

DRAWING SHEET

| NO. | NO. | SHEET TITLE |
|------|-----|--|
| A-01 | 2. | GENERAL NOTES |
| A-02 | 3. | PROJECT LOCATION PLAN |
| B-01 | 4. | EXISTING CONDITIONS AND WETLAND DELINEATION SITE PLAN KEY |
| B-02 | 5. | EXISTING CONDITIONS AND WETLAND DELINEATION PLAN AREA 01 |
| B-03 | 6. | EXISTING CONDITIONS AND WETLAND DELINEATION PLAN AREA 02 |
| B-04 | 7. | EXISTING CONDITIONS AND WETLAND DELINEATION PLAN AREA 03 |
| C-01 | 8. | PROPOSED SEDIMENT CONTROL AND DREDGING PLAN KEY |
| C-02 | 9. | PROPOSED SEDIMENT CONTROL AND DREDGING PLAN AREA 01 |
| C-03 | 10. | PROPOSED SEDIMENT CONTROL AND DREDGING PLAN AREA 02 |
| C-04 | 11. | PROPOSED SEDIMENT CONTROL AND DREDGING PLAN AREA 03 |
| C-05 | 12. | AREA 01 - CROSS-SECTIONS (1 OF 2) |
| C-06 | 13. | AREA 01 - CROSS-SECTIONS (2 OF 2) |
| C-07 | 14. | AREA 02 - CROSS-SECTIONS |
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| D-02 | 18. | PIPELINE ROUTING |
| E-01 | 19. | STAGING AREA |
| F-01 | 20. | WETLAND CREATION AREAS |
| F-02 | 21. | WETLAND CREATION AREAS |
| F-03 | 22. | PLANTING PLAN |
| F-04 | 23. | PLANTING PLAN |
| F-05 | 24. | PLANTING DETAILS AND NOTES |
| G-01 | 25. | SECTION AND DETAILS |
| G-02 | 26. | TYPICAL DETAILS |
| H-01 | 27. | ISTHMUS ACCESS ROAD - PLAN & PROFILE |
| H-02 | 28. | ISTHMUS ACCESS ROAD - PLAN & PROFILE |
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| H-04 | 30. | ISTHMUS ACCESS ROAD - PLAN & PROFILE |
| I-01 | 31. | TEMPORARY EROSION & SEDIMENT CONTROL PLAN - INITIAL PHASE STAGING AREA |
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| I-03 | 33. | TEMPORARY EROSION & SEDIMENT CONTROL PLAN - ISTHMUS ACCESS ROAD INITIAL AND FINAL DESIGN |
| I-04 | 34. | TEMPORARY EROSION & SEDIMENT CONTROL PLAN - ISTHMUS ACCESS ROAD INITIAL AND FINAL DESIGN |
| I-05 | 35. | TEMPORARY EROSION & SEDIMENT CONTROL - DETAILS & NOTES |
| I-06 | 36. | TEMPORARY EROSION & SEDIMENT CONTROL - DETAILS & NOTES |
| I-07 | 37. | TEMPORARY EROSION & SEDIMENT CONTROL - DETAILS & NOTES |

| | | |
|------|-----|--|
| J-01 | 38. | DAM REPAIR - TITLE SHEET |
| J-02 | 39. | DAM REPAIR - GENERAL NOTES |
| J-03 | 40. | DAM REPAIR - EXISTING CONDITION PLAN |
| J-04 | 41. | DAM REPAIR - PROPOSED SITE PLAN |
| J-05 | 42. | DAM REPAIR - SECTIONS AND DETAILS |
| J-06 | 43. | DAM REPAIR - TEMPORARY EROSION & SEDIMENT CONTROL PLAN - INITIAL PHASE |
| J-07 | 44. | DAM REPAIR - TEMPORARY EROSION & SEDIMENT CONTROL PLAN - FINAL PHASE |
| J-08 | 45. | DAM REPAIR - TEMPORARY EROSION & SEDIMENT CONTROL - DETAILS & NOTES |
| J-09 | 46. | DAM REPAIR - SOIL BORING LOGS |

| PERMIT INFORMATION CHART | | | | | |
|--------------------------|----------------------|--------------|-----------|----------------|--------|
| Subdivision Name | COLUMBIA TOWN CENTER | Section/Area | SECTION 1 | Lot/Parcel No. | LOT 14 |
| Plot # or L/F | 23 | Grid # | 20/2 | Zoning | NT |
| Phase | 23 | Tax Map No. | 30 & 36 | Elect. Distr. | A 5 |
| Flat Book | 15 | Census Tract | 6054.02 | | 605602 |
| Folio | 19 & 20 | Water Code | | Sewer Code | |

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division
 Chief, Division of Land Development
 Director, DEP

12/23/09
 Date
 1/27/10
 Date
 1/7/10
 Date

Maryland Department of the Environment
 Water Management Administration
 Dam Safety Division
 V. P. Dalal
 Regulatory & Compliance Engineer

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 29997, EXPIRATION DATE: 01-14-2010

THIS PLAN SET HAS BEEN PREPARED BY:

HDR

HDR Engineering, Inc.
 6700 LAKE WRIGHT DRIVE
 SUITE 500
 NORFOLK, VIRGINIA 23502
 757-222-1800

PLANS HAVE BEEN DESIGNED UNDER MY SUPERVISION

PIETER DAHMEN, PE
 HDR ENGINEERING INC.

STATE OF MARYLAND
 PROFESSIONAL ENGINEER
 11-24-2009

COLUMBIA ASSOCIATION
 10221 WINCOPIN CIRCLE #100
 COLUMBIA, MD 21044
 (410)-381-2947

COLUMBIA ASSOCIATION
 TOWN CENTER
 MINOR GRADING IN SUPPORT OF
 LAKE KITTAMAQUUNDI RESTORATION
 ELECTION DISTRICT 5, HOWARD COUNTY MD.
 TAX MAP 30 AND 36
 SCALE AS SHOWN
 JUNE 18, 2009

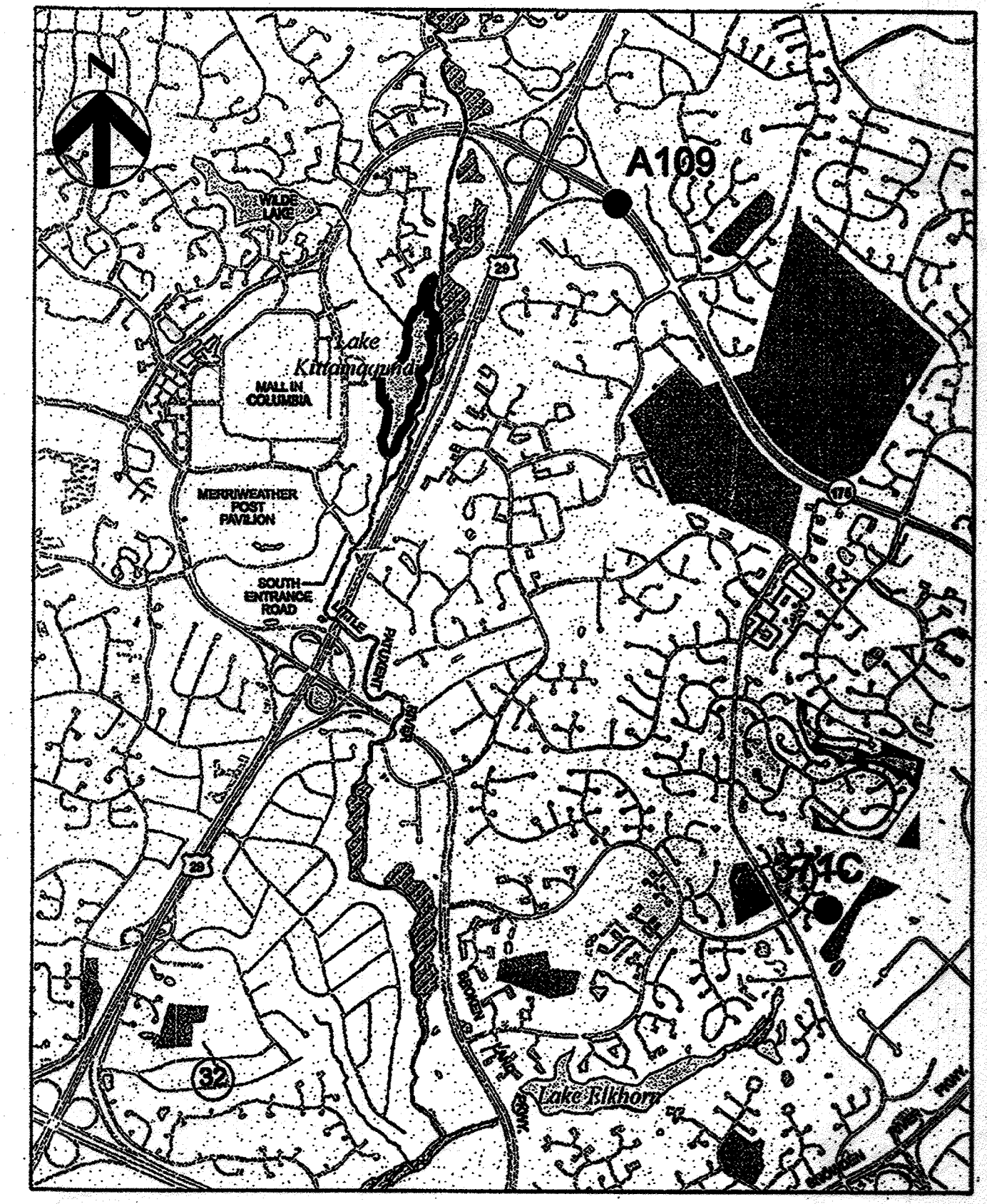
DRAWING SHEET 1 OF 62

SDP-08-108

Lake Kittamaquundi Restoration Project Columbia, Maryland

Columbia Association Construction Services Project No. 040107DK

CERTIFICATION FOR REVISION ONLY
 PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND
 LICENSE NO. 54378
 EXPIRATION DATE: 5/14/15



LOCATION PLAN
 NTS

| SITE ANALYSIS DATA CHART | | | |
|---|------------|---------|-----------------|
| a. TOTAL PROJECT AREA | | | |
| LAKE | 28.3 ACRES | 1232748 | FT ² |
| STAGING AREA | 106 ACRES | 46153 | FT ² |
| ISTHMUS | 0.66 ACRES | 28892 | FT ² |
| b. AREA OF PLAN SUBMISSION - SEE ITEM a | | | |
| c. LIMIT OF DISTURBED AREA | | | |
| LAKE | 22.3 ACRES | 97074 | FT ² |
| STAGING AREA | 193 ACRES | 84251 | FT ² |
| ISTHMUS | 1.7 ACRES | 5085 | FT ² |
| d. PRESENT ZONING NT | | | |
| e. NA TEMPORARY MAINTENANCE EMPLOYEES | | | |

| | | |
|------|-----|---|
| K-01 | 47. | MULTIUSE TRAIL - COVER SHEET |
| K-02 | 48. | MULTIUSE TRAIL - KEY SHEET |
| K-03 | 49. | MULTIUSE TRAIL - DESIGN PLANS |
| K-04 | 50. | MULTIUSE TRAIL - DESIGN PLANS |
| K-05 | 51. | MULTIUSE TRAIL - DESIGN PLANS |
| K-06 | 52. | MULTIUSE TRAIL - DESIGN PLANS |
| K-07 | 53. | MULTIUSE TRAIL - DESIGN PLANS |
| K-08 | 54. | MULTIUSE TRAIL - CROSS SECTIONS & DETAILS |
| K-09 | 55. | MULTIUSE TRAIL - BOARDWALK DETAILS |
| K-10 | 56. | MULTIUSE TRAIL - BOARDWALK DETAILS |
| K-11 | 57. | MULTIUSE TRAIL - EROSION & SEDIMENT CONTROL PLAN |
| K-12 | 58. | MULTIUSE TRAIL - EROSION & SEDIMENT CONTROL PLAN |
| K-13 | 59. | MULTIUSE TRAIL - EROSION & SEDIMENT CONTROL NOTES & DETAILS |

60 SITE DEVELOPMENT PLAN - BANDSHELL
 61 SEDIMENT AND EROSION CONTROL - BANDSHELL
 62 LANDSCAPE PLAN - BANDSHELL

| REVISIONS | | | |
|-----------|----------|---|----|
| NO. | DATE | ITEM | BY |
| 3 | 04/21/14 | SHEETS 47 TO 59 TO BE ADDED TO PLAN SET TO INCLUDE TRAIL WORK | MB |
| | | SHEET 3 OF 59: PLAN VIEW REVISED TO SHOW PROPOSED CONSTRUCTION ACCESS | |
| | | SHEET 4 OF 59: PLAN VIEW REVISED TO SHOW EXISTING PATHS TO BE PAVED | |

1 PATH WIDENING REDLINE REVISION IS SUBJECT TO WAIVER OF SUBSECTIONS 16.115(c)(2) AND 16.116(a)(2)(iii) APPROVED ON NOVEMBER 8, 2012.

| REVISIONS | | | |
|-----------|----------|--|----|
| NO. | DATE | ITEM | BY |
| 2 | 01/18/13 | SHEETS 38 TO 46 TO BE ADDED TO PLAN SET TO INCLUDE DAM REPAIR | SB |
| | | SHEET 4 OF 46: PLAN VIEW REVISED TO SHOW DAM SPILLWAY STRUCTURE TO BE REPAIRED | |

| REVISIONS | | | |
|-----------|----------|--|----|
| NO. | DATE | ITEM | BY |
| 1 | 12/06/12 | SHEET 4 OF 37: PLAN VIEW REVISED TO SHOW EXISTING PAVED PATH TO BE WIDENED TO 10 FT WIDE | SB |

3 TRAIL PAVING REDLINE REVISION IS SUBJECT TO CONDITIONS OF APPROVAL OF WAIVER PETITION WP-14-079 APPROVED ON FEBRUARY 18, 2014.

HOWARD COUNTY
GENERAL NOTES:

1. All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications if applicable.
2. The contractor shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 313-1880 24-hours prior to the start of work.
3. The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work being done.
4. Traffic control devices, markings and signing shall be in accordance with the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD). All street and regulatory signs shall be in place prior to the placement of any asphalt.
5. Street light placement and the type of fixture and pole shall be in accordance with the Howard County Design Manual, Volume III (1993) and as modified by "Guidelines for Street Lights in Residential Developments (June 1993)". A minimum spacing of 20' shall be maintained between any streetlight and any tree.
6. All sign posts used for traffic control signs installed in the County right-of-way shall be mounted on a 2" galvanized steel perforated square tube post (1/4 gauge) inserted into a 2-1/2" galvanized steel perforated square tube sleeve (1/2 gauge) - 3' long. A galvanized steel pole cap shall be mounted on top of each post.
7. All plan dimensions are to face of curb unless otherwise noted.
8. The existing topography is taken from aerial survey with (maximum two foot) contour intervals prepared by Mercado Consultants Inc. dated 5-22-06.
9. The coordinates shown hereon are based upon the Howard County Geodetic Control, which is based upon the Maryland State Plane Coordinate System, Howard County Monument Nos. A109, 371C and "Harris AZ Mark" were used for this project.
10. No permanent increases in impervious area.
11. Existing utilities are based on GIS mapping.
12. No floodplain study was prepared for this project.
13. Project background information (unless included in title block):
 - Hydraulically dredging the upper half of the lake to its original depths.
 - Pumping the dredged material to a temporary staging area on the South Entrance Road for mechanical dewatering.
 - Trucking dewatered material to an off-site licensed placement facility.
 - Constructing a peninsula and wetlands in the upper portion of the lake to create a Forebay.
 - Install access road on isthmus with turf reinforced matting and placement of riprap at existing overflow areas on the isthmus to prevent further erosion.
 - Providing imbricated riprap for erosion protection at select spots on the right bank of the Little Patuxent River.
 - Restoration of all disturbed areas, including removal of gravel & paving at the staging area.
14. No grading, removal of vegetative cover or trees, paving or new structures shall be permitted outside the limits of disturbance in wetlands, streams, or their associated buffers, forest conservation easements, or 100-year floodplain without DPZ approval.
15. This subject property is zoned NT per the February 2, 2004 Comprehensive Zoning Plan and per the "Camp Life Zoning Amendments" effective July 28, 2006.
16. This project is exempt from the requirements of Section 16J24 of the Howard County Code for Landscaping since disturbance resulting from project activities is temporary and no permanent structures are proposed.
17. This project is exempt from the requirements of Section 16J200 of the Howard County Code for Forest Conservation since it is part of a Planned Unit Development which had preliminary development plan approval and 50% or more of the land was recorded and substantially developed before December 31, 1992.
18. The Contractor shall be responsible for repairs to property damage caused by the Contractor.
19. Project is subject to approval by the U.S. Army Corps of Engineers, Baltimore District, the MDE Nontidal Wetlands and Waterways Division, and the MDE Dam Safety Division. Copies of the applicable permits or authorizations shall be submitted to the DPZ, Division of Land Development. MDE permit tracking number is 200863535.
20. The Contractor shall comply with all applicable Federal, State and Local Laws and Regulations including project permits. Effluent leaving the site shall not exceed Maryland turbidity limits of 150 NTU at any time or 50 NTU as a monthly average per COMAR 26.08.02.
21. No wetland areas landward of the ordinary high water are disturbed by the project. Wetlands within the lake (mainly nonpersistent emergent and lacustrine unconsolidated bottom wetlands) are subject to disturbance from project activity, refer to JPA 2008-63535.M02.
22. WP-17-110 to allow the installation of five Poster Tree art sculptures within Kennedy Gardens adjacent to Lake Kittamaquundi was approved on May 16, 2017, subject to these conditions:
 - All Grading and clearing shall be minimized to the extent required to install five proposed tree sculptures. Any disturbed areas must be returned to the existing grade, and stabilized as appropriate.
 - The petitioner shall obtain state and federal authorization of regulated activities, if applicable.
 - The petitioner shall obtain all required permits from the Howard County Department of Inspections, Licenses and Permits.
 - Include the alternative compliance request number, description, and decision on all associated plans and permits.

HOWARD SOIL CONSERVATION DISTRICT
STANDARD SEDIMENT CONTROL NOTES

1. A minimum of 24 hours notice must be given to the Howard County Department of Inspection, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).
2. 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.
3. Following initial soil disturbance or re-disturbance, 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.
4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. I, Chapter 12 of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 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.
6. 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.
7. Site Analysis: Staging Area
Total Area of Site 1.06 Acres
Area Disturbed 1.91 Acres
Area to be roofed or paved 0.00 Acres
Area to be vegetatively stabilized .042 Acres
Total Cut 11.09 Cu.Yds.
Total Fill 11.09 Cu.Yds.
Total Dredging Values per 2006 Bathymetric Survey Cu.Yds.
Offsite waste/borrow area location: Site with an approved sediment control plan and active permit, as approved by the Inspector and Howard SCD.
- Site Analysis: Isthmus Area
Total Area of Site 0.66 Acres
Area Disturbed 1.91 Acres
Area to be roofed or paved 0.00 Acres
Area to be vegetatively stabilized 0.85 Acres
Total Cut 254 Cu.Yds.
Total Fill 252 Cu.Yds.
Offsite waste/borrow area location: On Site
8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. 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.
11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each work day, whichever is shorter.

HOWARD SOIL CONSERVATION DISTRICT
PERMANENT SEEDING NOTES:

- Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.
- Seedbed Preparation: Loosen upper three inches of soil by raking, disk or other acceptable means before seeding, if not previously loosened.
- Soil Amendments: In lieu of soil test recommendations, use one of the following schedules:
1. Preferred - Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq.ft.) and 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq.ft.) before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs/acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq.ft.)
 2. Acceptable - Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq.ft.) and 1000 lbs/acre 10-10-10 fertilizer (23 lbs/1000 sq.ft.) before seeding. Harrow or disk into upper three inches of soil.
- Seeding - For the periods March 1 - April 30, and August 1 - October 15, seed with 60 lbs/acre (14 lbs/1000 sq.ft.) of Kentucky 31 Tall Fescue. For the period May 1 - July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs/acre (0.5 lbs/1000 sq.ft.) of weeping lovegrass. During the period of October 15 - February 28, protect site by:
- Option 1 - Two tons per acre of well anchored straw mulch and seed as soon as possible in the spring.
Option 2 - Use sod.
Option 3 - Seed with 60 lbs/acre Kentucky 30 Tall Fescue and mulch with 2 tons/acre well anchored straw.
- Mulching - Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000 sq.ft.) of unrattled small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq.ft.) of emulsified asphalt on flat areas. On slope 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq.ft.) for anchoring.
- Maintenance - Inspect all seeding areas and make needed repairs, replacements and reseeds.

TEMPORARY SEEDING NOTES:

- Apply to graded or cleared areas likely to be re-disturbed where a short-term vegetative cover is needed.
- Seedbed preparation: - Loosen upper three inches of soil by raking, disk or other acceptable means before seeding, if not previously loosened.
- Soil Amendments: - Apply 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq.ft.).
- Seeding: - For periods March 1 - April 30 and from August 15 - October 15, seed with 2-1/2 bushel per acre of annual rye (32 lbs/1000 sq.ft.). For the period May 1 - August 14, seed with 3 lbs/acre of weeping lovegrass (0.7 lbs/1000 sq.ft.). For the period November 15 - February 28, protect site by applying 2 tons/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/acre (70 to 90 lbs/1000 sq.ft.) of unrattled weed-free, small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal. per acre (5 gal/1000 sq.ft.) of emulsified asphalt on flat areas. On slope 8 ft. or higher, use 348 gal. per acre (8 gal/1000 sq.ft.) for anchoring.
- Refer to the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for additional rates and methods not covered.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division *[Signature]* 12/23/09
Date

Chief, Division of Land Development *[Signature]* 1/2/10
Date

Director, DEP *[Signature]* 1/2/10
Date

Maryland Department of the Environment
MDE Water Management Administration
Dam Safety Division
V.P. Dalal 11/1/09
V.P. Dalal
Regulatory & Compliance Engineer

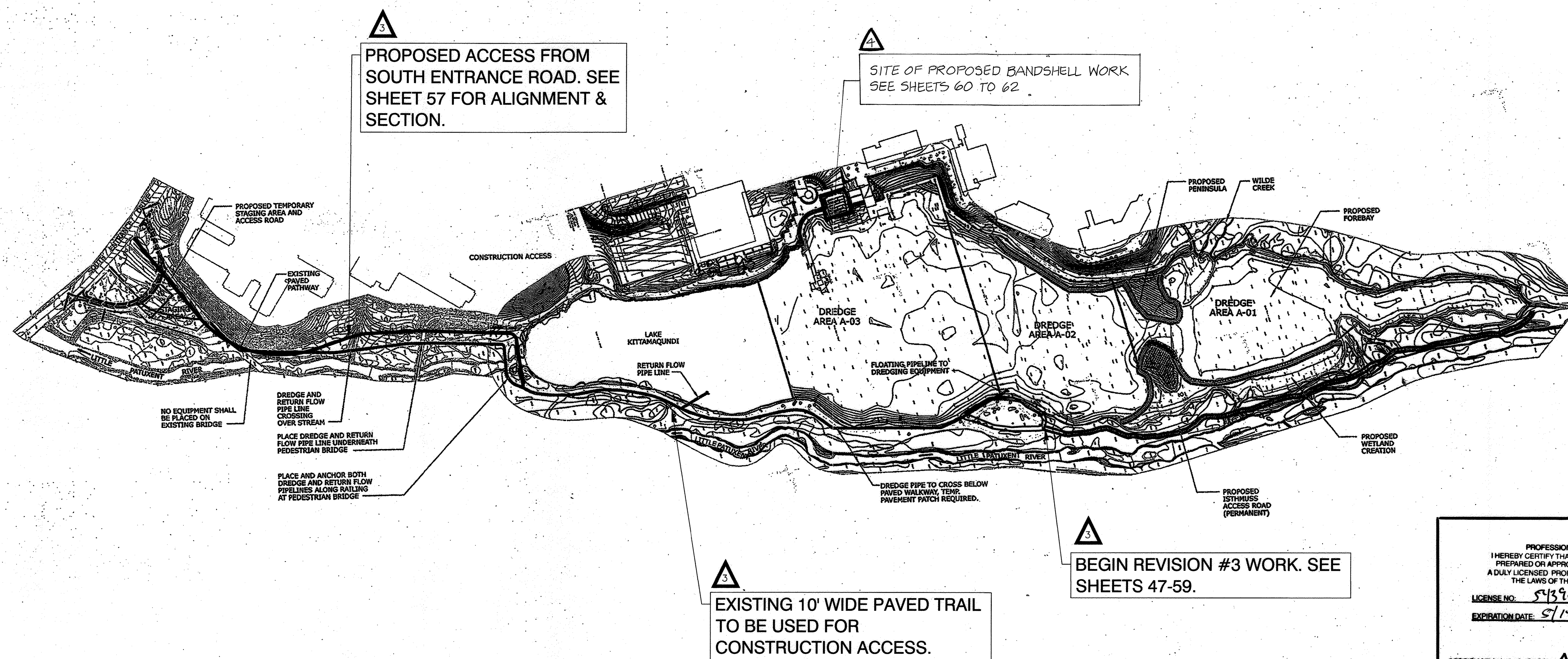
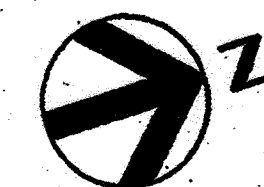
THIS PLAN SET HAS BEEN PREPARED BY:
HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
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[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

| | | |
|--|-----|--|
| 2/24/17 | 1 | RECONSTRUCTION OF BELL TREE/NEW POSTER TREES |
| DATE | NO. | REVISION DESCRIPTION |
| GENERAL NOTES | | |
| COLUMBIA ASSOCIATION TOWN CENTER | | |
| MINOR GRADING IN SUPPORT OF LAKE KITTAMAQUUNDI RESTORATION ELECTION DISTRICT 5, HOWARD COUNTY MD. TAX MAP 30 AND 36 | | |
| SCALE AS SHOWN JUNE 18, 2009 | | |
| DRAWING A-01, SHEET 2 OF 62 | | |
| SDP-08-108 | | |



PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE
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THE LAWS OF THE STATE OF MARYLAND

LICENSE NO. 54390
EXPIRATION DATE: 5/1/10

CERTIFICATION FOR REVISION 3 ONLY

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division

[Signature]
Chief, Division of Land Development

[Signature]
Director, DEP

12/23/09
Date

1/07/10
Date

1/2/10
Date

Maryland Department of the Environment
MDE Water Management Administration
Dam Safety Division

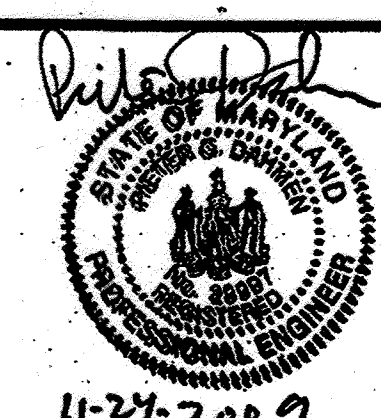
V.P. Dalal 12/1/09
Vistay P. Dalal
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0 200 400
SCALE IN FEET

PROJECT LOCATION PLAN

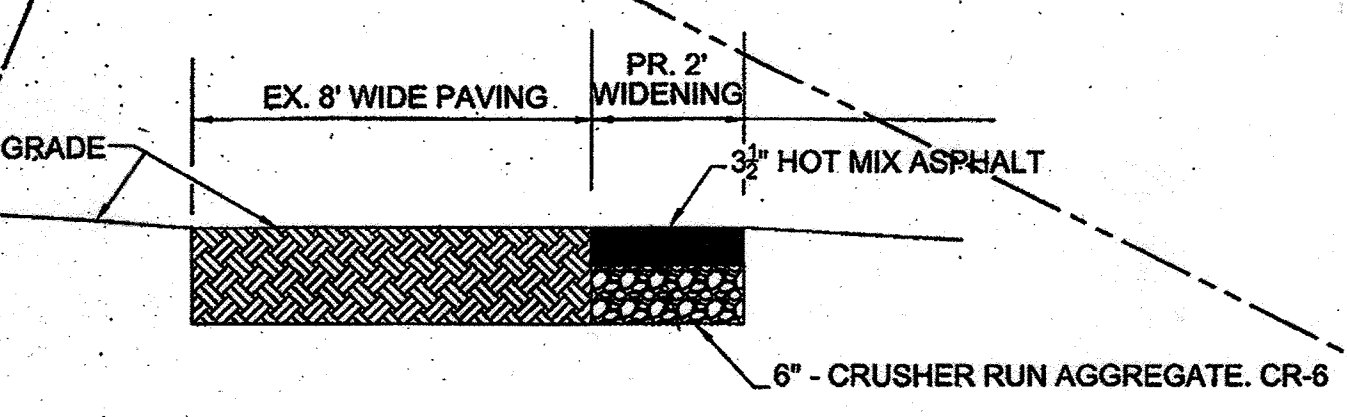
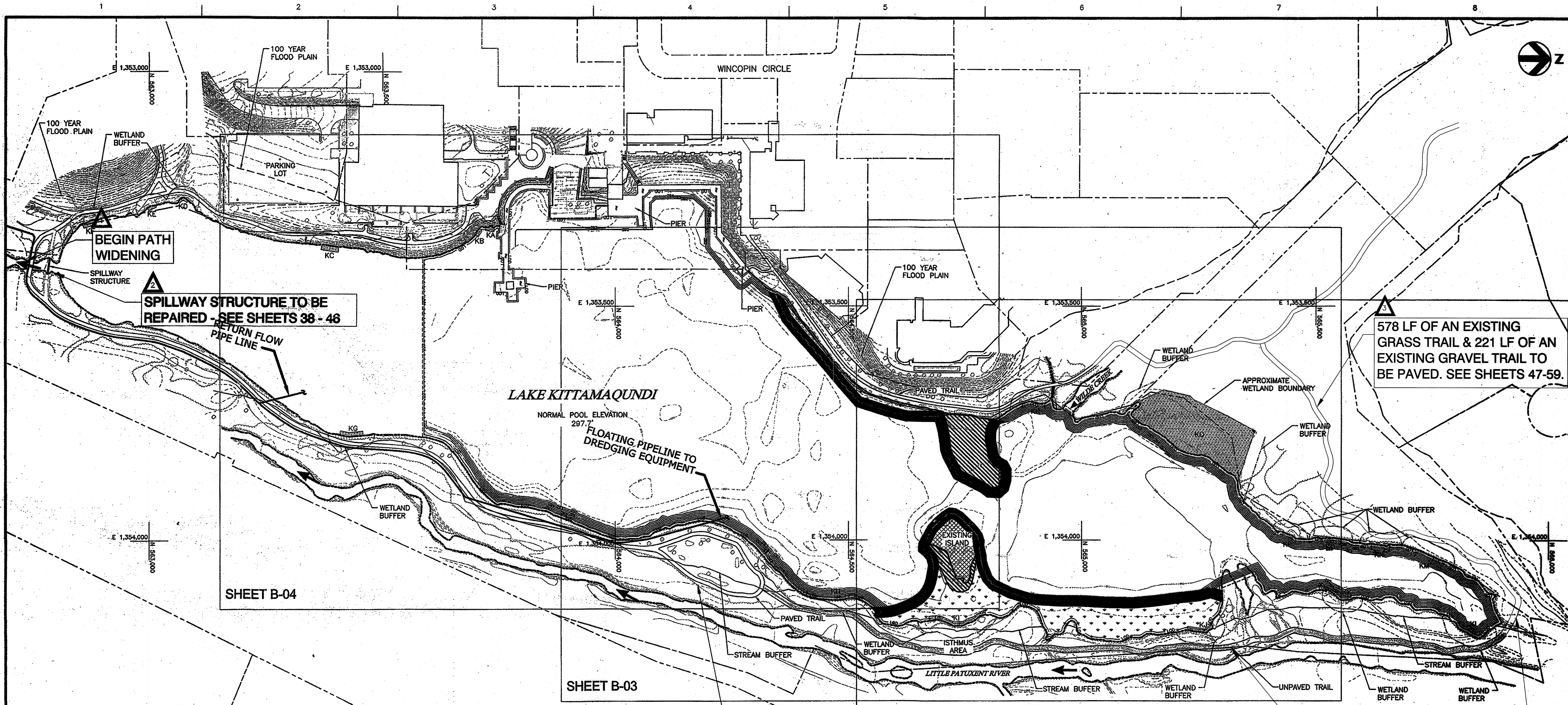
**COLUMBIA ASSOCIATION
TOWN CENTER**

MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUUNDI RESTORATION
ELECTION DISTRICT #, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING A-02, SHEET 3 OF 62

SDP-08-108



NOTE: STORMWATER MANAGEMENT SHALL BE ADDRESSED WITH DISCONNECTION OF NON-ROOFTOP RUNOFF CREDIT

2,150 LF OF EXISTING 8-FT WIDE, PAVED PATH TO BE EXPANDED TO 10-FT WIDE AND REPAVED ACCORDING TO THE TYPICAL PATH WIDENING SECTION THIS SHEET.

220 LF PROPOSED BOARDWALK. SEE SHEETS 47-59.

1,571 LF OF AN EXISTING GRAVEL TRAIL TO BE PAVED. SEE SHEETS 47-59.

LEGEND:

- EXISTING CONTOURS
- EXISTING BATHYMETRY
- DIRECTION OF WATER FLOW
- EDGE OF WATER
- BATHYMETRIC SURVEY LIMITS
- EXISTING WETLANDS
- STREAM BUFFER
- WETLAND BUFFER
- PARCEL LINE
- 100 YEAR FLOOD PLAIN
- 15%-25% SLOPES
- SLOPES > 25%

NOTE:
BATHYMETRIC SURVEY OF LAKE BOTTOM, COMPLETED ON 5/22/2006, IS SUBJECT TO CHANGE.

**LAKE KITTAMAQUUNDI RESTORATION PROJECT
EXISTING CONDITIONS AND WETLAND
DELINEATION SITE PLAN KEY**

**COLUMBIA ASSOCIATION
TOWN CENTER**

MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUUNDI RESTORATION
ELECTION DISTRICT 5, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING B-01, SHEET 4 OF 62

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division
Chief, Division of Land Development
Director, DEP.

Date 12/23/09
Date 1/02/10
Date 1/2/10

Maryland Department of the Environment
Water Management Administration
Dam Safety Division

V.P. Dalal 12/1/09
Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY:

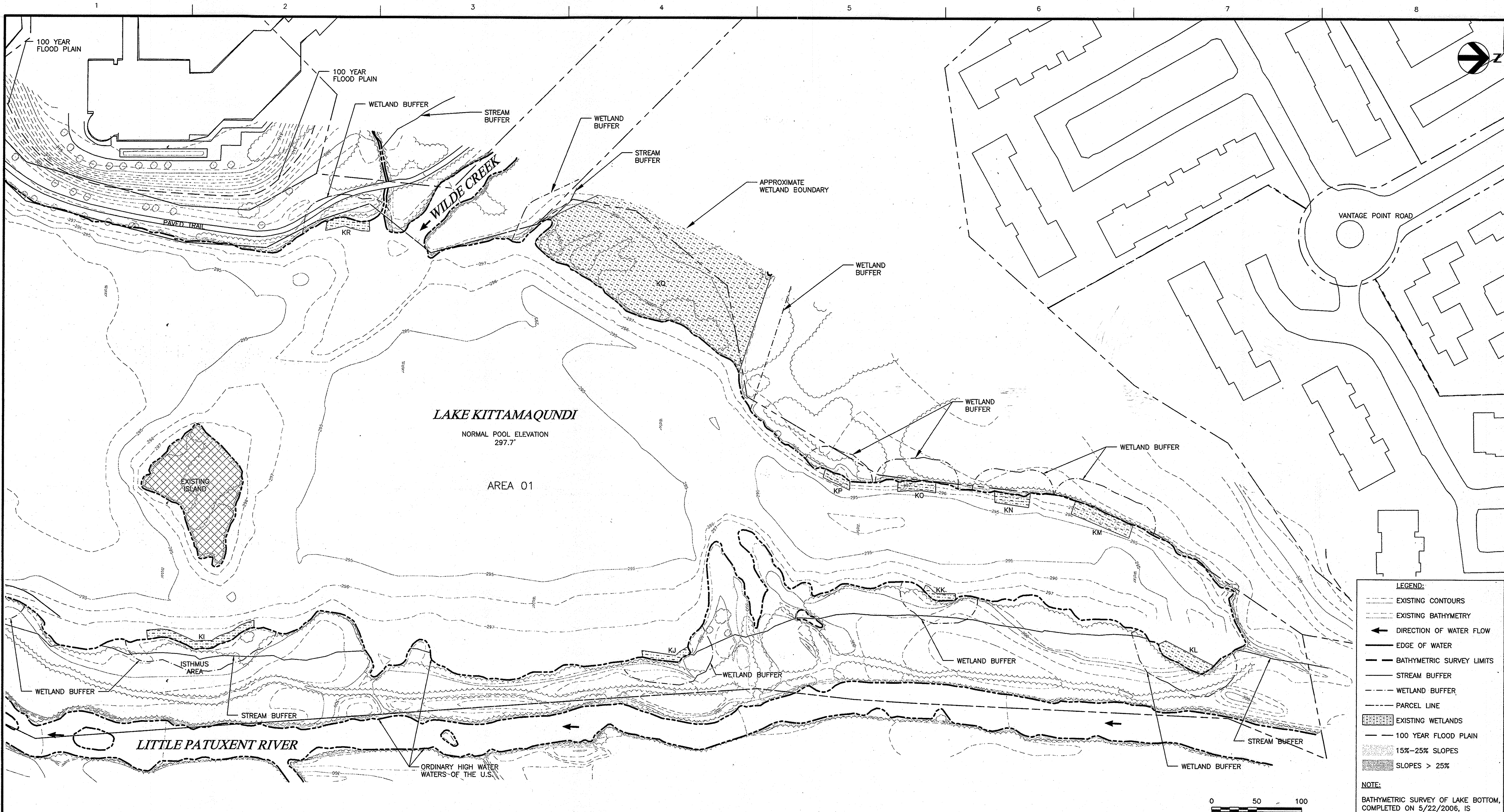
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HDR ENGINEERING INC.

STATE OF MARYLAND
Professional Engineer
11-24-2009

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COLUMBIA, MD 21044
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APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division
[Signature]
Chief, Division of Land Development
[Signature]
Director, DEP.

[Signature] 12/1/09
Date
1/27/10
Date
1/2/10
Date

MDE Maryland Department of the Environment
Water Management Administration
Dam Safety Division
[Signature] 12/1/09
V.P. Dalal
Regulatory & Compliance Engineer

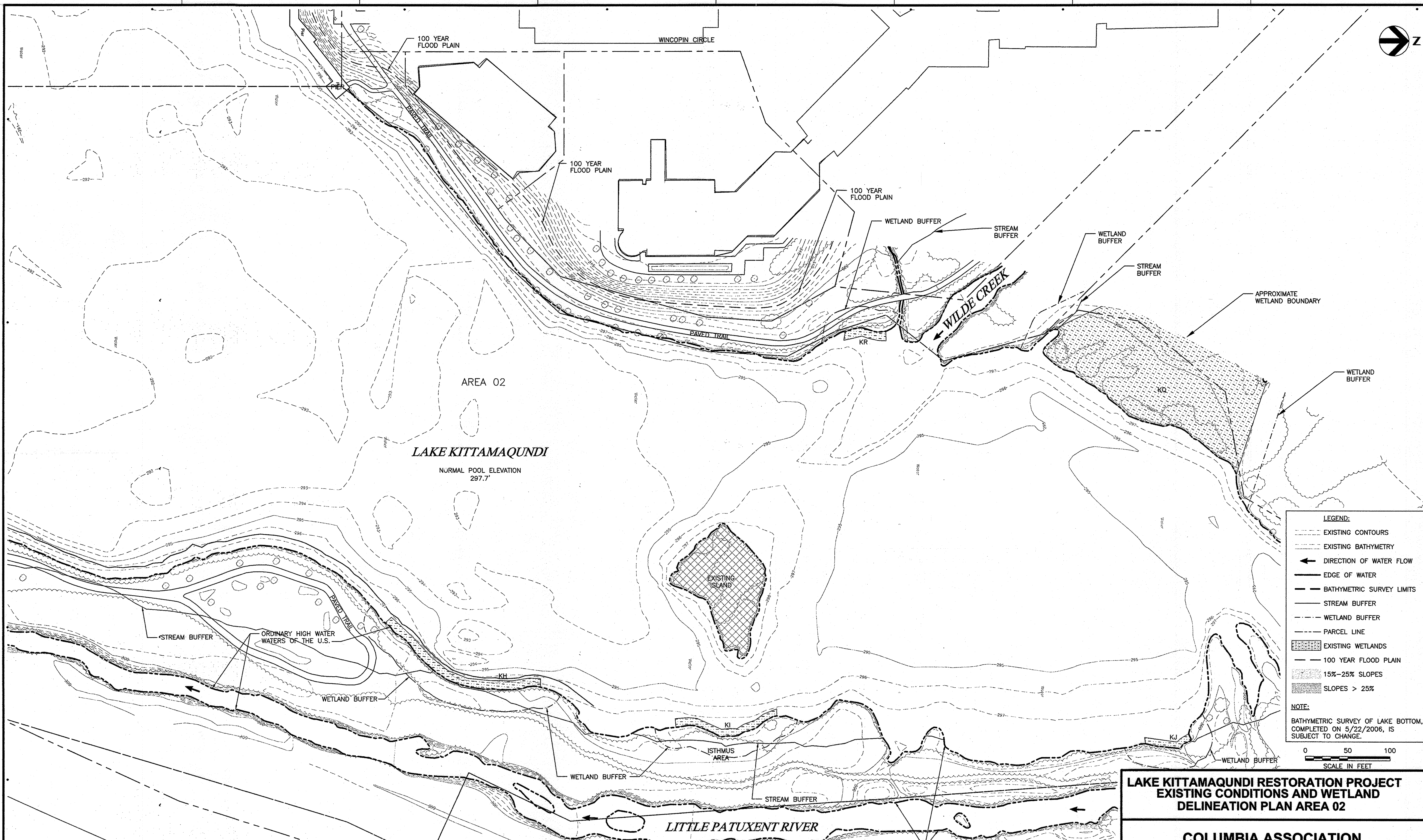
THIS PLAN SET HAS BEEN PREPARED BY:
HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION
[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.
11-24-2009

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

LAKE KITTAMAQUNDI RESTORATION PROJECT
EXISTING CONDITIONS AND WETLAND
DELINEATION PLAN AREA 01

COLUMBIA ASSOCIATION
TOWN CENTER
MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 5, HOWARD COUNTY MD.
TAX MAP 30 AND 36
SCALE AS SHOWN
JUNE 18, 2009
DRAWING B-02, SHEET 5 OF 62
SDP-08-108



LEGEND:

- EXISTING CONTOURS
- EXISTING BATHYMETRY
- DIRECTION OF WATER FLOW
- EDGE OF WATER
- BATHYMETRIC SURVEY LIMITS
- STREAM BUFFER
- WETLAND BUFFER
- PARCEL LINE
- EXISTING WETLANDS
- 100 YEAR FLOOD PLAIN
- 15%-25% SLOPES
- SLOPES > 25%

NOTE:
BATHYMETRIC SURVEY OF LAKE BOTTOM, COMPLETED ON 5/22/2006, IS SUBJECT TO CHANGE.

0 50 100
SCALE IN FEET

APPROVED: DEPARTMENT OF PLANNING AND ZONING

| | |
|---|---------|
| | 12/2/09 |
| Chief, Development Engineering Division | Date |
| | 1/2/10 |
| Chief, Division of Land Development | Date |
| | 1/2/10 |
| Director, DEP | Date |

Maryland Department of the Environment
Water Management Administration
Dam Safety Division

12/1/09

V.P. Dalal
Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY:

HDR

HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

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HDR ENGINEERING INC.

1-24-2009

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

**LAKE KITTAMAQUNDI RESTORATION PROJECT
EXISTING CONDITIONS AND WETLAND
DELINEATION PLAN AREA 02**

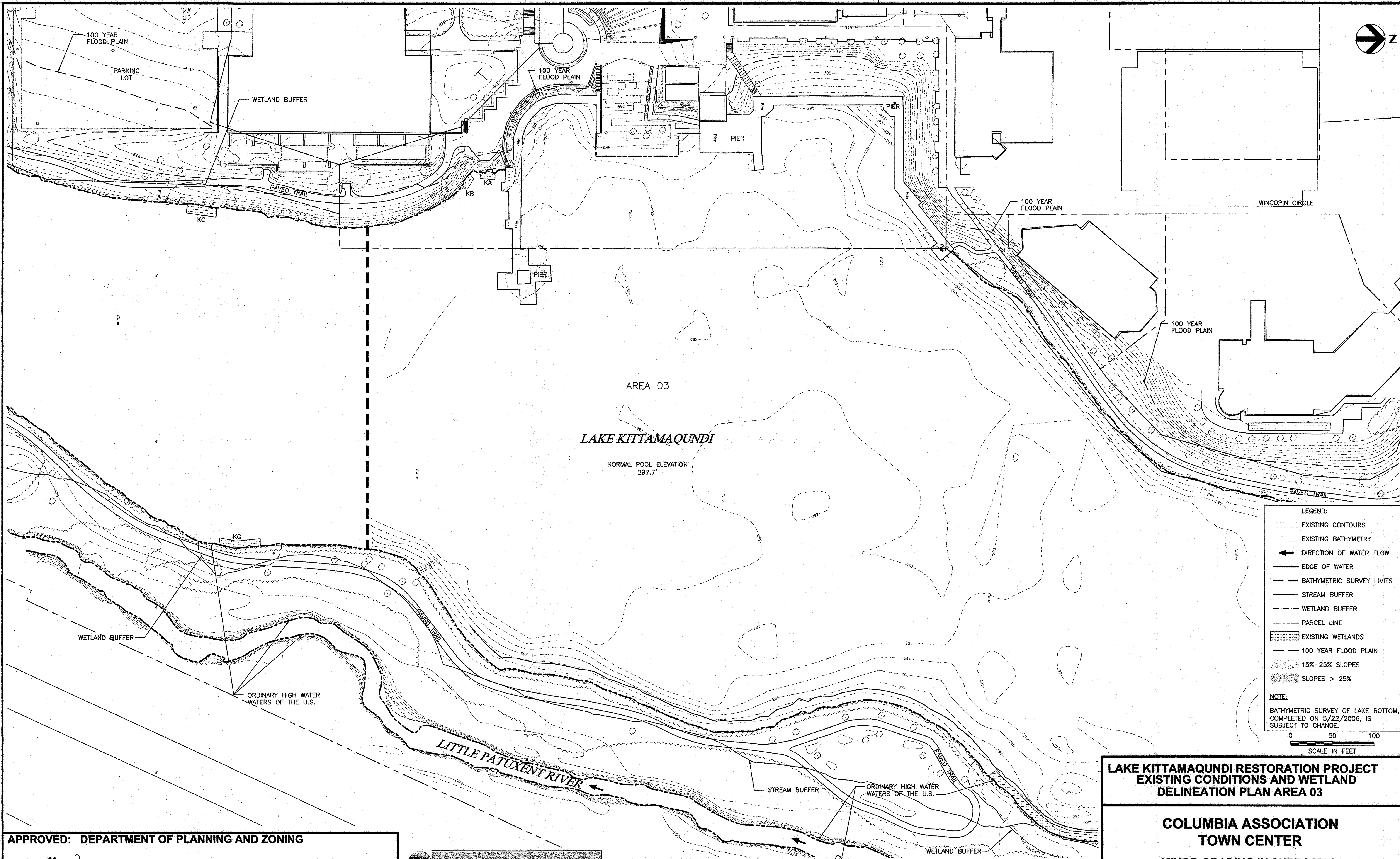
**COLUMBIA ASSOCIATION
TOWN CENTER**

MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 4, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING B-03, SHEET 6 OF 62

SDP-08-108



APPROVED: DEPARTMENT OF PLANNING AND ZONING

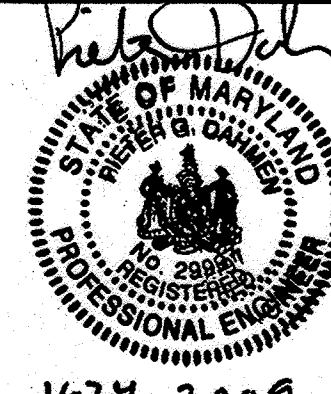
[Signature]
Chief, Development Engineering Division
[Signature]
Chief, Division of Land Development
[Signature]
Director, DEP.

12/23/09
Date
1/27/10
Date
1/2/10
Date

Maryland Department of the Environment
Water Management Administration
Dam Safety Division
V.P. Dalal 12/1/09
Visty P. Dalal
Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY:
HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

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SUPERVISION
[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

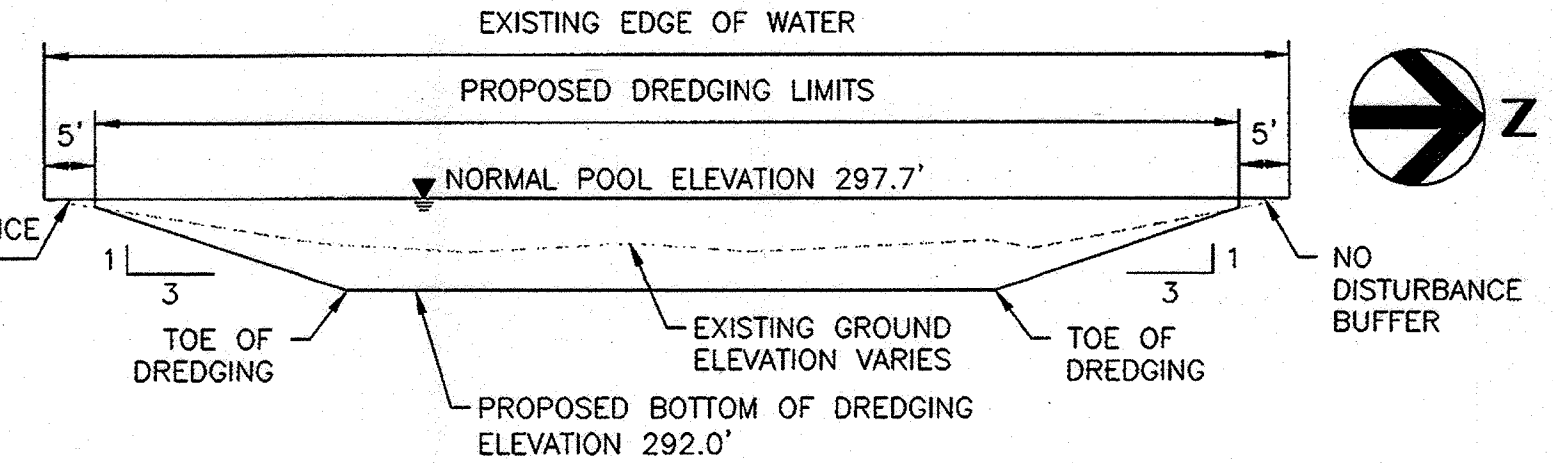
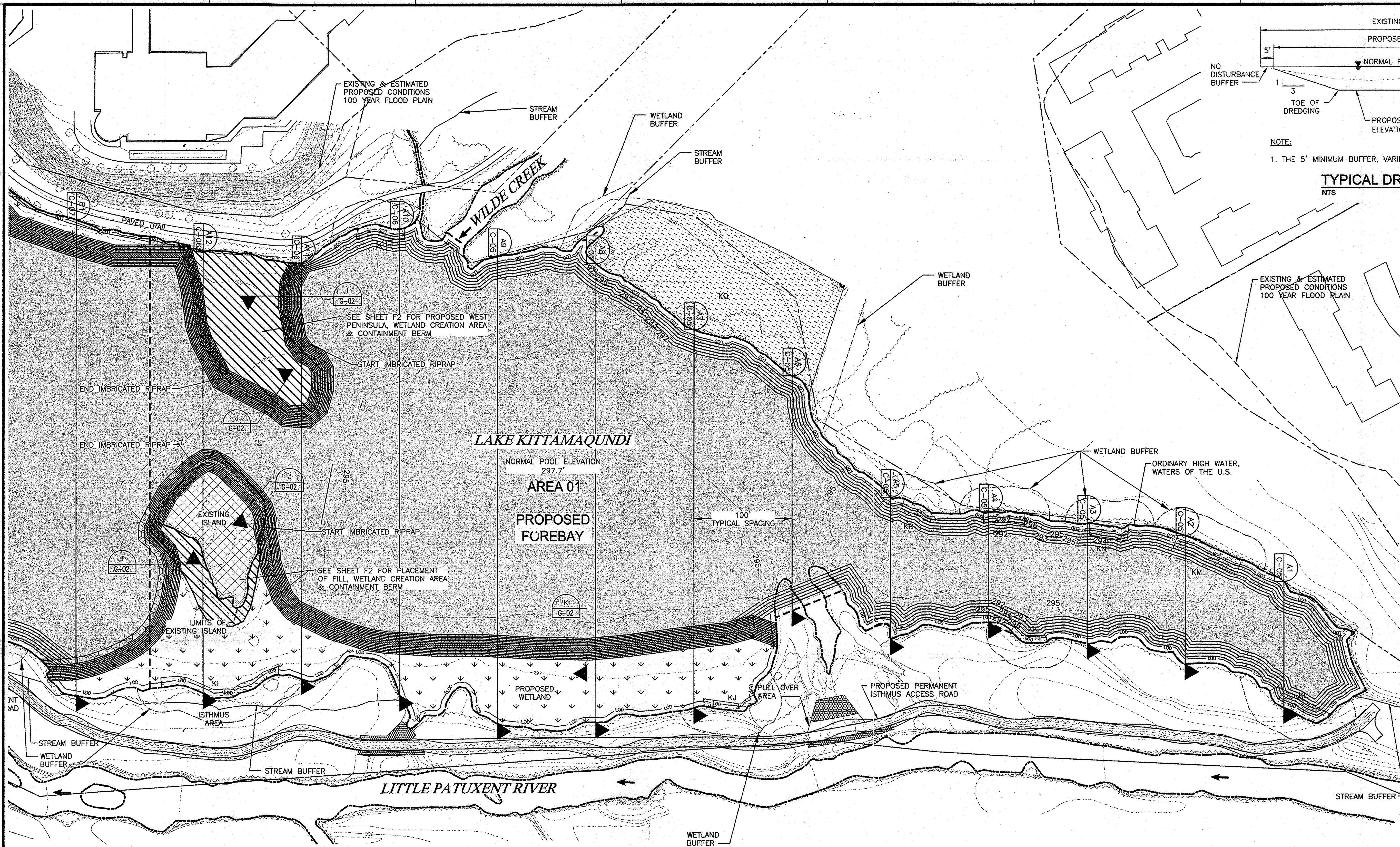
LAKE KITTAMAQUNDI RESTORATION PROJECT
EXISTING CONDITIONS AND WETLAND
DELINEATION PLAN AREA 03

COLUMBIA ASSOCIATION
TOWN CENTER
MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 5, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING B-04, SHEET 7 OF 22

SDP-08-108



NOTE:
1. THE 5' MINIMUM BUFFER, VARIES AT PROPOSED WETLAND CREATION AREAS.

LEGEND:

- PROPOSED PENINSULA & EXPANDED ISLAND 2 FT ABOVE LAKE ELEVATION
- EXISTING ISLAND (NOT TO BE DISTURBED)
- PROPOSED RIPRAP
- PROPOSED WETLAND AREA
- PROPOSED IMBRICATED RIPRAP
- PROPOSED PERMANENT ISTHMUS ACCESS ROAD
- PROPOSED DREDGE AREA
- PROPOSED EROSION CONTROL MATTING
- PROPOSED CONTOURS
- EXISTING CONTOURS
- EXISTING BATHYMETRY
- DIRECTION OF WATER FLOW
- EDGE OF WATER
- LIMIT OF DISTURBANCE
- 100 YEAR FLOOD PLAIN
- PARCEL LINE
- 15%-25% SLOPES
- SLOPES > 25%

NOTES:

- SIDE SLOPE BASED ON A 3:1 RATIO.
- CROSS SECTION SPACING IS 100 FEET.

**LAKE KITTAMAQUNDI RESTORATION PROJECT
PROPOSED SEDIMENT CONTROL AND
DREDGING PLAN AREA 01**

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division *[Signature]* 12/23/09
Date

Chief, Division of Land Development *[Signature]* 1/6/10
Date

Director, DEP. *[Signature]* 1/7/10
Date

Maryland Department of the Environment
Water Management Administration
Dam Safety Division

V.P. Dalal 12/1/09
V.P. Dalal
Regulatory & Compliance Engineer

| DREDGE AREA | NORMAL POOL ELEVATION (FT.) | AVERAGE EXISTING LAKE BOTTOM ELEVATION (FT.) | AVERAGE EXISTING LAKE DEPTH (FT.) | AVERAGE ASSUMED ORIGINAL LAKE BOTTOM ELEVATION (FT.) | AVERAGE ASSUMED ORIGINAL LAKE DEPTH (FT.) | AREA TO BE DREDGED (SQ. FT.) | DREDGE VOLUME TO OBTAIN ASSUMED ORIGINAL LAKE BOTTOM ELEVATION (CU. YD.) |
|-------------|-----------------------------|--|-----------------------------------|--|---|------------------------------|--|
| AREA 01 | 297.7 | 295.8 | 1.9 | 292.0 | 5.7 | 265,746 | 25,699 |

THIS PLAN SET HAS BEEN PREPARED BY:

HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN DESIGNED UNDER MY SUPERVISION

[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.
11-24-2009

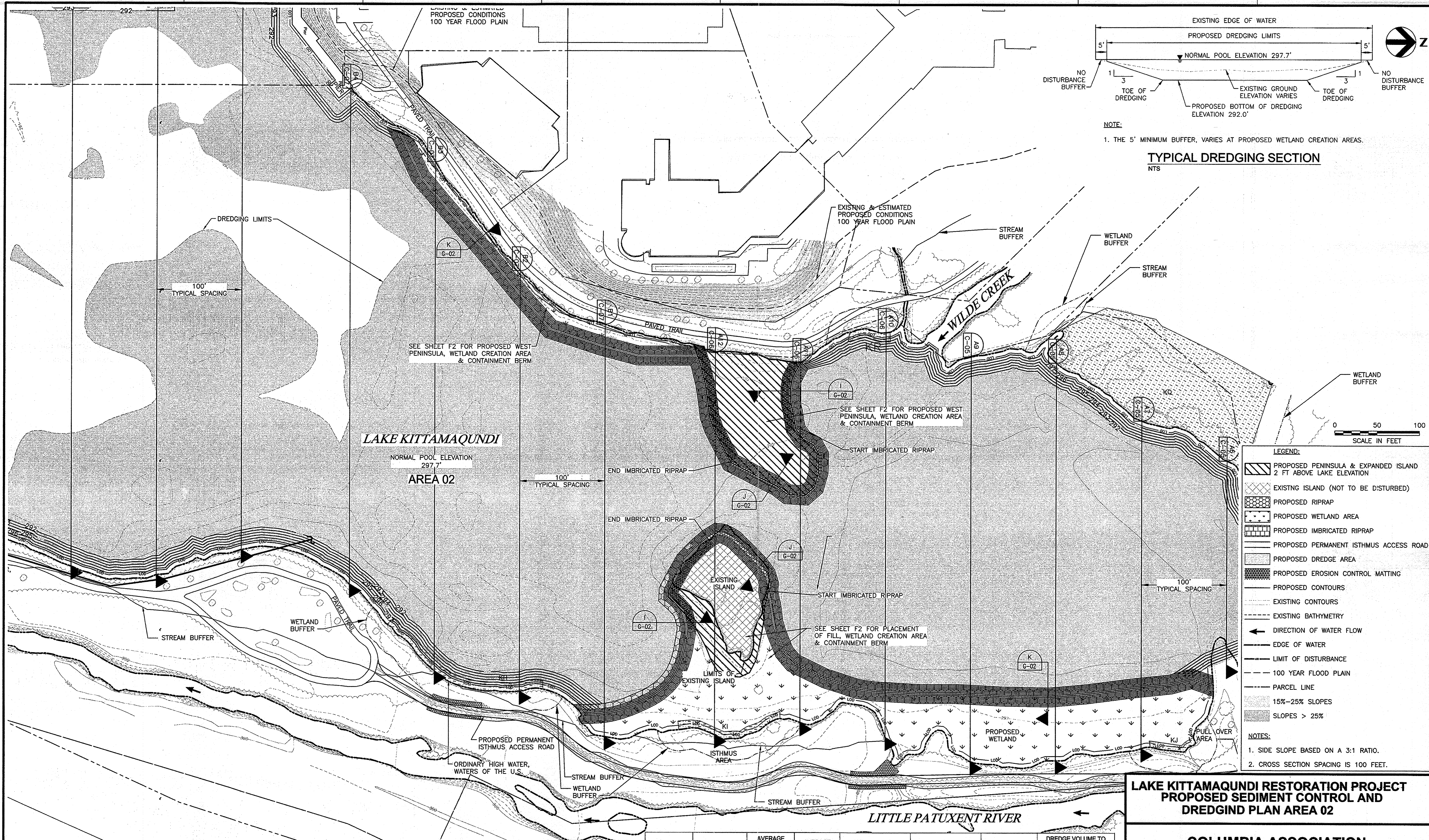
COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

**COLUMBIA ASSOCIATION
TOWN CENTER**

MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 6, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING C-02, SHEET 9 OF 62



APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division, *12/23/09*
Date *1/07/10*
[Signature]
Chief, Division of Land Development *1/3/10*
Date *1/3/10*
[Signature]
Director, DEP

Maryland Department of the Environment
Water Management Administration
Dam Safety Division
V. P. Dalal
V. P. Dalal
Regulatory & Compliance Engineer
12/1/09

| DREDGE AREA | NORMAL POOL ELEVATION (FT.) | AVERAGE EXISTING LAKE BOTTOM ELEVATION (FT.) | AVERAGE EXISTING LAKE DEPTH (FT.) | AVERAGE ASSUMED ORIGINAL LAKE BOTTOM ELEVATION (FT.) | AVERAGE ASSUMED ORIGINAL LAKE DEPTH (FT.) | AREA TO BE DREDGED (SQ. FT.) | DREDGE VOLUME TO OBTAIN ASSUMED ORIGINAL LAKE BOTTOM ELEVATION (CU. YD.) |
|-------------|-----------------------------|--|-----------------------------------|--|---|------------------------------|--|
| AREA 02 | 297.7 | 294.3 | 3.4 | 292.0 | 5.7 | 196,852 | 11,143 |

THIS PLAN SET HAS BEEN PREPARED BY:

HDR
HDR Engineering, Inc.
6700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN DESIGNED UNDER MY SUPERVISION

[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.
11-24-2009

STATE OF MARYLAND
REGISTERED PROFESSIONAL ENGINEER
[Signature]
11-24-2009

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

**LAKE KITTAMAQUNDI RESTORATION PROJECT
PROPOSED SEDIMENT CONTROL AND
DREDGING PLAN AREA 02**

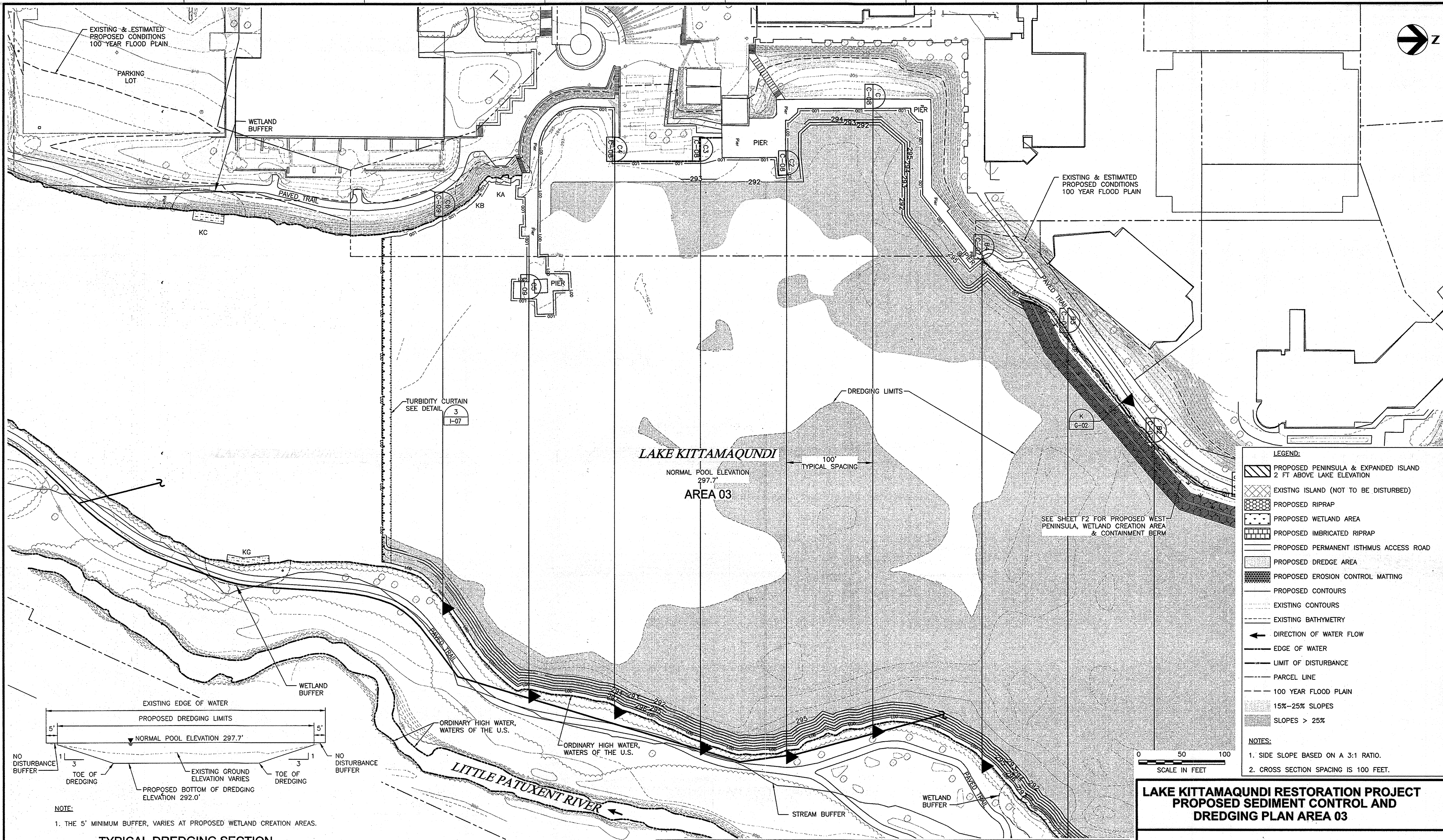
**COLUMBIA ASSOCIATION
TOWN CENTER**

**MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 8, HOWARD COUNTY MD.
TAX MAP 30 AND 36**

SCALE AS SHOWN
JUNE 18, 2009

DRAWING C-03, SHEET 10 OF 02

SDP-08-108

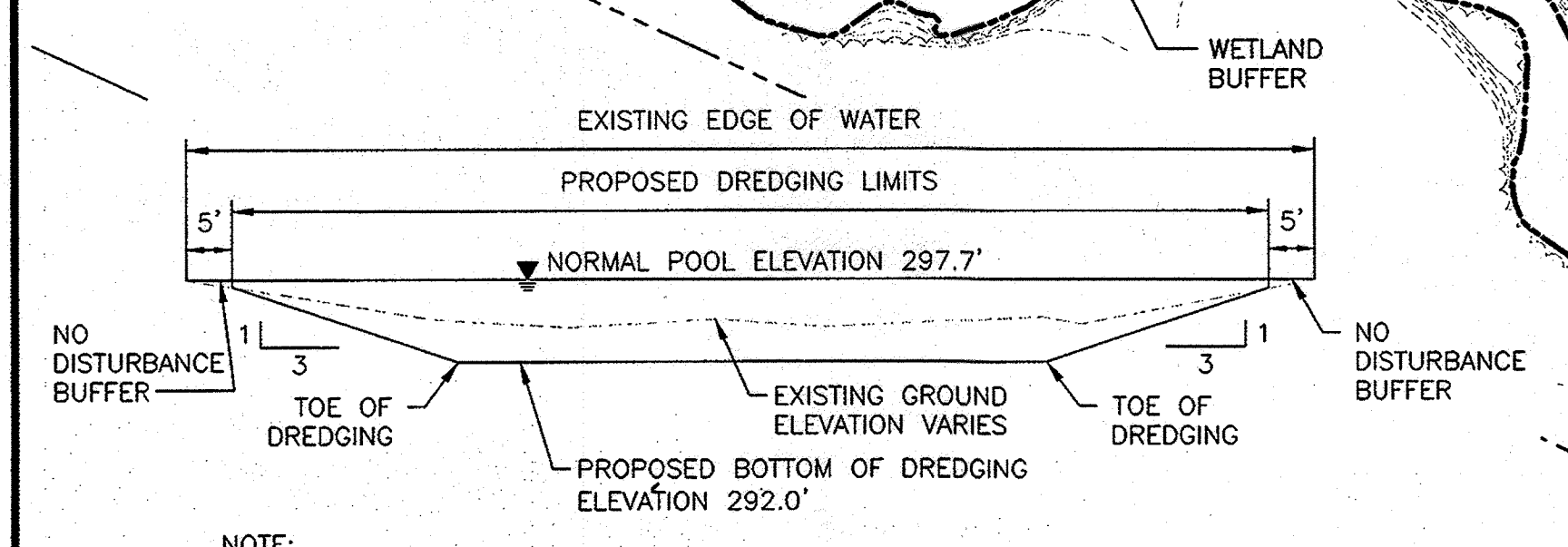
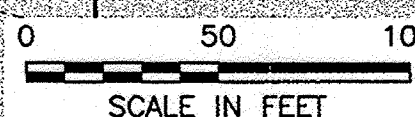


LEGEND:

- PROPOSED PENINSULA & EXPANDED ISLAND 2 FT ABOVE LAKE ELEVATION
- EXISTING ISLAND (NOT TO BE DISTURBED)
- PROPOSED RIPRAP
- PROPOSED WETLAND AREA
- PROPOSED IMBRICATED RIPRAP
- PROPOSED PERMANENT ISTHMUS ACCESS ROAD
- PROPOSED DREDGE AREA
- PROPOSED EROSION CONTROL MATTING
- PROPOSED CONTOURS
- EXISTING CONTOURS
- EXISTING BATHYMETRY
- DIRECTION OF WATER FLOW
- EDGE OF WATER
- LIMIT OF DISTURBANCE
- PARCEL LINE
- 100 YEAR FLOOD PLAIN
- 15%-25% SLOPES
- SLOPES > 25%

NOTES:

- SIDE SLOPE BASED ON A 3:1 RATIO.
- CROSS SECTION SPACING IS 100 FEET.



NOTE: 1. THE 5' MINIMUM BUFFER, VARIES AT PROPOSED WETLAND CREATION AREAS.

TYPICAL DREDGING SECTION
NTS

| DREDGE AREA | NORMAL POOL ELEVATION (FT.) | AVERAGE EXISTING LAKE BOTTOM ELEVATION (FT.) | AVERAGE EXISTING LAKE DEPTH (FT.) | AVERAGE ASSUMED ORIGINAL LAKE BOTTOM ELEVATION (FT.) | AVERAGE ASSUMED ORIGINAL LAKE DEPTH (FT.) | AREA TO BE DREDGED (SQ. FT.) | DREDGE VOLUME TO OBTAIN ASSUMED ORIGINAL LAKE BOTTOM ELEVATION (CU. YD.) |
|-------------|-----------------------------|--|-----------------------------------|--|---|------------------------------|--|
| AREA 03 | 297.7 | 292.7 | 5.0 | 292.0 | 5.7 | 146,732 | 3,289 |

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division, *[Signature]* Date 12/23/09

Chief, Division of Land Development, *[Signature]* Date 1/07/10

Director, DEP, *[Signature]* Date 1/2/10

MDE Maryland Department of the Environment
Water Management Administration
Dam Safety Division
V.P. Dalal 12/1/09
Visty P. Dalal
Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY:
HDR
HDR Engineering, Inc.
6701 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1100

PLANS HAVE BEEN DESIGNED UNDER MY SUPERVISION
[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.
11-24-2009

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

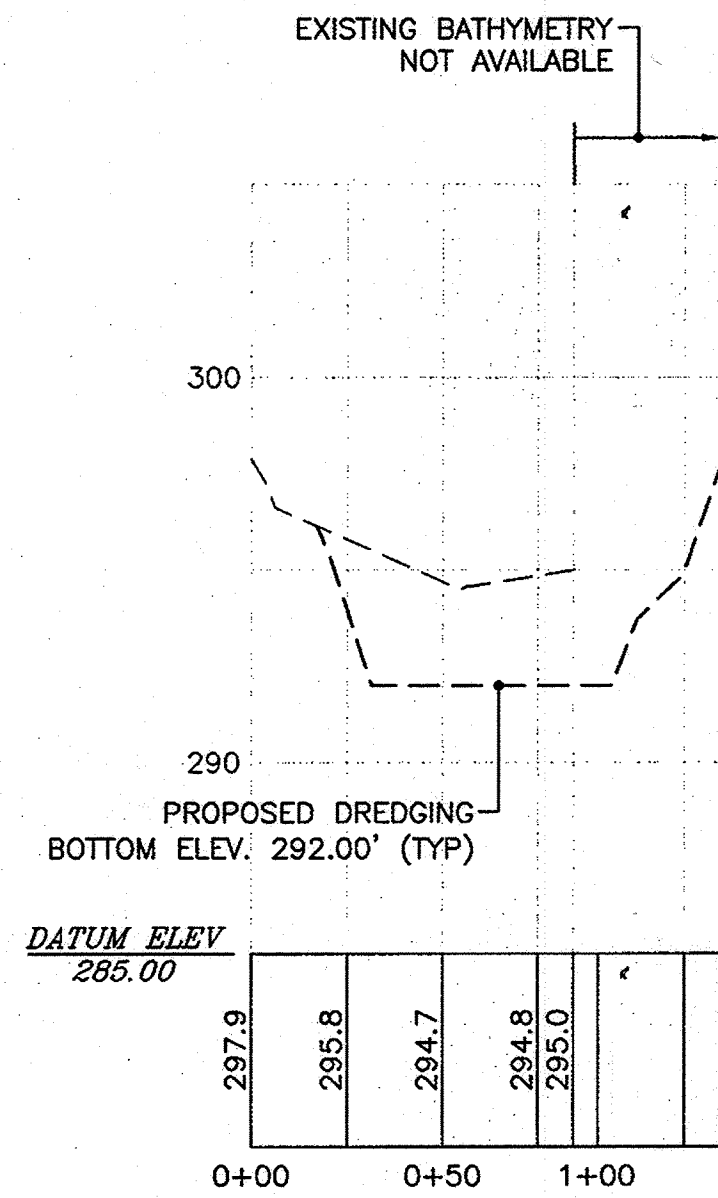
**LAKE KITTAMAQUUNDI RESTORATION PROJECT
PROPOSED SEDIMENT CONTROL AND
DREDGING PLAN AREA 03**

**COLUMBIA ASSOCIATION
TOWN CENTER**

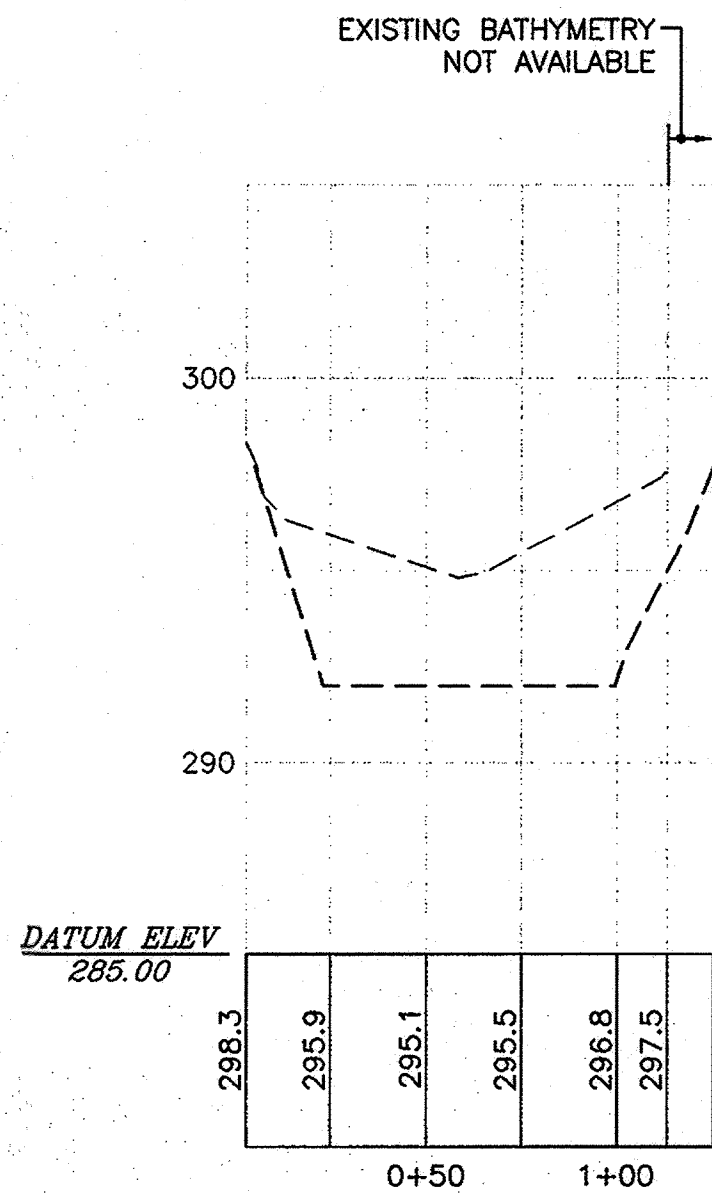
MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUUNDI RESTORATION
ELECTION DISTRICT 5, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

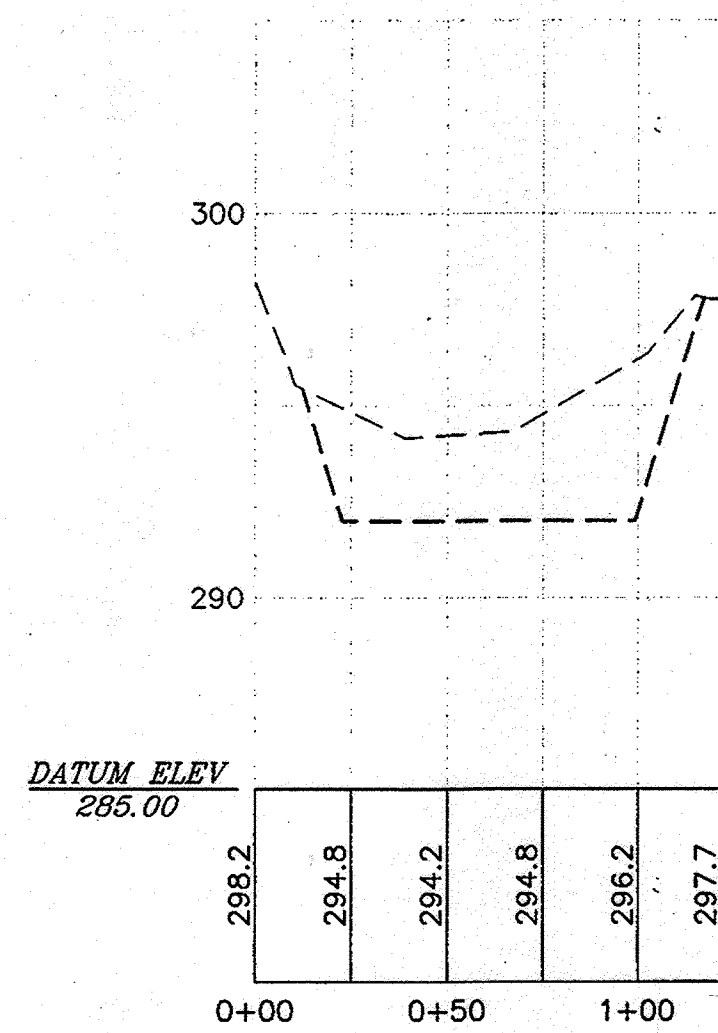
DRAWING C-04, SHEET 11 OF 62
SDP-08-108



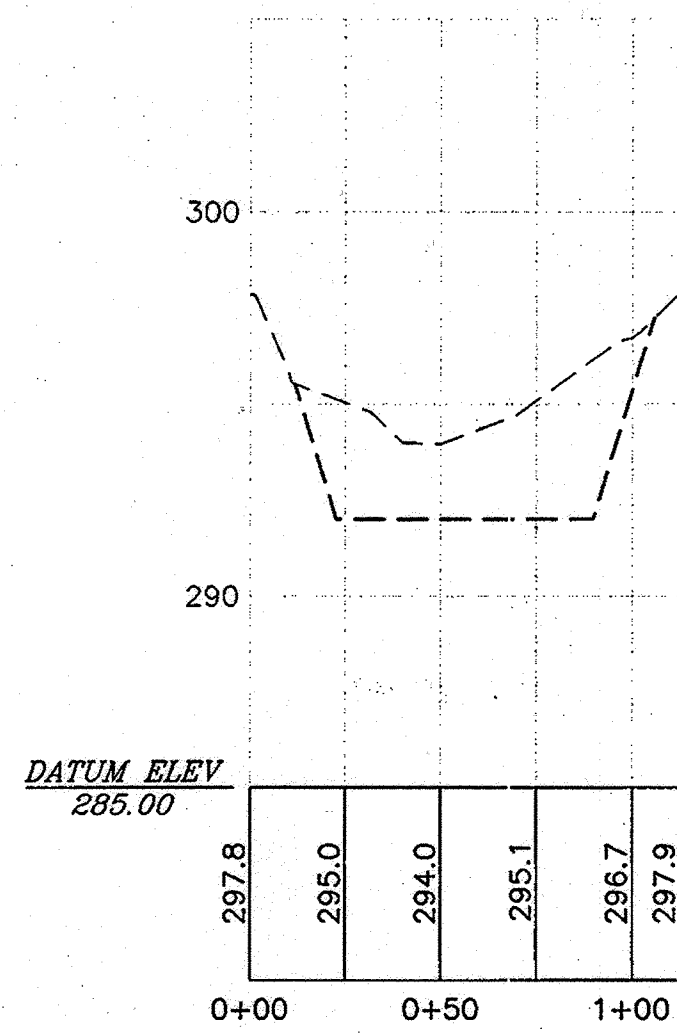
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C-02



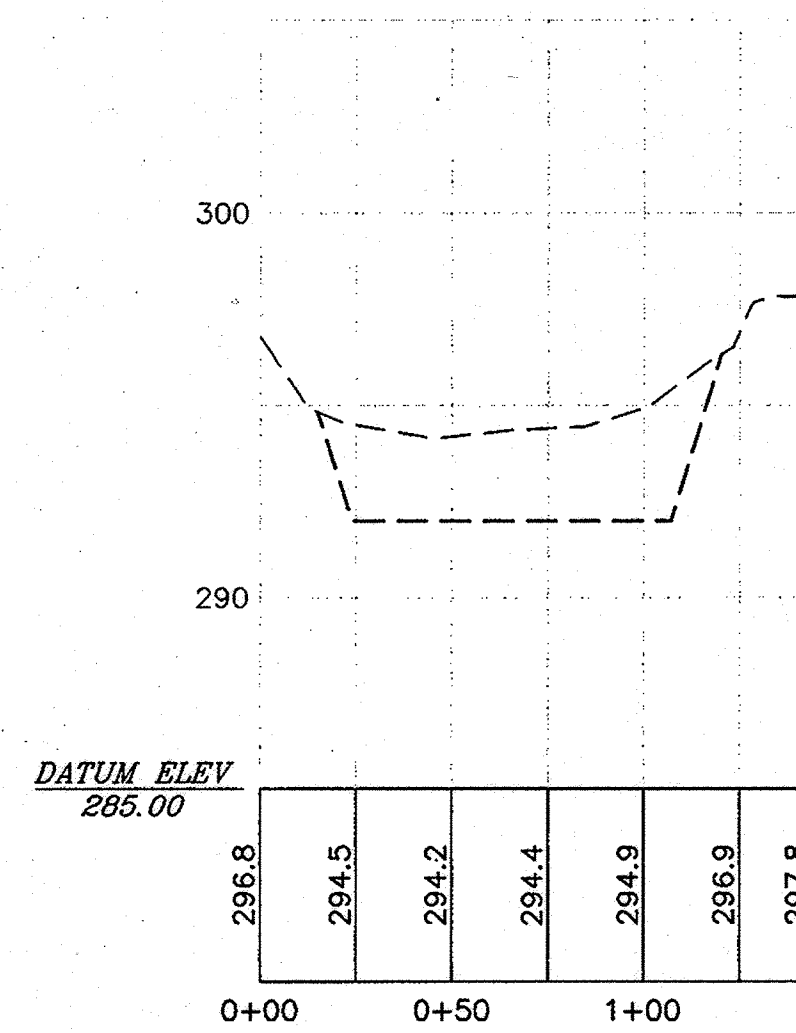
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C-02



