[redacted]

OC 526-06 Palm Harbor Condo
Site Plan 6-18100002

MSA. S. 1829-5869

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/

October 27, 2008

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

RE: Ocean Harbor Hotel; Revised site Plan

Dear Mr. Blaine Smith:

As a follow up to my September 15, 2008 letter I offer the following comments on revised plans for redevelopment of parcels 5749, 53-57 on map 111, creating a hotel and parking. The project is located at least partially in the 100-foot Buffer, is IDA, and waterfront.

1. The applicant has reduced the building footprint and thus reduced impervious surfaces overall.

2. The 2 decks previously located in the setback have been removed.

3. Substantially more landscaping has been added and correspondingly reduced the fee in lieu.

Thank you for the opportunity to provide review and comment. If you have any further questions regarding this project, please call me directly at 410-260-3468.

Sincerely,

Roby Hurley
Natural Resources Planner

cc: OC778-04 and 526-06

Martin O'Malley
Governor

Anthony G. Brown
Lt. Governor

Margaret G. McHale
Chair

Ren Serey
Executive Director

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September 16, 2008

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

RE: Ocean Harbor Hotel

Dear Mr. Smith:

Thank you for the submission of site plans related to the above referenced project. The applicant intends to redevelop parcels 5749, 53-57 on map 111, creating a hotel and parking. The project is located at least partially in the 100-foot Buffer, is IDA, and waterfront. Commission staff offers the following comments:

1. The applicant is proposing to address the 10% rule with a series of infiltration trenches under pavers and it appears this BMP configuration meets the Town's Program.

2. The afforestation requirement appears to be met on-site; however the numbers on the application form differ from those on Sheet 4 (7/22/08) of the Plan.

3. In reference to Buffer impacts and mitigation, a substantial amount of impervious surfaces in the form of buildings, parking and walkways have been removed from the Bufferyard (25') through previous demolition. In redesign the applicant has located all structures outside of the 25' setback with the exception of 2 decks which your ordinance allows at a 10' setback. Fee in lieu for Buffer impacts appear to be correctly calculated at an amount of $48,263.

4. A DNR Heritage letter dated 6/6/08 was included with the application and indicated that no listed species will be impacted.

Thank you for the opportunity to provide review and comment. If you have any further questions regarding this project, please call me directly at 410-260-3468.

Sincerely,

Roby Hurley
Natural Resources Planner

cc: OC778-04

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August 22, 2006

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

RE: Palm Harbor Condominiums (a.k.a. Misty Harbor Condominiums)

Dear Mr. Smith:

Thank you for the most recent submission of site plans related to the above referenced project. The applicant intends to construct a 79 unit condominium complex on a 2.49 acre parcel. The project is within the 100-foot Buffer, is IDA, and waterfront. Issues of concern include the 25-foot setback, afforestation, sensitive species, and pollutant removal requirements. Commission staff offers the following comments:

1. The applicant is proposing to address the 10% rule with a series of infiltration trenches. The efficiency of the trenches must be addressed. The applicant is proposing to keep a 2 foot separation of the stormwater from groundwater. The Town of Ocean City's Engineering Department has indicated that the depth to water of the site is between 0-1 foot below ground surface (bgs). An elevation of groundwater in the calculations has been reported as 1 foot bgs as a "conservative" design measure. This statement seems contradictory in regards to the available data.

2. The afforestation requirement is not met on-site. As stated in the Town of Ocean City's Code Section 30-554.(d)(8)a. "The option of paying a fee in lieu of mitigation or landscaping is only available if, in the determination of the Department, the property owner has exhausted all reasonable possibilities of mitigation or landscaping on-site." The Commission would recommend that the Town require the applicant to provide additional landscaping within the Buffer as there appears to be adequate room to do so. As presented, the applicant is

proposing to pay a fee-in-lieu of $91,862.40 to mitigate the afforestation requirement.

3. Pervious pavers may not count toward landscape area. Staff could not locate this reference in Chapter 98, Article II, Landscaping Code of Ocean City. This may be a "practice" but it is not outlined in the Code. Please revise your calculations.

Please respond to the above comments and provide for resubmittal to the Commission staff for review.

We look forward to the updated documentation. If you have any further questions regarding this project, please call me directly at 410-260-3476.

Best regards,

Chris Clark
Natural Resources Planner

cc: OC778-04

Robert L. Ehrlich, Jr.
Governor

Michael S. Steele
Lt. Governor

Martin G. Madden
Chairman

Ren Serey
Executive Director

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May 22, 2006

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

RE: Misty Harbor Condominium

Dear Mr. Smith:

Thank you for the most recent submission of site plans related to the above referenced project. The applicant intends to construct a 79 unit condominium complex on a 2.49 acre parcel. The project is within the 100-foot Buffer, is IDA, and waterfront. Issues of concern include the 25-foot setback, afforestation, and pollutant removal requirements. Commission staff offers the following comments:

1. The applicant is proposing to address the 10% rule with a series of infiltration trenches. A stormwater and grading plan was not supplied for review. Please have the applicant supply the Commission with the plans. The efficiency of the trench was also the topic of some discussion during the Ocean City staff review. Please provide depth to water measurements for our records.

2. The site plan indicates the presence of a wooden boardwalk adjacent to the building and the bulkhead. It is not clear if the boardwalk next to the bulkhead currently exists or is planned. If it currently exists, please note that on the site plan. Any encroachment into the 25-foot setback will require mitigation at a ratio of 2:1. It appears that the applicant has included this in the calculations.

3. The afforestation requirement is not met on-site. The Commission would recommend that the Town require the applicant to provide additional landscaping within the Buffer. As presented, the applicant is proposing to pay a fee-in-lieu of $95,232 to mitigate the afforestation requirement.

4. It is understood that the applicant has submitted a request to the Department of Natural Resources (DNR) for a Heritage review. Please forward any response from DNR as it becomes available.

Please respond to the above comments and provide for resubmittal to the Commission staff for review.

We look forward to the updated documentation. If you have any further questions regarding this project, please call me directly at 410-260-3476.

Best regards,

Chris Clark
Natural Resources Planner

cc: OC778-04

Robert L. Ehrlich, Jr.
Governor

Michael S. Steele
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April 12, 2006

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

RE: Misty Harbor Condominiums

Dear Mr. Smith:

Thank you for including the Critical Area Commission during your April 6, 2006 technical review meeting regarding the above referenced project. In response to the discussion about the project, the Commission would offer the following comments for your records:

The applicant needs to provide the Commission staff with a site plan including stormwater, landscaping, and Critical Area plans. Several issues were noted during review that are unclear on the plans provided and the Commission would like the applicant to provide more detail pursuant to the Town of Ocean City Code Section 30-559.(2) *Atlantic Coastal Bays Critical Area Report*. **The report must include a description of the project and an environmental assessment of the site.**

Specifically, we would like to review a discussion of the proposed development including previous and proposed uses and a detailed explanation of the 10% worksheet submitted for compliance. The 10% worksheet submitted is unacceptable on its own. The 10% worksheet provided was incorrect and the BMP efficiency needs to be addressed.

If it is necessary to produce a separate plan sheet to indicate preexisting and proposed post development pollutant reduction measures please do so. If not, please be as detailed as possible in the narrative. Please also include all correspondence and findings received from any local, county, State or federal agency including the required Heritage letter. Please also include any soil boring information and its relationship to the proposed stormwater infiltration calculations.

This office would like to see any revisions, alterations, or substitutions as related to the landscape, stormwater or site plans.

Please respond to the above comments and provide for resubmittal to the Commission staff for review. Please forward a copy of this letter to the applicant.

We look forward to the updated documentation. If you have any further questions regarding this project, please call me directly at 410-260-3476.

Best regards,

Chris Clark
Natural Resources Planner

cc: OC778-04

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November 16, 2004

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

VIA FACSIMILE

RE: Site Plan – Misty Harbor Condominiums

Dear Mr. Smith:

Thank you for providing information on the above referenced site plan. The applicant proposes to tear down several existing buildings and construct a 19-unit condominium with associated parking in its place. The subject parcel is a total of 0.876 acres and is waterfront with a 10-foot setback. Commission staff has reviewed the information provided and we have the following comments:

1. It is not clear that impervious surfaces have been calculated correctly. In adding up all of the pervious areas (including the boardwalk along the water and the sidewalk extension), it appears that proposed impervious areas are greater than the 78% shown in the calculations. All areas covered by roof or pavement must be included as impervious in the calculations.

2. Notwithstanding the above, it appears that the 10% requirement can be adequately addressed through construction of infiltration trenches beneath pervious pavers. However, there is inadequate information regarding soil permeability. Also, grading plans should ensure that 80% of the site can be treated by the infiltration trenches beneath the pavers.

3. It appears that the proposed landscaping shown on sheet L101 will meet the required 15% afforestation in terms of total square footage. However,

4. The Buffer mitigation calculations do not take the existing boardwalk into account. Improved pervious areas (such as the 1500 square foot boardwalk) must be mitigated

at a 1:1 ratio. Substantial fees-in-lieu are proposed. It appears that some additional plantings can be accommodated on the site.

5. Please note that the landscaping shown on sheet L101 does not match the landscaping shown on sheet A100.

6. Please note that the civil engineering sheets show the development on Lots 5, 6, 7, 10 and 11 while the architectural plans show the development on Lots 4-7 and 10. This should be clarified. The applicant should not be permitted to propose projects in phases for the purpose of avoiding the 25-foot setback on parcels larger than 40,000 square feet.

Thank you for the opportunity to review this project. If you have any questions or concerns, please contact me at (410) 260-3477.

Sincerely,

LeeAnne Chandler

LeeAnne Chandler
Natural Resources Planner

cc: OC778-04

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

May 6, 2008

Mr. Ronald D. Gatton
Environmental Consultants, Inc.
28712 Island Creek Road
P.O. Box 438
Trappe, MD 21673

RE: Environmental Review for Redevelopment by Ocean's Harbor for Property Located at 25th to 26th Streets and Coastal Highway, Worcester County, Maryland.

Dear Mr. Gatton:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2008.0745.wo

VISTA
DESIGN INC. Landscape Architects, Land Planning Consultants and Engineers

September 17, 2008

Ms. Gail Blazer
Town of Ocean City
P.O. Box 158
Ocean City, Maryland 21843

RE: Ocean Harbor Hotel

Ms. Blazer-

Enclosed for your review, please find a complete Ocean City 10% Critical Area Worksheet, Critical Area Project Application, design narrative, and (1) one set of Stormwater Management / Sediment Plans for the above referenced project.

NARRATIVE

PROJECT DESCRIPTION

The Ocean Harbor Hotel is located in Ocean City, Maryland on Costal Highway between the intersections of 25th street and 26th street bayside. The site is approximately ±108,201 square feet. The proposed site conditions include a multi-storied hotel and restaurant.

EXISTING SITE CONDITIONS

The existing topography ranges from elevations 2.0' – 5.0' with slopes ranging from 0-3.0%. We have provided a post-development drainage area map in our construction set (sheet C 3.0). The drainage map shows the proposed best management practices and the area draining to each.

CRITICAL AREAS

The proposed site is located within the 100 foot critical area buffer. This line has been shown on the plans and the Critical Area Project Application has been completed and submitted with this narrative.

CALCULATIONS

The Ocean City 10% Critical Area Worksheet has been completed and submitted with this narrative. In addition, we have provided impervious area breakdowns, charts and visuals to help in the review process.

Sincerely,
Vista Design, Inc.

Richard Blasey

Resend

11634 Worcester Highway Showell, Maryland 21862
ph. 410-352-3874 fax 410-352-3875 email vista@vistadesigninc.com

Clean Streets
Clean Waters
Working Together To Protect Our Beaches & Boys

STORMWATER MANAGEMENT/ENGINEERING APPLICATION

Date 9/17/08 Permit #_____

Project Name/Site Location OCEAN HARBOR HOTEL (25TH – 26TH & COASTAL)

Owner/Agent Name _____ Phone #_____

Owner Address_____

Contact Name/ Title _____Phone#_____

Contact Address _____

DEVELOPER/BUILDER CERTIFICATION

As representative for the above project I do agree to the following requirement(s).

All information set forth in this plan accurately conveys this site's conditions and meets the current Stormwater Management ordinance to the best of my knowledge.

All Stormwater Management and Critical Area, calculations, design, construction, exemption/waiver request will adhere to the current 2000 Maryland Stormwater Design Manual volumes I & II and the code of the Town of Ocean City, Section 30-141 through 30-153, for Stormwater Management and Stormwater Plan for the this site and the Critical Area Program. All information set forth in this plan accurately conveys this site's conditions and meets the current Stormwater Management ordinance to the best of my knowledge. 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 is required. 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 and approval.

Proper soil erosion and sediment control devices will protect all structural devices for Stormwater Management until all contributing areas have passed final stabilization inspection.

See reverse side for Engineering and Stormwater Management conditions.

_____ _____

Applicant Signature Date

_____ _____

Owner Signature Date

Dec 2005

Clean Streets Clean Waters
Working Together To Protect Our Beaches & Bays

Date _____
Permit# _____
Project Name _____
Address _____

Ocean City Critical Area 10% Rule Worksheet

Standard Application Process

Calculating Pollutant Removal Requirements

Step 1: Calculating Existing and Proposed Site Impervious

A. Calculate Percent Imperviousness

Site Area within the Critical Area IDA, A= 108,201 (sf) ✓

B. Site Impervious Surface Area, Existing and Proposed, (See Table 4.1 for detail)

	(1) Existing (sf)	(2) Proposed (sf)
Roads	—	
Parking Lots	36,259	35,970
Sidewalks/Paths	7,412	2,992
Rooftops	26,433	35,009
Decks		
Swimming pools/ponds	—	—
Other		
Impervious surface area (sf)	70,104	73,971

82474 ?

C. Non-Structural BMP's Applied to the Site

Non-Structural	Disconnected Impervious Area (sf)
a.	
b.	
c.	

Total Disconnected Impervious Area (sf) 0

D. Adjusted Proposed Impervious surface Step B (2) minus total of Step C 0

E. Impervious (I) calculations

Existing Impervious – Ipre = Impervious surface/Site Area
= 64.79 %

Proposed Impervious - Ipost =Adjusted Proposed Impervious/Site Area
= 68.36 %

Define development category (circle)

1. **Redevelopment:** Existing Imperviousness greater than 15% I (Go to step 2A)
2. **New Development:** Existing Imperviousness less than 15% I (Go to step 2B)
3. **Single Lot Residential:** Single lot being developed single family residential and more than 250 sf disturbed should submit a Standard SWM plan or Residential Water Quality management plan.

Step 2: Calculated the Predevelopment Phosphorous Pollution Load (Lpre)

A. Redevelopment

Lpre = (Rv) (C) (A) (.000187)

Rv = .05 + .009 (Ipre) **Rv = .05 + .009 (64.79)= 0.63**

Lpre = (Rv 0.63) x (C.3) x (A 108,201 sf) (.000187) = 3.84

= 3.84 lbs/year of total phosphorus

Where:

Lpre = Average annual load of total phosphorus exported from the site prior to development (lb/year)
Rv = Runoff coefficient, which expresses the fraction of rainfall which is converted into runoff.

Ipre = Predevelopment (existing) site imperviousness
C = Flow-weighted mean concentration of the pollutant (total phosphorous in urban runoff (mg/1) = .3 mg/1xphosphorus
A = Area of site within the IDA (sf)
(.000187) = Includes regional constants and unit conversion factors

B. New Development

Lpre=(0.5) (A/43560) **(0.5) (/43560) = _____**

= _____ lbs/year of total phosphorous

Where:

Lpre = 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 (sf)

Step 3: Calculate the Post-Development Load

A. New Development and Re-Development:

Lpost = (Rv) (C) (A) (.000187)

Rv = .05+.009 (Ipost) **Rv = .05 + .009 (68.36) = 0.67**

Lpost = (Rv 0.67) x (C.3) x (A 108,201 sf) (.000187) = 4.04

= 4.09 lbs/year of total phosphorus

Where:

Lpost = Average annual load of total phosphorus exported from the site prior to development (lb/year)
Rv = Runoff coefficient, which expresses the fraction of rainfall which is converted into runoff.
Ipost = Predevelopment (existing) site imperviousness
C = Flow-weighted mean concentration of the pollutant (total phosphorous in urban runoff (mg/1) = .3 mg/1=phosphorus
A = Area of site within the IDA (sf)
(0000187) = Includes regional constants and unit conversion factors

Step 4: Calculate the Pollutant Removal Requirements (RR)

10% Reduction = 09 x (Lpre) = 3.46

RR = Lpost – 10% reduction = 0.579

= 0.579 **lbs/year of total phosphorus**

Where:

RR = Pollutant removal requirements (lbs/year of total phosphorus)
Lpost = Average annual load of total phosphorus exported from the post-development site (lbs/year)
Lpre = Average annual of total phosphorus exported from the site prior to development (lbs/year)

Step 5: Identify Feasible BMP(s)

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

BMP type	(Lpost)	X	(BMPre)	X	% Site served =	LR	
SEE ATTACHED FOR COMPLETE BREAK DOWN		X		X		= on plan	lbs/year
		X		X		=	lbs/year
		X		X		=	lbs/year

Load Removed/LR (total) = 0.687 lbs/year

Pollutant Removal Requirement RR (from Step 4) = 0.579 lbs/year

If the load removed is equal to or greater than the Pollutant Removal Requirements computed in Step 4, than the on-site BMP complies with the 10% Rule…else, and more BMPs or Fee-in-Lieu as followed:

RR minus LR = (i) lbs/year, Fee-In-lieu at ($20,000 lb per year)

$20,000 x (i) = $ 0 Fee-In-Lieu owed

Where:

Load Removed	=	Annual total phosphorus load removed by the proposed BMP (lbs/year)
Lpost	=	Average annual load of total phosphorus export from the post-development site development (lbs/year)
BMP Re	=	BMP removal efficiency for total phosphorus, table 4.8 (%)
% DA served	=	Fraction of the drainage area served by the BMP (%)
RR	=	Pollutant removal requirement (lbs/year)
(i)	=	Pollutant load not removed by BMP (lb/year)
Fee-in-Lieu	=	$20,000 per (lb)

Critical Area Project Application
Town of Ocean City

Date: 9/17/08 **File#**_____

Project Name: OCEAN HARBOR HOTEL

Project Address_____

Tax Map: _____ **Parcel:**_____ **Block:**_____**Lot#**_____ **Zoning** _____

Property Owner_____ **Phone** _____

Property Owner Address_____

Parcel size (SF): 108,201 **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) 70,104 **% of site impervious:** 65%

Impervious surface within the 100-foot buffer (SF): 42,871

Proposed Conditions

Impervious surface (SF): 73,971 **% of site impervious:** 68%

Total SF of disturbed area: 68,125

Impervious surface within the 100-foot buffer (SF): 51,550

Is project in the 100 foot buffer? Yes X **No**_____ *(If yes, continue with Sec. II)*
(If no, skip to Sec. III)

