

SPECIAL CONSTRUCTION REQUIREMENTS FOR WORK PERFORMED IN THE VICINITY OF THE EXISTING 96" P.C.C.P. WATER MAIN

- Construction vehicles generating a load greater than an AASHTO H20 and vibratory compaction equipment are not permitted within 10 feet clear of the existing 96" P.C.C.P. water or sewer main(s).
- The Contractor shall submit construction vehicle specifications for all vehicles to be used closer than 10 feet clear of existing 96" P.C.C.P. water or sewer main(s) to the WSSC Relocations Unit for WSSC approval prior to commencing work over the mains.
- Stockpiling of soil or other material is not permitted within 10 feet clear of the mains.
- The contractor shall locate and stake out the existing 96" P.C.C.P. water or sewer mains and maintain the markers during construction. Unless otherwise approved by WSSC Relocations Unit, construction vehicles are not permitted within 10 feet clear of the 96" P.C.C.P. water or sewer mains at any time when less than 3'-0" of cover exists over the mains during construction. The Contractor is responsible for identifying areas where less than 3'-0" of soil cover will exist over the mains during his construction operations.
- All backfill and compaction over the 96" P.C.C.P. water or sewer mains with less than 3'-0" of soil cover must be performed manually and/or with vehicles positioned a minimum of 10 feet clear of the main(s) until 3'-0" of cover is achieved. If necessary, temporary fill shall be placed over the existing mains to allow WSSC approved vehicle traffic to cross over the pipeline.
- All exposed rocks, broken pavement, curbing and other unyielding debris having any dimension greater than three inches shall be removed from above the main(s) prior to placing and compacting fill, subgrade materials or paving over the main.
- The contractor shall notify the WSSC Construction Inspector, Mike Trail (301.206.4300), at least 5 days in advance of any grading or paving in the vicinity of the existing 96" P.C.C.P. water or sewer main(s). All grading and paving over the mains shall be coordinated and performed under the supervision of the WSSC Construction Inspector.
- The contractor shall use special care while performing work in the vicinity of the existing 96" P.C.C.P. water or sewer main where less than 3'0" of soil cover exists and strictly adhere to these special construction requirements. The Contractor is responsible for any damage and/or replacement required as result of his work over the mains.

GREENBELT LAKE

(MD DAM No. 8) DAM REPAIRS

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS

- No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- Place materials in location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.
- Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year floodplain in excess of that lost under the originally authorized structure or fill.
- Rectify any nontidal wetlands, wetland buffers, waterways, or 100-year floodplain temporarily impacted by any construction.
- All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: Annual Ryegrass (*Lolium multiflorum*), Millet (*Setaria italica*), Barley (*Hordeum sp.*), Oats (*Avena sp.*), and/or Rye (*Secale cereale*). These species will allow for the stabilization of the site while also allowing for the voluntary revegetation of natural wetland species. Other non-persistent vegetation may be acceptable, but must be approved by the Nontidal Wetlands and Waterways Division, Kentucky 31 fessue shall not be utilized in wetland or buffer areas. The area should be seeded and mulched to reduce erosion after construction activities have been completed.
- After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.
- To protect aquatic species, in-stream work is prohibited as determined by the classification of the stream:
 - Use I waters: In-stream work shall not be conducted during the period March 1 through June 15, inclusive, during any year.
 - Use III waters: In-stream work shall not be conducted during the period October 1 through April 30, inclusive, during any year.
 - Use IV waters: In-stream work shall not be conducted during the period March 1 through May 31, inclusive, during any year.
- Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the wetland.
- Culverts shall be constructed with any riprap placed so as not to obstruct the movement of aquatic species, unless the purpose of the activity is to impound water.

Erosion and Sediment Control General Notes

- The developer is responsible for the acquisition of all required easement, right and/or rights-of-way pursuant to the discharge from the erosion and sediment control practices, stormwater management practices and the discharge of stormwater onto or across and grading or other work to be performed on adjacent or downstream properties affected by this plan.
- Following initial soil disturbance or redistribution, permanent or temporary stabilization shall be completed within: a) three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than three horizontal to one vertical (3:1) and b) seven (7) calendar days for all other disturbed or graded areas on the project site. The in-place sediment control measures will be maintained on a continuing basis until the site is permanently stabilized and all permit requirements are met.
- The owner/developer or representative shall request that the inspection authority approve work completed in accordance with the approved erosion and sediment control plan, the grading or building permit and shall obtain written inspection approvals by the Inspector at the following stages in the development of the site:
 - Prior to the start of earth disturbance;
 - Upon completion of installation of tree protection devices, followed by the installation of perimeter erosion and sediment controls, prior to proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until initial approval by the Inspector is made;
 - Upon completion of stripping, the stockpiling of topsoil, the construction of temporary sediment and erosion control facilities, disposal of all waste material and preparation of the ground;
 - Upon completion of rough grading, but prior to placing topsoil, permanent drainage or other site development improvements and ground covers;
 - Prior to the start of another phase of construction or opening of another grading unit;
 - Prior to the removal of sediment control practices; and
 - Upon completion of final grading, reforesting, permanent drainage and erosion control facilities including established ground covers and planting, and all other work of the building permits.
- Approval shall be requested upon final stabilization of all sites with disturbed areas in excess of two acres before removal of controls.
- All permits under an erosion and sediment control plan must and can only be issued to the owner/developer that signs the certification on the plan. The owner/developer that signs the certification on an erosion and sediment control plan is the responsible party regardless of any sale of the property or work of subcontractors. Erosion and sediment control plans are approved for one owner/developer only.
- PGSCD approval of a erosion and sediment control plan, pursuant to meeting local permit requirements for grading, building or street permits, etc., is valid only when the work to be performed under the permit is the same as (no more/no less than) that contained in the plan as approved by the PGSCD.
- Any changes or modifications to an approved erosion and sediment control plan, not approved by the PGSCD, shall invalidate the plan approval.
- Offsite borrow or spoil areas must have an approved and active erosion and sediment control plan.
- Temporary designed sediment basins shall be removed within 36 months after the beginning of construction of the basin.
- On small pond approvals:
 - The owner or engineer will notify PGSCD promptly in writing when construction is begun and when construction is completed.
 - The project shall be constructed under the supervision of the engineer-in-charge. Within 30 days of the completion of construction, the engineer-in-charge that designed the structure shall provide PGSCD with an As-Built plan and shall certify, with the engineer's seal, that the MD378 pond was constructed as shown on the As-Built plans.
 - The approval is valid only for use by the applicant and may not be transferred to another unless written approval for such transfer is obtained from PGSCD.
- Disturbed surface area
 - Vegetatively stabilized area 2.71 Ac.
 - Volume of spoil material 1,420 CY
 - Volume of cut 2,674 CY
 - Volume of borrow material
 - Volume of fill 1,254 CY
- List Predominant soil types and general description per PGSCD soil survey: **CcD, CdD, RuB, UdD, ZS**

OWNER'S/DEVELOPER'S CERTIFICATION

"I/we hereby certify that I/we have reviewed this erosion and sediment control plan and that any clearing, grading, drainage, construction and/or development will be done pursuant to this approved plan, including inspecting and maintaining controls and that any responsible personnel involved in the construction project will have a Certificate of Training at a Maryland Department of the Environment approved training program for the control of erosion and sediment before beginning the project. Prince George's Soil Conservation District and the enforcement authority shall have the right of entry for periodic on-site evaluations."

Signature: Chela W. Craze Date: 8/11/15
 Name (printed): CELIA CRAZE
 Firm: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT
 Complete address: 15 CRESCENT ROAD, GREENBELT, MARYLAND 20770

CONSULTANT'S CERTIFICATION

"I certify that this Environmental Site Development Grading, Erosion, and Sediment Control plan represents all significant Natural Resources and is practical & workable based on my personal knowledge of the site, and that this plan was designed and prepared in accordance with the requirements of the Prince George's Soil Conservation District and "Standards and Specifications for Soil Erosion and Sediment Control". I have reviewed this Environmental Site Development Grading, Erosion, and Sediment Control plan with the owner/developer."

Signature: Jeffrey B. Bluss MD License# 32457 Date: 06-01-2015
 Name (printed): JEFFREY B. BLUSS
 (Include seal, company name, address and phone number if not included elsewhere on plan.)
CHARLES P. JOHNSON & ASSOCIATES, 1751 ELTON ROAD, SILVER SPRING, MARYLAND 20903
(301) 434-7000

MISS UTILITY

Call "Miss Utility" at 1-800-257-7777, 72 hours prior to the start of work. The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation.

Sequence of Construction to Repair Greenbelt Lake Dam

Notes:

- This project involves phased work. After completing a phase of the project, the contractor is expected to leave the site in a permanently stabilized condition.
- For earthwork of any kind, the contractor must submit a cut sheet to the Engineer-in-Charge 72 hours in advance of earthwork operations.
- All concrete, earthwork, and subsurface work should be completed under supervision of a professional geotechnical engineer.
- Prior to issuing a grading permit, a pre-construction meeting must be conducted on-site with the Owner's representative (240-542-2042 48 hours' notice), the MDE Dam Safety Engineer (410-501-4042 five days' notice), the Engineer-in-Charge (301-434-7000 48 hours' notice), the WSSC Inspector (301-206-4300 five days' notice) and the Contractor.

Preliminary - Sediment Control Installation (5 DAY DURATION)

- Clear and grub for installation of sediment control devices for access to site and staging and stockpile area (2 DAYS).
- Install stabilized construction entrance from the Greenbelt Lake Dam access road (1 DAY).
- Install perimeter sediment controls for access to site and staging and stockpile area (2 DAYS).

Phase 1 - Lake Drain Repair (to be completed on or before November 1, 2015 - 41 DAY DURATION PLUS RECORD DRAWING TIME)

- Clear and grub for installation of sediment controls and install sediment controls including clean water diversion earth dike (install from downstream to upstream) with mountable berm and silt fence as shown on Phase 1 sediment control plan (5 DAYS).
- Clear and grub for excavation and replacement of the existing 24" C.M.P. lake drain pipe extension (2 DAYS).
- Excavate the existing 24" C.M.P. lake drain pipe extension from downstream to upstream to the connection with the existing 24" C.I.P. lake drain pipe. Remove and dispose of existing end wall, weep drains, and 24" C.M.P. Contractor is to take extreme care when working over and around existing 42" and 96" water mains. Coordinate work with W.S.S.C. Inspector (5 DAYS).
- Complete CCTV inspection of existing 24" C.I.P. (5 DAYS).
- Prepare existing 24" C.I.P. lake drain pipe for connection to proposed manhole (MH2) location (1 DAY).
- Install manhole MH2, 24" R.C.P. lake drain pipe stub, and (2) 6" P.V.C. to drain pipe stubs (2 DAYS).
- Form, reinforce and pour concrete collars around all pipe connections to manhole MH2 (3 DAYS).
- Install 24" R.C.P. lake drain pipe and end wall EW2 from downstream to upstream and connect to 24" R.C.P. pipe stub at manhole MH2. Contractor is to take extreme care when working over and around existing 42" and 96" water mains. Coordinate work with W.S.S.C. Inspector (5 DAYS).
- Backfill excavation to existing grade per MD-378 specifications and stabilize (5 DAYS).
- Install riprap channel at end wall EW-2 (2 DAYS).
- Complete repair items pertaining to the existing lake drain manhole MH1 and install valve stem extension to the top of the existing manhole MH1 (3 DAYS).
- Exercise and lubricate lake drain valve in existing manhole MH1 (1 DAY).
- Install valve stem extension (2 DAYS).
- Upon completion of this phase of construction, stabilize all disturbed areas per soil stabilization notes and remove all sediment control devices with the approval of the Sediment Control Inspector (1 DAY).
- Complete record drawing survey and plan (by Engineer-in-Charge) and submit to MDE within 60 days of completion of the work (60 DAYS).

Phase 2A - Chimney Filter and Toe Drain Installation (to be completed on or before September 1, 2017 - 55 DAY DURATION PLUS RECORD DRAWING TIME) - NOT IN CONTRACT

- Clear and grub for installation of sediment controls and install sediment controls including temporary gabion outlet structure, earth dikes (install from downstream to upstream), and super silt fence, and silt fence as shown on Phase 2 sediment control plan (5 DAYS).
- Clear and grub for installation of toe drain and chimney filter (5 DAYS).
- Excavate for installation of the toe drain. Excavation must use trench boxes or provide 2H:1V layback as well as comply with all applicable OSHA regulations (3 DAYS).
- Install toe drain media and 6" P.V.C. toe drain pipes and connect to existing 6" P.V.C. pipe stubs at manhole MH2 (7 DAYS).
- Excavate for chimney filter (10 DAYS).
- Install chimney filter on the downstream slope of the embankment. Contractor is to take extreme care not to damage existing observation wells (15 DAYS).
- Backfill and install topsoil over chimney filter and toe drain and complete finalized grading per grading plan (7 DAYS).
- Upon completion of this phase of construction, stabilize all disturbed areas per soil stabilization notes and remove all sediment control devices with the approval of the Sediment Control Inspector (3 DAYS).
- Complete record drawing survey and plan (by Engineer-in-Charge) and submit to MDE within 60 days of completion of the work (60 DAYS).

Phase 2B - Embankment Raising (to be completed on or before September 1, 2017 - 32 DAY DURATION PLUS RECORD DRAWING TIME) - NOT IN CONTRACT

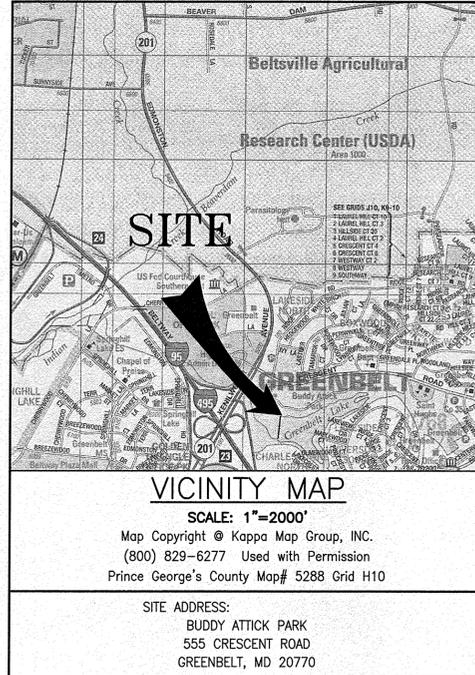
- Clear and grub for installation of sediment controls and install sediment controls including silt fence as shown on Phase 3 sediment control plan (5 DAYS).
- Clear and grub for installation of fill to raise and level embankment (2 DAYS).
- Remove existing access road graded aggregate base material and stockpile for reuse (3 DAYS).
- Raise existing lake drain manhole MH1 and existing sewer manhole located in the graded aggregate base access road to their proposed grade (5 DAYS).
- Install embankment fill per MD-378 specifications to proposed grade. Contractor is to take extreme care not to damage existing observation wells (10 DAYS).
- Install access road consisting of graded aggregate base course surface to proposed grade (5 DAYS).
- Upon completion of this phase of construction, stabilize all disturbed areas per soil stabilization notes and remove all sediment control devices with the approval of the Sediment Control Inspector (2 DAYS).
- Complete record drawing survey and plan (by Engineer-in-Charge) and submit to MDE within 60 days of completion of work (60 DAYS).

Phase 3 - Spillway Repair (to be completed on or before July 1, 2018 - 59 DAY DURATION) - NOT IN CONTRACT

- Use the lake drain to lower the lake level to elevation 100.00. Lake draw-down may not exceed six inches per day. During this time, the lake drain valve is to remain open and operable in order to pass base flow through the lake and control the lake level in the during storm events (20 DAYS).
- Install sediment controls including temporary stone outlet structure, clean water earth dikes (install downstream to upstream) and temporary diversion wall barrier around work area as shown on the plan (7 DAYS).
- Demolish and remove existing spillway from the upstream end in the lake to a point downstream equal to the downstream side of the existing bridge. Take care to not damage existing concrete bridge abutments which are to remain in their entirety (10 DAYS).
- Prepare subgrade for new concrete spillway. Use a mudmat if necessary. DO NOT USE GRAVEL, STONE, OR AGGREGATE UNDER THE SPILLWAY (5 DAYS).
- Form, reinforce, and pour the new concrete spillway (15 DAYS).
- Upon completion of this phase of construction, stabilize all disturbed areas per soil stabilization notes and remove all sediment control devices with the approval of the Sediment Control Inspector (2 DAYS).

Project Completion (continuation of Phase 3 - 75 DAY DURATION) - NOT IN CONTRACT

- Once all work is completed, contact the Engineer-in-Charge and the MDE Dam Safety Engineer to hold a punch list inspection of the entire project (5 DAY WINDOW).
- Address all punch list items (10 DAYS)
- Complete record drawing survey and plan (by Engineer-in-Charge) and submit to MDE within 60 days of completion of the punch list by the contractor. Final Record Drawing and accompanying report should cover entire project and include all documentation (60 DAYS).



SITE ADDRESS:

BUDDY ATTICK PARK
 555 CRESCENT ROAD
 GREENBELT, MD 20770

General Notes:

- Only approved plans that have been signed by the appropriate regulatory authority shall be used for the construction of the improvements shown on these drawings. CAD or other electronic files are not to be used for construction purposes.
- These plans do not include the necessary precautions for construction safety. The contractor shall perform work in accordance and compliance with Health and Safety Acts of 1970 and all rules and regulations thereto appurtenant.
- The existing utilities shown hereon have been located using information available at the time this plan was prepared. Prior to digging, the contractor shall locate all existing utilities via hand-dug test pit within the limits of construction shown on this plan and confirm that no conflicts exist. Conflicts must be brought to the attention of the Owner and CPJ prior to starting construction.
- Prior to grading, installation of structures or treatments, or any work that involves earthwork of any kind, the contractor shall provide cut sheets to the Owner and CPJ a minimum of 72 hours in advance of work for review.
- The contractor is responsible for repairing, replacing, or reconstruction all site features (e.g. pavement, sidewalk, curb, gutter, trees, landscaping, benches, mailboxes, utilities, etc.) damaged as a result of project work.
- Prior to vegetative stabilization, all disturbed areas must be topsoil per the Maryland Department of the Environment Standards and Specifications for Topsoil.