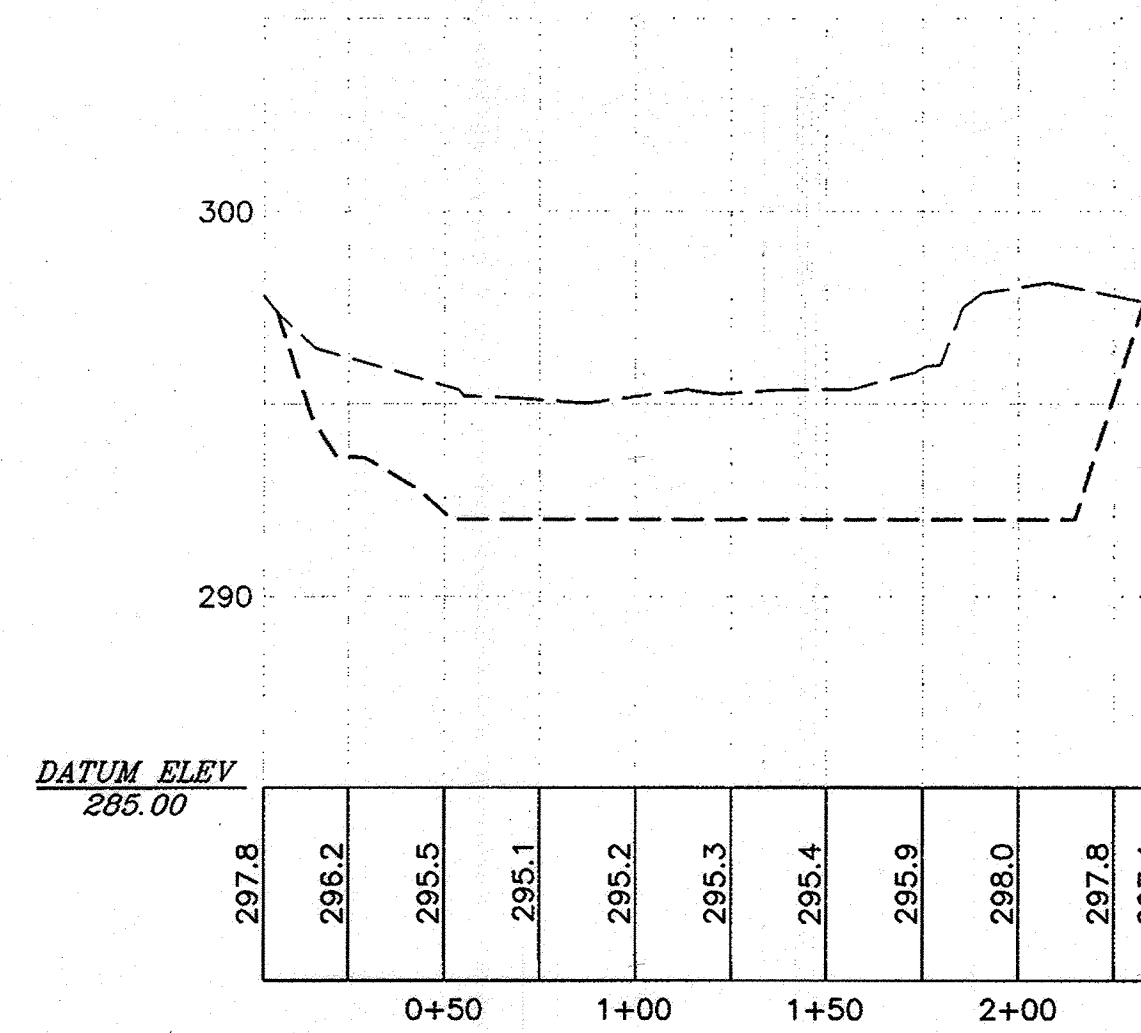
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C-02



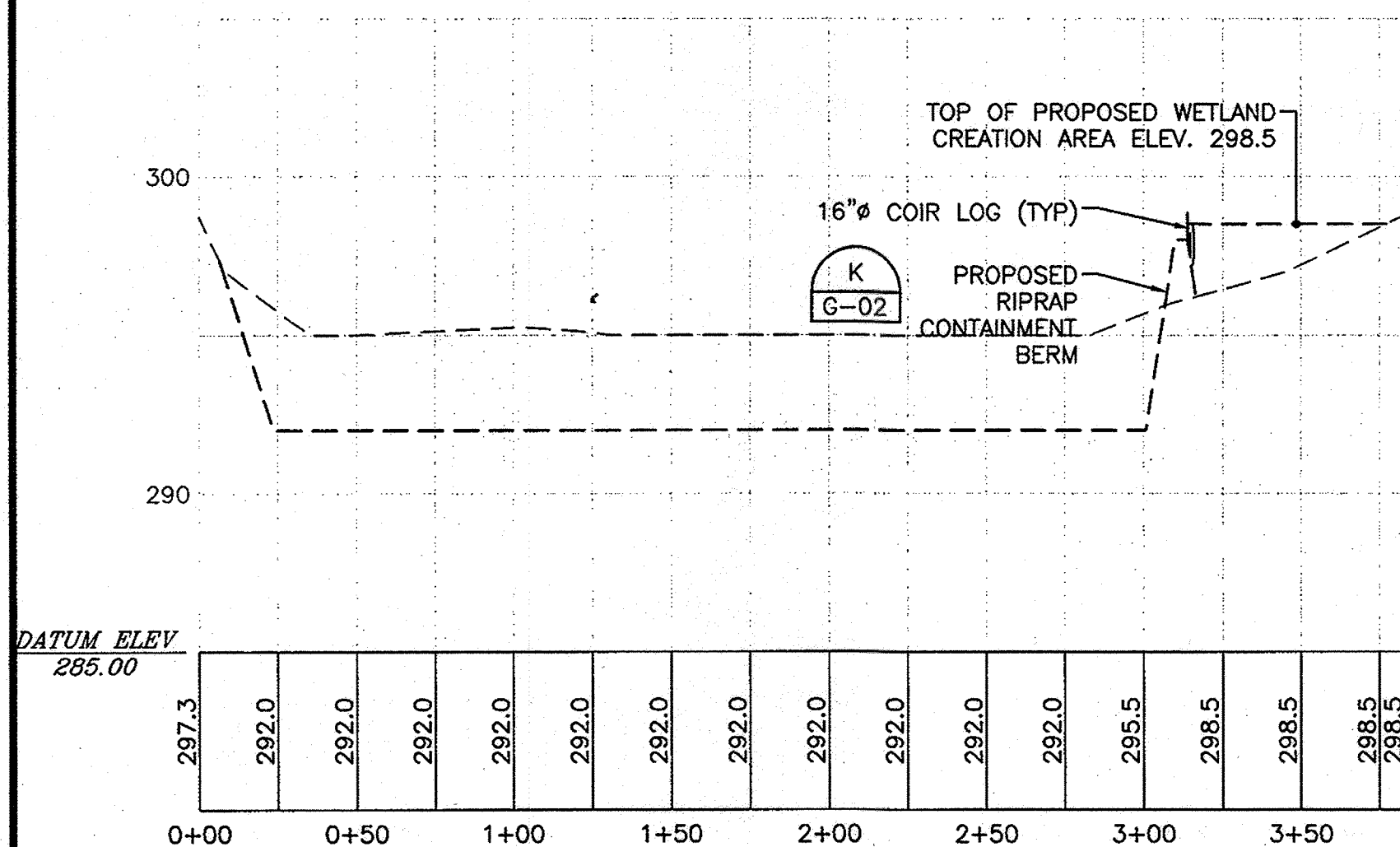
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C-02

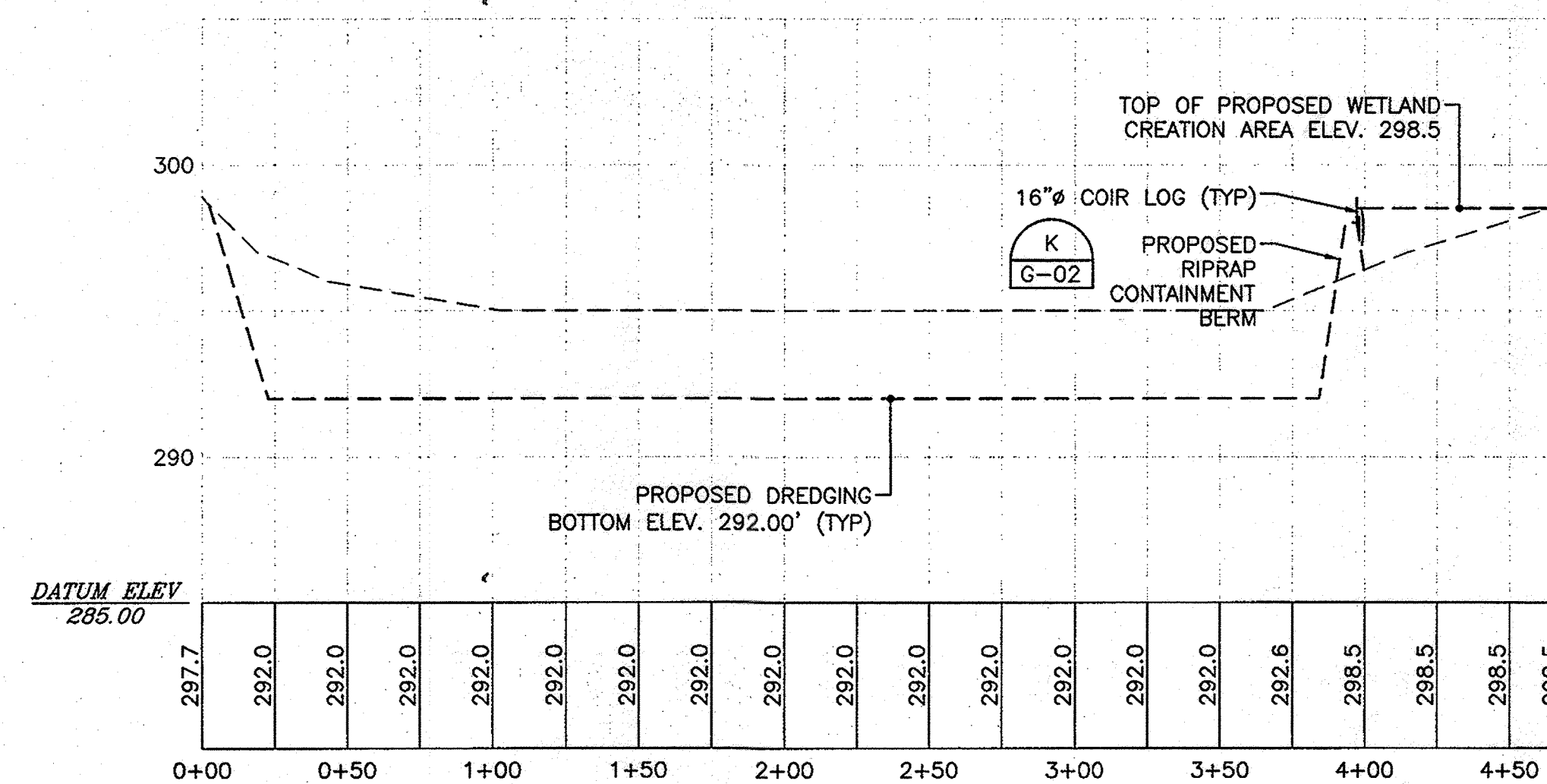


CROSS-SECTION A5 A5
C-02

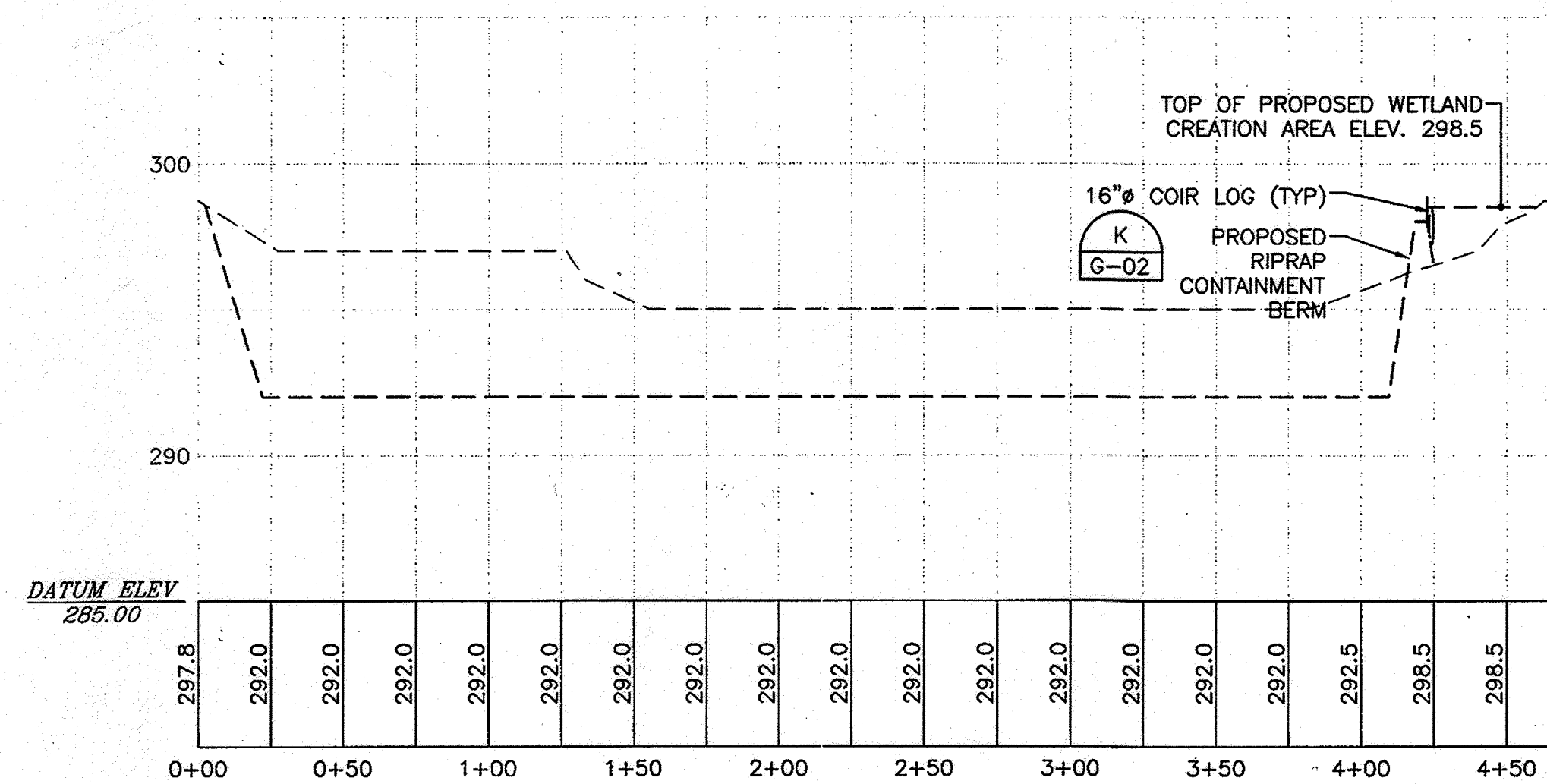


CROSS-SECTION A6 A6
C-02

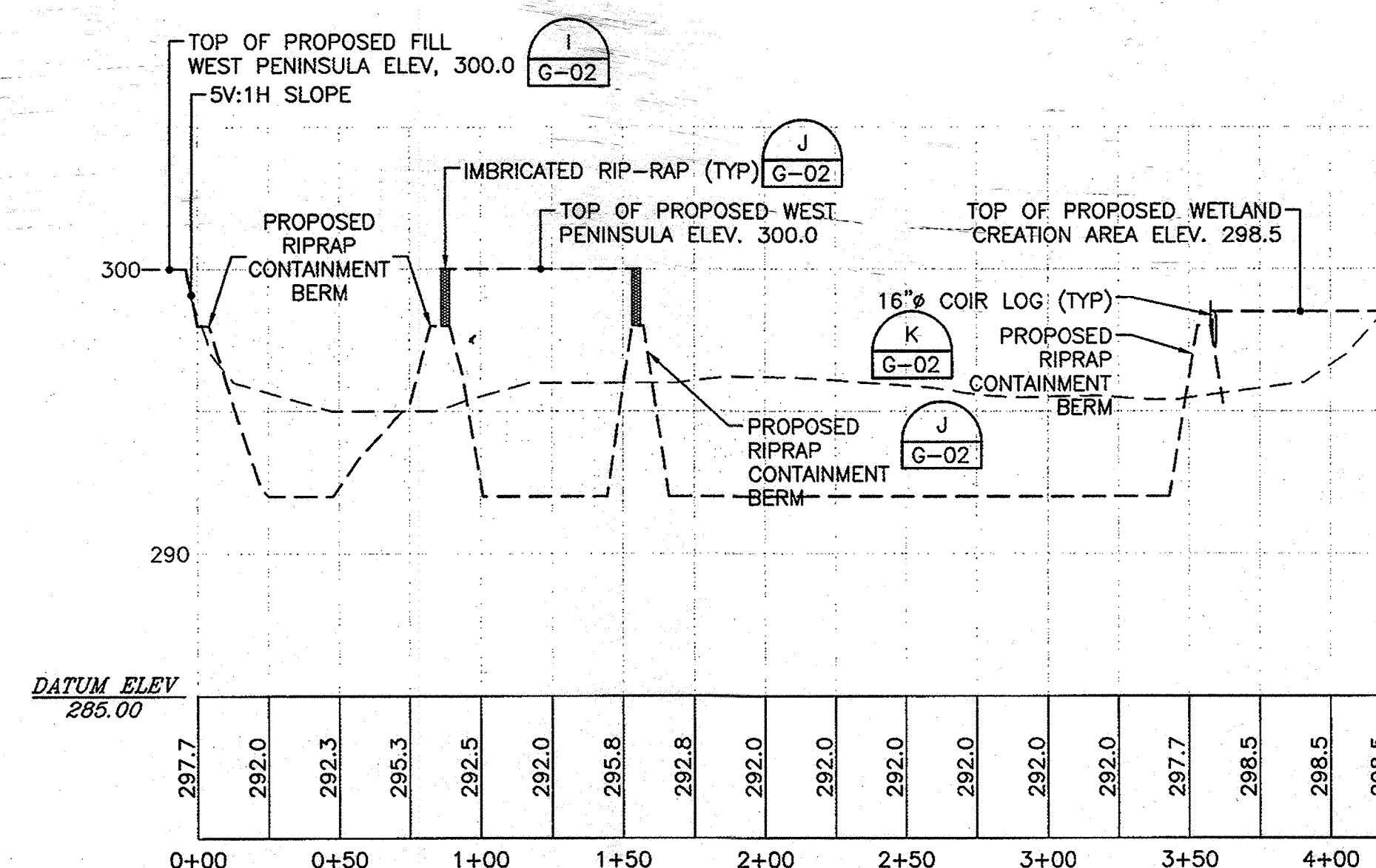




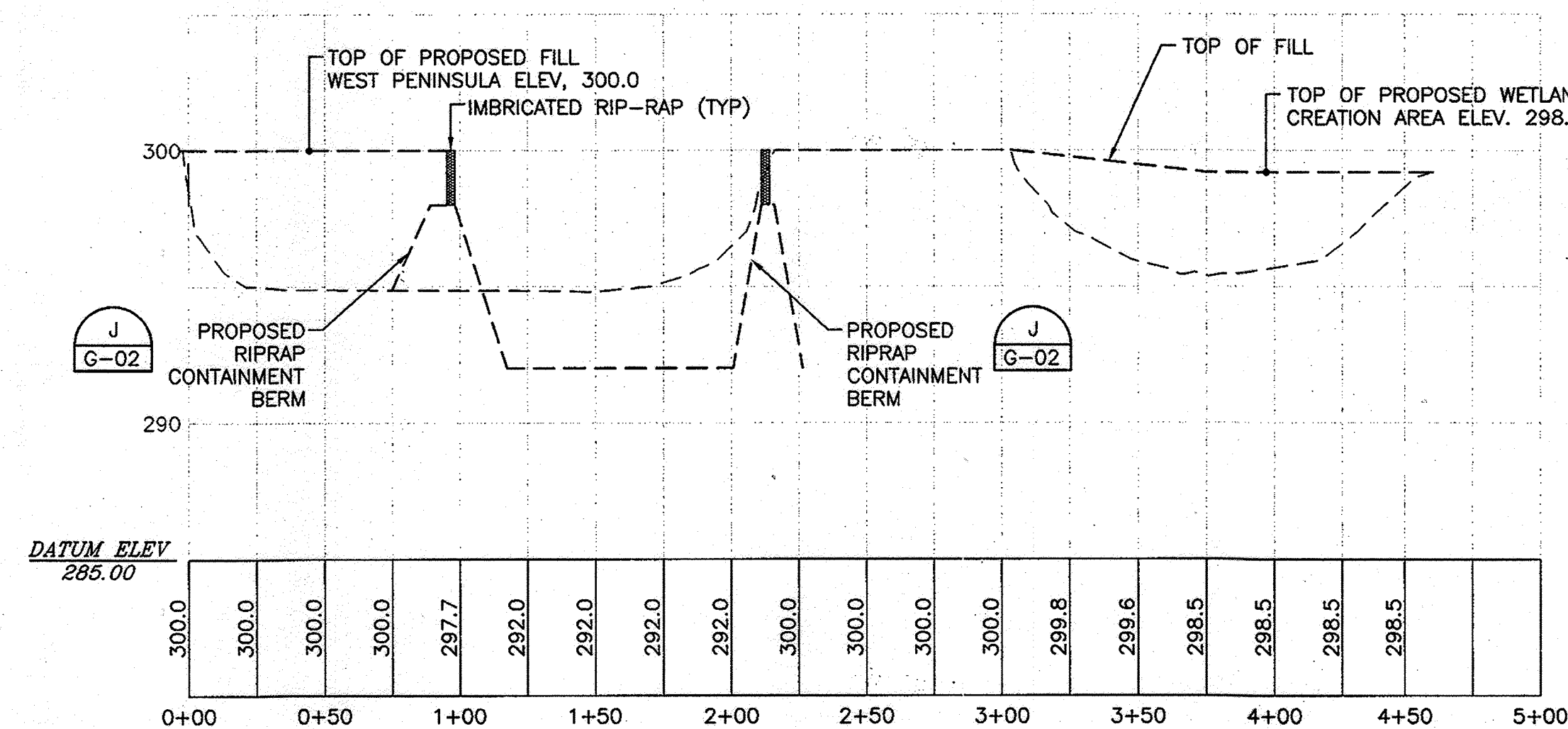
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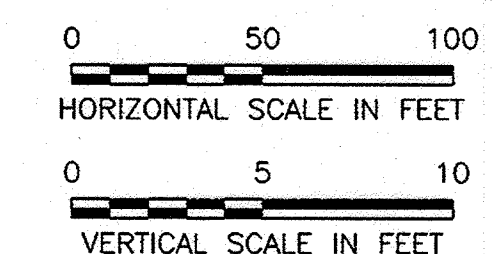
CROSS-SECTION A10



CROSS-SECTION A11



CROSS-SECTION A12



LEGEND:
 --- EXISTING BATHYMETRY
 --- PROPOSED BATHYMETRY

NOTES:
 1. SEE SHEET F2 FOR DETAILS REGARDING PROPOSED PENINSULAS WETLAND CREATION AREA AND CONTAINMENT BERM.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division
 Chief, Division of Land Development
 Director, DEP.

12/23/09
 Date
 1/27/10
 Date
 1/2/10
 Date

Maryland Department of the Environment
 Water Management Administration
 Dam Safety Division
 V.P. Dalal
 Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY:
 HDR
 HDR Engineering, Inc.
 5700 LAKE WRIGHT DRIVE
 SUITE 300
 NORFOLK, VIRGINIA 23502
 757-222-1500

PLANS HAVE BEEN DESIGNED UNDER MY SUPERVISION
 PIETER DAHMEN, PE
 HDR ENGINEERING INC.

Professional Engineer
 State of Maryland
 11-24-2009

COLUMBIA ASSOCIATION
 10221 WINCOPIN CIRCLE #100
 COLUMBIA, MD 21044
 (410)-381-2947

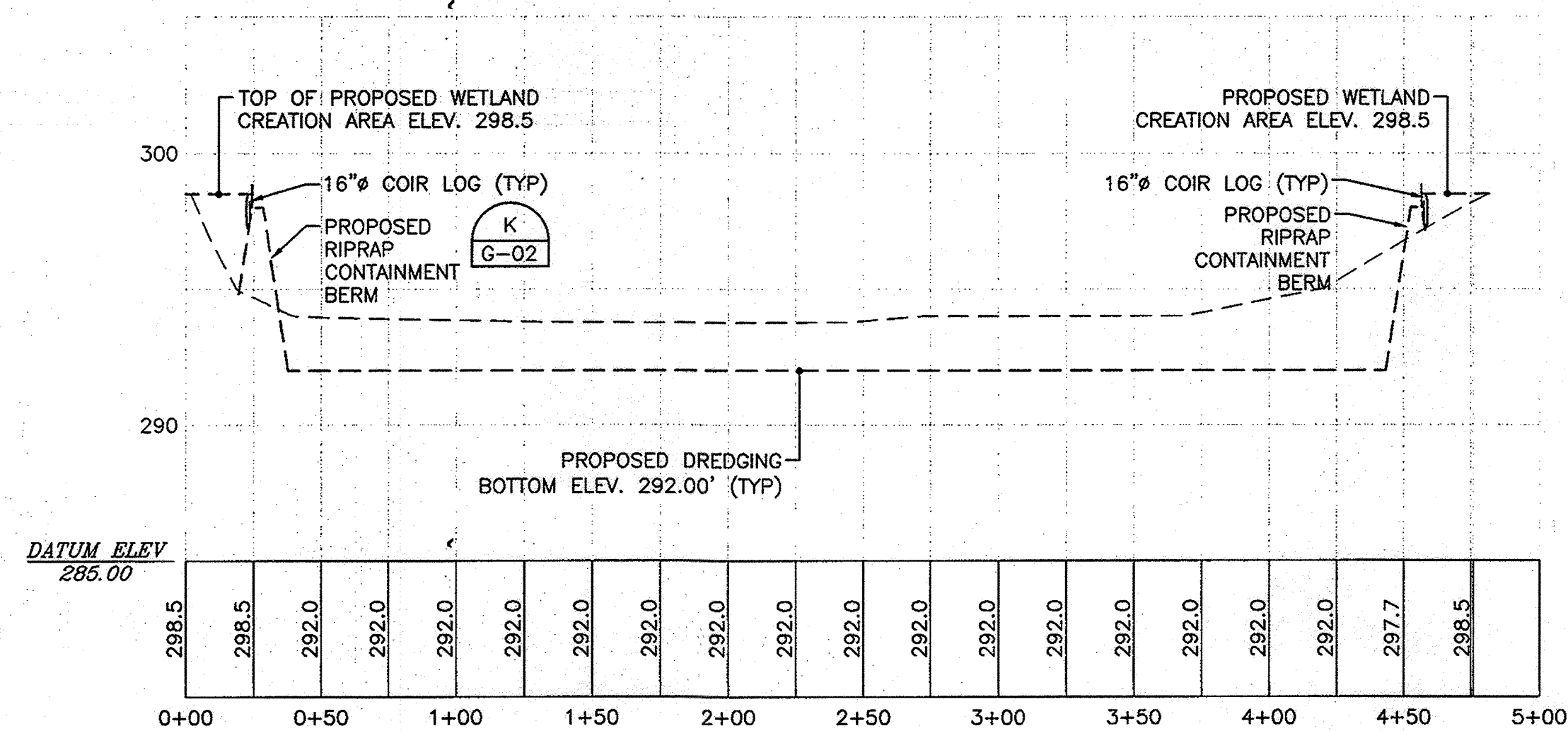
LAKE KITTAMAQUUNDI RESTORATION PROJECT
 AREA 01
 CROSS-SECTIONS (2 OF 2)

COLUMBIA ASSOCIATION
 TOWN CENTER
 MINOR GRADING IN SUPPORT OF
 LAKE KITTAMAQUUNDI RESTORATION
 ELECTION DISTRICT 8, HOWARD COUNTY MD.
 TAX MAP 30 AND 36

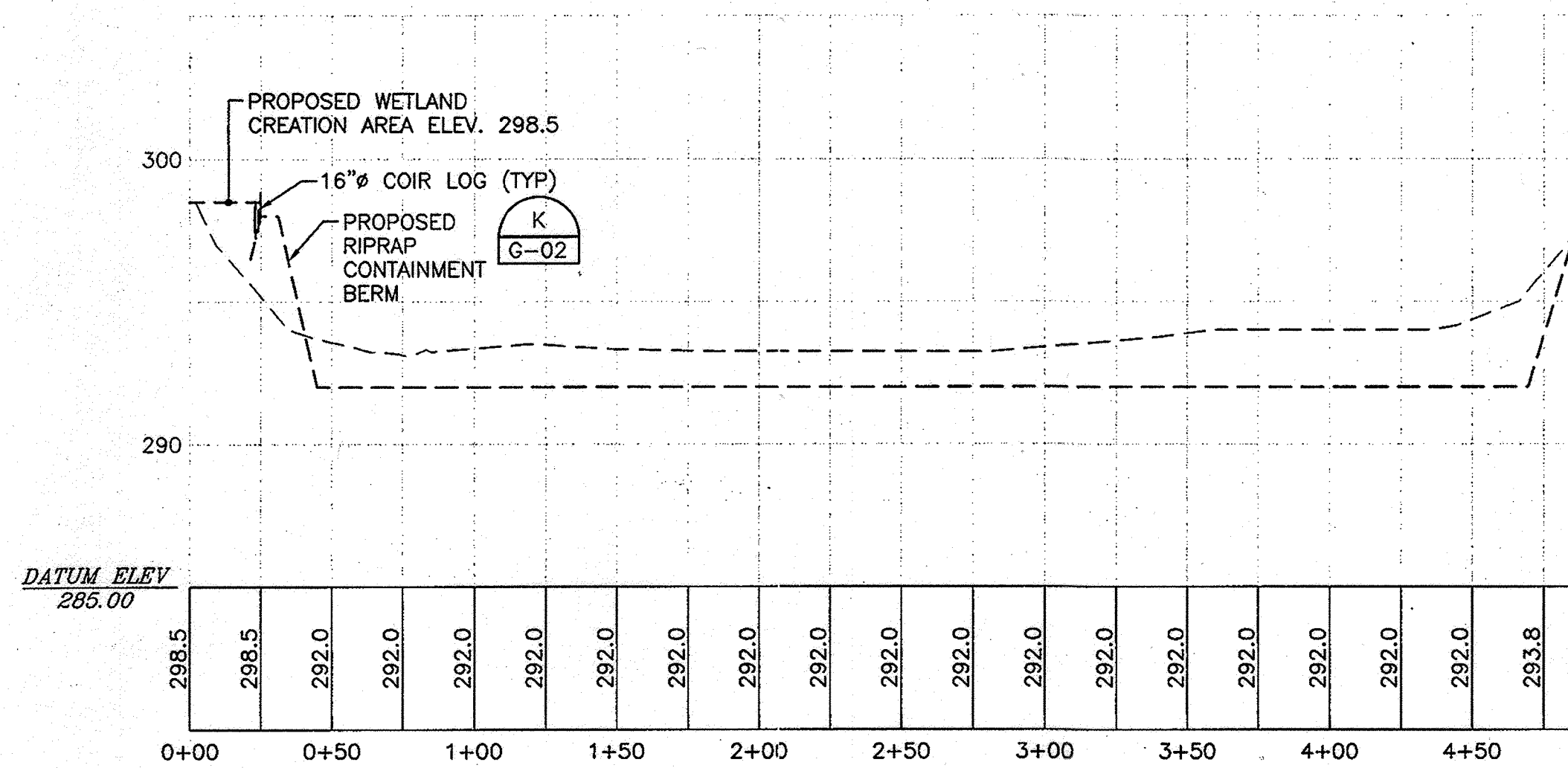
SCALE AS SHOWN
 JUNE 18, 2009

DRAWING C-06, SHEET 13 OF 62

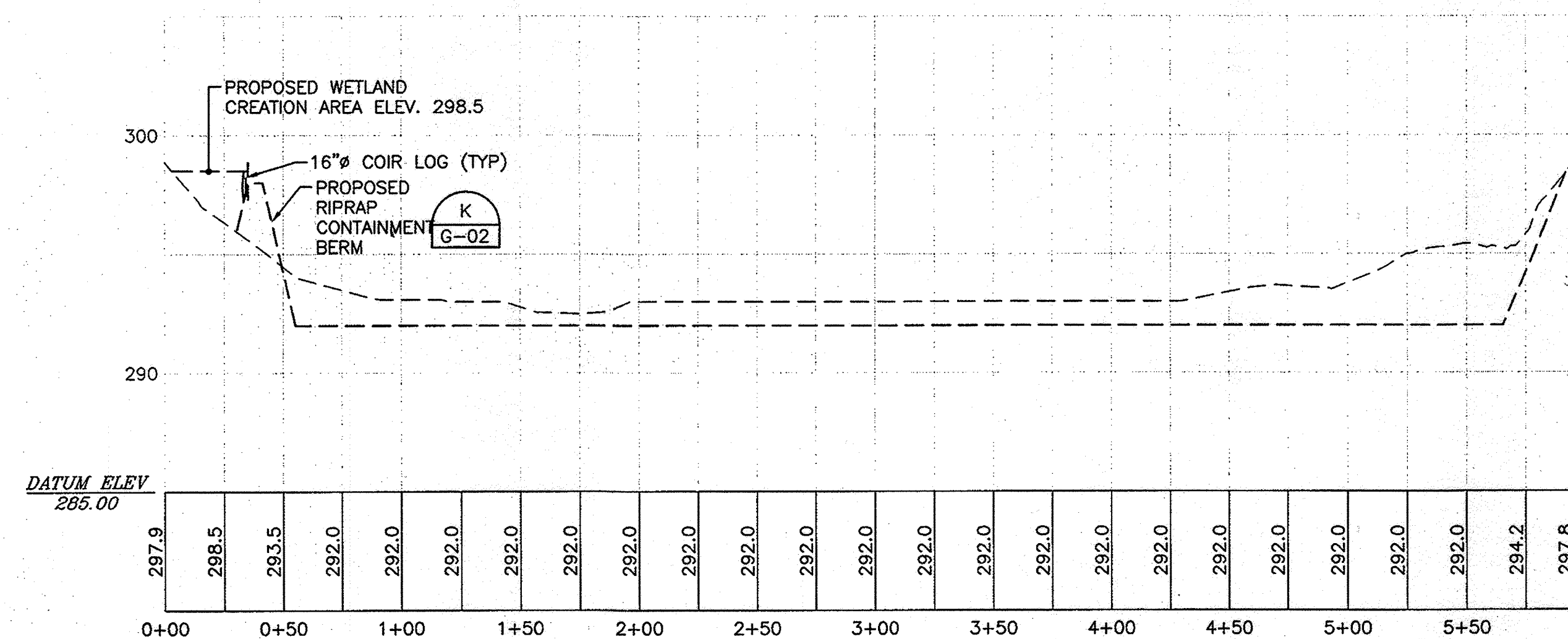
SDP-08-108



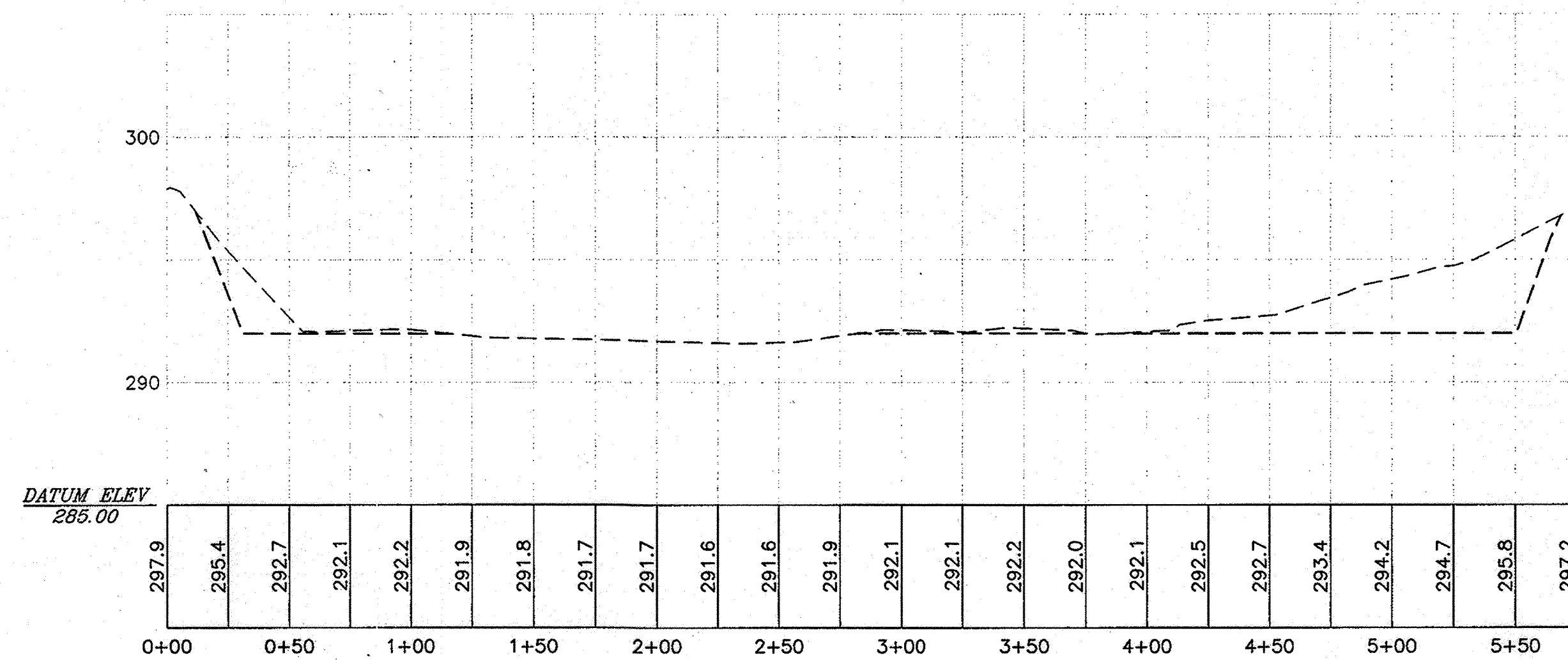
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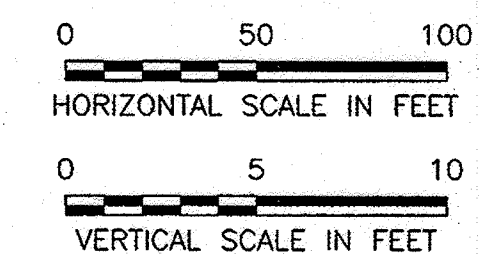
CROSS-SECTION B2



CROSS-SECTION B3'



CROSS-SECTION B4



LEGEND:
 --- EXISTING BATHYMETRY
 --- PROPOSED BATHYMETRY

NOTES:
 1. SEE SHEET F2 FOR DETAILS REGARDING PROPOSED PENINSULAS WETLAND CREATION AREA AND CONTAINMENT BERM.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
 Chief, Development Engineering Division

[Signature]
 Chief, Division of Land Development

[Signature]
 Director, DEP.

12/23/09
 Date

1/07/10
 Date

1/2/10
 Date

Maryland Department of the Environment
 Water Management Administration
 Dam Safety Division

[Signature]
 V. P. Dalal
 Regulatory & Compliance Engineer

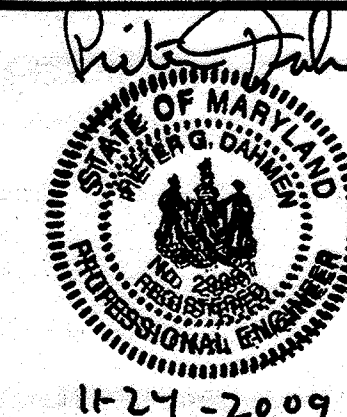
12/1/09
 Date

THIS PLAN SET HAS BEEN PREPARED BY:

HDR
 HDR Engineering, Inc.
 5700 LAKE WRIGHT DRIVE
 SUITE 300
 NORFOLK, VIRGINIA 23502
 757-222-1500

PLANS HAVE BEEN
 DESIGNED UNDER MY
 SUPERVISION

[Signature]
 PIETER DAHMEN, PE
 HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
 10221 WINCOPIN CIRCLE #100
 COLUMBIA, MD 21044
 (410)-381-2947

LAKE KITTAMAQUUNDI RESTORATION PROJECT
 AREA 02
 CROSS-SECTIONS

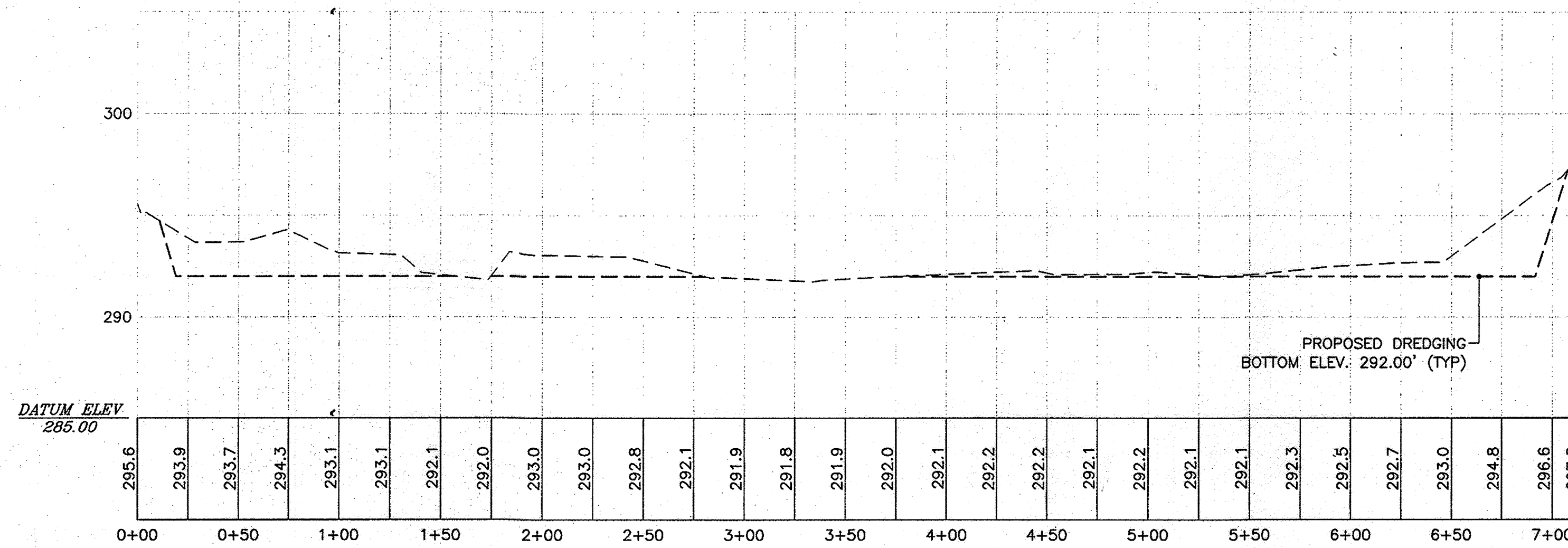
COLUMBIA ASSOCIATION
 TOWN CENTER

MINOR GRADING IN SUPPORT OF
 LAKE KITTAMAQUUNDI RESTORATION
 ELECTION DISTRICT 8, HOWARD COUNTY MD.
 TAX MAP 30 AND 36

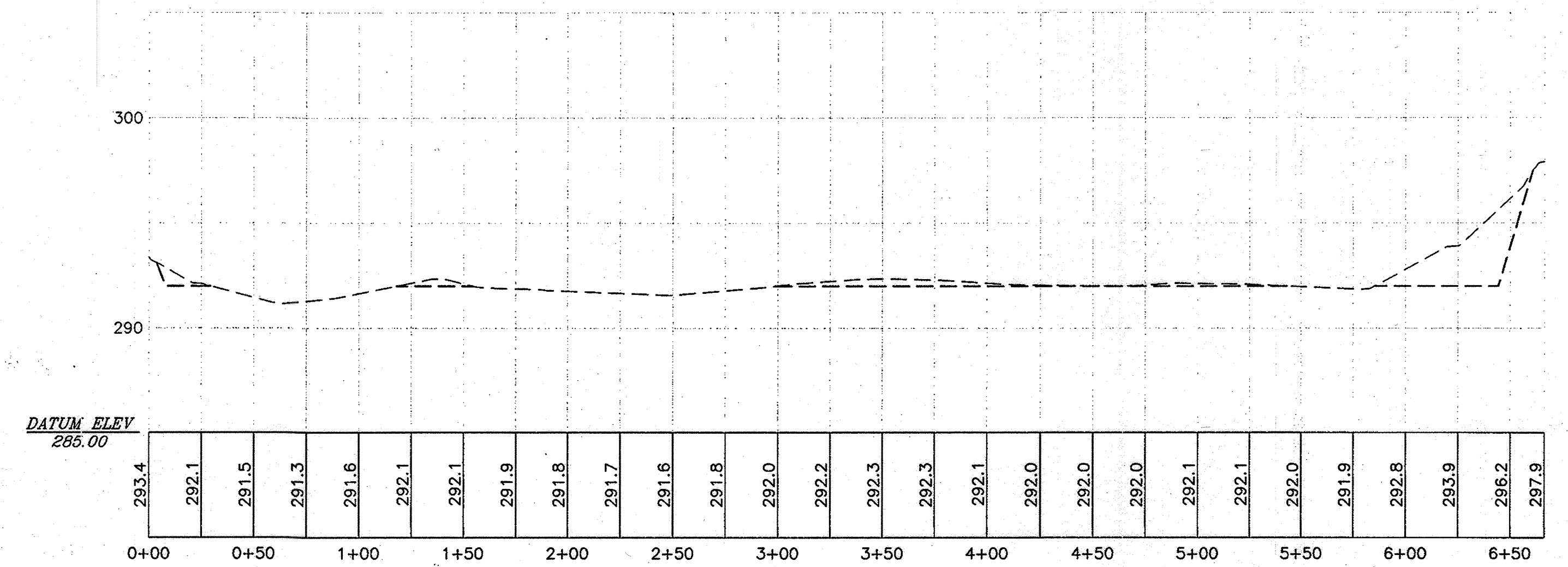
SCALE AS SHOWN
 JUNE 18, 2009

DRAWING C-07, SHEET 14 OF 62

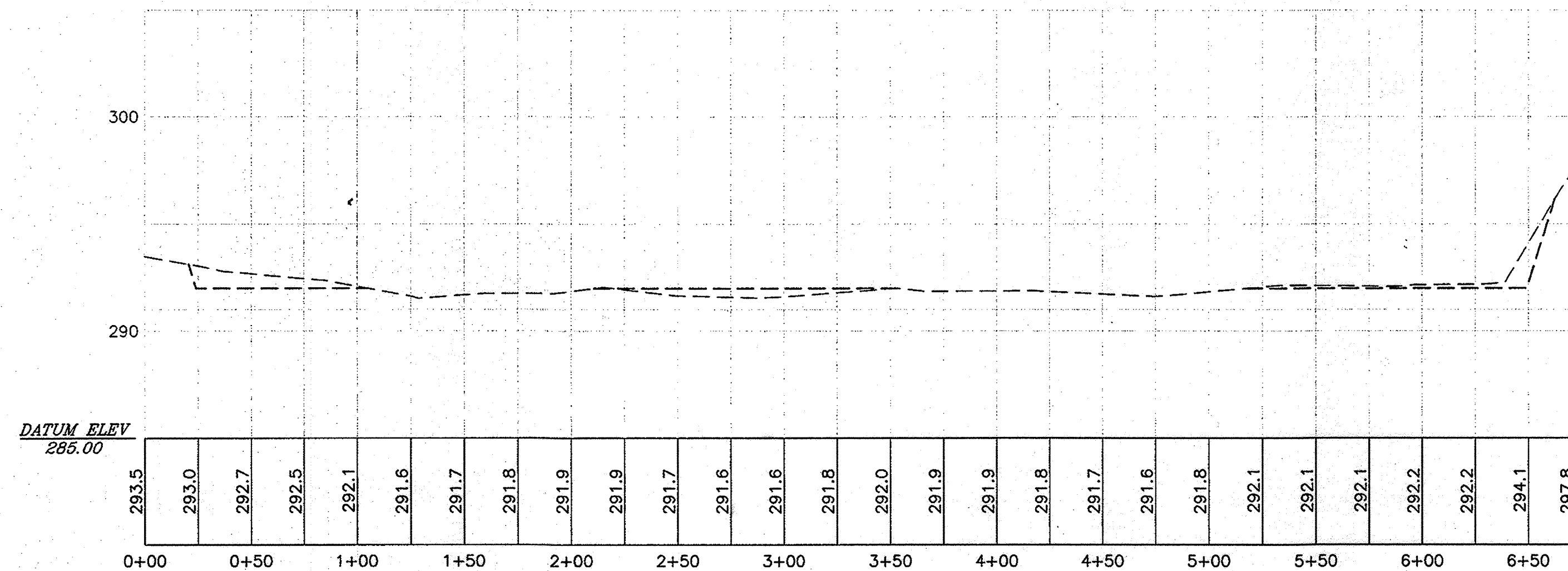
SDP-08-108



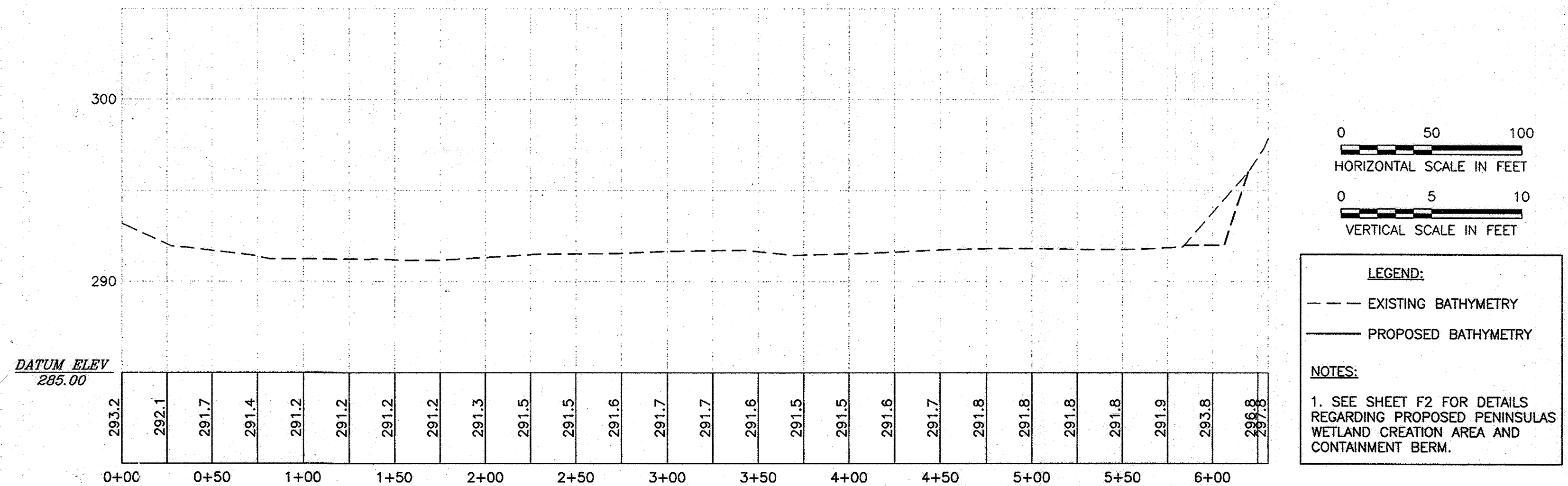
CROSS-SECTION C1



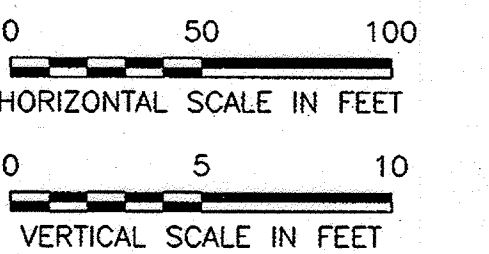
CROSS-SECTION C2



CROSS-SECTION C3



CROSS-SECTION C4



LEGEND:
 --- EXISTING BATHYMETRY
 — PROPOSED BATHYMETRY

NOTES:
 1. SEE SHEET F2 FOR DETAILS REGARDING PROPOSED PENINSULAS WETLAND CREATION AREA AND CONTAINMENT BERM.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

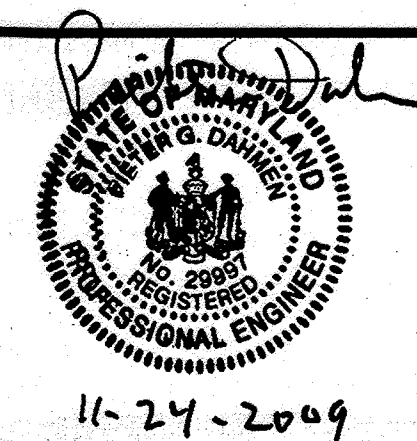
[Signature]
 Chief, Development Engineering Division &
[Signature]
 Chief, Division of Land Development
[Signature]
 Director, DEP.

12/23/09
 Date
 1/27/10
 Date
 1/2/10
 Date

Maryland Department of the Environment
 Water Management Administration
 Dam Safety Division
V. P. Dahi
 Visty P. Dahi
 Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY:
HDR
 HDR Engineering, Inc.
 5700 LAKE WRIGHT DRIVE
 SUITE 300
 NORFOLK, VIRGINIA 23502
 757-222-1500

PLANS HAVE BEEN
 DESIGNED UNDER MY
 SUPERVISION
 PIETER DAHMEN, PE
 HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
 10221 WINCOPIN CIRCLE #100
 COLUMBIA, MD 21044
 (410)-381-2947

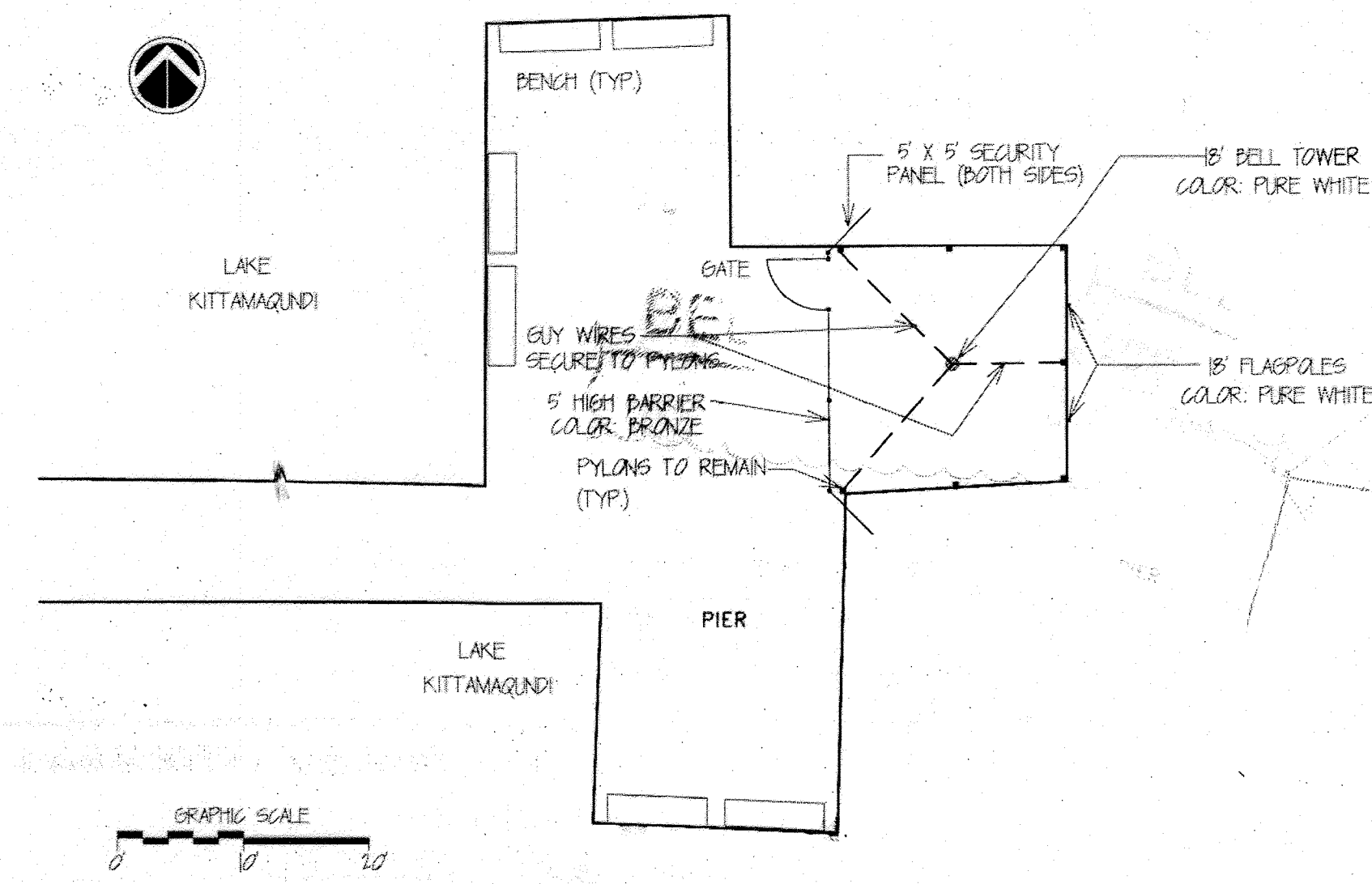
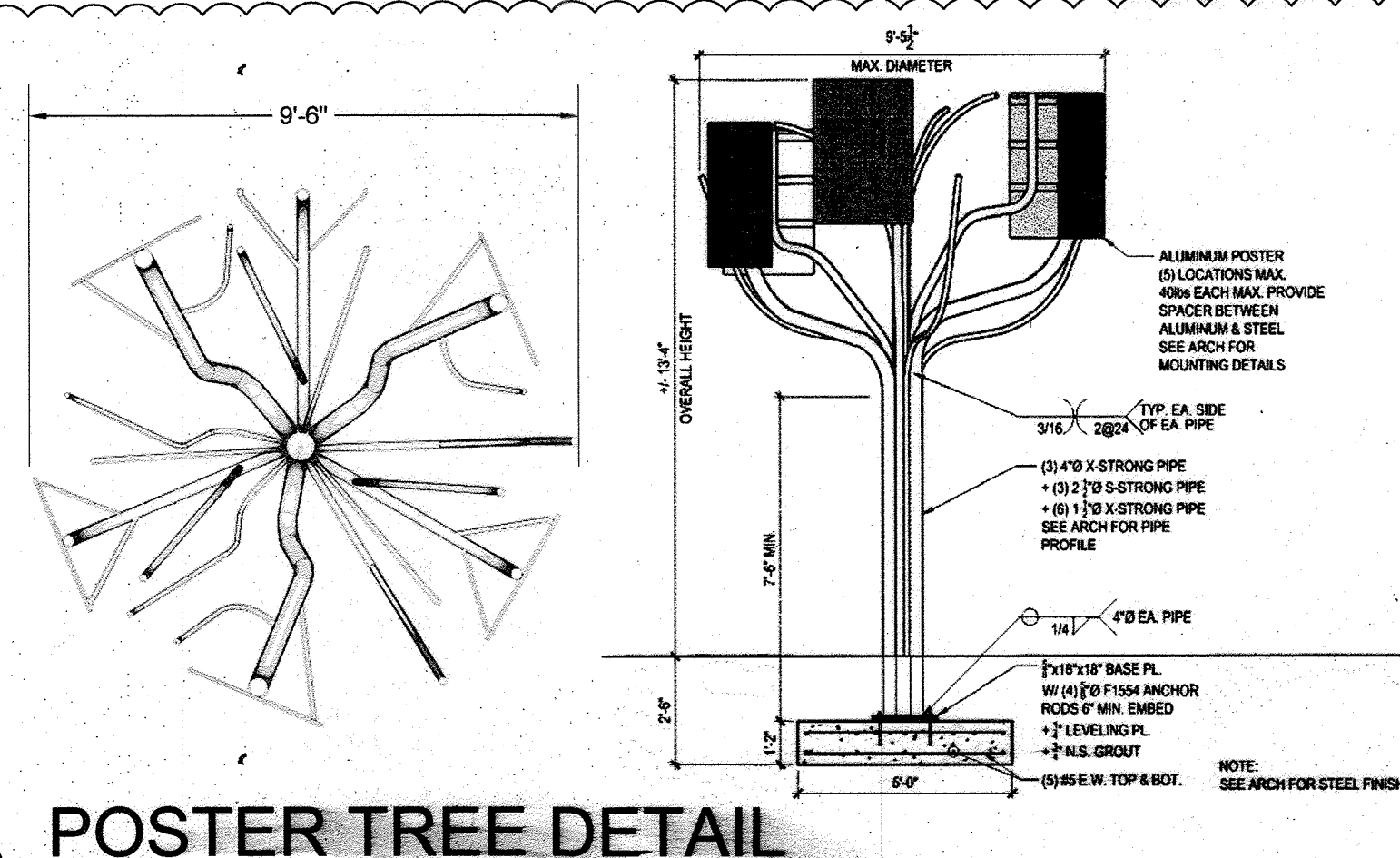
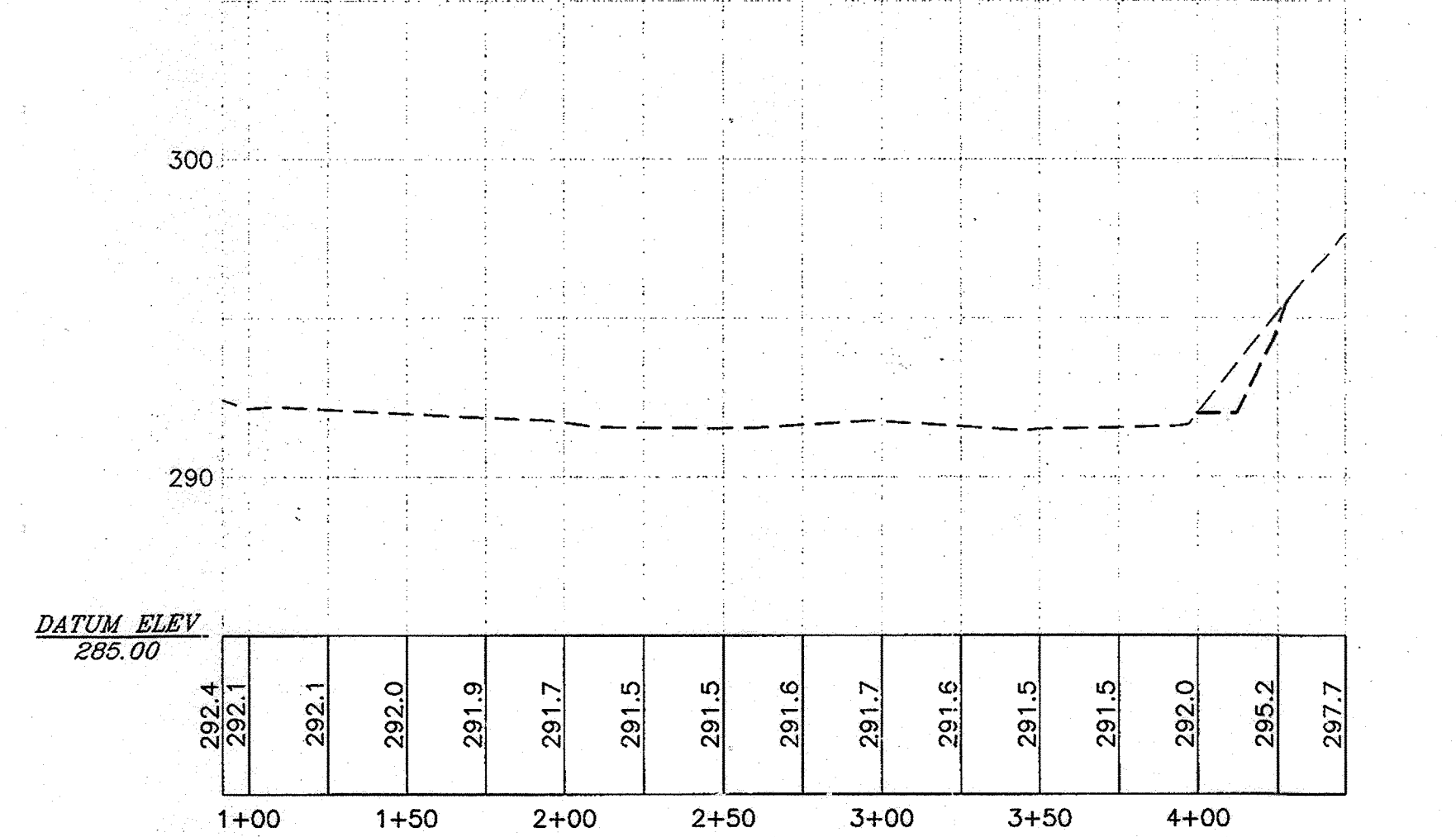
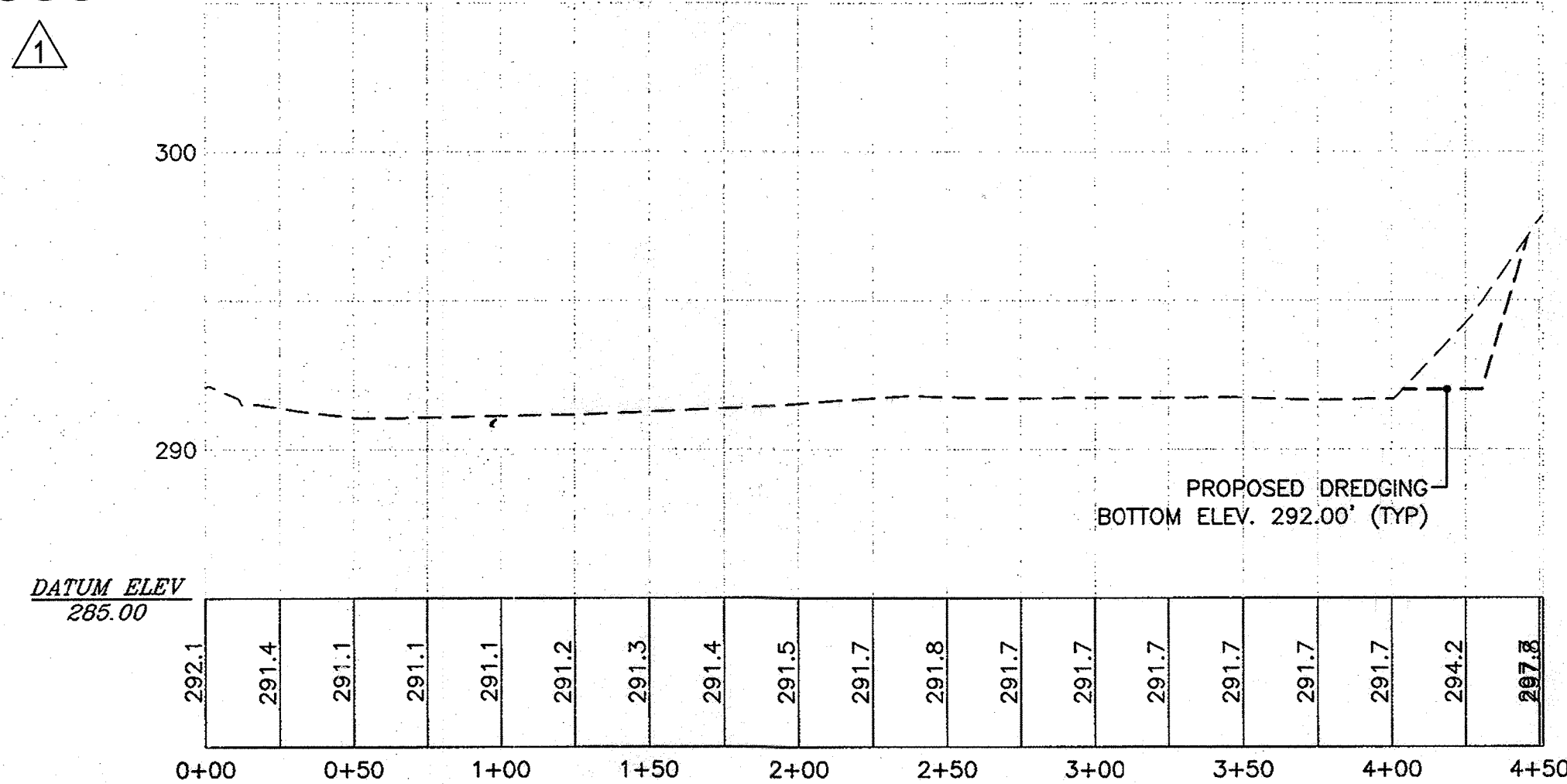
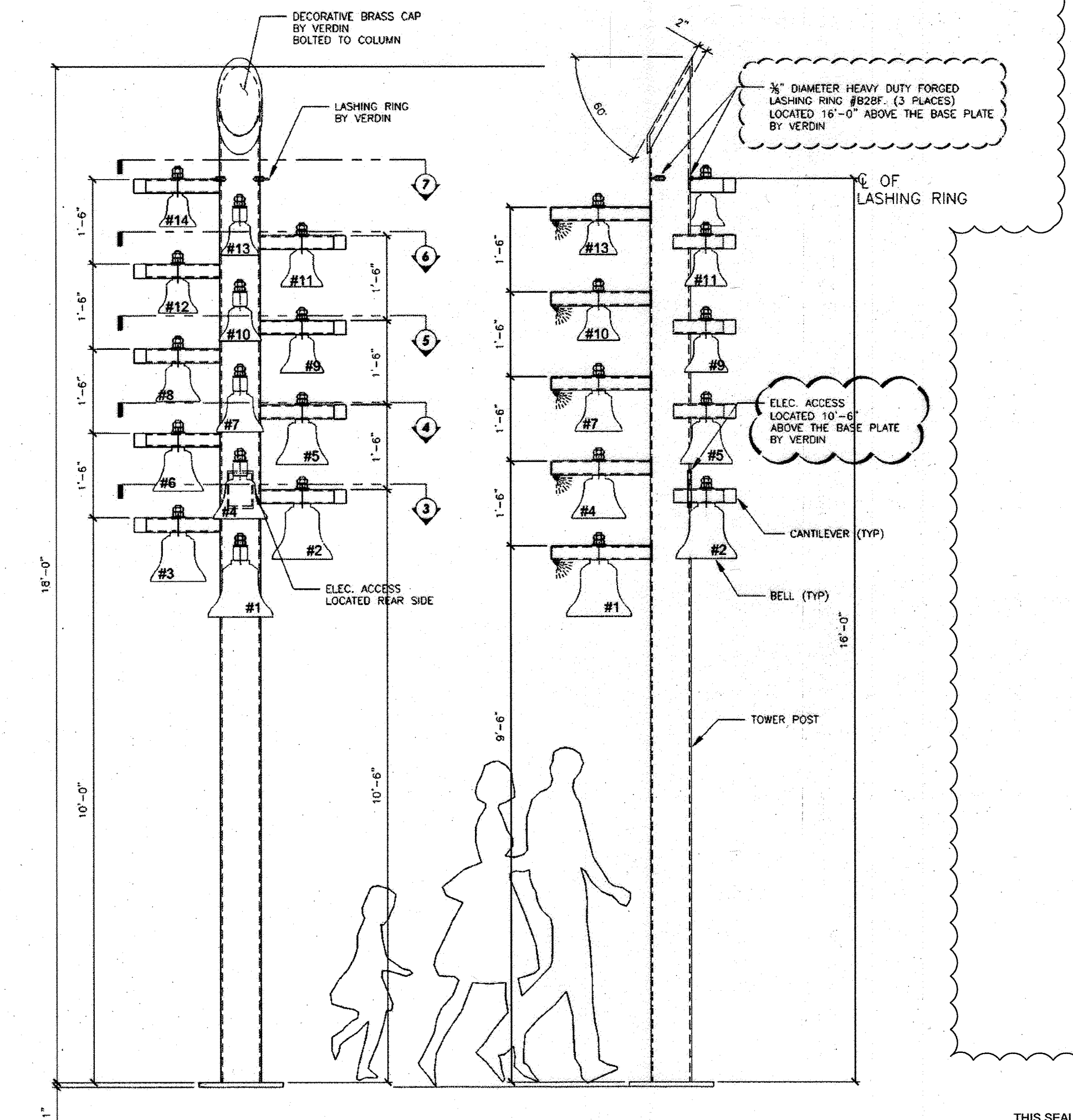
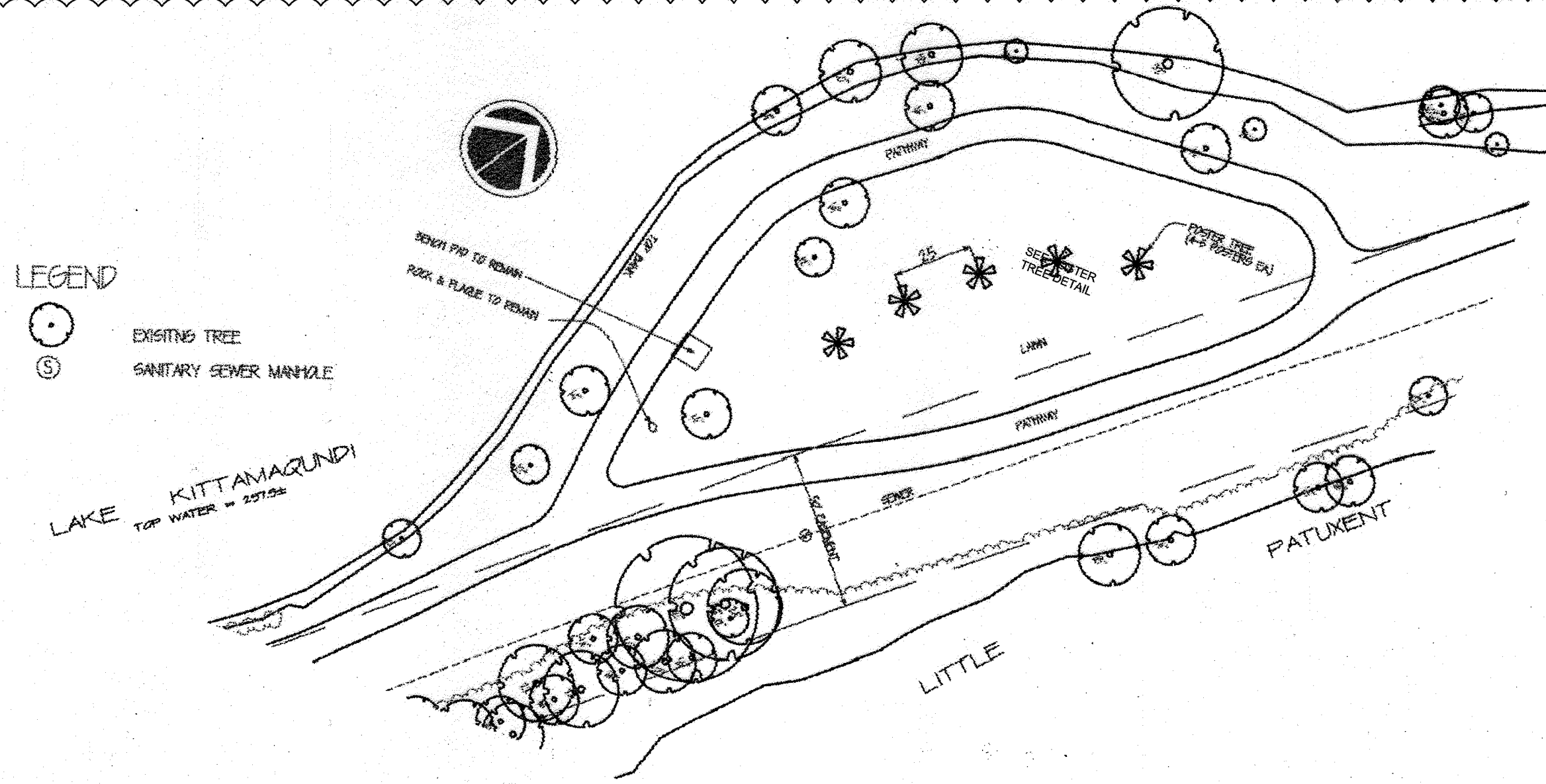
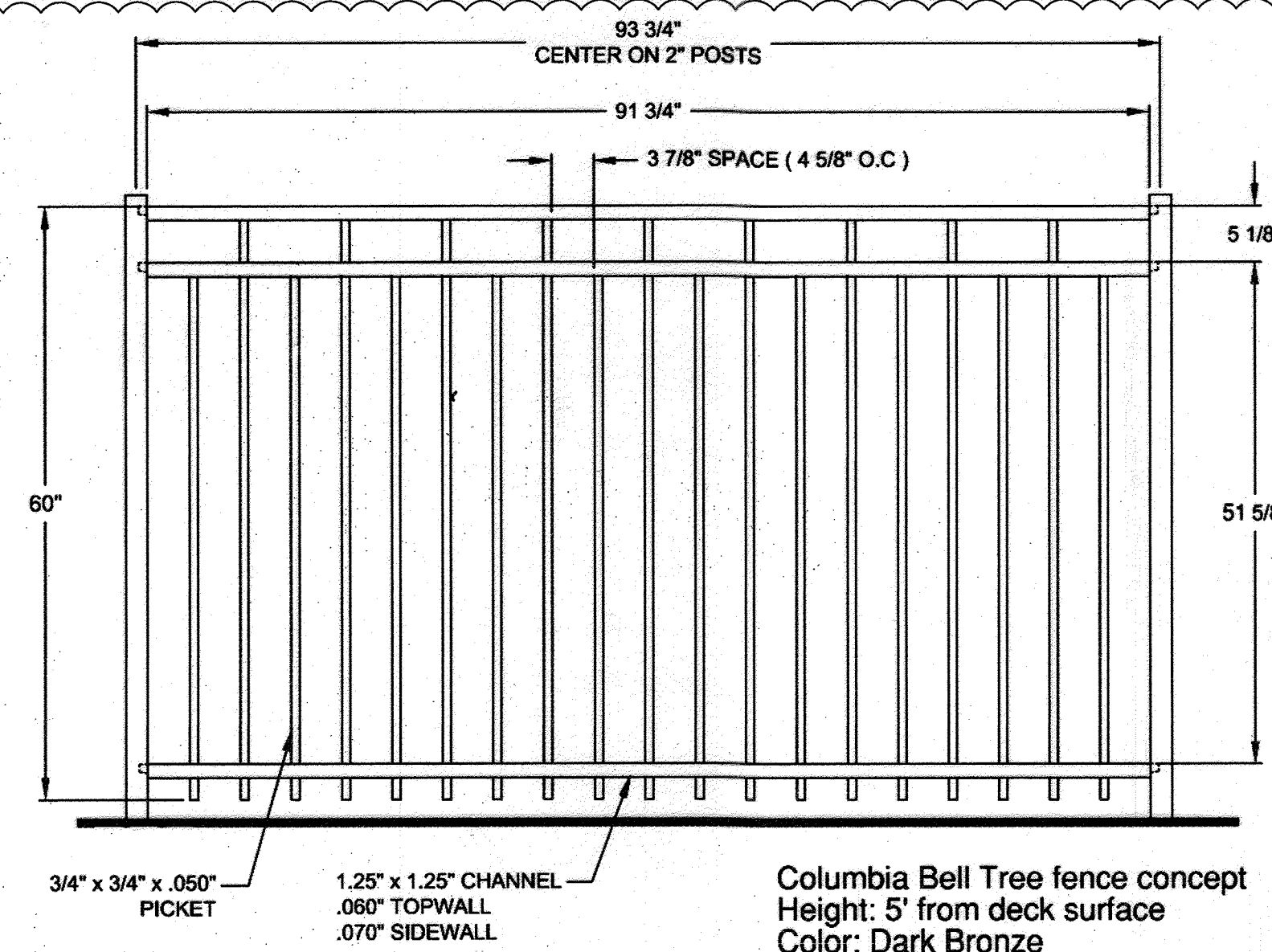
LAKE KITTAMAQUNDI RESTORATION PROJECT
 AREA 03
 CROSS-SECTIONS (1 OF 2)

COLUMBIA ASSOCIATION
 TOWN CENTER
 MINOR GRADING IN SUPPORT OF
 LAKE KITTAMAQUNDI RESTORATION
 ELECTION DISTRICT #, HOWARD COUNTY MD.
 TAX MAP 30 AND 36

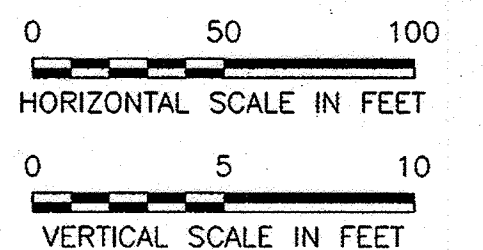
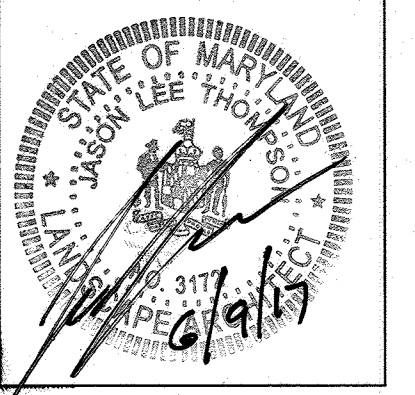
SCALE AS SHOWN
 JUNE 18, 2009

DRAWING C-08, SHEET 15 OF 62

SDP-08-108



THIS SEAL IS FOR 1 REVISIONS
MADE BY SITE RESOURCES, INC.



LEGEND:

- EXISTING BATHYMETRY
- PROPOSED BATHYMETRY

SHEET F2 FOR DETAILS
OF PROPOSED PENINSULAR
AND CREATION AREA AND
INMENT BERM.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division *W. J. Sullivan*

Chief, Division of Land Development *W. J. Sullivan*

Director, DEP. *W. J. Sullivan*

12/23/07
Date

1/07/10
Date

1/7/10
Date

Maryland Department of the Environment
Water Management Administration
Dam Safety Division

V. P. Dalal
Visty P. Dalal 12/1/01
Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY

HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

**PLANS HAVE BEEN
DESIGNED UNDER M
SUPERVISION**

PIETER DAHMEN, PE
HDR ENGINEERING INC.

**COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947**

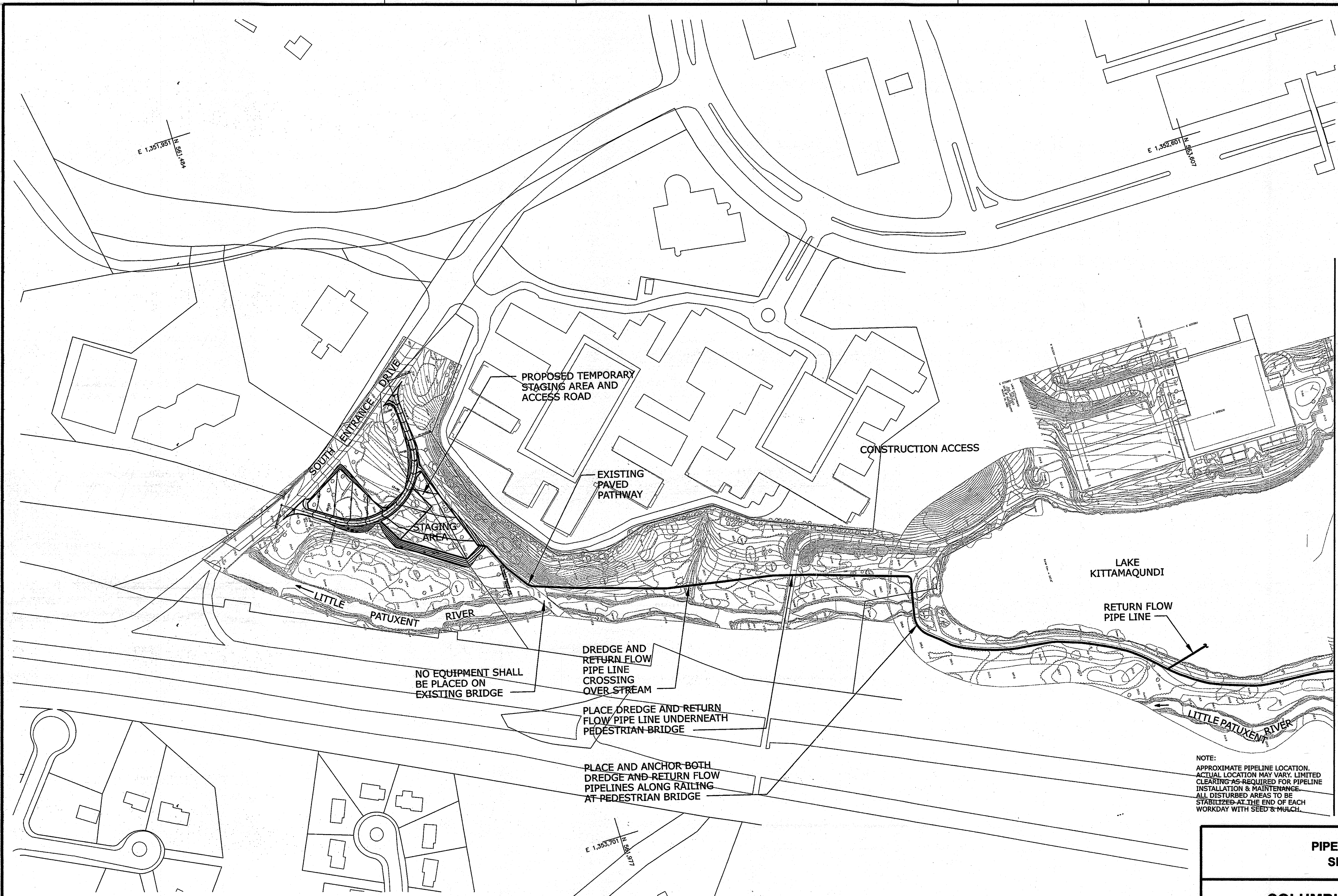
LAKE KITTAMAQUUNDI RESTORATION PROJECT
AREA 03
CROSS-SECTIONS (2 OF 2)

**COLUMBIA ASSOCIATION
TOWN CENTER**

**MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 8, HOWARD COUNTY MD.
TAX MAP 30 AND 36**

**SCALE AS SHOWN
JUNE 18, 2009**

DRAWING C-09, SHEET 16 OF 20



APPROVED: DEPARTMENT OF PLANNING AND ZONING

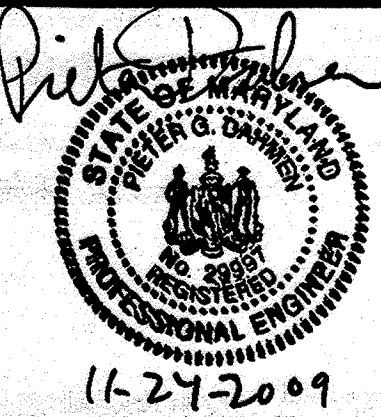
[Signature]
Chief, Development Engineering Division
[Signature]
Chief, Division of Land Development
[Signature]
Director, DEP

12/23/09
Date
1/27/10
Date
1/27/10
Date

Maryland Department of the Environment
Water Management Administration
Dam Safety Division
V.I. Dahl
V.I. Dahl
Regulatory & Compliance Engineer
12/1/09

THIS PLAN SET HAS BEEN PREPARED BY:
HDR
HDR Engineering, Inc.
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SUITE 500
NORFOLK, VIRGINIA 23502
757-222-1500

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DESIGNED UNDER MY
SUPERVISION
[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

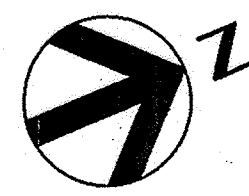
PIPELINE ROUTING
SHEET 1 OF 2

COLUMBIA ASSOCIATION
TOWN CENTER
MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUUNDI RESTORATION
ELECTION DISTRICT 6, HOWARD COUNTY MD.
TAX MAP 30 AND 36

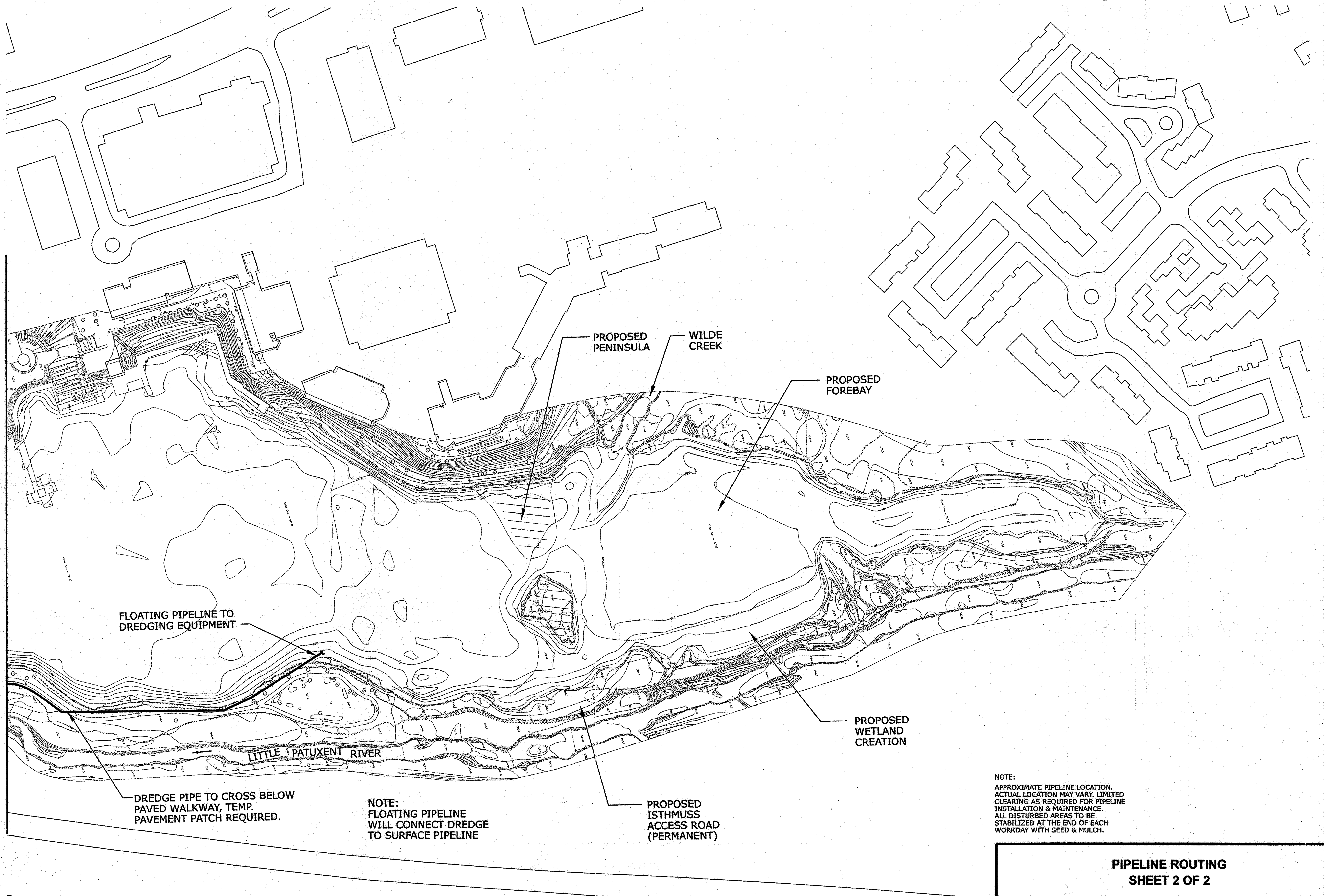
SCALE AS SHOWN
JUNE 18, 2009

DRAWING D-01, SHEET 17 OF 62

SDP-08-108



MATCH LINE SEE SHEET D-01



NOTE:
APPROXIMATE PIPELINE LOCATION.
ACTUAL LOCATION MAY VARY. LIMITED
CLEARING AS REQUIRED FOR PIPELINE
INSTALLATION & MAINTENANCE.
ALL DISTURBED AREAS TO BE
STABILIZED AT THE END OF EACH
WORKDAY WITH SEED & MULCH.

0 100 200
SCALE IN FEET

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division
[Signature]
Chief, Division of Land Development
[Signature]
Director, DEP.

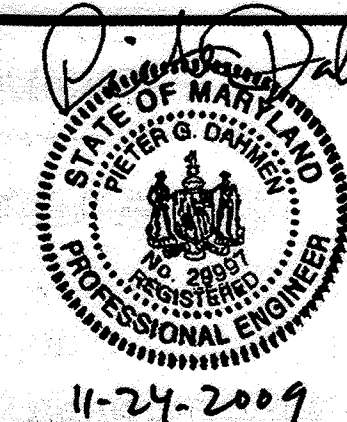
[Signature] 12/23/09
Date
[Signature] 1/07/10
Date
[Signature] 1/7/10
Date

Maryland Department of the Environment
MDE Water Management Administration
Dam Safety Division
V.P. Dalal
V.P. Dalal
Regulatory & Compliance Engineer
12/1/09

THIS PLAN SET HAS BEEN PREPARED BY:
HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION

PIETER DAHMEN, PE
HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

PIPELINE ROUTING
SHEET 2 OF 2

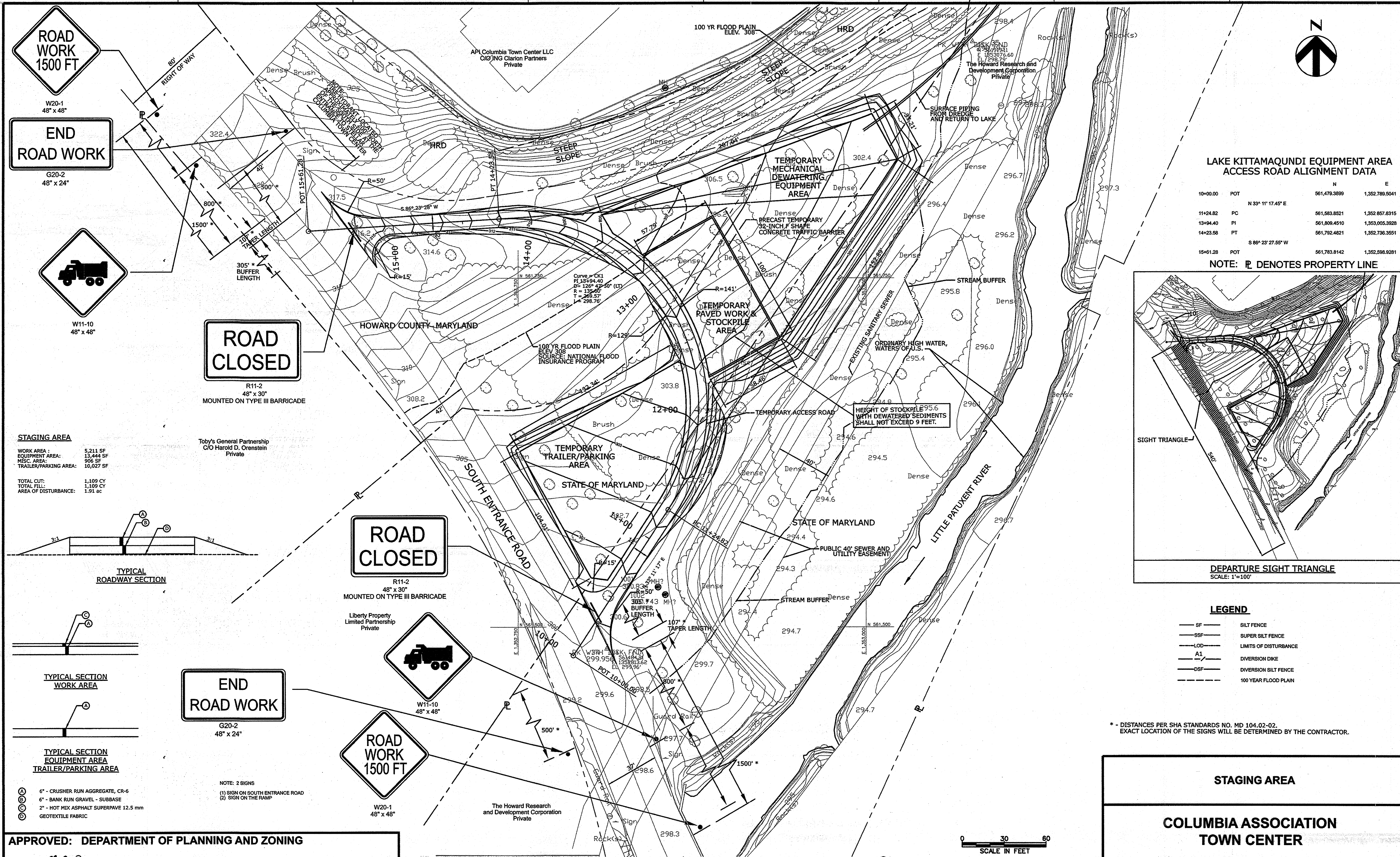
COLUMBIA ASSOCIATION
TOWN CENTER

MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 6, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING D-02, SHEET 18 OF 62

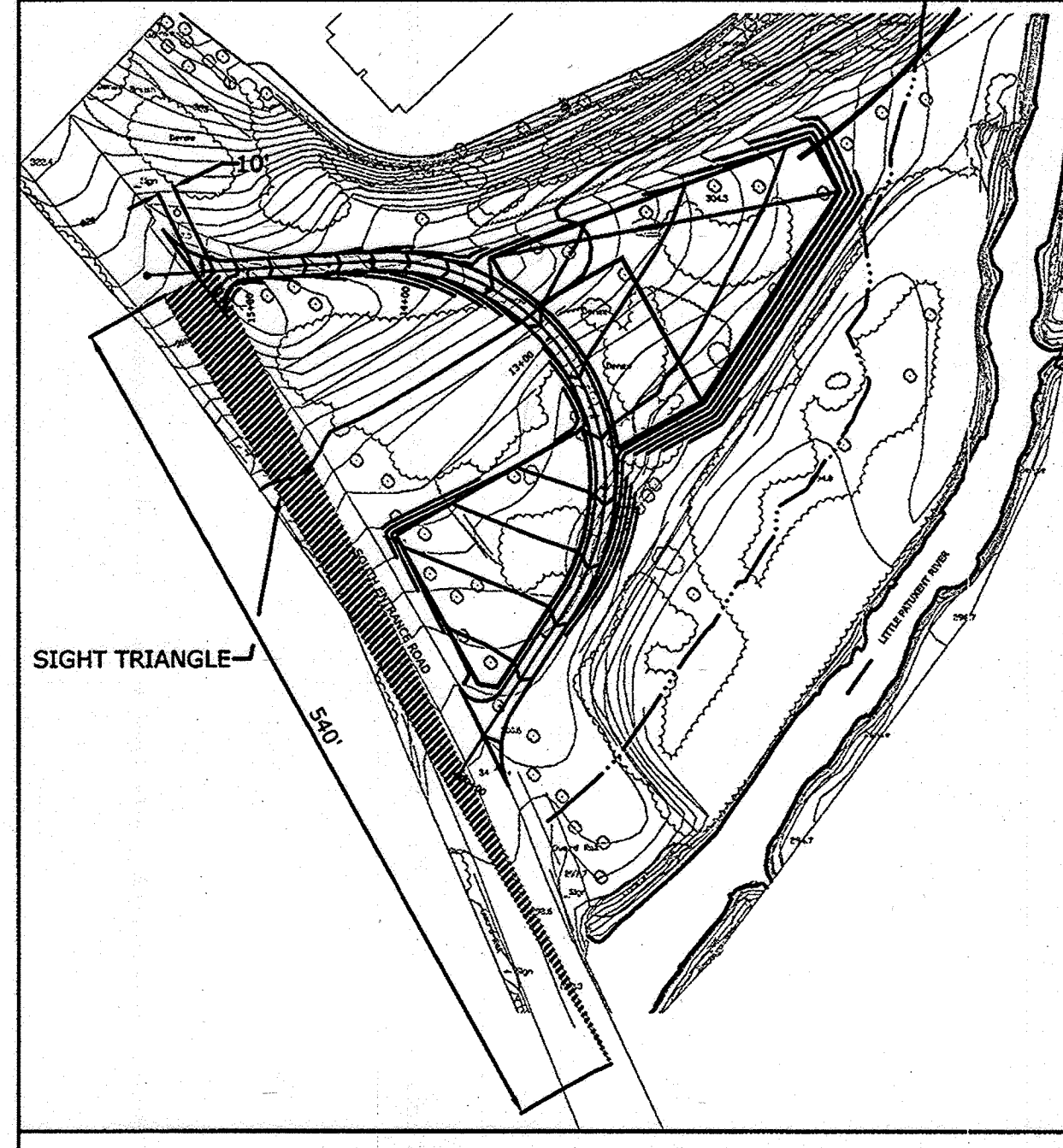
SDP-08-108



LAKE KITTAMAQUONDI EQUIPMENT AREA
ACCESS ROAD ALIGNMENT DATA

| | N | E |
|--------------|--------------|----------------|
| 10+00.00 POT | 561,478.3899 | 1,352,788.5041 |
| 11+24.82 PC | 561,583.8521 | 1,352,857.8315 |
| 13+94.40 PI | 561,809.4510 | 1,353,005.3928 |
| 14+23.58 PT | 561,792.4821 | 1,352,736.3551 |
| 15+61.28 POT | 561,783.8142 | 1,352,598.9281 |

NOTE: P DENOTES PROPERTY LINE



DEPARTURE SIGHT TRIANGLE
SCALE: 1"=100'

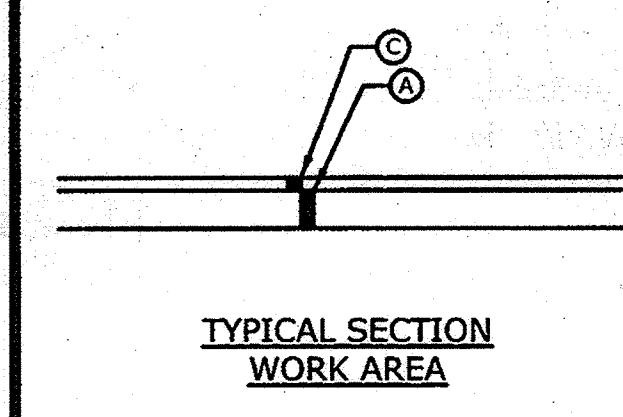
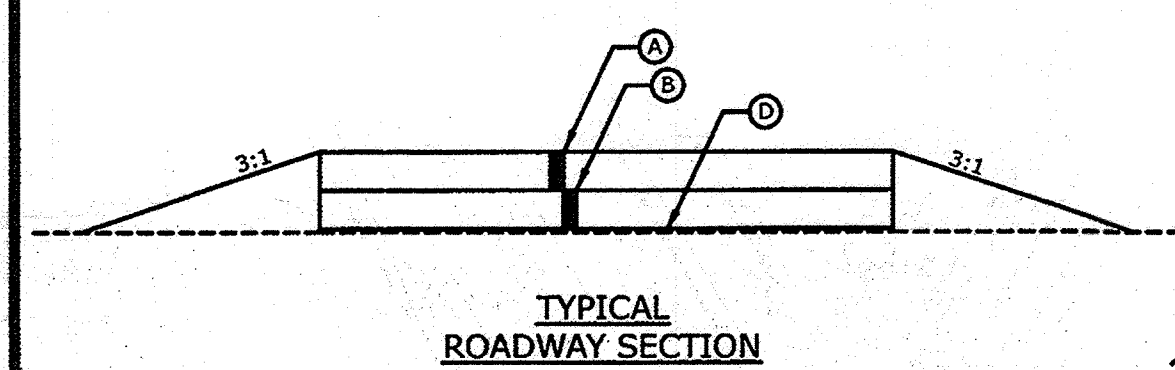
LEGEND

| | |
|---------|-----------------------|
| — SF — | SILT FENCE |
| — SSF — | SUPER SILT FENCE |
| — LOD — | LIMITS OF DISTURBANCE |
| — A1 — | DIVERSION DIKE |
| — DSF — | DIVERSION SILT FENCE |
| — — — | 100 YEAR FLOOD PLAIN |

* - DISTANCES PER SHA STANDARDS NO. MD 104.02-02.
EXACT LOCATION OF THE SIGNS WILL BE DETERMINED BY THE CONTRACTOR.

STAGING AREA

| | |
|------------------------|-----------|
| WORK AREA : | 5,211 SF |
| EQUIPMENT AREA : | 13,444 SF |
| MISC. AREA : | 906 SF |
| TRAILER/PARKING AREA : | 10,027 SF |
| TOTAL CUT : | 1,109 CY |
| TOTAL FILL : | 1,109 CY |
| AREA OF DISTURBANCE : | 1.91 ac |



- (A) 6" - CRUSHER RUN AGGREGATE, CR-6
- (B) 6" - BANK RUN GRAVEL - SUBBASE
- (C) 2" - HOT MIX ASPHALT SUPERPAVE 12.5 mm
- (D) GEOTEXTILE FABRIC

NOTE: 2 SIGNS
(1) SIGN ON SOUTH ENTRANCE ROAD
(2) SIGN ON THE RAMP

APPROVED: DEPARTMENT OF PLANNING AND ZONING

| | |
|---|----------|
| Chief, Development Engineering Division | 12/23/09 |
| Chief, Division of Land Development | 1/07/10 |
| Director, DEP | 1/7/10 |

Maryland Department of the Environment
Water Management Administration
Dam Safety Division
V.P. Dalal
Regulatory & Compliance Engineer
12/1/09

THIS PLAN SET HAS BEEN PREPARED BY:
HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION
PIETER DAHMEN, PE
HDR ENGINEERING INC.
11-24-2009

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

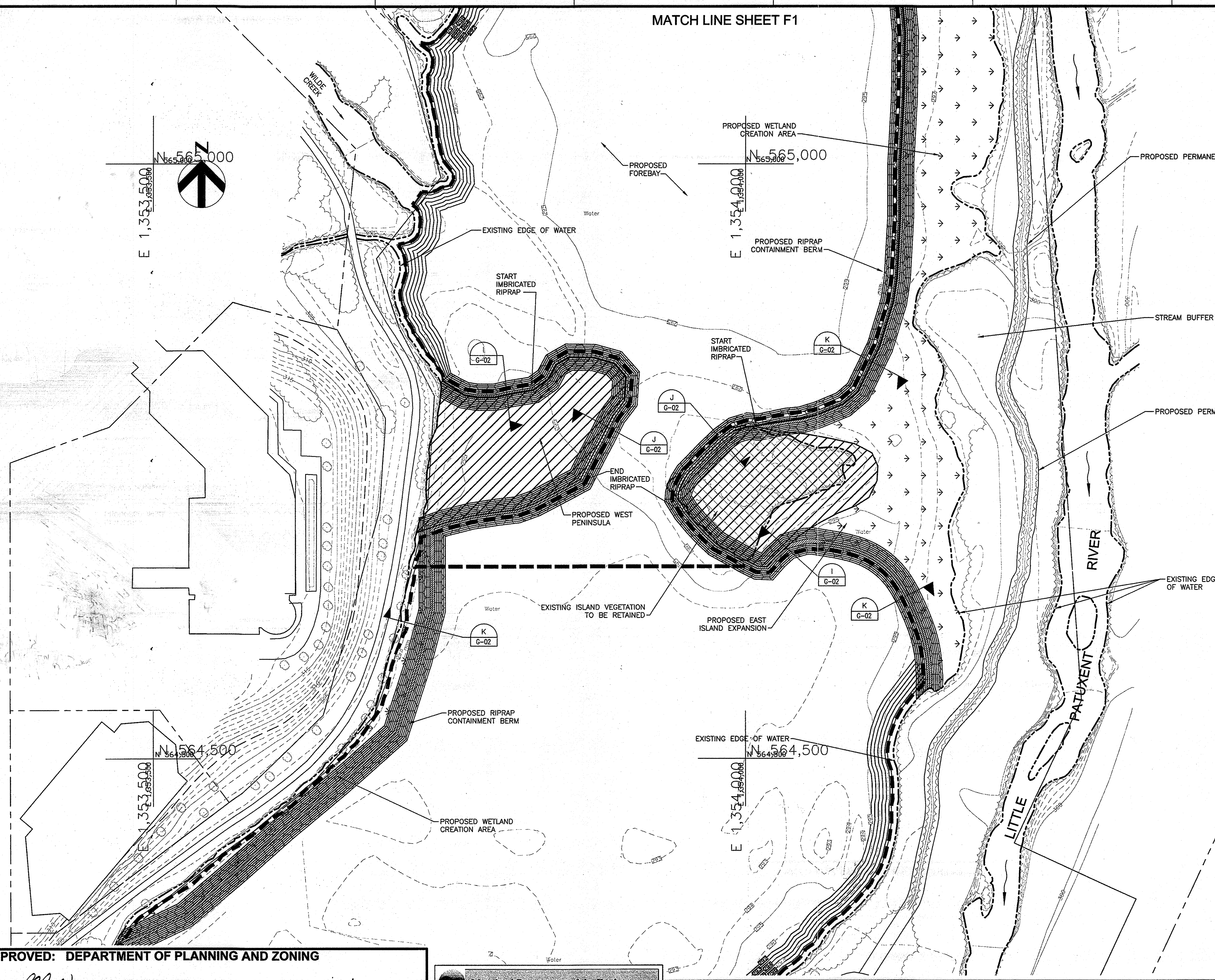
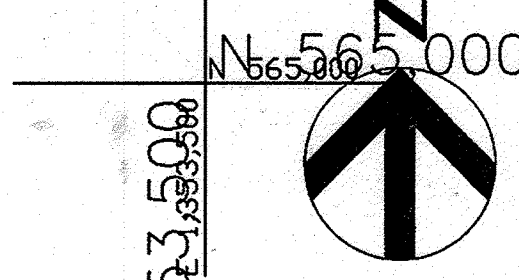
STAGING AREA

**COLUMBIA ASSOCIATION
TOWN CENTER**

**MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUONDI RESTORATION
ELECTION DISTRICT 5, HOWARD COUNTY MD.
TAX MAP 30 AND 36**

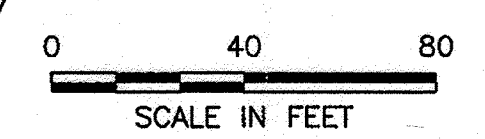
SCALE AS SHOWN
JUNE 18, 2009

DRAWING E-01, SHEET 19 OF 62



LEGEND

- PROPOSED PERMANENT ISTHMUS ACCESS ROAD
- DREDGED MATERIAL
- EXISTING ISLAND — AREA NOT TO BE DISTURBED
- PROPOSED WETLAND
- RIPRAP CONTAINMENT BERM



APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division

[Signature]
Chief, Division of Land Development

[Signature]
Director, DEP

12/23/09
Date

1/07/10
Date

1/7/10
Date

Maryland Department of the Environment
Water Management Administration
Dam Safety Division

V. P. Dalal
V. P. Dalal
Regulatory & Compliance Engineer

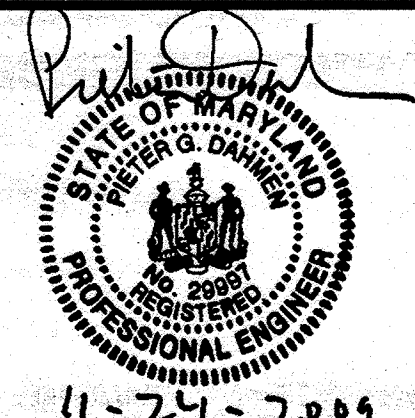
12/1/09
Date

THIS PLAN SET HAS BEEN PREPARED BY:

HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
707-222-1500

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[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

LAKE KITTAMAQUNDI RESTORATION PROJECT

WETLAND CREATION AREAS

COLUMBIA ASSOCIATION TOWN CENTER

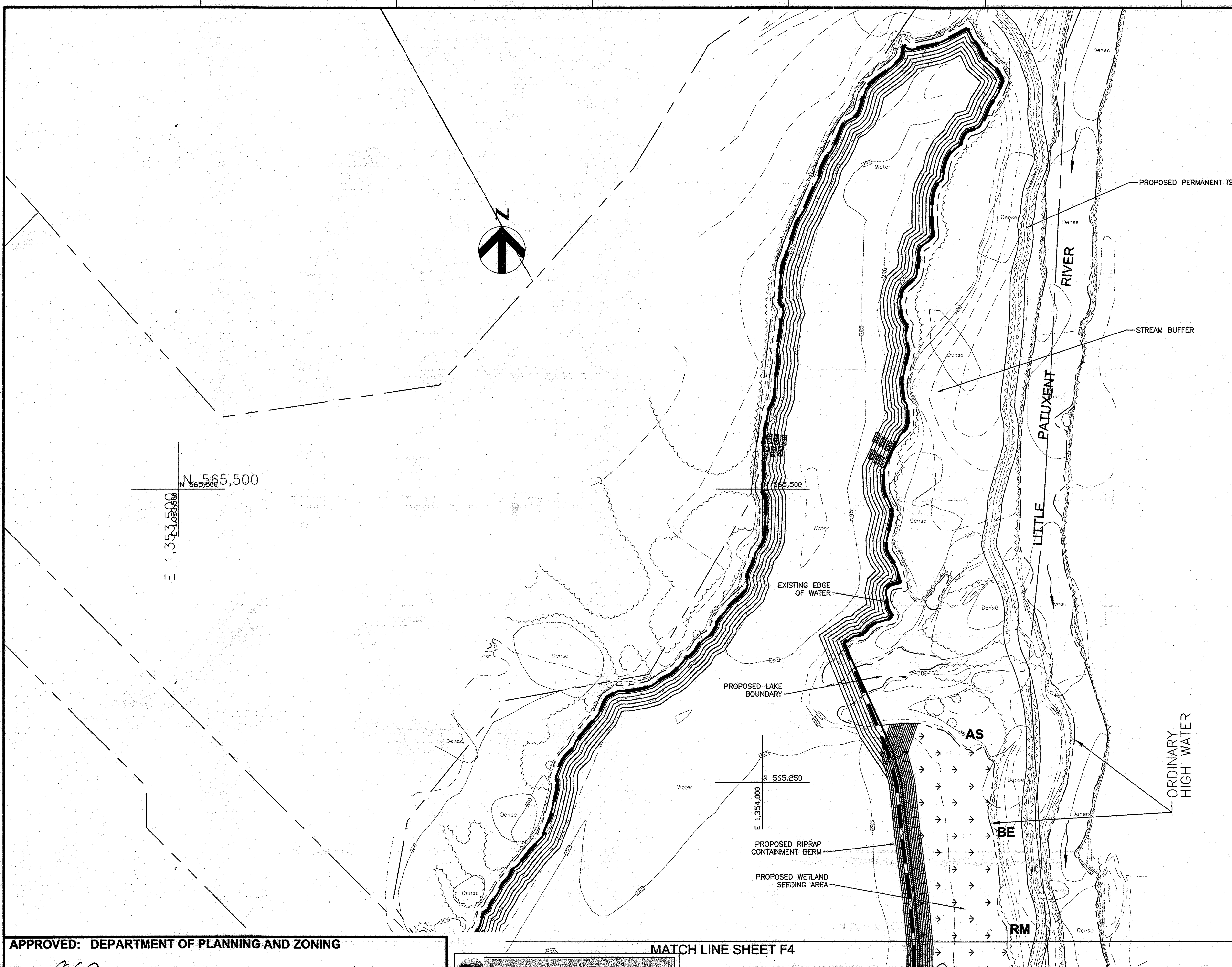
MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 8, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING F-02 SHEET 21 OF 02
SDP-08-108

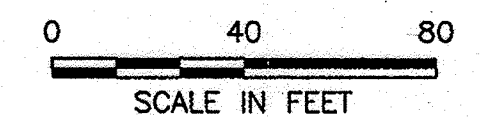
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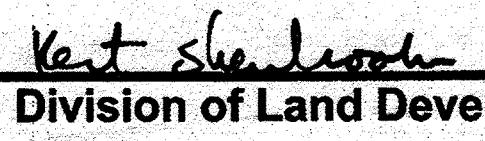
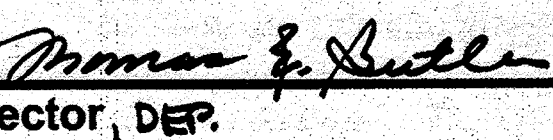


LEGEND

| | |
|---------------------------------|--|
| Sal | Black Willow (<i>Salix nigra</i>) |
| Aln | Smooth Alder (<i>Alnus serrulata</i>) |
| WETLAND TREES (GROUPS OF 3): | |
| RB | River Birch (<i>Betula Nigra</i>) |
| SM | Silver Maple (<i>Acer Saccharinum</i>) |
| RM | Red Maple (<i>Acer Rubrum</i>) |
| BE | Box Elder (<i>Acer Negundo</i>) |
| AS | American Sycamore (<i>Platanus Occidentalis</i>) |
| WETLAND SEED MIX | |
| RIPRAP CONTAINMENT BERM | |



APPROVED: DEPARTMENT OF PLANNING AND ZONING

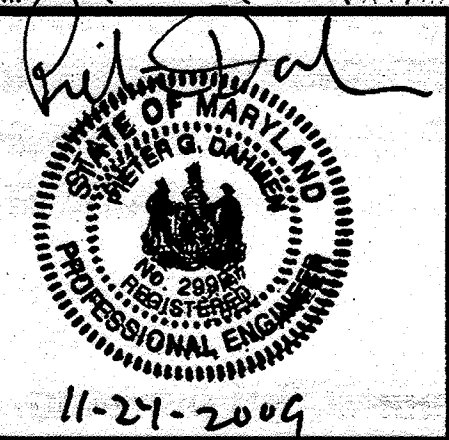
| | |
|--|------------------|
|  Chief, Development Engineering Division | 12/22/09 Date |
|  Chief, Division of Land Development | 1/07/10 Date |
|  Director, DEP | 1/7/10 Date |

MDE Maryland Department of the Environment
Water Management Administration
Dam Safety Division
V. P. Dalal
Visty P. Dalal
Regulatory & Compliance Engineer
12/1/09

THIS PLAN SET HAS BEEN PREPARED BY:
HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION

PIETER DAHMEN, PE
HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

LAKE KITTAMAQUNDI RESTORATION PROJECT

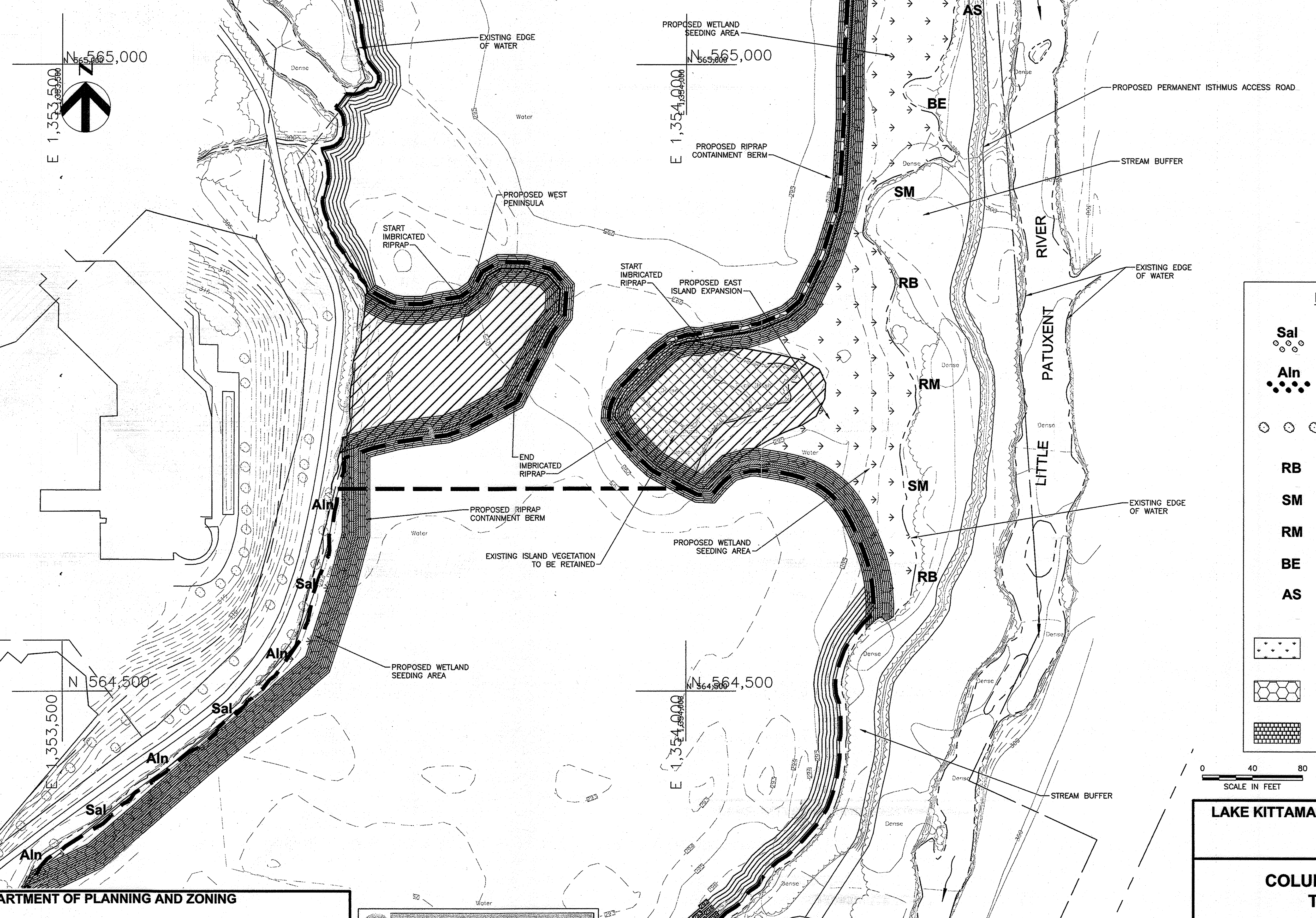
PLANTING PLAN

**COLUMBIA ASSOCIATION
TOWN CENTER**

**MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 8, HOWARD COUNTY MD.
TAX MAP 30 AND 36**

SCALE AS SHOWN
JUNE 18, 2009

DRAWING F-03, SHEET 22 OF 62
SDP-08-108



Sal Black Willow (*Salix nigra*)

Aln Smooth Alder (*Alnus serrulata*)

WETLAND TREES
(GROUPS OF 3):

RB River Birch (*Betula Nigra*)

SM Silver Maple (*Acer Saccharinum*)

RM Red Maple (*Acer Rubrum*)

BE Box Elder (*Acer Negundo*)

AS American Sycamore (*Platanus Occidentalis*)

The diagram illustrates three different methods for creating a riprap containment berm, each shown in a rectangular box:

- WETLAND SEED MIX:** The first box shows a rectangular area filled with small, dark, irregular shapes representing seeds or organic material, intended for natural revegetation.
- RIPRAP CONTAINMENT BERM:** The second box shows a rectangular area filled with large, irregular, light-colored shapes representing riprap stones, designed to physically contain the sediment.
- IMBRICATED RIPRAP:** The third box shows a rectangular area filled with small, light-colored squares arranged in a staggered, overlapping pattern, creating a more stable and permeable structure.

0 40 80
SCALE IN FEET

PLANTING PLAN

**MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 6, HOWARD COUNTY MD.
TAX MAP 30 AND 36**

SCALE AS SHOWN
JUNE 18, 2009

DRAWING F-04, SHEET 23 OF 62

SDP-08-108

APPROVED: DEPARTMENT OF PLANNING AND ZONING

W. B. ...
Chief, Development Engineering Division *CE*

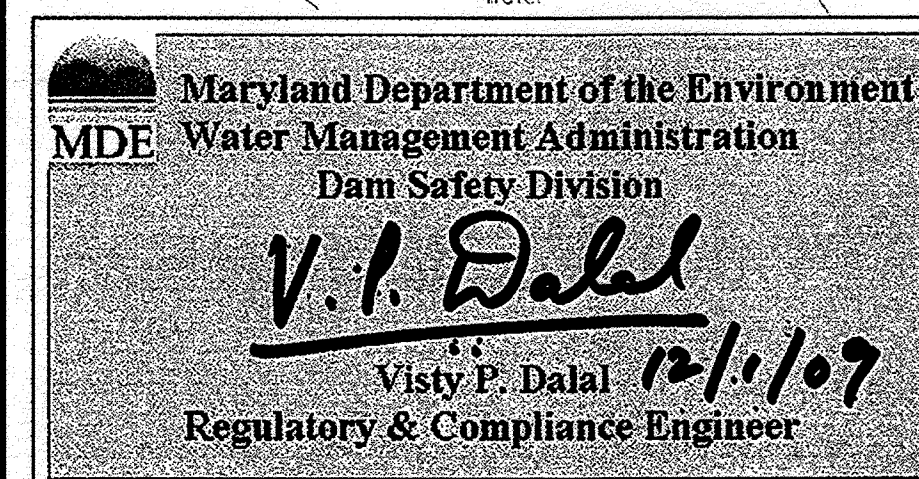
K. S. ...
Chief, Division of Land Development *DL*

Thomas G. Butler
Director, DEP.

12/22/05
Date

1/07/10
Date

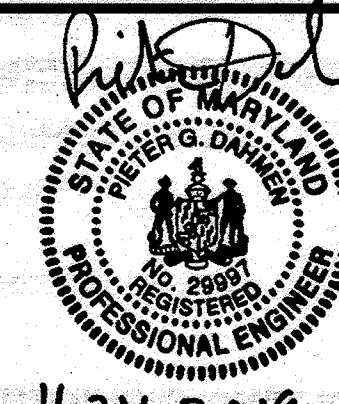
1/7/10
Date



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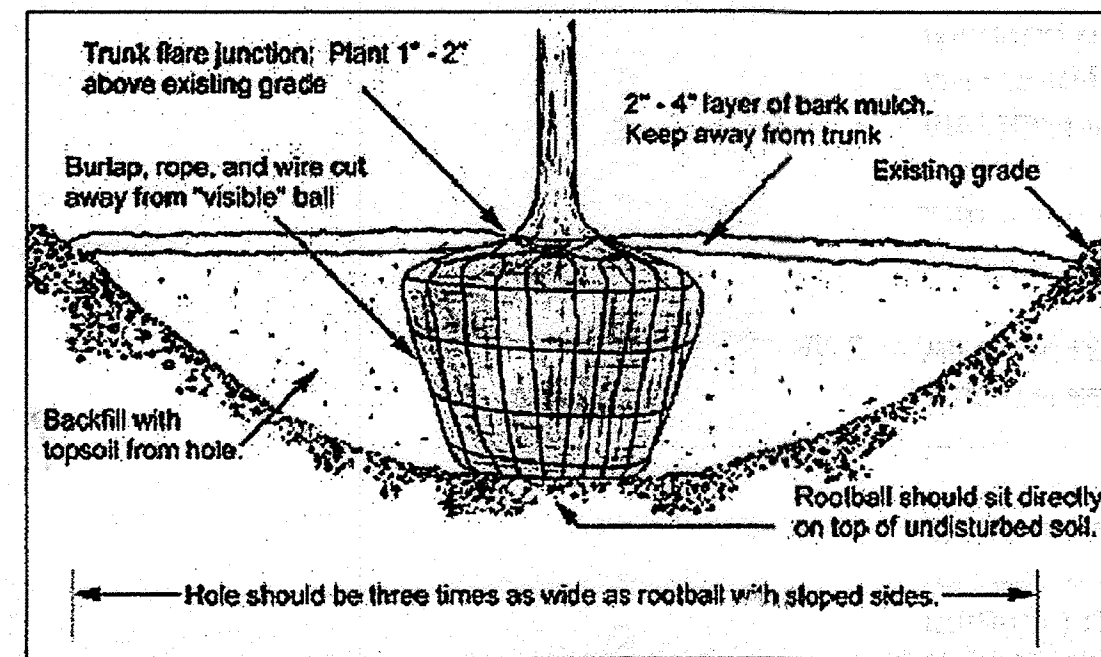
**PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION**

PIETER DAHMEN, PE
HDR ENGINEERING INC.

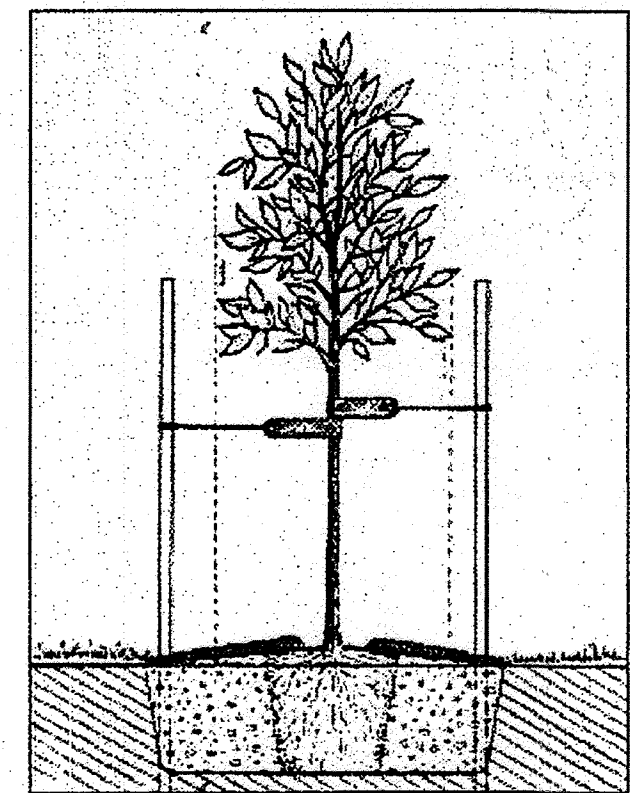


**COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947**

BALL & BURLAP DETAIL



PLANT STAKING DETAIL



FLOOD PLAIN WILDLIFE MIX: ERNMX-154 Seed at 15 pounds per acre

| Percentage | Scientific Name | Common Name | Quantity |
|------------|---|-------------------------|----------|
| 15.0% | <i>Carex vulpinoidea</i> | Fox Sedge | 2.75 lbs |
| 15.0% | <i>Elymus virginicus</i> | Virginia Wild Rye | 2.75 lbs |
| 11.0% | <i>Elymus canadensis</i> | Canada Wild Rye | 2.00 lbs |
| 10.0% | <i>Andropogon gerardii</i> , WI Ecotype | WI Ecotype Big Bluestem | 1.75 lbs |
| 7.0% | <i>Verbena hastata</i> | Blue Vervain | 1.25 lbs |
| 6.0% | <i>Heliopsis helianthoides</i> | Ox Eye Sunflower | 1.00 lbs |
| 5.0% | <i>Panicum clandestinum</i> | Tioga Deer Tongue | 1.00 lbs |
| 4.0% | <i>Carex crinita</i> | Fringed (Nodding) Sedge | 0.75 lbs |
| 4.0% | <i>Desmodium canadense</i> | Showy Tick Trefoil | 0.75 lbs |
| 3.0% | <i>Helenium autumnale</i> | Common Sneezeweed | 0.50 lbs |
| 3.0% | <i>Iris versicolor</i> | Blue Flag | 0.50 lbs |
| 2.0% | <i>Carex scoparia</i> | Blunt Broom Sedge | 0.25 lbs |
| 2.0% | <i>Carex stipata</i> | Awl Sedge | 0.25 lbs |
| 2.0% | <i>Carex vesicaria</i> | Inflated Sedge | 0.25 lbs |
| 2.0% | <i>Eupatorium perfoliatum</i> | Boneset | 0.25 lbs |
| 2.0% | <i>Panicum virgatum</i> , Shelter | Shelter Switch Grass | 0.25 lbs |
| 2.0% | <i>Verbesina alternifolia</i> | Wingstem | 0.25 lbs |
| 2.0% | <i>Vernonia gigantea</i> | Giant Ironweed | 0.25 lbs |
| 1.0% | <i>Carex squarrosa</i> | Squarrose Sedge | 0.25 lbs |
| 1.0% | <i>Carex tribuloides</i> | Bristlebract Sedge | 0.25 lbs |
| 1.0% | <i>Monarda fistulosa</i> | Wild Bergamot | 0.25 lbs |

PLANTING NOTES

- W-1 Plants and seeds shall be obtained from a commercial supplier. The Contractor shall make arrangements with reliable sources to ensure that an adequate supply of the required plant and seed material is available. A source of supply shall be submitted in writing to the Project Engineer prior to beginning of construction, and shall guarantee that the plant and seed materials are being reserved or grown for the Contractor. If this requirement is not met, the Contractor will be responsible for the additional costs of supplying larger size materials, larger container size, or substitute plants chosen by the Project Engineer.
- W-2 All seed received from commercial suppliers shall be as specified in the plans. All wetland seeding shall be seeded at the specified rate in pounds of Pure Live Seed (PLS) per Acre.
- W-3 In the event that a seed specified is not commercially available, the Contractor may request a substitution in writing. All requests for substitutions shall be made at least 2 months prior to seeding and be approved by the Project Environmental Inspector. Substitute seed must meet the same testing requirements as the original seed specified.
- W-4 All plant material received from commercial suppliers shall conform to the current issue of the American Standard for Nursery Stock, published by the American Association of Nurserymen.
- W-5 Substitutions of plant material will be allowed only under the conditions specified in the Special Provision for Wetland Planting. Requests for plant material substitution must be submitted in writing at least two months prior to planting, and the substitution must be approved by the Project Environmental Inspector.
- W-6 The Contractor is responsible for installing all plant material in the appropriate season for each plant type. Trees and shrubs shall be planted during the period from November 15 through March 15 (outside the growing season). The herbaceous material shall be planted from April 15 to June 30. Any request for variance from these times of year restrictions must be submitted in writing at least two months prior to planting and must be approved by the Project Environmental Inspector.
- W-7 All plant material, unless otherwise specified, shall be uniformly shaped and have a vigorous root system. The plant material shall be healthy, vigorous, and free from defects, decay, abrasions of the bark, plant diseases, insect pest eggs, and all forms of infestations. The plant material must be fresh and free from transplant shock or visible wilt. Unhealthy plant stock and plants from cold storage are unacceptable and will be rejected.
- W-8 All container grown stock shall have been propagated in a container large enough for the roots to have developed sufficiently to hold its soil when removed from the container. Container stock with poorly developed roots is unacceptable and will be rejected.
- W-9 The Contractor shall verify all final grades prior to beginning planting work. If final grades differ from those depicted on the grading plan, the Contractor shall notify the Project Engineer and Project Environmental Inspector prior to planting in the area of concern.
- W-10 After soil preparation and prior to seeding and planting, equipment will not be permitted on the wetland planting zones without prior approval from the Project Engineer.
- W-11 Seeding in wetlands areas will not require lime or fertilizer. No seeding shall occur when the soil is frozen or flooded.
- W-12 The Contractor shall notify the Project Engineer and Project Environmental Inspector a minimum of 48 hours prior to commencing planting or seeding operations.
- W-13 Shrubs (*Alnus serrulata* and *Salix nigra*) shall be planted in cluster arrangements along the western planting area as shown on Planting Plan Sheet 8.
- W-14 - Trees (*Betula nigra*, *Fraxinus pennsylvanica*, *Acer rubrum*, *Acer saccharinum*, and *Platanus occidentalis*) shall be planted as shown on the Planting Plan (Sheets 7 and 8).
- W-15 The final location and orientation of all plant material, as well as the location of all planting zones, will be subject to the approval of the Project Environmental Inspector. The Contractor will be responsible for replanting or reseeding any plant material installed without the approval of the Project Environmental Inspector.
- W-16 Each plant shall be fertilized with 20-10-5 controlled-release tablets. The formulation specified (20-10-5) is a readily available commercial formulation. Formulations vary considerably by manufacturer, and other formulations are acceptable, provided the tablets are not readily water-soluble. The selection of fertilizer and all application specifications shall be approved by the Project Environmental Inspector prior to planting. The tablets shall be buried within the planting pit near the plant's root system. Plant stock shall be fertilized at the following rates:

| Stock | No. of Tablets |
|---------------|----------------|
| # 7 container | 3 |
| Ball & Burlap | 4 |

(Approximate number of tablets equals 249. Cost to be included in other pay items.)

- W-17 During planting the Contractor shall water each plant with the following minimum quantities of water, unless otherwise directed by the Project Engineer:

| | |
|--------|------------------|
| Trees | 1 gallon per pit |
| Shrubs | 1 gallon per pit |

- W-18 The Contractor shall be required to guarantee and maintain all plant materials for a period of two consecutive years after date of acceptance of finished planting by the Project Engineer.

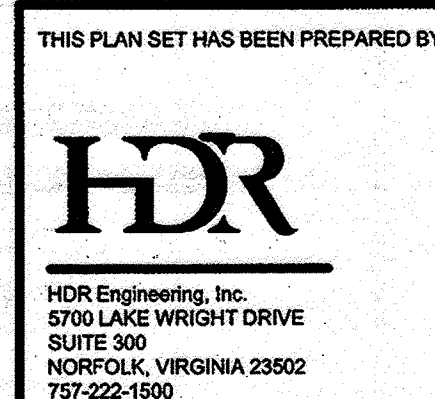
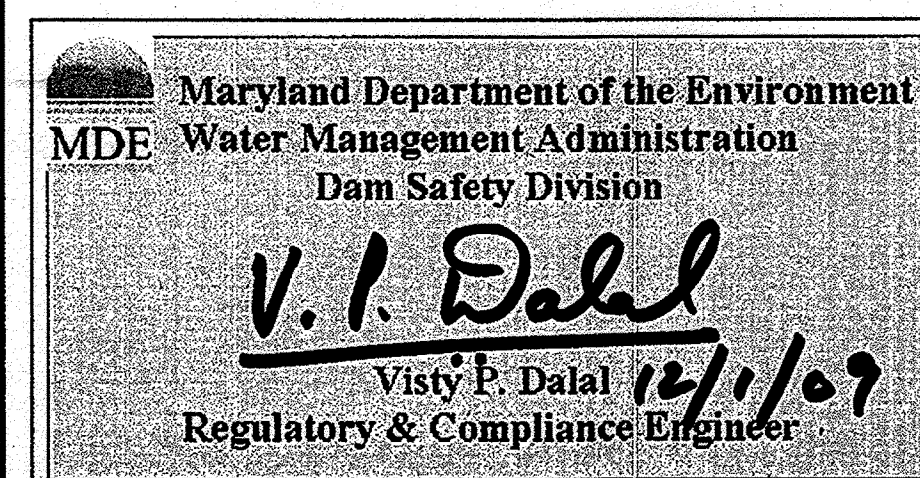
PLANTING LIST

| Common Name | Scientific Name | Indicator Status | Container Type | Minimum Size | Quantity |
|-------------------|------------------------------|------------------|-------------------------------|--------------|----------|
| Silver Maple | <i>Acer saccharinum</i> | FACW | Ball & Burlap | 2-3" caliper | 6 |
| Red Maple | <i>Acer rubrum</i> | FAC | Ball & Burlap | 2-3" caliper | 6 |
| Box Elder | <i>Acer Negundo</i> | FACW | Ball & Burlap or #7 container | 1-2" caliper | 6 |
| River Birch | <i>Betula nigra</i> | FACW | Ball & Burlap or #7 container | 2-3" caliper | 6 |
| American Sycamore | <i>Platanus occidentalis</i> | FACW- | Ball & Burlap or #7 container | 2-3" caliper | 6 |
| Smooth Alder | <i>Alnus serrulata</i> | OBL | #7 container | 1-2" caliper | 28 |
| Black Willow | <i>Salix nigra</i> | FACW+ | #7 container | 1-2" caliper | 15 |

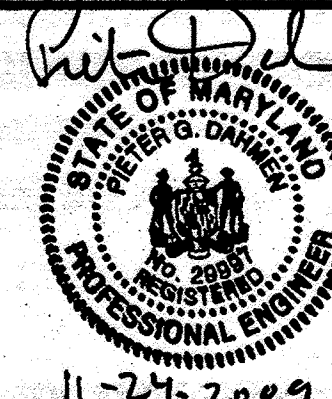
APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division
 Chief, Division of Land Development
 Director, DEP

12/23/09
 Date
 1/07/10
 Date
 1/7/10
 Date



THIS PLAN SET HAS BEEN PREPARED BY:
 PLANS HAVE BEEN DESIGNED UNDER MY SUPERVISION
 PIETER DAHMEN, PE
 HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
 10221 WINCOPIN CIRCLE #100
 COLUMBIA, MD 21044
 (410)-381-2947

LAKE KITTAMAQUUNDI RESTORATION PROJECT

PLANTING DETAILS AND NOTES

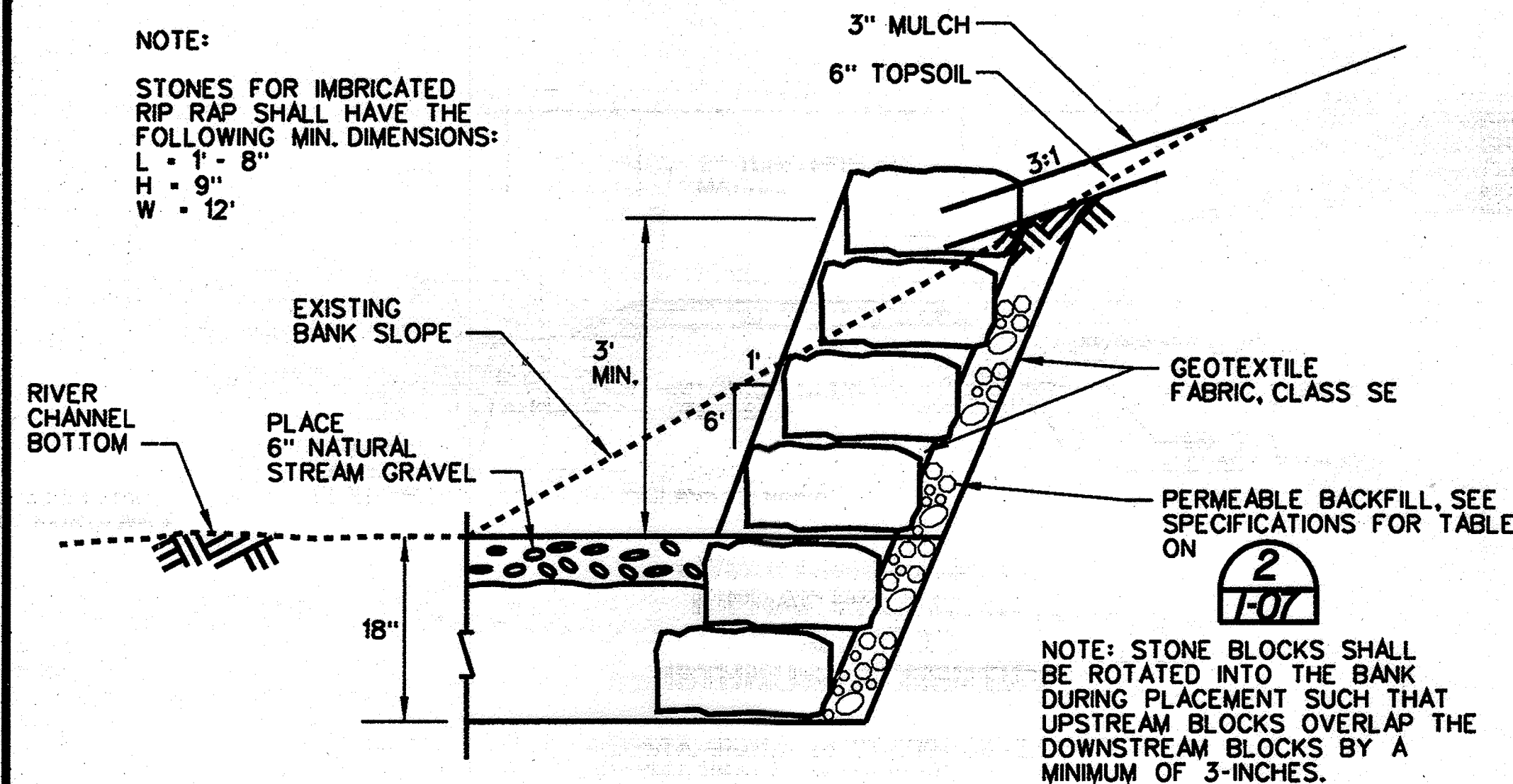
COLUMBIA ASSOCIATION TOWN CENTER

MINOR GRADING IN SUPPORT OF
 LAKE KITTAMAQUUNDI RESTORATION
 ELECTION DISTRICT 8, HOWARD COUNTY MD.
 TAX MAP 30 AND 36

SCALE AS SHOWN
 JUNE 18, 2009

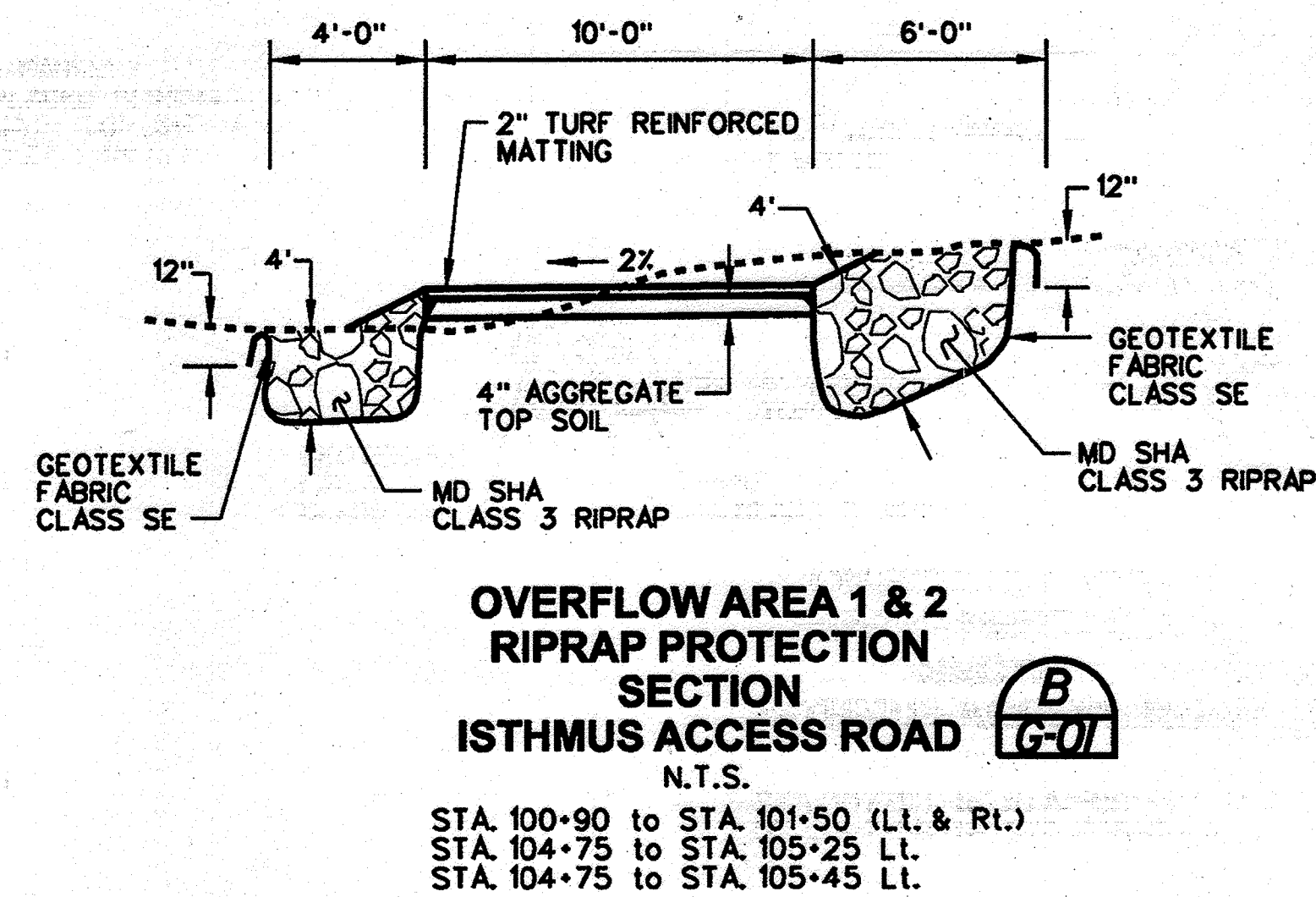
DRAWING F-05, SHEET 24 OF 62

SDP-08-108

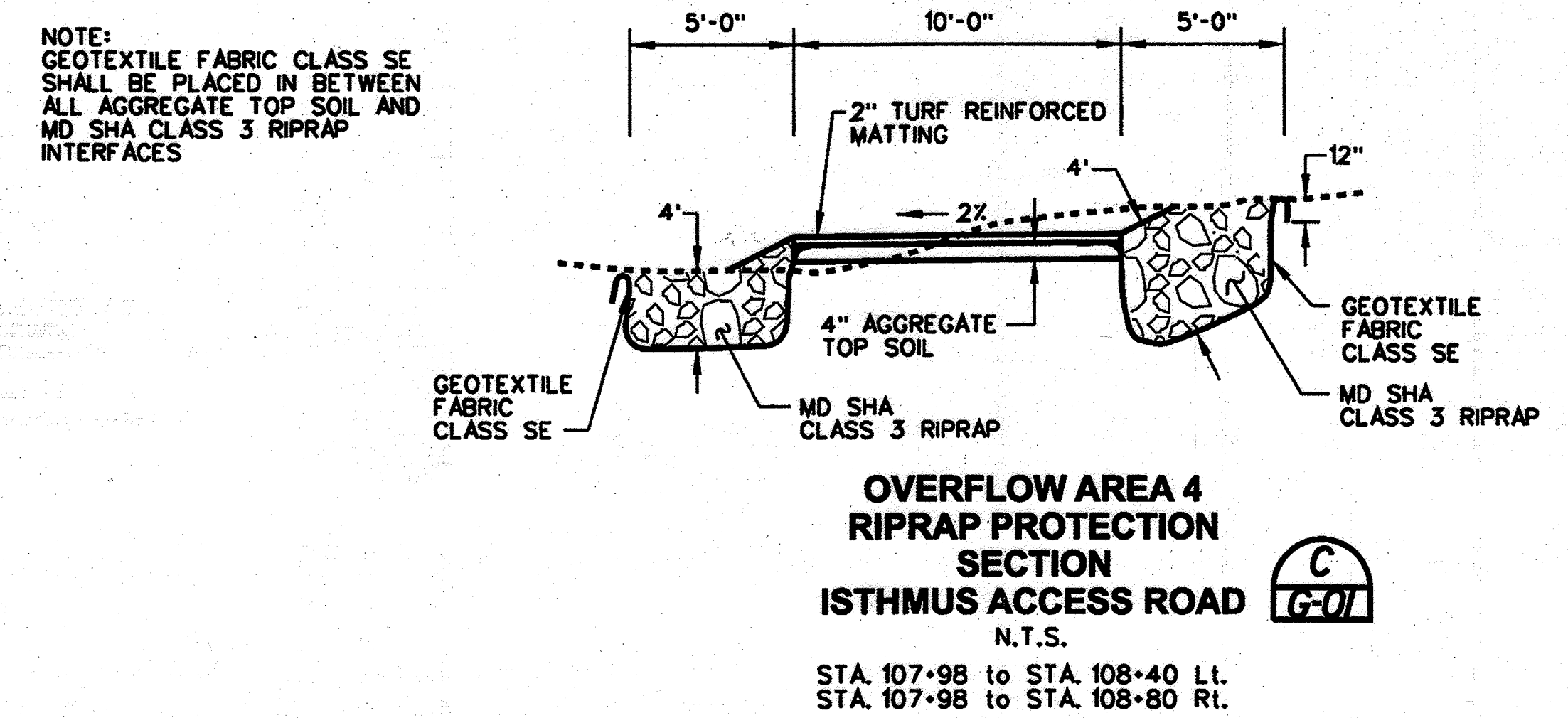


IMBRICATED RIPRAP (RIVER BANK PROTECTION) WALL SECTION
N.T.S.
STA. 104+85 to STA. 105+45 Lt.
STA. 105+95 to STA. 106+82 Lt.
STA. 108+65 to STA. 108+95 Lt.
STA. 110+65 to STA. 111+57 Lt.

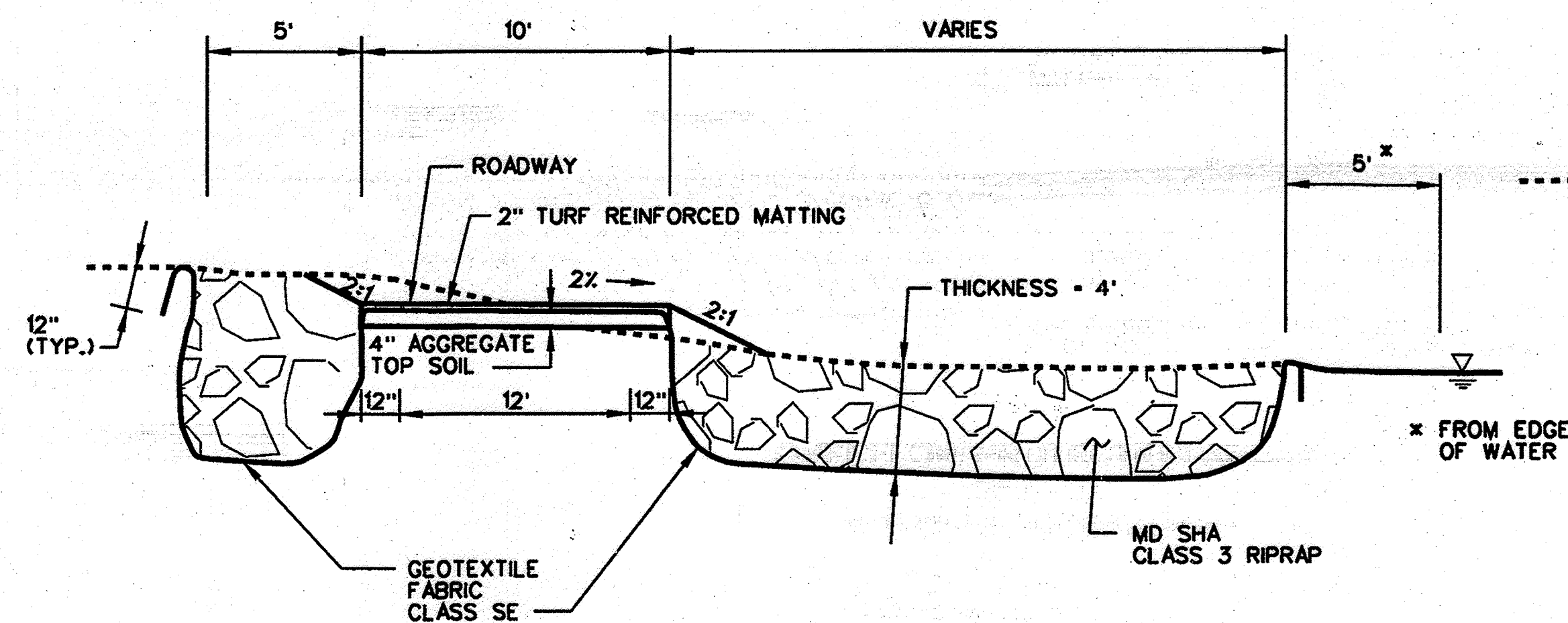
FOR INSTALLATION & MATERIAL SPECIFICATIONS, SEE



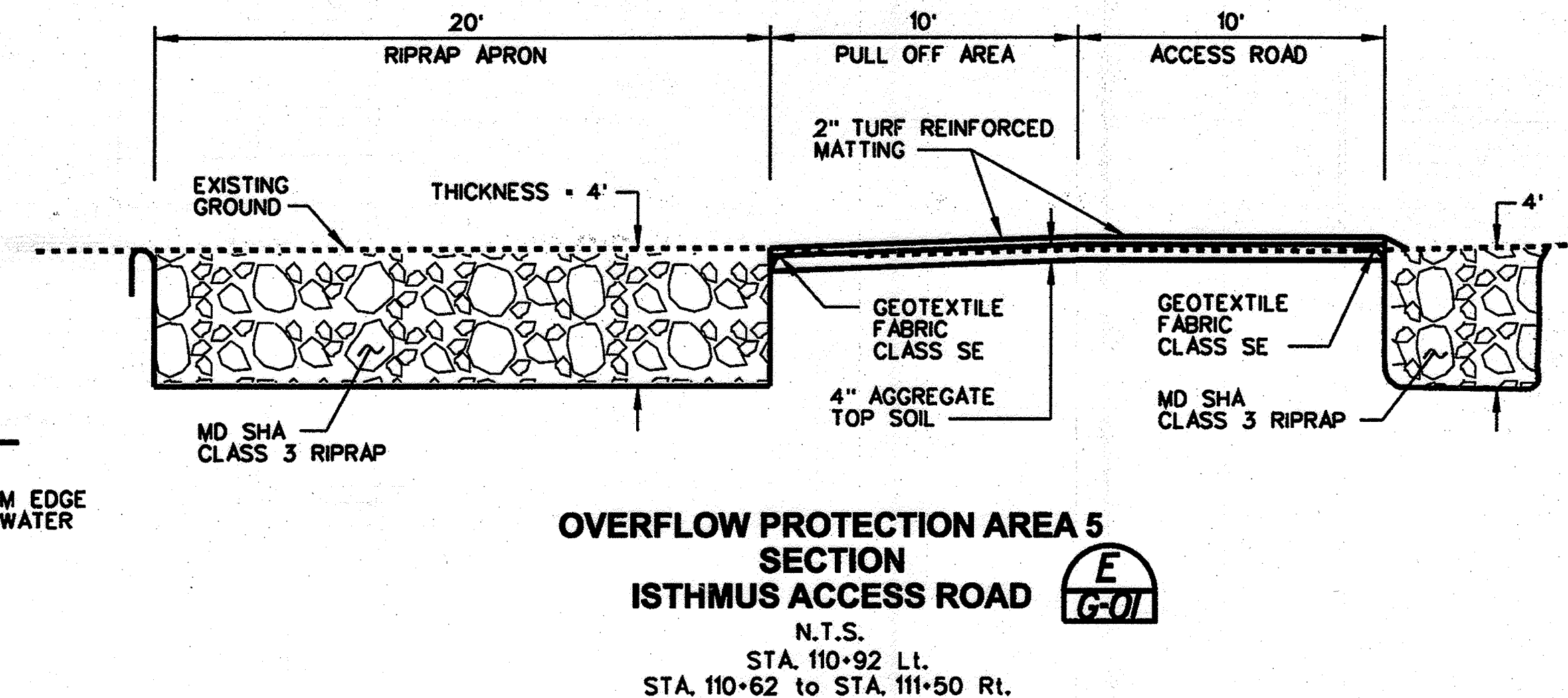
OVERFLOW AREA 1 & 2 RIPRAP PROTECTION SECTION
ISTHMUS ACCESS ROAD
N.T.S.
STA. 100+90 to STA. 101+50 (Lt. & Rt.)
STA. 104+75 to STA. 105+25 Lt.
STA. 104+75 to STA. 105+45 Lt.



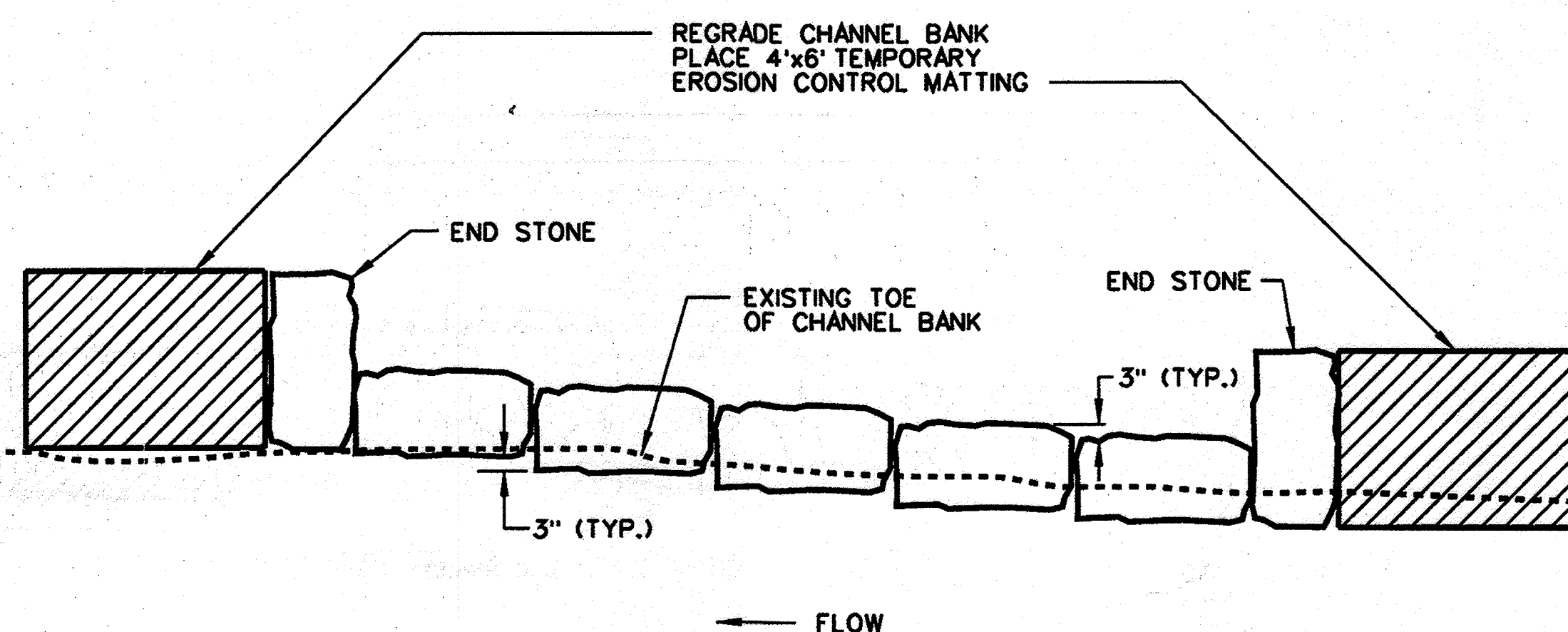
OVERFLOW AREA 4 RIPRAP PROTECTION SECTION
ISTHMUS ACCESS ROAD
N.T.S.
STA. 107+98 to STA. 108+40 Lt.
STA. 107+98 to STA. 108+80 Rt.



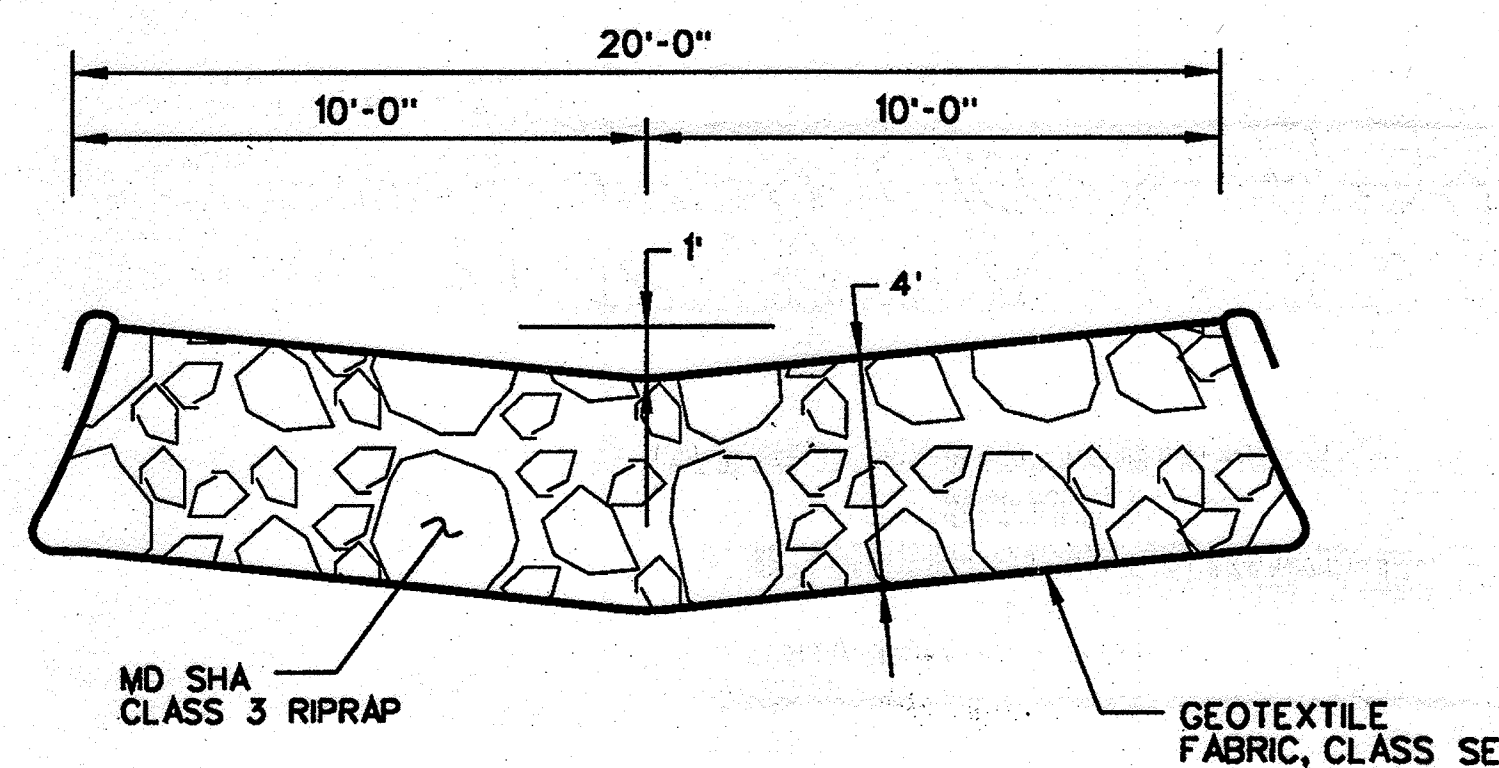
OVERFLOW PROTECTION AREA 3 DETAIL SECTION
ISTHMUS ACCESS ROAD
N.T.S.
STA. 106+34 Lt.
STA. 106+05 to STA. 106+70 Rt.



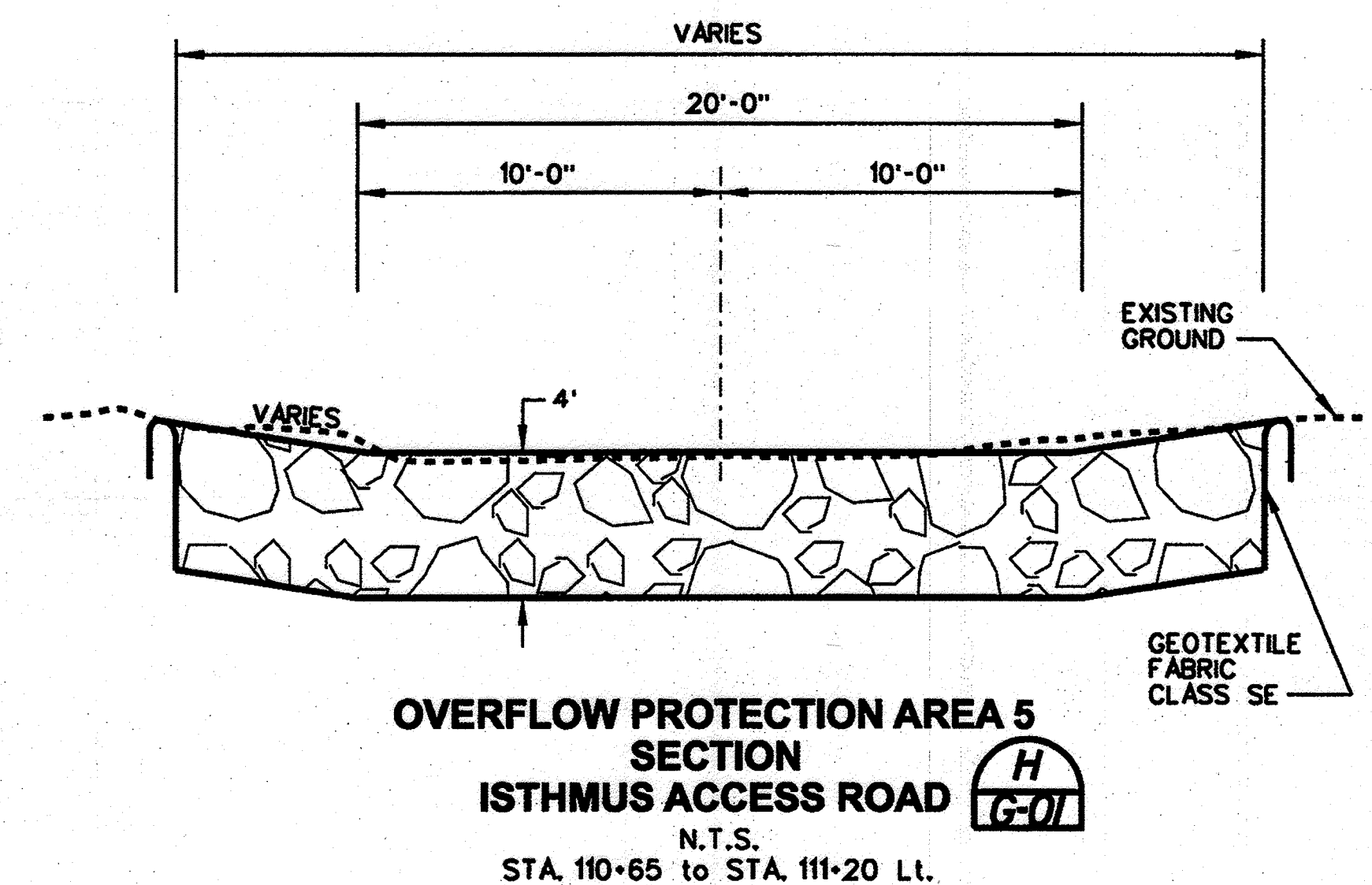
OVERFLOW PROTECTION AREA 5 SECTION
ISTHMUS ACCESS ROAD
N.T.S.
STA. 110+92 Lt.
STA. 110+62 to STA. 111+50 Rt.