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:** # 2 x 100 SF x 1= 200 SF
b. **Trees or shrubs removed from setback** # 5 x 100 SF x 2= 1000 SF
c. **Pervious to impervious** 15,601 SF x 2 = 31,202 SF
d. **Improved pervious to improved pervious** 0 SF x 1 = 0 SF
e. **Undisturbed surface disturbed but remaining pervious** 0 SF x 1 = 0 SF
f. **Impervious to impervious** 35,396 SF x 1 = 35,396 SF
g. **Impervious to pervious** 0 SF x 0 = 0 SF
h. **Construction of decks in setback** 278 SF x 2 = 556 SF
i. **TOTAL MITIGATION REQUIRED** (sum of a through h) = 68,354 SF
j. **TOTAL LANDSCAPE PROVIDED** (Refer to "Landscape Conversion Chart" below)

	Number	Value		Total
Large trees	# 10	x 200 SF	=	2000 SF
Small trees	# 58	x 100 SF	=	5800 SF
Large shrubs	# 161	x 75 SF	=	12,075 SF
Small shrubs	# 348	x 50 SF	=	17,400 SF
Herbaceous Plants	# 1953	x 2 SF	=	3906 SF

TOTAL VALUE OF LANDSCAPE PROVIDED 41,181 SF

K. **FEE-IN-LIEU OF LANDSCAPE = i – j x $1.20** $ 27,172.00
(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 108,201 **SF x .15 =** 16,230 **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	# 10	x 200 SF =		SF	2,000 SF
Small trees	# 58	x 100 SF =		SF	5,800 SF
Large shrubs	# 161	x 75 SF =		SF	12,075 SF
Small shrubs	# 348	x 50 SF =		SF	17,400 SF
Herbaceous Plants	# 1953	x 2 SF=		SF	3,906 SF

TOTAL VALUE OF LANDSCAPE PROVIDED: 41,181 **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: B. Blevins Smith Jr. **Zoning Administrator** **Date** 10/2/08

L. Lee P Blazer **Environmental Engineer** **Date** 9-25-08

STORMWATER SUBMISSION REQUIREMANTS

1. need **REVIEW FEE:**
   $50.00 for first 25,000 sf plus $1.00 for every 1,000 sf additional

2. need ------- Building Permit Application Form and Yellow Approval Routing Slip

3. ------- Four (4) copies of civil plans with stormwater management
   (Existing and Proposed Grades Required)
   (One Copy Of Building Plan)

   CRITICAL AREA SITES:

4. ------- 10% Critical Area Plan Worksheet or Residential Water Quality Management Plan, and the Critical Area Application.
   (See note on bottom of Building Permit Application)

5. ------- Make appointment with Gail to pick them up Call (410) 289-8825

9/17/20083:26 PM

VISTA DESIGN INC. Landscape Architects, Land Planning Consultants and Engineers

Project: Ocean Harbor Hotel

Subject: Stormwater Calculations

Date: 17-Sep-08

Surface	Pre-Existing	Post-Development
Parking Lots	36,259	35970
Sidewalks/Concrete	7,412	2,992
Buildings	26,433	35,009
Total Impervious	**70,104**	**73,971**
Landscaping	26,593	19,548
Pervious Pavers/ Gravel Lots	9,806	9,343
Wooden Decks	1,698	2,652
Sidewalk Pavers		2,696
Total Pervious	38,097	34,239
Total Site	108,201	108,210
% Impervious	64.79%	68.36%
% Landscaped	35.21%	20.56%
Rv	0.63	0.67
Phosphorus loading	3.84	4.04
WQv	5708.64	5998.70
20% Existing WQv	1141.73	
New WQV	290.06	
WQV Required	1431.79	
	108,201	
Lpre/Lpost	3.843	4.038
RR/LR	3.459	0.579

Designed By:
Vista Design inc.

VISTA DESIGN INC. Landscape Architects, Land Planning Consultants and Engineers

Lpost = 4.04

Watershed	Watershed Type	Surface Area	Column Area	Storage Pipe	Storage Available	Drainage Area	Site Area	% Drainage Served	LR
1	Pervious Pavers	2737	0	0	547.4	12,858	Storage Area	6.07%	0.080
2	Pervious Pavers	3791	270	45.37	533.57	10,925	Storage Area	5.92%	0.078
3	Pervious Pavers	1972	0	0	394.4	6,676	Storage Area	4.37%	0.057
4	Pervious Pavers	1513	0	69.102	371.702	11,565	Storage Area	4.12%	0.054
5	Pervious Pavers	1054	0	0	210.8	4,747	Storage Area	2.34%	0.031
6	Pervious Pavers	918	45	186.96	325.56	4,967	Storage Area	3.61%	0.047
7	Pervious Pavers	595	0	0	119	3,966	Storage Area	1.32%	0.017
8	Rain Gardens				506	7243	Storage Area	5.61%	0.057
9	Rain Gardens				462	12217	Storage Area	5.12%	0.052
10	Rain Gardens				2,020	22923	Drainage Area	21.19%	0.214
Total					5,489	98,087		59.66%	0.687

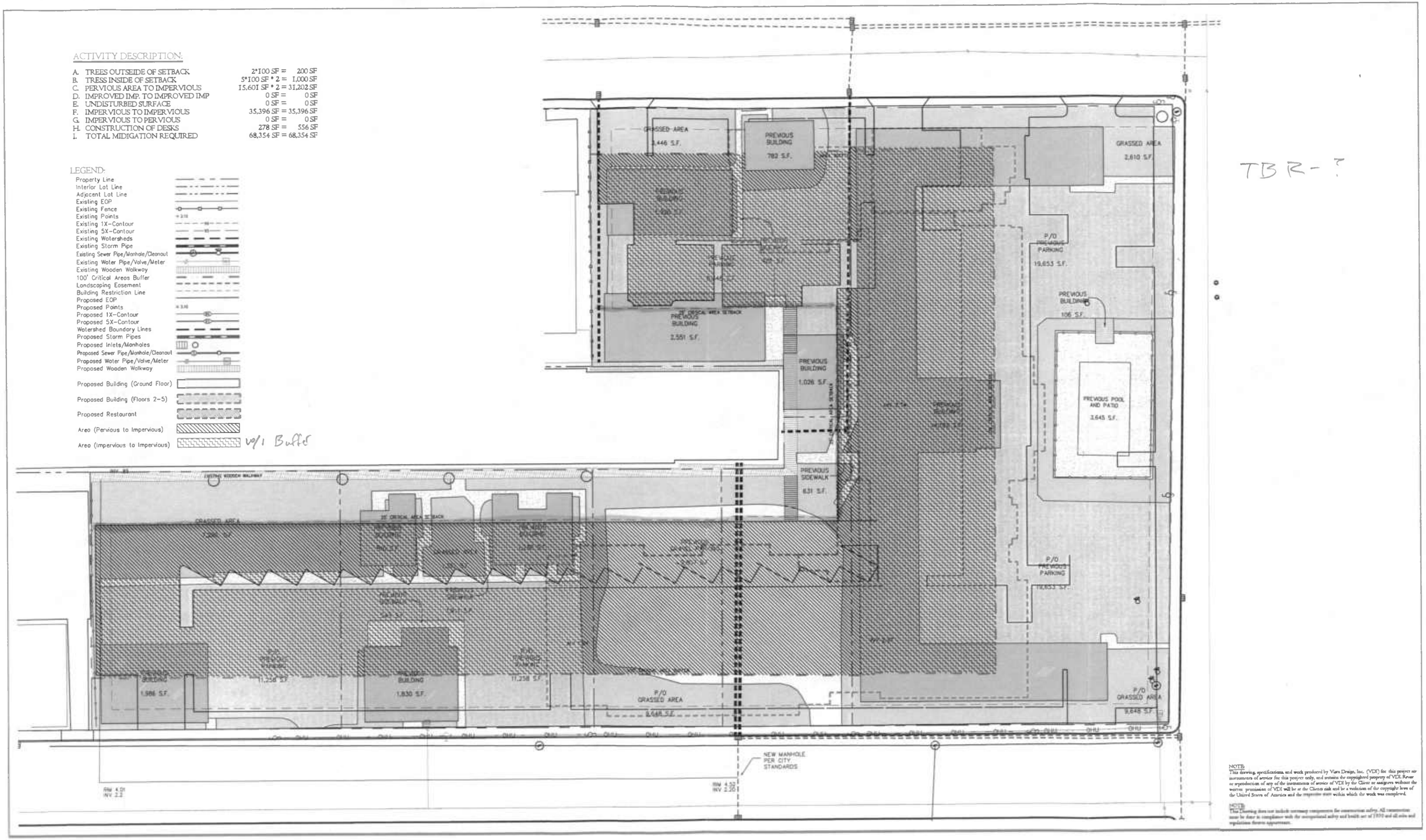
Designed By:
Vista Design inc.

ACTIVITY DESCRIPTION:

A.	TREES OUTSEIDE OF SETBACK	2*100 SF = 200 SF
B.	TRESS INSIDE OF SETBACK	5*100 SF * 2 = 1,000 SF
C.	PERVIOUS AREA TO IMPERVIOUS	15,601 SF * 2 = 31,202 SF
D.	IMPROVED IMP. TO IMPROVED IMP	0 SF = 0 SF
E.	UNDISTURBED SURFACE	0 SF = 0 SF
F.	IMPERVIOUS TO IMPERVIOUS	35,396 SF = 35,396 SF
G.	IMPERVIOUS TO PERVIOUS	0 SF = 0 SF
H.	CONSTRUCTION OF DESKS	278 SF = 556 SF
I.	TOTAL MIDIGATION REQUIRED	68,354 SF = 68,354 SF

LEGEND:

- Property Line
- Interior Lot Line
- Adjacent Lot Line
- Existing EOP
- Existing Fence
- Existing Points
- Existing 1X-Contour
- Existing 5X-Contour
- Existing Watersheds
- Existing Storm Pipe
- Existing Sewer Pipe/Manhole/Cleanout
- Existing Water Pipe/Valve/Meter
- Existing Wooden Walkway
- 100' Critical Areas Buffer
- Landscaping Easement
- Building Restriction Line
- Proposed EOP
- Proposed Points
- Proposed 1X-Contour
- Proposed 5X-Contour
- Watershed Boundary Lines
- Proposed Storm Pipes
- Proposed Inlets/Manholes
- Proposed Sewer Pipe/Manhole/Cleanout
- Proposed Water Pipe/Valve/Meter
- Proposed Wooden Walkway
- Proposed Building (Ground Floor)
- Proposed Building (Floors 2-5)
- Proposed Restaurant
- Area (Pervious to Impervious)
- Area (Impervious to Impervious) w/1 Buffer



TBR-?

NOTE:
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NOTE:
This Drawing does not include necessary components for construction safety. All construction must be done in compliance with the occupational safety and health act of 1970 and all rules and regulations therein appurtenant.

		Ocean Harbor Hotel	Commercial Mitigation Worksheet PHASE 1		

VISTA DESIGN, INC.
Landscape Architects, Land Planning Consultants, Engineers, and Surveyors
11634 Worcester Hwy, Showell, MD 21862
ph. 410-352-3874 fax 410-352-3875 email vista@vistadesigninc.com

PROJECT DATA	
DRAWN BY:	RFB
CHECK BY:	AJR
OCEAN CITY	
WORCESTER COUNTY, MARYLAND	
F.B. NO.:	00-00-00
T.M. NO.:	0-00-00-00
DATE:	9-16-08
FILE NAME:	File
SCALE	N.T.S.

REVISIONS

08-028	PROJ. NO.
CE 090908.dwg	File Name
I	SHEET NO.

PARKER AND ASSOCIATES, INC.
528 Riverside Drive
Salisbury, MD
TEL: (410) 749-1023
FAX: (410) 749-1012

Ocean Harbor Hotel
STORM WATER MANAGEMENT REPORT
Project No. S1867
July 23, 2008

1. PROJECT DESCRIPTION

The project entails the construction of a hotel building on a site located on Philadelphia Avenue within the Town of Ocean City corporate limits. The site contains 108,201 SF within its property lines, of which 107,732 SF are above mean high water. The site includes 1 building, parking, driveways, and sidewalks totaling 82,071 SF of impervious surfaces. The remaining area is landscaping, pervious decks, and pervious. The site will have public water and sewer services, and private cable and electric service. Storm water will be collected via pipes and conveyed to an infiltration system below the building. The site lies within the Atlantic Coastal Bay Critical.

2. DISCUSSION

2.1. Storm water management design criteria.

The design criteria used for this site complies with the MD Storm Water Design Manual and Town of Ocean City development standards and storm water management regulations for re-development.

The storm water BMP was sized to manage water quality increase as required by regulations. As well as help with pollutant run off as required by Critical Area regulations.

2.2. Design Methodology.

The storm water run off from the building is collected via roof drains and conveyed to an underground infiltration system located in the parking area beneath the building. This system was sized according to the local and state regulations to treat part of the existing water quality and the increase in water quality from re-development.
To help reduce the overall imperviousness of the site several areas of pervious pavers were placed around the perimeter. They serve a dual purpose of lowering the impervious percentage and helping to capture pollutant runoff before it leaves the site.

2.3.1. Water quality required

The following table shows the requirements for WQv of Rev. Detailed calculations are attached to this report:

	Pre-Development	Post-Development
WQv	*5,740.3*	*6,246.1*
20% Existing Wq and 100% New	1,148.1	489.8
WQv Required	**1,637.8**	

3. CONCLUSIONS

3.1. The proposed storm water management BMPs will be able to provide adequate treatment to comply with the State of Maryland and Town of Ocean City standards for water quality.

Critical Area Project Application
Town of Ocean City

Date: 07/14/08 **File#**_____

Project Name: Ocean Harbor Hotel

Project Address 2501 Philadelphia Ave
5754 5755 5756 5758

Tax Map: 111 **Parcel:** 5757 **Block:**____ **Lot#**____ **Zoning** R2

Property Owner Arthur Tsamis **Phone** _____

Property Owner Address_____

Parcel size (SF): 108,201 **or Site Area (SF)** 107,732 **(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) 68603 **% of site impervious:** 63.7

Impervious surface within the 100-foot buffer (SF): 44909

Proposed Conditions

Impervious surface (SF): 77296 **% of site impervious:** 71.7%

Total SF of disturbed area: 107,732

Impervious surface within the 100-foot buffer (SF): 48904

Is project in the 100 foot buffer? Yes X **No**_____ *(If yes, continue with Sec. II)*
(If no, skip to Sec. III)

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:**
   # 2 **x** 100 **SF x 1=** 200 **SF**
b. **Trees or shrubs removed from setback #** 5 **x** 200 **SF x 2=** 2000 **SF**
c. **Pervious to impervious** 3995 **SF x 2 =** 7990 **SF**
d. **Improved pervious to improved pervious** 0 **SF x 1 =** 0 **SF**
e. **Undisturbed surface disturbed but remaining pervious**
   0 **SF x 1 =** 0 **SF**
f. **Impervious to impervious** 44904 **SF x 1 =** 44904 **SF**
g. **Impervious to pervious** 0 **SF x 0 = 0 SF**
h. **Construction of decks in setback** 1063 **SF x 2 =** 2126 **SF**
i. **TOTAL MITIGATION REQUIRED** (sum of a through h) = 57219 **SF**
j. **TOTAL LANDSCAPE PROVIDED** (Refer to "Landscape Conversion Chart" below)

	Number	Value		Total
Large trees	# 0	x 200 SF	=	0 SF
Small trees	# 70	x 100 SF	=	7000 SF
Large shrubs	# 0	x 75 SF	=	0 SF
Small shrubs	# 200	x 50 SF	=	10000 SF
Herbaceous Plants	# 0	x 2 SF	=	0 SF

TOTAL VALUE OF LANDSCAPE PROVIDED 17000 **SF**

K. **FEE-IN-LIEU OF LANDSCAPE = i – j x $1.20 $** 48262.90
(To be paid prior to issuance of Certificate of Occupancy)

l. **Setback from water/wetlands** 13059 **SF x .25 =** 3265 **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 108201 **SF x .15 =** 16230 **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	# 0 x	**200 SF =**	0 **SF**	0 **SF**
Small trees	# 17 x	**100 SF =**	0 **SF**	7000 **SF**
Large shrubs	# 0 x	**75 SF =**	0 **SF**	0 **SF**
Small shrubs	# 200 x	**50 SF =**	0 **SF**	10000 **SF**
Herbaceous Plants	# 0 x	**2 SF=**	0 **SF**	0 **SF**

O. Akrenk than site plan

TOTAL VALUE OF LANDSCAPE PROVIDED: 17000 **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.

B. New Development

Lpre = 0.5 A

Lpre = 0.000 lbs/year of total phosphorus

Where:

Lpre	=	Average annual load of total phosphourous exported from the site prior to development (lbs/year)
0.5	=	Annual total phosphourous 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)

= 0.6345

Lpost = 3.841 lbs/year of total phosphorus ✓

Where:

Lpost	=	Average annual load of total phosphourous exported from the post developmentsite (lbs/year)
Rv	=	Runoff coefficient, which expresses the fraction of rainfall which is converted to runoff
Ipost	=	Post-development (proposed) site imperviousness (ie 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 3.48

RR = Lpost - 0.9 Lpre

= 3.841 - 0.9 3.871 ✓

= 0.3572

Where:

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

infil beneath pavers 50% credit if GW to high or infilt. rate is slow

Project: Ocean Harbor Motel
Coastal Hwy, 25th and 26th Streets
Ocean City Md

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= 107732 sf 2.473 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	36005.3	0.8266	27364	0.6282
Driveways	0	0.0000	0	0.0000
Sidewalks/Paths	6163.4	0.1415	12501	0.2870
Rooftops	26434	0.6068	33968	0.7798
Decks	1950	0.0448	3250	0.0746
Swimming Pools/Ponds	0	0.0000	0	0.0000
Other	0	0.0000		0.0000
Impervious Surface Area	70552.7	1.6197	77083	1.7696

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

Non-Structural BMP	Disconnected Impervious Area	
	sf	acres
Pervious paver	2277	0.0523
Pervious paver	935	0.0215
Pervious paver	2550	0.0585
Pervious paver	1360	0.0312
	0	0.0000
	0	0.0000
Disconnected Rooftop Impervious Area	7122	0.1635

4) Adjusted Proposed Impervious Surface Area
= Proposed Impervious Surface Area - Disconnected Impervious Area
= Step 2b - Step 3
= 1.7696 - 0.1635
= 1.6061 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
	=	1.6197	/	2.4732
	=	65.4891 %		
Proposed Imperviousness, Ipost	=	Impervious Surface Area/Site Area		
	=	Step 4	/	Step 1
	=	1.6061	/	2.4732
	=	64.9399 %		

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 eing 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)
	=	0.6394
Lpre	=	3.871 lbs/year of total phosphorus

Where:

Lpre	=	Average annual load of total phosphourous exported from the site prior to development (lbs/year)
Rv	=	Runoff coefficient, which expresses the fraction of rainfall which is converted to runoff
Lpre	=	Predevelopment (existing) site imperviousness (ie 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 5: Identify Feasilbe BMP (s)

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

BMP	Lpost	BMPre	%DA			LR
Pavers	3.841	65%	32%	50%	=	0.3995 lbs/yr
	3.442				=	0.0000 lbs/yr
	3.442				=	0.0000 lbs/yr
	3.442				=	0.0000 lbs/yr
	3.442				=	0.0000 lbs/yr
	3.442				=	0.0000 lbs/yr
	3.442				=	0.0000 lbs/yr

Load Removed (total)	=	0.3995
Pollutant removal Requirement (from Step 4)	=	0.3572

Where:

Load Removed	=	Annual total phosphourous load removed by the proposed BMP (lbs/year)
Lpost	=	Average annual load of total phosphourous exported from the post developmentsite (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? Yes

Pollutant removal requirement not served 0.0000 lbs

Fee in Luie **$0.00**

STORMWATER MANAGEMENT CALCULATIONS

FOR

MISTY HARBOR CONDOMINIUMS
PHASE 1

OCEAN CITY, MARYLAND

APRIL 2005

BECKER MORGAN GROUP

ARCHITECTURE
ENGINEERING

WILMINGTON, DELAWARE
302-888-2600

SALISBURY, MARYLAND
410-546-9100

DOVER, DELAWARE
302-734-7950

Prepared by:

Becker Morgan Group, Inc.
312 West Main Street, Suite 300
Salisbury, Maryland 21801

2004042.00

Table of Contents

1.0 INTRODUCTION

This report is prepared to provide supporting stormwater management documentation for the proposed development of phase one of the Misty Harbor Condominium site located on 25th Street. The report will demonstrate that the site design is in compliance with the Town of Ocean City's regulatory guidelines and the Maryland Department of the Environment's Stormwater Design Manual. Misty Harbor Condominium is located west of coastal highway, north of 25th Street in the Town of Ocean City, MD. The proposed development includes three interconnecting lots.

