

OC 195-06 Meridian Condo  
Site Plan 10530-10680

MSA. S. 1829-5858

CC Nylap  
CC 5/10/06

Robert L. Ehrlich, Jr.  
*Governor*

Michael S. Steele  
*Lt. Governor*



Martin G. Madden  
*Chairman*

Ren Serey  
*Executive Director*

**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/](http://www.dnr.state.md.us/criticalarea/)

May 15, 2006

Ms. Gail Blazer  
Planning and Community Development  
P.O. Box 158  
Ocean City, MD 21843

RE: 6-60<sup>th</sup> Street, Meridian Condominiums – File # 10530/#10680

Dear Ms. Blazer:

Thank you for your recent updated submittal of the Stormwater Plan and 10 percent calculations for the above referenced site.

As presented, the applicant has met the intent of the Town of Ocean City's Critical Area requirements on the site. This office would like to see any revisions, alterations, or substitutions as related to the landscape, stormwater or site plans.

If you have any further questions regarding this project, please call me directly at 410-260-3476.

Best regards,

A handwritten signature in black ink, appearing to read "Chris Clark".

Chris Clark  
Natural Resources Planner

cc: OC195-06

Robert L. Ehrlich, Jr.  
Governor

Michael S. Steele  
Lt. Governor



416-629-1710

Martin G. Madden  
Chairman

Ren Serey  
Executive Director

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April 4, 2006

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

RE: 6-60<sup>th</sup> Street, Meridian Condominiums – File # 10530/#10680

Dear Mr. Smith:

Thank you for your recent submittal for the above applicants' request to construct two towers of condominiums of seven and ten stories respectively on the above referenced site. The total site area is reported to be 1.87 acres and is located in the IDA. The proposed development will create 1.37 acres of impervious surface. Critical Area concerns are: stormwater management, pollutant removal and afforestation.

The applicant has provided 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. It is unclear what stormwater will flow to the "existing BMP" and how it will work and/or if it is intended to be redesigned. 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 for parcels 40,000 square feet and larger. Please also include any soil boring information and its relationship to the proposed stormwater infiltration calculations.

Mr. Blaine Smith  
File #10530/#10680

Page 2  
April 4, 2006

As presented, the applicant has met the afforestation requirement on the site. 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.

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,

A handwritten signature in black ink, appearing to be 'Chris Clark', written in a cursive style.

Chris Clark  
Natural Resources Planner

cc: OC195-06



Robert L. Ehrlich, Jr., Governor

Michael S. Steele, Lt. Governor

C. Ronald Franks, Secretary

February 6, 2006

Mr. Robert Plitko, Jr.  
Atlantic Group  
10044 Old Ocean City Boulevard  
Berlin, MD 21811

**RE: Environmental Review for Meridian Condominium, 60<sup>th</sup> Street, Tax Map 51 Parcel 4,  
Ocean City, Worcester County, Maryland.**

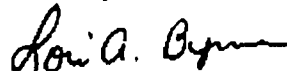
Dear Mr. Plitko:

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. Please note however that the utilization of state funds, the need to obtain a state-authorized permit, or changes to the plan might warrant additional evaluations that could lead to protection or survey recommendations by the Wildlife and Heritage Service. Please contact us again for further coordination if this project falls into one of those categories.

We would also like to point out that our initial evaluation of this project should not be interpreted as meaning that it is not possible for rare, threatened or endangered species to be present. Certain species could be present without documentation because adequate surveys may not have been conducted in the past. Although we are not requiring any surveys, we would like to bring to your attention that Wildlife and Heritage Service's Natural Heritage database records do indicate that there are occurrences of state-listed endangered Beach Plum (*Prunus maritima*) known to occur within the vicinity of the project site. If the appropriate habitat is present for this species it could potentially occur on the project site itself. Since the population of this native plant has declined historically we would encourage efforts to help conserve it across the state. Feel free to contact us if you would like technical assistance regarding the conservation of this important species.

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

ER #2005.2672.wo  
Cc: S.A. Smith, WHS  
R. Esslinger, CAC

## Mail Message

Novell.

Close Next Delete From This Mailbox Delete From All Mailboxes Forward Reply to Sender Reply All Move Delete Read Later Properties

**From:** Gail Blazer  
**To:** CClark@dnr.state.md.us  
**Date:** Thursday - May 4, 2006 9:50 AM  
**Subject:** RE: meridian

Hey Chris,

Let me try and explain.

The 10% rule if they didn't include the existing BMP they would not be required to do any stormwater management (pollutant removal)

Pre load w/o infiltration trench

3.85lb -

Post-load with 3.24

$3.24 - 3.85(.9) = -.225$

I require that they show what the existing infiltration trench removed so they continue to do that removal as well as an additional 10% reduction. Thus they have to show what the trench removed. Which was 36% of the site so 36% of the pre-load 3.84 would be 1.36lb at an efficiency of 65% would be that the existing BMP removed .8973.  $3.85 - .8973 = \text{pre load } 2.95$

The BMP have to now remove 10% below the 2.95lb not the 3.85

Therefore RR would be  $3.24 - .9(2.95) = 3.24 - 2.655 = .585$  RR

They now will have to show a BMP to remove .585lbs.

I hope this explains the 10% rule and the stormwater management.

I am also going to send you the Habitat Protection Letter. I just faxed it to you  
 Gail

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

>>> "Clark, Chris" <CClark@dnr.state.md.us> 05/04/06 7:56 AM >>>

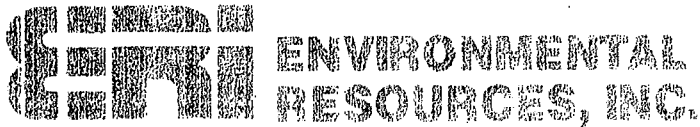
If you are comfortable with what you reviewed then that's fine. Please have the consultant prepare the other information asked for in the letter and submit it to the Commission.

Thanks. Chris

Chris Clark  
 Natural Resources Planner  
 Critical Area Commission  
 1804 West St., Suite 100  
 Annapolis, MD 21401  
 410-260-3460  
 direct - 410-260-3476  
 fax - 410-974-5338

-----Original Message-----

From: Gail Blazer [mailto:gblazer@ococean.com]  
 Sent: Wednesday, May 03, 2006 12:45 PM  
 To: Clark, Chris  
 Subject: meridian



ONE PLAZA EAST, SUITE 500  
100 EAST MAIN STREET  
SALISBURY, MD 21801-4981  
PHONE: 410-548-5320  
FAX: 410-548-3767

September 23, 2005

ERI #0388-0018

Attn.: Rob Plitko  
Wiles Mensch Corp., Atlantic Group  
10088 Old Ocean City Boulevard  
Berlin, Maryland 21811

RE: Summary of Soil Testing for Storm water Management Structure Design  
Meridian (aka. Nassau Hotel), Ocean City, Maryland

Dear Mr. Plitko:

Environmental Resources Inc. (ERI) has conducted the requested soil observations and infiltration testing that are part of your storm water management facilities design for the Meridian property. This property is located in north Ocean City, Maryland along 60<sup>th</sup> Street. As a result of extensive paving and development, soil testing locations were limited. As we discussed, four soil profile descriptions and two infiltration tests were completed where access was possible. Copies of soil profile and infiltration test sheets are attached. A sketch of the profile locations was provided to you previously.

Coastal beaches or "sand dunes" are mapped over the entire project in the Soil Survey of Worcester County, Maryland, Sheet 12. From the soil borings, fill dirt has been deposited over the beach sand in varying amounts across the site. The fill dirt textures are mostly sand to sandy loam, but compaction was noted and it is not recommended for infiltration structures without a greater amount of testing. At each of the four soil boring locations the soil boring encountered the sand and was described to at least the depth of the current water table. Soil profiles were completed by me and reviewed with Thomas Nobile (ARCPACS Certified Professional Soil Scientist 03297) also with ERI.