IMBRICATED RIPRAP RIVER BANK PROTECTION PLAN VIEW SECTION
N.T.S.



OVERFLOW PROTECTION AREA 2 SECTION
ISTHMUS ACCESS ROAD
N.T.S.
STA. 106+05 to STA. 106+65 Lt.



OVERFLOW PROTECTION AREA 5 SECTION
ISTHMUS ACCESS ROAD
N.T.S.
STA. 110+65 to STA. 111+20 Lt.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division
Chief, Division of Land Development
Director, DEP

Date
Date
Date

Maryland Department of the Environment
Water Management Administration
Dam Safety Division
V.P. Dalal
Regulatory & Compliance Engineer

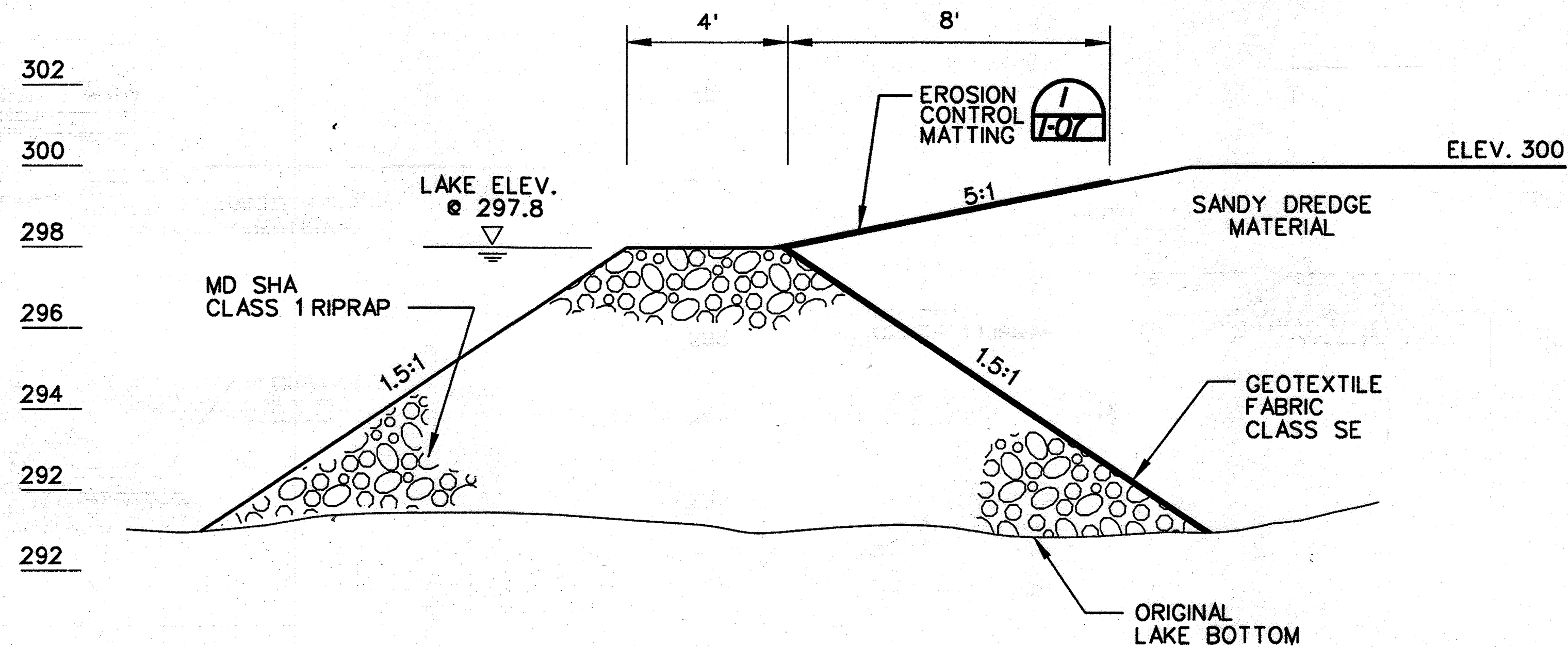
THIS PLAN SET HAS BEEN PREPARED BY:
HDR
HDR Engineering, Inc.
6700 LAKE WRIGHT DRIVE
NORFOLK, VIRGINIA 23502
757-222-1600

PLANS HAVE BEEN DESIGNED UNDER MY SUPERVISION
PIETER DAHMEN, PE
HDR ENGINEERING INC.

STATE OF MARYLAND
PROFESSIONAL ENGINEER
12-24-2009

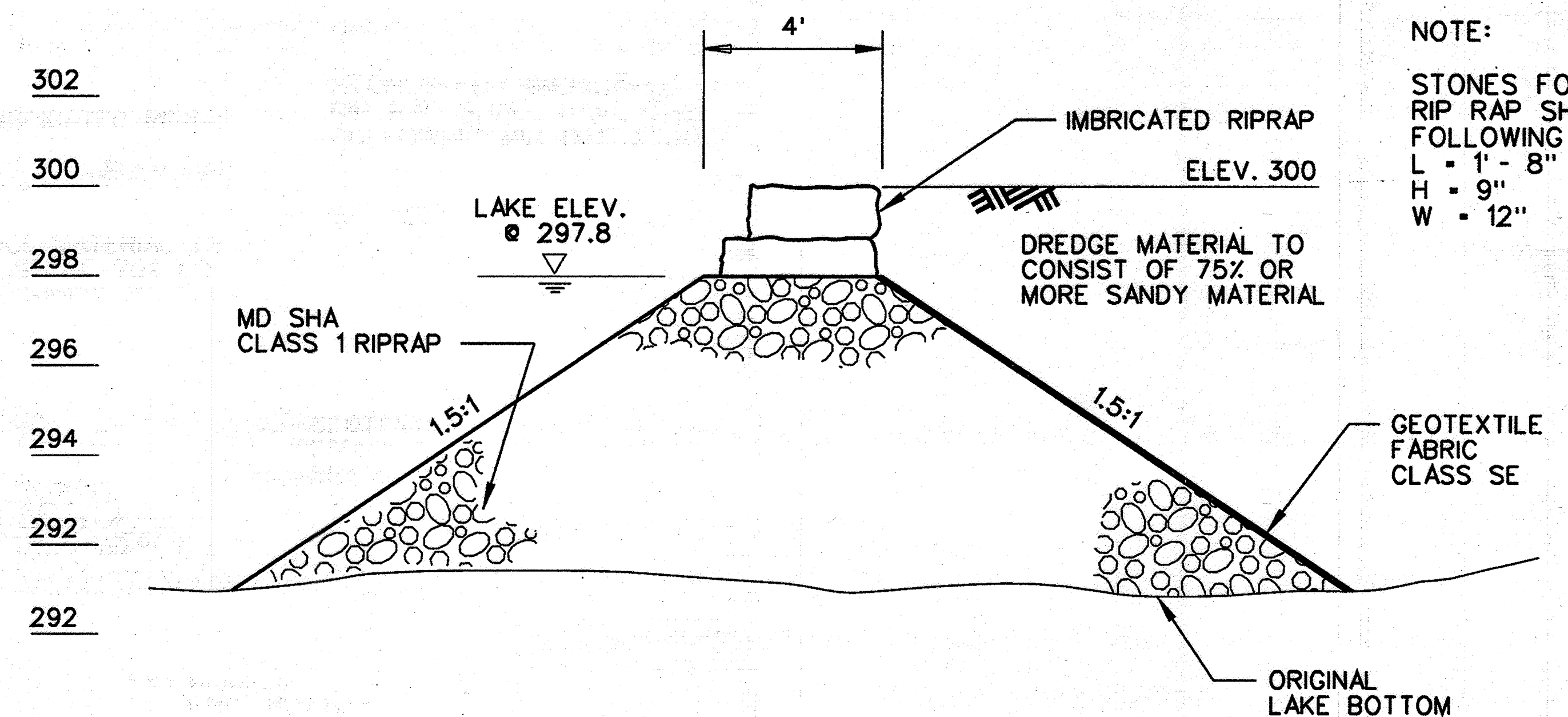
COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

RIVER BANK PROTECTION SECTIONS
COLUMBIA ASSOCIATION TOWN CENTER
MINOR GRADING IN SUPPORT OF LAKE KITAMAQUUNDI RESTORATION
ELECTION DISTRICT 8, HOWARD COUNTY MD.
TAX MAP 30 AND 36
SCALE AS SHOWN
JUNE 18, 2009
DRAWING G-01, SHEET 25 OF 62
SDP-08-108




WEST PENINSULA (FOREBAY) IN-LAKE RIPRAP CONTAINMENT BERM
SECTION W/O IMBRICATED RIPRAP

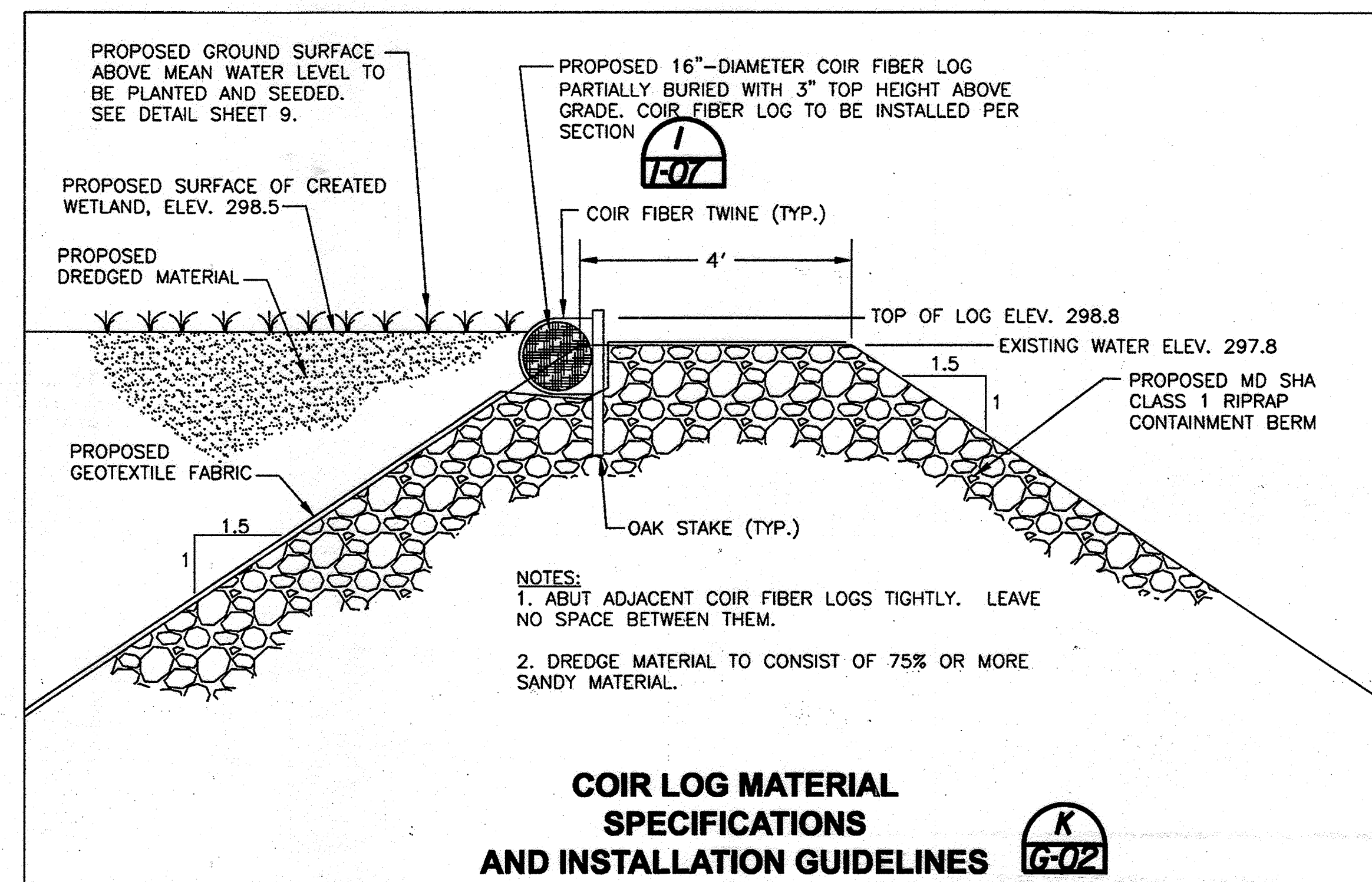
SECTION
N.T.S. 



EAST & WEST PENINSULA (FOREBAY) IN-LAKE RIPRAP CONTAINMENT BERM
SECTION WITH IMBRICATED RIPRAP


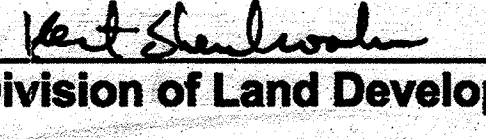
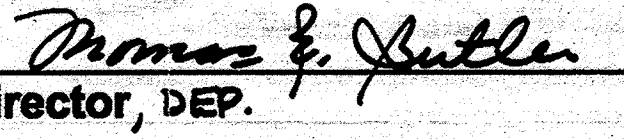
SECTION
N.T.S. 

NOTE:
STONES FOR IMBRICATED
RIP RAP SHALL HAVE THE
FOLLOWING MIN. DIMENSIONS:
L = 1'-8"
H = 9"
W = 12"





COIR LOG MATERIAL
SPECIFICATIONS
AND INSTALLATION GUIDELINES


APPROVED: DEPARTMENT OF PLANNING AND ZONING


Chief, Development Engineering Division

Chief, Division of Land Development

Director, DEP.

Date 12/23/09
Date 1/07/10
Date 1/7/10

Maryland Department of the Environment
Water Management Administration
Dam Safety Division

V.P. Dalal
Regulatory & Compliance Engineer
Date 12/1/09

THIS PLAN SET HAS BEEN PREPARED BY:

HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION

PIETER DAHMEN, PE
HDR ENGINEERING INC.
11-24-2009

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

IN-LAKE RIPRAP CONTAINMENT BERM
SECTIONS

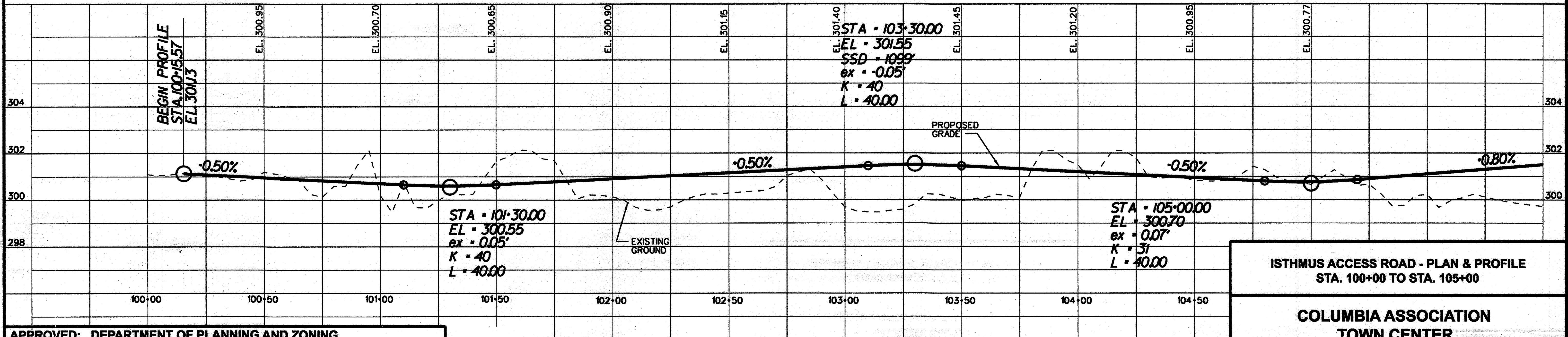
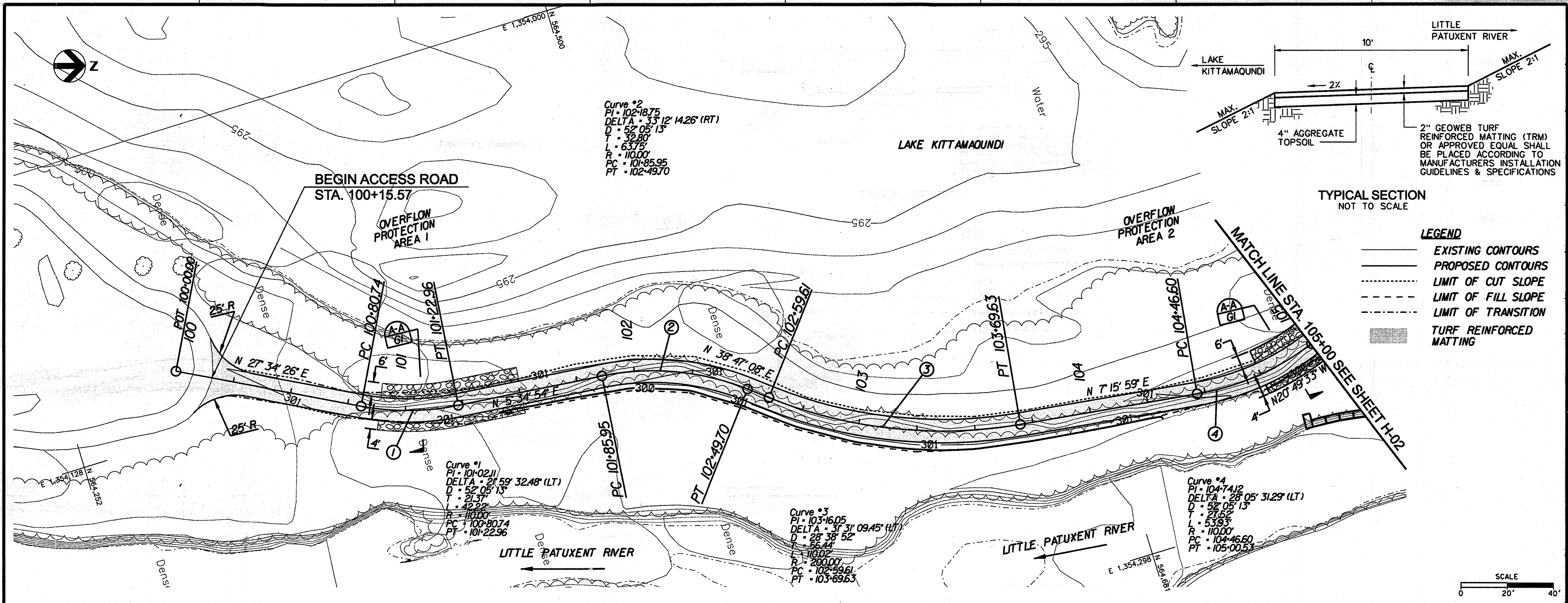
COLUMBIA ASSOCIATION
TOWN CENTER

MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 8, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING G-02, SHEET 26 OF 62

SDP-08-108



APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division
Date 12/23/09

[Signature]
Chief, Division of Land Development
Date 1/07/10

[Signature]
Director, DEP.
Date 1/7/10

Maryland Department of the Environment
MDE Water Management Administration
Dam Safety Division

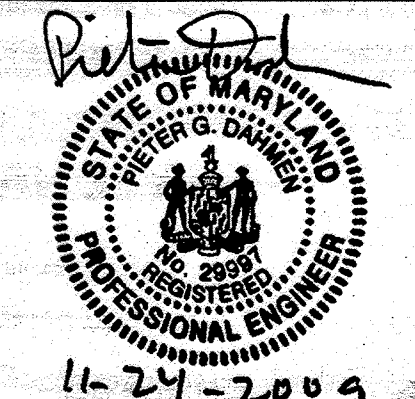
[Signature]
V.P. Dalal
Regulatory & Compliance Engineer
Date 12/1/09

THIS PLAN SET HAS BEEN PREPARED BY:

HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
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NORFOLK, VIRGINIA 23502
757-222-1600

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION

[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.
Date 11-24-2009



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

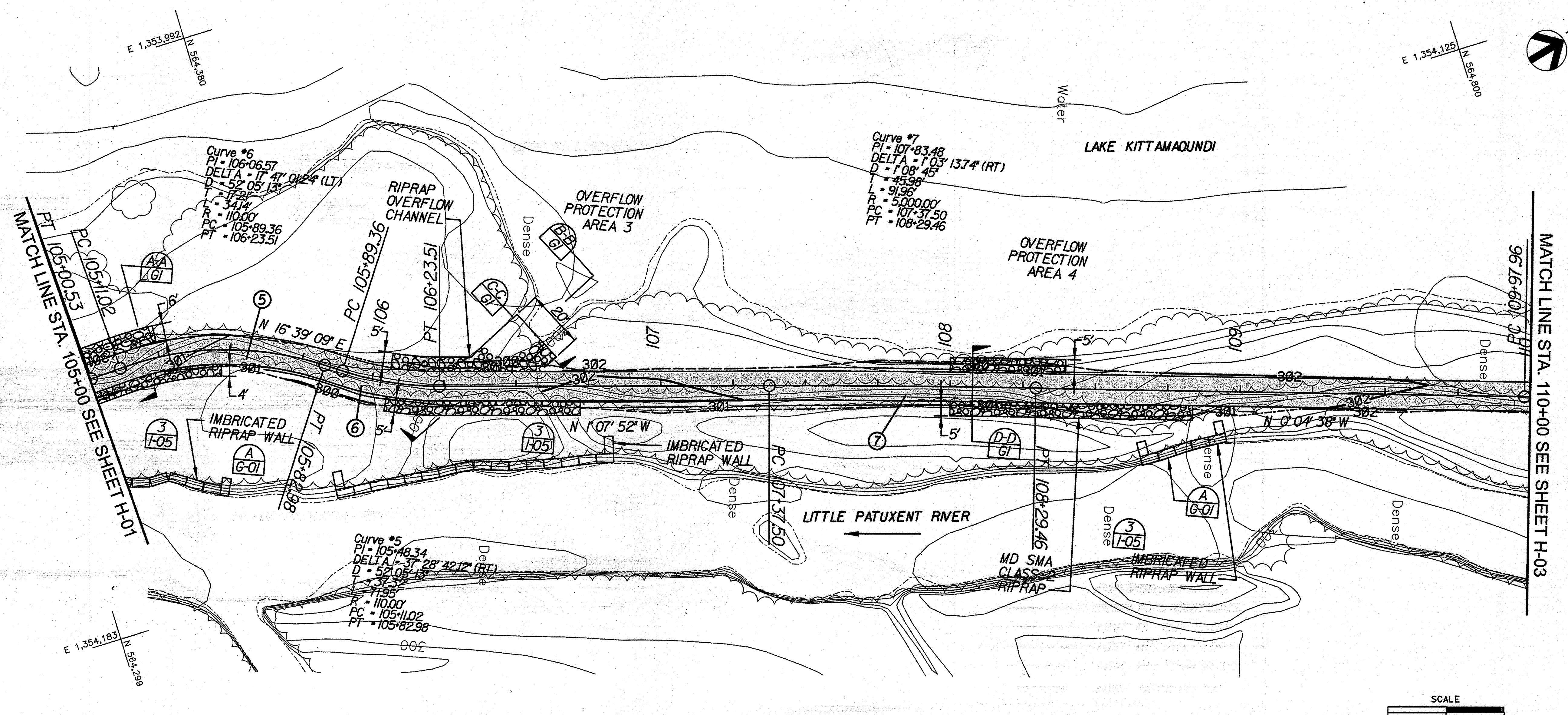
ISTHMUS ACCESS ROAD - PLAN & PROFILE
STA. 100+00 TO STA. 105+00

**COLUMBIA ASSOCIATION
TOWN CENTER**

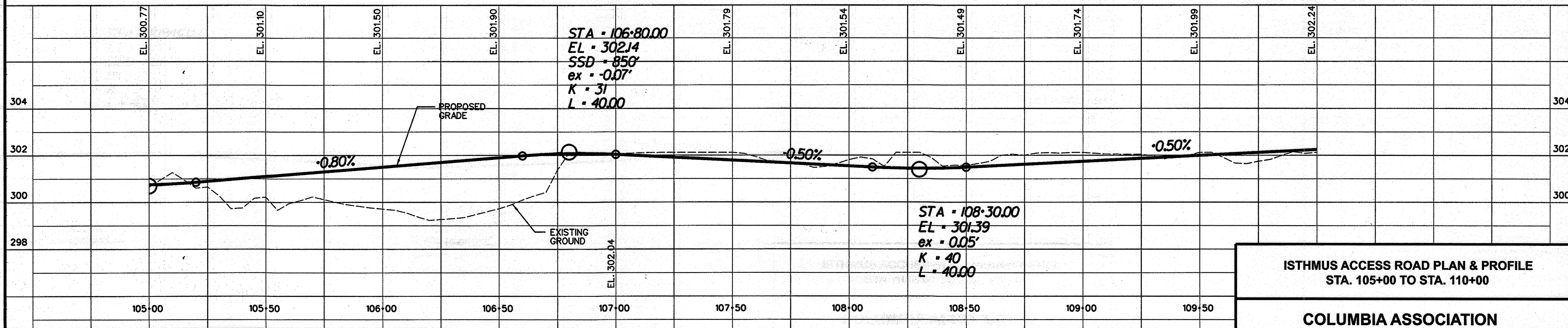
MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUUNDI RESTORATION
ELECTION DISTRICT 5, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING H-01, SHEET 27 OF 62
SDP-08-108



- LEGEND**
- EXISTING CONTOURS
 - PROPOSED CONTOURS
 - LIMIT OF CUT SLOPE
 - LIMIT OF FILL SLOPE
 - LIMIT OF TRANSITION
 - TURF REINFORCED MATTING



APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division
Date: 12/28/07

[Signature]
Chief, Division of Land Development
Date: 1/27/10

[Signature]
Director, DEP
Date: 1/7/10

Maryland Department of the Environment
MDE Water Management Administration
Dam Safety Division

V. P. Dahl
V. P. Dahl
Regulatory & Compliance Engineer
Date: 12/1/09

THIS PLAN SET HAS BEEN PREPARED BY:

HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION

[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.
Date: 11-29-2009

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

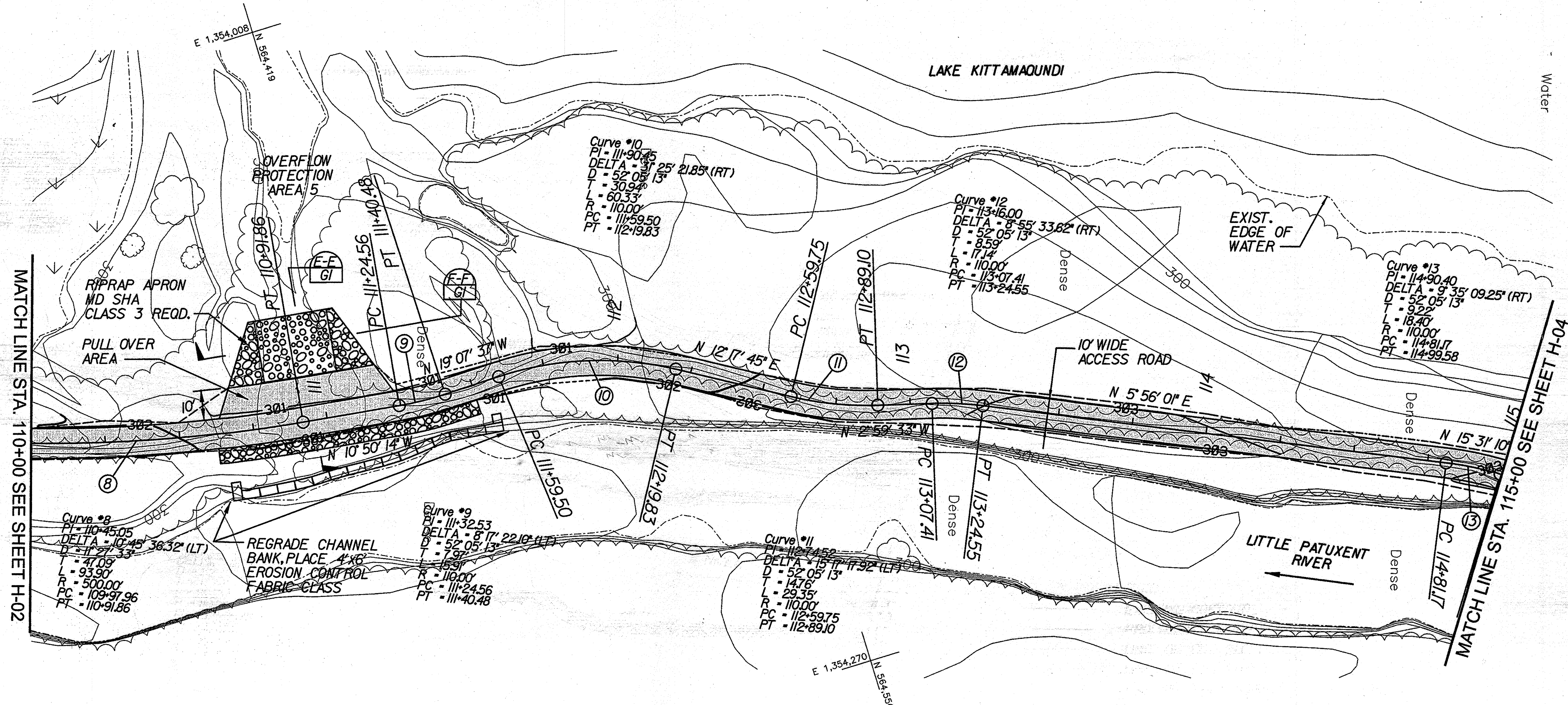
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STA. 105+00 TO STA. 110+00

**COLUMBIA ASSOCIATION
TOWN CENTER**

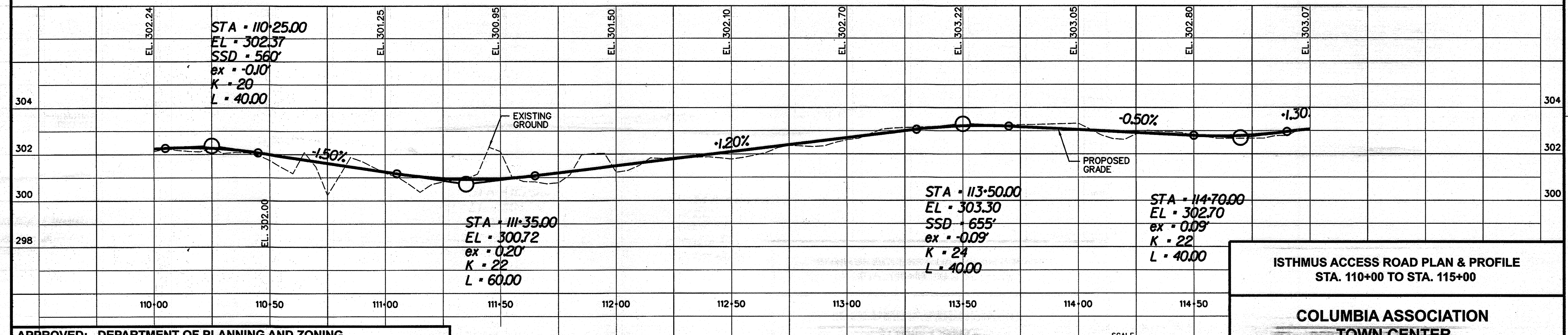
MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT #, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING H-02, SHEET 28 OF 62
SDP-08-108



- LEGEND**
- EXISTING CONTOURS
 - PROPOSED CONTOURS
 - LIMIT OF CUT SLOPE
 - LIMIT OF FILL SLOPE
 - LIMIT OF TRANSITION
 - TURF REINFORCED MATTING



APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division

Chief, Division of Land Development

Director, DEP

Date: 12/28/07

Date: 1/07/10

Date: 1/7/10

Maryland Department of the Environment
Water Management Administration
Dam Safety Division

V. P. Dalal
Regulatory & Compliance Engineer

Date: 12/1/09

THIS PLAN SET HAS BEEN PREPARED BY:

HDR

HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
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SUPERVISION

PIETER DAHMEN, PE
HDR ENGINEERING INC.

11-24-2009

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

ISTHMUS ACCESS ROAD PLAN & PROFILE
STA. 110+00 TO STA. 115+00

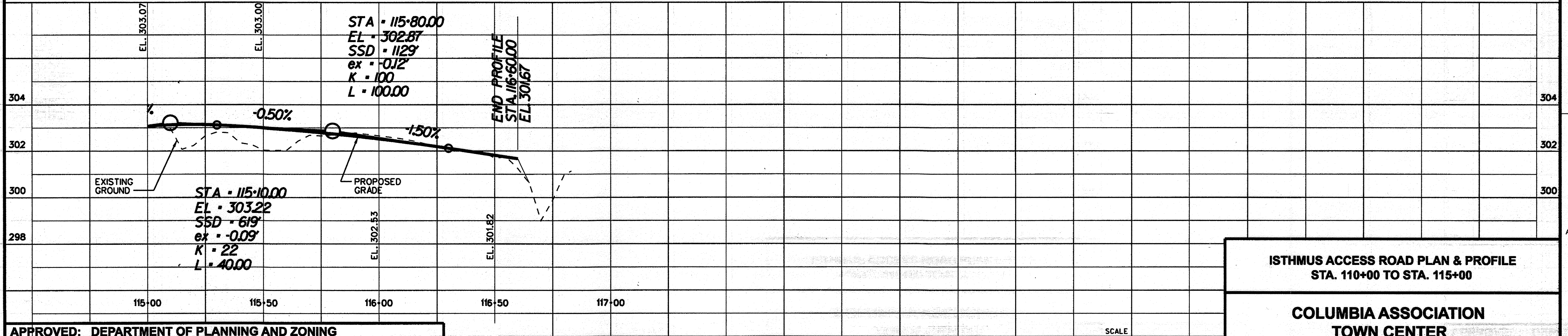
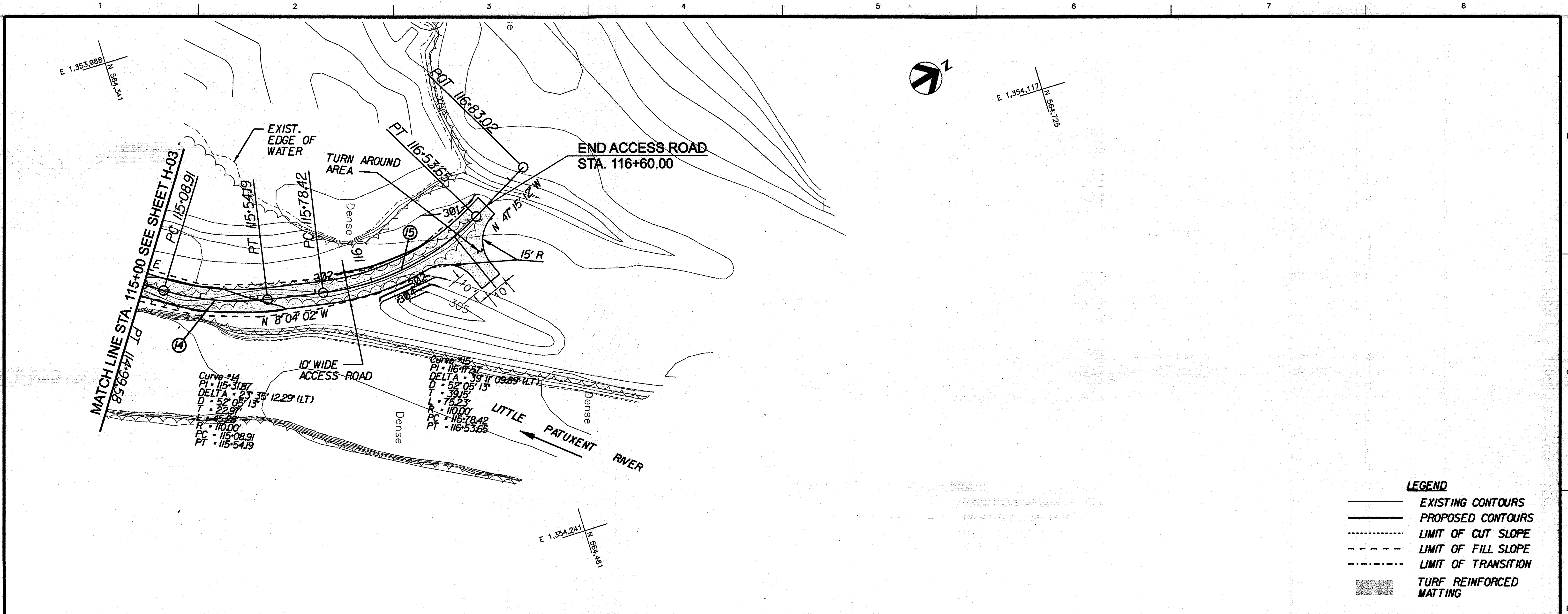
COLUMBIA ASSOCIATION
TOWN CENTER

MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUUNDI RESTORATION
ELECTION DISTRICT 6, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING H-03, SHEET 29 OF 62

SDP-08-108



APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division &
Date 12/22/09

[Signature]
Chief, Division of Land Development
Date 1/07/10

[Signature]
Director, DEP.
Date 1/7/10

Maryland Department of the Environment
MDE Water Management Administration
Dam Safety Division

[Signature]
V. P. Dalal
Regulatory & Compliance Engineer
Date 12/11/09

THIS PLAN SET HAS BEEN PREPARED BY:

HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION

[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.
Date 11-24-2009

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

ISTHMUS ACCESS ROAD PLAN & PROFILE
STA. 110+00 TO STA. 115+00

**COLUMBIA ASSOCIATION
TOWN CENTER**

MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 5, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING H-04, SHEET 30 OF 62
SDP-08-108

STAGING AREA

WORK AREA : 5,211 SF
EQUIPMENT AREA: 13,444 SF
MISC. AREA: 905 SF
TRAILER/PARKING AREA: 10,027 SF

TOTAL CUT: 1,109 CY
TOTAL FILL: 1,109 CY
AREA OF DISTURBANCE: 1.91 AC

NOTE:
USE ROADWAY
SECTION DETAIL
FOR THE CONSTRUCTION
OF THE SCE

TYPICAL ROADWAY SECTION

TYPICAL SECTION WORK AREA

TYPICAL SECTION EQUIPMENT AREA TRAILER/PARKING AREA

- (A) 6" - CRUSHER RUN AGGREGATE, CR-6
- (B) 6" - BANK RUN GRAVEL - SUBBASE
- (C) 2" - HOT MIX ASPHALT SUPERPAVE 12.5 mm
- (D) GEOTEXTILE FABRIC

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

[Signature] 12/14/09
Howard SCD Date

ENGINEER'S CERTIFICATE
I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements with the Howard Soil Conservation District.

[Signature] 12/17/2009
Signature of Engineer (print name below signature) Date
Pieter Dahmen

DEVELOPER'S CERTIFICATE
I/We certify that all development and construction will be done according to this plan for sediment and erosion control, and that all 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 also authorize periodic on-site inspection by the Howard Soil Conservation District.

[Signature] 12/16/09
Signature of Developer (print name below signature) Date
Dennis Matney

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 12/22/09
Chief, Development Engineering Division &

[Signature] 1/07/10
Chief, Division of Land Development

[Signature] 1/7/10
Director, DEP

12/22/09
Date
1/07/10
Date
1/7/10
Date

Maryland Department of the Environment
Water Management Administration
Dam Safety Division
[Signature] 12/1/09
V.P. Dalal
Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY:
HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION
PIETER DAHMEN, PE
HDR ENGINEERING INC.

[Signature] 11-24-2009
Professional Engineer Seal

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

TEMPORARY EROSION AND SEDIMENT CONTROL PLAN INITIAL PHASE - STAGING AREA

COLUMBIA ASSOCIATION TOWN CENTER

MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 6, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING 1-01, SHEET 31 OF 32

SDP-08-108

LEGEND

- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- LOD --- LIMITS OF DISTURBANCE
- A1 — DIVERSION DIKE
- DSF — DIVERSION SILT FENCE
- ERM — EROSION CONTROL MATTING
- 100 YR FLOOD PLAIN

NOTE:
EXTEND END OF SSF UPHILL FOR A DISTANCE OF 5 FT. UNLESS NOTED.

Sediment Control Sequence of Construction for the construction of the Staging Area for Dredging Lake Kittamaqundi

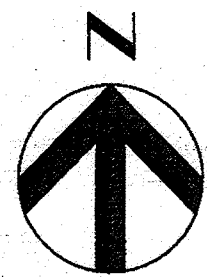
| Task | Phase I | Duration (Days) |
|-------|--|-----------------|
| 1 | Contractor is to notify the Howard County Department of Inspections Sediment Control Division 24-hours prior to commencing work at (410) 313-1855 and obtain Grading and MDE permits. Reference MDE Tracking Number 200853535. | 2 |
| 2 | Obtain and bring all required E & S materials for construction to the project site | 1 |
| 3 | Clear and grub for stabilized construction entrances (SCE) and access road. Install SCE's for a minimum distance of 50 ft. | 2 |
| 4 | Install diversion dike, diversion silt fence, super silt fence, tree protection fencing and all other controls. | 7 |
| 5 | After receiving permission of the Howard County Sediment Control Inspector, clear and grub within limits of construction of the Staging Area | 5 |
| Total | | 17 |

| Task | Phase II | Duration (Days) |
|-----------------------------|---|-----------------|
| 6 | Construct Staging Area Access Road | 5 |
| 7 | Construct Trailer / Parking Area | 5 |
| 8 | Construct Equipment and Working Area | 10 |
| 9 | Mulch, place standard erosion control matting and seed disturbed and exposed areas not to be paved or covered with gravel | 2 |
| 10 | Provide a copy of the approved sediment control plan or other permit authority for the site(s) receiving dewatered dredged material to the Inspector and Howard Soil Conservation District and obtain written permission from Inspector to proceed. | 7 |
| 11 | Install Turbidity Curtain in Lake Kittamaqundi | 2 |
| 12 | Commence dredging. Maintain diversion dike, diversion fence and super silt fence during duration of dredging and dewatering, repair perimeter controls as necessary. The Contractor shall comply with all applicable federal, state, and local laws and regulations, including project permits. Effluent leaving the site shall not exceed Maryland turbidity limits of 150 Ntu at any time or 50 Ntu as a monthly average per COMAR 26.08.02 | 100 |
| 13 | Remove access road, gravel surface of equipment area and the paved working area. Restore staging area and temporary access road to original contours, place top soil with erosion control matting and seed. | 15 |
| 14 | Stabilize remaining disturbed areas and remove sediment controls upon approval of Howard County Sediment Control Inspectors | 5 |
| Total | | 151 |
| Total Initial + Final Phase | | 168 |

Sequence of Construction for the construction of the Isthmus Access Road of Lake Kittamaqundi

| Task | Phase III | Duration (Days) |
|-------|--|-----------------|
| 15 | Contractor is to notify the Howard County Department of Inspections Sediment Control Division 24-hours prior to commencing work at (410) 313-1855 and obtain Grading and MDE permits. Reference MDE Tracking Number 200853535. | 2 |
| 16 | Obtain and bring all required E & S materials for construction to the project site | 1 |
| 17 | Clear and grub for stabilized construction entrances (SCE) and access road. Install SCE's for a minimum distance of 50 ft and install access road | 2 |
| 18 | After receiving permission of the Howard County Sediment Control Inspector, clear and grub within limits of construction of the Isthmus Access Road and overflow protection areas | 5 |
| Total | | 10 |

| Task | Phase IV | Duration (Days) |
|-----------------------------|--|-----------------|
| 19 | Construct Staging Area Access Road | 20 |
| 20 | Construct Riprap Overflow Area | 10 |
| 21 | Remove debris from channel, construct implicated channel banks stabilization | 15 |
| 22 | Mulch, place standard erosion control matting and seed on disturbed and exposed areas not to be paved or covered with gravel | 2 |
| 23 | Stabilize remaining disturbed areas and remove sediment controls upon approval of Howard County Sediment Control Inspectors | 5 |
| Total | | 52 |
| Total Initial + Final Phase | | 62 |



- LEGEND**
- SF SILT FENCE
 - SSF SUPER SILT FENCE
 - LOD LIMITS OF DISTURBANCE
 - A1 DIVERSION DIKE
 - DSF DIVERSION SILT FENCE
 - ECM EROSION CONTROL MATTING
 - 100 YEAR FLOOD PLAIN

NOTE:
EXTEND END OF SSF UPHILL FOR A DISTANCE OF 5'.

STAGING AREA

WORK AREA: 5,211 SF
EQUIPMENT AREA: 13,444 SF
MISC. AREA: 906 SF
TRAILER/PARKING AREA: 10,027 SF

TOTAL CUT: 1,109 CY
TOTAL FILL: 1,109 CY
AREA OF DISTURBANCE: 1.91 AC

Curve = CK1
PI 13+94.40
D= 126° 47' 50" (LT)
R = 135.00'
T = 269.57'
L = 298.76'

Toby's General Partnership
C/O Harold D. Orenstein

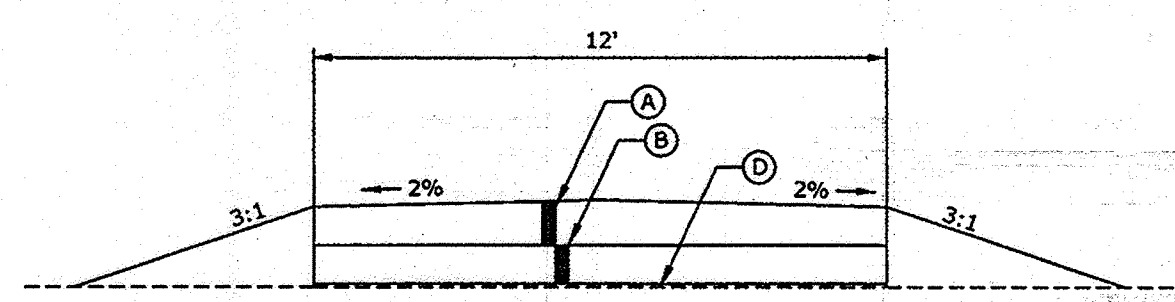
Liberty Property
Limited Partnership

API Columbia Town Center LLC
C/O ING Clarion Partners

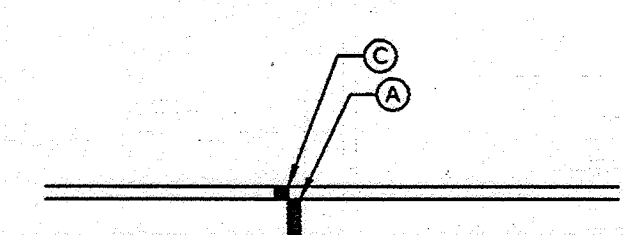
The Howard Research
and Development
Corporation

HEIGHT OF STOCKPILE
WITH DEWATERED SEDIMENTS
SHALL NOT EXCEED 5 FEET

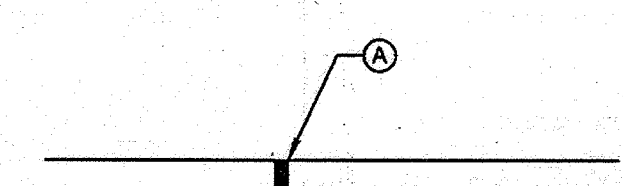
NOTE:
AT COMPLETION OF DREDGING REMOVE TEMPORARY
ACCESS ROAD, GRAVEL SURFACE, PAVED AREAS AND
RESTORE STAGING AREA TO THE ORIGINAL CONTOURS



**TYPICAL
ROADWAY SECTION**



**TYPICAL SECTION
WORK AREA**



**TYPICAL SECTION
EQUIPMENT AREA
TRAILER/PARKING AREA**

- (A) 6" - CRUSHER RUN AGGREGATE, CR-6
- (B) 6" - BANK RUN GRAVEL - SUBBASE
- (C) 2" - HOT MIX ASPHALT SUPERPAVE 12.5 mm
- (D) GEOTEXTILE FABRIC

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

[Signature] 12/14/09
Howard SCD Date

ENGINEER'S CERTIFICATE
"I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements with the Howard Soil Conservation District."

[Signature] 12/17/2009
Signature of Engineer (print name below signature) Date
Pieter Dahmen

DEVELOPER'S CERTIFICATE
"I/We certify that all development and construction will be done according to this plan for sediment and erosion control, and that all 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 also authorize periodic on-site inspection by the Howard Soil Conservation District"

[Signature] 12/16/09
Signature of Developer (print name below signature) Date
Dennis McElroy

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 12/20/09
Chief, Development Engineering Division &
[Signature] 1/09/10
Chief, Division of Land Development
[Signature] 1/7/10
Director, DEP.

Date 12/20/09
Date 1/09/10
Date 1/7/10

Maryland Department of the Environment
Water Management Administration
Dam Safety Division

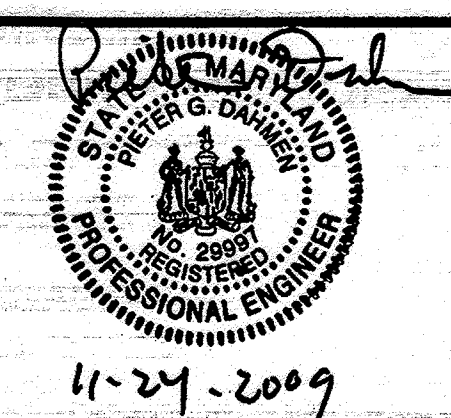
[Signature] 12/1/09
V.P. Dalal
Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY:

HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION

PIETER DAHMEN, PE
HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

**TEMPORARY EROSION AND SEDIMENT CONTROL PLAN
FINAL PHASE - STAGING AREA**

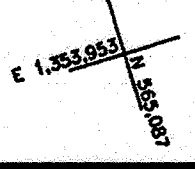
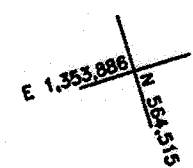
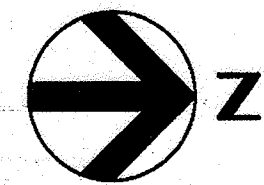
**COLUMBIA ASSOCIATION
TOWN CENTER**

**MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 5, HOWARD COUNTY MD.
TAX MAP 30 AND 36**

SCALE AS SHOWN
JUNE 18, 2009

DRAWING 1-02, SHEET 32 OF 62

SDP-08-108



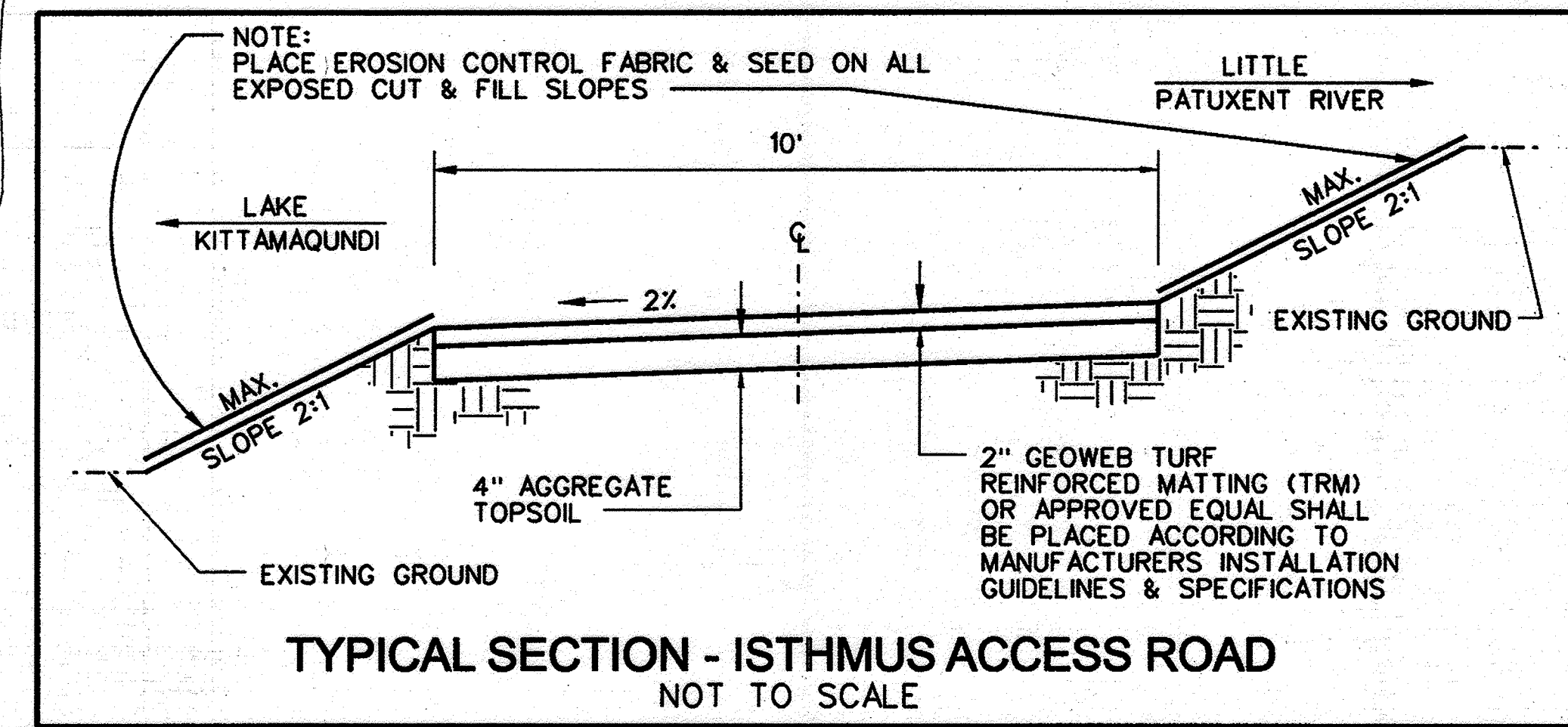
LEGEND

- IMBRICATED RIPRAP
- RIPRAP OVERFLOW PROTECTION
- EROSION CONTROL MATTING
- EXISTING CONTOURS
- PROPOSED CONTOURS
- SILT FENCE
- SUPER SILT FENCE
- LIMITS OF DISTURBANCE
- REMOVAL PUMPING STATION

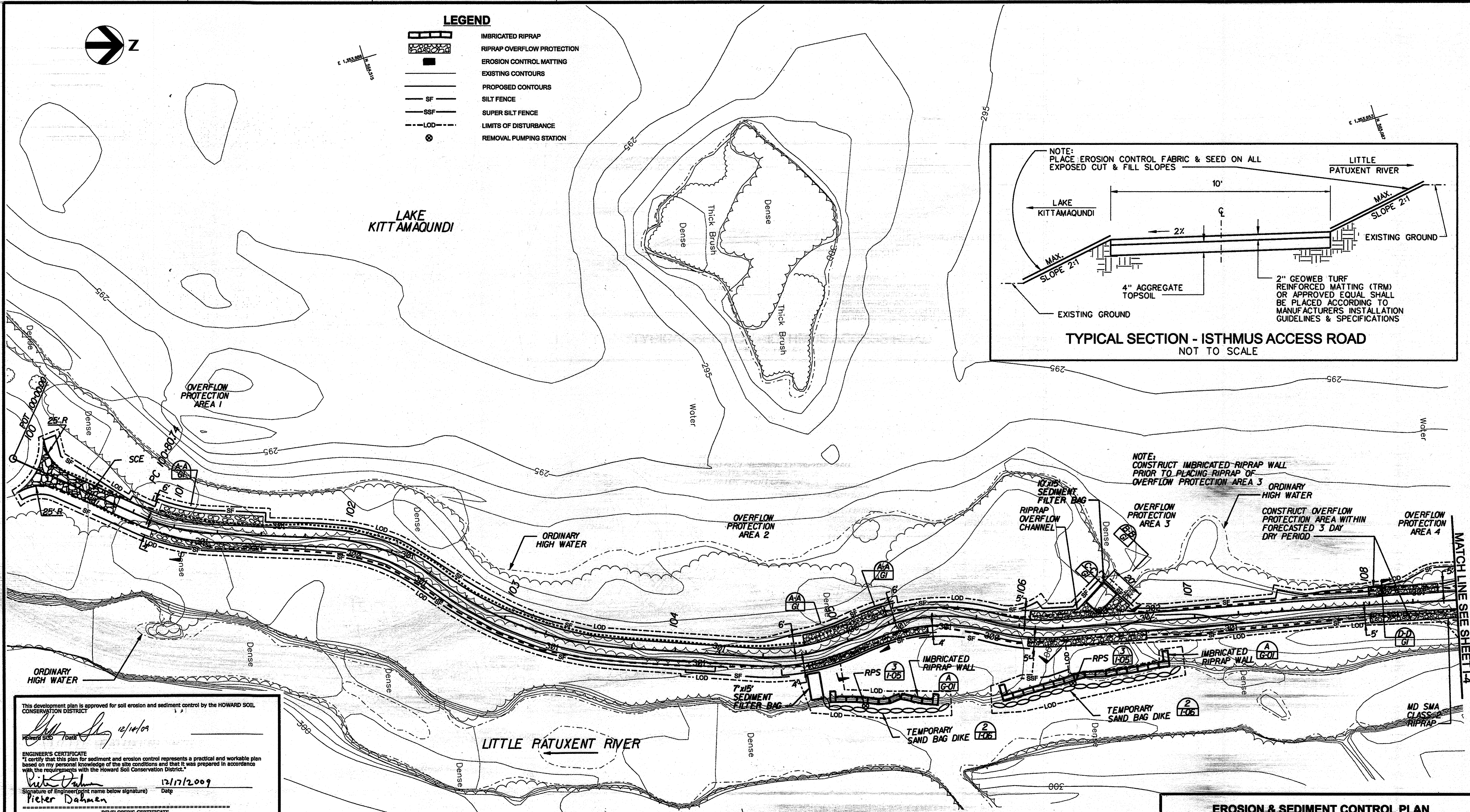
LAKE
KITTA MAQUINDI

Water

Water



TYPICAL SECTION - ISTHMUS ACCESS ROAD
NOT TO SCALE



This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

[Signature] 12/14/09
Date

ENGINEER'S CERTIFICATE
I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements with the Howard Soil Conservation District.

[Signature] 12/17/2009
Signature of Engineer (print name below signature) Date
Pieter Dahmen

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[Signature] 12/16/09
Signature of Developer (print name below signature) Date
Dennis Peters

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division

[Signature]
Chief, Division of Land Development

[Signature]
Director, DER

Date 12/23/09
Date 1/07/10
Date 1/7/10

Maryland Department of the Environment
MDE Water Management Administration
Dam Safety Division

[Signature]
V. P. Dalal
Regulatory & Compliance Engineer

12/11/09

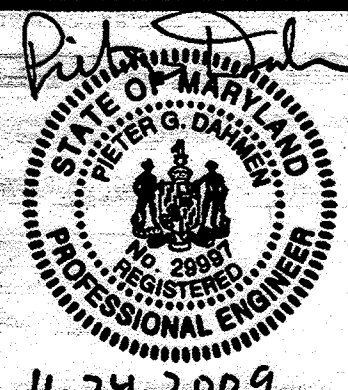
THIS PLAN SET HAS BEEN PREPARED BY:

HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1600

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION

[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.

11-24-2009



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

EROSION & SEDIMENT CONTROL PLAN
ISTHMUS ACCESS ROAD
INITIAL AND FINAL DESIGN

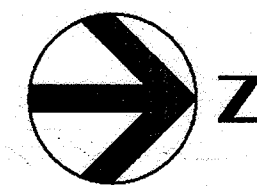
COLUMBIA ASSOCIATION
TOWN CENTER

MINOR GRADING IN SUPPORT OF
LAKE KITTA MAQUINDI RESTORATION
ELECTION DISTRICT 5, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

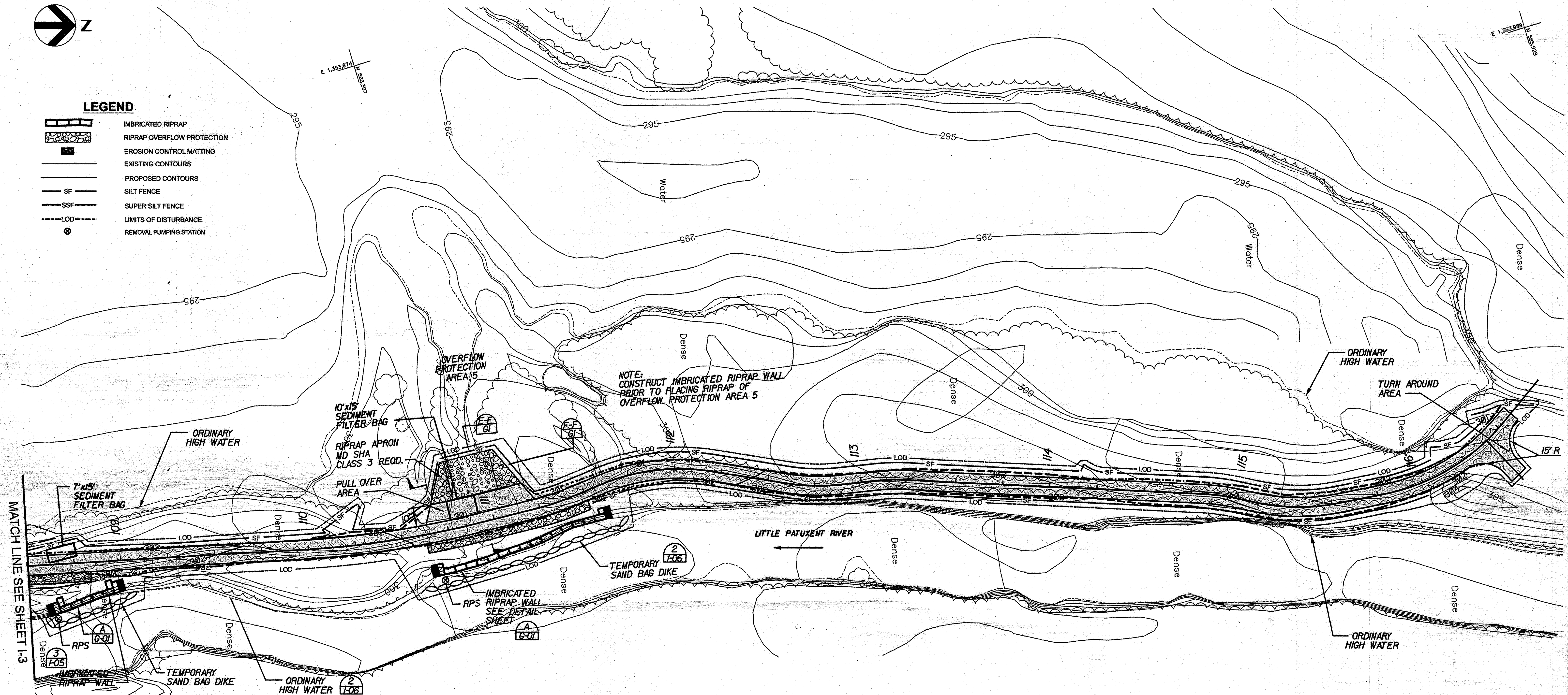
DRAWING I-03 SHEET 33 OF 62

SDP-08-108



LEGEND

- IMBRICATED RIPRAP
- RIPRAP OVERFLOW PROTECTION
- EROSION CONTROL MATTING
- EXISTING CONTOURS
- PROPOSED CONTOURS
- SF SILT FENCE
- SSF SUPER SILT FENCE
- LOD LIMITS OF DISTURBANCE
- REMOVAL PUMPING STATION



This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

[Signature] 12/16/09
Howard SCD Date

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[Signature] 12/17/2009
Signature of Engineer (print name below signature) Date
Pieter Dahmen

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[Signature] 12/16/09
Signature of Developer (print name below signature) Date
Dennis Matney

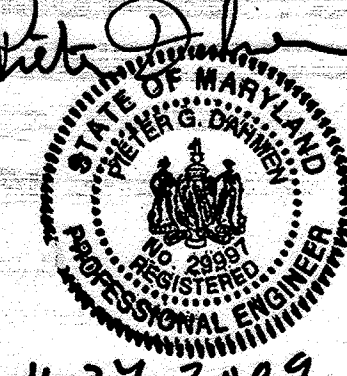
APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 12/23/09
Chief, Development Engineering Division Date
[Signature] 1/07/10
Chief, Division of Land Development Date
[Signature] 1/7/10
Director, DEP. Date

Maryland Department of the Environment
MDE Water Management Administration
Dam Safety Division
[Signature] 12/1/09
V. P. Dálal Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY:
HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 200
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION
[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.
11-27-2009



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

EROSION & SEDIMENT CONTROL ISTHMUS ACCESS ROAD INITIAL AND FINAL DESIGN

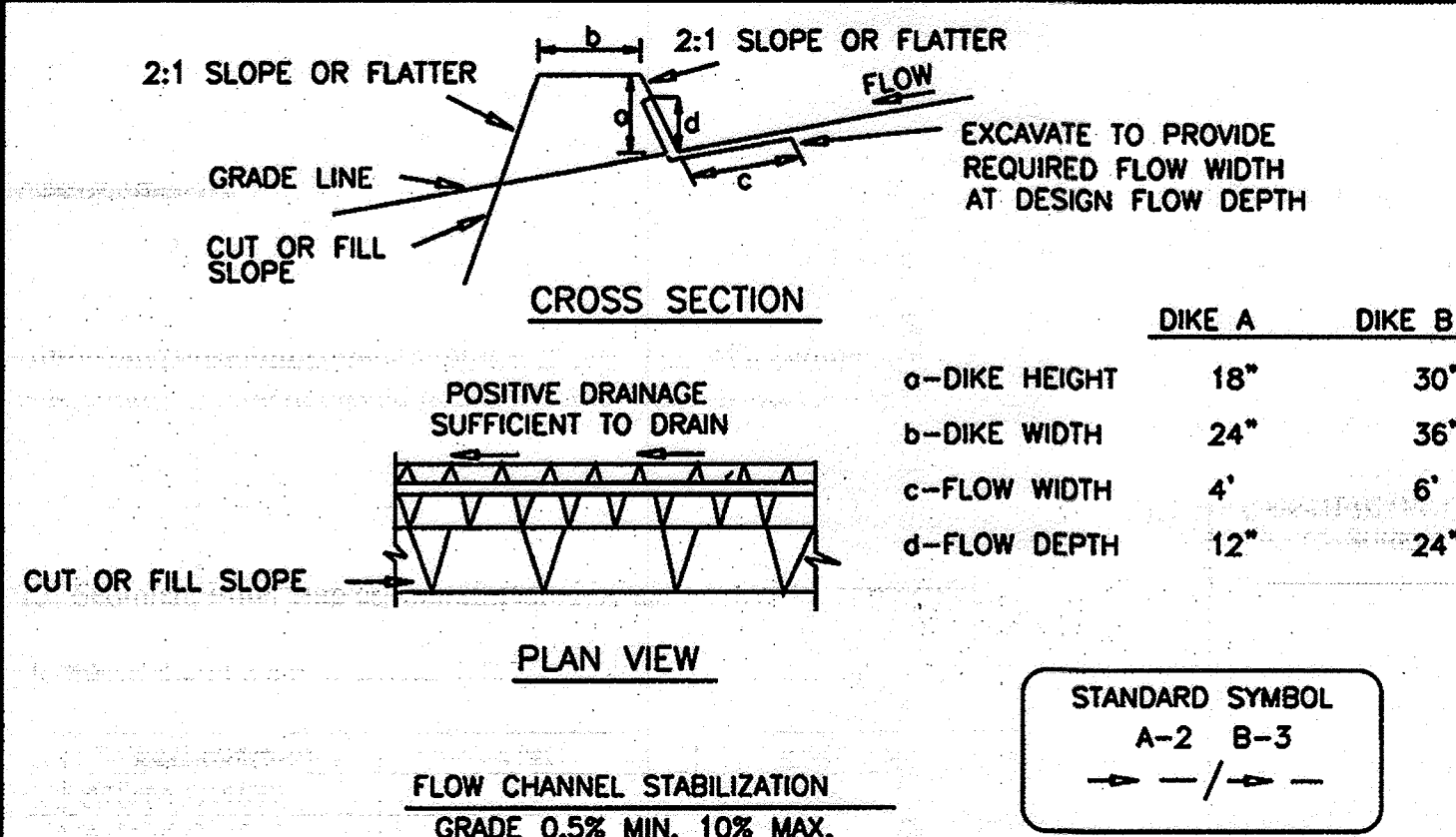
COLUMBIA ASSOCIATION TOWN CENTER

MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 5, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING 1-04, SHEET 34 OF 62

SDP-08-108



1. Seed and cover with straw mulch.
 2. Seed and cover with Erosion Control Matting or line with sod.
 3. 4" - 7" stone or recycled concrete equivalent pressed into the soil 7" minimum
- Construction Specifications**
1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
 2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
 3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
 4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
 5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
 6. Fill shall be compacted by earth moving equipment.
 7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
 8. Inspection and maintenance must be provided periodically and after each rain event.

EARTH DIKE

1-05

Sediment Filter Bag Specifications

1.0 DESCRIPTION

1.1 This work is for furnishing, installing, maintaining, and disposing of a Sediment Filter Bag. The purpose is to control sediment discharge in any dewatering or pumped water application.

2.0 MATERIALS

2.1 FB-3 15' x 15' Sediment Filter Bag as manufactured by an approved manufacturer

2.2 The geotextile fabric shall be a non-woven fabric with the following properties:

| Properties | Test Method | Units | MARV |
|----------------------|-------------|------------|---------------|
| ib Tensile Strength | ASTM D-4632 | lbs. | 290 |
| ib Elongation | ASTM D-4632 | % | 50 |
| pezoid Tear | ASTM D-4533 | lbs. | 145 |
| cture | ASTM D-4833 | lbs. | 165 |
| llen Burst | ASTM D-3786 | psi | 550 |
| mittivity | ASTM D-4491 | sec. | 0.7 |
| meability | ASTM D-4491 | cm/sec | .35 |
| S | ASTM D-4751 | U.S. Sieve | 100 (.150 mm) |
| Resistance (500hrs.) | ASTM D-4355 | % | 70 |
| ter Flow Rate | ASTM D-4491 | gpm/ft. | 110 |
| m Strength | ASTM D-4491 | lbs. | 250 |

2.3 The Sediment Filter Bag Seams shall be double 401 lock chain stitch seam with a 121 lbs./inch sewn strength, tested in accordance with ASTM D-4884.

2.4 The Sediment Filter Bag shall have an adjustable spout large enough to accommodate a six inch (6") diameter discharge hose.

3.0 CONSTRUCTION

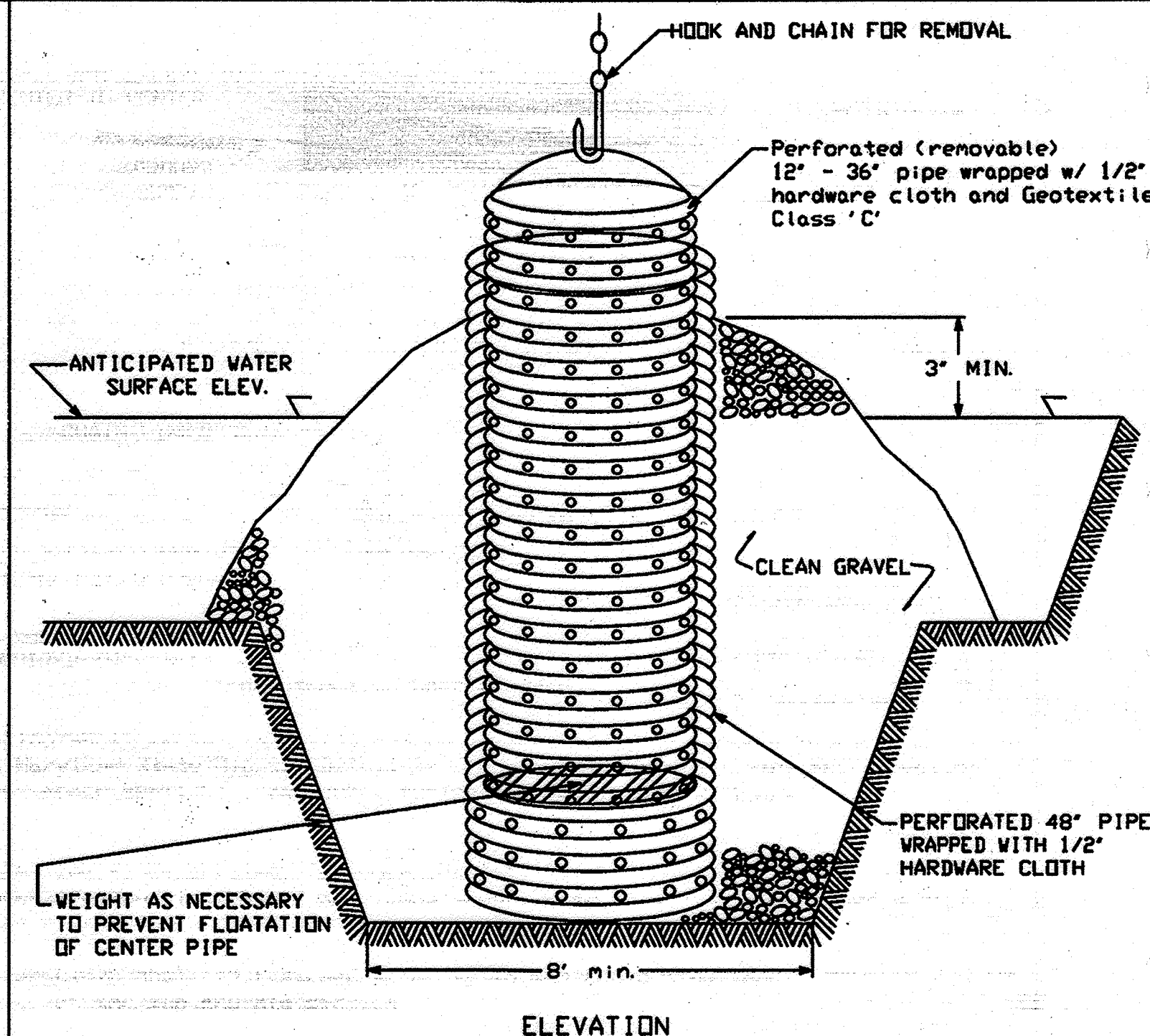
3.1 Unfold filter bag on a stabilized area over either a bed of straw evenly distributed at a rate of one (1) bale per square foot, or on an aggregate pad constructed of #57 stone at a minimum depth of three inches (3"). Filter bag should not be placed on bare soil.

3.2 Insert discharge pump hose into the filter bag spout a minimum of six inches (6") and tightly secure the hose with tie wire or pipe clamp.

4.0 MAINTENANCE

TEMPORARY SEDIMENT FILTER BAG

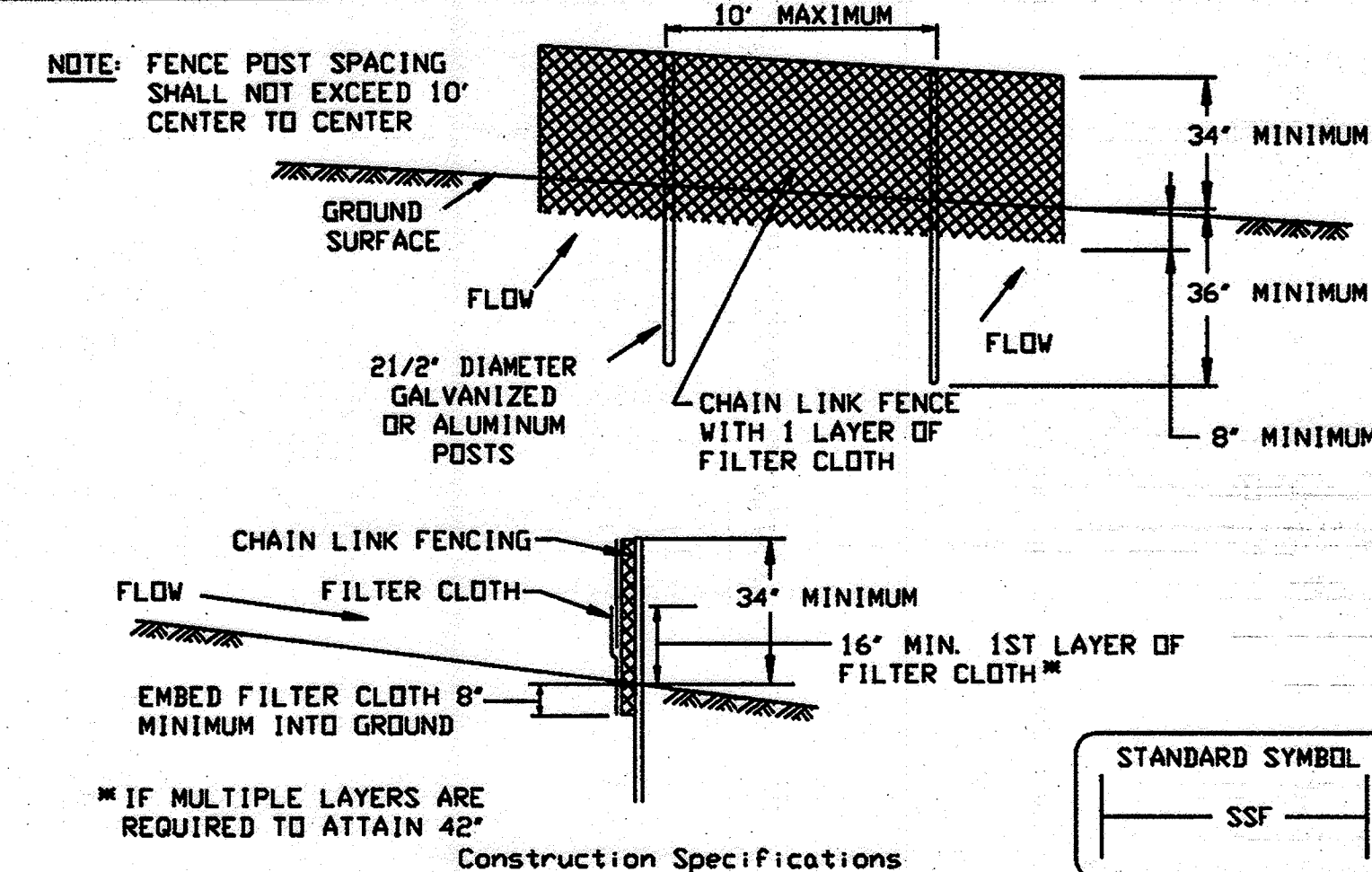
2-05



1. The outer pipe should be 48" dia. or shall, in any case, be at least 4" greater in diameter than the center pipe. The outer pipe shall be wrapped with 1/2" hardware cloth to prevent backfill material from entering the perforations.
2. After installing the outer pipe, backfill around outer pipe with 2" aggregate or clean gravel.
3. The inside stand pipe (center pipe) should be constructed by perforating a corrugated or PVC pipe between 12" and 36" in diameter. The perforations shall be 1/2" x 6" slots or 1" diameter holes 6" or center. The center pipe shall be wrapped with 1/2" hardware cloth first, then wrapped again with Geotextile Class C.
4. The center pipe should extend 12" to 18" above the anticipated water surface elevation or riser crest elevation when dewatering a basin.

REMOVABLE PUMPING STATION (RPS)

3-05



- Construction Specifications**
1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
 2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
 3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
 4. Filter cloth shall be embedded a minimum of 8" into the ground.
 5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" or more.
 6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height
 7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:
- | | | |
|----------------------|--|----------------|
| Tensile Strength | 50 lbs/in (min.) | Test: MSMT 509 |
| Tensile Modulus | 20 lbs/in (min.) | Test: MSMT 509 |
| Flow Rate | 0.3 gal/ft ² /minute (max.) | Test: MSMT 322 |
| Filtering Efficiency | 75% (min.) | Test: MSMT 322 |

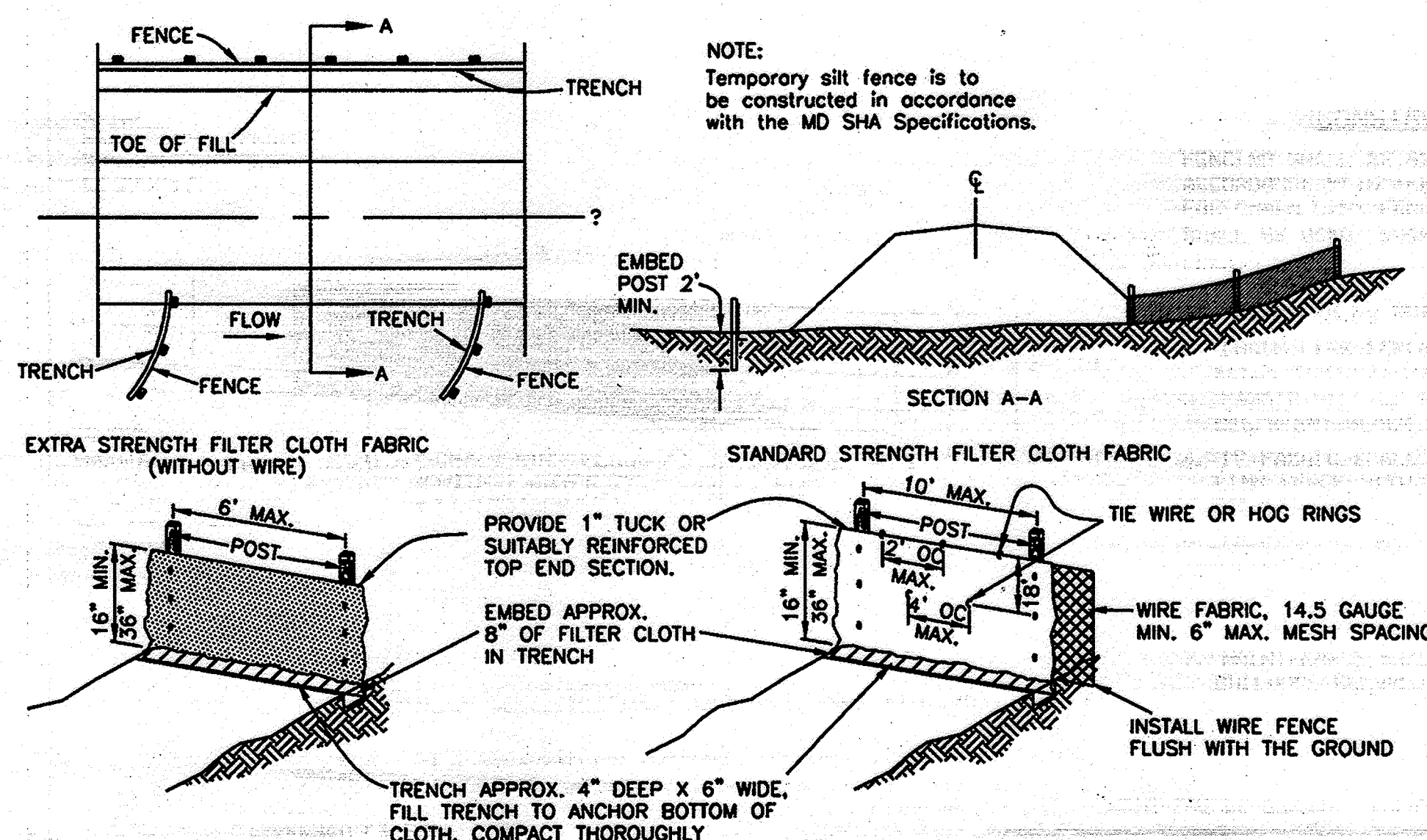
SUPER SILT FENCE

4-05

- Construction and Material Specifications**
- I. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experiment Station.
 - II. Topsoil Specifications - Soil to be used as topsoil must meet the following:
 - i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/4" in diameter.
 - ii. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.
 - iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 48 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.
 - III. For sites having disturbed areas under 5 acres:
 - i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.
 - IV. For sites having disturbed areas over 5 acres:
 - i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
 - a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
 - b. Organic content of topsoil shall be not less than 1.5 percent by weight.
 - c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
 - d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.
 - ii. Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
 - iii. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.
 - V. Topsoil Application
 - i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
 - ii. Grades on the slopes to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.
 - iii. Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
 - iv. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

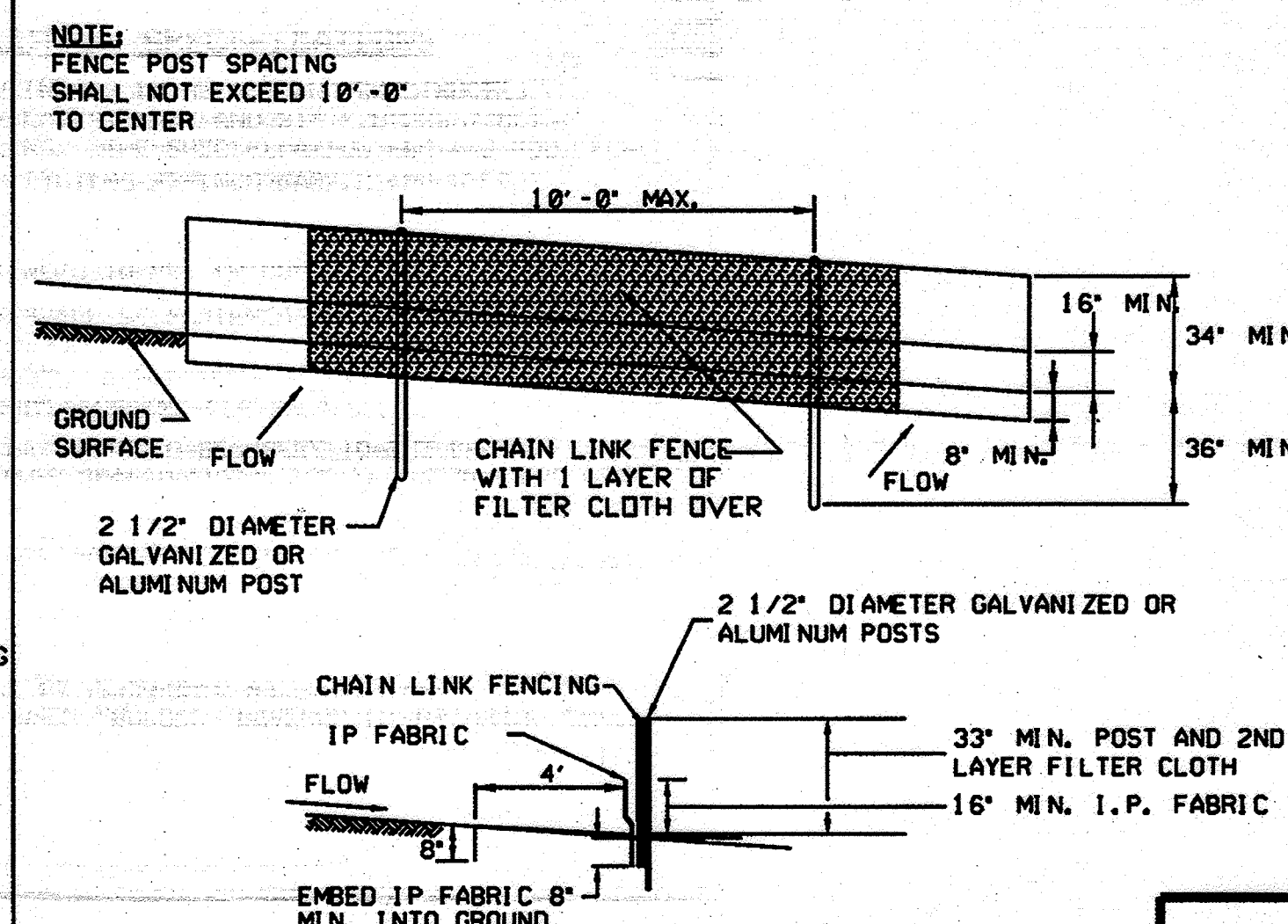
TOPSOILING

5-05



TOE OF FILL - INSTALLATION OF SILT FENCE

6-05



SUPER SILT DIVERSION FENCE (DSF)

7-05

TEMPORARY EROSION AND SEDIMENT CONTROL DETAILS AND NOTES

COLUMBIA ASSOCIATION TOWN CENTER

MINOR GRADING IN SUPPORT OF LAKE KITTAMAQUUNDI RESTORATION ELECTION DISTRICT 5, HOWARD COUNTY MD. TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING I-05, SHEET 35 OF 64

SDP-08-108

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division

Chief, Division of Land Development

Director, DEP.

