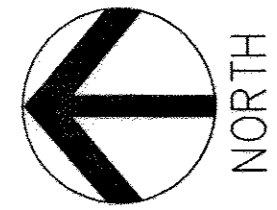




RESIDENTIAL DEVELOPMENT



AGE OF CEDAR  
GE RESIDENTIAL  
DEVELOPMENT

**LEGEND**

- EXISTING CONTOUR
- TREELINE
- DRAINAGE AREA
- APL PROPERTY LINE
- ADJACENT PROPERTY LINE
- FLOOD PLAIN
- 26 EXISTING BUILDING
- 29 PROPOSED BUILDING
- PARKING LOT
- EDGE OF ROAD
- \* POTENTIAL STORMWATER CONTROL LOCATION

**SEDIMENT CONTROL & POND CONSTRUCTION**

< > BY THE DEVELOPER:  
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

*Robert A. Warner* 4/25/02  
SIGNATURE OF DEVELOPER DATE  
PRINT NAME BELOW SIGNATURE

< > BY THE ENGINEER:  
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

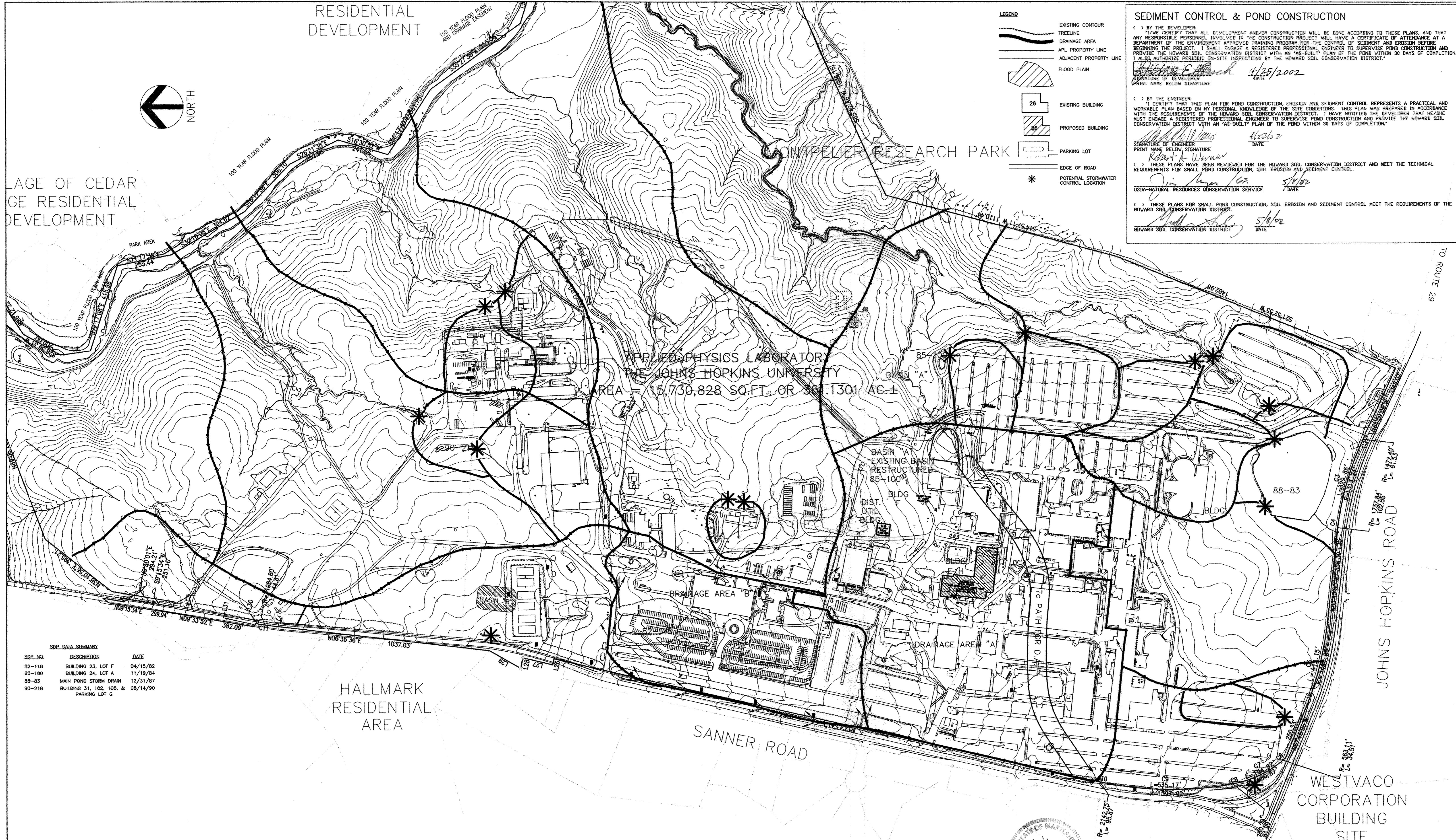
*Robert A. Warner* 4/25/02  
SIGNATURE OF ENGINEER DATE  
PRINT NAME BELOW SIGNATURE

< > THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

*Jim Meyer* 5/1/02  
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

< > THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*William A. ...* 5/1/02  
HOWARD SOIL CONSERVATION DISTRICT DATE



**SDP DATA SUMMARY**

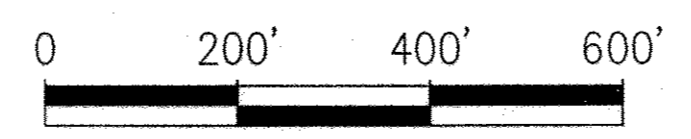
| SDP NO. | DESCRIPTION                            | DATE     |
|---------|--|----------|
| 82-118  | BUILDING 23, LOT F                     | 04/15/82 |
| 85-100  | BUILDING 24, LOT A                     | 11/19/84 |
| 88-83   | MAIN POND STORM DRAIN                  | 12/31/87 |
| 90-218  | BUILDING 31, 102, 108, & PARKING LOT G | 08/14/90 |

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 5/1/02  
CHIEF, DEVELOPMENT ENGINEERING DIVISION M14 DATE

*[Signature]* 5/20/02  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DIRECTOR N/A DATE



**AMT**  
A. MORTON THOMAS AND ASSOCIATES, INC.  
CONSULTING ENGINEERS  
12750 TWINBROOK PARKWAY, SUITE 200, ROCKVILLE MD 20852  
TEL (301) 881-2546 FAX (301) 881-0814  
AMT FILE # 98-153

Einhorn  
Yaffee  
Prescott

|                |      |                               |     |    |        |
|----------------|------|-------------------------------|-----|----|--------|
| DES: B. WARNER |      |                               |     |    |        |
| DRN: S. ITANI  |      |                               |     |    |        |
| CHK: B. WARNER |      |                               |     |    |        |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK APP |

APPLIED PHYSICS LABORATORY  
THE JOHNS HOPKINS UNIVERSITY - POND A  
**OVERALL DRAINAGE AREA**

TAX MAP 41 PARCEL 123  
ELECTION DISTRICT NO. 5  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET C2

SHEET 2 OF 24

F-02-40

**LEGEND**

|  |   |  |                                  |
|--|---|--|----------------------------------|
|  | EXISTING CONTOUR                        |  | OBSERVATION AREA                 |
|  | TREELINE                                |  | 30" DBH TREE                     |
|  | FOREST STAND                            |  | SOILS CLASSIFICATION             |
|  | DRAINAGE AREA                           |  | PROPOSED INFILTRATION TRENCH     |
|  | 100 YEAR FLOODPLAIN                     |  | CATCH BASIN                      |
|  | STREAM VALLEY BUFFER                    |  | EXISTING MANHOLE                 |
|  | WETLANDS                                |  | SANITARY SEWER MANHOLE           |
|  | 25' WETLAND BUFFER                      |  | PROPOSED MANHOLE                 |
|  | SOIL CLASSIFICATION                     |  | PROPOSED STORMCEPTOR             |
|  | STREAMS                                 |  | EXISTING POST INDICATOR VALVE    |
|  | DRAINAGE DITCH                          |  | EXISTING WATER VALVE             |
|  | PROPERTY LINE                           |  | EXISTING FIRE HYDRANT            |
|  | ADJACENT PROPERTY LINE                  |  | EXISTING CLEANOUT                |
|  | EXISTING SANITARY SEWER                 |  | PROPOSED STORM DRAIN CATCH BASIN |
|  | PROPOSED SANITARY SEWER                 |  |                                  |
|  | EXISTING WATER                          |  |                                  |
|  | PROPOSED WATER                          |  |                                  |
|  | EXISTING STORM DRAIN                    |  |                                  |
|  | PROPOSED STORM DRAIN                    |  |                                  |
|  | EXISTING STORM DRAIN TO BE REMOVED      |  |                                  |
|  | EXISTING WATER TO BE REMOVED            |  |                                  |
|  | EXISTING SANITARY SEWER TO BE REMOVED   |  |                                  |
|  | EXISTING SANITARY SEWER TO BE ABANDONED |  |                                  |

**PROPERTY NOTES**

- COURSES AND COORDINATES ARE BASED ON THE MARYLAND STATE COORDINATE SYSTEM (NAD 83) AND ARE DERIVED FROM THE FOLLOWING JOHNS HOPKINS UNIVERSITY CONTROL STATIONS:
 

| STATION | NORTH       | EAST         |
|---------|-------------|--------------|
| HOPKINS | 544836.5300 | 1340825.3542 |
| G12     | 550256.5002 | 1342325.2642 |
| G7      | 548107.0328 | 1341025.0830 |
| G8      | 549478.7005 | 1341170.4345 |
- OWNERSHIP: JOHNS HOPKINS UNIVERSITY (SEE BELOW)
- THE INFORMATION PROVIDED AND OBTAINED INDICATES THAT TITLE TO THE SUBJECT PROPERTY IS VESTED IN THE FOLLOWING DEEDS:
 

BEING ALL OF THE FOLLOWING DEEDS:

DEED DATED OCTOBER 9, 1952 AND RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND IN LIBER M.W.B.237, FOLIO 451, WHICH WAS CONVEYED BY GEORGE WOLFF, EVA WOLFF AND M. JEAN DAVIDSON TO THE JOHNS HOPKINS UNIVERSITY.

BEING PART OF THE FOLLOWING DEEDS:

DEED DATED JULY 30, 1952 AND RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND IN LIBER M.W.B. 234, FOLIO 304, WHICH WAS CONVEYED BY RAYMOND D. MOORE AND ELIZABETH A. MOORE TO THE JOHNS HOPKINS UNIVERSITY.

DEED DATED JULY 31, 1952 AND RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND IN LIBER M.W.B.234, FOLIO 336, WHICH WAS CONVEYED BY HOWARD E. WESSEL, DOROTHY L. WESSEL, ROLAND F. WESSEL AND DOROTHY E. WESSEL TO THE JOHNS HOPKINS UNIVERSITY.

DEED DATED NOVEMBER 24, 1953 AND RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND IN LIBER M.W.B. 250, FOLIO 283, WHICH WAS CONVEYED BY JEAN M. DAVIDSON, GEORGE WOLFF AND EVA WOLFF TO THE JOHNS HOPKINS UNIVERSITY.

DEED DATED APRIL 8, 1963 AND RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND IN LIBER 398, FOLIO 244, WHICH WAS CONVEYED BY MILDRED B. PRICE, JAMES N. PRICE AND MILDRED B. PRICE, EXECUTRIX OF THE ESTATE OF SCOTT F. BROWN TO THE JOHNS HOPKINS UNIVERSITY.

DEED DATED MAY 31, 1963 AND RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND IN LIBER 400, FOLIO 625, WHICH WAS CONVEYED BY HERBERT W. WESSEL AND GERTRUDE L. WESSEL TO JOHNS HOPKINS UNIVERSITY.
- STORMWATER MANAGEMENT POND WILL BE PRIVATELY OWNED AND MAINTAINED.

**SEDIMENT CONTROL & POND CONSTRUCTION**

BY THE DEVELOPER: I HAVE CERTIFIED THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

*Robert A. Warner* 4/25/02  
SIGNATURE OF DEVELOPER DATE

BY THE ENGINEER: I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

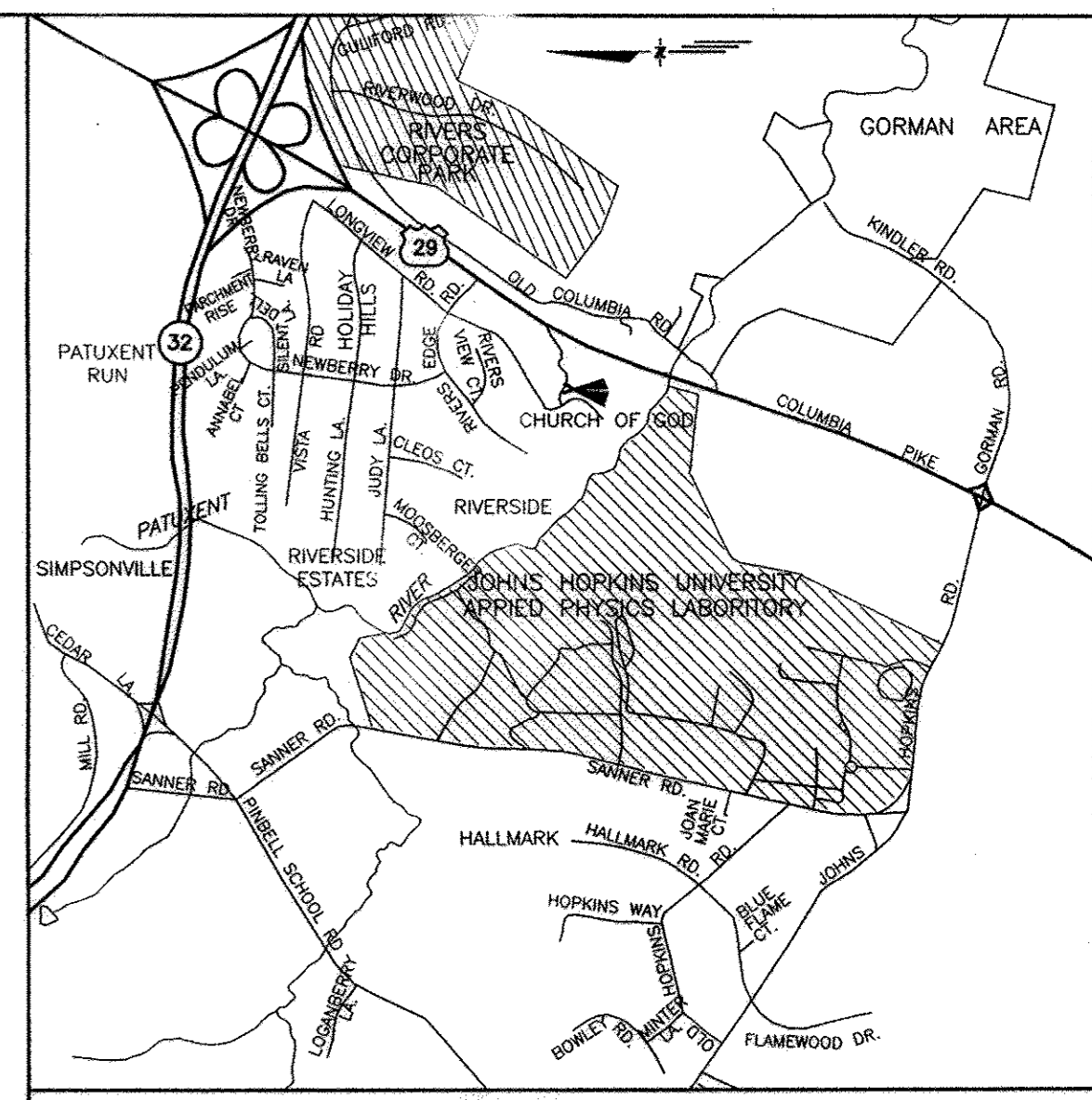
*Robert A. Warner* 4/22/02  
SIGNATURE OF ENGINEER DATE

BY THE USDA: THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

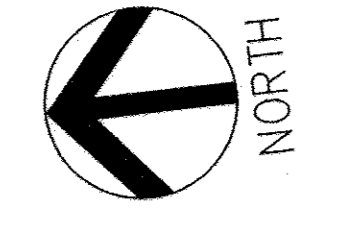
*John J. Jones* 5/6/02  
USDA NATURAL RESOURCES CONSERVATION SERVICE DATE

BY THE HOWARD SOIL CONSERVATION DISTRICT: THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

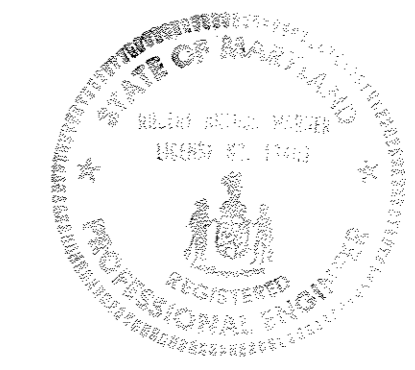
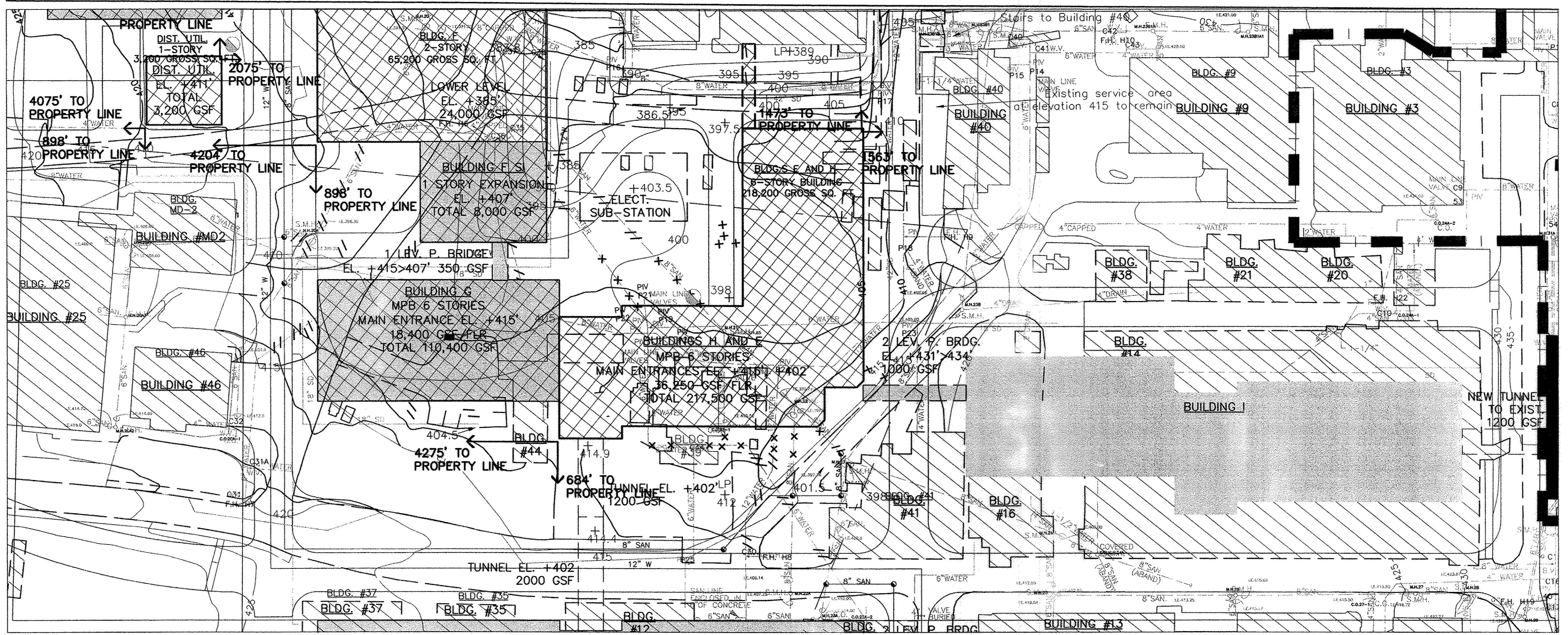
*John J. Jones* 5/6/02  
HOWARD SOIL CONSERVATION DISTRICT DATE



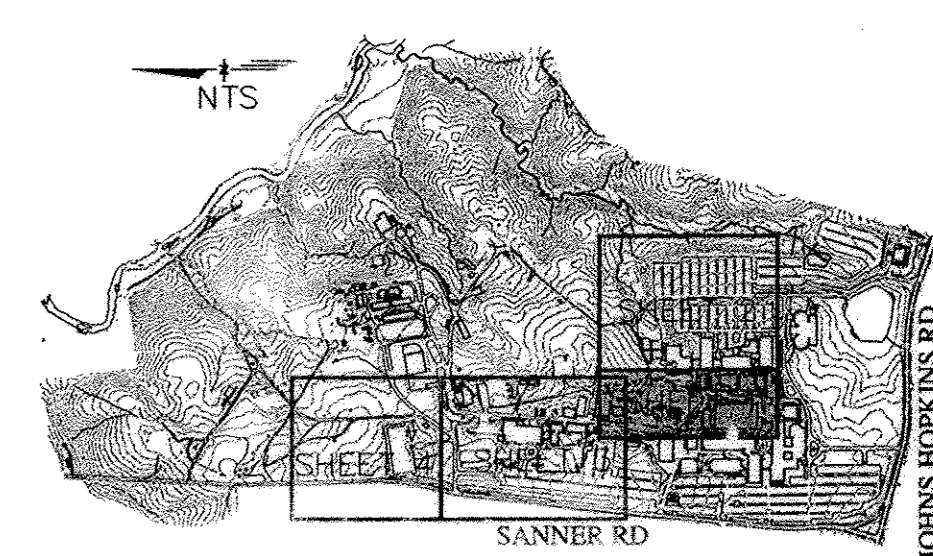
VICINITY MAP  
SCALE: 1"=2000'



**MATCHLINE A-A**



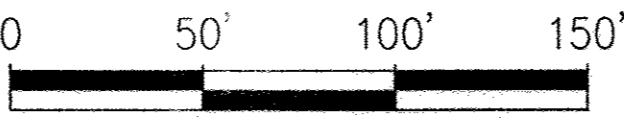
**KEY LEGEND**



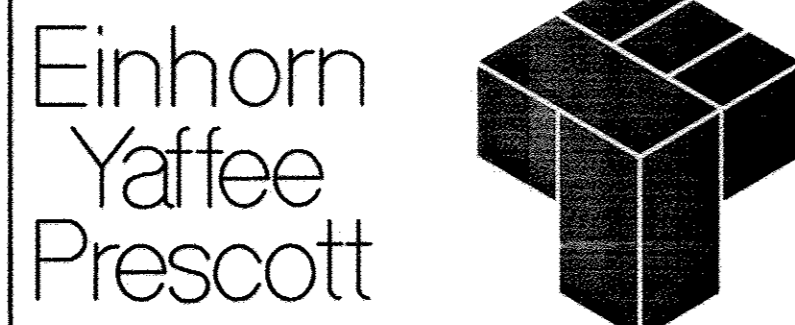
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF DEVELOPMENT ENGINEERING DIVISION MKM 5/17/02  
 CHIEF, DIVISION OF LAND DEVELOPMENT WJD 5/22/02  
 DIRECTOR N/A

OWNER/DEVELOPER  
 APPLIED PHYSICS LABORATORY--  
 THE JOHNS HOPKINS UNIVERSITY  
 11100 JOHNS HOPKINS ROAD  
 LAUREL, MARYLAND 20707

SURVEYOR  
 WHITMAN, REQUARDT, AND ASSOCIATES  
 2315 SAINT PAUL STREET  
 BALTIMORE, MARYLAND 21218



|                |      |                               |     |    |        |
|----------------|------|-------------------------------|-----|----|--------|
| DES: B. WARNER |      |                               |     |    |        |
| DRN: S. ITANI  |      |                               |     |    |        |
| CHK: B. WARNER |      |                               |     |    |        |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK APP |



APPLIED PHYSICS LABORATORY  
 THE JOHNS HOPKINS UNIVERSITY -- POND A  
**DRAINAGE AREA "A"**  
 TAX MAP 41 PARCEL 3  
 ELECTION DISTRICT 5  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET C3  
 SHEET 3 OF 24

**SEDIMENT CONTROL & POND CONSTRUCTION**

BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature: *[Signature]* DATE: 4/15/2002  
 SIGNATURE OF DEVELOPER DATE

BY THE ENGINEER:  
 I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

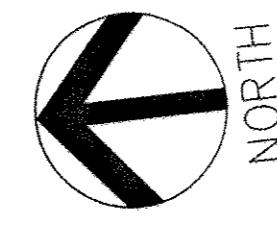
Signature: *[Signature]* DATE: 4/15/02  
 SIGNATURE OF ENGINEER DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

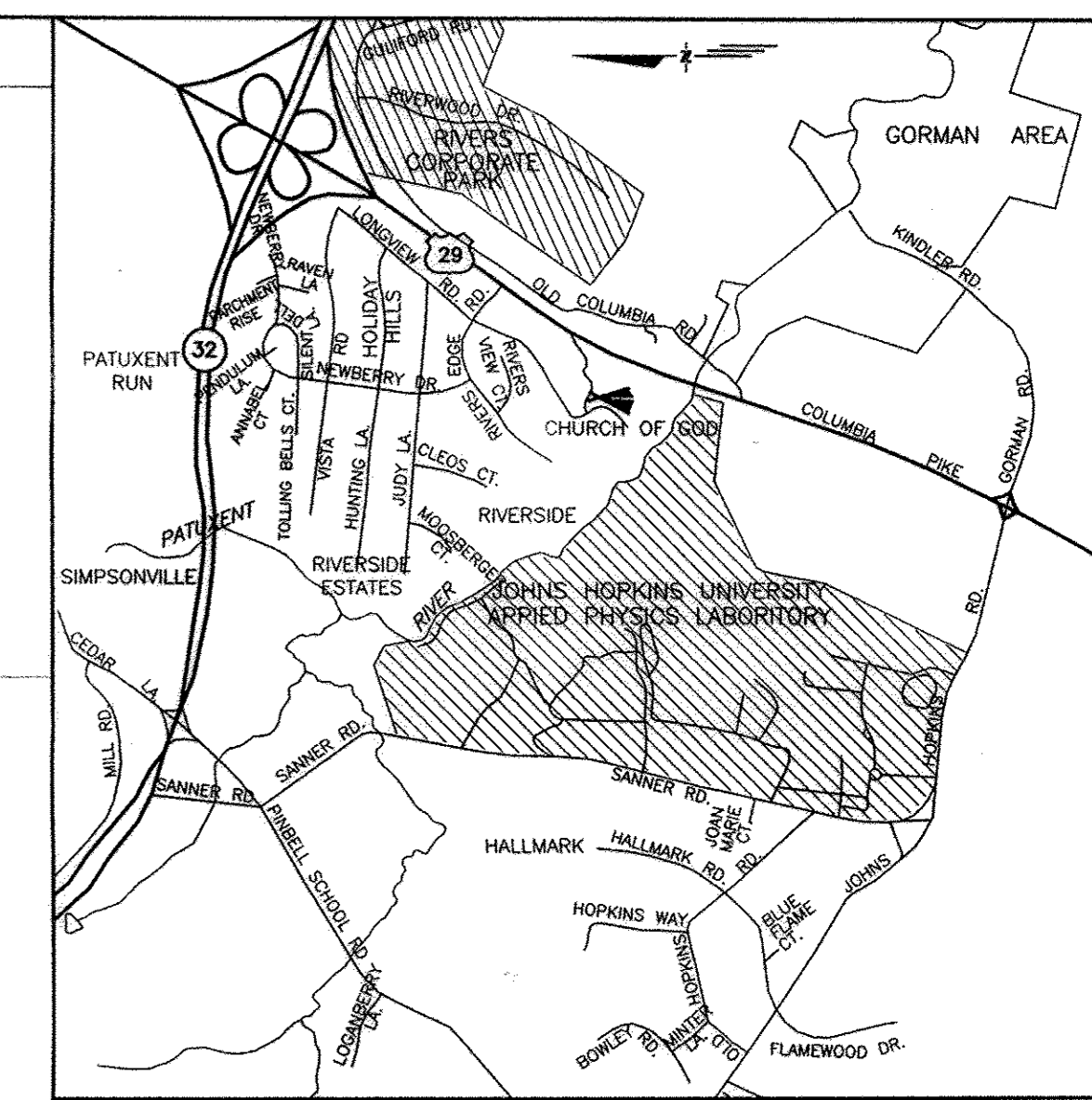
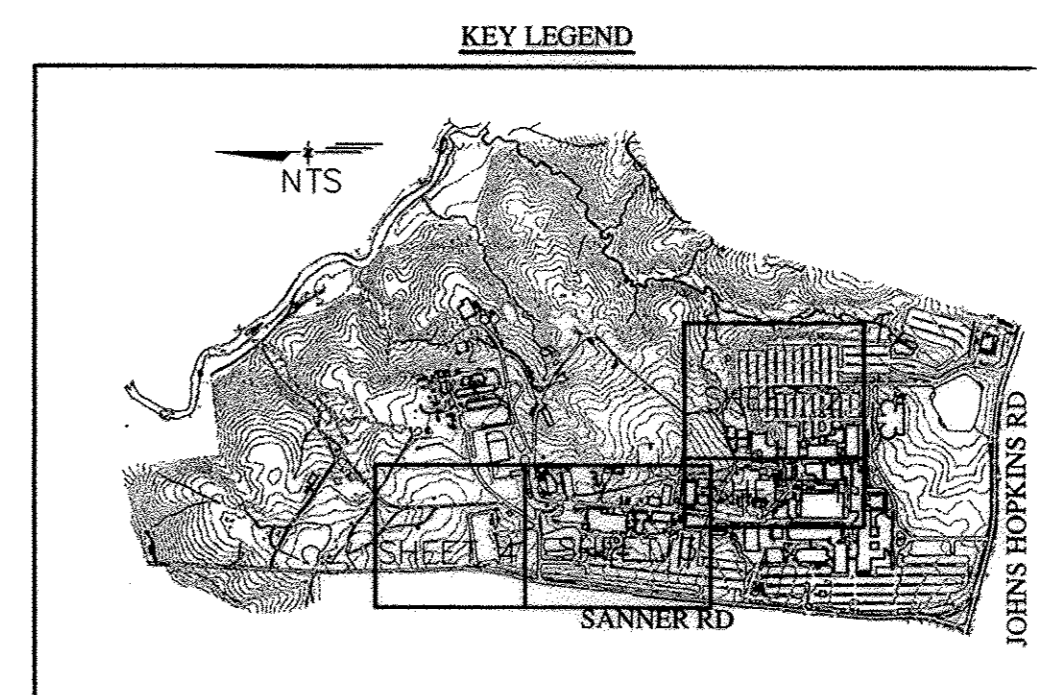
Signature: *[Signature]* DATE: 5/16/02  
 USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

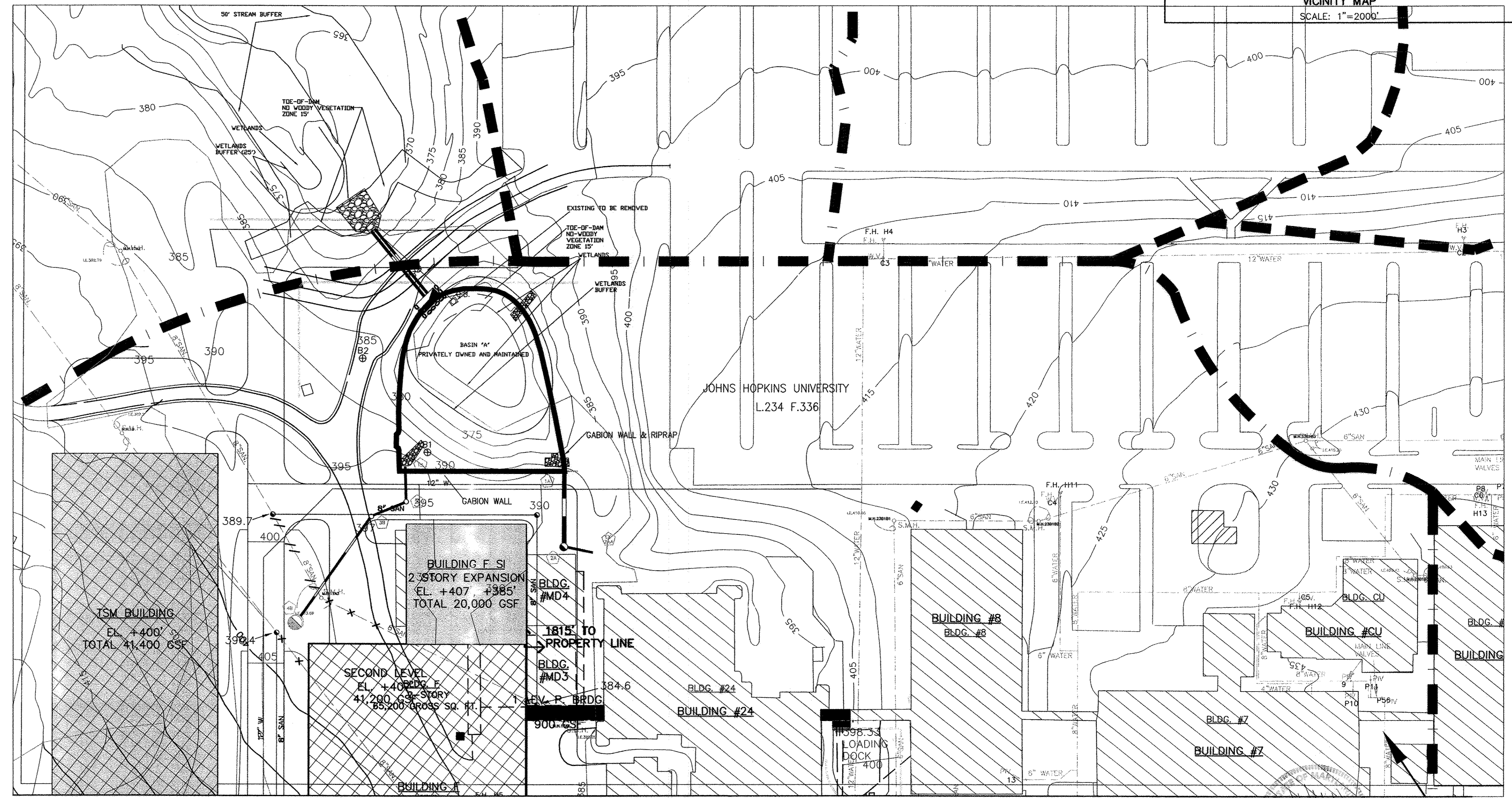
Signature: *[Signature]* DATE: 5/16/02  
 HOWARD SOIL CONSERVATION DISTRICT DATE



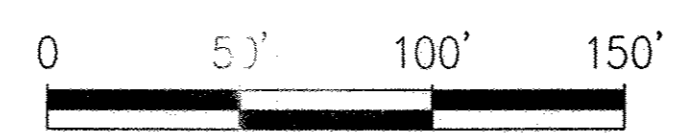
**NOTE:**  
 1. NO SWM PERIMETER LANDSCAPING IS REQUIRED BECAUSE BASIN "A" IS INTERNAL TO THE SITE AND PLANTINGS ARE PROVIDED IN THE FACILITY.