2.0 GENERAL SITE INFORMATION

2.1 Existing Site Condition

The existing site drainage area consists of 0.87 acres within four adjacent lots owned by Purnell Properties, L.L.C. The area is made up of a grass field, a gravel parking lot, a paved parking lot, and 4 buildings. The existing impervious area covers 57% (21,705 SF) of the site surface. The soil type, as determined by the US Department of Agriculture, is dominated by made land (MA) HSG = C. These soils have dynamic characteristics resulting from the uncertain source of the man-made fill and tidally influenced water table. Groundwater elevation was determined to be at EL –0.55 according to the attached soil borings log. Manmade soils typical to this area are dredged soils with a silty-sand composition. The site drainage area contains no wetlands, and is above the 100-year floodplain.

2.2 Proposed Site Condition

The site will be developed into two separate 5-story condominiums, with parking, elevated pool deck, and landscaping. Since this project represents a redevelopment, the 2000 Maryland Stormwater Design Manual" requires a 20% reduction in impervious area or a BMP to provide the runoff water quality control of a 20% reduction. The general idea for treating and storing the runoff will be to have it sheet flow over to pervious pavers, and then stored in the 57 stone underneath. By using pervious pavers, the proposed design meets and exceeds the WQv, Water Quantity, and 10% Critical Areas requirements.

3.0 STORMWATER MANAGEMENT

The proposed site has been designed in accordance with the Town of Ocean City development regulations using Best Management Practices (BMPs) listed in the Town's Stormwater Design Guidelines. The pervious pavers have been designed to capture the water quality volume required and also designed to treat the water for phosphorous. The pervious pavers located at the edge of the sidewalk have been designed to treat some of the phosphorous in the runoff.

3.1 Stormwater Quantity Management

Quantity management is not required for this site due to the fact that the sites drainage area is adjacent to tidal waters.

3.2 Stormwater Quality Management

The quality management requirements have been met through the use of pervious pavers. The roof drains will be located in areas of the parking lot where pervious pavers will be installed to collect all of the roof runoff. The proposed design provides a 22% increase in impervious surface area from the existing condition amount. Since there is a 22% increase in impervious area, best management practices are designed for 20% of the existing impervious area, plus 100% of new impervious area (44%). The calculated water quality volume required (1") equals 1334 CF. The pervious paver areas total approx. 4000 SF, providing approx. 2080 CF of treatment capacity, which matches the volume required for quality volume management. Phosphorus removal is met through using the infiltration under the pavers.

CALCULATION SUMMARY

Total Site Area	Total Disturbed Area	Existing Impervious Surface	Proposed Impervious Surface
38,100 SF	38,100 SF	21,705 SF	30,125 SF

The existing 21,705 SF (57%) impervious area consists of a gravel parking area, a paved parking area and 4 small buildings. The proposed development results in an impervious coverage of 30,125 SF (79%). As the code requires, 20% of the existing impervious area and 100% of the increased impervious area will be quality treated. The required total impervious area to quality manage is as follows:

TOTAL REQUIRED VOLUME

=100% Post-Development Quality Volume + 20% Pre-Developed Quality Volume

Increase in pervious area = 22%
22% of increase + 20% Existing = 44% of area
44% of 38,100 SF = 16,764 SF
1" Rain Event on 16,764 SF =
1334 CF Required

DRAINAGE AREAS AND BMP DESIGN

DRAINAGE AREA 1 (11,200 SF)

2200 SF OF PAVERS (Not including curb edge)
Add 150 CF of Structural Encroachment (Assume 7x7 Pile caps)
11,200 SF x 1" Rain Event = 933 CF
933 CF + 150 CF = 1083 CF Of Storage Needed

STORAGE PROVIDED IN PAVER SECTION

2200 SF x 1.4' of depth x .4 Void Ratio =

1,232 CF Storage Provided

DRAINAGE AREA 2 (9,200 SF)

1,800 SF OF PAVERS (Not including curb edge)
Add 150 CF of Structural Encroachment (Assume 7x7 Pile caps)
9,200 SF x 1" Rain Event = 767 CF
767 CF + 150 CF = 917 CF Of Storage Needed

STORAGE PROVIDED IN PAVER SECTION

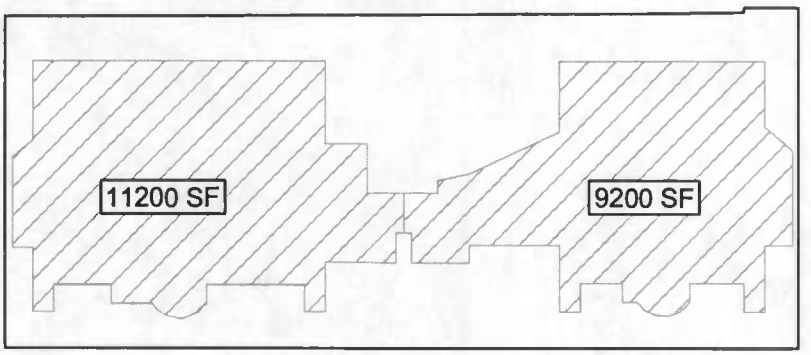
1,800 SF x 1.4' of depth x .4 Void Ratio =

1,000 CF Storage Provided

2,232 CF Total Storage Provided

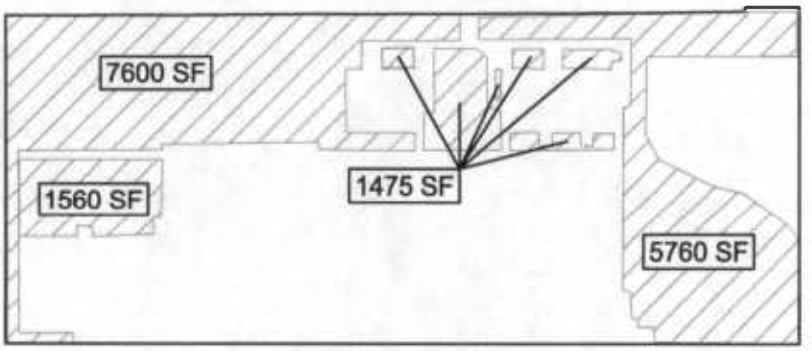
4.0 CONCLUSION

This report demonstrates that the proposed development design is in compliance with the Town of Ocean City Stormwater Regulations and Maryland Stormwater Design Manual. The required stormwater quality treatments have been detailed both in this report and in the design plans submitted herein. The BMPs utilized in this site design, along with sediment control practices during construction, will result in a development that represents an improvement to the quality of runoff when contrasting existing and proposed conditions.



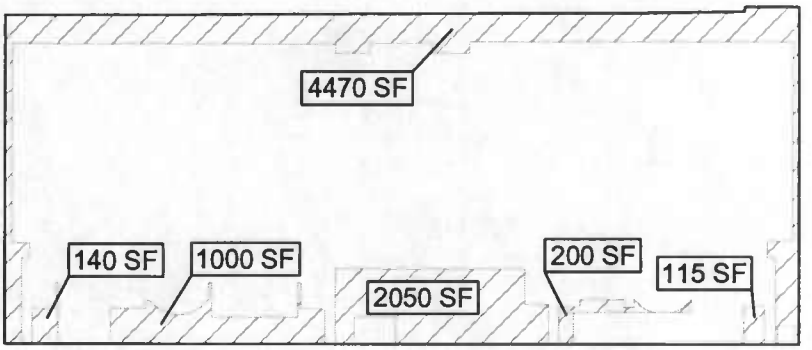
SWM DRAINAGE AREAS

NO SCALE



EX PERVIOUS AREAS

NO SCALE



BECKER MORGAN GROUP
ARCHITECTURE ENGINEERING

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www.beckermorgan.com

MISTY HARBOR

25 TH STREET
OCEAN CITY MD

SWM AREAS

PROJECT:	2004042
DATE:	4.20.05
SCALE:	NO SCALE
DRAWN BY:	JMR

C001

F:\AutoCAD\Projects\2004\200404201\dwg\SWM\SWM.dwg Apr 20, 2005 - 10:44am

HARDIN-KIGHT ASSOCIATES, INC.
CONSULTING ENGINEERS

November 24, 2004

Project No: 04875

MISTY HARBOR DEVELOPMENT, LLC
c/o Purnell Properties
P.O. Box 460
Ocean City, Maryland 21843

Attention: Mr. Troy Purnell

Reference: Preliminary Subsurface Investigation
And Geotechnical Evaluation For
Misty Harbor Condominium
25th Street - Bayside Ocean City, Maryland

Dear Mr. Purnell:

As requested, we have completed a preliminary investigation and geotechnical evaluation for Phase 1 of the Misty Harbor Condominium proposed for construction at 25th Street in Ocean City, Maryland. The purpose of this investigation is to evaluate the subsurface conditions and develop preliminary recommendations for the design and construction of foundations. Our findings, analysis, and preliminary recommendations are presented herein.

PROPOSED CONSTRUCTION

The proposed construction is for a new Condominium located on the north side of 25th Street between Coastal Highway and the Assawoman Bay in Ocean City, Maryland. We understand that the building will be a column supported 3 level poured in place, post-tensioned concrete structure above parking at the existing surface estimated about elevation plus 7 (+/- one foot). At the time of this investigation, construction drawings were not available. In our analysis, we have assumed that typical column loads will be in the range of 200 to 300 kips.

SUBSURFACE CONDITIONS

In order to evaluate the subsurface conditions on the site we have directed the drilling of three (3) standard penetration test borings. The borings were drilled to a depth of 70 to 75 feet below the current surface. The test boring locations are shown on the attached boring location plan. Standard penetration tests were taken at close intervals from the surface to ten feet and at five foot intervals thereafter. Split spoon samples were obtained and transported to our laboratory for review and classification. The samples were visually identified in accordance with Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) ASTM Designation: D-2488. Detailed descriptions of the soils are indicated on the attached test boring logs.

The subsurface conditions encountered at the site consist generally of sand with layers of silt and clay. Loose SAND was encountered from the surface to a depth of about 12 feet over a very soft layer of silty CLAY which extended to about twenty-two feet below the surface

(approximately 10 feet thick). The silty clay is underlain with loose to medium dense Sand to a depth of about thirty-four feet. A second Clay layer was encountered from thirty-four feet and extends to about fifty-two feet. Below the second Clay layer we encountered medium dense to very dense Sand to the maximum depth explored (75 feet). Our analysis of the SPT test data indicates that the granular soils can be characterized as very loose to very dense and the cohesive soils are very soft to stiff.

Water was encountered at a depth of 5 feet below the existing surface.

ANALYSIS AND DISCUSSION

For this preliminary evaluation we have assumed that the proposed structure will be column supported with loads ranging from 200 to 300 kips and that the bottom of pile caps will be at about elevation plus 3 +/- one foot. We will need to review and perhaps revise our preliminary recommendations when the final building loads become available. This office should be contacted for additional review and comment when the final design drawings are completed.

Based on the estimated column loads, we anticipate that the most cost effective safe foundation for the proposed structure will be pile foundations with a design capacity of 50 tons/pile. Based on our evaluation of the subsurface conditions we have considered two pile foundation alternatives; 14-inch diameter Auger-Cast piles installed to a depth of 65 feet below surface, and 12-inch square precast concrete piles driven to a depth of 65 feet below the surface.

Based on our evaluation of the SPT data and our experience, we estimate that 14-Inch diameter auger cast piles installed to a depth of 65 feet below the existing surface will have an allowable design load equal to 50 tons/pile. The allowable design load will have to be confirmed by a load test performed in accordance with ASTM D-1143.

As an alternative we have considered 12-inch square precast concrete piles. Based on our analysis of the SPT data, we anticipate that a 12-inch square precast concrete pile driven to a depth of 65 feet below the surface will have an allowable design load equal to 50 tons/pile. The final pile embedment length will have to be determined by the installation of a few probe piles. During installation of the probe piles, the driving criteria required to achieve a capacity equal 50 tons can be established using a Pile Dynamic Analysis (PDA) in accordance with ASTM D-4945. The allowable design load will have to be confirmed following the criteria in section 1808.2.8.3 of the International Building Code 2003. The allowable design load can be confirmed by testing selected probe piles in accordance with ASTM D-1143 or ASTM D-4945.

PRELIMINARY FOUNDATION RECOMMENDATIONS

Based on the findings at the test boring locations and our understanding of the proposed construction, we have developed the following recommendations for the design and construction of foundations for the Misty Harbor Condominiums.

1. We recommend that the building be supported by either14-inch diameter Auger Pressure Grout (APG) piles with a design load of 50 tons/pile; or 12-inch square precast concrete piles with a design load of 50 tons/pile.

2. If the 14-inch diameter APG piles are selected for foundation support, we recommend that a test pile be installed to a depth of 65 feet below the existing ground surface. We recommend that the pile capacity be confirmed by a load test performed in accordance with ASTM D -1143.

3. If the 12-inch square precast concrete piles are selected for foundation support, we recommend that the pile embedment lengths and driving criteria for a capacity of 50 tons/pile be established based on a PDA analysis, In accordance with ASTM D-4945, on a minimum of three probe piles installed across the site. We recommend that the pile embedment length and allowable pile capacity be confirmed by test on one or more of the probe piles in accordance with ASTM D -1143 or ASTM D-4945.

4. If the load test confirms an allowable load equal to or greater than the design load, we recommend that all production piles be installed following the same criteria as used for installation of the test piles.

5. We recommend that the installation of the test piles and the load tests be monitored by Hardin-Kight Associates, Inc. We recommend that the allowable load on the piles be determined by Hardin-Kight Associates, Inc. from an analysis of the load test results. We recommend that the installation of all production piles be monitored and approved by a Professional Engineer who shall provide a certification or professional opinion that all production piles have an allowable load equal to at least the final design load determined from an analysis of the load test.

6. For the auger cast piles we recommend that the test pile and all production piles contain one continuous #8 re-bar installed the full length of the pile. Additional reinforcing may be required in production piles from considerations of stability. We recommend that the test pile contain a minimum of three strain gauges through the length of the test pile.

7. We recommend that we be given the opportunity to review the final design drawings and project specifications when they become available.

If you have any questions concerning this report or if we can be of any further assistance at this time, please call us.

Very truly yours,
HARDIN-KIGHT ASSOCIATES, INC.

Paul [illegible]

Jack [illegible], P.E.

cc: Harkins Concrete Construction

Hardin-Kight Associates, Inc.
12515 Caterpillar Lane
Bishopville, Maryland 21813

Office: 410-352-5001
Fax: 410-352-3228
e-mail: hkaoc@aol.com

Record of Soil Exploration

Contracted With: MISTY HARBOR DEVELOPMENT LLC
Projects Name: MISTY HARBOR CONDOS
Location: 25TH ST, BAYSIDE, OCEAN CITY, MARYLAND

Boring: B - 1 (pg 1 of 2)
Job #: 04875

Datum	-	Hammer Wt.	140 Lbs.	Sampler		Foreman	RICH KIMES
Surf. Elev.		Hammer Drop	30 In.	Rock Core Dia.	-	Inspector	PAUL TILL
Date Started	11/10/04	Pipe Size	2 in.	Hole Diameter	6"	Date Finished	11/10/04
				Boring Method	HSA		

Elev.	Soil Description Color, Moisture, Density Plasticity, Size Proportions	Strata Depth	Depth Scale	Sample Cond	Sample Blows / 6"	Sample No.	Sample Type	Sample Rec.	Boring & Sample Notes
	Tan/brown, moist to wet, very loose, medium to fine, silty SAND (SM) (FILL)			D	2-3-3	1	DS	18"	
				D	3-4-3	2	DS	14"	
		5.5	5	I	4-1-1	3	DS	12"	marsh mat in S-3
	MARSH MAT	6.5							
	Grey, wet, medium dense, medium to fine SAND with trace silt (SP)								Started mud drilling at 7.5'
			10	D	7-9-10	4	DS	18"	
		12.0							
	Grey, very soft, silty CLAY (CL/ML)		15	I	WOH/18"	5	DS	18"	
			20	I	WOH/18"	6	DS	18"	
		22.0							
	Grey, wet, loose to medium dense, silty, very fine SAND (SM)		25	D	2-3-4	7	DS	15"	
			30	D	6-6-6	8	DS	16"	
		34.0							
	Grey, medium stiff to stiff, silty CLAY with sand seams (CL/ML)		35	D	3-4-6	9	DS	18"	brown silt in S-9
			40	I	4-2-2	10	DS	18"	

Sampler Type
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

Sample Conditions
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

Ground Water Depth
AT COMPLETION ___FT
AFTER___HRS_____FT
AFTER___24 HRS_____FT

Boring Method
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVEN CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" OD SAMPLER WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS

Hardin-Kight Associates, Inc.
12515 Caterpillar Lane
Bishopville, Maryland 21813
Office: 410-352-5001
Fax: 410-352-3228
e-mail: hkaoc@aol.com

Record of Soil Exploration

Contracted With: MISTY HARBOR DEVELOPMENT, LLC
Projects Name: MISTY HARBOR CONDOS
Location: 25TH ST, BAYSIDE, OCEAN CITY, MARYLAND

Boring: B - 1 (pg 2 of 2)
Job #: 04875

Datum	-	Hammer Wt.	140 Lbs.	Sampler Rock Core Dia.	-	Foreman	RICH KIMES
Surf. Elev.		Hammer Drop	30 In.	Hole Diameter	6"	Inspector	PAUL TILL
Date Started	11/10/04	Pipe Size	2 In.	Boring Method	HSA	Date Finished	11/10/04