Date 12/23/07

Date 1/07/10

Date 1/7/10

Maryland Department of the Environment
MDE Water Management Administration
Dam Safety Division

V.P. Dalal

Vistly P. Dalal

Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY:

HDR

HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN DESIGNED UNDER MY SUPERVISION

PIETER DAHMEN, PE

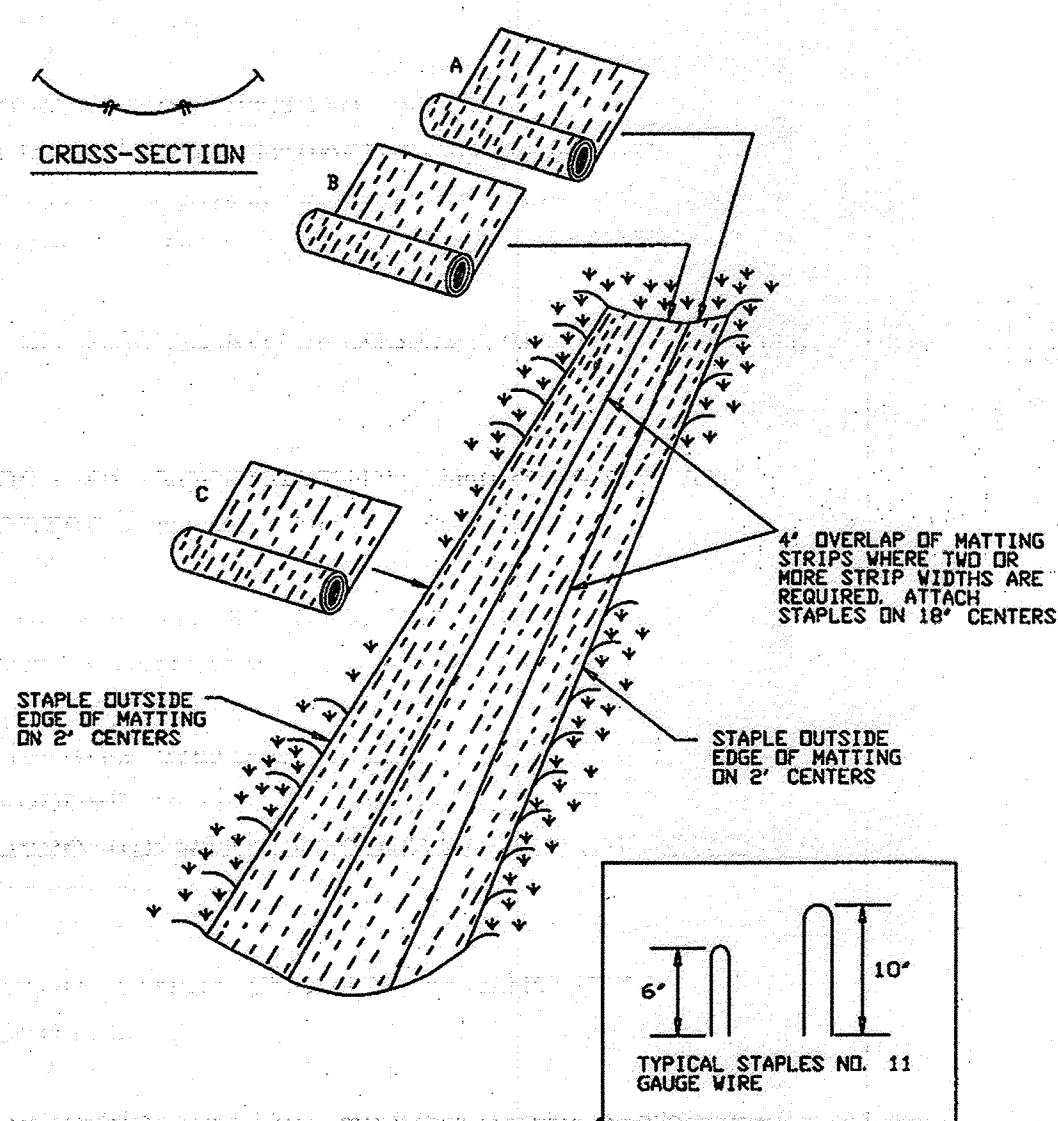
HDR ENGINEERING INC.

COLUMBIA ASSOCIATION

10221 WINCOPIN CIRCLE #100

COLUMBIA, MD 21044

(410)-381-2947

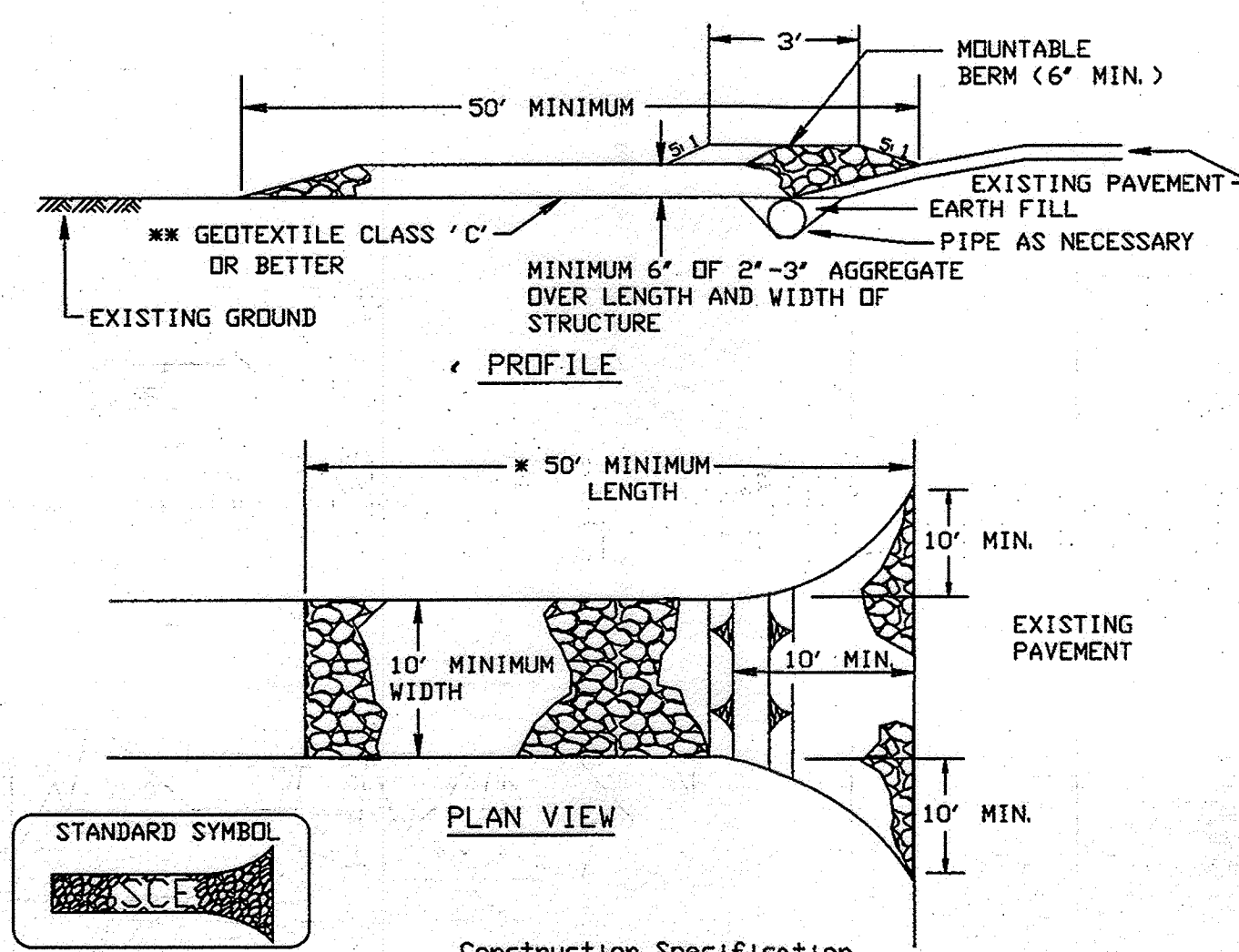


- Construction Specifications**
1. Key-in the matting by placing the top ends of the matting in a narrow trench, 6' in depth. Backfill the trench and tamp firmly to conform to the channel cross-section. Secure with a row of staples about 4' down slope from the trench. Spacing between staples is 6'.
 2. Staple the 4' overlap in the channel center using an 18" spacing between staples.
 3. Before stapling the outer edges of the matting, make sure the matting is smooth and in firm contact with the soil.
 4. Staples shall be placed 2' apart with 4 rows for each strip, 2 outer rows, and 2 alternating rows down the center.
 5. Where one roll of matting ends and another begins, the end of the top strip shall overlap the upper end of the lower strip by 4', shiplap fashion. Reinforce the overlap with a double row of staples spaced 6' apart in a staggered pattern on either side.
 6. The discharge end of the matting liner should be similarly secured with 2 double rows of staples.

Note: If flow will enter from the edge of the matting then the area effected by the flow must be keyed-in.

EROSION CONTROL MATTING

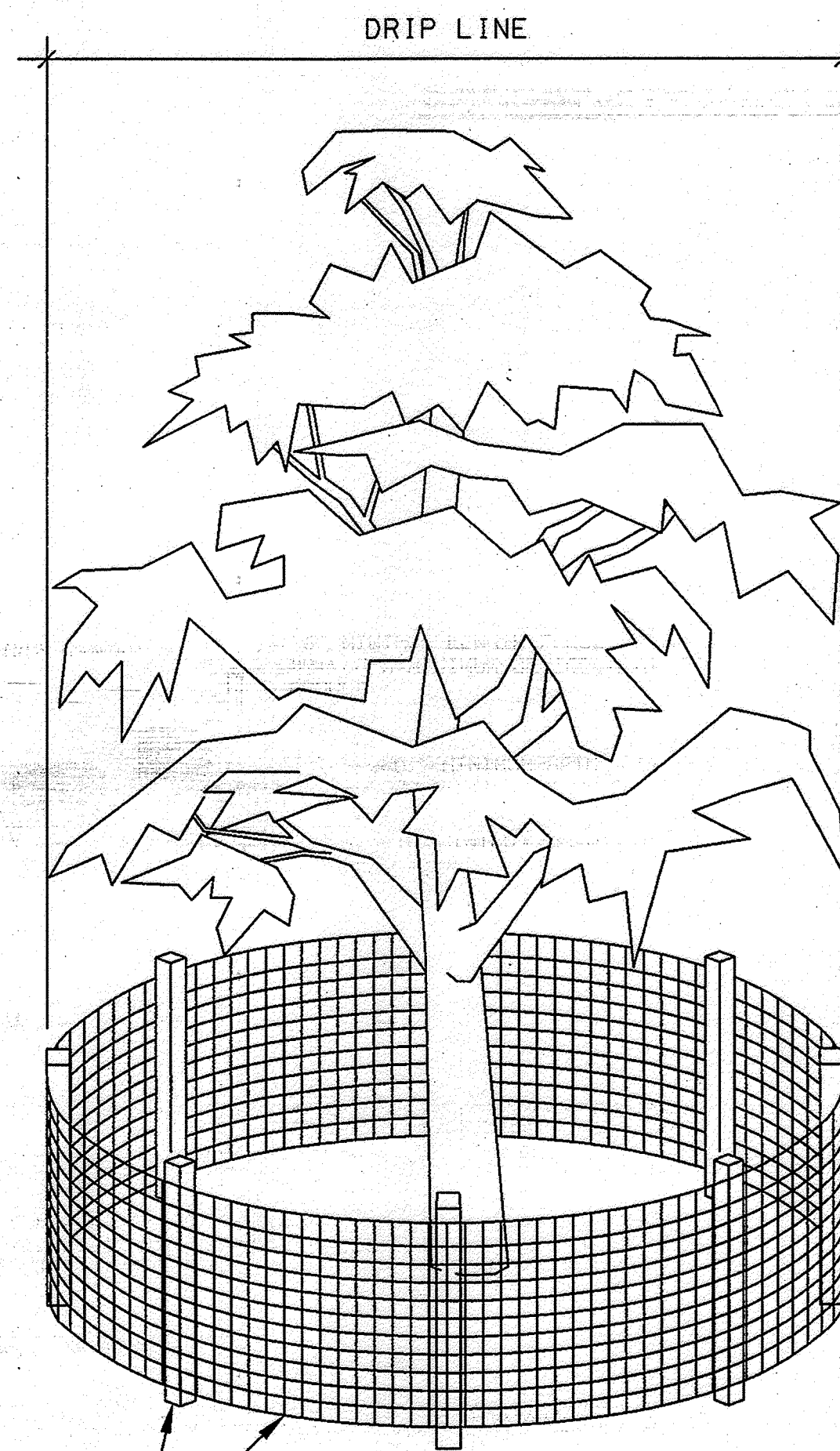
1-06



- Construction Specification**
1. Length - minimum of 50' (#30' for single residence lot).
 2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.
 3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. *The plan approval authority may not require single family residences to use geotextile.
 4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
 5. 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 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
 6. 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 the stabilized construction entrance.

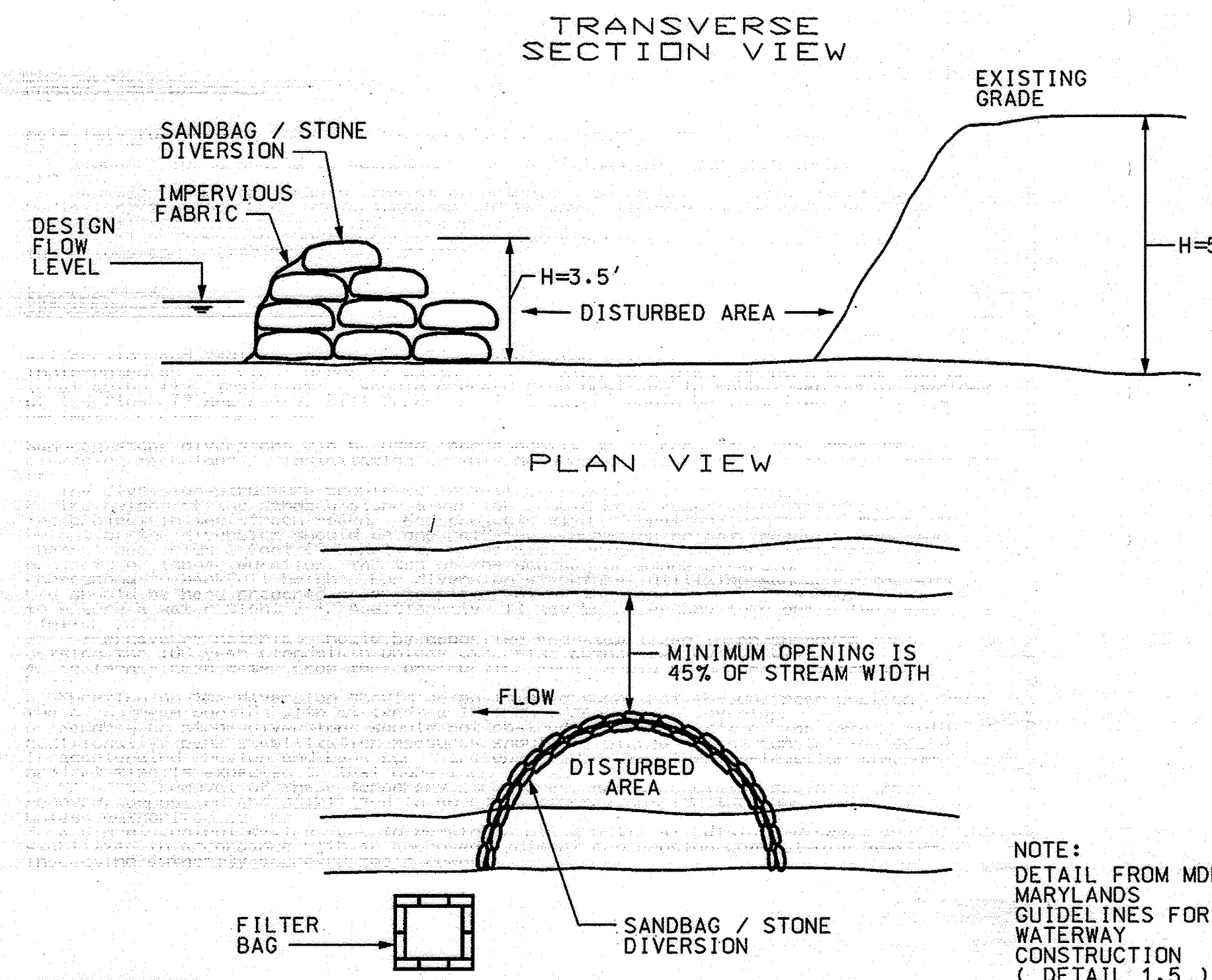
STABILIZED CONSTRUCTION ENTRANCE

3-06



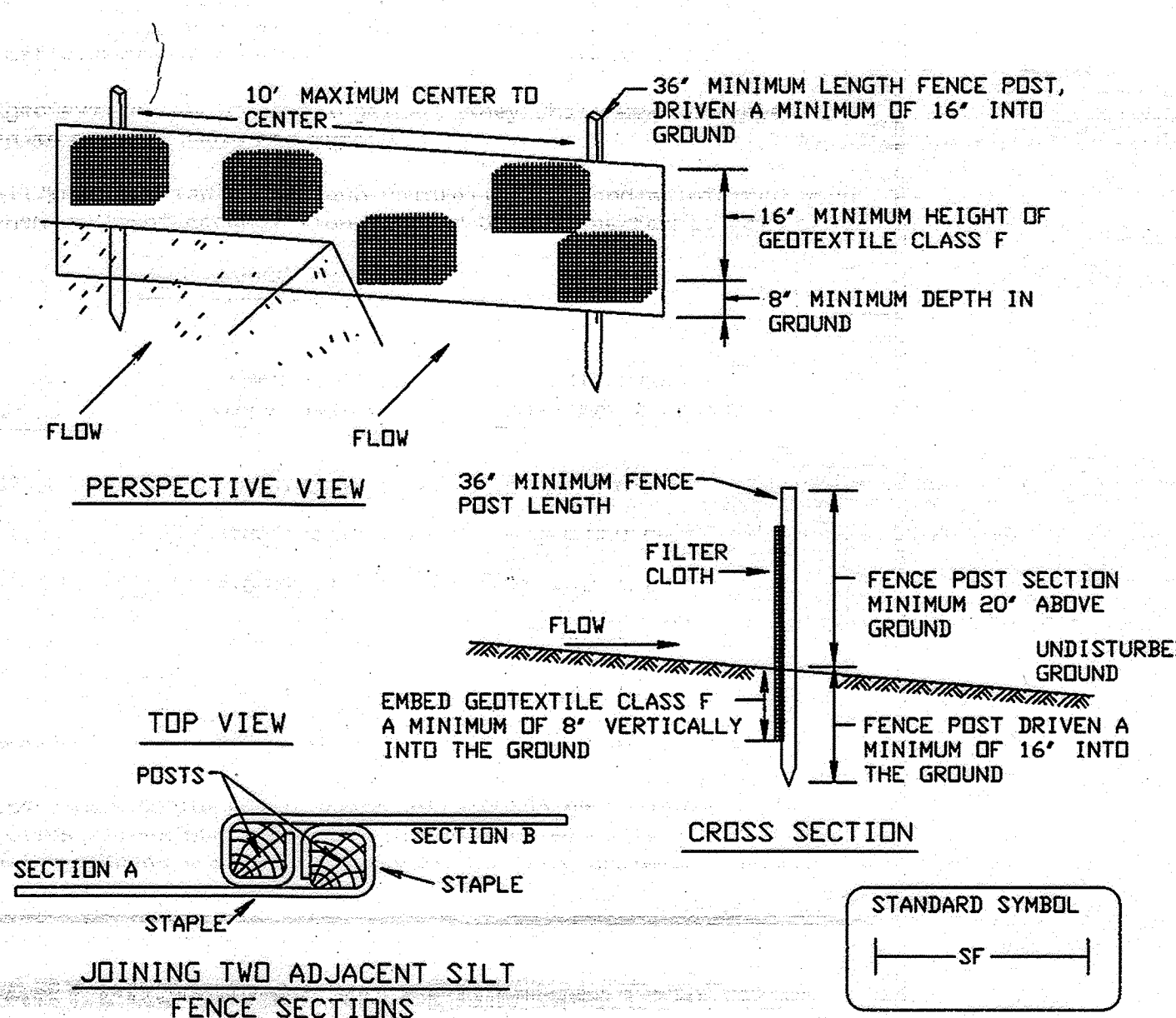
TREE PROTECTION

4-06



SANDBAG / STONE DIVERSION

2-06



SILT FENCE

5-06

Material Specifications

Materials for sandbag and stone stream diversions should meet the following requirements:
 - Riprap: Riprap should be washed and have a minimum diameter of 6 inches (0.15 meters).
 - Sandbags: Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of the fill material (i.e., sand, fine gravel, etc.).
 - Sheeting: Sheeting should consist of polyethylene or other materials which are impervious and resistant to puncture and tearing.

Installation Guidelines

All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during periods of low flow. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.
 Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should proceed as follows (refer to Detail 1.5):
 1. The diversion structure should be installed from upstream to downstream.
 2. The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration less than 2 weeks, the height of the diversion should be one half the streambank height, measured from the channel bed, plus 1 foot (0.3 meters) or bankfull height, whichever is greater. For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures utilizing sandbags, the stream bed should be hand prepared prior to placement of the base layer of sandbags in order to ensure a water tight fit. Additionally, it may be necessary to prepare the bank in a similar fashion.
 3. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
 4. Sediment-laden water from the construction area should be pumped to a dewatering basin.
 5. Sheeting on the diversion should be positioned such that the upstream portion covers the downstream portion with at least a 18-inch (0.45 meters) overlap.
 6. Sandbag or stone diversions should not obstruct more than 45% of the stream width. Additionally, bank stabilization measures should be placed in the constricted section if accelerated erosion and bank scour are observed during the construction time or if project time is expected to last more than 2 weeks.
 7. Prior to removal of these temporary structures, any accumulated sediment should be removed, deposited and stabilized in an approved area outside the 100-year floodplain unless authorized by the WMA.
 8. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

Construction Specifications

1. Fence posts shall be a minimum of 36' long driven 16' minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

| | | |
|----------------------|---|----------------|
| Tensile Strength | 50 lbs/in (min.) | Test: MSMT 509 |
| Tensile Modulus | 20 lbs/in (min.) | Test: MSMT 509 |
| Flow Rate | 0.3 gal ft ² / minute (max.) | Test: MSMT 322 |
| Filtering Efficiency | 75% (min.) | Test: MSMT 322 |

3. Where ends of geotextile fabric cone together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

Silt Fence Design Criteria

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

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

TEMPORARY EROSION AND SEDIMENT CONTROL DETAILS AND NOTES

COLUMBIA ASSOCIATION TOWN CENTER

MINOR GRADING IN SUPPORT OF LAKE KITTAMAQUUNDI RESTORATION
 ELECTION DISTRICT 8, HOWARD COUNTY MD.
 TAX MAP 30 AND 36

SCALE AS SHOWN
 JUNE 18, 2009

DRAWING I-06, SHEET 36 OF 62

SDP-08-108

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division
 Chief, Division of Land Development
 Director, DEP.

12/23/09
 Date
 1/07/10
 Date
 1/7/10
 Date

Maryland Department of the Environment
 Water Management Administration
 Dam Safety Division
 V. P. Dalal
 Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY:
 HDR
 HDR Engineering, Inc.
 5700 LAKE WRIGHT DRIVE
 SUITE 300
 NORFOLK, VIRGINIA 23502
 757-222-1500

PLANS HAVE BEEN DESIGNED UNDER MY SUPERVISION
 PIETER DAHMEN, PE
 HDR ENGINEERING INC.

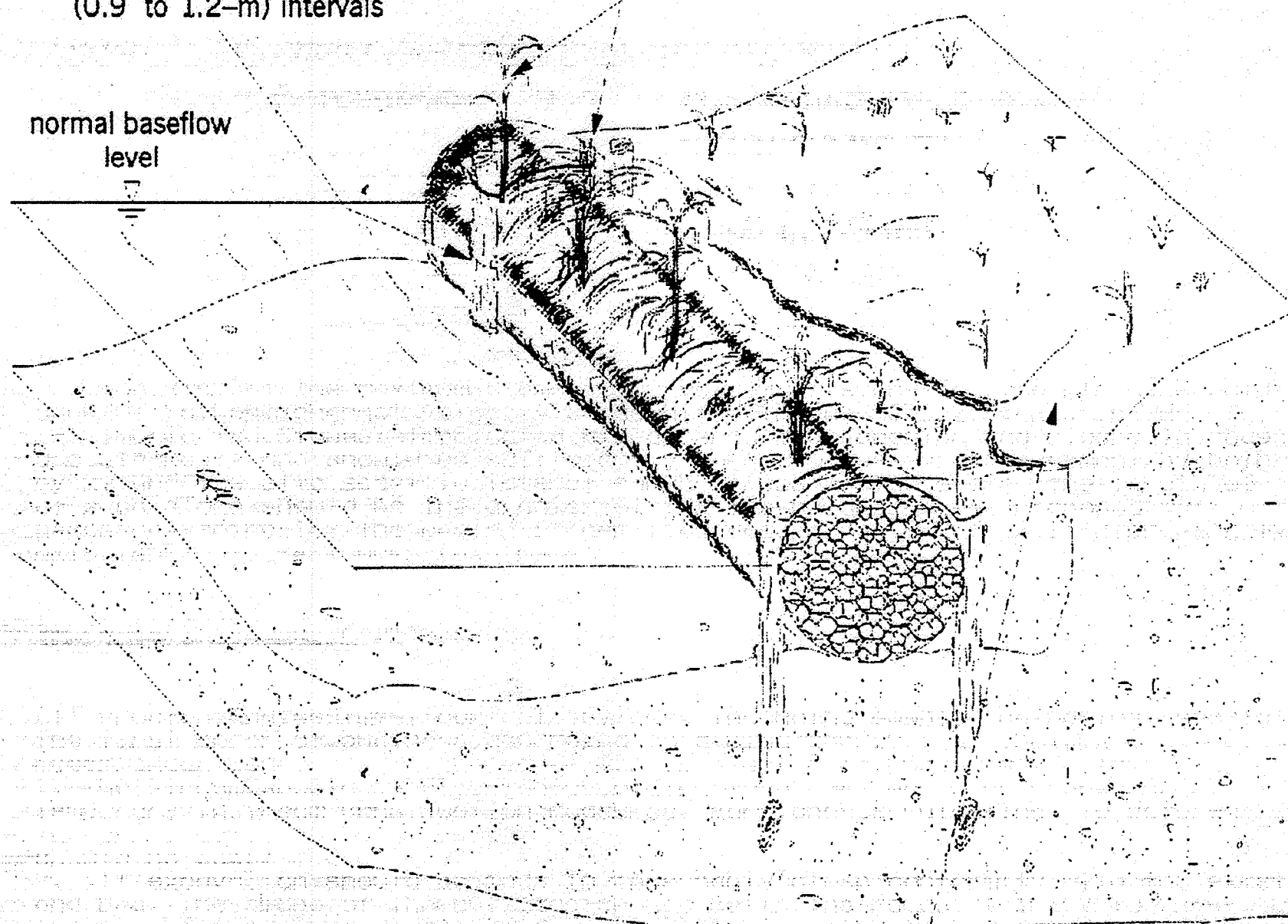
1-27-2009

COLUMBIA ASSOCIATION
 10221 WINCOPIN CIRCLE #100
 COLUMBIA, MD 21044
 (410)-381-2947

live or dead stakes, min. 3-ft (0.9-m) length, notched for twine or rope and spaced at 3 to 4-ft (0.9 to 1.2-m) intervals

plugs recommended by a plant specialist and spaced at appropriately - generally at 6 to 12-in (15 to 30-cm) intervals

normal baseflow level



slope shall be backfilled and protected with temporary erosion control measures until permanent vegetation is established

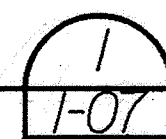
Material Specifications

- Fiber logs: Natural fiber logs composed of biodegradable materials such as coir fiber are commercially available in 16 or 18-inch (0.40 or 0.45-meter) diameter rolls.
- Plantings: Vegetative plantings should be chosen according to their adaptability to site-specific conditions and objectives by a plant specialist.
- Live stakes: Live stakes should be cut from fresh, green, healthy dormant parent plants which are adapted to the site conditions whenever possible.

Installation Guidelines

- All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Refer to the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control. The recommended construction procedure for natural fiber logs should proceed as follows (refer to Detail 2.6):
1. Natural fiber rolls should be installed so that they rest against the bottom of the waterway in ponds or lakes. In streams and rivers, the first row of fiber logs should be placed above any necessary toe stabilization measures. Natural fiber logs should not be used as the primary toe stabilization measure in streams or rivers.
 2. Plants should be plugged in an alternating pattern along the top of the fiber log in gaps between the coir fiber netting. Appropriate species and a spacing ranging from 6 to 12 inches (0.15 to 0.3 meters) should be selected by a plant specialist according to site characteristics such as soil properties, anticipated post-construction bank slope, water chemistry, amount of available sunlight, and expected duration of inundation during high stream flows. If water levels are too low for the fiber logs to be submerged $\frac{3}{4}$ to $\frac{2}{3}$ of their diameter, plants should be plugged inside the soil/log interface where they will receive adequate moisture.
 3. Dead or live stakes should be used to anchor the fiber logs in place. Stakes should be notched approximately 5 inches (13 centimeters) from their tops and pounded partially into the ground on either side of the bundle at a spacing of 3 to 4 feet (0.9 to 1.2 meters). Twine should be tied from the notch in one stake to the notch in the stake directly opposite. The stakes should then be driven so that the twine is secured against the top of the roll. Ideally, the top of the stake should be flush with the top of the roll.
 4. The ends of adjacent logs should be laced together with twine by making a number of passes in the end netting between the logs and pulling the twine taut. Where a fiber roll does not abut another fiber roll, the end should be bent inward and buried in the bank to prevent water from intruding behind the roll and dislodging it.
 5. Successive rows of fiber rolls should be offset 3 to 8 inches (8 to 20 centimeters). Additionally, to ensure that roots extend into the soil, plants should be plugged into the sides of the fiber log near the soil. The need to backfill/contour the soil behind the fiber logs and between successive lifts will depend on the specific aesthetic and physical requirements of the project. The re-contoured soil should be seeded and/or plugged with appropriate vegetative species and covered with an erosion control blanket to prevent slope erosion.

NATURAL FIBER ROLLS



APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division

[Signature]
Chief, Division of Land Development

[Signature]
Director, DEP

12/22/03
Date

1/07/10
Date

1/9/10
Date

Maryland Department of the Environment
Water Management Administration
Dam Safety Division

[Signature]
V.P. Dahl
Regulatory & Compliance Engineer

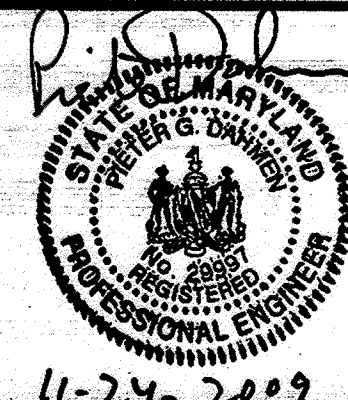
12/1/07

THIS PLAN SET HAS BEEN PREPARED BY:

HDR
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5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
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[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
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TEMPORARY EROSION AND SEDIMENT CONTROL DETAILS AND NOTES

COLUMBIA ASSOCIATION TOWN CENTER

MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUNDI RESTORATION
ELECTION DISTRICT 8, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009

DRAWING 1-07, SHEET 37 OF 62

SDP-08-108

Material Specifications

Materials for imbricated riprap construction and installation should meet the following requirements:

Filters: Synthetic filter fabric may be used cautiously based on the 1994 MD Standards and Specifications for Soil Erosion and Sediment Control. Whenever possible, however, granular filters with a minimum thickness of 6 inches (15 cm) should be used with a gradation as found in Table 2.2.

Table 2.2: Granular Filter Material Grading Specifications

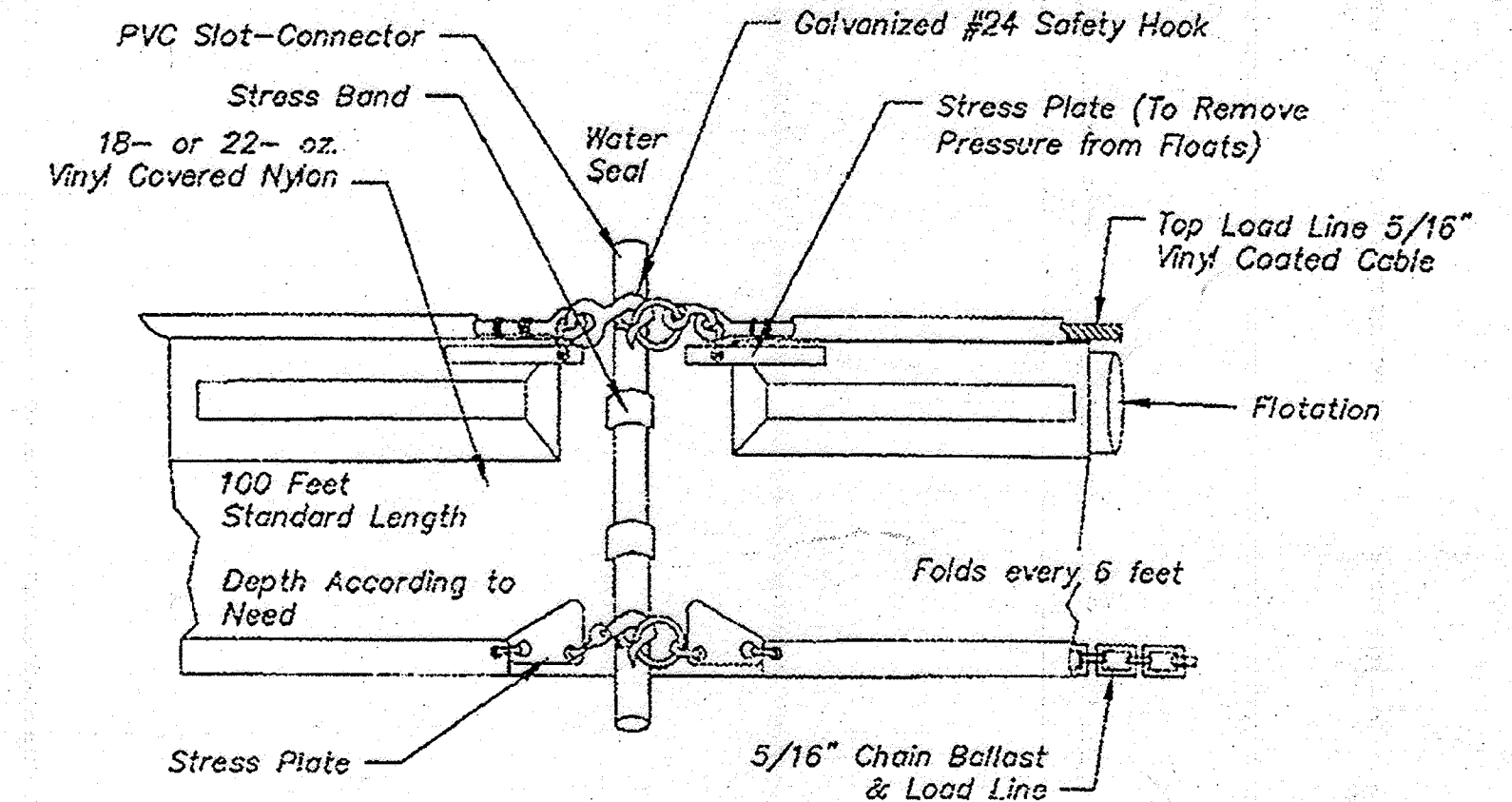
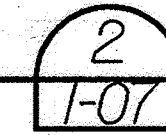
| Percent Less Than | U.S. Standard Sieve Size |
|-------------------|--------------------------|
| 100 | 2 1/2 in (64 mm) |
| 85 - 100 | 1 in (25 mm) |
| 60 - 100 | 1/2 in (13 mm) |
| 35 - 70 | No. 10 |
| 20 - 50 | No. 40 |
| 3 - 20 | No. 200 |

- Toe Riprap: The maximum diameter or weight of stone for toe riprap should be based upon the bankfull stream channel velocity as detailed in the MGC 2.1: Riprap and Figure 2.1. Imbricated Stones: Imbricated riprap should be angular and blocky in shape such that they are stackable and should be sufficiently large to resist displacement by both the design storm event and the site-specific lateral earth stresses. Therefore, the length of the longest axis of each stone should be the greater of 1/3 the height of the proposed wall and the size necessary to resist the design stream flow according to MGC 2.1: Riprap. A typical minimum axis length is 24 inches (0.6 meters).

Installation Guidelines

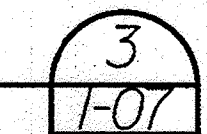
- All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. The recommended construction procedure for imbricated riprap is as follows (refer to Detail 2.2):
1. The stream should be diverted according to a WMA recommended procedure (see Section 1, Temporary Instream Construction Measures, Maryland's Guidelines to Waterway Construction), and the construction area should be dewatered.
 2. All excavation should be made in reasonably close conformity with the existing stream slope and bed. The slope of the cut face should be in the range of 1H:6V to 2H:6V. Loose material at the toe of the embankment should be excavated until a stable foundation is reached, usually within 2 to 3 feet (0.6 to 0.9 meters) of the surface. The subgrade should be smooth, firm, and free from protruding objects or voids that would effect the proper positioning of the first layer of stones.
 3. A graded granular filter or filter fabric should be placed on the face of the cut slope to prevent the migration of fine materials through the revetment. If filter fabric is used, it should be carefully and loosely placed on the prepared slope and secured. Adjacent strips should overlap a minimum of 8 inches (0.20 meters). If the filter fabric is torn or damaged, it should be repaired or replaced.
 4. The rock layers should be neatly stacked with staggered joints so that each stone rests firmly on two stones in the tier below. Additionally, smaller stones should be used to fill voids so that each rock rests solidly on the previous rock layer with minimal opportunity for movement. Upon completion of the first layer of stone, the toe trench should be filled with Class III riprap sized according to MGC 2.1: Riprap or additional imbricated stone. Two footer stones should be used where high potential for channel incision exists. The height of the imbricated revetment is dictated by the size of the stone used, and the height should not exceed 3 times the length of the longest axis and should not be greater than 10 feet (3 meters).
 5. Placement of the granular backfill should occur concurrently with the stone placement. The backfill slope angle should be 2H:1V or flatter but should be greater than 0 degrees to facilitate drainage. Once all of the backfill is in place, it should be covered with a filter layer and a layer of topsoil sufficient to support a native vegetative cover.
 6. The disturbed sections of the channel, including the slopes and stream bed, should be stabilized with methods approved by the WMA.

IMBRICATED RIPRAP



1. Type II is designed for use on rivers and streams, large open lakes, bays, and beaches with moderate currents and wind exposure.
2. When the curtain is no longer required as determined by the Inspector, the curtain and related components shall be removed so as to minimize turbidity. Remaining sediment shall be removed and the original depth or plan elevations restored. Any spoils must be taken to upland area and stabilized.
3. Curtain will be opened as required to accommodate passage of work boats.

TURBIDITY CURTAIN



Turbidity Curtain Specifications

Flotation consists of a series of expanded polyethylene logs, 6" in diameter and 55" long. The logs are enclosed in 22 oz./sq. yd. PVC coated nylon or polyester having 400 lbs. minimum tensile strength. Curtain is permanently attached to the bottom of the flotation unit and weighed down with 1/2" galvanized chain. The curtain material is monofilament woven polypropylene having 200 lb. or 300 lb. tensile strength.

Woven Curtain Material Specifications:

| Property | Test Method | Results | Results | Results |
|---------------------|-------------|---------------|---------------|----------------|
| Fabric Code | | AEF 200W | AEF 300W | AEF 650W |
| Fabric Structure | | Woven | Woven | Woven |
| Polymer Composition | | Polypropylene | Polypropylene | Polypropylene |
| Weight | ASTM D-4632 | 4.2 oz/sq. yd | 5.8 oz/sq. yd | 6.3 oz/sq. yd |
| Grab Strength | ASTM D-4632 | 200 lbs. | 300 lbs. | 390 x 250 lbs. |
| Trap Tear Strength | ASTM D-4533 | 90 lbs. | 120 lbs. | 115 x 65 lbs. |
| Burst Strength | ASTM D-3786 | 400 psi | 600 psi | 495 psi |
| Puncture | ASTM D-3787 | 90 lbs. | 150 lbs. | 130 lbs. |
| Elongation | ASTM D-4632 | 20% | 20% | 30% |
| U.V. Resistance | ASTM D-4335 | 70% (500hrs) | 70% (500hrs) | 70% (500hrs) |
| E.O.S. | CW-02215 | 40 | 40 | 70 |

Maintenance

Inspect turbidity curtain after each major storm event resulting from 3-inches or more of rainfall within a 24-hour period. Repair or replace damaged materials and remove any debris lodged against the turbidity curtain.

DRAWING SHEET
NO. NO. SHEET TITLE

~~A-01 J-01 2. 39~~ GENERAL NOTES

~~B-01 J-01 3. 40~~ EXISTING CONDITIONS PLAN

~~C-01 J-01 4. 41~~ PROPOSED SITE PLAN

~~D-01 J-01 5. 42~~ SECTIONS AND DETAILS

~~E-01 J-01 6. 43~~ TEMPORARY EROSION & SEDIMENT CONTROL PLAN - INITIAL PHASE

~~E-02 J-01 7. 44~~ TEMPORARY EROSION & SEDIMENT CONTROL PLAN - FINAL PHASE

~~E-03 J-01 8. 45~~ TEMPORARY EROSION & SEDIMENT CONTROL - DETAILS & NOTES

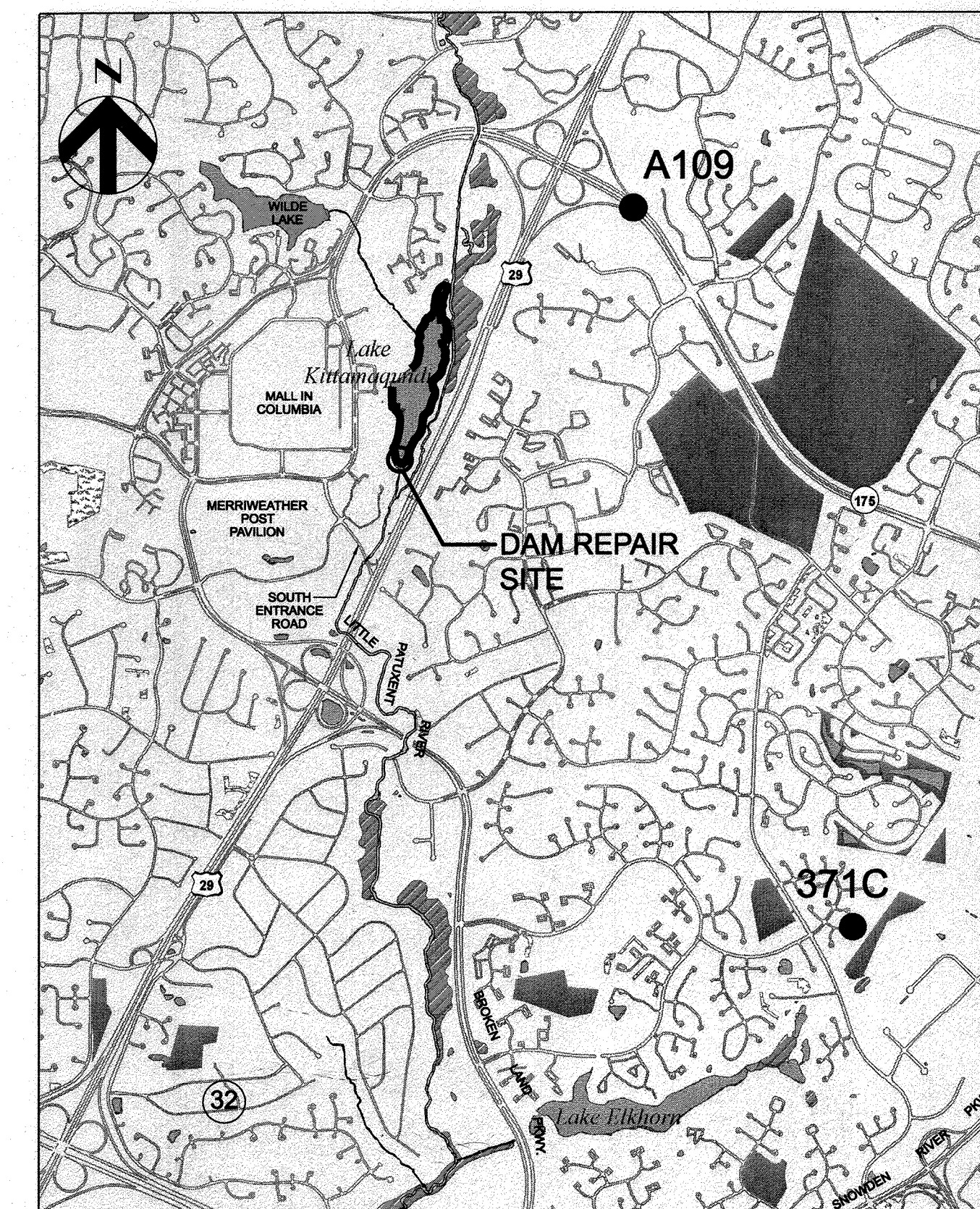
~~F-01 J-01 9. 46~~ SOIL BORING LOGS



| | | |
|------|-----|--|
| J-01 | 38. | DAM REPAIR - TITLE SHEET |
| J-02 | 39. | DAM REPAIR - GENERAL NOTES |
| J-03 | 40. | DAM REPAIR - EXISTING CONDITION PLAN |
| J-04 | 41. | DAM REPAIR - PROPOSED SITE PLAN |
| J-05 | 42. | DAM REPAIR - SECTIONS AND DETAILS |
| J-06 | 43. | DAM REPAIR - TEMPORARY EROSION & SEDIMENT CONTROL PLAN - INITIAL PHASE |
| J-07 | 44. | DAM REPAIR - TEMPORARY EROSION & SEDIMENT CONTROL PLAN - FINAL PHASE |
| J-08 | 45. | DAM REPAIR - TEMPORARY EROSION & SEDIMENT CONTROL - DETAILS & NOTES |
| J-09 | 46. | DAM REPAIR - SOIL BORING LOGS |

Lake Kittamaquundi Dam Repair Columbia, Maryland

Columbia Association Construction Services Project No. 040107DK



LOCATION PLAN
NTS

SITE ANALYSIS DATA CHART

| | | | |
|---|------|-------|-----------------------|
| a. TOTAL PROJECT AREA | | | |
| DAM REPAIR AREA | .039 | ACRES | 1,710 FT ² |
| b. AREA OF PLAN SUBMISSION - SEE ITEM a | | | |
| c. LIMIT OF DISTURBED AREA | .161 | ACRES | 7,040 FT ² |
| d. PRESENT ZONING | NT | | |
| e. NA, TEMPORARY MAINTENANCE EMPLOYEES | | | |

PERMIT INFORMATION CHART

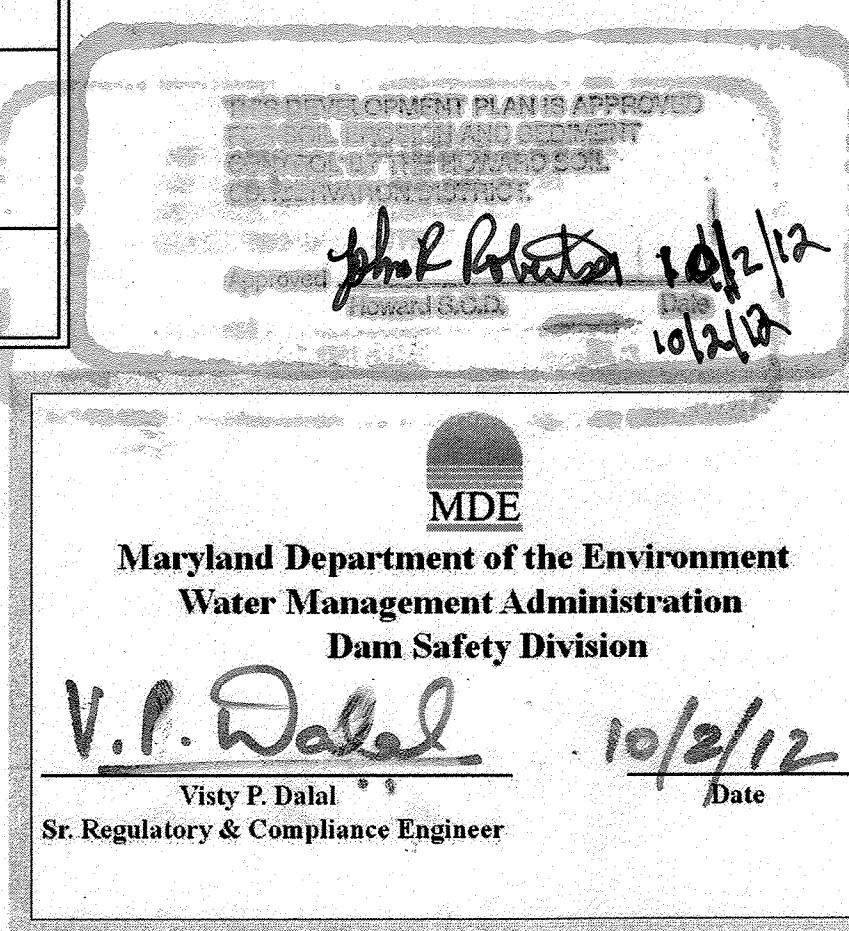
| | | | | | |
|------------------|---|--------------|-----------|----------------|--------|
| Subdivision Name | COLUMBIA TOWN CENTER | Section/Area | SECTION 1 | Lot/Parcel No. | LOT 14 |
| Plot # or L/F | PHASE 23 PLAT BOOK 16 FOLIO 19 & 20 | Grid # | | Zoning | NT |
| Tax Map No. | 30 & 36 | Elect Distr | 4 | Census Tract | 605602 |
| Water Code | | Sewer Code | | | |

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division
Date 3/1/13

[Signature]
Chief, Division of Land Development
Date 3/8/13

[Signature]
Director
Date 3-12-13



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 29997, EXPIRATION DATE: 01-14-2014.

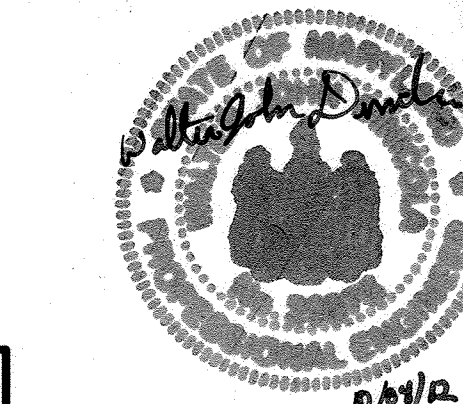
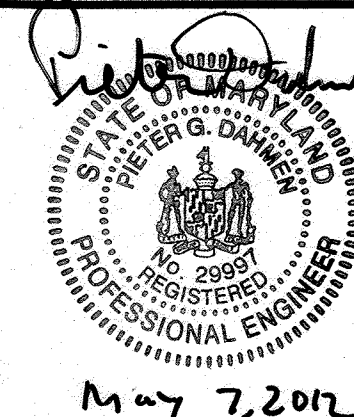
THIS PLAN SET HAS BEEN PREPARED BY:

HDR

HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
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PIETER DAHMEN, PE
HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

COLUMBIA ASSOCIATION TOWN CENTER

Revised Site Development Plan
LAKE KITTAMAQUUNDI DAM REPAIR
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
FEBRUARY 2011

DRAWING J-01 SHEET 4 OF 62

HOWARD COUNTY
GENERAL NOTES:

- All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications if applicable.
- The contractor shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 313-1880 24-hours prior to the start of work.
- The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work being done.
- Traffic control devices, markings and signing shall be in accordance with the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD). All street and regulatory signs shall be in place prior to the placement of any asphalt.
- Street light placement and the type of fixture and pole shall be in accordance with the Howard County Design Manual, Volume III (1993) and as modified by "Guidelines for Street Lights in Residential Developments (June 1993)." A minimum spacing of 20' shall be maintained between any streetlight and any tree.
- All sign posts used for traffic control signs installed in the County right-of-way shall be mounted on a 2" galvanized steel, perforated, square tube post (14 gauge) inserted into a 2-1/2" galvanized steel, perforated, square tube sleeve (12 gauge) - 3' long. A galvanized steel pole cap shall be mounted on top of each post.
- All plan dimensions are to face of curb unless otherwise noted.
- The existing topography is taken from aerial survey with (maximum two foot) contour intervals prepared by Mercado Consultants Inc. dated 5-22-06.
- The coordinates shown hereon are based upon the Howard County Geodetic Control, which is based upon the Maryland State Plane Coordinate System, Howard County Monument Nos. A109, 371C and "Harris AZ Mark" were used for this project.
- No permanent increase in impervious area.
- Existing utilities are based on GIS mapping.
- No floodplain study was prepared for this project.
- Project background information (unless included in title block):
 - Hydraulically dredging the upper half of the lake to its original depths.
 - Pumping the dredged material to a temporary staging area on the South Entrance Road for mechanical dewatering.
 - Trucking dewatered material to an off-site licensed placement facility.
 - Constructing a peninsula and wetlands in the upper portion of the lake to create a Forebay.
 - Install access road on isthmus with turf reinforced matting and placement of riprap at existing overflow areas on the isthmus to prevent further erosion.
 - Providing imbricated riprap for erosion protection at select spots on the right bank of the Little Patuxent River.
 - Restoration of all disturbed areas, including removal of gravel & paving at the staging area.
- No grading, removal of vegetative cover or trees, paving or new structures shall be permitted outside the limits of disturbance in wetlands, streams, or their associated buffers, forest conservation easements, or 100-year floodplain without DPZ approval.
- This subject property is zoned NT per the February 2, 2004 Comprehensive Zoning Plan and per the "Comp Life" Zoning Amendments effective July 28, 2006.
- This project is exempt from the requirements of Section 16J24 of the Howard County Code for Landscaping since disturbance resulting from project activities is temporary and no permanent structures are proposed.
- This project is exempt from the requirements of Section 16J200 of the Howard County Code for Forest Conservation since it is part of a Planned Unit Development which had preliminary development plan approval and 50% or more of the land was recorded and substantially developed before December 31, 1992.
- The Contractor shall be responsible for repairs to property damage caused by the Contractor.
- Project is subject to approval by the U.S. Army Corps of Engineers, Baltimore District, the MDE Nonflood Wetlands and Waterways Division, and the MDE Dam Safety Division. Copies of the applicable permits or authorizations shall be submitted to the DPZ, Division of Land Development. MDE permit tracking number is 200863535.
- The Contractor shall comply with all applicable Federal, State and Local Laws and Regulations including project permits. Effluent leaving the site shall not exceed Maryland turbidity limits of 150 Ntu at any time or 50 Ntu as a monthly average per COMAR 26.08.02.
- No wetland areas landward of the ordinary high water are disturbed by the project. Wetlands within the lake (mainly nonperennial emergent and lacustrine unconsolidated bottom wetlands) are subject to disturbance from project activity, refer to JPA 2008-63535.M02.

HOWARD SOIL CONSERVATION DISTRICT
STANDARD SEDIMENT CONTROL NOTES

- A minimum of 24 hours notice must be given to the Howard County Department of Inspection, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).
- 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 re-disturbance, 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 I, 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 1994 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: Staging Area
Total Area of Site 1.06 Acres
Area Disturbed 1.91 Acres
Area to be roofed or paved 0.00 Acres
Area to be vegetatively stabilized .042 Acres
Total Cut 11.09 Cu.Yds.
Total Fill 11.09 Cu.Yds.
Total Dredging Values Cu.Yds.
per 2006 Bathymetric Survey
Offsite waste/borrow area location: Site with an approved sediment control plan and active permit, as approved by the Inspector and Howard SCD.
- Site Analysis: Isthmus Area
Total Area of Site 0.66 Acres
Area Disturbed 1.91 Acres
Area to be roofed or paved 0.00 Acres
Area to be vegetatively stabilized 0.85 Acres
Total Cut 254 Cu.Yds.
Total Fill 252 Cu.Yds.
Offsite waste/borrow area location: On Site
- 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 shall be back-filled and stabilized by the end of each work day, whichever is shorter.

HOWARD SOIL CONSERVATION DISTRICT
PERMANENT SEEDING NOTES:

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived 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: In lieu of soil test recommendations, use one of the following schedules:

- Preferred - Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq.ft.) and 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq.ft.) before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs/acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq.ft.)
- Acceptable - Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq.ft.) and 1000 lbs/acre 10-10-10 fertilizer (23 lbs/1000 sq.ft.) before seeding. Harrow or disk into upper three inches of soil.

Seeding - For the periods March 1 - April 30, and August 1 - October 15, seed with 60 lbs/acre (14 lbs/1000 sq.ft.) of Kentucky 31 Tall Fescue. For the period May 1 - July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs/acre (.05 lbs/1000 sq.ft.) of weeping lovegrass. During the period of October 16 - February 28, protect site by:

- Option 1 - Two tons per acre of well anchored straw mulch and seed as soon as possible in the spring.
Option 2 - Use sod.
Option 3 - Seed with 60 lbs/acre Kentucky 30 Tall Fescue and mulch with 2 tons/acre well anchored straw.

Mulching - Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000 sq.ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq.ft.) of emulsified asphalt on flat areas. On slope 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq.ft.) for anchoring.

Maintenance - Inspect all seeding areas and make needed repairs, replacements and reseeding.

TEMPORARY SEEDING NOTES:

Apply to graded or cleared areas likely to be re-disturbed 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 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq.ft.).

Seeding: - For periods March 1 - April 30 and from August 15 - October 15, seed with 2-1/2 bushel per acre of annual rye (3.2 lbs/1000 sq.ft.). For the period May 1 - August 14, seed with 3 lbs/acre of weeping lovegrass (.07 lbs/1000 sq.ft.). For the period November 16 - February 28, protect site by applying 2 tons/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/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 218 gal. per acre (5 gal/1000 sq.ft.) of emulsified asphalt on flat areas. On slope 8 ft. or higher, use 348 gal. per acre (8 gal/1000 sq.ft.) for anchoring.

Refer to the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for additional rates and methods not covered.

22

22. The Department of Planning and Zoning determined that activities in the floodplain and within 75 feet of the lake and streambank are necessary for completion of the dam repair.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division

3/1/13
Date

Chief, Division of Land Development

3/8/13
Date

Director

3-12-13
Date

THIS DEVELOPMENT PLAN IS APPROVED
FOR SOIL EROSION AND SEDIMENT
CONTROL BY THE HOWARD SOIL
CONSERVATION DISTRICT.

John R. Robinson 10/2/12
Howard SCD Date

MDE
Maryland Department of the Environment
Water Management Administration
Dam Safety Division
V. P. Dalal 10/2/12
V. P. Dalal
Sr. Regulatory & Compliance Engineer Date

THIS PLAN SET HAS BEEN PREPARED BY:

HDR

HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION

PIETER DAHMEN, PE
HDR ENGINEERING INC.

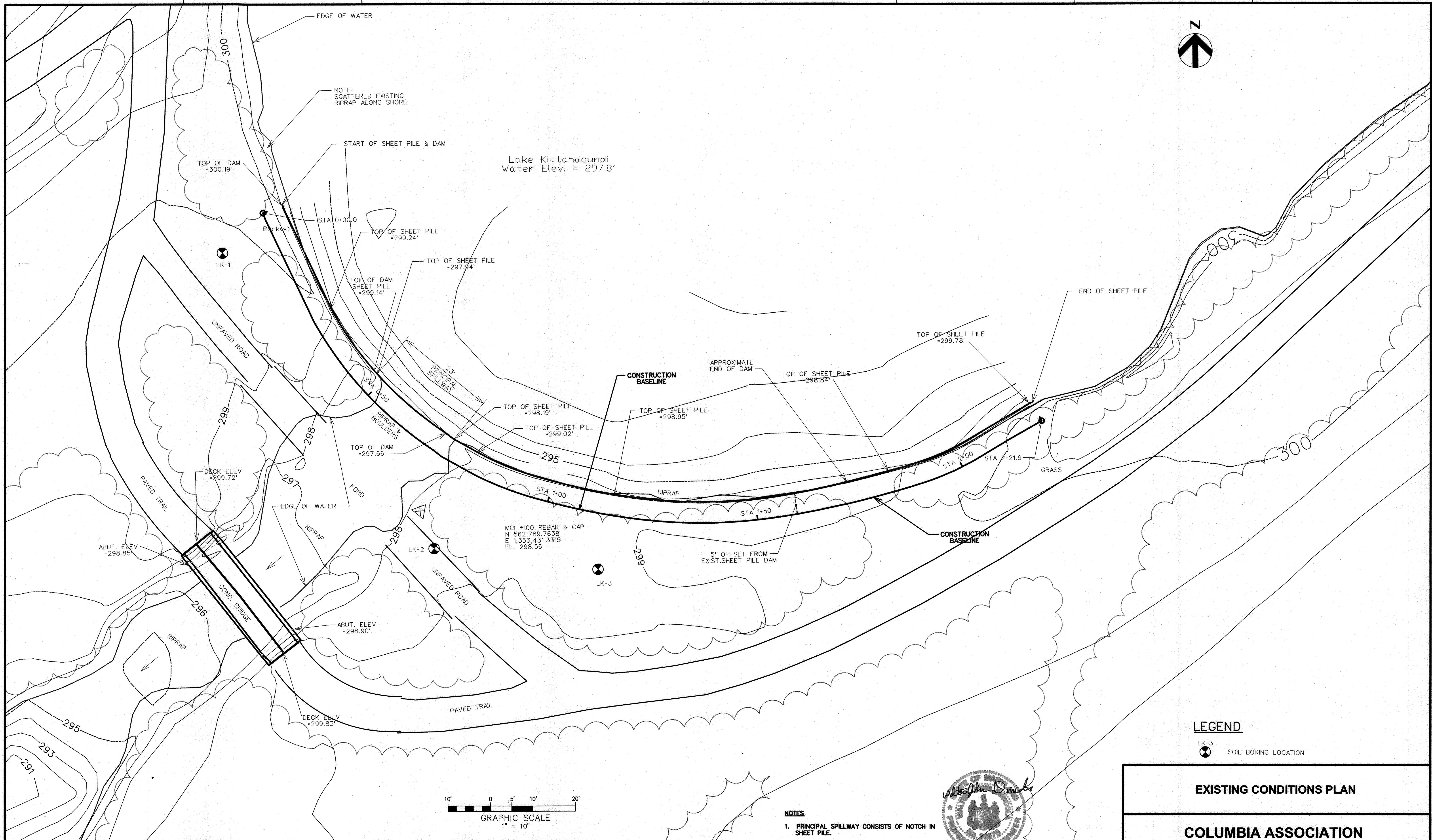
Professional Engineer
STATE OF MARYLAND
PIETER DAHMEN
No. 2996
REGISTERED
PROFESSIONAL ENGINEER
May 7, 2012

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

GENERAL NOTES

COLUMBIA ASSOCIATION
TOWN CENTER
REVISED SITE DEVELOPMENT PLAN
MINOR GRADING IN SUPPORT OF
LAKE KITTAMAQUUNDI RESTORATION
ELECTION DISTRICT 4, HOWARD COUNTY MD.
TAX MAP 30 AND 36

SCALE AS SHOWN
JUNE 18, 2009 J-02 39
DRAWING A-01, SHEET 2 OF 62



APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division

[Signature]
Chief, Division of Land Development

[Signature]
Director

3/1/12
Date

3/8/13
Date

3-10-13
Date

MDE
Maryland Department of the Environment
Water Management Administration
Dam Safety Division

V.P. Dalal
V.P. Dalal
Sr. Regulatory & Compliance Engineer

10/2/12
Date

THIS PLAN SET HAS BEEN PREPARED BY:

HDR
HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION

[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.

10/4/12

STATE OF MARYLAND
REGISTERED PROFESSIONAL ENGINEER
10/4/12

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

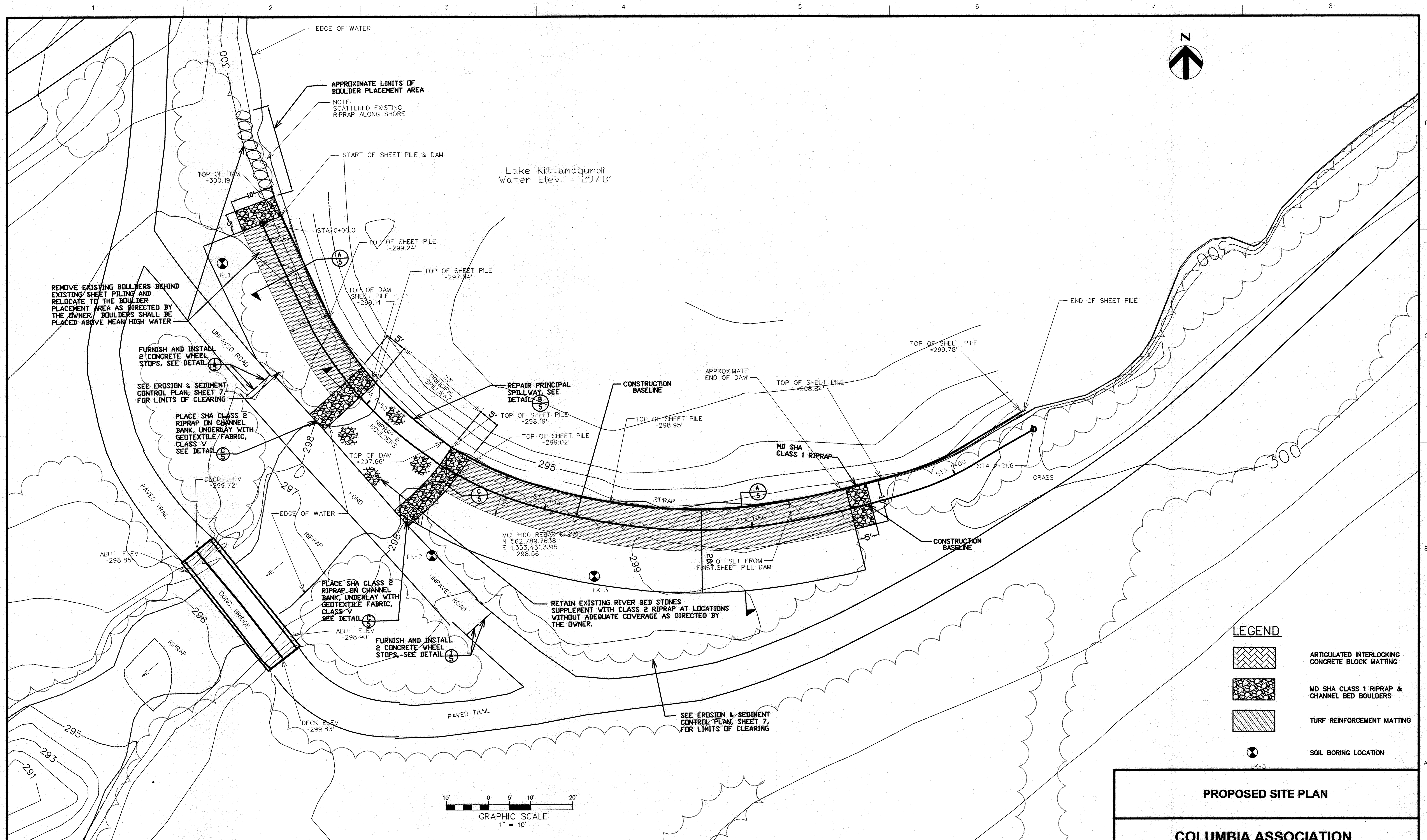
EXISTING CONDITIONS PLAN

COLUMBIA ASSOCIATION
TOWN CENTER

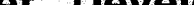
REVISED SITE DEVELOPMENT PLAN
LAKE KITAMAQUUNDI DAM REPAIR
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
FEBRUARY 2011 J-03
DRAWING B0-1, SHEET 3 OF 62

40
SDP-08-108



APPROVED: DEPARTMENT OF PLANNING AND ZONING


Chief, Development Engineering Division

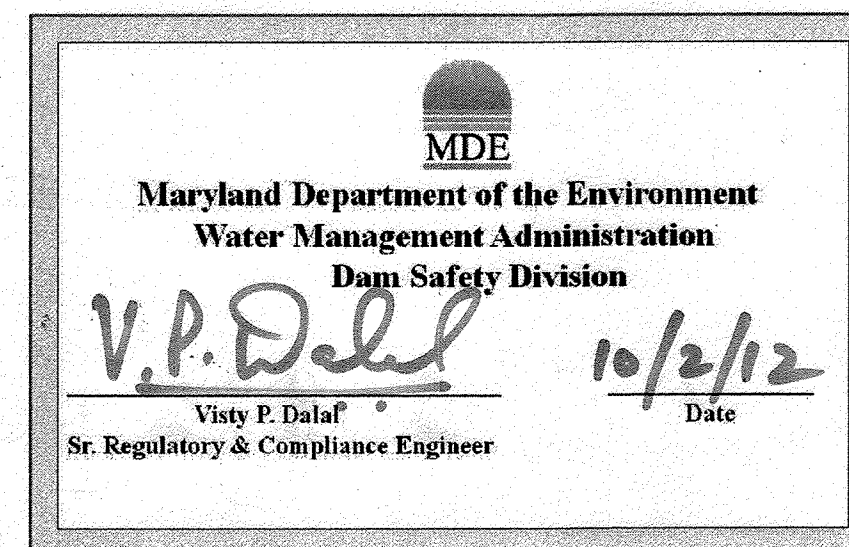
K. T. Schenck
Chief, Division of Land Development

Director **MARSHA McLAUGHLIN**

3/1/13
Date

3/08/11
Date

3-12-13
Date




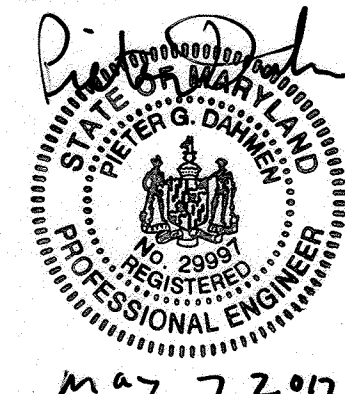
THIS PLAN SET HAS BEEN PREPARED BY



HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

**PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION**


PIETER DAHMEN, PE
HDR ENGINEERING INC



**COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947**

PROPOSED SITE PLAN

**COLUMBIA ASSOCIATION
TOWN CENTER**

REVISED SITE DEVELOPMENT PLAN LAKE KITTAQUUNDI DAM REPAIR HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
FEBRUARY 2011 J-04

DRAWING C-01, SHEET 4 OF 62

41

DP-08-108

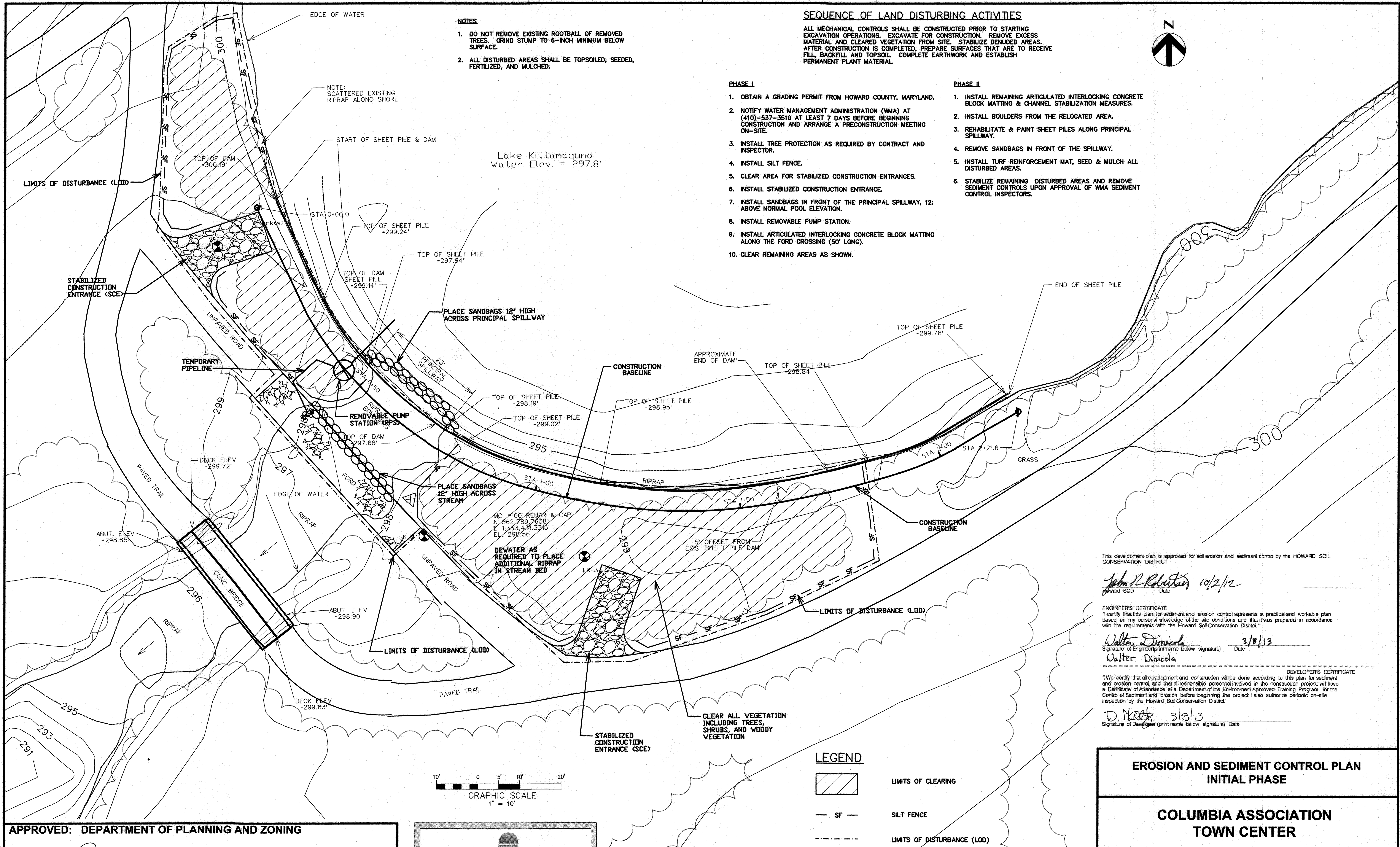


DP- 08 - 108

P. J. Suh

STATE OF MARYLAND
PIETER & DANIEL
NO. 29097
REGISTERED
PROFESSIONAL ENGINEER

May 7, 2012



- NOTES**
- DO NOT REMOVE EXISTING ROOTBALL OF REMOVED TREES. GRIND STUMP TO 6-INCH MINIMUM BELOW SURFACE.
 - ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED, FERTILIZED, AND MULCHED.

SEQUENCE OF LAND DISTURBING ACTIVITIES

ALL MECHANICAL CONTROLS SHALL BE CONSTRUCTED PRIOR TO STARTING EXCAVATION OPERATIONS. EXCAVATE FOR CONSTRUCTION. REMOVE EXCESS MATERIAL AND CLEARED VEGETATION FROM SITE. STABILIZE DENUDED AREAS. AFTER CONSTRUCTION IS COMPLETED, PREPARE SURFACES THAT ARE TO RECEIVE FILL, BACKFILL AND TOPSOIL. COMPLETE EARTHWORK AND ESTABLISH PERMANENT PLANT MATERIAL.

PHASE I

- OBTAIN A GRADING PERMIT FROM HOWARD COUNTY, MARYLAND.
- NOTIFY WATER MANAGEMENT ADMINISTRATION (WMA) AT (410)-537-3510 AT LEAST 7 DAYS BEFORE BEGINNING CONSTRUCTION AND ARRANGE A PRECONSTRUCTION MEETING ON-SITE.
- INSTALL TREE PROTECTION AS REQUIRED BY CONTRACT AND INSPECTOR.
- INSTALL SILT FENCE.
- CLEAR AREA FOR STABILIZED CONSTRUCTION ENTRANCES.
- INSTALL STABILIZED CONSTRUCTION ENTRANCE.
- INSTALL SANDBAGS IN FRONT OF THE PRINCIPAL SPILLWAY, 12' ABOVE NORMAL POOL ELEVATION.
- INSTALL REMOVABLE PUMP STATION.
- INSTALL ARTICULATED INTERLOCKING CONCRETE BLOCK MATTING ALONG THE FORD CROSSING (50' LONG).
- CLEAR REMAINING AREAS AS SHOWN.

PHASE II

- INSTALL REMAINING ARTICULATED INTERLOCKING CONCRETE BLOCK MATTING & CHANNEL STABILIZATION MEASURES.
- INSTALL BOULDERS FROM THE RELOCATED AREA.
- REHABILITATE & PAINT SHEET PILES ALONG PRINCIPAL SPILLWAY.
- REMOVE SANDBAGS IN FRONT OF THE SPILLWAY.
- INSTALL TURF REINFORCEMENT MAT, SEED & MULCH ALL DISTURBED AREAS.
- STABILIZE REMAINING DISTURBED AREAS AND REMOVE SEDIMENT CONTROLS UPON APPROVAL OF WMA SEDIMENT CONTROL INSPECTORS.

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

John R. Roberts 10/2/12
Howard SOCD Date

ENGINEER'S CERTIFICATE
I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements with the Howard Soil Conservation District.

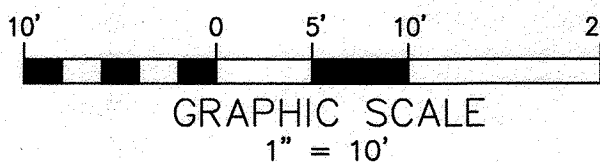
Walter Dinicola 3/8/13
Signature of Engineer (print name below signature) Date
Walter Dinicola

DEVELOPER'S CERTIFICATE
"We certify that all development and construction will be done according to this plan for sediment and erosion control, and that all 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 also authorize periodic on-site inspection by the Howard Soil Conservation District."