- LEGEND**
- EXISTING CONTOUR
  - TREELINE
  - FOREST STAND
  - DRAINAGE AREA
  - 100 YEAR FLOODPLAIN
  - STREAM VALLEY BUFFER
  - STREAM SYSTEM
  - WETLANDS
  - 25' WETLAND BUFFER
  - SOIL CLASSIFICATION BOUNDARY
  - STREAMS
  - DRAINAGE DITCH
  - PROPERTY LINE
  - ADJACENT PROPERTY LINE
  - 8" SAN. EXISTING SANITARY SEWER
  - 8" SAN. PROPOSED SANITARY SEWER
  - 12" W. EXISTING WATER
  - 12" W. PROPOSED WATER
  - 18" DR. EXISTING STORM DRAIN
  - 18" SD. PROPOSED STORM DRAIN
  - 18" DR. EXISTING STORM DRAIN TO BE REMOVED
  - 12" W. EXISTING WATER TO BE REMOVED
  - 8" SAN. EXISTING SANITARY SEWER TO BE REMOVED
  - 8" SAN. EXISTING SANITARY SEWER TO BE ABANDONED
  - OBSERVATION AREA
  - 30" DBH TREE
  - SOILS CLASSIFICATION
  - PROPOSED INFILTRATION TRENCH
  - CATCH BASIN C.B. C.B.
  - EXISTING MANHOLE M.H.
  - SANITARY SEWER MANHOLE S.M.H.
  - PROPOSED MANHOLE
  - PROPOSED STORMCEPTOR
  - EXISTING POST INDICATOR VALVE P.I.V.
  - EXISTING WATER VALVE W.V.
  - EXISTING FIRE HYDRANT F.H.C.
  - EXISTING CLEANOUT C.O.
  - PROPOSED STORM DRAIN CATCH BASIN
  - EXISTING BUILDING
  - PROPOSED BUILDING
  - PARKING LOT
  - EDGE OF ROAD



MATCHLINE A-A



APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 Signature: *[Signature]* DATE: 5/17/02  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 Signature: *[Signature]* DATE: 5/16/02  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 Signature: *[Signature]* DATE: X

OWNER/DEVELOPER  
 APPLIED PHYSICS LABORATORY—  
 THE JOHN'S HOPKINS UNIVERSITY  
 11100 JOHN'S HOPKINS ROAD  
 LAUREL, MARYLAND 20707

SURVEYOR  
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 BALTIMORE, MARYLAND 21218

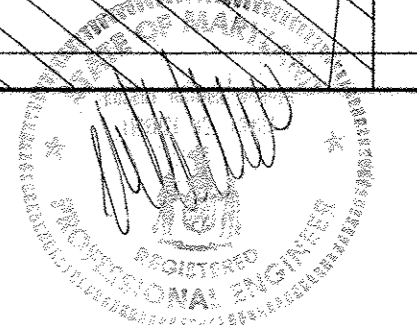
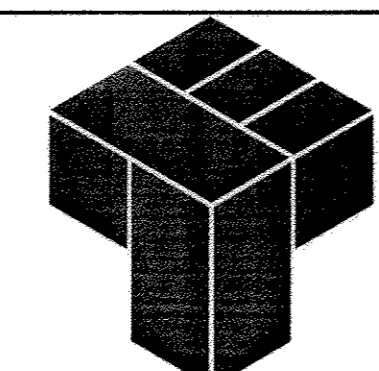
|                |      |                               |     |    |        |
|----------------|------|-------------------------------|-----|----|--------|
| DES: B. WARNER |      |                               |     |    |        |
| DRN: S. ITANI  |      |                               |     |    |        |
| CHK: B. WARNER |      |                               |     |    |        |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK APP |

APPLIED PHYSICS LABORATORY  
 THE JOHN'S HOPKINS UNIVERSITY — POND A  
**DRAINAGE AREA "A"**  
 TAX MAP 41 PARCELS 123  
 ELECTION DISTRICT NO. 5  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET C4  
 SHEET 4 OF 24

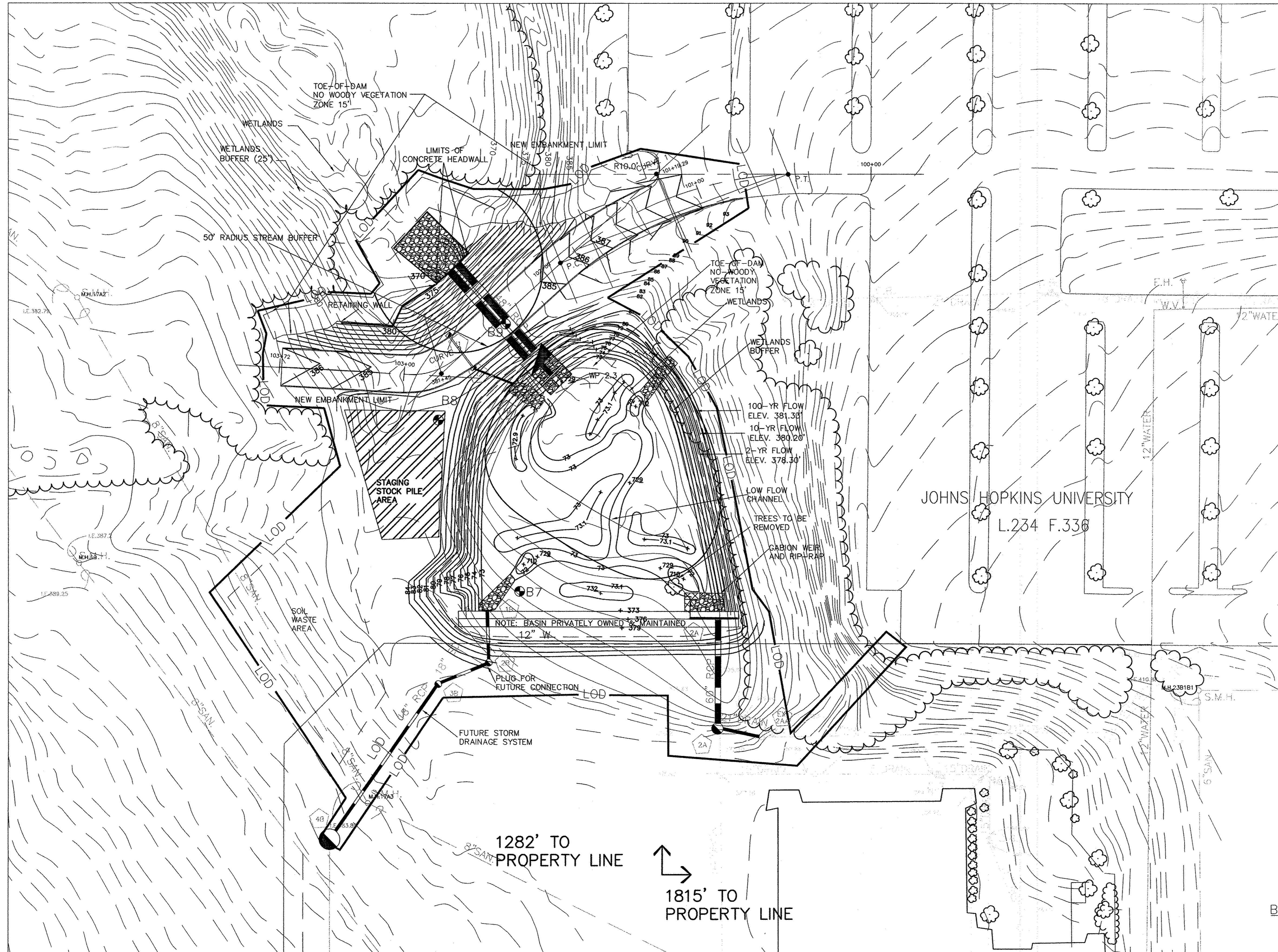


Einhorn  
 Yaffee  
 Prescott



F-02-40





**NOTE:**

1. AREA "C" VALUE: 0.85
2. AREA "A" IMPERVIOUS PERCENTAGE: 63%
3. AREA "A" BASIN HAZARD CLASSIFICATION: "A"
4. AREA "A" BASIN HYDRAULICS FOR 43.2 ACRE AREA:

| YEAR     | INFLOW (CFS) | RELEASE / DISCHARGE (CFS) | STORAGE VOLUME (ACRE-FT) |
|----------|--------------|---------------------------|--------------------------|
| 2 YEAR   | 69.66        | 61.47                     | 1.92                     |
| 10 YEAR  | 162.75       | 127.33                    | 2.90                     |
| 100 YEAR | 234.83       | 225.61                    | 3.50                     |

**SEDIMENT CONTROL & POND CONSTRUCTION**

( ) BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]*  
 SIGNATURE OF DEVELOPER DATE 4/25/02  
 PRINT NAME BELOW SIGNATURE

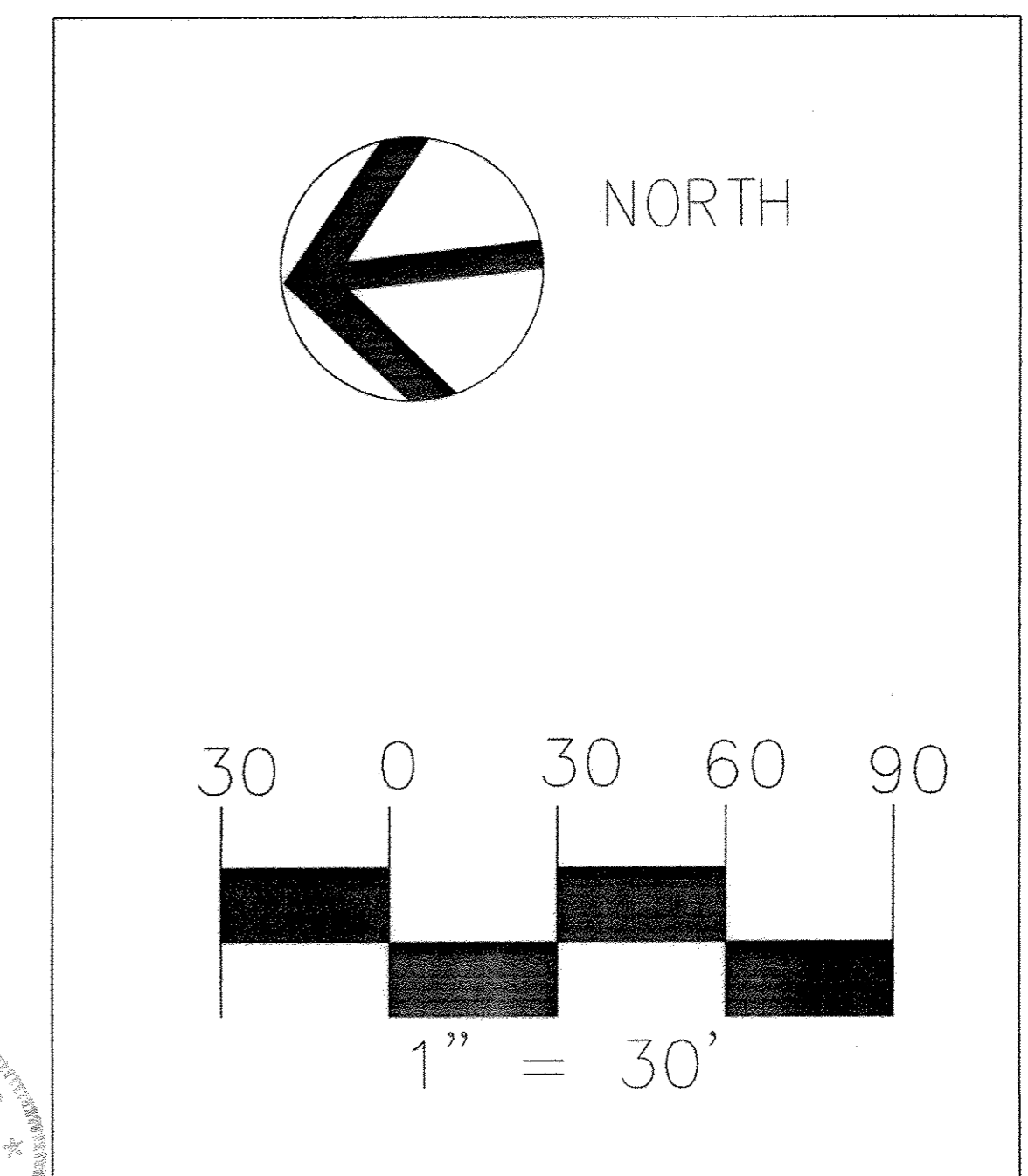
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*[Signature]*  
 SIGNATURE OF ENGINEER DATE 4/20/02  
 PRINT NAME BELOW SIGNATURE

( ) THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

*[Signature]*  
 USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE 5/6/02

( ) THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
*[Signature]*  
 HOWARD SOIL CONSERVATION DISTRICT DATE 5/6/02



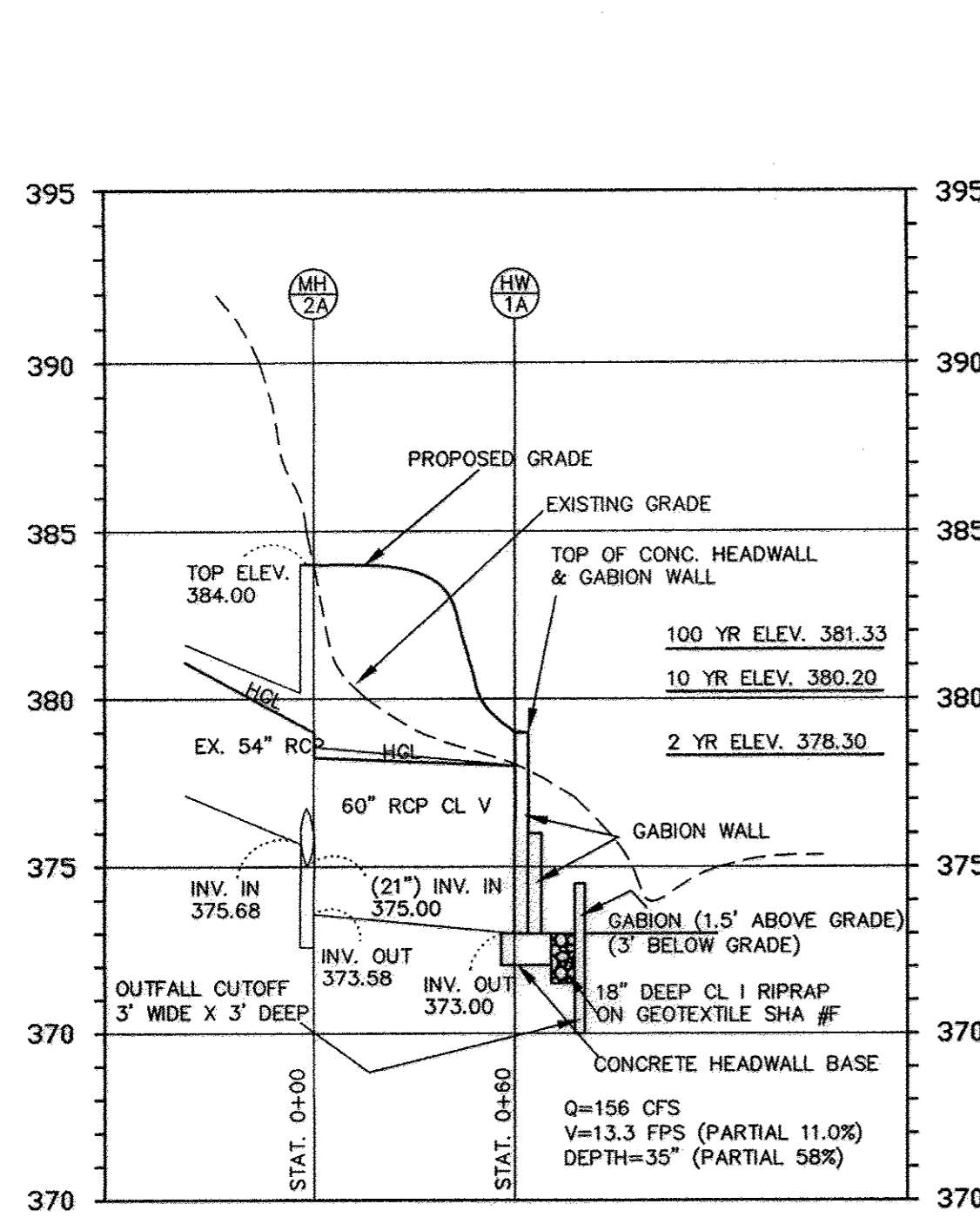
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*[Signature]*  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE 5/17/02  
*[Signature]*  
 CHIEF, DIVISION OF LAND DEVELOPMENT WB DATE 5/22/02  
 DIRECTOR N/A DATE X



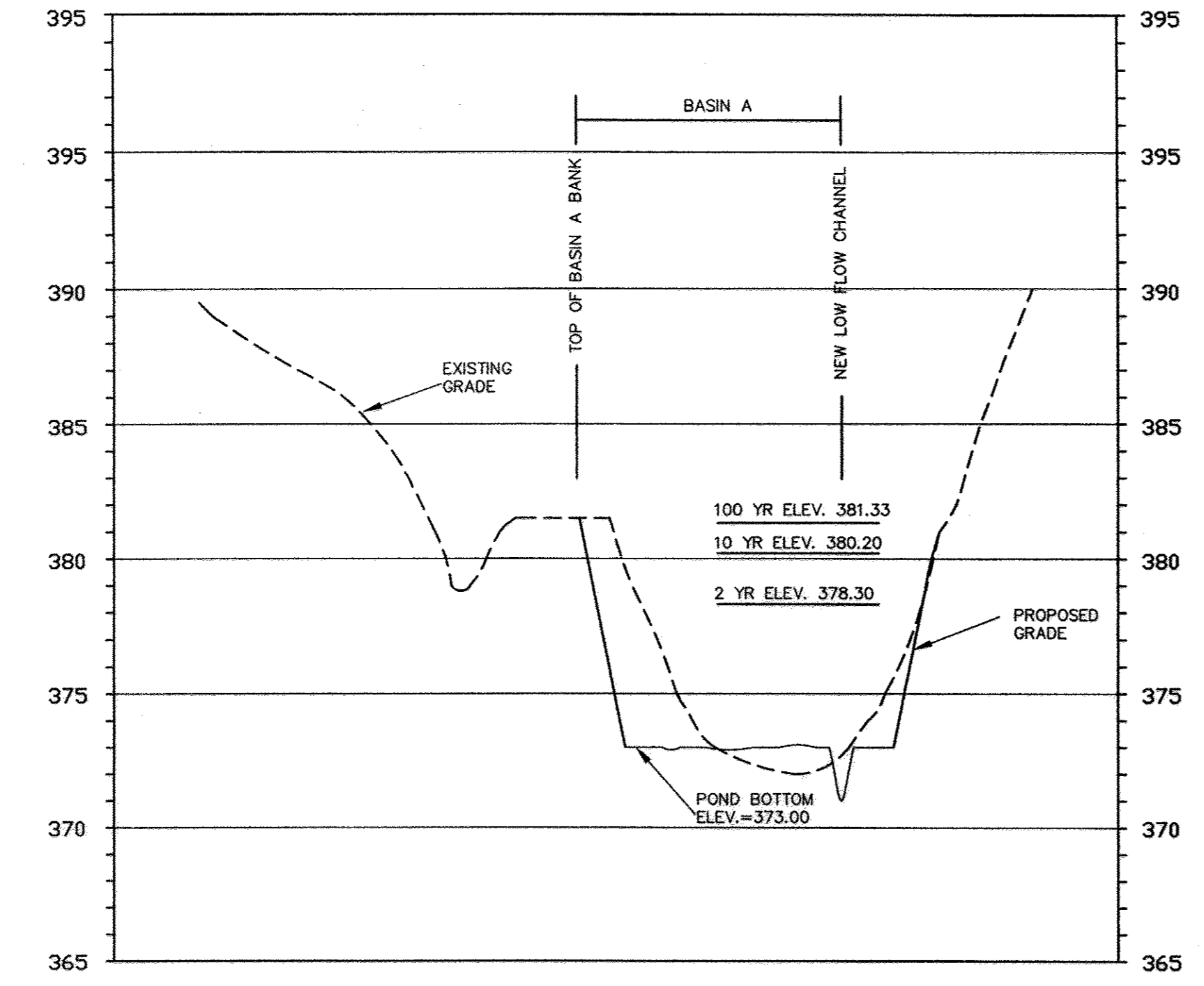
|                |      |                               |     |    |        |
|----------------|------|-------------------------------|-----|----|--------|
| DES: B. WARNER |      |                               |     |    |        |
| DRN: S. ITANI  |      |                               |     |    |        |
| CHK: B. WARNER |      |                               |     |    |        |
| DATE: 04/24/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK APP |

APPLIED PHYSICS LABORATORY  
 THE JOHNS HOPKINS UNIVERSITY - POND A  
**POND GRADING/DRAINAGE PLAN**  
 TAX MAP 41 PARCEL 123  
 ELECTION DISTRICT NO. 5  
 HOWARD COUNTY, MARYLAND

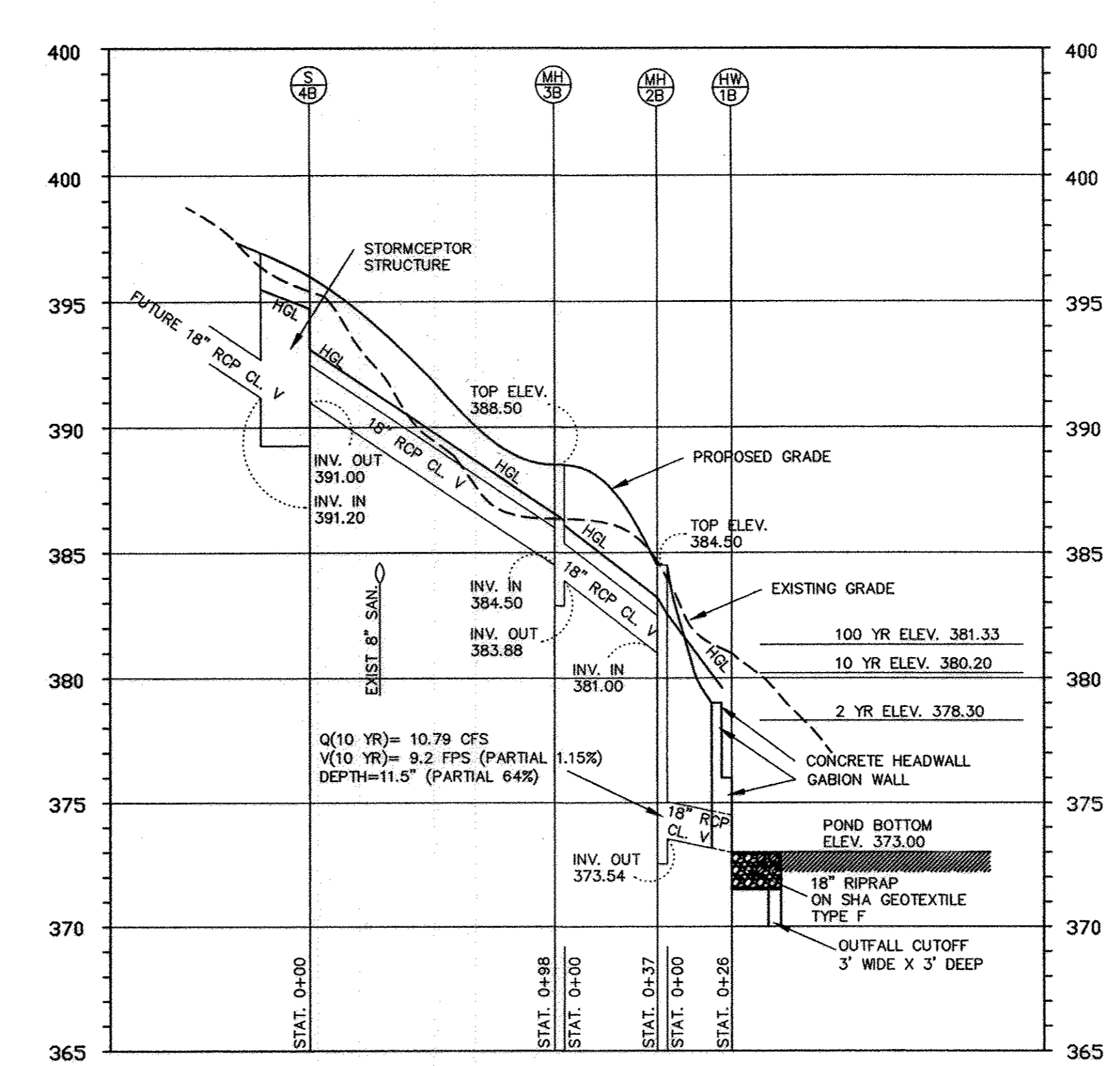
SCALE AS 1" = 30'  
 SHEET C6  
 SHEET 6 OF 24



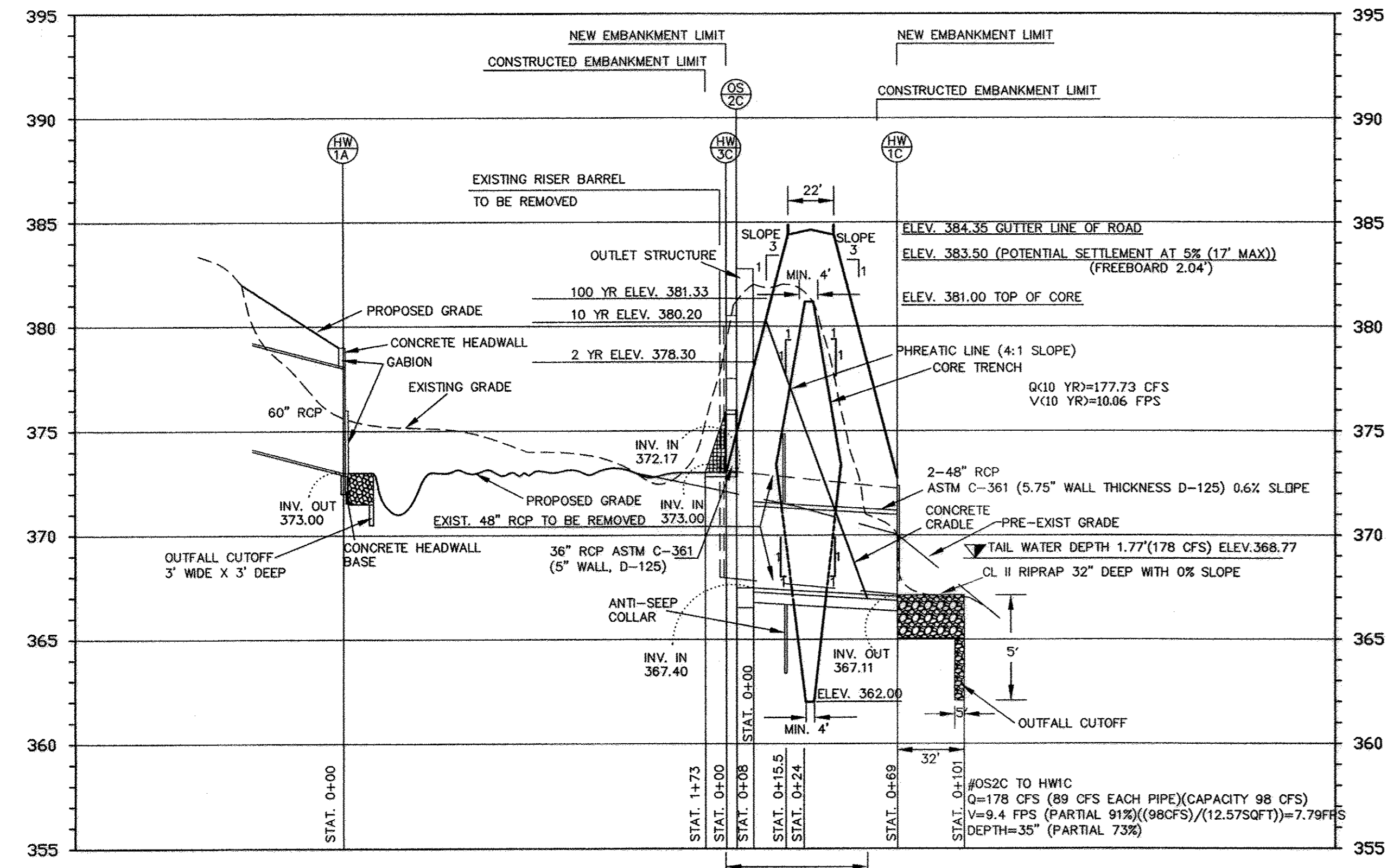
1 PIPE PROFILE THRU 54" & 60" RCP  
SCALE: HORIZ. 1"=50'  
VERT. 1"=5'



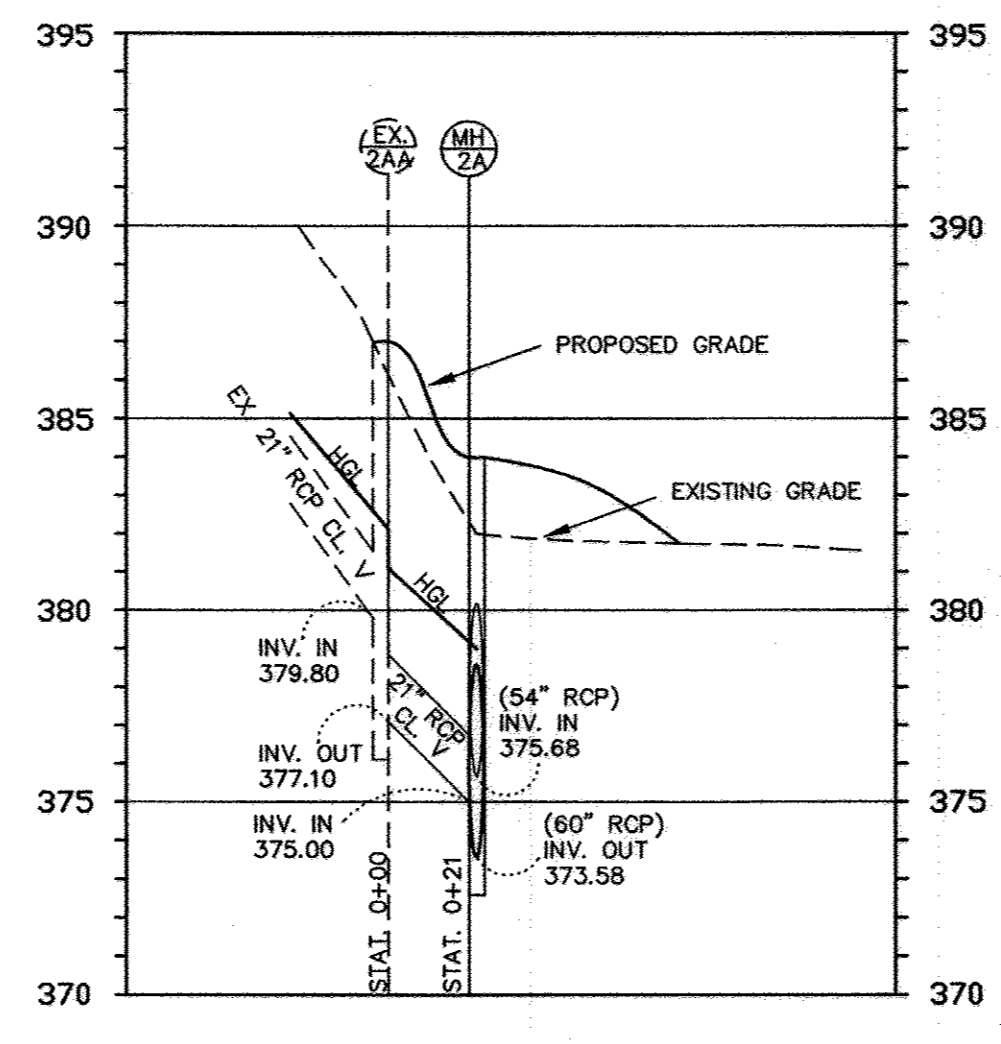
2 POND SECTION A-A  
SCALE: HORIZ. 1"=50'  
VERT. 1"=5'



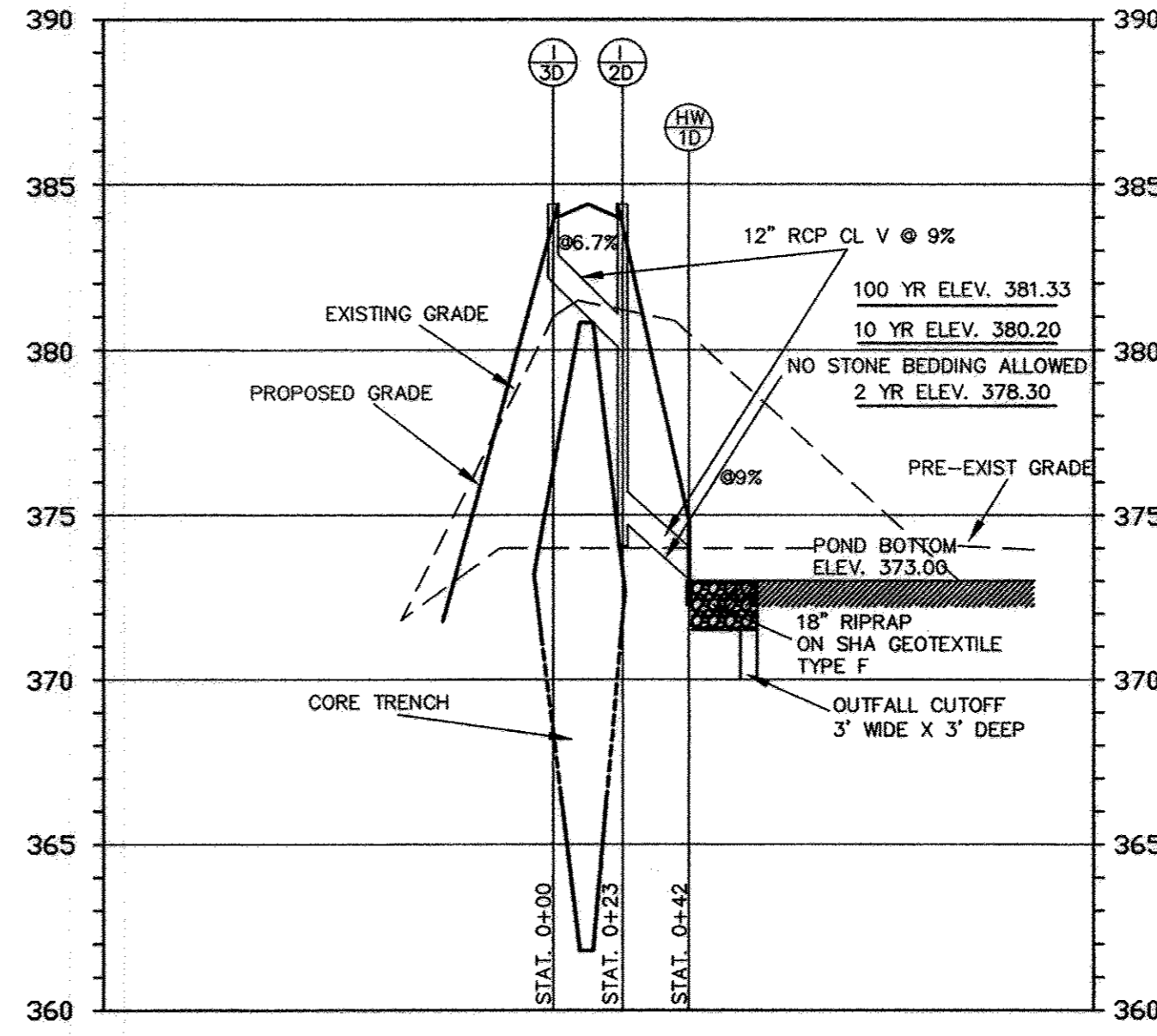
5 PIPE PROFILE - 18" RCP  
SCALE: HORIZ. 1"=50'  
VERT. 1"=5'



4 POND PROFILE  
SCALE: HORIZ. 1"=50'  
VERT. 1"=5'



3 PIPE PROFILE - 21" RCP  
SCALE: HORIZ. 1"=50'  
VERT. 1"=5'



3 PIPE PROFILE - 12" SD PIPE  
SCALE: HORIZ. 1"=50'  
VERT. 1"=5'

**SEDIMENT CONTROL & POND CONSTRUCTION**

( ) BY THE DEVELOPER:  
I/VE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature: *[Signature]* DATE: 4/25/02  
SIGNATURE OF DEVELOPER  
PRINT NAME BELOW SIGNATURE

( ) BY THE ENGINEER:  
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED BY ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

Signature: *[Signature]* DATE: 5/17/02  
SIGNATURE OF ENGINEER  
PRINT NAME BELOW SIGNATURE

( ) THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

Signature: *[Signature]* DATE: 5/17/02  
USDA-NATURAL RESOURCES CONSERVATION SERVICE

( ) THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Signature: *[Signature]* DATE: 5/17/02  
HOWARD SOIL CONSERVATION DISTRICT

**STORM DRAIN PIPE SCHEDULE**

| FROM  | TO    | SIZE (INCH) | LENGTH (FEET) | SLOPE (%) | FLOW CAP. (cfs) | 10-YRS Q (cfs) | VELOCITY (fps) | PIPE TYPE |
|-------|-------|-------------|---------------|-----------|-----------------|----------------|----------------|-----------|
| MH2A  | HW1A  | 60          | 60            | 1%        | 237.00          | 155.96         | 12.07          | RCP       |
| MH2AA | MH2A  | 21          | 21            | 10%       | 46.52           | 13.16          | 19.34          | RCP       |
| S-4B  | MH3B  | 18          | 98            | 6.6%      | 25.05           | 10.79          | 14.18          | RCP       |
| MH3B  | MH2B  | 18          | 37            | 7.8%      | 27.24           | 10.79          | 15.41          | RCP       |
| MH2B  | HW1B  | 18          | 26            | 2.1%      | 14.13           | 10.79          | 8              | RCP       |
| OS-2C | HW1C  | 48          | 69            | 0.6%      | 240             | 127            | 11.6           | RCP       |
| I-3D  | I-2D  | 12          | 22            | 9%        | 9               | 0.7            | 4.5            | RCP       |
| I-2D  | HW-1D | 12          | 18            | 9%        | 9               | 1.8            | 4.5            | RCP       |

**STORM DRAIN STRUCTURE SCHEDULE**

| STRUC. No | TYPE             | STANDARD No.    | TOP ELEVATION | SIZE (ft) | INV. IN | INV. OUT | COMMENT                                   |
|-----------|------------------|-----------------|---------------|-----------|---------|----------|---|
| EX.MH-2AA | MH               | -               | 387.00        | -         | 379.80  | 377.10   | EXIST. MANHOLE                            |
| MH-2A     | MH               | SHA # MD-384.01 | 384.00        | -         | 375.68  | 373.58   | MANHOLE PRECAST                           |
| HW-1A     | HW               | SHA # MD-354.01 | 379.00        | -         | 373.00  | -        | HEADWALL CONC. SEE SHEET C11              |
| S-4B      | STORM-CEPTOR     | -               | 396.00        | -         | 391.20  | 391.00   | SEE DETAIL SHEET C12                      |
| MH-3B     | MH               | SHA # MD-384.01 | 388.50        | -         | 384.50  | 383.80   | MANHOLE PRECAST                           |
| MH-2B     | MH               | SHA # MD-384.01 | 384.50        | -         | 381.00  | 373.54   | MANHOLE PRECAST                           |
| HW-1B     | HW               | SHA # MD-354.01 | 379.00        | -         | -       | 373.00   | HEADWALL CONC. SEE SHEET C11              |
| HW-1C     | HW               | SHA # MD-352.01 | 372.00        | -         | -       | 369.09   | HEADWALL CONC. W/ 2 PIPES (SEE SHEET C11) |
| OS-2C     | OUTLET STRUCTURE | -               | 381.50        | -         | -       | -        | -   |
| HW-3C     | HW               | SHA # MD-354.01 | 376.00        | -         | -       | -        | HEADWALL CONC. SEE SHEET C11              |
| HW-1D     | HW               | SHA # MD-354.01 | 378.00        | GUTTER    | -       | 373.00   | HEADWALL CONC.                            |
| I-2D      | INLET            | SHA # MD-374.61 | 384.03        | 5' WIDE   | 380.50  | 374.62   | INLET CONC.                               |
| I-3D      | INLET            | SHA # MD-374.67 | 384.03        | 5' WIDE   | -       | 381.87   | INLET CONC.                               |