Elev.	Soil Description (Color, Moisture, Density, Plasticity, Size Proportions)	Strata Depth	Depth Scale	Sample Cond	Blows / 6"	No.	Type	Rec.	Boring & Sample Notes
	Grey, medium stiff to stiff, silty CLAY with sand seams (CL/ML)		45	I	3-3-4	11	DS	18"	
			50	D	6-7-7	12	DS	18"	
		52.0							
	Grey, wet, medium dense, very fine SAND with trace silt (SP/SM)		55	D	5-4-6	13	DS	18"	
		57.0							
	Grey, wet, very dense, medium to coarse SAND with trace silt & fine gravel (SP)		60	D	50/5"	14	DS	1"	gravel in S-14 & S-15
			65	D	50/5"	15	DS	3"	
		67.0							
	Light grey, wet, medium dense, medium to fine SAND with trace silt (SM)	70.0	70	D	8-9-18	16	DS	16"	
	BOTTOM OF BORING - 70.0'		75						
			80						

Sampler Type
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Record of Soil Exploration

Contracted With: MISTY HARBOR DEVELOPMENT LLC
Projects Name: MISTY HARBOR CONDOS
Location: 25TH ST, BAYSIDE, OCEAN CITY, MARYLAND

Boring: B - 2 (pg 1 of 2)
Job #: 04875

Datum	-	Hammer Wt.	140 Lbs.	Sampler		Foreman	RICH KIMES
Surf. Elev.		Hammer Drop	30 in.	Rock Core Dia.	-	Inspector	PAUL TILL
Date Started	11/11/04	Pipe Size	2 in.	Hole Diameter	6"	Date Finished	11/11/04
				Boring Method	HSA		

Elev.	Soil Description Color, Moisture, Density Plasticity, Size Proportions	Strata Depth	Depth Scale	Sample Cond	Blows / 6"	No.	Type	Rec.	Boring & Sample Notes
	Ten/grey, moist to wet, very loose, fine, silty SAND (SM) (FILL)				3-3-3	1	DS	18"	
		5.0			4-3-2	2	DS	18"	
	Grey, wet, loose, medium to fine SAND with trace silt (SP)		5		3-1-1	3	DS	18"	Organics in S-3
			10		4-4-4	4	DS	12"	started mud drilling at 7.5'
		12.0							
	Grey, very soft, silty CLAY with trace organics (CL/ML)		15		WOH/18"	5	DS	18"	
			20		WOH/18"	6	DS	18"	
			25		4-6-5	7	DS		
		27.0							
	Grey, wet, medium dense to dense, silty, fine SAND (SM)		30		12-15-21	8	DS		
		34.0							
	Grey, medium stiff to stiff, silty CLAY with sand seams (CL/ML)		35		4-2-3	9	DS	12"	brown silt in tip of S-9
			40		5-6-5	10	DS	18"	

Sampler Type
DS - DRIVEN SPLIT SPOON
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CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

Sample Conditions
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AT COMPLETION ___FT
AFTER___HRS_____FT
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Record of Soil Exploration

Contracted With: MISTY HARBOR DEVELOPMENT, LLC
Projects Name: MISTY HARBOR CONDOS
Location: 25TH ST, BAYSIDE, OCEAN CITY, MARYLAND

Boring: B - 2 (pg 2 of 2)
Job #: 04875

Sampler

Datum	-	Hammer Wt.	140 Lbs.	Rock Core Dia.	-	Foreman	RICH KIMES
Surf. Elev.		Hammer Drop	30 In.	Hole Diameter	6"	Inspector	PAUL TILL
Date Started	11/11/04	Pipe Size	2 In.	Boring Method	HSA	Date Finished	11/11/04

Elev.	Soil Description (Color, Moisture, Density, Plasticity, Size Proportions)	Strata Depth	Depth Scale	Sample Cond	Blows / 6"	No.	Type	Rec.	Boring & Sample Notes
	Grey, medium stiff to stiff, silty CLAY with sand seams (CL/ML)		45		3-4-4	11	DS	18"	hole took most mud. mixed up new pan of mud
			50		7-5-4	12	DS	18"	trace sand in S-12
		52.0							
	Grey, wet, medium dense, silty, very fine SAND (SM)		55		9-7-7	13	DS	15"	
		57.0							
	Grey, wet, dense, medium to coarse SAND with trace fine gravel (SP)		60		10-13-40	14	DS		fine gravel in S-14
			65		50/5"	15	DS		
		67.0							
	Light grey, wet, medium dense, medium to fine SAND with trace to some silt (SP/SM)		70		8-9-11	16	DS		
		75.0	75		9-10-14	17	DS		
	BOTTOM OF BORING - 75.0'		80						

Sampler Type
- DS - DRIVEN SPLIT SPOON
- PT - PRESSED SHELBY TUBE
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Sample Conditions
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- AT COMPLETION ___FT
- AFTER___HRS_____FT
- AFTER___24 HRS_____FT

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Record of Soil Exploration

Contracted With: MISTY HARBOR DEVELOPMENT LLC
Projects Name: MISTY HARBOR CONDOS
Location: 25TH ST, BAYSIDE, OCEAN CITY, MARYLAND

Boring: B - 3 (pg 1 of 2)
Job #: 04875

Sampler

Datum	-	Hammer Wt.	140 Lbs.	Rock Core Dia.	-	Foreman	RICH KIMES
Surf. Elev.		Hammer Drop	30 in.	Hole Diameter	6"	Inspector	PAUL TILL
Date Stared	11/11/04	Pipe Size	2 in.	Boring Method	HSA	Date Finished	11/11/04

Elev.	Soil Description (Color, Moisture, Density, Plasticity, Size Proportions)	Strata Depth	Depth Scale	Sample Cond	Sample Blows / 6"	Sample No.	Sample Type	Sample Rec.	Boring & Sample Notes
	Tan/brown, moist to wet, very loose, medium to fine, silty SAND (SM) (FILL)				3-3-3	1	DS		
					2-4-3	2	DS		
		6.0	5		3-1-1	3	DS		
	MARSH MAT	6.5							
	Grey, wet, medium dense, medium to fine SAND with trace silt (SP)				6-7-9	4	DS		
		11.5	10		6-5-2	5	DS		Clay in tip of S-5
	Grey, very soft, silty CLAY (CL/ML)								
			15		WOH/18"	6	DS		
			20		WOH/12-1	7	DS		
		22.0			WOH/12-2	8	DS		sand in tip of S-8
	Grey, wet, loose to medium dense silty, very fine SAND (SM)		25		2-2-3	9	DS		
			30		5-7-8	10	DS		
		34.0							
	Grey, medium stiff to stiff, silty CLAY with sand seams (CL/ML)		35		4-6-2	11	DS		brown silt in tip of S-11
			40		3-2-3	12	DS		

Sampler Type
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- PT - PRESSED SHELBY TUBE
- CA - CONTINUOUS FLIGHT AUGER
- RC - ROCK CORE

Sample Conditions
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Record of Soil Exploration

Contracted With: MISTY HARBOR DEVELOPMENT, LLC
Projects Name: MISTY HARBOR CONDOS
Location: 25TH ST, BAYSIDE, OCEAN CITY, MARYLAND

Boring: B - 3 (pg 2 of 2)
Job #: 04875

Datum	-	Hammer Wt.	140 Lbs.	Sampler Rock Core Dia.	-	Foreman	RICH KIMES
Surf. Elev.		Hammer Drop	30 in.	Hole Diameter	6"	Inspector	PAUL TILL
Date Started	11/11/04	Pipe Size	2 in.	Boring Method	HSA	Date Finished	11/11/04

Elev.	Soil Description (Color, Moisture, Density, Plasticity, Size Proportions)	Strata Depth	Depth Scale	Sample Cond	Sample Blows / 6"	Sample No.	Sample Type	Sample Rec.	Boring & Sample Notes
	Grey, medium stiff to stiff, silty CLAY with sand seams (CL/ML)		45		3-3-3	13	DS	18"	
			50		4-5-4	14	DS	18"	
		52.0							
	Grey, wet, medium dense, fine SAND with trace silt & trace clay (SM)		55		5-5-7	15	DS	16"	
		57.0							
	Grey, wet, dense, medium to coarse SAND with trace fine gravel (SP)		60		11-16-33	16	DS	12"	fine gravel in S-16 & S-17
			65		50/4"	17	DS	3"	
		67.0							
	Light grey, wet, medium dense to dense, medium to fine SAND with trace silt (SP/SM)		70		8-10-12	18	DS	15"	
		75.0	75		11-14-16	19	DS	15"	
	BOTTOM OF BORING - 75.0'		80						

Sampler Type
DS - DRIVEN SPLIT SPOON
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Sample Conditions
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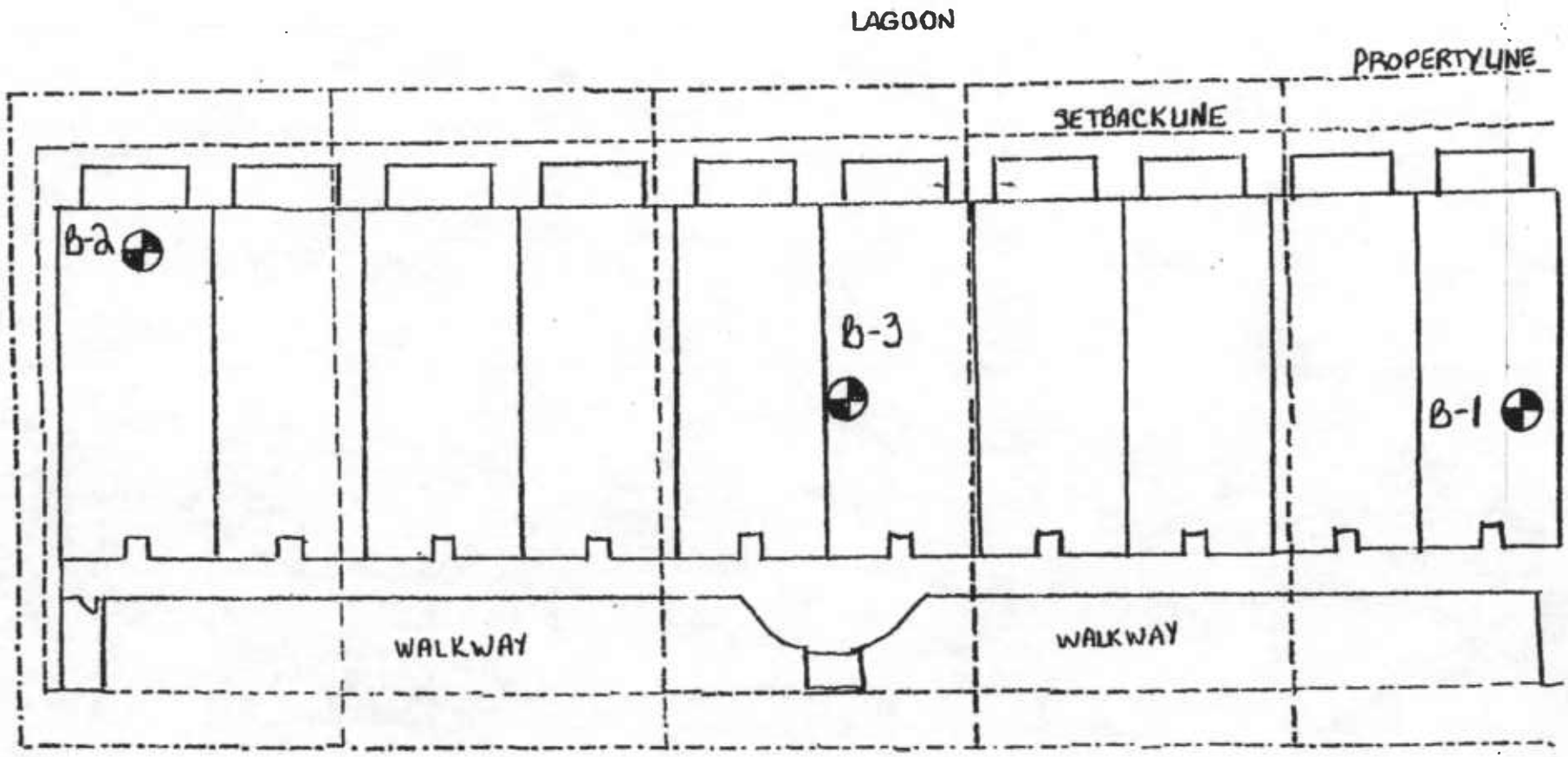
STANDARD PENETRATION TEST - DRIVING 2" OD SAMPLER WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS



PROJECT: 04875	Misty Harbor Condos 25th St - Bayside . Ocean City Md	DATE: 11-04
SCALE: NTS		DRAWN BY: AB
		CHECKED BY: PT
DRAWING:	FILE:	HARDIN-KIGHT ASSOCIATES, INC. CONSULTING ENGINEERS

Worksheet A: Standard Application Process

Calculating Pollutant Removal Requirements*

Step 1: Project Description

A. Calculate Percent Imperviousness

1) Site Acreage = 0.870 acres

2) Site Imperviousness, existing and proposed, *(See Table 1.0 for details)*

	(a) Existing (acres)	(b) Post-Development (acres)
Rooftop	0.262	0.650
Roads	0.000	0.000
Sidewalks	0.063	0.000
Parking Lots	0.112	0.050
Pools / Ponds	0.000	0.000
Decks	0.000	0.000
Other	0.063	0.000
	0.000	0.000
Impervious Surface Area	0.500	0.700

3) Non-Structural BMPs Disconnected Impervious Area

4) Adjusted Proposed Impervious Surface Area
(Step 2b) - (Step 3) = (0.682) - (0.000) = 0.682 acres

Imperviousness (I)

Existing Impervious Surface Area / Site Area = (Step 2a) / (Step 1) =	57%
Post-Development Impervious Surface Area / Site Area = (Step 2b) / (Step 1) =	79%

B. Define Development Category (circle)

1) Redevelopment:	Existing imperviousness greater than 15% I *(Go to Step 2A)*	X
2) New development:	Existing imperviousness less than 15% I *(Go to Step 2B)*	
3) Single Lot Residential:	Single lot being developed or improved; single family residential; and more than 250 square feet being disturbed. *(Go to Page 27 - Single Lot Residential sheet for remaining steps).*	

* **NOTE: All acreage used in this worksheet refer to areas within the IDA of the critical area only.**

Step 2: Calculate the Pre-Development Load (L_{pre})

A. Redevelopment

L_{pre} = $(R_v)(C)(A)8.16$ C = 0.3

R_v = 0.41 R_v = 0.56

L_{pre} = (0.56)(0.3)(0.87)8.16

= **1.19** lbs P / year

where:

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

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

C = Flow weighted mean concentration of the pollutant in urban runoff (mg/l)

C = 0.26 if pre-development I<20%

C = 1.08 if pre-development I>=20%

A = Area of the development site (acres in the Critical Area)

8.16 = Includes regional constants and unit conversion factors

OR

B. New Development

L_{pre} = 0.5 lbs/year * A

= (0.5)( )

= 0 lbs P / year

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

A. New Development and Redevelopment

L_{post} = $(R_v)(C)(A)8.16$ C = 0.3

R_v = $0.05 + 0.009(I_{post})$ R_v = 0.76

L_{post} = (0.76)(0.3)(0.87)8.16

= 1.62 lbs P / year

where:

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

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

C = Flow weighted mean concentration of the pollutant in urban runoff (mg/l)

C = 0.3

A = Area of the development site (acres in the Critical Area)

8.16 = Includes regional constants and unit conversion factors

Step 4: Calculate the Pollutant Removal Requirement (RR)

RR = L_{post} - (0.9)(L_{pre})
= (1.62) - (0.9)(1.19)
= 0.55 lbs P

Step 5: Identify Feasible Urban BMP

Select BMP Options using the screening tools and pollutant removal rates listed in the Applicant's Guide *Tables 5.0, 5.1, 5.2 and 5.4*. Calculate the load removed for each option.

BMP Type	(Removal Efficiency [use 0.50 or 50%])	x	(Fraction of Drainage Area Served) **	x	(L_{post})		Load Removed	
Pervious Pavers	0.65	x	54%	x	1.62	=	0.57	lbs
								lbs
		x		x		=		lbs
						=	0.57	lbs

If the Load Removed is equal to or greater than the pollutant removal removal requirement (RR) calculated in Step 4, then the on-site BMP option complies with the 10% Rule. *(See Table 5.3, page 16)* for submittal requirements for each option.

Critical Area Project Application
Town of Ocean City

Project Name: Misty Harbor Condominiums Phase 1

Project Address 25th Street and Coastal Highway

Tax Map: 111 **Parcel:** 5749,5756 & 5757 **Block:** n/a **Lot#** 5,6,&10 **Zoning** R-2

Property Owner Mr. Troy Purnell **Phone** 410.524.0001

Property Owner Address P.O. BOX 460 Ocean City, MD 21843

Parcel size (SF): 38,100 SF

I. Project Description

In the 100 foot buffer? Yes X **No** _____ *(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 (10 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) 21,705 SF **% of site impervious:** 57%

Impervious surface within the 100-foot buffer (SF): 11,644 SF

Proposed Conditions

Impervious surface (SF): 30,125 SF **% of site impervious:** 79%

Total SF of disturbed area: 38,100 SF

Impervious surface within the 100-foot buffer (SF): 26,575 SF

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 14,941 SF x 2 = 29,882 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 11644 SF x 1 = 11644 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) = **41526 SF**
j. TOTAL LANDSCAPING PROVIDED (Refer to "Landscaping Conversion Chart" below)

	Number		Value		Total
Large trees	_____	x	200 SF	SF	_____
Small trees	35	x	100 SF	SF	3500
Large shrubs	26	x	75 SF	SF	1950
Small shrubs	_____	x	50 SF	SF	_____
Plants	_____	x	2 SF	SF	_____
TOTAL VALUE OF LANDSCAPING PROVIDED				SF	5450
FEE-IN-LIEU OF LANDSCAPING (OFFSET) = i – j x $1.20					$43,291

(To be paid prior to issuance of Certificate of Occupancy)

k. Setback from water/wetlands 3350 SF x .25 = 837.5 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. Afforestation (Landscaping) Requirements Outside the 100-foot Buffer

1. Multi-Family and Commercial 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 = _____SF.

b. Landscaping provided (use Landscaping Conversion Chart)

Large trees # ___ x 200 SF = _____SF
Small trees #___ x 100 SF = _____SF
Large shrubs #___ x 75 SF = _____SF
Small shrubs #___ x 50 SF = _____ SF

TOTAL VALUE OF LANDSCAPING PROVIDED: _____SF

2. 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.)

