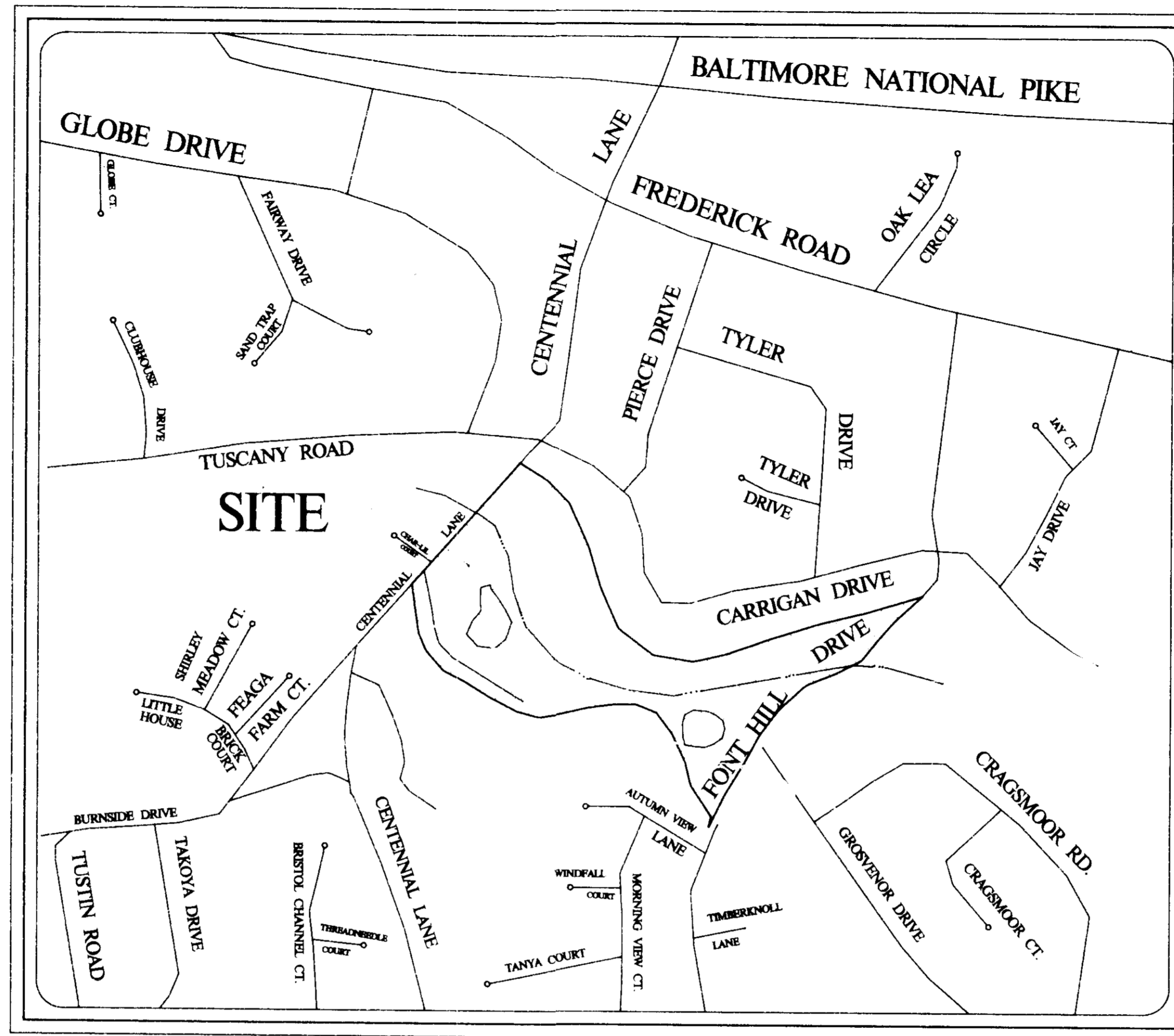


PROJECT DATA

- Owner/Developer: Howard County Maryland, Department of Recreation & Parks, 3450 South House Drive, Ellicott City, Maryland 21043
- Property Location: Between Centennial Lane & Font Hill Drive South of Route 10
- Site Area: 24.127 Acres
- Existing Use: Recreation Park
- Proposed Use: Environmental Education Park
- Zoning: R-20 Single Family Residential
- Tax Map Parcel: 424, 449
- Deed Reference: 808-649
- Election District: "nd"
- Census Tract: 0623-01
- Flood Data: Community 2400-44, Panel 0623, Zone A & C
- Topographic Survey prepared by Mildenberg, Mochi & Associates, Inc. dated May 7, 1994. Additional information has been obtained from the various agencies involved; however, we do not guarantee the accuracy or completeness of the information received.
- Construction of all structures shall conform to the building codes of Howard County.
- The contractor must notify Miss Tilly at 1-257-7777 at least five (5) days prior to beginning work.
- Wetland areas were identified and delineated using the multi-parameter approach. This approach requires positive identification of wetland plants, hydric soils and wetland hydrology for a determination that the area is a wetland. This methodology is outlined in the 1987 U.S. Army Corps Wetland Delineation Manual.
 - Wetland Plants: The wetter portions of the site described above are dominated by hydrophytic vegetation, mixed emergent and scrub/shrub vegetation exists adjacent to the large pond in the western portion of the property.
 - Hydric Soils: Areas dominated by hydrophytic vegetation are poorly drained. Of these soils within the small drained pond are a variant of the Haboro series, being artificially created in formerly upland soils. The remaining poorly drained soils belong to the Baile series.
 - Wetland Hydrology: The subject site occupies a broad valley of the Little Patuxent third order perennial stream. Surface and shallow subsurface drainage from the subject property flows into this stream. Wetland areas exist along the floodplain of the stream, adjacent to a man made pond in the western portion of the property, and adjacent to and within a small shallow, drained pond in the southeast portion of the property.
- Wetland Classifications
 - Existing Conditions
 - System - Palustrine
 - Class - Forested and Scrub/Shrub
 - Subclass - Broadleaf/Deciduous
 - Modifiers - Circumneutral
 - Water regime - Temporarily Flooded and Saturated
 - Salinity - Fresh
 - Proposed Conditions
 - System - Palustrine
 - Class - Forested, Scrub/Shrub and Emergent
 - Subclass - Broadleaf/Deciduous
 - Modifiers - Circumneutral
 - Water Regime - Seasonally Flooded and Saturated
 - Salinity - Fresh
- Water Body: Tributary to Little Patuxent River
- Anticipated Construction Date: FALL, 1995

PROJECT OBJECTIVE

The Font Hill Environmental Education Park has been designed to enhance the Little Patuxent Watershed. The project incorporated the mitigation requirements for Governor's Run, Ashton Woods, Watermark Condominiums, Ellicott Woods, and East Columbia Library. The site design accommodated for the wetlands lost during development by creating 0.83 acres of emergent wetland, 0.23 acres of scrub/shrub wetland, 1.89 acres of forested wetland, 1.80 acres open water, 250 linear feet of stream stabilization, and restoration of 2 existing ponds.



LOCATION MAP
SCALE: 1" = 1000'

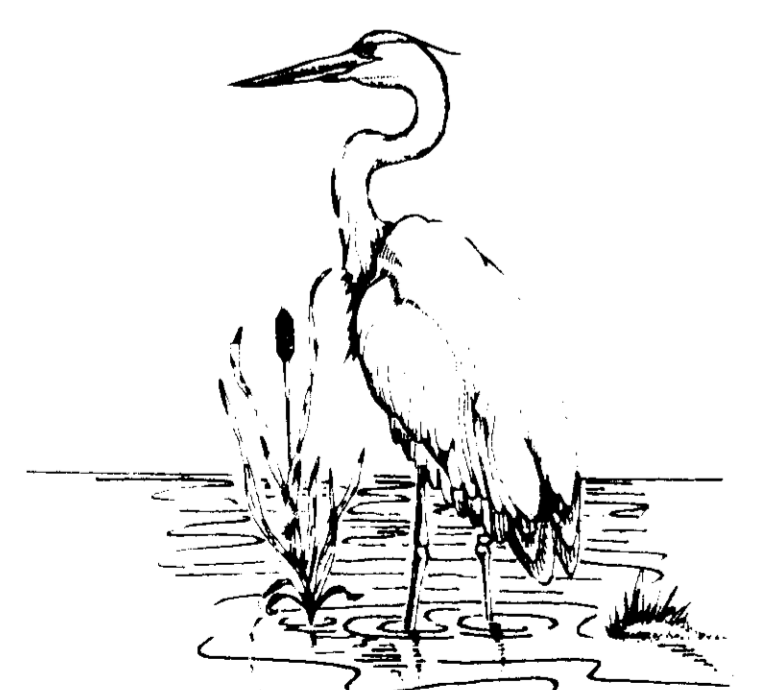
FONT HILL ENVIRONMENTAL EDUCATION PARK
HOWARD COUNTY, MARYLAND

DEPARTMENT OF NATURAL RESOURCES
BALTIMORE DISTRICT CORPS OF ENGINEERS
MARYLAND DEPARTMENT OF THE ENVIRONMENT
MITIGATION REQUIREMENTS

- The mitigation plan is acceptable provided the following condition(s) are met:
- The permittee will successfully create 2.85 acres of nontidal wetlands of similar functions and values of wetlands filled, 250 L.F. of stream stabilization and .47 acres of open water due to the construction of Governor's Run, East Columbia Library, Watermark Condominiums, Ashton Woods, & Ellicott Woods.
- This final mitigation plan shall be submitted to Maryland Department of the Environment and the U.S. Army Corps of Engineers, & Department of Natural Resources. These plans need to be approved by all agencies prior to starting work. The plans will include the proposed grades, sediment control measures, and plant information.
- The permittee shall obtain approval from the U.S. Army Corps of Engineers, Department of Natural Resources, & Exploration Research, Inc. for any changes of plant species or planting schedule from that specified in the mitigation plan.
- The wetland creation project will be either performed and/or supervised by Exploration Research, Inc. and in accordance with the final mitigation plan prepared by Exploration Research, Inc.
- The construction of the project will begin August 1995. All mitigation work will be completed by June, 1996.
- Exploration Research, Inc. will survey the wetland creation site prior to any planting to ensure the elevations of the existing wetland or newly graded surfaces are correct for successful growth of the wetland plants selected. All fill material must be clean, free of contaminants, suitable for growth and establishment of wetland plants. Should the settlement of the fill material occur after planting, the elevation will be corrected and the area will be replanted.
- Installation: The wetland creation project will be either performed and/or supervised by Exploration Research, Inc. and in accordance with the final mitigation plan. Exploration Research, Inc. will carefully monitor the work at the wetland creation site and keep the Department of Natural Resources Water Resource Administration advised of the project starting date and the status of each stage of the project. Upon completion, an as-built survey will be conducted.
- The successful establishment of the wetlands and completion of the requirement for mitigation must meet all agency requirements. If the success criteria is not achieved, the reason for failure will be determined by Exploration Research, Inc. The problems will be corrected, and areas not established will be replanted by the landscape contractor during the next growing season.
- Sediment Control: Permittee shall obtain approval from the County Soil Conservation Districts for grading and sediment control plans specifying soil erosion control measures. The approved Sediment Control: The grading and sediment control plan shall be included in the Approved Plan, and shall be available at the construction site. All earthwork operations shall be carried out in a manner as to minimize erosion of the material into wetlands or waterways.
- Site Access: Permittee shall allow authorized representatives of the Administration access to the site of authorized activities during normal business hours to conduct inspections and evaluations necessary to assure compliance with Permit. Permittee shall provide necessary assistance to effectively and safely conduct such inspections and evaluations.
- Inspection Notification: Permittee shall notify the Administration's Enforcement Division at least five (5) days before starting activities authorized by Permit and five (5) days after completion.
- Best Management Practices During Construction: Permittee, its employees, agents and contractors shall conduct authorized activities in a manner consistent with the Best Management Practices specified on the Approved Plan.
- Disposal of Excess: Unless otherwise shown on the Approved Plan, all excess fill, spoil material, debris, and construction material shall be disposed of outside of nontidal wetlands, nontidal buffers, and the 100-year floodplain, and in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands.
- Discharge: Runoff or accumulated water containing sediment or other suspended materials shall not be discharged into waters of the State unless treated by an approved sediment control device or structure.
- Disturbance of Stream Channels: Motor driven construction equipment shall not be allowed within the stream channel unless shown on Approved Plan or specifically authorized in writing by the Administration.
- Minimum Disturbance: Any disturbance of stream banks, channel bottom, wetlands, and wetlands buffer authorized by Permit or Approved Plan shall be the minimum necessary to conduct permitted activities. All disturbed areas shall be stabilized vegetatively no later than seven (7) days after construction is completed or in accordance with the approved grading and sediment control plan.
- Upon completion of earthwork operations, all fills and other areas disturbed during construction shall be seeded, rip-rapped, or given some other type of protection from subsequent soil erosion.
- The permittee shall employ measures during construction to prevent spills of fuels or lubricants. If a spill occurs, it shall be controlled to prevent its entry into the waterway.
- The permittee must obtain Department of the Army authorization for any grading or filling in nontidal wetlands to replace any sediment control devices or temporary construction access roads not previously authorized.
- Should the permittee violate any of the conditions as listed, the permit shall automatically be suspended.

SHEET INDEX	
SHEET 1 OF 21	COVER SHEET
SHEET 2 OF 21	TOPOGRAPHIC SURVEY
SHEET 3 OF 21	MATCH LINE KEY SHEET
SHEET 4 OF 21	SITE LAYOUT PLAN
SHEET 5 OF 21	SITE LAYOUT PLAN
SHEET 6 OF 21	GRADING & SEDIMENT EROSION CONTROL PLAN
SHEET 7 OF 21	GRADING & SEDIMENT EROSION CONTROL PLAN
SHEET 8 OF 21	SEDIMENT EROSION CONTROL NOTES & DETAILS
SHEET 9 OF 21	SEDIMENT EROSION CONTROL NOTES & DETAILS
SHEET 10 OF 21	PLANTING PLAN
SHEET 11 OF 21	PLANTING PLAN
SHEET 12 OF 21	PLANTING NOTES & DETAILS
SHEET 13 OF 21	PLANTING NOTES & DETAILS
SHEET 14 OF 21	STREAM STABILIZATION DETAILS AND SOIL BORINGS
SHEET 15 OF 21	WEST POND PROFILES
SHEET 16 OF 21	WEST POND DETAILS
SHEET 17 OF 21	SMALL POND PROFILES
SHEET 18 OF 21	SMALL POND DETAILS
SHEET 19 OF 21	PEDESTRIAN BRIDGES ABUTMENT DETAILS
SHEET 20 OF 21	BOARDWALK DETAILS
SHEET 21 OF 21	BOARDWALK DETAILS & WETLAND CROSS SECTIONS

SHEET REVIEW LIST	
THE FOLLOWING SHEETS WILL BE REVIEWED BY EXPLORATION RESEARCH, INC.:	
SHEET 1	- COVER SHEET
SHEET 3	- MATCH LINE KEY SHEET
SHEET 4	- SITE LAYOUT PLAN
SHEET 5	- SITE LAYOUT PLAN
SHEET 10	- PLANTING PLAN
SHEET 11	- PLANTING PLAN
SHEET 12	- PLANTING NOTES & DETAILS
SHEET 13	- PLANTING NOTES & DETAILS
SHEET 14	- STREAM STABILIZATION DETAILS & SOIL BORINGS
SHEET 20	- BOARDWALK DETAILS
SHEET 21	- BOARDWALK DETAILS & WETLAND CROSS SECTIONS
THE FOLLOWING SHEETS WILL BE REVIEWED BY HOWARD SOIL CONSERVATION DISTRICT:	
SHEET 6	- GRADING & SEDIMENT EROSION CONTROL PLAN
SHEET 7	- GRADING & SEDIMENT EROSION CONTROL PLAN
SHEET 8	- SEDIMENT EROSION CONTROL NOTES & DETAILS
SHEET 9	- SEDIMENT EROSION CONTROL NOTES & DETAILS
SHEET 15	- WEST POND PROFILES
SHEET 16	- WEST POND DETAILS
SHEET 17	- SMALL POND PROFILES
SHEET 18	- SMALL POND DETAILS
THE FOLLOWING SHEETS WILL BE REVIEWED BY LYSAGHT & ASSOCIATES	
SHEET 19	- PEDESTRIAN BRIDGE ABUTMENT DETAILS



EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
838 FORREST STREET
HISTORIC ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX: (410) 750-7350

REVISIONS MADE 9/26/95 PER HOWARD COUNTY COMMENTS
REVISIONS MADE 6/11/95 PER HOWARD COUNTY COMMENTS
REVISIONS MADE 7/22/94 PER HOWARD COUNTY COMMENTS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 9/1/95
Date

APPROVED: DEPARTMENT OF LAND DEVELOPMENT & RESEARCH
[Signature] 9/1/94
Date

APPROVED: FOR OPEN DRAINAGE SYSTEMS AND PUBLIC PARKS, DEPT. OF PUBLIC WORKS
[Signature] 8/10/94
Date

APPROVED: HEALTH DEPARTMENT
[Signature] 8/24/94
Date

ASHTON WOODS 89-WQ-0577
88-1967-4
F-90-11

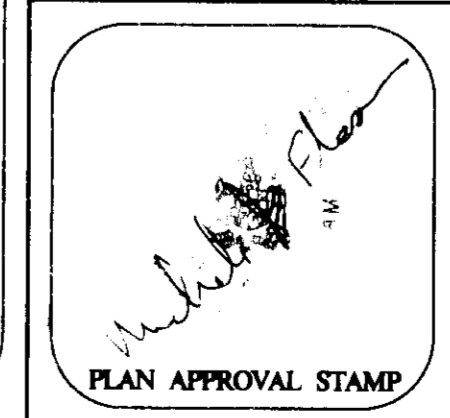
EAST COLUMBIA LIBRARY 91-WQ-660
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91-NT-0719
F-92-51

ELLCOTT WOODS 90-WQ-0066
88-4110-4
F-90-88

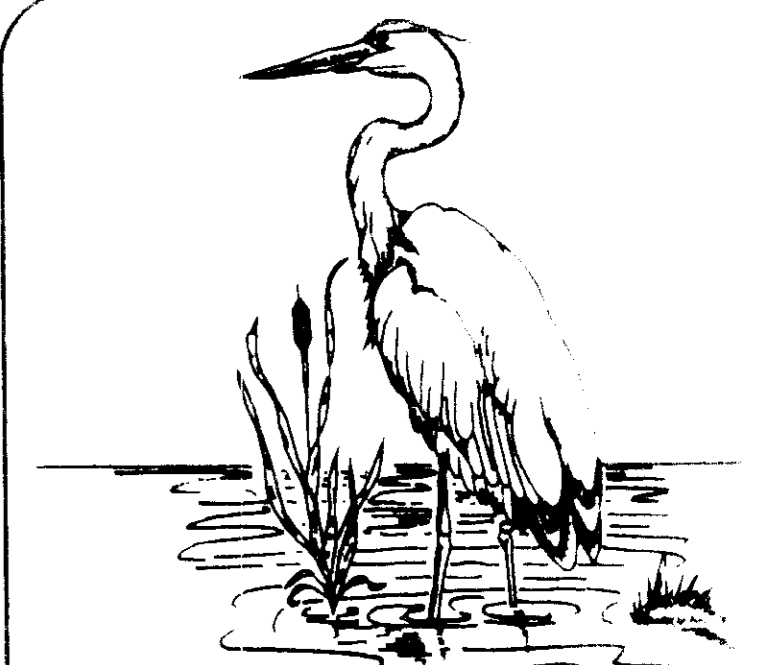
GOVERNORS RUN 90-WQ-0304
89-2266-3
F-90-106
F-90-114

WATERMARK CONDOMINIUMS 88-WQ-0567
88-3276-3
F-91-31

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
HOWARD SOIL CONSERVATION DISTRICT
HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS



SDP 94-123

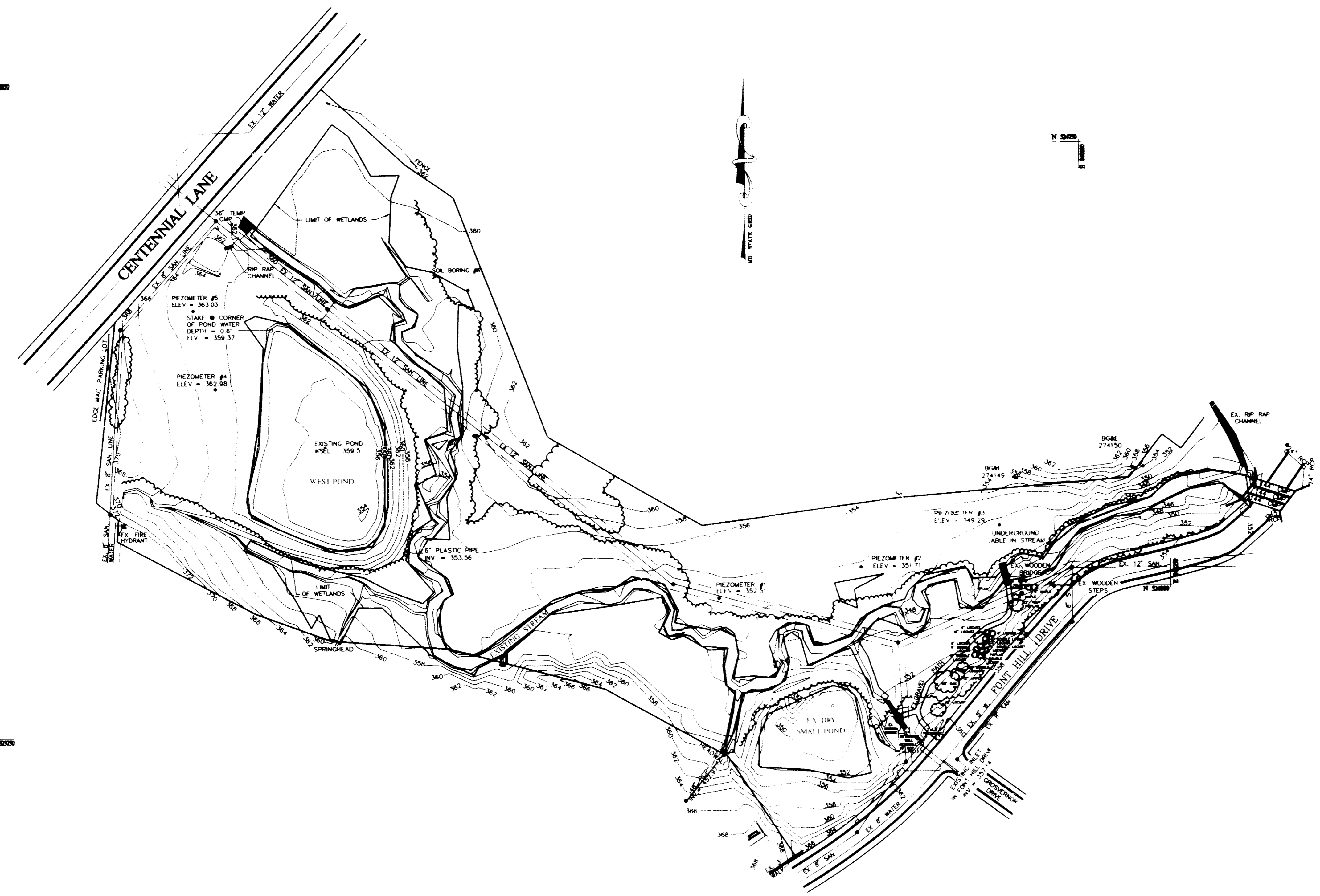


EXPLORATION RESEARCH, INC.
 ENVIRONMENTAL CONSULTANTS
 338 FORREST STREET
 HISTORIC ELLICOTT CITY, MARYLAND 21043
 TEL: (410) 750-1150 FAX: (410) 750-7350

OWNER/DEVELOPER
 HOWARD COUNTY DEPARTMENT OF
 RECREATION AND PARKS
 10000 ROUTE 108
 ELLICOTT CITY, MARYLAND 21043
 (410) 313-7256

TOPOGRAPHIC SURVEY
FONT HILL ENVIRONMENTAL
EDUCATION PARK
 HOWARD COUNTY, MARYLAND

ASTON WOODS 88-1807-4
 EAST COLUMBIA LIBRARY 88-WQ-060
 ELLICOTT WOODS 88-410-1
 91-WQ-066
 91-WQ-067
 91-WQ-068
 91-WQ-069
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 91-WQ-100



REVISIONS MADE 7/22/94 PER HOWARD COUNTY COMMENTS

APPROVED: DEPARTMENT OF PLANNING AND ZONING <i>[Signature]</i> Date: 7/19/94	8/10/94
APPROVED: DEPT. OF PUBLIC WORKS <i>[Signature]</i> Date: 8/10/94	8/19/94
APPROVED: COUNTY HEALTH DEPARTMENT <i>[Signature]</i> Date: 8/20/94	

M MILDENBERG,
M MOCHI & ASSOCIATES, INC.
 ENGINEERS • SURVEYORS • PLANNERS

3140 North Ridge Road, Suite 235, Ellicott City, Maryland 21043-3350
 410-461-0078 D.C. Metro: (301) 621-5768 Fax: (410) 750-6340

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 HOWARD SOIL CONSERVATION DISTRICT
 HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS

U.S. ARMY CORPS OF ENGINEERS APPROVAL
 OF PLANS & SPECIFICATIONS FOR COMPLIANCE
 WITH PERMIT NUMBERS 88-026-3, 88-030-4, 88-190-4,
 88-226-3, 88-405-1

SIGNATURE OF U.S. ARMY CORPS
 OF ENGINEERS, BALTIMORE, MD. DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT
 STANDARDS & CERTIFICATION DIVISION APPROVAL
 OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH
 PERMIT NUMBERS 88-WQ-066, 88-WQ-066, 88-WQ-077,
 88-WQ-084, 88-WQ-080

SIGNATURE OF STANDARDS/
 CERTIFICATION DIVISION DATE

DEPARTMENT OF NATURAL RESOURCES
 NON-TIDAL WETLANDS DIVISION APPROVAL
 OF PLANS & SPECIFICATIONS FOR COMPLIANCE
 WITH PERMIT NUMBER 88-NT-076

SIGNATURE OF DEPARTMENT
 OF NATURAL RESOURCES DATE

DRAWN BY: J. MATHIAS SCALE: 1" = 40'
 DESIGNED BY: DATE: 4/94
 CHECKED BY: R. MOCHI SHEET 2 OF 2



EXPLORATION RESEARCH, INC.
 ENVIRONMENTAL CONSULTANTS
 818 FORREST STREET
 HISTORIC ELLICOTT CITY, MARYLAND 21043
 TEL: (410) 750-1150 FAX: (410) 750-7350

OWNER/DEVELOPER

HOWARD COUNTY DEPARTMENT OF
 RECREATION AND PARKS
 10000 ROUTE 108
 ELLICOTT CITY, MARYLAND 21043
 (410) 313-7256

KEY SHEET
**FONT HILL ENVIRONMENTAL
 EDUCATION PARK**
 HOWARD COUNTY, MARYLAND

ASHTON WOODS EAST COLUMBIA LIBRARY ELLICOTT WOODS
 88-WQ-0577 91-WQ-060 90-WQ-0066
 88-1967-4 88-4426-4 88-4110-4
 91-NT-079
 GOVERNORS RUN WATERMARK CONDOMINIUMS
 88-WQ-0567
 88-WQ-0384 88-2266-3 88-2776-3

U.S. ARMY CORPS OF ENGINEERS APPROVAL
 OF PLANS & SPECIFICATIONS FOR COMPLIANCE
 WITH PERMIT NUMBERS: 88-2266-3, 88-4110-4, 88-1967-4,
 89-2266-3, 91-6426-4

SIGNATURE OF U.S. ARMY CORPS OF ENGINEERS, BALTIMORE, MD. DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT
 STANDARDS & CERTIFICATION DIVISION APPROVAL
 OF PLANS SPECIFICATIONS FOR COMPLIANCE WITH
 PERMIT NUMBERS: 88-WQ-0567, 90-WQ-0066, 89-WQ-0577,
 90-WQ-0384, 91-WQ-060

SIGNATURE OF STANDARDS & CERTIFICATION DIVISION DATE

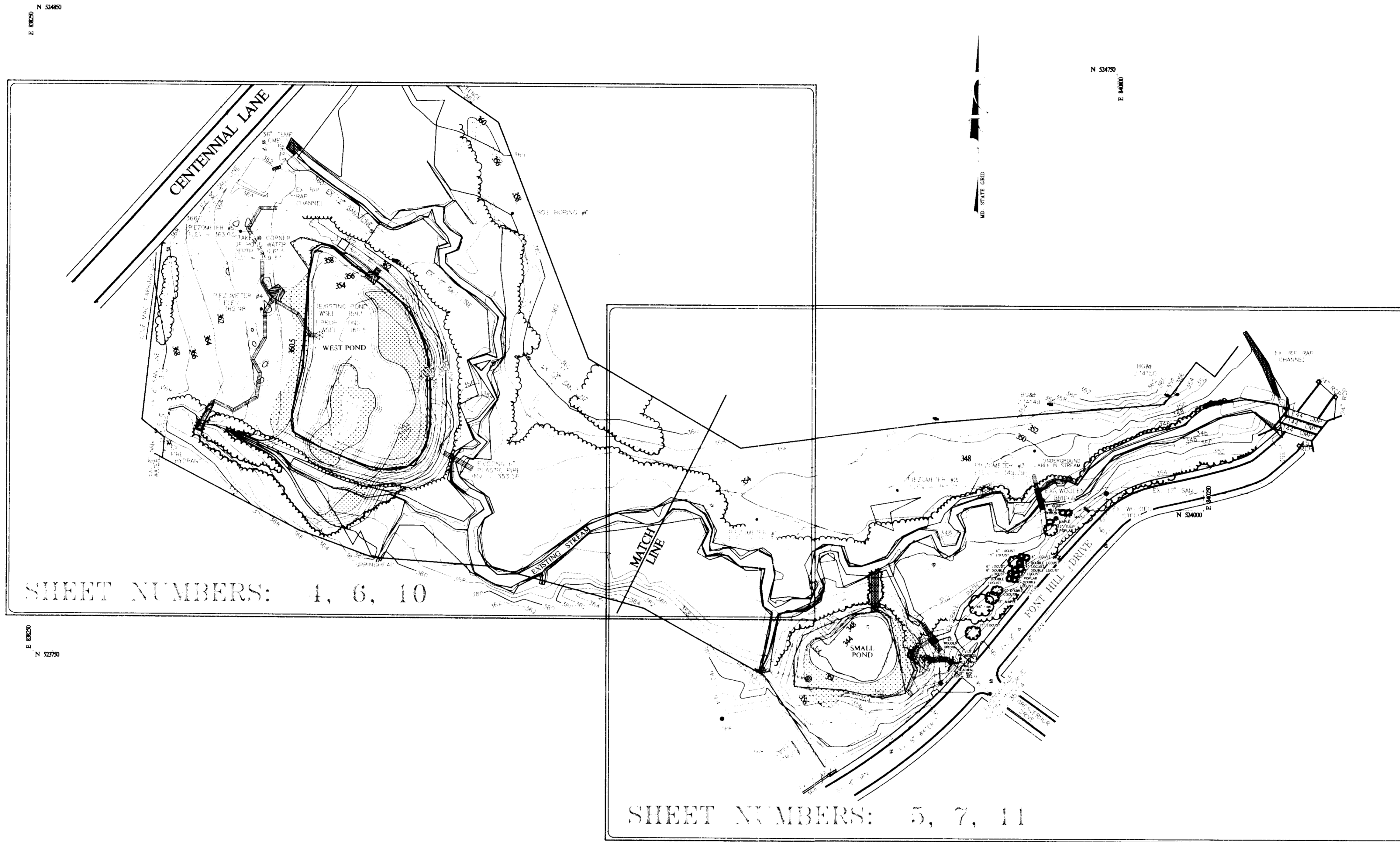
DEPARTMENT OF NATURAL RESOURCES
 NON-TIDAL WETLANDS DIVISION APPROVAL
 OF PLANS & SPECIFICATIONS FOR COMPLIANCE
 WITH PERMIT NUMBER: 91-NT-079

SIGNATURE OF DEPARTMENT OF NATURAL RESOURCES DATE

DRAWN BY: M.J. FLOAM SCALE: 1" = 100'

DESIGNED BY: M.J. FLOAM DATE: 4/94

CHECKED BY: S. HUBER SHEET 3 OF 21



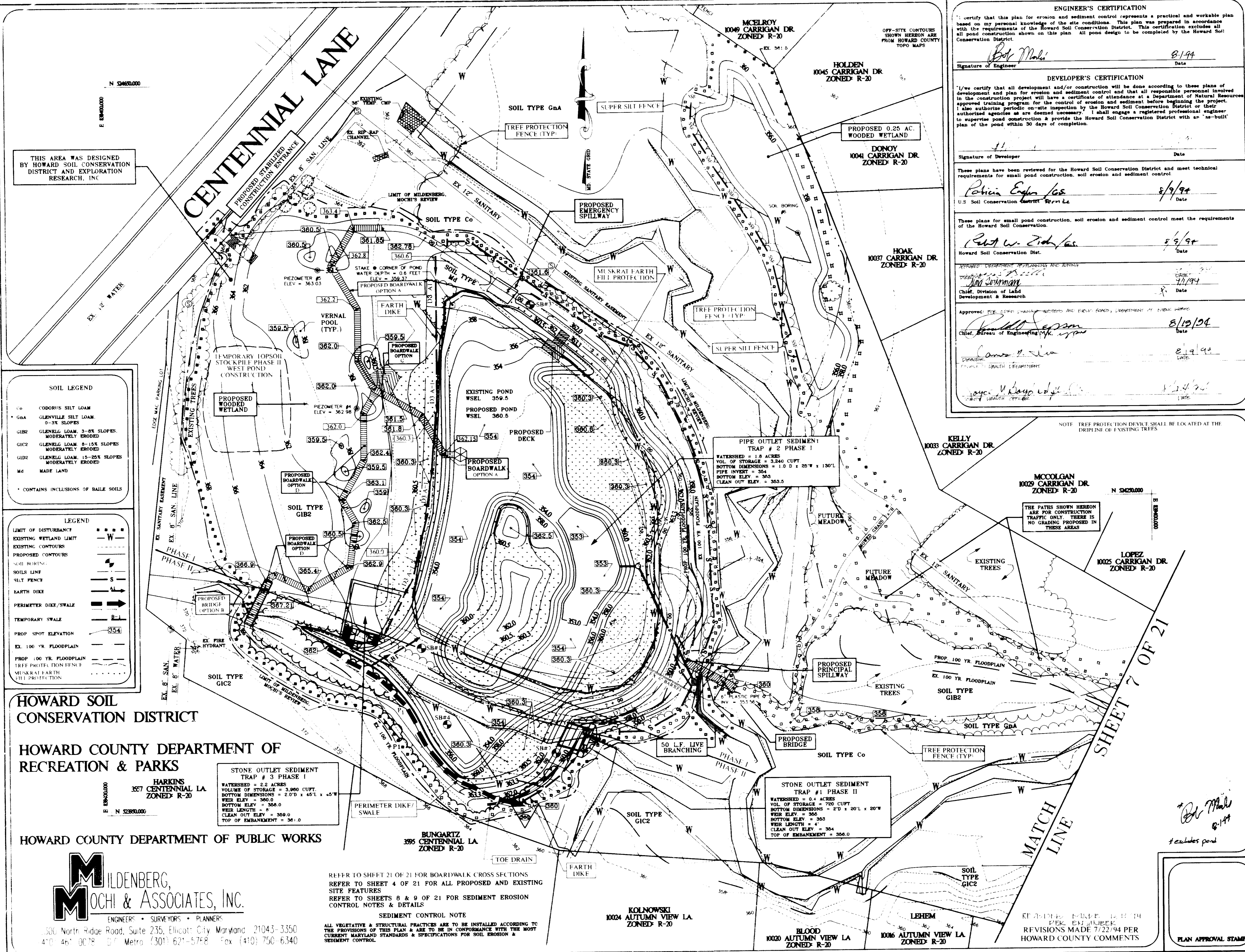
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 HOWARD SOIL CONSERVATION DISTRICT
 HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS



REVISIONS MADE 12/19 94 PER ENGINEER
 REVISIONS MADE 7/22/94 PER HOWARD COUNTY COMMENTS

APPROVED: DEPARTMENT OF PLANNING AND ZONING <i>Quinn Swannery</i> Chief, Division of Land Development & Research Date: 7/1/94	8/10/94
APPROVED: PUBLIC UTILITIES, UTILITIES AND PUBLIC WORKS, DEPARTMENT OF PUBLIC WORKS <i>James P. Lewis</i> Director Date: 8/19/94	8/19/94
REVIEWED: HEALTH DEPARTMENT <i>James P. Lewis</i> Date: 8/24/94	8/24/94

44-11-132
 1-18



THIS AREA WAS DESIGNED BY HOWARD SOIL CONSERVATION DISTRICT AND EXPLORATION RESEARCH, INC.