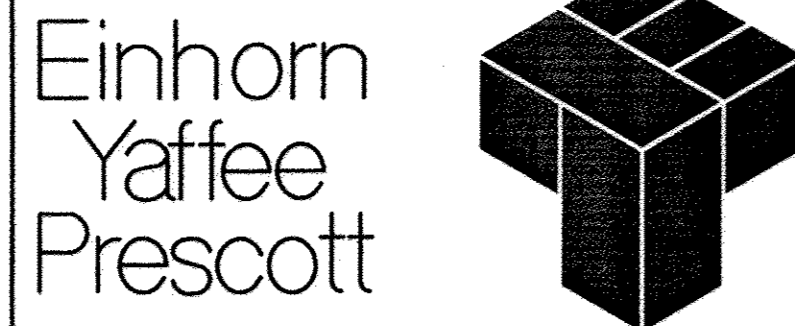
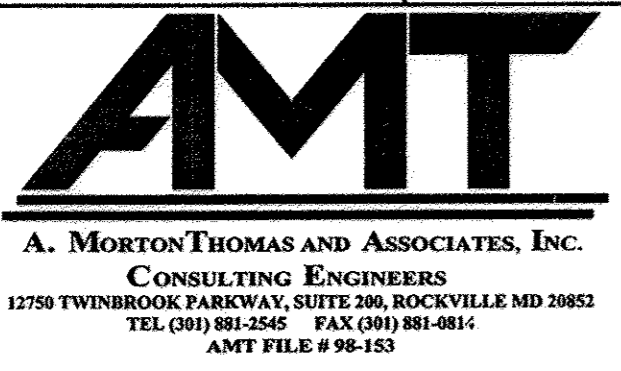
**STORM DRAIN COMPUTATION SHEET**

COMPUTED BY: PCF DATE: 09/01 PROJECT: APL-JHU  
CHECKED BY: RAW DATE: 09/01 STORM FREQUENCY: 10 YEARS

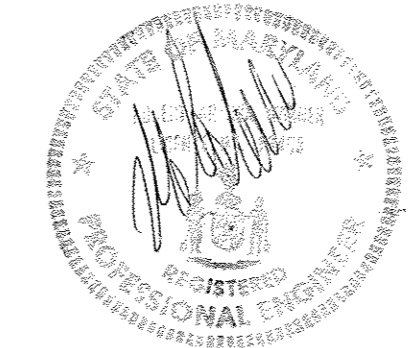
MANNING'S "N" (RCP) = 0.012

| PIPE STRUCTURE | DRAINAGE AREA (AC) | RUN OFF COEFF. | "AREA"X"C" INC (AC) | TIME OF CONC. (MIN)        | RAINFALL INTENSITY (IN/HR) | RUNOFF "Q" (CFS) | PIPE DIAMETER (IN) | PIPE LENGTH (FT) | MIN. PIPE SLOPE (1/100) | ACTUAL PIPE SLOPE (1/100) | VELOCITY (FPS) | TIME IN PIPE (MIN) | PIPE "Q" CAPAC. |      |        |   |
|----------------|--------------------|----------------|---------------------|----------------------------|----------------------------|------------------|--------------------|------------------|-------------------------|---------------------------|----------------|--------------------|-----------------|------|--------|---|
| (1)            | (2)                | (3)            | (4)                 | (5)                        | (6)                        | (7)              | (8)                | (9)              | (10)                    | (11)                      | (12)           | (13)               | (14)            |      |        |   |
| S-4B           | MH3B               | -              | 2.99                | 0.87                       | 2.60                       | 25.20            | 4.15               | 10.79            | 18                      | 98                        | 0.012          | 0.066              | 14.18           | 0.12 | 25.05  |   |
| MH3B           | MH2B               | -              | 2.99                | 0.87                       | 2.60                       | 25.20            | 4.15               | 10.79            | 18                      | 37                        | 0.012          | 0.078              | 15.41           | 0.04 | 27.24  |   |
| MH2B           | HW1B               | -              | 2.99                | 0.87                       | 2.60                       | 25.20            | 4.15               | 10.79            | 18                      | 26                        | 0.012          | 0.021              | 8.00            | 0.05 | 14.13  |   |
| EX2AA          | MH2AA              | -              | 2.70                | 0.87                       | 2.35                       | 13.80            | 5.60               | 13.16            | 21                      | 21                        | 0.008          | 0.100              | 19.34           | 0.02 | 46.52  |   |
| MH2A           | HW1A               | -              | 43.20               | 0.87                       | 37.58                      | 37.58            | 25.20              | 4.15             | 155.96                  | 60                        | 0.004          | 0.010              | 12.07           | 0.08 | 237.00 |   |
| OS2C           | HW1C               | -              | 44.80               | (SEE BASIN A COMPUTATIONS) |                            | 178              | 2                  | (48")            | 69                      | 0.0017                    | 0.006          | 9.4                | 0.12            | 240  |        |   |
| I-3D           | I-2D               | -              | 0.11                | 0.95                       | 0.10                       | 0.10             | 5.0                | 7.0              | 0.7                     | 12                        | 22             | 0.0005             | 0.09            | 4.5  | 0.08   | 9 |
| I-2D           | HW1D               | 0.16           | 0.27                | 0.95                       | 0.15                       | 0.25             | 5.0                | 7.0              | 1.8                     | 12                        | 18             | 0.0035             | 0.09            | 4.5  | 0.07   | 9 |

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MKK DATE: 5/17/02  
 CHIEF, DIVISION OF LAND DEVELOPMENT WJD DATE: 5/20/02  
 DIRECTOR N/A DATE: X



|                |      |                               |     |    |        |
|----------------|------|-------------------------------|-----|----|--------|
| DES: B. WARNER |      |                               |     |    |        |
| DRN: P. FRIAS  |      |                               |     |    |        |
| CHK: B. WARNER |      |                               |     |    |        |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK APP |



APPLIED PHYSICS LABORATORY  
 THE JOHNS HOPKINS UNIVERSITY  
**SWM PROFILES / STRUCTURE SCHEDULE**  
 TAX MAP 41 PARCEL 123  
 ELECTION DISTRICT NO. 5  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET C7  
 SHEET 7 OF 24

**SEDIMENT CONTROL & POND CONSTRUCTION**

( ) BY THE DEVELOPER:  
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of Developer  
PRINT NAME BELOW SIGNATURE DATE

( ) BY THE ENGINEER:  
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

Signature of Engineer  
PRINT NAME BELOW SIGNATURE DATE

( ) THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

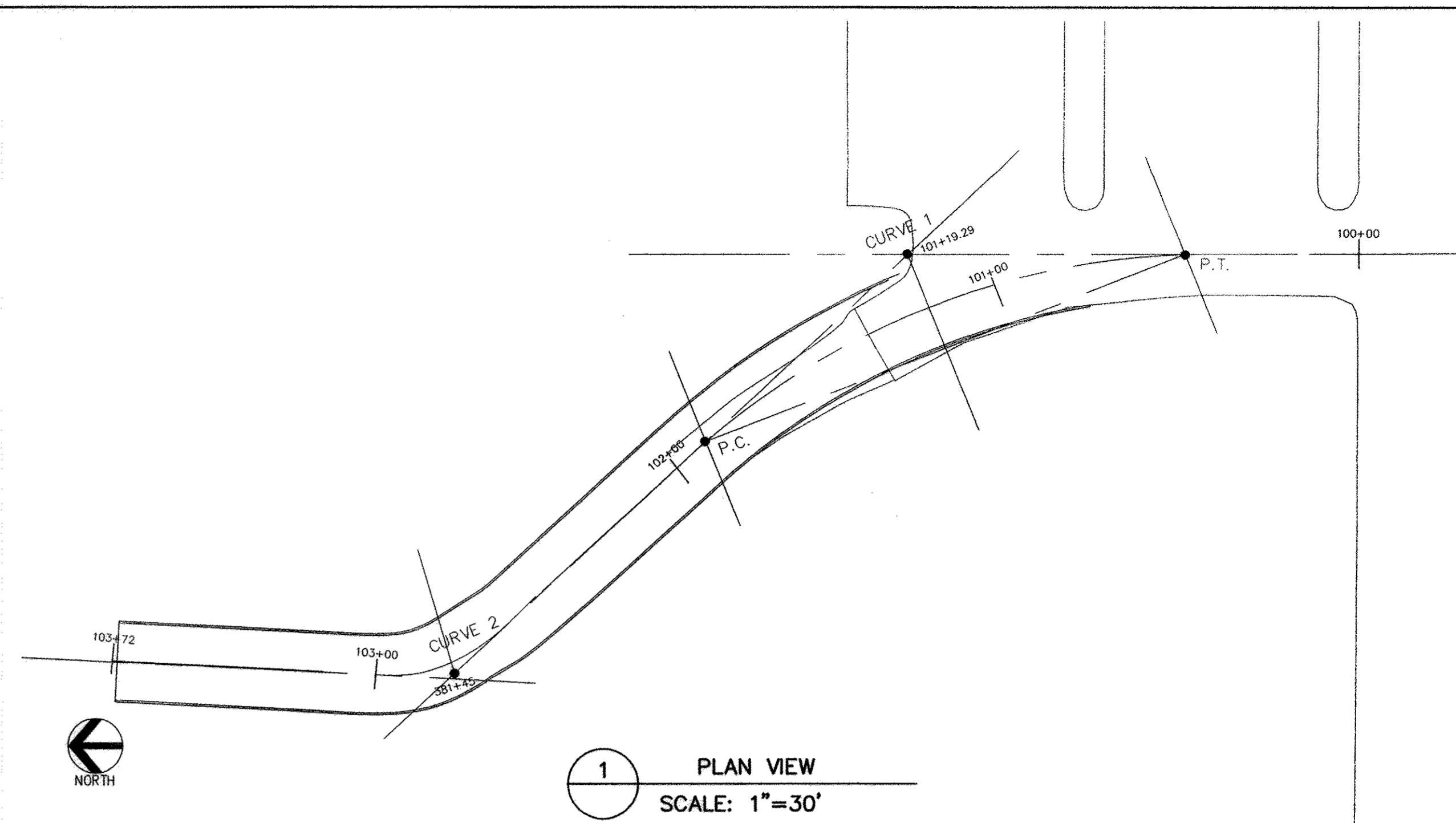
Signature of Reviewer  
DATE

( ) THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

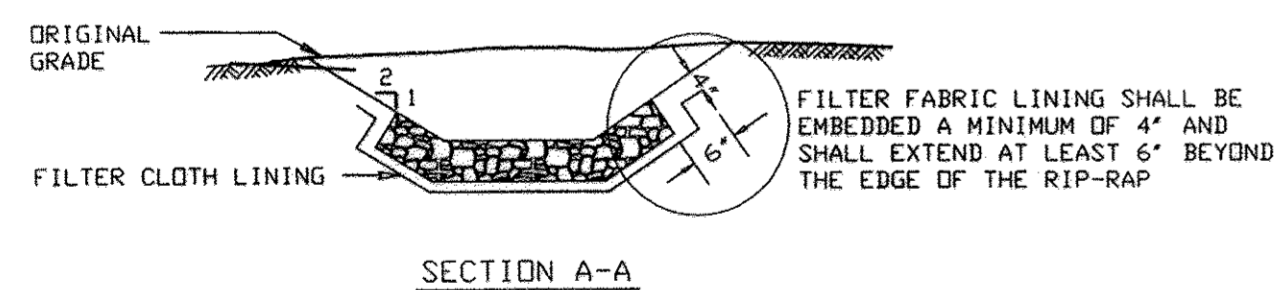
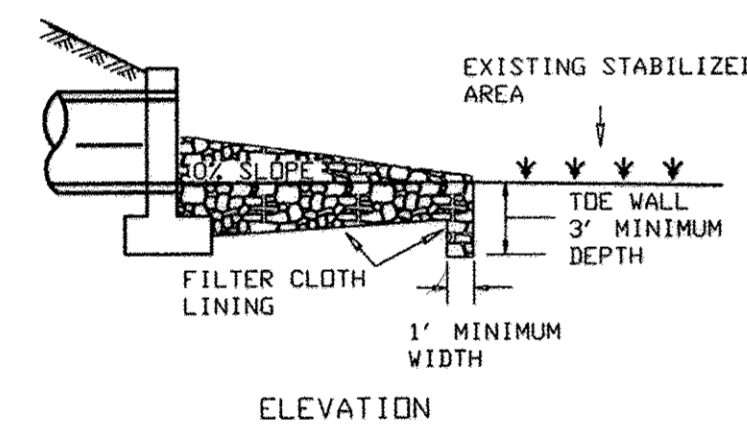
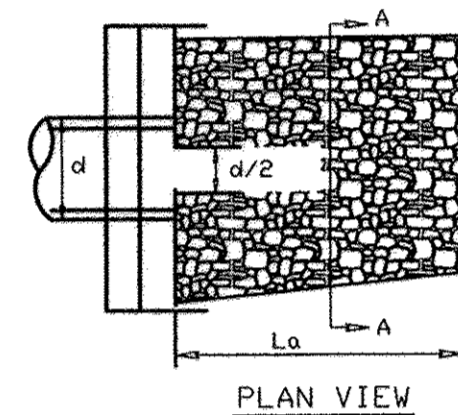
Signature of District  
DATE

**CURVE #2**  
PI STA. 102+80.98  
 $\Delta = 60.63'$   
 $D = 124.56'$   
 $R = 46.00'$   
 $T = 26.90'$   
 $L = 48.68'$   
 $E = 7.29'$   
PC = 102+54.08  
PT = 103+2.76

**CURVE #1**  
PI STA. 101+19.14  
 $\Delta = 39.11'$   
 $D = 27.28'$   
 $R = 210'$   
 $T = 74.60'$   
 $L = 143.36'$   
 $E = 12.86'$   
PC = 100+44.54  
PT = 101+87.90



**DETAIL 27 - ROCK OUTLET PROTECTION III**



NOTE: FILTER CLOTH SHALL BE GEOTEXTILE CLASS C

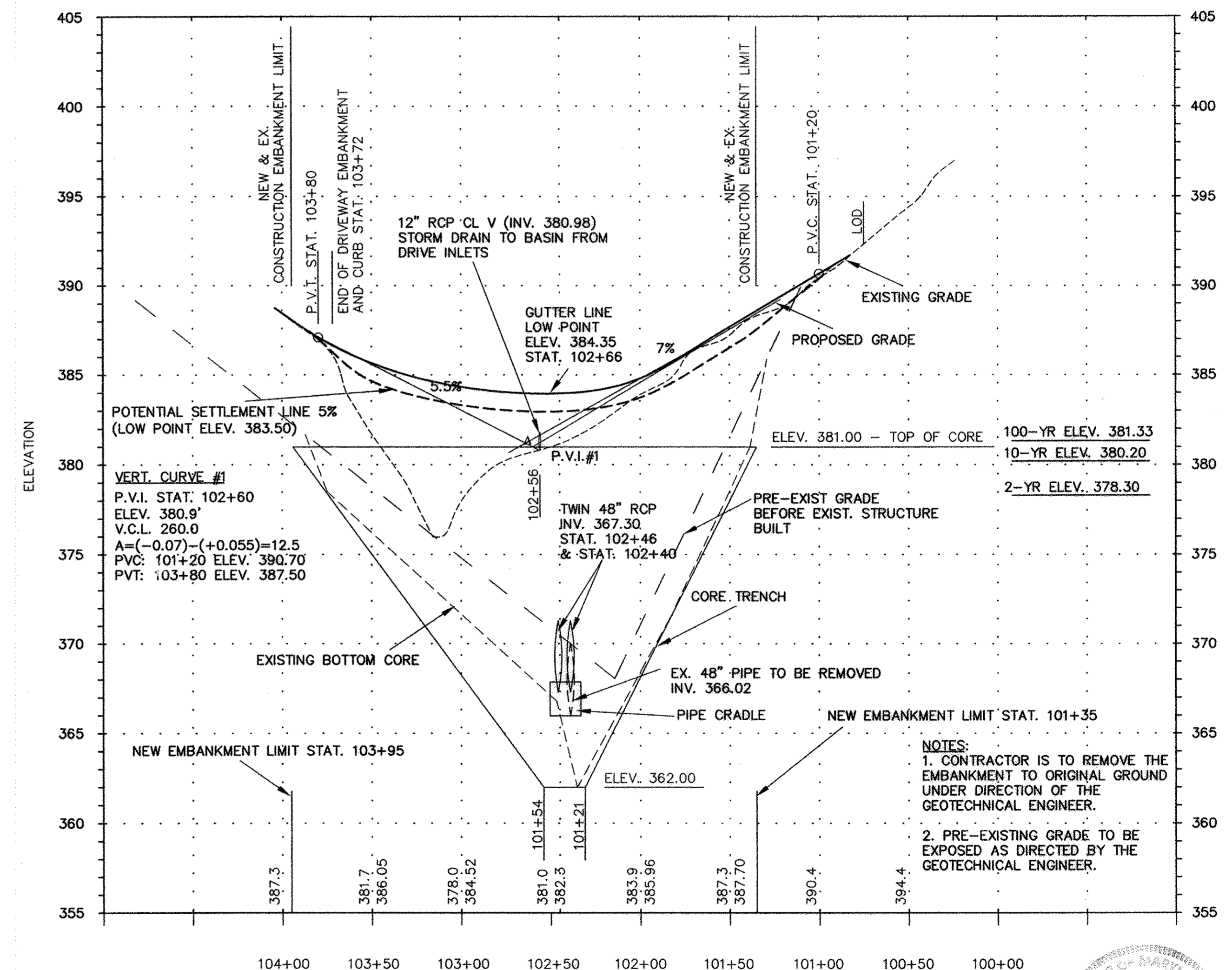
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE F-18-10 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

**ROCK OUTLET PROTECTION**

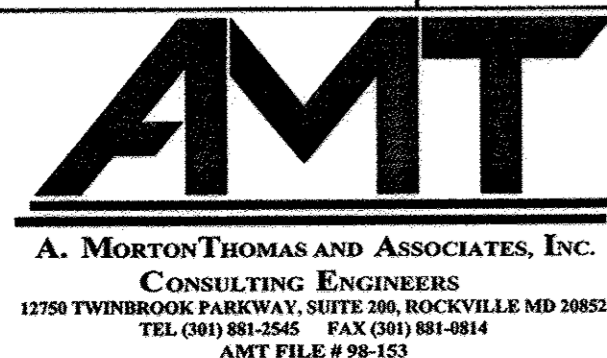
**Construction Specifications**

- The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
- The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.
- Geotextile shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.
- Stone for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.
- The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high then the flow will be forced out of the channel and scour adjacent to the stone will occur.

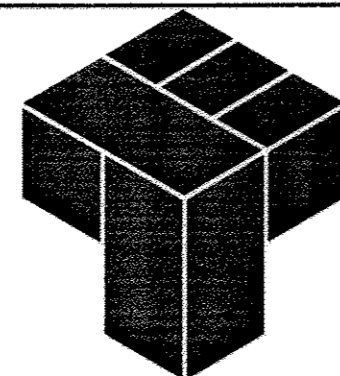
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE F-18-8A MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 5/17/02  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE 5/20/02  
DIRECTOR DATE X



Einhorn  
Yaffee  
Prescott

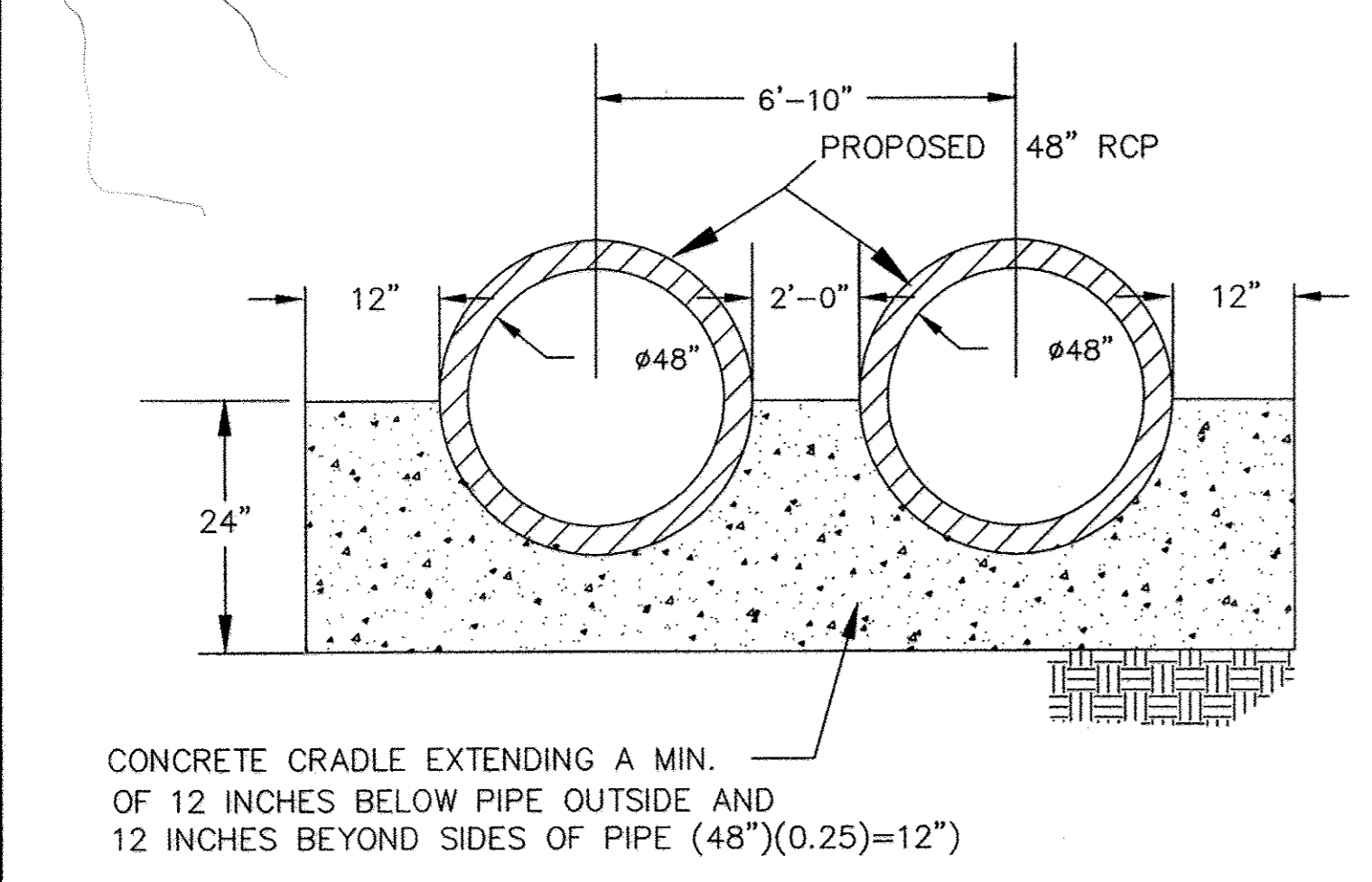
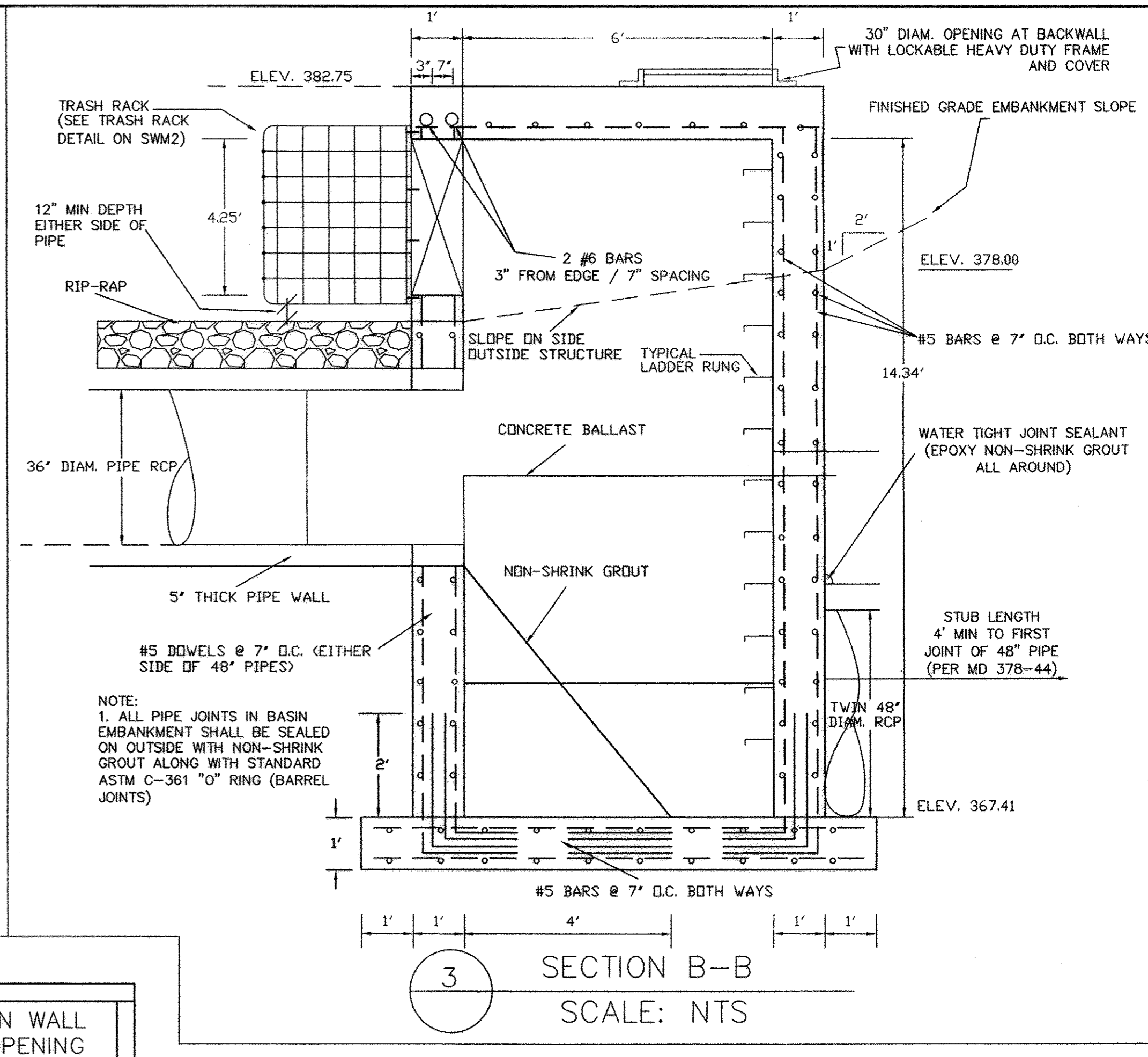
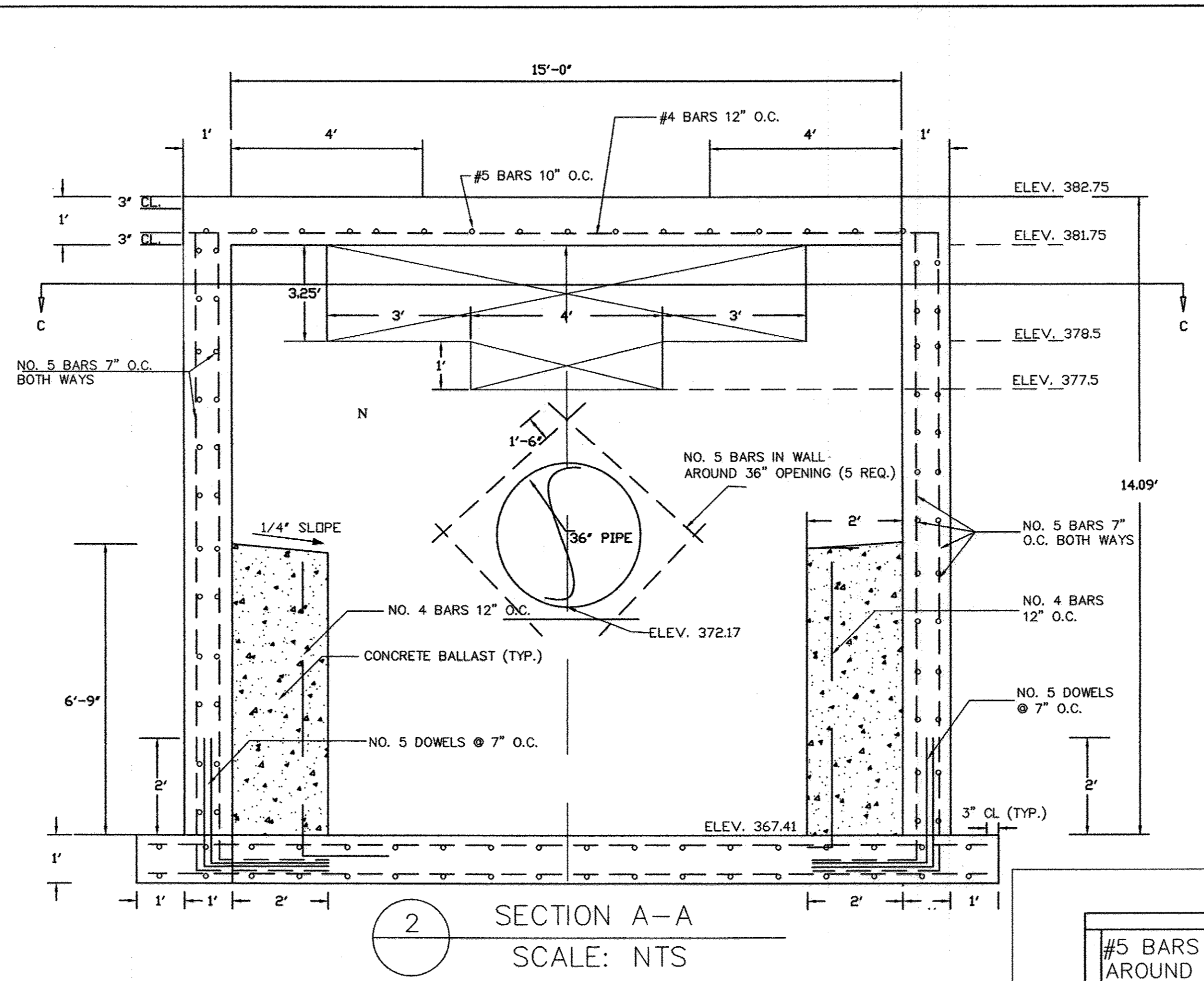
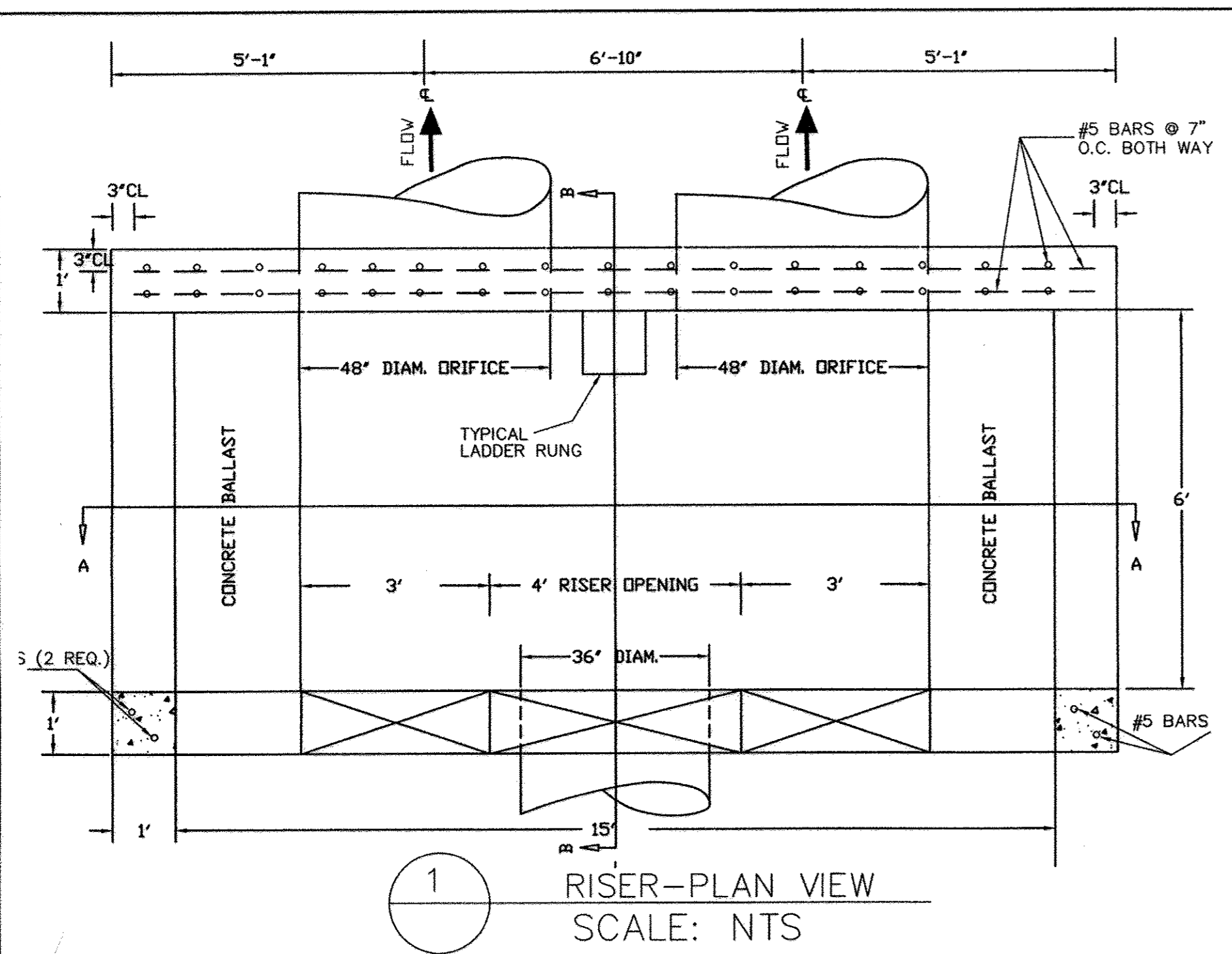


|                |      |                               |     |    |    |     |  |
|----------------|------|-------------------------------|-----|----|----|-----|--|
| DES: B. WARNER |      |                               |     |    |    |     |  |
| DRN: S. ITANI  |      |                               |     |    |    |     |  |
| CHK: B. WARNER |      |                               |     |    |    |     |  |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK | APP |  |

APPLIED PHYSICS LABORATORY  
THE JOHNS HOPKINS UNIVERSITY - POND A  
EMBANKMENT/PERIMETER  
ROAD PROFILE  
TAX MAP 41 PARCELS 23  
ELECTION DISTRICT NO. 5  
HOWARD COUNTY, MARYLAND

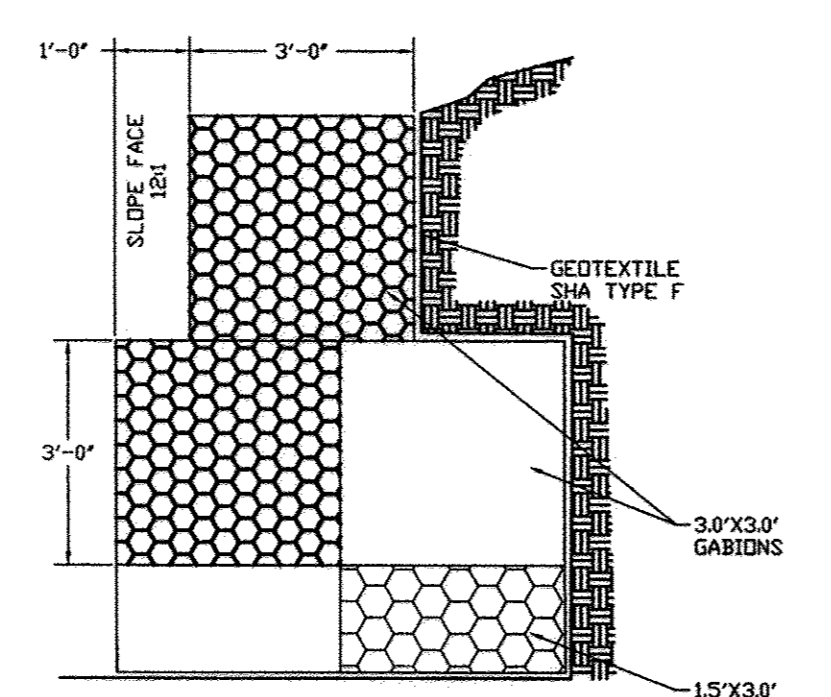
SCALE AS SHOWN  
SHEET C8  
SHEET 8 OF 24





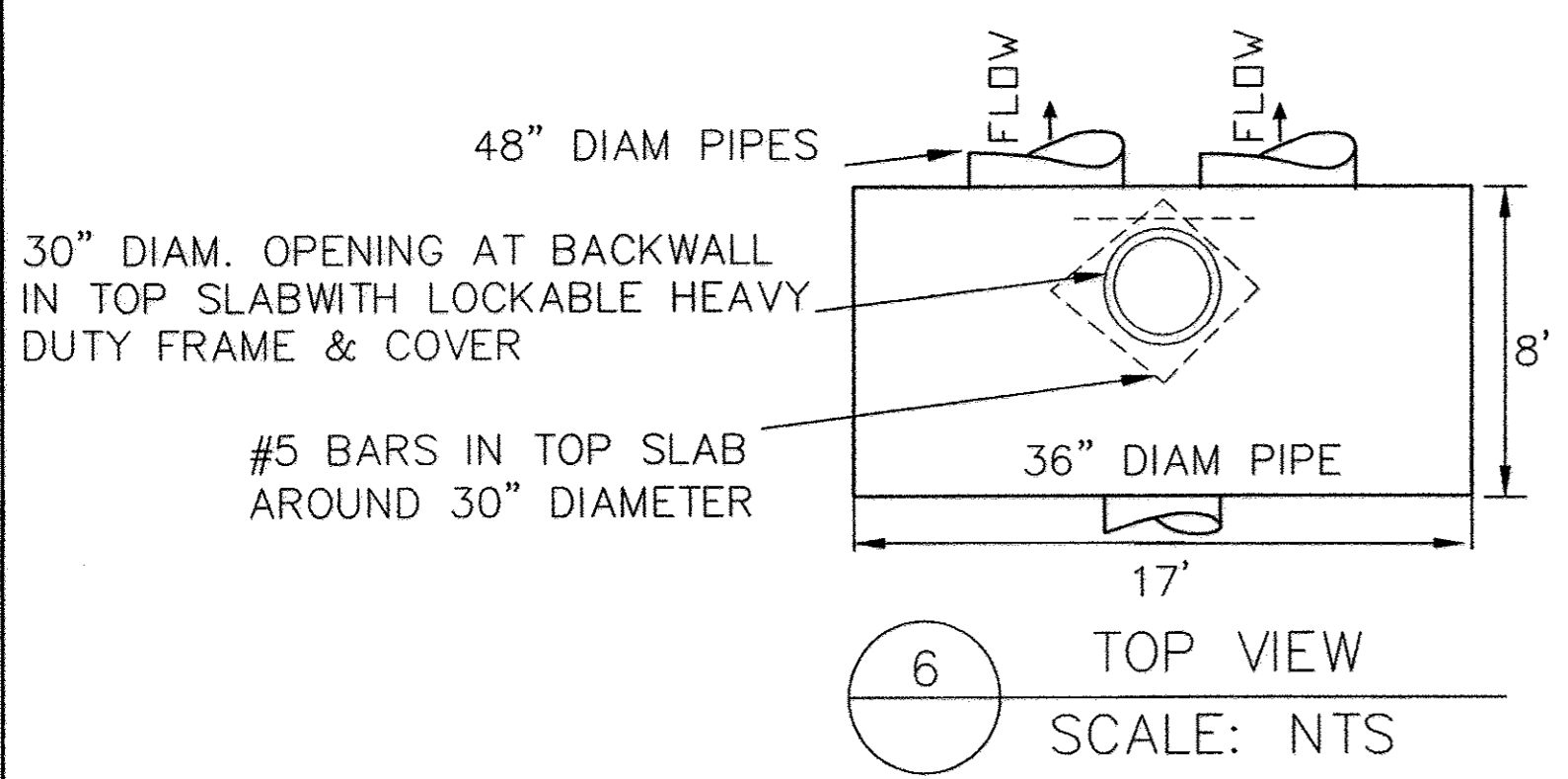
NOTE:  
1. ALL CONCRETE MIN. 3000 PSI TO ASTM C-361 STANDARD

4 CONCRETE CRADLE DETAIL SCALE: NTS



- Counterforts shall be used on gabion at slope 12:1.
- Gabions shall be vinyl coated on galvanized steel mesh, color black.