Project Notes:

- The survey datum for this project is horizontally: Maryland State Plane 1983 NRSR 2007 and vertically, NAVD 1988. The contractor shall use the marked survey traverse points shown on the plan to complete the work.
- There is no Federal Emergency Management Agency (FEMA) 100 year floodplain located on the project site per FEMA Flood Insurance Rate Map (FIRM) 2452080015D Effective December 15, 1989.
- This dam is a Class "C" (High) hazard structure based on the dam breach analysis completed by Charles P. Johnson & Associates, Inc. and accepted by the Maryland Department of the Environment.

Stabilization Note:

Stabilization practices on all projects must be in compliance with the requirements of COMAR 26.17.1.08 G regulations by January 9, 2013, regardless of when an erosion and sediment control plan was approved.

Following initial soil disturbance or re-disturbance, permanent or temporary stabilization must be completed within:

- Three (3) calendar days as to the surface of all perimeter dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and
- Seven (7) calendar days as to all other disturbed or graded areas on the project site not under active grading.

GREENBELT LAKE DAM REPAIRS - Sediment Control Narrative

Site Analysis

The project is located in Greenbelt, Maryland east of the intersection of Kenilworth Avenue and the Capital Beltway and just south of Crescent Rd. The dam is located on a 91.59 acre property owned by the City of Greenbelt. The property consists of a lake, dam and recreational paths. Existing topography shows that the top of dam is at an elevation of 113.30 +/- and the existing outfall is approximately at an elevation of 86.00 +/- . It has been determined that seepage is occurring through the base of the berm between the lake and the lower embankment.

The drainage area to Greenbelt Lake is approximately 0.8 square miles. Wetlands and forested areas exist on the site, mainly to the west and south. Wetlands were located near the downstream toe of the dam and appear to be caused by poor drainage, impacts from an adjacent water main, or both. Several large trees were located on the downstream embankment of the dam and will have to be removed as part of the retrofit. A Natural Resource Inventory and Forest Stand Delineation (NRI/FSD) have been completed is being reviewed and approved by the Maryland-National Capital Park and Planning Commission. All natural resources have been identified and integrated with the proposed design.

Proposed Project Design and Environmental Site Development

The project will be completed over a four year phased plan. Overall, the pond retrofit includes the replacement of the corrugated metal pipe (C.M.P.) portion of the existing pond drain, installation of a chimney filter, raising the top of dam, replacing the concrete flume spillway, and re-grading the downstream embankment to improve drainage. The top of dam embankment will be raised to elevation 114.50. While there are impacts to the existing wetlands downstream of the dam they are considered minor in nature and authorization is being obtained from the Maryland Department of the Environment's Non-Tidal Wetlands Division.

Soils were mapped by use of United States Department of Agriculture Natural Resource Conservation Service Web Soil Survey. An area of interest was delineated around the site and the following results were obtained. The area is made up of a mixture of type B and D soils. The B soil contained within the site are Udorthents, loamy, 5 to 15 percent slopes and the D soils are Zekiah and Issue soils, flooded frequently. All construction within the limit of disturbance (LOD) and any portion of highly erodible soils shall be immediately and permanently stabilized upon completion of construction. This shall control any erosion which may occur during the construction process.

The Greenbelt Lake Retrofit site is located in the Tier II watershed of the Anacostia River. The Maryland Department of the Environment identified this watershed as biologically impaired in 2006. Greenbelt Lake flows to Indian Creek, a tributary of the Anacostia River. Accelerated stabilization will also be implemented to protect the watershed against added sediment runoff. Super silt fence will be placed around portions of the LOD that are next to the stream and lake and silt fence will be placed around all other portions of the LOD. Where possible, clean water earth dikes will be used to divert clean water around open grading work areas. In addition, all runoff from the site will be filter using gabion or stone outlet structures or silt/super silt fencing. During replacement of the concrete spillway, the lake will be lowered and the lake drain valve opened to allow discharge from the lake without impacting the work area.

The site has been designed to avoid sensitive and natural resource areas to the maximum extent practicable. However, small portions of forests will need to be removed to maintain the integrity of the dam and complete the retrofit design. Forest surrounds the downstream channel and portions of the downstream embankment. Several large trees from the downstream embankment and small areas of forest near the downstream toe of the dam will be removed (approx. 0.192 acres).

TRAVERSE TABLE					
POINT #	NORTHING	EASTING	ELEVATION	TYPE	
19501	N 486,509.45	E 1,343,336.21	113.44	REBAR & CAP	
19502	N 486,811.11	E 1,343,360.46	112.74	REBAR & CAP	



PRINCE GEORGE'S SOIL CONSERVATION DISTRICT
 ENVIRONMENTAL SITE DEVELOPMENT APPROVAL
 GRADING, EROSION AND SEDIMENT CONTROL

SSC# - 23-15-00 01/26/18
 EXPIRATION DATE

PRELIMINARY POND (PP#) X

Charles P. Johnson 01/26/15
 DISTRICT SIGNATURE APPROVAL DATE

WETLAND NOTE:

IT IS THE APPLICANT'S RESPONSIBILITY TO OBTAIN ANY STATE PERMITS, IF REQUIRED, FOR ANY CONSTRUCTION ACTIVITY COVERED BY THIS PLAN WHICH IMPACTS A STATE REGULATED WETLAND. ANY CHANGES TO PLANS FOR THIS DEVELOPMENT WHETHER REQUIRED BY THE STATE OR INITIATED BY THE APPLICANT TO MEET STATE REQUIREMENTS, MUST BE APPROVED BY PGSCD.

"I hereby certify that this plan conforms to Subtitle 4, Division 3 of the Building Code of Prince George's County, Maryland."

Signature: Jeffrey B. Bluss Date: 06-01-2015

"I certify that I have inspected this site and that drainage onto this site from other upgrade properties, and from this site onto other downgrade properties, has been addressed in substantial accordance with applicable codes."

Signature: Jeffrey B. Bluss Date: 06-01-2015

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* DENOTES FUTURE - NOT IN CONTRACT

PLANS APPROVED BY
 Harald W. Van Aller, P.E.
Harald W. Van Aller
 March 19, 2015
 14-MR-0062
 Dam Safety Division
 Maryland Dept. of the Environment

COVER SHEET
 MD DAM No. 8 DAM REPAIRS
 GREENBELT LAKE
 BERWYN (21st) ELECTION DISTRICT
 PRINCE GEORGE'S COUNTY, MARYLAND

CPJ Charles P. Johnson & Associates, Inc.
 Civil and Environmental Engineers • Planners • Landscape • Architects • Surveyors
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 www.cpja.com • Silver Spring, MD • Gaithersburg, MD • Annapolis, MD • College Park, MD • Frederick, MD • Fairfax, VA

CLIENT:	PRELIMINARY PLAN NO.:		SITE PLAN NO.:	
	N/A	N/A	N/A	N/A
DESIGN: JBB	SHEET 1		OF 22	
	DRAFT JMV		G-1/ES-1 G-2/ES-10	
DATE: FEB. 2015	SCALE: AS-SHOWN		FILE NO.: 38-146-241	

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MASTER LEGEND

EXISTING CONTOURS	
EXISTING INDEX CONTOURS	
PROPOSED CONTOURS	
PROPOSED INDEX CONTOURS	
EXISTING STORM DRAIN PIPE	
PROPOSED STORM DRAIN PIPE	
OVERALL PROPOSED LIMITS OF DISTURBANCE	
PROPOSED LIMITS OF DISTURBANCE (BY PHASE)	
DRAINAGE DIVIDE	
DRAINAGE FLOWPATH POINT	
FLOWPATH	
NORMAL POOL WATER SURFACE ELEV.	
EXISTING STREAM	
100 YEAR WATER SURFACE ELEV.	
PROPOSED/EXISTING RIPRAP	
EXISTING PROPERTY LINE	
EXISTING WSSC RIGHT-OF-WAY	
SILT FENCE	
SUPER SILT FENCE	
TREE PROTECTION FENCE	
BLAZE ORANGE FENCE	
LIMITS OF EXCAVATION	
EXISTING TREE LINE	
PROPOSED TREE LINE	
EXISTING ACCESS PATH	
REPLACEMENT ACCESS PATH	
LIMITS OF EXCAVATION	

EX. SEWER LINE	
EX. WATER LINE	
EXISTING WETLAND	
EXISTING 25' WETLAND BUFFER	
EX. SEWER MANHOLE	
EX. STORMDRAIN MANHOLE	
EX. WATER VALVE	
EX. TREE TO BE REMOVED	
EX. TREE TO REMAIN	
STAGING/STOCKPILE AREA	
STRUCTURAL LABEL	
TRAVERSE POINT	
STABILIZED CONSTRUCTION ENTRANCE	
DRAINAGE SLOPE	
SOIL BORING	
CHIMNEY DRAIN	
PROPOSED STORMDRAIN MANHOLE	
TEMPORARY GABION OUTLET STRUCTURE	

MASTER LIST OF ABBREVIATIONS

Ac.	ACRE(S)	L	LENGTH OF CURVE (CURVE DATA)
ASTM	AMERICAN CONCRETE INSTITUTE MATERIALS	L.F.	LINEAR FEET
€	CENTERLINE	L / F.	LIBER / FOLIO
CAD	COMPUTER AIDED DRAFTING	MAX	MAXIMUM
C/C	CENTER-TO-CENTER	MD378	NATURAL RESOURCES CONSERVATION PRACTICE - MARYLAND No. 378 (POND)
CF	CUBIC FEET	MDE	MARYLAND DEPARTMENT OF THE ENVIRONMENT
cf/s	CUBIC FEET PER SECOND	MH	MANHOLE
C.I.P.	CAST IRON PIPE	MIN	MINIMUM
CL	CLASS	MSHA	MARYLAND STATE HIGHWAY ADMINISTRATION
C.M.P.	CORRUGATED METAL PIPE	NAD83	NORTH AMERICAN DATUM OF 1983
COMAR	CODE OF MARYLAND REGULATIONS	NAV88	NORTH AMERICAN VERTICAL DATUM OF 1988
CPV	CHANNEL PROTECTION VOLUME	N/F	NOW OR FORMERLY
CR	CRUSHER RUN	No.	NUMBER
CS	CONTROL STRUCTURE	NTS	NOT TO SCALE
CY	CUBIC YARDS	O/C	ON-CENTER
D	DEPTH	O.D.	OUTSIDE DIAMETER
D50	50TH PERCENTILE OF DIAMETER	PGDER	PRINCE GEORGE'S COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES
DA	DRAINAGE AREA	PGSCD	PRINCE GEORGE'S COUNTY SOIL CONSERVATION DISTRICT
DBC	DIRECT BURIED CABLE	PSI	POUNDS PER SQUARE INCH
D.I.P.	DUCTILE IRON PIPE	P.V.C.	POLYVINYL CHLORIDE PIPE
DPW	DEPARTMENT OF PUBLIC WORKS	RCN	RUNOFF CURVE NUMBER
EA	EACH	R.C.P.	REINFORCED CONCRETE PIPE
ELEC	ELECTRIC	R/W	RIGHT-OF-WAY
ELEV	ELEVATION	S	SEWER
EW	END WALL	SB	SOIL BORING
ES	END SECTION	SCH.	SCHEDULE
EX.	EXISTING	S.S.	SIDE SLOPE
f'c	COMPRESSIVE STRENGTH	STA.	STATION
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY	S.W.M.	STORMWATER MANAGEMENT
FIRM	FLOOD RATE INSURANCE MAP	t	THICKNESS
FO	FIBER OPTIC	T	TANGENT (CURVE DATA)
f.p.s.	FEET PER SECOND	T.B.R.	TO BE REMOVED
FT	FEET	Tc	TIME OF CONCENTRATION
GAB	GRADED AGGREGATE BASE	TELE	TELECOMMUNICATION
GALV.	GALVANIZED	T.O.W.	TOP OF WALL
H	HEIGHT	TYP.	TYPICAL
HRS.	HOURS	V	VELOCITY
HW	HEADWALL	W	WATER / WIDTH
H.D.P.E.	HIGH DENSITY POLYETHYLENE	WQv	WATER QUALITY VOLUME
HGL	HYDRAULIC GRADE LINE	WSEL	WATER SURFACE ELEVATION
HSG	HYDROLOGIC SOIL GROUP	YR	YEAR
I	INLET	Ø	DIAMETER
I.D.	INSIDE DIAMETER		
INV.	INVERT		

PLANS APPROVED BY
Harold W. Van Aller, P.E.
Harold W. Van Aller
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment



PRINCE GEORGE'S SOIL CONSERVATION DISTRICT
ENVIRONMENTAL SITE DEVELOPMENT APPROVAL
GRADING, EROSION AND SEDIMENT CONTROL

SSC# - 23-15-00 01/26/18
EXPIRATION DATE

PRELIMINARY FOND (FPF)

Charles P. Johnson 01/26/15
DISTRICT SIGNATURE APPROVAL DATE

LEGEND AND ABBREVIATIONS

MD DAM No. 8 DAM REPAIRS

GREENBELT LAKE

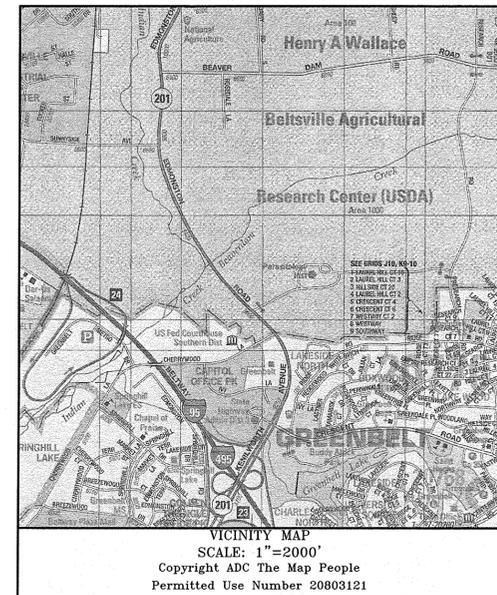
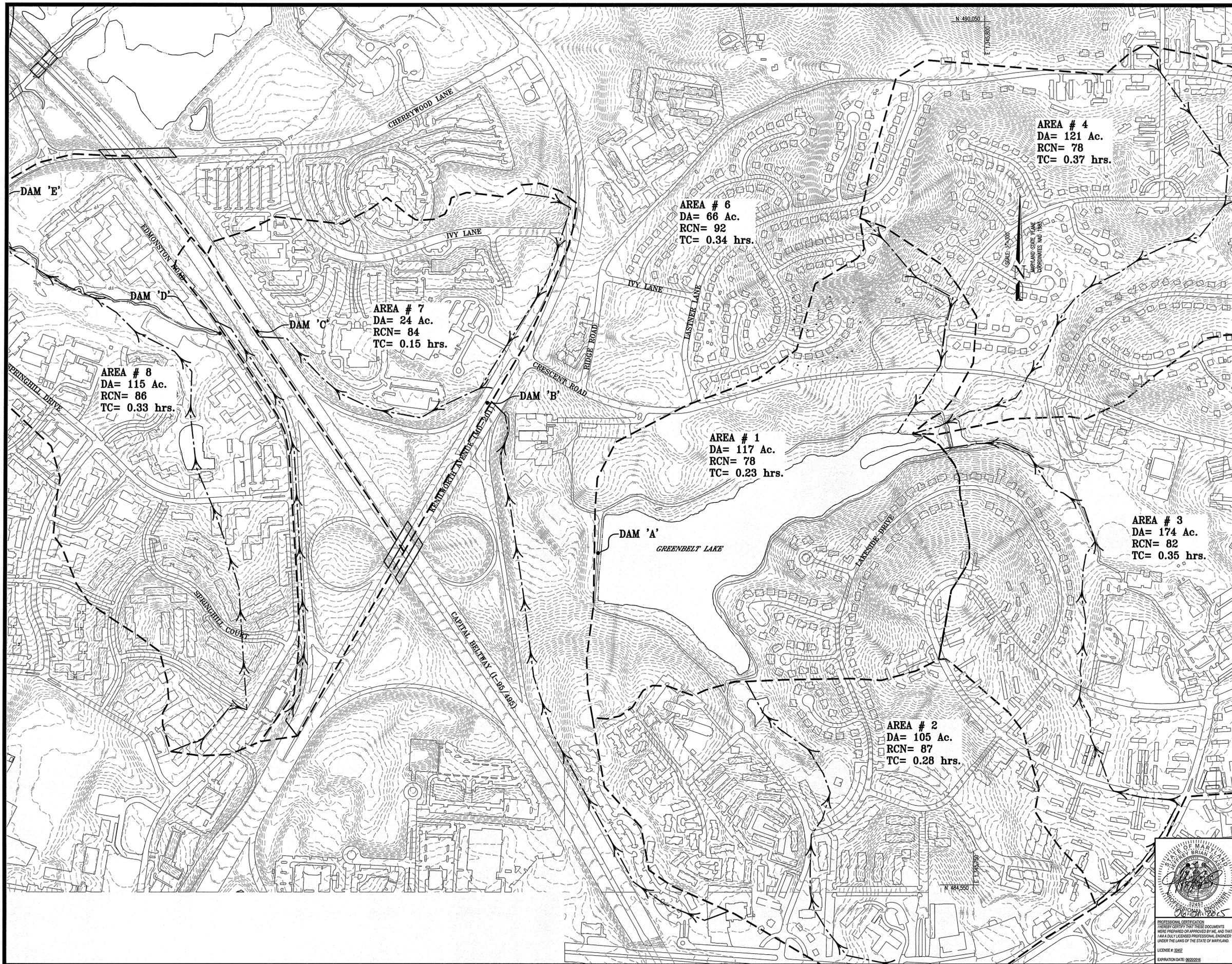
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