Establishing the depth to the seasonal high water table (SHWT) is often based on low chroma soil redoximorphic features, commonly referred to as mottling or gleying. At this site the water table is interpreted to be fluctuating within sand, which naturally has low chroma color. Therefore, the soil color at this site does not provide much information for determining the SHWT since the low chroma color of the sand is not necessarily related to wetness. When determining SHWT, consideration is also given to the observed water levels, topography, natural or man-made surface outlets, alterations to local hydrology, precipitation history, and time of the growing season. In this coastal setting, the annual water table is estimated to fluctuate about 1.5 to 2 feet. Based on all information available at the time of investigation, the SHWT is at an elevation of approximately 4.5 feet across this site.

The underlying sand that was expected to be suitable for storm water infiltration could only be readily tested at Soil Boring 3 under current conditions. The two infiltration tests (3A and 3B) were conducted five feet to the east and west, respectively, of Soil Boring 3. Infiltration testing was completed in sand within the 2 foot separation zone below the bottom of the proposed storm water management structure near Boring 3. Tests were prepared and completed on September 19, 2005 by Mr. Nobile and myself.

This work was completed in accordance with Appendix D.1 of the Maryland Storm Water Design Manual as much as possible after discussion with you. Twenty four inches of water were used as the initial pre-soak and to conduct the testing. The initial pre-soak of all two feet of water was completed in less than 10 minutes. In a phone conversation with you, you agreed that it appeared unnecessary to delay the infiltration testing for twenty-four hours since this would have allowed drying of the test site to occur. With your approval we began testing immediately after the pre-soak was complete. A total of 8 readings were taken in addition to the pre-soak. The last four readings were averaged for the reported rate. The results of tests 3A and 3B are summarized below.

Testing At Soil Boring 3	Test Depth (in.)	Soil Texture	Result (in./hr.)
3A	45	sand	203
3B	44	sand	239
<b>Geometric Mean</b>			<b>220</b>

Typically a safety factor is applied to the field results. We recommend that you incorporate any applicable safety factor as part of your design. Test results are representative of the infiltration rates of the sand below the fill dirt material. In order to utilize the permeable nature of the sand, uniform access to the sand will be necessary. As shown below, the elevation at which the beach sand begins varies across the site.

Soil Boring	Desirable Soil Texture	Depth to Sand (in. from ex. surface)	Elevation of Sand (ft.)
1	sand	43	8.2
2	sand	40	5.6
3	sand	34 to 42	6.4
4	sand	45	8.6



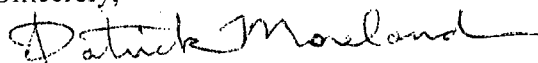
Summary of Soil Testing for Storm water Management Structure Design  
Meridian, Ocean City, Maryland  
September 23, 2005  
Page 3

ERI #0388-0018

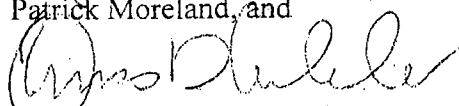
If a proposed storm water management facility is located shallower than the sand, a possible solution, pending agency approval, would be to excavate to the sand and backfill with sand. It should be noted that the limited number of soil observations and infiltration test results are based on existing site conditions and may be representative only of the area near the actual observations.

Thank you again for choosing ERI to conduct your soil observations and infiltration testing for storm water management structure design. If you have any questions, please feel free to contact me or Mr. Nobile.

Sincerely,



Patrick Moreland, and



Thomas D. Nobile, CPSS

Enclosed:     Soil Profiles 4  
                  Infiltration Test Results 2

# **Meridian Condominiums**

Oceanside  
60<sup>th</sup> Street  
Ocean City, Maryland

## **Critical Area Report**

*June 15, 2006*

**Prepared By:**

The Atlantic Group  
10044 Old Ocean City Boulevard  
Berlin, Maryland 21811  
Voice: 410.629.1160  
Fax: 410.629.1710

## **1.0 Introduction / Narrative:**

The proposed Meridian Condominium project is located on the north side of 60<sup>th</sup> street and east of Coastal Highway. The property is located in the IDA area and falls entirely within the 1000 ft. critical area limit, but does not fall within the 100 ft. buffer area. The proposed site development plan is to demo the existing site and construct 80 condominium units.

## **2.0 Existing Conditions:**

**A.** The existing site currently is 1.87 acres and before demolition contained three existing buildings which consisted of 102 motel units and 8 motel suites.

**B.** The site currently does not border any shorelines or waterways and there are not any proposed piers, bulkheads, revetments, or other shoreline stabilization methods.

**C.** Currently the eastern half of the site has an existing stormwater infiltration trench which provides 2,964 cubic feet of storage. This stormwater system accounts for 0.67 impervious acres of the entire site. The other portion of the site (0.97 impervious acres) does not contain a stormwater system and all existing runoff sheet flows off site. The existing infiltration trench will be abandoned and removed prior to any construction.

**D.** The existing site topography ranges from elevation 7.0 ft. to 15 ft. with the high point occurring on the east property line and sloping west toward Coastal Highway. The site contains two soil types; Acquango (AcB), and Urban Land (Uc & Un). All soils for this site were identified using the National SSURGO data from NRCS. Soil borings were performed by ERI at four locations and the seasonal high water table was identified at elevation 4.5'. At soil boring 3, an infiltration test resulted in a 200 in/hour rate. (See Appendix A for ERI's Soil Report). Currently the site consists of 1.64 acres of imperviousness, so there are not any areas of soil erosion and there are not any proposed conditions where soil erosion will become a problem. During construction, the site will be stabilized with silt fencing and a construction entrance so that all runoff and erosion will be managed within the site.

### **3.0 Stormwater Methodologies:**

The proposed stormwater plan is to maintain the existing stormwater storage and to reduce the site's imperviousness by 20%. An infiltration trench has been designed to help maintain the existing storage and will store 2,221 cu.ft. of runoff. The trench will be flat with a bottom elevation of 6.5' which has a 2.0' separation from the seasonal high water table. Three permeable pavers areas have been designed to reduce the site's imperviousness and will also store the first inch of rooftop. The total storage provided from the paver trenches equals 4055 cu.ft.. The bottom elevation of all paver areas will have at least 2.0' clearance from the seasonal high water table. The total provided storage is 6276 c.f. which is greater than the 2964 c.f. needed. The extra storage is needed in order to meet the 10% rule calculations and to achieve adequate pipe coverage.

#### **20% Reduction Calculations:**

Existing Impervious Area = 1.64 Ac.

20% Reduction  $(1.64 - (1.64 \times 0.2)) = 1.31$  Ac. (Required)

Proposed Impervious Area = 1.53 Ac.

Total Open Paver Area = 0.16 Ac.

Total Rooftop Area directed to Pavers = 0.59 Ac.

Adjusted Impervious Area = 0.78 Ac. \* Site meets 20% reduction\*

### **4.0 Construction:**

The total area of disturbance equals 1.87 acres and the site will be surrounded with silt fence to contain any sediment runoff. All existing buildings will be completely removed along with any existing stormwater management facilities. The new stormwater trench and paver areas will treat the required 10% pollutant requirements as follows:

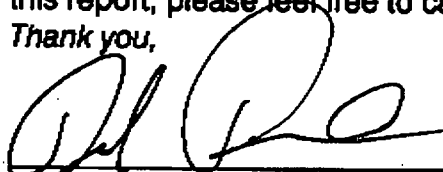
- This site is a redevelopment site, so step 2b is used.
- The total site's L(pre) is determined to be 3.85 lbs/yr based on 88% imperviousness.
- Next the total existing impervious area treated by the existing SWM facility equals 0.67 Acres. So  $(0.67 / 1.87[\text{total area}])$  equals 36%. Then  $(L_{\text{pre}}) \times (36\%) = 1.38$  lbs/yr, which is the total pollutant going to the existing SWM, and the load removed from that system, based on a 65% removal rate, equals:  
 $(1.38 \text{ lbs/yr}) \times (65\%) = 0.897$  lbs/yr.