7 TYPICAL GABION WALL SECTION SCALE: NTS



6 TOP VIEW SCALE: NTS

**SEDIMENT CONTROL & POND CONSTRUCTION**

BY THE DEVELOPER: ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY PERSONS, FIRMS OR PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT SHALL HAVE 30 DAYS PRIOR TO ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE WORK. THE PROJECT SHALL BE MONITORED BY A REGISTERED PROFESSIONAL ENGINEER TO INSURE THE POND CONSTRUCTION AND MAINTENANCE MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

DATE: 4/25/02

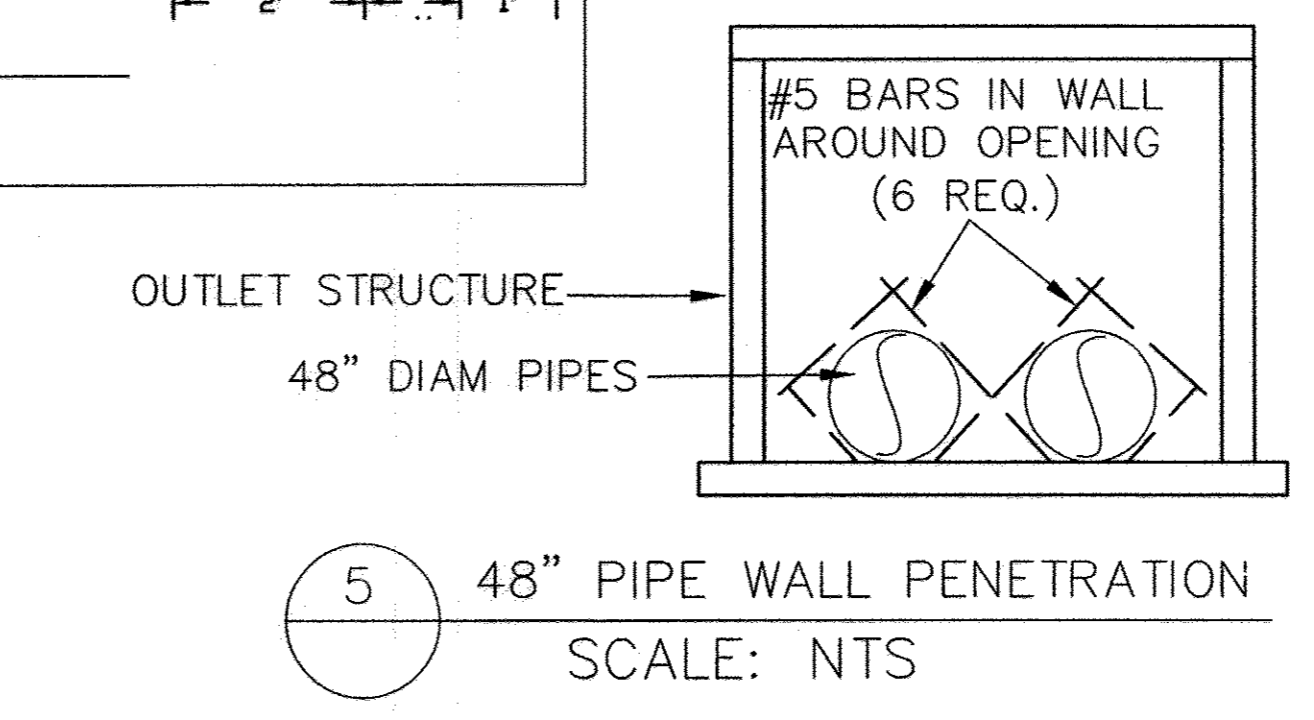
BY THE ENGINEER: I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE ADVISED THE HOWARD SOIL CONSERVATION DISTRICT WITHIN 30 DAYS OF COMPLETION.

DATE: 5/1/02

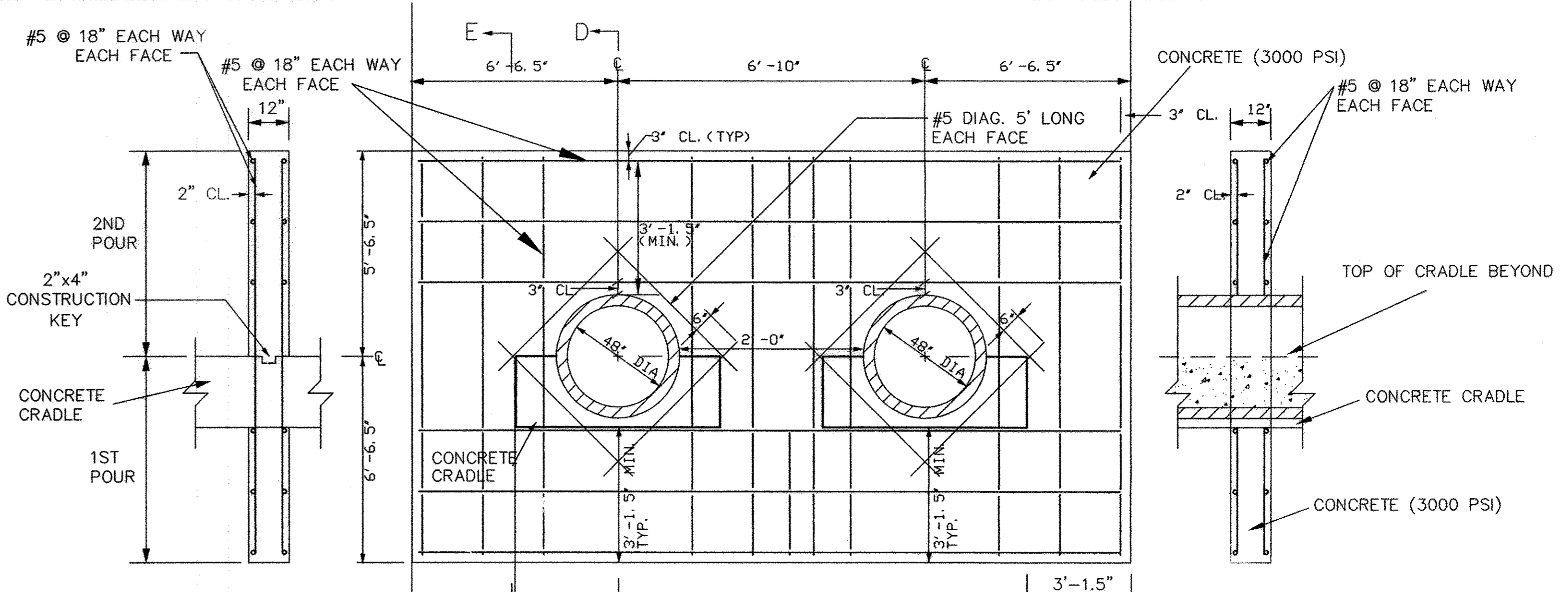
OSBA-NATIONAL RESOURCES CONSERVATION SERVICE

DATE: 5/1/02

HOWARD SOIL CONSERVATION DISTRICT



5 48" PIPE WALL PENETRATION SCALE: NTS



8 SECTION E-E SCALE: NTS

9 ANTI-SEEP COLLAR SCALE: NTS

10 SECTION D-D SCALE: NTS

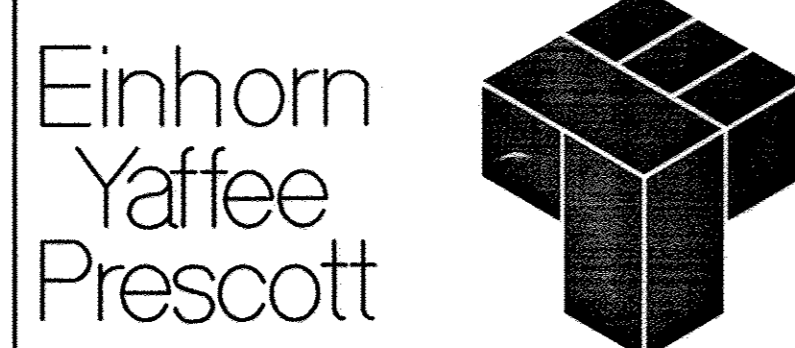
APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION: 5/17/02

CHIEF, DIVISION OF LAND DEVELOPMENT: 5/20/02

DATE: 5/17/02

DATE: 5/20/02



|                |      |                               |     |    |        |
|----------------|------|-------------------------------|-----|----|--------|
| DES: B. WARNER |      |                               |     |    |        |
| DRN: P. FRIAS  |      |                               |     |    |        |
| CHK: B. WARNER |      |                               |     |    |        |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK APP |

APPLIED PHYSICS LABORATORY  
THE JOHNS HOPKINS UNIVERSITY

**SWM DETAILS**

TAX MAP 41 PART 123  
ELECTION DISTRICT 5  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET C9

SHEET 9 OF 24

F-02-40





FOR TECHNICAL INFORMATION CALL STORMCEPTOR AT 1-800-762-4703

AS MANUFACTURED BY CSR-HYDRO CONDUIT AND STORMCEPTOR CORPORATION, MODEL STC-3600, PRECAST CONCRETE. FOR TECHNICAL INFORMATION CALL STORMCEPTOR AT 301-762-8361. TO ORDER CONTACT CSR-HYDRO CONDUIT, VIRGINIA PRECAST AT 1-800-999-2278 AT LEAST 3 WEEKS PRIOR TO NEEDED DELIVERY.

NOTES:

1. THE STORMCEPTOR IS PROTECTED BY U.S. PATENT NO. 4,985,148.
2. CAST IRON FRAME & COVER TO BE APPROVED BY STORMCEPTOR CORPORATION. "STORMCEPTOR" TO BE EMBOSSED ON COVER.
3. BEDDING, BACKFILL AND GENERAL INSTALLATION REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER AND A PROFESSIONAL ENGINEER BASED ON SITE SPECIFIC SOILS CONDITIONS, SUBJECT TO THE APPROVAL OF THE REGULATORY AGENCIES.
4. SIZING OF THE STORMCEPTOR SHALL BE IN ACCORDANCE WITH THE GUIDELINES PROVIDED BY STORMCEPTOR CORPORATION, SUBJECT TO THE APPROVAL OF THE REGULATORY AGENCIES.
5. THE STORMCEPTOR SHOULD BE MAINTAINED ANNUALLY AND/OR IMMEDIATELY FOLLOWING ANY KNOWN SPILLS.
6. THE STORMCEPTOR CONFORMS TO ASTM C 478 DESIGN SPECIFICATIONS / STANDARDS.
7. A MINIMUM OF 1 STEP IS TO BE USED IN THE ACCESS WAY.
8. COVER TO BE OFFSET 6" FROM ACCESS WALL ADJACENT TO INLET INSPECTION PORT.
9. NON-SMOOTH WALL O.D. PIPE TO BE GROUDED IN PLACE.
10. FURTHER TECHNICAL INFORMATION IS AVAILABLE FROM STORMCEPTOR CORPORATION 1 (800) 762-4703.

CONSTRUCTION NOTES

1. SILT AND DEBRIS SHALL NOT BE ALLOWED TO ENTER THE STORMCEPTOR UNTIL THE CONTRIBUTING DRAINAGE AREAS HAVE BEEN PERMANENTLY STABILIZED. SILT MAY BE ALLOWED TO ENTER STORMCEPTOR IF IT IS BEING USED AS A FINAL SEDIMENT CONTROL FILTERING DEVICE.
2. ALL OPENINGS TO STRUCTURES SHALL BE PROTECTED WITH THE APPROPRIATE SEDIMENT CONTROL MEASURES.
3. THE STORMCEPTOR MUST BE PUMPED OUT AND CLEANED AT THE END OF THE CONSTRUCTION OF THE PROJECT.

| FLOWS AND CAPACITIES* |                                |                        |                       |                         |
|-----------------------|--------------------------------|------------------------|-----------------------|-------------------------|
| MODEL                 | MAX. TREATED FLOW RATE (gpm)** | SEDIMENT CAPACITY (15) | OIL CAPACITY (US gal) | TOTAL CAPACITY (US gal) |
| STC 3600              | 475                            | 345                    | 880                   | 3750                    |

\* APPROXIMATE  
\*\* WITHOUT BY-PASSING

INSPECTION NOTES: PRECAST CONCRETE STORMCEPTOR

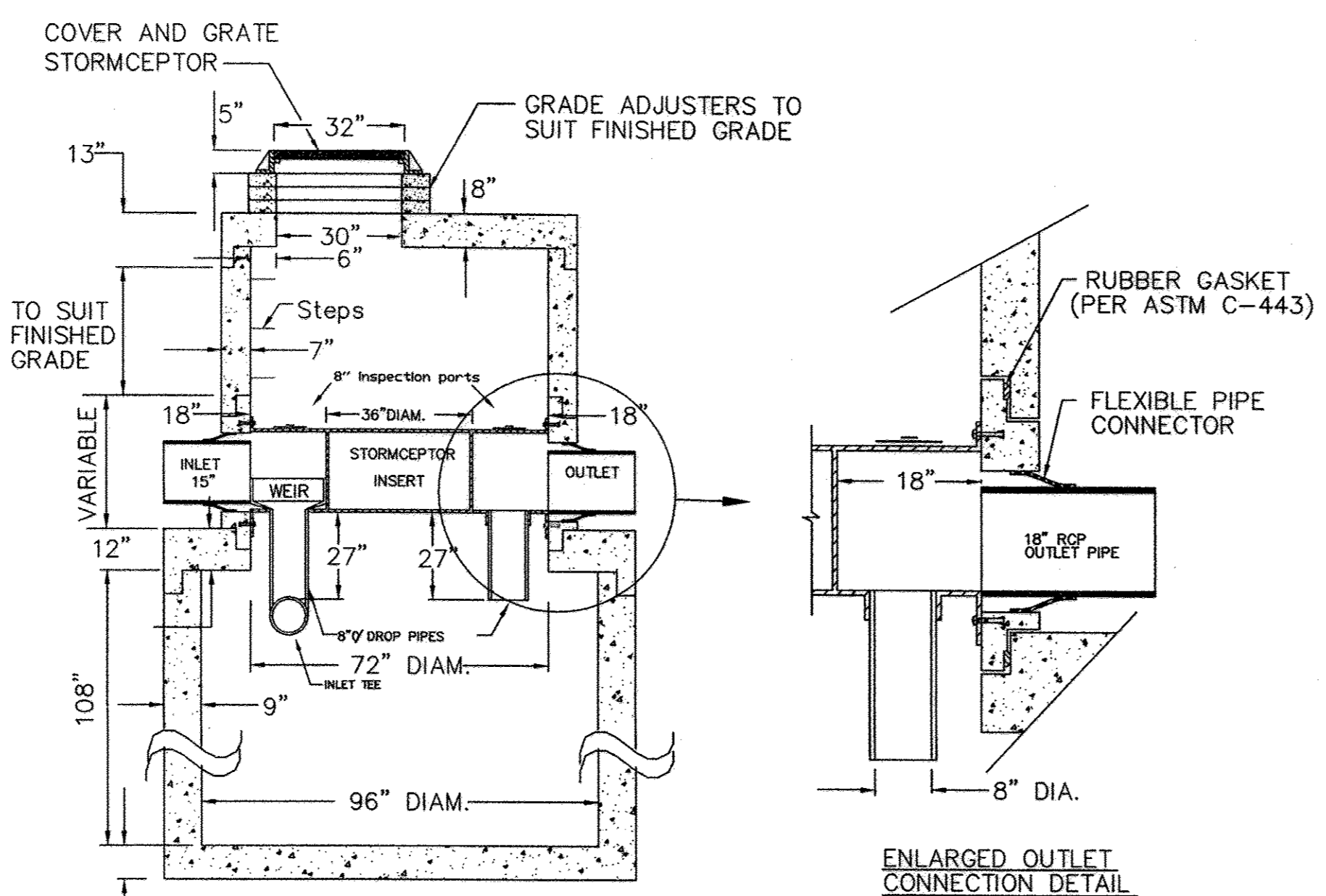
1. PRIOR TO THE START OF INSTALLING THE STORMCEPTOR, THE INSPECTOR MUST BE CALLED 48 HOURS IN ADVANCE (PRE-CONSTRUCTION MEETING).
2. THE APL INSPECTOR MUST BE NOTIFIED AT EACH OF THE FOLLOWING STAGES:
  - A. APPROVAL OF SUBGRADE; PREPARE A COMPACTED GRAVEL BED AT THE BOTTOM OF THE EXCAVATION. ENSURE COMPACTION TO 95% DENSITY.
  - B. PLACE STORMCEPTOR IN EXCAVATION AT CORRECT ELEVATION AND AT CORRECT ALIGNMENT AND GRADE FOR INLET AND OUTLET STORM DRAINS. LEVEL UNIT INSTALL BASE AND LOWER TANK, MIDDLE SECTION WITH STORMCEPTOR INSERT, RISER SECTION, TOP SLAB WITH PERSONWAY, LEVELING RINGS AND MANHOLE FRAME AND COVER.
  - C. BACKFILL STORMCEPTOR WITH SUITABLE NATIVE SOIL (NO ORGANIC OR TOPSOIL IS TO BE USED FOR BACKFILL). BACKFILL AND COMPACT IN 8" LIFTS. BACKFILL SHOULD BE AT 95% OF DENSITY.
  - D. WHEN SITE IS PERMANENTLY STABILIZED AND SEDIMENT CONTROL MEASURES HAVE BEEN REMOVED AND STABILIZED, THEN THE STORMCEPTOR WILL BE PUMPED OUT AND CLEANED AND PLACED IN STORMWATER MANAGEMENT OPERATION.
  - E. FINAL INSPECTION
3. ALL GEOTECHNICAL REPORTS, SOIL COMPACTION, BEARING CAPACITY, AND CONCRETE TESTING DATA & RESULTS SHALL BE PROVIDED TO THE INSPECTOR AND COPIED TO THE OWNER.

MAINTENANCE NOTES: WATER QUALITY STRUCTURE

1. WATER QUALITY STRUCTURES WILL REQUIRE PERIODIC CLEANING. OWNERS OF THESE FACILITIES WILL HAVE TO CLEAN THEM AS NEEDED.
2. MAINTENANCE OF THESE FACILITIES WILL CONSIST OF CLEANING OUT THE STORMCEPTOR AND DISPOSAL OF THE WASTE AND REPAIR OF THE FACILITY AS NEEDED. PERIODIC INSPECTIONS OF THESE FACILITIES WILL BE MADE BY THE OWNER.
3. THE DISPOSAL OF THE LIQUID AND SOLID MATTER SHALL BE AS FOLLOWS:
  - A. ALL LIQUID MATERIAL IN THE STORMCEPTOR SHALL BE PUMPED INTO A SUITABLE TANK TRUCK AND DISPOSED OF AT AN APPROVED SANITARY DISTRICT DISCHARGE MANHOLE OR TO BE TAKEN TO AN APPROVED SEWAGE TREATMENT PLANT FOR DISCHARGE.
  - B. THE SOLID MATERIAL SHALL BE LANDFILLED IN AN APPROVED SANITARY LANDFILL.
4. THE INLET PIPES AND STRUCTURAL PARTS SHALL BE REPAIRED AS NEEDED.
5. STORMCEPTOR INLET AND OUTLET ASSEMBLY SHALL BE PERIODICALLY INSPECTED. BLOCKAGES SHALL BE REMOVED AND DISPOSED OF AS REQUIRED IN 3B ABOVE.

CONTRACTOR INSTALLATION INSTRUCTIONS  
PRECAST CONCRETE STORMCEPTOR

1. STAKE-OUT THE LOCATION OF THE STORMCEPTOR AND EXCAVATE HOLE. EXCAVATE ADEQUATE SPACE TO CONNECT INLET AND OUTLET PIPES TO UNIT. INSTALL A 12" DEEP (OR AS REQUIRED) LAYER OF COMPACTED AGGREGATE SUBBASE AT BOTTOM OF EXCAVATION. INSTALL MULE OR SHORING, AS NEEDED.
2. CHECK ELEVATION OF UNIT BY MEASURING ITS SECTIONS FROM BASE OF THE STORAGE CHAMBER (BOTTOM OF UNIT'S SLAB) TO THE INVERT OF STORMCEPTOR BYPASS CHAMBER INLET ELEVATION (FIBERGLASS INSERT). SUBTRACT THIS DISTANCE FROM DESIGN INVERT ELEVATION TO DETERMINE TOP OF SUBBASE ELEVATION. CHECK ELEVATION OF INSTALLED SUBBASE AND ADJUST AS NEEDED.
3. SECURE INSPECTOR APPROVAL OF SUBGRADE AND SUBBASE.
4. INSTALL STORAGE CHAMBER. INSTALL SCREW INSERTS INTO BASE OF STORAGE CHAMBER. ATTACH CABLES OR CHAINS TO ALL 3 LIFTING LUGS ON THE BASE SLAB. USING LARGE EQUIPMENT OR CRANE LIFT, PLACE THE BASE SECTION OF THE STORAGE CHAMBER IN THE EXCAVATED HOLE ON THE SUBBASE. MAKE SURE THAT THE BASE IS LEVEL. SPECIFIC ALIGNMENT OF THIS PART IS NOT REQUIRED. INSTALL RUBBER GASKET ON BASE UNIT AND COAT WITH LUBRICATING GREASE (PROVIDED IN SHIPMENT). IF NOT PRELUBRICATED, INSTALL ADDITIONAL STORAGE CHAMBER SECTIONS, AS REQUIRED (PROCEDURE IS SAME AS STEP 6).
5. INSTALL REDUCING SLAB (STORMCEPTOR MODELS STC-2400, STC-3600, STC-4800, STC-6000 AND STC-7200) CHECK THAT SECTION IS SET FLUSH, LEVEL, AND IS AT THE PROPER ELEVATION. INSTALL RUBBER GASKET ON THE TRANSITION SLAB SPIGOT AND COAT WITH LUBRICATING GREASE (PROVIDED IN SHIPMENT).
6. INSTALL BYPASS CHAMBER OF STORMCEPTOR WITH FACTORY INSTALLED STORMCEPTOR INSERT. LIFT BYPASS SECTION AND INSTALL, WHILE CHECKING ALIGNMENT AND GRADE OF INLET AND OUTLET DRAINAGE PIPES. CHECK TO MAKE SURE THE BYPASS CHAMBER IS SET FLUSH, LEVEL, AND IS AT THE PROPER ELEVATION. THE BYPASS CHAMBER MUST BE ORIENTED SUCH THAT THE INLET PIPE DISCHARGES INTO THE V-SHAPED FIBERGLASS WEIRS (INSIDE INSERT). INSTALL RUBBER GASKET ON TOP OF BYPASS SECTION AND COAT WITH LUBRICATING GREASE, IF NOT LUBRICATED.
7. INSTALL STORMCEPTOR DROP PIPES ACCORDING TO STC PIPE INSTALLATION PROCEDURE AS SHOWN ON THIS SHEET.
8. INSTALL RISER SECTION. LIFT RISER SECTION AND INSTALL, WHILE CHECKING THAT SECTION IS SET FLUSH AND IS AT PROPER ELEVATION AND THAT UNIT IS LEVEL. SPECIFIC ALIGNMENT OF THIS PART IS REQUIRED IF STEP(S) ARE INCLUDED. ALIGN STEPS ABOVE INLET INSPECTION PORT. NOTE, FOR SHALLOW INSTALLATIONS THIS SECTION MAY NOT BE REQUIRED.
9. INSTALL TOP CAP WITH OPENING FOR STORMCEPTOR COVER. IF OPENING IS OFFSET (NOT CENTERED), THE TOP CAP OPENING SHOULD BE ORIENTED ABOVE THE STORMCEPTOR INLET INSPECTION PORT (PLUG).
10. BACKFILL STORMCEPTOR WITH APPROVED BACKFILL MATERIAL (NO ORGANIC OR TOPSOIL IS TO BE USED FOR BACKFILL). BACKFILL AND COMPACT IN 8 INCH LIFTS. BACKFILL SHOULD BE COMPACTED TO LOCAL/STATE REQUIREMENTS.
11. INSTALL AND SET GRADE ADJUSTING RINGS AS NEEDED.
12. INSTALL AND SET STORMCEPTOR FRAME AND COVER.
13. INSTALL INLET AND OUTLET STORM DRAIN PIPES. CONNECT INLET AND OUTLET STORM DRAIN PIPES WITH FLEXIBLE BOOTS (WHEN PROVIDED) AND WITH NON-SHINK GROUT. WHEN NO FLEXIBLE BOOTS ARE PROVIDED, THE INVERT OF THE INLET AND OUTLET PIPE IS TO MATCH WITH THE INVERT OF THE STORMCEPTOR INSERT. FLEXIBLE BOOT INSTALLATION PROCEDURES: CENTER THE PIPE IN THE BOOT OPENING; LUBRICATE THE OUTSIDE OF THE PIPE AND/OR THE INSIDE OF THE BOOT IF THE PIPE OUTSIDE DIAMETER IS THE SAME AS THE INSIDE DIAMETER OF THE BOOT. POSITION THE PIPE CLAMP IN THE GROOVE OF THE BOOT WITH THE SCREW AT THE TOP. TIGHTEN THE PIPE CLAMP SCREW TO 60 INCH POUNDS. IF THE PIPE IS MUCH SMALLER THAN THE BOOT, LIFT THE BOOT SUCH THAT IT CONTACTS THE BOTTOM OF THE PIPE WHILE TIGHTENING THE CLAMP TO ENSURE EVEN CONTRACTION OF THE RUBBER. MOVE THE PIPE HORIZONTALLY AND/OR VERTICALLY TO BRING IT TO GRADE.
14. THE STORMCEPTOR SHOULD BE PUMPED OUT WHEN THE SEDIMENT CONTROL MEASURES ARE REMOVED (SITE PERMANENTLY STABILIZED).
15. FINAL INSPECTION



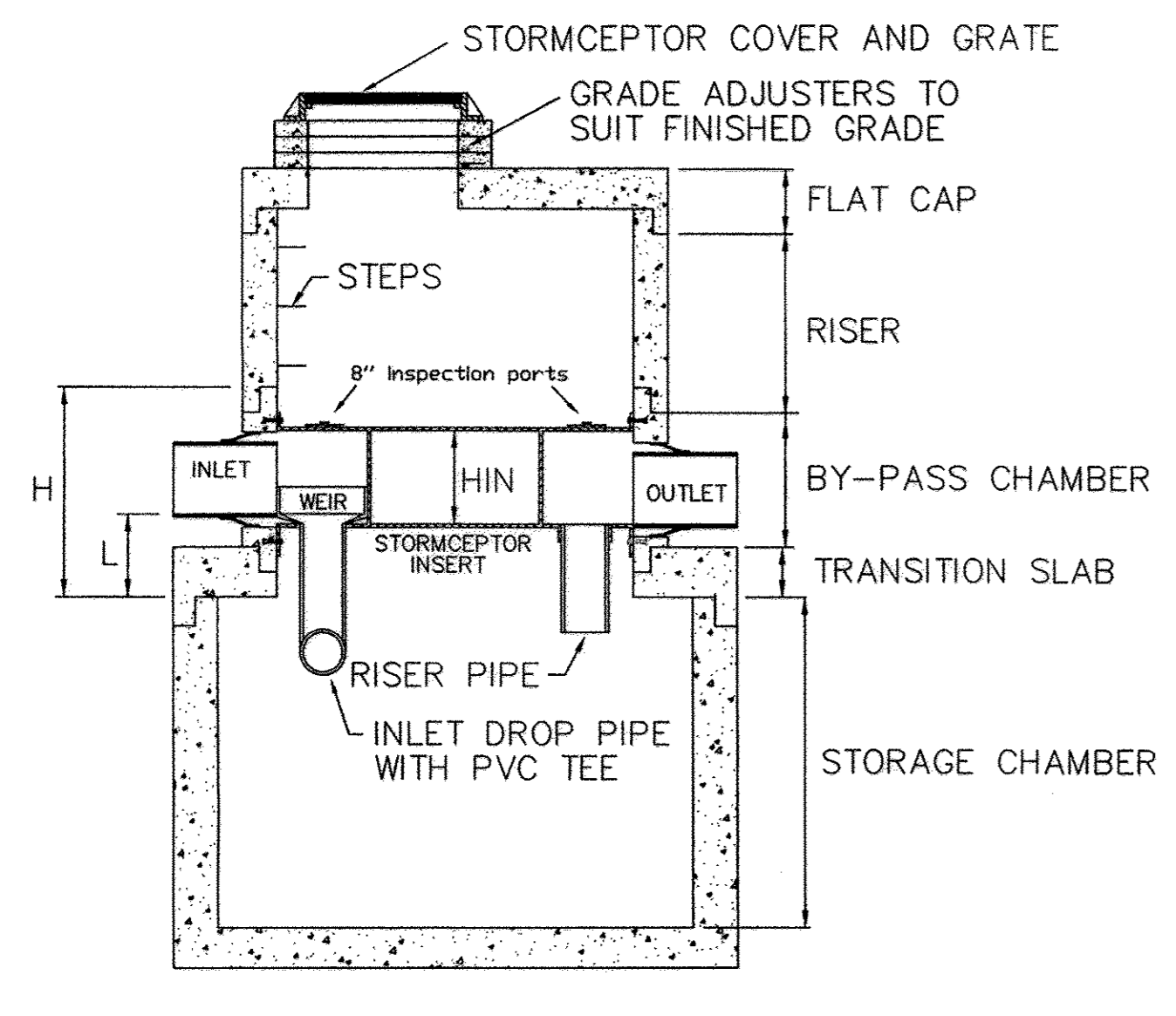
Design Specifications:

1. ASTM C 478

- NOTES:
1. NON-SMOOTH OUTSIDE WALL PIPE TO BE GROUDED IN PLACE (NO KOR-N-SEAL BOOTS).
  2. RISER SECTION ABOVE THE INSERT TO BE 72" O OR A MINIMUM OF 60" OR TO THE GRADE (WHICHEVER IS LESSER).
  3. COVER TO BE LOCATED ADJACENT TO INLET INSPECTION PORT.
  4. PROVIDE TWO OPEN PICK HOLES ON STORMCEPTOR COVER OFFSET 6" FROM THE STRUCTURE EDGE.
  5. NO JOINT SHALL BE PERMITTED AT FLOOR AND WALL.

2 PRECAST CONCRETE STORMCEPTOR (STC 3600)  
NOT TO SCALE

| CONCRETE STORMCEPTOR DATA - STRUCTURE No. 1 |               |                  |           |            |                     |
|---|---------------|------------------|-----------|------------|---------------------|
| DRAINAGE AREA (ACRES)                       | TOP ELEVATION | PIPE SIZE & TYPE | INVERT IN | INVERT OUT | MATERIAL/ MODEL NO. |
| 2.99  | 396.00        | 18" HDPCP        | 391.20    | 391.00     | CDNC/STC3600        |



| PIPING AND INSERT DIMENSIONS |                  |               |           |         |         |
|------------------------------|------------------|---------------|-----------|---------|---------|
| STRUCTURE No.                | PIPE DIAM. (in.) | PIPE MATERIAL | HIN (in.) | H (in.) | L (in.) |
| 1                            | 15               | HDPCP         | 22        | 42      | 9.5     |

DROP PIPE INSTALLATION

1. The drop pipe and the riser pipe MUST NOT be attached to Stormceptor couplings until the BY-PASS CHAMBER section has been connected to the installed TRANSITION SLAB.
2. Install the drop pipe and riser pipe while inside the Storage Chamber via a ladder placed down the Stormceptor access hole.
3. The drop pipe with the T-section MUST be connected to the INLET gasketed coupling using the supplied PVC lubricant. Make certain that the orientation of the Tee is correct (see diagrams).
4. The riser pipe MUST be connected to the OUTLET gasketed coupling using the supplied PVC pipe lubricant.

1 STC PIPE INSTALLATION PROCEDURE  
NOT TO SCALE

Concrete Stormceptor® Order Request Form

Contractor Information: NAME, ADDRESS, CITY, STATE, ZIP CODE, CONTACT, PHONE, FAX

Owner Information: NAME, PHONE, FAX

Stormceptor Model: 900, 1200, 1800, 2400, 3600, 4800, 6000, 7200

Insert Size: 22", 32", 44", Custom

Manhole Number: Top Elevation (ft), Inlet Pipe Invert (ft), Outlet Pipe Invert (ft), Pipe Type, Pipe Inside Diameter (in) [ID], Pipe Outside Diameter (in) [OD]

Project Name: \_\_\_\_\_

Approximate time frame until required delivery (weeks): \_\_\_\_\_

Delivery Address: Street \_\_\_\_\_, City \_\_\_\_\_, State \_\_\_\_\_, Zip Code \_\_\_\_\_

Designer Company: \_\_\_\_\_, Designer Contact: \_\_\_\_\_, Phone \_\_\_\_\_, Fax \_\_\_\_\_

Please Fax this sheet back to Hydro Conduit/Virginia Precast at (804) 798-3426 Attn: Dave Brinser / Ed O'Malley (Phone: 1-800-999-2278)

For credit information/applications contact Carole Broadus at (804) 798-6068 For Technical Assistance Please Call Stormceptor Corporation at (301) 762-8361 or toll free at 1 (800) 762-4703

TO BE INCLUDED ON SWM PLAN BY DESIGNER 11/23/95

NOTE:

1. THE STORMCEPTOR SHOWN RELATES TO THE DEVELOPMENT OF BUILDING P, WHICH HAS NOT BEEN DESIGNED. THIS IS INTENDED AS AN EXAMPLE OF THE SIZE AND TYPE OF STORMCEPTOR THAT WILL BE USED AT THIS BUILDING AND ALL FUTURE BUILDINGS IN AREA "A".