CPJ Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers • Planners • Landscape • Architects • Surveyors

1751 Elton Rd., Ste 300 Silver Spring, MD 20903 301-434-7000 Fax: 301-434-9594
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CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 2	OF: 22
DRAFT: JMV	DATE: FEB, 2015	FILE NO: 38-146-241
SCALE: AS-SHOWN		

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Area	DA (Ac.)	RCN	Tc (hrs.)
1	117	78	0.23
2	105	87	0.28
3	174	82	0.35
4	121	78	0.37
5	137	78	0.24
6	66	92	0.34
7	24	84	0.15
8	115	86	0.33

LEGEND

DRAINAGE DIVIDE
 FLOW PATH
>
>

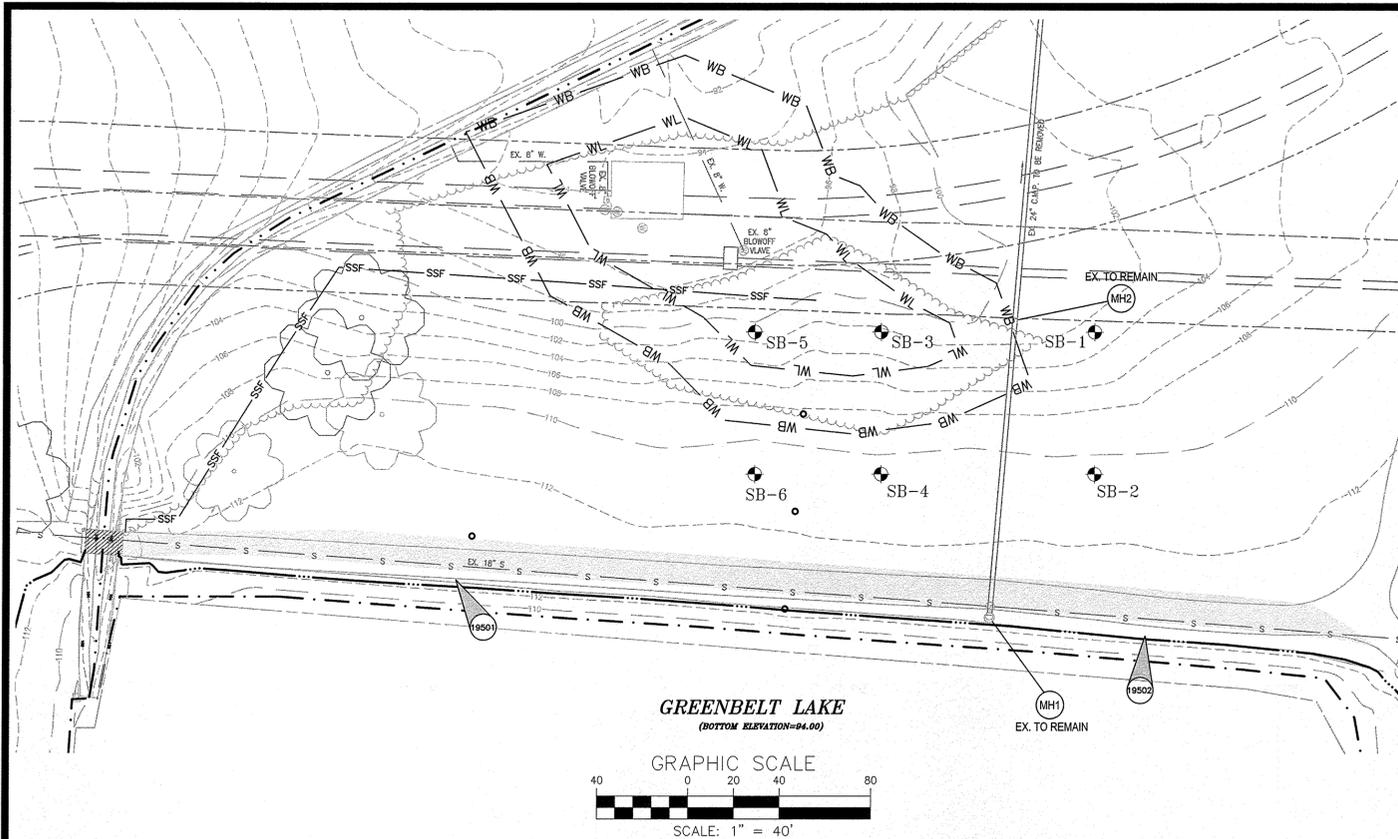
DRAINAGE AREA MAP

MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

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CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 3	OF: 22
DRAFT: JMV	DATE: FEB. 2015	DA-1 DA-1
SCALE: 1" = 300'	FILE NO:	38-146-241



BORING NUMBER B-1 PAGE 1 OF 1

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

CLIENT: Charles P. Johnson & Associates
PROJECT NAME: Greenbelt Lake
PROJECT NUMBER: E1104SS
PROJECT LOCATION: Greenbelt, MD
DATE STARTED: 6/29/11 COMPLETED: 6/29/11
GROUND ELEVATION: 103.8 ft
HOLE SIZE: 6 inches
DRILLING CONTRACTOR: K.E.I.
GROUND WATER LEVELS:
DRILLING METHOD: Hollow Stem Auger
AT TIME OF DRILLING:
LOGGED BY: RT CHECKED BY: RON
AT END OF DRILLING: 16.50 ft / Elev 84.10 ft
48hrs AFTER DRILLING: 8.50 ft / Elev 92.10 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RSD)	REMARKS	POCKET PEN (psi)	DRY UNIT WT (pcf)	Δ SPT N VALUE	PL	MC	LL	FI
0		Topsoil of first 5 inches	SS 1	83	2-3-1 (3)			20	40	60	80	
5		Reddish brown to gray, moist, slightly micaceous, organic, very loose clayey SAND (SC-SM) with plant and rock fragments	SS 2	100	1-2-2 (4)			20	40	60	80	
10		Gray to tanish brown, moist, organic, loose Sandy SILT (ML-S) with plant and rock fragments	SS 3	94	2-3-4 (6)			20	40	60	80	
15		Red to tan, moist, stiff CLAY (CL-CH)	SS 4	78	3-3-5 (8)			20	40	60	80	
20			SS 5	100	6-7-10 (17)			20	40	60	80	
25			SS 6	56	8-12-15 (27)			20	40	60	80	

Bottom of borehole at 20.0 feet

BORING NUMBER B-2 PAGE 1 OF 1

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

CLIENT: Charles P. Johnson & Associates
PROJECT NAME: Greenbelt Lake
PROJECT NUMBER: E1104SS
PROJECT LOCATION: Greenbelt, MD
DATE STARTED: 6/27/11 COMPLETED: 6/27/11
GROUND ELEVATION: 109.2 ft
HOLE SIZE: 6 inches
DRILLING CONTRACTOR: K.E.I.
GROUND WATER LEVELS:
DRILLING METHOD: Hollow Stem Auger
AT TIME OF DRILLING:
LOGGED BY: RT CHECKED BY: RON
AT END OF DRILLING: 23.00 ft / Elev 85.80 ft
48hrs AFTER DRILLING: 6.50 ft / Elev 103.30 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RSD)	REMARKS	POCKET PEN (psi)	DRY UNIT WT (pcf)	Δ SPT N VALUE	PL	MC	LL	FI
0		Topsoil of first 5 inches	SS 1	67	8-9-8 (17)			20	40	60	80	
5		Brown to reddish brown, very soft to stiff Sandy Clay rock and plant fragments	SS 2	78	3-1-2 (3)			20	40	60	80	
10		Reddish brown, wet, organic, very soft Sandy CLAY (CL-S) with plant and rock fragments	SS 3	67	1-1-1 (2)			20	40	60	80	
15		Gray to tanish brown, moist to wet, slightly micaceous, soft to medium Silty CLAY (CL-ML) with branch and rock fragments	SS 4	78	1-2-1 (3)			20	40	60	80	
20			SS 5	89	4-3-4 (7)			20	40	60	80	
25			SS 6	100	2-3-2 (5)			20	40	60	80	
30		Reddish brown to tanish red, moist, slightly micaceous, stiff CLAY (CL)	SS 7	94	8-10-13 (23)			20	40	60	80	
35			SS 8	11	6-7-12 (19)			20	40	60	80	

BORING NUMBER B-5 PAGE 1 OF 1

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

CLIENT: Charles P. Johnson & Associates
PROJECT NAME: Greenbelt Lake
PROJECT NUMBER: E1104SS
PROJECT LOCATION: Greenbelt, MD
DATE STARTED: 6/29/11 COMPLETED: 6/29/11
GROUND ELEVATION: 97.8 ft
HOLE SIZE: 6 inches
DRILLING CONTRACTOR: K.E.I.
GROUND WATER LEVELS:
DRILLING METHOD: Hollow Stem Auger
AT TIME OF DRILLING:
LOGGED BY: RT CHECKED BY: RON
AT END OF DRILLING: 10.25 ft / Elev 87.55 ft
48hrs AFTER DRILLING: 2.75 ft / Elev 95.05 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RSD)	REMARKS	POCKET PEN (psi)	DRY UNIT WT (pcf)	Δ SPT N VALUE	PL	MC	LL	FI
0		Topsoil of first 5 inches	SS 1	78	4-2-3 (5)			20	40	60	80	
5		Gray, dry to moist to wet, organic, soft to medium Sandy CLAY with branch fragments	SS 2	78	3-3-3 (6)			20	40	60	80	
10		Gray to tan, dry to moist to wet, organic, Silty CLAY (CL-M) with rock fragments	SS 3	67	1-1-3 (4)			20	40	60	80	
15		Red, moist, stiff CLAY (CL)	SS 4	94	4-4-6 (10)			20	40	60	80	
20			SS 5	100	4-5-7 (12)			20	40	60	80	

Bottom of borehole at 15.0 feet

BORING NUMBER B-6 PAGE 1 OF 1

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

CLIENT: Charles P. Johnson & Associates
PROJECT NAME: Greenbelt Lake
PROJECT NUMBER: E1104SS
PROJECT LOCATION: Greenbelt, MD
DATE STARTED: 6/27/11 COMPLETED: 6/27/11
GROUND ELEVATION: 109.5 ft
HOLE SIZE: 6 inches
DRILLING CONTRACTOR: K.E.I.
GROUND WATER LEVELS:
DRILLING METHOD: Hollow Stem Auger
AT TIME OF DRILLING:
LOGGED BY: RT CHECKED BY: RON
AT END OF DRILLING: 10.25 ft / Elev 87.55 ft
72hrs AFTER DRILLING: 8.00 ft / Elev 101.50 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RSD)	REMARKS	POCKET PEN (psi)	DRY UNIT WT (pcf)	Δ SPT N VALUE	PL	MC	LL	FI
0		Topsoil of first 5 inches	SS 1	78	3-2-2 (4)			20	40	60	80	
5		Brown, dry to moist, very loose to loose Silty Sand	SS 2	78	3-2-1 (3)			20	40	60	80	
10		Brown to gray, moist to wet, soft to medium to stiff Sandy CLAY (CL-S) with rock and plant fragments	SS 3	56	3-3-2 (10)			20	40	60	80	
15			SS 4	11	5-2-2 (4)			20	40	60	80	
20			SS 5	83	4-2-7 (9)			20	40	60	80	
25		Tanish brown, wet, medium dense SAND (SP-SC) with gravel and some Clay	SS 6	94	4-5-6 (11)			20	40	60	80	
30		Reddish brown to Tanish brown, moist to wet, stiff CLAY (CL)	SS 7	94	11-8-6 (13)			20	40	60	80	
35			SS 8	94	4-5-8 (15)			20	40	60	80	

BORING NUMBER B-3 PAGE 1 OF 1

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

CLIENT: Charles P. Johnson & Associates
PROJECT NAME: Greenbelt Lake
PROJECT NUMBER: E1104SS
PROJECT LOCATION: Greenbelt, MD
DATE STARTED: 6/29/11 COMPLETED: 6/29/11
GROUND ELEVATION: 98.3 ft
HOLE SIZE: 6 inches
DRILLING CONTRACTOR: K.E.I.
GROUND WATER LEVELS:
DRILLING METHOD: Hollow Stem Auger
AT TIME OF DRILLING:
LOGGED BY: RT CHECKED BY: RON
AT END OF DRILLING: 10.25 ft / Elev 87.55 ft
48hrs AFTER DRILLING: 3.00 ft / Elev 95.30 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RSD)	REMARKS	POCKET PEN (psi)	DRY UNIT WT (pcf)	Δ SPT N VALUE	PL	MC	LL	FI
0		Topsoil of first 5 inches	SS 1	58	6-6-7 (15)			20	40	60	80	
5		Brown, moist, medium dense, Silty Sand	SS 2	83	4-5-4 (9)			20	40	60	80	
10		Brown to gray, moist to wet, loose Silty SAND (SM) with clay and with branch and rock fragments	SS 3	67	7-3-3 (8)			20	40	60	80	
15		Tan, wet, slightly micaceous, Silty CLAY (CL-M)	SS 4	56	2-2-3 (5)			20	40	60	80	
20		Tan, wet, medium dense, SAND with trace of clay (SW-SI)	SS 5	78	6-6-7 (13)			20	40	60	80	

Bottom of borehole at 15.0 feet

BORING NUMBER B-4 PAGE 1 OF 1

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

CLIENT: Charles P. Johnson & Associates
PROJECT NAME: Greenbelt Lake
PROJECT NUMBER: E1104SS
PROJECT LOCATION: Greenbelt, MD
DATE STARTED: 6/27/11 COMPLETED: 6/27/11
GROUND ELEVATION: 109.6 ft
HOLE SIZE: 6 inches
DRILLING CONTRACTOR: K.E.I.
GROUND WATER LEVELS:
DRILLING METHOD: Hollow Stem Auger
AT TIME OF DRILLING:
LOGGED BY: RT CHECKED BY: RON
AT END OF DRILLING: 8.10 ft / Elev 101.50 ft
AFTER DRILLING:

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RSD)	REMARKS	POCKET PEN (psi)	DRY UNIT WT (pcf)	Δ SPT N VALUE	PL	MC	LL	FI
0		Topsoil of first 5 inches	SS 1	94	5-4-1 (5)			20	40	60	80	
5		Red, dry, loose Sandy SILT with rock fragments	SS 2	61	3-2-2 (4)			20	40	60	80	
10		Red, wet, slightly micaceous, very loose Silty CLAY (CL-M)	SS 3	100	1-0-1 (1)			20	40	60	80	
15		Red to redish brown to brown, very wet, loose to very loose SAND (SW) with silt	SS 4	78	1-0-0 (0)			20	40	60	80	
20			SS 5	94	2-3-3 (6)			20	40	60	80	
25		Gray, moist to wet, loose, Silty CLAY (CL-M) with sand and plant fragments	SS 6	94	4-3-4 (7)			20	40	60	80	
30		Brown to tan to gray, moist to wet, slightly micaceous, stiff Sandy CLAY with silt (CLS)	SS 7	22	2-3-9 (12)			20	40	60	80	
35			SS 8	100	3-4-5 (9)			20	40	60	80	

GENERAL NOTES:
1. THIS PLAN SHALL ONLY BE USED FOR THE CONSTRUCTION OF STORM DRAIN AND ASSOCIATED STORM DRAIN IMPROVEMENTS WITHIN THE PUBLIC RIGHT-OF-WAY AND/OR EASEMENT AS SHOWN. THIS PLAN IS NOT TO BE USED FOR ANY OTHER CONSTRUCTION PURPOSE.

MISS UTILITY
Call "Miss Utility" at 1-800-257-7777, 72 hours prior to the start of work. The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation.