D. Noth 3/8/13
Signature of Developer (print name below signature) Date

LEGEND

- LIMITS OF CLEARING
- SILT FENCE
- LIMITS OF DISTURBANCE (LOD)



APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 3/1/13
Chief, Development Engineering Division
[Signature] 3/28/13
Chief, Division of Land Development
[Signature] 3-12-13
Director **MARSHA McLAUGHLIN**

[Signature] 3/1/13
Date
[Signature] 3/28/13
Date
[Signature] 3-12-13
Date

Maryland Department of the Environment
Water Management Administration
Dam Safety Division
V.P. Dalal 10/2/12
V.P. Dalal
Sr. Regulatory & Compliance Engineer

THIS PLAN SET HAS BEEN PREPARED BY:

HDR Engineering, Inc.
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VIRGINIA 23502
757-222-1500

PLANS HAVE BEEN
DESIGNED UNDER MY
SUPERVISION
[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.
May 7, 2012

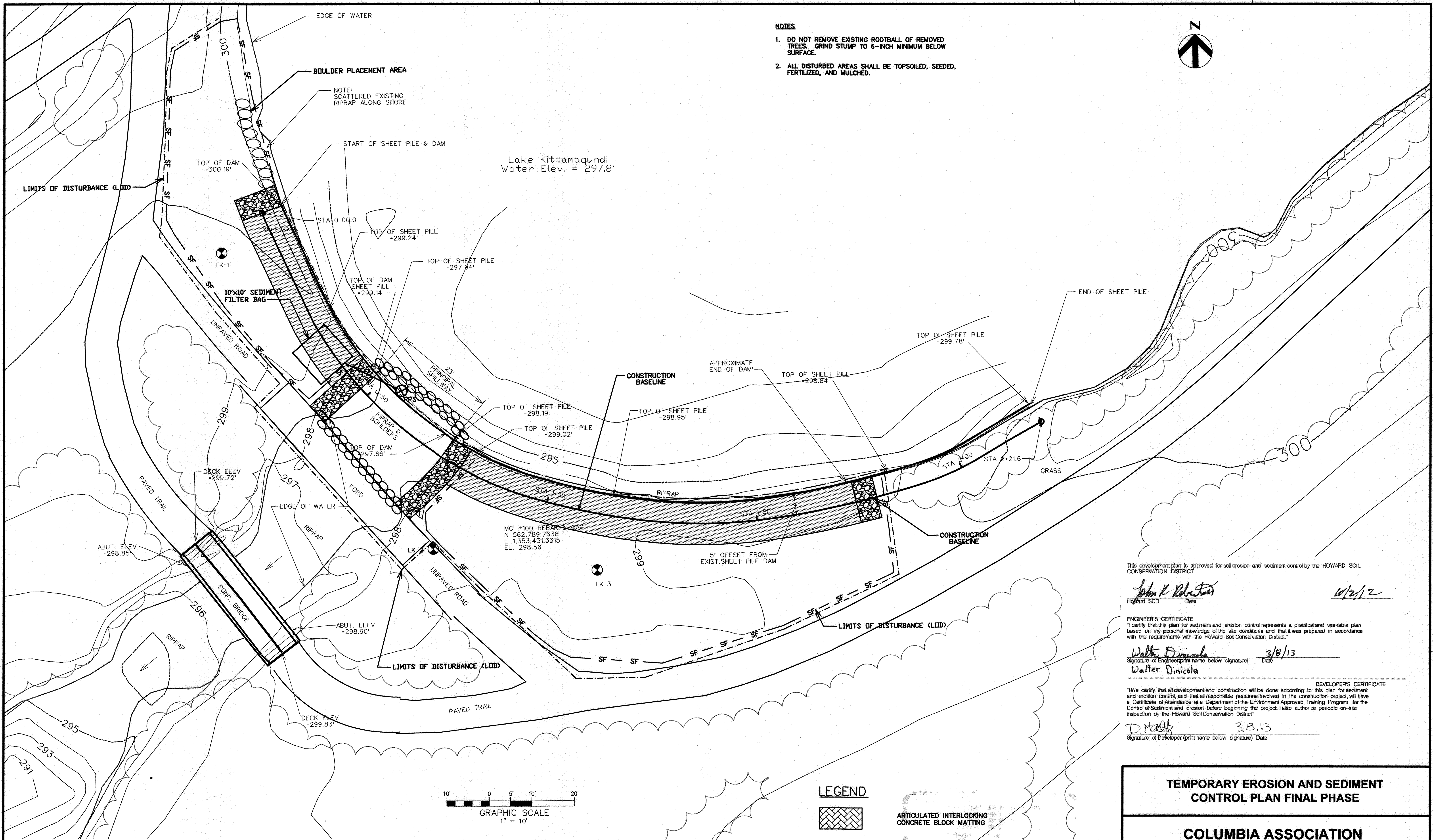
COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

**EROSION AND SEDIMENT CONTROL PLAN
INITIAL PHASE**

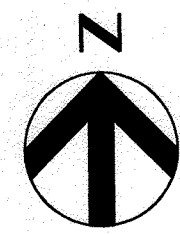
**COLUMBIA ASSOCIATION
TOWN CENTER**

REVISED SITE DEVELOPMENT PLAN
LAKE KITTAMAQUNDI DAM REPAIR
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
FEBRUARY 2011 J-06
DRAWING **E-01**, SHEET **6** OF **62**
SDP-08-108



- NOTES**
- DO NOT REMOVE EXISTING ROOTBALL OF REMOVED TREES. GRIND STUMP TO 6-INCH MINIMUM BELOW SURFACE.
 - ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED, FERTILIZED, AND MULCHED.



This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

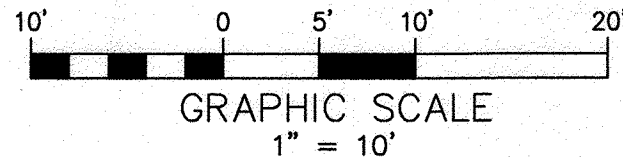
John K. Robertson
Howard SCD Date 10/2/12

ENGINEER'S CERTIFICATE
I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements with the Howard Soil Conservation District.

Walter D. Dinicola
Signature of Engineer (print name below signature) Date 3/8/13
Walter Dinicola

"We certify that all development and construction will be done according to this plan for sediment and erosion control, and that all 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 also authorize periodic on-site inspection by the Howard Soil Conservation District."

D. M. ...
Signature of Developer (print name below signature) Date 3.8.13



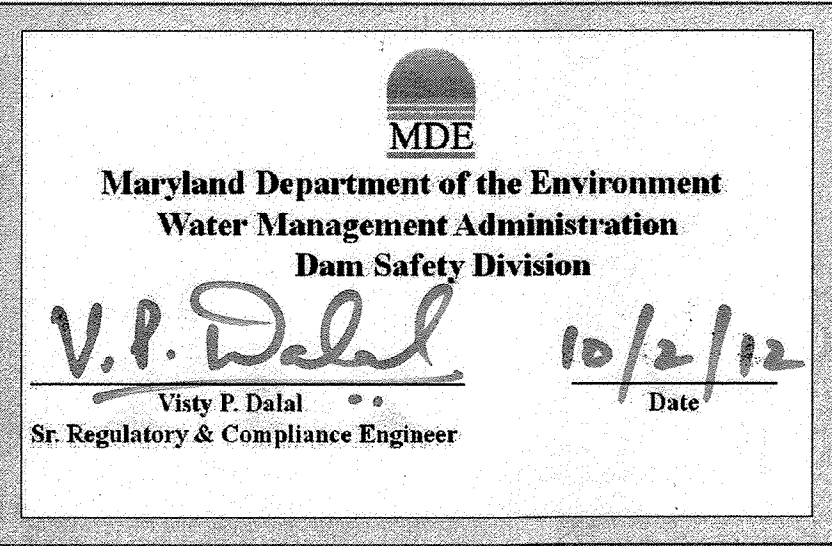
LEGEND

- ARTICULATED INTERLOCKING CONCRETE BLOCK MATTING
- SF SILT FENCE
- LIMITS OF DISTURBANCE (LOD)

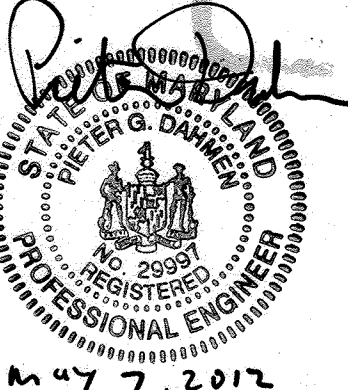
APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
Chief, Development Engineering Division
[Signature]
Chief, Division of Land Development
[Signature]
Director

3/1/13
Date
3/08/13
Date
3-12-13
Date



PLANS HAVE BEEN DESIGNED UNDER MY SUPERVISION
[Signature]
PIETER DAHMEN, PE
HDR ENGINEERING INC.



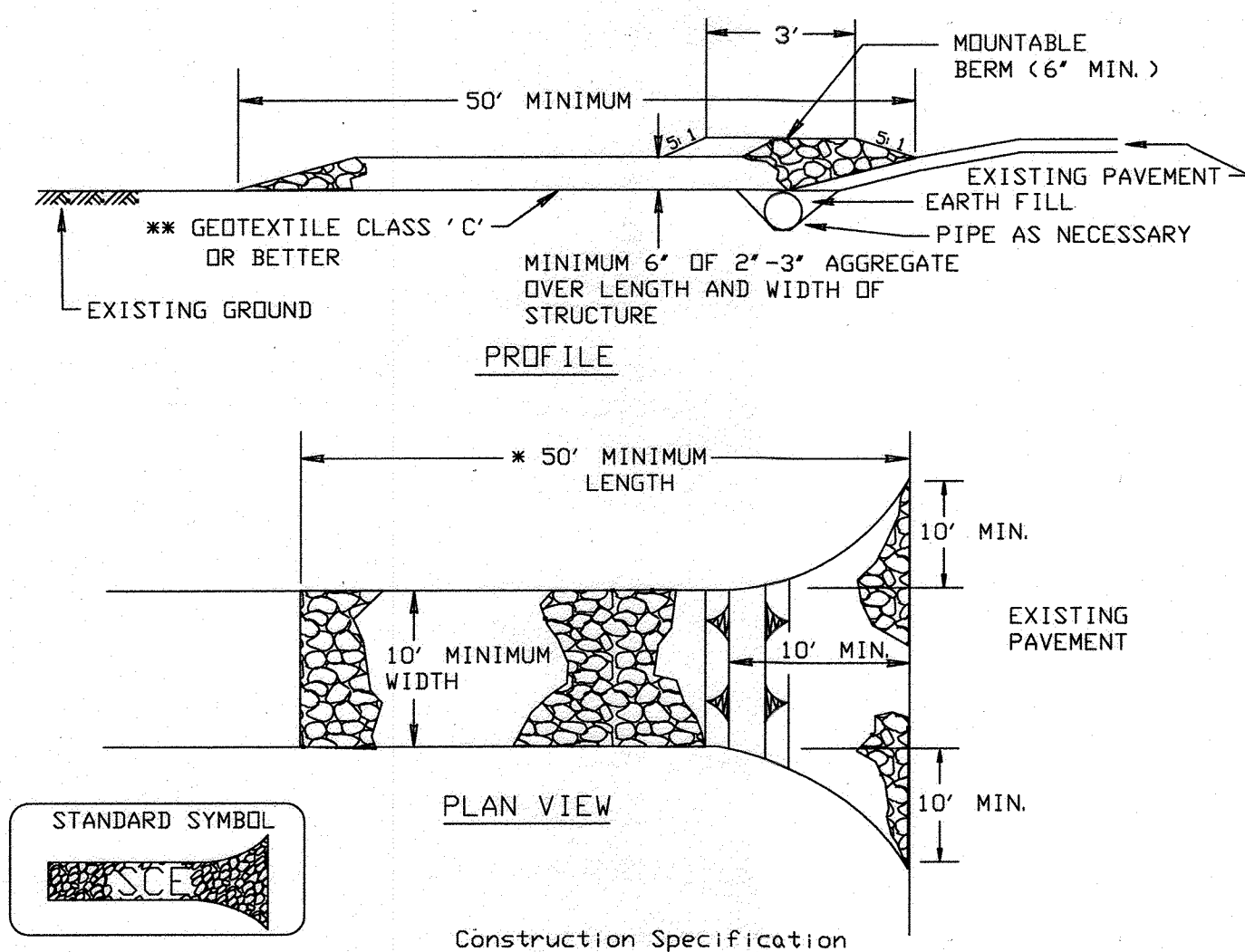
COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

TEMPORARY EROSION AND SEDIMENT CONTROL PLAN FINAL PHASE

COLUMBIA ASSOCIATION TOWN CENTER

REVISED SITE DEVELOPMENT PLAN
LAKE KITTAMAQUNDI DAM REPAIR
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
FEBRUARY 2011 J-07
DRAWING E-02 SHEET 7 OF 62
SDP-08-108



- Length - minimum of 50', or as shown on plans (*30' for single residence lot).
- Width - 10' 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. **The plan approval authority may not require single family residences to use geotextile.
- Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6' 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 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6' minimum will be required.
- 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 the stabilized construction entrance.

STABILIZED CONSTRUCTION ENTRANCE

1
E-03

Construction Specifications

- Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pound per linear foot.
- Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

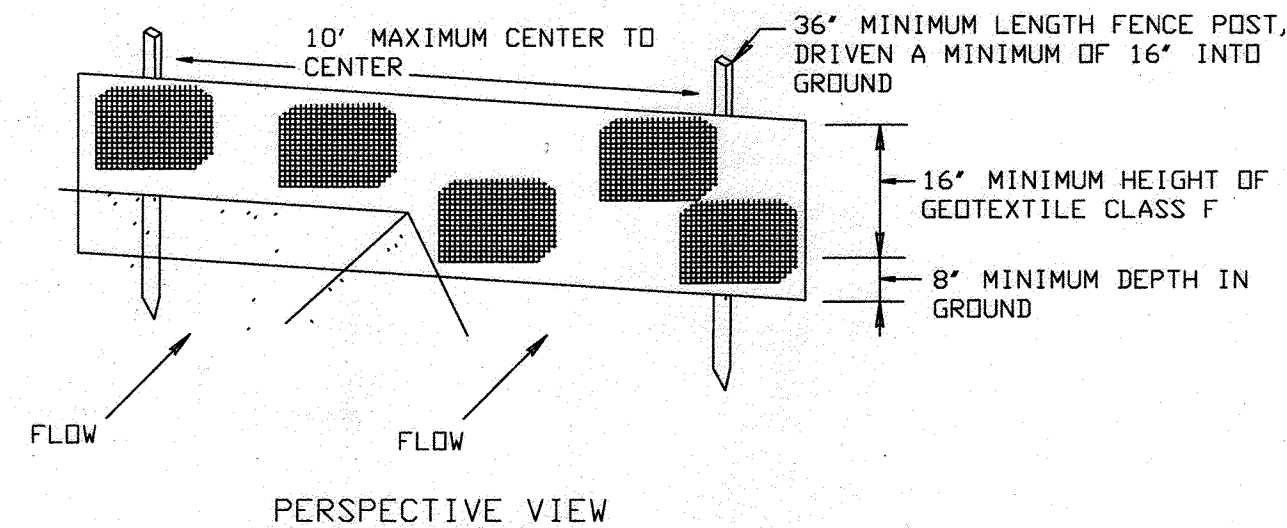
| | Tensile Strength | 50 lbs/in (min.) | Test: MSMT 509 |
|--|----------------------|--|----------------|
| | Tensile Modulus | 20 lbs/in (min.) | Test: MSMT 509 |
| | Flow Rate | 0.3 gal ft ² /minute (max.) | Test: MSMT 322 |
| | Filtering Efficiency | 75% (min.) | Test: MSMT 322 |

- Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
- Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

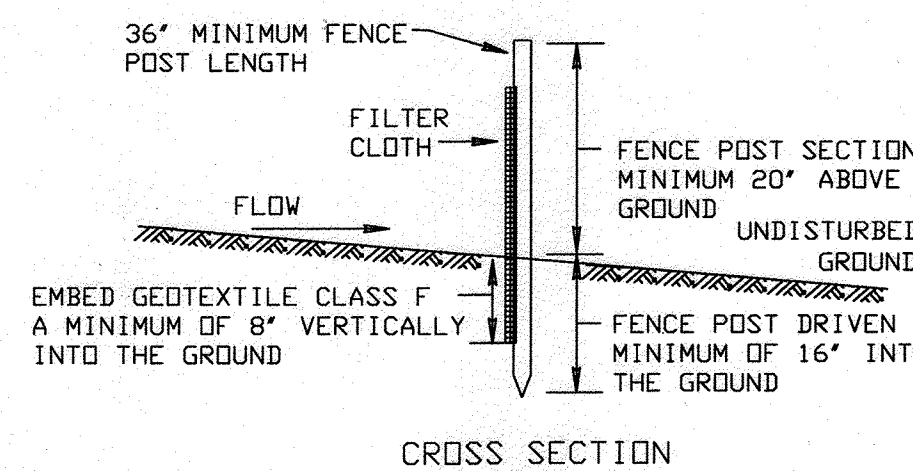
Silt Fence Design Criteria

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

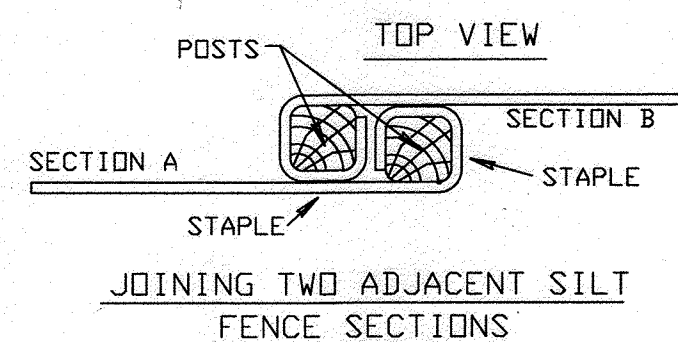
Note: In areas of less than 2% slope and sandy soils (USDA general classification system, soil Class A) maximum slope length and silt fence length will be unlimited. In these areas a silt fence may be the only perimeter control required.



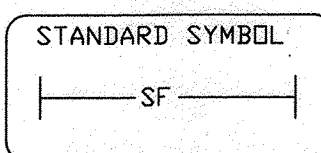
PERSPECTIVE VIEW



CROSS SECTION

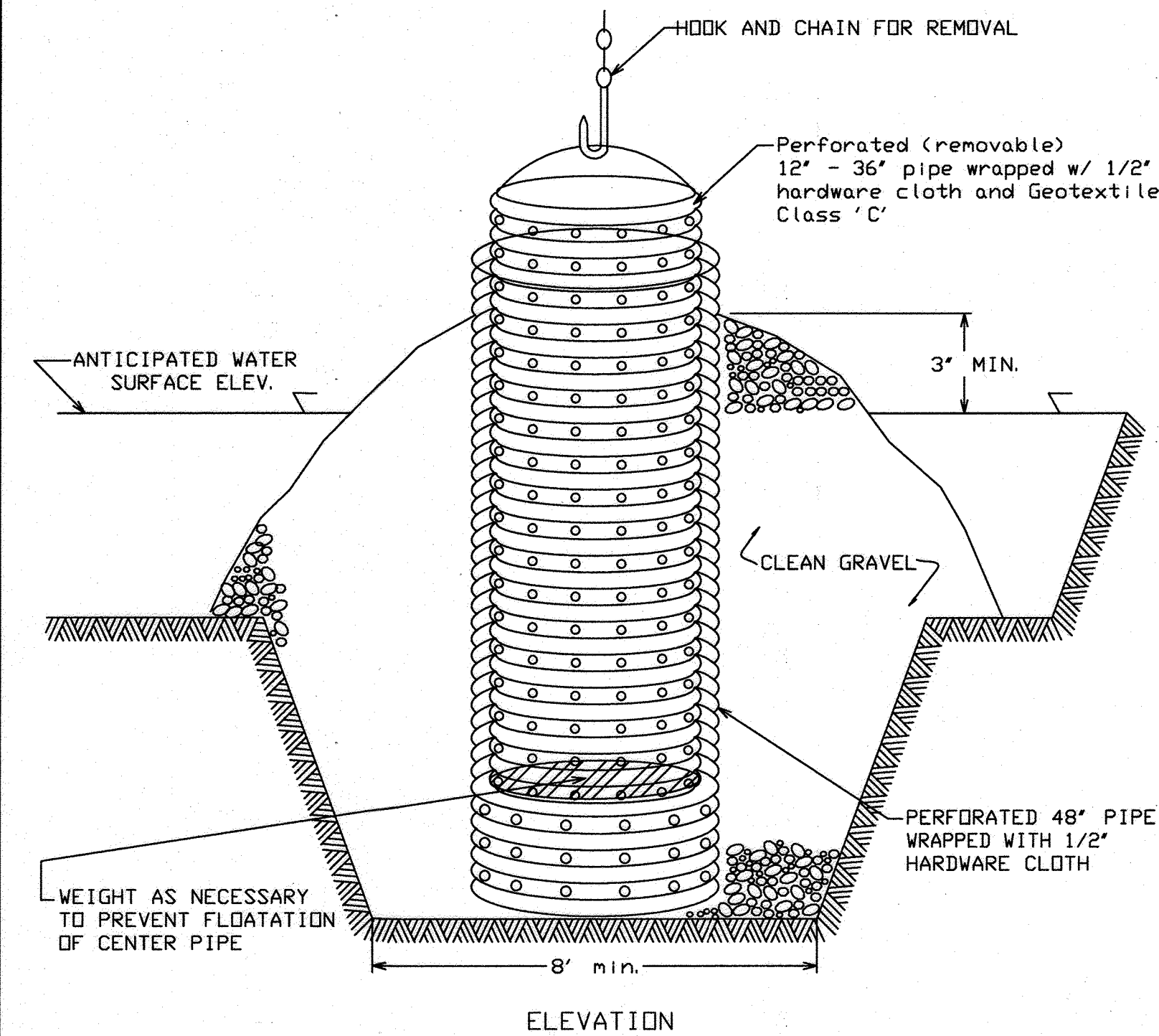


JOINING TWO ADJACENT SILT FENCE SECTIONS



SILT FENCE

3
E-03

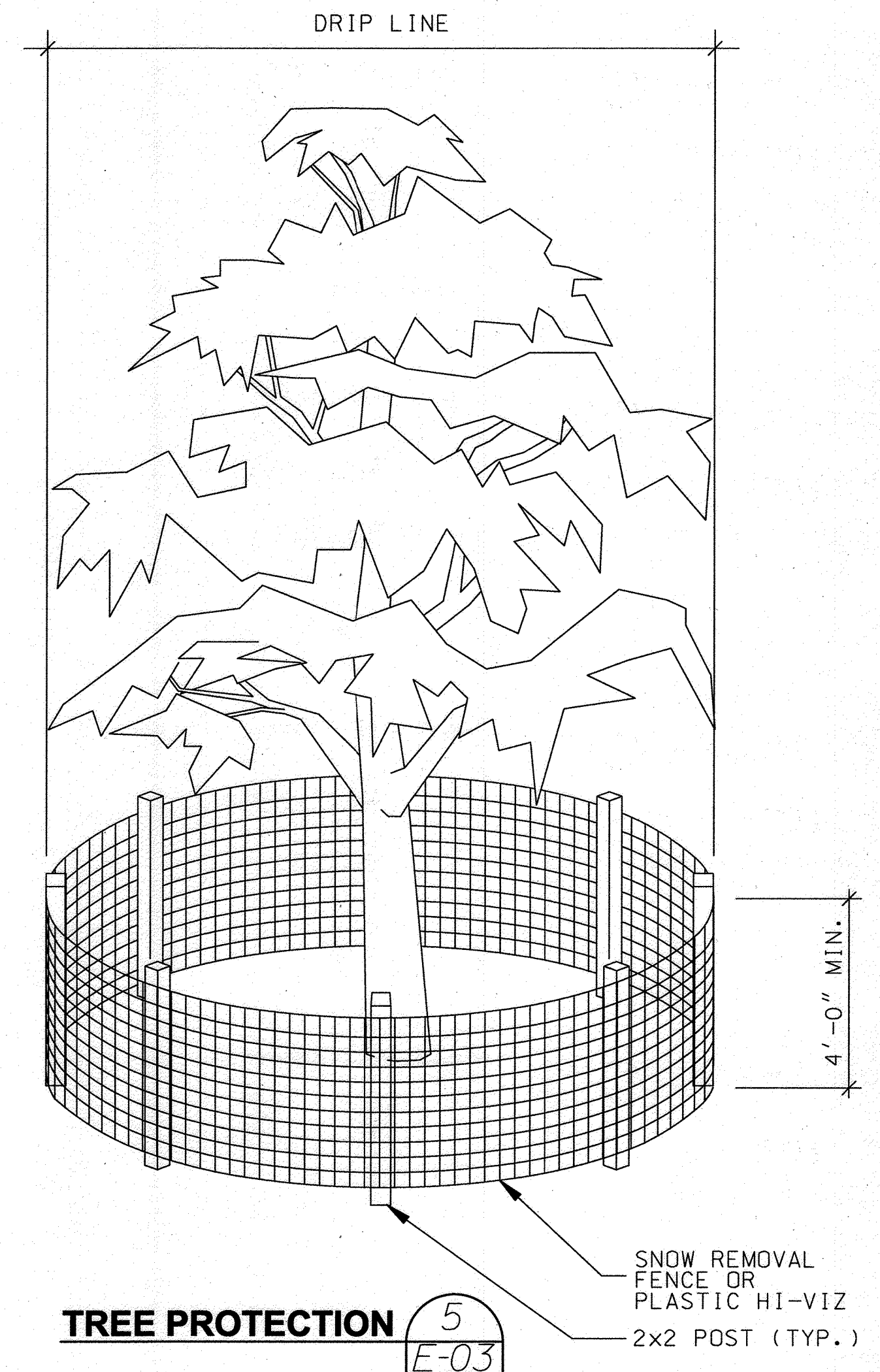


Construction Specifications

- The outer pipe should be 48" dia. or shall, in any case, be at least 4" greater in diameter than the center pipe. The outer pipe shall be wrapped with 1/2" hardware cloth to prevent backfill material from entering the perforations.
- After installing the outer pipe, backfill around outer pipe with 2" aggregate or clean gravel.
- The inside stand pipe (center pipe) should be constructed by perforating a corrugated or PVC pipe between 12" and 36" in diameter. The perforations shall be 1/2" x 6" slits or 1" diameter holes 6" on center. The center pipe shall be wrapped with 1/2" hardware cloth first, then wrapped again with Geotextile Class C.
- The center pipe should extend 12" to 18" above the anticipated water surface elevation or riser crest elevation when dewatering a basin.

REMOVABLE PUMPING STATION (RPS)

4
E-03



TREE PROTECTION

5
E-03

- Construction and Material Specifications
- Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, one depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experimental Station.
 - Topsoil Specifications - Soil to be used as topsoil must meet the following:
 - Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of clinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2" in diameter.
 - Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutgrass, poison ivy, white, or others as specified.
 - Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 48 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. The shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.
 - For sites having disturbed areas under 5 acres:
 - Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.
 - For sites having disturbed areas over 5 acres:
 - On soil meeting topsoil specifications, obtain test results dictating fertilizer and lime amendments required to, bring the soil into compliance with the following:
 - pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
 - Organic content of topsoil shall be not less than 1.5 percent by weight.
 - Topsoil having soluble salt content greater than 500 parts per million shall not be used.
 - No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.
 - Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
 - Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.
 - Topsoil Application
 - When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
 - Grades on the areas to be topsoiled, which have been previously established, shall be maintained, at least 4" higher in elevation.
 - Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
 - Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

TOPSOILING

2
E-03

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division

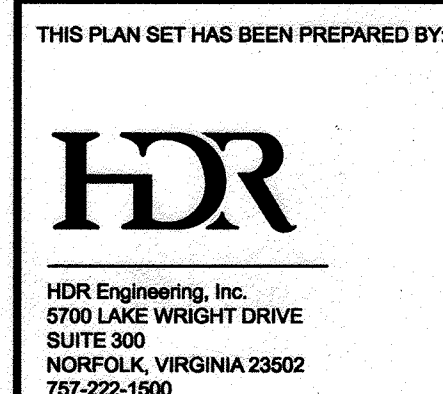
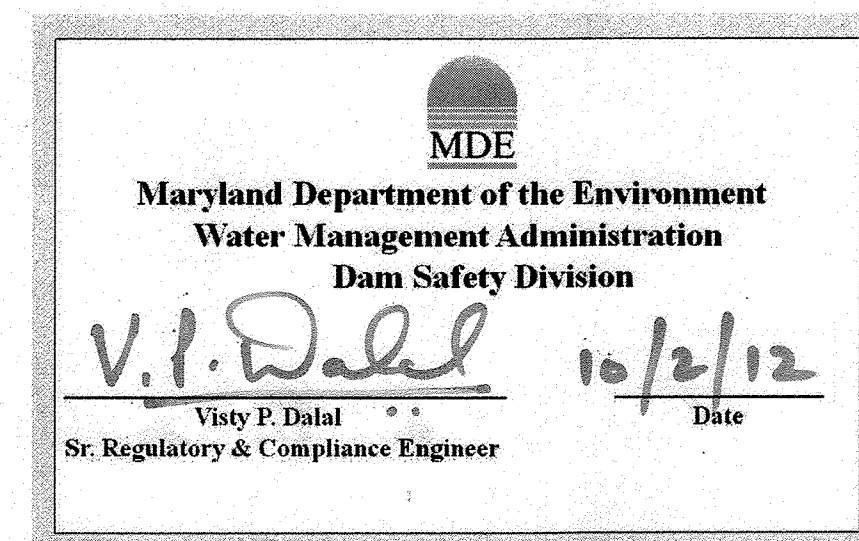
3/1/13
Date

Chief, Division of Land Development

3/08/13
Date

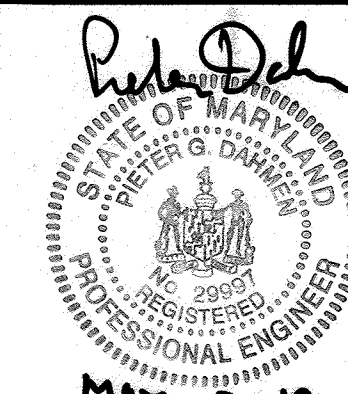
Director

3-12-13
Date



PLANS HAVE BEEN DESIGNED UNDER MY SUPERVISION

PIETER DAHMEN, PE
HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

TEMPORARY EROSION AND SEDIMENT CONTROL DETAILS AND NOTES

COLUMBIA ASSOCIATION TOWN CENTER

REVISED SITE DEVELOPMENT PLAN
LAKE KITTAMAQUUNDI DAM REPAIR
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
FEBRUARY 2011 J-08

DRAWING E-03, SHEET 8 OF 62

SDP-08-108

PROJECT #: 95522
PROJECT: Lake Kittamaqundi
STRUCTURE: West End of Dam
LOCATION: *N
SURFACE ELEVATION: 299.6 ft
OFFSET: LONGITUDE: *W
COORD. DATUM: NAD 83
Date(s) Drilled: 11/5/08 - 11/5/08
Drilling Method(s): Hollow Stem Auger w/SPTs
SPT Method: Automatic Hammer
Other Test(s):
Driller: Andy Bisette/F&R
Logger: Sue Young/HDR
GROUND WATER
8 feet at 0 hrs
NO LONG TERM MEASUREMENTS TAKEN
DESCRIPTION OF STRATA
0.0 / 299.6
Topsoil TOPS
0.2 / 299.4
Red brown CLAYEY SAND, medium dense, moist,
micaceous SC
Same, red brown and gray, moist
4.8 / 294.8
Dark gray SILT, trace fine sand, very soft to soft, very
moist, micaceous MH
Lenses of red brown sandy silt below 7.5 feet
Trace small well rounded pebbles
Wet at 9 feet
10.3 / 289.3
Medium gray, SAND, SILT AND GRAVEL, very dense, wet
(saturated) GP-GM
12.0 / 287.6
DECOMPOSED GRANITE, recovered as tan to pink silt,
and rock fragments GRN
Auger refusal at 15.5 feet

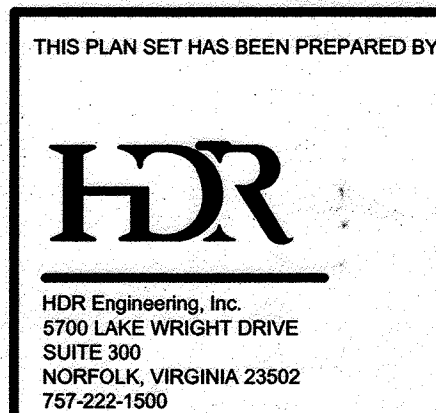
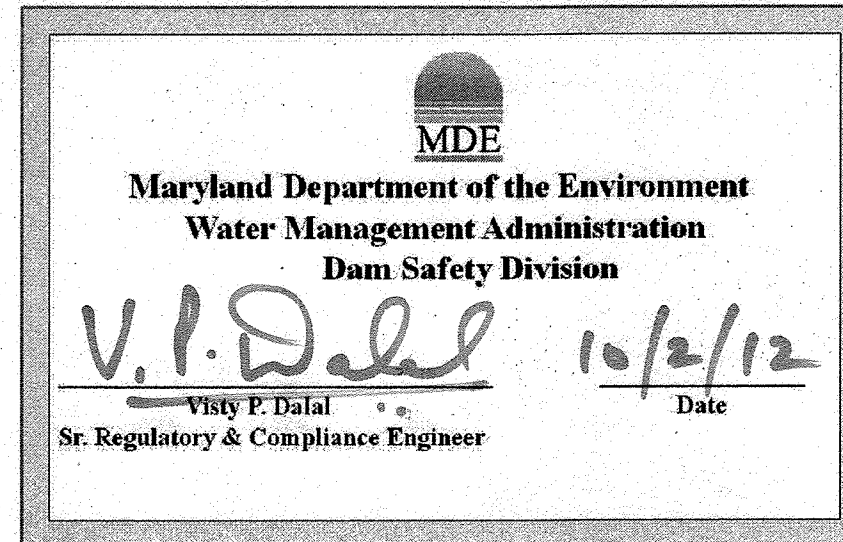
PROJECT #: 95522
PROJECT: Lake Kittamaqundi
STRUCTURE: Center of Dam
LOCATION: *N
SURFACE ELEVATION: 298.7 ft
OFFSET: LONGITUDE: *W
COORD. DATUM: NAD 83
Date(s) Drilled: 11/5/08 - 11/5/08
Drilling Method(s): Hollow Stem Auger w/SPTs
SPT Method: Automatic Hammer
Other Test(s):
Driller: Andy Bisette/F&R
Logger: Sue Young/HDR
GROUND WATER
4.7 feet at 0 hrs
NO LONG TERM MEASUREMENTS TAKEN
DESCRIPTION OF STRATA
0.0 / 298.7
Leaves, root mat OH
0.2 / 298.5
Fill, recovered as tan rock fragments, very dense, dry FL
2.5 / 296.2
Brown fine SANDY CLAY, trace gravel, stiff to medium
stiff, moist, micaceous CL
4.5 / 294.2
Brown gray CLAY, very soft to medium stiff, moist,
micaceous CL
Trace fine sand and small gravel lenses, wet below 7.5
feet
9.2 / 289.5
Gray, tan, and brown GRAVEL, SAND, SILT, medium
dense, wet GP-GM
12.0 / 286.7
DECOMPOSED GRANITE, recovered as gray, tan, and
brown sand, silt, and rock fragments GRN
Auger refusal at 14.0 feet

PROJECT #: 95522
PROJECT: Lake Kittamaqundi
STRUCTURE: East End of Dam
LOCATION: *N
SURFACE ELEVATION: 298.5 ft
OFFSET: LONGITUDE: *W
COORD. DATUM: NAD 83
Date(s) Drilled: 11/5/08 - 11/5/08
Drilling Method(s): Hollow Stem Auger w/SPTs
SPT Method: Automatic Hammer
Other Test(s):
Driller: Andy Bisette/F&R
Logger: Sue Young/HDR
GROUND WATER
6.6 feet at 1 hr
NO LONG TERM MEASUREMENTS TAKEN
DESCRIPTION OF STRATA
0.0 / 298.5
Topsoil TOPS
0.2 / 298.3
Red brown fine SILTY SAND, some small gravel, medium
dense, moist, micaceous ML
1.8 / 296.7
Red brown fine CLAYEY SAND, loose to very loose, moist,
micaceous SC
5.5 / 293.0
Red brown fine SILTY SAND, very loose, moist,
micaceous SM
8.2 / 290.3
Gray fine SANDY SILT, very soft, wet ML
8.8 / 289.7
Gray and tan GRAVEL, SILT, and SAND, medium dense,
wet GP-GM
10.2 / 288.3
DECOMPOSED GRANITE, recovered as gray, dark gray,
and tan, sand, silt, and rock fragments GRN
Top of weathered rock at 10.2 feet
Auger refusal at 19.3 feet

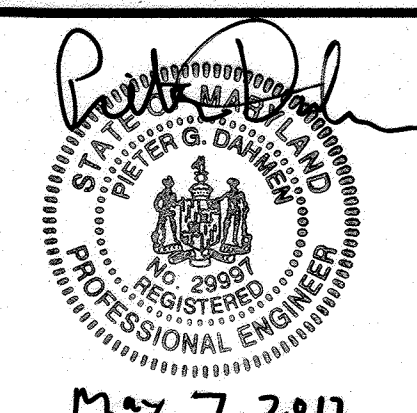
APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division
Chief, Division of Land Development
Director MCLAUGHEN

3/1/13
Date
3/6/13
Date
3-12-13
Date



PLANS HAVE BEEN DESIGNED UNDER MY SUPERVISION
PIETER DAHMEN, PE
HDR ENGINEERING INC.



COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21044
(410)-381-2947

COLUMBIA ASSOCIATION
TOWN CENTER

REVISED SITE DEVELOPMENT PLAN
LAKE KITTAMAQUNDI DAM REPAIR
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
FEBRUARY 2011 J-09
DRAWING F-01, SHEET 9 OF 62
SDP-03-108

LAKE KITTAMAQUNDI MULTIUSE TRAIL

CONSTRUCTION DRAWINGS

COLUMBIA ASSOCIATION

HOWARD COUNTY, MARYLAND

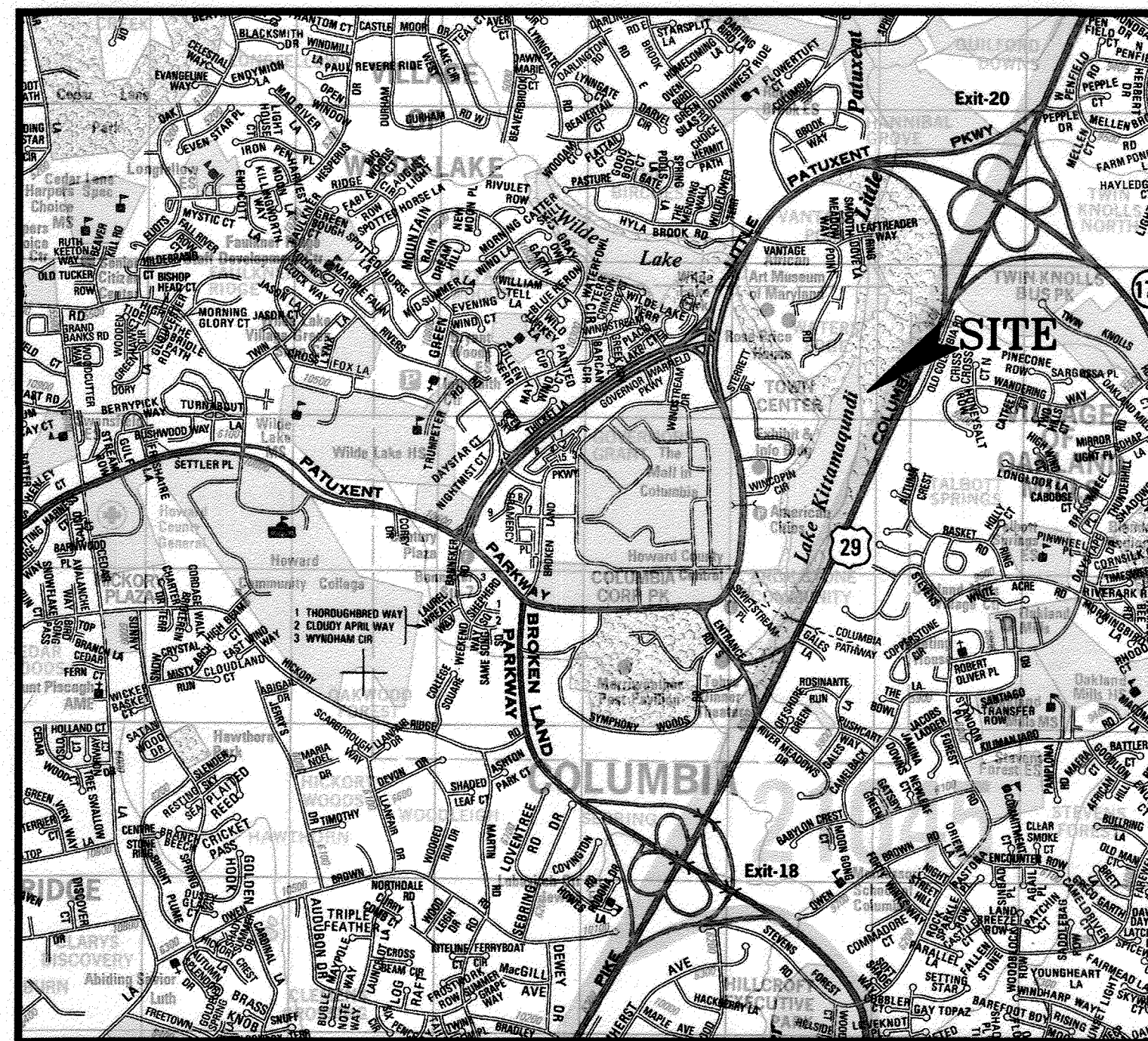
GENERAL NOTES

- HORIZONTAL AND VERTICAL SURVEY CONTROLS:
THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD 83/91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS HOWARD CO. BM 30 BA AND BM 36 EA. ALL VERTICAL CONTROLS ARE BASED NAVD 88. VERTICAL CONTROLS PROVIDED ON THE DRAWINGS ARE BM 30 BA AND BM 36 EA.
- THE EXISTING UTILITIES, GRADES, AND OBSTRUCTIONS SHOWN ARE FROM THE BEST AVAILABLE RECORDS AND SHALL BE VERIFIED BY THE CONTRACTOR TO HIS SATISFACTION PRIOR TO CONSTRUCTION. NECESSARY PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR TO PROTECT EXISTING SERVICES AND MAINS AND ANY DAMAGE TO THEM SHALL BE REPAIRED IMMEDIATELY AT HIS OWN EXPENSE.
- CONTOURS SHOWN OUTSIDE OF LIMIT OF WORK ARE BASED ON HOWARD COUNTY 2011 GIS TOPOGRAPHY.
- PROPERTY LINES SHOWN ARE BASED ON HOWARD COUNTY 2012 CADASTRAL DATA.
- WETLAND DELINEATION WAS PERFORMED BY BAYLAND CONSULTANTS & DESIGNERS, INC. ON JUNE 16TH 2013.
- THE MARYLAND DEPARTMENT OF THE ENVIRONMENT PERMIT TRACKING NUMBER IS 201460150.
- FEMA FIRM #24027C01550 EFFECTIVE NOVEMBER 6, 2013 SHOWS THAT THE PROJECT SITE IS LOCATED WITHIN ZONE A.
- RIPRAP SHOWN IN PLAN VIEW AND PROFILE ARE SYMBOLIC AND DO NOT REPRESENT INDIVIDUAL STONES.
- THE SITE IS WITHIN THE LITTLE PATUXENT RIVER WATERSHED.
- FOR DETAILS, MATERIALS, AND CONSTRUCTION METHODS NOT SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL REFER TO HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION. THE CONTRACTOR SHALL HAVE A COPY VOLUME IV ON SITE AT ALL TIMES.
- THIS PLAN IS EXEMPT FROM FOREST CONSERVATION REQUIREMENTS UNDER SUBSECTION 16.1202(b)(1)(iv) SINCE IT IS PART OF A PLANNED UNIT DEVELOPMENT WHICH HAD PRELIMINARY PLAN APPROVAL AND 50% OR MORE OF THE LAND WAS RECORDED AND SUBSTANTIALLY DEVELOPED BEFORE DECEMBER 31, 1992.
- LANDSCAPING FOR THIS PLAN IS PROVIDED BY ALTERNATIVE COMPLIANCE BASED ON EXISTING SITE CONDITIONS AND VEGETATION.
- THIS PLAN IS SUBJECT TO WAIVER PETITION WP-14-079, APPROVED ON FEBRUARY 18, 2014. WP-14-079 APPROVES A WAIVER TO SUBSECTIONS 16.115(c)(2), 16.116(a)(1), AND 16.116(a)(2)(iii) WHICH IS SUBJECT TO THE FOLLOWING CONDITIONS:
 - HOWARD COUNTY APPROVAL OF REDLINE REVISION NO. 3 TO SDP-08-108
 - STATE AND FEDERAL AUTHORIZATION OF REGULATED ACTIVITIES
 - OBTAIN ALL REQUIRED PERMITS FROM THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES, AND PERMITS.
 - OBTAIN ALL NECESSARY PERMISSION AND AGREEMENTS FROM THE MARYLAND STATE HIGHWAY ADMINISTRATION (SHA) FOR THE PORTIONS OF THE PATHWAY LOOP LOCATED WITHIN THE US ROUTE 29 RIGHT-OF-WAY.

STORMWATER MANAGEMENT NOTE

STORMWATER MANAGEMENT REQUIREMENTS WILL BE PROVIDED FOR THE PROPOSED PAVED TRAIL AS SHOWN ON THIS PLAN VIA NON-ROOFTOP DISCONNECTION IN ACCORDANCE WITH THE CURRENT HOWARD COUNTY DESIGN MANUAL, VOLUME I: STORM DRAINAGE, CHAPTER 5: STORMWATER MANAGEMENT. A SIMPLIFIED ENVIRONMENTAL CONCEPT PLAN WAS APPROVED ON JANUARY 13, 2014.

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 6/5/2014



HOWARD COUNTY ADC MAP COORDINATES:
MAP 15 GRID H-5

MAP COPYRIGHT UNIVERSAL MAP GROUP LLC.
PERMITTED USE NUMBER 20911186

LOCATION MAP

SCALE: 1"=2000'

LEGEND

| | | |
|----------------------------------|--------|----------------------------|
| TRAVERSE POINT | X ELEV | PROP. PATH |
| EX. SPOT SHOT | | PROP. BOARDWALK |
| EX. BOUNDARY | | PROP. IMBRICATED ROCK WALL |
| EX. MINOR CONTOUR | | PROP. CONSTRUCTION ACCESS |
| EX. MAJOR CONTOUR | | LIMIT OF DISTURBANCE |
| EX. ROAD | | SILT FENCE |
| EX. TREELINE | | TURBIDITY CURTAIN |
| EX. VEGETATED BUFFER | | TEMPORARY ACCESS BRIDGE |
| EX. WATERS OF THE U.S. | | |
| EX. 100-YR FEMA FLOODPLAIN | | |
| EX. 15' NON-TIDAL WETLAND BUFFER | | |
| EX. NON-TIDAL WETLANDS | | |
| EX. IMBRICATED RIPRAP WALL | | |

PROJECT INFORMATION

| | |
|---------------------------------|---|
| 1. OWNER/DEVELOPER: | COLUMBIA ASSOCIATION CONTACT: DENNIS MATTEY |
| 2. OWNER/DEVELOPER INFORMATION: | 9450 GERWIG LANE COLUMBIA, MD 21046 410-381-0591 |
| 3. ENGINEER: | BAYLAND CONSULTANTS AND DESIGNERS, INC. |
| 4. ENGINEER INFORMATION: | 1321 MERCEDES DRIVE, SUITE A HANOVER, MARYLAND 21076 PH: 410-694-9401 |
| 5. TAX MAP: | 0036 |
| 6. PARCEL: | 0210 |
| 7. DEED REF: | 03324/00191 |
| 8. DISTRICT: | 15 |
| 9. HO. COUNTY TAX ID NO: | 15-010657 |
| 10. USE: | OPEN SPACE |
| 11. ZONING: | NEW TOWN |
| 12. PROPERTY AREA: | 39.8± ACRES |
| 13. WATERSHED: | LITTLE PATUXENT RIVER |

INDEX OF SHEETS

| DRAWING NO. | SHEET NO. | SHEET TITLE |
|-------------|-----------|---|
| K-01 | 47 | MULTIUSE TRAIL - COVER SHEET |
| K-02 | 48 | MULTIUSE TRAIL - KEY SHEET |
| K-03 | 49 | MULTIUSE TRAIL - DESIGN PLANS |
| K-04 | 50 | MULTIUSE TRAIL - DESIGN PLANS |
| K-05 | 51 | MULTIUSE TRAIL - DESIGN PLANS |
| K-06 | 52 | MULTIUSE TRAIL - DESIGN PLANS |
| K-07 | 53 | MULTIUSE TRAIL - DESIGN PLANS |
| K-08 | 54 | MULTIUSE TRAIL - CROSS SECTIONS & DETAILS |
| K-09 | 55 | MULTIUSE TRAIL - BOARDWALK DETAILS |
| K-10 | 56 | MULTIUSE TRAIL - BOARDWALK DETAILS |
| K-11 | 57 | MULTIUSE TRAIL - EROSION AND SEDIMENT CONTROL PLAN |
| K-12 | 58 | MULTIUSE TRAIL - EROSION AND SEDIMENT CONTROL PLAN |
| K-13 | 59 | MULTIUSE TRAIL - EROSION AND SEDIMENT CONTROL NOTES & DETAILS |

SITE ANALYSIS

| | |
|--|------------|
| 1. TOTAL DISTURBED AREA: | 2.87 ACRES |
| 2. TOTAL AREA TO BE STABILIZED: | 2.87 ACRES |
| 2.1. TOTAL EX. IMP. AREA: | 0.00 ACRES |
| 2.2. TOTAL PR. IMPERVIOUS AREA: | 0.55 ACRES |
| 2.3. TOTAL STABILIZED CONSTRUCTION ACCESS: | 0.33 ACRES |
| 2.4. TOTAL TO BE VEGETATIVELY STABILIZED: | 1.99 ACRES |
| 3. PROPOSED IMPERVIOUS AREA: | 0.88 ACRES |
| 4. ESTIMATED CUT: | 620 CY |
| 5. ESTIMATED FILL: | 0 CY |

NOTE:
THE EARTHWORK QUANTITIES SHOWN HEREON ARE FOR INFORMATION PURPOSES ONLY. BAYLAND MAKES NO GUARANTEES OF ACCURACY OF QUANTITIES OR BALANCE OF SITE. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY OF ACTUAL EARTHWORK QUANTITIES ENCOUNTERED DURING CONSTRUCTION.

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 21194, EXPIRATION DATE: 04/20/2016.

REVISED SITE DEVELOPMENT PLAN

LAKE KITTAMAQUNDI MULTIUSE TRAIL COVER SHEET

| DATE | BY | REVISIONS | DESCRIPTION |
|------|----|-----------|-------------|
| | | | |
| | | | |
| | | | |
| | | | |

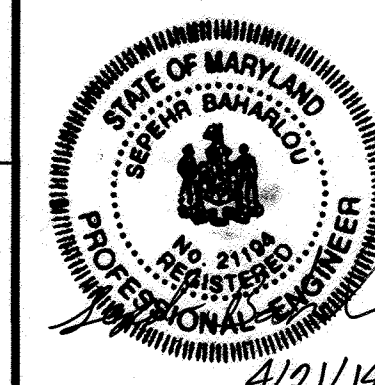
| | |
|----------------------------------|-----------------|
| SCALE: AS-SHOWN | |
| DRAWN BY: MKB | DATE: 04/21/14 |
| CHECKED BY: SB | DATE: 4/21/2014 |
| DESIGNED BY: MKB | DATE: 04/21/14 |
| DRAWING K-01, SHEET NO. 47 OF 62 | |

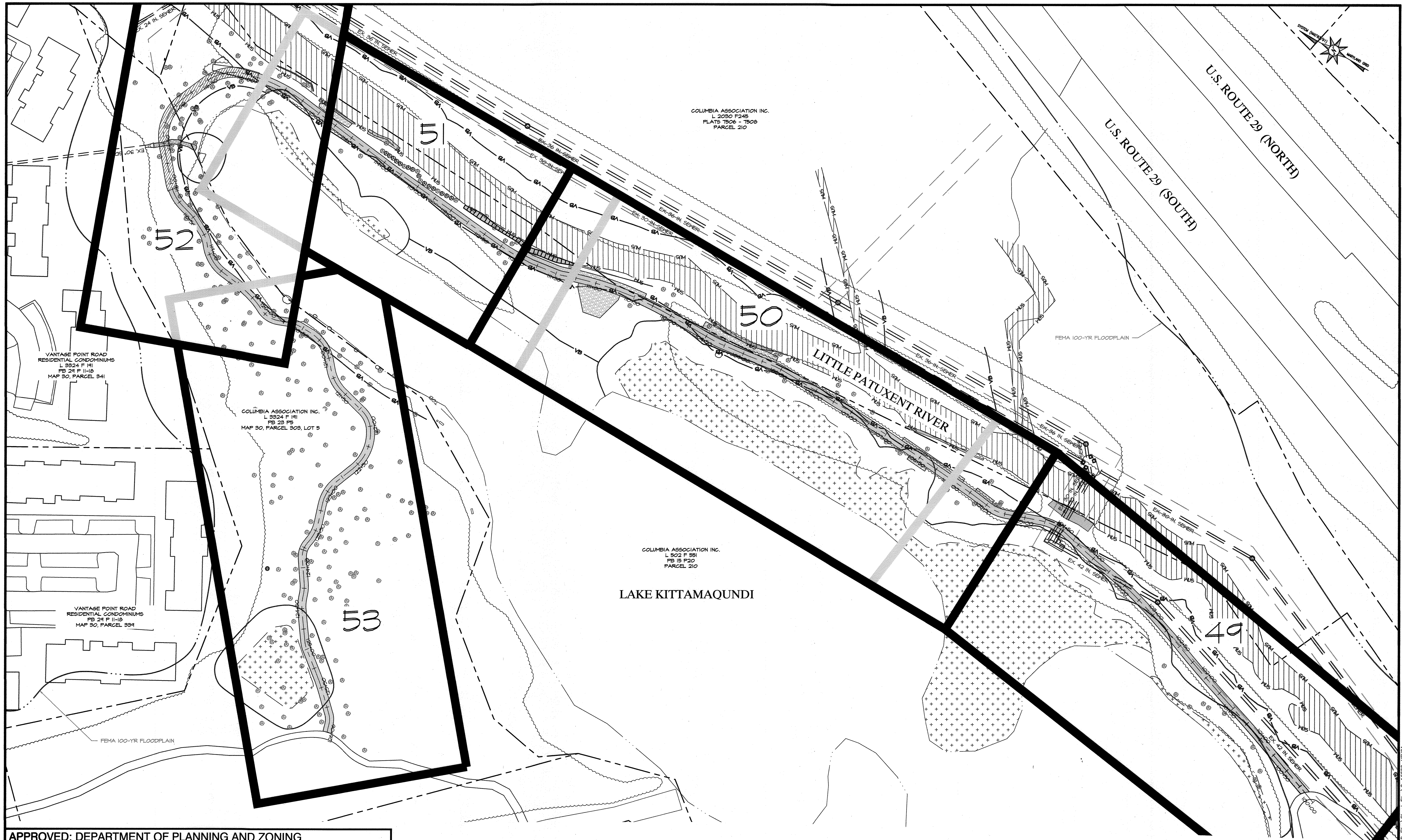
APPROVED: DEPARTMENT OF PLANNING AND ZONING

| | |
|--|------------------------|
| <u>Chad Clark</u> Chief, Development Engineering Division <i>AsP</i> | <u>5.9.14</u> Date |
| <u>Keith Shadsworth</u> Chief, Division of Land Development <i>SPB/12</i> | <u>6-09-14</u> Date |
| <u>Mark R. Gagliardi</u> Director | <u>6/9/14</u> Date |

Columbia Association
10221 WINCOPIN CIRCLE #100
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(410) 381 - 2947

Bayland Consultants & Designers, Inc.
"Integrating Engineering and Environment"
1321 Mercedes Drive, Suite A Phone: (410)694-9401
Hanover, Maryland 21076 Fax: (410)694-9405
Email: bayland@baylandinc.com
Website: http://www.baylandinc.com
BAYLAND JOB NO. 8_16202





APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Clark
Chief, Development Engineering Division *HSP* Date *5.9.14*

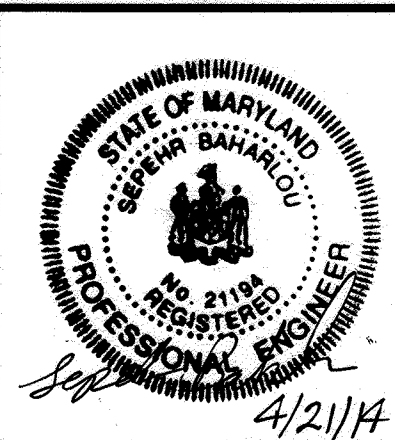
Kurt Schuler
Chief, Division of Land Development *SB* Date *6.09.14*

Wesley H. Gault
Director Date *6/9/14*

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE *6/5/2014*

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COLUMBIA, MD 21046
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BAYLAND JOB NO. 8_16202

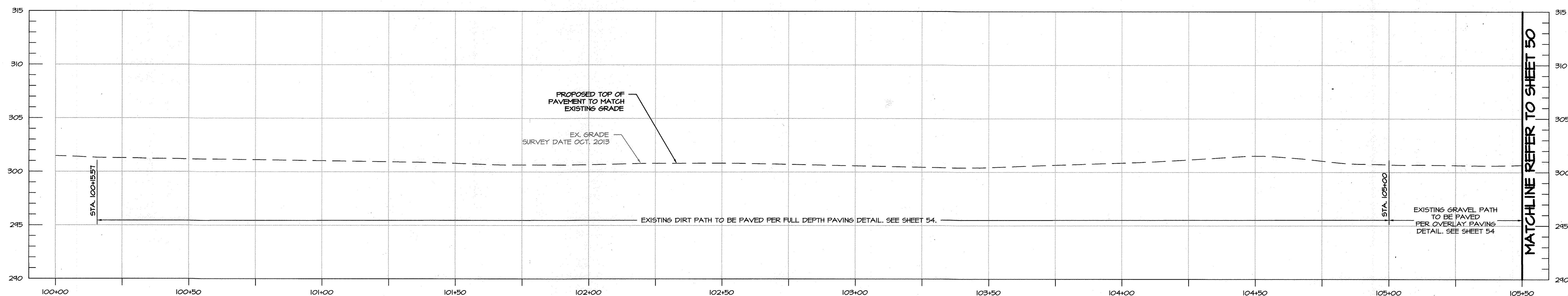
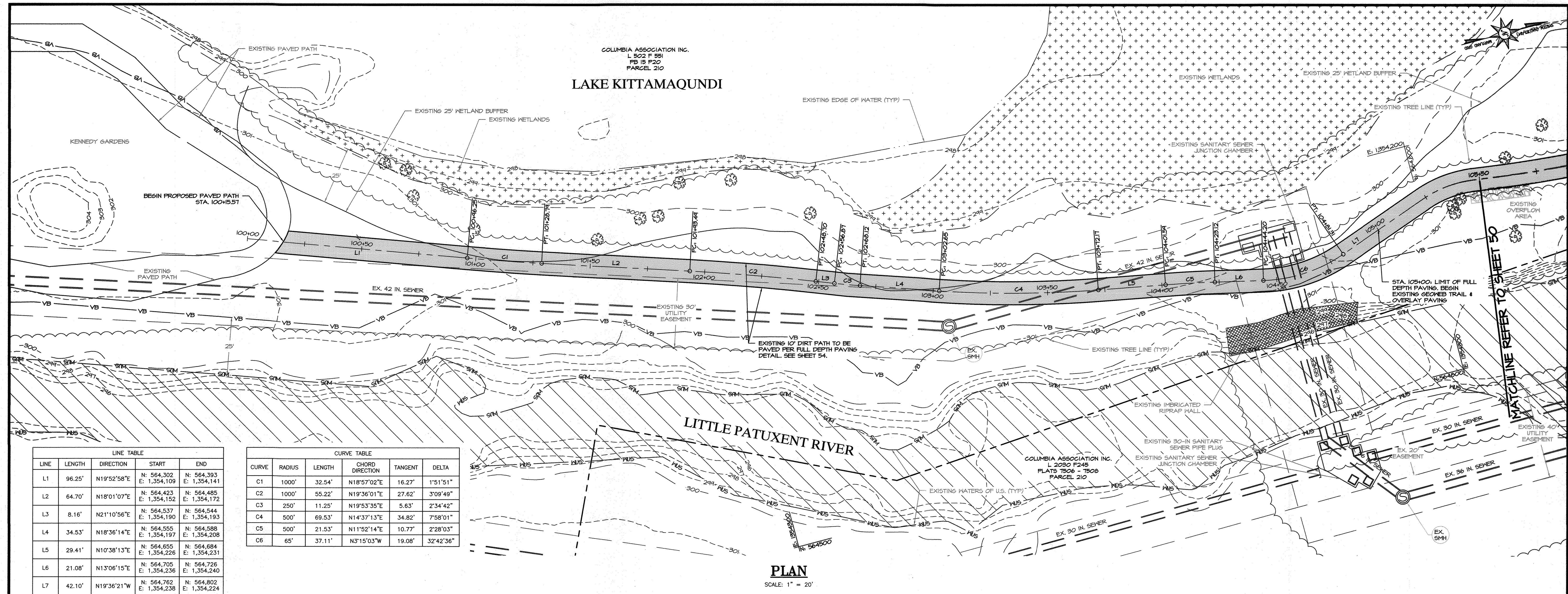


REVISED SITE DEVELOPMENT PLAN

LAKE KITTAMAQUUNDI MULTIUSE TRAIL KEY SHEET

| REVISIONS | | | SCALE: 1" = 50' | |
|-----------|----|-------------|----------------------------------|-----------------|
| DATE | BY | DESCRIPTION | DRAWN BY: MKB | DATE: 04/21/14 |
| | | | CHECKED BY: SB | DATE: 4/21/2014 |
| | | | DESIGNED BY: MKB | DATE: 04/21/14 |
| | | | DRAWING K-02, SHEET NO. 48 OF 62 | |

SDP-08-108



APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division *HSP* Date 5.9.14

Chief, Division of Land Development *LSH* Date 6-09-14

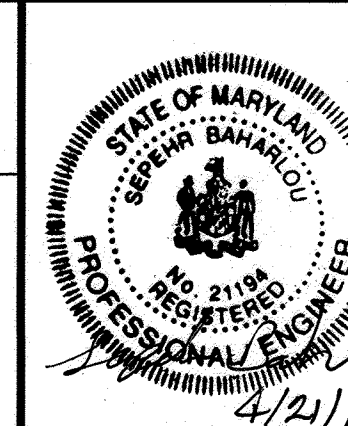
Director *Mark P. Ayala* Date 6/5/14

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 6/5/2014

0 10 20 40
1 Inch = 20 Feet

Columbia Association
10221 WINCOPIN CIRCLE #100
COLUMBIA, MD 21046
(410) 381 - 2947

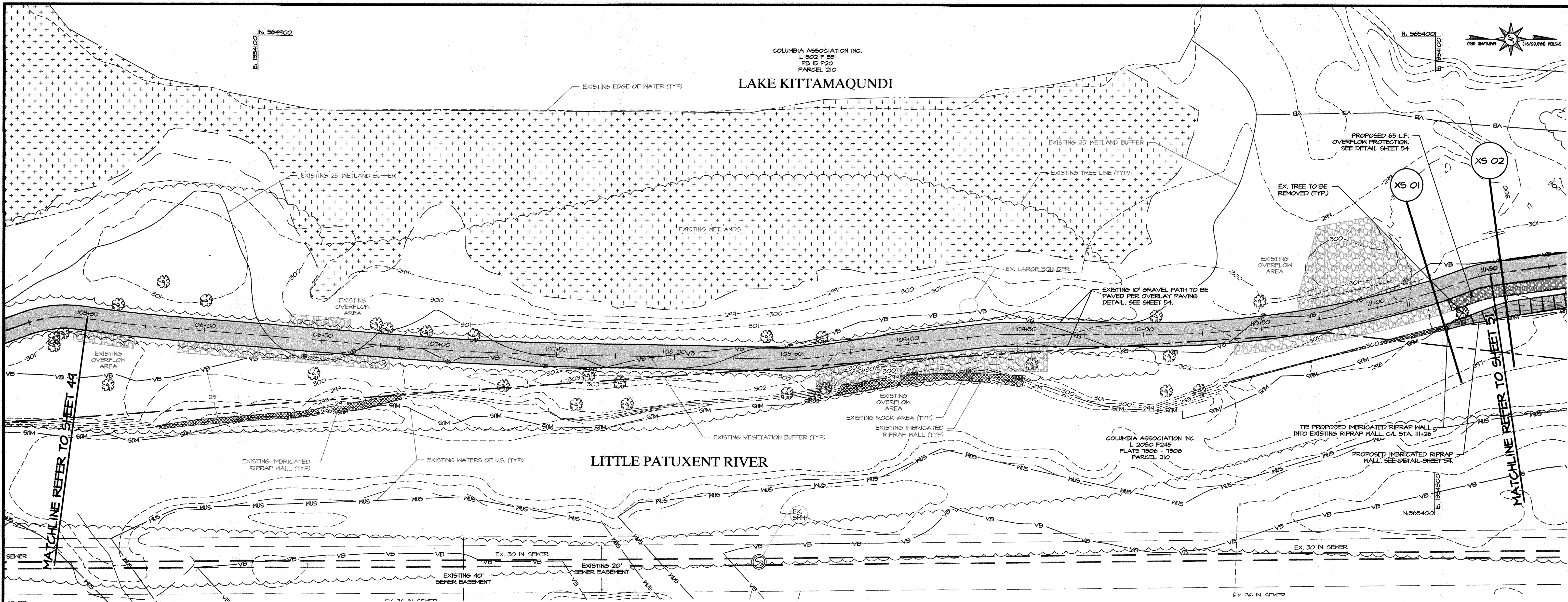
BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
1321 Mercedes Drive, Suite A Phone: (410)694-9401
Hanover, Maryland 21076 Fax: (410)694-9405
Email: bayland@baylandinc.com
Website: http://www.baylandinc.com
BAYLAND JOB NO. 8_16202



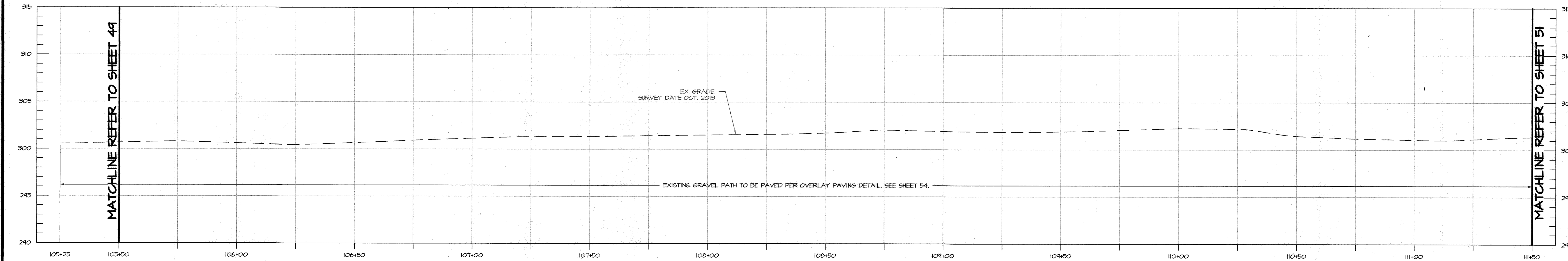
REVISED SITE DEVELOPMENT PLAN
**LAKE KITTAMAQUNDI MULTIUSE TRAIL
DESIGN PLANS**

| REVISIONS | | SCALE: 1" = 20' | |
|-----------|-------------|----------------------------------|-----------------|
| DATE | DESCRIPTION | DRAWN BY: MKB | DATE: 04/21/14 |
| | | CHECKED BY: SB | DATE: 4/21/2014 |
| | | DESIGNED BY: MKB | DATE: 04/21/14 |
| | | DRAWING K-03, SHEET NO. 49 OF 62 | |

SDP-08-108



PLAN
SCALE: 1" = 20'



PROFILE OF PROPOSED TRAIL STA: 105+25 TO STA: 111+50

APPROVED: DEPARTMENT OF PLANNING AND ZONING

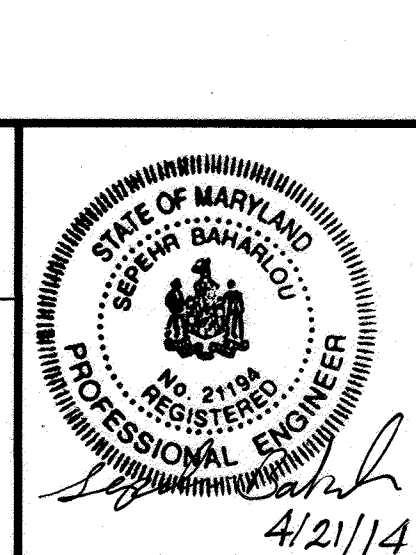
Chief, Development Engineering Division *ASD* 5-9-14 Date
 Chief, Division of Land Development *ASD* 6-09-14 Date
 Director *ASD* 6/9/14 Date

APPROVED PLANNING BOARD OF HOWARD COUNTY
 DATE 6/5/2014

0 10 20 40
 1 Inch = 20 Feet

Columbia Association
 10221 WINCOPIN CIRCLE #100
 COLUMBIA, MD 21046
 (410) 381-2947

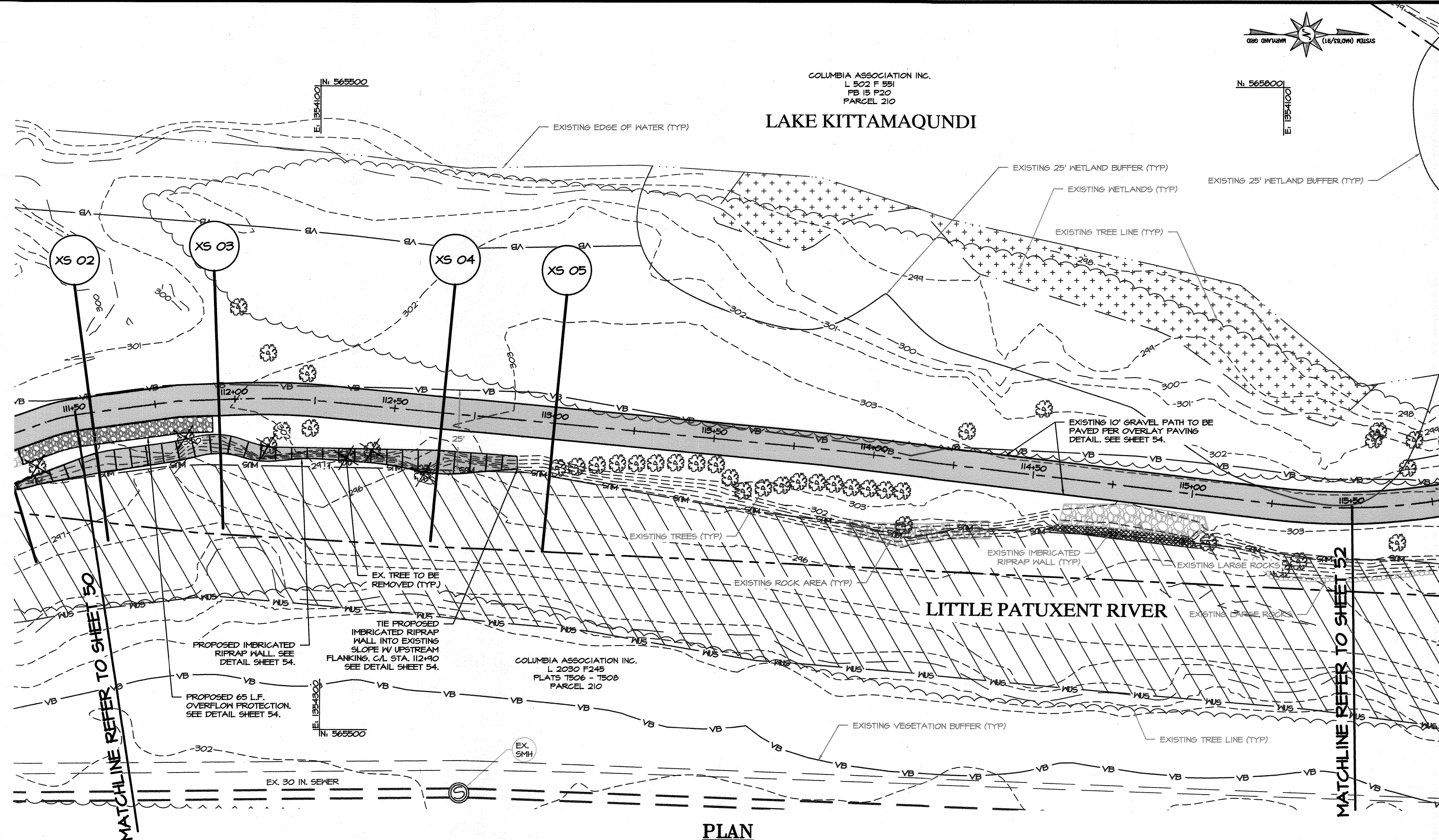
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 BAYLAND JOB NO. 8-16202



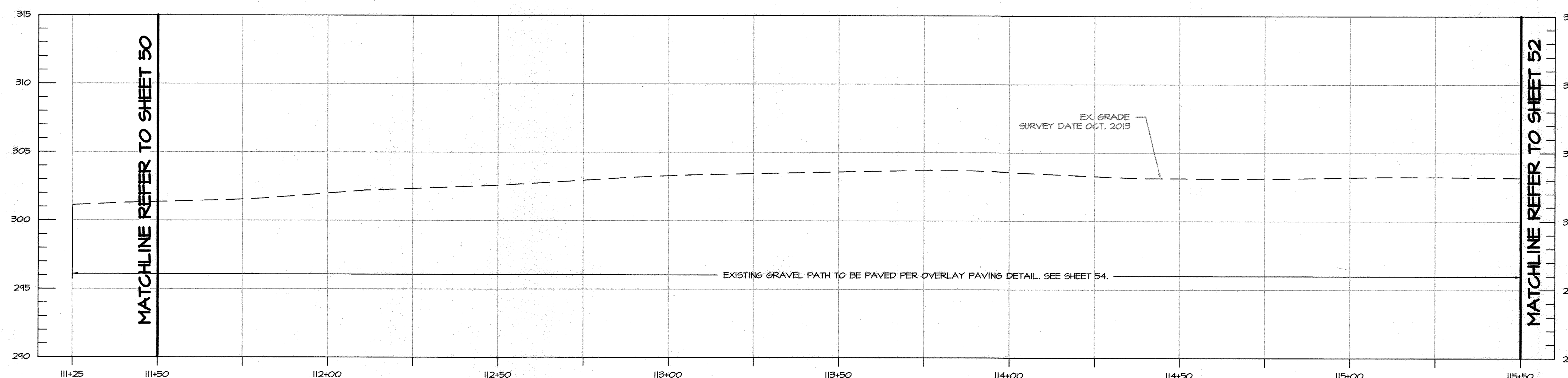
REVISED SITE DEVELOPMENT PLAN
LAKE KITTAMAQUUNDI MULTIUSE TRAIL DESIGN PLANS

| REVISIONS | | SCALE: 1" = 20' | |
|-----------|-------------|----------------------------------|-----------------|
| DATE | DESCRIPTION | DRAWN BY: MKB | DATE: 04/21/14 |
| | | CHECKED BY: SB | DATE: 4/21/2014 |
| | | DESIGNED BY: MKB | DATE: 04/21/14 |
| | | DRAWING K-04, SHEET NO. 50 OF 62 | |

SDP-08-108



PLAN
SCALE: 1" = 20'



PROFILE OF PROPOSED TRAIL STA: 111+25 TO STA: 115+50

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division *MS* 5-9-14
Date
Chief, Division of Land Development *MS* 6-09-14
Date
Director *MS* 6-9-14
Date

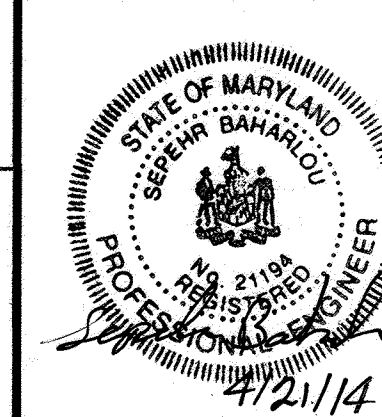
APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 6/5/2014

0 10 20 40
1 Inch = 20 Feet

HORIZONTAL : 1" = 20'
VERTICAL : 1" = 5'

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(410) 381 - 2947

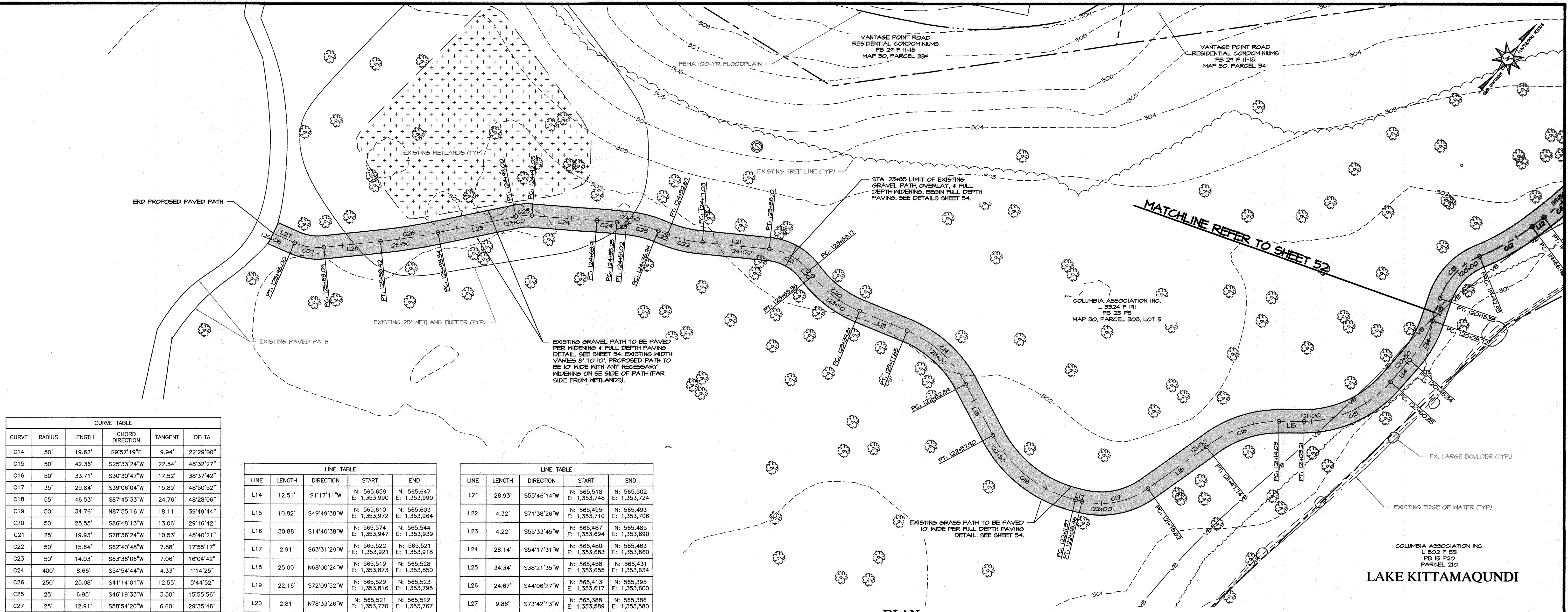
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Email: bayland@baylandinc.com
Website: http://www.baylandinc.com
BAYLAND JOB NO. 8_16202



REVISED SITE DEVELOPMENT PLAN

LAKE KITTAMAQUUNDI MULTIUSE TRAIL
DESIGN PLANS

| DATE | | BY | REVISIONS | DESCRIPTION | | SCALE: 1" = 20' | |
|------|--|----|-----------|-------------|--|----------------------------------|-----------------|
| | | | | | | DRAWN BY: MKB | DATE: 04/21/14 |
| | | | | | | CHECKED BY: SB | DATE: 4/21/2014 |
| | | | | | | DESIGNED BY: MKB | DATE: 04/21/14 |
| | | | | | | DRAWING K-05, SHEET NO. 51 OF 62 | |

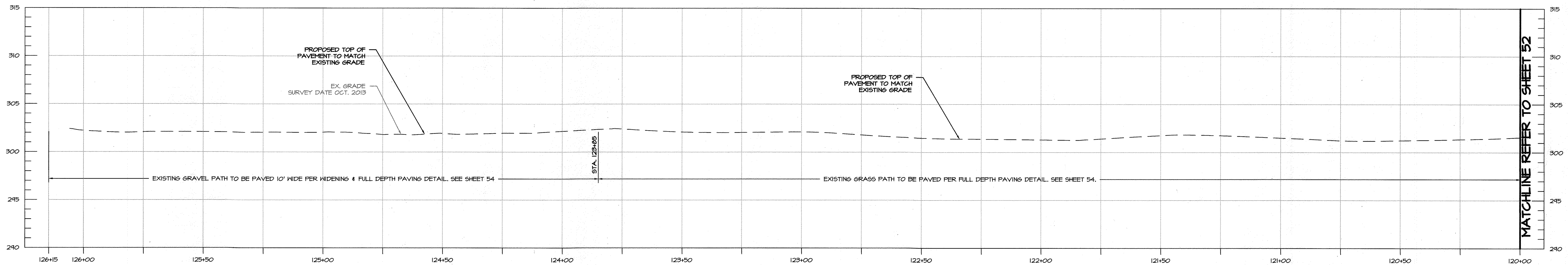


PLAN
SCALE: 1" = 20'

| CURVE | RADIUS | LENGTH | CHORD DIRECTION | TANGENT | DELTA |
|-------|--------|--------|-----------------|---------|-----------|
| C14 | 50' | 19.62' | S9°57'19"E | 9.94' | 22°29'00" |
| C15 | 50' | 42.36' | S25°33'24"W | 22.54' | 48°32'27" |
| C16 | 50' | 33.71' | S30°30'47"W | 17.52' | 38°37'42" |
| C17 | 35' | 29.84' | S39°06'04"W | 15.89' | 48°50'52" |
| C18 | 55' | 46.53' | S87°45'33"W | 24.76' | 48°28'06" |
| C19 | 50' | 34.76' | N87°55'16"W | 18.11' | 39°49'44" |
| C20 | 50' | 25.55' | S86°48'13"W | 13.06' | 29°16'42" |
| C21 | 25' | 19.93' | S78°36'24"W | 10.53' | 45°40'21" |
| C22 | 50' | 15.64' | S62°40'48"W | 7.88' | 17°55'17" |
| C23 | 50' | 14.03' | S63°36'06"W | 7.06' | 16°04'42" |
| C24 | 400' | 8.66' | S54°54'44"W | 4.33' | 1°14'25" |
| C26 | 250' | 25.08' | S41°14'01"W | 12.55' | 5°44'52" |
| C25 | 25' | 6.95' | S46°19'33"W | 3.50' | 15°55'56" |
| C27 | 25' | 12.91' | S58°54'20"W | 6.60' | 29°35'46" |

| LINE | LENGTH | DIRECTION | START | END |
|------|--------|-------------|----------------------------|----------------------------|
| L14 | 12.51' | S11°17'11"W | N: 565,659 E: 1,353,990 | N: 565,647 E: 1,353,990 |
| L15 | 10.82' | S49°49'38"W | N: 565,610 E: 1,353,972 | N: 565,603 E: 1,353,964 |
| L16 | 30.88' | S14°40'38"W | N: 565,574 E: 1,353,947 | N: 565,544 E: 1,353,939 |
| L17 | 2.91' | S63°31'29"W | N: 565,522 E: 1,353,921 | N: 565,521 E: 1,353,918 |
| L18 | 25.00' | N68°00'24"W | N: 565,519 E: 1,353,873 | N: 565,528 E: 1,353,850 |
| L19 | 22.16' | S72°09'52"W | N: 565,529 E: 1,353,816 | N: 565,523 E: 1,353,795 |
| L20 | 2.81' | N78°33'28"W | N: 565,521 E: 1,353,770 | N: 565,522 E: 1,353,767 |

| LINE | LENGTH | DIRECTION | START | END |
|------|--------|-------------|----------------------------|----------------------------|
| L21 | 28.93' | S55°46'14"W | N: 565,518 E: 1,353,748 | N: 565,502 E: 1,353,724 |
| L22 | 4.32' | S71°38'26"W | N: 565,495 E: 1,353,710 | N: 565,493 E: 1,353,706 |
| L23 | 4.22' | S55°33'45"W | N: 565,487 E: 1,353,694 | N: 565,485 E: 1,353,690 |
| L24 | 28.14' | S54°17'31"W | N: 565,480 E: 1,353,683 | N: 565,463 E: 1,353,660 |
| L25 | 34.34' | S38°21'35"W | N: 565,458 E: 1,353,655 | N: 565,431 E: 1,353,634 |
| L26 | 24.67' | S44°06'27"W | N: 565,413 E: 1,353,617 | N: 565,395 E: 1,353,600 |
| L27 | 9.86' | S73°42'13"W | N: 565,388 E: 1,353,589 | N: 565,386 E: 1,353,580 |



PROFILE OF PROPOSED TRAIL STA: 120+00 TO STA: 126+15

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division
 Chief, Division of Land Development
 Director

Date 5.9.14
 Date 6.09.14
 Date 6/9/14

APPROVED
 PLANNING BOARD
 of HOWARD COUNTY
 DATE 6/5/2014

0 10 20 40
 1 Inch = 20 Feet

HORIZONTAL: 1" = 20'
 VERTICAL: 1" = 5'

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 10221 WINCOPIN CIRCLE #100
 COLUMBIA, MD 21046
 (410) 381-2947

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 Hanover, Maryland 21076 Fax: (410)694-9405
 Email: bayland@baylandinc.com
 Website: http://www.baylandinc.com
 BAYLAND JOB NO. 8_16202