SOIL LEGEND

G0	CODORIS SILT LOAM
G0a	GLENNVILLE SILT LOAM, 0-3% SLOPES
G1B2	GLENNVILLE LOAM, 3-8% SLOPES, MODERATELY ERODED
G1C2	GLENNVILLE LOAM, 8-15% SLOPES, MODERATELY ERODED
G1D2	GLENNVILLE LOAM, 15-25% SLOPES, MODERATELY ERODED
M4	MADE LAND

* CONTAINS INCLUSIONS OF BAILE SOILS

LEGEND

--- W ---	LIMIT OF DISTURBANCE
--- W ---	EXISTING WETLAND LIMIT
---	EXISTING CONTOURS
---	PROPOSED CONTOURS
---	SOIL BORING
---	SOILS LINE
---	SILT FENCE
---	EARTH DIKE
---	PERIMETER DIKE/SWALE
---	TEMPORARY SWALE
---	PROP. SPOT ELEVATION
---	EX. 100 YR. FLOODPLAIN
---	PROP. 100 YR. FLOODPLAIN
---	TREE PROTECTION FENCE
---	MUSKRAT FATH. FILL PROTECTION

HOWARD SOIL CONSERVATION DISTRICT

HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS

HARKINS
357 CENTENNIAL LA.
ZONED: R-20

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

BUNGARTZ
CENTENNIAL LA.
ZONED: R-20

KOLNOWSKI
10024 AUTUMN VIEW LA.
ZONED: R-20

LEHEM
1006 AUTUMN VIEW LA.
ZONED: R-20

BLOOD
10020 AUTUMN VIEW LA.
ZONED: R-20

MILDENBERG, MOCHI & ASSOCIATES, INC.
ENGINEERS • SURVEYORS • PLANNERS

300 North Ridge Road, Suite 235, Ellicott City, Maryland 21043-3350
410-461-0078 • Metro (301) 621-5758 • Fax (410) 750-6340

REFER TO SHEET 21 OF 21 FOR BOARDWALK CROSS SECTIONS
REFER TO SHEET 4 OF 21 FOR ALL PROPOSED AND EXISTING SITE FEATURES
REFER TO SHEETS 8 & 9 OF 21 FOR SEDIMENT EROSION CONTROL NOTES & DETAILS

SEDIMENT CONTROL NOTE
ALL VEGETATIVE & STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN & ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS & SPECIFICATIONS FOR SOIL EROSION & SEDIMENT CONTROL.

ENGINEER'S CERTIFICATION
I certify that this plan for 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. This certification excludes all pond construction shown on this plan. All pond design to be completed by the Howard Soil Conservation District.

Signature of Engineer: *Bob Mochi* Date: 8/1/94

DEVELOPER'S CERTIFICATION
I/we certify that all development and/or construction will be done according to these plans of development and plan for erosion and sediment control and that all responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of erosion and sediment before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agencies as are deemed necessary. I shall engage a registered professional engineer to supervise pond construction & provide the Howard Soil Conservation District with an "as-built" plan of the pond within 30 days of completion.

Signature of Developer: _____ Date: _____

These plans have been reviewed for the Howard Soil Conservation District and meet technical requirements for small pond construction, soil erosion and sediment control.

Signature: *Patricia Edgar / Joe* Date: 8/9/94
U.S. Soil Conservation District: _____

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

Signature: *Robert W. Zickler* Date: 8/9/94
Howard Soil Conservation Dist.: _____

APPROVED: _____ DATE: 8/19/94
Chief, Division of Land Development & Research

APPROVED: _____ DATE: 8/19/94
Chief, Bureau of Engineering

APPROVED: _____ DATE: 8/19/94
Director, Bureau of Planning

EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
838 FORREST STREET
HISTORIC ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX: (410) 750-7350

OWNER/DEVELOPER

HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
1000 ROUTE 108
ELLICOTT CITY, MARYLAND 21043
(410) 313-7256

GRADING AND SEDIMENT EROSION CONTROL PLAN

FONT HILL ENVIRONMENTAL EDUCATION PARK

HOWARD COUNTY, MARYLAND

ASHTON WOODS EAST COLUMBIA LIBRARY ELLICOTT WOODS
88-WO-0077 91-WO-0066 91-WO-0064 91-WO-0065
88-WO-0074 88-WO-0075 88-WO-0076 88-WO-0077
GOVERNORS RUN WATERMARK CONDOMINIUMS
88-WO-0074 88-WO-0075 88-WO-0076 88-WO-0077

U.S. ARMY CORPS OF ENGINEERS APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS 88-226-1, 88-00-1, 88-967-4, 88-226-3, 91-628-4

SIGNATURE OF U.S. ARMY CORPS OF ENGINEERS, BALTIMORE, MD. DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT STANDARDS & CERTIFICATION DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS 88-WO-0077, 90-WO-0066, 88-WO-0077, 90-WO-0064, 91-WO-0065

SIGNATURE OF STANDARDS/CERTIFICATION DIVISION DATE

DEPARTMENT OF NATURAL RESOURCES NON-TOTAL WETLANDS DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER 91-NT-078

SIGNATURE OF DEPARTMENT OF NATURAL RESOURCES DATE

DRAWN BY: M.I. FLOAM SCALE: 1" = 40'
DESIGNED BY: M.I. FLOAM DATE: 4/94
CHECKED BY: R. MOCHI SHEET 6 OF 21

REVISIONS MADE 7/22/94 PER HOWARD COUNTY COMMENTS

PLAN APPROVAL STAMP

SEQUENCE OF CONSTRUCTION

- 1. Obtain grading permits.
2. Contractor/Developer is to notify Exploration Research, Inc. (410 750-1150) 48 hours prior to commencing work.
3. Install stabilized construction entrances at Centennial Lane and Font Hill Drive and tree protection fence. (1 day)
4. Raise existing wooden pedestrian bridge and set aside. Install temporary vehicular access bridge in location of existing bridge. (2 days)
5. Install the earth dikes, silt fence, silt fence, and outlet channel in areas around the wooded wetlands. (2 days)
6. Construct proposed bridge abutments and proposed wooden bridge in area as indicated on sheet 4 of 20 and sheet 19 of 20. (5 days)
7. Strip and stockpile topsoil in wooded and scrub/shrub wetlands that are to be graded. (1 day)
8. Clear and grade wooded wetland north of the small pond and wooded wetland north of the west pond. Respread topsoil in both areas. Stabilize areas with temporary seeding and mulch. (3 days)
9. Start construction of the Small Pond. Refer to sheet 7 of 21 for sediment control measures
a. Install Silt Fence S-1 as shown on the plan view.
b. Clear and grub the dam only over the area to be breached for the principle spillway and water surface control structure.
c. Breech dam, remove existing pipe drain, and install the rip-rap principal spillway and water surface control structure. Complete outfall last, removing only that portion of the Silt Fence S-1 necessary to complete the spillway.
d. Install Silt Fence S-1A beside the rip-rap chute as shown on the plan view. Securely link S-1A into S-1 on both sides of the spillway.
e. Grade finished pool contours, except for the east side of the dam and storm drain outfall areas.
f. Install the Drop Inlet Structure and Supply Pipeline.
g. Install Silt Fence S-3 as shown on the plan view along the 350.5 contour.
h. Install Silt Fence S-2 and cut the storm drain outflow into the pond on the same day. Obstruct the existing channel if necessary to divert the flow away from the existing channel.
i. Install new storm drain outfall channel, Pond Fore Bay, and Level Spreader.
j. Finish the pool grading and reshaping of the site in the vicinity of the Outfall and Fore Bay.
k. Install Silt Fence S-4 as shown on the plan view and securely link it to S-3.
l. Vegetatively stabilize all disturbed areas not covered by other seeding or planting plans according to the seeding specifications found herein. Areas not to be seeded within fourteen days of the completion of all earth moving shall be temporarily stabilized using the Temporary Seeding recommendation.
m. Remove all sediment control after satisfactory seed germination and approval of sediment control inspector. Re-seed areas disturbed by sediment control removal.
10. Install boardwalk, decks, stone dust path and retaining wall near small pond as shown on sheet 5 of 21, sheet 20 of 21.
11. Start construction of the West Pond. Refer to sheet 6 of 21 for sediment control measures.

SMALL POND

- 1. The Howard Soil Conservation District (410 465-3180) shall be notified 72 hours (three working days) prior to commencement, in order to provide for the inspection, of the installation of the core trench, the pipe spillway, and the placement of all backfill material and the earthen dam. Should this not occur the contractor shall be prepared to provide sealed certification of all listed construction by a professional engineer and the same to the effect that all fill placement is 95% of the maximum dry density with a moisture content within 2% of the optimum, as determined by AASHTO Method T-99.

WEST POND

- General Notification:
The Howard Soil Conservation District (410 465-3180) shall be notified 72 hours (three working days) prior to commencement, in order to provide for the inspection, of the installation of the core trench, the pipe spillway, and the placement of all backfill material and the earthen dam. Should this not occur the contractor shall be prepared to provide sealed certification of all listed construction by a professional engineer and the same to the effect that all fill placement is 95% of the maximum dry density with a moisture content within 2% of the optimum, as determined by AASHTO Method T-99.
Phase I
a. All construction will be performed in accordance with details and specifications found elsewhere in these drawings.
b. Install silt fence, Dike D3, and stone filter outlet Sediment Trap #3, as shown on plan view.
c. Dewater pond using existing barrel by removing existing riser assembly.
d. Clear and grub woody vegetation from earthen dam between 1+00 and 7+00 of dam center line. Trees and stumps to be hauled to disposal site. (see Sheet 9 of 21, Sediment Control Notes, note 7)
e. Strip sod and top soil on dam and stockpile along downstream toe of dam.
f. Breech dam along path of new pipe spillway using 3:1 side slopes. Divert all pond discharge through old barrel.
g. Install principle spillway with all features and Sediment Trap #2 in front of drain invert.
h. Extend breech and excavate the old barrel, use soil to start covering new pipe spillway.
i. Back fill spillway breech in lifts after scarifying the 3:1 breech slopes.
j. Complete grading of existing pond interior, dam, and shoreline.
k. Excavate the emergency spillway.
l. Close valve allowing pond to fill to top of 6" PVC riser stub, elevation 356.0.

Phase II

- m. Divert stream into pond, north of the island, by constructing Dike B1 with the excavation from the first of two breaches in the existing dam which create the island. Excavate breech to elevation 357.5, top of dam elevation 350.5.
n. Install perimeter Dike P1 and stabilize.
o. Install Dike D1 and Stone Outlet Sediment Trap #1 as shown on plan view and stabilize. Connect silt fence from Phase I to Dike D2.
p. Clear and grub new pool area.
q. Strip and store topsoil as shown on sheet 6 of 21.
r. Excavate and back fill core trench.
s. Excavate pool area to finished grades except for the breech areas which create the island.
t. Construct new extension of dam, station 7+00 to 10+00. A 200 GPM pump will be on site, if necessary to remove ponded water to achieve design grades.
u. Remove Dike B1 and complete both breaches of the old dam, creating the island. Note that the last several feet of excavation in both breaches will be under water, below elevation 356.0. For this reason the final excavation should proceed from the new pond area toward the old pond until a thin strip of land divides the old and new ponds. A backhoe can then be used to finish the connection.
v. Excavate emergency spillway.
w. Bring entire dam up to finished grade by spreading top soil over fill.
x. Stabilize all disturbed areas above the normal pool elevation according to seeding schedule.
y. Once site is stabilized and after approval of sediment control inspector, remove all sediment control measures except 10 and Trap 3.
z. After grading for the mitigation site, but prior to planting of materials a 6" PVC riser stub should be installed raising the normal pool elevation to elevation 380.5.

MITIGATION SITE

- 11. Clear and grade wooded wetland and scrub/shrub area west of the west pond. Respread topsoil in these areas. Stabilize areas with temporary seeding and mulch. (3 days)
12. Install boardwalks, decks and stone dust paths as shown on sheet 4 of 21, sheet 20 of 21, sheet 21 of 21. (2 weeks)
13. Grade slopes and install stream stabilization techniques. Construction shall be done in increments of 25 linear feet. An area must be constructed and stabilized by the end of each workday. (5 days)
14. Remove temporary vehicular access bridge and reinstall existing wooden pedestrian bridge. (2 days)
15. Sediments from sediment traps must be removed when sediment has accumulated to one-half of the storage volume of the traps. All removed sediments must be deposited upstream of approved sediment control devices. (as required)
16. All sediment control devices are to be inspected daily and after each rainfall. Repair sediment devices as required.
17. Following initial soil disturbances or redistribution, permanent or temporary stabilization shall be completed within seven (7) calendar days for all perimeter slopes and all slopes greater than 3:1 or within fourteen (14) days for all other disturbed areas on the project site. (as required)
18. When all contributing area to a sediment control device has been stabilized, and with the permission of the Sediment Control Inspector, the device may be removed and/or backfilled and the area brought to design grades and stabilized. (as required)
19. Notify Howard County Office of Inspections and Permits for final inspection at end of project.

POND 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 in excess of 1 1/2" diameter, and other objectionable material shall be removed and disposed of off site in an approved manner. Channel banks and sharp breaks shall be sloped to no steeper than 1:1.
Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 50 foot radius around the inlet structure shall be cleared.
All cleared and grubbed material shall be disposed of off-site in an approved manner. 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, wood, rubbish, or other objectionable material. Fill material for the center of the embankment and cut off trench shall conform to United Soil Classification GC, SC, CH, or CL. Consideration may be given to the use of other materials in the embankment if design and construction are supervised by a geotechnical engineer.
Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 6 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow materials shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with 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 track of the equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, 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.
Cut Off Trench - The cut off trench shall be excavated into impervious material along or parallel to the 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.
Structure Backfill - Backfill adjacent to pipes or structures 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 structure. Under no circumstances shall equipment be driven over any part of concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure of pipe.

Pipe Conduits
All pipes shall be circular in cross section.
All fill and pipe construction shall have a vertical elevation error not exceeding 0.2 feet (two tenths of a foot).
Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:
1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM Designation C-381 - Class B25.
2. Bedding - All reinforced concrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high slump concrete placed under the pipe and up the sides of the pipe with a minimum thickness of 3 inches, or as shown on the drawings.
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 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 2 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.
6. Anti-seep collars, constructed using two separate concrete pours, shall have a "water stop" bridging the pour joint.

Polyvinyl Chloride (PVC) Pipe - All of the following criteria shall apply for polyvinyl chloride (PVC) pipe:
1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241.
2. Joints and connections to anti-seep collars shall be completely watertight.

Concrete
Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 608, Mix No. 3.
Rock Riprap (Brownstone or River Jack only)
Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 905.

The riprap shall be placed to the required thickness in one operation. The rock shall be delivered and placed in a manner that will insure the riprap in place shall be reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact one to another with the smaller rocks filling the voids between the larger rocks. Filter cloth shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 819.12.

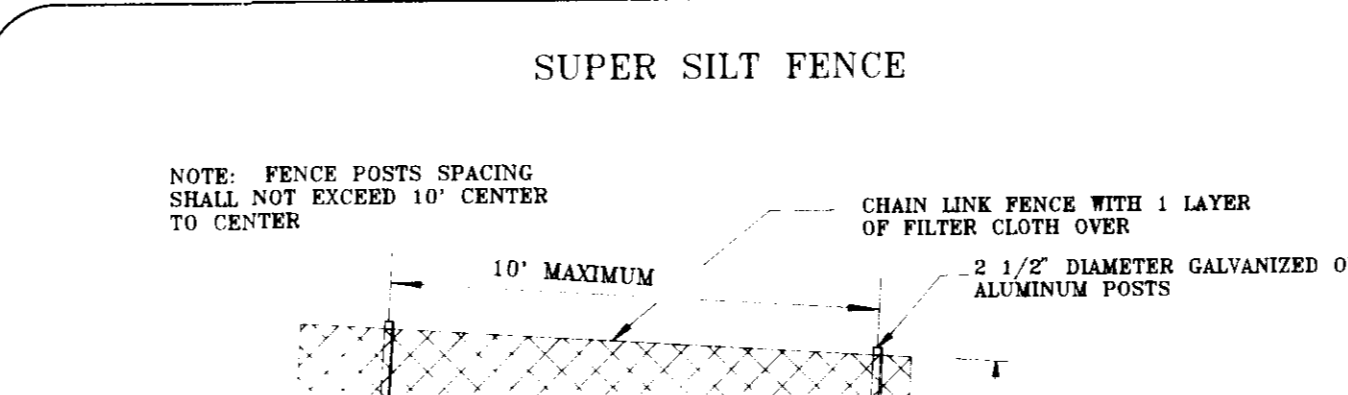
Care of Water during Construction
All work on permanent structures shall be carried out in areas free from water. The contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the area to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from the 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 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 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 draining the water to sumps 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 Maryland Soil 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 to be employed during the construction process.

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
HOWARD SOIL CONSERVATION DISTRICT
HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS

This development is approved for erosion and sediment control by the Howard Soil Conservation District. Approved:
Howard Soil Conservation Dist.
APPROVED: DEPARTMENT OF PLANNING AND ZONING
APPROVED: FOR: SOIL DRAINAGE SYSTEMS AND PUBLIC WORKS, DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Engineering
REVIEWED: HEALTH DEPARTMENT



NOTE: FENCE POSTS SPACING SHALL NOT EXCEED 10' CENTER TO CENTER.
CHAIN LINK FENCE WITH 1 LAYER OF FILTER CLOTH OVER
2 1/2" DIAMETER GALVANIZED OR ALUMINUM POSTS
GROUND SURFACE
FLOW
10' MAXIMUM
3' MINIMUM
12" MIN.
9" MIN.
36" MINIMUM
PERSPECTIVE VIEW
SECTION

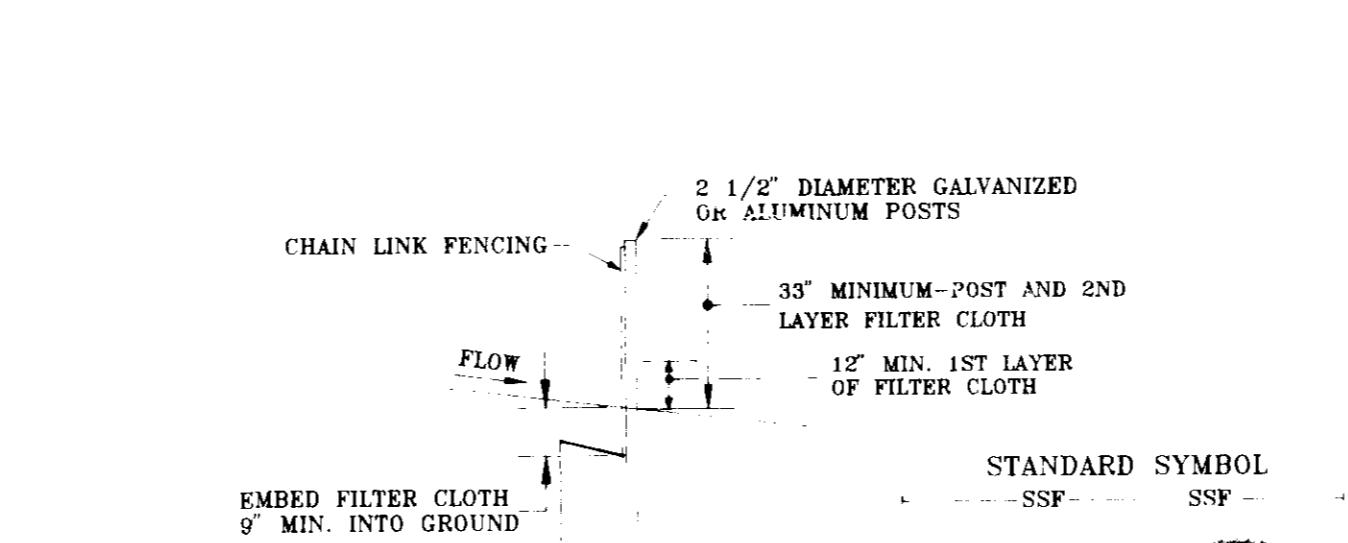


Table with 4 columns: Slope Steepness, Slope Length (maximum), Silt Fence Length (maximum), and Silt Fence Length (maximum). Rows include 10-20%, 20-33%, 33-50%, 50%+ slopes.

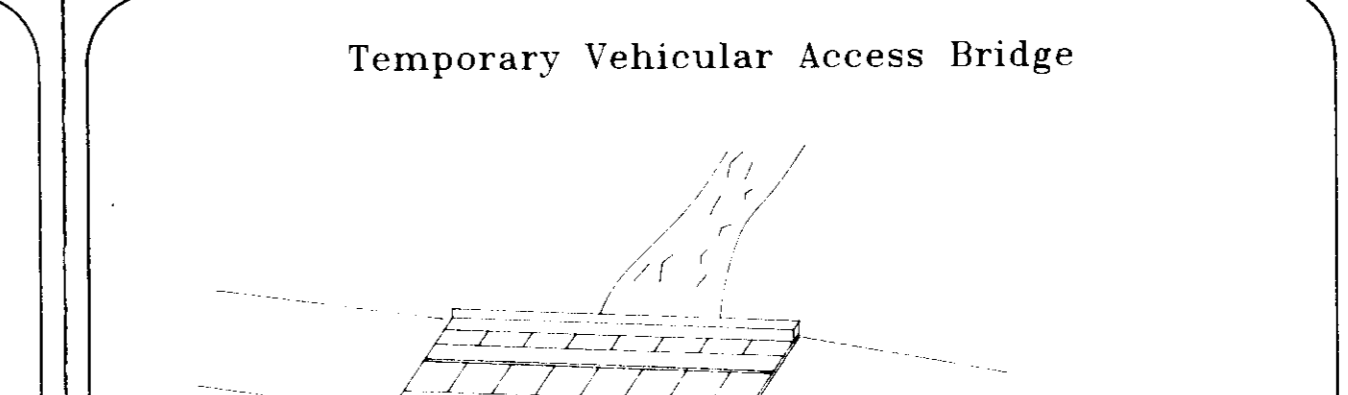
Where ends of the filter fabric come together, the ends shall be overlapped, folded, and stapled to prevent sediment bypass.
Fabric Specifications
Super silt fence fabric shall conform to the following specifications unless otherwise approved by the authorized soil erosion and sediment control plan approving authority. Such approval shall not constitute statewide acceptance. Statewide acceptability shall depend on in-field and/or laboratory observations and evaluations.

Table with 3 columns: Fabric Properties, Minimum Acceptable Value, and Test Method. Rows include Grab tensile strength, Elongation at failure, Mullen burst strength, Puncture strength, Equivalent opening size, and Ultraviolet radiation stability.

Construction Specifications
Fencing shall be 42 inches in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6 foot fence shall be used, substituting 42 inch fabric and 6 foot length posts.
1. Chain link fence shall be fastened securely to the fence posts with wire ties or staples.
2. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24 inches at the top and mid section.
3. Filter cloth shall be embedded a minimum of 9 inches into the ground.
4. When two sections of filter cloth adjoin each other, they shall be overlapped by 6 inches and folded.
5. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence.

REVISIONS MADE 7/22/94 PER HOWARD COUNTY COMMENTS

ENGINEER'S CERTIFICATION
I hereby certify that this plan for erosion and sediment control presents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District. This certification excludes all pond construction shown on this plan. All pond design to be completed by the Howard Soil Conservation District.
Signature of Engineer: [Signature] Date: 8-1-94
DEVELOPER'S CERTIFICATION
I/we certify that all development and construction will be done according to this plan of development and plan for erosion and sediment control and that all responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of erosion and sediment before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agencies as are deemed necessary.
Signature of Developer: [Signature] Date: 8/27/94
Reviewed for Howard County Soil Conservation District and meets technical requirements.
Signature: [Signature] Date: 8/2/94



Construction Specifications
a. Restriction - Construction, use, or removal of a temporary access bridge will not normally have any time of year restrictions since construction, use or removal should not affect the stream or its banks, unless the bridge is built with a pier(s) in the water.
b. Bridge Replacement - A temporary bridge structure shall be constructed at or above the bank elevation to prevent the entrapment of floating materials and debris.
c. Abutments - Abutments shall be placed parallel to, and on, stable banks.
d. Bridge Span - Bridges shall be constructed to span the entire channel. If the channel width exceeds 8 feet, (as measured from top-of-bank to top-of-bank) then a footing, pier, or bridge support may be constructed within the waterway. One additional footing, pier, or bridge support will be permitted within the waterway. However, no footing, pier, or bridge support will be permitted within the channel for waterways less than 8 feet wide.
e. Stringers - Stringers shall either be logs, sawn timber, prestressed concrete beams, metal beams, or other approved materials.
f. Deck Material - Decking materials shall be of sufficient strength to support the anticipated load. All decking members shall be placed perpendicular to the stringer, butted tightly, and securely fastened to the stringers. Decking materials must be butted tightly to prevent any soil material tracked onto the bridge from falling into the waterway below.
g. Run Planks (optional) - Run planking shall be securely fastened to the length of the span. One run plank shall be provided for each track of the equipment wheels. Although run planks are optional, they may be necessary to properly distribute loads.
h. Curbs or Fenders - Curbs or fenders may be installed along the outer sides of the deck. Curbs or fenders are an option which will provide additional safety.
i. Bridge Anchors - Bridges shall be securely anchored at only one end using steel cable or chain. Anchoring at only one end will prevent channel obstruction in the event that floatwaters flow the bridge. Acceptable anchors are large trees, large boulders, or driven/steel anchors. Anchoring shall be sufficient to prevent the bridge from floating downstream and possibly causing an obstruction to the flow.
j. Stabilization - All areas disturbed during installation shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard for "Critical Area Stabilization With Permanent Seeding".

Bridge Maintenance Requirements
a. Inspection - Periodic inspection shall be performed by the user to ensure that the bridge, streambed, and stream banks are maintained and not damaged.
b. Maintenance - Maintenance shall be performed, as needed to ensure that the structure complies with the standard and specifications. This shall include removal and disposal of any trapped sediment or debris. Sediment shall be disposed of outside of the flood plain and stabilized.

Bridge Removal and Clean-Up Requirements
a. Removal - When the temporary bridge is no longer needed, all structures including abutments and other bridging materials shall be removed within 14 calendar days. In all cases, the bridge materials shall be removed within one year of installation.
b. Final Clean-Up - Final clean-up shall consist of removal of the temporary bridge from the waterway, protection of banks from erosion, and removal of all construction materials. All removed materials shall be disposed of off site in an approved manner.
c. Method - Removal of the bridge and clean up of the area shall be accomplished without construction equipment working in the waterway channel.
d. Final Stabilization - All areas disturbed during removal shall be stabilized within 14 calendar days of that disturbance in accordance with the Standards for "Critical Area Stabilization With Permanent Seeding".

Signature of U.S. Army Corps of Engineers Approval of Plans & Specifications for Compliance with Permit Numbers 88-226-3, 88-480-4, 88-967-4, 88-226-3, 91-626-4.
Signature of Standards/Certification Division.
Signature of Department of Natural Resources.

Signature of U.S. Army Corps of Engineers Approval of Plans & Specifications for Compliance with Permit Numbers 88-226-3, 88-480-4, 88-967-4, 88-226-3, 91-626-4.
Signature of Standards/Certification Division.
Signature of Department of Natural Resources.

Signature of Department of Natural Resources.
DRAWN BY: M.J. FLOAM SCALE: N.T.S.
DESIGNED BY: M.J. FLOAM DATE: 4/94
CHECKED BY: R. MOCHI SHEET 8 OF 21
PLAN APPROVAL STAMP

EXPLORATION RESEARCH, INC. ENVIRONMENTAL CONSULTANTS
838 FORREST STREET
HISTORIC ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX:(410) 750-7350

OWNER/DEVELOPER
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
10000 ROUTE 108
ELLICOTT CITY, MARYLAND 21043
(410) 313-7256

SEDIMENT EROSION CONTROL NOTES AND DETAILS
FONT HILL ENVIRONMENTAL EDUCATION PARK
HOWARD COUNTY, MARYLAND
ELLICOTT WOODS 90-WQ-0066 88-410-4
EAST COLUMBIA LIBRARY 91-WQ-660 91-WQ-0577 88-1867-4
ASHTON WOODS 88-WQ-0577 88-1867-4
GOVERNORS RUN 90-WQ-0084 88-226-3
WATERMARK CONDOMINIUMS 88-WQ-0577 88-2767-3

U.S. ARMY CORPS OF ENGINEERS APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS 88-226-3, 88-480-4, 88-967-4, 88-226-3, 91-626-4.
SIGNATURE OF U.S. ARMY CORPS OF ENGINEERS, BALTIMORE, MD. DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT STANDARDS & CERTIFICATION DIVISION APPROVAL OF PLANS SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS 88-WQ-0577, 90-WQ-0066, 88-WQ-0577, 90-WQ-0304, 91-WQ-660.
SIGNATURE OF STANDARDS/CERTIFICATION DIVISION DATE

DEPARTMENT OF NATURAL RESOURCES NON-TIDAL WETLANDS DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER: 91-NT-079.
SIGNATURE OF DEPARTMENT OF NATURAL RESOURCES DATE

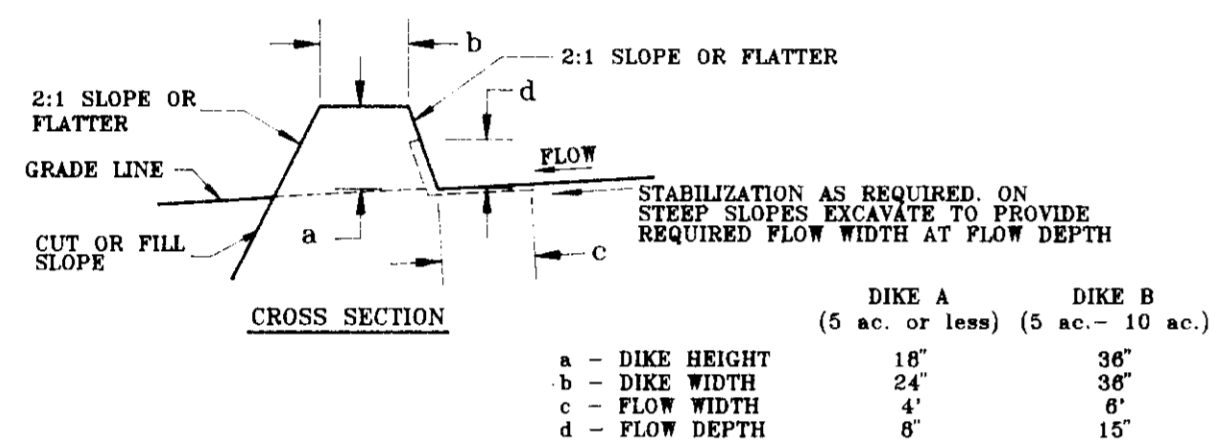
DRAWN BY: M.J. FLOAM SCALE: N.T.S.
DESIGNED BY: M.J. FLOAM DATE: 4/94
CHECKED BY: R. MOCHI SHEET 8 OF 21

94-123

HOWARD SOIL CONSERVATION DISTRICT
STANDARD SEDIMENT CONTROL NOTES

- A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction, (313-1850).
- All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the most current "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", and revisions thereto.
- Following initial soil disturbance or redistribution, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
- All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 12, of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
- All disturbed areas must be stabilized within the time period specified above in accordance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (Sec. 51), sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
- All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- Site Analysis:
Total Area of Site: 24.172 Acres
Area Disturbed: 8.65 Acres
Area to be Roofed or Paved: 0 Acres
Area to be Vegetatively Stabilized: 2.85 Acres
Total Cut: 23,200 cu.yd. +/-
Total Fill with 15% compaction: 8,000 cu.yd. +/-
15,200 cu.yd. +/- of excess cut will be disposed of at the Howard County Landfill.
- Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
- Trenches for the construction of utilities is limited to three pipe lengths or that which can be back filled and stabilized within one working day, whichever is shorter.

EARTH DIKE
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

- All dikes shall be compacted by earth-moving equipment.
- All dikes shall have positive drainage to an outlet.
- Top width may be wider and side slopes may be flatter if desired to facilitate crossing by construction traffic.
- Field location should be adjusted as needed to utilize a stabilized safe outlet.
- Earth dikes shall have an outlet that functions with a minimum of erosion. Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin where either the dike channel or the drainage area above the dike are not adequately stabilized.
- Stabilization shall be: (A) in accordance with standard specifications for seed and straw mulch or straw mulch if not in seeding season, (B) Flow channel as per the chart below.

Type of Treatment	Channel Grade	FLOW CHANNEL STABILIZATION	
		DIKE A	DIKE B
1	0.5-3.0%	Seed & Straw Mulch	Seed & Straw Mulch
2	3.1-5.0%	Seed & Straw Mulch	Seed using Jute, or Excelsior, Sod; 2" stone
3	5.1-8.0%	Seed with Jute, or Sod; 2" stone	Lined Rip-Rap 4-8"
4	8.1-20%	Lined rip-rap 4-8"	Engineering design

- Stone to be 2" stone, or recycled concrete equivalent, in a layer at least 3" in thickness and be pressed into the soil with construction equipment.
 - Rip-rap to be 4-8" in a layer at least 8" thickness and pressed into the soil.
 - Approved equivalents can be substituted for any of the above materials.
7. Periodic inspection and required maintenance must be provided after each rain event.

Reviewed for Howard County Soil Conservation District and meets technical requirements.

Patricia Engler, Esq. 8/19/94
U.S. Soil Conservation Service Date

This development is approved for erosion and sediment control by the Howard Soil Conservation District. Approved:

Robert W. Zick, Esq. 8/6/94
Howard Soil Conservation Dist. Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING

9/1/94
Date

Approved: THE COUNTY DEPARTMENT OF PUBLIC WORKS, DEPARTMENT OF PUBLIC WORKS

8/10/94
Date

8/19/94
Date

8/24/94
Date

ENGINEER'S CERTIFICATION

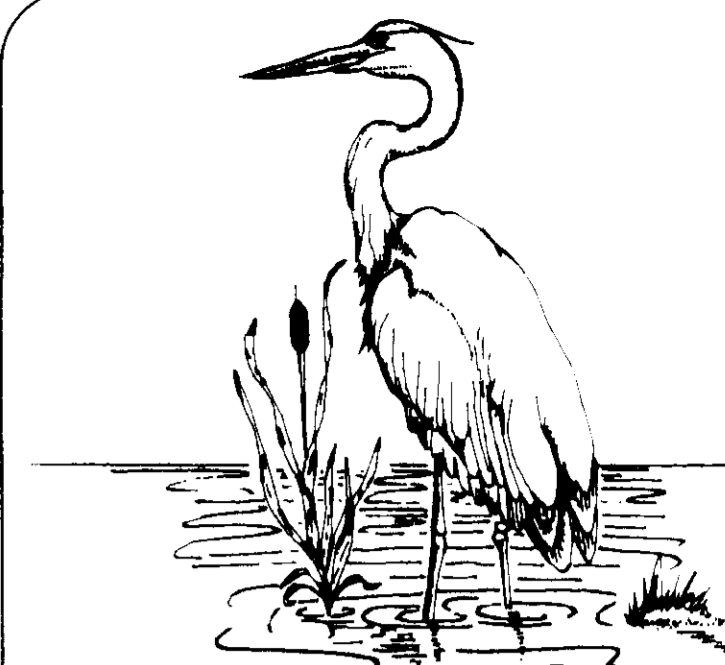
I hereby certify that this plan for erosion and sediment control presents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District. This certification excludes all pond construction shown on this plan. All pond design to be completed by the Howard Soil Conservation District.

Signature of Engineer: Ed Mallon Date: 8-1-94

DEVELOPER'S CERTIFICATION

I/we certify that all development and construction will be done according to this plan of development and plan for erosion and sediment control and that all responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of erosion and sediment before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agencies, if deemed necessary.