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. Commercial and multi-family 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. **Site plan requirements**

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. **100-foot Buffer and applicable setback**
8. **Habitat protection areas (if applicable)**
9. **All impervious surfaces labeled as existing or proposed.**
10. **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 _____)

Form Revised 12/17/03

GMB
GEORGE, MILES & BUHR, LLC

ARCHITECTS
ENGINEERS

200 WEST MAIN STREET
SALISBURY, MD 21801
PH: 410.749.5115
PH: 800.780.4462
FAX: 410.548.5790

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www.gmbnet.com

August 30, 2006

Town of Ocean City
Department of Planning and Community Development
Baltimore & Third Street
P.O. Box 158
Ocean City, MD 21843

Attn: Ms. Margaret E. Fussell
Deputy Zoning Administrator

Mr. R. Blaine Smith
Zoning Administrator

Re: Misty Harbor Condominiums
Existence of Nonconforming Use for Parking
GMB No: 2005289.00

Dear Maggie & Blaine:

The following responses relate to the State of Maryland Critical Area Commission comment letter dated August 22, 2006.

1. Soil borings conducted on the site indicated that the water table is located approximately 5 feet below grade. This would indicate that the water table located approximately at elevation -0.25. The Town of Ocean City conducted an independent water table investigation using a hand auger resulting in a determination that the water table is located between elevation 0 -1. As a result of this information, design of the infiltration trenches was based on a groundwater table elevation of 1.0 with one (1) foot of separation between the bottom of the infiltration trench and groundwater. Because elevation 1.0 was the high end of range of water table elevations found on the site, it was considered to be a conservative value for design purposes. A copy of the geotechnical report prepared by Hillis Carnes and Associates Inc. has been enclosed for your use.

   Because the separation is less than two (2) feet, the full removal efficiency for the BMP cannot be met. However, in accordance with direction from the Town of Ocean City, a removal efficiency equaling 50% of the BMP efficiency rating recommended in the *Maryland Atlantic Coastal Bays Critical Area 10% Rule Guidance Manual* can be used if the separation distance is between 1 and 2 feet as it is in this case. Therefore, a removal efficiency of 32.5% (or 50% of 65%) has been applied to all of the proposed infiltration trenches as shown in *Worksheet A: Standard Application Process Step 5 (10% Rule Worksheet)*. The proposed grading will be adjusted to insure that

Critical Area Project Application
Town of Ocean City

Date: August 30, 2006 **File#** 2005289.00

Project Name: Palm Harbor Condominiums

Project Address: 25th Street Ocean City, Maryland

Tax Map: 111 **Parcel:** 5749, **Block:** _____**Lot#** 10 and 11
Zoning: Residential R-2

Tax Map: 111 **Parcel:** 5753 **Block:** _____**Lot#** 1&2
Zoning: Residential R-2

Tax Map: 111 **Parcel:** 5756 **Block:** _____**Lot#** 5
Zoning: Residential R-2

Tax Map: 111 **Parcel:** 5757 **Block:** _____**Lot#** 6 and 7
Zoning: Residential R-2

Tax Map: 111 **Parcel:** 5754 **Block:** _____**Lot#** NA **Zoning:** Commercial LC-1

Tax Map: 111 **Parcel:** 5755 **Block:** _____**Lot#**4 **Zoning:** Commercial LC-1

Property Owner: Waves Development LLC **Phone:** 410 213-7006

Property Owner Address 9927 Stephen Decatur Hwy
Suite 17 Ocean City, Maryland 21842

Parcel size (SF): 108,191 SF

I. Project Description

In the 100 foot buffer? Yes _X_ **No**_____ *(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) 73,568 **% of site impervious:** 67.88

Impervious surface within the 100-foot buffer (SF): 31,358

Proposed Conditions

Impervious surface (SF): 80,321 **% of site impervious:** 74.24

Total SF of disturbed area: 108,191

Impervious surface within the 100-foot buffer (SF): 53,215

Form Revised 12/1/04

II. Mitigation Worksheet in the 100-foot Buffer

1. Detached Single Family Dwellings

Value of Construction: $ NA

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): 19 x 200 SF x 1= 3,800 SF
b. Trees or shrubs removed from setback 8 x SF= 75 x 2= 1,200 SF
c. Pervious to impervious 25,999 SF x 2 = 51,998 SF
d. Improved pervious to improved pervious 10,636 SF x 1 = 10,636 SF
e. Undisturbed surface disturbed but remaining pervious 0 SF x 1 = 0 SF
f. Impervious to impervious 27,270 SF x 1 = 27,270 SF
g. Impervious to pervious 4,097 SF x 0 = 0 SF
h. Construction of decks in setback 2,649 SF x 2 = 5,298 SF
i. TOTAL MITIGATION REQUIRED (sum of a through h) = 100,202 SF
j. TOTAL LANDSCAPING PROVIDED (Refer to "Landscaping Conversion Chart" below)

	Number		Value	Total
Large trees	46	x	200 SF	9,200 SF
Small trees	51	x	100 SF	5,100 SF
Large shrubs	65	x	75 SF	4,875 SF
Small shrubs	120	x	50 SF	6,000 SF

TOTAL VALUE OF LANDSCAPING PROVIDED **25,175 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 $ 90,032
(To be paid prior to issuance of Certificate of Occupancy)

k. Setback from water/wetlands 14,844 SF x .25 = 3,711 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 " " "

III. **Afforestation (Landscaping) Requirements Outside the 100-foot Buffer**

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 = 16,229 **SF.**
(This SF area must be plantable and planted with the following number of plants)
b. Landscaping provided (use Landscaping Conversion Chart)

	Number		Value	Total
Large trees	46	x	200 SF	9,200 SF
Small trees	51	x	100 SF	5,100 SF
Large shrubs	65	x	75 SF	4,875 SF
Small shrubs	120	x	50 SF	6,000 SF

TOTAL VALUE OF LANDSCAPING PROVIDED **25,175 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. Commercial and multi-family 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**

ALL VEGETATION SHALL BE PROVIDED IN ACCORDANCE WITH CHAPTER 98, ARTICLE II, LANDSCAPING, OF THE CODE.

VII. **Site plan requirements**

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 _____)

GMB
GEORGE, MILES & BUHR, LLC

a minimum of (one) 1-foot of separation is provided between the bottom of each infiltration trench and the groundwater table.

2. A revised landscape plan Sheet L1.1 has been prepared that shows an additional 9 large trees and 13 small trees in areas within the 100-foot buffer. However, the addition of trees to certain buffer areas resulted in the removal of 21 Inkberry Holly bushes which would not thrive in the shade of the proposed trees. Nevertheless, a net gain in landscaping has been achieved as shown of the revised Town of Ocean City Critical Area Application. The revised 'fee-in-lieu' of landscape mitigation is $90,032. We believe this plan exhausts all reasonable landscaping options within the 100-foot buffer while providing adequate space to allow vegetation to mature.

3. In accordance with guidance from Gail Blazer, pervious pavers used for sidewalk widening mandated by the Town can be used to meet the afforestation requirement. Pervious pavers in other areas will not be counted toward the afforestation requirement. This provision was established through an agreement between the Town and State Critical Area Commission and has been implemented with other Town projects. Therefore, the 2,225 square feet of pervious pavers used for sidewalk widening has been included in the Critical Areas plans and computations. If it is determined by the State and Town Critical Area Staffs that pervious pavers for sidewalk widening cannot be included in the afforestation computation, the report and plans will be modified accordingly. Please feel free to contact Gail Blazer or Lee Anne Chandler to discuss details of this agreement.

Please feel free to contact me at (410) 742-3115 with any questions or comments.

Thank you,

David J. Rovansek

DJR/mam

Enclosures

cc: Waves Development Group
Attn: Paul Palitti (w/o encl.)
GMB – Sparks
Attn: Dane S. Bauer (w/o encl.)
GMB – Dover
Attn: Jack Pepper, A.I.A. (w/o encl.)

David J. Rovansek

From: Gail Blazer [gblazer@ococean.com]
Sent: Wednesday, August 30, 2006 10:45 AM
To: Blaine Smith; Jesse Houston; Maggie Fussell
Cc: CClark@dnr.state.md.us; Terry Mcgean
Subject: Wider Sidewalks

The Council and Planning Commission are requesting wider sidewalks for public saftey. The developers are to put this area on their property.
But asking this we would be taking more of their landscaping area that they need to meet the 15% afforestation. We have been compromizing with the developers that if this sidewalk expansion is built with pervious pavers and has a shallower profile for plant material to grow laterally we would include this area, only if built pervious, in the required 15%.
No other pervious pavers or sidewalks would be allowed to be included in this percentage. The last comment letter from Chris Clark states that we do not have this in our code. (Ref, Palm Harbor comment #3) I KNOW we have a verbal from the Critical Area Commission that this was OK, but we should get this policy in writing or in the code so Chris knows it too.

Gail P. Blazer
Town of Ocean City
P.O. Box 158
Ocean City, MD 21843
(410)289-8825
gblazer@ococean.com

OC 778-04

GMB
GEORGE, MILES & BUHR, LLC

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PH: 888 455 4462
FAX: 410 329 5881

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April 13, 2006

Wildlife and Heritage Service
Maryland Department of Natural Resources
580 Taylor Avenue
Annapolis, Maryland 21401

Attn: Ms. Lori A. Byrne
Environmental Review Coordinator

Re: Misty Harbor Condominiums
Ocean City, MD
GMB No: 2005.289

Dear Ms. Byrne:

The purpose of this letter is to inquire whether a proposed development site is within an Endangered Species Habitat Protection Area. The 108,191 square foot (2.484 acre) site is located at 2501 Philadelphia Avenue, Ocean City, MD and borders a navigable canal which is connected to the Sinepuxent Bay. The entire site is located within the Atlantic Coastal Bays Critical Area.

Details of the property information are summarized below.

Property Owner/Developer: Misty Harbor LLC
Tax Map: 111
Grid: 6
Parcel/Lot: 5756/Lot 5;
5749/Lot 10 & 11;
5757/Lot 6 & 7;
5753/Lots1 & 2;
5754; 5755/Lot 4;
Liber: 2489
Folio: 316
Critical Area Setback: 25-ft

Proposed development on the site includes demolition of all existing structures and construction of 79 condominium units.

GMB
GEORGE, MILES & BUHR, LLC

Please respond in writing when a determination has been made. Feel free to contact me at (410) 742-3115 with any questions or comments.

Thank you,

David J. Rovansek

cc: Waves Development
Attn: Kenny Ridgeway
Town of Ocean City Engineering Department
Attn: Gail Blazer
State of Maryland Critical Areas Commission
Attn: K. Christopher Clark
GMB - Sparks
Attn: Dane Bauer

PALM HARBOR CONDOMINIUMS
ATLANTIC COASTAL BAYS CRITICAL AREA REPORT

WAVES DEVELOPMENT GROUP, LLC
9927 STEPHEN DECATUR HIGHWAY
SUITE 17
OCEAN CITY, MD 21842

JULY 2006
REVISED (August 8, 2006)

GMB FILE NO. 2005289

GMB
GEORGE, MILES & BUHR, LLC

ARCHITECTS/ENGINEERS

206 WEST MAIN STREET
SALISBURY, MD 21801
410.742.3115

SALISBURY/BALTIMORE/SEAFORD/LEWES/YORK/DOVER

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APPENDICES

APPENDIX 1: Critical Area Computations

APPENDIX 2: Supporting Material

EXHIBITS

Atlantic Coastal Bays Critical Area Report for the Proposed
Palm Harbor Condominiums
2501 Philadephia Avenue, Ocean City, MD

INTRODUCTION

Waves Development Group proposes to redevelop property located at 2501 Philadelphia Avenue in Ocean City, Maryland. The redevelopment will involve demolition of all structures and construction of a 79-unit condominium building with related amenities. Because the proposed development site is bounded by waters of the Isle of Wight Bay and the entire site is within 1000-feet of the Bay's mean high water level, the project will be subject to the Town of Ocean City's Atlantic Coastal Bays Critical Area Program. Requirements will be met in order to preserve, protect, and improve water quality in the coastal bays.

This report was prepared to meet the requirements of an environmental site assessment as specified by the Code of the Town of Ocean City, Maryland, Part II, Chapter 30, Article VII, Sec. 30-559 (d). (1). & (2): Implementation of the Atlantic Coastal Bays Critical Area Provisions.

EXISTING SITE CONDITIONS

General

The 108,191 square feet (2.484 acres) site currently contains The Misty Harbor Motel and Apartments and related amenities. The site is located on the western side of Philadelphia Avenue (MD Route 528) on the block between 25th and 26th Streets in Ocean City, Maryland and is bounded to the west by multi-family residential properties and a Canal which has access to the Isle of Wight Bay.
The existing site consists of 1.70 acres of impervious area making up 68% of the site.

Existing Landscaping

No existing forested areas are present on the site. Pervious area on the property consists of approximately 34,138 square feet including scattered small trees and small shrubs as well as 2,577 square feet of boardwalk surrounding the Canal which will be retaining under proposed conditions. Existing vegetation includes approximately pine trees which have an average height of approximately 15-feet and approximately small shrubs which have an average height of approximately 3-feet. Eight (8) shrubs or trees are within the 25-foot setback and nineteen (19) shrubs or trees are outside the 25-foot setback, but inside the 100-foot buffer. All existing vegetation will be removed.

Shoreline Condition

A vinyl bulkhead, wood piers, and a wooden boardwalk stabilize the shoreline with Isle of Wight Bay. The bulkhead system appears to be in adequate functioning condition with no detectable major structural issues.

Stormwater Management/Drainage

Under existing conditions, the stormwater runoff is directed from the site into the Town or State Highway's collection system and eventually discharged into the Isle of Wight Bay. The site's existing stormwater management measures are designed only to address quantity of flow and prevent standing water on the site, but do not address quality management.

Soils and Topography

The site is generally flat with elevation changes of little more then a foot. Groundwater was determined by the Town of Ocean City Engineering Department field investigation to be between elevation 0 and 1. The water table has been assumed at elevation 1 for design purposes to ensure conservative design.

The United States Department of Agriculture (USDA) classifies the soil on the site as Urban-land Udorthents complex. The site has no apparent erosion issues and the soil type has only slight erosion characteristics.

PROPOSED DEVELOPMENT

General

All structures will be demolished and the entire site will be cleared to allow for proposed construction of the Palm Harbor Condominiums which will consist of 79 three-bedroom units. Proposed construction will result in 80,110 square feet (2.03 acres) of impervious area, or approximately 74% of the site. Public sewer and water service will be provided by connection to the existing Town of Ocean City facilities.

Shoreline Condition

The existing bulkhead will remain intact during and after construction. The only work on the structure will be to replace any damaged boardwalk. Additional new stormwater outfalls will be installed through the bulkhead to accommodate the proposed stormwater management system. Bulkhead penetrations will be subject to issuance of a MDE – Tidal Wetlands Division/Army Corps of Engineers joint permit and Town of Ocean City Board of Port Warden approval.

Stormwater Management Measures

The vast majority of runoff will no longer drain to the Town's stormwater system under proposed conditions. Instead the runoff will drain from the building's roof and plaza deck through downspouts into underground infiltration trenches. This infiltration will into the water table will allow pollutant removal prior to occur. Once the trenches reach an over flow point they will discharge directly to the bay.

Landscaping

The proposed landscaping will be comprised of Willow Oak (Quercus Phellos), Fringe Tree (Chionanthus Virginicus), Inkberry Holly (Ilex Clabra), Coastal Panic Grass (Panicum Amarum), seasonal flowers, and turf type tall fescue.

ATLANTIC COASTAL BAYS CRITICAL AREAS REQUIREMENTS

General

In accordance with the The Code of the Town of Ocean City Atlantic Coastal Bays Critical Area Regulations, requirements for the project relate to: afforestation, 100-foot buffer landscape mitigation, setbacks, overall site pollutant reduction, and Habitat Protection.

Afforestation Requirement

The requirements dictate that development within the 1000-foot Critical Area zone must be planted in woody vegetation in an amount of 15% of the total site area. The proposed site will contain 18.4% or 19,940 SF of area available for landscaping, which exceeds the requirement. In accordance with Town of Ocean City standard practice, the total landscape area computation includes pervious pavers used for sidewalk widening along 25th Street, 26th Street, and

Philadelphia Avenue. All landscaping provided is in accordance with Chapter 98, Article II, and Landscaping of the Code of the Town of Ocean City.

Landscape Buffer Mitigation Requirements

Providing required landscaping within the 100-foot buffer is intended to offset redevelopment activity and removal of existing vegetation. Criteria for this requirement is detailed on the Town of Ocean City Critical Areas Application form. Due to the proposed level of redevelopment, configuration of the building, and the shape of the property, the mitigation requirement cannot be met on-site. Therefore, the remainder of the requirement will be met by a fee-in-lieu of payment in the amount of $91,862.40. Detailed landscape mitigation requirements are enclosed in this report.

Setback Requirements

Because the proposed project site is greater than 40,000 square feet, the Critical Area setback is 25-feet from mean high water for the entire site. No impervious surfaces or cantilevered impervious surfaces are located within this setback. A five(5)-foot cantilevered pervious deck will be extended in to the setback.

The proposed development will be subject to all Impacts of the proposed development will be attenuated by meeting the

Stormwater Management 10% Pollutant Reduction Requirement

To limit the impacts of development, a 10% pollutant reduction is required for all development within the 1000-foot Critical Area. The 10% Rule worksheet provided in Appendix 1 which shows that through use of infiltration a 2.31 lb reduction in Phosphorus loading from existing conditions can be expected following development. The infiltration trench will maintain 2-feet of separation from groundwater, which will allow the BMP to operate at full pollutant removal capacity. This pollutant reduction exceeds the treatment requirement of 1.23lbs.

Habitat Protection

Due to the size of the project (> 40,000 square feet), consultation with the Maryland Department of Natural Resources (DNR) is required to determine the possible existence of any Habitat Protection Areas that may be affected by

the proposed development is required. Because of the level of existing development on the property, habitat protection areas were not considered to be present on the site. DNR has confirmed in writing that there are no records of threatened or endangered species within the site boundaries. A copy of this letter is provided in Appendix 2.