STATE OF MARYLAND
 PROFESSIONAL SEAL
 4/21/14

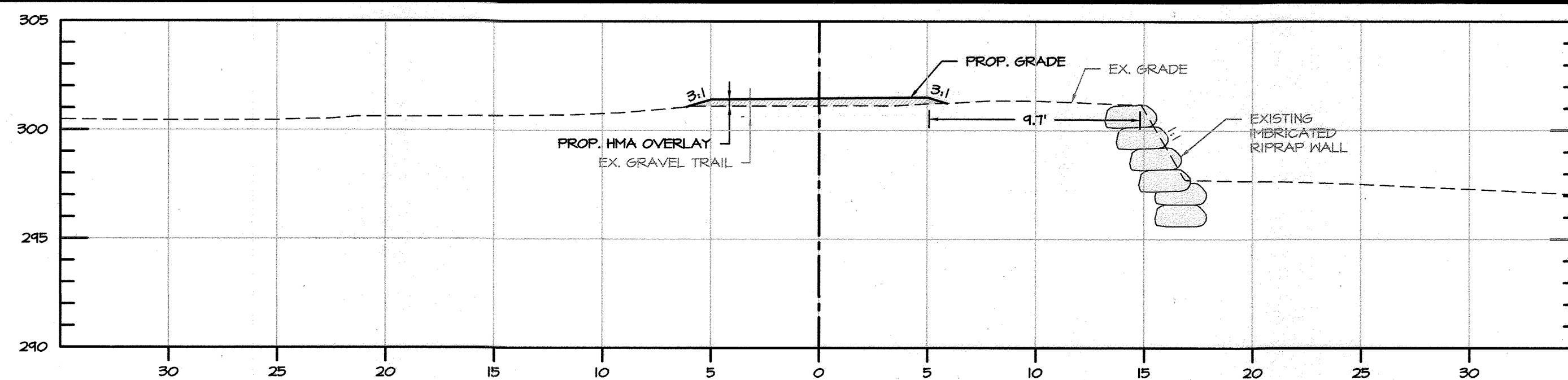
REVISED SITE DEVELOPMENT PLAN

LAKE KITTAMAQUUNDI MULTIUSE TRAIL
 DESIGN PLANS

| DATE | BY | REVISIONS | DESCRIPTION |
|------|----|-----------|-------------|
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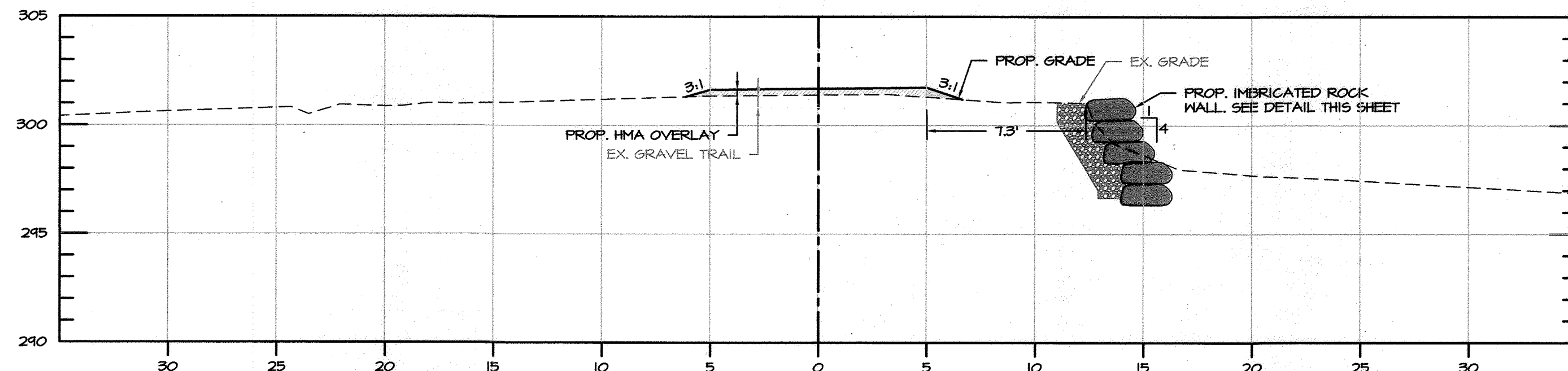
SCALE: 1" = 20'
 DRAWN BY: MKB DATE: 04/21/14
 CHECKED BY: SB DATE: 4/21/2014
 DESIGNED BY: MKB DATE: 04/21/14
 DRAWING K-07, SHEET NO. 53 OF 62

SDP-08-108



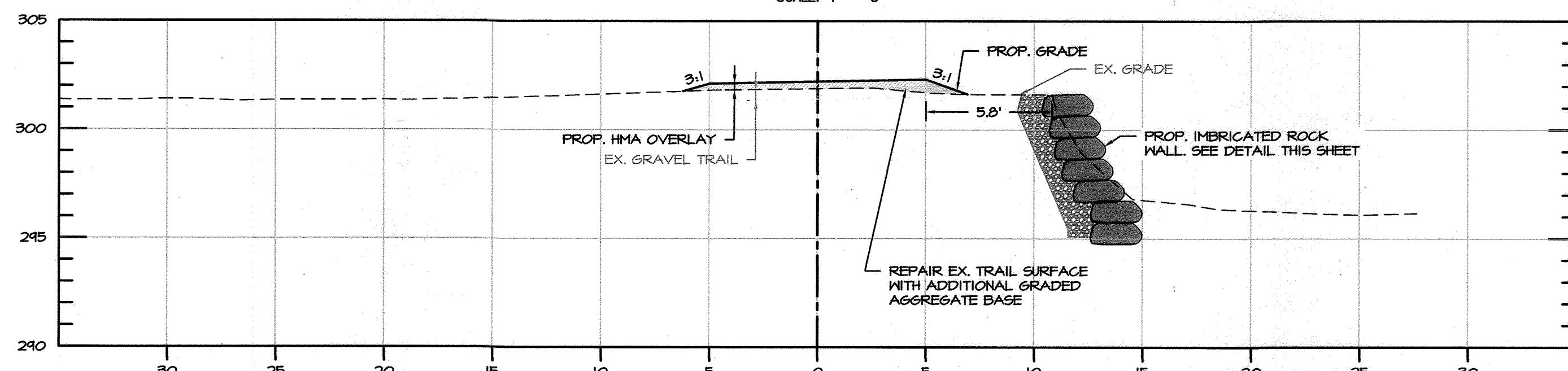
PROP. TRAIL SECTION XS 01 STA 111+25

SCALE: 1" = 5'



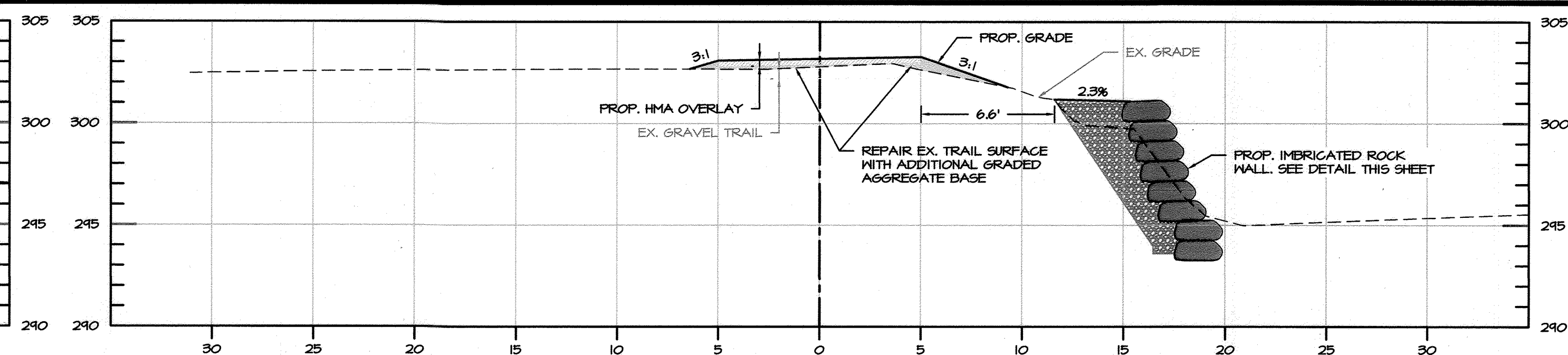
PROP. TRAIL SECTION XS 02 STA 111+55

SCALE: 1" = 5'



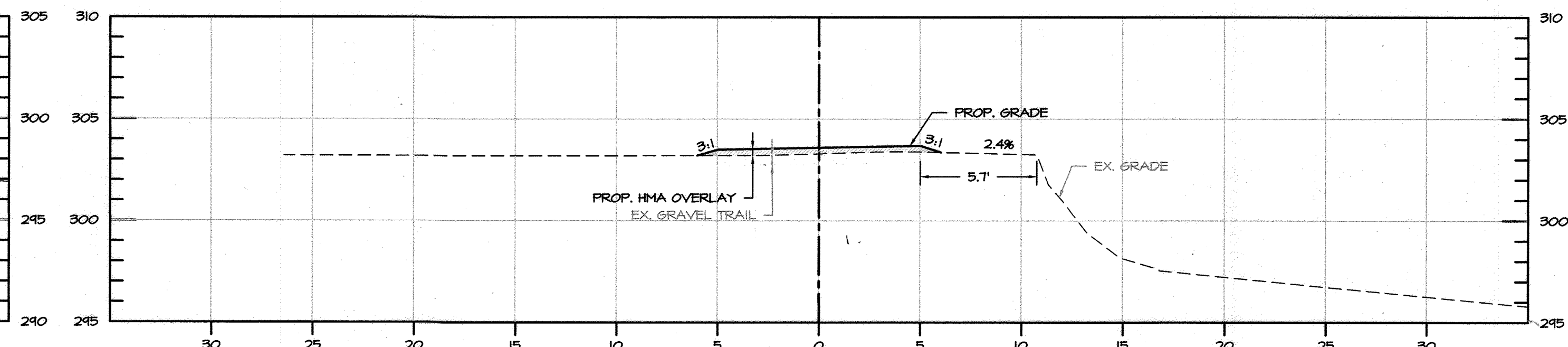
PROP. TRAIL SECTION XS 03 STA 111+95

SCALE: 1" = 5'



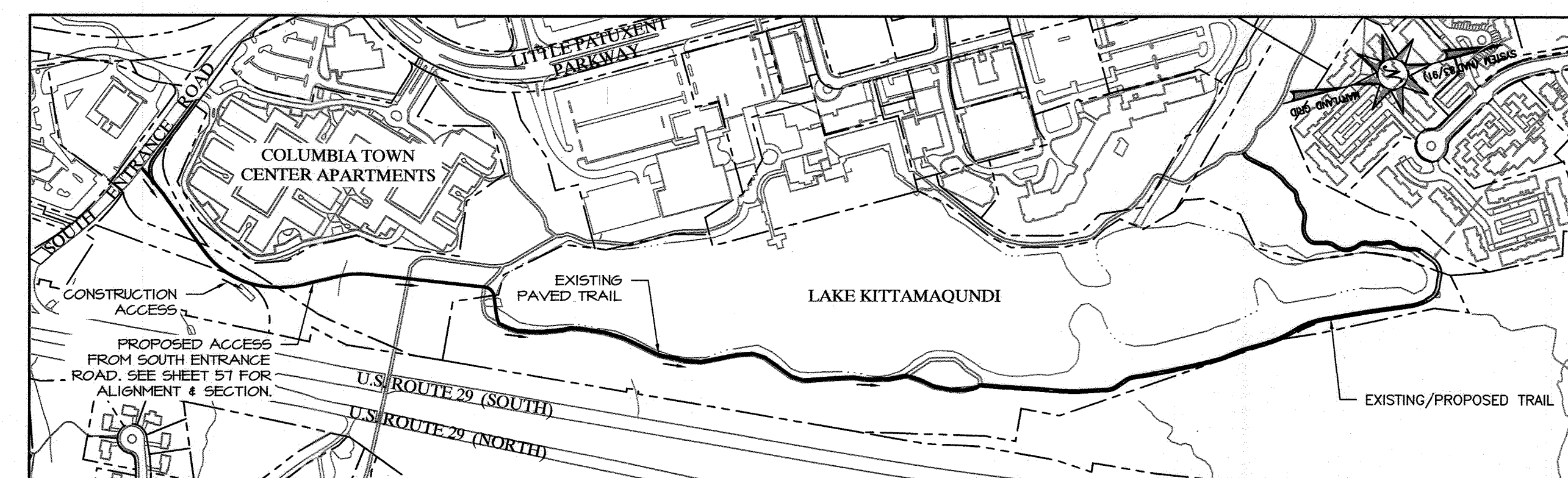
PROP. TRAIL SECTION XS 04 STA 112+65

SCALE: 1" = 5'



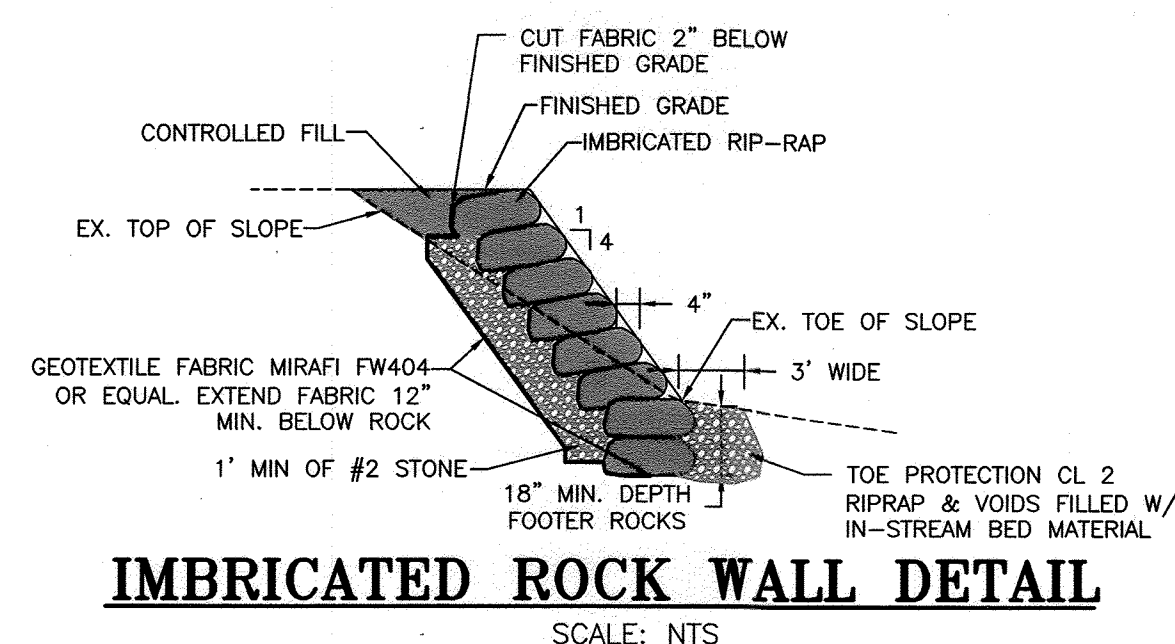
PROP. TRAIL SECTION XS 05 STA 113+00

SCALE: 1" = 5'



CONSTRUCTION ACCESS

NOT TO SCALE



IMBRICATED ROCK WALL DETAIL

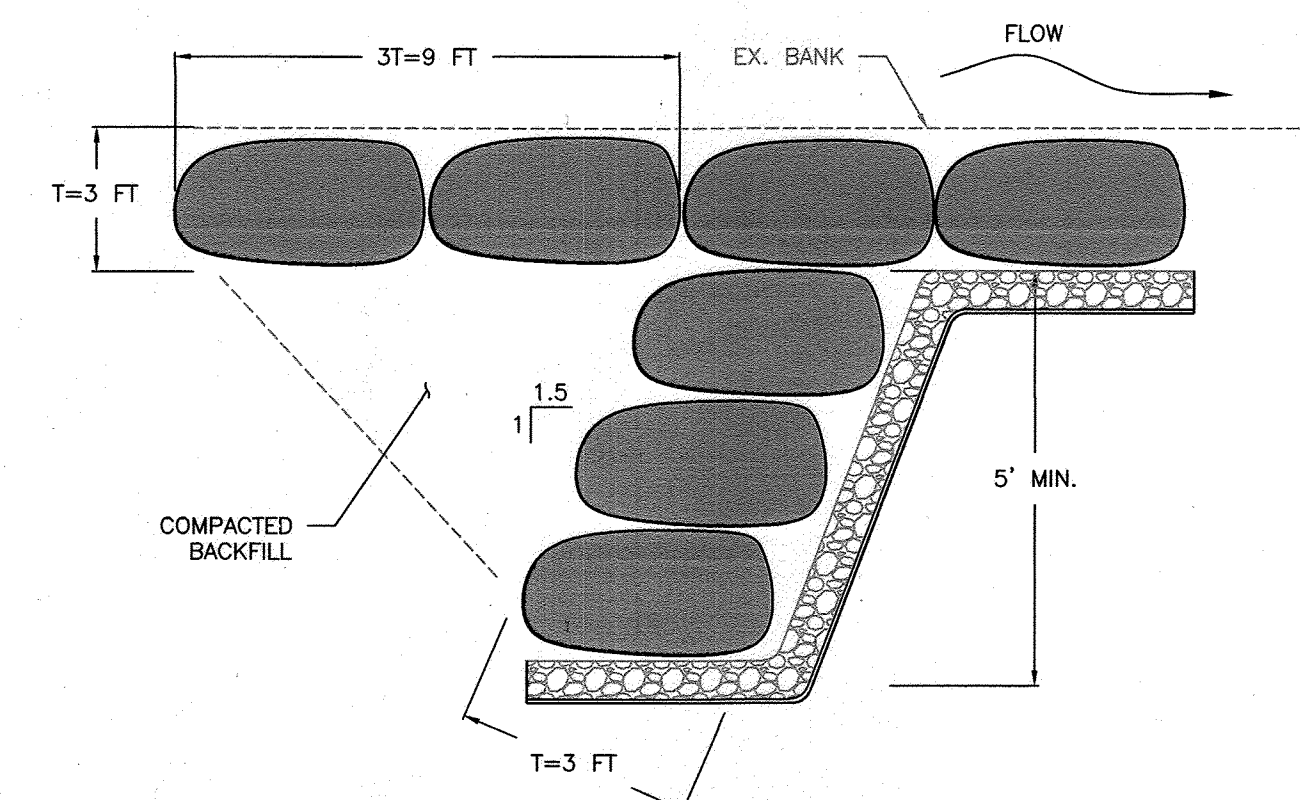
SCALE: NTS

IMBRICATED ROCK WALL NOTES

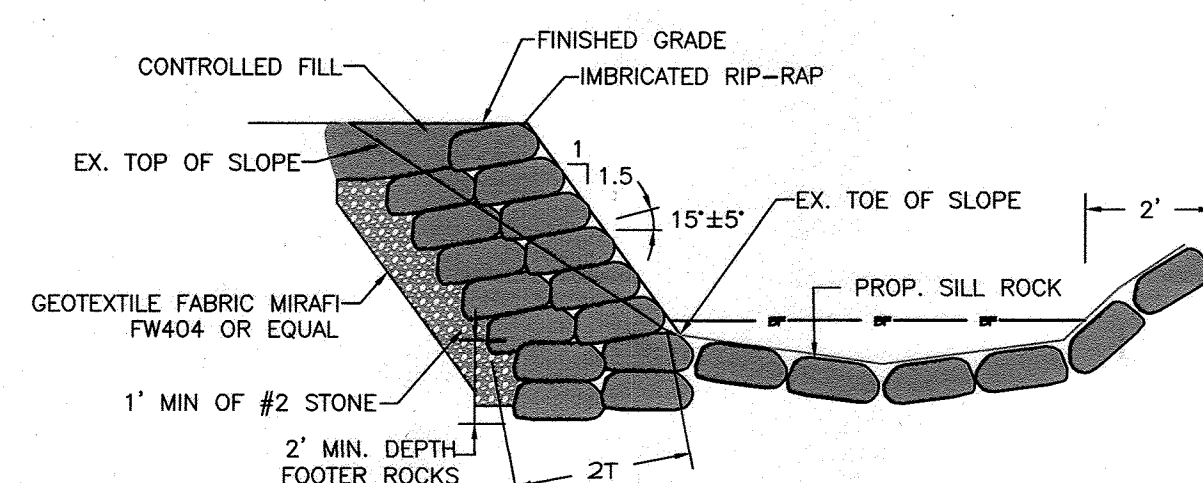
1. ALL MATERIALS SHALL BE UNDERLAIN BY MIRAFI FW404 GEOTEXTILE FABRIC OR EQUAL.
2. WHEN BACKFILLING, ALL MATERIAL SHALL BE COMPACTED FIRMLY IN ALL VOIDS TO SECURE STONE. ALL SOIL SHALL BE COMPACTED TO MD-378 STANDARDS.
3. IMBRICATED ROCK WALL SHALL BE CONSTRUCTED SUCH THAT ALL ROCKS SECURELY INTERLOCK AND SHALL NOT ROCK OR ROTATE IN PLACE. ALL ROCKS EXCEPT BOTTOM FOOTER ROCKS SHALL BE SUPPORTED BY A FOOTER ROCK.
4. IMBRICATED ROCK SHALL BE OBLONG AND FLAT IN APPEARANCE WITH TWO PARALLEL FACES, AND SHALL BE STACKABLE.
5. ALL ROCK SHALL BE GRANITE ROCK THAT IS TAN, DARK BROWN, OR DARK GRAY IN COLOR. ROCKS NOT MEETING SPECIFICATIONS SHALL BE REMOVED AND REPLACED AT NO COST TO THE OWNER.

ROCK SIZE TABLE

| ROCK TYPE | SIZE | % BY WEIGHT |
|-----------------|----------------------------------|-------------|
| IMBRICATED ROCK | GREATER THAN 16" X 18" X 24" | 20 |
| | 8" X 9" X 12" TO 16" X 18" X 24" | 80 |



PLAN



SECTION

UPSTREAM FLANK DETAIL

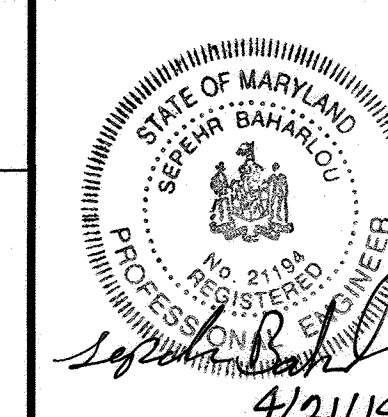
SCALE: NTS

APPROVED
PLANNING BOARD
OF HOWARD COUNTY

DATE 6/5/2014

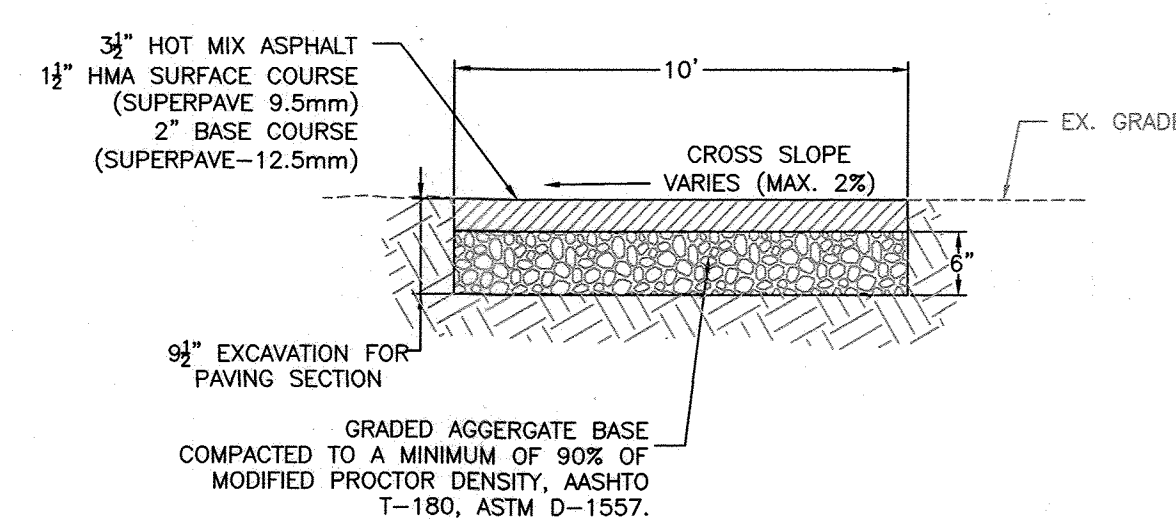
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10221 WINCOPIN CIRCLE #100
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(410) 381-2947

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BAYLAND JOB NO. 8-16202



WIDENING & FULL DEPTH PAVING PATH DETAIL

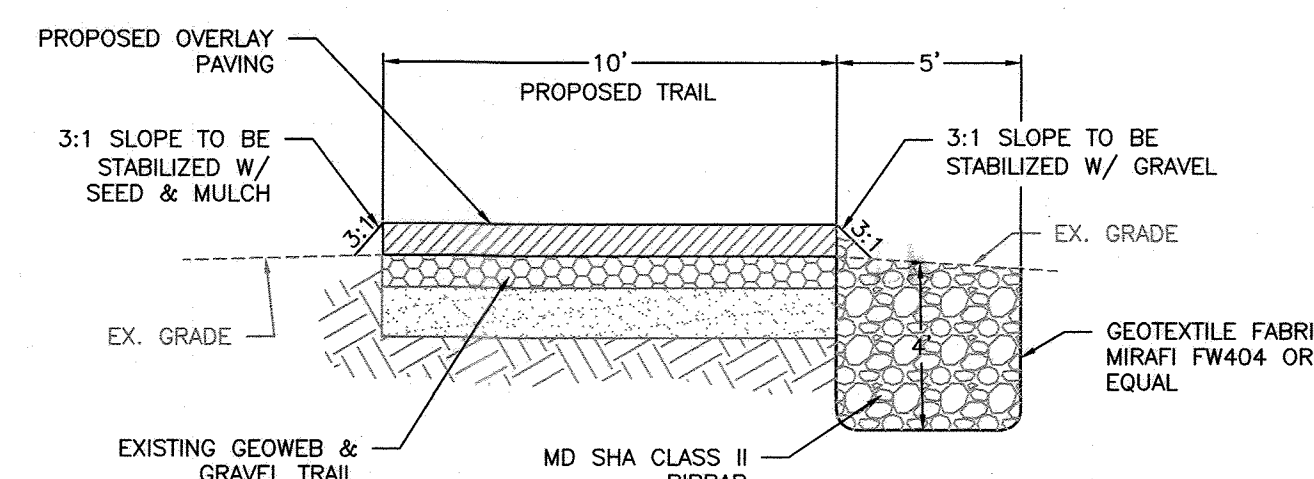
NOT TO SCALE



STA. 100+15.57 TO STA. 105+00
STA. 118+07 TO STA. 123+85

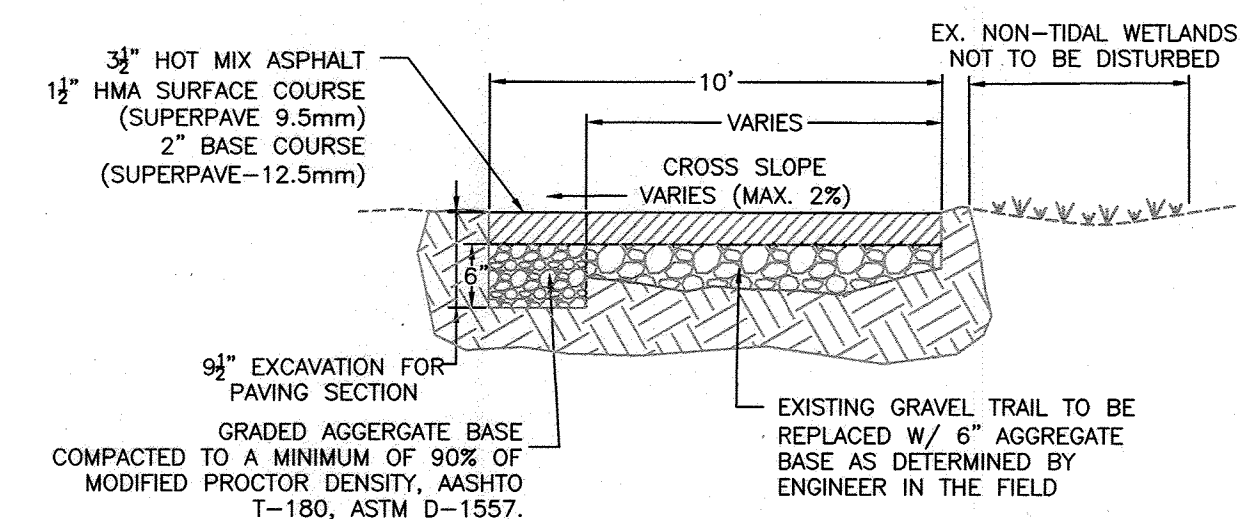
FULL DEPTH PAVING PATH DETAIL

NOT TO SCALE



OVERFLOW PROTECTION DETAIL

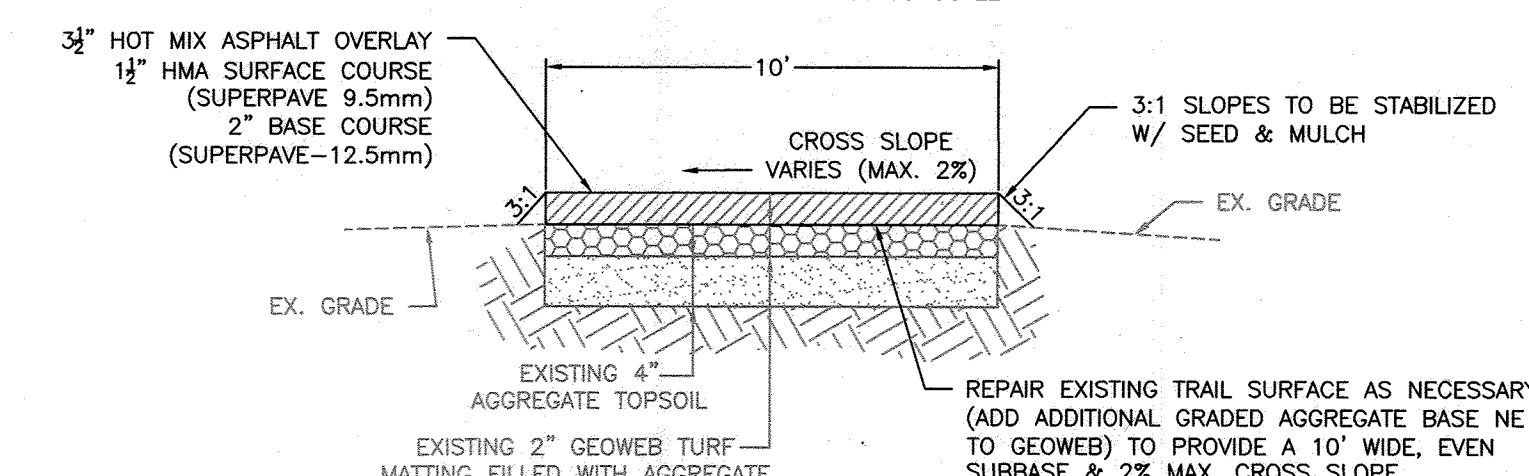
NOT TO SCALE



STA. 123+85 TO STA. 126+06

WIDENING & FULL DEPTH PAVING PATH DETAIL

NOT TO SCALE



STA. 105+00 TO STA. 115+87

OVERLAY PAVING PATH DETAIL

NOT TO SCALE

REVISED SITE DEVELOPMENT PLAN

LAKE KITTAMAQUUNDI MULTIUSE TRAIL CROSS SECTIONS & DETAILS

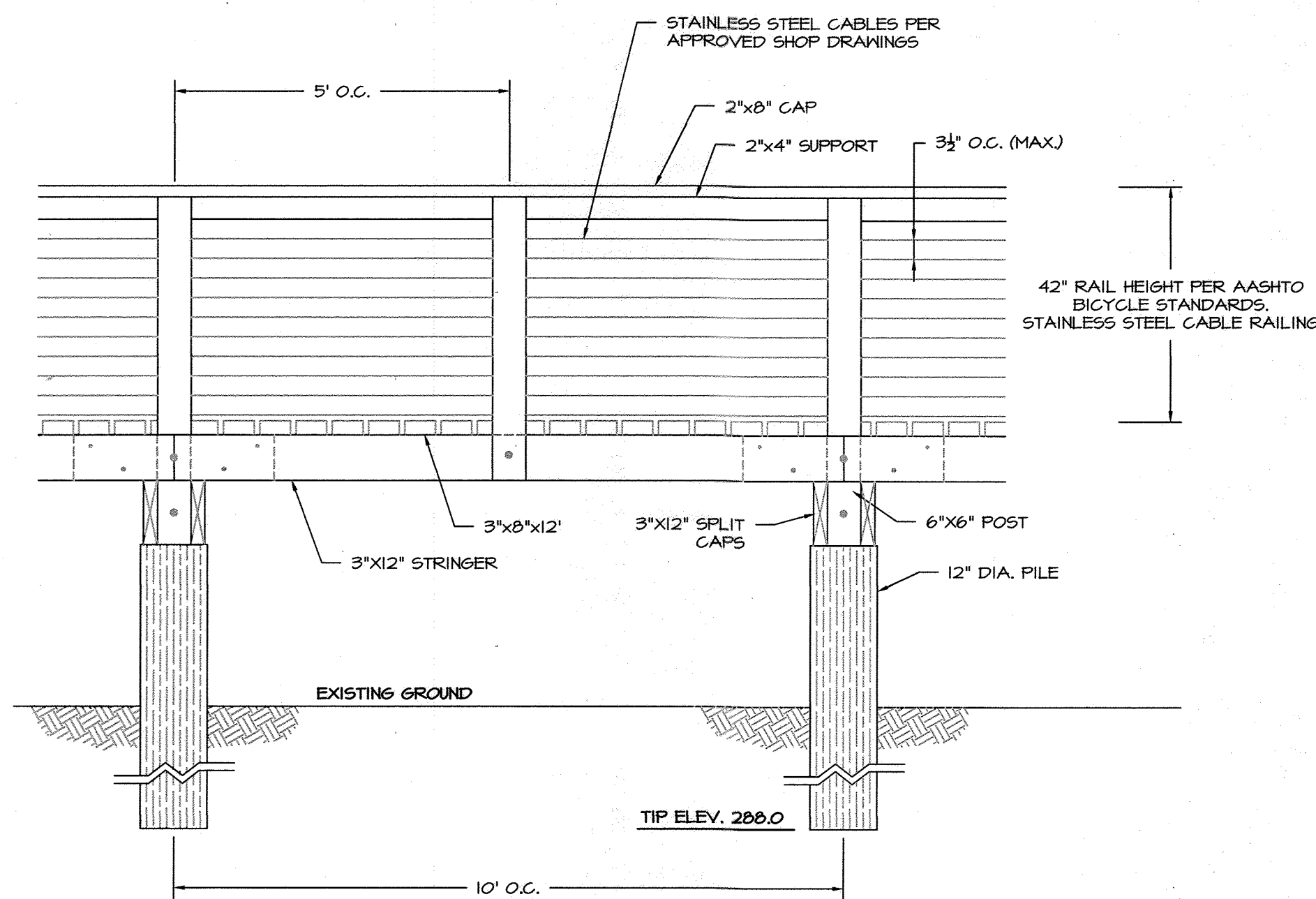
| DATE | BY | REVISIONS | DESCRIPTION |
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|----------------------------------|-----------------|
| DRAWN BY: MKB | DATE: 04/21/14 |
| CHECKED BY: SB | DATE: 4/21/2014 |
| DESIGNED BY: MKB | DATE: 04/21/14 |
| DRAWING K-08, SHEET NO. 54 OF 62 | |

SDP-08-108

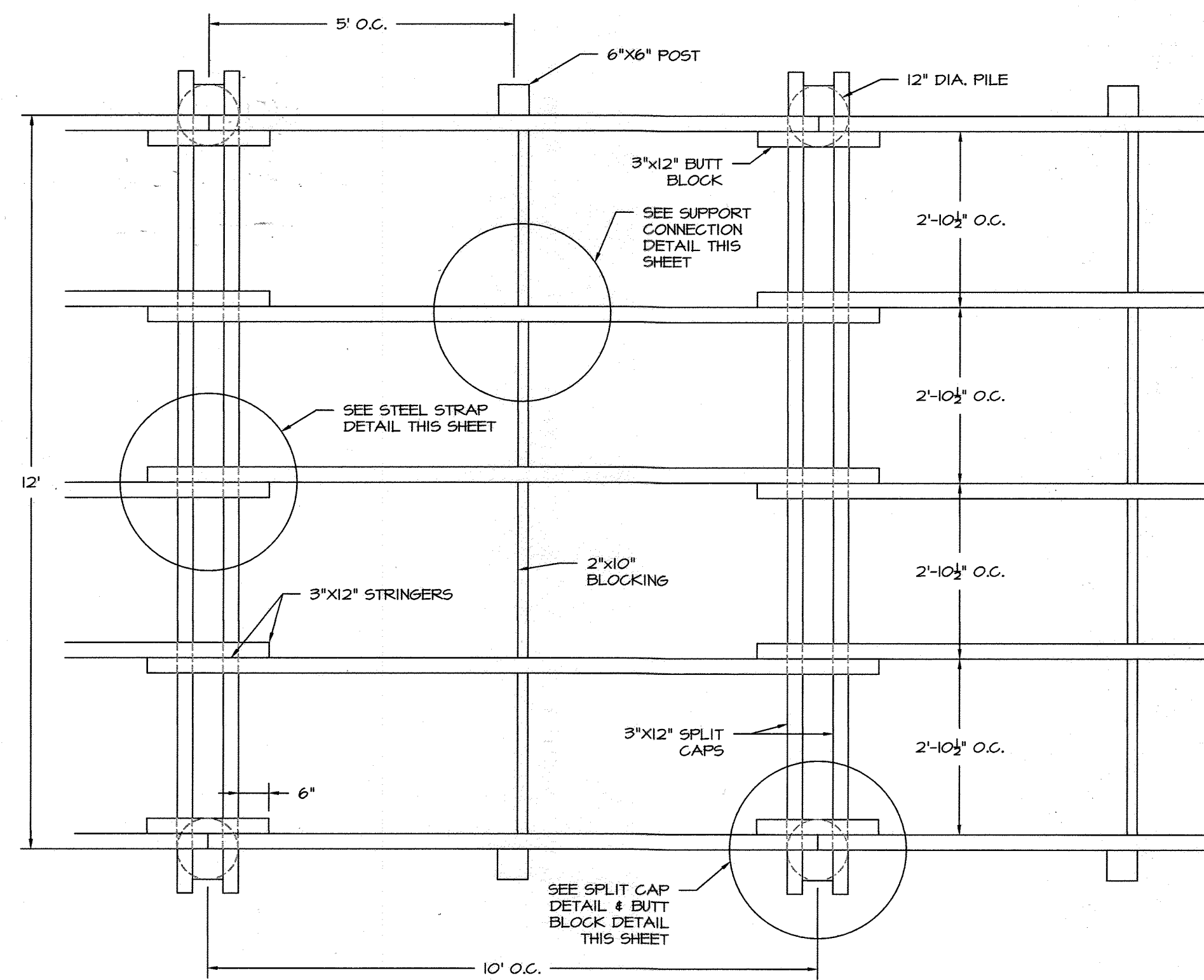
APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division *HSP* Date 5.9.14
Chief, Division of Land Development *Diata* Date 6.09.14
Director *Frank M. Cayle* Date 6/9/14



BOARDWALK SIDE VIEW

SCALE: 1" = 2'



BOARDWALK DECKING PLAN

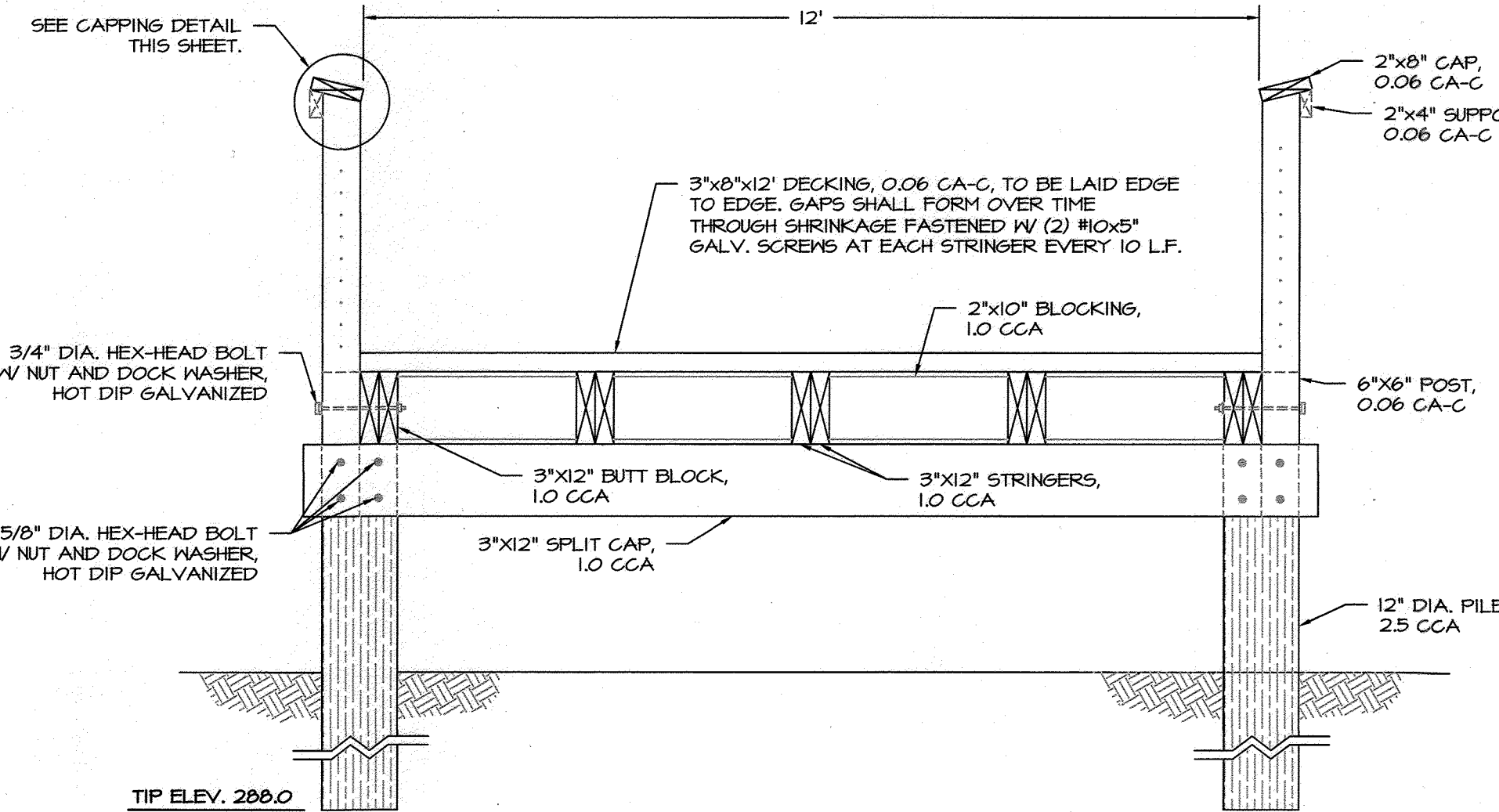
SCALE: 1" = 2'

STAINLESS STEEL CABLE RAILING NOTE

THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE PROPOSED STAINLESS STEEL CABLE RAILING SYSTEM. THE SHOP DRAWINGS MUST BE STAMPED APPROVED BY MARYLAND REGISTERED PROFESSIONAL ENGINEER.

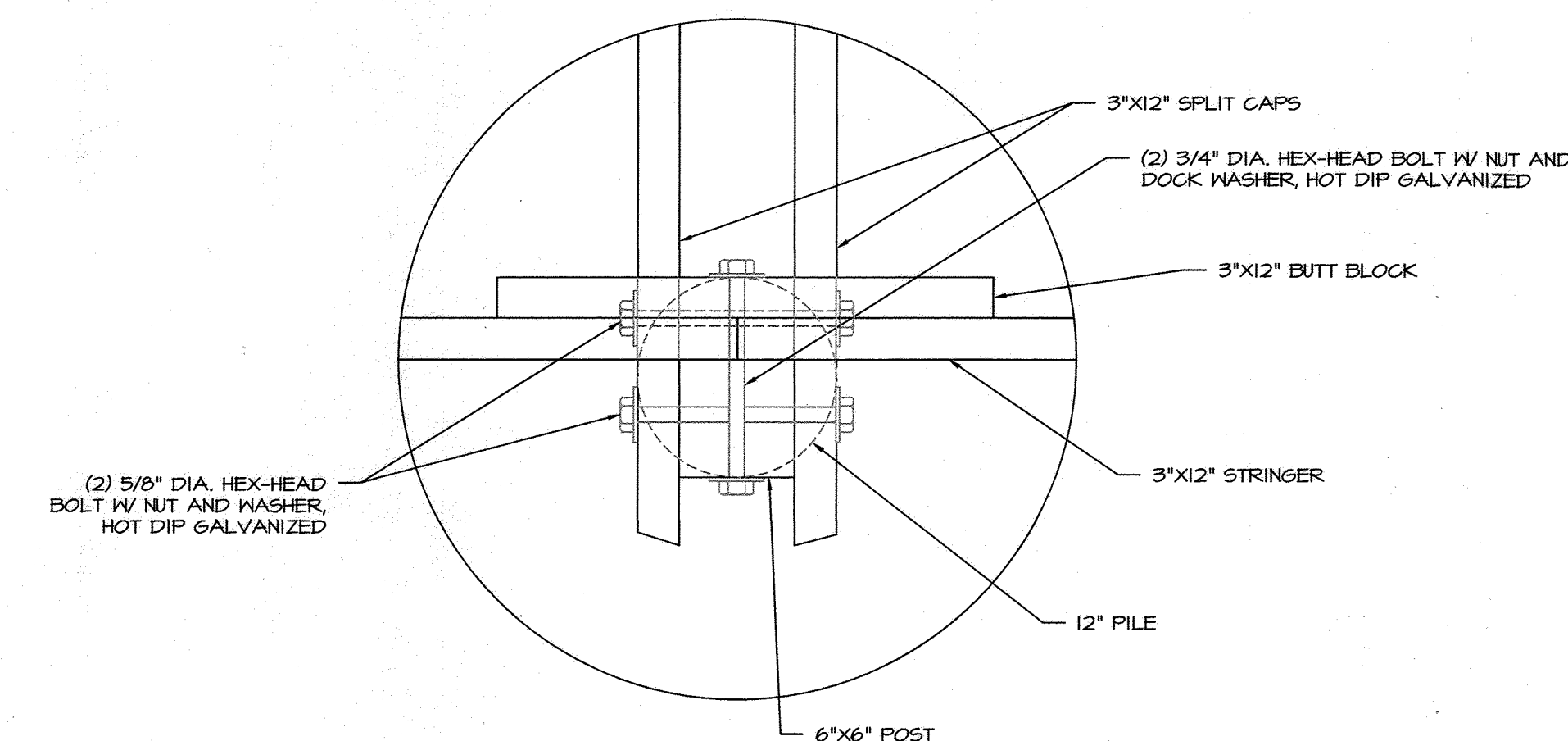
APPROVED
PLANNING BOARD
OF HOWARD COUNTY

DATE 6/5/2014



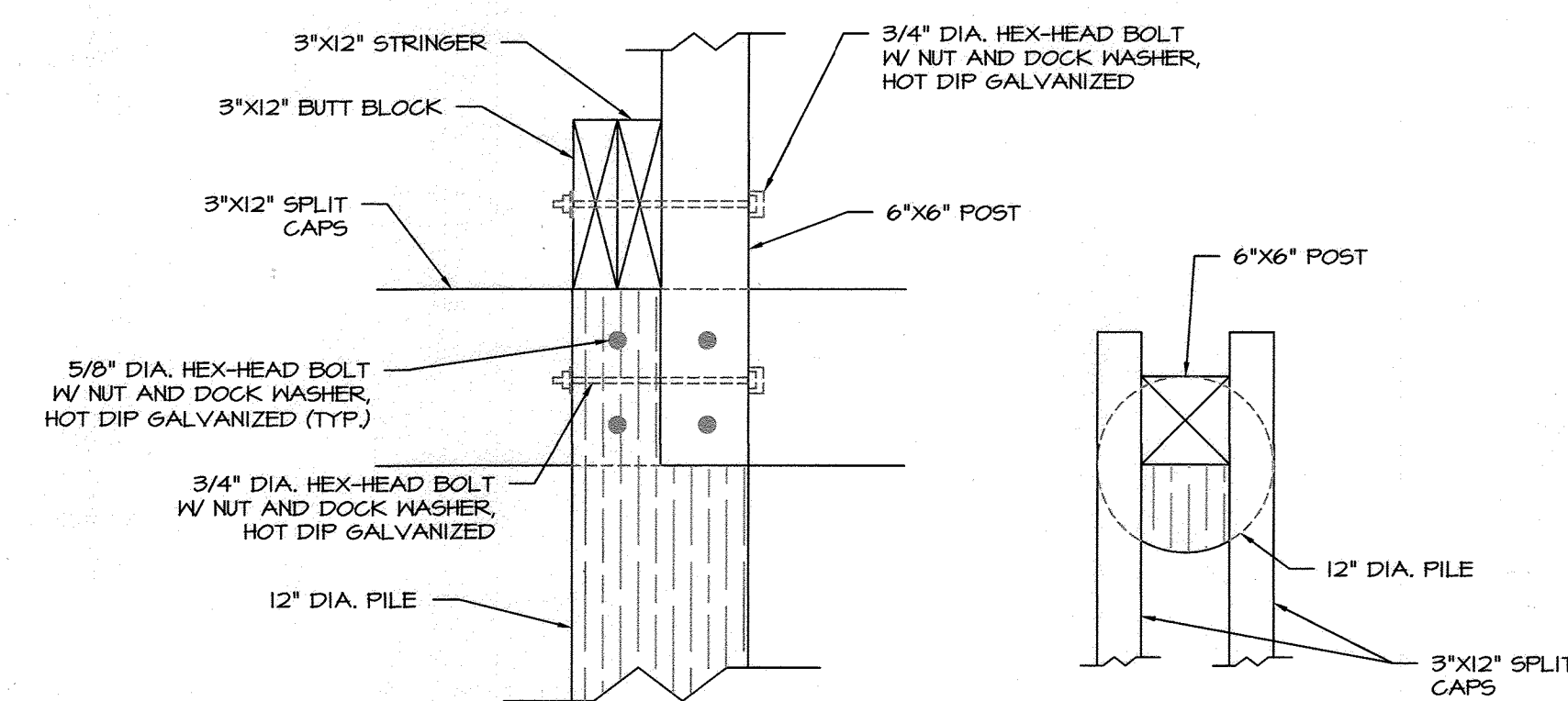
BOARDWALK SECTION VIEW

SCALE: 1" = 2'



SPLIT CAP DETAIL

NOT TO SCALE



SIDE VIEW

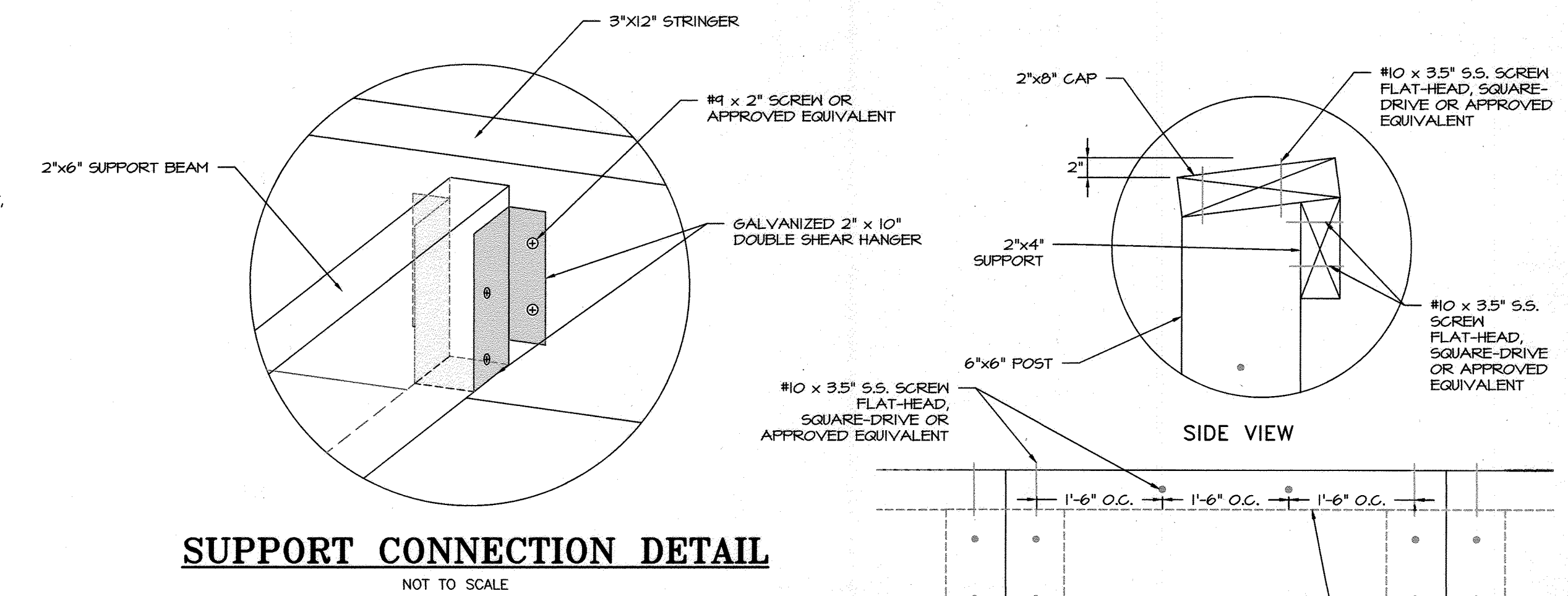
TOP VIEW

PILE DETAILS

SCALE: 1" = 1'

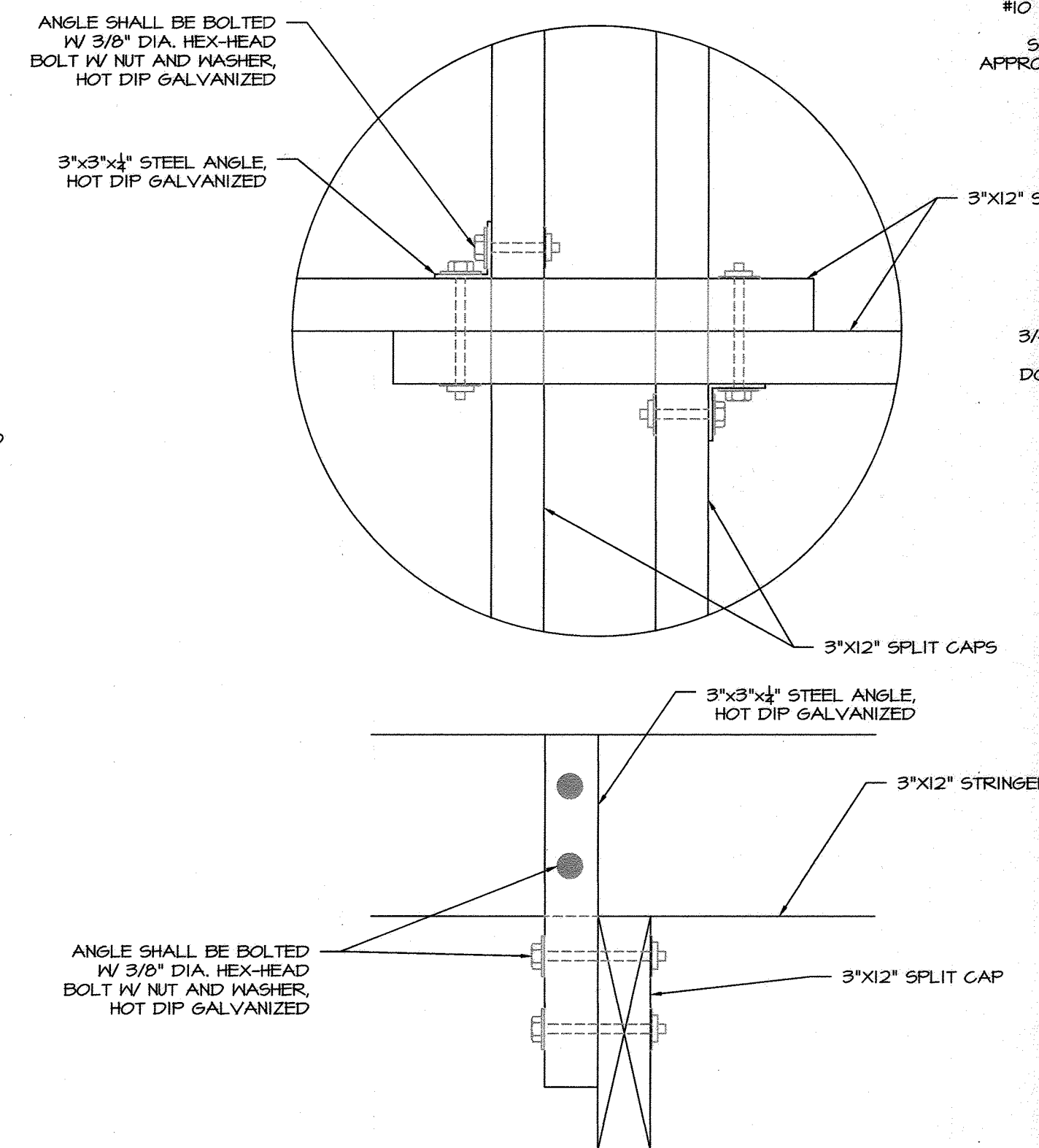
NOTES:

- ALL PILES SHALL BE 12" DIA. TIMBER TYPE 'B' AND TREATED W/ 2.5 CCA
- ALL DIMENSIONAL LUMBER SHALL BE NO.1 SYP
 - STRUCTURAL LUMBER SHALL BE TREATED W/ 1.0 CCA
 - DECKING, POSTS, & CAPS SHALL BE TREATED W/ 0.06 CA-C
- ALL HARDWARE SHALL BE HOT DIPPED GALVANIZED (GALV.) OR 305 STAINLESS STEEL (S.S.) AS NOTES ON PLANS
- ALL EXPOSED HARDWARE SHALL BE COUNTERSUNK



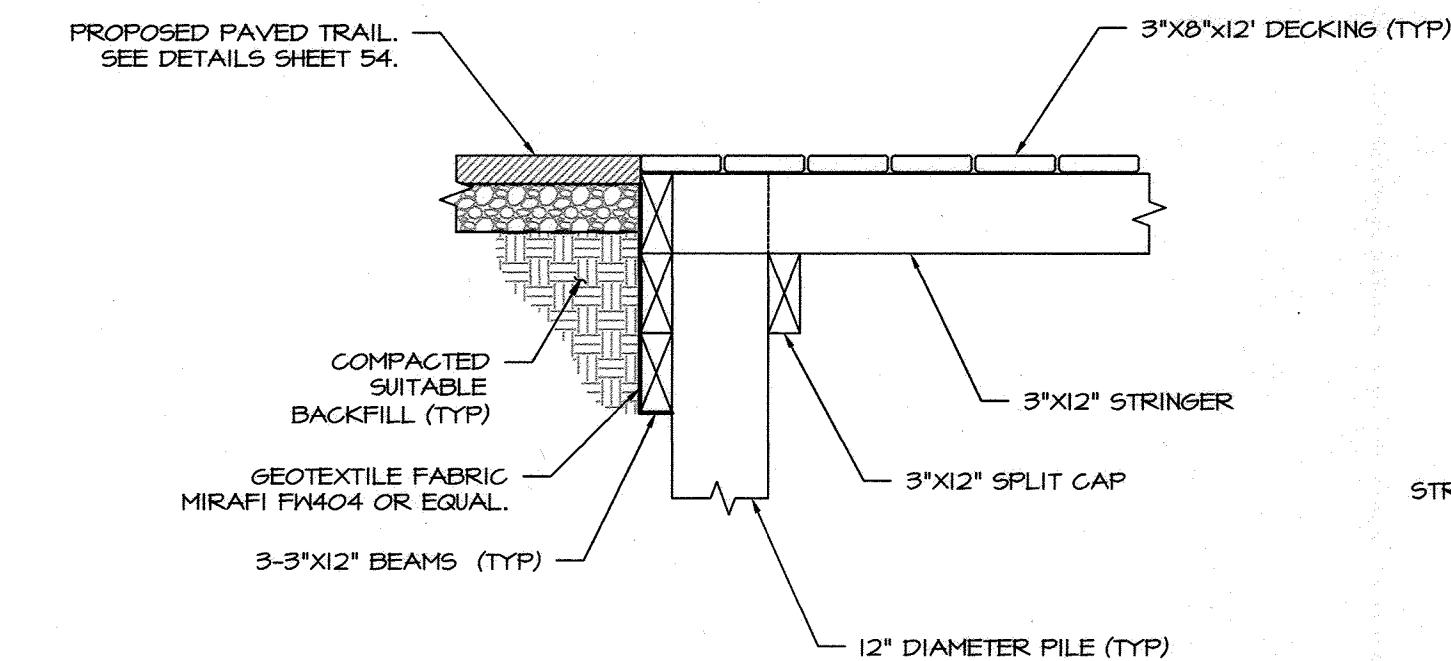
SUPPORT CONNECTION DETAIL

NOT TO SCALE



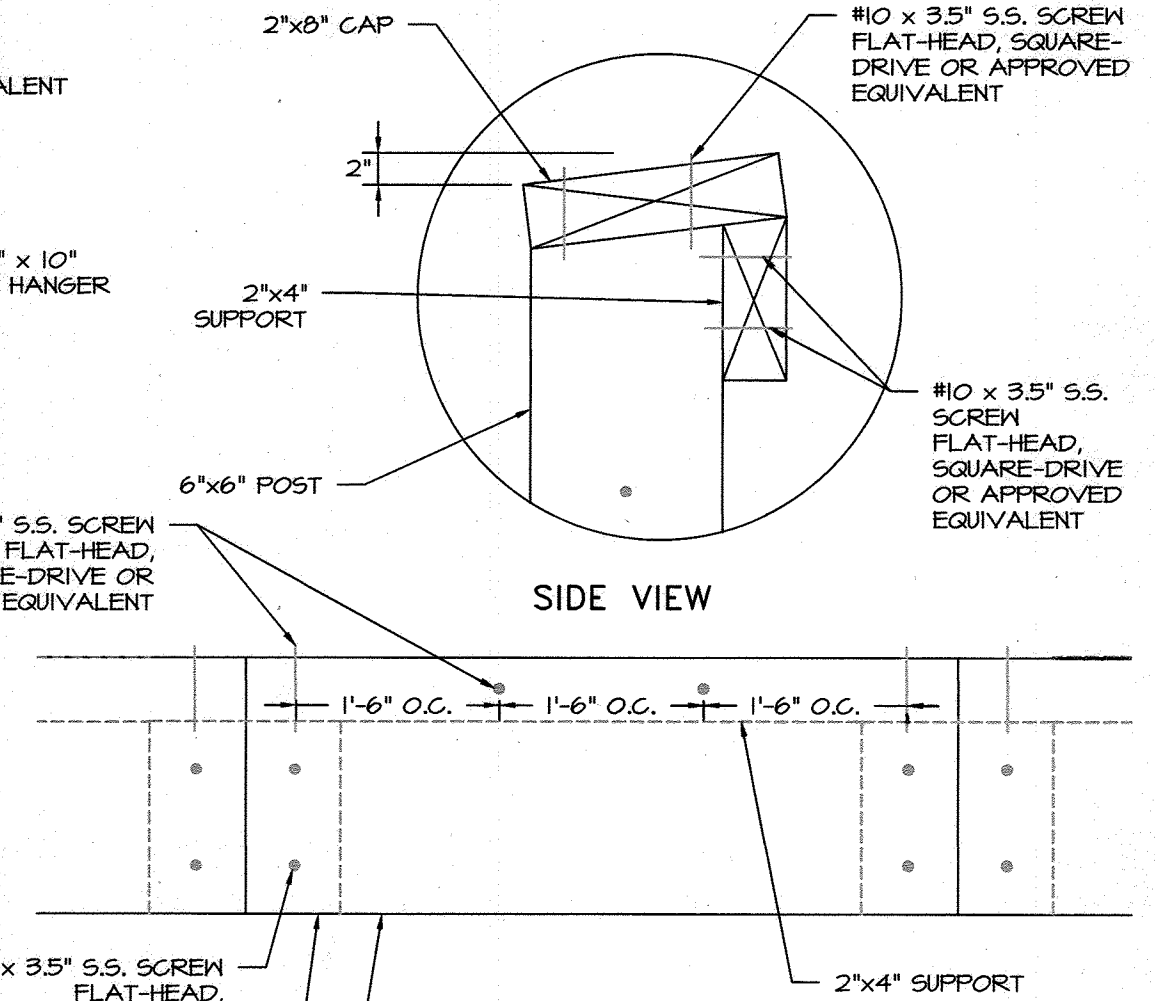
STEEL STRAP DETAIL

NOT TO SCALE



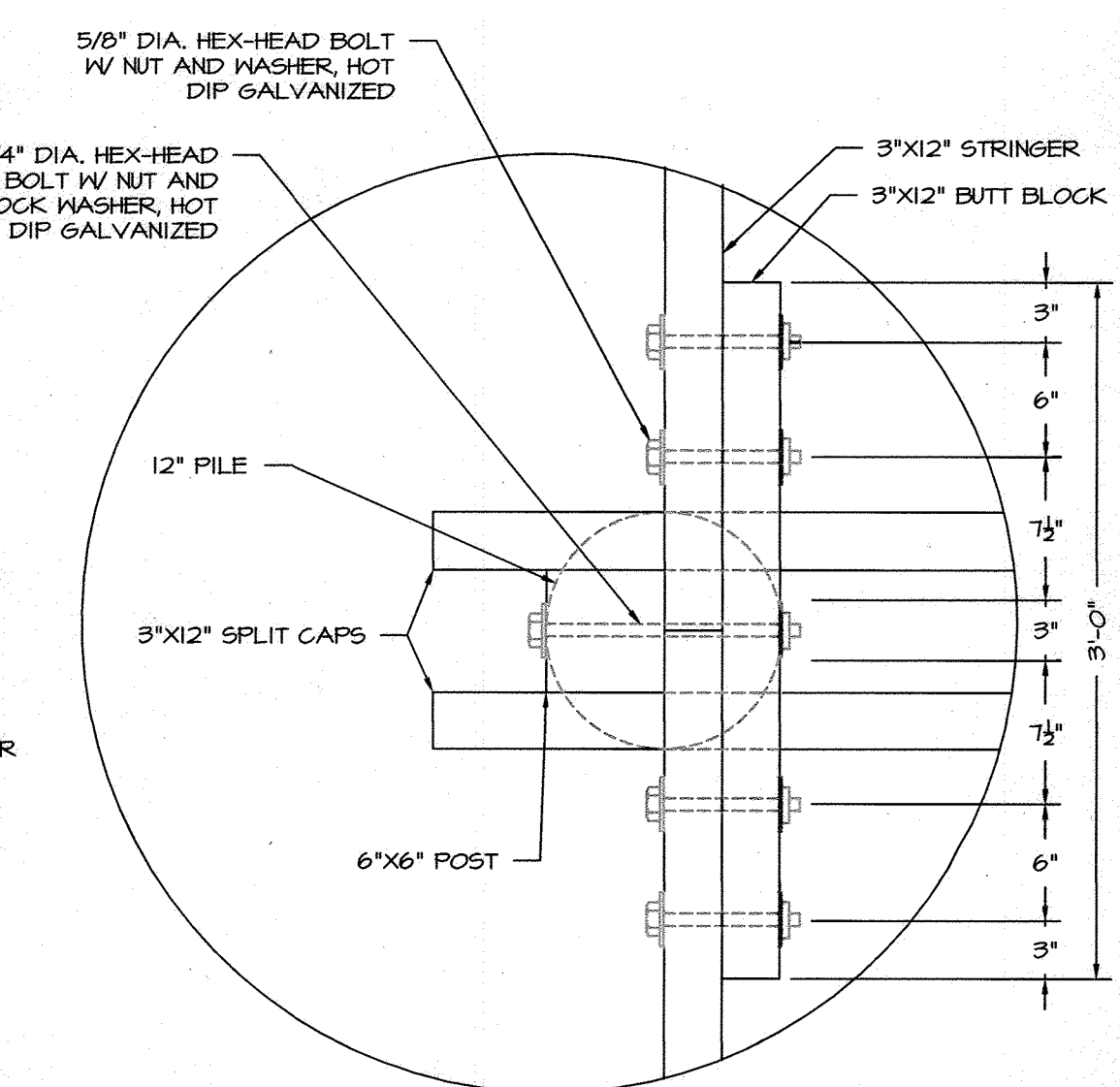
BOARDWALK TO PAVED TRAIL TRANSITION

SCALE 1" = 2'



CAPPING DETAIL

NOT TO SCALE



BUTT BLOCK DETAIL

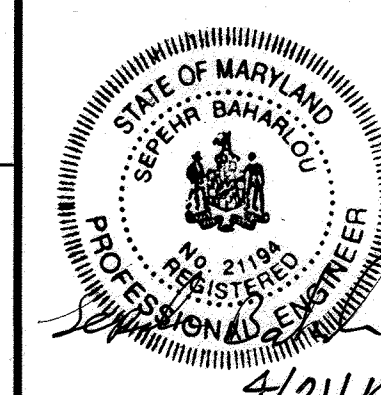
NOT TO SCALE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

| | |
|--|--------------|
| Chief, Development Engineering Division <i>HSP</i> | Date 5-9-14 |
| Chief, Division of Land Development <i>DRG</i> | Date 6-09-14 |
| Director <i>Mark A. Layton</i> | Date 6/5/14 |

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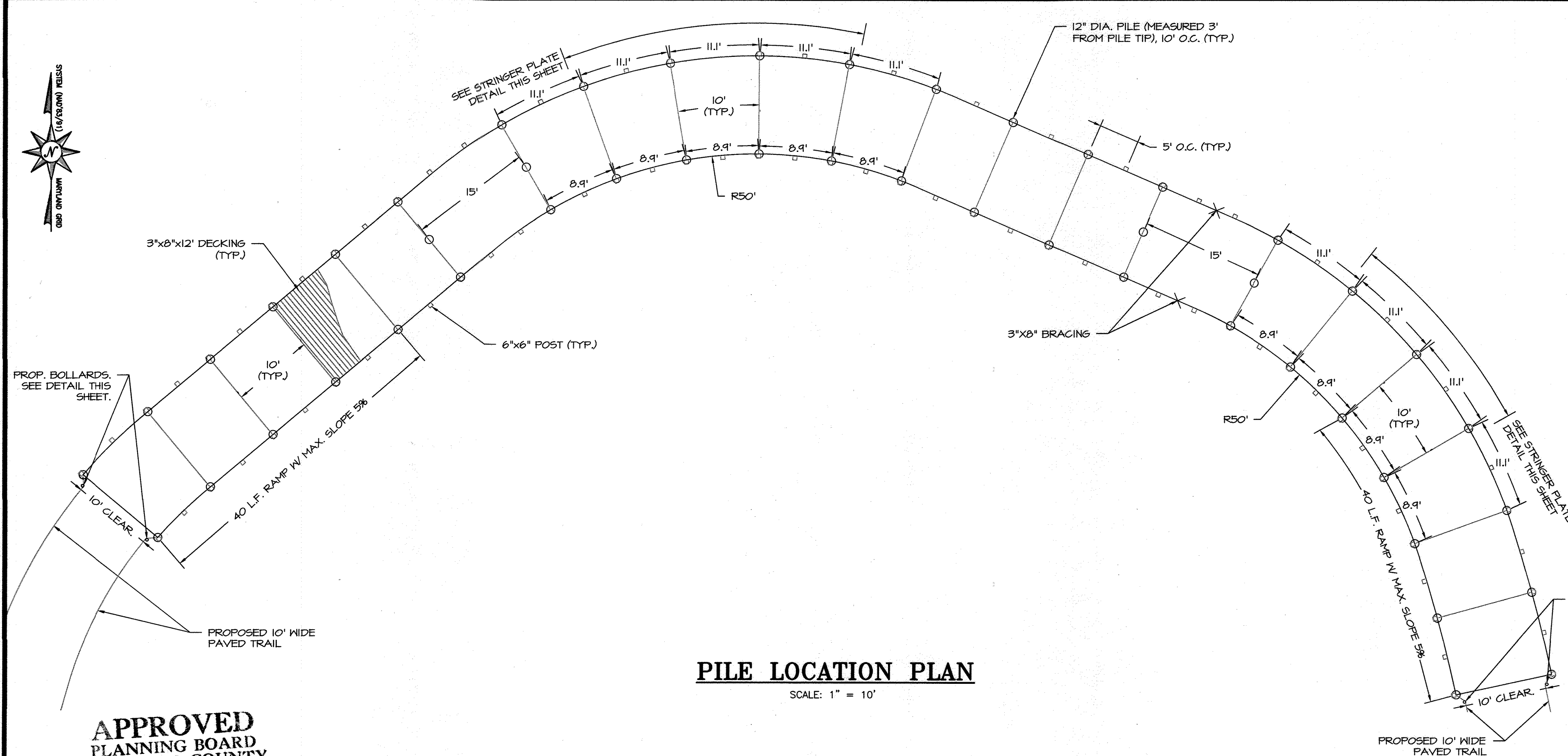


REVISED SITE DEVELOPMENT PLAN

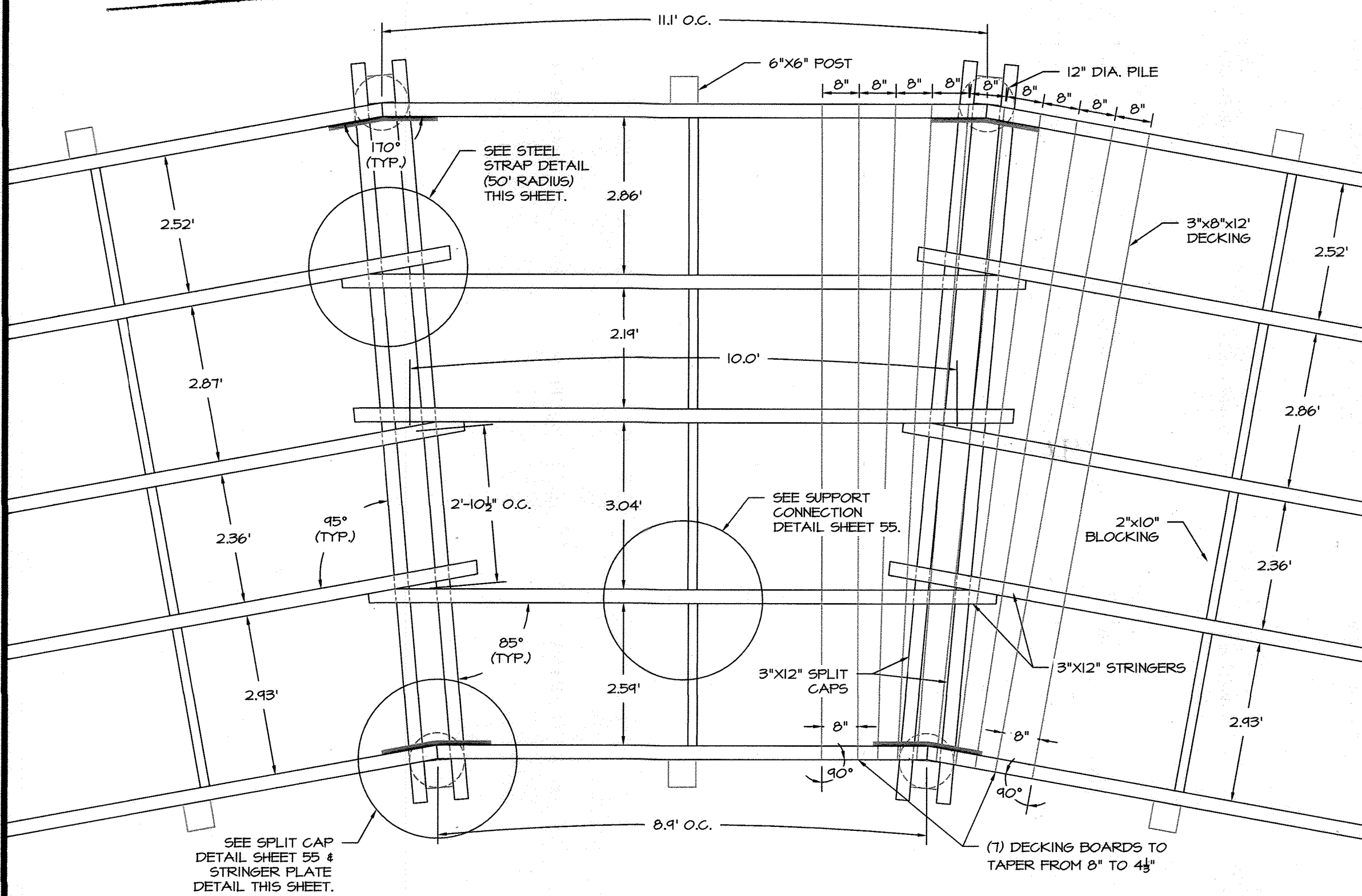
LAKE KITTAMAQUUNDI MULTIUSE TRAIL BOARDWALK DETAILS

| REVISIONS | | | SCALE: AS-SHOWN | |
|-----------|----|-------------|----------------------------------|-----------------|
| DATE | BY | DESCRIPTION | DRAWN BY: MKB | DATE: 04/21/14 |
| | | | CHECKED BY: SB | DATE: 4/21/2014 |
| | | | DESIGNED BY: MKB | DATE: 04/21/14 |
| | | | DRAWING K-09, SHEET NO. 55 OF 02 | |

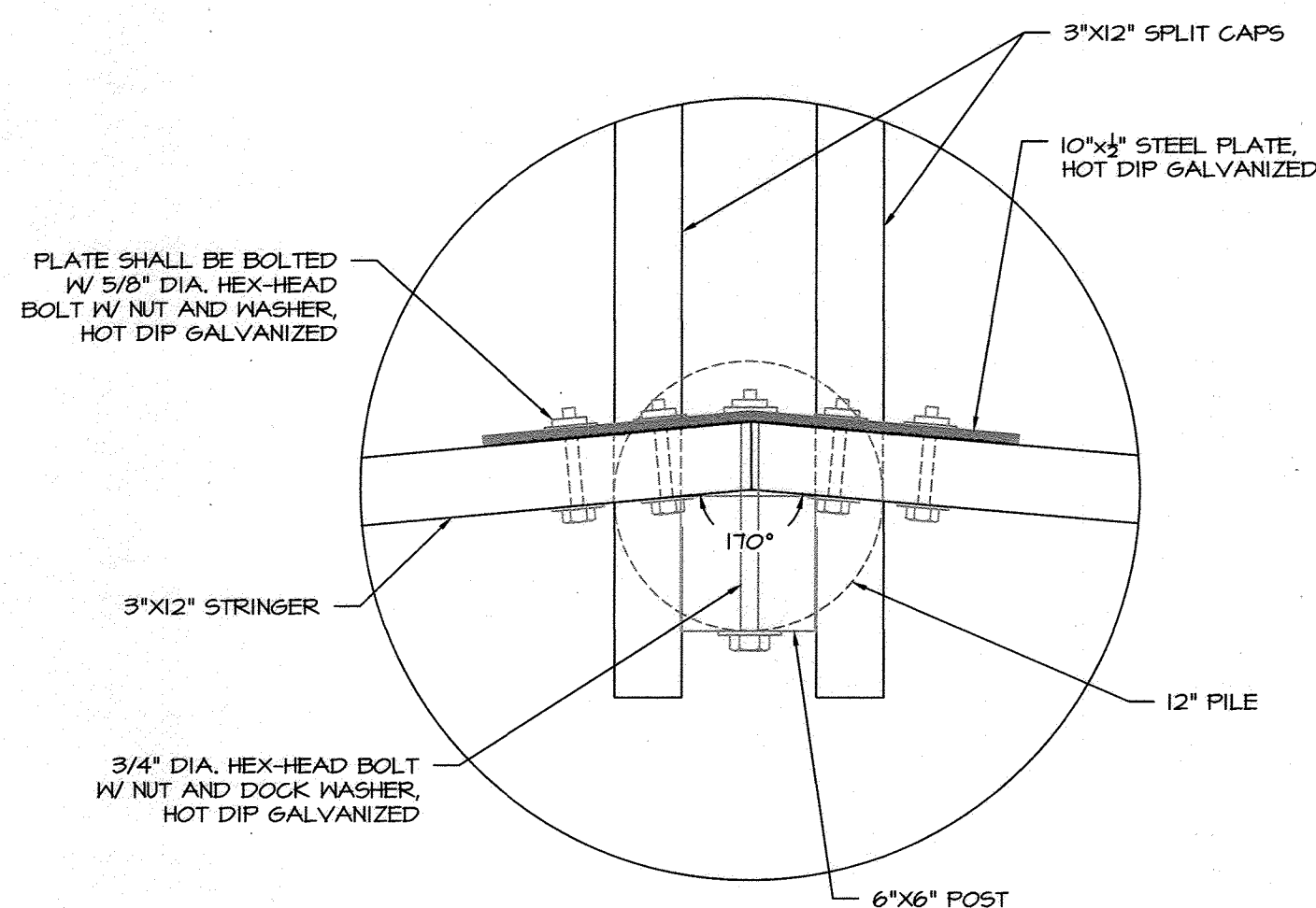
SDP-08-108



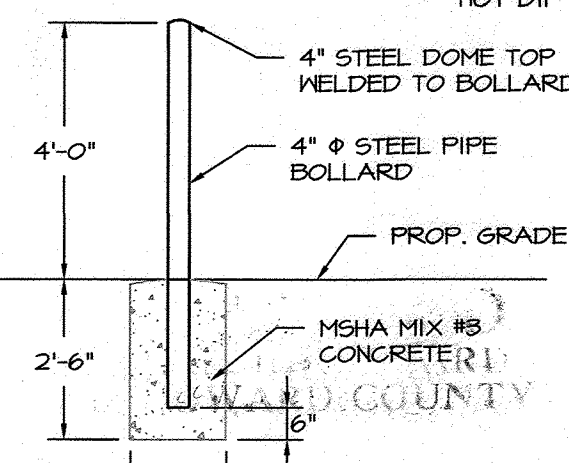
APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 6/5/2014



BOARDWALK DECKING PLAN (50' INSIDE RADIUS)
SCALE: 1" = 2'

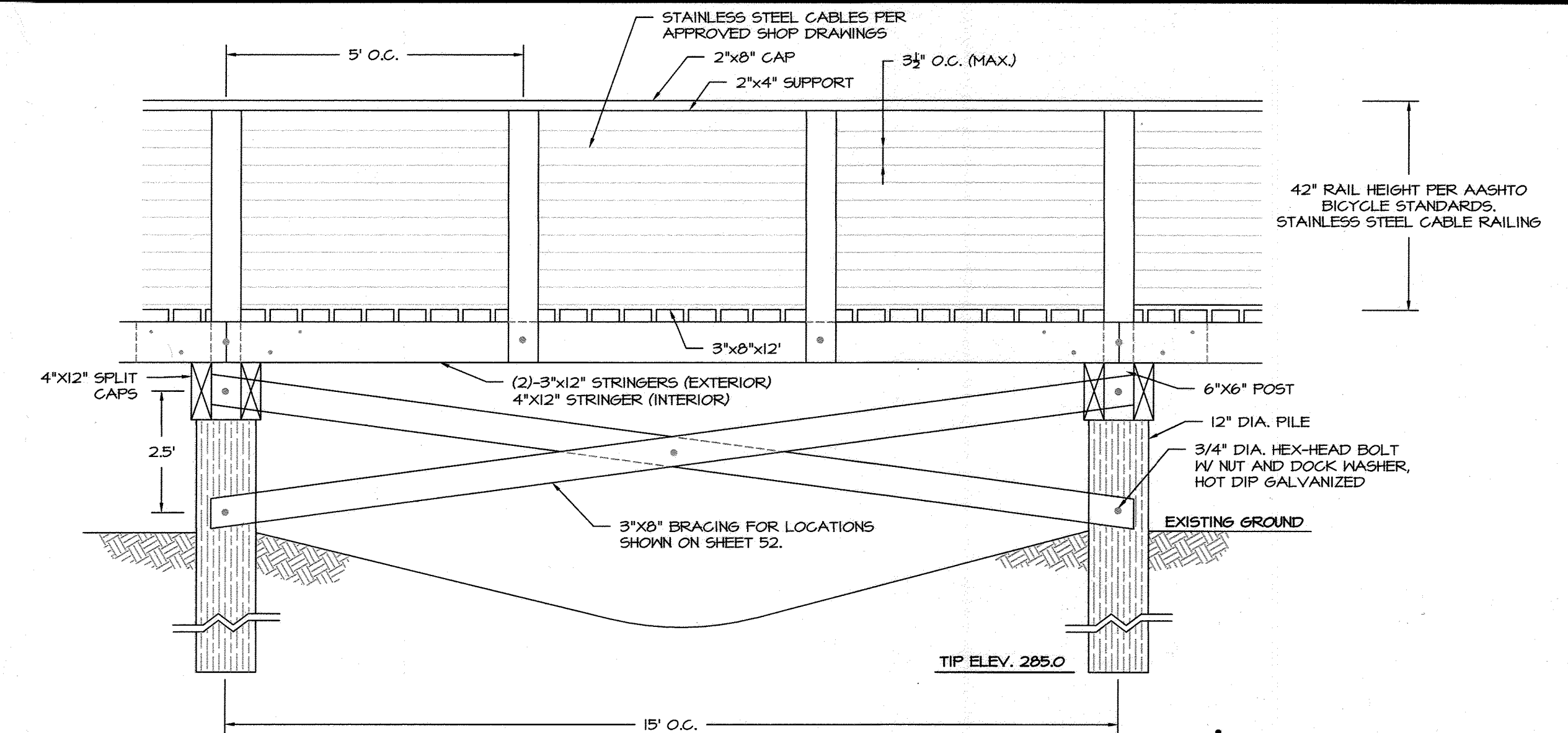


STRINGER PLATE DETAIL
NOT TO SCALE

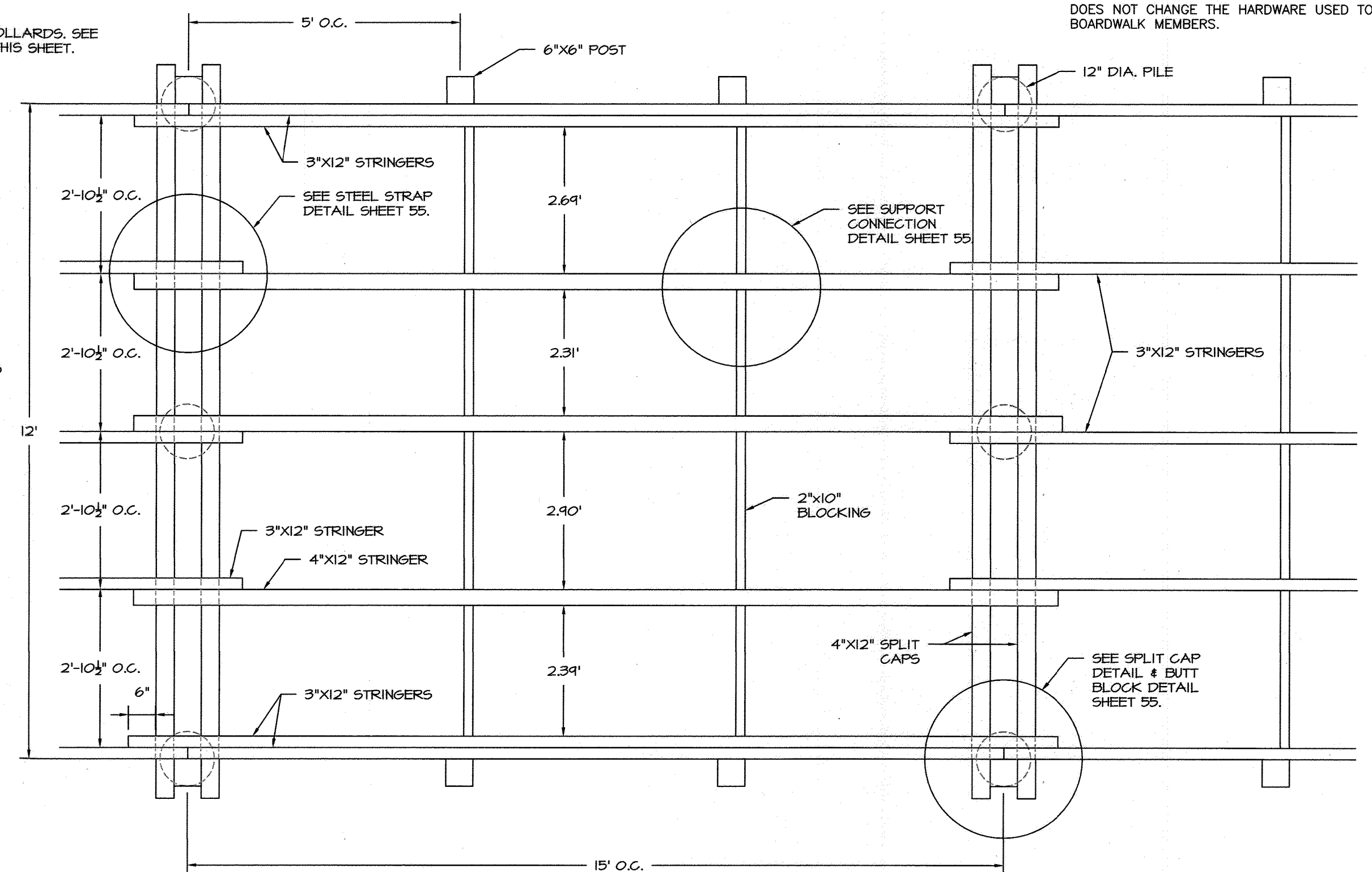


BOLLARD DETAIL
NOT TO SCALE

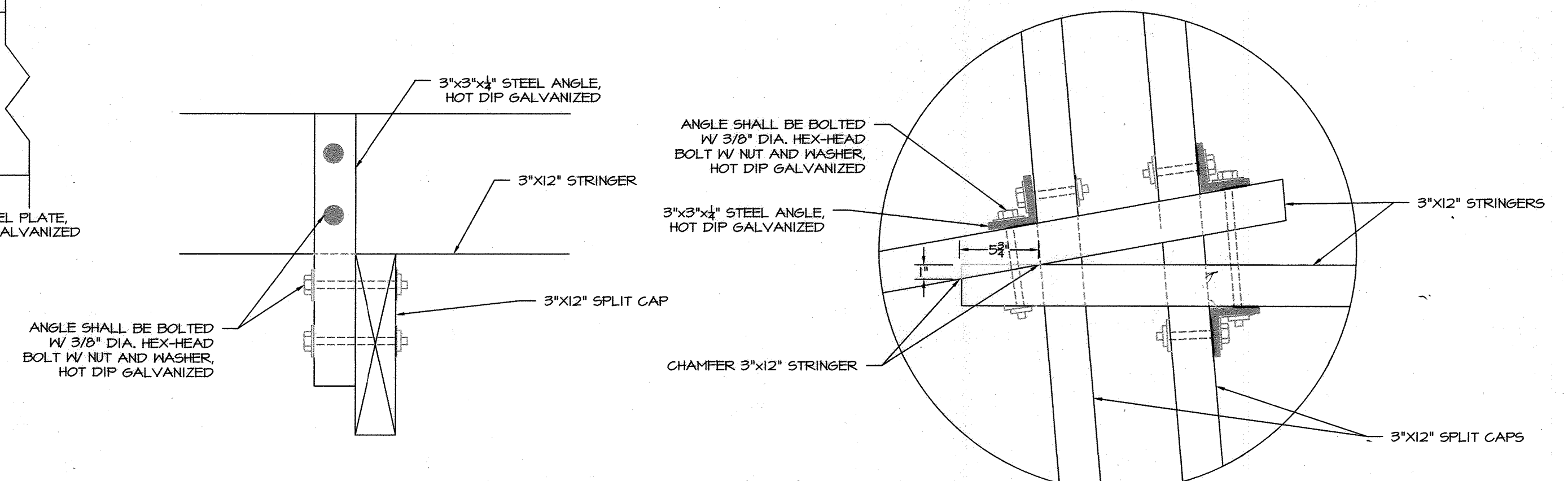
- NOTES:
1. ALL PIPE TO BE STANDARD HEIGHT AS PER AISC MANUAL.
 2. ALL EXPOSED METAL SURFACES SHALL BE PAINTED WITH GALVANIZED PAINT - ONE COAT METAL PRIMER AND TWO COATS STANDARD SAFETY YELLOW # 4540 METAL ENAMEL.