- Now the pollutant load remaining will be  $3.85 - 0.897 = 2.95$  lbs/yr. Our proposed plan for treatment will be to treat the existing pollutant removal of 0.897 lbs/yr, plus reduce the remaining 2.95 lbs/yr by 10%.
- Next, the new development  $L(\text{post}) = 3.24$  lbs/yr, and the required removal rate based on the 2.95 existing pollutant load equals 0.59 lbs/yr.
- So the total required removal equals  $0.59 + 0.897 = 1.487$  lbs/yr.
- The RR of 1.487 lbs/yr requires us to manage the existing treated pollutant plus treat the additional pollutant loading from the remainder of the site.
- We have treated the required pollutant removal by using an infiltration trench and three other paver areas, and the total pollutant removed equals 1.50 lbs/yr., which satisfies the required removal of 1.487 lbs/yr.

**5.0 Summary:**

This site has been designed to meet all requirements as set forth by the Town of Ocean City and the Chesapeake and Atlantic Coastal Bays program. If there are any questions regarding the information provided in this report, please feel free to call the office at 410.629.1160.

*Thank you,*

  
Rob Plitko, Jr. E.I.T.  
The Atlantic Group  
Phone: 410.629.1160

*6/14/06*

## Worksheet A: Standard Application Process

### Calculating Pollutant Removal Requirements<sup>1</sup>

**Step 1: Calculate Existing and Proposed Site Imperviousness**

**A. Calculate Percent Imperviousness**

- 1) Site Area within the Critical Area IDA, A = 1.87 acres
- 2) Site Impervious Surface Area, Existing and Proposed, (See Table 4.1 for details)

	(a) Existing (acres)	(b) Proposed (acres)
Roads	<u>0.90</u>	<u>0.74</u>
Parking lots	<u>0.18</u>	<u>0.03</u>
Driveways	<u>0.49</u>	<u>0.74</u>
Sidewalks/paths	<u>0.07</u>	<u>0.02</u>
Rooftops	<u>0.02</u>	<u>-0.16</u>
Decks	<u>1.64</u>	<u>1.37</u>
Swimming pools/ponds		
Other <small>DISCONNECT OF OPEN PAVED AREA</small>		
<b>Impervious Surface Area</b>	<u>1.64</u>	<u>1.37</u>

3) Imperviousness (I)

Existing Imperviousness,  $I_{pre}$  = Impervious Surface Area / Site Area  
 = (Step 2a) / (Step 1)  
 =  $(\frac{1.64}{1.87}) / (\frac{1.37}{1.87})$   
 = 88 %

Proposed Imperviousness,  $I_{post}$  = Impervious Surface Area / Site Area  
 = (Step 2b) / (Step 1)  
 =  $(\frac{1.37}{1.87}) / (\frac{1.07}{1.87})$   
 = 73 %

**B. Define Development Category (circle)**

- 1) New Development: Existing imperviousness less than 15% | (Go to Step 2A)
- 2) Redevelopment: Existing imperviousness of 15% | or more (Go to Step 2B)
- 3) Single Lot Residential Development: Single lot being developed or improved; single family residential development; and more than 250 square feet of impervious area and associated disturbance (Go to Section 5, Residential Approach, for detailed criteria and requirements).

<sup>1</sup> NOTE: All acreage used in this worksheet refers to areas within the IDA of the Critical Area only.

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

**A. New Development**

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

$$= (0.5) (\underline{\hspace{2cm}})$$

$$= \underline{\hspace{2cm}} \text{ lbs/year of total phosphorus}$$

Where:

- $L_{pre}$  = Average annual load of total phosphorus exported from the site prior to development (lbs/year)
- 0.5 = Annual total phosphorus load from undeveloped lands (lbs/acre/year)
- A = Area of the site within the Critical Area IDA (acres)

**B. Redevelopment**

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

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

$$= 0.05 + 0.009 (\underline{88}) = \underline{0.842}$$

$$L_{pre} = (\underline{0.842}) (\underline{0.3}) (\underline{1.87}) (8.16)$$

$$= \underline{3.85} \text{ lbs/year of total phosphorus}$$

Where:  $\frac{\text{Area to Existing BMP}}{\text{Drainage Area}} = \frac{0.67 \text{ Ac}}{1.87 \text{ Ac}} = 36\%$

- $L_{pre}$  = 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
- $I_{pre}$  = Pre-development (existing) site imperviousness (i.e.,  $I = 75$  if site is 75% impervious)
- C = Flow-weighted mean concentration of the 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 constants and unit conversion factors

$$(L_{pre}) (\% \text{ to exist BMP}) = (3.85) (0.36) = 1.38 \text{ lbs/yr} = L_{BMP}$$

$$(L_{BMP}) / (0.65) = 0.897 = L_{Ramp}$$

→ TOTAL EXISTING LOAD REMOVED

From Existing BMP.

$$L_{exist} = 3.85 - 0.897 = 2.95 \text{ lbs/yr} \text{ (REMAINING LOAD FROM EXISTING SITE)}$$

**Step 3: Calculate the Post-Development Load ( $L_{post}$ )****A. New Development and Redevelopment:**

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

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

$$= 0.05 + 0.009 ( \underline{73} ) = \underline{0.707}$$

$$L_{post} = ( \underline{0.707} ) ( \underline{0.9} ) ( \underline{1.87} ) (8.16)$$

$$= \underline{3.24} \text{ lbs/year of total phosphorus}$$

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 the 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 constants and unit conversion factors

**Step 4: Calculate the Pollutant Removal Requirement (RR)**

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

$$= ( \underline{3.24} ) - (0.9) ( \underline{2.95} )$$

$$= \underline{0.59} \text{ lbs/year of total phosphorus}$$

Where:

RR = Pollutant 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)

$$TOTAL_{RR} = RR + LR_{BMP}$$

$$= 0.59 + 0.897$$

$$T_{RR} = \underline{1.487}$$



Section 4.0 Standard Application Process

**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	( $L_{post}$ )	x	( $BMP_{RE}$ )	x	(% DA Served)	=	LR
<u>INF. TRENCH</u>	<u>3.24</u>	x	<u>0.65</u>	x	<u>0.30</u>	=	<u>0.63</u> lbs/year
<u>INF. PAVES (1)</u>	<u>3.24</u>	x	<u>0.65</u>	x	<u>0.05</u>	=	<u>0.11</u> lbs/year
<u>INF. PAVES (2)</u>	<u>3.24</u>	x	<u>0.65</u>	x	<u>0.19</u>	=	<u>0.40</u> lbs/year
<u>INF. PAVES (3)</u>	<u>3.24</u>	x	<u>0.65</u>	x	<u>0.17</u>	=	<u>0.36</u> lbs/year
Load Removed, LR (total) =							<u>1.50</u> lbs/year
Pollutant Removal Requirement, RR (from Step 4) =							<u>1.49</u> lbs/year

Where:

- Load Removed, LR = 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 = Pollutant removal requirement (lbs/year)

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

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

### 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 = 12218.58 SF.

b. Landscaping provided (use Landscaping Conversion Chart)

Large trees	#	<u>43</u>	x	200 SF =	<u>8600</u>	SF
Small trees	#		x	100 SF =		SF
Large shrubs	#		x	75 SF =		SF
Small shrubs	#	<u>293</u>	x	50 SF =	<u>14650</u>	SF

TOTAL VALUE OF LANDSCAPING PROVIDED: 23250 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 = \$ \_\_\_\_\_)~~