APPENDIX 1

Critical Area Computations

Critical Area Project Application
Town of Ocean City

Date: August 9, 2006 **File#** 2005289.00

Project Name: Palm Harbor Condominiums

Project Address: 25th Street Ocean City, Maryland

Tax Map: 111 **Parcel:** 5749, **Block:** _____**Lot#** 10 and 11
Zoning: Residential R-2

Tax Map: 111 **Parcel:** 5753 **Block:** _____**Lot#** 1&2
Zoning: Residential R-2

Tax Map: 111 **Parcel:** 5756 **Block:** _____**Lot#** 5
Zoning: Residential R-2

Tax Map: 111 **Parcel:** 5757 **Block:** _____**Lot#** 6 and 7
Zoning: Residential R-2

Tax Map: 111 **Parcel:** 5754 **Block:** _____**Lot#** NA **Zoning:** Commercial LC-1

Tax Map: 111 **Parcel:** 5755 **Block:** _____**Lot#**4 **Zoning:** Commercial LC-1

Property Owner: Misty Harbor LLC **Phone:** 410 213-7006

Property Owner Address 9927 Stephen Decatur Hwy
Suite 17 Ocean City, Maryland 21842

Parcel size (SF): 108,191 SF

I. Project Description

In the 100 foot buffer? Yes _X_ **No**_____ *(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) 73,568 **% of site impervious:** 67.88

Impervious surface within the 100-foot buffer (SF): 31,358

Proposed Conditions

impervious surface (SF): 80,321 **% of site impervious:** 74.24

Total SF of disturbed area: 108,191

Impervious surface within the 100-foot buffer (SF): 53,215

Form Revised 12/1/04

II. Mitigation Worksheet in the 100-foot Buffer

1. Detached Singie Family Dwelliings

Value of Construction: $ NA

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

b. Totai landscaping provided. Attach cost values and plant schedule. (Must equai or exceed "Means" book vaiue.)
$_____

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

2. Muiti-Family and Commerciai 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 (Compiete aii that appiy):

a. Trees or shrubs removed from buffer (outside of setback):
19 x 200 SF x 1= 3,800 SF
b. Trees or shrubs removed from setback 8 x SF= 75 x 2= 1,200 **SF**
c. Pervious to impervious 25,999 **SF x 2 =** 51,998 **SF**
d. Improved pervious to improved pervious 10,636 **SF x 1 =** 10,636 **SF**
e. Undisturbed surface disturbed but remaining pervious 0 **SF x 1 =** 0 **SF**
f. impervious to Impervious 27,270 **SF x 1 =** 27,270 **SF**
g. impervious to pervious 4,097 **SF x 0 =** 0 **SF**
h. Construction of decks in setback 2,649 **SF x 2 =** 5,298 **SF**
i. TOTAL MITIGATION REQUIRED (sum of a through h) = 100,202 **SF**
j. TOTAL LANDSCAPING PROVIDED (Refer to "Landscaping Conversion Chart" below)

	Number		Value	Total
Large trees	37	x	**200 SF**	7,400 **SF**
Small trees	38	x	**100 SF**	3,800 **SF**
Large shrubs	86	x	**75 SF**	6,450 **SF**
Small shrubs	120	x	**50 SF**	6,000 **SF**

TOTAL VALUE OF LANDSCAPING PROVIDED **23,650 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 $ 91,862.40
(To be paid prior to issuance of Certificate of Occupancy)

k. Setback from water/wetlands 14,844 **SF x .25 =** 3,711 **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. **Afforestation (Landscaping) Requirements Outside the 100-foot Buffer**

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 = 16,229 **SF.**
(This SF area must be plantable and planted with the following number of plants)
b. Landscaping provided (use Landscaping Conversion Chart)

Large trees	37	x	200 SF	7,400 SF
Small trees	38	x	100 SF	3,800 SF
Large shrubs	86	x	75 SF	6,450 SF
Small shrubs	120	x	50 SF	6,000 SF

PANIC GRASS

TOTAL VALUE OF LANDSCAPING PROVIDED **23,650 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. Commercial and multi-family 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**

ALL VEGETATION SHALL BE PROVIDED IN ACCORDANCE WITH CHAPTER 98, ARTICLE II, LANDSCAPING, OF THE CODE.

VII. **Site plan requirements**

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 8/10/06)

_____ Environmental Engineer (Date 8-10-06

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= **2.48** acres

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

	(a) Existing (acres)	(b) Proposed (acres)
Roads		
Parking Lots	1.01	
Driveways		0.01
Sidewalks/paths	0.08	0.02
Rooftops	0.53	1.79
Decks		
Swimming pools/ponds	0.08	
Other		0.02
Impervious Surface Area	1.70 acres	1.84 acres

3) Imperviousness (I)

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

= (Step 2a) / (Step1)

= (1.70) / (2.48)

= 68%

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

= (Step 2a) / (Step1)

= (1.84) / (2.48)

= 74%

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)

[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) (**2.48**)

= **1.24** 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 (**68**) = **0.66**

L_{pre} = (**0.66**) (**0.30**) (**2.48**) (8.16)

= **4.01** 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 = $0.05 + 0.009\ (I_{post})$

= $0.05 + 0.009\ (\ 74.23\ ) =\ 0.72$

L_{post} = (0.72) (0.30) (2.48) (8.16)

= 4.37 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 = $L_{post} - (0.9)(L_{pre})$

= (4.37) - (0.9) (4.01)

= 0.76 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	
Infiltration Trench	**4.37**		**32%**		**72%**		**1.02**	lbs/year
		x		x		=		lbs/year
		x		x		=		lbs/year
		x		x		=		lbs/year

Load Removed, LR (total) = **1.02** lbs/year

Polutant Removal Requirement, RR (from Step 4) = **0.76** 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**

APPENDIX 2

Supporting Material

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Robert L. Ehrlich, Jr., Governor
Michael S. Steele, Lt. Governor
C. Ronald Franks, Secretary

May 1, 2006

Mr. David J. Rovansek
GMB
120 Sparks Valley Road, Suite A
Sparks, MD 21152

RE: Environmental Review for Misty Harbor Condominiums, GMB No.: 2005.289, Ocean City, Worcester Co., MD.

Dear Mr. Rovansek:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted. It is also important to note that the utilization of state funds, or the need to obtain a state authorized permit may warrant additional evaluations that could lead to protection or survey recommendations by the Wildlife and Heritage Service. If this project falls into one of these categories, please contact us for further coordination.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER #2006.0871.wo

STORMWATER MANAGEMENT COMPUTATIONS
GMB Project #2005289.00
(Revised 8-9-06)

MARYLAND STORMWATER SIZING CRITERIA
(Based on Total Site Area)

Total Area (A):	2.484 ac	108191 ft²
Existing Impervious (A_{ex}):	1.228 ac	53473 ft²
Percent Impervious (existing):	49.42 %	
Proposed Impervious (A_i):	1.844 ac	80321 ft²
Percent Impervious (Proposed):	74.24 %	

Per Town of Ocean City Stormwater Management Ordinance Section 30-143(d)(2)
Redevelopment Criteria:

WQ_v: a). Reduce existing site impervious area by at least 20%.
b). Where site conditions prevent reduction of impervious area, provide qualitative control for 20% of impervious area of existing site.
c). When a combination of impervious area reduction and stormwater management practice implementation is used, the combined area shall equal or exceed 20% of the site.

20% of Existing Impervious Area (A_i):	0.246 ac	10695 ft²
Change in site Impervious Area:	0.616 ac	26848 ft²
Percent Change:	50.21 %	
Area which must be treated to meet WQ_v Requirement (20% of existing Impervous area + impervous area increase):	0.862 ac	37543 ft²
Percent of Total Area to be treated :	34.70 %	(Assuming all treated area is impervious)

Water Quality Volume Required to be treated by BMP (WQ_v)

P=	1.0	
R_v=	0.950	
A=	0.862 ac	37543 ft²
Impervious (Drainage Area) =	100.00 %	

Note: P=1.0 for Delmarva Pennisula

$$WQ_v \text{ required} = \frac{(P)(R_v)(A)}{12}$$

WQ_v required =	0.0682	ac-ft	
	2972	ft²	
WQ_v provided =	0.1541	ac-ft	Provided in five (5) separate areas (Trenches A - E)
	6714	ft²	Approx. Value dependent on Final Design

PALM HARBOR CONDOMINIUMS
STORMWATER MANAGEMENT COMPUTATIONS
GMB Project #2005289.00
(Revised 8-9-06)

Infiltration Trench A - Design Computations

AREA

Contributing Impervious Area: 22930 ft^2
0.53 acres

FINDING THE WQv REQUIRED TO SERVE THE DRAINAGE AREA

Variables: Rainfall, P 1 inches determined from rainfall zone
Runoff Coeff, Rv 0.05+0.009(I) where I equals the percent impervious

WQv=(P*Rv*A)/12 where A equals the total area in acres

Drainage Area (acre)	Total Area (acre)	Impervious Area (acre)	Impervious Percent	Runoff Coefficient (Rv)	Water Quality Volume (acre-ft)
A	**0.53**	**0.53**	**100.0**	**0.95**	**0.0417**

FINDING THE QUANTITY REQUIREMENT

A quantity management waiver is requested due to direct discharge of stormwater into tidal waters in accordance with Section 30-143 C9c)(2) A. of the Town of Ocean City Stormwater Management Ordinance.

INFILTRATION TRENCH VOLUME COMPUTATION

Volume Storage per Foot of Trench
Volume provided by perforated pipe

Diameter	18 in
Cross Area	1.77 ft^2
Volume	1.77 ft^3/ ft

Volume provided by gravel fill

Width	2.167 ft
Depth	2.167 ft
Pipe Cross Section	1.767 ft^2
Gravel Cross Section	2.927 ft^2
Porosity	0.4
Volume	1.17 ft^3/ ft

TOTAL STORAGE PER FOOT 2.94 ft^3/ ft

Storage for Infiltration Trench System

Total storage per foot	2.94 ft^3/ ft	
Total length of piping	633 ft	(3 sections 195 ft long and 4 sections 12 feet long)
Total Storage Provided	**1860** ft^3	
Total Storage Required	0.0417 acre-ft **1815** ft^3 Requirement met	

STORMWATER MANAGEMENT COMPUTATIONS
GMB Project #2005289.00
(Revised 8-9-06)

Infiltration Trench B - Design Computations

AREA

Contributing Impervious Area: 13325 ft^2
0.306 acres

FINDING THE WQv REQUIRED TO SERVE THE DRAINAGE AREA

Variables: Rainfall, P 1 inches determined from rainfall zone
Runoff Coeff, Rv 0.05+0.009(I) where I equals the percent impervious

WQv=(P*Rv*A)/12 where A equals the total area in acres

Drainage Area (acre)	Total Area (acre)	Impervious Area (acre)	Impervious Percent	Runoff Coefficient (Rv)	Water Quality Volume (acre-ft)
B	**0.31**	**0.31**	**100.0**	**0.95**	**0.0242**

FINDING THE QUANTITY REQUIREMENT

A quantity management waiver is requested due to direct discharge of stormwater into tidal waters in accordance with Section 30-143 C9c)(2) A. of the Town of Ocean City Stormwater Management Ordinance.

INFILTRATION TRENCH VOLUME COMPUTATION

Volume Storage per Foot of Trench
Volume provided by perforated pipe

Diameter	18 in
Cross Area	1.77 ft^2
Volume	1.77 ft^3/ft

Volume provided by gravel fill

Width	2.167 ft
Depth	2.167 ft
Pipe Cross Section	1.767 ft^2
Gravel Cross Section	2.927 ft^2
Porosity	0.4
Volume	1.17 ft^3/ft

TOTAL STORAGE PER FOOT 2.94 ft^3/ft

Storage for Infiltration Trench System

Total storage per foot	2.94 ft^3/ft	
Total length of piping	376 ft	(8 sections 47 ft long)
Total Storage Provided	**1105** ft^3	
Total Storage Required	0.0242 acre-ft **1055** ft^3 Requirement met	

STORMWATER MANAGEMENT COMPUTATIONS
GMB Project #2005289.00
(Revised 8-9-06)

Infiltration Trench C - Design Computations

AREA

Contributing Impervious Area: 16010 ft^2
0.368 acres

FINDING THE WQv REQUIRED TO SERVE THE DRAINAGE AREA

Variables: Rainfall, P 1 inches determined from rainfall zone
Runoff Coeff, Rv 0.05+0.009(I) where I equals the percent impervious

WQv=(P*Rv*A)/12 where A equals the total area in acres

Drainage Area (acre)	Total Area (acre)	Impervious Area (acre)	Impervious Percent	Runoff Coefficient (Rv)	Water Quality Volume (acre-ft)
C	**0.37**	**0.37**	**100.0**	**0.95**	**0.0291**

FINDING THE QUANTITY REQUIREMENT

A quantity management waiver is requested due to direct discharge of stormwater into tidal waters in accordance with Section 30-143 C9c)(2) A. of the Town of Ocean City Stormwater Management Ordinance.

INFILTRATION TRENCH VOLUME COMPUTATION

Volume Storage per Foot of Trench
Volume provided by perforated pipe

Diameter	18 in
Cross Area	1.77 ft^2
Volume	1.77 ft^3/ ft

Volume provided by gravel fill

Width	2.167 ft
Depth	2.167 ft
Pipe Cross Section	1.767 ft^2
Gravel Cross Section	2.927 ft^2
Porosity	0.4
Volume	1.17 ft^3/ ft

TOTAL STORAGE PER FOOT 2.94 ft^3/ ft

Storage for Infiltration Trench System

Total storage per foot	2.94 ft^3/ ft	
Total length of piping	450 ft	(6 sections 75 ft long)
Total Storage Provided	**1322** ft^3	
Total Storage Required	0.0291 acre-ft **1267** ft^3	
	Requirement met	

STORMWATER MANAGEMENT COMPUTATIONS
GMB Project #2005289.00
(Revised 8-9-06)

Infiltration Trench D - Design Computations

AREA

Contributing Impervious Area: 13995 ft^2
Area to be treated: 0.321 acres

FINDING THE WQv REQUIRED TO SERVE THE DRAINAGE AREA

Variables: Rainfall, P 1 inches determined from rainfall zone
Runoff Coeff, Rv 0.05+0.009(I) where I equals the percent impervious

WQv=(P*Rv*A)/12 where A equals the total area in acres

Drainage Area (acre)	Total Area (acre)	Impervious Area (acre)	Impervious Percent	Runoff Coefficient (Rv)	Water Quality Volume (acre-ft)
D	**0.32**	**0.32**	**100.0**	**0.95**	**0.0254**

FINDING THE QUANTITY REQUIREMENT

A quantity management waiver is requested due to direct discharge of stormwater into tidal waters in accordance with Section 30-143 C9c)(2) A. of the Town of Ocean City Stormwater Management Ordinance.

INFILTRATION TRENCH VOLUME COMPUTATION

Volume Storage per Foot of Trench
Volume provided by perforated pipe

Diameter	18 in
Cross Area	1.77 ft^2
Volume	1.77 ft^3/ft

Volume provided by gravel fill

Width	2.167 ft
Depth	2.167 ft
Pipe Cross Section	1.767 ft^2
Gravel Cross Section	2.927 ft^2
Porosity	0.4
Volume	1.17 ft^3/ft

TOTAL STORAGE PER FOOT 2.94 ft^3/ft

Storage for Infiltration Trench System

Total storage per foot	2.94 ft^3/ft	
Total length of piping	385 ft	(5 sections 77 ft long)
Total Storage Provided	**1131** ft^3	
Total Storage Required	0.0254 acre-ft **1108** ft^3 Requirement met	

STORMWATER MANAGEMENT COMPUTATIONS
GMB Project #2005289.00
(Revised 8-9-06)

Infiltration Trench E - Design Computations

AREA

Contributing Impervious Area: 14190 ft^2
0.326 acres

FINDING THE WQv REQUIRED TO SERVE THE DRAINAGE AREA

Variables: Rainfall, P 1 inches determined from rainfall zone
Runoff Coeff, Rv 0.05+0.009(I) where I equals the percent impervious

WQv=(P*Rv*A)/12 where A equals the total area in acres

Drainage Area (acre)	Total Area (acre)	Impervious Area (acre)	Impervious Percent	Runoff Coefficient (Rv)	Water Quality Volume (acre-ft)
E	**0.33**	**0.33**	**100.0**	**0.95**	**0.0258**

FINDING THE QUANTITY REQUIREMENT

A quantity management waiver is requested due to direct discharge of stormwater into tidal waters in accordance with Section 30-143 C9c)(2) A. of the Town of Ocean City Stormwater Management Ordinance.

INFILTRATION TRENCH VOLUME COMPUTATION

Volume Storage per Foot of Trench
Volume provided by perforated pipe

Diameter	18 in
Cross Area	1.77 ft^2
Volume	1.77 ft^3/ ft

Volume provided by gravel fill

Width	2.167 ft
Depth	2.167 ft
Pipe Cross Section	1.767 ft^2
Gravel Cross Section	2.927 ft^2
Porosity	0.4
Volume	1.17 ft^3/ ft

TOTAL STORAGE PER FOOT 2.94 ft^3/ ft

Storage for Infiltration Trench System

Total storage per foot	2.94 ft^3/ ft	
Total length of piping	440 ft	(8 sections 55 ft long)
Total Storage Provided	**1293** ft^3	
Total Storage Required	0.0258 acre-ft **1123** ft^3 Requirement met	

5/31/06 -- PAUL PALITTI
DAVE BAUER
DAVE ROVANSEK

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/

May 22, 2006

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

RE: Misty Harbor Condominium

Dear Mr. Smith:

Thank you for the most recent submission of site plans related to the above referenced project. The applicant intends to construct a 79 unit condominium complex on a 2.49 acre parcel. The project is within the 100-foot Buffer, is IDA, and waterfront. Issues of concern include the 25-foot setback, afforestation, and pollutant removal requirements. Commission staff offers the following comments:

1. The applicant is proposing to address the 10% rule with a series of infiltration trenches. A stormwater and grading plan was not supplied for review. Please have the applicant supply the Commission with the plans. The efficiency of the trench was also the topic of some discussion during the Ocean City staff review. Please provide depth to water measurements for our records.

2. The site plan indicates the presence of a wooden boardwalk adjacent to the building and the bulkhead. It is not clear if the boardwalk next to the bulkhead currently exists or is planned. If it currently exists, please note that on the site plan. Any encroachment into the 25-foot setback will require mitigation at a ratio of 2:1. It appears that the applicant has included this in the calculations.

3. The afforestation requirement is not met on-site. The Commission would recommend that the Town require the applicant to provide additional landscaping within the Buffer. As presented, the applicant is proposing to pay a fee-in-lieu of $95,232 to mitigate the afforestation requirement.

4. It is understood that the applicant has submitted a request to the Department of Natural Resources (DNR) for a Heritage review. Please forward any response from DNR as it becomes available.

Please respond to the above comments and provide for resubmittal to the Commission staff for review.

We look forward to the updated documentation. If you have any further questions regarding this project, please call me directly at 410-260-3476.

Best regards,

Chris Clark
Natural Resources Planner

cc: OC778-04

DAVE ROVANSEK
PAUL V. PALITTI

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 12, 2006

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

RE: Misty Harbor Condominiums

Dear Mr. Smith:

Thank you for including the Critical Area Commission during your April 6, 2006 technical review meeting regarding the above referenced project. In response to the discussion about the project, the Commission would offer the following comments for your records:

The applicant needs to provide the Commission staff with a site plan including stormwater, landscaping, and Critical Area plans. Several issues were noted during review that are unclear on the plans provided and the Commission would like the applicant to provide more detail pursuant to the Town of Ocean City Code Section 30-559.(2) *Atlantic Coastal Bays Critical Area Report*. The report must include a description of the project and an environmental assessment of the site.

Specifically, we would like to review a discussion of the proposed development including previous and proposed uses and a detailed explanation of the 10% worksheet submitted for compliance. The 10% worksheet submitted is unacceptable on its own. The 10% worksheet provided was incorrect and the BMP efficiency needs to be addressed.

If it is necessary to produce a separate plan sheet to indicate preexisting and proposed post development pollutant reduction measures please do so. If not, please be as detailed as possible in the narrative. Please also include all correspondence and findings received from any local, county, State or federal agency including the required Heritage letter. Please also include any soil boring information and its relationship to the proposed stormwater infiltration calculations.

This office would like to see any revisions, alterations, or substitutions as related to the landscape, stormwater or site plans.

Please respond to the above comments and provide for resubmittal to the Commission staff for review. Please forward a copy of this letter to the applicant.