SEDIMENT CONTROL & POND CONSTRUCTION

( ) BY THE DEVELOPER: I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature: *Dave Brinser* DATE: 4/25/2002

( ) BY THE ENGINEER: I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL, REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

Signature: *Robert A. Warner* DATE: 4/22/02

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

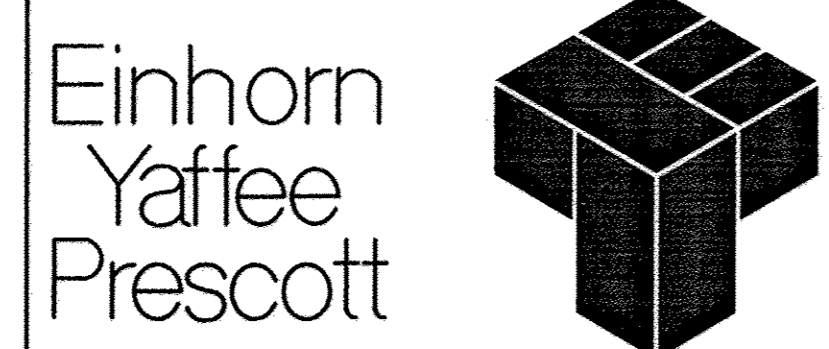
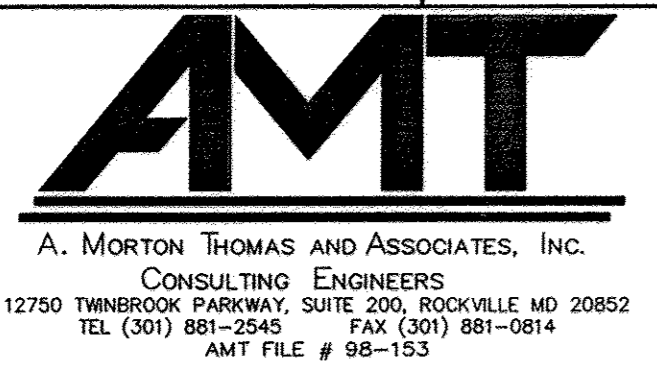
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE: \_\_\_\_\_

( ) THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT DATE: \_\_\_\_\_

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DIRECTOR

DATE: 5/17/02  
DATE: 5/20/02  
DATE: X



|                |      |                               |     |    |    |     |  |  |  |
|----------------|------|-------------------------------|-----|----|----|-----|--|--|--|
| DES: B. WARNER |      |                               |     |    |    |     |  |  |  |
| DRN: S. ITANI  |      |                               |     |    |    |     |  |  |  |
| CHK: B. WARNER |      |                               |     |    |    |     |  |  |  |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK | APP |  |  |  |

APPLIED PHYSICS LABORATORY  
THE JOHNS HOPKINS UNIVERSITY - POND A  
STORMCEPTOR DETAILS  
TAX MAP 41 PARCEL 123  
ELECTION DISTRICT NO. 5  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET C12  
SHEET 12 OF 24

F-02-40

Plastic Pipe- The following criteria shall apply for plastic pipe:

- 1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4' - 10' inch pipe shall meet the requirements of AASHTO M252 Type S, and 12' through 24' shall meet the requirements of AASHTO M294 Type S.
2. Joints and connections to anti-seep collars shall be completely watertight.
3. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.
4. Backfilling shall conform to "Structure Backfill".
5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Drainage Diaphragms when a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311, Geotextile shall be placed under all rip-rap and shall meet the requirements of MD Department of Transportation SHA Standard Specifications for Construction and Materials Section No. 921.01 Class C.

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, section 921.09, Class C.

Care of Water during Construction

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require drainage the water pumps from which the water shall be pumped.

Stabilization

All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and specifications for critical area planting (MD-342) or as shown on the accompanying drawings.

Erosion and Sediment Control

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots, and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, and wood. Rubbish, stones greater than 6', frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 3% passing the #200 sieve. Consideration may be given to use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer.

Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

Placement- Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8-inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with the fill placement and not excavated into the embankment.

Compaction- The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within ± 2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction as to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench- The cutoff trench shall be excavated into impervious material along or parallel to centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

Embankment core- The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10-year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition the core shall be placed concurrently with the outer shell of the embankment.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a concrete structure or pipe unless there is a compacted fill of 24' or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Materials shall be placed such that a minimum of 6' (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability if the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstance shall equipment be driven over any part of a structure of pipe unless there is a compacted fill of 24' or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

Reinforced Concrete Pipe- All of the following criteria shall apply for reinforced concrete pipe:

- 1. Materials - Reinforced concrete pipe shall have a bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.
2. Bedding - Reinforced concrete pipe conduit shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.
3. Laying Pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all the spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.
4. Backfilling shall conform to "Structure Backfill".
5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings. see sheet ES-4 (18 of 23) for continuation of specification

SEDIMENT CONTROL & POND CONSTRUCTION. I, the developer, hereby certify that all development and/or construction will be done according to these plans, and that any responsible personnel involved in the construction project will have a certificate of attendance at a department of the environment approved training program for the control of sediment and erosion during construction.

Engineering Firm & Address: A. Morton Thomas and Associates, Inc. 1772 Piedmont Drive, Rockville, MD 20853-1708. Project Name: JHU - Applied Physics Laboratory. POND AS-BUILT CHECKLIST table with columns for Rev. and Minimum Information Required.

Natural Resources Conservation Service FORD SUMMARY SHEET. PROJECT INFORMATION: JHU - Applied Physics Laboratory. Maryland Coordinates: East 830,000, North 486,000, County Howard, ADC Map/grid 19 / B2.

EMBANKMENT: Max Fill Height: 11 ft. Top Elevation: 384.55 ft. Normal Pool Elevation: N/A ft. DHW Water Elevation: 381.44 ft. Will embankment serve as a public roadway? Yes No.

APPROVED: DEPARTMENT OF PLANNING AND ZONING. CHIEF, DEVELOPMENT ENGINEERING DIVISION: DATE 5/17/02. CHIEF, DIVISION OF LAND DEVELOPMENT: DATE 5/20/02.

OPERATION, MAINTENANCE AND INSPECTION. Section of the pond(s) shown hereon shall be performed at least annually, in accordance with the checklist and items contained within USDA, SCS "Standards and Specifications For Ponds" (MD-378).

AMT A. MORTON THOMAS AND ASSOCIATES, INC. CONSULTING ENGINEERS. 12750 TWENBROOK PARKWAY, SUITE 200, ROCKVILLE MD 20852. TEL: (301) 881-2646 FAX: (301) 881-0814 AMT FILE # 98-153

Einhorn Yaffee Prescott logo and name.

Table with columns: DES: B. WARNER, DRN:, CHK: B. WARNER, DATE: 04/19/02, DATE, REVISIONS AND RECORD OF ISSUE, NO., BY, CK, APP.

Table with columns: NO., BY, CK, APP, REVISIONS AND RECORD OF ISSUE.

APPLIED PHYSICS LABORATORY THE JOHNS HOPKINS UNIVERSITY - POND A. POND SPECS. TAX MAP 41 PARCEL 123 ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND.

SCALE AS SHOWN. SHEET C13. SHEET 13 OF 24.

F-02-40

**SEDIMENT CONTROL & POND CONSTRUCTION**

( ) BY THE DEVELOPER:  
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

*Robert A. Warner* 4/25/2002  
SIGNATURE OF DEVELOPER DATE

( ) BY THE ENGINEER:  
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

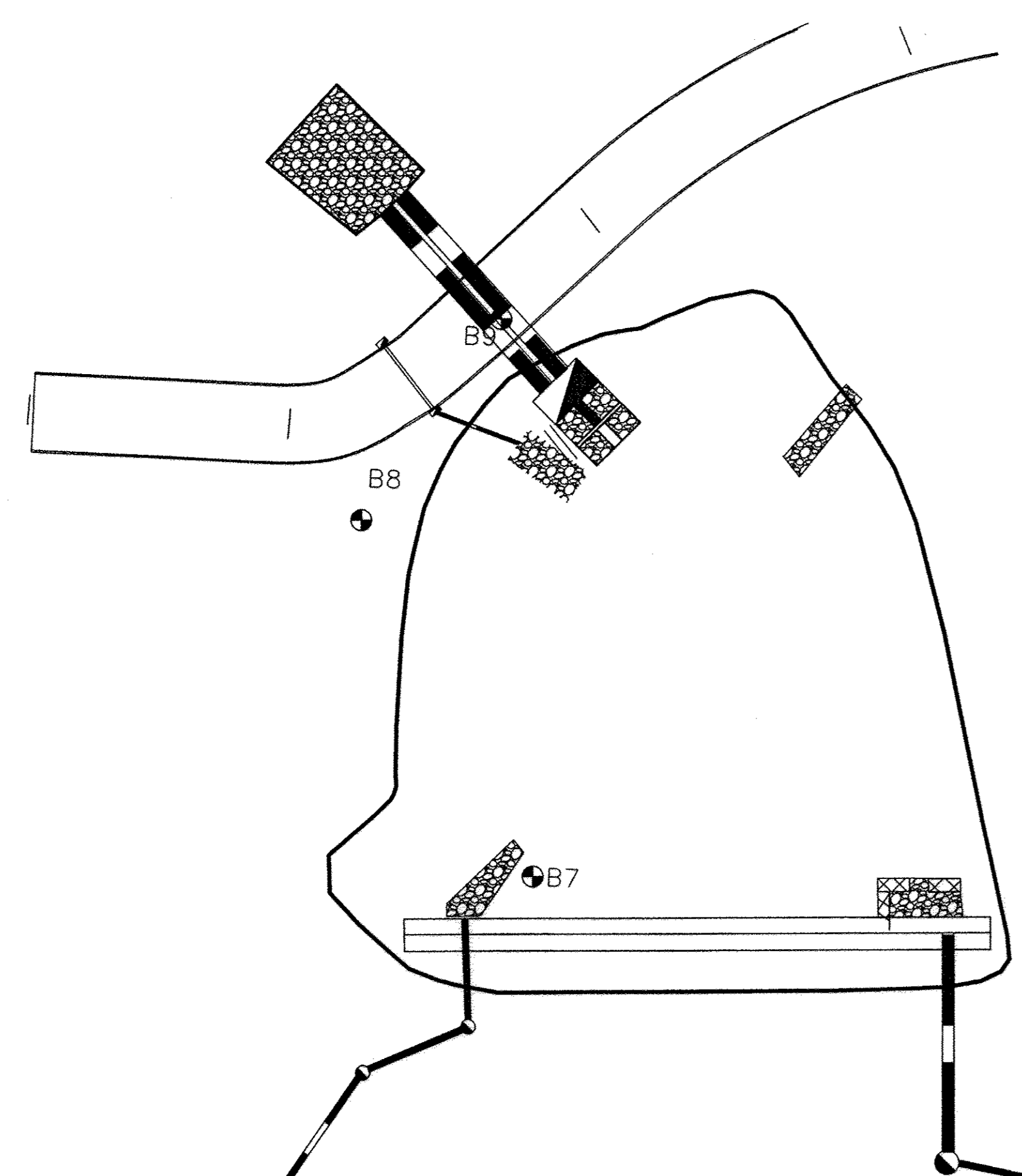
*Robert A. Warner* 4/22/02  
SIGNATURE OF ENGINEER DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT DATE



**Schnabel TEST BORING LOG** Project: John Hopkins Applied Physics Lab Storm Water Management Basin - A Boring Number: 01121283 B-7  
Contract Number: 01121283 Sheet: 1 of 1

Boring Contractor: Stevens Drilling  
Boring Foreman: Cave  
Drilling Method: 2-1/4 I.D. Hollow Stem Auger  
Drilling Equipment: ATV-Mounted  
SEA Representative: Eric Hennmueller  
Dates Started: 8/15/01 Finished: 8/15/01  
Location: See Boring Location Plan

Ground Surface Elevation: 380.02 (feet)

| Groundwater Observations |  | Date | Time | Depth | Casing | Caved |
|--------------------------|--|------|------|-------|--------|-------|
| Encountered              |  | 8/15 |      | 10.0' |        |       |
| Completion               |  | 8/15 |      | 7.0'  |        |       |
| Casing Pulled            |  | 8/15 |      | 4.0'  |        | 9.0'  |
| 24 hours                 |  | 8/16 |      | 2.0'  |        | 7.0'  |

| DEPTH (ft) | STRATA DESCRIPTION   | CLASS | ELEV. (ft) | STRATA-TUM | SAMPLING DEPTH DATA | TESTS   | REMARKS |
|------------|--|-------|------------|------------|---------------------|---------|---------|
| 0.2        | Topsoil  |       | 379.8      |            | 12+22+40            |         |         |
|            | DISINTEGRATED ROCK, micaceous, moist, reddish-brown to yellowish-brown |       |            |            | 100/5"              |         |         |
|            |  |       |            | C          | 5                   |         |         |
|            |  |       |            |            | 100/6"              | w=9.5%  |         |
| 8.5        | sandy SILT, micaceous, moist, reddish-brown                            | ML    | 371.5      |            | 8+8+17              | w=20.1% |         |
|            |  |       |            | B          | 10                  |         |         |
| 13.8       | DISINTEGRATED ROCK, micaceous, moist, reddish-brown                    |       | 368.5      |            | 100/4"              |         |         |
| 13.9       | BOTTOM OF BORING @ 13.9 FT.  |       | 366.1      |            |                     |         |         |

Comments:

**Schnabel TEST BORING LOG** Project: John Hopkins Applied Physics Lab Storm Water Management Basin - A Boring Number: 01121283 B-8  
Contract Number: 01121283 Sheet: 1 of 1

Boring Contractor: Stevens Drilling  
Boring Foreman: Cave  
Drilling Method: 2-1/4 I.D. Hollow Stem Auger  
Drilling Equipment: ATV-Mounted  
SEA Representative: Eric Hennmueller  
Dates Started: 8/15/01 Finished: 8/15/01  
Location: See Boring Location Plan

Ground Surface Elevation: 383.02 (feet)

| Groundwater Observations |  | Date | Time | Depth | Casing | Caved |
|--------------------------|--|------|------|-------|--------|-------|
| Encountered              |  | 8/15 |      | 13.0' |        |       |
| Completion               |  | 8/15 |      | 13.0' |        |       |
| Casing Pulled            |  | 8/15 |      | 12.0' |        | 13.0' |
| 24 hours                 |  | 8/16 | 7:05 | 10.0' |        | 12.0' |

| DEPTH (ft) | STRATA DESCRIPTION  | CLASS | ELEV. (ft) | STRATA-TUM | SAMPLING DEPTH DATA | TESTS   | REMARKS |
|------------|---|-------|------------|------------|---------------------|---------|---------|
| 0.3        | stone and gravel  |       | 382.7      |            | 8+13+12             |         |         |
|            | silty sand FILL, micaceous, moist, reddish-brown              |       |            |            |                     |         |         |
| 2.5        | silty sand FILL, micaceous, trace organics, moist, gray/brown |       | 380.5      | A          | 13+6+10             | w=18.0% |         |
| 8.0        | sandy SILT, micaceous, moist, yellowish-brown                 | ML    | 378.0      |            | 3+6+7               | w=18.6% |         |
|            |   |       |            | B          |                     |         |         |
| 9.0        | DISINTEGRATED ROCK, micaceous, moist, yellowish-brown         |       | 374.0      |            | 10+30+70            | w=9.2%  |         |
|            |   |       |            | C          |                     |         |         |
| 15.0       | BOTTOM OF BORING @ 15.0 FT.                                   |       | 368.0      |            | 35+60+50            |         |         |

Comments:  
6" Pipe installed for infiltration test. Infiltration test performed at a depth of 6.2 feet below grade.

**Schnabel TEST BORING LOG** Project: John Hopkins Applied Physics Lab Storm Water Management Basin - A Boring Number: 01121283 B-9  
Contract Number: 01121283 Sheet: 1 of 1

Boring Contractor: Stevens Drilling  
Boring Foreman: Cave  
Drilling Method: 2-1/4 I.D. Hollow Stem Auger  
Drilling Equipment: ATV-Mounted  
SEA Representative: Eric Hennmueller  
Dates Started: 8/15/01 Finished: 8/15/01  
Location: See Boring Location Plan

Ground Surface Elevation: 382.52 (feet)

| Groundwater Observations |  | Date | Time | Depth | Casing | Caved |
|--------------------------|--|------|------|-------|--------|-------|
| Encountered              |  | 8/15 |      | 13.0' |        |       |
| Completion               |  | 8/15 |      | 13.0' |        |       |
| Casing Pulled            |  | 8/15 |      | 12.0' |        | 12.0' |
| 24 hours                 |  | 8/16 | 7:00 | 11.0' |        | 12.0' |

| DEPTH (ft) | STRATA DESCRIPTION                                  | CLASS | ELEV. (ft) | STRATA-TUM | SAMPLING DEPTH DATA | TESTS   | REMARKS |
|------------|---|-------|------------|------------|---------------------|---------|---------|
| 0.3        | Topsoil   |       | 382.2      |            | 3+3+8               | w=14.2% |         |
|            | sandy silt FILL, micaceous, moist, reddish-brown    |       |            |            |                     |         |         |
|            |   |       |            | A          | 8+11+14             |         |         |
|            |   |       |            |            | 6+8+10              | w=21.3% |         |
| 8.5        | silty SAND, micaceous, moist, reddish-brown         | SM    | 373.0      |            | 3+3+20              | w=23.8% |         |
|            |   |       |            | B          |                     |         |         |
| 14.0       | DISINTEGRATED ROCK, micaceous, moist, reddish-brown |       | 368.8      |            | 8+26+55             |         |         |
| 15.0       | BOTTOM OF BORING @ 15.0 FT.                         |       | 367.8      |            |                     |         |         |

Comments:

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Mark...* 5/17/02  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
*...* 5/19/02  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
DIRECTOR DATE

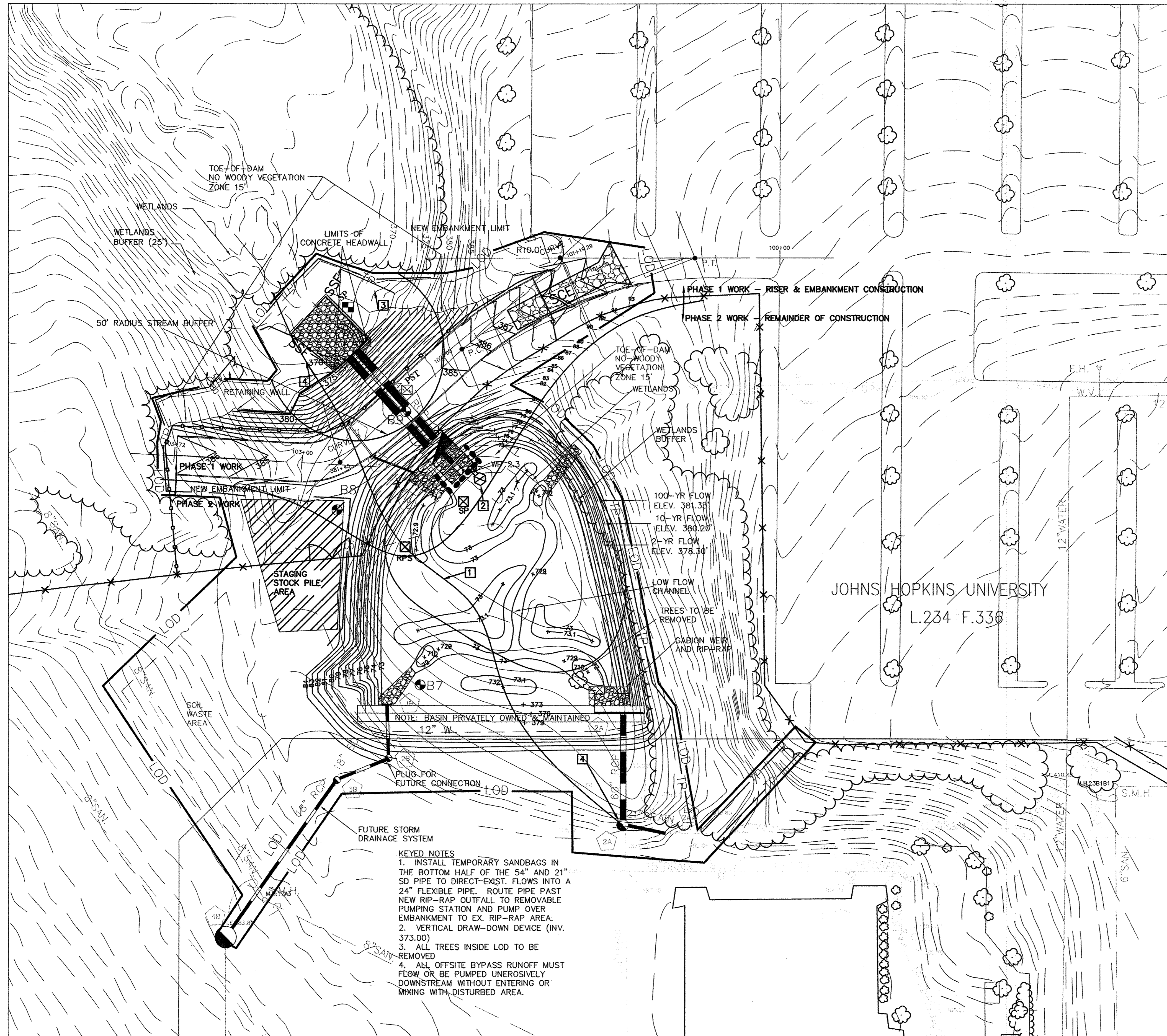


|                |      |                               |     |    |    |     |  |
|----------------|------|-------------------------------|-----|----|----|-----|--|
| DES: B. WARNER |      |                               |     |    |    |     |  |
| DRN:           |      |                               |     |    |    |     |  |
| CHK: B. WARNER |      |                               |     |    |    |     |  |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK | APP |  |

APPLIED PHYSICS LABORATORY  
THE JOHNS HOPKINS UNIVERSITY  
BORING LOCATION & DATA  
TAX MAP 41 PARCELS 123  
ELECTION DISTRICT 5  
HOWARD COUNTY, MD

SCALE AS SHOWN  
SHEET C14  
SHEET 14 OF 24

F-02-40



**SEDIMENT CONTROL & POND CONSTRUCTION**

( ) BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

*Robert A. Warner* 4/25/2002  
 SIGNATURE OF DEVELOPER DATE  
 PRINT NAME BELOW SIGNATURE

( ) BY THE ENGINEER:  
 I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

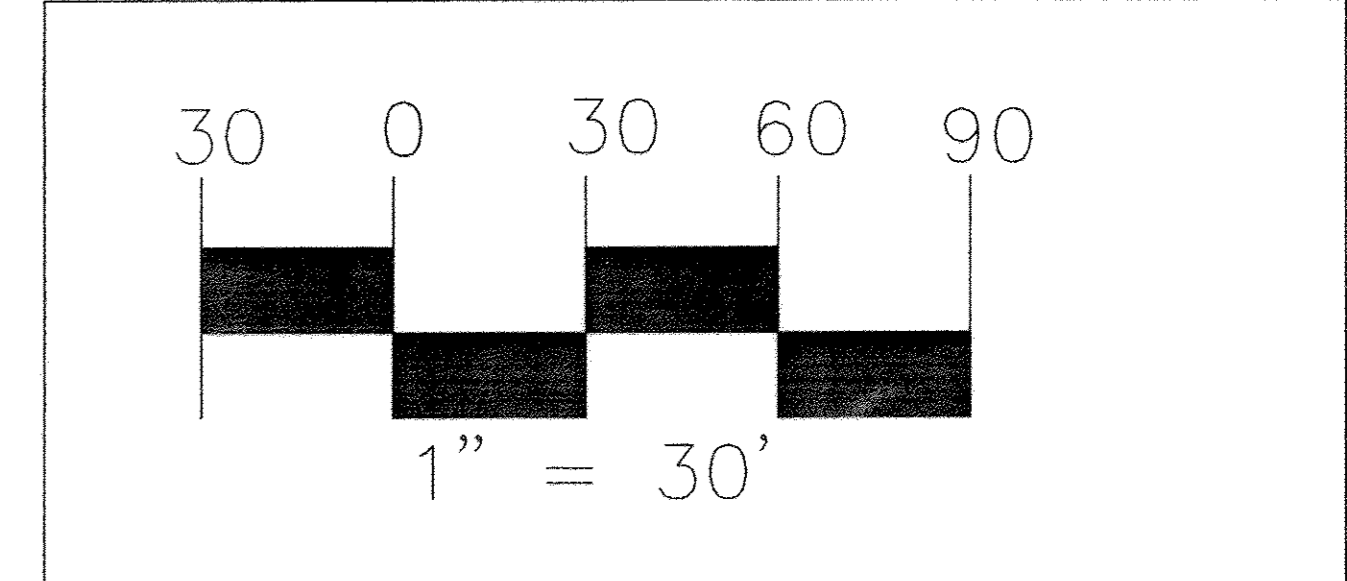
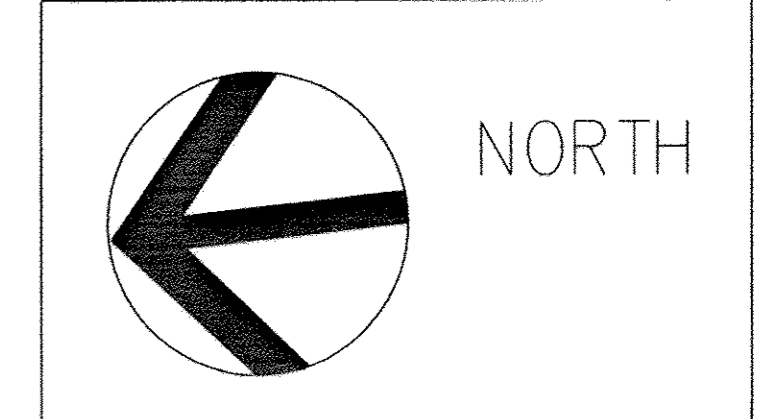
*Robert A. Warner* 5/6/02  
 SIGNATURE OF ENGINEER DATE  
 PRINT NAME BELOW SIGNATURE

( ) THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

*John J. ...* 5/6/02  
 SIGNATURE OF DEVELOPER DATE  
 PRINT NAME BELOW SIGNATURE

( ) THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*John J. ...* 5/6/02  
 SIGNATURE OF ENGINEER DATE  
 PRINT NAME BELOW SIGNATURE



**KEYED NOTES**

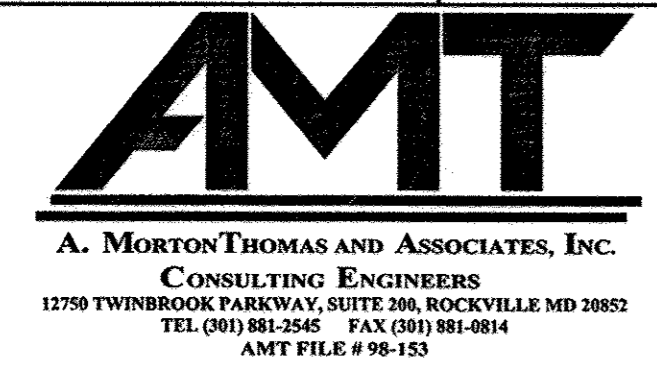
1. INSTALL TEMPORARY SANDBAGS IN THE BOTTOM HALF OF THE 54" AND 21" SD PIPE TO DIRECT-EXIST. FLOWS INTO A 24" FLEXIBLE PIPE. ROUTE PIPE PAST NEW RIP-RAP OUTFALL TO REMOVABLE PUMPING STATION AND PUMP OVER EMBANKMENT TO EX. RIP-RAP AREA.
2. VERTICAL DRAW-DOWN DEVICE (INV. 373.00)
3. ALL TREES INSIDE LOD TO BE REMOVED
4. ALL OFFSITE BYPASS RUNOFF MUST FLOW OR BE PUMPED UNEROSIVELY DOWNSTREAM WITHOUT ENTERING OR MIXING WITH DISTURBED AREA.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 5/17/02  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 5/2/02  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

N/A  
 DIRECTOR DATE

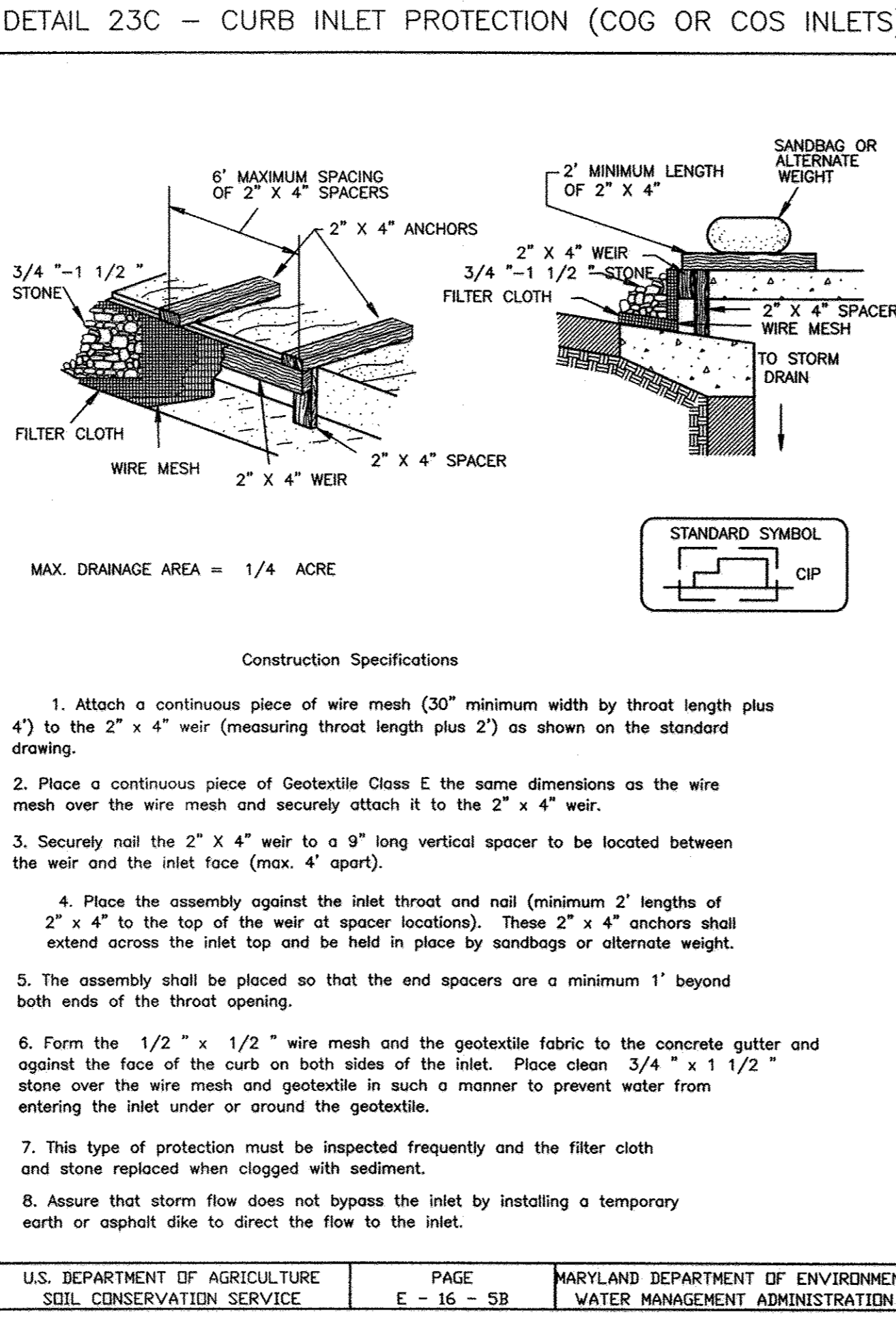
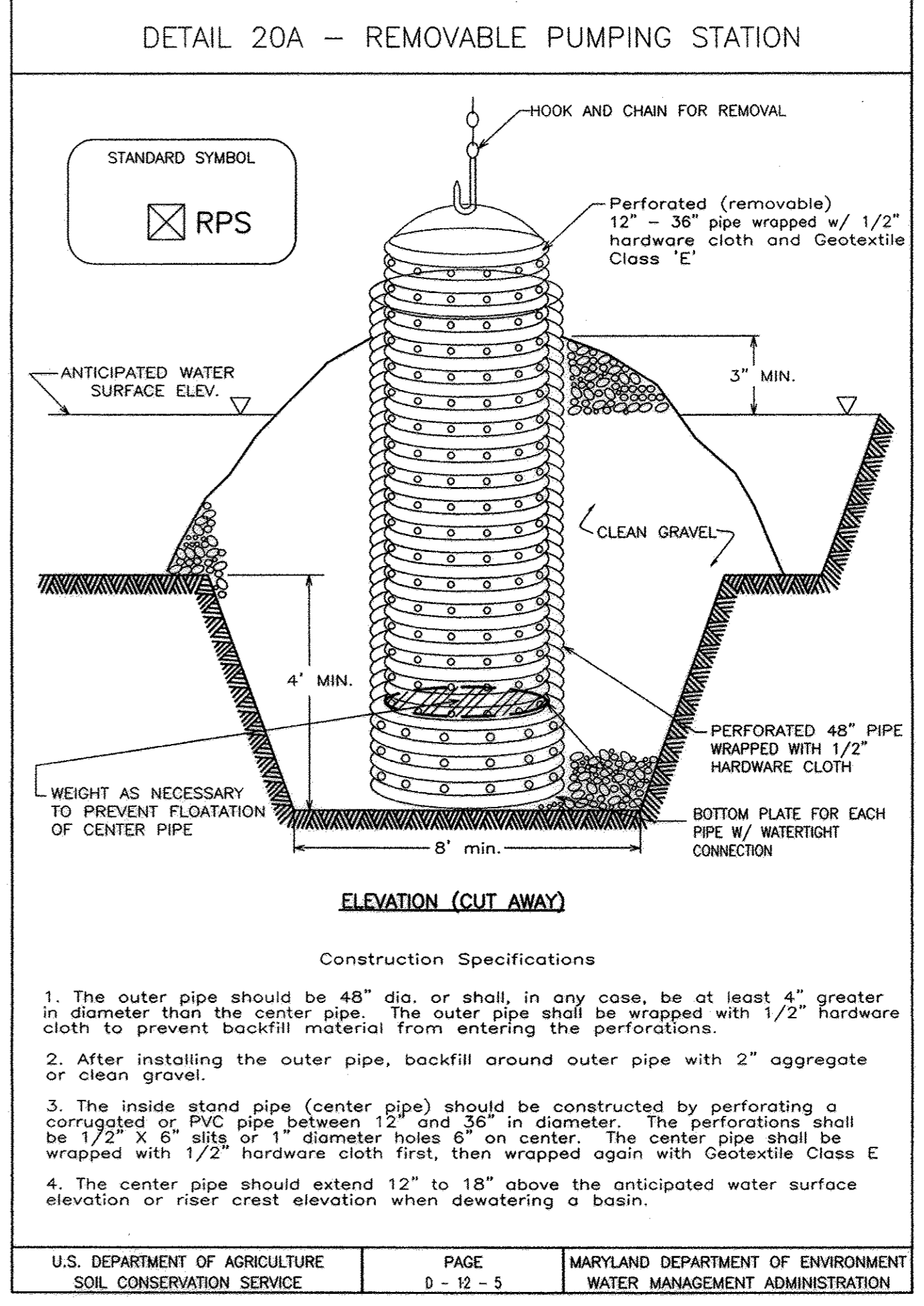
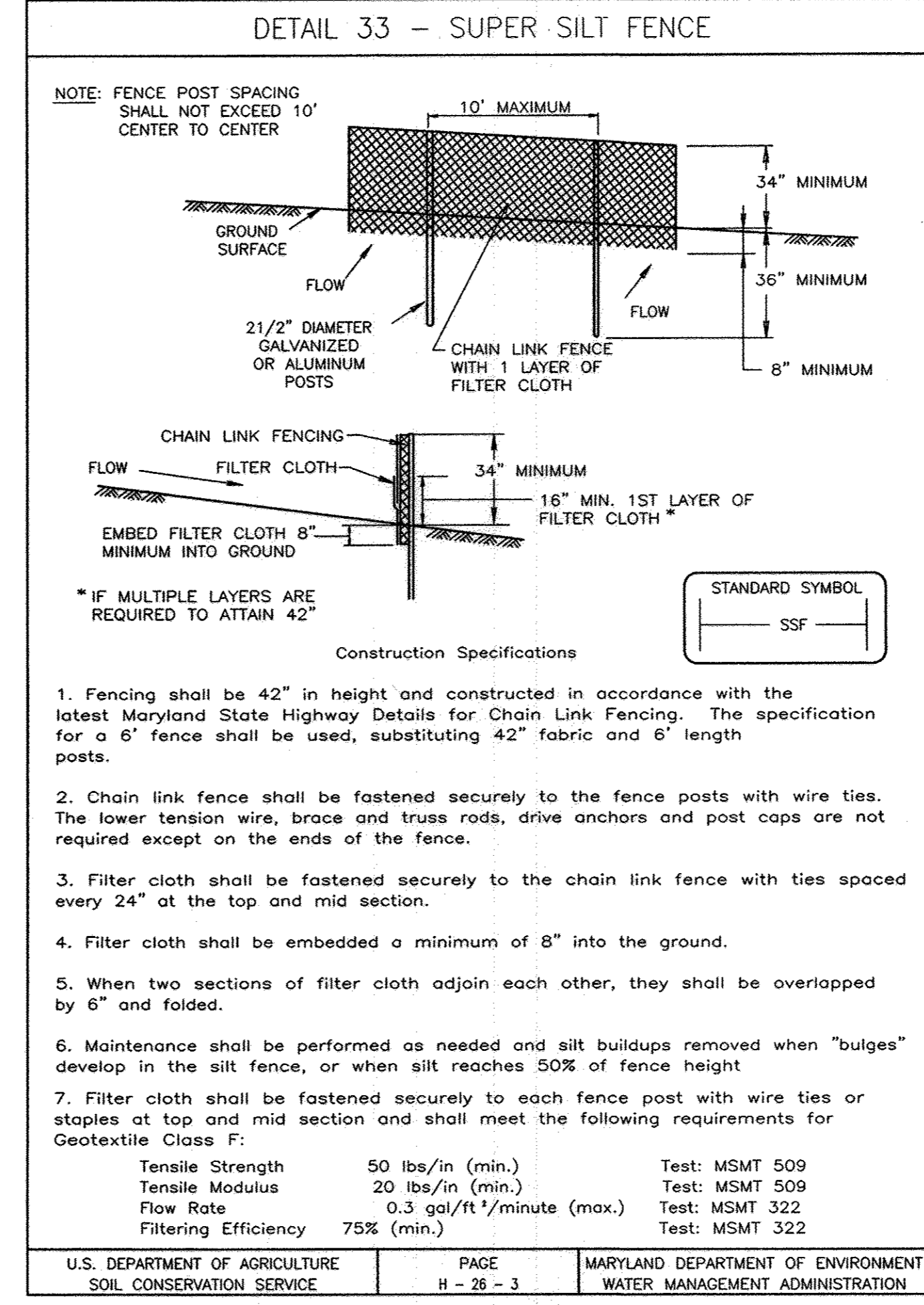
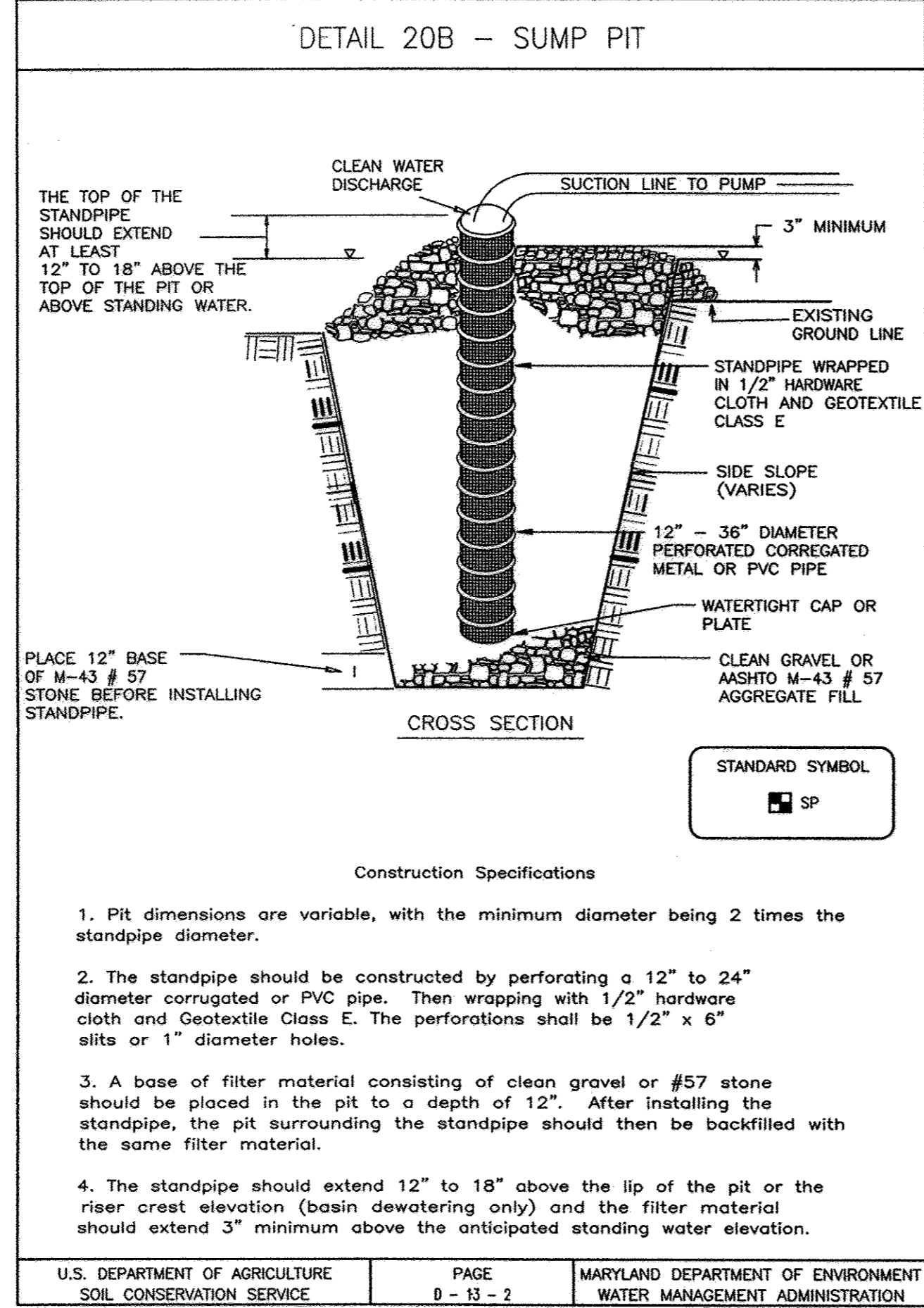
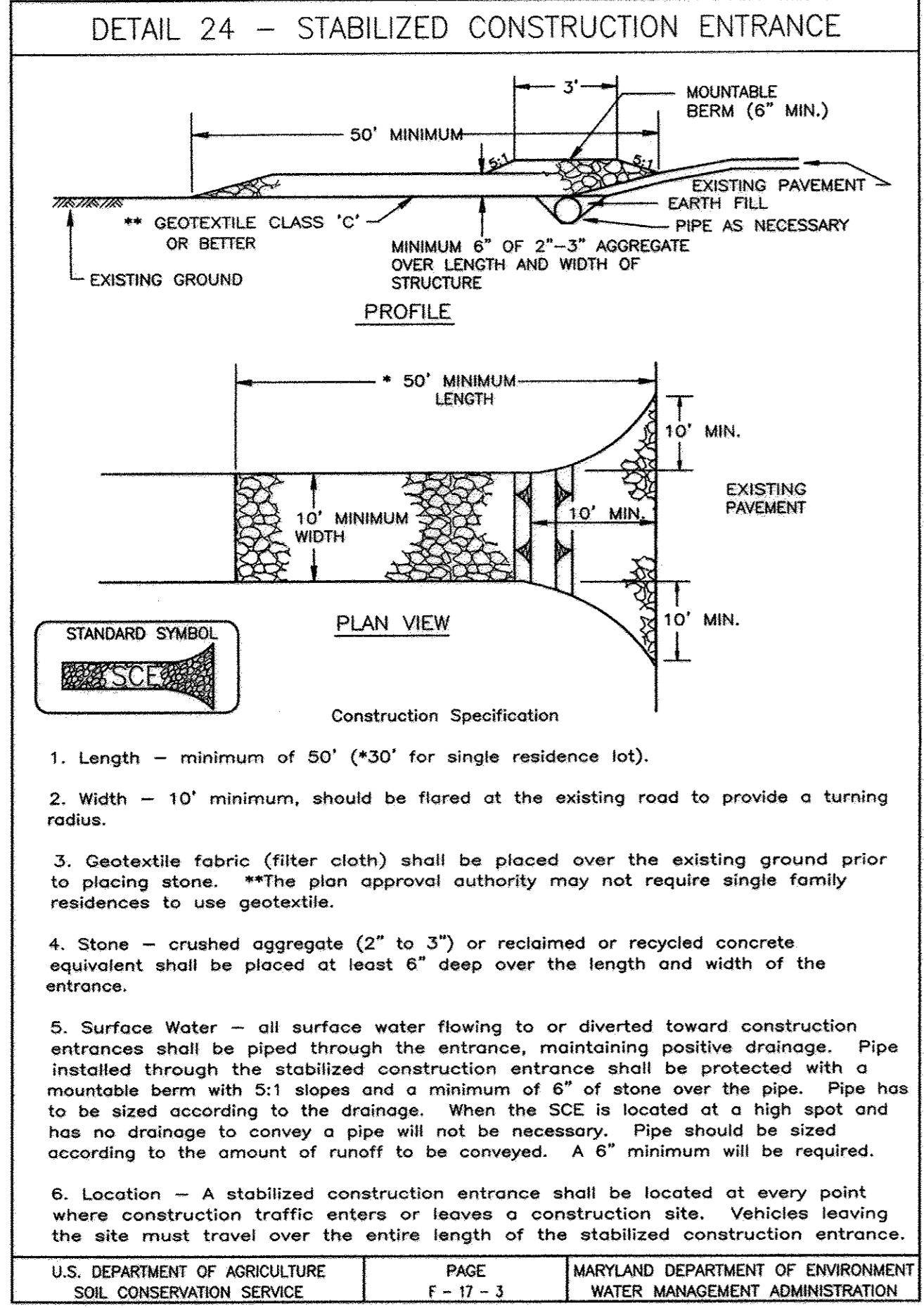