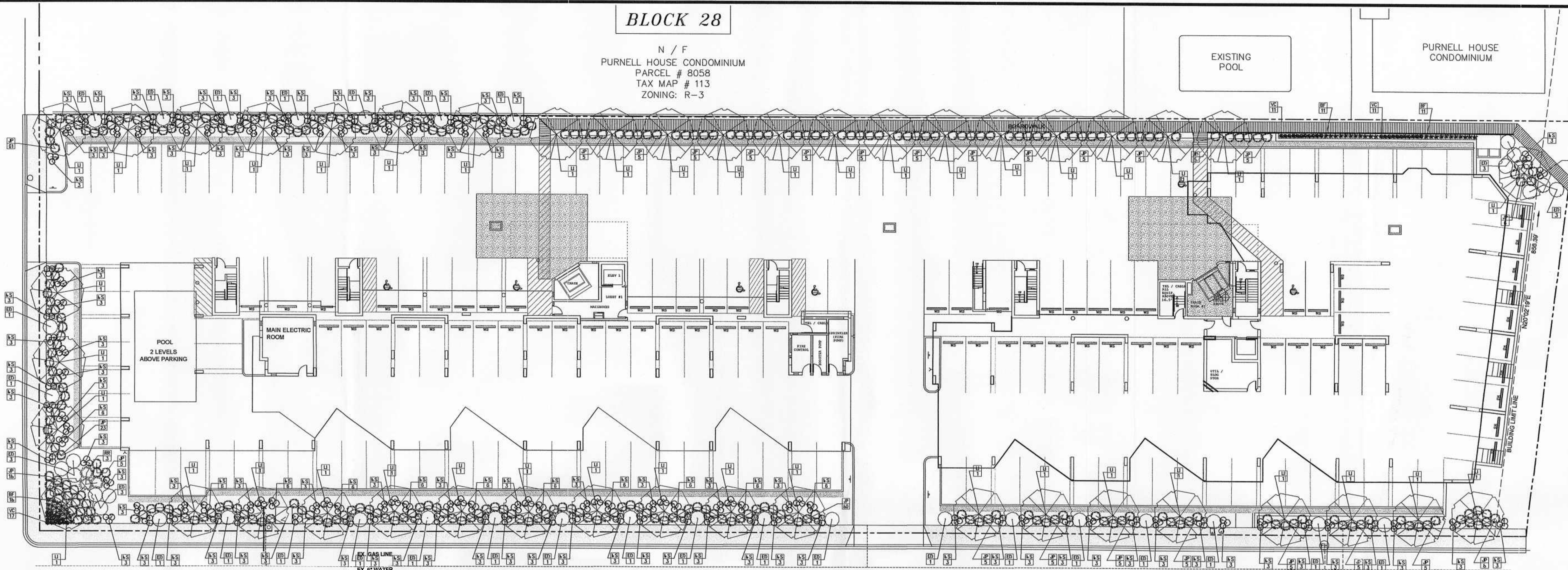
~~b. Total landscaping provided. Attach cost values and plant schedule. (Must equal or exceed "Means" book value.)  
\$ \_\_\_\_\_~~

~~c. Mitigation requirement (if a - b > 0) = Fee in Lieu of landscaping.  
\$ \_\_\_\_\_ (To be paid prior to issuance of Certificate of Occupancy.)~~

**BLOCK 28**

N / F  
 PURNELL HOUSE CONDOMINIUM  
 PARCEL # 8058  
 TAX MAP # 113  
 ZONING: R-3

COASTAL HIGHWAY 120' R/W  
 (MD. ROUTE 528)



**60TH STREET 50' R/W**  
 (PLATTED AS 27TH STREET)

**BLOCK 27**

ZONING: R-3

**Planting Specifications:**

**I. General**

A. The scope of work without limiting the generality thereof consist of furnishing all labor, equipment, and materials, and performing all operations necessary to complete landscape work for the project site as shown on these plans and specifications.

**II. Standards**

A. Inspection and Approval: All plant and miscellaneous material described and specified herein are subject to the approval of the Landscape Architect. This inspection does not waive the right to reject material after it has been delivered on site.

**B. Miscellaneous Materials:**

1. Topsoil shall be either loam, sandy loam, silty loam, or sandy clay loam and free of subsoil, clay, cinders, stones, lumps, trash, or other extraneous matter larger than 1 1/2" in diameter as well as plants or parts of plants or grasses. All topsoil pH shall range from 5 to 7. Soluble salts shall not be higher than 500 parts per million.

2. Back fill mix for plantings pits shall be 2/3 topsoil and 1/3 organic matter.

3. Organic Matter shall be peat moss (Type 1 sphagnum peat moss, finely divided with a pH of 3.1 to 5.0) or leaf compost (thoroughly shredded, composted, and screened leaf material free from trash).

4. Mulch shall be composted, well shredded hardwood mulch, a product of major trees, limbs or stumps and of uniform consistency and dark brown in color. Mulch shall be free of large chunks, twigs, and leaves.

5. Guying Cable shall be five-strand, 3/16" diameter cable.

6. Hose to encase wire or cable for fastening stakes and guys to trees shall be 2 ply 1/2" diameter reinforced garden hose. "Plastic Lock Ties" or equal may be used in place of wire and hose on trees up to 2 1/2" caliper.

7. Stakes shall be sound wood 2" x 2" rough sawn than 11/2" in diameter as well as plants or parts of plants or grasses. All topsoil pH shall range from 5 to 7. Soluble salts shall not be higher than 500 parts per million.

8. Wire for fastening trees to stakes shall be galvanized no. 14 gauge wire.

9. All plant material to be irrigated by drip irrigation system.

**C. Plant Materials:**

1. Plant standards: All plant materials shall be equal to or better than the requirements of the "American Standard for Nursery Stock" latest edition, published by the American Association of Nurserymen. All plants shall be typical of their species and variety, shall have a normal habit of growth, and shall be first quality, sound, vigorous, well branched and with healthy root systems.

2. Plant measurements: All plants shall equal or exceed the measurements specified in the plant schedule, which are the minimum acceptable sizes.

3. Planting Execution

1. Plant Location: Before plant containers have been removed place plant material in position - scaling from plans as necessary. Obtain Landscape Architect's review and approval prior to planting. Landscape Architect reserves the right to interchange or shift plant locations prior to planting.

2. Planting container and balled and burlapped plants: The root ball shall be centered in the plant pit and set plumb and straight. Pull burlap back to edge of ball. Remove as much burlap, wire, fastenings as possible. All synthetic wrap must be removed. Containers shall be removed and root ball burlapped. Each layer of of backfill mix shall be carefully tamped in place and when approximately two-thirds of the hole has been backfilled, the hole shall be filled with water. The top of the root ball shall be slightly above surrounding grade. Trees under 2 1/2" in caliper shall be staked and trees over 2 1/2" in caliper shall be guyed.

3. Planting herbaceous plants and woody ground covers: The planting bed shall be loosened prior to planting by one of the following methods: rototilling, backhoeing and rototilling, or by picking. Soil shall be loosened to a depth of 6". Organic matter shall be spread over the bed to a depth of 2" after the soil has been loosened. The organic matter shall be worked into the bed. Spacing of the plants shall be as shown on landscape plans. The entire bed shall be edged and thoroughly watered.

4. Edging and Mulching: After cultivation and planting all beds shall be edged using the landscape plans as a guide for the outline of beds. A 2" to 3" layer of approved mulch shall be spread around the plant. Areas around isolated plants shall be edged and mulched to the full diameter of the planting pit. Planting beds shall be covered with min. 6" of River Gravel (2" to 4" dia) as approved by Landscape Architect or Owner.

5. Sod: Prepare sod by removing stones over 1 1/2", sticks, roots, rubbish, and other extraneous material from all lawn areas. Adjust soil pH to 5.0 to 7.0. Till soil 4" deep and then grade lawn areas to a smooth surface as required to meet finished grade. Allow for sod thickness. Finish grade for all sod areas is to be one inch below adjacent pavement. Moisten prepared lawn areas before planting if dry. Lay sod within 24 hours. Lay sod to form a solid mass with tightly fitted joints and no overlapping. Stagger strips to offset joints. Roll all sodded areas. Immediately water sod.

6. Cleanup: During planting all areas shall be kept neat and clean, and precautions shall be taken to avoid damage to existing plants, turf, and structures. Upon completion all debris and waste material resulting from planting operations shall be removed from the site and the area cleaned up. Any damaged areas shall be restored to their original condition by the contractor at the contractor's cost.