PLANS APPROVED BY
Harold W. Van Aller, P.E.
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment

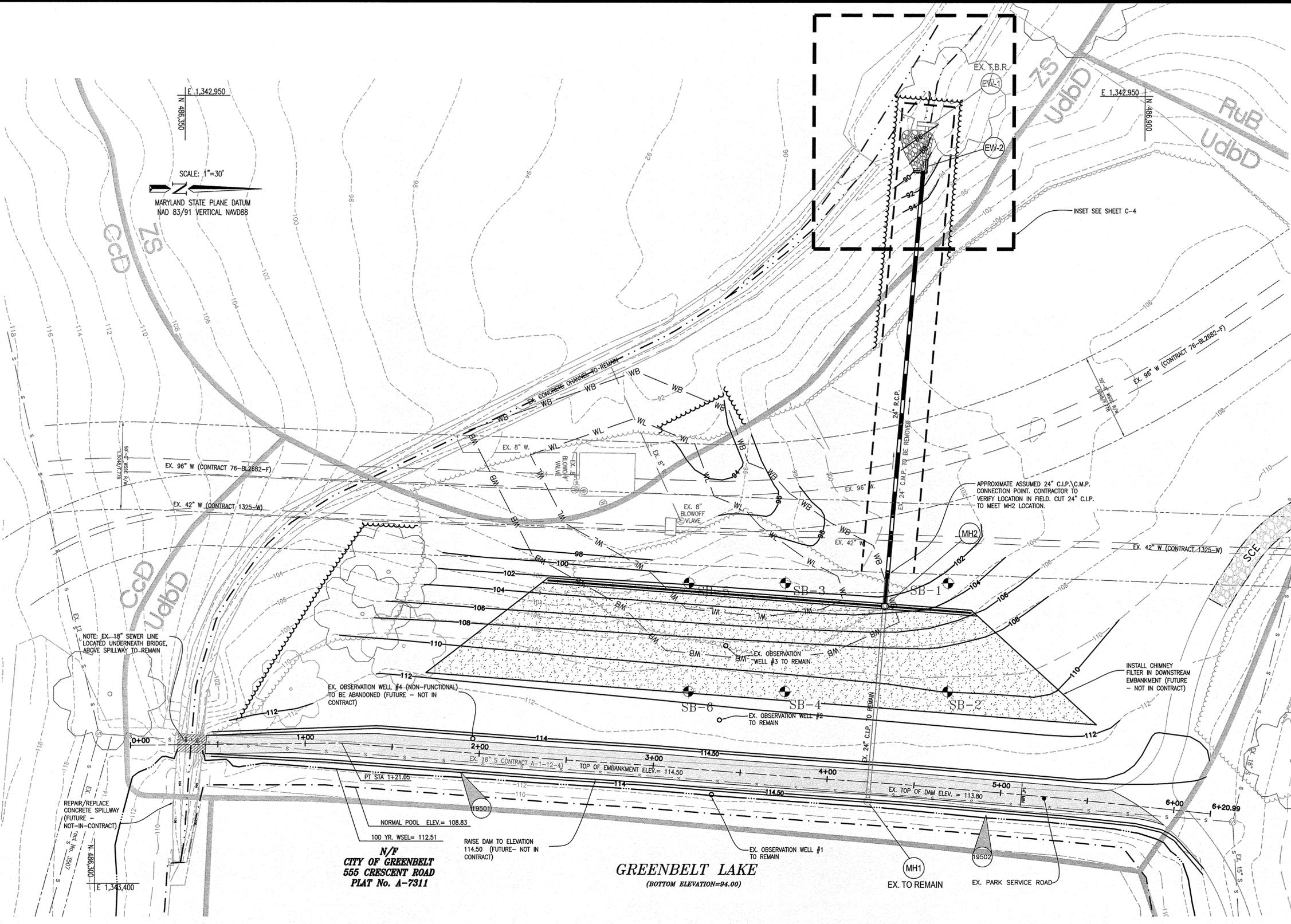


GEOTECHNICAL EXPLORATION LOGS
MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

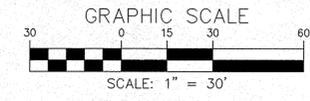
CPJ Charles P. Johnson & Associates, Inc.
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CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 4	OF: 22
DRAFT: JMV	DATE: FEB. 2015	FILE NO: B-1 B-1
SCALE: 1" = 40'		38-146-241

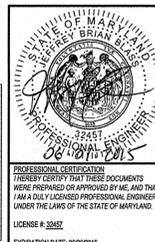
SCALE: 1"=30'
 MARYLAND STATE PLANE DATUM
 NAD 83/91 VERTICAL NAVD88



MISS UTILITY
 Call "Miss Utility" at 1-800-257-7777, 72 hours prior to the start of work. The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation.



PLANS APPROVED BY
 Harald W. Van Aller, P.E.
 March 19, 2015
 14-MR-062
 Dam Safety Division
 Maryland Dept. of the Environment



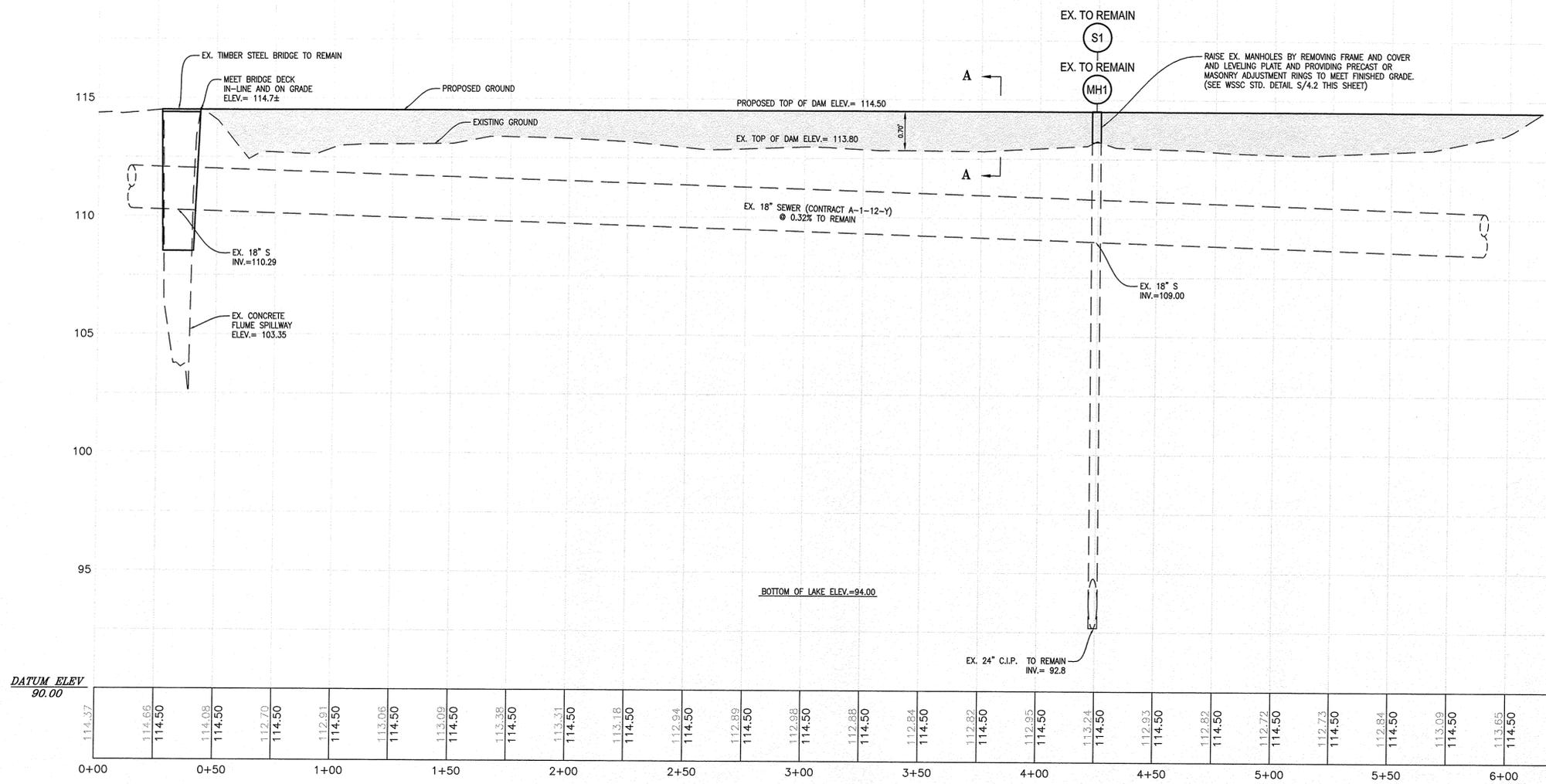
- GENERAL NOTES:**
- THIS PLAN SHALL ONLY BE USED FOR THE CONSTRUCTION OF DAM REPAIR AND ASSOCIATED DAM REPAIR IMPROVEMENTS AS SHOWN. THIS PLAN SHALL NOT BE USED FOR ANY OTHER CONSTRUCTION PURPOSE. THIS PLAN SHALL NOT BE USED FOR GRADING OF THE SITE OTHER THAN AREAS WITHIN THE LOD.
 - THE EXISTING UTILITIES SHOWN HEREON HAVE BEEN LOCATED USING INFORMATION AVAILABLE AT THE TIME THIS PLAN WAS PREPARED. PRIOR TO DIGGING, THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES VIA TEST PIT WITHIN THE LIMITS OF CONSTRUCTION SHOWN ON THIS PLAN AND CONFIRM THAT NO CONFLICTS EXIST. ANY CONFLICTS MUST BE BROUGHT TO THE ATTENTION OF CPJ AND THE OWNER PRIOR TO STARTING CONSTRUCTION.
 - THE EXISTING SURVEY TRAVERSE POINTS SHALL BE PRESERVED THROUGH EACH PHASE BY THE CONTRACTOR OR RESET IN ANOTHER LOCATION AND NEW TRAVERSE POINT INFORMATION PROVIDED TO THE OWNER AND ENGINEER-IN-CHARGE.

- LAKE DRAIN NOTES:**
- CONTRACTOR TO COMPLETE A CCTV INSPECTION OF 24" C.I.P. UPON EXPOSING PIPE. BASED ON RESULTS OF CCTV INSPECTION, CONTRACTOR MAY BE REQUIRED, AT OWNERS REQUEST TO SLIP LINE 24" C.I.P. WITH AN 18" O.D. SNAP-TITE LINER AND 1,000 PSI GROUT.
 - CONTRACTOR TO EXERCISE AND LUBRICATE EXISTING 24" VALVE IN MH1. IF VALVE CANNOT BE OPERATED, CONTRACTOR TO REPLACE EXISTING VALVE.

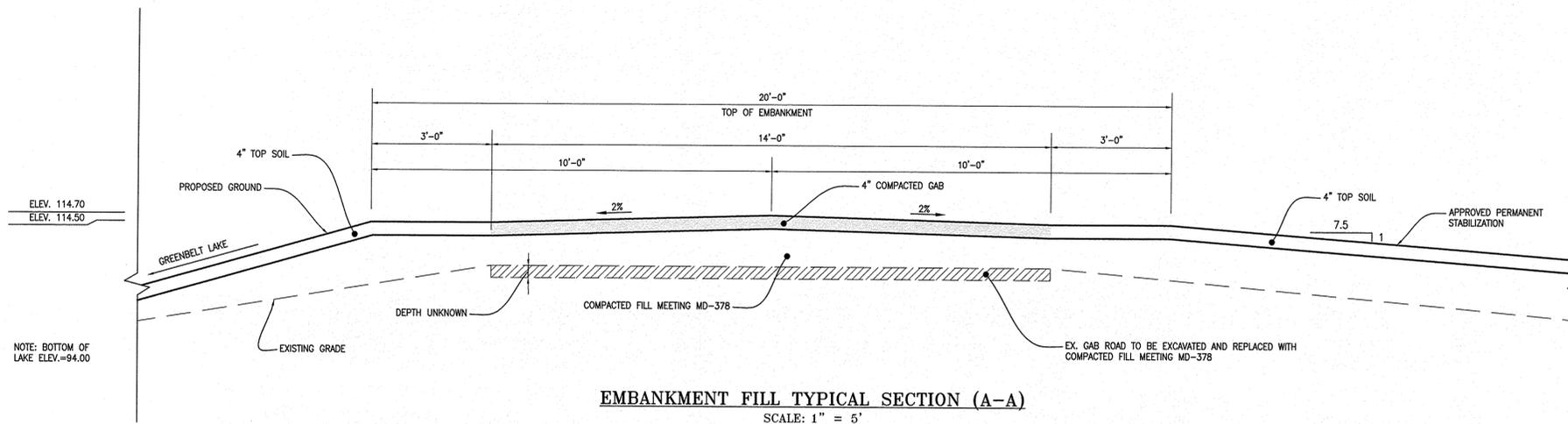
DAM PLAN VIEW
 MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
 BERWYN (21st) ELECTION DISTRICT
 PRINCE GEORGE'S COUNTY, MARYLAND

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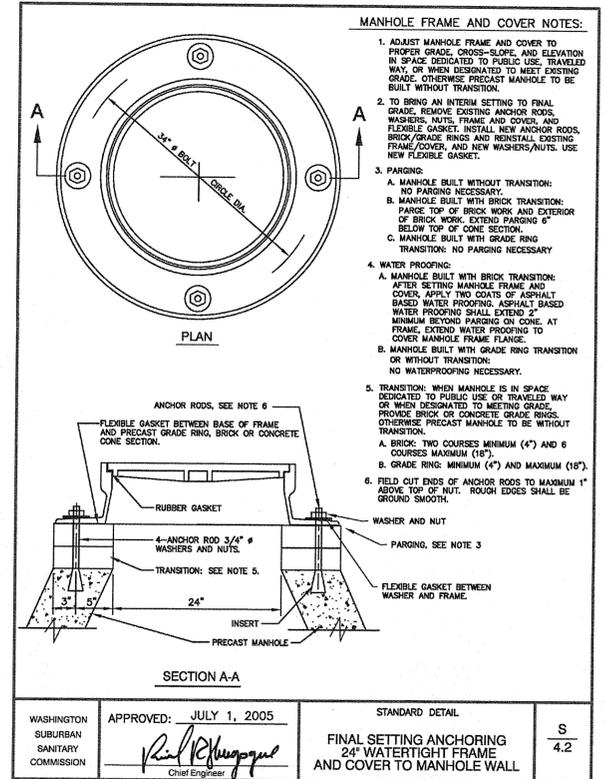
CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 5	OF: 22
DRAFT: JMV	DATE: FEB., 2015	SCALE: 1"=30'
DATE: FEB., 2015	SCALE: 1"=30'	FILE NO.: 38-146-241



EMBANKMENT FILL MODIFICATION PROFILE
SCALE: 1" = 30'



EMBANKMENT FILL TYPICAL SECTION (A-A)
SCALE: 1" = 5'



FUTURE - NOT IN CONTRACT

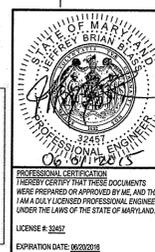
THIS PLAN SHALL ONLY BE USED FOR THE CONSTRUCTION OF DAM REPAIR AND ASSOCIATED DAM REPAIR IMPROVEMENTS AS SHOWN. THIS PLAN SHALL NOT BE USED FOR ANY OTHER CONSTRUCTION PURPOSE. THIS PLAN SHALL NOT BE USED FOR GRADING OF THE SITE OTHER THAN AREAS WITHIN THE SWM EASEMENT.

THE EXISTING UTILITIES SHOWN HEREON HAVE BEEN LOCATED USING INFORMATION AVAILABLE AT THE TIME THIS PLAN WAS PREPARED. PRIOR TO DIGGING, THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES VIA TEST PIT WITHIN THE LIMITS OF CONSTRUCTION SHOWN ON THIS PLAN AND CONFIRM THAT NO CONFLICTS EXIST. ANY CONFLICTS MUST BE BROUGHT TO THE ATTENTION OF CPJ AND THE OWNER PRIOR TO STARTING CONSTRUCTION.

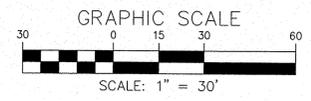
EMBANKMENT FILL MODIFICATION
MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

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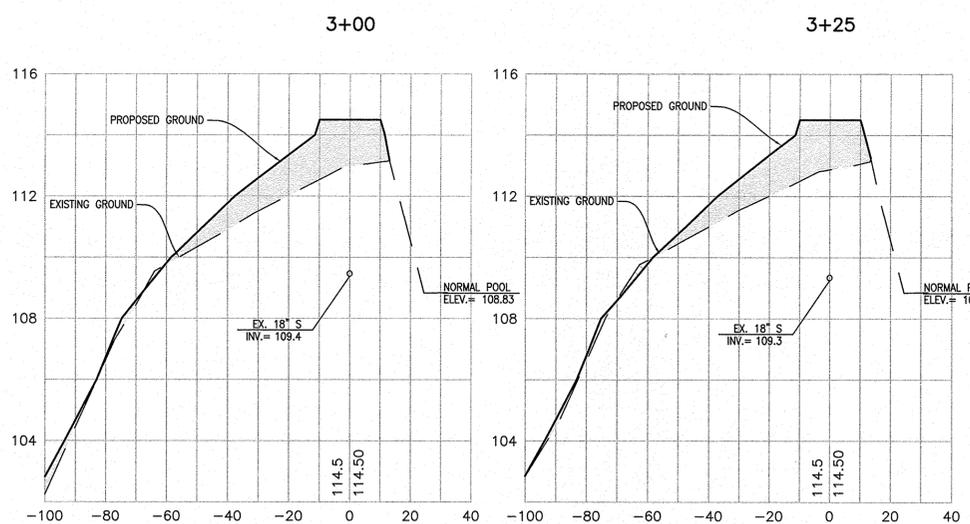
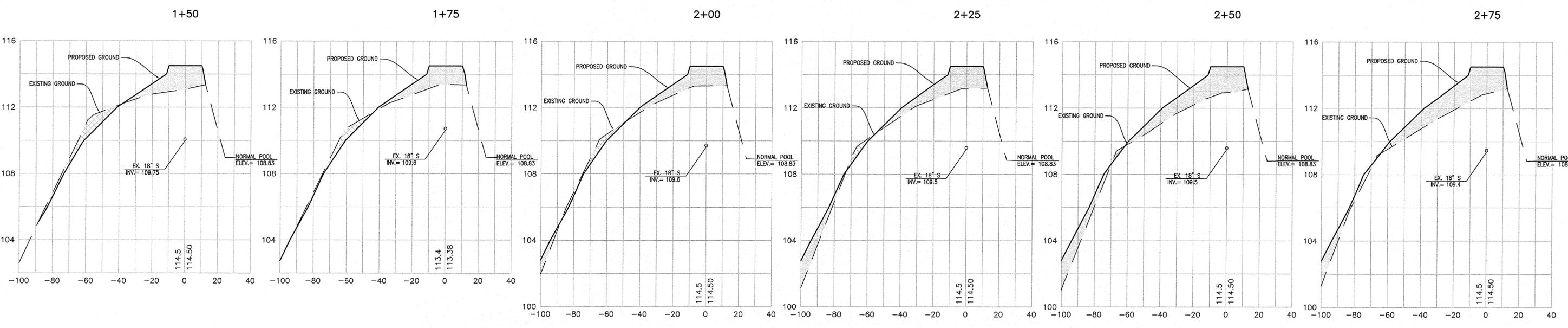
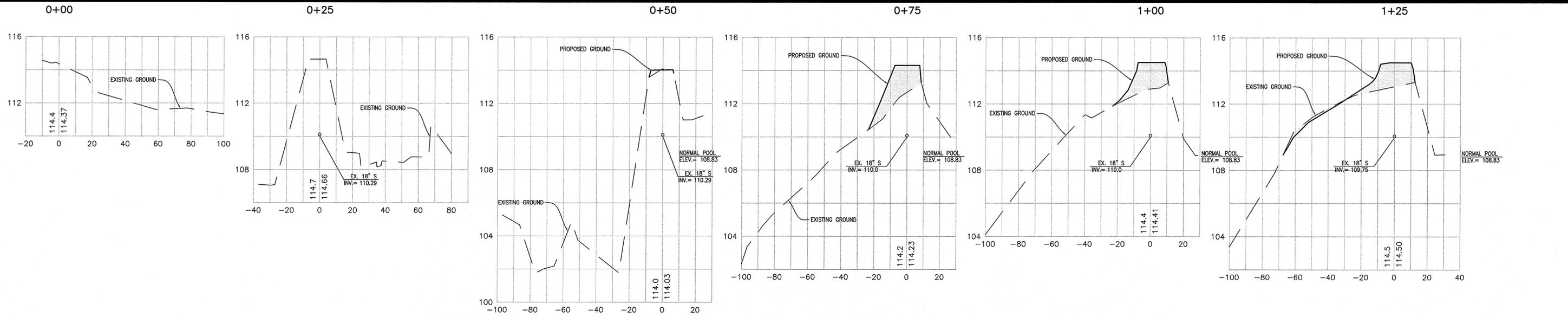
CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO.: N/A	SHEET NO.: N/A
DESIGN: JBB	DATE: FEB., 2015	SCALE: 1" = 30'
DRAFT: JMV	FILE NO.: C-2	38-146-241
DATE: FEB., 2015	FILE NO.: C-8	



PLANS APPROVED BY
Harold W. Van Aller, P.E.
Harold W. Van Aller
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment



MISS UTILITY
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FUTURE - NOT IN CONTRACT

SEE TYPICAL EMBANKMENT FILL DETAIL (SHEET C-2) FOR ROAD SECTION AND GEOMETRY DETAILS.