Signature of Developer: [Signature] Date: 8/13/94



EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
838 FORREST STREET
HISTORIC ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX: (410) 750-7350

OWNER/DEVELOPER
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
10000 ROUTE 108
ELLICOTT CITY, MARYLAND 21043
(410) 313-7256

SEDIMENT EROSION CONTROL NOTES AND DETAILS
FONT HILL ENVIRONMENTAL EDUCATION PARK
HOWARD COUNTY, MARYLAND

ASHTON WOODS EAST COLUMBIA LIBRARY ELLICOTT WOODS
88-WQ-0577 90-WQ-0660 90-WQ-0666
88-1967-4 91-626-4 88-410-4
91-NT-079 88-276-3

GOVERNORS RUN WATERMARK CONDOMINIUMS
90-WQ-0384 88-WQ-0567
88-286-3 88-276-3

U.S. ARMY CORPS OF ENGINEERS APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS: 88-276-3, 88-410-4, 88-1967-4, 88-286-3, 91-626-4

SIGNATURE OF U.S. ARMY CORPS OF ENGINEERS, BALTIMORE, MD. DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT STANDARDS & CERTIFICATION DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS: 88-276-3, 88-410-4, 88-1967-4, 88-WQ-0660, 90-WQ-0666, 88-WQ-0577, 90-WQ-0384, 91-NT-079

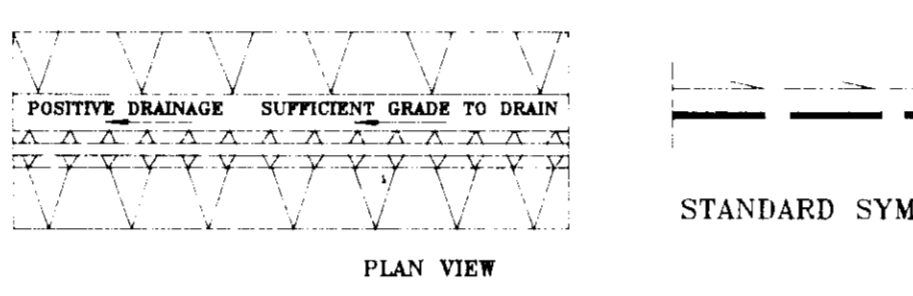
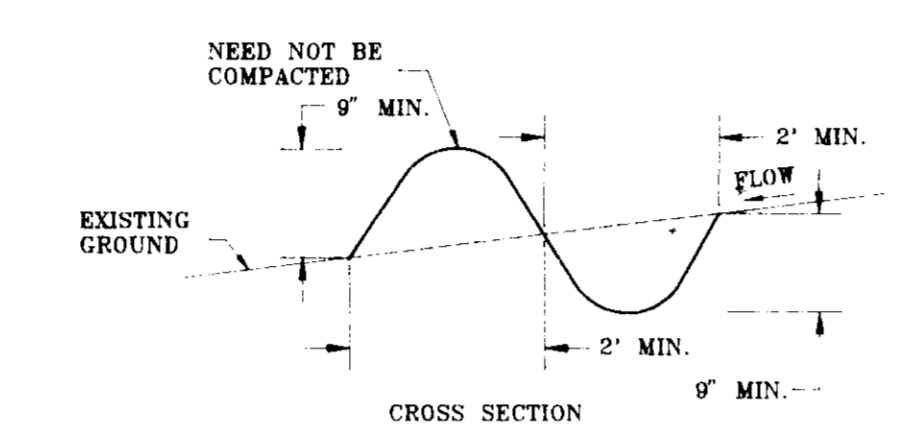
SIGNATURE OF STANDARDS/CERTIFICATION DIVISION DATE

DEPARTMENT OF NATURAL RESOURCES NON-TIDAL WETLANDS DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER: 91-NT-079

SIGNATURE OF DEPARTMENT OF NATURAL RESOURCES DATE: 8/1/94

DRAWN BY: M.J. FLOAM SCALE: N.T.S.
DESIGNED BY: M.J. FLOAM DATE: 4/94
CHECKED BY: R. MOCHI SHEET 9 OF 21

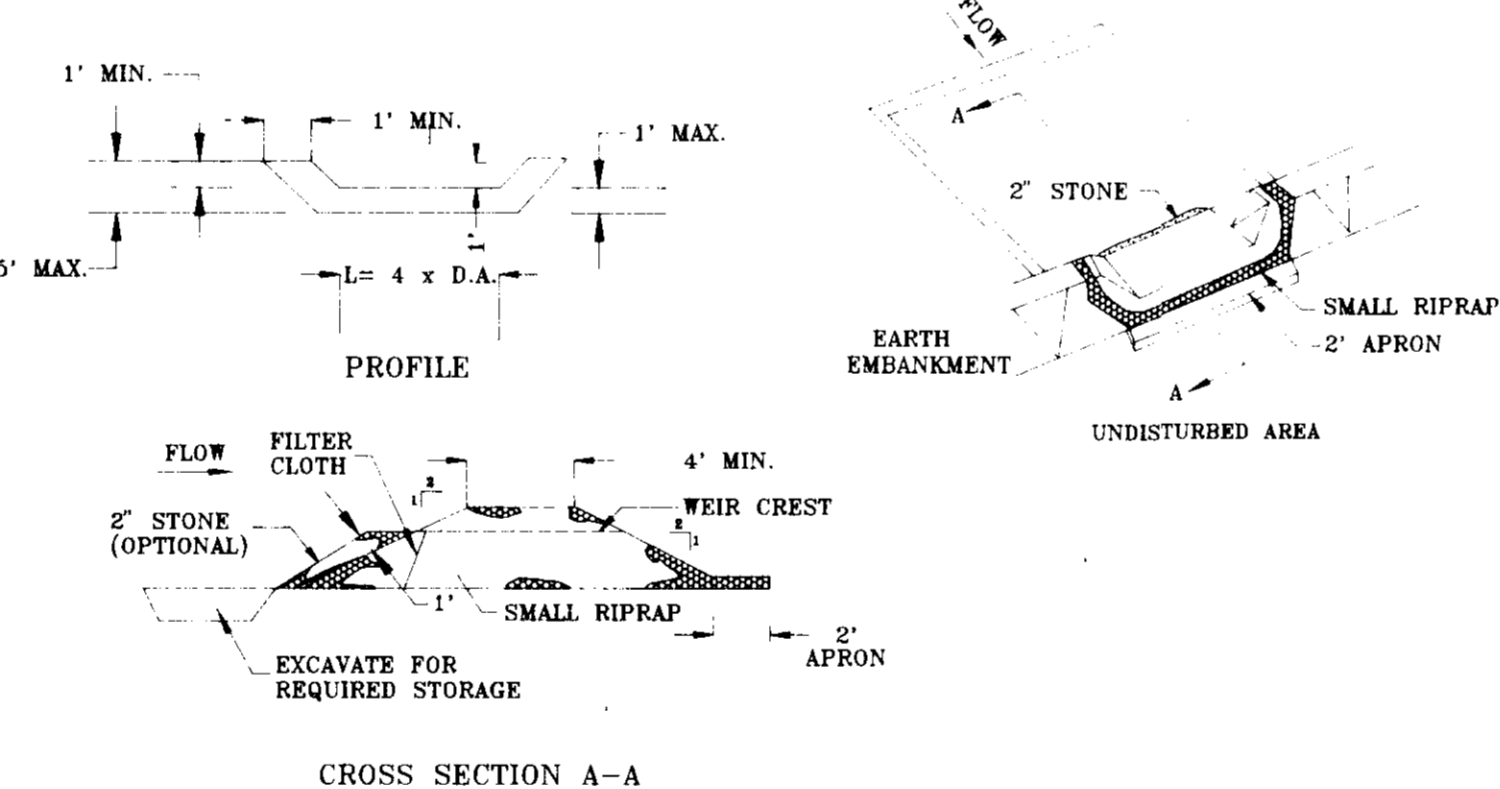
PERIMETER DIKE/SWALE
NOT TO SCALE



CONSTRUCTION SPECIFICATION

- All perimeter dike/swale shall have uninterrupted positive grade to an outlet.
 - Diverted runoff from a disturbed area shall be conveyed to a sediment trapping device.
 - Diverted runoff from an undisturbed area shall outlet into an undisturbed stabilized area at non-erosion velocity.
 - The swale shall be excavated or shaped to line, grade, and cross section as required to meet the criteria specified in the standard.
 - Stabilization of the area disturbed by the dike and swale shall be done in accordance with the standard and specification for seed and straw mulch, and shall be done within 10 days.
 - Periodic inspection and required maintenance must be provided after each rain event.
- MAX. DRAINAGE AREA LIMIT: 2 ACRES

STONE OUTLET SEDIMENT TRAP V



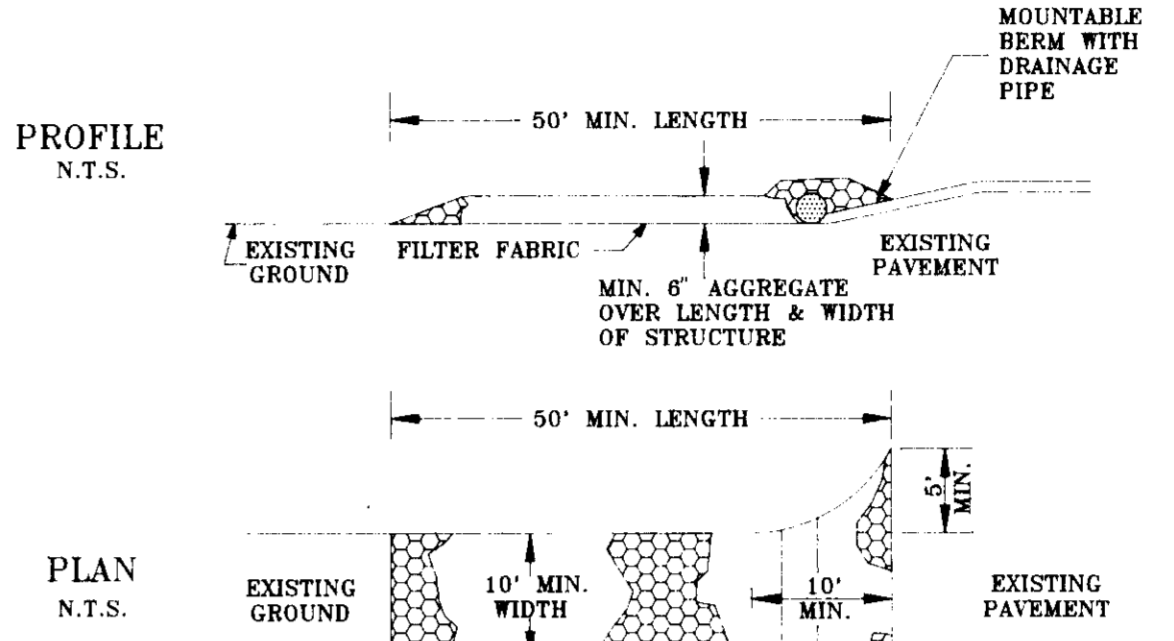
CROSS SECTION A-A

OPTION: A one layer of 2" stone may be placed on the upstream side of the riprap in place of the embedded filter cloth.

CONSTRUCTION SPECIFICATIONS FOR ST-V

- Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
- The fill material for the embankment shall be free of roots and other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
- All cut and fill slopes shall be 2:1 or flatter.
- The stone used in the outlet shall be small riprap 4"-8" along with a 1" thickness of 2" aggregate placed on the upgrade side on the small riprap or embedded filter cloth in the riprap.
- Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to 1/2 the design depth of the trap.
- The structure shall be inspected after each rain and repairs made as needed.
- Construction operations shall be carried out in such a manner that erosion and water pollution is minimized.
- The structure shall be removed and the area stabilized when the drainage area has been properly stabilized.

STABILIZED CONSTRUCTION ENTRANCE



Design Criteria

- Length - Minimum of 50 feet (30 feet for single residence lot).
- Width - Ten (10) foot minimum, should be flared at the existing road to provide a turning radius.
- Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. Single family residence may not require geotextile.
- Stone - Crushed aggregate (2" to 3"), or reclaimed or recycled concrete equivalent shall be placed at least six (6) inches deep over the length and width of the entrance.
- Surface Water - All surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of six inches of stone over the pipe.
- Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of stabilized construction entrance.

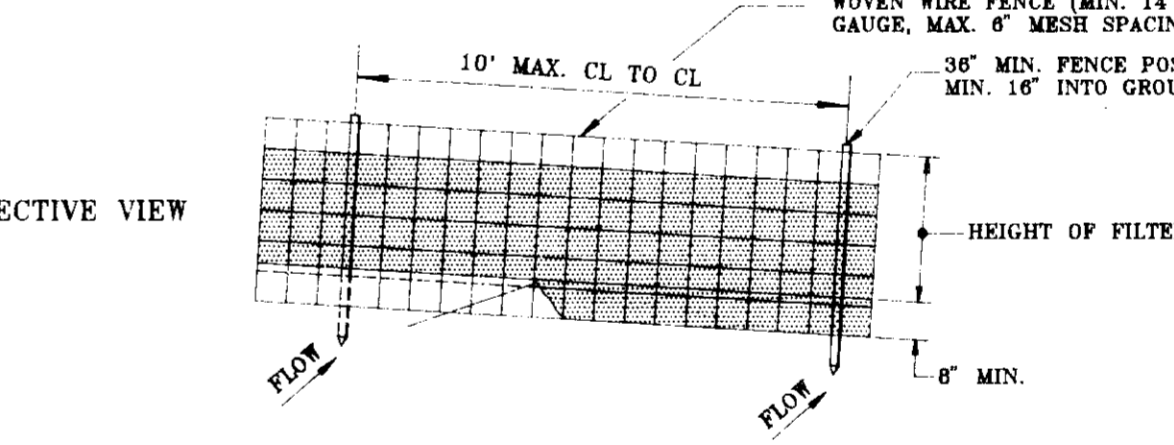
Maintenance

The entrance shall be maintained in a condition which will minimize tracking of sediment onto public rights-of-way. This may require adding stone or other repairs as conditions demand. All sediment spilled, dropped, or tracked onto public rights-of-way must be removed immediately by vacuum sweeping, scraping, or sweeping.

When necessary, wheels shall be cleaned or washed to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device. Daily inspection and maintenance is required.

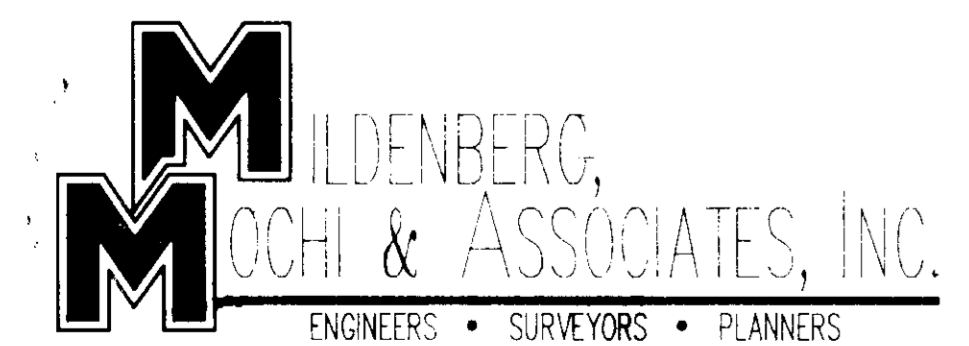
After construction is complete and the site is stabilized the stabilized construction entrance shall be removed and the area stabilized unless it will be used as an underlayment for a driveway.

SILT FENCE



CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

- WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES
 - FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
 - WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED
 - MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN 'BULGES' DEVELOP IN THE SILT FENCE.
- POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD
FENCE: WOVEN WIRE, 14 1/2 GA. 6" MAX. MESH OPENING
FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL
PREFABRICATED UNIT: GEOPAR, ENVIFENCE, OR APPROVED EQUAL



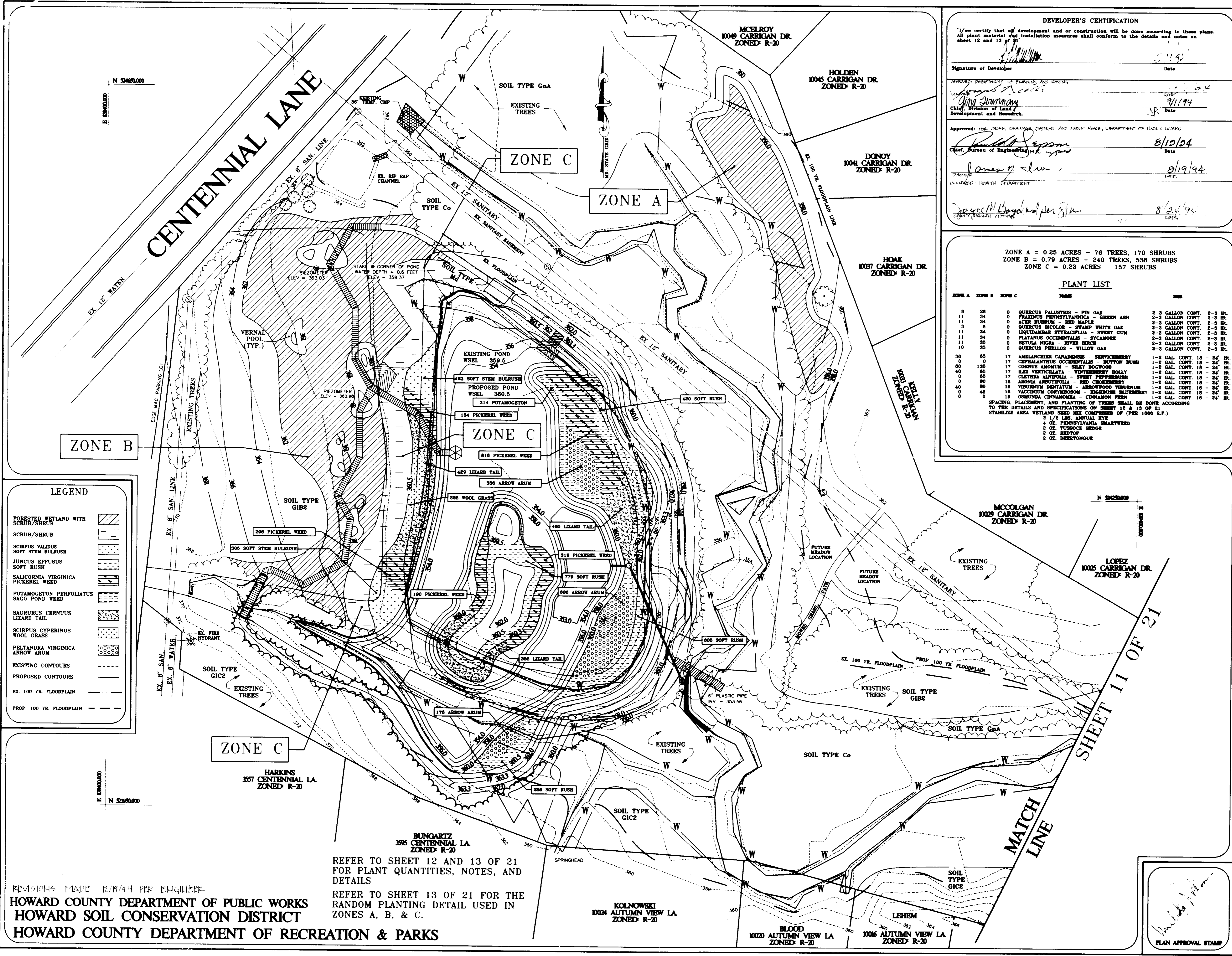
3300 North Ridge Road, Suite 235, Ellicott City, Maryland 21043-3350
(410) 461-0078 D.C. Metro: (301) 621-5768 Fax: (410) 750-6340

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
HOWARD SOIL CONSERVATION DISTRICT
HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS



PLAN APPROVAL STAMP

DF-94-173



DEVELOPER'S CERTIFICATION

I/We certify that all development and/or construction will be done according to these plans. All plant material and installation measures shall conform to the details and notes on sheet 12 and 13 of 21.

Signature of Developer: _____ Date: 8/19/94

Approved: Department of Planning and Zoning
 Chief, Division of Land Development and Research: _____ Date: 8/19/94

Approved: The Storm Drainage Systems and Public Works, Department of Public Works
 Chief, Bureau of Engineering: _____ Date: 8/19/94

Approved: Department of Health
 Chief: _____ Date: 8/20/94

ZONE A = 0.25 ACRES - 76 TREES, 170 SHRUBS
 ZONE B = 0.79 ACRES - 240 TREES, 538 SHRUBS
 ZONE C = 0.23 ACRES - 157 SHRUBS

PLANT LIST

ZONE A	ZONE B	ZONE C	NAME	SIZE
8	26	0	QUERCUS PALUSTRIS - PINE OAK	2-3 GALLON CONT.
11	34	0	FRAXINUS PENNSYLVANICA - GREEN ASH	2-3 GALLON CONT.
11	34	0	ACER RUBRUM - RED MAPLE	2-3 GALLON CONT.
3	8	0	QUERCUS SCROLOLE - STAMP WHITE OAK	2-3 GALLON CONT.
11	34	0	LIQUIDAMBAR STRYCIPLIA - SWEET GUM	2-3 GALLON CONT.
11	34	0	PLATANUS OCCIDENTALIS - SYCAMORE	2-3 GALLON CONT.
11	34	0	NYCTAGINIA - NIXES HERB	2-3 GALLON CONT.
10	35	0	QUERCUS PHELLOS - WILLOW OAK	2-3 GALLON CONT.
30	65	17	AMELANCHIER CANADENSIS - SERVICEBERRY	1-2 GAL. CONT.
0	0	17	OSPIALANTHEUS OCCIDENTALIS - BUTTON BUSH	1-2 GAL. CONT.
60	135	17	CORUS AMOMUM - SILEY DOGWOOD	1-2 GAL. CONT.
40	85	17	ILEX VERTICILLATA - WINTERBERRY HOLLY	1-2 GAL. CONT.
0	80	17	CLYTEMNUS ALPHILOBA - SWEET PEPPERBUSH	1-2 GAL. CONT.
40	80	18	ABOTIA ARBUTIFOLIA - RED CREEPERBERRY	1-2 GAL. CONT.
40	80	18	VIBURNUM DENTATUM - ARROWWOOD VIBURNUM	1-2 GAL. CONT.
48	48	18	YACHTINUM CORYMBOSUM - EGGBERRY BLUESBERRY	1-2 GAL. CONT.
0	0	18	OSMUNDA CINNAMOMEA - CINNAMON FERN	1-2 GAL. CONT.

SPACING, PLACEMENT AND PLANTING OF TREES SHALL BE DONE ACCORDING TO THE DETAILS AND SPECIFICATIONS ON SHEET 12 & 13 OF 21.
 STABILIZE AREA WETLAND SEED MIX COMPRESSED OF (PER 1000 S.F.)
 2 1/2 LBS. ANNUAL RYE
 4 OZ. PENNSYLVANIA SMARTWEED
 2 OZ. YUSSOCK SEDGE
 2 OZ. SEDTOP
 2 OZ. MEETONGUE



EXPLORATION RESEARCH, INC.
 ENVIRONMENTAL CONSULTANTS
 588 FORREST STREET
 HISTORIC ELLICOTT CITY, MARYLAND 2043
 TEL: (410) 750-1150 FAX: (410) 750-7350

OWNER/DEVELOPER
 HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 1000 ROUTE 106
 ELLICOTT CITY, MARYLAND 2043
 (410) 313-7256

PLANTING PLAN
FONT HILL ENVIRONMENTAL EDUCATION PARK
 HOWARD COUNTY, MARYLAND

ASTON WOODS 94-40-057 94-40-058 94-40-059 94-40-060 94-40-061 94-40-062 94-40-063 94-40-064 94-40-065 94-40-066 94-40-067 94-40-068 94-40-069 94-40-070 94-40-071 94-40-072 94-40-073 94-40-074 94-40-075 94-40-076 94-40-077 94-40-078 94-40-079 94-40-080 94-40-081 94-40-082 94-40-083 94-40-084 94-40-085 94-40-086 94-40-087 94-40-088 94-40-089 94-40-090 94-40-091 94-40-092 94-40-093 94-40-094 94-40-095 94-40-096 94-40-097 94-40-098 94-40-099 94-40-100 94-40-101 94-40-102 94-40-103 94-40-104 94-40-105 94-40-106 94-40-107 94-40-108 94-40-109 94-40-110 94-40-111 94-40-112 94-40-113 94-40-114 94-40-115 94-40-116 94-40-117 94-40-118 94-40-119 94-40-120 94-40-121 94-40-122 94-40-123 94-40-124 94-40-125 94-40-126 94-40-127 94-40-128 94-40-129 94-40-130 94-40-131 94-40-132 94-40-133 94-40-134 94-40-135 94-40-136 94-40-137 94-40-138 94-40-139 94-40-140 94-40-141 94-40-142 94-40-143 94-40-144 94-40-145 94-40-146 94-40-147 94-40-148 94-40-149 94-40-150 94-40-151 94-40-152 94-40-153 94-40-154 94-40-155 94-40-156 94-40-157 94-40-158 94-40-159 94-40-160 94-40-161 94-40-162 94-40-163 94-40-164 94-40-165 94-40-166 94-40-167 94-40-168 94-40-169 94-40-170 94-40-171 94-40-172 94-40-173 94-40-174 94-40-175 94-40-176 94-40-177 94-40-178 94-40-179 94-40-180 94-40-181 94-40-182 94-40-183 94-40-184 94-40-185 94-40-186 94-40-187 94-40-188 94-40-189 94-40-190 94-40-191 94-40-192 94-40-193 94-40-194 94-40-195 94-40-196 94-40-197 94-40-198 94-40-199 94-40-200 94-40-201 94-40-202 94-40-203 94-40-204 94-40-205 94-40-206 94-40-207 94-40-208 94-40-209 94-40-210 94-40-211 94-40-212 94-40-213 94-40-214 94-40-215 94-40-216 94-40-217 94-40-218 94-40-219 94-40-220 94-40-221 94-40-222 94-40-223 94-40-224 94-40-225 94-40-226 94-40-227 94-40-228 94-40-229 94-40-230 94-40-231 94-40-232 94-40-233 94-40-234 94-40-235 94-40-236 94-40-237 94-40-238 94-40-239 94-40-240 94-40-241 94-40-242 94-40-243 94-40-244 94-40-245 94-40-246 94-40-247 94-40-248 94-40-249 94-40-250 94-40-251 94-40-252 94-40-253 94-40-254 94-40-255 94-40-256 94-40-257 94-40-258 94-40-259 94-40-260 94-40-261 94-40-262 94-40-263 94-40-264 94-40-265 94-40-266 94-40-267 94-40-268 94-40-269 94-40-270 94-40-271 94-40-272 94-40-273 94-40-274 94-40-275 94-40-276 94-40-277 94-40-278 94-40-279 94-40-280 94-40-281 94-40-282 94-40-283 94-40-284 94-40-285 94-40-286 94-40-287 94-40-288 94-40-289 94-40-290 94-40-291 94-40-292 94-40-293 94-40-294 94-40-295 94-40-296 94-40-297 94-40-298 94-40-299 94-40-300 94-40-301 94-40-302 94-40-303 94-40-304 94-40-305 94-40-306 94-40-307 94-40-308 94-40-309 94-40-310 94-40-311 94-40-312 94-40-313 94-40-314 94-40-315 94-40-316 94-40-317 94-40-318 94-40-319 94-40-320 94-40-321 94-40-322 94-40-323 94-40-324 94-40-325 94-40-326 94-40-327 94-40-328 94-40-329 94-40-330 94-40-331 94-40-332 94-40-333 94-40-334 94-40-335 94-40-336 94-40-337 94-40-338 94-40-339 94-40-340 94-40-341 94-40-342 94-40-343 94-40-344 94-40-345 94-40-346 94-40-347 94-40-348 94-40-349 94-40-350 94-40-351 94-40-352 94-40-353 94-40-354 94-40-355 94-40-356 94-40-357 94-40-358 94-40-359 94-40-360 94-40-361 94-40-362 94-40-363 94-40-364 94-40-365 94-40-366 94-40-367 94-40-368 94-40-369 94-40-370 94-40-371 94-40-372 94-40-373 94-40-374 94-40-375 94-40-376 94-40-377 94-40-378 94-40-379 94-40-380 94-40-381 94-40-382 94-40-383 94-40-384 94-40-385 94-40-386 94-40-387 94-40-388 94-40-389 94-40-390 94-40-391 94-40-392 94-40-393 94-40-394 94-40-395 94-40-396 94-40-397 94-40-398 94-40-399 94-40-400 94-40-401 94-40-402 94-40-403 94-40-404 94-40-405 94-40-406 94-40-407 94-40-408 94-40-409 94-40-410 94-40-411 94-40-412 94-40-413 94-40-414 94-40-415 94-40-416 94-40-417 94-40-418 94-40-419 94-40-420 94-40-421 94-40-422 94-40-423 94-40-424 94-40-425 94-40-426 94-40-427 94-40-428 94-40-429 94-40-430 94-40-431 94-40-432 94-40-433 94-40-434 94-40-435 94-40-436 94-40-437 94-40-438 94-40-439 94-40-440 94-40-441 94-40-442 94-40-443 94-40-444 94-40-445 94-40-446 94-40-447 94-40-448 94-40-449 94-40-450 94-40-451 94-40-452 94-40-453 94-40-454 94-40-455 94-40-456 94-40-457 94-40-458 94-40-459 94-40-460 94-40-461 94-40-462 94-40-463 94-40-464 94-40-465 94-40-466 94-40-467 94-40-468 94-40-469 94-40-470 94-40-471 94-40-472 94-40-473 94-40-474 94-40-475 94-40-476 94-40-477 94-40-478 94-40-479 94-40-480 94-40-481 94-40-482 94-40-483 94-40-484 94-40-485 94-40-486 94-40-487 94-40-488 94-40-489 94-40-490 94-40-491 94-40-492 94-40-493 94-40-494 94-40-495 94-40-496 94-40-497 94-40-498 94-40-499 94-40-500 94-40-501 94-40-502 94-40-503 94-40-504 94-40-505 94-40-506 94-40-507 94-40-508 94-40-509 94-40-510 94-40-511 94-40-512 94-40-513 94-40-514 94-40-515 94-40-516 94-40-517 94-40-518 94-40-519 94-40-520 94-40-521 94-40-522 94-40-523 94-40-524 94-40-525 94-40-526 94-40-527 94-40-528 94-40-529 94-40-530 94-40-531 94-40-532 94-40-533 94-40-534 94-40-535 94-40-536 94-40-537 94-40-538 94-40-539 94-40-540 94-40-541 94-40-542 94-40-543 94-40-544 94-40-545 94-40-546 94-40-547 94-40-548 94-40-549 94-40-550 94-40-551 94-40-552 94-40-553 94-40-554 94-40-555 94-40-556 94-40-557 94-40-558 94-40-559 94-40-560 94-40-561 94-40-562 94-40-563 94-40-564 94-40-565 94-40-566 94-40-567 94-40-568 94-40-569 94-40-570 94-40-571 94-40-572 94-40-573 94-40-574 94-40-575 94-40-576 94-40-577 94-40-578 94-40-579 94-40-580 94-40-581 94-40-582 94-40-583 94-40-584 94-40-585 94-40-586 94-40-587 94-40-588 94-40-589 94-40-590 94-40-591 94-40-592 94-40-593 94-40-594 94-40-595 94-40-596 94-40-597 94-40-598 94-40-599 94-40-600 94-40-601 94-40-602 94-40-603 94-40-604 94-40-605 94-40-606 94-40-607 94-40-608 94-40-609 94-40-610 94-40-611 94-40-612 94-40-613 94-40-614 94-40-615 94-40-616 94-40-617 94-40-618 94-40-619 94-40-620 94-40-621 94-40-622 94-40-623 94-40-624 94-40-625 94-40-626 94-40-627 94-40-628 94-40-629 94-40-630 94-40-631 94-40-632 94-40-633 94-40-634 94-40-635 94-40-636 94-40-637 94-40-638 94-40-639 94-40-640 94-40-641 94-40-642 94-40-643 94-40-644 94-40-645 94-40-646 94-40-647 94-40-648 94-40-649 94-40-650 94-40-651 94-40-652 94-40-653 94-40-654 94-40-655 94-40-656 94-40-657 94-40-658 94-40-659 94-40-660 94-40-661 94-40-662 94-40-663 94-40-664 94-40-665 94-40-666 94-40-667 94-40-668 94-40-669 94-40-670 94-40-671 94-40-672 94-40-673 94-40-674 94-40-675 94-40-676 94-40-677 94-40-678 94-40-679 94-40-680 94-40-681 94-40-682 94-40-683 94-40-684 94-40-685 94-40-686 94-40-687 94-40-688 94-40-689 94-40-690 94-40-691 94-40-692 94-40-693 94-40-694 94-40-695 94-40-696 94-40-697 94-40-698 94-40-699 94-40-700 94-40-701 94-40-702 94-40-703 94-40-704 94-40-705 94-40-706 94-40-707 94-40-708 94-40-709 94-40-710 94-40-711 94-40-712 94-40-713 94-40-714 94-40-715 94-40-716 94-40-717 94-40-718 94-40-719 94-40-720 94-40-721 94-40-722 94-40-723 94-40-724 94-40-725 94-40-726 94-40-727 94-40-728 94-40-729 94-40-730 94-40-731 94-40-732 94-40-733 94-40-734 94-40-735 94-40-736 94-40-737 94-40-738 94-40-739 94-40-740 94-40-741 94-40-742 94-40-743 94-40-744 94-40-745 94-40-746 94-40-747 94-40-748 94-40-749 94-40-750 94-40-751 94-40-752 94-40-753 94-40-754 94-40-755 94-40-756 94-40-757 94-40-758 94-40-759 94-40-760 94-40-761 94-40-762 94-40-763 94-40-764 94-40-765 94-40-766 94-40-767 94-40-768 94-40-769 94-40-770 94-40-771 94-40-772 94-40-773 94-40-774 94-40-775 94-40-776 94-40-777 94-40-778 94-40-779 94-40-780 94-40-781 94-40-782 94-40-783 94-40-784 94-40-785 94-40-786 94-40-787 94-40-788 94-40-789 94-40-790 94-40-791 94-40-792 94-40-793 94-40-794 94-40-795 94-40-796 94-40-797 94-40-798 94-40-799 94-40-800 94-40-801 94-40-802 94-40-803 94-40-804 94-40-805 94-40-806 94-40-807 94-40-808 94-40-809 94-40-810 94-40-811 94-40-812 94-40-813 94-40-814 94-40-815 94-40-816 94-40-817 94-40-818 94-40-819 94-40-820 94-40-821 94-40-822 94-40-823 94-40-824 94-40-825 94-40-826 94-40-827 94-40-828 94-40-829 94-40-830 94-40-831 94-40-832 94-40-833 94-40-834 94-40-835 94-40-836 94-40-837 94-40-838 94-40-839 94-40-840 94-40-841 94-40-842 94-40-843 94-40-844 94-40-845 94-40-846 94-40-847 94-40-848 94-40-849 94-40-850 94-40-851 94-40-852 94-40-853 94-40-854 94-40-855 94-40-856 94-40-857 94-40-858 94-40-859 94-40-860 94-40-861 94-40-862 94-40-863 94-40-864 94-40-865 94-40-866 94-40-867 94-40-868 94-40-869 94-40-870 94-40-871 94-40-872 94-40-873 94-40-874 94-40-875 94-40-876 94-40-877 94-40-878 94-40-879 94-40-880 94-40-881 94-40-882 94-40-883 94-40-884 94-40-885 94-40-886 94-40-887 94-40-888 94-40-889 94-40-890 94-40-891 94-40-892 94-40-893 94-40-894 94-40-895 94-40-896 94-40-897 94-40-898 94-40-899 94-40-900 94-40-901 94-40-902 94-40-903 94-40-904 94-40-905 94-40-906 94-40-907 94-40-908 94-40-909 94-40-910 94-40-911 94-40-912 94-40-913 94-40-914 94-40-915 94-40-916 94-40-917 94-40-918 94-40-919 94-40-920 94-40-921 94-40-922 94-40-923 94-40-924 94-40-925 94-40-926 94-40-927 94-40-928 94-40-929 94-40-930 94-40-931 94-40-932 94-40-933 94-40-934 94-40-935 94-40-936 94-40-937 94-40-938 94-40-939 94-40-940 94-40-941 94-40-942 94-40-943 94-40-944 94-40-945 94-40-946 94-40-947 94-40-948 94-40-949 94-40-950 94-40-951 94-40-952 94-40-953 94-40-954 94-40-955 94-40-956 94-40-957 94-40-958 94-40-959 94-40-960 94-40-961 94-40-962 94-40-963 94-40-964 94-40-965 94-40-966 94-40-967 94-40-968 94-40-969 94-40-970 94-40-971 94-40-972 94-40-973 94-40-974 94-40-975 94-40-976 94-40-977 94-40-978 94-40-979 94-40-980 94-40-981 94-40-982 94-40-983 94-40-984 94-40-985 94-40-986 94-40-987 94-40-988 94-40-989 94-40-990 94-40-991 94-40-992 94-40-993 94-40-994 94-40-995 94-40-996 94-40-997 94-40-998 94-40-999 94-40-1000

LEGEND

FORESTED WETLAND WITH SCRUB/SHRUB

SCRUB/SHRUB

SCIRPUS VALIDUS
SOFT STEM BULRUSH

JUNCUS EFFUSUS
SOFT RUSH

SALICORNIA VIRGINICA
PICKEREL WEED

POTAMOGETON PERPOLIATUS
SAGO POND WEED

SAURURUS CERNUUS
LIZARD TAIL

SCIRPUS CYPERINUS
WOOL GRASS

PELTANDRA VIRGINICA
ARROW ARUM

EXISTING CONTOURS

PROPOSED CONTOURS

EX. 100 YR. FLOODPLAIN

PROP. 100 YR. FLOODPLAIN

REVISIONS MADE 10/19/94 PER ENGINEER

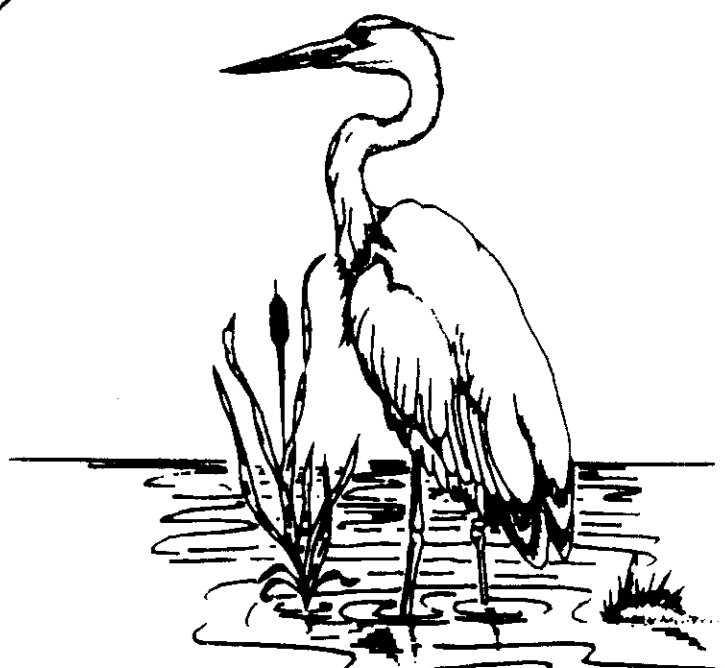
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 HOWARD SOIL CONSERVATION DISTRICT
 HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS

REFER TO SHEET 12 AND 13 OF 21 FOR PLANT QUANTITIES, NOTES, AND DETAILS

REFER TO SHEET 13 OF 21 FOR THE RANDOM PLANTING DETAIL USED IN ZONES A, B, & C.