7. Landscape contractor shall remove all above ground staking, guying and tie material one year after planting.

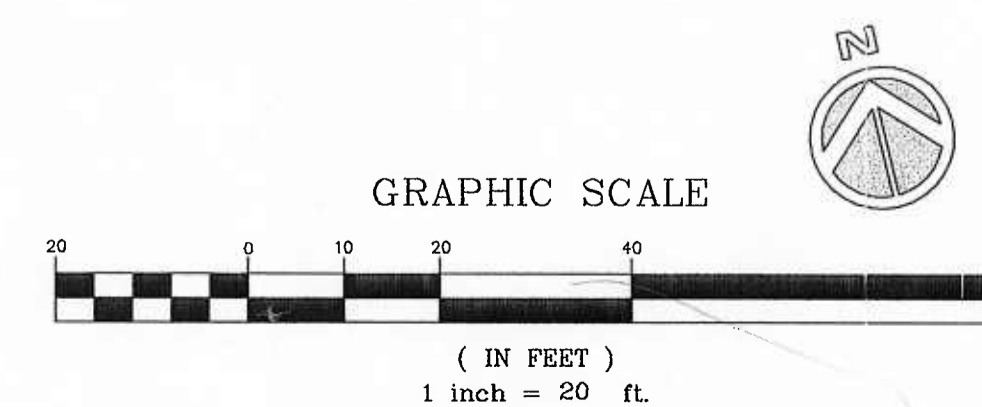
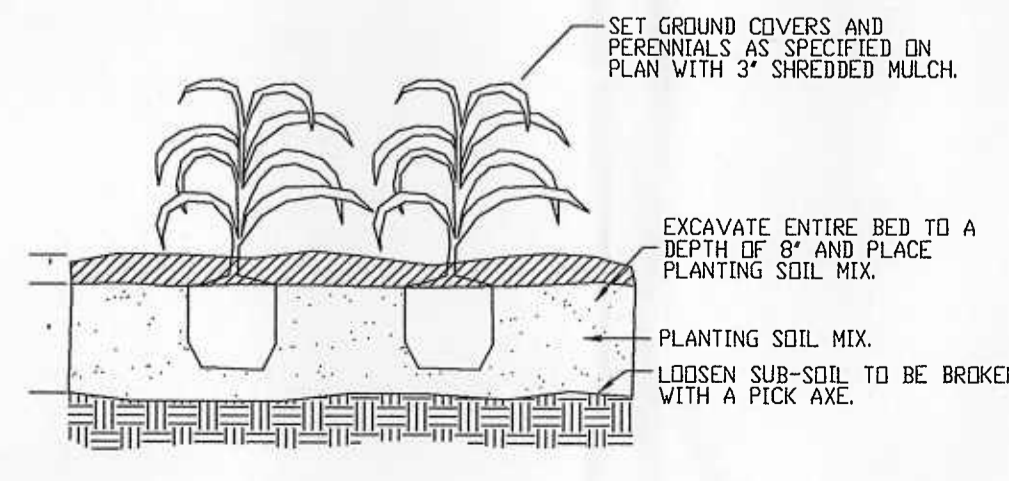
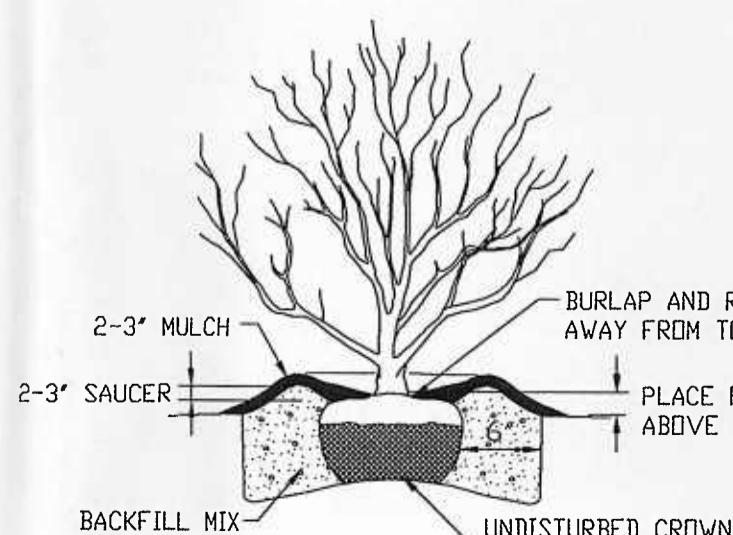
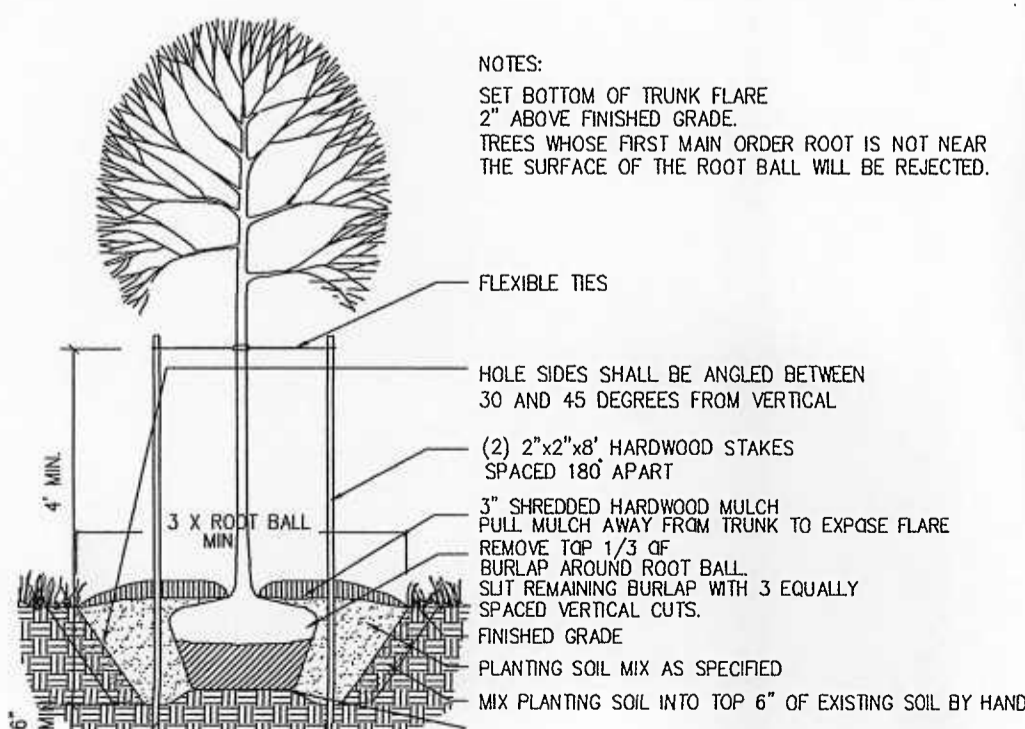
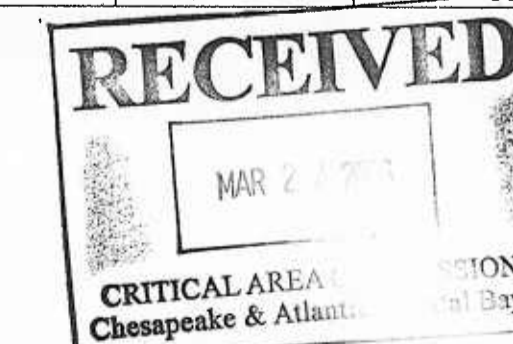
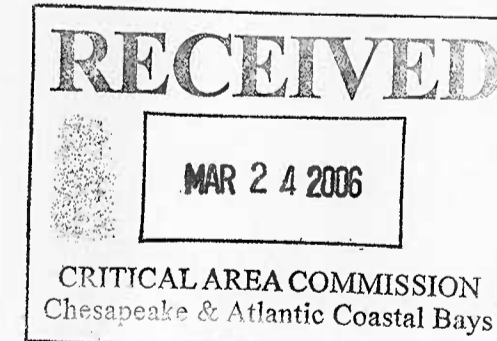
**E. Plant Warranty & Replacement:**

1. Contractor shall furnish a written warranty that each plant will remain alive and in good health for one full year. Any material that is 25% dead or more shall be considered dead and shall be replaced (per kind and size as listed in the plant schedule) at no charge.