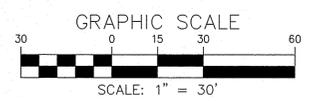
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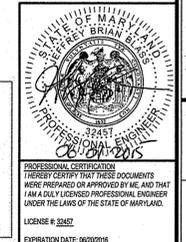
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NOTE:
BOTTOM OF LAKE
ELEV.=94.00



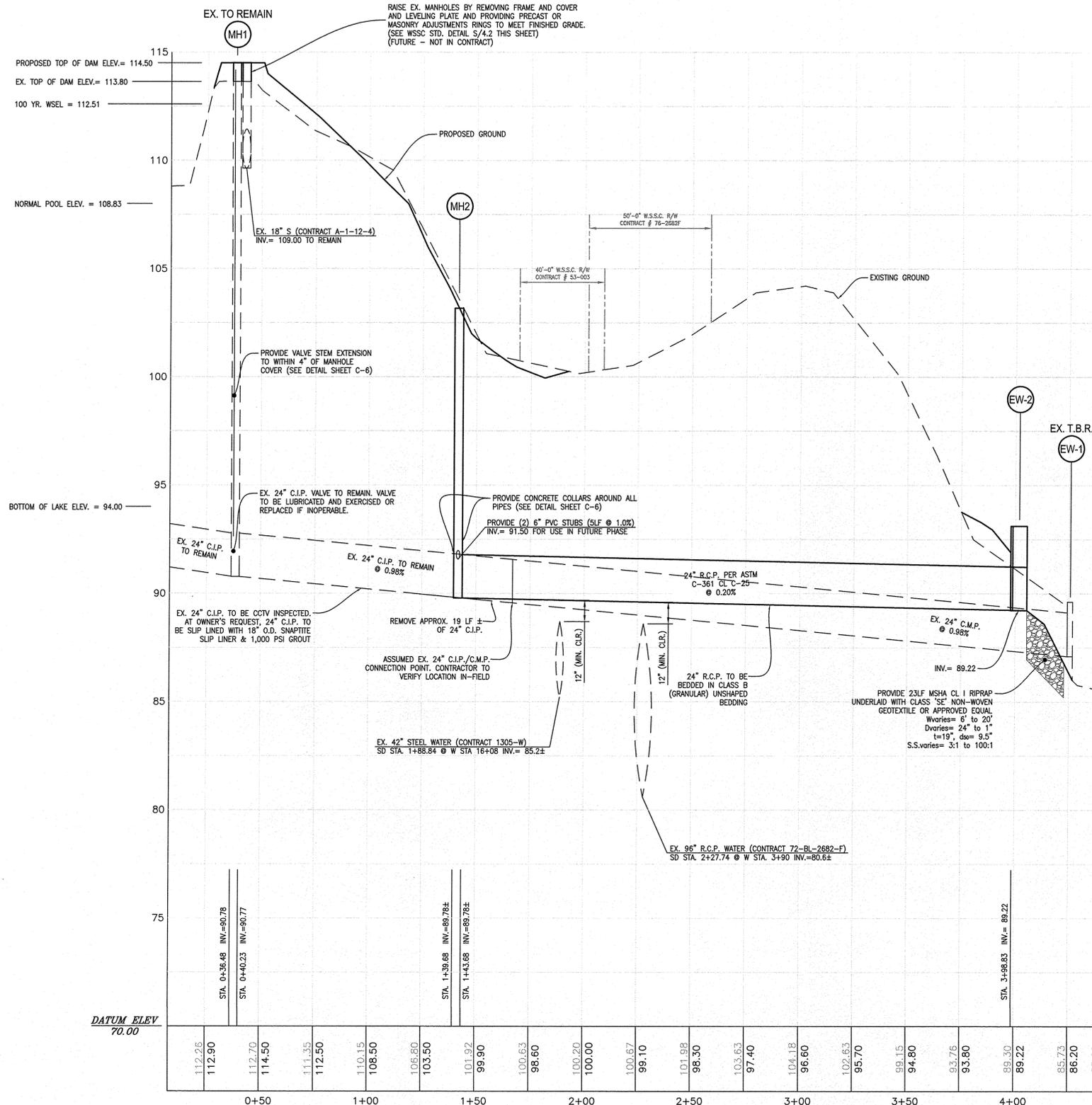
PLANS APPROVED BY
Harold W. Van Aller, P.E.
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment



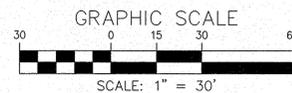
EMBANKMENT FILL PROFILES
MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

CPJ Charles P. Johnson & Associates, Inc.
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CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 7	OF: 22
DRAFT: JMV	DATE: FEB. 2015	FILE NO.: 38-146-241
SCALE: 1" = 30'		

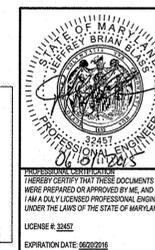


LAKE DRAIN PROFILE
 HORIZONTAL SCALE: 1" = 30'
 VERTICAL SCALE: 1" = 3'



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PLANS APPROVED BY
 Harald W. Van Aller, P.E.
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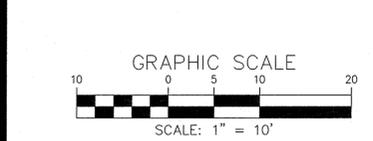
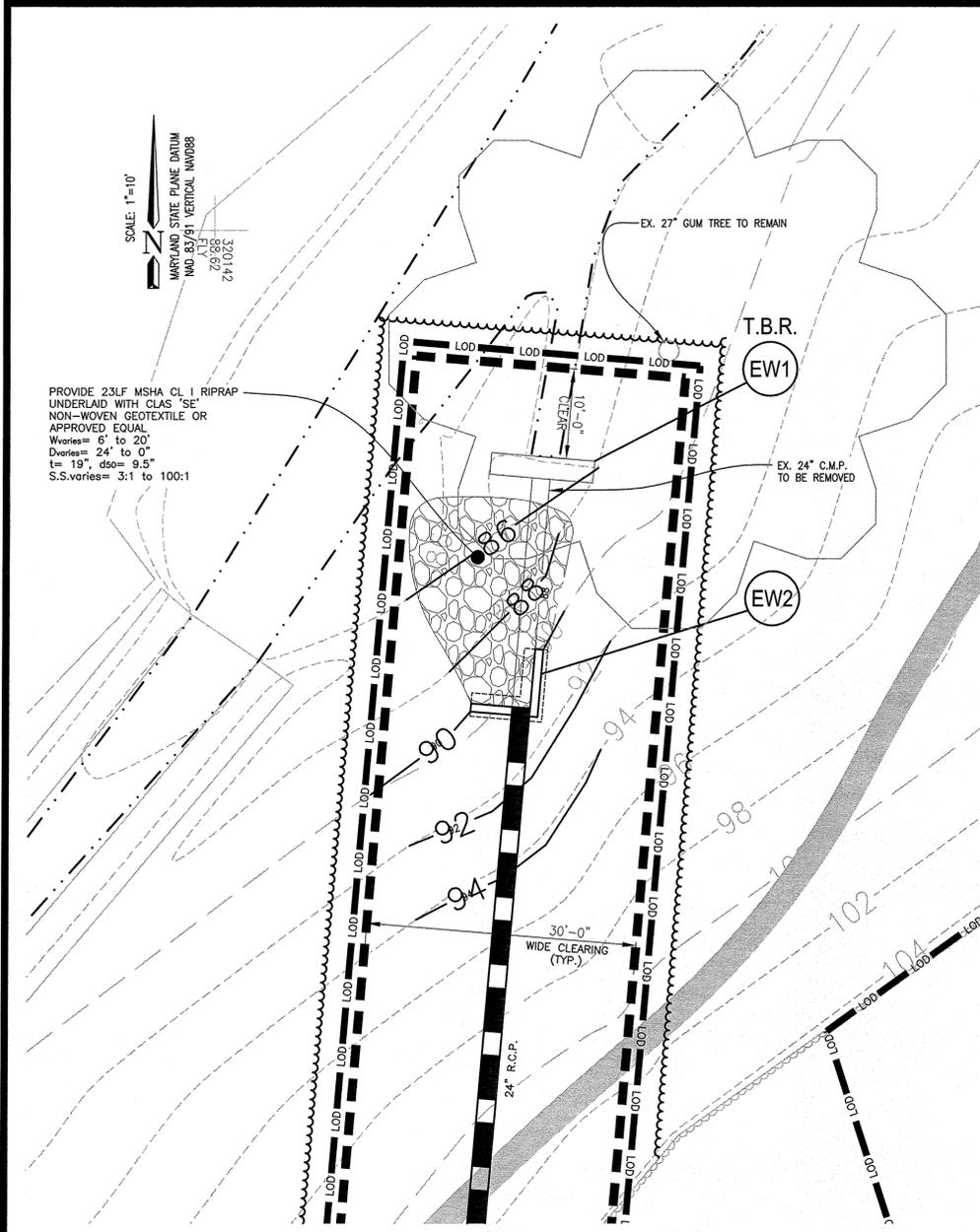
ALL WORK WITHIN W.S.S.C. RIGHT-OF-WAY SHALL TAKE PLACE UNDER SUPERVISION OF THE W.S.S.C. INSPECTOR.

LAKE DRAIN
 MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
 BERWYN (21st) ELECTION DISTRICT
 PRINCE GEORGE'S COUNTY, MARYLAND

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CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE		PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN JBB	SHEET 9	OF 22	
DRAFT JMV	DATE FEB. 2015	C-5	C-8
SCALE 1" = 30'	FILE NO: 38-146-24.1		

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OUTFALL INSET
(SCALE: 1" = 10')

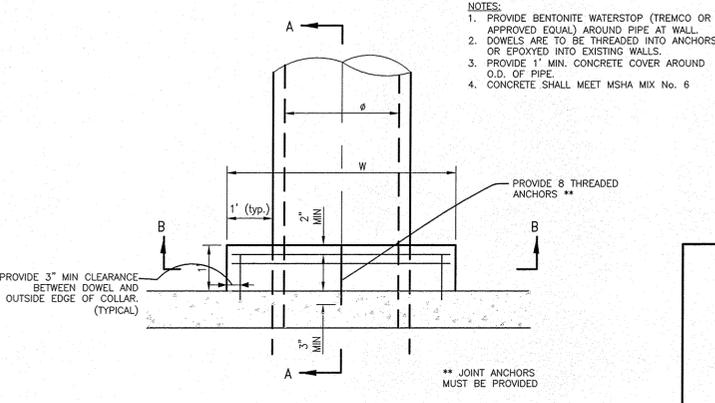
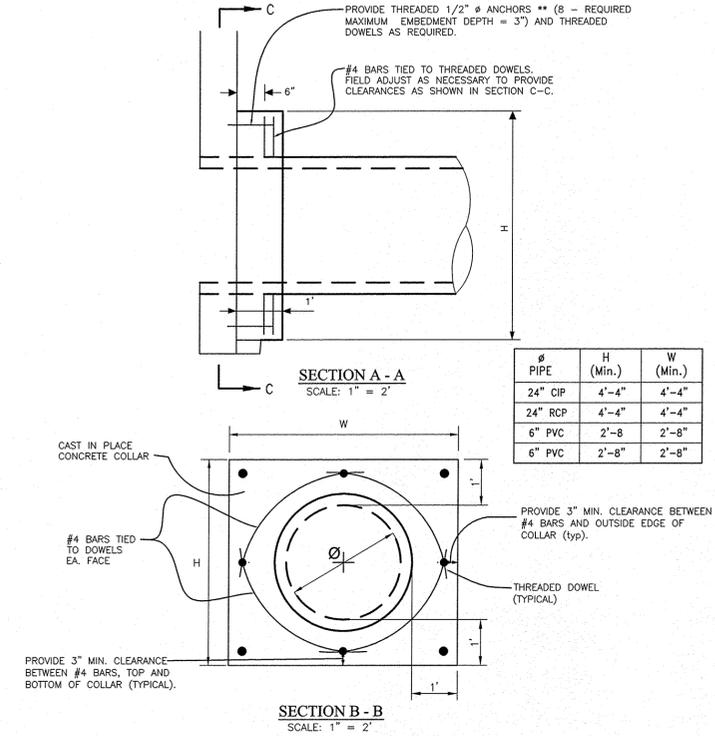
PIPE SCHEDULE		
PIPE SIZE	TYPE	LENGTH (LF)
24"	R.C.P. C-361 CL C-25	262 LF
24"	C.M.P. (TO BE REMOVED)	262 LF
24"	C.I.P. (TO BE REMOVED)	19 LF

PUBLIC STRUCTURE SCHEDULE									
NO.	TYPE	COORDINATES		TOP ELEVATION		BASE DIAMETER	THROAT DESIGN	STEP LOCATION	REMARKS
		NORTHING	EASTING	UPPER	LOWER				
EW1	ENDWALL	486775.18	1342965.05	INV.=	87.96	-	-	-	EX. TO BE REMOVED
EW2	ENDWALL	486772.86	1342992.88	INV.=	89.22	-	-	-	TYPE E ENDWALL STANDARD No. MD 356.01 (Ø = 24")
MH1	MANHOLE	486753.59	1343223.95	TOP=	114.50	36" X 36"	-	3:00	EX. TO BE MODIFIED
MH2	MANHOLE	486752.15	1343241.24	TOP=	103.17	48"	-	3:00	TYPE A MANHOLE STANDARD No. PG SD 21.0

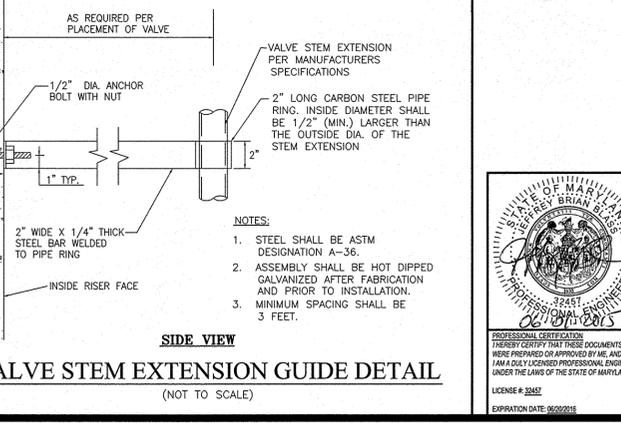
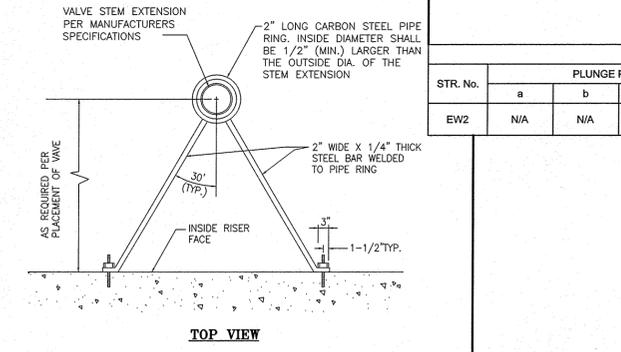
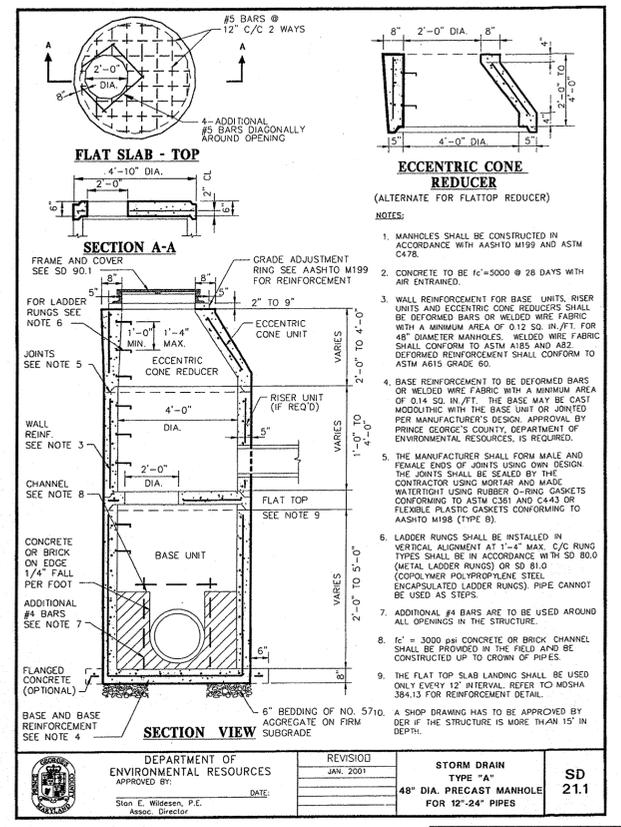
- NOTES:**
- NO PIPE SHALL BE CONSTRUCTED INTO THE CORNER OF A SQUARE OR RECTANGULAR STORM DRAIN STRUCTURE (TO BE USED AS A SAFETY MEASURE), PER MSHA STD. No. MD-384.13 - SEE DETAIL ON THIS SHEET.
 - ALL PRECAST STRUCTURES AND SUPPLIERS OF "ALTERNATIVE EQUAL STRUCTURES" ARE TO BE PREVIOUSLY APPROVED BY MCDOT.
 - STATION AND OFFSET (OR COORDINATE) TO MANHOLES ARE TO CENTER OF STRUCTURE.
 - STATION AND OFFSET (OR COORDINATE) TO A-INLETS ARE TO CENTER OF STRUCTURE AT FRONT OF CURB.
 - STATION AND OFFSET (OR COORDINATE) TO ENDSECTIONS ARE TO CENTER OF LOWER FLARED END.
 - STATION AND OFFSET (OR COORDINATE) TO ENDWALL/HEADWALL ARE TO TOP CENTER OF WALL.