BOARDWALK SIDE VIEW (15' O.C. PILES)
SCALE: 1" = 2'



BOARDWALK DECKING PLAN (15' O.C. PILES)
SCALE: 1" = 2'



STEEL STRAP DETAIL (50' RADIUS)
NOT TO SCALE

REVISED SITE DEVELOPMENT PLAN

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division *HP*

Chief, Division of Land Development *DMG*

Director *Mark A. Coughlin*

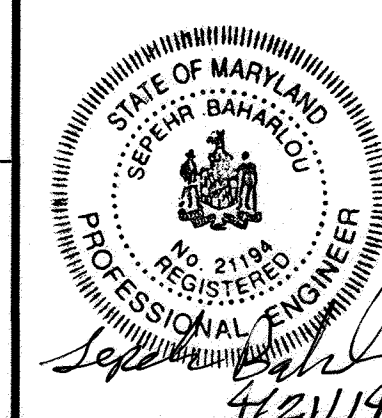
Date 5.9.14

Date 6.09.14

Date 6/5/14

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COLUMBIA, MD 21046
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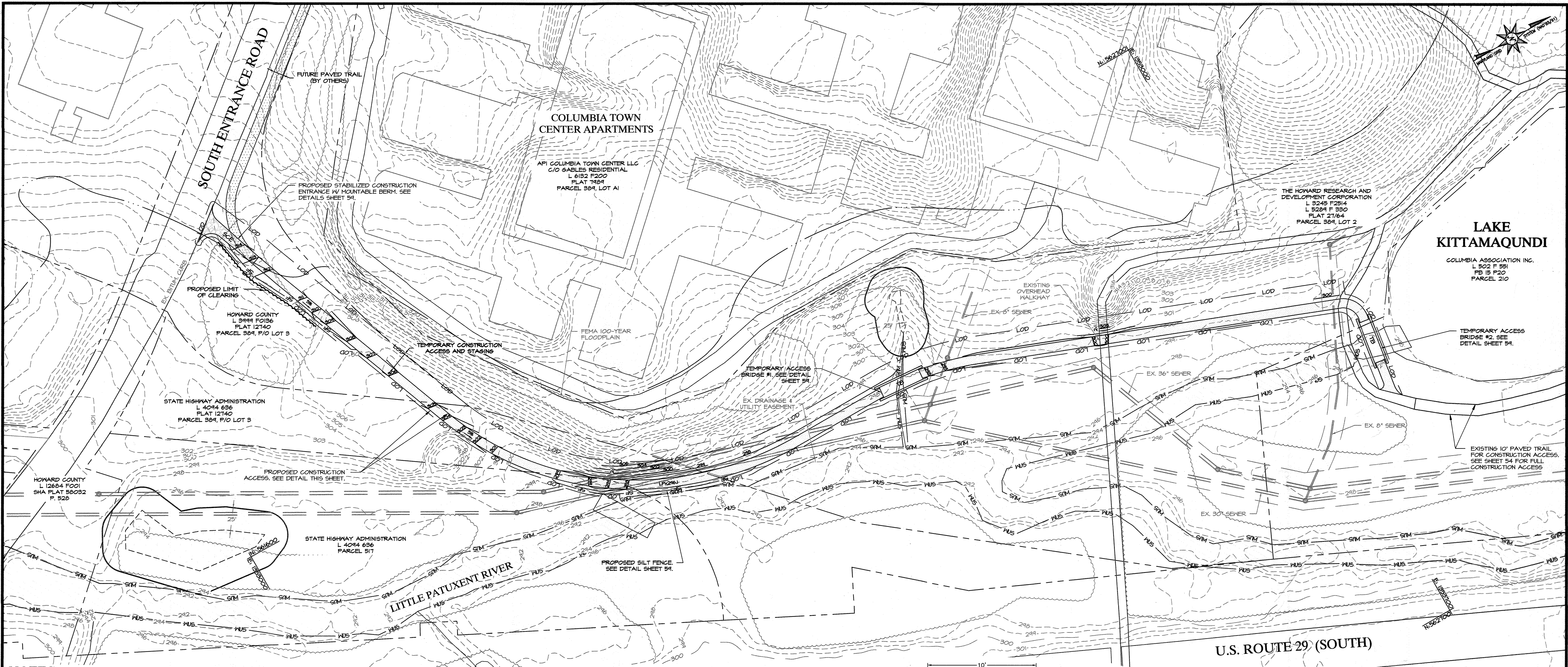
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Email: bayland@baylandinc.com
Website: http://www.baylandinc.com



LAKE KITTAMAQUUNDI MULTIUSE TRAIL BOARDWALK DETAILS

| REVISIONS | | SCALE: AS-SHOWN | |
|-----------|----|-----------------|--|
| DATE | BY | DESCRIPTION | |
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SDP-08-108



NOTES

- THE ENTIRE LIMITS OF DISTURBANCE ARE WITHIN THE 100-YEAR FLOODPLAIN AND STOCKPILES ARE NOT PERMITTED WITHIN THE 100-YEAR FLOODPLAIN; THEREFORE, THE CONTRACTOR IS RESPONSIBLE FOR HAULING AWAY ALL EXCAVATED MATERIAL BY THE END OF EACH WORKING DAY. FOR DAILY STOCKPILES, THE CONTRACTOR SHALL PILE EXCAVATED MATERIAL WITHIN THE LIMITS OF DISTURBANCE AND THE STOCKPILE SHALL BE PROTECTED WITH SILT FENCE TO ENSURE SEDIMENT LADEN RUNOFF DOES NOT DISCHARGE FROM THE LIMITS OF DISTURBANCE.
- THE CONTRACTOR SHALL REPLACE SILT FENCE WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- THE CONTRACTOR MAY SUBSTITUTE SILT FENCE WITH FILTER LOGS IN THE VICINITY OF WETLAND AND/OR TREE AREAS. THE CONTRACTOR SHALL REPLACE SILT FENCE WITH FILTER LOGS AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

SEQUENCE OF CONSTRUCTION

PRE-CONSTRUCTION

- OBTAIN A GRADING PERMIT FROM HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS.
- THE CONTRACTOR SHALL NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, SEDIMENT CONTROL INSPECTOR AT (410) 901-4020 AT LEAST 48 HOURS BEFORE COMMENCING WORK. WORK MAY NOT COMMENCE UNTIL THE PERMITTEE OR THE RESPONSIBLE PERSONNEL HAVE MET ON SITE WITH THE SEDIMENT AND EROSION CONTROL INSPECTOR TO REVIEW THE APPROVED PLANS.

PHASE I: STABILIZED CONSTRUCTION ACCESS

- CLEAR AND GRUB FOR THE INSTALLATION OF THE SEDIMENT AND EROSION CONTROL DEVICES.
- INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AND SILT FENCE.
- BEGIN EXCAVATION AND GRADING FOR THE CONSTRUCTION ACCESS ROAD AND INSTALL THE STONE BASE. THE CONTRACTOR SHALL ONLY EXCAVATE AND GRADE A LENGTH THAT CAN BE STABILIZED AT THE END OF EACH WORKING DAY. THE SILT FENCE IS A PRECAUTIONARY MEASURE TO ENSURE EXCAVATED MATERIALS DO NOT ENTER THE LITTLE PATUXENT RIVER AND WORK IN THIS AREA SHALL BE STABILIZED AT THE END OF EACH WORKING DAY.
- AS CONSTRUCTION PROGRESS TOWARD THE EXISTING INTERMITTENT CHANNEL, INSTALL TEMPORARY ACCESS BRIDGE #1 AND CONTINUE EXCAVATION AND STONE BASE INSTALLATION TOWARD LAKE KITTAMAQUUNDI.
- INSTALL TEMPORARY ACCESS BRIDGE #2.
- COMPLETE CONSTRUCTION ACCESS ROAD, STONE BASE INSTALLATION AND TIE INTO EXISTING PAVED TRAIL.
- WITH SEDIMENT CONTROL INSPECTOR'S APPROVAL, REMOVE THE SILT FENCE AND PERMANENTLY STABILIZE ANY DISTURBED AREAS. THE STABILIZED CONSTRUCTION ENTRANCE AND TEMPORARY ACCESS BRIDGES SHALL REMAIN FOR PHASE II CONSTRUCTION.

SUMMARY OF ESC QUANTITIES

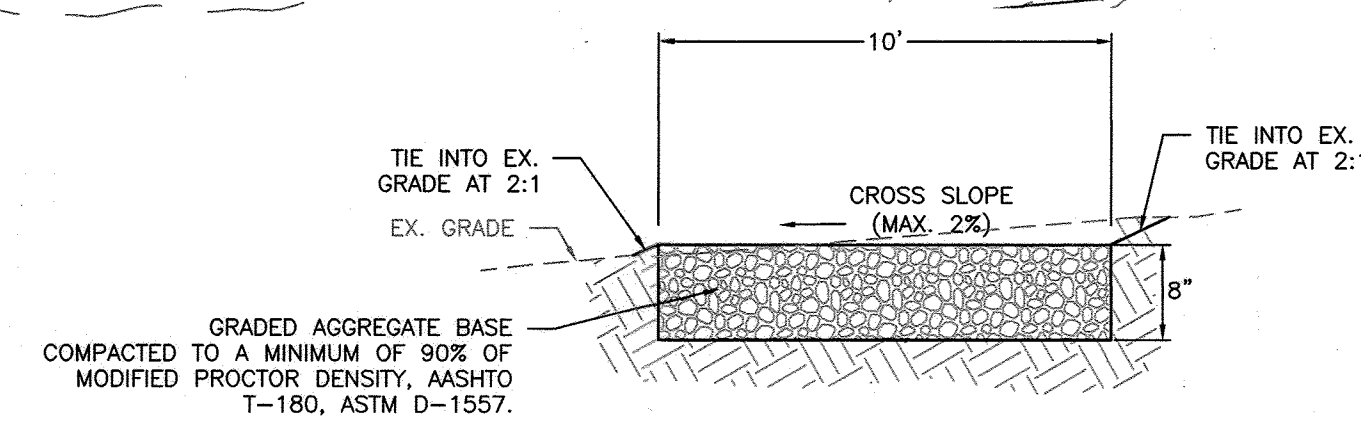
PHASE I

| | |
|----------------------------------|----------|
| STABILIZED CONSTRUCTION ENTRANCE | 1 EA |
| MOUNTABLE BERM | 1 EA |
| TEMPORARY ACCESS BRIDGE | 2 EA |
| SILT FENCE | 300 L.F. |

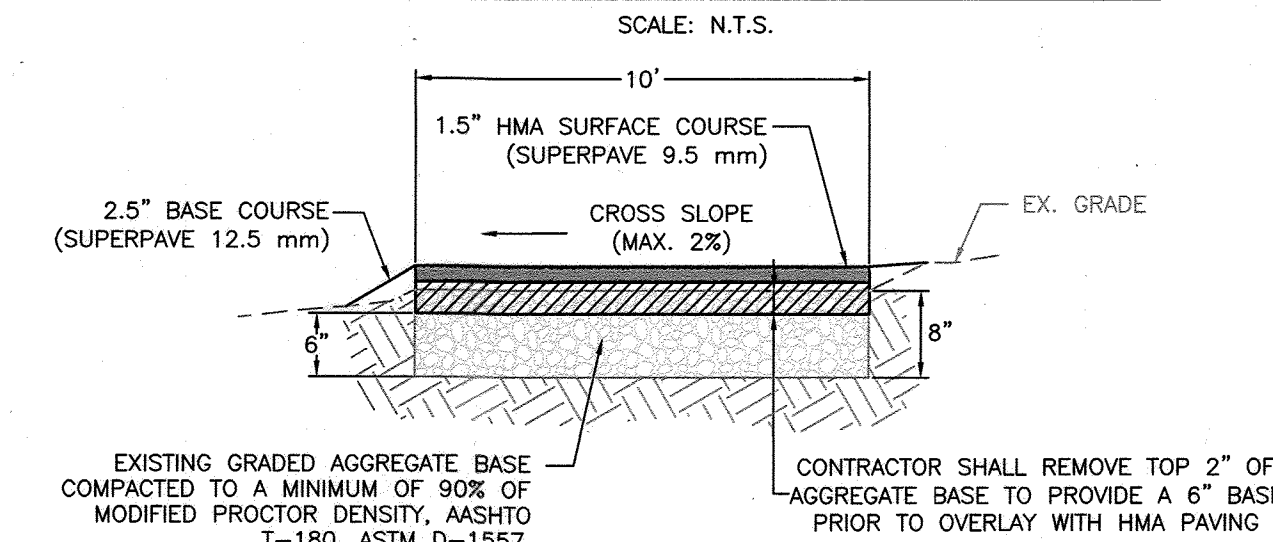
NOTE: THIS SUMMARY OF SEDIMENT CONTROL QUANTITIES IS FOR USE BY THE HOWARD SOIL CONSERVATION DISTRICT ONLY. THIS SUMMARY IS NOT INTENDED TO BE USED BY THE CONTRACTOR FOR ESTIMATING AND BIDDING PURPOSES.

PHASE II: LAKE KITTAMAQUUNDI MULTIUSE TRAIL

- CLEAR AND GRUB FOR THE INSTALLATION OF THE SEDIMENT AND EROSION CONTROL DEVICES.
- INSTALL THE SILT FENCE AND TEMPORARY ACCESS BRIDGE #3 AS SHOWN ON THE APPROVED CONSTRUCTION DRAWINGS.
- INSTALL TURBIDITY CURTAIN AND CONSTRUCT PROPOSED IMBRICATED RIPRAP WALL. FOLLOWING THE CONSTRUCTION AND WITH THE SEDIMENT CONTROL INSPECTOR'S APPROVAL, REMOVE THE TURBIDITY CURTAIN.
- INSTALL BOARDWALK PILES AND CONSTRUCT THE BOARDWALK AND ASSOCIATED RAILINGS. CONTRACTOR SHALL TRIM TREE BRANCHES AS NECESSARY FOR ACCESS AND CONSTRUCTION.
- BEGIN PAVING OVERLAY AND FULL DEPTH WIDENING FOR THE EXISTING 8' WIDE TO 10' WIDE GRAVEL TRAIL (STA. 123+85 TO STA. 126+00). ALL NECESSARY TRAIL WIDENING SHALL OCCUR SOUTHEAST SIDE OF THE TRAIL WHICH IS THE FAR SIDE FROM THE WETLANDS. THE CONTRACTOR SHALL USE CAUTION IN THIS AREA AS TO NOT DISTURB THE EXISTING NON-TIDAL WETLAND.
- BEGIN EXCAVATION FOR THE FULL DEPTH PAVING TRAIL (STA. 100+15.57 TO STA. 105+00 AND STA. 118+07 TO STA. 123+85) AND INSTALL PAVING SECTION.
- BEGIN PAVING OVERLAY THE EXISTING GRAVEL TRAIL (STA. 105+00 TO STA. 115+87). THE CONTRACTOR SHALL ONLY DISTURB AN AREA THAT CAN BE STABILIZED AT THE END OF EACH WORKING DAY.
- WITH SEDIMENT CONTROL INSPECTOR'S APPROVAL, REMOVE ALL REMAINING SEDIMENT CONTROLS, INCLUDING PHASE I SEDIMENT CONTROLS, AND PERMANENTLY STABILIZE ANY DISTURBED AREAS. THE CONSTRUCTION ACCESS ROAD SHALL REMAIN AND WILL BE PAVED BY OTHERS.



CONSTRUCTION ACCESS DETAIL



ULTIMATE PAVED TRAIL DETAIL (BY OTHERS)

SCALE: N.T.S.

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 AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Sepehr Baharloo
SIGNATURE OF ENGINEER
SEPEHR BAHARLOO
PRINTED NAME
4/21/14
DATE

DEVELOPER'S CERTIFICATION

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, 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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

Dennis Matley
SIGNATURE OF DEVELOPER
Dennis Matley
PRINTED NAME
4.24.14
DATE

HOWARD SOIL CONSERVATION DISTRICT

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

John R. Robertson
SIGNATURE
HOWARD SOIL CONSERVATION DISTRICT
4/29/14
DATE

REVISED SITE DEVELOPMENT PLAN

LAKE KITTAMAQUUNDI MULTIUSE TRAIL EROSION AND SEDIMENT CONTROL PLAN

| REVISIONS | | | SCALE: 1" = 50' | |
|----------------------------------|----|-------------|------------------|-----------------|
| DATE | BY | DESCRIPTION | DRAWN BY: MKB | DATE: 04/21/14 |
| | | | CHECKED BY: SB | DATE: 4/21/2014 |
| | | | DESIGNED BY: MKB | DATE: 04/21/14 |
| DRAWING K-11, SHEET NO. 57 OF 62 | | | | |

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Chubb
Chief, Development Engineering Division HSP
Date 5-9-14
Kat Shalosh
Chief, Division of Land Development
Date 6-09-14
Mark J. Long
Director
Date 6/9/14

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE 6/5/2014

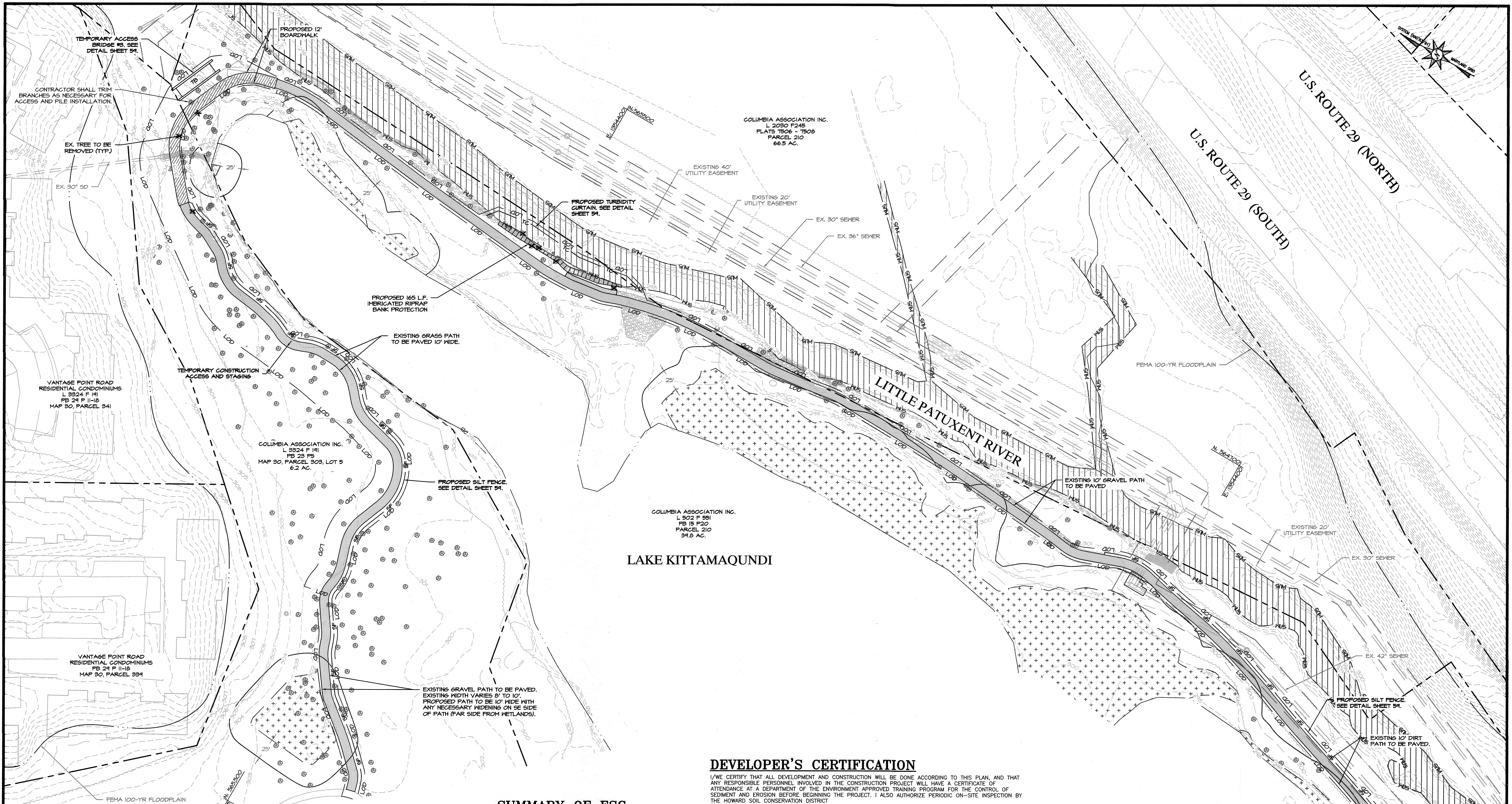
0 25 50 100
1 inch = 50 Feet

Columbia Association
10221 WINCOPIN CIRCLE #100
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BayLand Consultants & Designers, Inc.
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Email: bayland@baylandinc.com
Website: http://www.baylandinc.com
BAYLAND JOB NO. 8-16202



2.8.16.2012 LAKE KITTAMAQUUNDI MULTIUSE TRAIL CAD Files (Sheet Files) 8-16202-ESG01



APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 6/5/2014

SUMMARY OF ESC QUANTITIES

| | |
|-------------------------|----------|
| PHASE II | |
| SILT FENCE | 1,310 LF |
| TURBIDITY CURTAIN | 200 LF |
| TEMPORARY ACCESS BRIDGE | 1 EA |

NOTE: THIS SUMMARY OF SEDIMENT CONTROL QUANTITIES IS FOR USE BY THE HOWARD SOIL CONSERVATION DISTRICT ONLY. THIS SUMMARY IS NOT INTENDED TO BE USED BY THE CONTRACTOR FOR ESTIMATING AND BIDDING PURPOSES.

DEVELOPER'S CERTIFICATION

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, 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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT

D. Matley 4.24.14
SIGNATURE OF DEVELOPER DATE

Dennis Matley
PRINTED NAME

HOWARD SOIL CONSERVATION DISTRICT

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

John R. Polster 4/29/14
HOWARD SOIL CONSERVATION DISTRICT DATE

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 AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Sepehr Baharloo 4/21/14
SIGNATURE OF ENGINEER DATE

SEPEHR BAHARLOO
PRINTED NAME

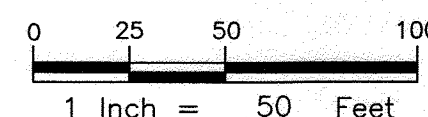
REVISED SITE DEVELOPMENT PLAN

LAKE KITTAMAQUUNDI MULTIUSE TRAIL EROSION AND SEDIMENT CONTROL PLAN

| REVISIONS | | SCALE: 1" = 50' | |
|-----------|----|-----------------|--------------------------------------|
| DATE | BY | DESCRIPTION | |
| | | | DRAWN BY: MKB DATE: 04/21/14 |
| | | | CHECKED BY: SB DATE: 4/21/2014 |
| | | | DESIGNED BY: MKB DATE: 04/21/14 |
| | | | DRAWING K-12, SHEET NO. 58 OF 62 |

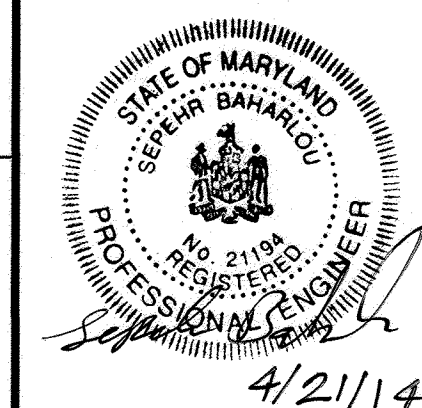
APPROVED: DEPARTMENT OF PLANNING AND ZONING

| | |
|--|---------------------|
| <u>Chief, Development Engineering Division</u> HSP | Date <u>5-9-14</u> |
| <u>Chief, Division of Land Development</u> SPB | Date <u>6-09-14</u> |
| <u>Director</u> H. Long U. | Date <u>6/9/14</u> |



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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 (313-1855).
- 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 THEREOF.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, FOR PERMANENT STABILIZATION (SEC. B-4-4), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). 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:

| | 2.87 | ACRES |
|------------------------------------|------|----------|
| TOTAL AREA OF SITE AREA DISTURBED | 0.88 | ACRES |
| AREA TO BE ROOFED OR PAVED | 1.99 | ACRES |
| AREA TO BE VEGETATIVELY STABILIZED | 620 | CU. YDS. |
| TOTAL CUT | 0 | CU. YDS. |
| TOTAL FILL | | |
| OFFSITE WASTE/BORROW LOCATION | | |
- ANY SEDIMENT CONTROL PRACTICE THAT 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 REQUIRED BEFORE COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROL, 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 SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
- ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.
- A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY, UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY. NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

TOPSOIL SPECIFICATIONS

- TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.
- TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.
- TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
 - THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
 - THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
 - THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
 - THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
- AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
- TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
 - TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CHINDERS, STONES, SLAGS, CEMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2 INCHES IN DIAMETER.
 - TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
 - TOPSOIL SUBSTITUTES OR AMENDMENTS AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.
- TOPSOIL APPLICATION
 - EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
 - UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
 - TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

| TEMPORARY SEEDING SUMMARY | | | | | |
|--------------------------------------|-----------------|--------------------------|---------------------------|----------------------------|--|
| HARDINESS ZONE (FROM FIGURE B.3): 6b | | | | FERTILIZER RATE (10-20-20) | |
| SEED MIXTURE (FROM TABLE B.1) | | | | LIME RATE | |
| NO. | SPECIES | APPLICATION RATE (lb/ac) | SEEDING DATES | SEEDING DEPTHS | |
| 1 | ANNUAL RYEGRASS | 40 (1lb/1000 sf) | 3/1 - 5/15 8/1 - 10/15 | 0.5" | |
| 2 | BARLEY | 96 (2.2lb/1000 sf) | 3/1 - 5/15 8/1 - 10/15 | 0.5" | |
| 3 | OATS | 72 (1.7lb/1000 sf) | 3/1 - 5/15 8/1 - 10/15 | 0.5" | |
| 4 | RYE | 112 (2.8lb/1000 sf) | 3/1 - 5/15 8/1 - 10/15 | 0.5" | |
| 5 | FOXTAIL MILLET | 30 (0.7lb/1000 sf) | 5/16 - 7/31 | 0.5" | |

NOTES:

- SEEDING RATES FOR THE WARM-SEASON GRASSES ARE IN POUNDS OF PURE LIVE SEED (PLS). ACTUAL PLANTING RATES SHALL BE ADJUSTED TO REFLECT PERCENT SEED GERMINATION AND PURITY, AS TESTED. ADJUSTMENTS ARE USUALLY NOT NEEDED FOR THE COOL-SEASON GRASSES. SEEDING RATES LISTED ABOVE ARE FOR PLANTED SEEDINGS. WHEN PLANTING AS A NURSE CROP WITH PERMANENT SEED MIXES, USE 1/3 OF THE SEEDING RATE LISTED ABOVE FOR BARLEY, OATS, AND WHEAT. FOR SMALLER-SEEDED GRASSES (ANNUAL RYEGRASS, PEARL MILLET, FOXTAIL MILLET), DO NOT EXCEED MORE THAN 5% (BY WEIGHT) OF THE OVERALL PERMANENT SEEDING MIX. CEREAL RYE GENERALLY SHOULD NOT BE USED AS A NURSE CROP, UNLESS PLANTING WILL OCCUR IN VERY LATE FALL BEYOND THE SEEDING DATES FOR OTHER TEMPORARY SEEDINGS. CEREAL RYE HAS ALLELOPATHIC PROPERTIES THAT INHIBIT THE GERMINATION AND GROWTH OF OTHER PLANTS. IF IT MUST BE USED AS A NURSE CROP, SEED AT 1/3 OF THE RATE LISTED ABOVE. OATS ARE THE RECOMMENDED NURSE CROP FOR WARM-SEASON GRASSES.

- FOR SANDY SOILS, PLANT SEEDS AT TWICE THE DEPTH LISTED ABOVE.
- THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division HSP
Chief, Division of Land Development Drgt
Director h.k. Long

STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

- SEEDING
 - SPECIFICATIONS
 - ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.
 - MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS.
 - INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
 - SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.
 - APPLICATION
 - DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
 - INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.
 - APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
 - DRILL OR CUTLIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
 - CUTLIPACKER SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.
 - APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
 - HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).
 - IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P205 (PHOSPHOROUS), 200 POUNDS PER ACRE; K20 (POTASSIUM), 200 POUNDS PER ACRE.
 - LIME: USE ONLY GRADE AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
 - MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
 - WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.
- MULCHING
 - MULCH MATERIALS (IN ORDER OF PREFERENCE)
 - STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARKED SEED LAW AND NOT MUSTY, MOLLY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
 - WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
 - WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMITY SPREAD SLURRY.
 - WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
 - WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
 - WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
 - WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.
 - APPLICATION
 - APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
 - WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE RATE TO 2.5 TONS PER ACRE.
 - WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
 - ANCHORING
 - PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:
 - A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.
 - WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
 - SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAC II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.
 - LIGHTWEIGHT PLASTIC NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

- IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P205 (PHOSPHOROUS), 200 POUNDS PER ACRE; K20 (POTASSIUM), 200 POUNDS PER ACRE.
- LIME: USE ONLY GRADE AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
- MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
- WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

- STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARKED SEED LAW AND NOT MUSTY, MOLLY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
- WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
- WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMITY SPREAD SLURRY.
- WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
- WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
- WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
- WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.

| PERMANENT SEEDING SUMMARY | | | | | |
|--------------------------------------|--|--------------------------|------------------------|----------------------------|-------------------------------|
| HARDINESS ZONE (FROM FIGURE B.3): 6b | | | | FERTILIZER RATE (10-20-20) | |
| SEED MIXTURE (FROM TABLE B.3) | | | | LIME RATE | |
| NO. | SPECIES | APPLICATION RATE (lb/ac) | SEEDING DATES | SEEDING DEPTHS | |
| 1 | SWITCHGRASS | 10 | 3/1 - 5/15 | 1" | |
| | CREeping RED FESCUE BUSH CLOVER | 15 | 5/15 8/1 - 10/15 | 1" | |
| | | 2 | - 10/15 | | |
| | | | | | 45 lb/ac 90 lb/ac 90 lb/ac |
| | | | | | (1.0 lb/ (2.0 lb/ (2.0 lb/ |
| | | | | | 1000 sf) 1000 sf) 1000 sf) |
| 3 | DEERTONGUE SHEEP FESCUE COMMON LESPEDeza | 20 | 3/1 - 5/15 8/1 - 10/15 | 1" - 1" | |
| | | 20 | 5/15 8/1 - 10/15 | | |
| | | | | | 100 lb/ac 100 lb/ac 100 lb/ac |
| | | | | | (2.0 lb/ (2.0 lb/ (2.0 lb/ |
| | | | | | 1000 sf) 1000 sf) 1000 sf) |

DEVELOPER'S CERTIFICATION

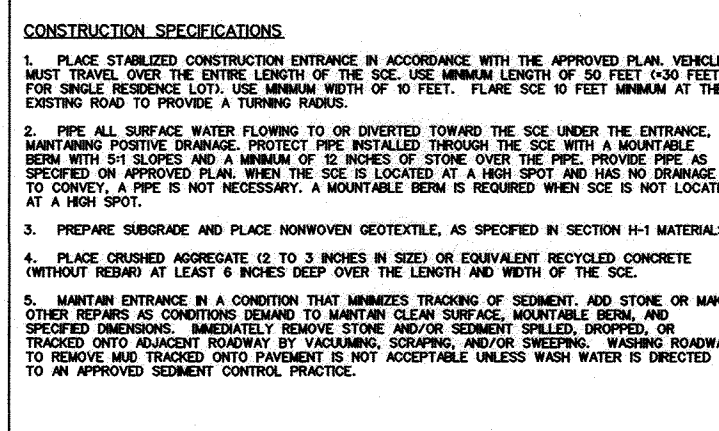
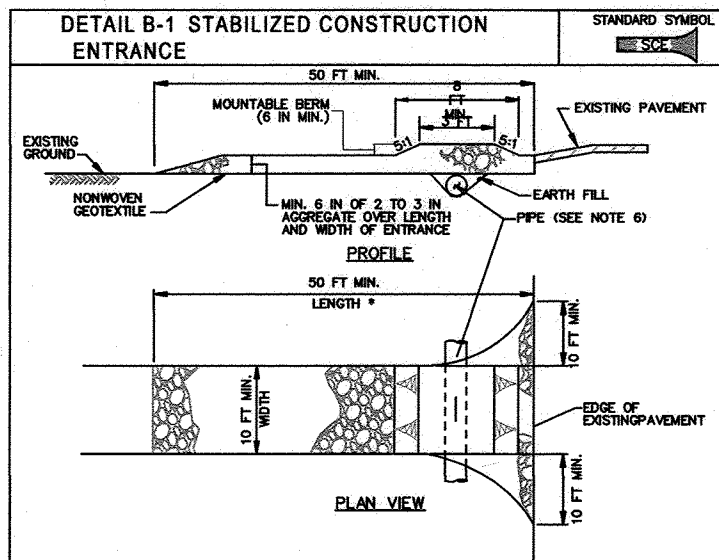
I/WE CERTIFY THAT OUR DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT

D. Mathey 4.24.14
SIGNATURE OF DEVELOPER DATE
Dennis Mathey
PRINTED NAME

HOWARD SOIL CONSERVATION DISTRICT

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

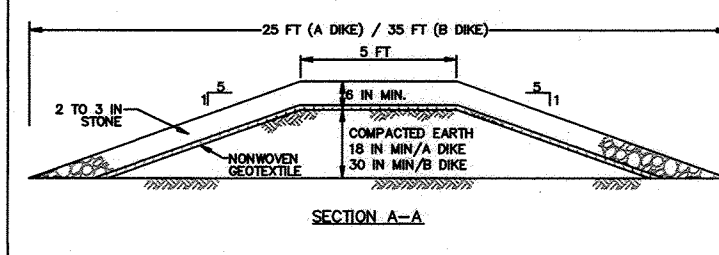
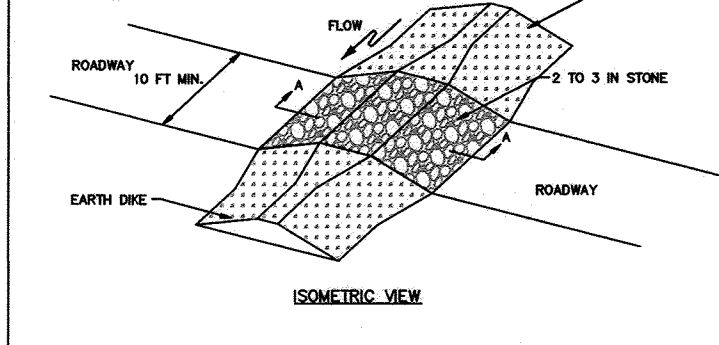
John P. Coleman 4/29/14
HOWARD SOIL CONSERVATION DISTRICT DATE



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

DETAIL C-8 MOUNTABLE BERM.



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE.

U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

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U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

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U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE.

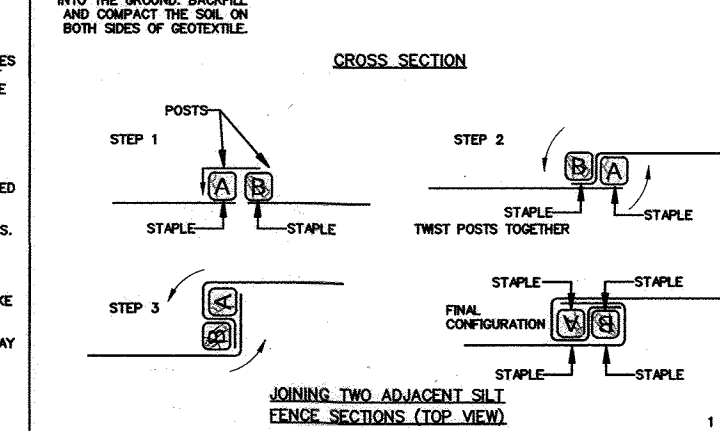
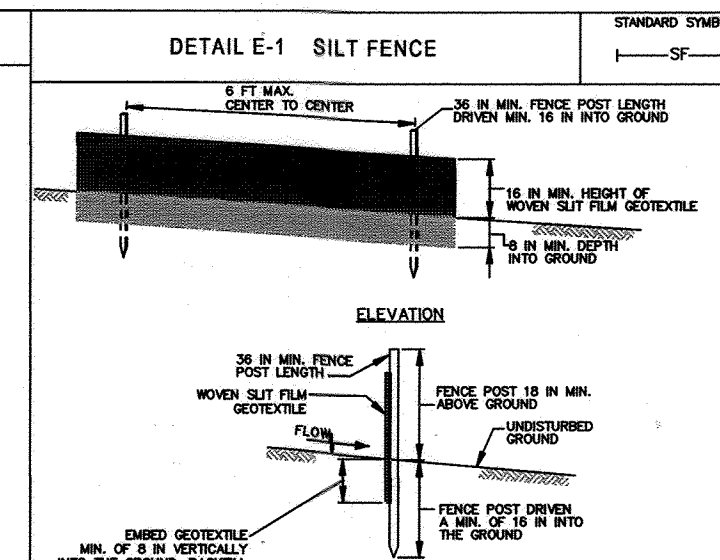
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE.

U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE.

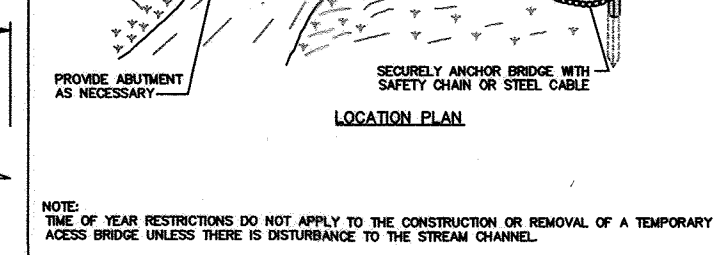
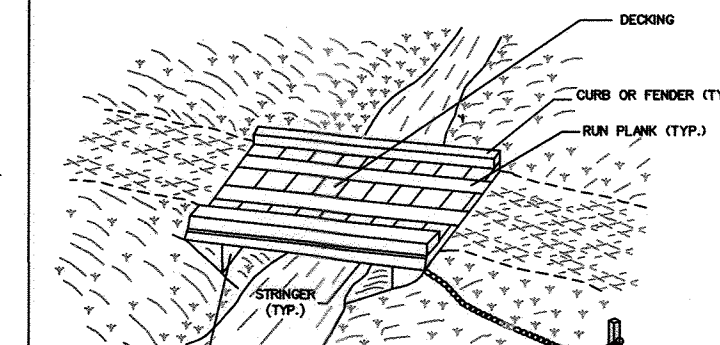
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE.



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

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U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE.

U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE.

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING, CONSTRUCTION INSPECTION DIVISION AT (410) 313-1800 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, BUREAU OF UTILITIES AT (410) 313-4400 AT LEAST FIVE (5) DAYS PRIOR TO STARTING ANY EXCAVATION WORK.
4. THE CONTRACTOR SHALL NOTIFY "MISSED UTILITY" AT 1-800-275-7771 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE. CONTRACTOR SHALL TEST AT/ AT UTILITY CROSSINGS AND REPORT THE RESULTS TO THE ENGINEER PRIOR TO CONSTRUCTION.
5. PROJECT BACKGROUND:

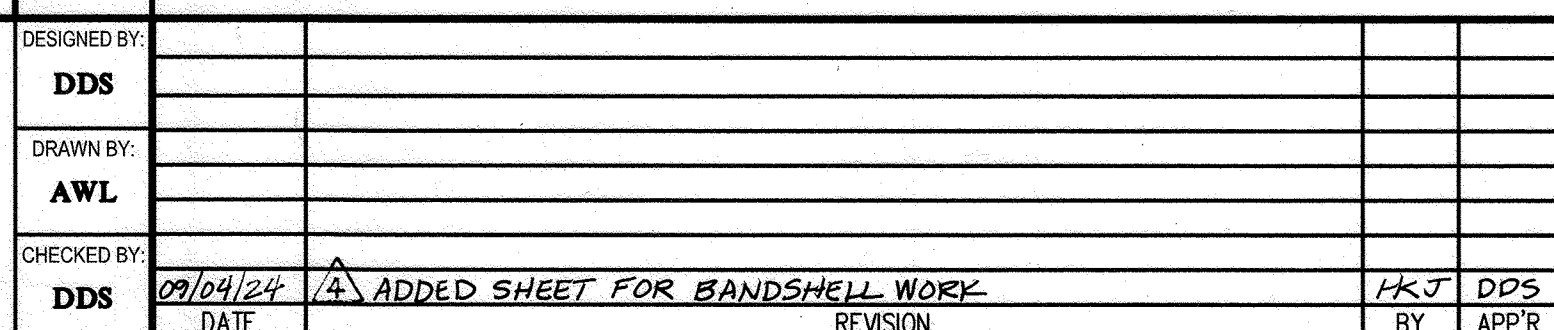
| | |
|----------------------|--------------------------|
| LOCATION: | TAX MAP #36, GRID 1 |
| ZONING: | NT OPEN SPACE |
| ELECTION DISTRICT: | 5TH |
| AREA OF LOT 1: | 4.4 A.C. |
| RECORDING REFERENCE: | PLAT BK. 12, PLAT NO. 62 |
6. PROPOSED USE: OPEN SPACE
7. ALL PLAN DIMENSIONS ARE TO FACE OF BUILDING AND/OR FACE OF CURB UNLESS OTHERWISE NOTED. DIMENSIONS ARE MEASURED PERPENDICULAR OR RADially BETWEEN ITEMS UNLESS OTHERWISE NOTED.
8. SPOT ELEVATIONS SHOWN FOR CURBS ARE BOTTOM OF CURB UNLESS OTHERWISE NOTED.
9. EXISTING TOPOGRAPHY SHOWN ON THESE PLANS IS BASED ON A FIELD A SURVEY PERFORMED BY GLN IN OCTOBER, 2023. OFFSITE TOPOGRAPHY IS FROM HOWARD COUNTY GIS.
10. COORDINATES AND BEARINGS FOR THIS 2024 REDLINE ARE BASED ON NAD 83
11. RELATED DEPARTMENT OF PLANNING & ZONING FILE NUMBERS: FDP-4-A-5, WP-24-100
12. THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT. NO PUBLIC WATER OR SEWER CONNECTIONS ARE PROPOSED FOR THIS STRUCTURE.
13. THE PROPOSED STRUCTURE WILL NOT HAVE A FIRE PROTECTION SPRINKLER SYSTEM.
14. THE PROPOSED ON-SITE STORM DRAIN SYSTEM IS PRIVATELY OWNED AND MAINTAINED.
15. STORMWATER MANAGEMENT IS NOT REQUIRED FOR THIS PROJECT. LIMIT OF DISTURBANCE IS LESS THAN 5,000 SF.
16. EXISTING UTILITIES ARE BASED ON A FIELD SURVEY AND A UTILITY LOCATION DRAWING PREPARED BY AI DATA DATED SEPTEMBER, 2023.
17. THERE ARE NO KNOWN CEMETERIES, GRAVE SITES OR HISTORIC STRUCTURES LOCATED ON THE SUBJECT PROPERTY ACCORDING TO THE CEMETERY INVENTORY MAP AND HISTORIC SITES MAP.
18. THE SCENIC ROADS MAP DOES NOT SHOW ANY SCENIC ROADS ABUTTING THE SITE.
19. 100 YEAR FLOODPLAIN IS BASED ON FEMA FLOOD MAP 240210055D, EFFECTIVE ON 10/06/23. THE FEMA FLOODPLAIN ELEVATIONS WERE DELINEATED USING THE EXISTING FIELD SURVEYED TOPOGRAPHY.
20. SOILS DATA WAS TAKEN FROM THE SOIL SURVEY OF HOWARD COUNTY, MARYLAND 1956/2 MARCH, 2008.
21. BOUNDARY INFORMATION IS FROM BOUNDARY SURVEYS BY GLN, DATED MARCH, 2017.
22. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, OR PLACEMENT OF NEW STRUCTURES IS PERMITTED WITHIN LIMITS OF WETLANDS, STREAMS OR THEIR REQUIRED BUFFER ZONE OR 100 YEAR FLOODPLAIN AREAS, SF UNLESS PERMITTED UNDER AN APPROVED WAIVER PETITION OR DETERMINED TO BE ESSENTIAL OR NECESSARY BY DPZ. THE ENVIRONMENTAL DISTURBANCES SHOWN ON THESE PLANS ARE COVERED BY WP-24-100 AND MDE PERMIT NO. #23-NT-5264/2023B615
23. THIS SITE IS EXEMPT FROM FOREST CONSERVATION REQUIREMENTS OF SECTION 161200 OF THE HOWARD COUNTY CODE SECTION IN ACCORDANCE WITH SECTION 161200.01(b) (Any property owned by a Homeowners Association in a Planned Unit Development which has preliminary development plan approval and 50 percent or more of the land is recorded and substantially developed before December 31, 1992)
24. ALL EXTERIOR LIGHTING SHALL COMPLY WITH THE REQUIREMENTS IN SECTION 134 OF THE HOWARD COUNTY ZONING REGULATIONS.
25. THE MINIMUM BUILDING SETBACKS RESTRICTIONS FROM PROPERTY LINES AND PUBLIC ROAD RIGHTS OF WAY ARE TO BE IN ACCORDANCE WITH FDP-4-A-5 AND LAKEFRONT CORE NEIGHBORHOOD DESIGN GUIDELINES.
26. NO PARKING REQUIREMENTS ARE IMPOSED ON ANY OF THE LAND UNDER FDP-4-A-5 DEVOTED TO OPEN SPACE USES.
27. THERE ARE NO STREAMS, WETLANDS OR THEIR BUFFERS WITHIN THE LIMIT OF DISTURBANCE PER A VERIFICATION DONE BY DAFT, MCGUINE, WALKER IN SEPTEMBER, 2023.
28. THE SCHEMATIC BUILDING ELEVATIONS INDICATE BUILDING HEIGHT, MASSING AND ARCHITECTURAL INTENT AND MAY CHANGE WITH FURTHER DESIGN DEVELOPMENT. FINAL ARCHITECTURAL DESIGN WILL BE SHOWN ON THE CONSTRUCTION DOCUMENTS AND WILL BE REVIEWED AT THE TIME OF BUILDING PERMIT.
29. AN APP APPROPRIATE TRAFFIC ANALYSIS IS NOT REQUIRED FOR THE PROPOSED STAGE REPLACEMENT. THE STAGE IS BEING REPLACED WITH A SIMILAR SIZED STAGE IN THE SAME LOCATION. THE REPLACEMENT IS NOT EXPECTED TO GENERATE ANY ADDITIONAL PEAK HOUR TRIPS
30. TRASH COLLECTION FOR THE SITE WILL BE PRIVATELY OPERATED BY COLUMBIA ASSOCIATION.
31. A FLOODPLAIN STUDY FOR THIS PROJECT WAS PROVIDED BY GLN IN OCTOBER, 2023 AND APPROVED WITH THIS SDP REDLINE.
32. CONTRACTOR TO RECONFIGURE EXISTING IRRIGATION SYSTEM FOR NEW LANDSCAPE AREAS.
33. ON JUNE 21, 2024 AND PURSUANT TO SECTION 16104, THE DIRECTOR OF THE DEPARTMENT OF PLANNING AND ZONING, CONSIDERED AND APPROVED WP-24-100, WITH THE FILE NUMBER, SURVIVOR, DATE OF APPROVAL, AND CONDITIONS OF APPROVAL, TO CONSTRUCT A PERMANENT STAGE WITHIN THE DESIGNATED FLOODPLAIN, SUBJECT TO THE FOLLOWING CONDITIONS:
 1. THE PROPOSED STAGE BOTTOM SHALL BE AT LEAST 2' ABOVE THE FLOODPLAIN ELEVATION.
 2. THE STAGE WILL BE BUILT ON STILTS ON AN AREA OF EXISTING IMPERVIOUS SURFACE.
 3. THE ELEVATION OF THE FLOODPLAIN DISPLACED BY THE SUPPORTS OF THE STAGE SHOULD BE REPLACED WITHIN THE LIMIT OF DISTURBANCE OF THIS PROJECT.
 4. PRIOR TO CONSTRUCTION, VERIFY WITH SCD THAT THE LIMIT OF DISTURBANCE FOR CONSTRUCTION IS LESS THAN 5,000 SF AND THE TOTAL CUTFILL VOLUME IS LESSER 100 CUBIC YARDS TO EXEMPT FROM SEDIMENT AND EROSION CONTROL MEASURES.
 5. THE STAGE WILL NOT IMPED PEDESTRIAN AND BICYCLE ACCESS AS CURRENTLY SHOWN.
 6. THE FLOODPLAIN DISTURBANCE APPROVED IS LIMITED TO THE AREA SHOWN ON THESE PLANS.
 7. A NOTE SHALL BE INCLUDED ON THIS SITE DEVELOPMENT PLAN (SDP-08-106) WITH THE FILE NUMBER, SURVIVOR, DATE OF APPROVAL, AND CONDITIONS OF APPROVAL OF THIS ALTERNATIVE COMPLIANCE.

APPROVED: BOARD COUNTY DEPARTMENT OF PLANNING & ZONING

Lynda Eason 9/11/24
Director Date

[Signature] 9/11/24
Chief, Division of Land Development Date

Paul Edmunds 9.8.24
Chief, Development Engineering Division Date



6. PARKING REQUIRED - 0 SPACES. SEE NOTE 26

[illegible]

STAGE LOCATION PLAN
SCALE: 1"=60'

AYER
SAINT
GROSS

PREPARED FOR:
COLUMBIA ASSOCIATION, INC.
6310 HILLSIDE COURT
SUITE 100
COLUMBIA, MD 21046
JOHN McHUGH
410-381-0384

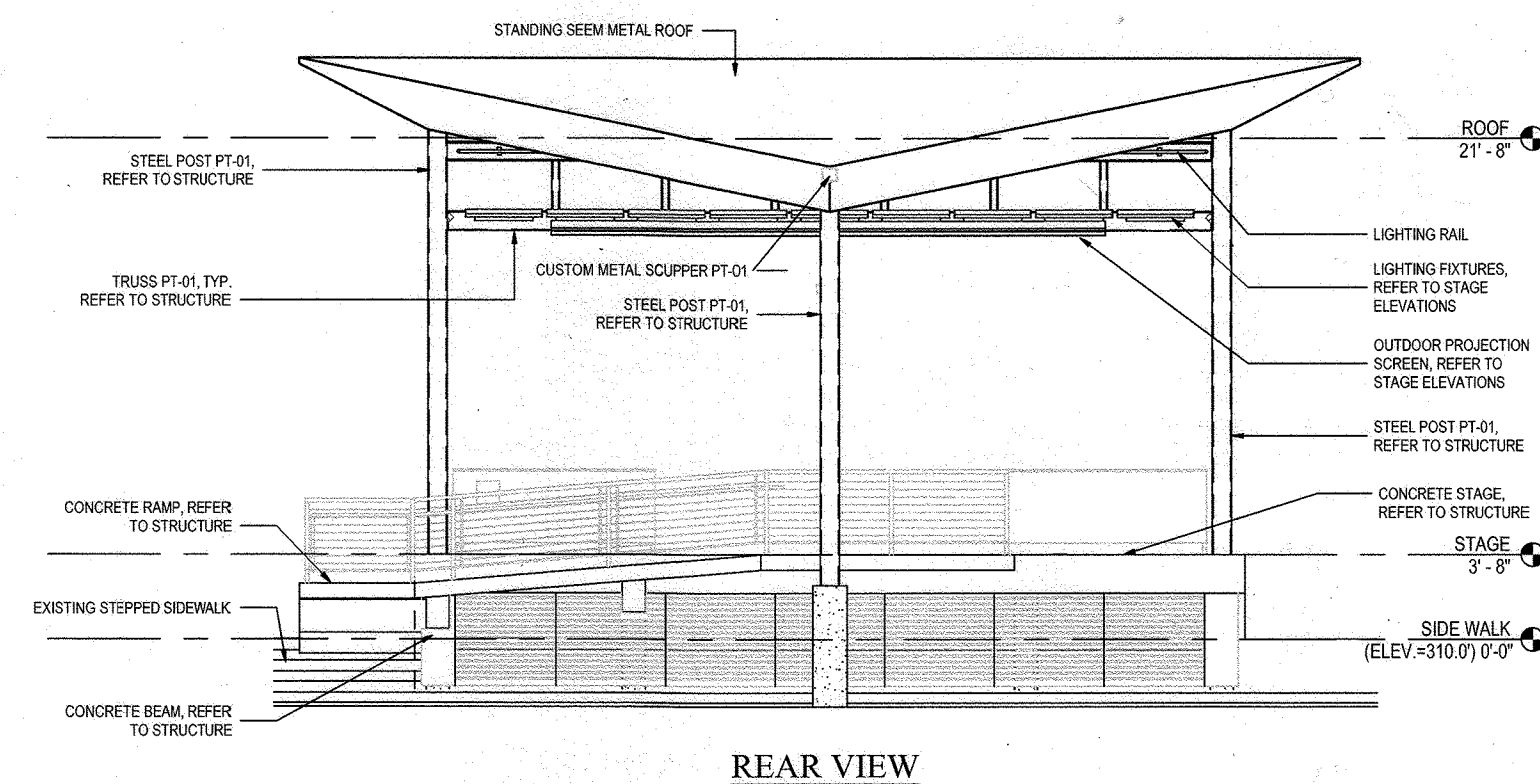
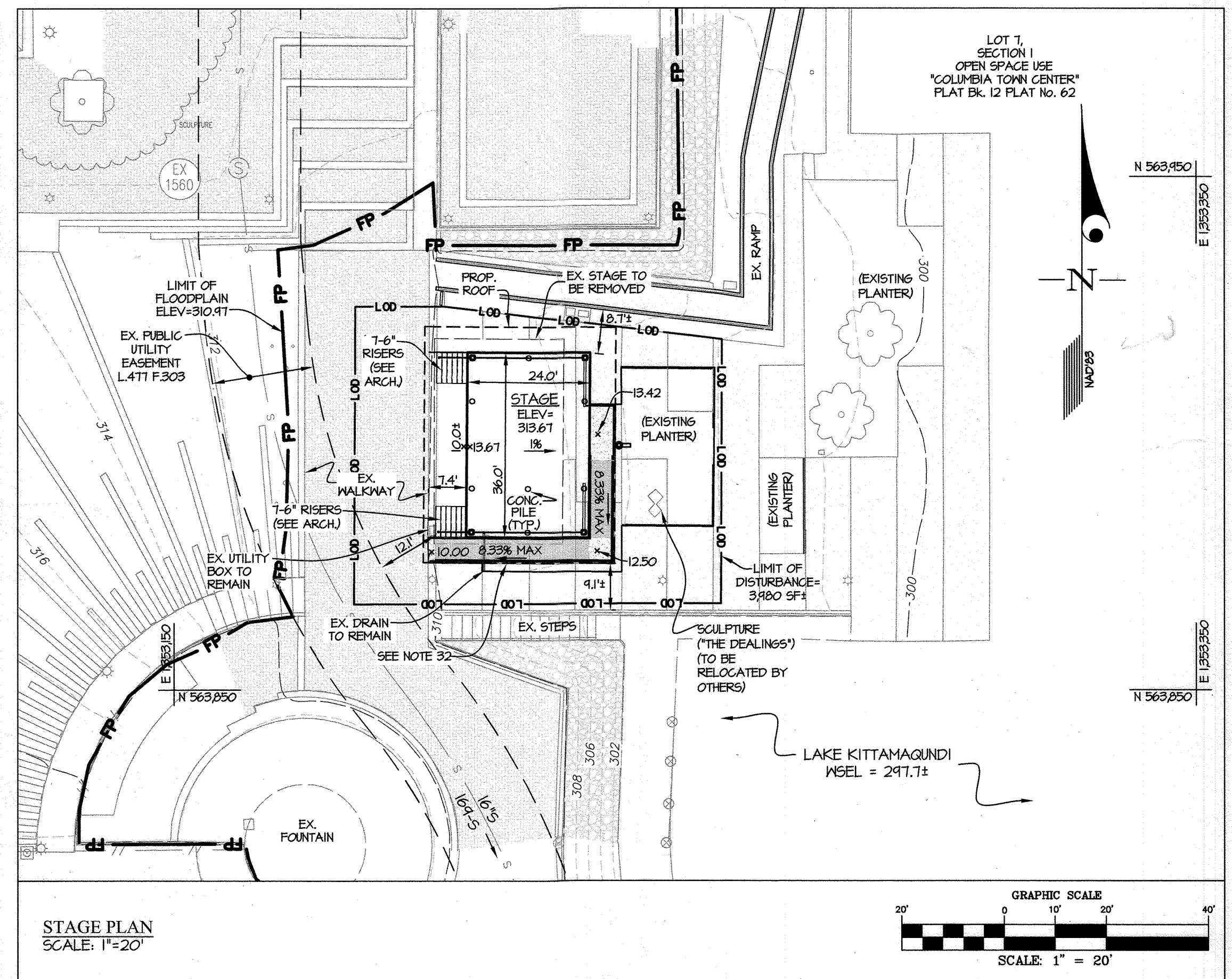
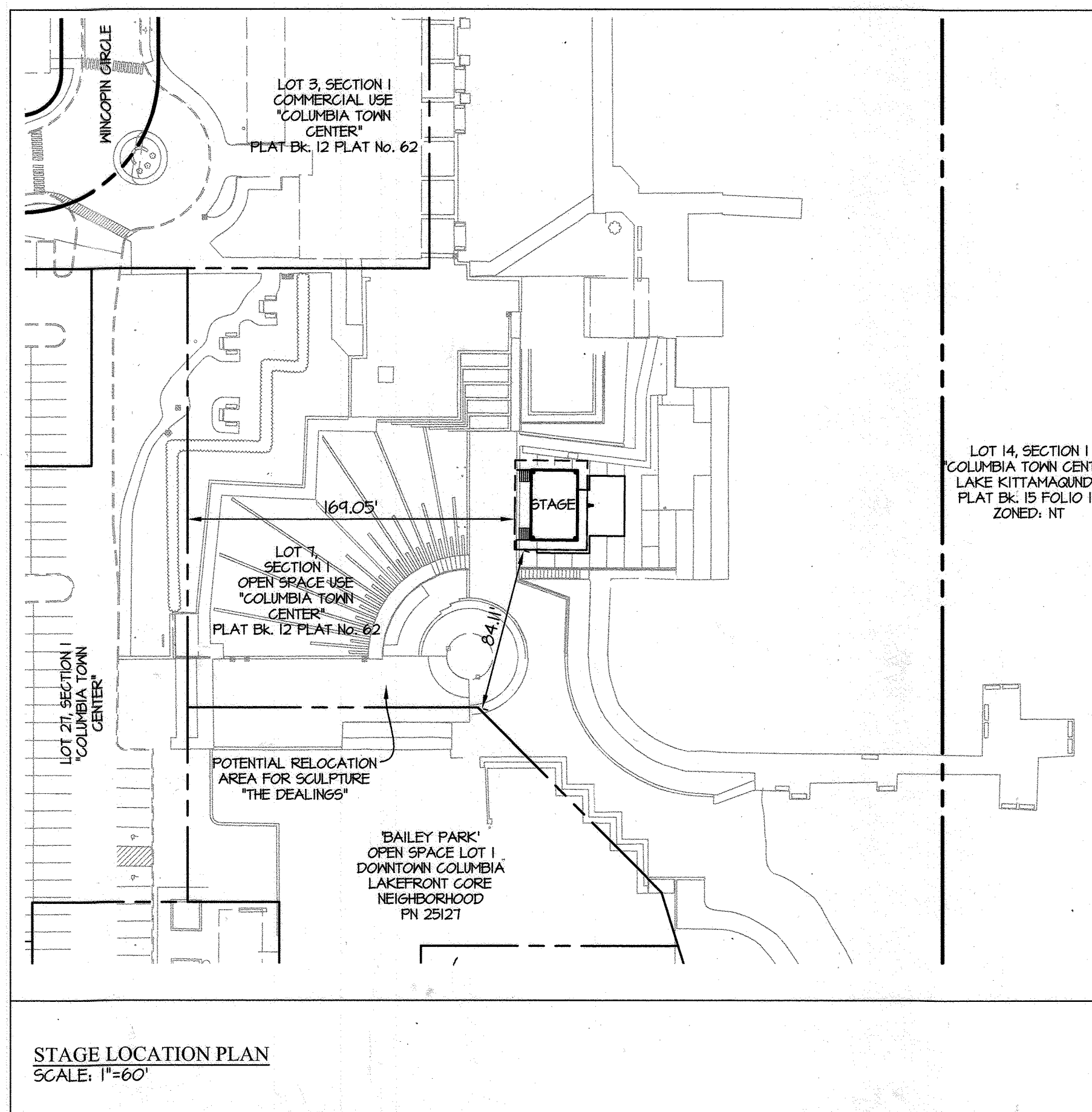
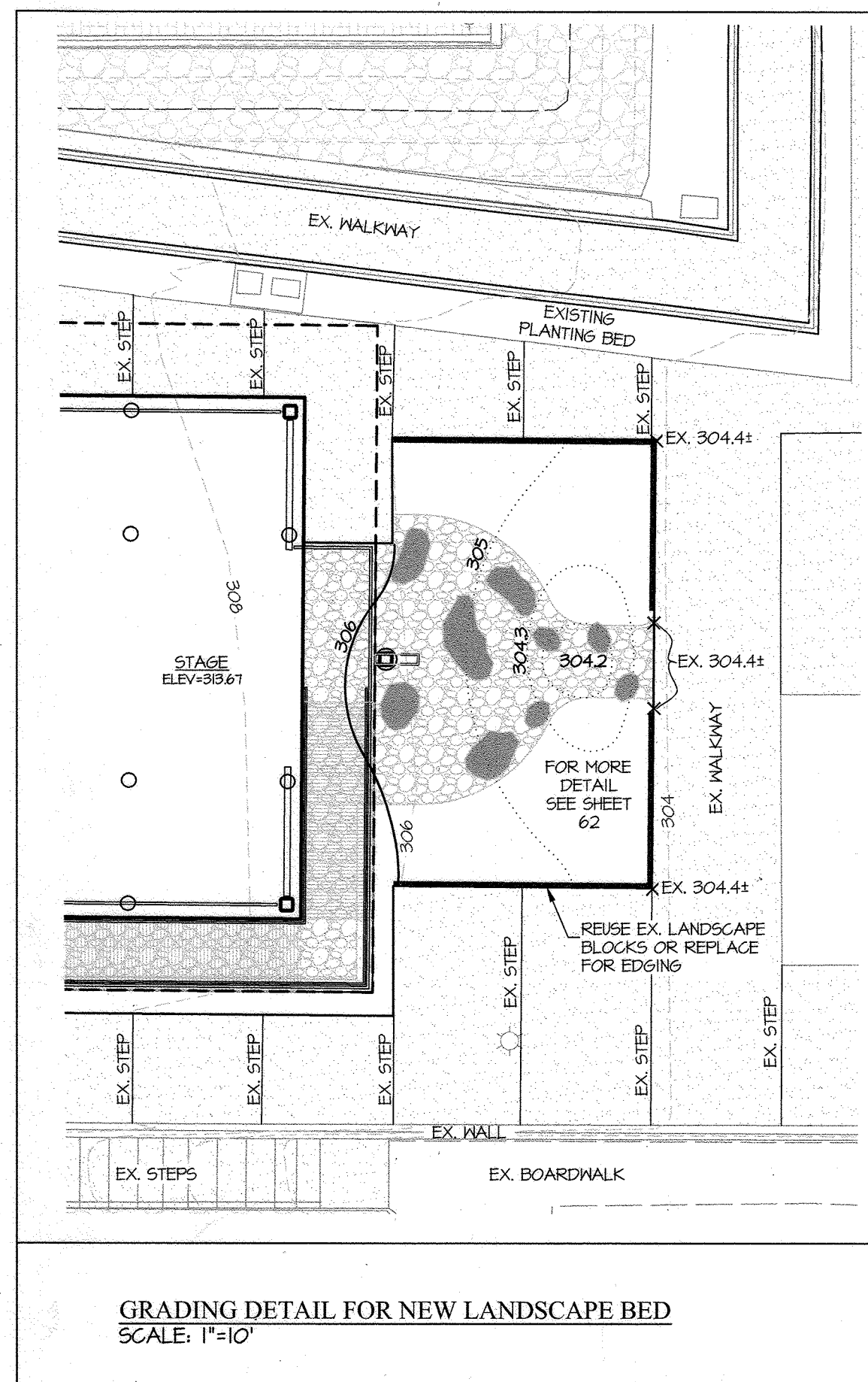
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS
WERE PREPARED OR APPROVED BY
ME, AND THAT I AM A DULY LICENSED
PROFESSIONAL ENGINEER UNDER THE
LAWS OF THE STATE OF MARYLAND,
LICENSE NO. 54390,
EXPIRATION DATE: MAY 14, 2025

ELECTION DISTRICT No. 5

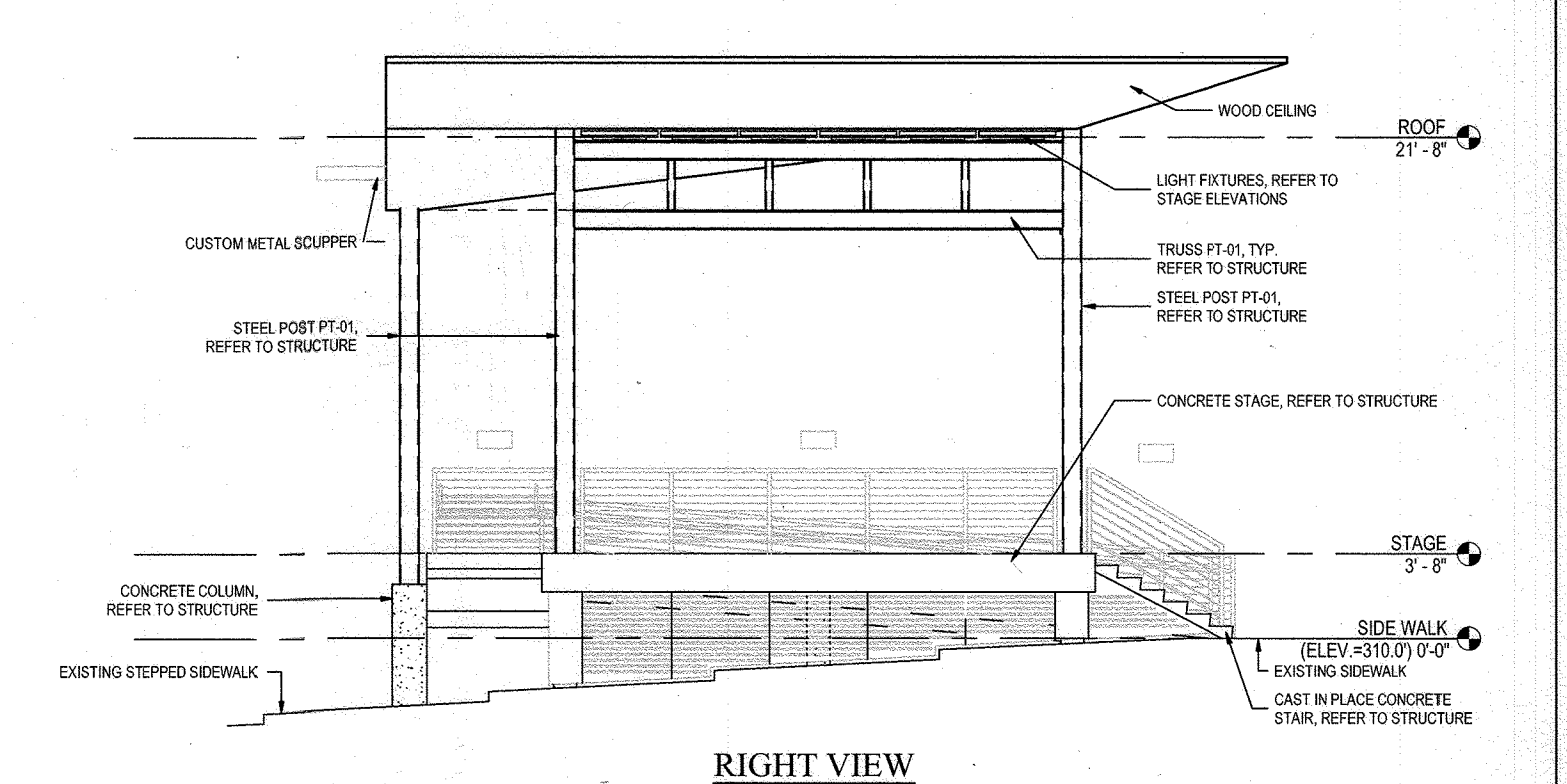
COLUMBIA LAKESIDE BANDSHELL
COLUMBIA TOWN CENTER
LOT 7, SECTION 1 - PARCEL 293

HOWARD COUNTY MARYLAND

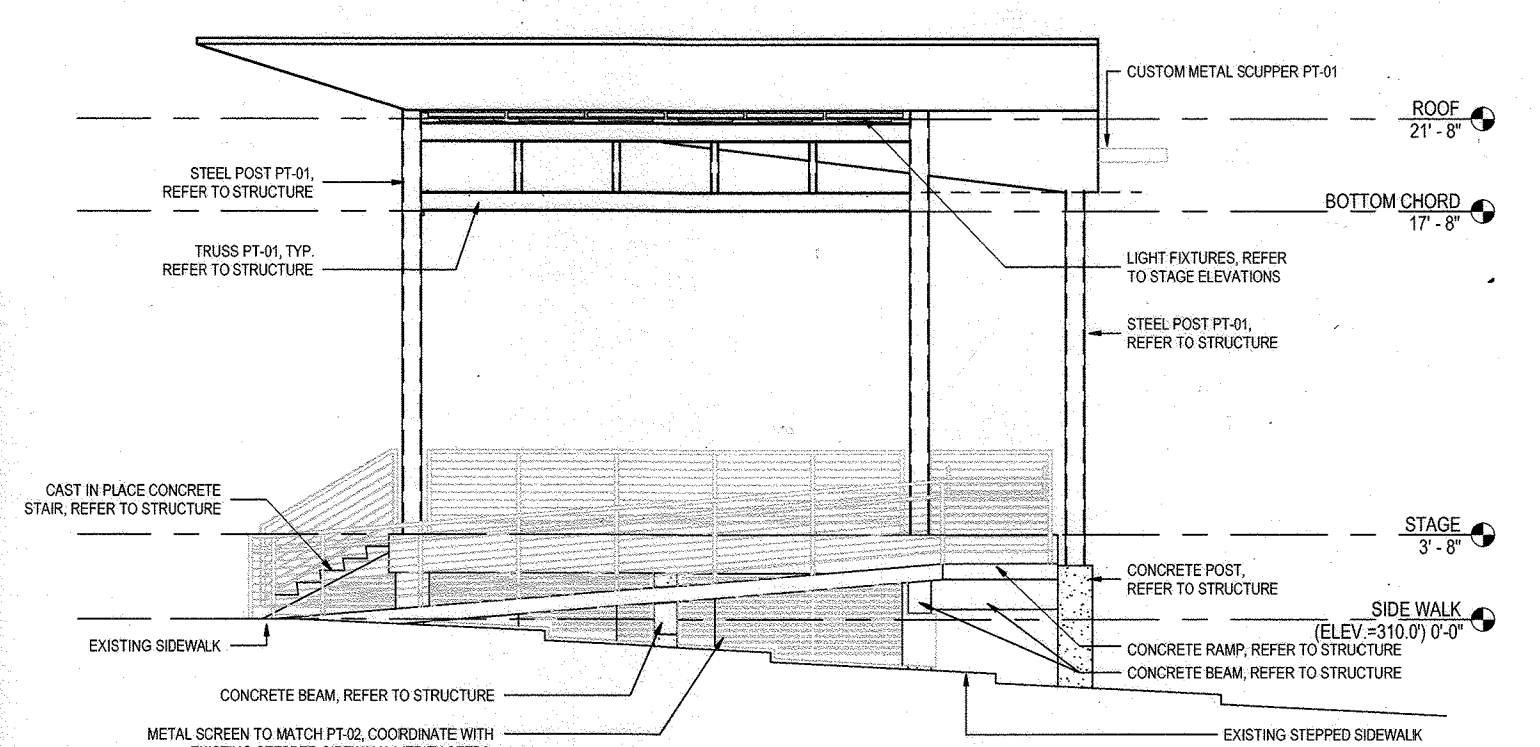
| | | |
|------------|----------------|-------------------|
| SCALE | ZONING | G. L. W. FILE No. |
| AS SHOWN | NT | 22166 |
| DATE | TAX MAP - GRID | SHEET |
| JULY, 2024 | 36 - 1 | 60 OF 62 |



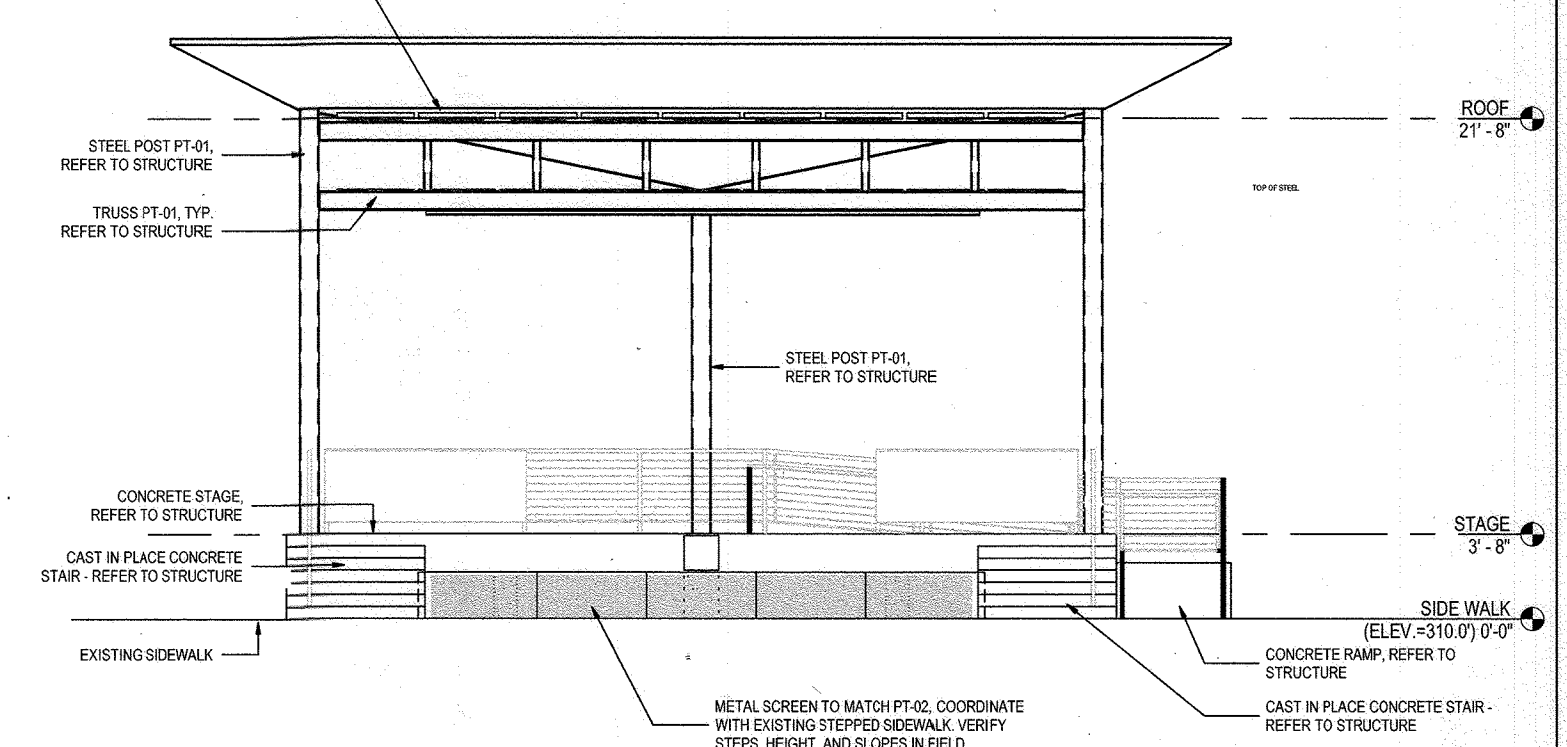
REAR VIEW



RIGHT VIEW



LEFT VIEW



FRONT VIEW

ELEVATIONS
SCALE: N.T.S.

L:\CADD\DRAWINGS\22166\PLANS BY GLW\SDP (REDLINE)\22166-60-SDP.dwg,
PLOTTED: 8/12/2024 4:27 PM, LAST SAVED: 8/12/2024 4:26 PM, PLOTTED BY: Tony Leggieri

Engineering plan for COLUMBIA LAKESIDE BANDSHELL COLUMBIA TOWN CENTER LOT 7, SECTION 1 - PARCEL 293. Includes standards for soil preparation, sediment control, and construction details. Features a detailed site plan with dimensions, elevations, and construction notes. Includes a table of materials and a list of construction specifications.