We look forward to the updated documentation. If you have any further questions regarding this project, please call me directly at 410-260-3476.

Best regards,

Chris Clark
Natural Resources Planner

cc: OC778-04

Critical Area Project Application
Town of Ocean City
(Draft Copy)

Date: March 6, 2006 **File#** 2005289

Project Name: Misty Harbor Condominiums

Project Address: 25th Street Ocean City, Maryland

Tax Map: 111 **Parcel:** 5749, **Block:** _____**Lot#** 10 and 11
Zoning: Residential R-2

Tax Map: 111 **Parcel:** 5753 **Block:** _____**Lot#** 1&2
Zoning: Residential R-2

Tax Map: 111 **Parcel:** 5756 **Block:** _____**Lot#** 5
Zoning: Residential R-2

Tax Map: 111 **Parcel:** 5757 **Block:** _____**Lot#** 6 and 7
Zoning: Residential R-2

Tax Map: 111 **Parcel:** 5754 **Block:** _____**Lot#** NA**Zoning:** Commercial LC-1

Tax Map: 111 **Parcel:** 5755 **Block:** _____**Lot#**4 **Zoning:** Commercial LC-1

Property Owner: Misty Harbor LLC **Phone:** 410 213-7006

Property Owner Address 9927 Stephen Decatur Hwy
Suite 17 Ocean City, Maryland 21842

Parcel size (SF): 108,290 SF

I. Project Description

In the 100 foot buffer? Yes _X_ **No**_____ *(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) 53,473 **% of site impervious:** 49.34

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

Proposed Conditions

Impervious surface (SF): 84,417 **% of site impervious:** 77.89

Total SF of disturbed area: 108,374

Impervious surface within the 100-foot buffer (SF): 0

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):
 # 0 x_____SF x 1= 0 SF

b. Trees or shrubs removed from setback # 0 x SF= _____ x 2= 0 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	23	x	**200 SF**	**SF**	4600
Small trees	18	x	**100 SF**	**SF**	1800
Large shrubs	137	x	**75 SF**	**SF**	10,275
Small shrubs	0	x	**50 SF**	**SF**	0
Plants	151	x	**2 SF**	**SF**	302

TOTAL VALUE OF LANDSCAPING PROVIDED **SF** 16,977
(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. **Afforestation (Landscaping) Requirements Outside the 100-foot Buffer**

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 = 16,240 **SF.**
(This SF area must be plantable and planted with the following number of plants)
b. Landscaping provided (use Landscaping Conversion Chart)

Large trees	**#**	23	**x**	**200 SF =**	4600	**SF**
Small trees	**#**	18	**x**	**100 SF =**	1800	**SF**
Large shrubs	**#**	137	**x**	**75 SF =**	10,275	**SF**
Small shrubs	**#**	0	**x**	**50 SF =**	0	**SF**

TOTAL VALUE OF LANDSCAPING PROVIDED: 16,675 **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. Commercial and multi-family 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**

ALL VEGETATION SHALL BE PROVIDED IN ACCORDANCE WITH CHAPTER 98, ARTICLE II, LANDSCAPING, OF THE CODE.

VII. **Site plan requirements**

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= **2.49** acres

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

	(a) Existing (acres)	(b) Proposed (acres)
Roads		
Parking Lots	**0.18**	
Driveways	**0.20**	**0.05**
Sidewalks/paths	**0.16**	**0.15**
Rooftops	**0.55**	**0.97**
Decks		**0.78**
Swimming pools/ponds	**0.14**	
Other		
Impervious Surface Area	**1.23 acres**	**1.94 acres**

3) Imperviousness (I)

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

= (Step 2a) / (Step1)

= (**1.23**) / (**2.49**)

= **49%**

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

= (Step 2a) / (Step1)

= (**1.94**) / (**2.49**)

= **78%**

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)

[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) (**2.49**)

= **1.24** 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 (**49**) = **0.49**

L_{pre} = (**0.49**) (**0.30**) (**2.49**) (8.16)

= **3.01** 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

Critical Area Project Application
Town of Ocean City

Project Name: Misty Harbor Condominiums Phase 1

Project Address 25th Street and Coastal Highway

Tax Map: 111 **Parcel:** 5749,5756 & 5757 **Block:** n/a **Lot#** 5,6,&10 **Zoning** R-2

Property Owner Mr. Troy Purnell **Phone** 410.524.0001

Property Owner Address P.O. BOX 460 Ocean City, MD 21843

Parcel size (SF): 38100 ft^2

I. Project Description

In the 100 foot buffer? Yes X **No** _____ *(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 (10 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) 15300 sf **% of site impervious:** 40%

Impervious surface within the 100-foot buffer (SF): 11644 sf

Proposed Conditions

Impervious surface (SF): 29710 **% of site impervious:** 78%

Total SF of disturbed area: 38100 sf

Impervious surface within the 100-foot buffer (SF): 25100 sf

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 13456 SF x 2 = 26912 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 11644 SF x 1 = 11644 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) = 38556 SF
j. TOTAL LANDSCAPING PROVIDED (Refer to "Landscaping Conversion Chart" below)

	Number		Value		Total
Large trees	_____	x	200 SF	SF	_____
Small trees	41	x	100 SF	SF	4100
Large shrubs	_____	x	75 SF	SF	_____
Small shrubs	_____	x	50 SF	SF	_____
Plants	_____	x	2 SF	SF	_____

TOTAL VALUE OF LANDSCAPING PROVIDED SF 4100
FEE-IN-LIEU OF LANDSCAPING (OFFSET) = i – j x $1.20 $41347.20
(To be paid prior to issuance of Certificate of Occupancy)

k. Setback from water/wetlands 2410 SF x .25 = 602.5 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. **Afforestation (Landscaping) Requirements Outside the 100-foot Buffer**

1. **Multi-Family and Commercial 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 = _____SF.

b. Landscaping provided (use Landscaping Conversion Chart)

Large trees #___ x 200 SF = _____SF
Small trees #___ x 100 SF = _____SF
Large shrubs #___ x 75 SF = _____SF
Small shrubs #___ x 50 SF = _____ SF

TOTAL VALUE OF LANDSCAPING PROVIDED: _____SF

2. **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.)

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= **2.49** acres

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

	(a) Existing (acres)	(b) Proposed (acres)
Roads		
Parking Lots	**0.18**	
Driveways	**0.20**	**0.05**
Sidewalks/paths	**0.16**	**0.15**
Rooftops	**0.55**	**0.97**
Decks		**0.78**
Swimming pools/ponds	**0.14**	
Other		
Impervious Surface Area	**1.23 acres**	**1.94 acres**

3) Imperviousness (I)

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

= (Step 2a) / (Step1)

= (**1.23**) / (**2.49**)

= **49%**

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

= (Step 2a) / (Step1)

= (**1.94**) / (**2.49**)

= **78%**

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)

[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) (**2.49**)

= **1.24** 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 (**49**) = **0.49**

L_{pre} = (**0.49**) (**0.30**) (**2.49**) (8.16)

= **3.01** 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 (**77.98**) = **0.75**

L_{post} = (**0.75**) (**0.30**) (**2.49**) (8.16)

= **4.58** 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})

= (**4.58**) - (0.9) (**3.01**)

= **1.87** 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	
Infiltration Trench	**4.58**		**65%**		**73%**		**2.17**	lbs/year
		x		x		=		lbs/year
		x		x		=		lbs/year
		x		x		=		lbs/year

Load Removed, LR (total) = **2.17** lbs/year

Polutant Removal Requirement, RR (from Step 4) = **1.87** 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**

MISTY HARBOR CONDOMINIUMS
GMB Project #2005289.00
(Revised 5-5-06)

MARYLAND STORMWATER SIZING CRITERIA
(Based on Total Site Area)

Total Area (A):	2.486 **ac**	**108290 ft²**
Existing Impervious (A_{ex}):	1.228 **ac**	**53473 ft²**
Percent Impervious (existing):	**49.38 %**	
Proposed Impervious (A_i):	1.938 **ac**	**84417 ft²**
Percent Impervious (Proposed):	**77.95 %**	

Per Town of Ocean City Stormwater Management Ordinance Section 30-143(d)(2)
Redevelopment Criteria:

WQ_v: a). Reduce existing site impervious area by at least 20%.
b). Where site conditions prevent reduction of impervious area, provide qualitative control for 20% of impervious area of existing site.
c). When a combination of impervious area reduction and stormwater management practice implementation is used, the combined area shall equal or exceed 20% of the site.

20% of Existing Impervious Area (A_i):	0.246 **ac**	10695 **ft²**
Change in site Impervious Area:	0.710 **ac**	30944 **ft²**
Percent Change:	**57.87 %**	
Area which must be treated to meet WQ_v Requirement (20% of existing Impervous area + impervous area increase):	0.956 **ac**	41639 **ft²**
Percent of Total Area to be treated :	**38.45 %**	(Assuming all treated area is impervious)

Water Quality Volume Required to be treated by BMP (WQ_v)

P=	**1.0**		
R_v=	**0.950**		
A=	**0.956**	**ac**	**41639 ft²**
Impervious (Drainage Area) =	**100.00 %**		

Note: P=1.0 for Delmarva Pennisula

$$WQ_v \text{ required} = \frac{(P)(R_v)(A)}{12}$$

WQ_v required =	**0.0757**	**ac-ft**	
	3296	**ft³**	
WQ_v provided =	**0.1149**	**ac-ft**	(provided in three (3) areas)
	5006	**ft³**	

Worksheet A: Standard Application Process

Calculating Pollutant Removal Requirements*

Step 1: Project Description

A. Calculate Percent Imperviousness

1) Site Acreage = 0.875 acres

2) Site Imperviousness, existing and proposed, *(See Table 1.0 for details)*

	(a) Existing (acres)	(b) Post-Development (acres)
Rooftop	0.147	0.682
Roads	0.000	0.000
Sidewalks	0.126	0.000
Parking Lots	0.112	0.000
Pools / Ponds	0.000	0.000
Decks	0.000	0.000
Other	0.000	0.000
	0.000	0.000
Impervious Surface Area	0.351	0.682

3) Non-Structural BMPs Disconnected Impervious Area

4) Adjusted Proposed Impervious Surface Area
(Step 2b) - (Step 3) = (0.682) - (0.000) = 0.682 acres

Imperviousness (I)

Existing Impervious Surface Area / Site Area = (Step 2a) / (Step 1) =	40%
Post-Development Impervious Surface Area / Site Area = (Step 2b) / (Step 1) =	78%

B. Define Development Category (circle)

1) Redevelopment:	Existing imperviousness greater than 15% I *(Go to Step 2A)*	X
2) New development:	Existing imperviousness less than 15% I *(Go to Step 2B)*	
3) Single Lot Residential:	Single lot being developed or improved; single family residential; and more than 250 square feet being disturbed. *(Go to Page 27 - Single Lot Residential sheet for remaining steps).*	

* **NOTE: All acreage used in this worksheet refer to areas within the IDA of the critical area only.**

Step 2: Calculate the Pre-Development Load (L_{pre})

A. Redevelopment

L_{pre} = $(R_v)(C)(A)8.16$ C = 0.3

R_v = 0.41 R_v = 0.410

L_{pre} = (0.41)(0.3)(0.875)8.16

= **0.88** lbs P / year

where:

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

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

C = Flow weighted mean concentration of the pollutant in urban runoff (mg/l)

C = 0.26 if pre-development I<20%

C = 1.08 if pre-development I>=20%

A = Area of the development site (acres in the Critical Area)

8.16 = Includes regional constants and unit conversion factors

OR

B. New Development

L_{pre} = 0.5 lbs/year * A

= (0.5)( )

= 0 lbs P / year

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

A. New Development and Redevelopment

L_{post} = $(R_v)(C)(A)8.16$ C = 0.3

R_v = $0.05 + 0.009(I_{post})$ R_v = 0.750

L_{post} = (0.75)(0.3)(0.875)8.16

= 1.60 lbs P / year

where:

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

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

C = Flow weighted mean concentration of the pollutant in urban runoff (mg/l)

C = 0.3

A = Area of the development site (acres in the Critical Area)

8.16 = Includes regional constants and unit conversion factors

Step 4: Calculate the Pollutant Removal Requirement (RR)

RR = $L_{post} - (0.9)(L_{pre})$
= (1.60) - (0.9)(0.88)
= 0.81 lbs P

Step 5: Identify Feasible Urban BMP

Select BMP Options using the screening tools and pollutant removal rates listed in the Applicant's Guide *Tables 5.0, 5.1, 5.2 and 5.4*. Calculate the load removed for each option.

BMP Type	(Removal Efficiency [use 0.50 or 50%])	x	(Fraction of Drainage Area Served) **	x	(L_{post})		Load Removed	
Pervious Pavers	0.65	x	80%	x	1.6	=	0.83	lbs
								lbs
		x		x		=		lbs
						=	0.83	lbs

If the Load Removed is equal to or greater than the pollutant removal removal requirement (RR) calculated in Step 4, then the on-site BMP option complies with the 10% Rule. *(See Table 5.3, page 16)* for submittal requirements for each option.

Entire Site

	Pre-Development	Post-Development
Roads	0.0	0.0
Parking Lots	36,005.3	27,364.0
Driveways	0.0	0.0
Sidewalks/conc	6,163.4	12,501.0
Building	26,434.0	33,968.0
Decks	1,950.0	3,250.0
Pools/Ponds	0.0	0.0
Other	0.0	0.0
Total Impervious	***70,552.7***	***77,083.0***
Landscape Area	29,809.0	20,173.0
Pervious Paver/Gravel	9,806.0	7,122.0
Pervious Wooden Decks	0.0	3,354.0
Total Pervious	***39,615.0***	***30,649.0***
Total Area	107,732.0	107,732.0
Percent Impervious	***65.5%***	***71.6%***
Percent Landscaped	***27.7%***	***18.7%***
Percent Pervious	***36.8%***	***28.4%***
Rv	***0.639402***	***0.693956***
WQv	***5,740.3***	***6,230.1***
20% Existing Wq and 100% New	1,148.1	489.8
WQv Required	**1,637.8**	

NOT FOR CONSTRUCTION
PRELIMINARY DRAWINGS

PROPOSED LEGEND

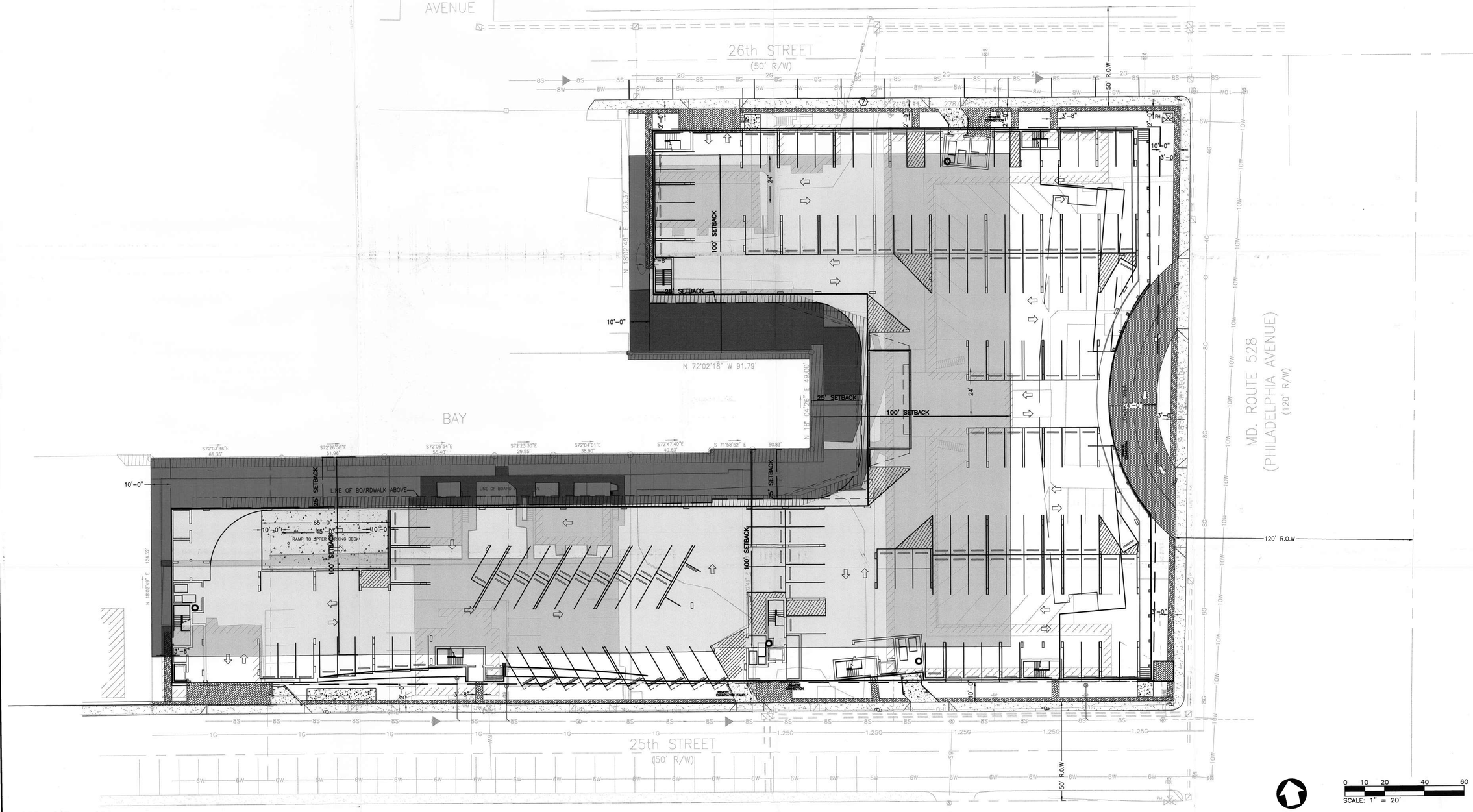
- BUILDINGS/STRUCTURES
- CONCRETE SIDEWALK
- PROPERTY BOUNDARY
- BUILDING SETBACK
- TRAFFIC DIRECTION ARROW
- INFILTRATION SYSTEM
- STORMDRAIN, INLET, AND CLEANOUT
- TRENCH DRAIN
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- STRUCTURAL COLUMNS
- SANITARY LATERAL, CLEANOUT, AND SIZE ANNOTATION
- BUILDING FOOTPRINT
- PAVERS
- BOARDWALK

EXISTING LEGEND

- CONCRETE MONUMENT FOUND
- PUNCH HOLE FOUND
- STREET LIGHT
- STREET SIGN
- WATER VALVE
- WATER METER
- SANITARY SEWER MANHOLE
- SEWER CLEAN OUT
- OVERHEAD UTILITY LINE
- GAS MAIN W/ SIZE
- SANITARY SEWER LINE W/ SIZE
- WATER MAIN
- PROPERTY LINE
- EXISTING CONTOUR
- EXISTING SPOT ELEVATION
- UTILITY BOX
- FIRE HYDRANT
- GAS METER
- EXIST. POWER POLE
- TREE
- CATCH BASIN
- EXISTING ELEVATION (REFERENCED TO PROJECT BENCHMARK OCM 2B) (1929 DATUM) — 6.51'
- PROJECT BENCHMARK