PLAN APPROVAL STAMP

U.S. ARMY CORPS OF ENGINEERS APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS 94-326-1, 94-326-2, 94-326-3, 94-326-4, 94-326-5, 94-326-6, 94-326-7, 94-326-8, 94-326-9, 94-326-10, 94-326-11, 94-326-12, 94-326-13, 94-326-14, 94-326-15, 94-326-16, 94-326-17, 94-326-18, 94-326-19, 94-326-20, 94-326-2



EXPLORATION RESEARCH, INC.
 ENVIRONMENTAL CONSULTANTS
 838 FORREST STREET
 HISTORIC ELLICOTT CITY, MARYLAND 20643
 TEL: (410) 750-1150 FAX: (410) 750-7350

OWNER/DEVELOPER
 HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 10000 ROUTE 108
 ELLICOTT CITY, MARYLAND 20643
 (410) 313-7256

PLANTING PLANS
FONT HILL ENVIRONMENTAL EDUCATION PARK
 HOWARD COUNTY, MARYLAND

ASHTON WOODS EAST COLUMBIA LIBRARY ELLICOTT WOODS
 90-WO-060 90-WO-066
 88-WO-077 91-WO-064
 88-WO-174 91-WO-075

GOVERNORS RUN WATERMARK CONDOMINIUMS
 90-WO-004 88-WO-087
 88-WO-263 88-WO-273

U.S. ARMY CORPS OF ENGINEERS APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER 88-226-1, 88-08-4, 88-287-4, 88-226-4, 91-426-4

SIGNATURE OF U.S. ARMY CORPS OF ENGINEERS, BALTIMORE, MD. DATE

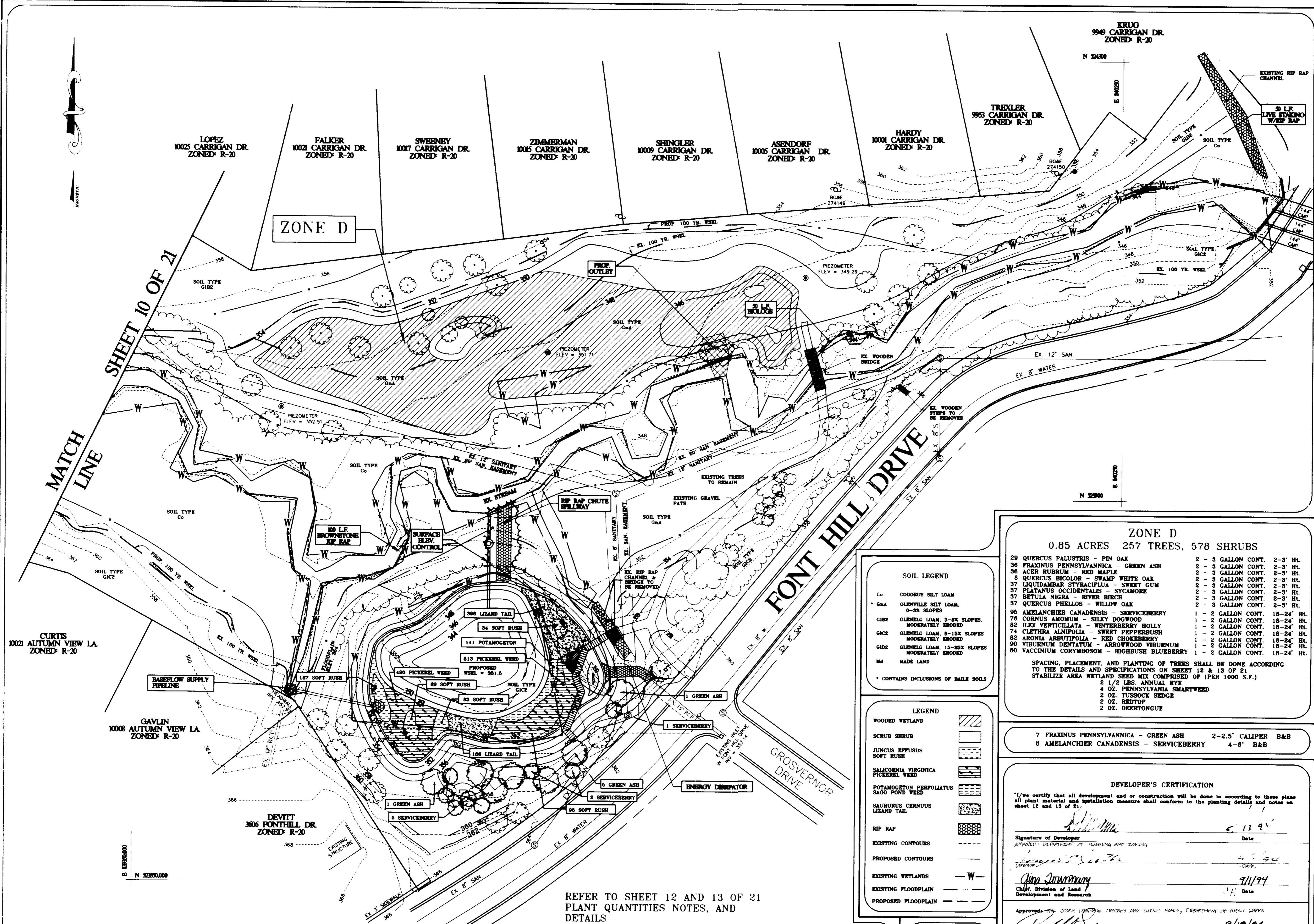
MARYLAND DEPARTMENT OF THE ENVIRONMENT STANDARDS & CERTIFICATION DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER 88-WO-060, 88-WO-066, 88-WO-077, 91-WO-064, 91-WO-075

SIGNATURE OF STANDARDS/CERTIFICATION DIVISION DATE

DEPARTMENT OF NATURAL RESOURCES NON-TIDAL WETLANDS DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER 91-WO-075

SIGNATURE OF DEPARTMENT OF NATURAL RESOURCES DATE

DRAWN BY: M.L. FLOAM SCALE: 1" = 40'
 DESIGNED BY: M.L. FLOAM DATE: 4/94
 CHECKED BY: E.L. HUBER SHEET 8 OF 21



ZONE D
 0.85 ACRES 257 TREES, 578 SHRUBS

29 QUERCUS PALUSTRIS - PIN OAK	2 - 3 GALLON CONT.	2-3' HL.
36 FRAXINUS PENNSYLVANICA - GREEN ASH	2 - 3 GALLON CONT.	2-3' HL.
36 ACER RUBRUM - RED MAPLE	2 - 3 GALLON CONT.	2-3' HL.
6 QUERCUS BICOLOR - SWAMP WHITE OAK	2 - 3 GALLON CONT.	2-3' HL.
37 LIQUIDAMBAR STYRACIFLUA - SWEET GUM	2 - 3 GALLON CONT.	2-3' HL.
37 PLATANUS OCCIDENTALIS - SYCAMORE	2 - 3 GALLON CONT.	2-3' HL.
37 BETULA NIGRA - RIVER BIRCH	2 - 3 GALLON CONT.	2-3' HL.
37 QUERCUS PHELLOS - WILLOW OAK	2 - 3 GALLON CONT.	2-3' HL.
95 AMELANCHIER CANADENSIS - SERVICEBERRY	1 - 2 GALLON CONT.	18-24' HL.
76 CORNUS AMOMUM - SILKY DOGWOOD	1 - 2 GALLON CONT.	18-24' HL.
82 ILEX VERTICILLATA - WINTERBERRY HOLLY	1 - 2 GALLON CONT.	18-24' HL.
74 CLETHRA ALNIFOLIA - SWEET PEPPERBUSH	1 - 2 GALLON CONT.	18-24' HL.
82 ARONIA ARBUTIFOLIA - RED CHOKEBERRY	1 - 2 GALLON CONT.	18-24' HL.
90 VIBURNUM DENTATUM - ARROWWOOD VIBURNUM	1 - 2 GALLON CONT.	18-24' HL.
80 VACCINIUM CORYMBOSUM - HIGHBUSH BLUEBERRY	1 - 2 GALLON CONT.	18-24' HL.

SPACING, PLACEMENT, AND PLANTING OF TREES SHALL BE DONE ACCORDING TO THE DETAILS AND SPECIFICATIONS ON SHEET 12 & 13 OF 21
 STABILIZE AREA WETLAND SEED MIX COMPRISED OF (PER 1000 S.F.)
 2 1/2 LBS. ANNUAL RYE
 4 OZ. PENNSYLVANIA SMARTWEED
 2 OZ. TUSsock SEDGE
 2 OZ. REDTOP
 2 OZ. DEERTONGUE

SOIL LEGEND

Co	CODORUS SILT LOAM
G1A	GLENNVILLE SILT LOAM, 0-5% SLOPES
G1B2	GLENNVILLE LOAM, 3-8% SLOPES, MODERATELY ERODED
G1C2	GLENNVILLE LOAM, 8-15% SLOPES, MODERATELY ERODED
G1D2	GLENNVILLE LOAM, 15-25% SLOPES, MODERATELY ERODED
Md	MADE LAND

* CONTAINS INCLUSIONS OF BAILE SLOES

LEGEND

WOODED WETLAND	[Symbol]
SCRUB SHRUB	[Symbol]
JUNCUS EFFUSUS SOFT RUSH	[Symbol]
SALICORNIA VIRGINICA PICKEREL WEED	[Symbol]
POTAMOGETON PERIFOLIATUS SAGO POND WEED	[Symbol]
SAURURUS CERNUUS LIZARD TAIL	[Symbol]
RIP RAP	[Symbol]
EXISTING CONTOURS	[Symbol]
PROPOSED CONTOURS	[Symbol]
EXISTING WETLANDS	[Symbol]
EXISTING FLOODPLAIN	[Symbol]
PROPOSED FLOODPLAIN	[Symbol]

7 FRAXINUS PENNSYLVANICA - GREEN ASH	2-2.5' CALIPER	B&B
8 AMELANCHIER CANADENSIS - SERVICEBERRY	4-6'	B&B

DEVELOPER'S CERTIFICATION

"I/we certify that all development and/or construction will be done in accordance with these plans. All plant material and installation measures shall conform to the planting details and notes on sheet 12 and 13 of 21."

Signature of Developer: *[Signature]* Date: 5/12/94

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Director: *[Signature]* Date: 5/16/94

Chief, Division of Land Development and Research: *[Signature]* Date: 9/11/94

APPROVED: OTHER AGENCIES AND PUBLIC AGENCIES, DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Engineering: *[Signature]* Date: 8/10/94

Director, Department of Health: *[Signature]* Date: 8/19/94

Approved: *[Signature]* Date: 8/24/94

REFER TO SHEET 12 AND 13 OF 21
 PLANT QUANTITIES NOTES, AND
 DETAILS

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 HOWARD SOIL CONSERVATION DISTRICT
 HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS

PLAN APPROVAL STAMP

CURTIS
 10021 AUTUMN VIEW LA.
 ZONED: R-20

GAVLIN
 10008 AUTUMN VIEW LA.
 ZONED: R-20

DEVITT
 3606 FONTHILL DR.
 ZONED: R-20

SHEET 10 OF 21

ZONE D

LOPEZ
 10025 CARRIGAN DR.
 ZONED: R-20

FALKER
 10021 CARRIGAN DR.
 ZONED: R-20

SWEENEY
 10017 CARRIGAN DR.
 ZONED: R-20

ZIMMERMAN
 10015 CARRIGAN DR.
 ZONED: R-20

SHINGLER
 10009 CARRIGAN DR.
 ZONED: R-20

ASENDORF
 10005 CARRIGAN DR.
 ZONED: R-20

HARDY
 10001 CARRIGAN DR.
 ZONED: R-20

TREXLER
 9953 CARRIGAN DR.
 ZONED: R-20

KRUG
 9949 CARRIGAN DR.
 ZONED: R-20

N 52850.000

N 52800

CONSTRUCTION SPECIFICATIONS

I. OBJECTIVE

The Font Hill Environmental Education Park has been designed to enhance the Little Patuxent Watershed. The project incorporated the mitigation requirements for Governor's Run, Ashton Woods, Watermark Condominiums, Ellicott Woods, and East Columbia Library. The site design accommodated for the wetlands lost during development by creating 0.83 acres of emergent wetland, 0.23 acres of scrub/shrub wetland, 1.89 acres of forested wetland, 1.80 acres open water, 250 linear feet of stream stabilization, and restoration of 2 existing ponds.

The purpose for the 0.85 acre +/- palustrine forested wetland mitigation and the 50 L.P. of stream stabilization shown on sheet 5 of 21 is to compensate for wetland functions lost due to the construction of the East Columbia Library. The library construction impacted 0.58 acres +/- of isolated scrub-shrub wetland and 830 L.P. of ephemeral stream channel. The implementation of the mitigation requirements at the Font Hill Environmental Education Park will serve to educate the public on the benefits of wetlands and their functions while providing a total wetland "system" by utilizing palustrine forested scrub-shrub and emergent wetland mitigation alternatives, stream restoration techniques and water quality retrofit. This design must meet DNR's approval and mitigation standards.

Successful implementation of the compensatory mitigation requires efficient sequencing and proper contract management. The contractor will maintain contact with Howard County Recreation and Parks and Exploration Research, Inc. designer throughout the implementation of the park and provide verbal and written progress reports during and upon completion of each project site.

II. CONSTRUCTION RESTRICTIONS

The contractor shall comply with all design conditions and restrictions. The conditions of this plan are:

- The proposed project shall be constructed in a manner which will not violate Maryland's Water Quality Standards as set forth in COMAR 26.08.02.
- The proposed project shall be constructed in accordance with the plan and its revisions as approved by the Baltimore District Corps of Engineers, Maryland Department of Natural Resources, and Maryland Department of the Environment.
- All fill and construction materials not used in the project shall be removed and disposed of in a manner which will prevent their entry into the waters of this State.
- Sediment transport into adjacent waters of the State shall be minimized.
- During the construction period, all persons involved in the project shall use sanitary facilities and adhere to sanitary wastewater disposal practices as approved by the local health department.
- The post construction bottom contours of waters and elevations of wetlands shall be the same as designed unless otherwise specified.
- Disturbances of wetlands and waterways shall be avoided or minimized through the use of other practical alternatives.
- All temporary fill materials shall be removed in their entirety on or before the completion of construction.
- If backfill is obtained from sources other than the originally excavated material, it shall be clean material free of waste metal products, organic material, unsightly debris, toxic material or any other deleterious substance.
- Disturbance in breeding areas for migratory waterfowl shall be avoided.
- Heavy equipment working in wetlands shall be placed on mats or suitably designed to prevent damage to the wetland.
- Contractor must comply with the approved sediment control plan.
 - This plan shall be on site during all phases of construction.
 - Sediment bearing waters shall not be discharged to the receiving waterway except as provided in the approved sediment control plan.

III. SEDIMENT AND EROSION CONTROL

Field Locate Utilities

The approximate location of all underground utilities are shown on the plans, but the contractor must locate these utilities and find their elevation, contact Miss Utility (1-800-557-7777) for this service, before construction is initiated. All utility companies must be notified 24 hours in advance of construction.

Stakeout and Fence Impact Area

Snow fencing (typical section shown in plan detail 1) shall be installed along all woodland conservation areas that are within fifty feet (50') of proposed construction activities. The location of all tree protection devices shall be staked in the field prior to the pre-construction meeting. The tree protection devices shall be in place at the time construction activities commence. No protective devices shall be installed along woodland conservation areas that are greater than fifty (50) feet from construction activity. The location of all tree protection devices are shown on the soil erosion and sediment control plan drawings which are incorporated in this construction plan (Sheet 6 & 7 of 21).

Non-tidal wetlands adjacent to the impact areas will be fenced and protected during construction.

Dewater Site

Should the mitigation site have standing water within its limits, the water must be pumped into a dewatering basin to allow filtration before re-entering the waterway.

Install Silt Fences/Earth Dikes

Please refer to the grading & sediment erosion control plan Sheet 6 & 7 of 21 for the location of all sediment control devices. They must be installed in accordance with the details provided on Sheet 8 & 9 of 21.

IV. CLEARING AND GRUBBING

Remove Debris

All vegetation, trash, and debris within the limits of disturbance that has not been designated in the field or on the plans to remain, will be removed from the construction area.

Dispose of Debris

All debris removed from the construction area will be disposed of off-site in an approved landfill or other pre-designated area.

V. GRADING

Excavate Site

The wetland creation areas to be excavated to six inches (6") below the finished grade, unless specified otherwise by Exploration Research, Inc. All surplus material shall be stockpiled in a pre-approved location within the construction area.

Topsoil Application

Six inches (6") of topsoil shall be uniformly spread to finished elevation. Topsoil shall have a pH range of 5.0-8.0 and shall be free of stones, lumps, plants, roots, etc. Grade tolerance shall be within 0.15 feet. Elevations may be adjusted slightly with the approval of Exploration Research, Inc. during construction to adjust the design for unanticipated field conditions. One pass of a subsoiler is required to loosen soil prior to planting.

As-Built Survey

All final elevations shall be field checked by an as-built survey and inspected by Exploration Research, Inc. to verify that all elevations conform to approved plans before the equipment is removed from the site. Contractor is responsible for providing an as-built survey.

VI. PLANTING SPECIFICATIONS

Planting shall commence after final grading, and all sediment control measures have been removed. All trees and shrubs shall be installed between March 31 and May 31 or as directed by Exploration Research, Inc.

All stock will be planted as received. No root or top pruning will be done at the site. Stock not meeting specifications shall be returned to the supplier.

All planting stock shall be protected from sunscald, desiccation, and structural damage during shipment to the site. Delivery of materials will be no sooner than one week prior to planting. Materials held for planting will be moistened and placed in cool, shaded areas until ready for placement. During planting all materials will be kept moist with the roots protected from desiccation.

Hardwood seedlings within 50 feet of the planting site edge will be fitted with 5' tree tube "tuber" or equal.

Plant Stock

- Plant Materials**
 - All plants shall conform to the sizes indicated. Nomenclature shall conform to standardized plant names. All nursery stock shall be in accordance with standard nursery stock, as set forth in the latest approved standards of the American Nursery Standards Association, Inc.
 - Root-stock of the plant material shall be kept moist during transport from the source to the job site and until planted. Plant material shall be planted in the soil with each planting pit excavated to size sufficient to contain the entire root-stock or the entire root-mass without cramping. Emergent vegetation shall be wet-cultured.
- Substitution**

Substitutions in plant species, size, quantities or other materials, shall be made only with written approval by Exploration Research, Inc. and Howard County Department of Recreation & Parks.
- Plant Material Quality**
 - All plants shall be sound, healthy, vigorous, well-branched, and free from plant diseases, pests, eggs, or larvae. Plants shall be nursery grown. No heated - cold storage or collected stock will be accepted. Plants shall have been growing in same climatic conditions as the location of this project for at least one (1) year prior to award date of this contract and shall have healthy well developed root systems.
 - Deciduous trees shall be full, well-branched and symmetrical, typical for the variety and species in the conformance with measurements specified on the plant list.
 - The Landscape Contractor shall be responsible for selecting plant materials of the size and characteristics indicated on the plant list on the drawing and of the quality specified. The contractor shall not accept nor deliver to the site any plants, which have broken branches, broken leaders, broken or otherwise damaged roots, root balls or containers, or which have damaged trunks or which have any dead or diseased areas.
- Inspection**
 - The Landscape Contractor shall be responsible for all inspection of plant material that may be required by State or Federal authorities.
 - Plants delivered to the site shall be subject to inspection by Exploration Research, Inc. Should Exploration Research, Inc. find any broken plant containers or plants to be crooked, broken, or otherwise in damaged condition, they shall be removed from the site and replaced with acceptable material at the expense of the contractor.

- Labeling**
 - All plants shall be labeled with the correct plant name and size. Labels shall be attached securely to all plants with care so that these attached directly to plants will not restrict growth. Plant labels shall be durable, legible labels stating the correct plant name and size in weather-resistant ink or embossed process lettering.
- Clean-Up After Planting**
 - At the completion of the job, the Contractor shall remove all excess materials from the job site and clean up all areas affected by this work or storage of materials. The Contractor shall repair or repair, at no cost to the Owners, all site areas or surrounding items damaged by work of his contract. All paved areas and walkways shall be left broom-clean.
- Plant Locations**
 - Prior to planting, random combinations of tree and shrub species will be assembled to ensure a thorough mixing of species in the planting areas. All locations to be approved by Exploration Research, Inc. before any planting is started.

Plant Bed Preparation

- Planting soil for all plant materials shall consist of 100% soil excavated from the planting area.
- Mulching material for trees, shrubs shall be well-aged, fine shredded hardwood, dark brown in color, pine bark or approved equal. Material shall be mulching grade; uniform in size and free of foreign matter.
- The Contractor shall make the necessary arrangements to obtain clean fresh water for use during planting operations and the subsequent maintenance period.
- Stakeout location of plants according to the details provided on sheet 13 of 20. Prepare each planting hole in accordance with standard details and notes on sheet 13 of 20.
- Seed or seed-fertilizer - mulch mixtures will be spread by the most efficient and practical manner available. All seed requiring pre-treatment will be thoroughly prepared according to the instructions of the supplier prior to incorporation into the seeding mixture. All seeding with grass or grass-forb mixtures shall leave a mulched, unseeded area of no less than two feet adjacent to all tree plantings.
- Holes shall be deep enough to place plants without re-curving the root system (J-rooting) but shallow enough that the soil surface is just below the root collar.
- All plant bed preparation shall be in accordance with the guidelines set forth in the latest approved standards of the Landscape Contractors Association (Md., D.C., Va.).

Wetland Seed Mix

Comprised of (per 1000 S.F.):
2 1/2 lbs Annual Ryegrass
4 oz. Pennsylvania Smartweed
2 oz. Carpet sp.
2 oz. Red Top
2 oz. Deer Tongue

VII. WORKMANSHIP

GENERAL NOTIFICATION:
Notify Exploration Research, Inc. at least 72 hours (three (3) working days) prior to beginning any work pertinent to planting operations.

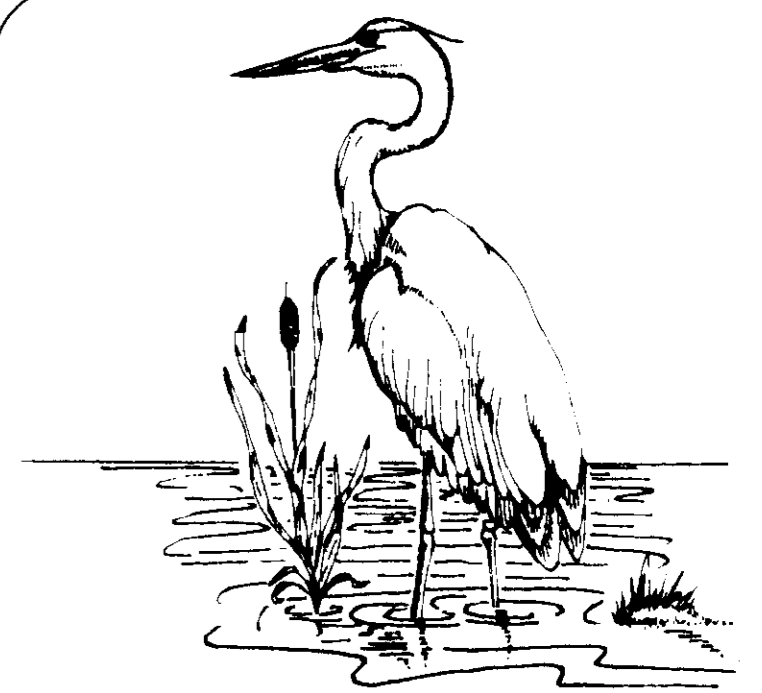
- Plant List**

The Landscape Contractor shall furnish all plants in quantities and sizes necessary to complete the work shown on the drawing.
- Plants:**

All plants shall be carefully handled at all times so that roots are protected from breakage, and from sun and drying winds and from freezing temperatures.
- Plant Layout**

The Contractor shall layout and stake or suitably mark the outline of all plants as nearly as possible to the dimensions and configurations shown on the plan. Stakes shall be placed as directed by Exploration Research, Inc.

APPROVED - DEPARTMENT OF PLANNING AND ZONING
 DATE: 9/1/94
 9/1/94
 JJA
 Approved: [Signature] 8/10/94
 Chief, Bureau of Engineering
 DATE: 8/19/94
 [Signature]
 DIVISION: HEALTH DEPARTMENT
 DATE: 8/24/94
 [Signature]
 COUNTY HEALTH OFFICER



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PLANTING NOTES AND DETAILS
FONT HILL ENVIRONMENTAL EDUCATION PARK
 HOWARD COUNTY, MARYLAND

ASHTON WOODS 88-1967-4
 EAST COLUMBIA LIBRARY 91-WQ-0570
 ELLICOTT WOODS 90-WQ-0066
 88-410-4
 91-WQ-0560
 91-WQ-0709
 GOVERNORS RUN WATERMARK CONDOMINIUMS 88-WQ-0567
 88-3276-3
 90-WQ-0304
 89-2266-3

- Tree Pits**

Tree pits for container stock shall be dug as indicated on the detail provided on sheet 13 of 21.
- Shrub Pits**

Shrub pits for container stock shall be dug as indicated on the detail provided on sheet 13 of 21.
- Emergent Planting**

All emergents shall be planted as indicated on the detail provided on sheet 13 of 21.

All plants shall be set straight or plumb, in locations shown on the drawings and at such a level that after settlement, normal or natural relationship of the crown on the plant with the adjacent ground surface shall be established.
- Backfilling**

All plants shall be backfilled and tamped to two-thirds depth of the pit and thoroughly watered with and open hose at low pressure of mist nozzle before bringing backfill to proper grade. Flood plant pit again so that backfill is thoroughly saturated and settled. Do not cover top of tree or shrub ball with soil.
- Mulching**

Mulch shall be done as soon as backfilling has been completed. Mulch to the limit of the plant pits to a depth of two (2) inches around trees and around shrubs and over shrub beds. If mulching is delayed, the Contractor shall water all plants thoroughly before spreading mulch. Remove all temporary plant bed outline stakes.
- Pruning After Planting**

Pruning shall be done by experienced personnel. Any broken or damaged branches shall be removed.

VIII. PLANT MAINTENANCE AND MANAGEMENT

A maintenance program will be implemented to employ proven management techniques and monitor the wetland functions to achieve the goal of 80% survival rate in a two (2) year period from the date of acceptance of planting in Zones 'A', 'B', and 'C'.
 A maintenance program will be implemented to employ proven management techniques and monitor the wetland functions to achieve the goal of 85% survival rate in a five (5) year period from the date of acceptance of planting in Zone 'D'.

Immediate Management Techniques

- Vegetation demonstrating immediate stress or dieback will be replaced. In addition, soil and climatic factors will be analyzed in relation to plant growth. The following management techniques will be utilized:
- Thoroughly water plant material once per week throughout first growing season or as directed by Exploration Research, Inc.
 - Replace dead or dying plant species with identical species or approved alternative.
 - Remove debris that impairs plant growth quarterly, during the growing season.

Monitoring Program - 2 Year and 5 Year Management Techniques
 In order to assess the success of the wetland creation, a 2 year and a 5 year monitoring program has been developed. The program will be initiated the first spring after construction at the wetland mitigation sites. Vegetative and hydrologic data will be collected and recorded in May and August of each year. Data collected will be analyzed and compiled into annual reports.

Vegetative Community Characterization
 One random tenth acre permanent vegetative sample point per acre throughout the mitigation area will be analyzed annually in May and in August for 2 or 5 consecutive years. Vegetative layers (trees, shrubs, emergents and vines) will be evaluated. All trees and shrubs will be counted, characterized and recorded. Species composition and cover of emergents and vines will also be characterized and recorded. In addition, photographs will be taken at each sample point. The sample points will be established by establishing a matrix throughout the mitigation areas. One plot per acre will be randomly located using a random numbers table and the established matrix.

Hydrologic Characterization
 Groundwater elevation will be recorded the first week in May and in August for 2 or 5 consecutive years at all monitoring well locations. Soil samples will be characterized in close proximity to the well locations.

Annual Reports
 Each year an annual monitoring report on the results of the monitoring efforts at the mitigation sites in Zone 'D' will be submitted to DNR by December 31st of each calendar year.

Long Term Management Techniques
 The mitigation will be assessed for its functional value in relation to wetland cycles and habitat enhancement.

IX. SUCCESS

Zone 'A', 'B', and 'C'
 The State of Maryland has determined that successful plan implementation will be the establishment of 80% vegetation coverage within the wetland areas two (2) years following the completion of planting. Should the 80% coverage not be obtained after the two (2) year period, the reasons for failure will be determined by Exploration Research, Inc. The problems will be corrected so that any areas not established will be replanted by the contractor during the next growing season.

Zone 'D'
 After five years, greater than 85% of the site shall be vegetated by planted species approved by the Department of Natural Resources or by a species composition agreed to by the Department of Natural Resources.

REVISIONS MADE 7/22/94 PER HOWARD COUNTY COMMENTS



DRAWN BY: MJ. FLOAM SCALE: N.T.S.
 DESIGNED BY: G.M.J./M.J.F. DATE: 2/94
 CHECKED BY: S.L. HUBER SHEET 12 OF 21

94-1-23

HOWARD COUNTY SEEDING NOTES

PERMANENT SEEDING NOTES

Grass Seed - Turf Type Fescue - 50 lb. bag.
An even blend of 34%-35% of 3 cultivars from the following list. One cultivar must be from Group A. Only certified seed accepted.

- | | |
|------------|-------------|
| Group A | Group B |
| 1. Arid | 4. Jaguar |
| 2. Olympic | 5. Arctic |
| 3. Bonanza | 6. Apache |
| | 7. Amigo |
| | 8. Rebel II |
| | 9. Trident |

All seed varieties shall meet the following minimum specifications:

Variety of Certified Tall Fescue	Min. Purity 98%	Min. Germination 85%	Max. Weeds 0.1%	Max. Noxious Weeds 0.1%	Noxious Weeds None
	* Must be free of ryegrass, timothy, orchardgrass, bentgrass, Canada bluegrass, clover, or any other contaminant which shall be unsightly and uncontrollable.				
	** Must be free of dock, chest, chess, chickweed, crabgrass, plantain, and black medic.				
	*** Must be free of all Maryland listed and restricted noxious weeds.				

Seed lots must be State Certified and blended under the supervision of the Maryland Department of Agriculture - Turf and Seed Section.

All seed and labeling must fully comply with the MD Seed Law and these specifications.

Seed shall be packed 50 lbs. net weight and packed in new, clean, poly woven bags, tightly woven to prevent leaking and contamination.

Each container must have permanently affixed to it an accurate analysis tag, a certification tag and a Howard County Recreation and Parks supervised tag.

All seed lots to be used in this mixture shall have been pre-tested by the Maryland seed laboratory to insure compliance with specifications.

A quality control sample of the delivered mixture may be submitted to the Maryland seed lab for testing prior to payment and any lots found not to comply shall be returned at the supplier's expense.

All seed shall be delivered within 48 hours after the seed is mixed and tagged under the supervision of the Maryland Department of Agriculture, Turf and Seed Section.

SEEDING PROCEDURES

Seed shall be sown between August 15 and September 30 or February 15 to April 15 as soon as the soil is dry enough to allow proper penetration of a seedbed. Any extension beyond these time periods shall only be approved by Department of Recreation and Parks personnel.

Mechanical seeding to be broadcast or by rotary spreader only. NO ROW TYPE SEEDERS WILL BE USED. Seeding must be followed by a drag mat or chain to work seed into soil and insure good soil/seed contact and uniform distribution.

Hydroseeding may be used providing that the slurry includes the fertilizer and seed as specified.

For each hydroseeding tank, seed, fertilizer (if required), a maximum of one bale of green dyed fiber mulch may be combined with each 1200 gallons of water to form a slurry. The slurry shall not be prepared more than two hours before commencement of hydroseeding work.

No seeding shall be done during windy weather or when the ground is wet or otherwise untiltable.

Seed all areas within the project limits that are not sodded, paved or designated on the drawings to receive special treatment. Grass seed mixture shall be applied at the rate of six (6) pounds per 1,000 square feet immediately after fertilizing, rake and/or drag mat fertilizer and seed into a depth of not more than 1/2 inch if seeded other than with hydroseeder.

MULCH

Mulch shall be required on all turf areas.

Mulch shall be thrashed barley, wheat or oat straw. It shall be clean and free of noxious weeds, weed seeds, and other foreign materials. Mulch shall be applied at a rate of 3,000 pounds per acre in a uniform manner. The material shall be anchored immediately after application.

Terra Tack Binders, or an approved equal, as manufactured by Grass Growers of Plainfield, New Jersey, shall be added to mulch mixture at the rate of 140 pounds per acre.

If mulch is displaced before a growth of one (1) inch to one and a half (1-1/2) inches is obtained, it shall be replaced by the contractor at no extra expense.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be redistributed where a short-term vegetative cover is needed.

Seedbed Preparation -- Loosen upper three inches of soil by raking, disking or other acceptable means before seeding if not previously loosened.

Soil Amendments -- Apply 1 LB. of nitrogen/1000 S.F., 5-15-10 fertilizer (14 lbs./1000 sq. ft.).