MISS UTILITY

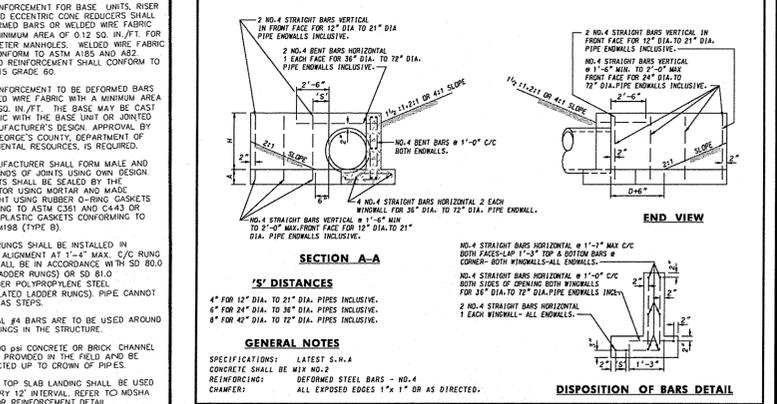
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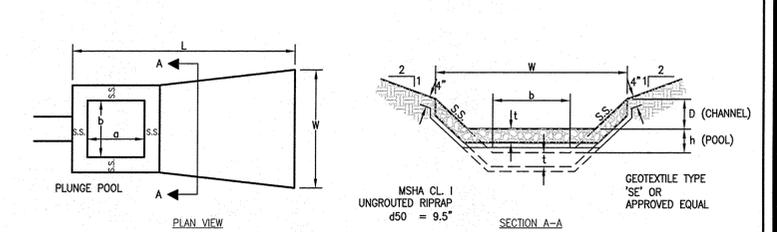
CAST-IN-PLACE CONCRETE COLLAR DETAILS
SCALE: 1" = 2'



QUANTITIES FOR ESTIMATING PURPOSES ONLY									
D	AREA	DIMENSIONS					CONC. C.Y.	STEEL LBS.	
		B	C	E	H	L			
12	0.79	3"	6"	6"	1'-9"	1'-9"	3'-6"	0.76	55
15	1.23	3"	6"	6"	1'-9"	2'-0"	4'-3"	0.99	61
18	1.77	3"	6"	6"	1'-9"	2'-3"	5'-0"	1.17	68
21	2.40	3"	6"	6"	1'-9"	2'-6"	5'-9"	1.38	77
24	3.14	3"	6"	6"	2'-0"	2'-9"	6'-6"	1.64	106
27	3.96	3"	6"	6"	2'-3"	3'-0"	7'-3"	2.17	115
30	4.91	3"	6"	6"	2'-6"	3'-6"	8'-0"	2.57	140
33	5.96	3"	6"	6"	2'-9"	3'-9"	8'-9"	2.95	148
36	7.07	3"	6"	6"	3'-0"	4'-0"	9'-6"	4.99	235
42	9.42	3"	6"	6"	3'-6"	4'-6"	11'-0"	6.19	303
48	12.57	3"	6"	6"	4'-0"	5'-0"	12'-6"	7.34	341
54	15.50	3"	6"	6"	4'-6"	5'-6"	14'-0"	9.17	438
60	18.64	3"	6"	6"	5'-0"	6'-0"	15'-6"	10.86	496
72	28.27	3"	6"	6"	6'-0"	7'-0"	17'-0"	12.69	597



SPECIFICATION	CATEGORY CODE ITEMS
305	SD 21.1



STR. No.	PLUNGE POOL					CHANNEL			
	a	b	h	S.S.	t	L	W	D	S.S.
EW2	N/A	N/A	N/A	N/A	19.0'	23'	VARIES 6' TO 20'	VARIES (24" TO 0")	VARIES (3:1 TO 100:1)

PLANS APPROVED BY
Harald W. Van Aller, P.E.
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment

LAKE DRAIN DETAILS

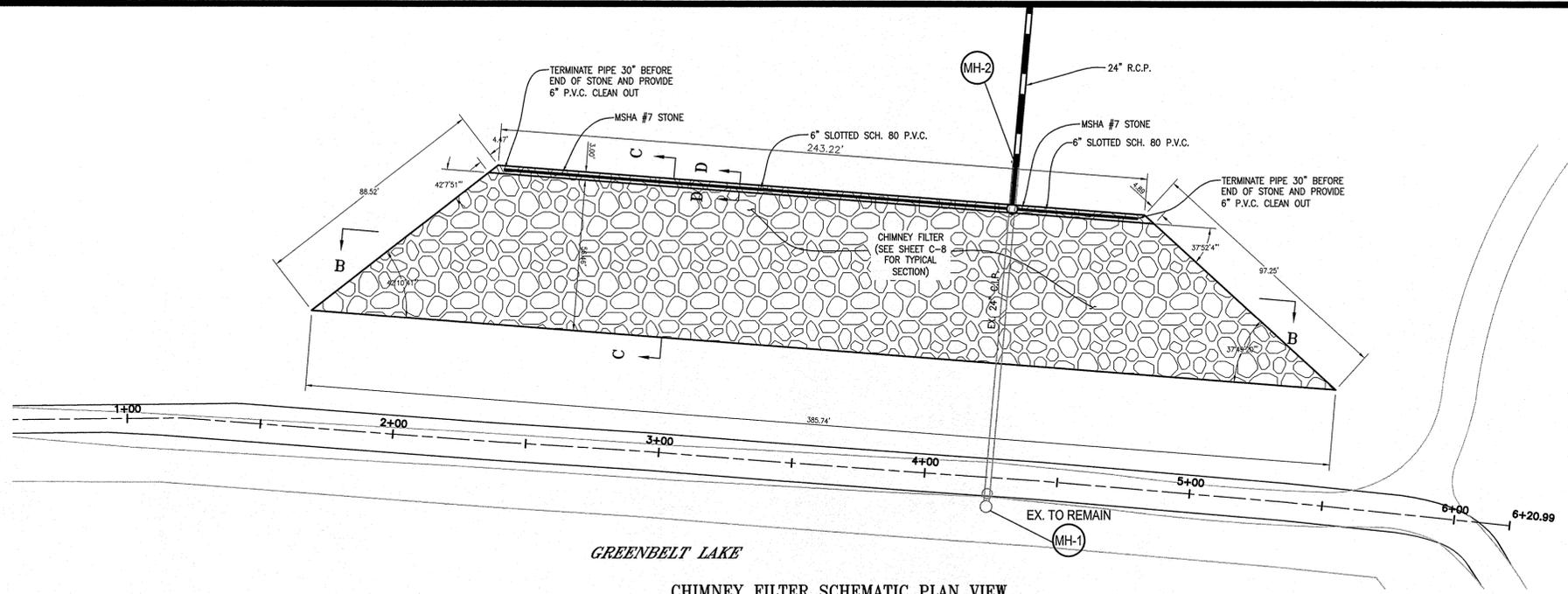
MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

CPJ Associates
Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers • Planners • Landscape • Architects • Surveyors

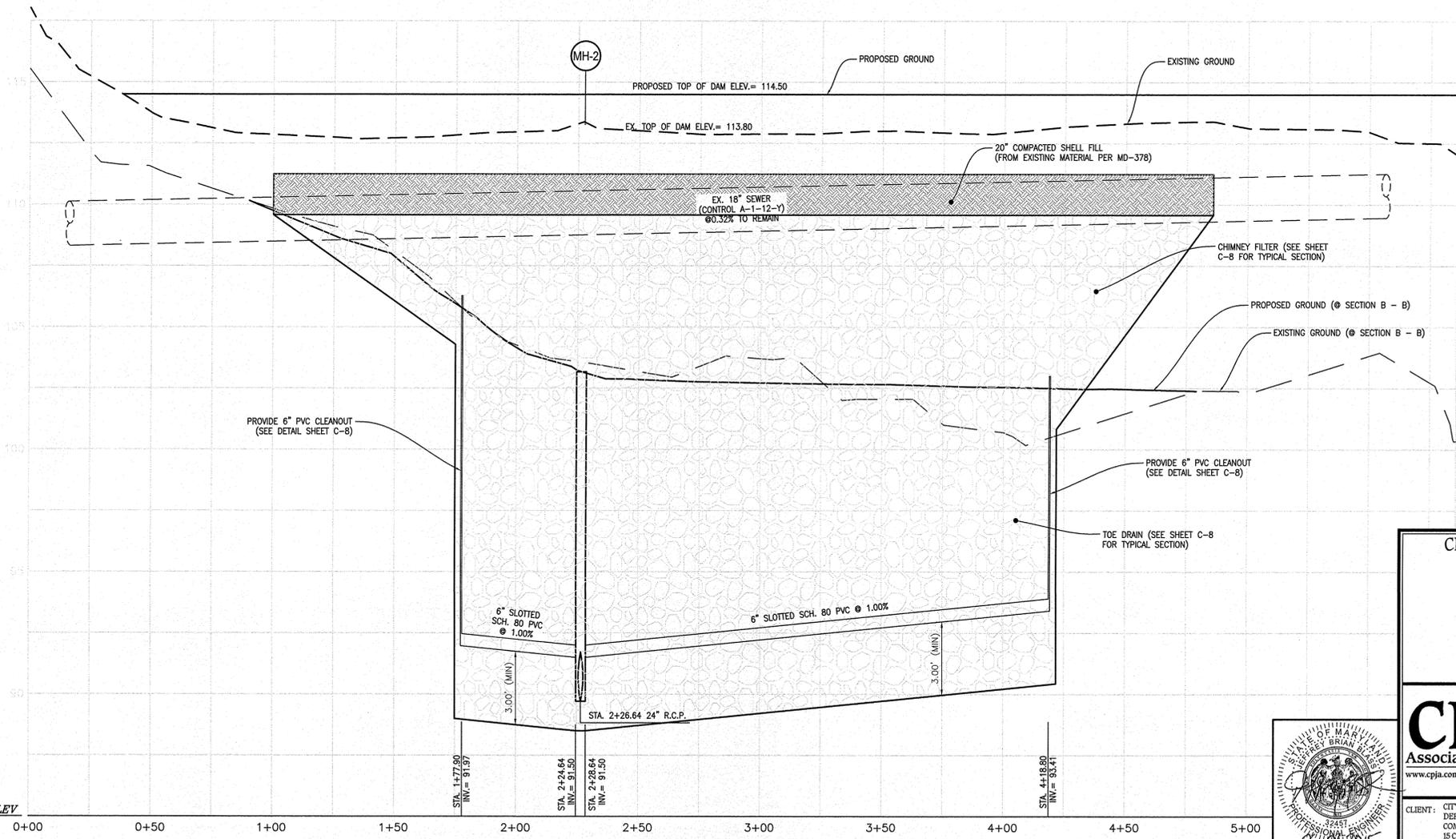
1751 Elton Rd., Ste 300 Silver Spring, MD 20903 301-454-7000 Fax: 301-454-9394
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CLIENT: CITY OF GREENBELT, DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT, 15 CRESCENT ROAD, GREENBELT, MD 20770-1886, CONTACT: MS. CELIA CRAZE

PRELIMINARY PLAN NO.: N/A
SITE PLAN NO.: N/A
DESIGN: JBB
SHEET: 10 OF 22
DRAFT: JMV
DATE: FEB. 2015
SCALE: 1" = 30'
FILE NO.: C-6 C-8
FILE NO.: 38-146-241

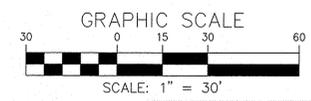


CHIMNEY FILTER SCHEMATIC PLAN VIEW
(SCALE: 1" = 30')



CHIMNEY FILTER PROFILE (B - B)
(SCALE: 1" = 30')

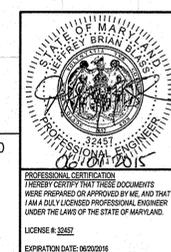
FUTURE - NOT IN CONTRACT



PLANS APPROVED BY
Harold W. Van Aller, P.E.
Harold W. Van Aller
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment

CHIMNEY FILTER PLAN VIEW AND PROFILES
MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

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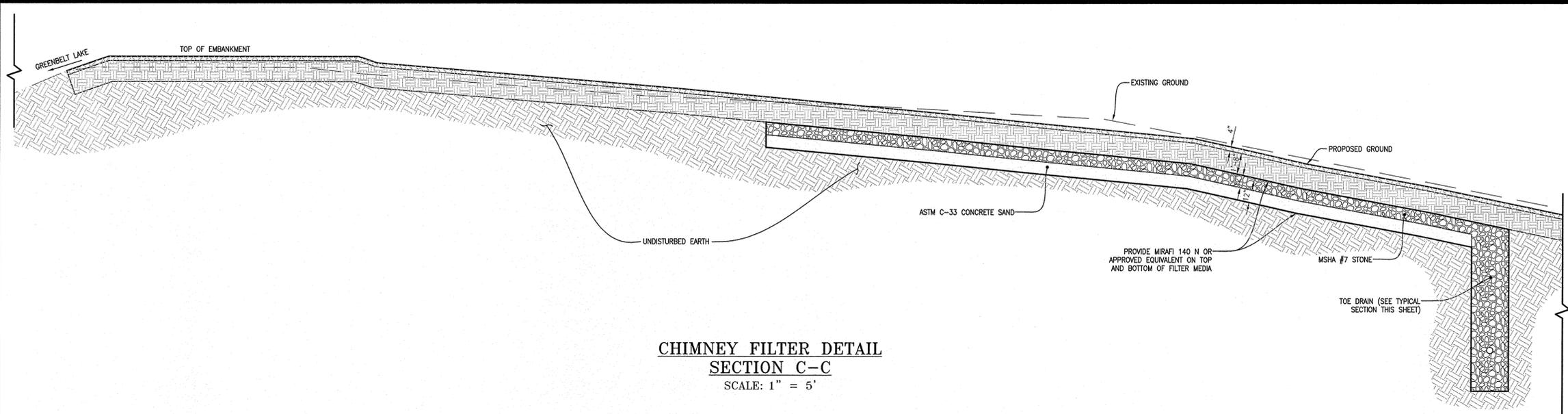
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CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 11	OF: 22
DRAFT: JMV	DATE: FEB. 2015	FILE NO: C-7 C-8
SCALE: 1" = 30'	SCALE: 1" = 30'	FILE NO: 38-146-241

Chimney Filter Installation Notes

- 1) All materials for chimney filter installation must be submitted to and approved by the Engineer-in-Charge and the Owner's Project Manager prior to delivery to site. Samples of sand and stone material to be used in the chimney filter shall be tested by the geotechnical engineer of record to ensure compliance with correct gradations of the specified materials.
- 2) Materials to be used on this project consist of the following:
 - i) ASTM C-33 Sand - The minimum dry density of the compacted sand shall be equal to 70 percent of the dry density obtained by compacting a single specimen of sand using the energy and methods described in ASTM D698A. The test consists of a one point test performed on sand that has been air dried thoroughly prior to compaction. The sand shall have no more than 3% material passing a #200 sieve as stockpiled on-site and no more than 5% material passing a #200 sieve as installed. The geotechnical engineer of record shall confirm this requirement.
 - ii) Stone aggregate shall be double-washed with a gradation meeting ASTM C-33 size #7.
 - iii) Under drain pipe and fittings shall be 6" diameter polyvinyl chloride (P.V.C.) meeting Schedule 80.
- 3) All chimney filter installation work is to be done under supervision of a professional geotechnical engineer.
- 4) Chimney filter material is to be placed in a maximum of eight (8) inch thick lifts compacting in between each lift.
- 5) Compaction of each lift of sand shall be accomplished via the following process:
 - i) Place lift the full length of the chimney filter prior to compaction.
 - ii) Flood the lift with clean potable water immediately prior to compaction from a source approved by the Engineer-in-Charge and the Owner's Project Manager.
 - iii) Make a minimum of two (2) passes with a vibratory plate compactor weighing at least 160 pounds with a minimum centrifugal weight of 2,450 pounds at a vibrating frequency of no less than 5,000 cycles per minute or by a vibratory smooth-wheeled roller weighing at least 325 pounds with a centrifugal weight of 2,250 pounds at a vibrating frequency of no less than 4,500 cycles per minute just after the water level has dropped below the surface of the sand.
- 6) Chimney filter material shall be placed to avoid segregation of particle sizes and to ensure the continuity and integrity of all zones. No foreign material shall be allowed to intermix with or otherwise contaminate the chimney filter materials. The contractor shall completely remove any chimney filter material found to be contaminated with foreign materials prior to installing additional chimney filter material.
- 7) Traffic shall not be permitted to crossover filter zones at random. Equipment crossovers shall be maintained, and the number and location of such crossovers shall be established and approved prior to beginning the chimney filter placement. Each cross over shall be cleared of contaminating material and shall be inspected and approved by the professional geotechnical engineer supervising the installation before placement of additional chimney filter material.
- 8) Any damage to the foundation surface or the trench sides or bottom occurring during placement of chimney filter material shall be repaired before chimney filter placement is continued.
- 9) The upper surface of the chimney filter should be constructed concurrently with adjacent zones of earth fill and shall be maintained at a minimum elevation of one (1) foot above the upper surface of the adjacent earth fill.