|                |      |                               |     |    |        |
|----------------|------|-------------------------------|-----|----|--------|
| DES: B. WARNER |      |                               |     |    |        |
| DRN: P. FRIAS  |      |                               |     |    |        |
| CHK: B. WARNER |      |                               |     |    |        |
| DATE: 04/24/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK APP |

APPLIED PHYSICS LABORATORY  
 THE JOHNS HOPKINS UNIVERSITY - POND A  
**EROSION & SEDIMENT CONTROL PLAN**  
 TAX MAP 41 PARCEL 123  
 ELECTION DISTRICT NO. 5  
 HOWARD COUNTY, MARYLAND

SCALE AS 1" = 30'  
 SHEET ES-1  
 SHEET 15 OF 24

F-02-40



### SILT FENCE

**Silt Fence Design Criteria**

| Slope Steepness   | (Maximum) Slope Length | (Maximum) Silt Fence Length |
|-------------------|------------------------|-----------------------------|
| Flatter than 50:1 | unlimited              | unlimited                   |
| 50:1 to 10:1      | 125 feet               | 1,000 feet                  |
| 10:1 to 5:1       | 100 feet               | 750 feet                    |
| 5:1 to 3:1        | 60 feet                | 500 feet                    |
| 3:1 to 2:1        | 40 feet                | 250 feet                    |
| 2:1 and steeper   | 20 feet                | 125 feet                    |

Note: In areas of less than 2% slope and sandy soils (USDA general classification system, soil Class A) maximum slope length and silt fence length will be unlimited. In these areas a silt fence may be the only perimeter control required.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE E-15-3A MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

### SEDIMENT CONTROL & POND CONSTRUCTION

( ) BY THE DEVELOPER:  
 I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature: *Robert A. Warner* DATE: 4/25/02  
 PRINT NAME BELOW SIGNATURE

( ) BY THE ENGINEER:  
 I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

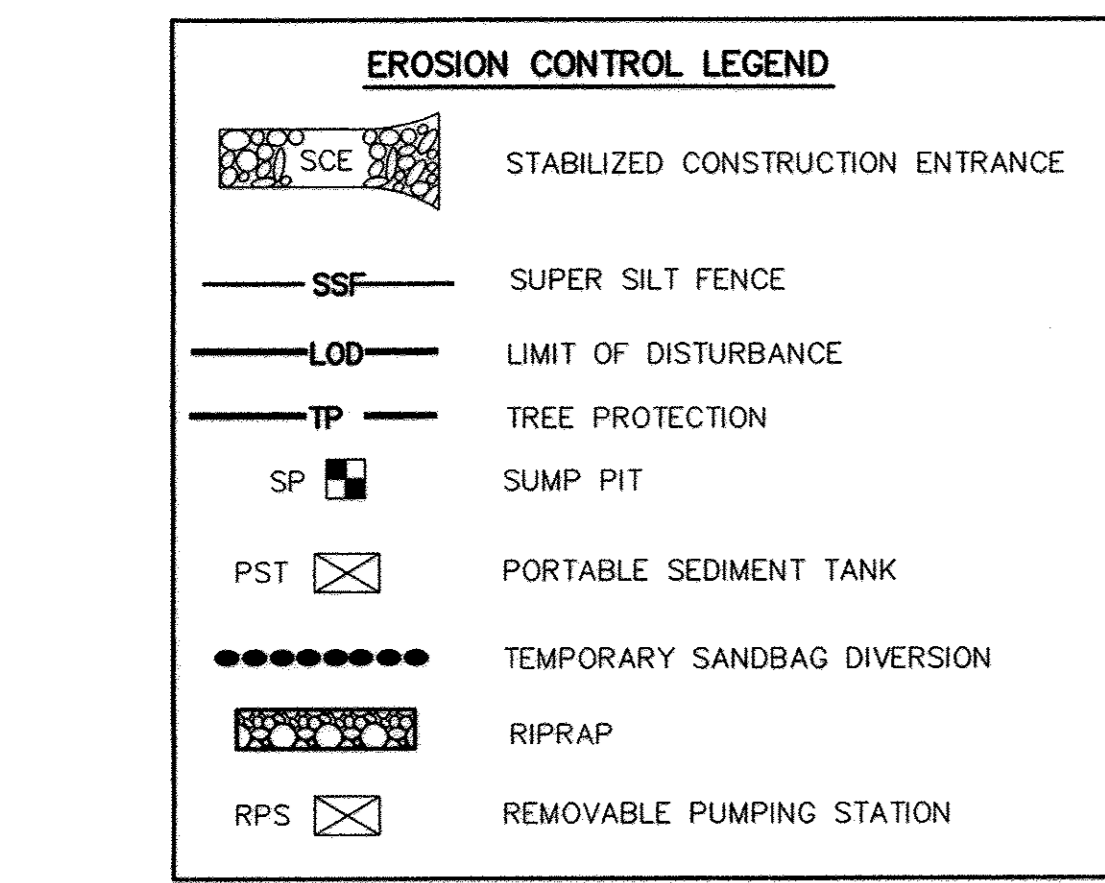
Signature: *Robert A. Warner* DATE: 5/6/02  
 PRINT NAME BELOW SIGNATURE

( ) THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

Signature: *Jim Munn* DATE: 5/6/02  
 USDA-NATURAL RESOURCES CONSERVATION SERVICE

( ) THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Signature: *Robert A. Warner* DATE: 5/6/02  
 HOWARD SOIL CONSERVATION DISTRICT

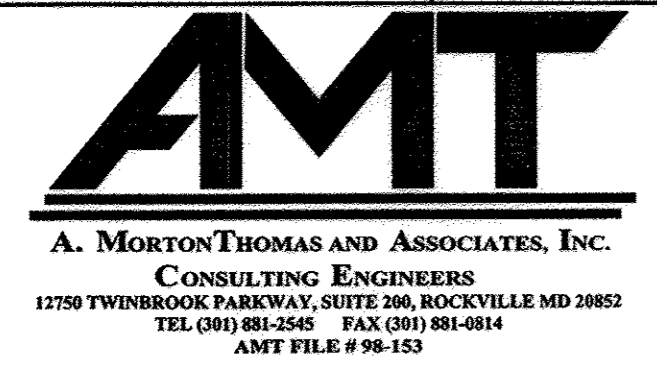


APPROVED: DEPARTMENT OF PLANNING AND ZONING

Signature: *[Signature]* DATE: 5/17/02  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

Signature: *[Signature]* DATE: 5/20/02  
 CHIEF, DIVISION OF LAND DEVELOPMENT

Signature: *[Signature]* DATE: X  
 DIRECTOR



|                |      |                               |     |    |        |
|----------------|------|-------------------------------|-----|----|--------|
| DES: B. WARNER |      |                               |     |    |        |
| DRN: S. ITANI  |      |                               |     |    |        |
| CHK: B. WARNER |      |                               |     |    |        |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK APP |

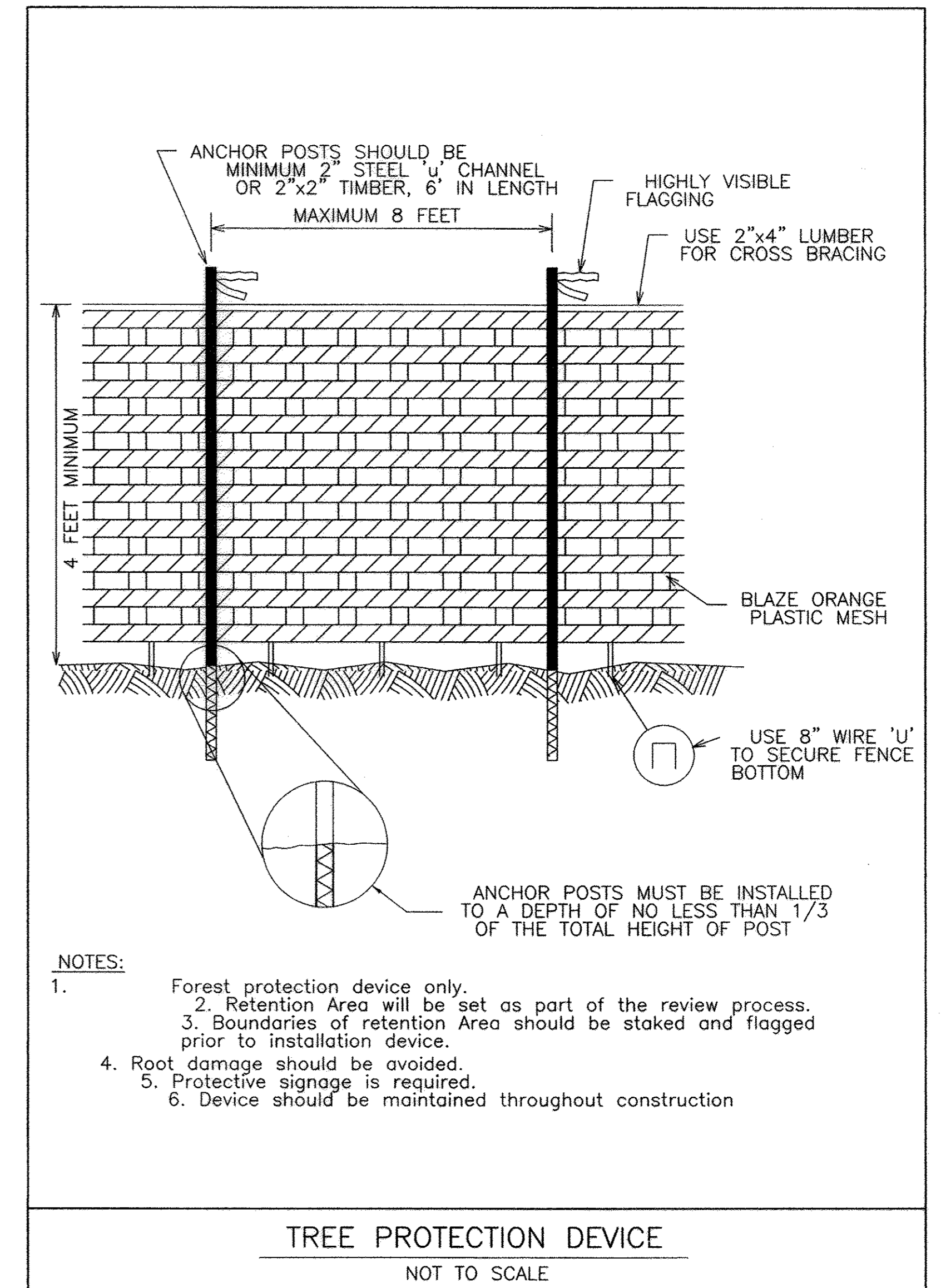
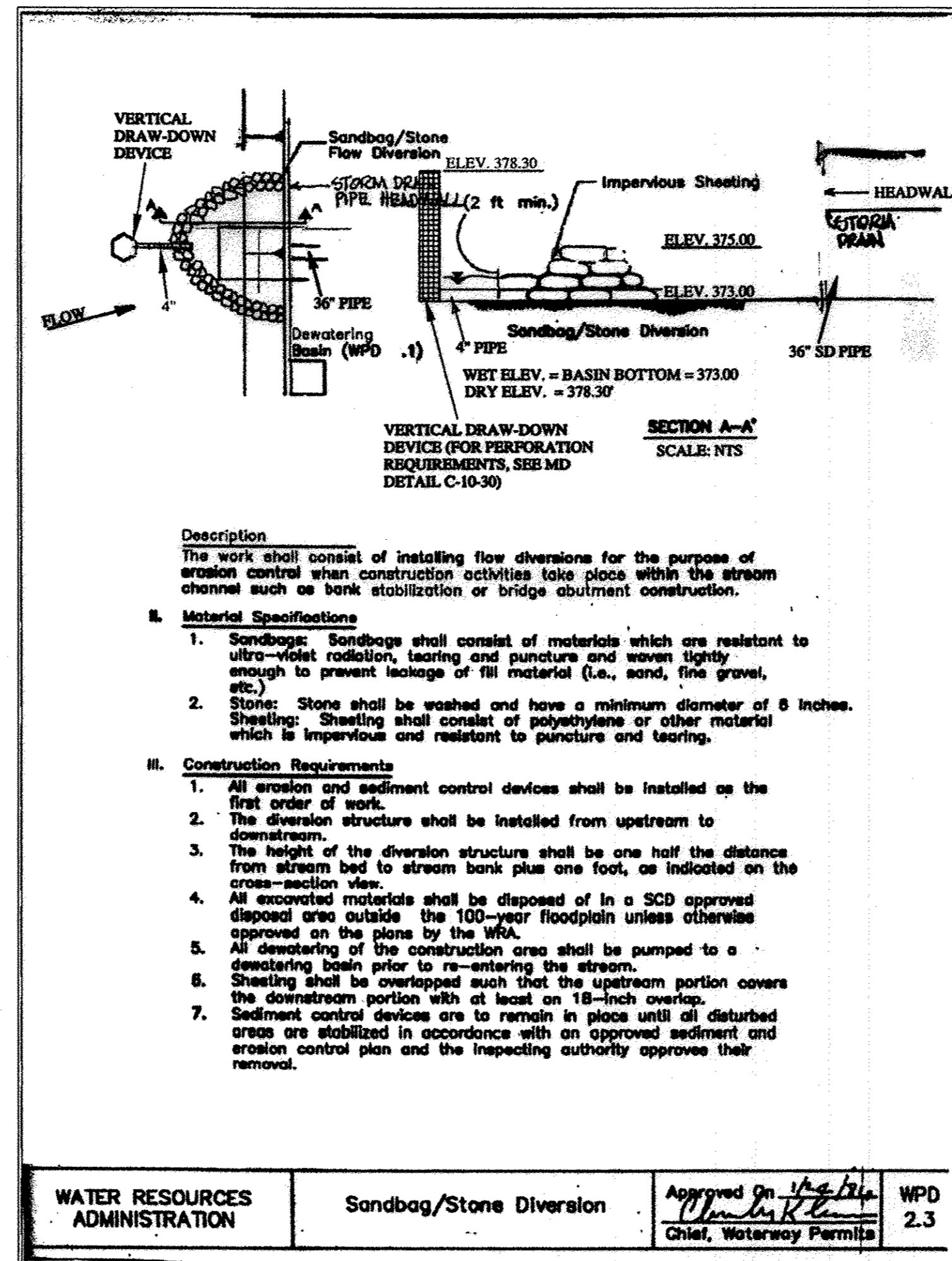
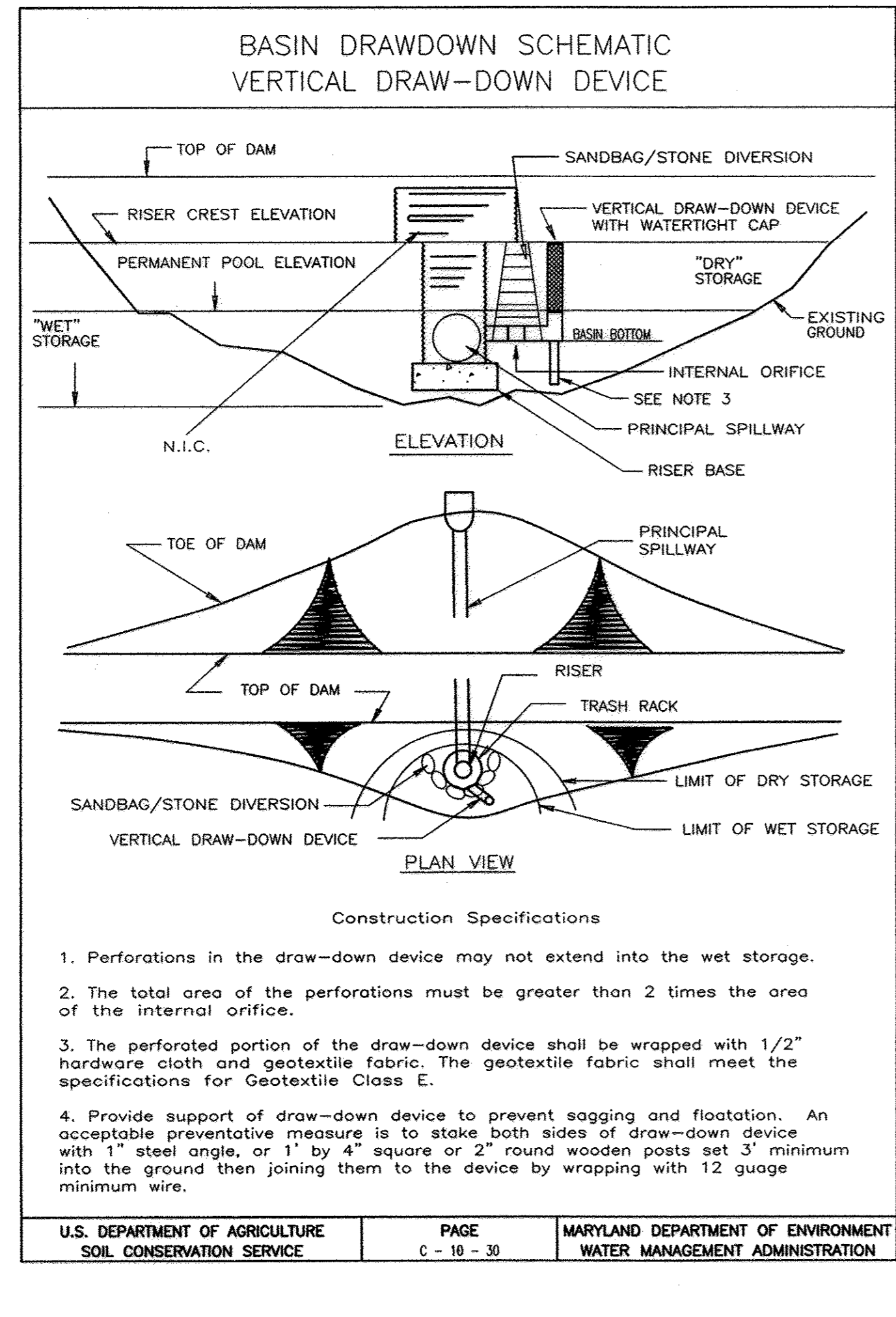
APPLIED PHYSICS LABORATORY  
 THE JOHNS HOPKINS UNIVERSITY - POND A  
 EROSION & SEDIMENT  
 NOTES AND DETAILS  
 TAX MAP 41 PARCEL 123  
 ELECTION DISTRICT NO. 5  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET ES-2  
 SHEET 16 OF 24

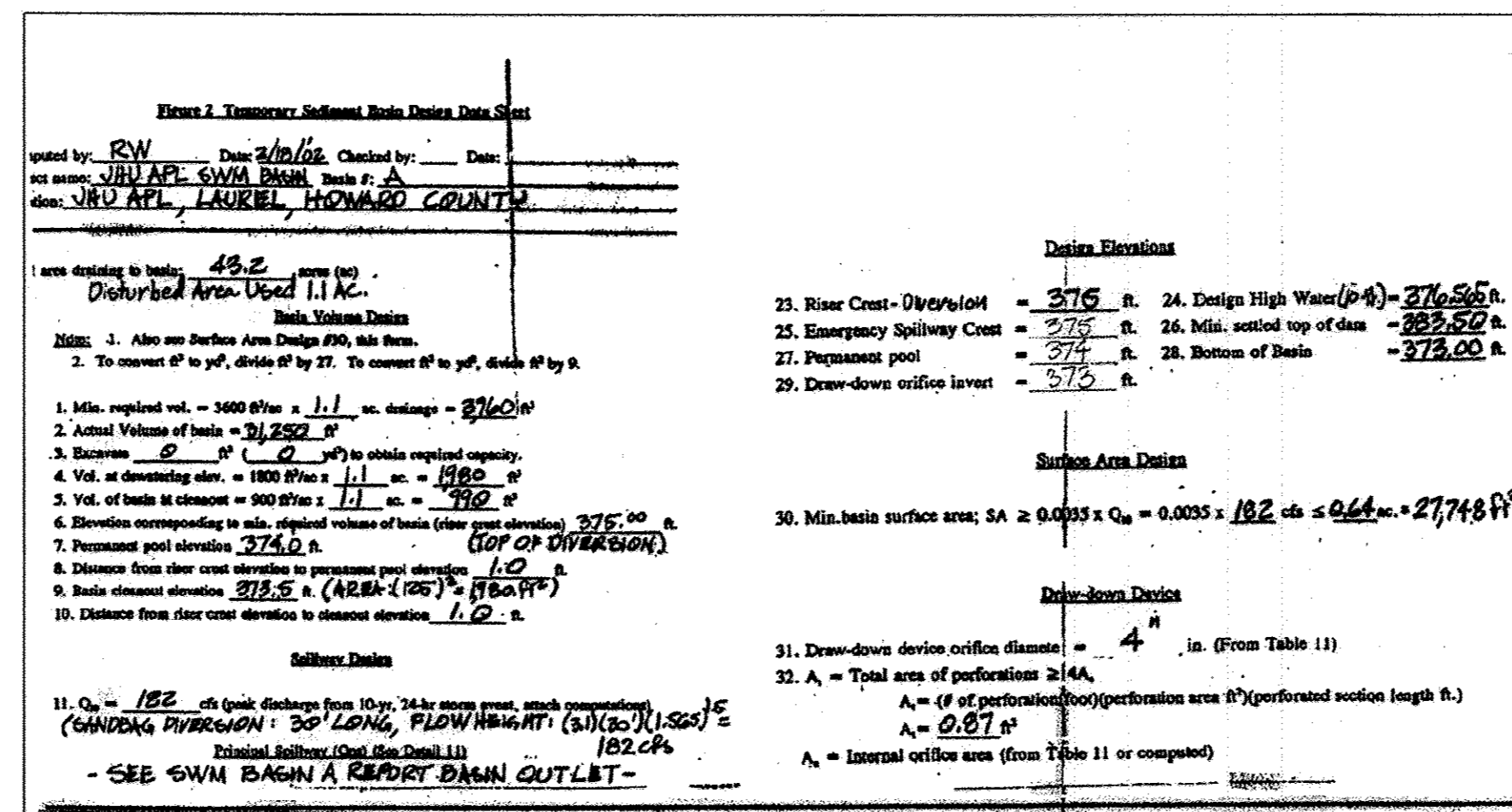
FOR EROSION AND SEDIMENT CONTROL ONLY

F-02-40





SANDBAG/STONE DIVERSION TO BE INSTALLED TO BLOCK INLET OF BASIN OUTLET STRUCTURE. BASIN TO BE DEWATERED BY MECHANICAL PUMP THROUGH "PST".



**SEDIMENT CONTROL & POND CONSTRUCTION**

( ) BY THE DEVELOPER:  
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC IN-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of Developer: [Signature] DATE: 4/25/02

( ) BY THE ENGINEER:  
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

Signature of Engineer: [Signature] DATE: 5/8/02

( ) THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

Signature of Reviewer: [Signature] DATE: 5/8/02

USDA-NATURAL RESOURCES CONSERVATION SERVICE

( ) THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of District: [Signature] DATE: 5/8/02

HOWARD SOIL CONSERVATION DISTRICT

| Item  | Comments  | Y/N        | DATE |
|---|-----------|------------|------|
| 1. Visual settlement?                         |           |            |      |
| 2. Misalignment?                              |           |            |      |
| 3. Cracking?                                  |           |            |      |
| 4. Erosion slope?                             |           |            |      |
| 5. Ground cover in good condition?            |           |            |      |
| 6. Trees, shrubs, or other woody vegetation?  |           |            |      |
| 7. Longitudinal/vertical cracks?              |           |            |      |
| 8. Adequate crown protection?                 |           |            |      |
| 9. Stone deterioration?                       |           |            |      |
| 10. Settlements, depressions, or bulges?      |           |            |      |
| 11. Downstream slope?                         |           |            |      |
| 12. Erosion?                                  |           |            |      |
| 13. Ground cover in good condition?           |           |            |      |
| 14. Trees, shrubs, or other woody vegetation? |           |            |      |
| 15. Longitudinal/vertical cracks?             |           |            |      |
| 16. Storm protection adequate?                |           |            |      |
| 17. Settlements, depressions, or bulges?      |           |            |      |
| 18. Soft spots or boggy areas?                |           |            |      |
| 19. Movement at or beyond toe?                |           |            |      |
| 20. Walls at toe?                             |           |            |      |
| 21. DRAINAGE/SEWER CONTROL                    |           |            |      |
| a. Internal drains flowing?                   | Est. Left | Est. Right |      |
| b. Seepage at toe?                            | Setback   | Setback    |      |
| c. Clear drainage channels?                   |           |            |      |
| d. Adhesive contacts                          |           |            |      |
| e. Erosion?                                   |           |            |      |
| f. Differential movement?                     |           |            |      |
| g. Cracks?                                    |           |            |      |
| h. Seepage?                                   |           |            |      |
| i. Adequate erosion protection for ditches?   |           |            |      |
| 22. INLET STRUCTURE                           |           |            |      |
| a. Seepage into structure?                    |           |            |      |
| b. Debris or obstruction?                     |           |            |      |
| c. If concrete, do surfaces show:             |           |            |      |
| 1. Spalling?                                  |           |            |      |
| 2. Cracking?                                  |           |            |      |
| 3. Erosion?                                   |           |            |      |
| 4. Seepage?                                   |           |            |      |
| 5. Exposed reinforcement?                     |           |            |      |
| 6. Other?                                     |           |            |      |
| d. If metal, do surfaces show:                |           |            |      |
| 1. Corrosion?                                 |           |            |      |
| 2. Protective coating deficient?              |           |            |      |
| 3. Misalignment or split seams?               |           |            |      |
| e. Do the joints show:                        |           |            |      |
| 1. Displacement or offset?                    |           |            |      |
| 2. Loss of joint material?                    |           |            |      |
| 3. Leakage?                                   |           |            |      |

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DIRECTOR

DATE: 5/10/02  
DATE: 5/2/02  
DATE: N/A

**OPERATION AND MAINTENANCE SCHEDULE**  
OWNER SHALL INSPECT AND COMPLETE  
INSPECTION CHECK LIST-SEMI ANNUALLY  
REPAIRS AND MAINTENANCE SHALL BE PERFORMED  
ANNUALLY AND WHEN NEEDED.

FOR EROSION AND SEDIMENT CONTROL ONLY

**AMT**  
A. MORTON THOMAS AND ASSOCIATES, INC.  
CONSULTING ENGINEERS  
12350 TWINBROOK PARKWAY, SUITE 200, ROCKVILLE, MD 20852  
TEL: (301) 881-2545 FAX: (301) 881-8814  
AMT FILE # 98-153

**Einhorn Yaffee Prescott**

| DES:      | DRN:     | CHK:     | DATE:    | DATE: | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK | APP |
|-----------|----------|----------|----------|-------|-------------------------------|-----|----|----|-----|
| B. WARNER | P. FRIAS | S. ITANI | 04/19/02 |       |                               |     |    |    |     |

APPLIED PHYSICS LABORATORY  
THE JOHNS HOPKINS UNIVERSITY - POND A  
**EROSION & SEDIMENT  
DETAILS AND NOTES**  
TAX MAP 41 PARC 123  
ELECTION DISTRICT 3-5  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET ES-3  
SHEET 17 OF 24

F-02-40



**SITE NARRATIVE**

The 1.33 acre Storm Water Management (SWM) Pond Retrofit and improvement site are within an existing open space off of the Johns Hopkins University, Applied Physics Laboratory grounds. The existing SWM pond serves a portion of the developed area of the grounds and is located in the Middle Patuxent River watershed.

The SWM site is bounded by a sloped forested edge on the southern side, buildings and parking areas on the eastern and western edges, and the pond dam and lower forested area to the north. The site is located within the major drainage basin of the laboratory grounds. Portions of the SWM Pond maintenance project and associated grading will impact 5,277 square feet of emergent wetlands predominately containing exotic *Phragmites australis* and broad-leaved cattails (*Typha latifolia*). Some edges of the emergent area contain Black Willow and Smooth Rush. No specimen trees are located within the proposed SWM site construction area.

The site contains a perennial stream. The stream flows are primarily a direct result of the storm drainage on the site. The storm drainage system drains the surface water from the site and conveys the water from the condensate drains of the existing air handling equipment on the site. The condensate drain flows appear to provide a 12-15 gallon per minute base flow in the summer months. This condensate flow is greatly reduced during the heating season.

The original storm water management pond was originally designed as an infiltration basin. The creation of the wetlands on the site within the existing basin is a result of the summer base flow of the condensate drain and storm flows.