2. Replacements: Replacements shall be plants of the same kind and size as listed in Plant Schedule, furnished and planted as in Contract Documents. Contractor shall repair any damage to grades, lawns, or paving caused by replacing plants at no additional cost.

**PLANT SCHEDULE**

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT/REMARKS
<b>TREES:</b>					
LI	43	Lagerstroemia Indica	Wichita Crape Myrtle	5' Height	B&B
<b>SHRUBS:</b>					
EG	38	Abelia 'Edward Gaucher'	Edward Gaucher Abelia	2-3' HT.	CONT.
JP	252	Juniperus x Pfitzeriana 'Armstrongii'	Armstrongii Juniper	2-3' HT.	CONT.
RR	3	Rosa rugosa	Rugosa Rose	2-3' HT.	CONT.
<b>GROUND COVER/ PERENNIALS/ GRASSES:</b>					
BF	40	Festuca Ovina var. Glauca	Blue Fescue	1 QT.	CONT.
MS	336	Miscanthus Sinensis	Variagated Maiden Grass	1 QT.	CONT.
VC	39	Verbena Canadensis 'Homestead Purple'	'Homestead Purple' Verbena	1 QT.	CONT.



**Meridian Condominiums**  
 Ocean City, MD; 60th Street  
 Landscape Plan

Wiles Mensch Corporation  
**Atlantic Group**  
 Civil Engineers  
 Land Planners  
 Landscape Architects  
 Surveyors  
 10044 Old Ocean City Boulevard Berlin, Maryland 21811 Ph: 410.629.1160



Date:	02/10/2006
Scale:	1"=20'
Project No.:	148.05
File:	Meridian
Drawn By:	RP
Approved By:	CMC
Sheet:	P-4

Date:	
Revision/ Issue:	
No.:	

COASTAL HIGHWAY 120' R/W  
(MD. ROUTE 528)

BLOCK 28

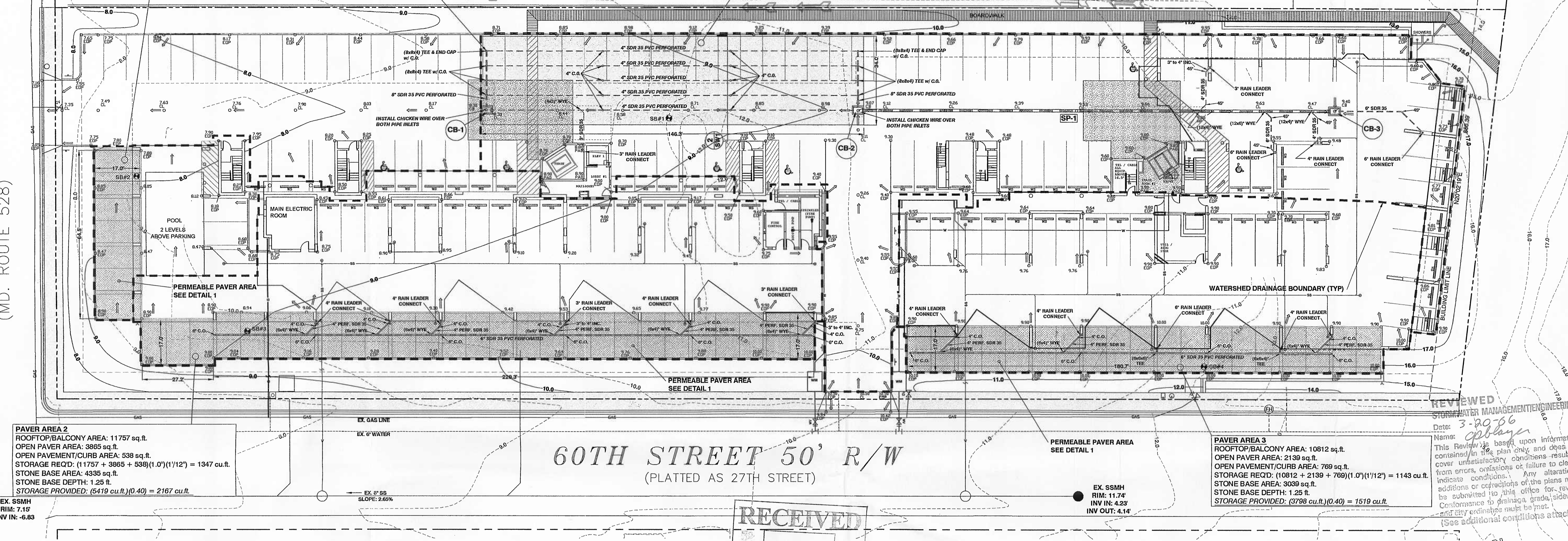
N / F  
PURNELL HOUSE CONDOMINIUM  
PARCEL # 8058  
TAX MAP # 113  
ZONING: R-3

INFILTRATION AREA (SEE DETAIL 2)  
ROOFTOP/BALCONY AREA: 7156 sq.ft.  
OPEN PAVEMENT/CURB AREA: 17835 sq.ft.  
STORAGE REQ'D: (7156 + 17835)(1.0)(1/12") = 2083 cu.ft.  
STONE BASE AREA: 4943 sq.ft.  
STONE BASE DEPTH: 1.10 ft.  
TOTAL PIPE STORAGE:  
8" PVC @ 43.36 LF => 15.13 cu.ft.  
4" PVC @ 706.53 LF => 61.66 cu.ft.  
TOTAL STONE STORAGE => [(4943)(1.10) - (76.79)(0.40)] = 2144 cu.ft.  
TOTAL STORAGE PROVIDED = 2144 + 76.79 => 2221 cu.ft.

PAVER AREA 1  
ROOFTOP/BALCONY AREA: 2387 sq.ft.  
POOL AREA: 873 sq.ft.  
OPEN PAVEMENT AREA: 917 sq.ft.  
CURB: 64 sq.ft.  
STORAGE REQ'D: (2387 + 873 + 917 + 64)(1.0)(1/12") = 353 cu.ft.  
STONE BASE AREA: 1085 sq.ft.  
STONE BASE DEPTH: 0.85 ft.  
STORAGE PROVIDED: (922 cu.ft.)(0.40) = 369 cu.ft.

PURNELL HOUSE CONDOMINIUM

EXISTING POOL



PAVER AREA 2  
ROOFTOP/BALCONY AREA: 11757 sq.ft.  
OPEN PAVEMENT AREA: 3835 sq.ft.  
OPEN PAVEMENT/CURB AREA: 538 sq.ft.  
STORAGE REQ'D: (11757 + 3865 + 538)(1.0)(1/12") = 1347 cu.ft.  
STONE BASE AREA: 4335 sq.ft.  
STONE BASE DEPTH: 1.25 ft.  
STORAGE PROVIDED: (5419 cu.ft.)(0.40) = 2167 cu.ft.

PAVER AREA 3  
ROOFTOP/BALCONY AREA: 10812 sq.ft.  
OPEN PAVEMENT AREA: 2189 sq.ft.  
OPEN PAVEMENT/CURB AREA: 789 sq.ft.  
STORAGE REQ'D: (10812 + 2139 + 789)(1.0)(1/12") = 1143 cu.ft.  
STONE BASE AREA: 3039 sq.ft.  
STONE BASE DEPTH: 1.25 ft.  
STORAGE PROVIDED: (3798 cu.ft.)(0.40) = 1519 cu.ft.