**CHIMNEY FILTER DETAIL
SECTION C-C**
SCALE: 1" = 5'

TENCATE Mirafi
TENCATE GEOSYNTHETICS Americas

Mirafi® 140N

Mirafi® 140N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 140N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids. Mirafi® 140N meets AASHTO M288-05 Class 3 for Elongation > 50%.

TenCate Geosynthetics Americas Laboratories are accredited by a2La (The American Association for Laboratory Accreditation) and Geosynthetic Accreditation Institute - Laboratory Accreditation Program (GAI-LAP). NITPEP

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	120 (534)	120 (534)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	50 (223)	50 (223)
CBR Puncture Strength	ASTM D6241	lbs (N)	310 (1380)	
Apparent Opening Size (AOS)*	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
Permeability	ASTM D4491	sec ⁻¹	1.7	
Flow Rate	ASTM D4481	gal/min/ft ² (l/min/m ²)	135 (5500)	
UV Resistance (at 500 hours) ²	ASTM D4355	% strength retained	70	

*ASTM D4751: AOS is a Maximum Opening Diameter Value
²Modified

Physical Properties	Unit	Typical Value ³
Roll Dimensions (width x length)	ft (m)	12.5 x 380 (3.8 x 110) / 15 x 380 (4.5 x 110)
Roll Area	yd ² (m ²)	500 (418) / 600 (502)
Estimated Roll Weight	lb (kg)	137 (62) / 165 (75)

³ASTM D4439 Standard Terminology for Geosynthetics: Typical value, n—For geosynthetics, the mean value calculated from documented manufacturing quality control test results for a defined population obtained from one test method associated with one specific property.

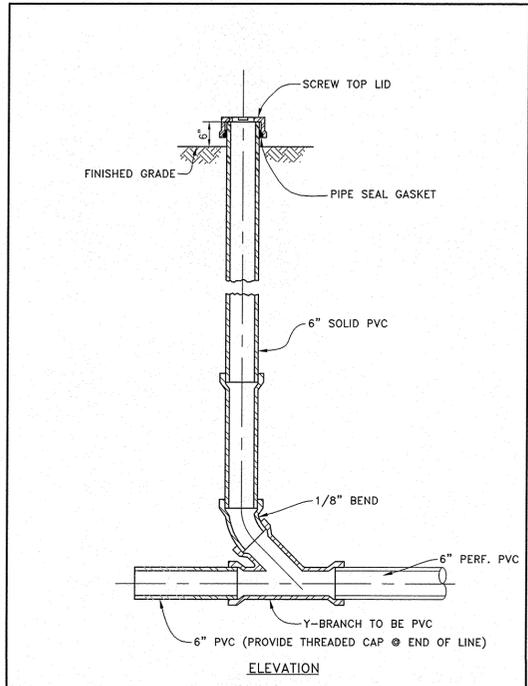
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TENCATE
materials that make a difference

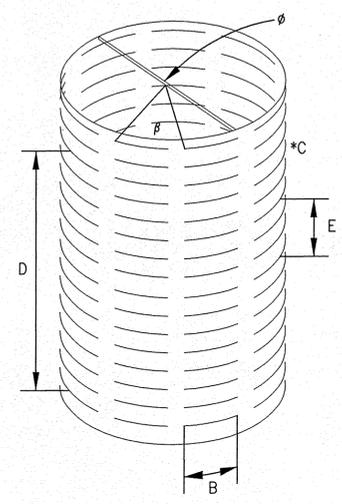
365 South Holland Drive
Pondore, GA 30667
Tel: 706 693 2226
Fax: 706 693 4400
www.tencate.com

ACCREDITED
GMA
NITPEP



**CLEANOUT/OBSERVATION WELL DETAIL
(NON-TRAFFIC AREA)**

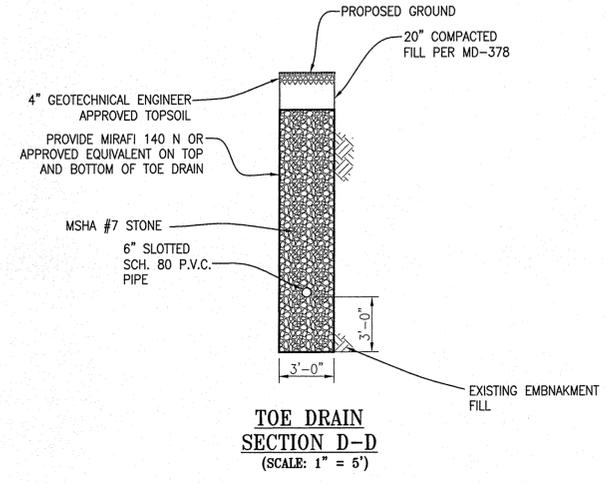
1. FOR AN UNDERGROUND OBSERVATION WELL/CLEANOUT MOUNTED AT FINISHED GRADE, PROVIDE A TUBE MADE OF NON-CORROSIVE MATERIAL, SCHEDULE 80 PVC, OR EQUAL, AT LEAST THREE FEET LONG WITH AN INSIDE DIAMETER OF AT LEAST SIX INCHES.
2. THE TUBE SHALL HAVE A FACTORY-ATTACHED CAST IRON OR HIGH-IMPACT PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING SCREW-TOP LID. THE SCREW-TOP LID SHALL BE CAST IRON OR HIGH-IMPACT PLASTIC THAT WILL WITHSTAND ULTRA-VIOLET RAYS.
3. THE TOP OF THE COVER TO BE APPROXIMATELY FLUSH WITH FINISHED GRADE.



SLOT SCHEDULE

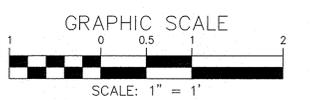
DIMENSION	VALUE	UNITS
A*	4	EA
B	1.8	IN
C	1/8	IN
D	4	EA
E	3	IN
β	6	IN
β	90	DEGREES

**SLOTTED PVC
DETAIL**
SCALE: 1"=1"



**TOE DRAIN
SECTION D-D**
SCALE: 1" = 5'

FUTURE - NOT IN CONTRACT



THIS PLAN SHALL ONLY BE USED FOR THE CONSTRUCTION OF DAM REPAIR AND ASSOCIATED DAM REPAIR IMPROVEMENTS AS SHOWN. THIS PLAN SHALL NOT BE USED FOR ANY OTHER CONSTRUCTION PURPOSE. THIS PLAN SHALL NOT BE USED FOR GRADING OF THE SITE OTHER THAN AREAS WITHIN THE SWM EASEMENT.

THE EXISTING UTILITIES HEREON HAVE BEEN LOCATED USING INFORMATION AVAILABLE AT THE TIME THIS PLAN WAS PREPARED. PRIOR TO DIGGING, THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES VIA TEST PIT WITHIN THE LIMITS OF CONSTRUCTION SHOWN ON THIS PLAN AND CONFIRM THAT NO CONFLICTS EXIST. ANY CONFLICTS MUST BE BROUGHT TO THE ATTENTION OF CPJ AND THE OWNER PRIOR TO STARTING CONSTRUCTION.

MISS UTILITY

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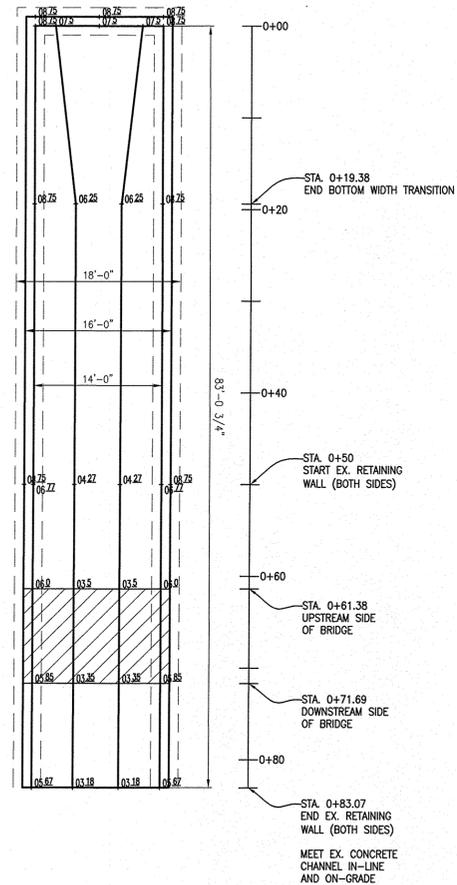
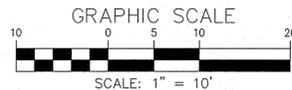
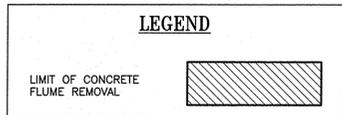
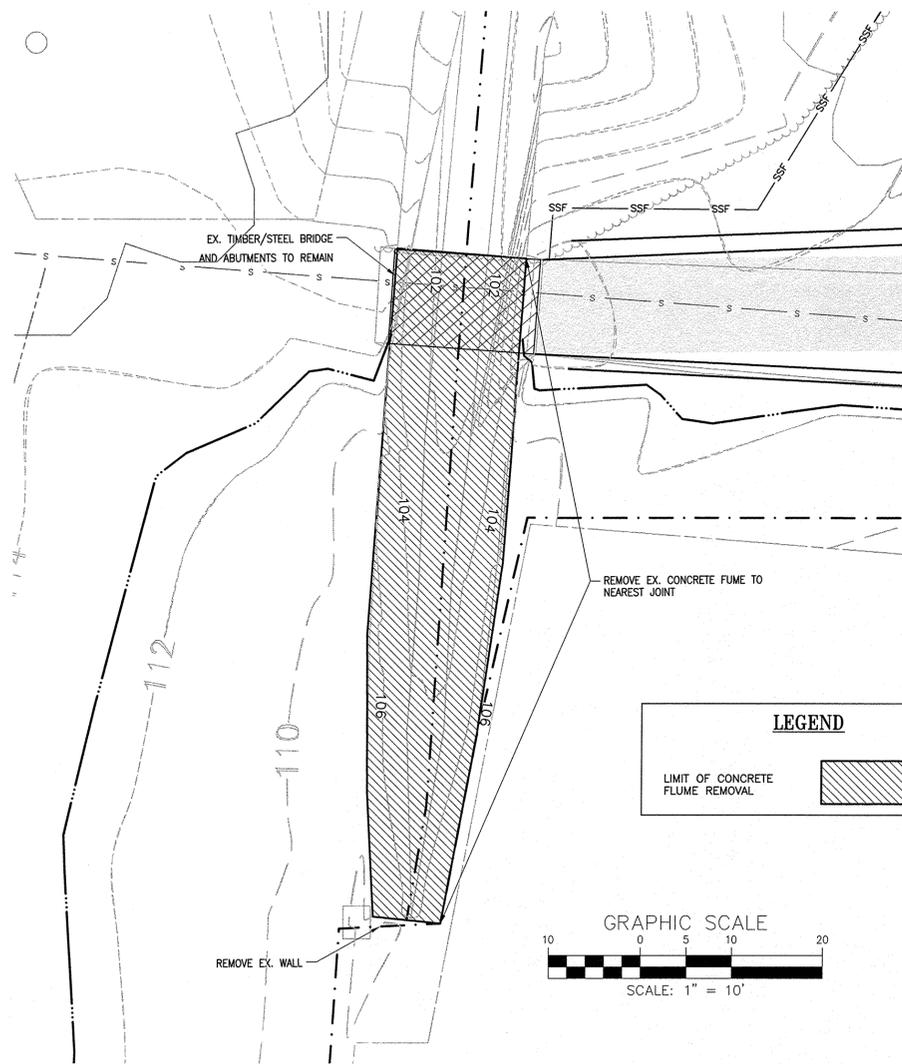
PLANS APPROVED BY
Harold W. Van Aller, P.E.
Harold W. Van Aller
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment



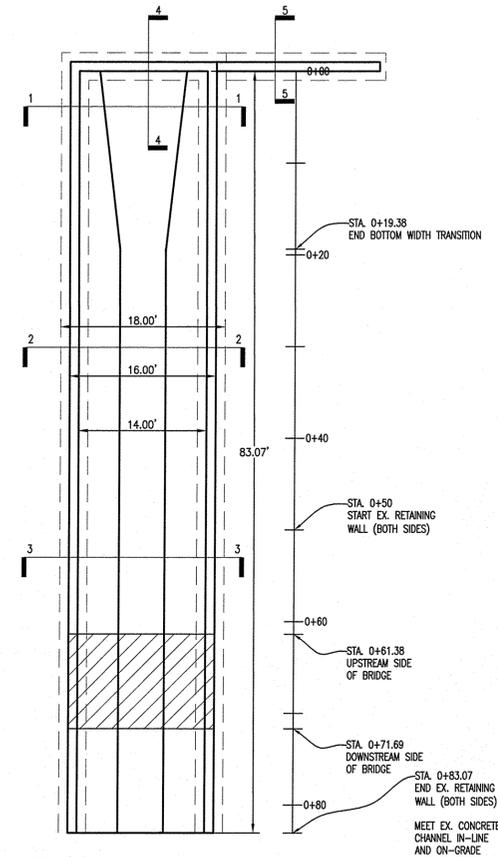
CHIMNEY FILTER DETAILS
MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

CPJ Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers • Planners • Landscape • Architects • Surveyors
1751 Elton Rd., Ste 500 Silver Spring, MD 20903 301-434-7000 Fax: 301-434-9394
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CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 12	OF: 22
DRAFT: JMV	DATE: FEB. 2015	SCALE: AS-SHOWN
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE # 2382 EXPIRATION DATE: 09/20/2015	FILE NO: 38-146-241	

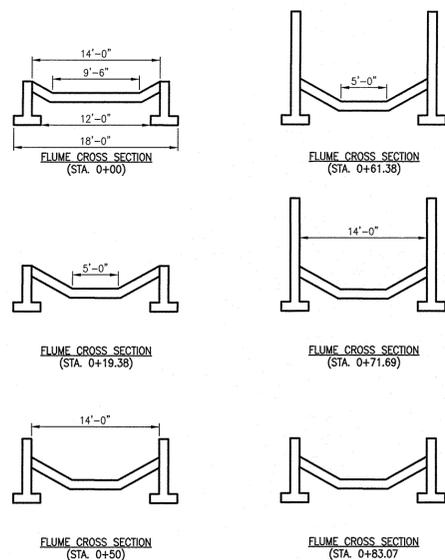


SPILLWAY FLUME SCHEMATIC PLAN
(SCALE: 1" = 10')

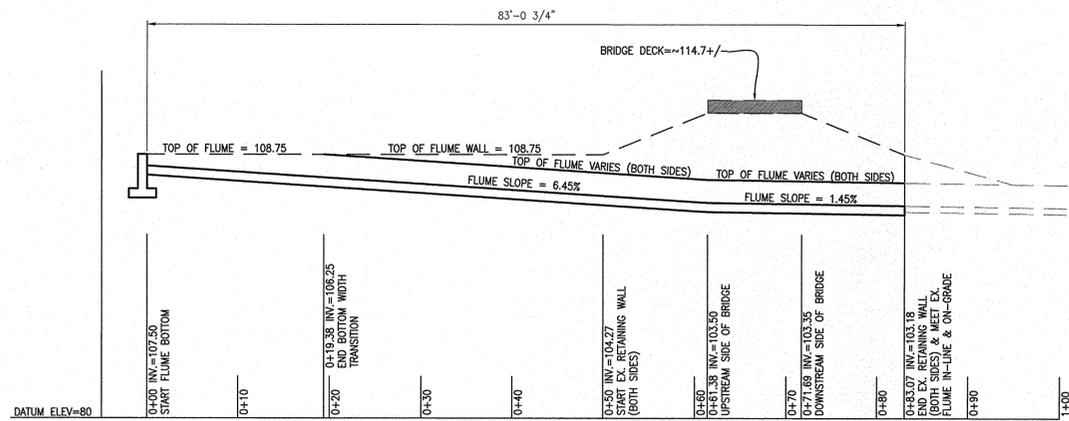


SPILLWAY FLUME SECTION LOCATIONS
(SCALE: 1" = 10')

SPILLWAY REPLACEMENT
(SCALE: 1" = 10')



SPILLWAY REPLACEMENT SECTIONS
(SCALE: 1" = 10')



SPILLWAY FLUME PROFILE
(SCALE: 1" = 10')

FUTURE - NOT IN CONTRACT

MISS UTILITY
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SPILLWAY REPLACEMENT PLAN VIEW

MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

PLANS APPROVED BY
Harold W. Van Aller, P.E.
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment

STRUCTURAL CERTIFICATION
I hereby certify that the structural design of this stormwater management facility is in accordance with applicable codes and that the plan for this has been designed for specified loading(s) as indicated hereon.