Seeding -- For periods March 1 thru April 30 and from August 15 thru October 15, seed with 2-1/2 bushel per acre of annual ryegrass (2.2 lbs./1000 sq. ft.). For the period May 1 thru August 14, seed with 3 lbs. per acre of weeping lovegrass (.07 lbs./1000 sq. ft.). For the period November 15 thru February, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

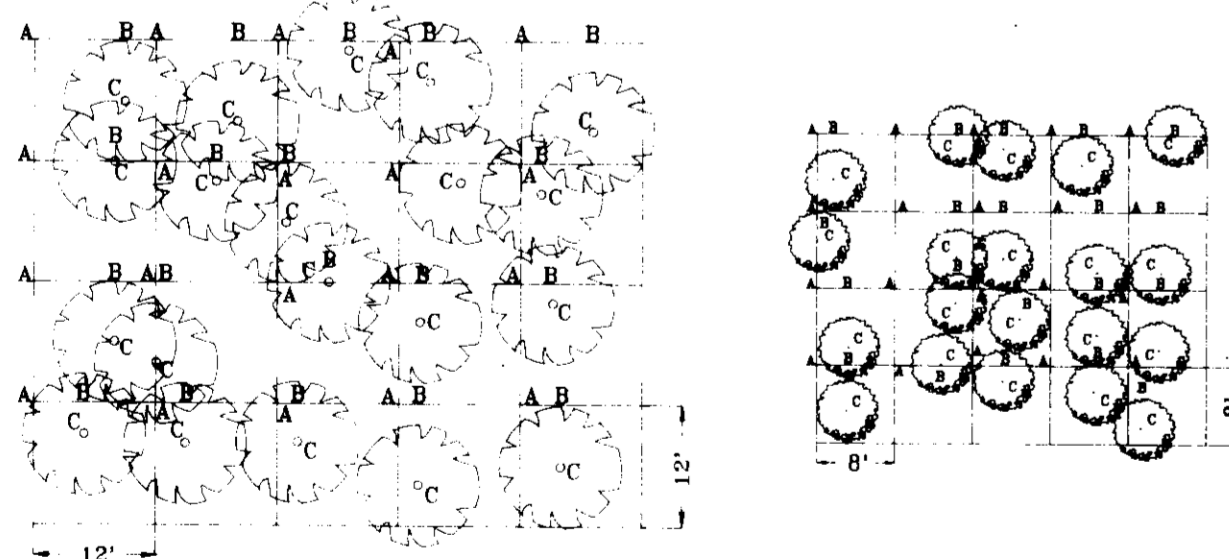
Mulching -- Apply 1-1/2 to 2 tons per acre (70 to 90 lbs./1000 sq. ft.) of unrotted weed free small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 210 gal. per acre (5 gal./1000 sq. ft.) of emulsified asphalt on flat areas. On slopes 8 ft. or higher, use 540 gal. per acre (18 gal./1000 sq. ft.) for anchoring.

Refer to the 1995 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for additional standards and methods not covered.

Note: These seeding notes do not pertain to wetland areas or their associated buffers.

DETAIL 1: PLANT PLACEMENT METHODOLOGY

PLANT LOCATIONS WILL BE DETERMINED BY AN ECOLOGIST AT EXPLORATION RESEARCH, INC. UTILIZING THE FOLLOWING METHODOLOGY



TREE PLACEMENT DETAIL
SCALE: 1" = 20'

SHRUB PLACEMENT DETAIL
SCALE: 1" = 20'

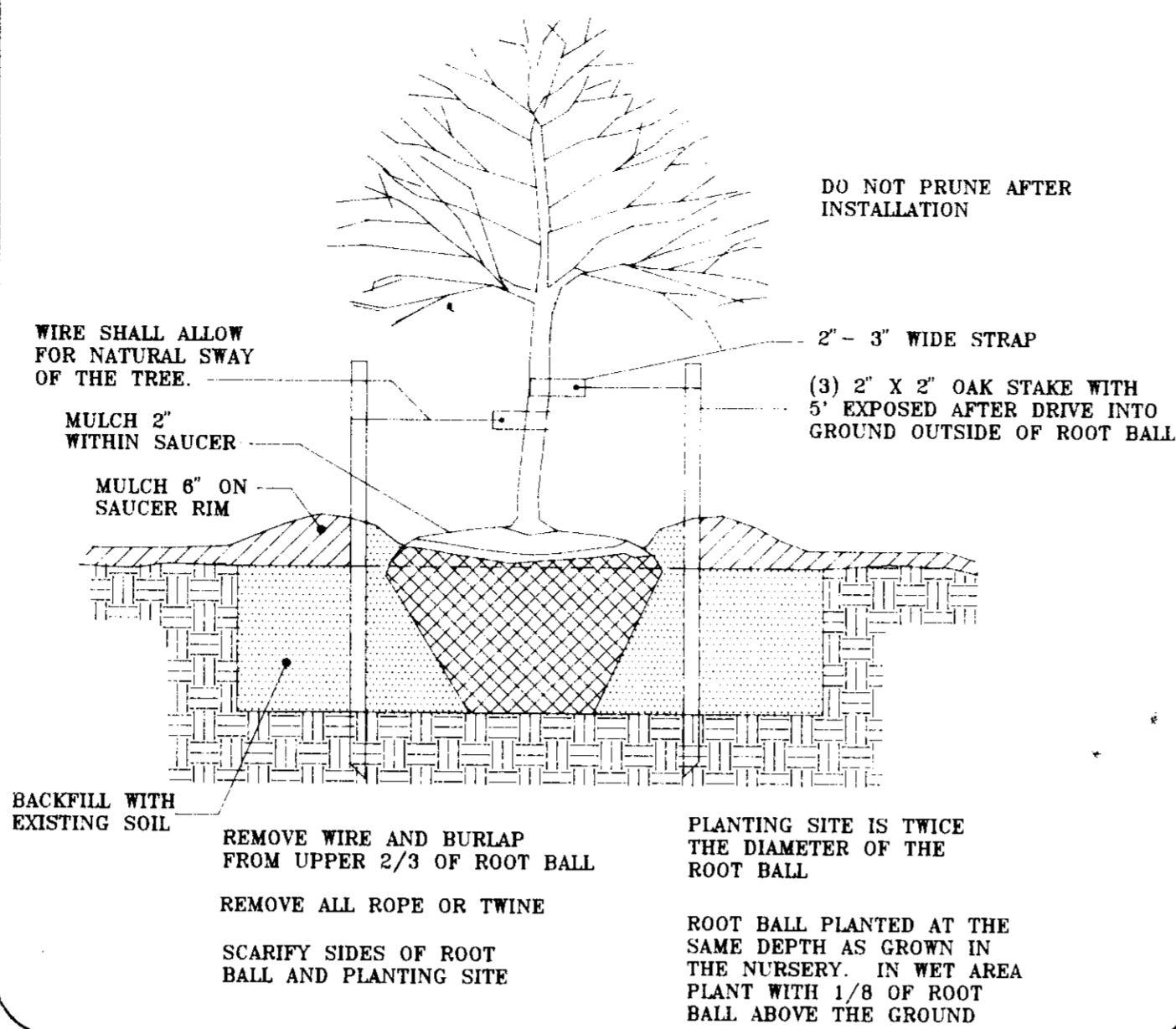
- STAKE TREES OUT AT A 12' GRID ACROSS SITE. STAKE SHRUBS OUT AT A 6' GRID ACROSS SITE. THESE POINTS ARE REPRESENTED BY POINT A.
- USE FIRST/NEXT RANDOM NUMBER AND MEASURE FROM POINT A TO THE EAST THAT DISTANCE IN FEET. THESE POINTS ARE REPRESENTED BY POINT B.
- USE SECOND/NEXT RANDOM NUMBER AND MEASURE FROM POINT B TO THE SOUTH THAT DISTANCE IN FEET. THESE POINTS ARE REPRESENTED BY POINT C.
- PLANT TREE OR SHRUB AT POINT C.

RANDOM NUMBER LIST FOR TREES:
9, 6, 8, 8, 7, 1, 3, 4, 7, 9, 8, 0, 6, 2, 1, 6, 6, 2, 2, 3, 8, 6, 0, 8, 5, 0, 2, 4, 3, 2, 5, 3, 3, 4, 2, 4, 2, 8, 4, 8, 8, 4, 7, 7, 1, 7, 5, 1, 1, 2, 3, 0, 4, 8, 5, 6, 2, 1, 7, 3, 0, 2, 1, 3, 2, 1, 4, 8, 7, 8, 9, 2, 2, 2, 8, 1, 1, 6, 7, 9, 3, 8, 6, 3, 5, 2

RANDOM NUMBER LIST FOR SHRUBS:
1, 3, 4, 0, 2, 1, 2, 2, 3, 0, 0, 2, 4, 3, 2, 3, 3, 4, 2, 4, 2, 4, 4, 1, 3, 2, 4, 3, 2, 4, 2, 3, 3, 0, 2, 1, 3, 2, 1, 4, 2, 2, 2, 1, 1, 3, 3, 2

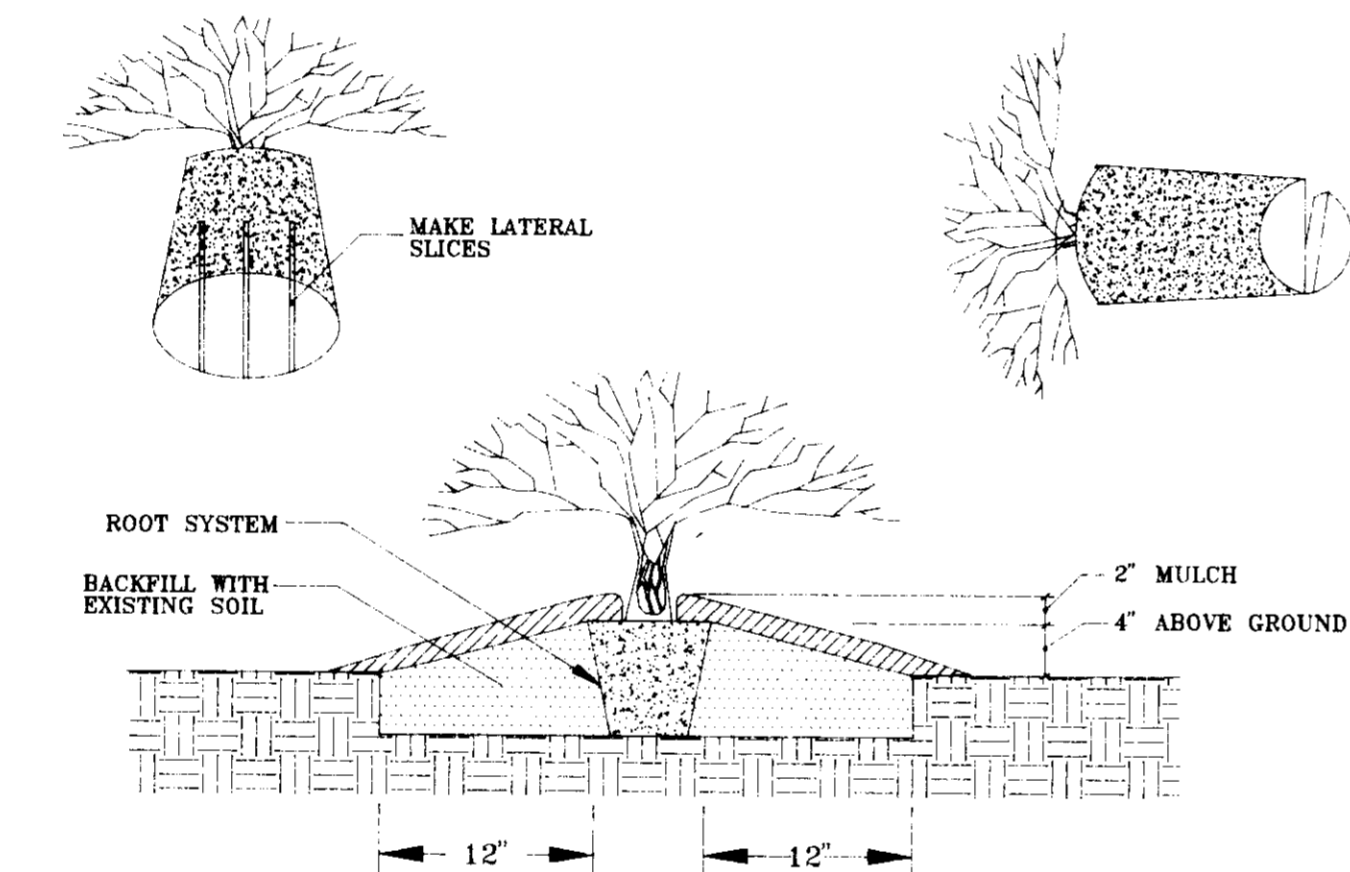
DETAIL 2 - TREE PLANTING

NOT TO SCALE



DETAIL 3 - CONTAINER PLANTING

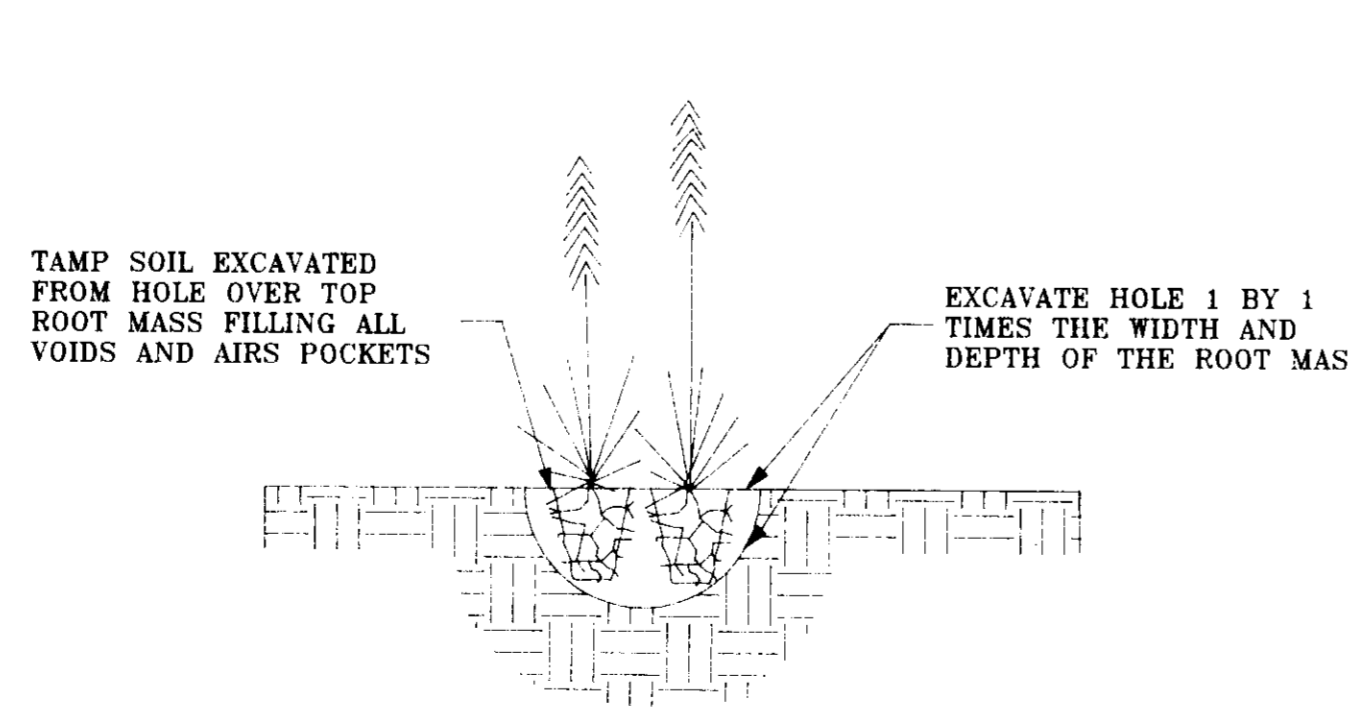
NOT TO SCALE



- REMOVE THE PLANT EITHER BY CUTTING OR INVERTING THE CONTAINER.
- USE A KNIFE TO CUT THROUGH BOTTOM HALF OF THE ROOT BALL.
- PLANT SHRUBS 4" ABOVE THE EXISTING GRADE WHEN HIGH WATER TABLE CONDITIONS EXIST, OTHERWISE PLANT FLUSH WITH EXISTING GRADE.
- PLANTING HOLE TO BE THREE TIMES THE DIAMETER OF THE CONTAINER.

DETAIL 4 - EMERGENT PLANTING

NOT TO SCALE



REVIEWED: HEALTH DEPARTMENT
APPROVED: DEPARTMENT OF PLANNING AND ZONING
APPROVED: FOR DRAINAGE SYSTEMS AND PUBLIC WORKS, DEPARTMENT OF PUBLIC WORKS
DIRECTOR: James M. [Signature]
DATE: 8/24/94

APPROVED: DEPARTMENT OF PLANNING AND ZONING
APPROVED: DEPARTMENT OF PLANNING AND ZONING
APPROVED: DEPARTMENT OF PLANNING AND ZONING
DATE: 9/1/94
DATE: 9/1/94
DATE: 8/10/94

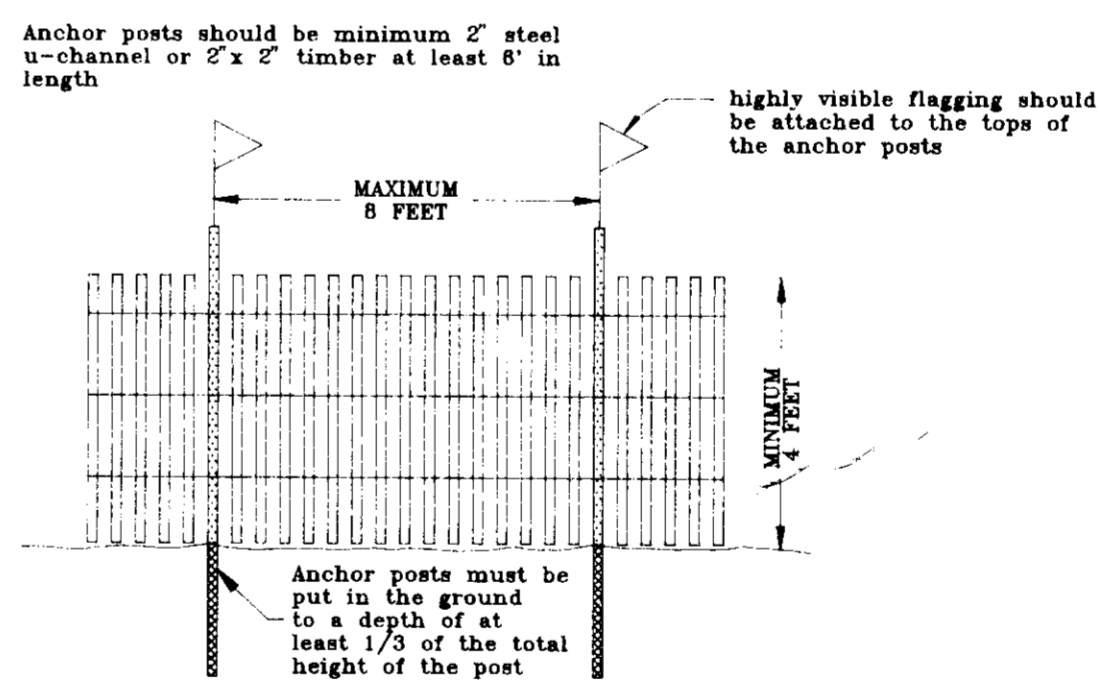
PLANT SCHEDULE

QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT
7	FRAXINUS PENNSYLVANICA	GREEN ASH	2" - 2 1/2" CAL.	B & B
8	AMELANCHIER CANADENSIS	SERVICEBERRY	4-6'	B & B
81	ACER RUBRUM	RED MAPLE	2-3 GALLON	CONTAINER
81	FRAXINUS PENNSYLVANICA	GREEN ASH	2-3 GALLON	CONTAINER
82	LIQUIDAMBAR STYRACIFLUA	SWEET GUM	2-3 GALLON	CONTAINER
82	QUERCUS BICOLOR	SWAMP WHITE OAK	2-3 GALLON	CONTAINER
82	PLATANUS OCCIDENTALIS	SYCAMORE	2-3 GALLON	CONTAINER
83	BETULA NIGRA	RIVER BIRCH	2-3 GALLON	CONTAINER
82	QUERCUS PHELLOS	WILLOW OAK	2-3 GALLON	CONTAINER
196	AMELANCHIER CANADENSIS	SERVICEBERRY	1-2 GALLON	CONTAINER
71	CEPHALANTHUS OCCIDENTALIS	BUTTON BUSH	1-2 GALLON	CONTAINER
287	CORNUS AMOMUM	SILKY DOGWOOD	1-2 GALLON	CONTAINER
193	ILEX VERTICILLATA	WINTERBERRY HOLLY	1-2 GALLON	CONTAINER
145	CLETHRA ALNIFOLIA	SWEET PEPPERBUSH	1-2 GALLON	CONTAINER
170	ARONIA ARBUTIFOLIA	RED CHOKEBERRY	1-2 GALLON	CONTAINER
218	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM	1-2 GALLON	CONTAINER
146	VACCINIUM CORYMBOSUM	HIGHBUSH BLUEBERRY	1-2 GALLON	CONTAINER
50	OSMUNDA CINNAMOMEA	CINNAMON FERN	8 - 12"	1.75" PEAT POT OR 1" x 1 1/4" x 1 1/2" ROOT CUBE
455	POTAMOGETON DIVERSIFOLIUS	WATER-THREAD POND WEED	8 - 12"	1.75" PEAT POT OR 1" x 1 1/4" x 1 1/2" ROOT CUBE
1833	SAURURUS CERNUUS	LIZARD TAIL	8 - 12"	1.75" PEAT POT OR 1" x 1 1/4" x 1 1/2" ROOT CUBE
2736	JUNCUS EFFUSUS	SOFT RUSH	8 - 12"	1.75" PEAT POT OR 1" x 1 1/4" x 1 1/2" ROOT CUBE
2780	PONTERDERIA CORDATA	PICKEREL WEED	8 - 12"	BARE ROOT
822	SCIRPUS VALIDUS	SOFT STEM BULRUSH	8 - 12"	1.75" PEAT POT OR 1" x 1 1/4" x 1 1/2" ROOT CUBE
1120	PELTANDRA VIRGINICA	ARROW ARUM	8 - 12"	1.75" PEAT POT OR 1" x 1 1/4" x 1 1/2" ROOT CUBE
225	SCIRPUS CYPERINUS	WOOL GRASS	8 - 12"	1.75" PEAT POT OR 1" x 1 1/4" x 1 1/2" ROOT CUBE

Oasis Root Cubes available through D & L Grower Supplies, Inc.

DETAIL 5: TREE PROTECTIVE DEVICE

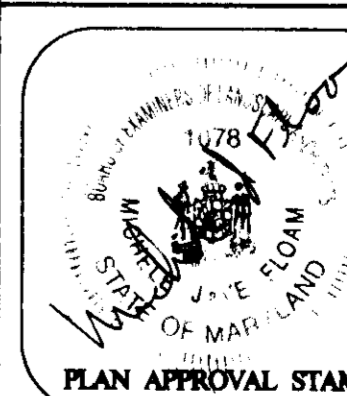
SOURCE: M-NCPPC, 1989



GENERAL NOTES

- Limits of disturbance will be set as part of the review process for an approved TCF.
- The boundaries of the limits of disturbance should be staked and flagged prior to erecting the protective.
- Anchor posts should be placed to avoid severing or damaging large tree roots.
- Fencing material should be fastened securely to the anchor posts.

HOWARD CO. DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS
HOWARD SOIL CONSERVATION DISTRICT



EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
838 FORREST STREET
HISTORIC ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX: (410) 750-7350

OWNER/DEVELOPER
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
ROUTE 108
ELLICOTT CITY, MARYLAND 21043
(410) 313-7256

PLANTING NOTES AND DETAILS
FONT HILL ENVIRONMENTAL EDUCATION PARK
HOWARD COUNTY, MARYLAND

ASHTON WOODS EAST COLUMBIA LIBRARY ELLICOTT WOODS
88-WQ-0577 91-WQ-0660 90-WQ-0066
88-WQ-0577 91-WQ-0660 91-WQ-0066
88-067-4 91-NT-079
GOVERNORS RUN WATERMARK CONDOMINIUMS
88-WQ-0567 88-WQ-0567
88-256-3 88-256-3

U.S. ARMY CORPS OF ENGINEERS APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS 88-226-4, 88-410-4, 88-567-4, 88-226-3, 91-6426-4

SIGNATURE OF U.S. ARMY CORPS OF ENGINEERS, BALTIMORE, MD. DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT STANDARDS & CERTIFICATION DIVISION APPROVAL OF PLANS SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS 88-WQ-0567, 90-WQ-0066, 88-WQ-0577, 90-WQ-0304, 91-WQ-660

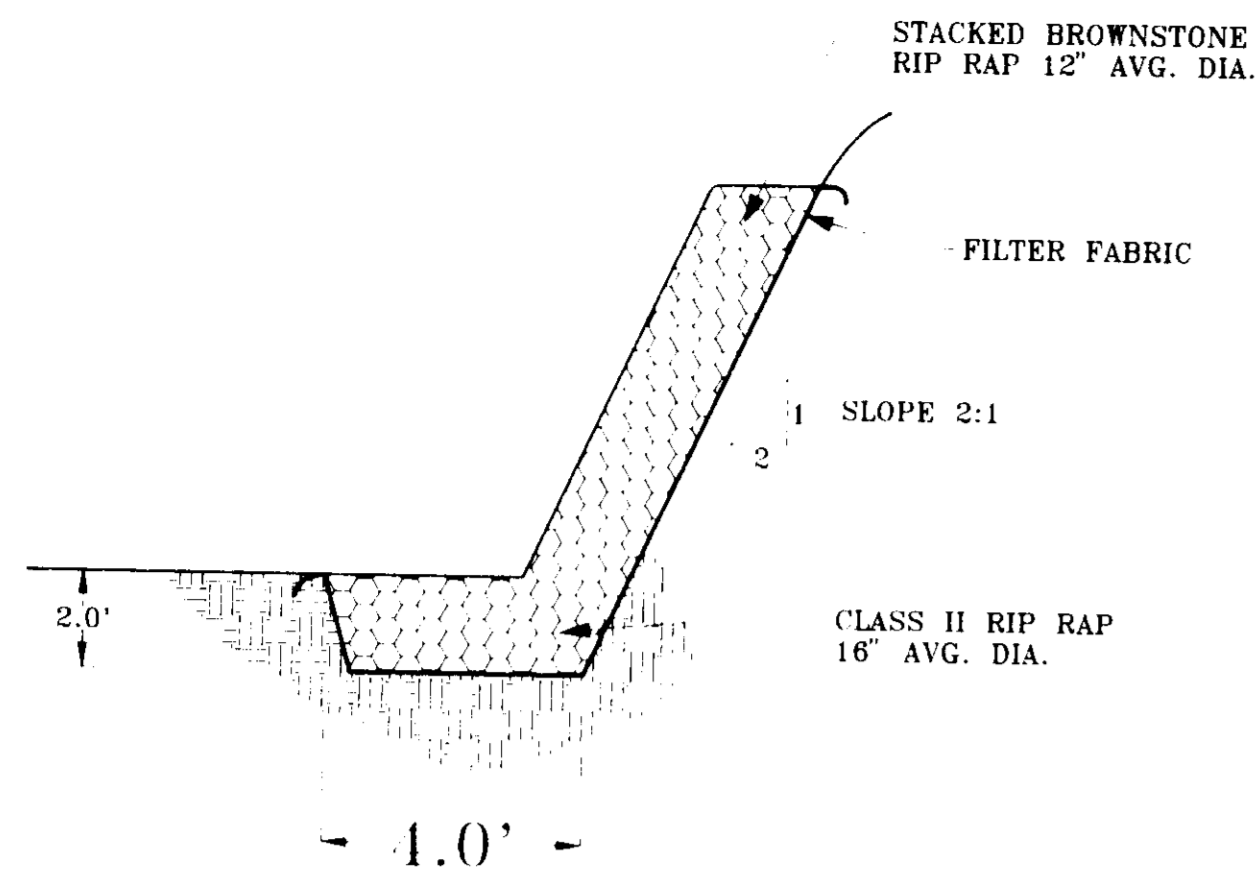
SIGNATURE OF STANDARDS/CERTIFICATION DIVISION DATE

DEPARTMENT OF NATURAL RESOURCES NON-TIDAL WETLANDS DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER: 91-NT-079

SIGNATURE OF DEPARTMENT OF NATURAL RESOURCES DATE

DRAWN BY: M.J. FLOAM SCALE: N.T.S.
DESIGNED BY: G.M.J./M.F. DATE: 4/94
CHECKED BY: S.L. HUBER SHEET 13 OF 21

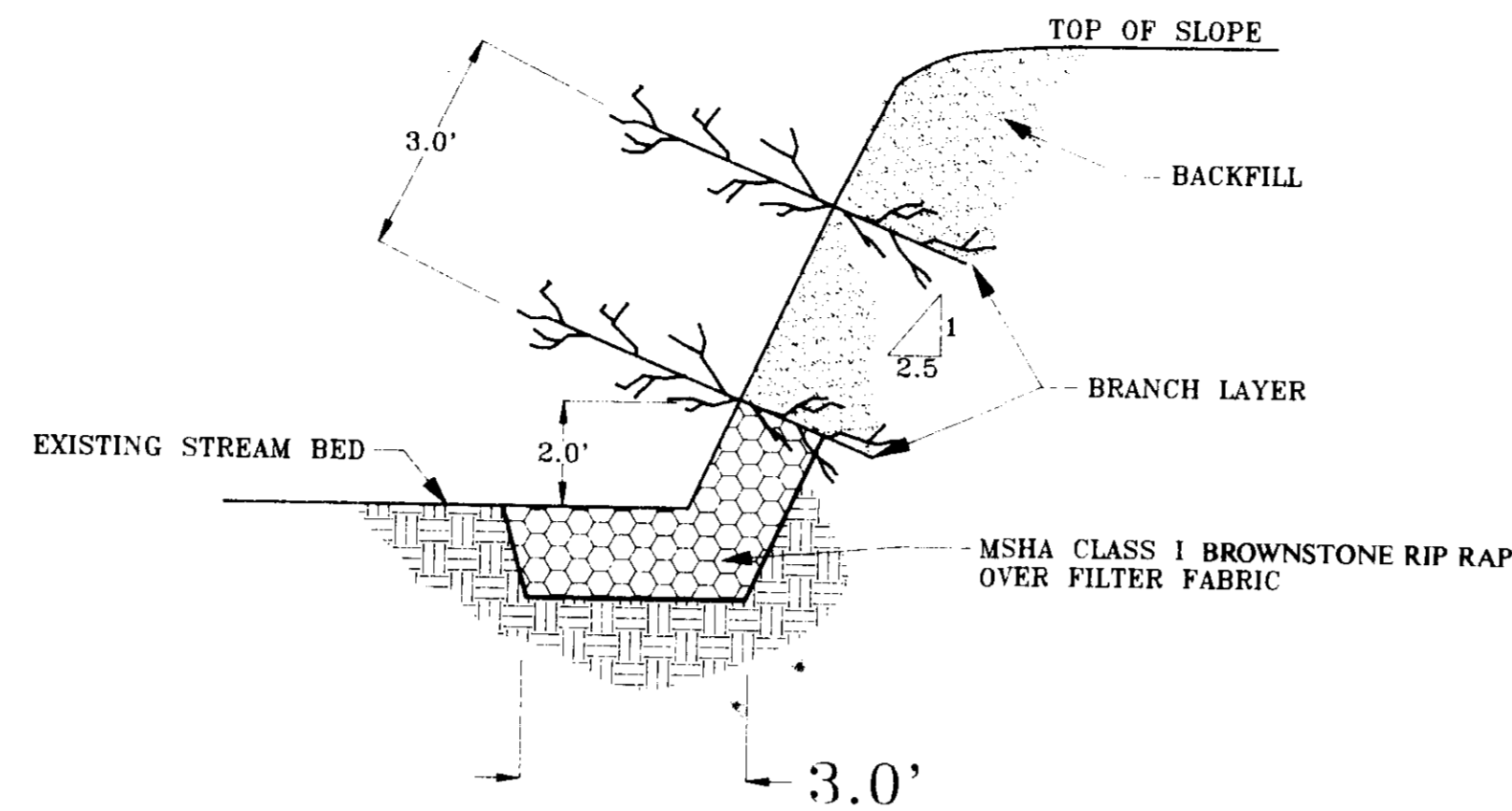
BROWNSTONE SLOPE PROTECTION
NOT TO SCALE



CONSTRUCTION NOTES/SPECIFICATIONS

1. THE CONTRACTOR SHALL INSTALL APPROPRIATE SEDIMENT AND EROSION CONTROL DEVICES BEFORE BEGINNING PROJECT.
2. THE FOUNDATION AREA SHALL BE CLEARED OF TREES, STUMPS, ROOTS, SOD, LOOSE ROCK, OR OTHER OBJECTIONABLE MATERIAL.
3. THE CROSS-SECTION SHALL BE EXCAVATED TO THE NEAT LINES AND GRADES AS SHOWN ON THE PLANS. OVER-EXCAVATED AREAS SHALL BE BACKFILLED WITH MOIST SOIL COMPACTED TO THE DENSITY OF THE SURROUNDING MATERIAL.
4. NO ABRUPT DEVIATIONS FROM DESIGN GRADE OR HORIZONTAL ALIGNMENT SHALL BE PERMITTED.
5. FILTER, BEDDING, AND ROCK RIP RAP SHALL BE PLACED TO LINE AND GRADE AND IN THE MANNER SPECIFIED.
6. CONSTRUCTION OPERATIONS SHALL BE DONE IN SUCH A MANNER THAT EROSION, AIR, AND WATER POLLUTION WILL BE MINIMIZED AND HELD WITHIN LEGAL LIMITS. THE COMPLETED JOB SHALL PRESENT A WORKMANLIKE APPEARANCE. ALL DISTURBED AREAS SHALL BE VEGETATED OR OTHERWISE PROTECTED AGAINST SOIL EROSION.
7. FILTER CLOTH SHALL BE PLACED BENEATH ALL RIP RAP AND GABIONS. THE FILTER CLOTH SHALL CONSIST OF EITHER WOVEN OR NON-WOVEN MONOFILAMENT FIBER AND SHALL CONFORM TO ASTM D 1777, ASTM D 1682, HAVING A THICKNESS OF 20-60 MILS, AND A GRAB STRENGTH OF 90-120 LBS.