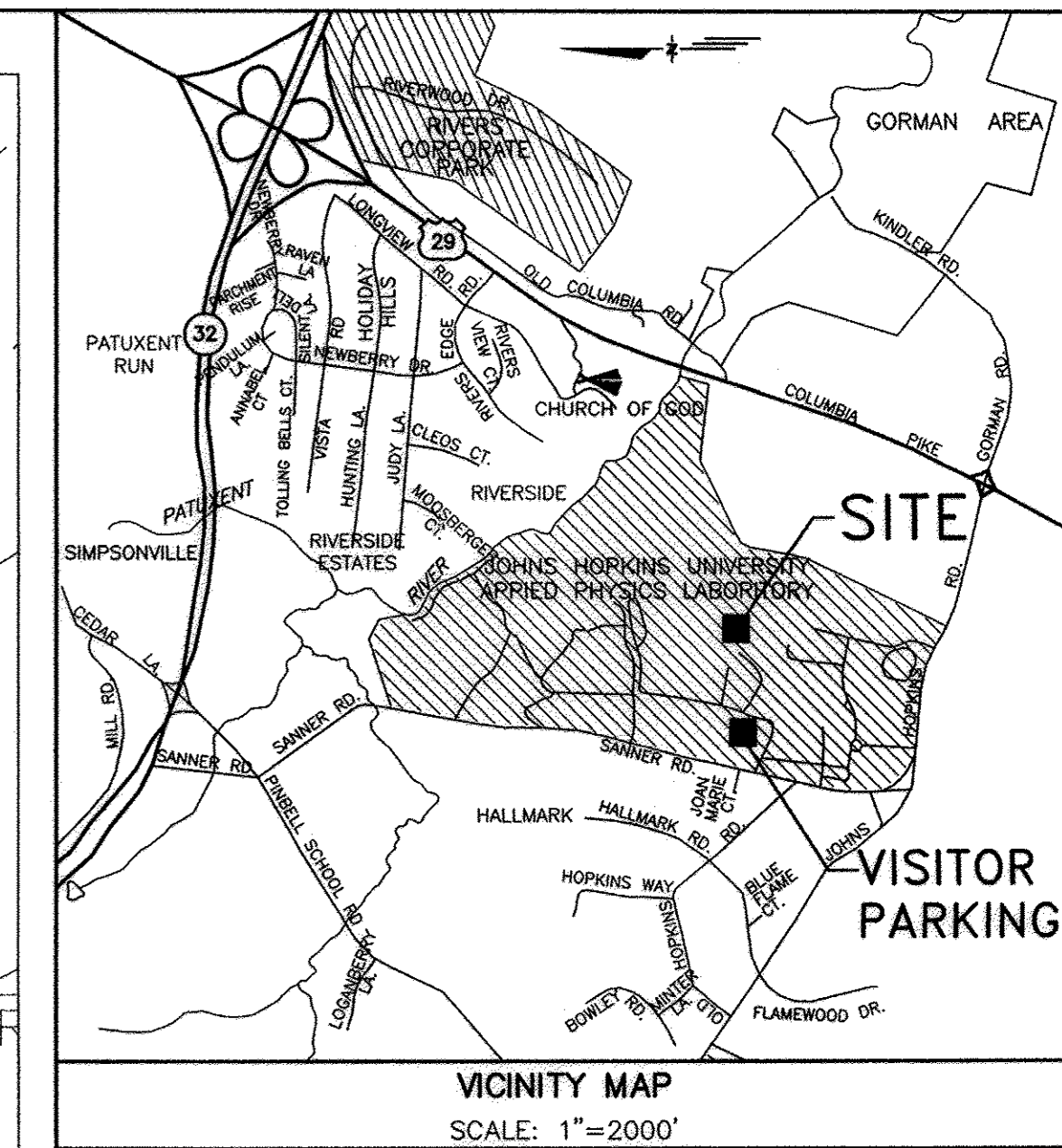
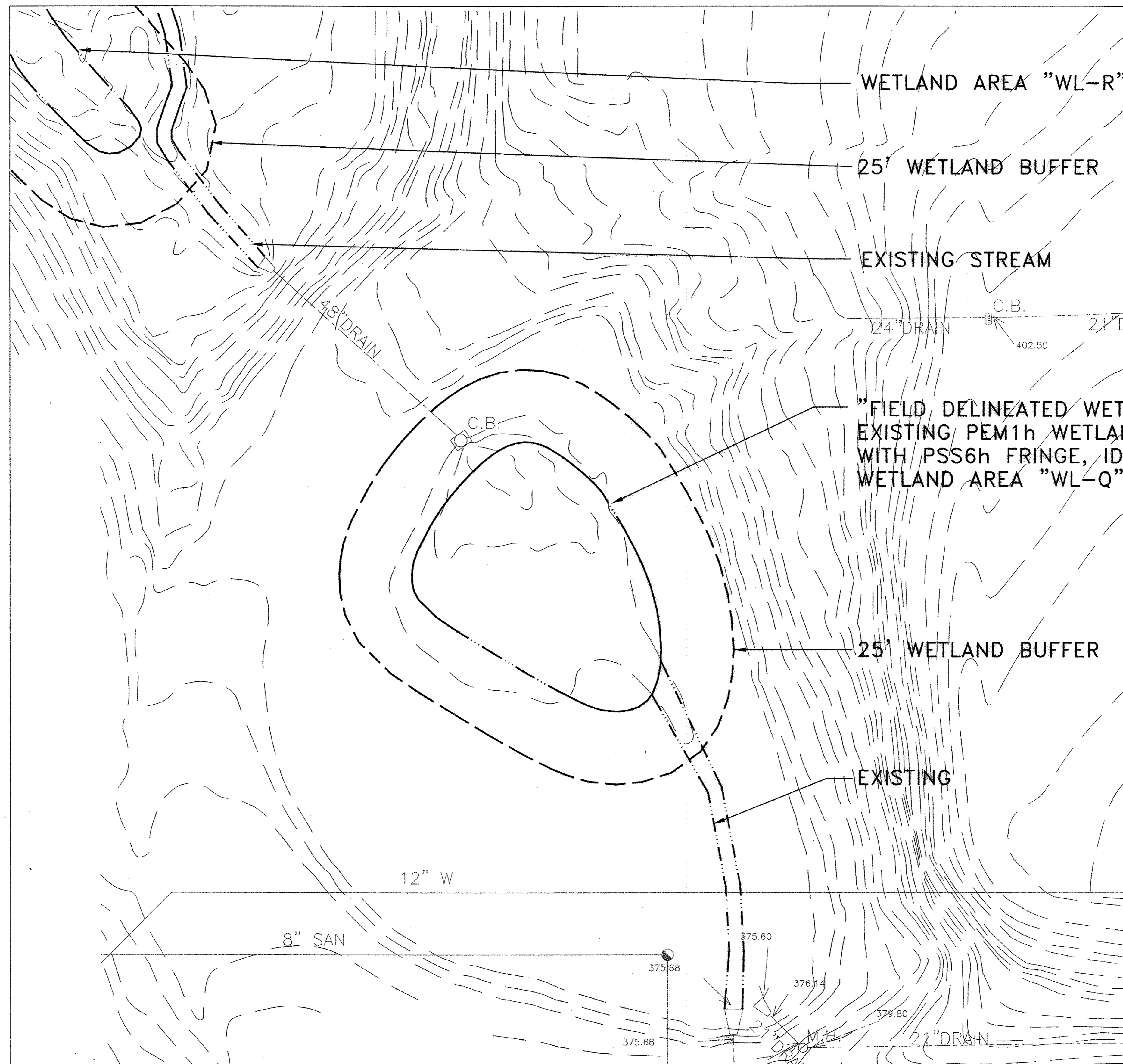
Preliminary soils information obtained from the Howard County Soil Survey Manual dated: July, 1995 indicates that the site contains the following soils:

Bo-Baile silt loam, 0 to 3 percent slopes. This soil is very deep and poorly drained. It is in upland depressions and along drainage ways. The baile soils are on the hydric soils list. The potential adaptability of wetland plants is good. The potential for wetland wildlife is fair.

The surface drainage and hydrology within the site have been modified by the previous SWM pond grading activities and adjacent development. Substantial re-grading has occurred on-site for the original SWM pond construction. Generally the soils within the basin did not exhibit the characteristics of a hydric soil.

The stream within the SWM site and the culvert replacement are perennial and designated as class I waters. The stream is tributary to the Middle Patuxent River within the Patuxent River Watershed. Flowing water was evident both above and below the pond area. No other intermittent, natural springs, or seeps were found on-site.

The site primarily consists of exotic emergent wetland plants adjacent to the stream and mowed turf type fescue and ryegrass on the basin bottom and side slopes to the north and west. There is forest on-site to the south of the site. The site area has been labeled on the plan and shows free standing trees, vacant cleared land, woods, emergent wetlands, and the wetland buffer. No threatened, endangered species or critical habitats were evident on the site at the time of the investigation.



**SEDIMENT CONTROL & POND CONSTRUCTION**

( ) BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]* 4/25/2002  
 SIGNATURE OF DEVELOPER DATE  
 PRINT NAME BELOW SIGNATURE

( ) BY THE ENGINEER:  
 I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

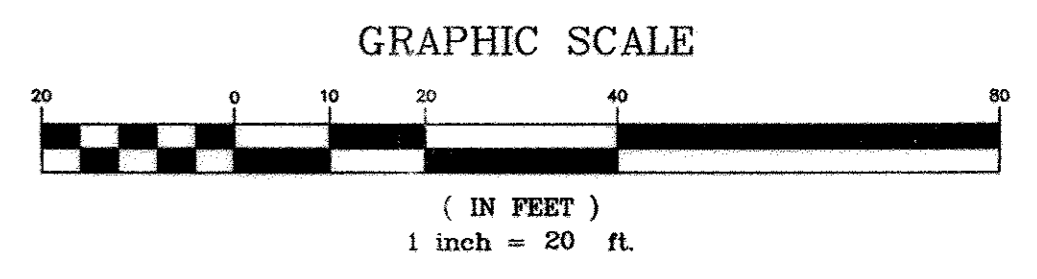
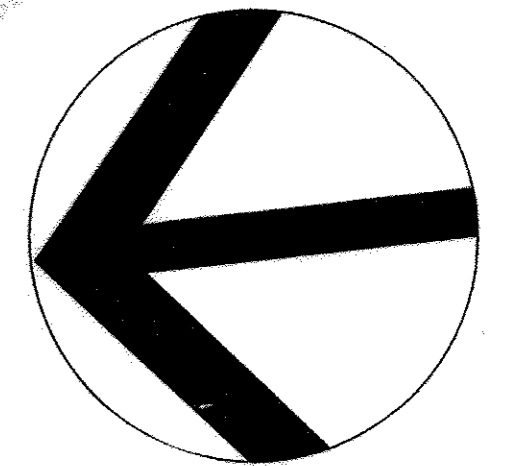
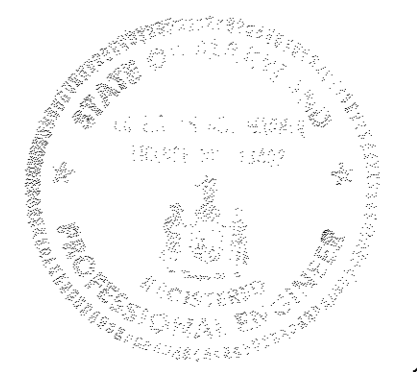
*[Signature]* 4/25/02  
 SIGNATURE OF ENGINEER DATE  
 PRINT NAME BELOW SIGNATURE  
 Robert A. Warner

( ) THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE \_\_\_\_\_

( ) THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT DATE \_\_\_\_\_



APPROVED: DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 5/17/02  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 5/20/02  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DIRECTOR N/A DATE

**AMT**  
 A. MORTON THOMAS AND ASSOCIATES, INC.  
 CONSULTING ENGINEERS  
 13759 TWINBROOK PARKWAY, SUITE 200, ROCKVILLE MD 20852  
 TEL (301) 881-2545 FAX (301) 881-0814  
 AMT FILE # 96-153

Einhorn  
 Yaffee  
 Prescott

|                |      |                               |     |    |        |
|----------------|------|-------------------------------|-----|----|--------|
| DES: N. HAINES |      |                               |     |    |        |
| DRN: M. NORTON |      |                               |     |    |        |
| CHK: N. HAINES |      |                               |     |    |        |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK APP |

**SWM BASIN 'A'**

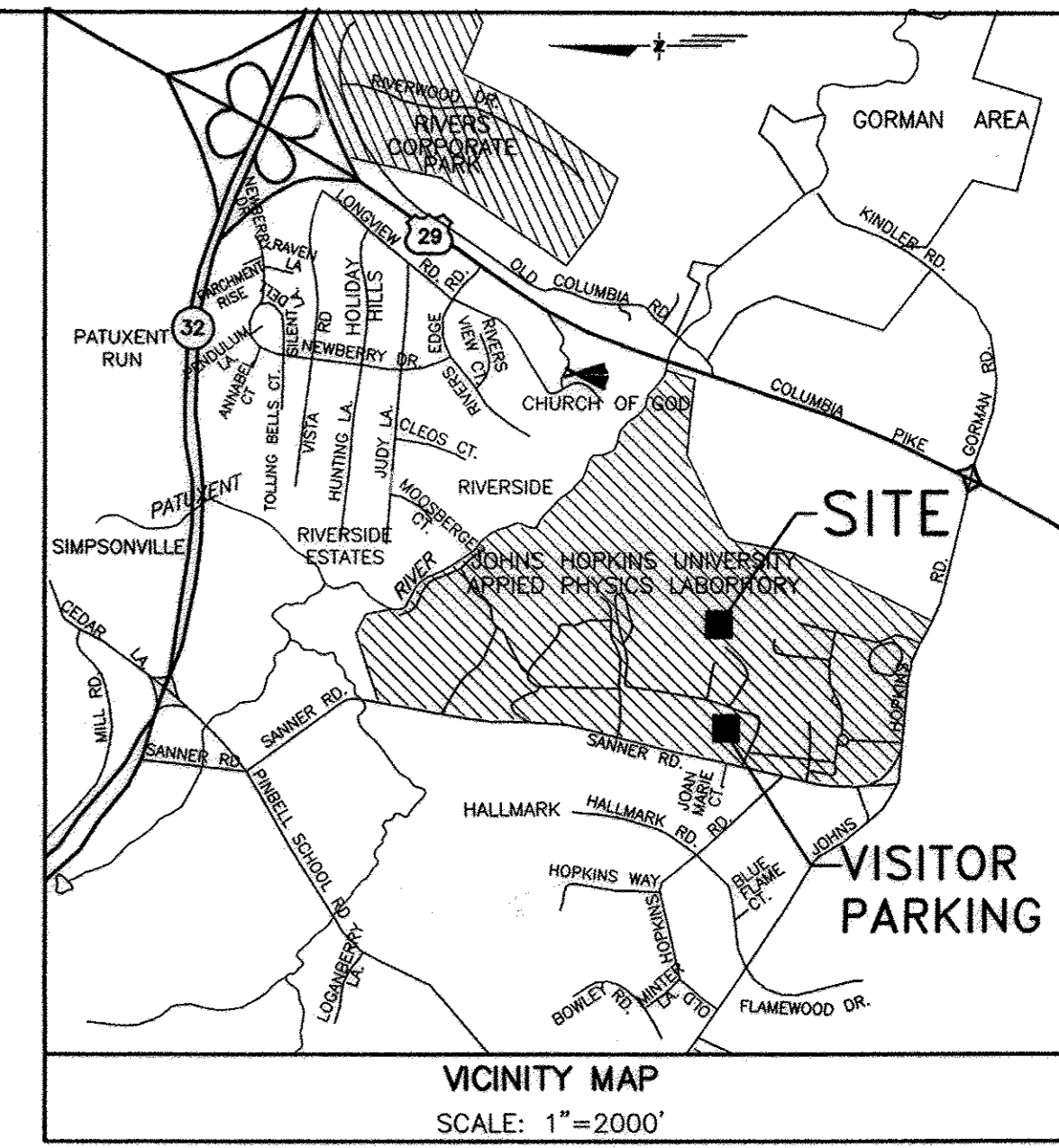
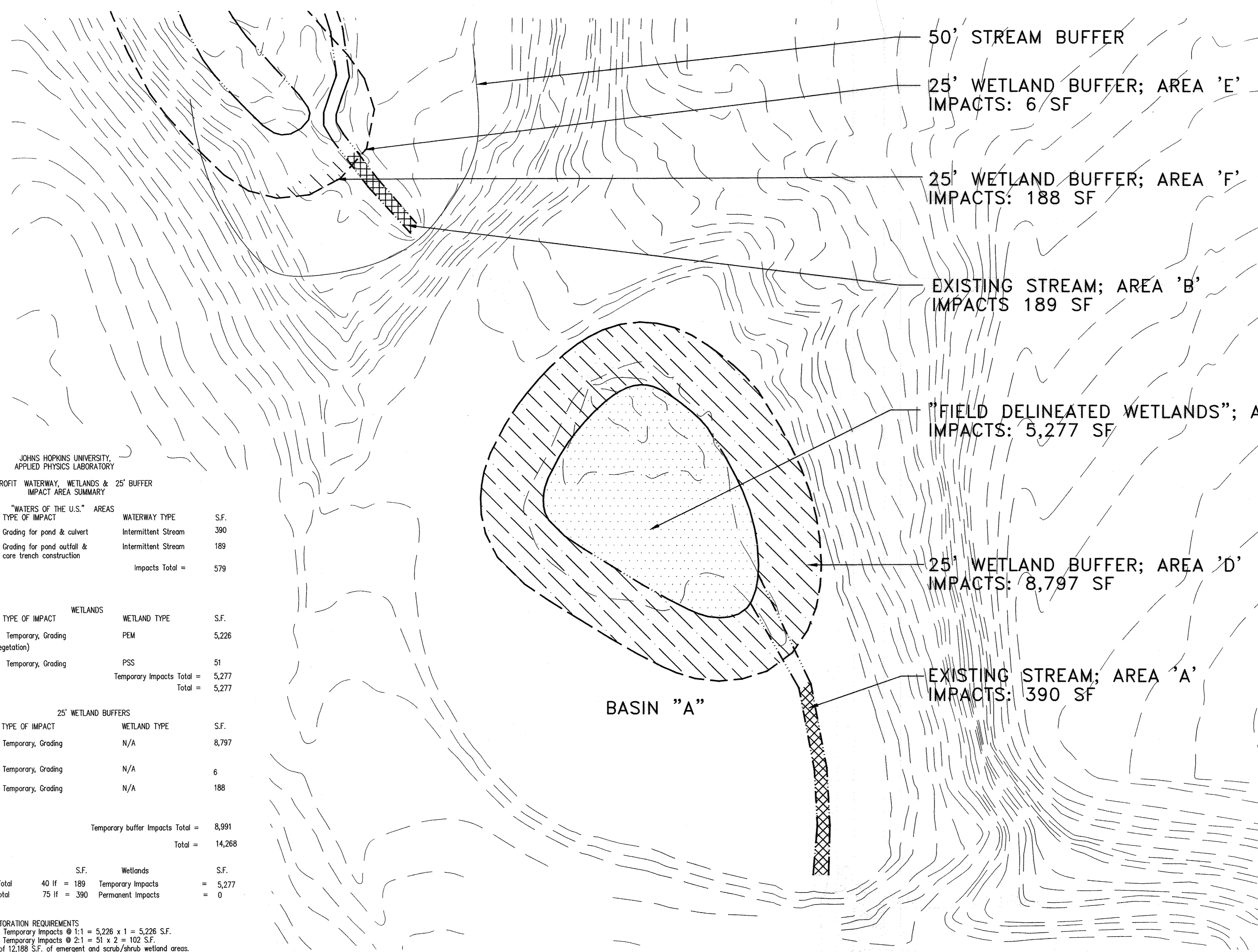
**SWM POND RETROFIT PROJECT**

APPLIED PHYSICS LABORATORY  
 THE JOHNS HOPKINS UNIVERSITY - POND A  
**MAPPING OF WETLANDS**  
 PLAN  
 TAX MAP 41 PARCEL 123  
 ELECTION DISTRICT NO 5  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET L-1

SHEET 19 OF 24



JOHNS HOPKINS UNIVERSITY,  
APPLIED PHYSICS LABORATORY

**SWM RETROFIT WATERWAY, WETLANDS & 25' BUFFER  
IMPACT AREA SUMMARY**

| AREA              | "WATERS OF THE U.S." TYPE OF IMPACT                 | WATERWAY TYPE       | S.F. |
|-------------------|---|---------------------|------|
| A. Stream Channel | Grading for pond & culvert                          | Intermittent Stream | 390  |
| B. Stream Channel | Grading for pond outfall & core trench construction | Intermittent Stream | 189  |
| Impacts Total =   |   |                     | 579  |

| AREA   | WETLANDS TYPE OF IMPACT | WETLAND TYPE | S.F.  |
|--|-------------------------|--------------|-------|
| C. Emergent Pond (area of emergents vegetation) & Scrub/Shrub edge areas | Temporary, Grading      | PEM          | 5,226 |
|  | Temporary, Grading      | PSS          | 51    |
| Temporary Impacts Total =  |                         |              | 5,277 |
| Total =  |                         |              | 5,277 |

| 25' WETLAND BUFFERS              |                    |              |        |
|----------------------------------|--------------------|--------------|--------|
| AREA                             | TYPE OF IMPACT     | WETLAND TYPE | S.F.   |
| D. Open Lawn & woodland edge     | Temporary, Grading | N/A          | 8,797  |
| E. Woodland edge                 | Temporary, Grading | N/A          | 6      |
| E. Woodland edge                 | Temporary, Grading | N/A          | 188    |
| Temporary buffer Impacts Total = |                    |              | 8,991  |
| Total =                          |                    |              | 14,268 |

| TOTALS                  | "Waters of the U.S." S.F. | Wetlands S.F.       | Total S.F. |
|-------------------------|---------------------------|---------------------|------------|
| Temporary Impacts Total | 40 If = 189               | Temporary Impacts = | 5,277      |
| Permanent Impacts Total | 75 If = 390               | Permanent Impacts = | 0          |

REPLACEMENT & RESTORATION REQUIREMENTS  
 Restore PEM Wetlands Temporary Impacts @ 1:1 = 5,226 x 1 = 5,226 S.F.  
 Restore PSS Wetlands Temporary Impacts @ 2:1 = 51 x 2 = 102 S.F.  
 Proposed restoration of 12,188 S.F. of emergent and scrub/shrub wetland areas.

**SEDIMENT CONTROL & POND CONSTRUCTION**

( ) BY THE DEVELOPER:  
 I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERSONS ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

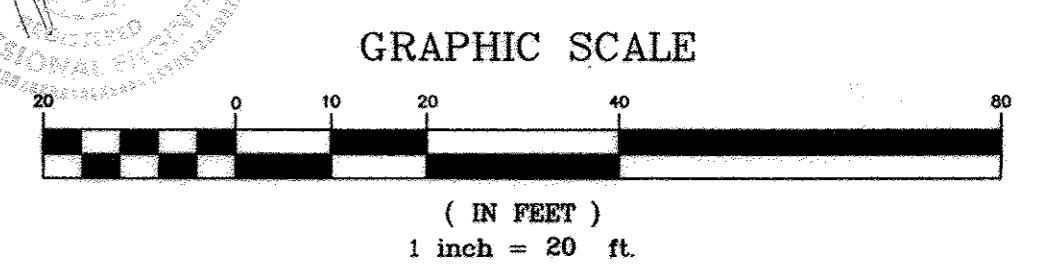
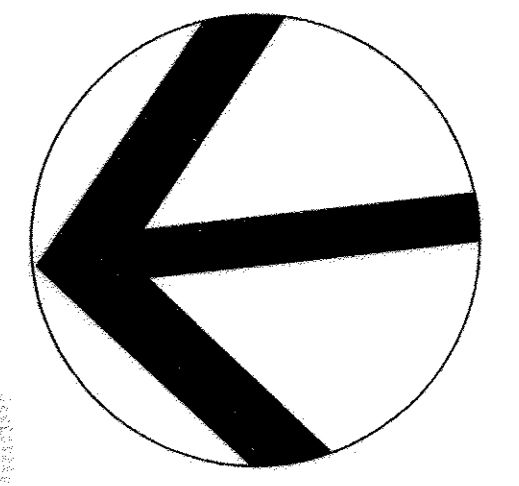
DATE: 4/15/02  
 SIGNATURE OF DEVELOPER: [Signature]  
 PRINT NAME BELOW SIGNATURE: [Name]

( ) BY THE ENGINEER:  
 I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

DATE: 4/22/02  
 SIGNATURE OF ENGINEER: [Signature]  
 PRINT NAME BELOW SIGNATURE: Robert A. Warner

( ) THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

DATE: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 HOWARD SOIL CONSERVATION DISTRICT



APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION: [Signature] DATE: 5/17/02

CHIEF, DIVISION OF LAND DEVELOPMENT: [Signature] DATE: 5/20/02

DIRECTOR: [Signature] DATE: X

**AMT**  
 A. MORTON THOMAS AND ASSOCIATES, INC.  
 CONSULTING ENGINEERS  
 12750 TWINSBROOK PARKWAY, SUITE 200, ROCKVILLE, MD 20852  
 TEL (301) 881-2545 FAX (301) 881-0814  
 AMT FILE # 98-153

Einhorn  
 Yaffee  
 Prescott

|                |      |                               |     |    |    |     |  |  |  |
|----------------|------|-------------------------------|-----|----|----|-----|--|--|--|
| DES: N. HAINES |      |                               |     |    |    |     |  |  |  |
| DRN: M. NORTON |      |                               |     |    |    |     |  |  |  |
| CHK: N. HAINES |      |                               |     |    |    |     |  |  |  |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK | APP |  |  |  |

**SWM BASIN 'A'**

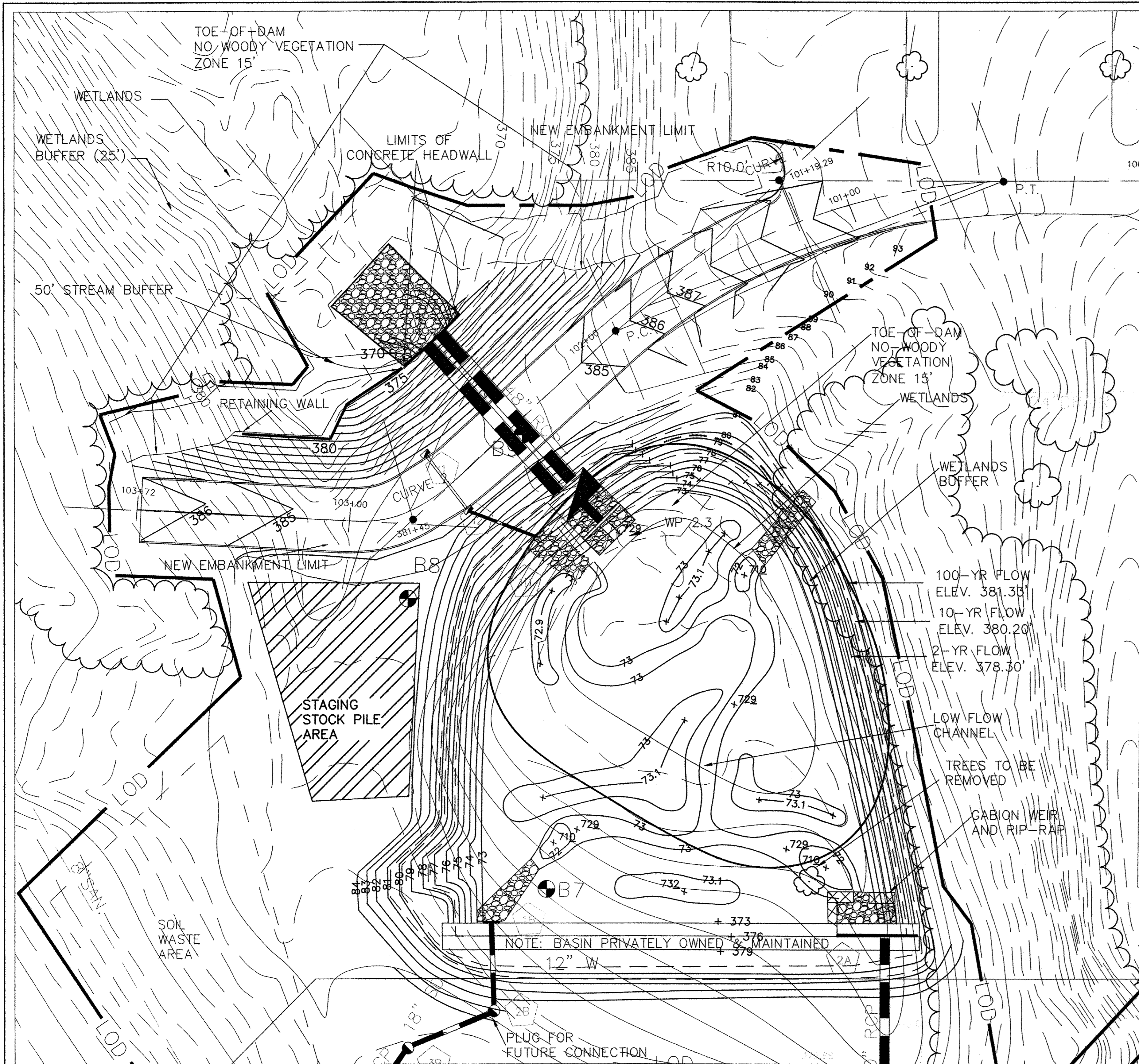
**SWM POND RETROFIT PROJECT**

APPLIED PHYSICS LABORATORY  
 THE JOHNS HOPKINS UNIVERSITY - POND A  
**WETLAND IMPACTS PLAN**

TAX MAP 41 PARCEL 123  
 ELECTION DISTRICT NO. 5  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET L-2  
 SHEET 20 OF 24

F-02-40



**SEDIMENT CONTROL & POND CONSTRUCTION**

( ) BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

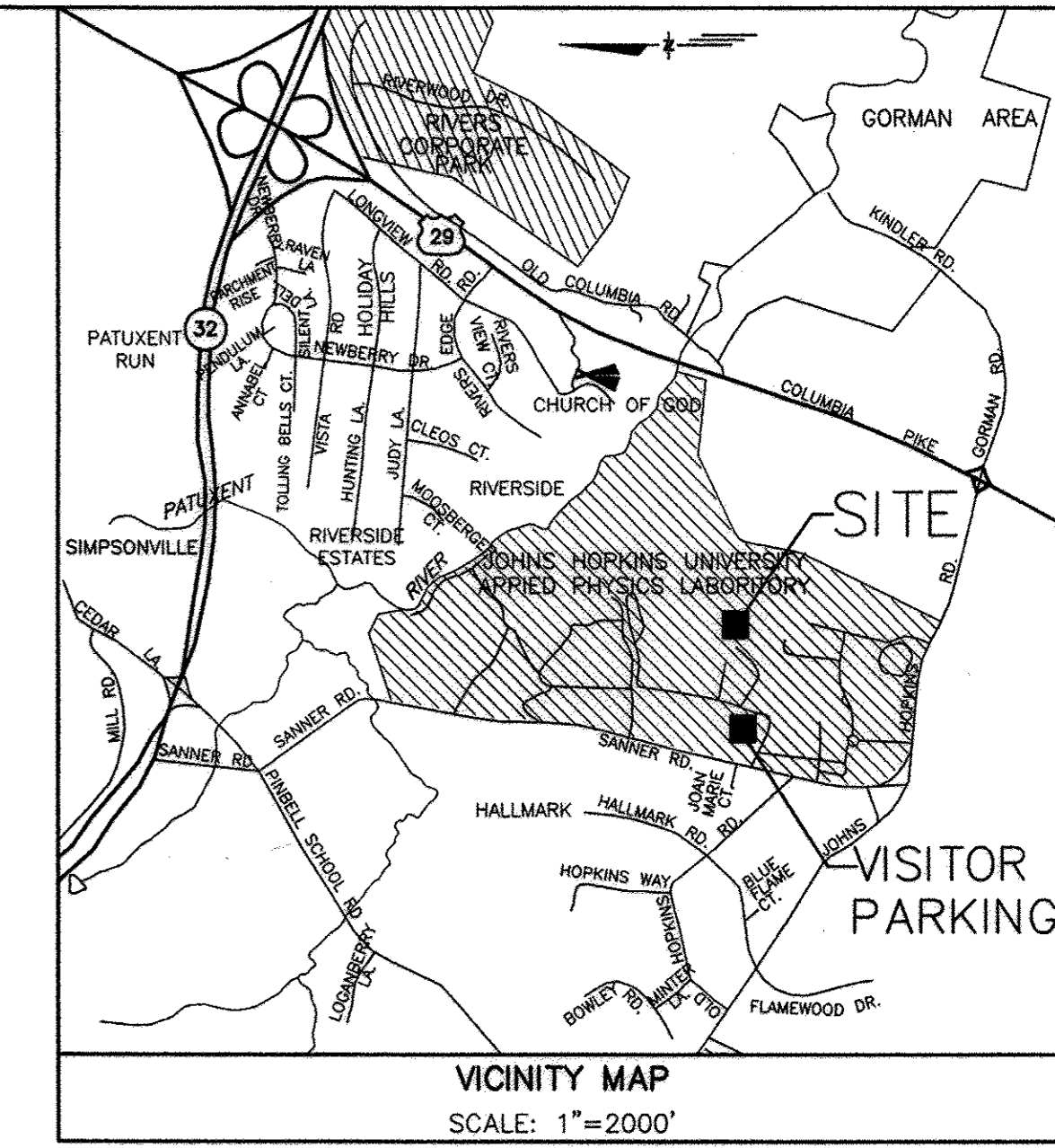
*[Signature]* 4/25/2002  
 SIGNATURE OF DEVELOPER DATE  
 PRINT NAME BELOW SIGNATURE

( ) BY THE ENGINEER:  
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*[Signature]* 4/26/02  
 SIGNATURE OF ENGINEER DATE  
 PRINT NAME BELOW SIGNATURE  
 Robert A. Warner  
 THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

*[Signature]* 5/6/02  
 USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

*[Signature]* 5/6/02  
 HOWARD SOIL CONSERVATION DISTRICT DATE



**GENERAL NOTES**

- NONTIDAL WETLANDS / WATERWAY CONDITIONS**
- The following conditions shall be listed on the site plans under the heading of "Conditions and Management Practices for Working in Nontidal Wetlands and Buffers" and must be followed:
    - No excess fill, construction material or debris are to be stockpiled or stored in the wetlands or buffers.
    - Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of the nontidal wetland or buffer.
    - Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material or any other deleterious substances. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material or any other deleterious substance.
    - Place heavy equipment on mats or suitably operate the equipment to prevent damage to the nontidal wetland or buffer.
    - Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetland and buffer in excess of nontidal wetland and buffer lost under the original structure or fill.
    - Conduct the activity so as not to cause or contribute to a degradation of water quality as determined by the Maryland Department of the Environment.
    - To protect important aquatic species, in-stream work is prohibited as determined by the classification of the stream as follows:
      - Class I Waters. In-stream work may not be conducted during the period March<sup>15</sup> through June 15, inclusive, during any year.
- All stabilization in the wetland and buffer shall be of the following recommended species: Annual Ryegrass (*Lolium multiflorum*), Millet (*Setaria italica*), Barley (*Hordeum sp.*), Oats (*Avena sp.*) and/or Rye (*Secale cereale*). These species will allow for the stabilization of the site while also allowing for the voluntary re-vegetation of natural wetland species. Other non-persistent vegetation may be acceptable, but must be approved by the Division. Kentucky 31 fescue shall not be utilized in the wetland or buffer areas. The area should be seeded and mulched to reduce erosion after construction activities have been completed.

**WETLAND CONSERVATION NOTES**

For this project, gross tract area is equal to the limit of disturbance.

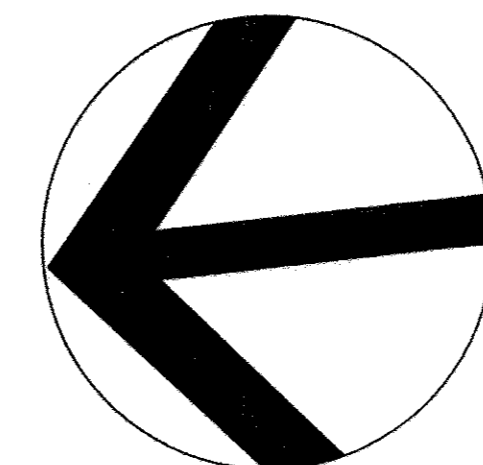
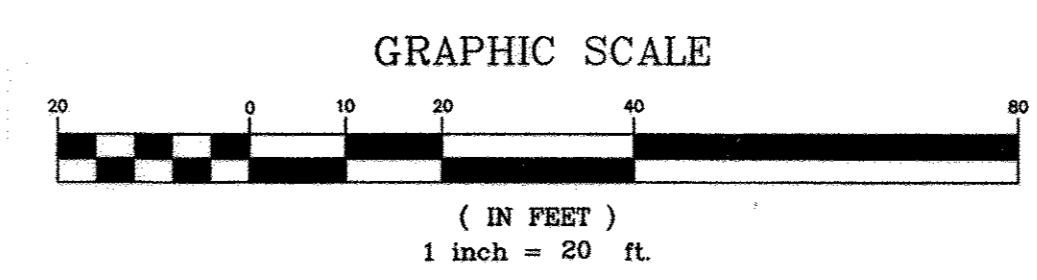
Gross Tract Area = 1.33 Acres or 58,047 s.f.  
 Tree area to be Cleared = 0 acres  
 Reforestation Required = 0 acres  
 Proposed = 0 acres  
 Wetlands Disturbed = 5,277 s.f.  
 Emergent Wetland Reestablishment Area = 12,188 s.f.

**WETLAND RESTORATION PROPOSED**

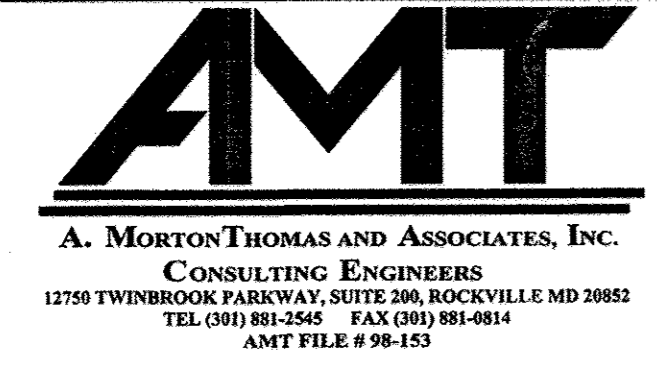
Emergent wetlands = 12,188 S.F.

**SEEDING SCHEDULE**

Seeding shall take place during the following periods: March 15 through June 15, and September 15 through October 15, or as directed by the owner. In the event that the contractor is out of this season by the time he/she is ready for planting, the contractor shall be responsible, at their own expense, to do the planting during the next season.



APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 5/17/02  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
*[Signature]* 5/20/02  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
 DIRECTOR N/A DATE



|                |      |                               |     |    |        |
|----------------|------|-------------------------------|-----|----|--------|
| DES: N. HAINES |      |                               |     |    |        |
| DRN: M. NORTON |      |                               |     |    |        |
| CHK: N. HAINES |      |                               |     |    |        |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK APP |

**SWM BASIN 'A'**  
**SWM POND RETROFIT PROJECT**

**APPLIED PHYSICS LABORATORY  
 THE JOHNS HOPKINS UNIVERSITY - POND A  
 GRADING & IMPROVEMENTS  
 PLAN**  
 TAX MAP 41 PARCEL 123  
 ELECTION DISTRICT NO. 3  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET L-3  
 SHEET 21 OF 24

**SEDIMENT CONTROL & POND CONSTRUCTION**

( ) BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

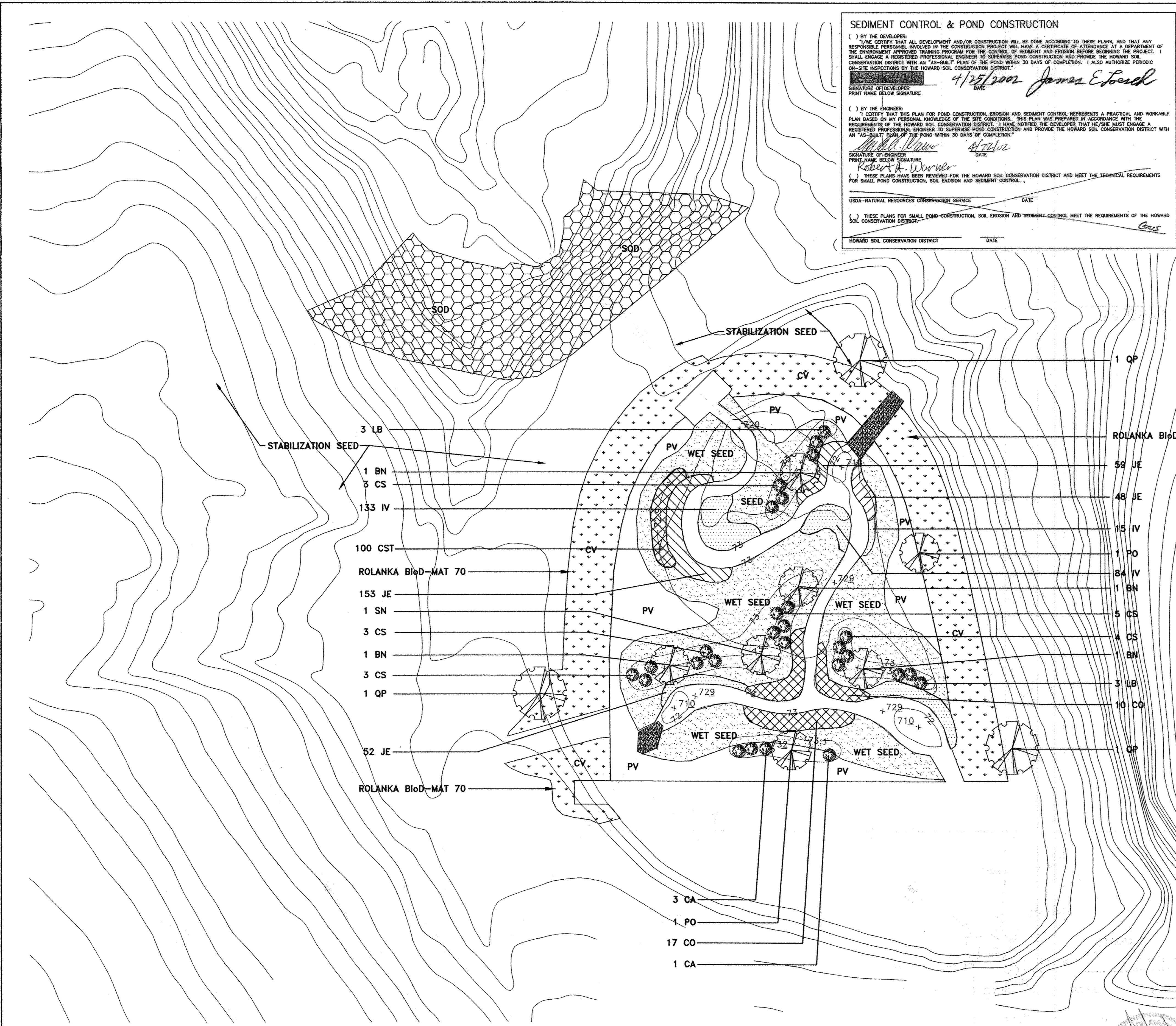
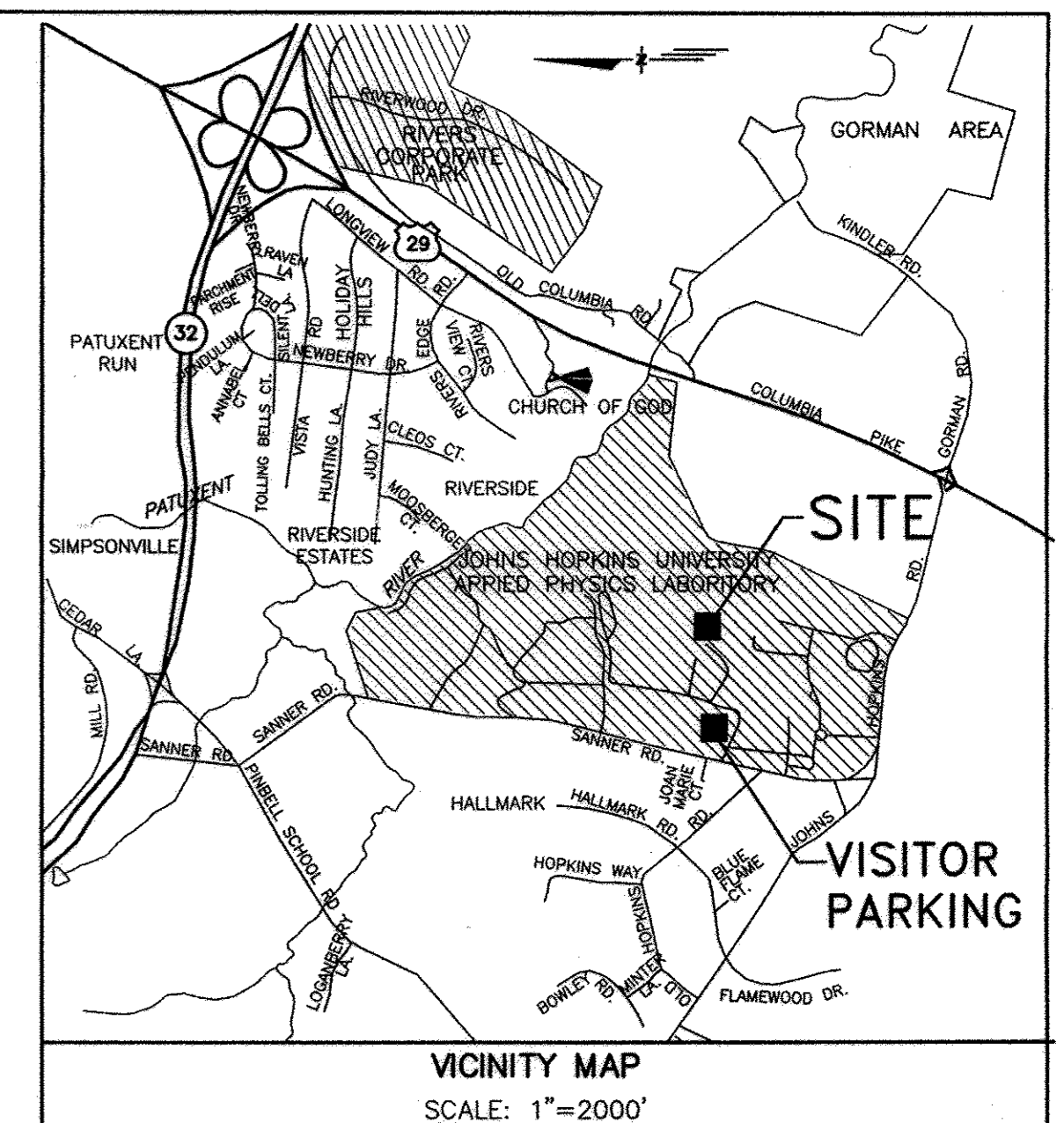
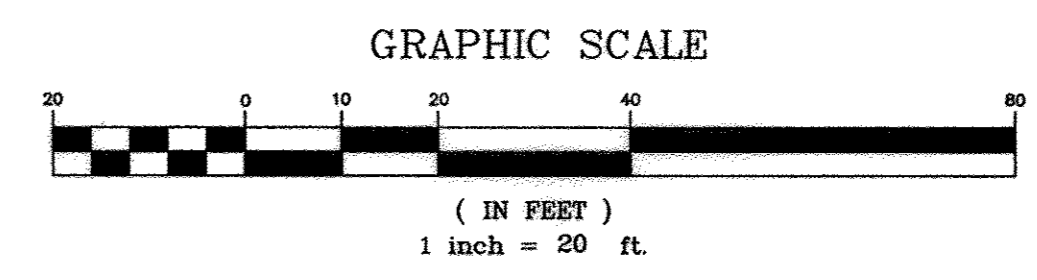
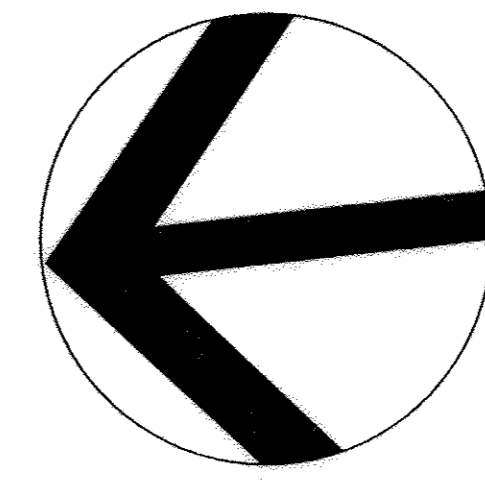
4/25/2002 James E. Loedel  
 SIGNATURE OF DEVELOPER  
 PRINT NAME BELOW SIGNATURE

( ) BY THE ENGINEER:  
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Robert A. Werner  
 SIGNATURE OF ENGINEER  
 PRINT NAME BELOW SIGNATURE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE  
 HOWARD SOIL CONSERVATION DISTRICT DATE



**PROPOSED PLANT MATERIALS**

**AQUATIC & WETLAND PLANTS**

| KEY | BOTANICAL NAME  | COMMON NAME   | SIZE      | FORM | SPACING  | QUANTITY | REMARKS                  |
|-----|-----------------|---------------|-----------|------|----------|----------|--------------------------|
| CST | CAREX STRICTA   | TUSsock SEDGE | BARE ROOT | PLUG | 18" O.C. | 100      | ADAPTS TO DRY CONDITIONS |
| IV  | IRIS VERSICOLOR | BLUE FLAG     | 2" PLUG   | FLAT | 18" O.C. | 232      |                          |
| JE  | JUNCUS EFFUSUS  | SOFT RUSH     | 2" PLUG   | FLAT | 18" O.C. | 312      | Emergent Aquatic         |

**STABILIZATION GRASSES & SEED MIXES**

| KEY                 | BOTANICAL NAME   | COMMON NAME  | SIZE | FORM | SPACING       | QUANTITY | REMARKS                  |
|---------------------|------------------|--|------|------|---------------|----------|--------------------------|
| CV**                | CORONILLA VARIA  | CROWN VETCH  | SEED |      | 7 LBS/1,000SF | 49 LBS.  | SIDE SLOPE STABILIZATION |
| PV                  | PANICUM VIRGATUM | SWITCH GRASS                                       | SEED |      | 5 LBS/1,000SF | 35 LBS.  | BOTTOM STABILIZATION     |
| WET SEED*           |                  | RETENTION BASIN FLOOR SEEDING                      | SEED |      | 3 LBS/1,000SF | 6 LBS.   | BOTTOM STABILIZATION     |
| SOD                 |                  | SOD  | SOD  | SY   |               | 636 SY   | DAM STABILIZATION        |
| STABILIZATION SEED* |                  | NATIVE UPLAND WILDLIFE FORAGE AND COVER MEADOW MIX | SEED |      | 3 LBS/1,000SF | 6 LBS.   | TOP OF DAM STABILIZATION |

\* OVERSEED WITH ANNUAL RYE GRASS AS A COMPANION CROP AND EROSION CONTROL AT 0.5 LB./1000SF.  
 \*\*INSTALL ROLANKA BioD-MAT 70 OR APPROVED EQUAL ON ALL 2:1 SIDE SLOPES

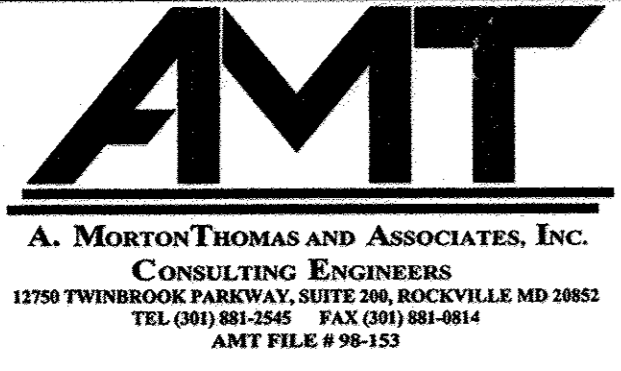
**SHRUBS**

| KEY | BOTANICAL NAME            | COMMON NAME      | SIZE    | FORM  | SPACING | QUANTITY | REMARKS                |
|-----|---------------------------|------------------|---------|-------|---------|----------|------------------------|
| CA  | CORNUS AMOMUM             | SILKY DOGWOOD    | 3'      | Cont. | SHOWN   | 4        |                        |
| CO  | CEPHALANTHUS OCCIDENTALIS | BUTTONBUSH       | 18"-24" | Cont. | 4' O.C. | 27       |                        |
| CS  | CORNUS STOLONIFERA        | Redosier Dogwood | 18"-24" | Cont. | SHOWN   | 18       | ADAPTIVE WETLAND SHRUB |
| LB  | LINDERA BENZOIN           | SPICEBUSH        | 18"-24" | Cont. | SHOWN   | 6        |                        |

**DECIDUOUS TREES**

| KEY | BOTANICAL NAME        | COMMON NAME  | SIZE | FORM  | SPACING | QUANTITY | REMARKS |
|-----|-----------------------|--------------|------|-------|---------|----------|---------|
| BN  | BETULA NIGRA          | River Birch  | 6'   | CONT. | Shown   | 4        |         |
| PO  | PLATANUS OCCIDENTALIS | SYCAMORE     | 5'   | CONT. | Shown   | 2        |         |
| QP  | QUERCUS PHELLOS       | WILLOW OAK   | 6'   | CONT. | Shown   | 3        |         |
| SN  | SALIX NIGRA           | Black Willow | 6'   | CONT. | Shown   | 1        |         |

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 DATE: 5/17/02  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 5/20/02  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: X  
 DIRECTOR



|                |      |                               |     |    |        |
|----------------|------|-------------------------------|-----|----|--------|
| DES: N. HAINES |      |                               |     |    |        |
| DRN: M. NORTON |      |                               |     |    |        |
| CHK: N. HAINES |      |                               |     |    |        |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK APP |

**SWM BASIN 'A'**  
**SWM POND RETROFIT PROJECT**

APPLIED PHYSICS LABORATORY  
 THE JOHNS HOPKINS UNIVERSITY  
**WETLAND PLANTING PLAN**  
 TAX MAP 41 PARCEL 123  
 ELECTION DISTRICT NO. 5  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET L-4  
 SHEET 22 OF 24

**A. SITE PREPARATION**

**WETLAND PLANTING SPECIFICATIONS**

- Construct sediment control features and clean water diversion as shown on sediment control plan. Contractor is to conform to sediment control plan and notes, until site is stabilized and has been approved by Howard County. Notify Howard County DEP inspector, Owner and Landscape Architect prior to commencement of work.
- Excavate site to grades shown on plan. Care should be taken to preclude sediments, or sediment-laden runoff from entering stream.
- Remove and dispose of excess soil in approved on-site spoil area. Contractor is to obtain approval from Owner of haul route on site. Following final grading, the substrate shall consist of a minimum one foot in depth of clean, inorganic/organic material, of which 80-90% by weight, pass a No. 10 sieve. Construction rubble, rocks, trash and sediments coarser than sand are excluded by this specification.
- If boulders or a rock outcropping are encountered during excavation or substrate preparation, the Contractor shall notify the Landscape Architect for possible incorporate on site.
- After excavation and use of heavy equipment, the graded planting area shall be tilled/plowed to a depth of one foot for a loose, friable planting soil condition.

**B. PLANTING**

- During planting operations and excavations for planting pits, exercise care to maintain even sheet flow of drainage across site, as shown on grading plan. Avoid depressions or mounding as a result of planting.
- Planting will be done between April 1 and June 30; or September 1 and November 30. Exception: Oaks must be planted in Spring.
- Exact location of plants shall be determined in the field by the planting Contractor based on hydraulic tolerances. Any major changes to the planting scheme are to be approved by the landscape architect.
- Fertilizer shall be placed in each planting pit and consist of Osmocote 19-6-12, 12-14 month release, at a rate of 1 oz. per herbaceous plant; 4 oz. per shrub. Trees use Agriform 20-10-5, two-year release, 10 gram tablets at the manufacturer's recommended rate. Seeded areas use standard 10-10-10 fertilizer at a rate of 600 lb./acre. Also see Note 10.
- All container grown plants are to be planted with crown or top of soil ball approximately 1" above grade of planting substrate.
- Backfill in planting pits is to be of same material as planting substrate and is to be firmed around root system, not excessively compacted.
- Root stock of the plant material shall be kept moist during transport from the source to the job site and until planted. Substitutions of balled and burlapped for container grown stock must be approved by landscape architect.
- Wetland plants must be wet cultured for a minimum of 3 months and supplied by a recognized wetland nursery which will provide certification of the culture process. Upland plants can be supplied from standard upland grown nursery operations. See list for wetland planting sources.
- Upland seed mixes shall be broadcast or hydroseeded in upper areas. Mulch shall consist of straw and be anchored by a fibertack. Asphalt emulsion will not be acceptable. The seed mix shall be a blend of 90% Rebel II Tall Fescue and 10% Red Top or approved equal.
- Lowland (flood prone) seed mixes shall be cultivated to a depth of 0 to 1/4-inch, followed by dragging, then packing or rolling. In graded areas, fertilizing of these areas shall be deferred until seedlings are 2 inches tall.
- Wetland reestablishment in the channel shall broadcast seeded. Fertilizing of these areas shall be deferred until seedlings are 2 inches tall.

**C. GUARANTEE**

The Contractor will guarantee an 85% survival rate of plants (each species) after one year. If at this time the total number of plants has fallen below this threshold, the Contractor will make a one-time replacement to bring plant numbers to the 85% levels for each species. Care shall be taken such that the activities involved in replacement planting do not cause damage or detrimental effect to the surviving flora. Any plants damaged by these activities will also be replaced by the Contractor to the 85% threshold.

**D. MAINTENANCE**

The Contractor shall conduct monthly inspections of the site during the first year after planting for a full growing season: April - October, and the months of April, May and June of the following season. During these monthly inspections, the Contractor shall:

- Remove all litter and debris throughout the site.
- Replant or reseed all erosion control stabilizing grasses, rushes, sedges or ground covers, as required to prevent erosion.
- Conduct fertilizations as may be required or requested.
- Take appropriate measures to exclude wildlife, if destructive depredation occurs.
- Conduct soils tests for pH, substrate salinity and moisture content, and notify Landscape Architect of conditions that may cause plant mortality. Correct conditions that are unsatisfactory, to insure plant success. Note: salinity may fluctuate, especially in early Spring, due to uphill runoff from roads treated with de-icing salts.
- Maintain planted and seeded areas by watering, mowing, rolling, or regrading, replanting and implementing erosion controls as required to establish vegetation, free of bare or eroded areas.

**E. CLEANUP AND PROTECTION**

- During landscape work, store materials and equipment where directed. Keep pavements clean and work areas and adjoining areas in an orderly condition.
- Protect landscape work and materials from damage due to landscape operations, operations by other trades and trespassers. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged landscape work as directed by landscape architect.

**F. INSPECTION AND ACCEPTANCE**

- The Landscape Architect reserves the right to inspect seeds and plant materials, either at place of growth or at site before planting, for compliance with requirements for name, variety, size, quantity, quality and mix proportion.
- Supply written affidavit certifying composition of seed mixtures and integrity of plant materials with respect to species, variety and source.
- Notify the Landscape Architect within 5 days after completing initial and/or supplemental plantings in wetland areas.
- When the landscape work is completed, including maintenance, the Landscape Architect will, upon request, make a final inspection to determine acceptability. After final acceptance, the Owner will be responsible for maintenance.
- The Contractor shall be responsible for the satisfactory growth of trees, shrubs, grasses, forbs and sedge species on all areas seeded and/or planted under the contract until final acceptance of the work. Acceptance of the work will be determined using a time meander search. The Landscape Architect shall conduct a time meander search at the site. The search shall be conducted at the end of the first full growing season after seeding and/or planting (not to exceed 12 months). The search will randomly sample 20% of the area for each area that was seeded and/or planted. If 85% of the species seeded and/or planted are alive and apparent, and the sample area has 80% ground cover of acceptable species, the work will be accepted.
- Where inspected landscape work does not comply with the requirements, replace rejected work and continue specified maintenance until reinspected by the Landscape Architect and found to be acceptable. Remove rejected plants and materials promptly from the project site. Resow or replant deficient areas.

**G. PUBLIC UTILITIES**

- Care shall be exercised in excavation near utilities. If at any time Contractor damages the utilities in place through negligence or carelessness, Contractor shall pay for the full cost of repairing such damages. Contractor shall notify the appropriate person in the office of any utility whose lines may be affected.
- The locations of utilities shown on the plans are approximates only and do not necessarily indicate all the utilities that may be encountered during construction. The failure of a utility to be shown on the plans does not relieve Contractor of the responsibility for any injuries he may inflict on the utility, and in case of injury, it shall be repaired at the expense of the Contractor.
- Whenever other utilities are encountered whose present grade would conflict with the new construction, Contractor shall notify landscape architect, who shall arrange revisions without unreasonable delay. Trenching or tunneling under existing utilities, culverts, etc., and providing temporary support shall be done at no additional expense to Owner.

**H. PROTECTION OF PRIVATE PROPERTY**

Contractor shall repair or replace all fences, concrete walls, concrete curbs, gravel and asphalt driveways, signs, culverts, and all other miscellaneous improvements, at no additional expense to owner, damaged by Contractor due to his operations on the project, to a condition equal to or better than their condition before construction.

**I. JOB CONDITIONS**

- Examine and evaluate grades, soils and water levels, observe the conditions under which work is to be performed, and notify the Landscape Architect of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.
- Utilities: Review underground utilities location maps and plans provided by owner; demonstrate an awareness of utility locations, and certify acceptance of liability for the protection of utilities during course of work. Contractor shall be responsible for any damage to utilities or property.
- Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Landscape Architect before planting.

**WETLAND PLANT SUPPLIERS LIST:**

Environmental Concern, Inc.  
P.O. Box P  
210 West Chew Avenue  
St. Michaels, Maryland 21663  
Tel: (301) 745-9620  
Fax: (301) 745-3517

Wicklein's Water Gardens  
1820 Cromwell Bridge Road  
Baltimore, Maryland 21234  
Tel: (301) 823-1335

Environmental Consultants, Inc.  
P.O. Box 3198  
Suffolk, Virginia 23434  
Tel: (804) 539-4833

Ocutararo Wetland Nurseries  
P.O. Box 24  
Oxford, PA 19363  
Tel: (215) 932-3762 or  
Elkton, MD (410) 392-8175

**SEEDING SCHEDULE**

Seeding shall take place during the following periods: March 15 through June 15, and September 15 through October 15, or as directed by the owner. In the event that the contractor is out of this season by the time he/she is ready for planting, the contractor shall be responsible, at his own expense, to do the planting during the next season.

**NONTIDAL WETLANDS / WATERWAY CONDITIONS**

The following conditions shall be listed on the site plans under the heading of "Conditions and Management Practices for Working in Nontidal Wetlands and Buffers" and must be followed:

- No excess fill, construction material or debris are to be stockpiled or stored in the wetlands or buffers.
- Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of the nontidal wetland or buffer.
- Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material or any other deleterious substances. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material or any other deleterious substance.
- Place heavy equipment on mats or suitably operate the equipment to prevent damage to the nontidal wetland or buffer.
- Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetland and buffer in excess of nontidal wetland and buffer lost under the original structure or fill;
- Conduct the activity so as not to cause or contribute to a degradation of water quality as determined by the Maryland Department of the Environment.
  - Class I Waters. In-stream work may not be conducted during the period March 1 through June 15, inclusive, during any year.
- All stabilization in the wetland and buffer shall be of the following recommended species: Annual Ryegrass (*Lolium multiflorum*), Millet (*Seteria italica*), Barley (*Hordeum sp.*), Oats (*Avena sp.*), and/or Rye (*Secale cereale*). These species will allow for the stabilization of the site while also allowing for the voluntary re-vegetation of natural wetland species. Other non-persistent vegetation may be acceptable, but must be approved by the Division. Kentucky 31 fescue shall not be utilized in the wetland or buffer areas. The area should be seeded and mulched to reduce erosion after construction activities have been completed.

**NOTES**

PROPOSAL: Reestablish PEM wetland of 5,226 square feet with 11,668 square feet of PEM wetland. Reestablish PSS wetland of 51 square feet with 520 square feet of PSS wetland.

Soil saturation and ground water levels vary from 0" to 18" of depth, depending on precipitation recharge and location on site. Grading shall be as shown on the plan and/or as directed by the Landscape Architect in the field during construction; to achieve proper hydric conditions for wetland restoration.

The Landscape Contractor is to verify all plant quantities and availability and notify Landscape Architect or Owner if there are problems prior to bidding.

The Landscape Contractor is responsible for the location of all utilities prior to planting.

The Landscape Contractor is to notify "MISS UTILITY" 48 hours prior to construction at 1-800-257-7777.

The Landscape Contractor is responsible for protecting existing plant materials during construction.

**SEED MIXES**

**RETENTION FLOOR SEEDING - FOR WILDLIFE PLANT DIVERSITY**

|                          |     |
|--------------------------|-----|
| CREeping BENTGRASS       | 25% |
| MEADOW FOXTAIL           | 25% |
| PURPLE STEMMED ASTER     | 1%  |
| TICKSEED SUNFLOWER       | 3%  |
| VIRGINIA WILD RYE        | 25% |
| RATTLE SNAKE GRASS       | 2%  |
| FOWL MANNAGRASS          | 2%  |
| RICE CUT-GRASS           | 4%  |
| SQUARE STEM MONKEYFLOWER | 1%  |
| GREEN BULRUSH            | 2%  |
| WOOL GRASS               | 1%  |
| SMALL SEEDED BULRUSH     | 1%  |
| MANY-LEAVED BULRUSH      | 1%  |
| ROUGH-LEAVED GOLDENROD   | 1%  |
| GIANT BUR-REED           | 4%  |
| BLUE VERVAIn             | 2%  |

**NATIVE UPLAND WILDLIFE FORAGE AND COVER MEADOW MIX**

|                    |     |
|--------------------|-----|
| BIG BLUE STEM      | 10% |
| LITTLE BLUE STEM   | 10% |
| FOX SEDGE          | 10% |
| CANADIAN WILD RYE  | 10% |
| SWITCHGRASS        | 10% |
| COASTAL PANICGRASS | 10% |
| CUP PLANT          | 10% |
| INDIAN GRASS       | 10% |
| EASTERN GAMAGRASS  | 20% |

**SEDIMENT CONTROL & POND CONSTRUCTION**

( ) BY THE DEVELOPER:  
I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL EMPLOY A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZED PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

4/25/2002 James E. Louch  
DATE

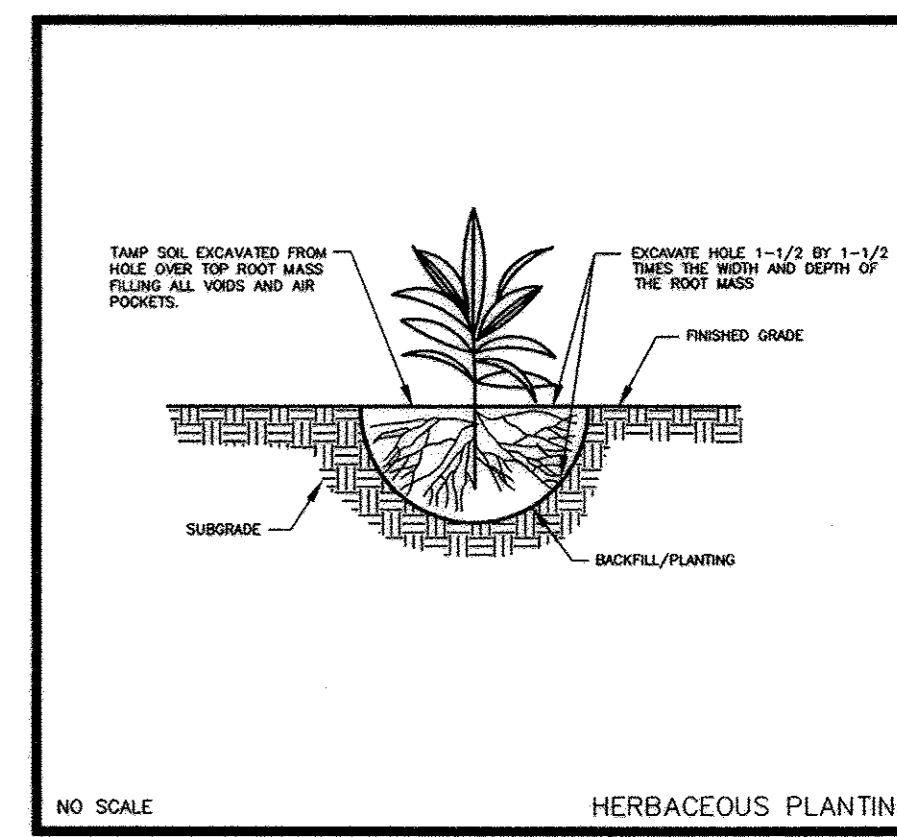
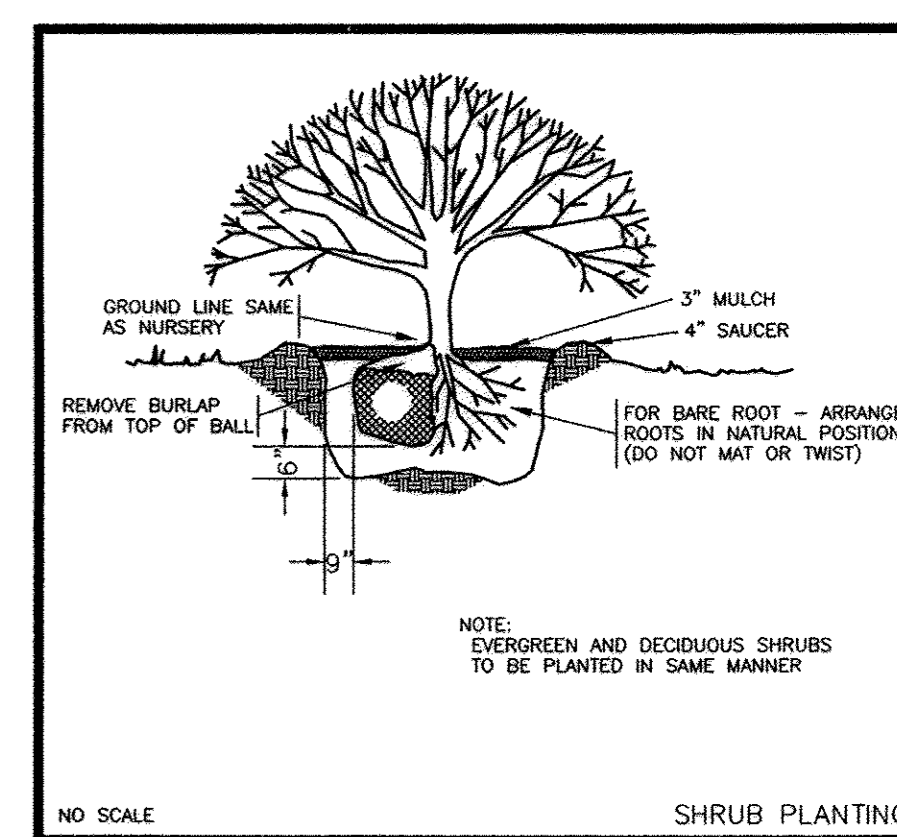
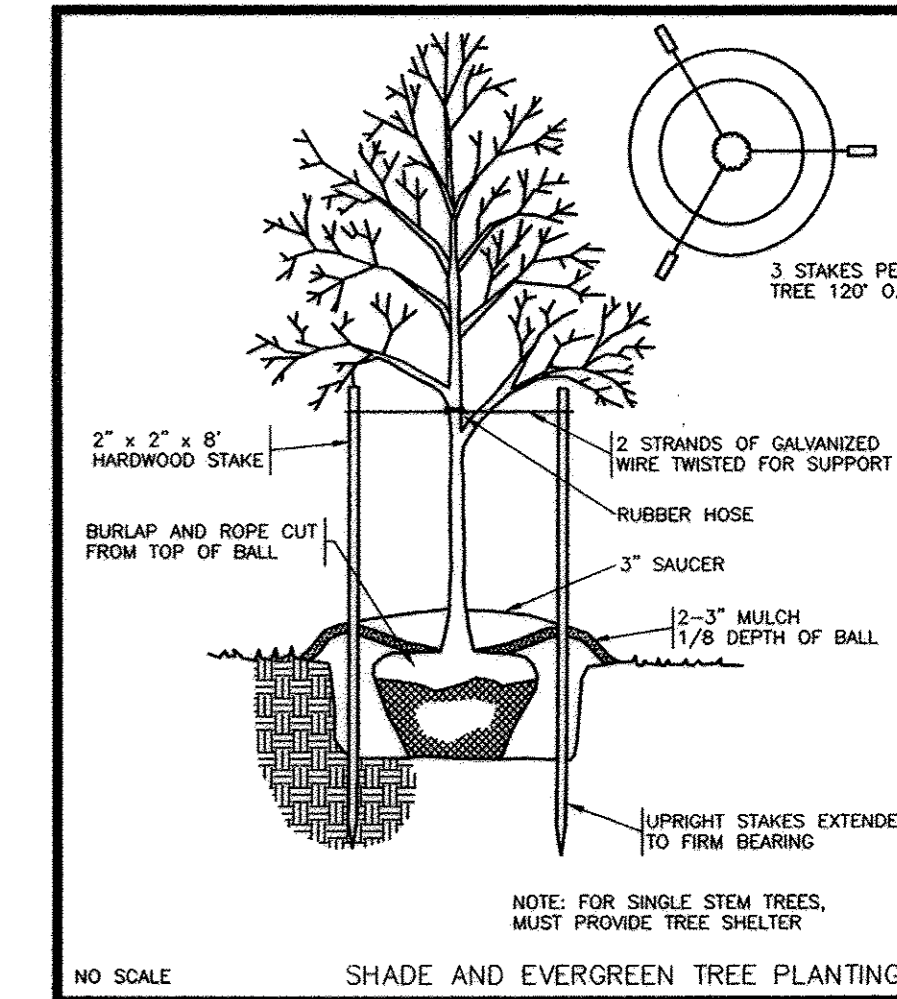
( ) BY THE ENGINEER:  
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE ADVISED THE DEVELOPER THAT HE/SHE MUST EMPLOY A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZED PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT TO MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

Robert A. Warner  
DATE 4/22/02

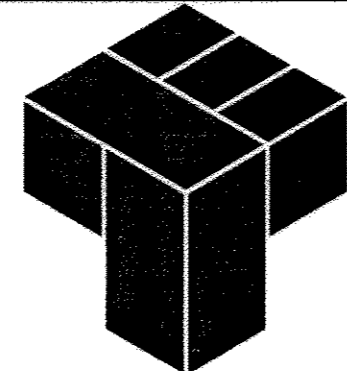
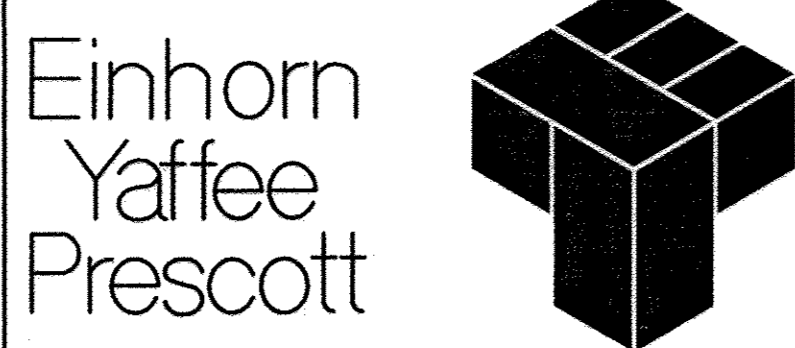
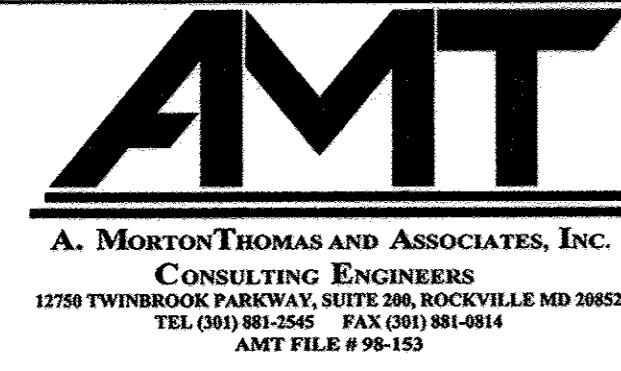
USA-NATURAL RESOURCES CONSERVATION SERVICE DATE

( ) THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL, MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT DATE



APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 5/17/02  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE 5/22/02  
DIRECTOR DATE



|                |      |                               |     |    |        |
|----------------|------|-------------------------------|-----|----|--------|
| DES: N. HAINES |      |                               |     |    |        |
| DRN: M. NORTON |      |                               |     |    |        |
| CHK: N. HAINES |      |                               |     |    |        |
| DATE: 04/19/02 | DATE | REVISIONS AND RECORD OF ISSUE | NO. | BY | CK APP |

**SWM BASIN 'A'**  
**SWM POND RETROFIT PROJECT**

APPLIED PHYSICS LABORATORY  
THE JOHNS HOPKINS UNIVERSITY  
**WETLAND PLANTING NOTES & DETAILS**  
TAX MAP 41 PARCEL 123  
ELECTION DISTRICT NO. 5  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET L-5  
SHEET 23 OF 24