CRITICAL AREAS LEGEND

- EXISTING IMPERVIOUS TO PROPOSED IMPERVIOUS 27,270 SF
- EXISTING IMPERVIOUS TO PROPOSED PERVIOUS 4097 SF
- EXISTING PERVIOUS TO PROPOSED IMPERVIOUS 25,999 SF
- EXISTING PERVIOUS TO PROPOSED PERVIOUS 10,836 SF
- CONSTRUCTION OF DECK IN SETBACK 2649 SF



PRELIMINARY PLANS PRINTS ISSUED FOR:
* REVIEW

REVISIONS

REV. #	DESCRIPTION	DATE

GMB
GEORGE, MILES & BUHR, LLC
ARCHITECTS & ENGINEERS
SALISBURY - BALTIMORE - LEWES - SEAFORD - YORK
www.gmbnet.com

PALM HARBOR CONDOMINIUMS
2501 PHILADELPHIA AVENUE, OCEAN CITY, MD

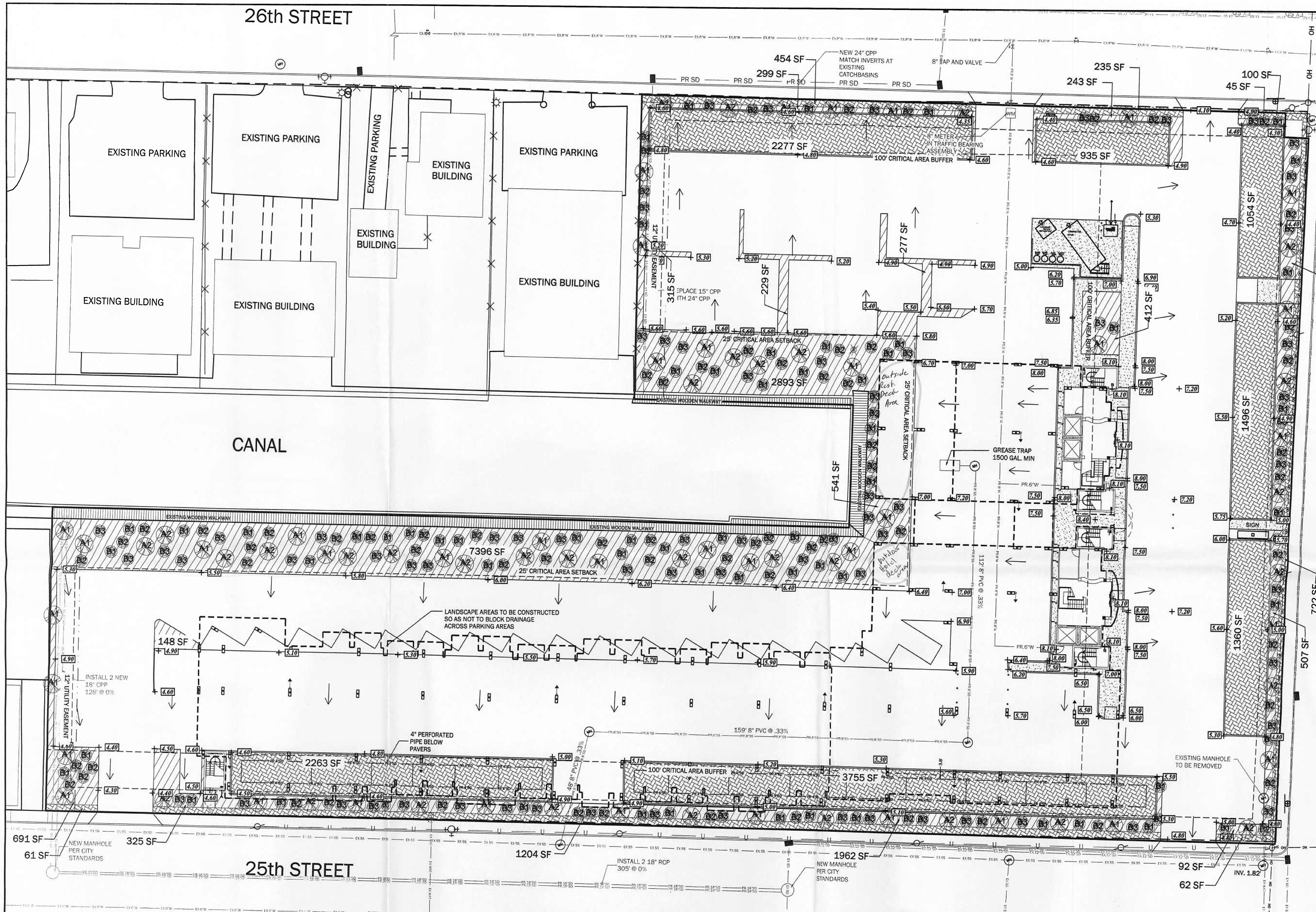
RECEIVED
AUG 14 2006
CRITICAL AREA COMMISSION
Chesapeake & Atlantic Coastal Bays

RECEIVED
AUG 14 2006
CRITICAL AREA COMMISSION

CRITICAL AREA SETBACK

SCALE:	1" = 20'
DESIGN BY:	
DRAWN BY:	
CHECKED BY:	
GMB FILE:	2005289
DATE:	JULY 2006

SHEET NO.
EX1



LEGEND

PERVIOUS PAVERS

CRITICAL AREA LANDSCAPE AREA

	Pre-Development	Post-Development
Roads	0.0	0.0
Parking Lots	36,005.3	27,364.0
Driveways	0.0	0.0
Sidewalks/conc	6,163.4	12,501.0
Building	26,434.0	33,968.0
Decks	1,950.0	3,250.0
Pools/Ponds	0.0	0.0
Other	0.0	0.0
Total Impervious	***70,552.7***	***77,083.0***
Landscape Area	29,809.0	20,173.0
Pervious Paver/Gravel	9,806.0	7,122.0
Pervious Wooden Decks	0.0	3,354.0
Total Pervious	***39,615.0***	***30,649.0***
Total Area	107,732.0	107,732.0
Percent Impervious	***65.5%***	***71.6%***
Percent Landscaped	***27.7%***	***18.7%***
Percent Pervious	***36.8%***	***28.4%***
Rv	***0.639402***	***0.693956***
WQv	***5,740.3***	***6,230.1***
20% Existing Wq and 100% New	1,148.1	489.8
WQv Required	**1,637.8**	

Landscape	Paver @ Sidewalk	Pavers Open to the Sky	Storage Pavers
299	454	2277	3755
243	235	935	2263
45	100	1054	
315	722	1496	
229	62	1360	
277	1204		
2893	61		
960			
507			
92			
1962			
325			
691			
7396			
541			
148			
412			
17335	2838	7122	6018

LANDSCAPE MAINTENANCE NOTE

EACH LANDSCAPE AREA MUST BE READILY ACCESSIBLE TO A WATER SUPPLY AND THE OWNER (THE CONTRACTOR PRIOR TO ACCEPTANCE) SHALL BE RESPONSIBLE FOR THE CONTINUED PROPER MAINTENANCE OF ALL THE LANDSCPAED AREAS AND PLANTS, AND SHALL KEEP THEM IN A HEALTHY, NEAT ORDERLY AND PROPER APPERANCE, FREE FROM REFUSE AND DEBRIS AT ALL TIMES. PROPER MAINTENANCE SHALL INCLUDE BUT NOT LIMITED TO, WATERING, WEEDING, MOWING, PRUNING, FERTILIZING AND MULCHING AS REQUIRED.

STANDARDS: (UNLESS NOTED OTHERWISE)
DECIDUOUS TREES: a minimum caliper measured 6" from ground level of 2 inches at time of planting.
EVERGREEN TREES: a minimum of five feet in height at time of planting.

NOTE TO LANDSCAPE CONTRACTOR

ALL LANDSCAPE MATERIALS INDICATED ON THIS PLAN, ALONG WITH THE PROPOSED LANDSCAPING PLAN MAY BE REVISED AND MATERIALS INDICATED MAY BE SUBSTITUTED FOR OTHER MATERIALS AND/OR PLAN. THE PROPOSED PLAN AND/OR SUBSTITUTION OF MATERIALS SHALL BE SUBJECT TO THE APPROVAL OF THE AUTHORITY HAVING JURISTICTION (PRIOR TO ANY WORK) OF THIS PROJECT. A COPY OF ANY REVISIONS SHALL BE SUPPLIED TO THE ARCHITECT FOR THE RECORD.

LANDSCAPE IRRIGATION SYSTEM

THE LANDSCAPE CONTRACTOR AS PART OF HIS CONTRACT SHALL PROVIDE A COMPLETE LAWN AND SHRUB IRRIGATION SPRINKLER SYSTEM, CONSISTING OF ALL RELATED PIPING, HEADS, VALVES AND AUTOMATIC CONTROLS. LANDSCAPE CONTRACTOR AND/OR IRRIGATION SYSTEM CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION FROM AUTOMATIC CONTROL VALVE TO THE SYSTEM, AND THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE WATER SUPPLY LINES TO THE CONTROL VALVE. INSTALLATION SHALL BE IN ACCORDANCE TO LOCAL REGULATIONS AND CODES.

	NAME	SIZE	QUANTITY	MITIGATION (EACH)	TOTAL MITIGATION
A1	PINE OAK, Quercus palustris	1 1/2" Cal. B&B	38	100 SF EACH	3800 SF
A2	RIVER BIRCH, Betula NIgra	1 1/2" Cal. B&B	32	100 SF EACH	3200 SF
B1	WINTERBERRY, Ilex verticallata	2 GALLON	66	50 SF EACH	3300 SF
B2	BLUE FLAG	3 GALLON	68	50 SF EACH	3400 SF
B3	LONG LEAF SPIKEGRASS	2 GALLON	66	50 SF EACH	3300 SF
				TOTAL MITIGATION	17,000 SF

NOTE: PAVERS ADDED TO BACK OF ALL SIDEWALK TO INCREASE WIDTH TO 8' AS REQUESTED BY PLANNING COMMISION. THIS AREA IS BEING CONSIDERED LANDSCAPE AREA AND TABULATED ACCORDINGLY.

SHEET 4 OF 7

REVISIONS DATE	INT.
06/12/08	RJK
06/15/08	RJK
07/07/08	RJK
07/11/08	RJK
07/17/08	RJK
07/22/08	RJK

DWG. S1867Sitebase.dwg

SWM/Critical Area/Landscape Plan
Ocean Harbor Hotel

Philadelphia Avenue, 25th and 26th Street
For: Atlantic Planning And Development
Ocean City, Worcester County, Maryland

SCALE 1" = 20' | DATE 05/05/2008 | TAX MAP 111 | GRID
JOB NO. J:\Projects\S1867\ | DRAWN BY RJK | PARCEL See Notes

SURVEYING · FORESTRY · CIVIL ENGINEERING · SITE PLANNING
PARKER & ASSOCIATES INC.

Jul 23, 2008-10:13am

26th STREET

EXISTING PARKING

EXISTING PARKING

EXISTING PARKING

EXISTING BUILDING

EXISTING BUILDING

EXISTING BUILDING

EXISTING BUILDING

EXISTING BUILDING

CANAL

299 SF

NEW 24" CPP
MATCH INVERTS AT
EXISTING
CATCHBASINS

PR SD

2277 SF

100' CRITICAL AREA BUFFER

243 SF

935 SF

45 SF

OH

1054 SF

960 SF

12' UTILITY EASEMENT

315 SF

REPLACE 15" CPP
WITH 24" CPP

229 SF

277 SF

100' CRITICAL AREA BUFFER

412 SF

25' CRITICAL AREA SETBACK

2893 SF

EXISTING WOODEN WALKWAY

25' CRITICAL AREA SETBACK

1496 SF

541 SF

EXISTING WOODEN WALKWAY

SIGN

3396 SF

25' CRITICAL AREA SETBACK

LANDSCAPE AREAS TO BE CONSTRUCTED
SO AS NOT TO BLOCK DRAINAGE
ACROSS PARKING AREAS

148 SF

1360 SF

507 SF

INSTALL 2 NEW
18" CPP
128' @ 0%

12' UTILITY EASEMENT

4" PERFORATED
PIPE BELOW
PAVERS

2263 SF

100' CRITICAL AREA BUFFER

3755 SF

EXISTING MANHOLE
TO BE REMOVED

691 SF

NEW MANHOLE
PER CITY
STANDARDS

325 SF

25th STREET

INSTALL 2 18" RCP
305' @ 0%

1962 SF

NEW MANHOLE
PER CITY
STANDARDS

92 SF

INV. 1.82

LEGEND

PERVIOUS PAVERS

CRITICAL AREA LANDSCAPE AREA

	Pre-Development	Post-Development
Roads	0.0	0.0
Parking Lots	36,005.3	32,301.0
Driveways	0.0	0.0
Sidewalks/conc	6,163.4	12,501.0
Building	26,434.0	33,968.0
Decks	1,950.0	3,250.0
Pools/Ponds	0.0	0.0
Other	0.0	0.0
Total Impervious	*70,552.7*	*82,020.0*
Landscape Area	29,809.0	16,236.0
Pervious Paver/Gravel	9,806.0	6,122.0
Pervious Wooden Decks	0.0	3,354.0
Total Pervious	*39,615.0*	*25,712.0*
Total Area	107,732.0	107,732.0
Percent Impervious	*65.5%*	*76.1%*
Percent Landscaped	*27.7%*	*15.1%*
Percent Pervious	*36.8%*	*23.9%*
Rv	*0.639402*	*0.735200*
WQv	*5,740.3*	*6,600.4*
20% Existing Wq and 100% New	1,148.1	860.0
WQv Required	**2,008.1**	

LANDSCAPE MAINTENANCE NOTE

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A1	PINE OAK, Quercus palustris	1 1/2' Cal. B&B	38	100 SF EACH	3800 SF
A2	RIVER BIRCH, Betula Nigra	clump 6'-8'tall B&B	32	100 SF EACH	3200 SF
B1	WINTERBERRY, Ilex verticallata	2 GALLON	66	50 SF EACH	3300 SF
B2	BLUE FLAG	3 GALLON	68	50 SF EACH	3400 SF
B3	LONG LEAF SPIKEGRASS	2 GALLON	66	50 SF EACH	3300 SF
				TOTAL MITIGATION	17,000 SF

NOTE: PAVERS ADDED TO BACK OF ALL SIDEWALK TO INCREASE WIDTH TO 8' AS REQUESTED BY PLANNING COMMISION. THIS AREA IS BEING CONSIDERED LANDSCAPE AREA AND TABULATED ACCORDINGLY.

STATE OF MARYLAND
ROOKE E. PARKER
No. 21739
PROFESSIONAL ENGINEER

SHEET 4 OF 7

REVISIONS		
DATE	INIT.	
06/12/08	RJK	
06/15/08	RJK	
07/07/08	RJK	

DWG. S1867Sitebase.dwg

SWM/Critical Area/Landscape Plan
Ocean Harbor Hotel

Philadelphia Avenue, 25th and 26th Street
For: Atlantic Planning And Development
Ocean City, Worcester County, Maryland

SCALE	1" = 20'
DATE	05/05/2008
DRAWN BY	RJK
JOB NO.	J:\Projects\S1867\
TAX MAP	111
PARCEL	See Notes

SURVEYING — FORESTRY

PARKER & ASSOCIATES
ESTABLISHED 1977
SALISBURY, MARYLAND 410-749-0563
CIVIL ENGINEERING — SITE PLANNING

Jul 07, 2008-3:33pm

26th STREET

EXISTING FIRE HYDRANT

PERVIOUS PAVERS FOR SIDEWALK WIDENING

NEW DEPRESSED CURB ENTRANCE

NEW DEPRESSED CURB ENTRANCE

EXISTING FIRE HYDRANT

EXISTING PARKING

EXISTING PARKING

EXISTING PARKING

EXISTING BUILDING

EXISTING BUILDING

EXISTING BUILDING

EXISTING BUILDING

EXISTING BUILDING

100' CRITICAL AREA BUFFER

12'X45' (540 SF) LOADING ZONE

12'X45' (540 SF) LOADING ZONE

12' UTILITY EASEMENT

HDCP RAMP

PERVIOUS PAVERS SYSTEM FOR SWM

ELECTRICAL TRANSFORMER

BUS STOP

100' CRITICAL AREA BUFFER

25' CRITICAL AREA SETBACK

BUILDING OUTLINE

PERVIOUS PAVERS FOR SIDEWALK WIDENING

CANAL

EXISTING WOODEN WALKWAY

25' CRITICAL AREA SETBACK

HDCP RAMP

HDCP RAMP

FIRE DEPARTMENT CONNECTION

CONC BOLLARD TYPICAL

SIGN

HDCP RAMP

HDCP RAMP

COASTAL HIGHWAY

EXISTING WOODEN WALKWAY

EXISTING WOODEN WALKWAY

ONE WAY

LANDSCAPE AREAS TO BE CONSTRUCTED SO AS NOT TO BLOCK DRAINAGE ACROSS PARKING AREAS

DO NOT ENTER

BUILDING OUTLINE

12'X45' (540 SF) LOADING ZONE

12' UTILITY EASEMENT

PERVIOUS PAVERS SYSTEM FOR SWM

CONC BOLLARD TYPICAL

HDCP RAMP

100' CRITICAL AREA BUFFER

100' CRITICAL AREA BUFFER

BUILDING OUTLINE

NEW DEPRESSED CURB ENTRANCE

FIRE DEPARTMENT CONNECTION

EXISTING FIRE HYDRANT

PERVIOUS PAVERS FOR SIDEWALK WIDENING

PERVIOUS PAVERS SYSTEM FOR SWM

NEW DEPRESSED CURB ENTRANCE

INV. 1.82

25th STREET

EXISTING FIRE HYDRANT

LEGEND

- DOWNSPOUT AND FLOW DIRECTION
- PERVIOUS PAVERS
- BUILDING OUTLINE ABOVE
- PROPERTY LINE
- COLUMN LOCATION
- × 0.00 PROPOSED SPOT ELEVATION
- +0.00 EXISTING SPOT ELEVATION
- EXISTING FIRE HYDRANT

SHEET 2 OF 7

REVISIONS		
DATE	INT.	
06/12/08	RJK	
06/15/08	RJK	
07/07/08	RJK	
07/11/08	RJK	

CAD FILE: S1867Sitebase.dwg

Proposed Site
Ocean Harbor Hotel

Philadelphia Avenue, 26th and 26th Street
For: Atlantic Planning And Development
Ocean City, Worcester County, Maryland

SCALE	1" = 20'
JOB NO.	J:\Projects\S1867\
DATE	05/05/2008
DRAWN BY	RJK
TAX MAP	111
PARCEL	See Notes
GRID	

STATE OF MARYLAND — ROBERT J. KOCH — No. 27737 — PROFESSIONAL ENGINEER

SURVEYING — FORESTRY

PARKER & ASSOCIATES INC. — ESTABLISHED 1957 — SALISBURY, MD 410-749-0220

CIVIL ENGINEERING — SITE PLANNING

Jul 11, 2008 12:49pm