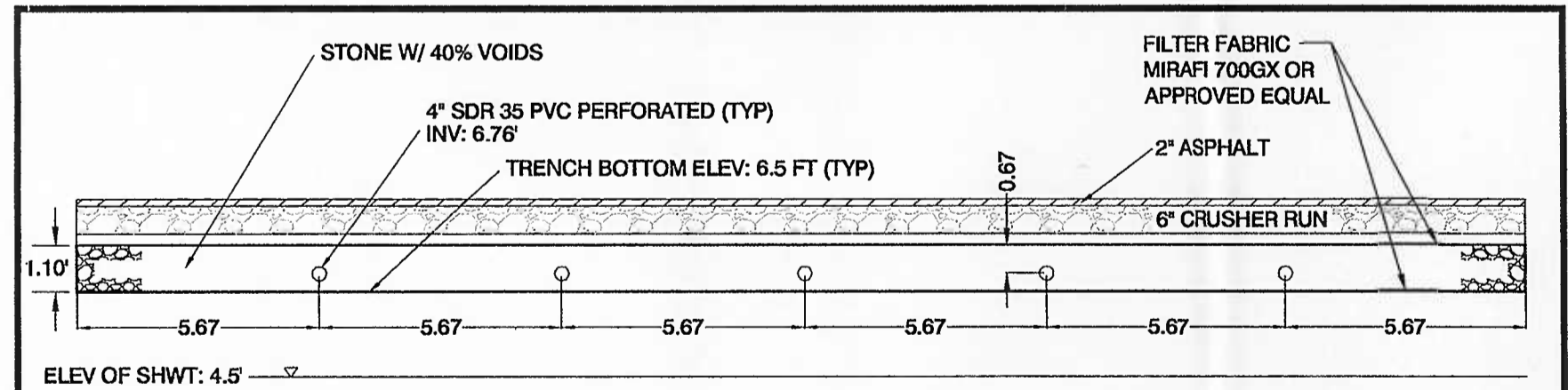
60TH STREET 50' R/W  
(PLATTED AS 27TH STREET)

RECEIVED  
MAR 24 2006  
CRITICAL AREA COMMISSION  
Chesapeake & Atlantic

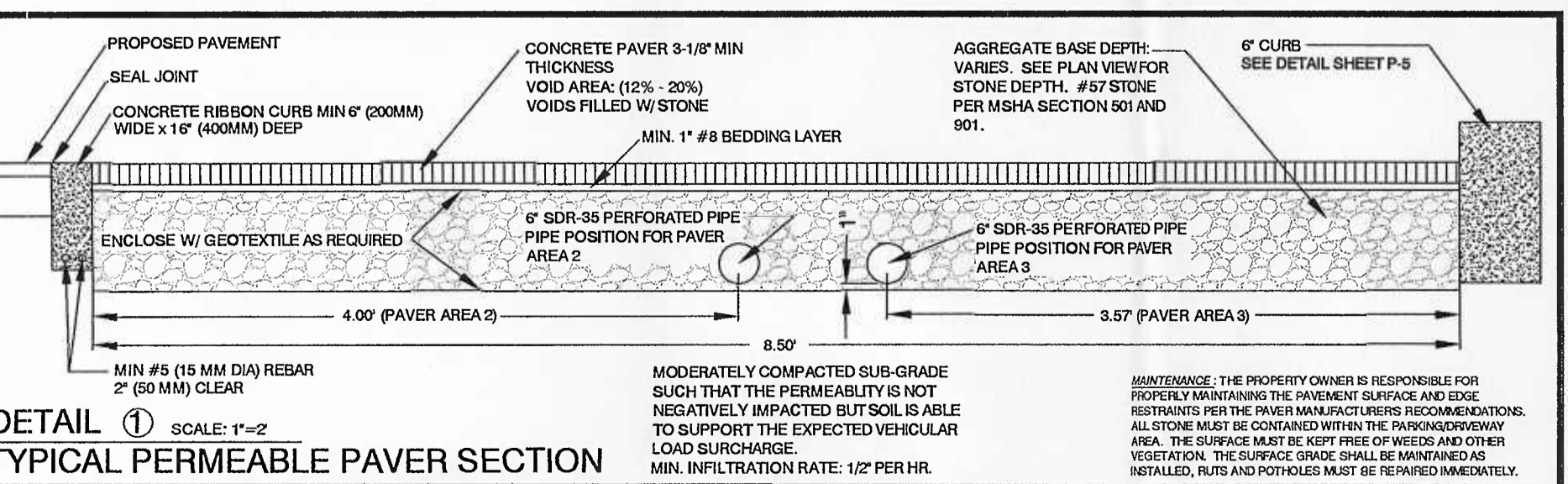
REVIEWED  
STORMWATER MANAGEMENT ENGINEERING  
Date: 3-20-06  
Name: [Signature]  
This Review is based upon information contained in the plan only, and does not cover unanticipated conditions resulting from errors, omissions or failure to clearly indicate conditions. Any alterations, additions or corrections of the plans must be submitted to this office for review. Conformance to drainage grade, sidewalk, and any ordinances must be met. (See additional conditions attached)

EX. SSMH  
RIM: 7.15  
INV IN: -6.83

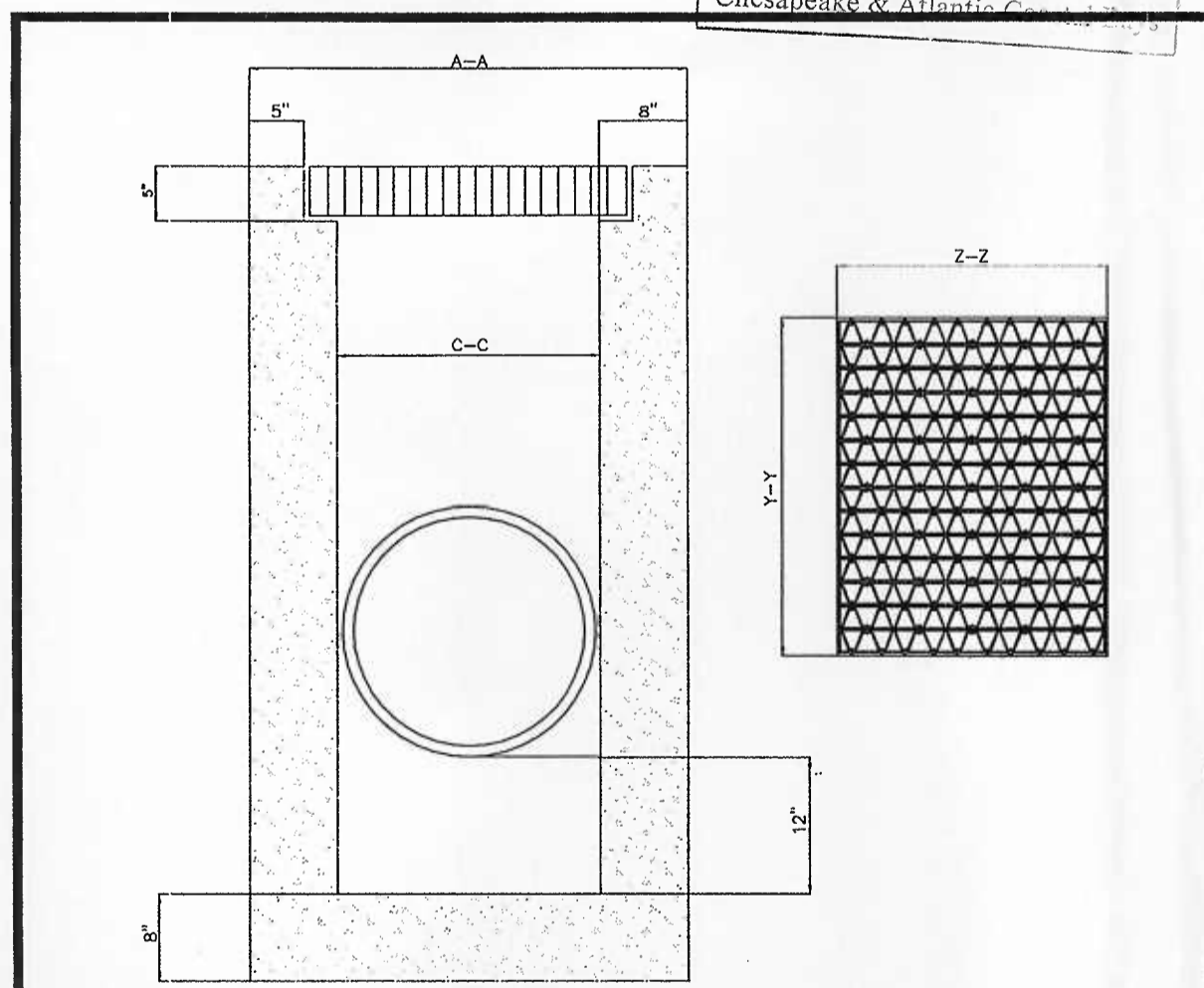
EX. SSMH  
RIM: 11.74  
INV IN: 4.23  
INV OUT: 4.14