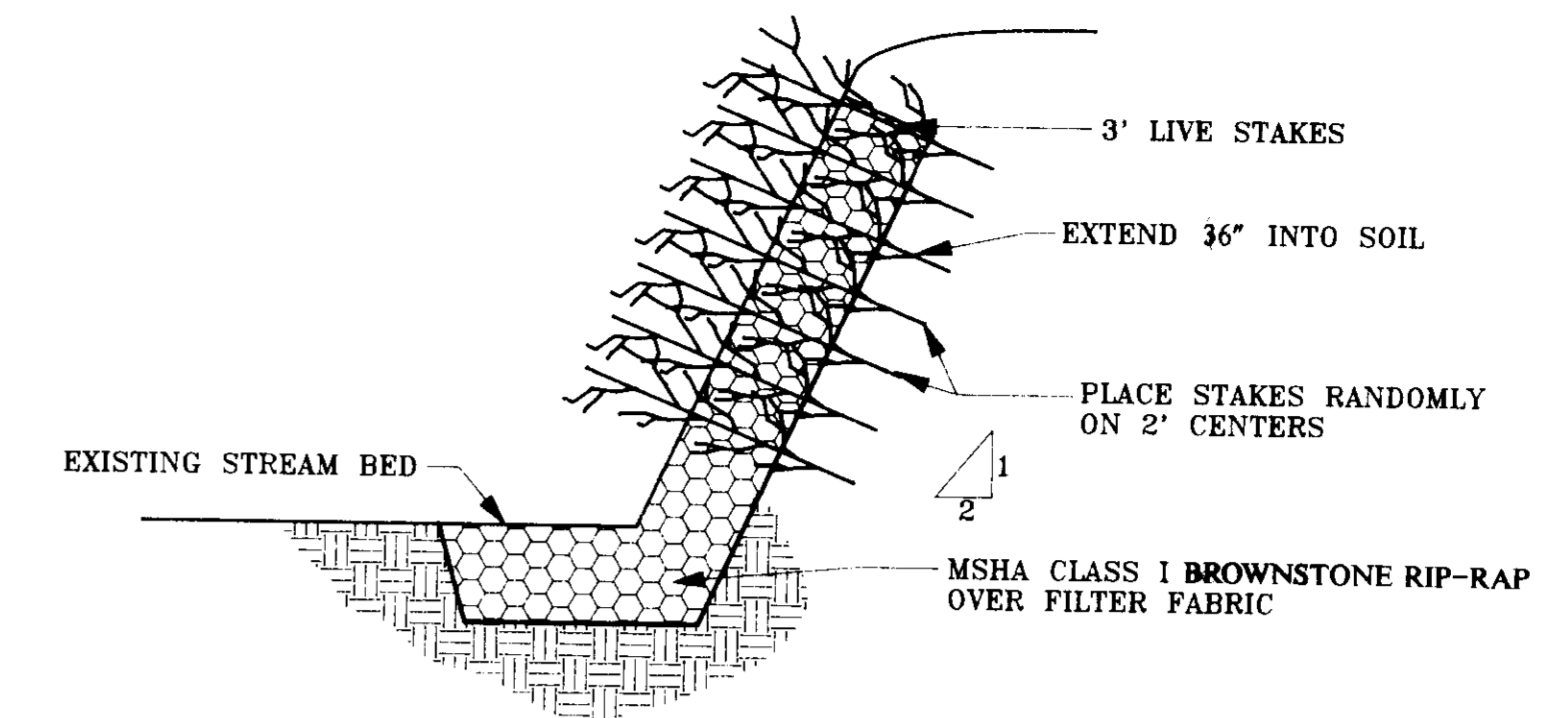
BRANCH LAYER STREAMBANK PROTECTION
NOT TO SCALE



CONSTRUCTION NOTES/SPECIFICATIONS

1. THE CONTRACTOR SHALL INSTALL APPROPRIATE SEDIMENT AND EROSION CONTROL DEVICES BEFORE STARTING PROJECT.
2. CONSTRUCTION TIME PERIOD IS LIMITED TO THE DORMANT SEASON NOT INCLUDING THE CLASS I CLOSURE PERIOD OF MARCH 1 THROUGH JUNE 15.
3. BRANCH LAYERS WILL CONSIST OF LIVE MATERIAL WITH AN AVERAGE DIAMETER OF 1/2" TO 2".
4. INSTALL BRANCH LAYERS ON CUT BENCH (2' WIDE) IN A CRISS-CROSS FASHION WITH BUTT ENDS EXTENDING TO FULL DEPTH OF BENCH. GROWING END SHOULD BE WELL BRANCHED EXTENDING 2 - 3' FROM PROPOSED SLOPE LINE.
5. BACKFILL SHOULD BE OBTAINED FROM MATERIAL CUT FROM BENCH AND FOOT TAMPED IN 6" LAYERS ATOP CUTTINGS TO FILL ALL VOIDS.
6. SEE CONSTRUCTION DETAILS FOR RIP RAP SLOPE PROTECTION.
7. STABILIZE DISTURBED AREAS WITH SEED AND MULCH.
8. SPECIES REQUIRED: SALIX NIGRA

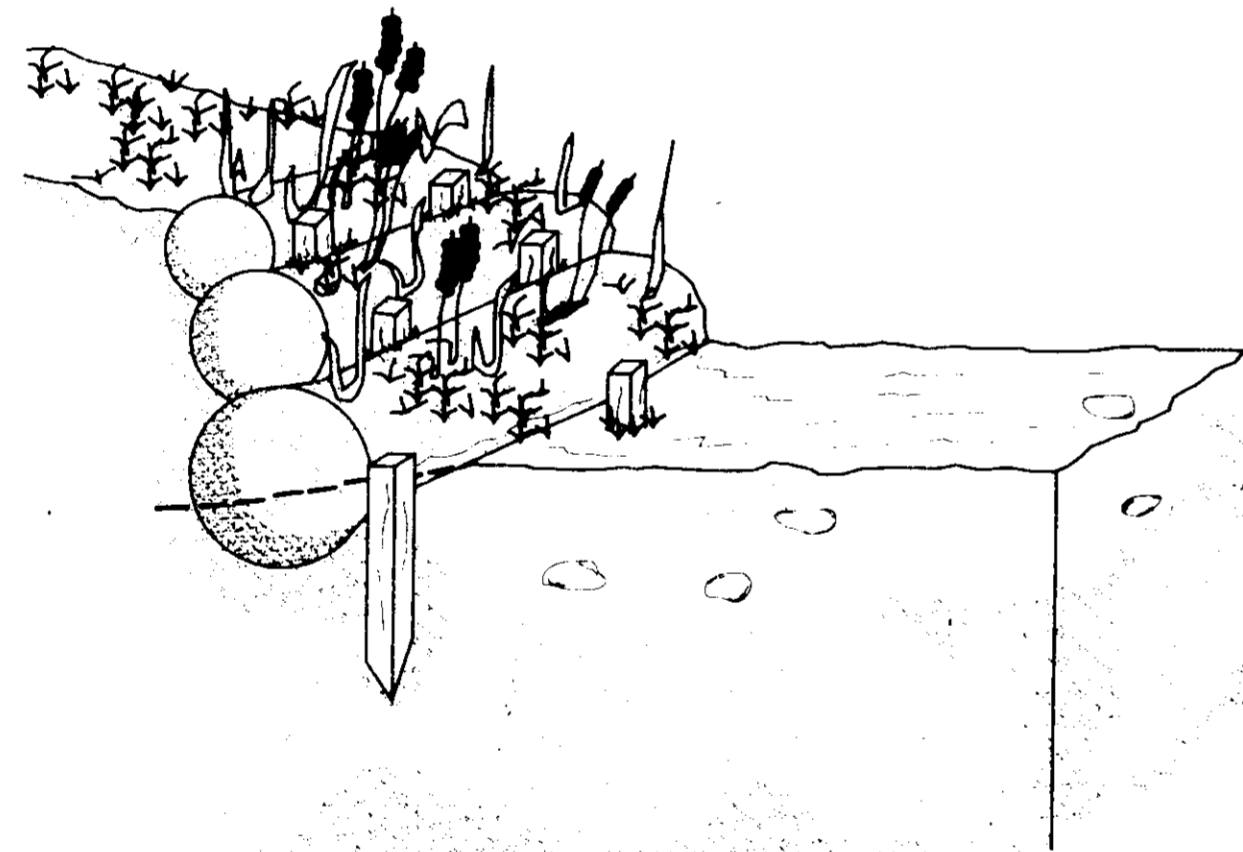
LIVE STAKING WITH RIP RAP
NOT TO SCALE



CONSTRUCTION NOTES/SPECIFICATIONS

1. CONTRACTOR SHALL INSTALL ALL APPROPRIATE SEDIMENT AND EROSION CONTROL FEATURES PRIOR TO BEGINNING WORK.
2. RIP RAP PROTECTION TO BE INSTALLED IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS.
3. LIVE STAKES ARE TO BE INSTALLED DURING THE DORMANT SEASON.
4. LIVE STAKES SHALL MEET THE FOLLOWING CRITERIA: a) ONE TO TWO INCHES IN DIAMETER, b) 3' MINIMUM IN LENGTH, c) EXTEND 18" INTO EXISTING SOIL.
5. THE GROWING END SHOULD BE CUT AT A RIGHT ANGLE WITH THE OPPOSITE END CUT ON AN ANGLE TO IMPROVE PENETRATION.
6. STAKES TO BE DRIVEN WITH A RUBBER MAUL. REPLACE ANY STAKE WITH BARK DAMAGE OR SPLIT WOOD. PUNCH HOLE WITH REBAR.
7. SPECIES REQUIRED: SALIX NIGRA OR BLACK WILLOW.

BIOLOG STREAMBANK STABILIZATION
NOT TO SCALE

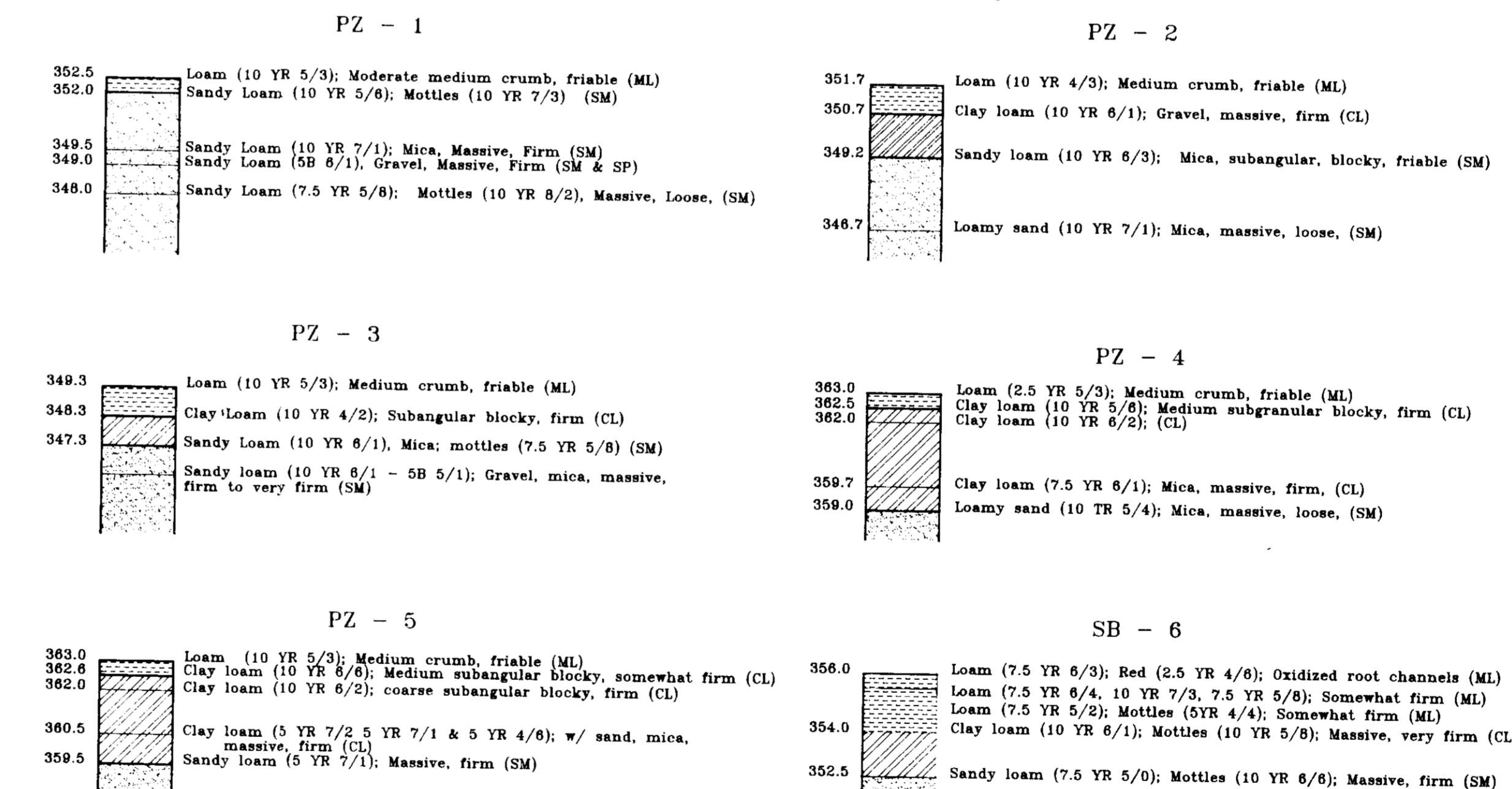


CONSTRUCTION NOTES/SPECIFICATIONS

BONTERRA BIOLOGS ARE EITHER ANCHORED WITH 2" X 2" X 36" WOODEN STAKES, TIED TOGETHER, OR BOTH, DEPENDING ON THE APPLICATION, AND ARE AVAILABLE IN EIGHT-FOOT AND 20-FOOT LENGTHS. EIGHT-FOOT BIOLOGS ARE MANUFACTURED WITH A CENTER ROPE HAVING LOOPS ON BOTH ENDS. THESE CAN BE STRUNG TOGETHER TO FORM A SHORELINE CHAIN, STACKED PARALLEL TO FORM A LOG WALL, WEIGHTED AND SUNK TO PROVIDE AQUATIC PLANT HABITAT, OR TIED TO FLOATS AND USED AS WATER SURFACE PLANTERS. TWENTY-FOOT BIOLOGS ARE MOST COMMONLY USED FOR SHORE AND STREAM BANK STABILIZATION. DETAILED INSTALLATION GUIDE IS AVAILABLE FROM THE MANUFACTURER.

Source: BonTerra America Biologs
Moscow, Idaho

PIEZOMETER AND SOIL BORINGS



REVISIONS MADE 7/22/94 PER HOWARD COUNTY COMMENTS
REVISIONS MADE 12/19/94 PER ENGINEER

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
HOWARD SOIL CONSERVATION DISTRICT
HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS



APPROVED: DEPARTMENT OF PLANNING AND ZONING
Date: 9/1/94

APPROVED: CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH
Date: 9/1/94

APPROVED: THE SEWER CHARGE SYSTEMS AND PUBLIC WORKS, DEPARTMENT OF PUBLIC WORKS
Date: 8/10/94

APPROVED: DIRECTOR, BUREAU OF ENGINEERING, M.D. WATERFORD
Date: 8/19/94

REVIEWED: HEALTH DEPARTMENT
Date: 8/24/94

EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
838 FORREST STREET
HISTORIC ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX: (410) 750-7350

OWNER/DEVELOPER
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
10000 ROUTE 108
ELLICOTT CITY, MARYLAND 21043
(410) 313-7256

STREAM STABILIZATION DETAILS
PIEZOMETER & SOIL BORINGS
FONT HILL ENVIRONMENTAL EDUCATION PARK
HOWARD COUNTY, MARYLAND

ASHTON WOODS EAST COLUMBIA LIBRARY ELLICOTT WOODS
88-WQ-0577 90-WQ-0060 90-WQ-0066 98-WQ-0064
88-5867-4 91-41-079 91-NT-079

GOVERNORS RUN WATERMARK CONDOMINIUMS
90-WQ-0034 88-WQ-0567 88-2266-3 88-276-3

U.S. ARMY CORPS OF ENGINEERS APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS 88-276-3, 88-410-4, 88-1967-4, 88-2266-3, 91-625-4

SIGNATURE OF U.S. ARMY CORPS OF ENGINEERS, BALTIMORE, MD. DATE

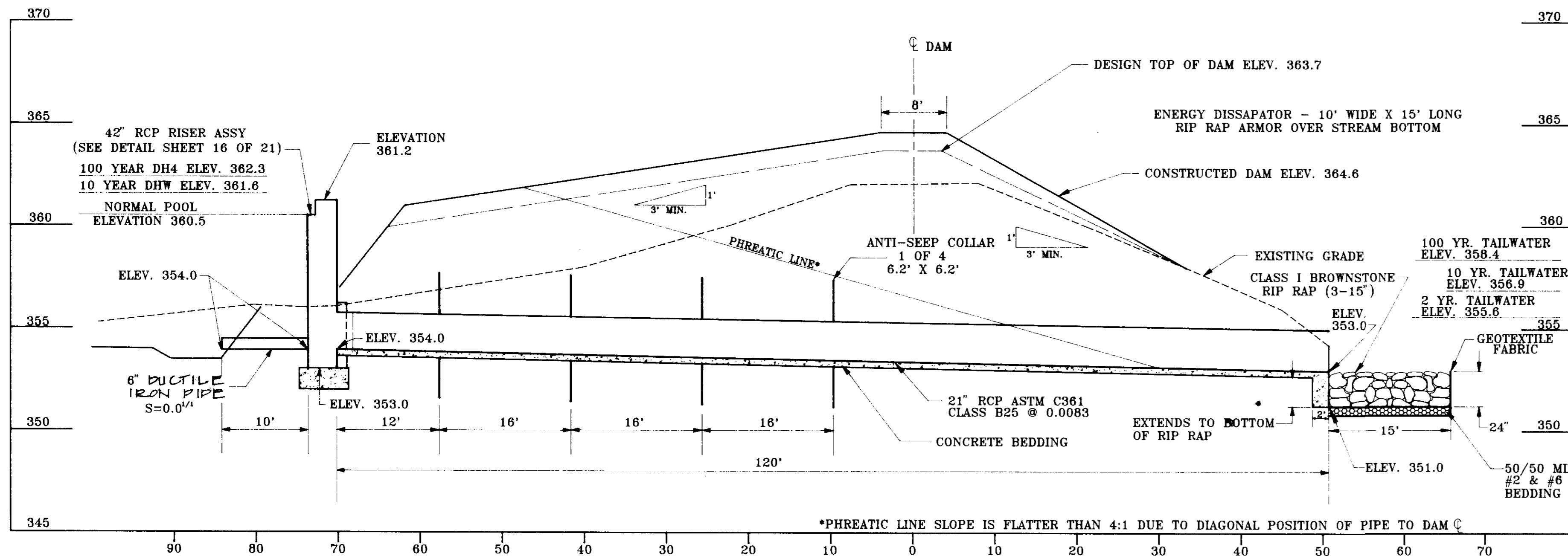
MARYLAND DEPARTMENT OF THE ENVIRONMENT STANDARDS & CERTIFICATION DIVISION APPROVAL OF PLANS SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS 88-WQ-0567, 90-WQ-0066, 88-WQ-0577, 90-WQ-0034, 88-WQ-0060

SIGNATURE OF STANDARDS/CERTIFICATION DIVISION DATE

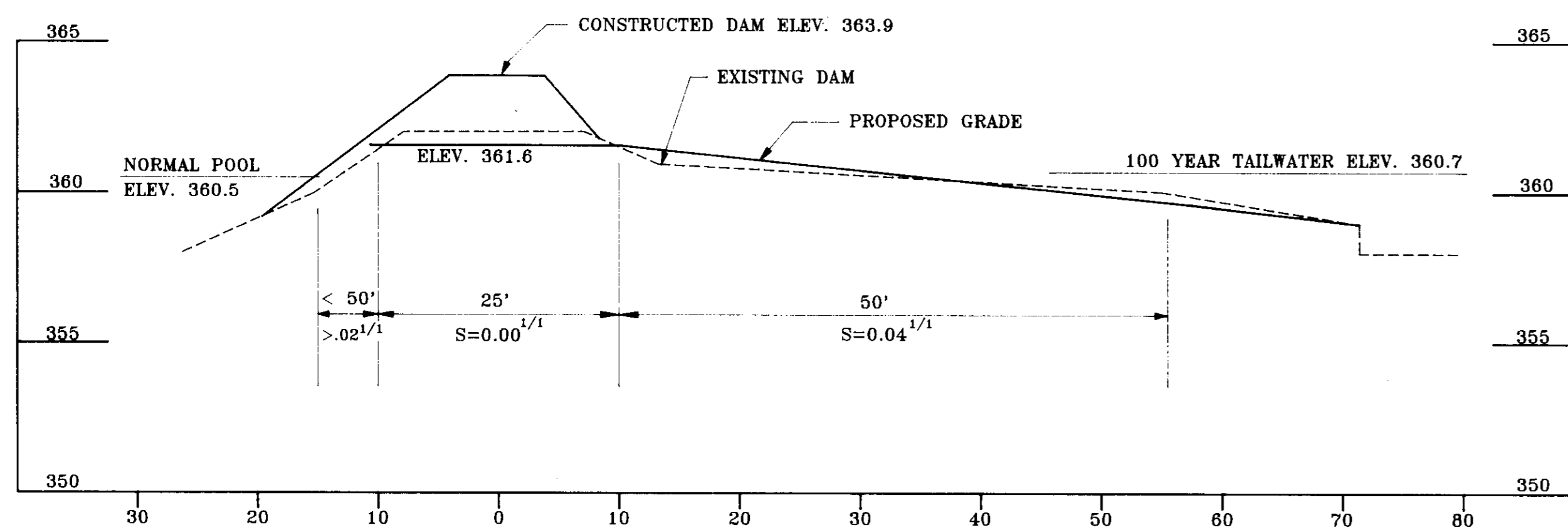
DEPARTMENT OF NATURAL RESOURCES NON-TIDAL WETLANDS DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS 91-NT-079

SIGNATURE OF DEPARTMENT OF NATURAL RESOURCES DATE

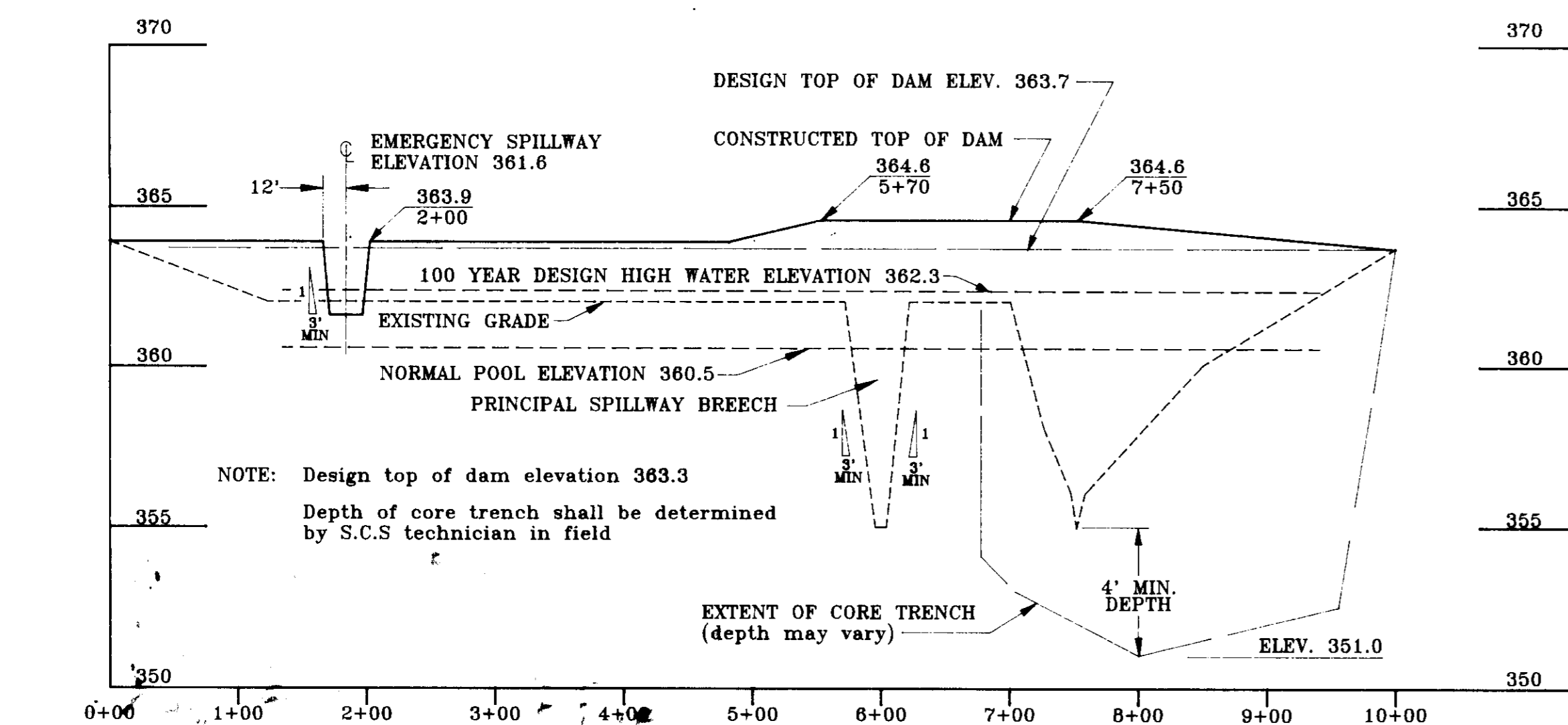
DRAWN BY: S.J.R./M.L.F. SCALE: AS SHOWN
DESIGNED BY: S.L.H. DATE: 4/94
CHECKED BY: S.L. HUBER SHEET 14 OF 21



P - 1 PROFILE OF THE WEST POND'S PRINCIPAL SPILLWAY
HORIZONTAL SCALE: 1" = 10' VERTICAL SCALE: 1" = 4'

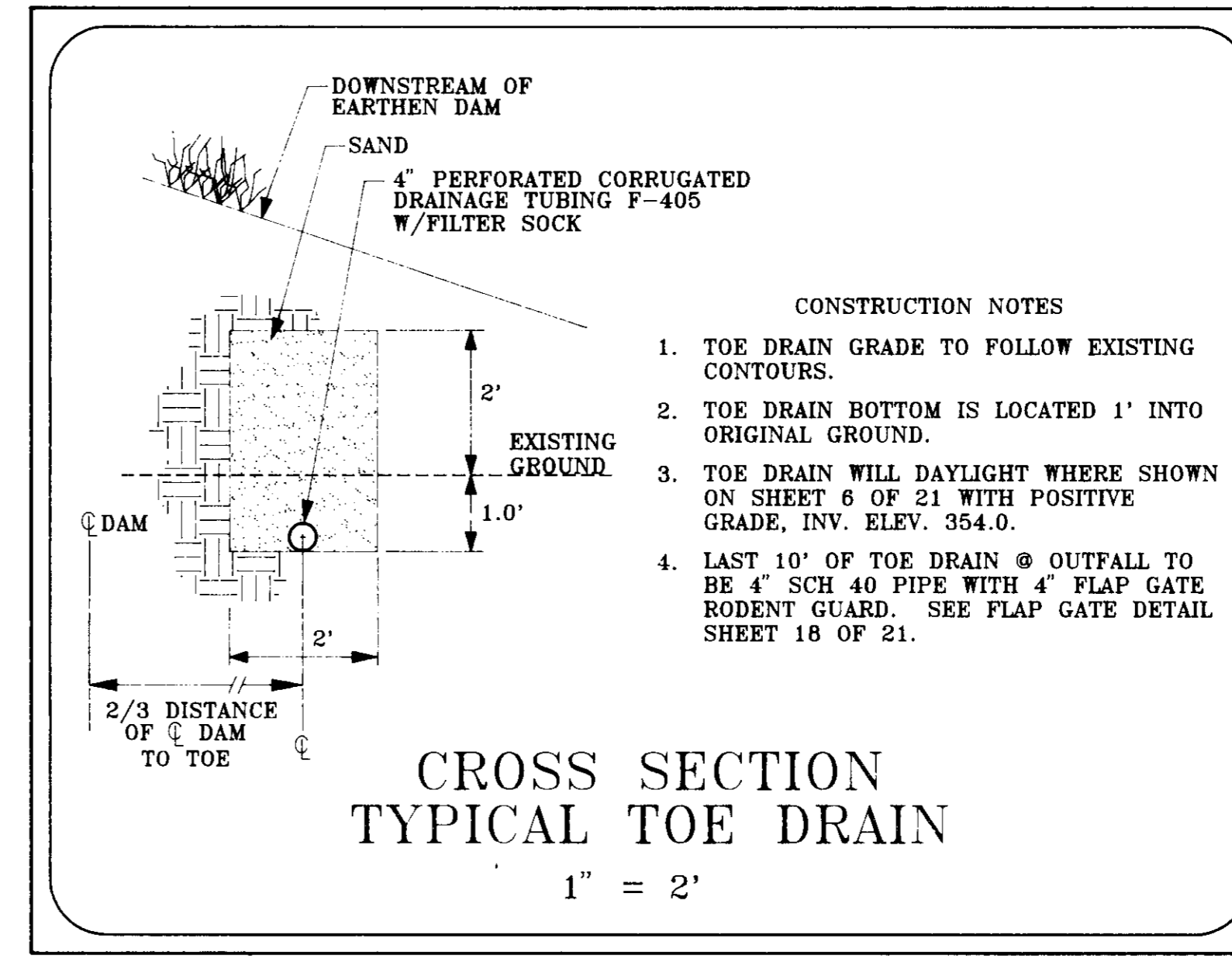


P - 2 PROFILE OF THE WEST POND'S EMERGENCY SPILLWAY
HORIZONTAL SCALE: 1" = 10' VERTICAL SCALE: 1" = 4'

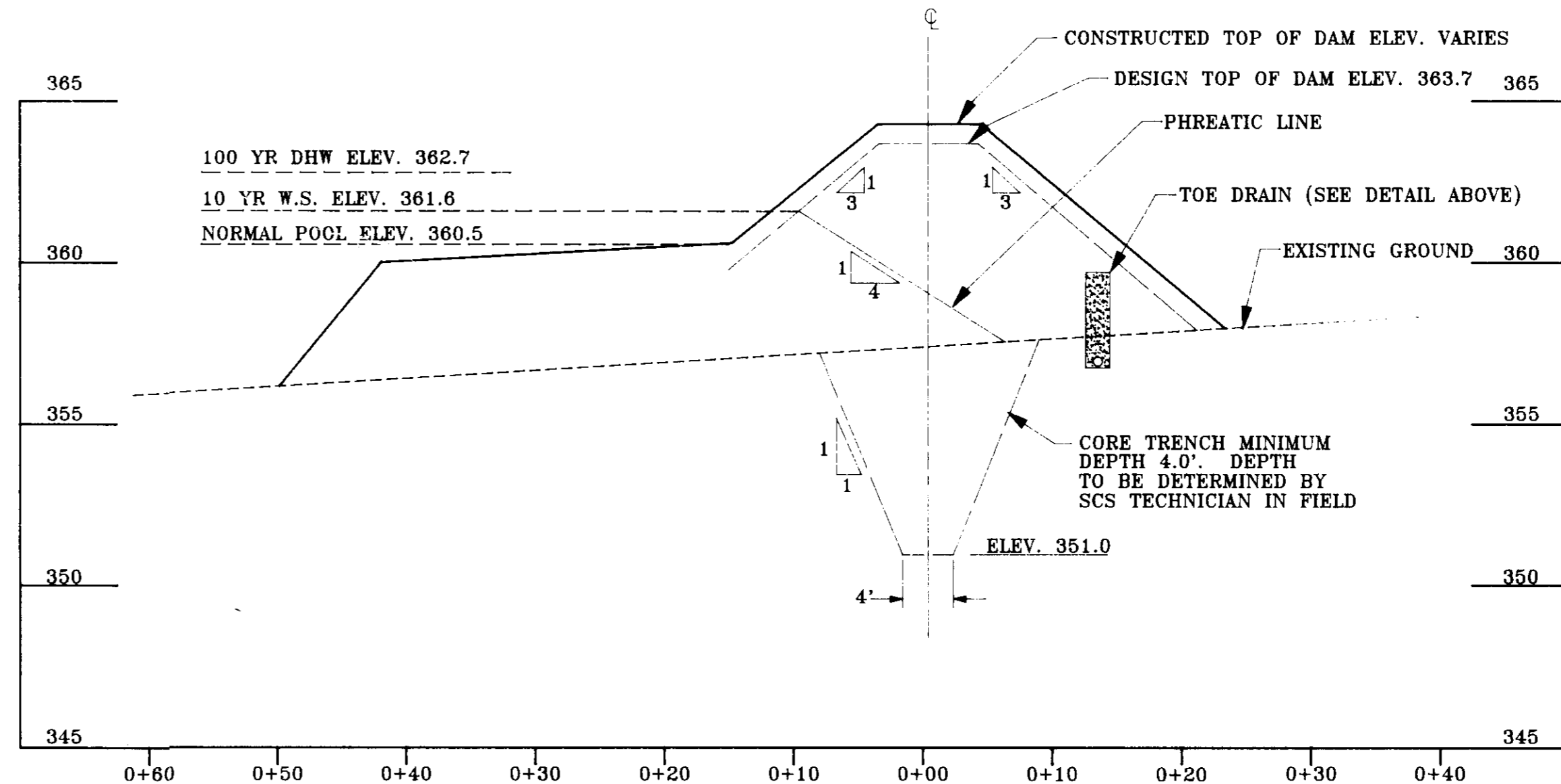


P - 3 PROFILE OF DAM FOR THE WEST POND
HORIZONTAL SCALE: 1" = 100' VERTICAL SCALE: 1" = 4'

REVISIONS MADE 6/11/95
PER HOWARD COUNTY COMMENTS
REVISIONS MADE 7/22/94
PER HOWARD COUNTY COMMENTS



CROSS SECTION
TYPICAL TOE DRAIN
1" = 2'



P - 4 PROFILE OF DAM @ ST 8 + 00
HORIZONTAL SCALE: 1" = 10' VERTICAL SCALE: 1" = 4'

OPERATION, MAINTENANCE, & INSPECTION FOR WEST POND AND SMALL POND

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-376). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

<p>DEVELOPER'S CERTIFICATION</p> <p>"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 will 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."</p> <p>Signature of Developer: <i>JERREY A. BAURNE</i> Date: 7/27/94</p>		<p>These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.</p> <p>Signature of Approver: <i>[Signature]</i> Date: 8/9/94</p>	
<p>DESIGNER'S CERTIFICATION</p> <p>"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 must provide the Howard Soil Conservation District with an "as-built" plan of the pond within 30 days of completion."</p> <p>Signature of Designer: <i>L. WESLEY EARP</i> Date: 7/27/94</p>		<p>Approved by: <i>[Signature]</i> Date: 8/12/94</p> <p>Chief, Bureau of Engineering M.K. [Signature]</p>	
<p>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.</p> <p>Signature of Reviewer: <i>[Signature]</i> Date: 8/1/94</p>		<p>Reviewed by: <i>[Signature]</i> Date: 8/24/94</p> <p>County Health Officer</p>	

EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
838 FORREST STREET
HISTORIC ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX: (410) 750-7250

OWNER/DEVELOPER
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
1000 ROUTE 108
ELLICOTT CITY, MARYLAND 21043
(410) 313-7256

WEST POND PROFILES
FONT HILL ENVIRONMENTAL EDUCATION PARK
HOWARD COUNTY, MARYLAND

ASHTON WOODS EAST COLUMBIA LIBRARY ELLICOTT WOODS
88-WQ-0577 88-WQ-060 90-WQ-0066
88-WQ-0574 91-WQ-060 91-WQ-0066
88-1867-4 91-WQ-079 91-WQ-079
GOVERNORS RUN WATERMARK CONDOMINIUMS
90-WQ-0084 88-WQ-0567
88-2266-3 88-2266-3

U.S. ARMY CORPS OF ENGINEERS APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS: 88-226-3, 88-410-4, 88-367-4, 88-226-3, 91-6426-4

SIGNATURE OF U.S. ARMY CORPS OF ENGINEERS, BALTIMORE, MD. DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT STANDARDS & CERTIFICATION DIVISION APPROVAL OF PLANS SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS: 88-WQ-0577, 90-WQ-0066, 88-WQ-0577, 90-WQ-0084, 91-WQ-060

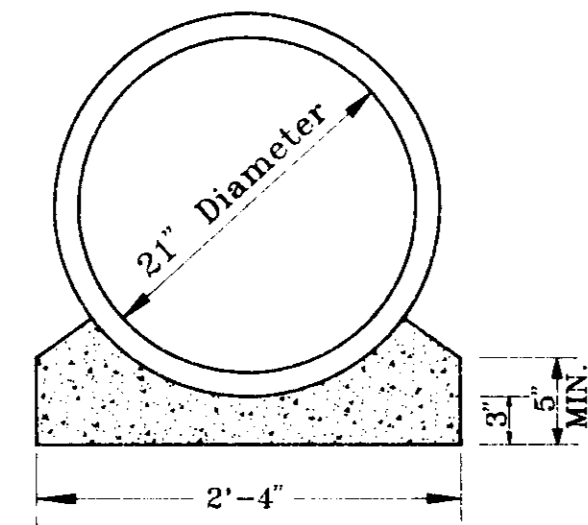
SIGNATURE OF STANDARDS/CERTIFICATION DIVISION DATE

DEPARTMENT OF NATURAL RESOURCES NON-TIDAL WETLANDS DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER: 91-WQ-079

SIGNATURE OF DEPARTMENT OF NATURAL RESOURCES DATE

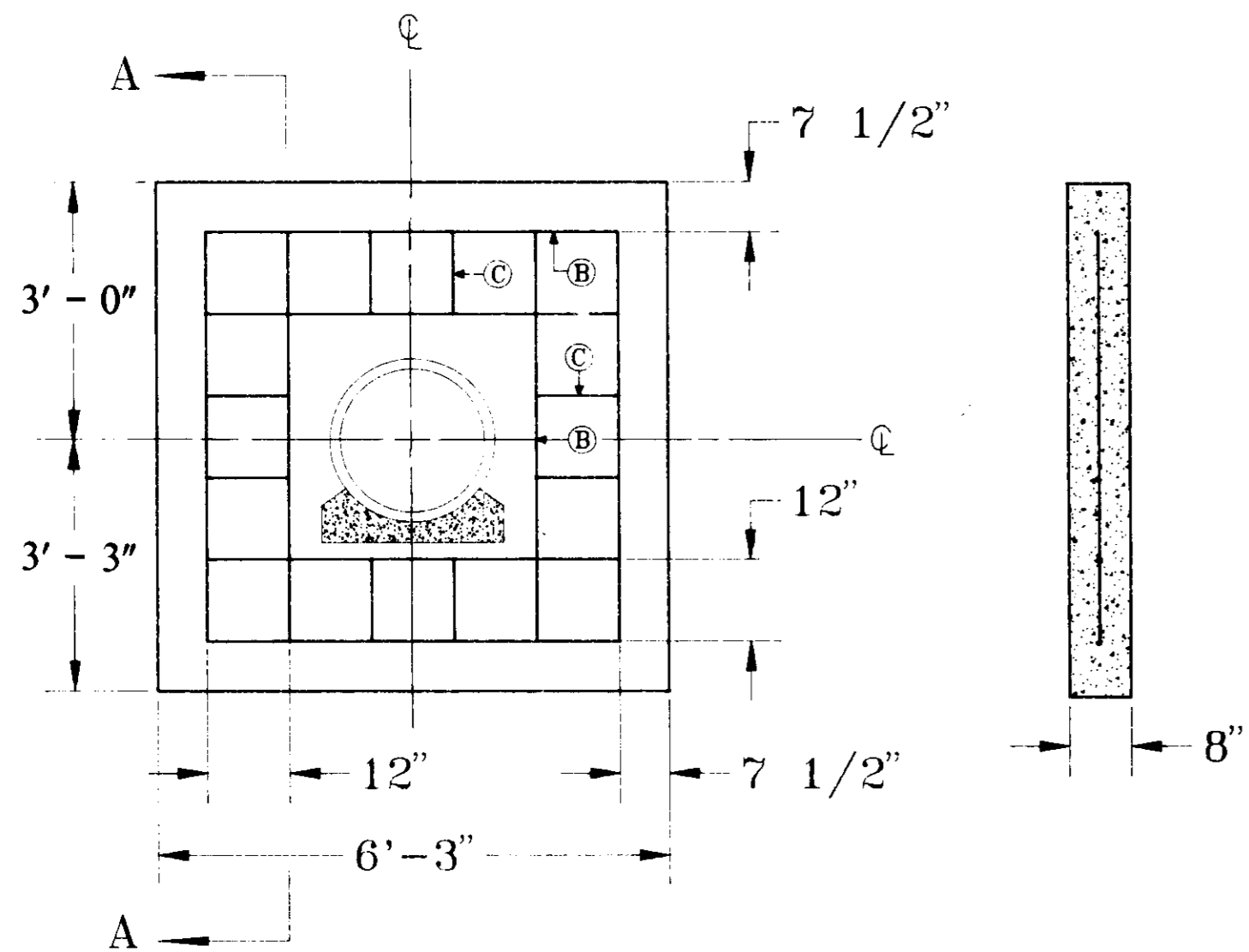
DRAWN BY: M.J. FLOAM SCALE: AS NOTED
DESIGNED BY: W. EARP DATE: 4/94
CHECKED BY: W. EARP SHEET 15 OF 21

CONCRETE BEDDING
REFER TO PROFILE P-1 SHEET 15 OF 21



Detail of Bedding
Scale: 1" = 1'-0"

ANTI-SEEP COLLAR DETAILS
REFER TO PROFILE P-1 SHEET 15 OF 21



Detail of Anti-Seep Collar Section A-A
Scale: 1" = 2'-0"

Steel Schedule

Mark	Size	Quantity Per Collar	Length	Total Quantity	Total Length
B	4	8	5'-2"	32	165'-4"
C	4	8	1'-2"	32	37'-4"

REVISIONS MADE 6/11/95 PER HOWARD COUNTY COMMENTS
REVISIONS MADE 7/22/94 PER HOWARD COUNTY COMMENTS

DEVELOPER'S CERTIFICATION

"I 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 will 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: *[Signature]* Date: 5/27/94
print name below signature

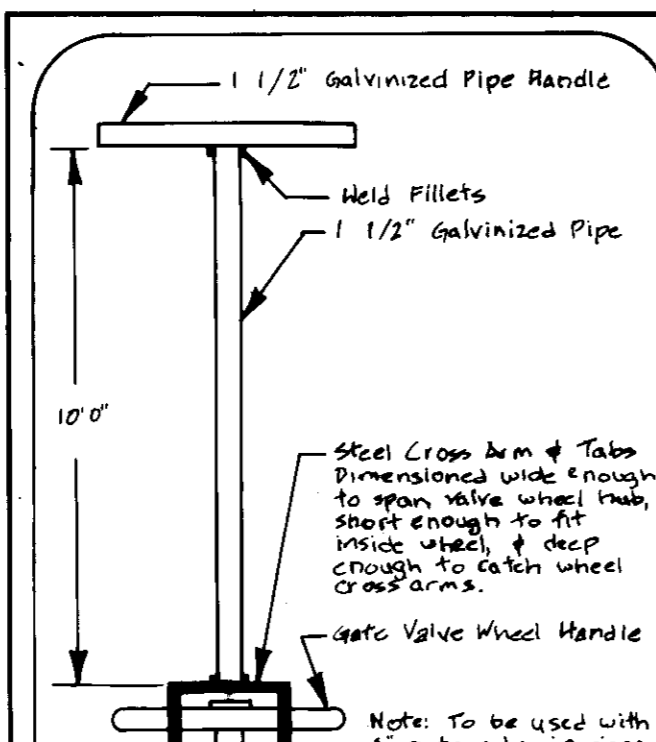
DESIGNER'S CERTIFICATION

"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 must provide the Howard Soil Conservation District with an 'as-built' plan of the pond within 30 days of completion."