DETAIL 2  
INFILTRATION TRENCH SECTION  
SCALE: 1" = 4'



DETAIL 1  
TYPICAL PERMEABLE PAVER SECTION  
SCALE: 1" = 2'



PARKWAY CATCH BASIN AND DRAIN GRATE DATA

NUMBER OF CATCH BASIN	LARGEST PIPE SIZE	CATCH BASIN DATA					GRATING DATA			
		INCHES	FEET	INCHES	FEET	INCHES	FEET	FEET	WEIGHT	
P.W.-B-0-1	30"	15'	8"	3 1/2"	11 1/2"	4 1/2"	2 1/4"	3 1/2"	8.39"	178 LBS.
P.W.-B-0-2	36"	24'	8"	3 1/2"	11 1/2"	4 1/2"	2 1/4"	3 1/2"	13.11"	273 LBS.
P.W.-B-0-3	42"	24'	8"	3 1/2"	11 1/2"	4 1/2"	2 1/4"	3 1/2"	14.36"	311 LBS.
P.W.-B-0-4	48"	24'	8"	3 1/2"	11 1/2"	4 1/2"	2 1/4"	3 1/2"	15.62"	336 LBS.

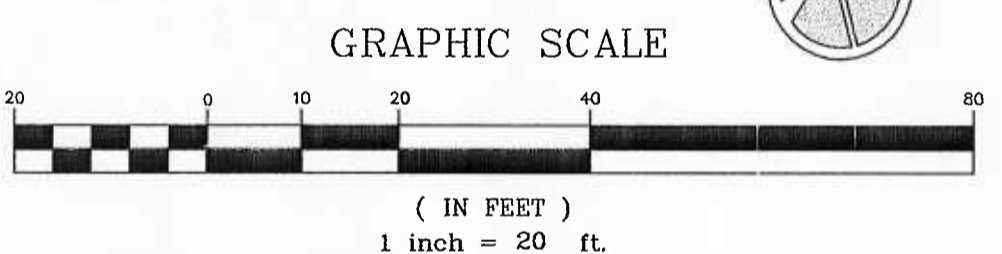
- SOIL BORING 1 - EXISTING ELEVATION 11.75' SHWT ELEV = 4.5'
- SOIL BORING 2 - EXISTING ELEVATION 9.0' SHWT ELEV = 4.5'
- SOIL BORING 3 - EXISTING ELEVATION 9.67' SHWT ELEV = 4.5' INFILTRATION RATE = 200 in./hr.
- SOIL BORING 4 - EXISTING ELEVATION 12.38' SHWT ELEV = 4.5'

CATCH BASIN SCHEDULE

STRUCTURE	RIM (FT)	INV IN (FT)	INV OUT (FT)	INV OUT (FT)
CB-1(PWBW)	8.30		6.75 (4')	6.60 (4')
CB-2(PWBW)	9.07	6.75 (12')	6.75 (4')	6.60 (4')
CB-3(PWBW)	9.40	7.2 (8')	7.2 (12')	

STORMWATER PIPE SCHEDULE

PIPE	TYPE	LENGTH	INV IN (FT)	INV OUT (FT)	SLOPE (%)
SP-1	12" SDR-35	178.62 LF	7.2	6.75	0.25



TOTAL SITE AREA: 1.87 Ac.  
TOTAL DISTURBED AREA: 1.87 Ac.  
EXISTING IMPERVIOUS AREA: 1.64 Ac.  
  
PROPOSED IMPERVIOUS AREA: 1.53 Ac.  
TOTAL OPEN PAVEMENT AREA: 0.16 Ac.  
PROPOSED ADJUSTED IMPERVIOUS AREA = (PROPOSED IMP. AREA - OPEN PAVEMENT AREA) = 1.37 Ac.  
EXISTING STORAGE: 2964 cu.ft.  
TOTAL PROPOSED STORAGE: 6276 cu.ft.

- Maintenance Schedule:
- Maintenance responsibility for BMP shall be vested with the responsible party by means of a legally binding and enforceable maintenance agreement that is executed as a condition of plan approval.
  - The owner of the property shall maintain in good condition and promptly repair and restore all grade surfaces, walls, drains, dams and structures, vegetation, erosion and sediment control measures and other protective devices.
  - The BMP will be maintained according to design and inspected according to the Maintenance Criteria quarterly in the first year and annually thereafter. An annual written inspection report shall be required.

- Maintenance Criteria:
- Implement source controls, such as street sweeping, landscaping practices and other good housekeeping practices.
  - Pipes shall be inspected quarterly for the first year to determine how quickly materials accumulate in them. Accumulated materials can be vacuumed out with a vector. High-pressure cleaning of the holes or slots in the pipes to reduce clogging.
  - Pervious surfaces should be maintained to infiltrate water. Should filtering capacity of BMP diminishes substantially, the top few inches of discolored sediment should be removed from the filter bed when the accumulation shall be removed without damaging the vegetation.
  - BMP with grass cover shall be mowed a minimum of 3 times per growing season to maintain maximum grass heights less than 12 inches.
  - Stone Rip-Rap Outfall Protection to be inspected to assure it is free of debris.

BMP Construction:  
See Sediment & Erosion Control Plan Sheet SE 2 for Sequence of Construction.

- Notes:
- Contact the Town of Ocean City to schedule a pre-construction meeting at least 48 hours prior to commencing any site work. Failure to do so may result in an immediate "Stop Work" order.
  - All proposed cleanouts for the stormwater system shall be traffic bearing cleanouts with recessed plugs.
  - If the pile cap elevations change, the Engineer at Atlantic Group shall be contacted immediately to verify that there are not any conflicts with the proposed stormwater system.

"I, THE UNDERSIGNED, CERTIFY THAT 1.: ANY CLEARING, GRADING, CONSTRUCTION OR DEVELOPMENT, OR ALL OF THESE WILL BE DONE PURSUANT TO THIS PLAN AND 2.: THAT RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE CERTIFICATION OF TRAINING AT THE DEPARTMENT APPROVED TRAINING PROGRAM (GREEN CARD CERTIFICATION FOR CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT.)"

"I, THE UNDERSIGNED, CERTIFY THAT THE STORMWATER MANAGEMENT AS-BUILT SHALL BE IN ACCORDANCE WITH THE APPROVED STORMWATER MANAGEMENT PLAN AND SHALL BE EXECUTED AFTER PROJECT COMPLETION."

"I, THE UNDERSIGNED, CERTIFY THAT THE STORMWATER MANAGEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED STORMWATER MANAGEMENT PLAN."

DATE: \_\_\_\_\_ OWNER'S SIGNATURE \_\_\_\_\_



Date: 02/10/2006  
Scale: 1"=20'  
Project No.: 148.05  
File: MWS/SM  
Drawn By: RP  
Approved By: CMC  
Sheet: SW-1

Revision/Issue:

No.	Date

Meridian Condominiums  
Ocean City, MD; 60th Street  
Stormwater Management Plan

Civil Engineers  
Land Planners  
Landscape Architects  
Surveyors