Signature of Designer: *[Signature]* L. WESLEY EARP Date: 7/27/94
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.

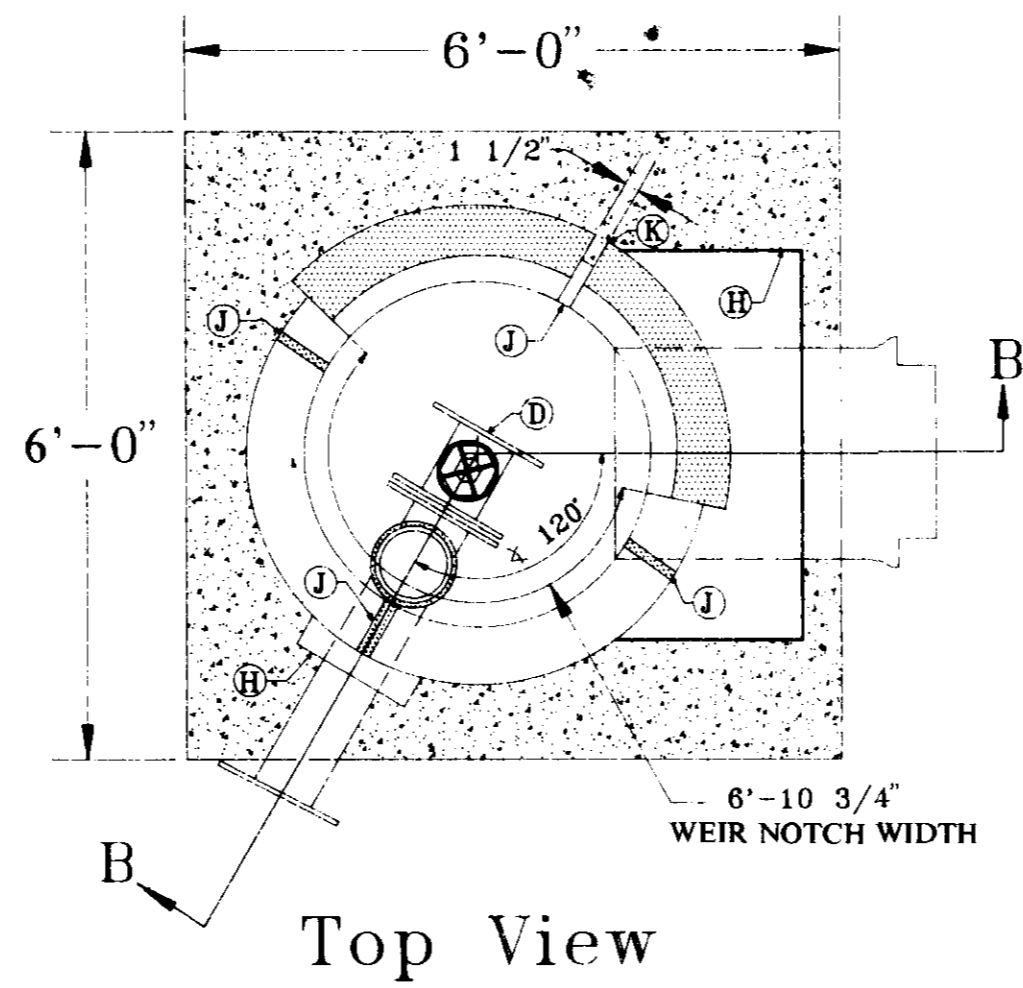
Signature of Reviewer: *[Signature]* Date: 8/5/94
U.S. Soil Conservation District



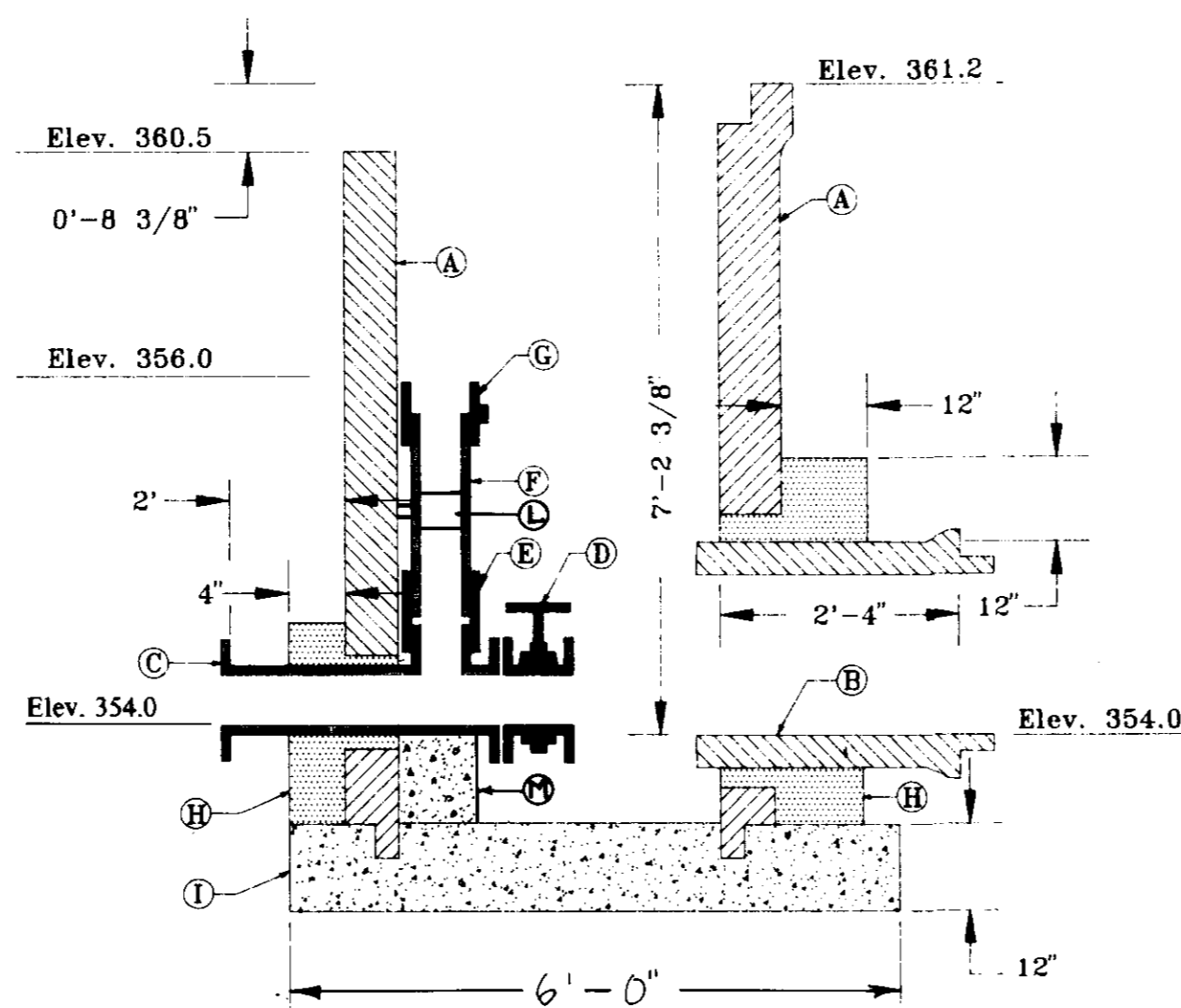
Extension Handle Detail
Not To Scale

RISER ASSEMBLY DETAILS
REFER TO PROFILE P-1 SHEET 15 OF 21

- All cement pipe and steel pipe joints and flange joints to be water tight
- Riser and slab subgrade will be determined in field, one 42" RCP riser dimensions are known.
- All exposed rebar in weir notch (top of riser) will be recessed 1" and the openings plugged with hydraulic cement.
- All PVC joints to be solvent welded.
- 6" coupling (G) to be strapped and anchored with bolts to side of riser.



Top View



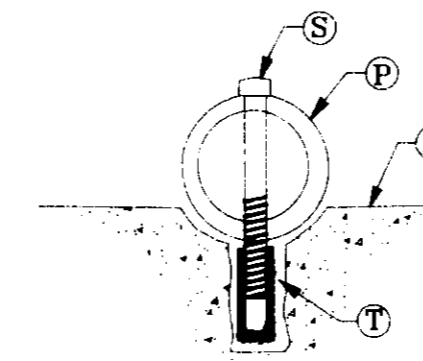
Riser Assembly Details

section B-B
not to scale

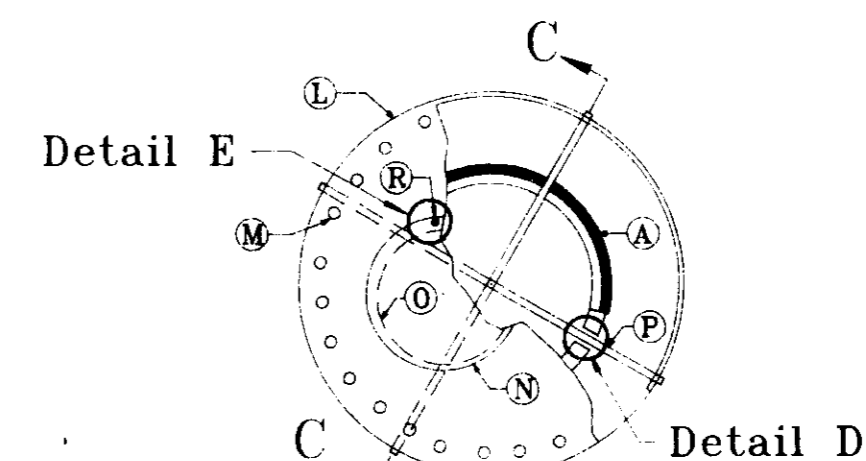
Parts Schedule

- 42" RCP CLASS B25 ASTM C-361
- 21" RCP stub CLASS B25 ASTM C-361
- 6" Flanged ductile iron pipe w/ thrd. tee
- 6" Gate valve
- 6" PVC female adapter - SCH 40
- 6" stub - SCH 40
- 6" Coupling - SCH 40
- Concrete collar
- Concrete base 6' x 5' x 1'
- 1 1/2" groove - 1/2" deep - 1 of 4 @ 90 <
- Detail B' K- 1 1/2" W x 8 7/8" D
- 3" steel strap connected to wall, or alternative method of support to be determined in the field.
- Poured in place concrete support for pipe.

- Top plate to be continuous welded to 72" CMP
- 24" Access hole to be centered 27" from edge and between 1 1/4" support pipes.
- 1/2" Nut welded to underside of top plate. 1/2" Bolt through 5/8" hole in lid & top plate into nut. Holes and nut positioned so that lid covers access hole & swings freely in 360 circle when bolt is loosened. Detail E
- 1 1/4" Support pipe to extend through sides of 72" CMP and welded in place.
- 1 1/2" Grooves (J) to be cut so that rack rests on support bars at all 4 points and rack does not rock

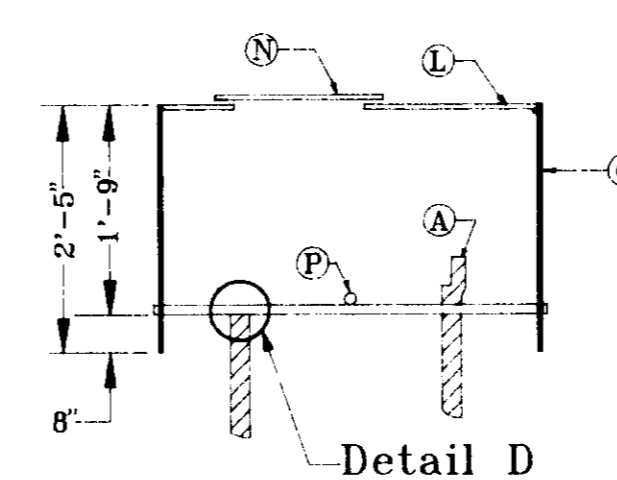


Detail D Face

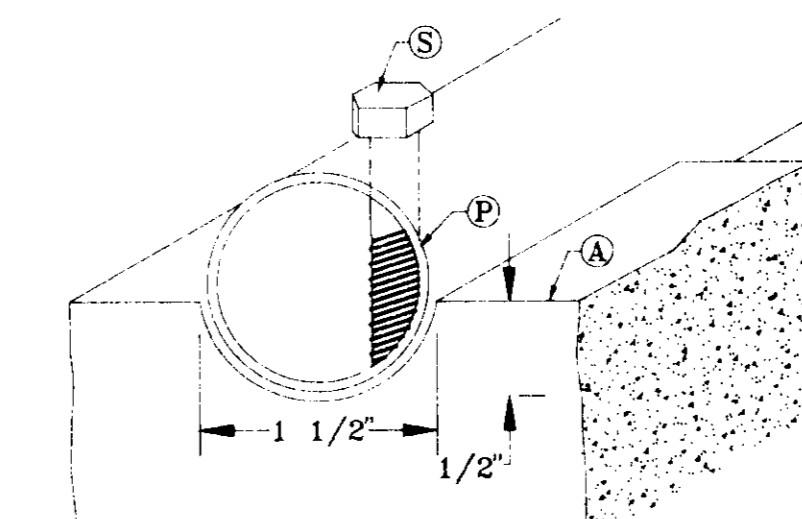


Top View
not to scale

Detail E



Section C-C
not to scale



Detail D Isometric
not to scale

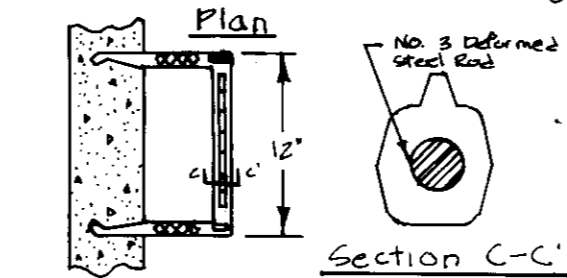
Trash Rack & Anti-Vortex Details

Parts Schedule

- 72" Diameter Aluminum or Aluminized top plate gauge 8.
- 1" Breather hole 20 min.
- 26" Aluminum or Aluminized Lid with handle
- 24" Opening for access
- 1 1/4" Galvanized pipe cross bar 1 of 2
- 72" Aluminum or Aluminized pipe gauge 8.
- 1/2" x 2" Bolt with nut 'hinge' note # 3
- 1/2" x 2 1/2" Bolt with receiving fastener 1 of 4.
- Epoxy grout

Notes:

- Steps shall be designed so that feet cannot slide off the end.
- Steps shall be aligned to form a continuous ladder with steps equally spaced vertically at a distance of 12 inches apart.
- Bottom step shall be 12 inches above top of concrete base.
- Top step shall be 6 inches below top of present section for the riser assembly.



Type 3 Polypropylene Plastic Step
Not To Scale

REFER TO SHEET 18 OF 21 FOR THE MUSKRAT EARTH FILL PROTECTION DETAIL

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

Signature: *[Signature]* Date: 8/24/94
Approved: DEPARTMENT OF PLANNING AND ZONING

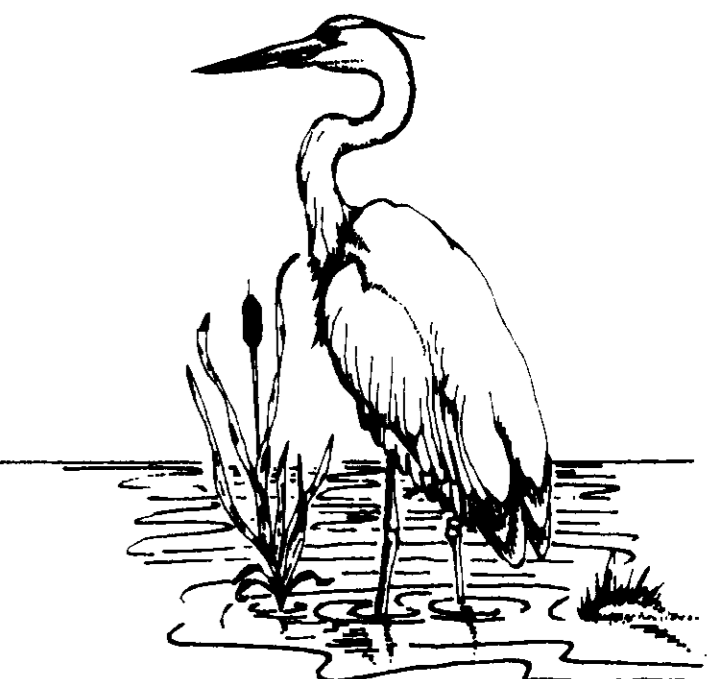
Signature: *[Signature]* Date: 9/1/94
Chief, Division of Land Development & Research

Approved: *[Signature]* Date: 8/10/94
Chief, Bureau of Engineering, M.A.R. SYSTEMS

Signature: *[Signature]* Date: 8/19/94
DIRECTOR

Signature: *[Signature]* Date: 8/24/94
REVIEWED: HEALTH DEPARTMENT

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
HOWARD CO. DEPARTMENT OF RECREATION AND PARKS HOWARD SOIL CONSERVATION DISTRICT



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ENVIRONMENTAL CONSULTANTS
838 FORREST STREET
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OWNER/DEVELOPER
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
10000 ROUTE 108
ELLICOTT CITY, MARYLAND 2043
(410) 313-7256

WEST POND DETAILS
FONT HILL ENVIRONMENTAL EDUCATION PARK
HOWARD COUNTY, MARYLAND
ASHTON WOODS EAST COLUMBIA LIBRARY ELLICOTT WOODS
91-WQ-060 91-WQ-066
88-WQ-077 91-WQ-064
88-1867-4 91-WQ-075
GOVERNORS RUN WATERMARK CONDOMINIUMS
91-WQ-084 88-WQ-057
88-2263-3 88-2263-3

U.S. ARMY CORPS OF ENGINEERS APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS: 88-2263-3, 91-WQ-064, 88-1867-4, 88-2263-3, 91-WQ-064

SIGNATURE OF U.S. ARMY CORPS OF ENGINEERS, BALTIMORE, MD. DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT STANDARDS & CERTIFICATION DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS: 88-WQ-067, 90-WQ-006, 88-WQ-057, 90-WQ-084, 91-WQ-060

SIGNATURE OF STANDARDS/CERTIFICATION DIVISION DATE

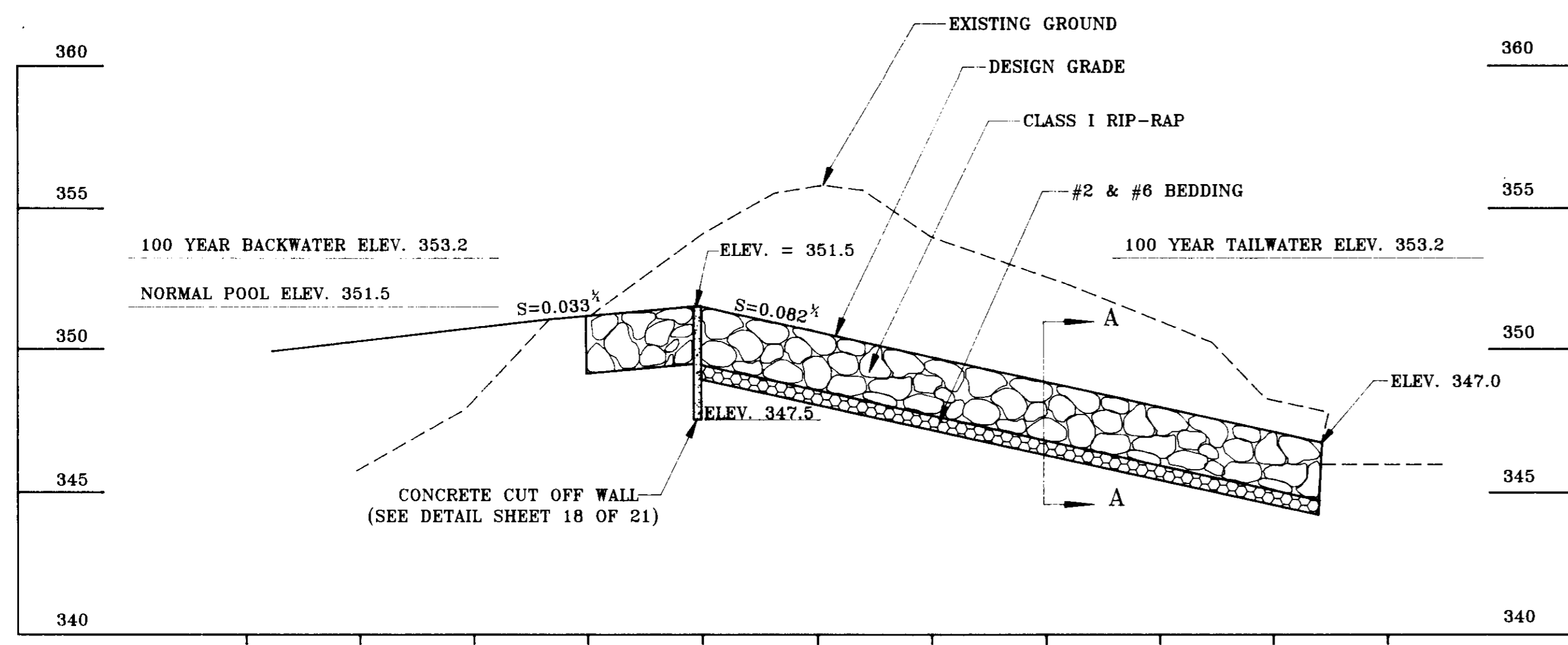
DEPARTMENT OF NATURAL RESOURCES NON-TIDAL WETLANDS DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER: 91-NI-070

SIGNATURE OF DEPARTMENT OF NATURAL RESOURCES DATE

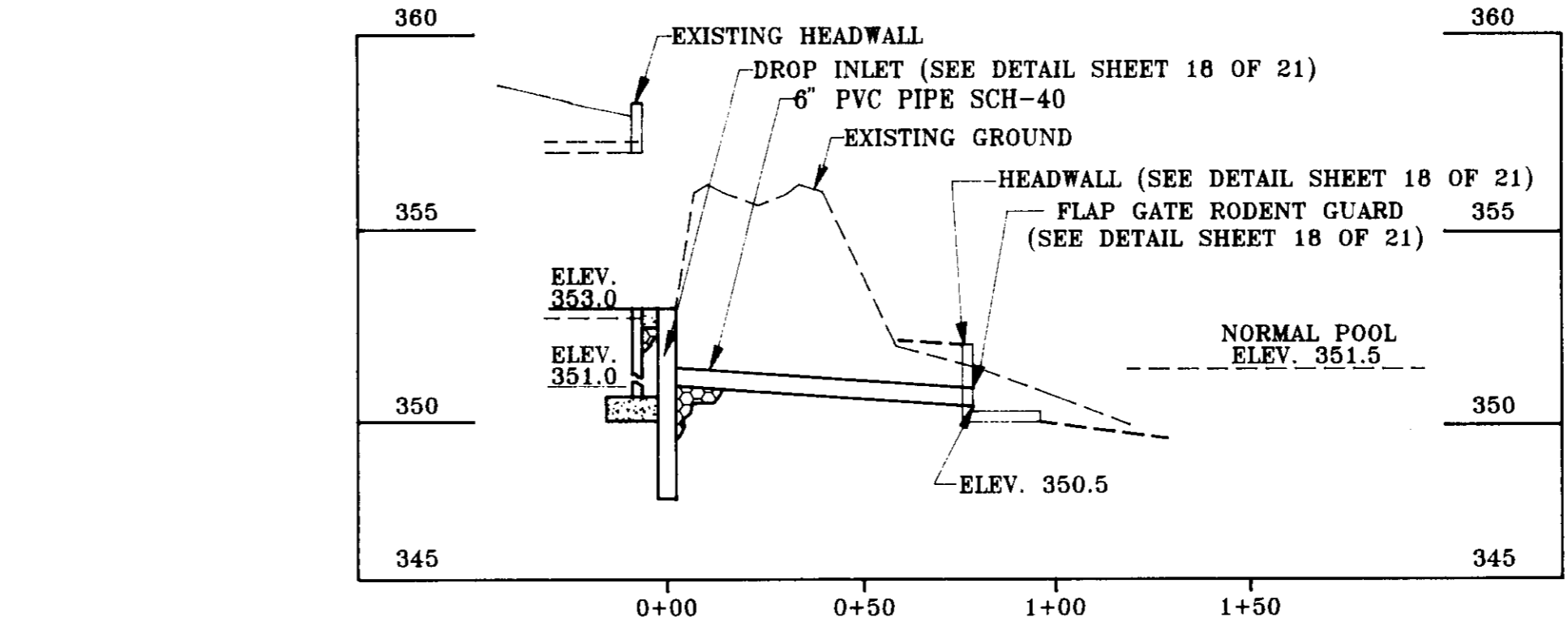
DRAWN BY: M.J. FLOAM SCALE: AS SHOWN

DESIGNED BY: W. BARP DATE: 4/94

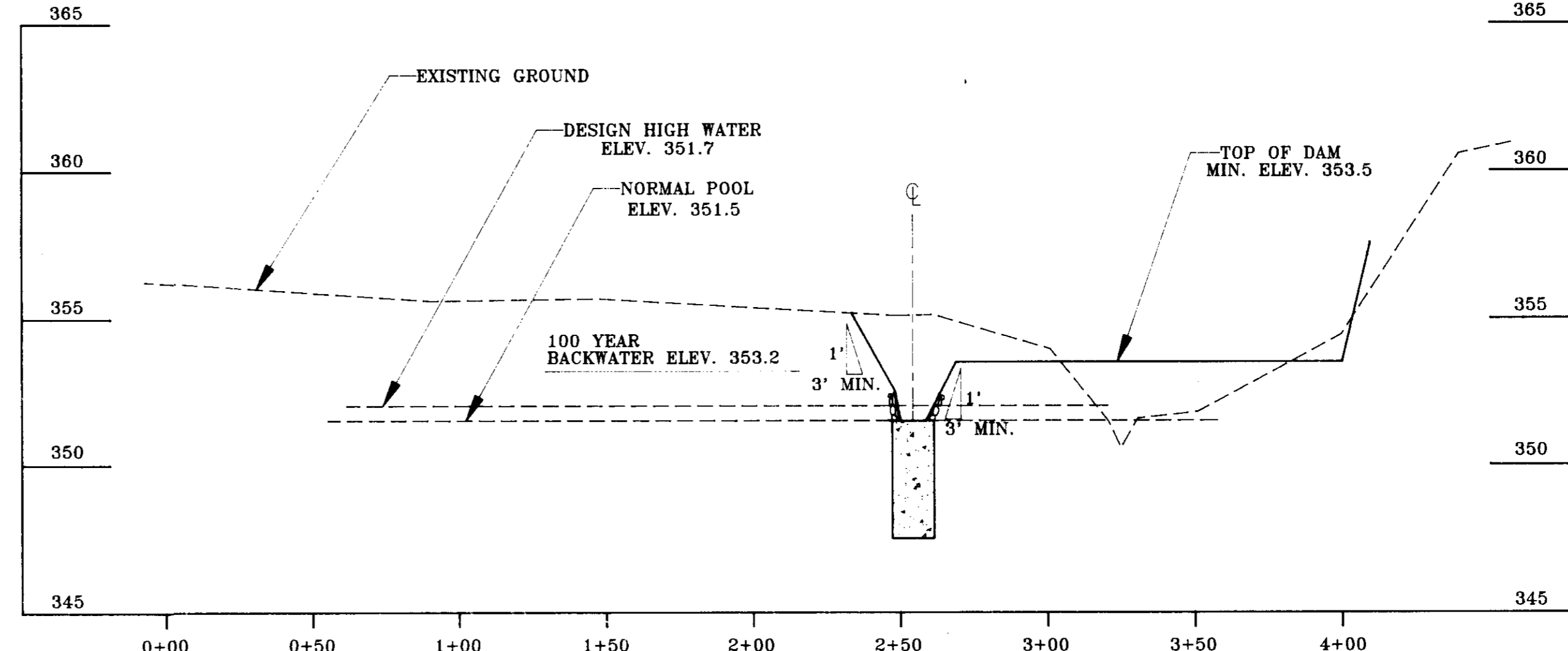
CHECKED BY: W. BARP SHEET 16 OF 21



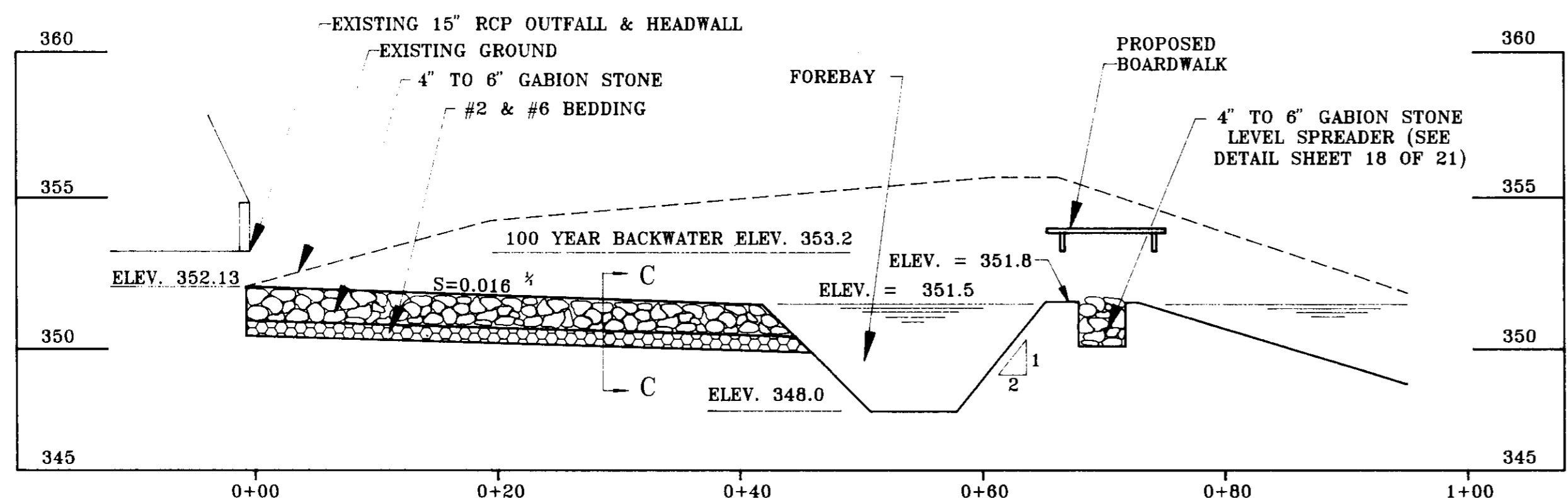
P-4 PROFILE OF THE SMALL POND'S PRINCIPAL SPILLWAY
HORIZONTAL SCALE: 1" = 10' VERTICAL SCALE: 1" = 4'



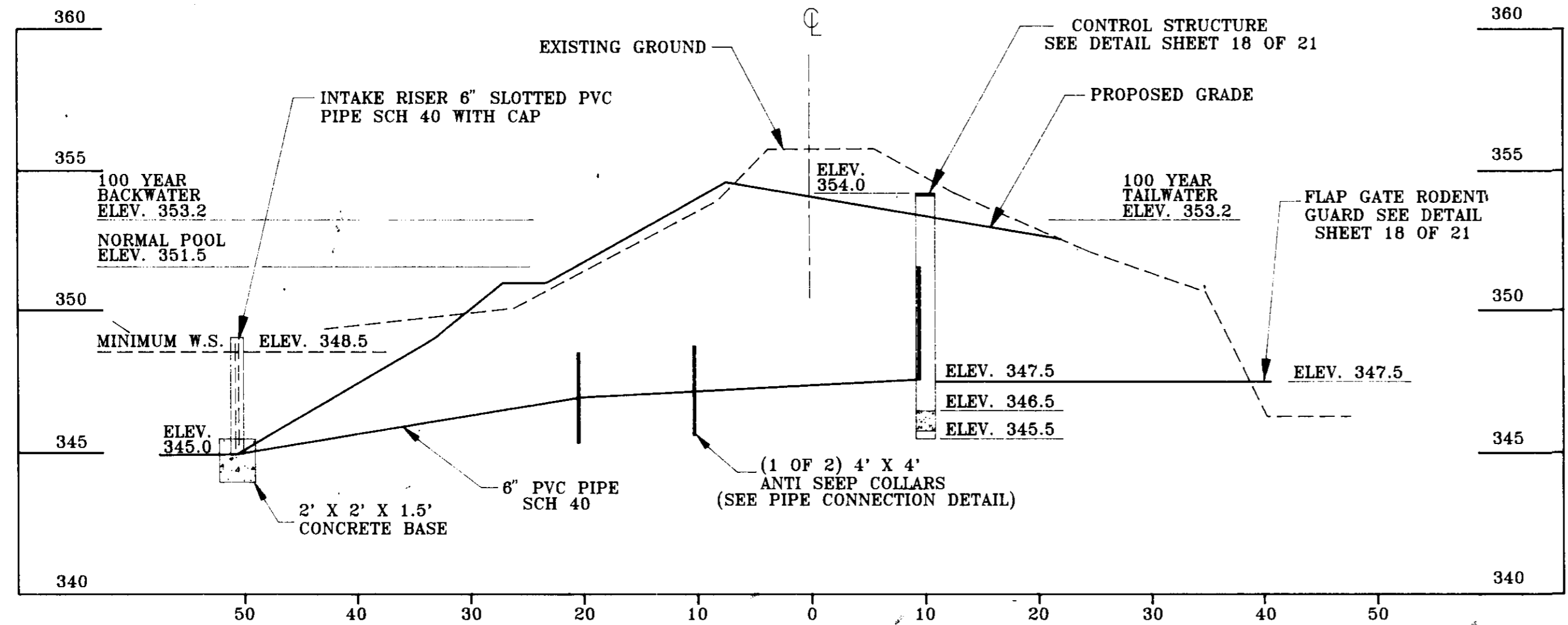
P-6 PROFILE OF THE SMALL POND'S SUPPLY PIPELINE
HORIZONTAL SCALE: 1" = 40' VERTICAL SCALE: 1" = 5'



P-7 PROFILE OF THE SMALL POND'S EXISTING DAM
HORIZONTAL SCALE: 1" = 40' VERTICAL SCALE: 1" = 4'



P-5 PROFILE OF THE SMALL POND'S STORM DRAIN OUTFALL AND FOREBAY
HORIZONTAL SCALE: 1" = 10' VERTICAL SCALE: 1" = 4'



P-8 PROFILE OF THE SMALL POND'S SURFACE ELEVATION CONTROL
HORIZONTAL SCALE: 1" = 10' VERTICAL SCALE: 1" = 4'

- 6" PVC INTAKE RISER TO BE CAPPED. CAP NOT SOLVENT WELDED.
- 6" PVC INTAKE RISER TO BE PERFORATED ABOVE CONCRETE BASE WITH 1" X 2" VERTICAL SLOTS, 4 PER LINEAR FOOT OF PIPE, MINIMUM OF 12."
- SOLVENT WELD ALL PIPE JOINTS, EXCEPT AS NOTED ABOVE.
- ANTI SEEP COLLARS TO BE SHEET METAL ATTACHED TO PVC PIPE OR PVC COUPLING WITH WELDED CONSTRUCTION.

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
HOWARD SOIL CONSERVATION DISTRICT
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS

REVISIONS MADE 7/22/94
PER HOWARD COUNTY COMMENTS

DEVELOPER'S CERTIFICATION
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 will 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: *Jeffrey A. Earp* Date: 7/27/94

DESIGNER'S CERTIFICATION
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 must provide the Howard Soil Conservation District with an "as-built" plan of the pond within 30 days of completion.

Signature of Designer: *L. Wesley Earp* Date: 7/27/94

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: *Robert W. Zehn* Date: 8/19/94
U.S. Soil Conservation District

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

Signature: *James J. Smith* Date: 9/1/94
Director, Department of Planning and Zoning

Signature: *Quinn J. Johnson* Date: 9/1/94
Chief, Division of Land Development & Research

Signature: *James M. Larson* Date: 8/19/94
Director, Department of Health

Signature: *James M. Larson* Date: 8/24/94
County Health Officer

EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
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HISTORIC ELLICOTT CITY, MARYLAND 21043
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ELLICOTT CITY, MARYLAND 21043
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SMALL POND PROFILES
FONT HILL ENVIRONMENTAL EDUCATION PARK
HOWARD COUNTY, MARYLAND

ASHTON WOODS EAST COLUMBIA LIBRARY ELLICOTT WOODS
90-WO-060 90-WO-066
88-WO-057 88-WO-404
90-WO-076 90-WO-075
90-WO-074 88-WO-057
89-2266-3 88-2776-3

U.S. ARMY CORPS OF ENGINEERS APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS: 88-174-1, 88-480-4, 88-2266-3, 89-6426-4

SIGNATURE OF U.S. ARMY CORPS OF ENGINEERS, BALTIMORE, MD. DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT STANDARDS & CERTIFICATION DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBERS: 88-WO-057, 90-WO-066, 88-WO-057, 90-WO-064, 90-WO-060

SIGNATURE OF STANDARDS/CERTIFICATION DIVISION DATE

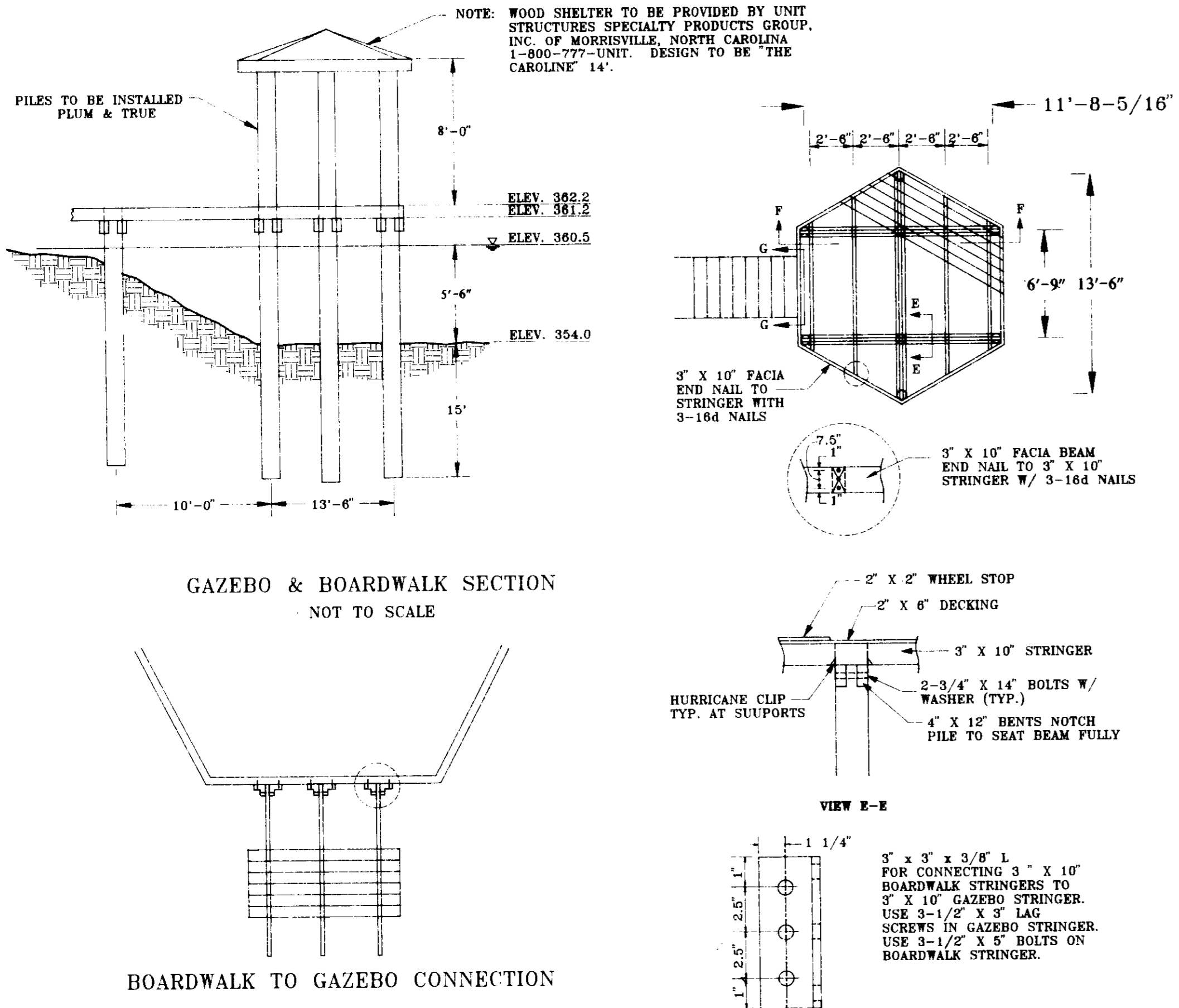
DEPARTMENT OF NATURAL RESOURCES NON-TIDAL WETLANDS DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER: 90-NT-076

SIGNATURE OF DEPARTMENT OF NATURAL RESOURCES DATE

DRAWN BY: S.J.R. SCALE: AS SHOWN
DESIGNED BY: W. EARP DATE: 4/94
CHECKED BY: W. EARP SHEET 17 OF 21

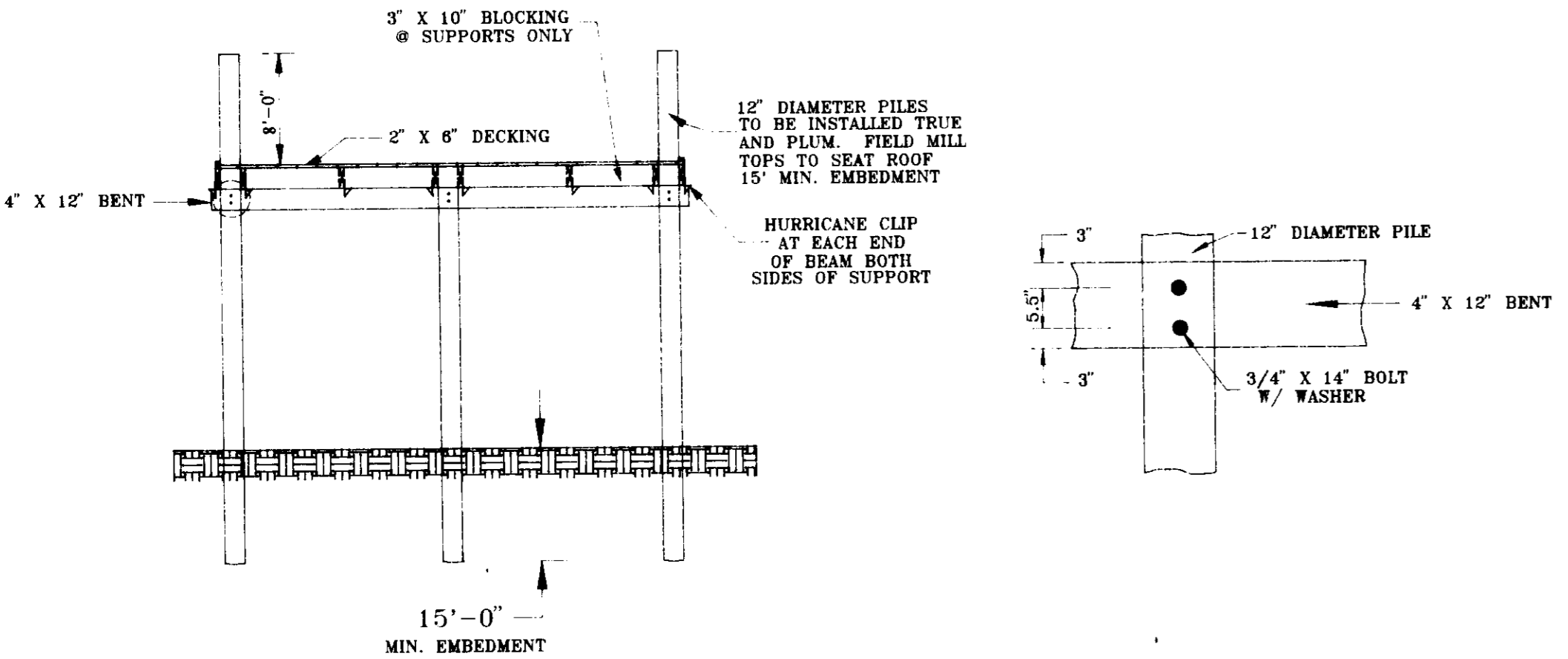
D-1 GAZEBO AND BOARDWALK DETAIL

NOT TO SCALE



GAZEBO & BOARDWALK SECTION
NOT TO SCALE

BOARDWALK TO GAZEBO CONNECTION



REVISIONS MADE 12/19/94 PER ENGINEER

GENERAL NOTES

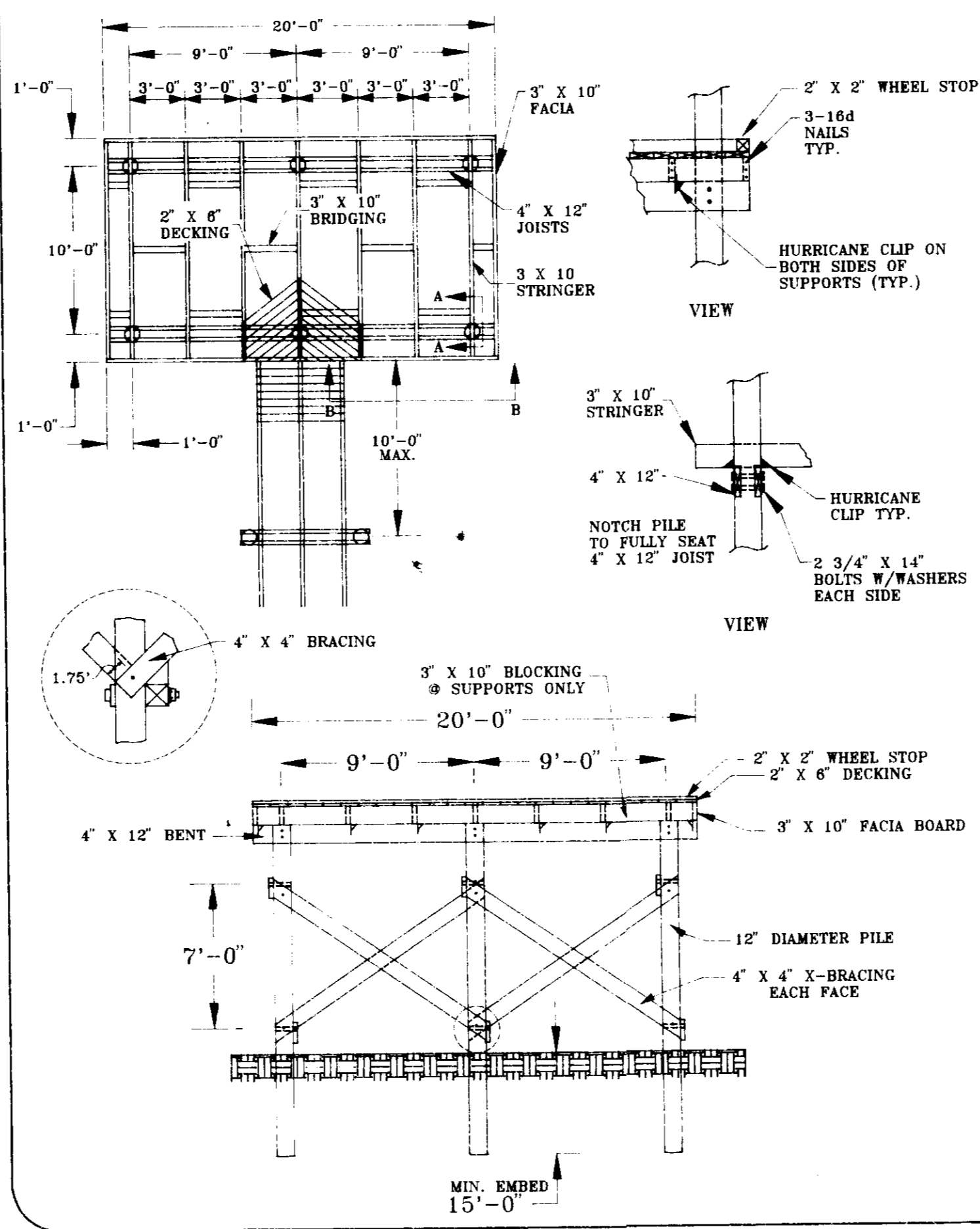
- DESIGN LOADS: DIST. LIVE LOAD = 100 PSF DEAD LOAD = 10 PSF
- 2 X 6 DECKING TO BE SOUTHERN PINE SELECT DECKING WITH A MODULUS OF ELASTICITY OF 1,600,000 AND AN ALLOWABLE BENDING STRESS OF 1,650 PSI AS GRADED BY THE SOUTHERN PINE INSPECTION BUREAU.
- 3 X 10 STRINGER TO BE SOUTHERN PINE NO. 1 DENSE WITH A MODULUS OF ELASTICITY OF 1,600,000 AND AN ALLOWABLE BENDING STRESS OF 1,550 PSI AS GRADED BY THE SOUTHERN PINE INSPECTION BUREAU.
- 6 X 6 AND 2 X 12 STRINGER SUPPORTS TO BE SOUTHERN PINE NO. 1 DENSE WITH A MODULUS OF ELASTICITY OF 1,600,000 AND AN ALLOWABLE BENDING STRESS OF 1,550 PSI AS GRADED BY THE SOUTHERN PINE INSPECTION BUREAU.
- AGGREGATE PLACED AS SUBBASE MATERIAL SHALL CONFORM TO REQUIREMENTS OF AASHTO M43, SIZE NUMBER 57. AGGREGATE SHALL BE PLACED AND COMPACTED IN 4" LIFTS.
- ALL CONCRETE TO BE 3000 PSI CONCRETE 8% ENTRAINED AIR TYPE IA OR IIA CEMENT 4" MAXIMUM SLUMP
- ALL 2' X 6 DECKING TO BE FASTENED WITH 2-16d GALVANIZED 5/16" NAILS PER STRINGER. 2' X 2 WHEEL STOPS TO BE FASTENED WITH 1-16d NAIL PER 2' X 6 DECKING CROSSED.
- 2' X 6 DECKING SHALL HAVE A MIN. 1/8" SPACE BETWEEN BOARDS AND SHALL BE INSTALLED AT 45° ANGLES TO STRINGERS ON OVERLOOK AND 60° ANGLES ON GAZEBO. DECKING SHALL BE SPICED AT CENTERLINE OF STRINGERS ONLY.
- ALL LUMBER, TIMBERS, AND PILES SHALL BE PRESSURE TREATED WITH CHROMIUM COPPER ARSENATE (CCA) TYPE C IN ACCORDANCE WITH THE AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA) STANDARD P5-90 AND A2-88. ALL LUMBER AND TIMBERS SHALL BE PRESSURE IMPREGNATED UNDER AWPA STANDARDS C1-90, C2-90, C14-90, AND C18-90 WHERE APPLICABLE. WHERE PRACTICAL PRESSURE IMPREGNATED UNDER AWPA STANDARDS C1-90, C2-90, C14-90, AND C18-90 WHERE APPLICABLE. ALL PILING SHALL BE PRESSURE IMPREGNATED UNDER AWPA STANDARDS C1-90, C3-90, C14-90, AND C18-90 WHERE APPLICABLE.
- LUMBER AND TIMBER MINIMUM RETENTION AND PENETRATIONS:

APPLICATION	RETENTION LBS OXIDE/CUFT	PENETRATION
ABOVE GROUND, SOIL CONTACT, FRESH WATER, SALT SPLASH	0.40	2.5" OR 85% OF SAPWOOD
BRACKISH * WATER	1.00	2.5" OR 85% OF SAPWOOD
SALT WATER	2.50	2.5" OR 85% OF SAPWOOD
- LUMBER AND TIMBER MINIMUM RETENTION AND PENETRATIONS:

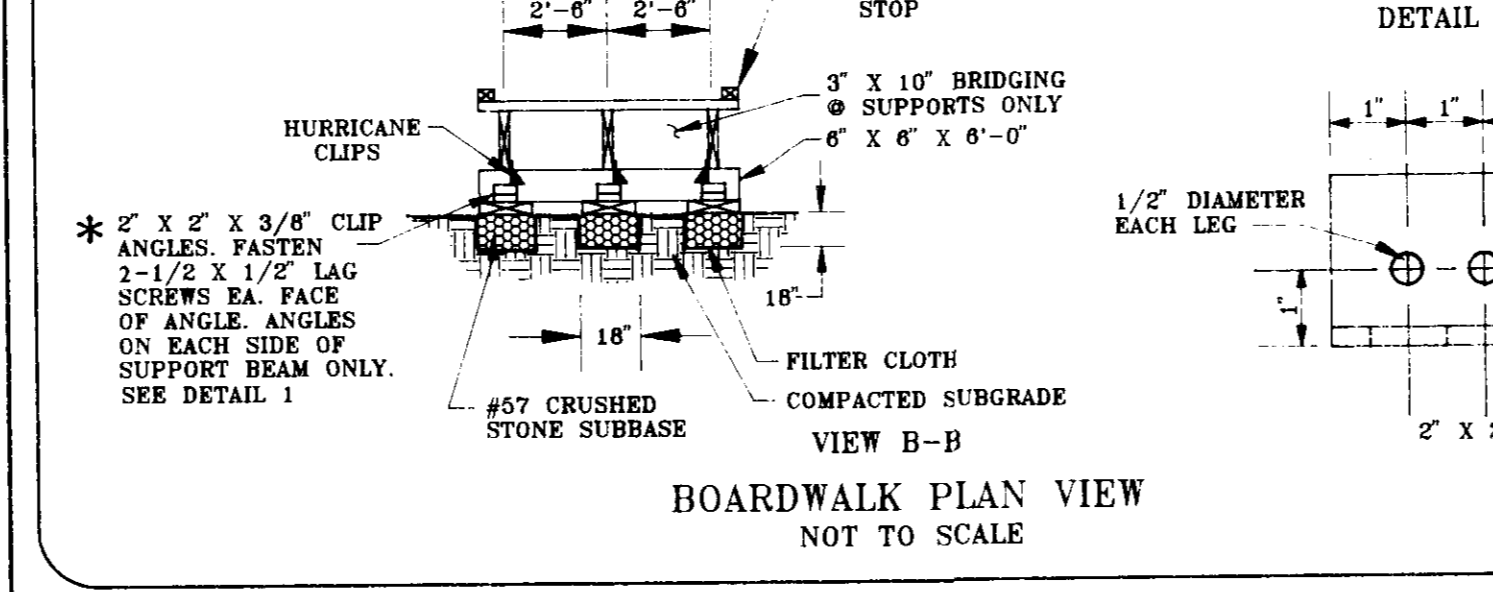
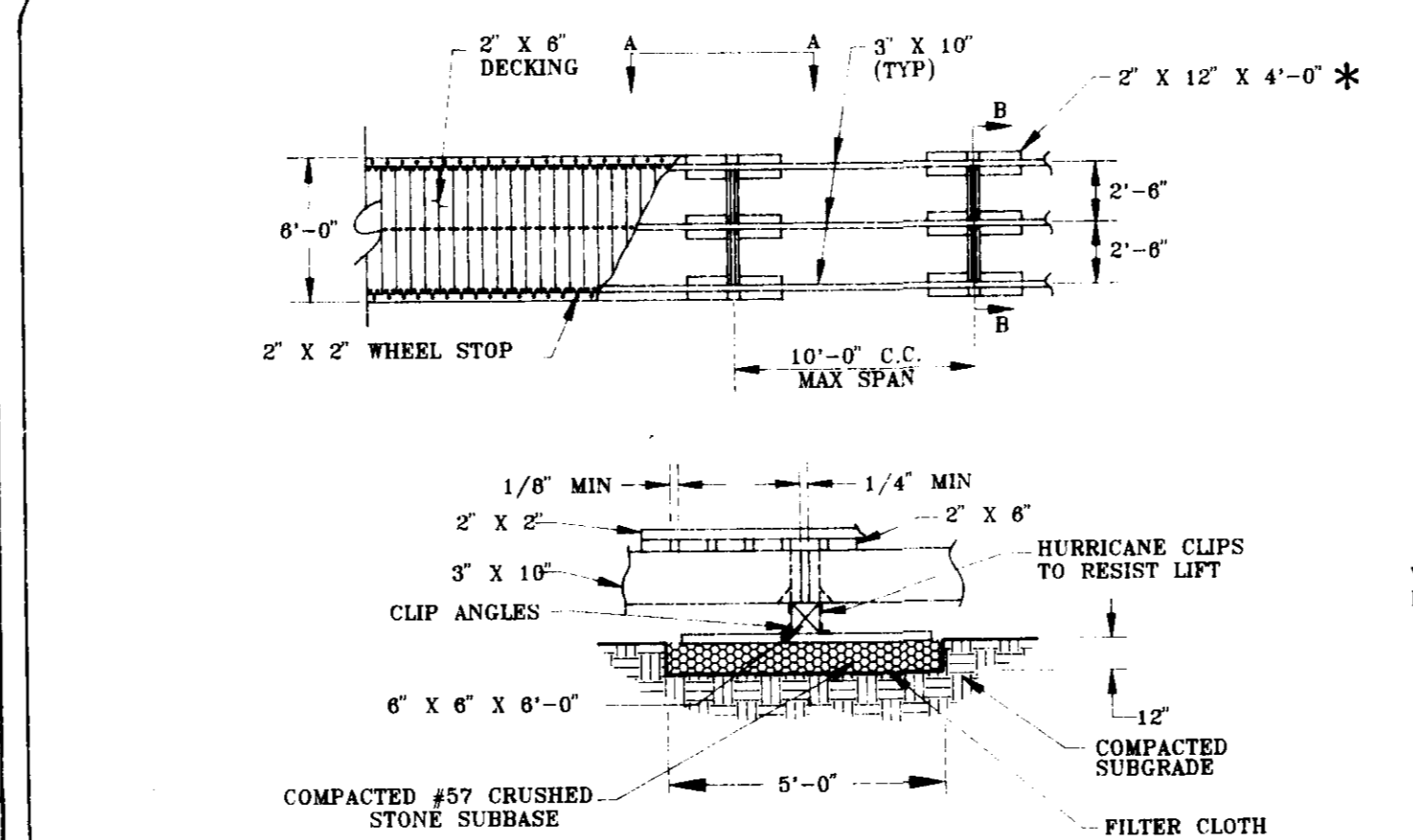
APPLICATION	RETENTION LBS OXIDE/CUFT	PENETRATION
LAND AND FRESH WATER	0.80	3.5" OR 90% OF SAPWOOD
BRACKISH * WATER	1.00	3.5" OR 90% OF SAPWOOD
SALT WATER	2.50	3.5" OR 90% OF SAPWOOD
- WOOD PILING
 - ALL PILING SHALL MEET THE REQUIREMENTS AS SET FORTH BY THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) UNDER THE PROVISIONS OF D25 (LATEST EDITION), STANDARD SPECIFICATIONS FOR ROUND TIMBER PILES.
 - ALL PILES SHALL BE DRIVEN BY APPROVED DROP HAMMER OR VIBRATORY HAMMER.
 - ANY AUGERING OR JETTING REQUIRED TO START PILES SHALL BE APPROVED BY OWNER AND/OR THE AGENCY GOVERNING THE WETLAND INSTALLATIONS.
 - OWNER RESERVES THE RIGHT TO REQUIRE PILE LOAD TESTING.

D-2 FISHING PIER DETAIL

NOT TO SCALE

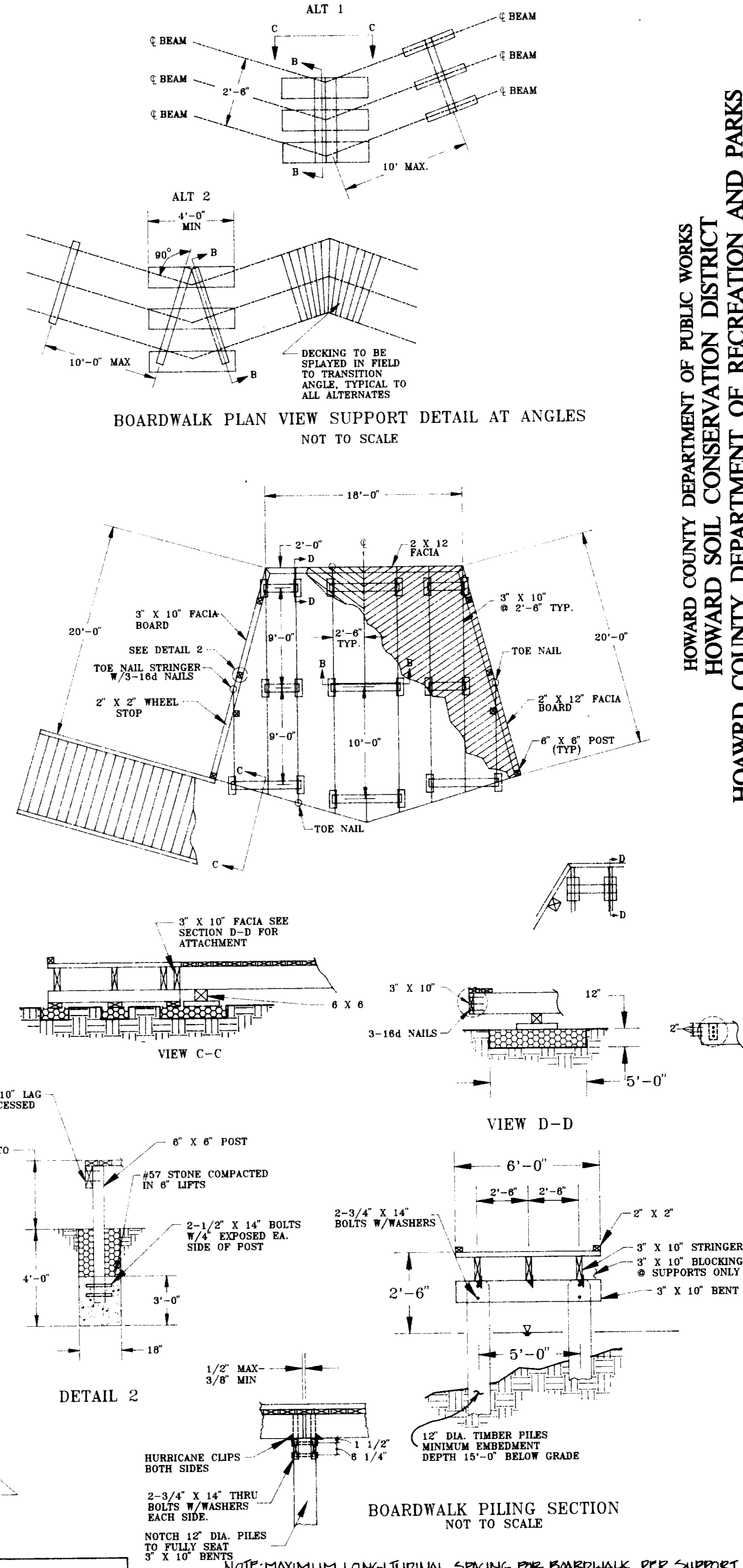


BOARDWALK PLAN VIEW SUPPORT DETAIL AT ANGLES
NOT TO SCALE



- ADDITIONALLY, THE FOLLOWING CONDITIONS SHALL BE MET:
 - WHEN NECESSARY, PRESSURE TREATMENT WILL CONFORM TO FEDERAL SPECIFICATIONS TT-W-536, TT-W-550, AND TT-W-571.
 - PRODUCERS OF PRESSURE TREATED MATERIALS MUST MAINTAIN AN ON-GOING QUALITY ASSURANCE PROGRAM, EITHER IN-HOUSE OR THROUGH A RECOGNIZED OUTSIDE INSPECTION AGENCY TO ENSURE CORRECT RETENTION AND PENETRATION REQUIREMENTS AND PROVIDE A CERTIFIED STATEMENT AS TO SUCH.
 - A TREATING CERTIFICATE SHALL BE PROVIDED BY THE TREATING FACILITY, SPECIFICALLY AS TO INVOICE NUMBER AND JOB, DESCRIBING SPECIES, GRADE, CHEMICAL TREATMENT, AND RETENTION.
 - FILL MATERIAL SHALL BE CLEAN GRANULAR FILL WITH A MINIMUM DRY WEIGHT OF 100 LBS/CUFT. IT SHALL NOT CONTAIN ANY ORGANIC MATTER, TRASH, FROZEN MATERIAL OR OTHER DELETERIOUS SUBSTANCES.
 - FILL BELOW TOP 1.5' TO BE COMPACTED TO 92% MAXIMUM DENSITY PER ASTM D1557.
 - TOP 1.5' OF FILL TO BE COMPACTED TO 95% MAXIMUM DENSITY PER ASTM D1557.
 - ADDITIONAL 2' X 12 BOARDS MAY BE ADDED TO LEVEL OR RAISE BOARDWALK TO MEET GRADE. NO MORE THAN 2 BOARDS MAY BE ADDED. LAG SCREWS FOR CLIP ANGLES MUST EXTEND 3/4" MINIMUM INTO BOARD CONTACTING GRADE. ADDITIONAL BOARDS MUST BE LAG SCREWED TO BOARD CONTACTING GRADE WITH 2 SCREWS AT EACH END OF ADDITIONAL BOARDS.
 - ALL NAILS, BOLTS, WASHERS, NUTS, AND SPIKES SHALL BE HOT DIP GALVANIZED. ALL BOLTS SHALL BE A-307.
 - NO DETAIL CHANGES SHALL BE MADE WITHOUT APPROVAL OF PROJECT ENGINEER

D-3 WETLAND BOARDWALK DETAIL



APPROVED FOR SOIL ORGANISMS SERVICES AND PUBLIC WORKS, DEPT. OF PUBLIC WORKS

James J. Shaw 8/19/94 DATE

John P. Brown 8/19/94 DATE

CHIEF, DIVISION OF PLANNING AND ZONING

APPROVED: DEPARTMENT OF PLANNING AND ZONING

James J. Shaw 8/19/94 DATE

John P. Brown 8/19/94 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT & RESEARCH

REVIEWED: HEALTH DEPARTMENT

John P. Brown 8/19/94 DATE

CHIEF, HEALTH DEPARTMENT

STATE OF MARYLAND
DEPARTMENT OF PUBLIC WORKS
REGISTERED PROFESSIONAL ENGINEER

PLAN APPROVAL STAMP

EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
838 FORREST STREET
HISTORIC ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX: (410) 750-7350

OWNER/DEVELOPER
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
10000 ROUTE 108
ELLICOTT CITY, MARYLAND 21043
(410) 313-7256

BOARDWALK DETAILS

FONT HILL ENVIRONMENTAL EDUCATION PARK

HOWARD COUNTY, MARYLAND

ASHTON WOODS EAST COLUMBIA LIBRARY ELLICOTT WOODS
88-WQ-006 90-WQ-006
88-WQ-077 91-WQ-660
88-1967-4 91-NT-079
88-1967-4 88-1967-4

GOVERNORS RUN WATERMARK CONDOMINIUMS
88-WQ-057 88-176-3
90-WQ-024 88-266-3

U.S. ARMY CORPS OF ENGINEERS APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER: 88-1967-4, 91-626-4, 88-480-4, 88-266-3, 88-276-3

SIGNATURE OF U.S. ARMY CORPS OF ENGINEERS, BALTIMORE, MD. DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT STANDARDS & CERTIFICATION DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER: 88-WQ-077, 91-WQ-660, 90-WQ-006, 90-WQ-034, 88-WQ-057

SIGNATURE OF STANDARDS/CERTIFICATION DIVISION DATE

DEPARTMENT OF NATURAL RESOURCES NON-TIDAL WETLANDS DIVISION APPROVAL OF PLANS & SPECIFICATIONS FOR COMPLIANCE WITH PERMIT NUMBER: 91-NT-079

SIGNATURE OF DEPARTMENT OF NATURAL RESOURCES DATE

DRAWN BY: SJR SCALE: N.T.S.
DESIGNED BY: SG DATE: 4/94
CHECKED BY: SG SHEET 20 OF 21