Design Engineer Signature: *Jeffrey B. Blasse* Date: *03.01.2015*
Printed Name: **JEFFREY B. BLASSE** Registration Number: **32457**
ACI-350 Design Loading

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CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 13	OF: 22
DRAFT: JMV	DATE: FEB, 2015	SCALE: AS-SHOWN
COPYRIGHT © LATEST DATE HEREON CHARLES P. JOHNSON & ASSOCIATES, INC. ALL RIGHTS RESERVED. UNAUTHORIZED USE OR REPRODUCTION IS PROHIBITED.	FILE NO: 38-146-241	

STRUCTURAL NOTES

1. BUILDING CODES
 - A. ALL CONSTRUCTION SHALL CONFORM WITH THE 2012 INTERNATIONAL BUILDING CODE AND ALL SUBSEQUENT SUPPLEMENTS.
 - B. IN ADDITION, ALL CONSTRUCTION SHALL CONFORM WITH THE GOVERNING LOCAL BUILDING CODE.

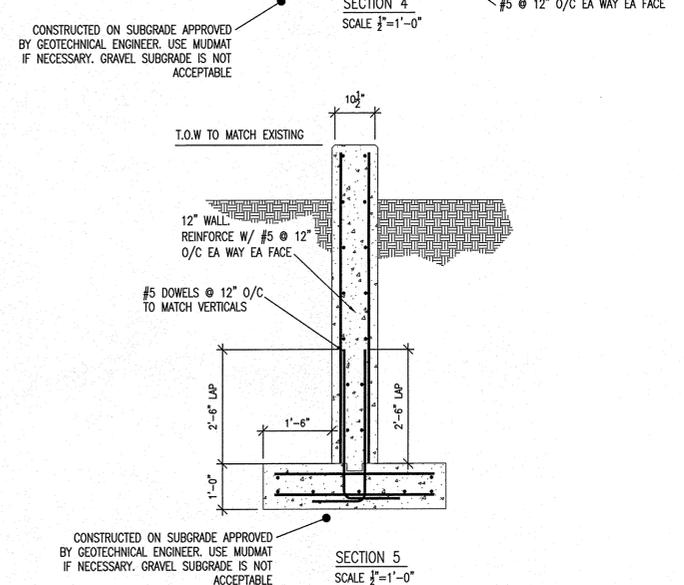
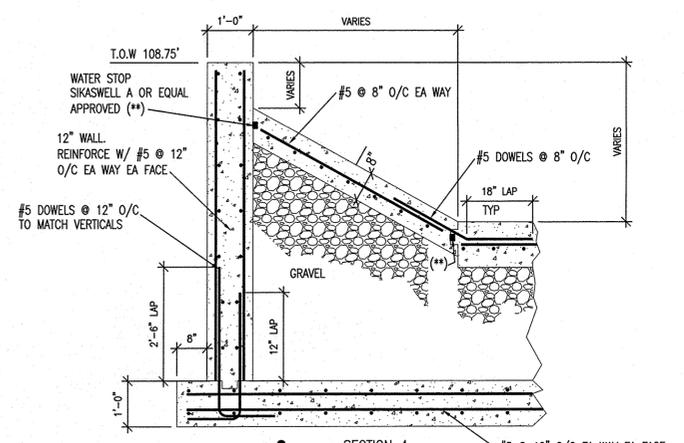
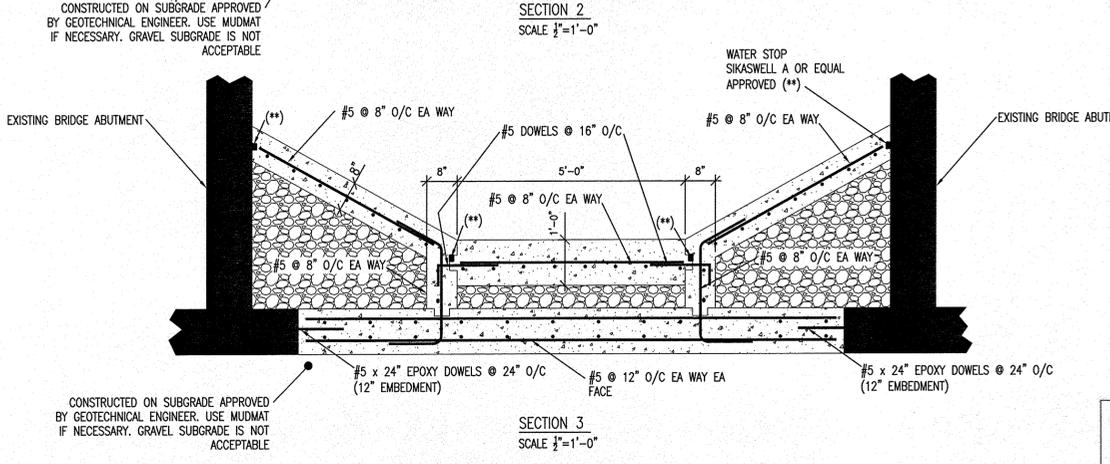
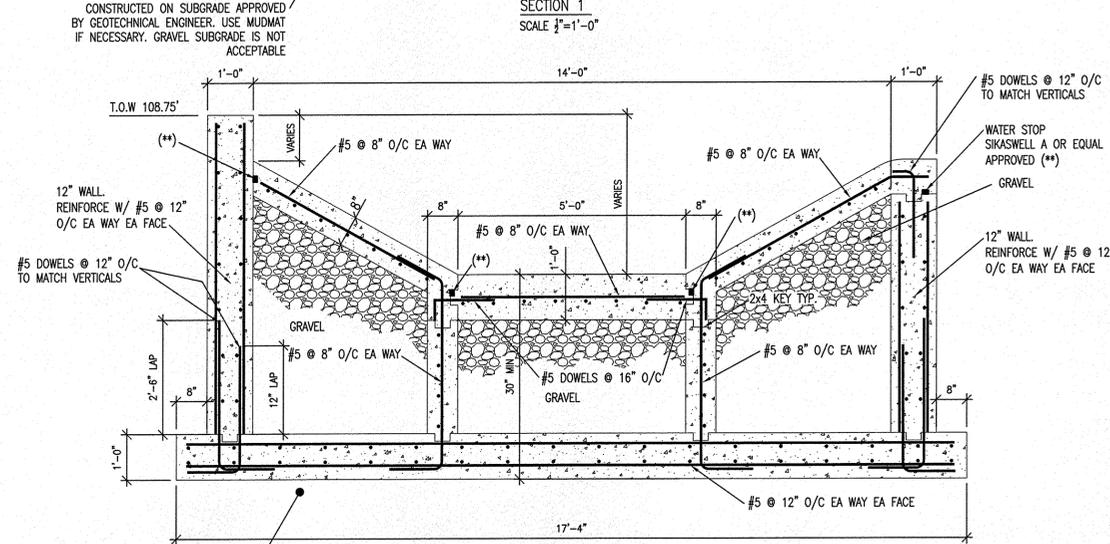
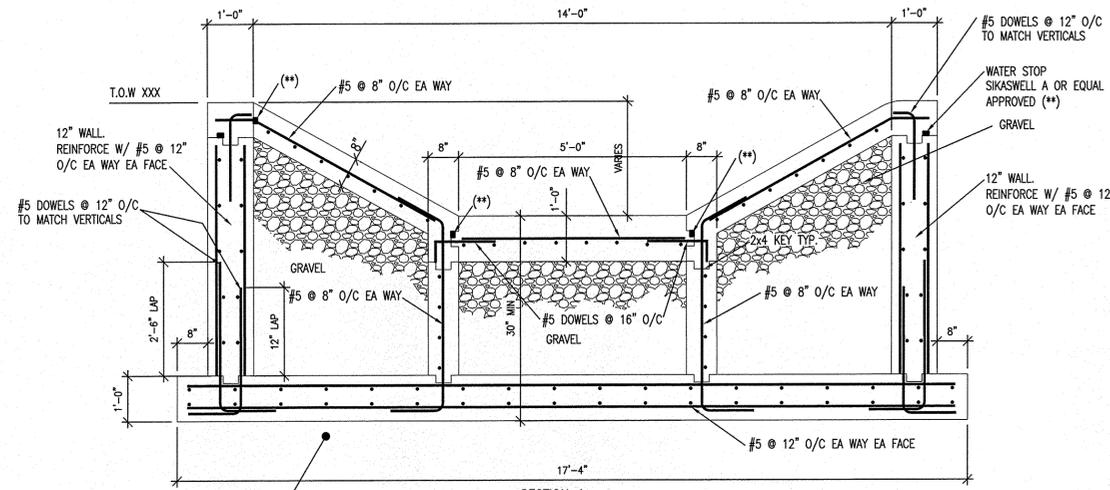
REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIAL CONSTRUCTION
2. MISCELLANEOUS
 - A. THE CONTRACTOR SHALL REVIEW CIVIL DRAWINGS PREPARED BY CPJ ASSOCIATES, DATED XXX FOR LOCATION AND DIMENSION OF CHASES, INSERTS, OPENINGS, SLEEVES, DEPRESSIONS AND OTHER PROJECT REQUIREMENTS WHICH IMPACT THE STRUCTURAL COMPONENTS.
 - B. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS SHOWN ON THE CONTRACT DRAWINGS BEFORE PROCEEDING WITH CONSTRUCTION. ALL DISCREPANCIES AND OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
 - C. THE CONTRACTOR SHALL NOT SUBMIT REPRODUCTIONS OF THE STRUCTURAL CONTRACT DOCUMENTS AS SHOP DRAWINGS.
 - D. SCALES SHOWN ON THE STRUCTURAL CONTRACT DRAWINGS ARE FOR GENERAL INFORMATION ONLY. DIMENSIONAL INFORMATION SHALL NOT BE OBTAINED BY SCALING THE DRAWINGS.
3. FOUNDATIONS
 - A. ALL FOUNDATIONS HAVE BEEN DESIGNED FOR AN ASSUMED NET ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF. THE ALLOWABLE SOIL BEARING PRESSURE SHALL BE FIELD VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACING FOUNDATIONS. SHOULD THE ACTUAL SOIL BEARING PRESSURE BE LESS THAN 2000 PSF, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.
 - B. ALL EXCAVATION AND BACKFILLING OPERATIONS WITHIN THE STRUCTURE FOOTPRINT, INCLUDING ALL COMPACTION TESTS AND INSPECTIONS, SHALL BE DONE UNDER THE DIRECTION AND SUPERVISION OF A REGISTERED GEOTECHNICAL ENGINEER. CONTRACTOR SHALL BACKFILL AROUND PERIMETER OF THE STRUCTURE AT AN EVEN RATE SO AS NOT TO CAUSE AN OVERTURNING MOMENT.
 - C. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ALL FOUNDATION AND SOIL CONDITIONS WHICH DIFFER FROM THOSE ANTICIPATED OR INDICATED IN THE CONTRACT DOCUMENTS.
 - D. ALL EXISTING SOIL CONTAINING GRAVEL, CONSTRUCTION OR DEMOLITION DEBRIS, ORGANIC SUBSTANCES, OR OTHER FOREIGN OBJECTS SHALL BE REMOVED FROM THE REGION WITHIN THE FOOTPRINT OF THE STRUCTURE.
4. CAST IN PLACE CONCRETE
 - A. ALL CONCRETE CONSTRUCTION SHALL CONFORM TO THE CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI 350) LATEST LOCAL APPROVED
 - B. IN ADDITION TO THE ABOVE, ALL CONCRETE WORK SHALL CONFORM TO THE FOLLOWING:
 1. RECOMMENDED PRACTICE FOR HOT WEATHER CONCRETING (ACI 305).
 2. RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING (ACI 306).
 3. RECOMMENDED PRACTICE FOR CONCRETE FORMWORK (ACI 347).
 - C. ALL CONCRETE, UNLESS NOTED OTHERWISE, SHALL BE STONE AGGREGATE CONCRETE HAVING A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4500 PSI (SHA MIX #5). ALL CONCRETE EXPOSED TO WEATHER SHALL HAVE AN AIR ENTRAINMENT OF 5% ±1. NO ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL BE PERMITTED. MAXIMUM AGGREGATE SIZE SHALL BE 1". WATER/CEMENT RATIO SHALL BE 0.45. MAXIMUM SLUMP SHALL BE 4". ALL CONCRETE, EXCEPT FOOTINGS, SHALL CONTAIN A WATER REDUCING ADMIXTURE. PORTLAND CEMENT SHALL CONFORM TO ASTM C 150 AND NORMAL WEIGHT AGGREGATES SHALL CONFORM TO ASTM C 33.
 - D. ALL REINFORCING BARS SHALL BE NEW BILLET STEEL CONFORMING TO ASTM A 615 GRADE 60. ALL WELDED WIRE FABRIC (W.W.F.) SHALL CONFORM TO ASTM A 185. LAP ALL REINFORCING BARS A MINIMUM OF 48 BAR DIAMETERS AND ALL W.W.F. A MINIMUM OF TWO FULL GRIDS, UNLESS OTHERWISE INDICATED.
 - E. ALL REINFORCING SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH THE CRSI "MANUAL OF STANDARD PRACTICE", ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT", ACI SP 66 "DETAILING MANUAL".
 - F. ALL CONCRETE MIX DESIGNS, INCLUDING CEMENT CONTENT, WATER CEMENT RATIO, FINE AND COARSE AGGREGATE CONTENT AND ALL ADMIXTURES, SHALL BE REVIEWED BY ENGINEER PRIOR TO PLACING FIRST CONCRETE.
 - G. ALL CONCRETE SHALL BE SAMPLED AND TESTED BY THE TESTING AGENCY. THE CONTRACTOR SHALL NOTIFY THE TESTING AGENCY 48 HOURS PRIOR TO THE PLACING OF ANY CONCRETE.
 - H. GROUND BLAST FURNACE SLAG CAN NOT BE USED TO REPLACE THE PORTLAND CEMENT IN A CONCRETE MIX, AND FLY ASH OR POZZOLAN CAN NOT BE USED TO REPLACE THE PORTLAND CEMENT IN A CONCRETE MIX.
5. MINIMUM COVER FOR ALL REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE INDICATED:

FOUNDATIONS	3 INCHES
WALLS	2 INCHES
6. RETAINING WALLS
 - A. RETAINING WALLS HAVE BEEN DESIGNED WITH BACKFILL MATERIAL HAVING THE FOLLOWING CHARACTERISTICS:

EARTH PRESSURE CALCULATED BASED EQUIVALENT FLUID PRESSURE OF 60H AND UNIT WEIGHT OF 125 PCF.

IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO INSURE THE BACK FILL MATERIAL MEETS THESE CHARACTERISTICS.
 - B. RETAINING WALLS HAVE BEEN DESIGNED FOR THE FOLLOWING MINIMUM FACTORS OF SAFETY:

OVERTURNING	2.0 OR BETTER
SLIDING	1.5 OR BETTER
BOUYANCY	1.5 OR BETTER
 - C. DO NOT BACKFILL UNTIL CONCRETE HAS REACHED ITS DESIGN STRENGTH AT 28 DAYS.



PLANS APPROVED BY
Harold W. Van Aller, P.E.
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment

STRUCTURAL CERTIFICATION
I hereby certify that the structural design of this stormwater management facility is in accordance with applicable codes and that the plan for this has been designed for specified loading(s) as indicated hereon.

Design Engineer Signature: *Jeffrey B. Blasz* Date: 06.01.2015
 Printed Name: JEFFREY B. BLASZ Registration Number: 32457
 ACI-350 Design Loading

FUTURE - NOT IN CONTRACT

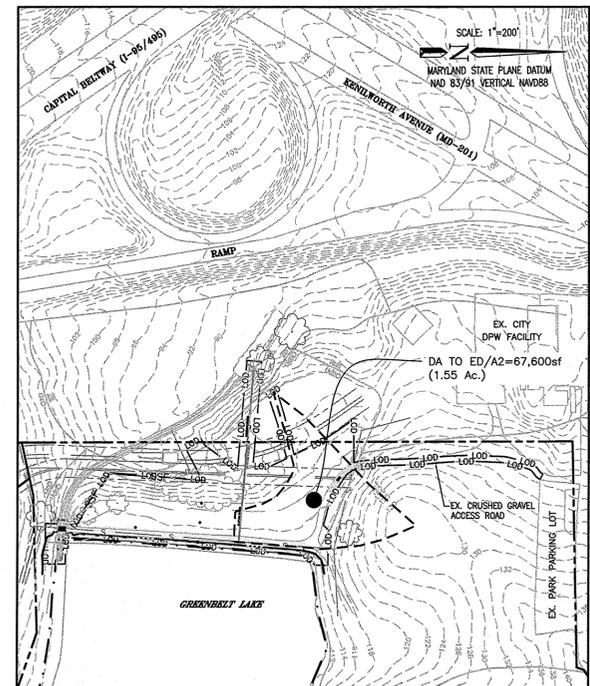
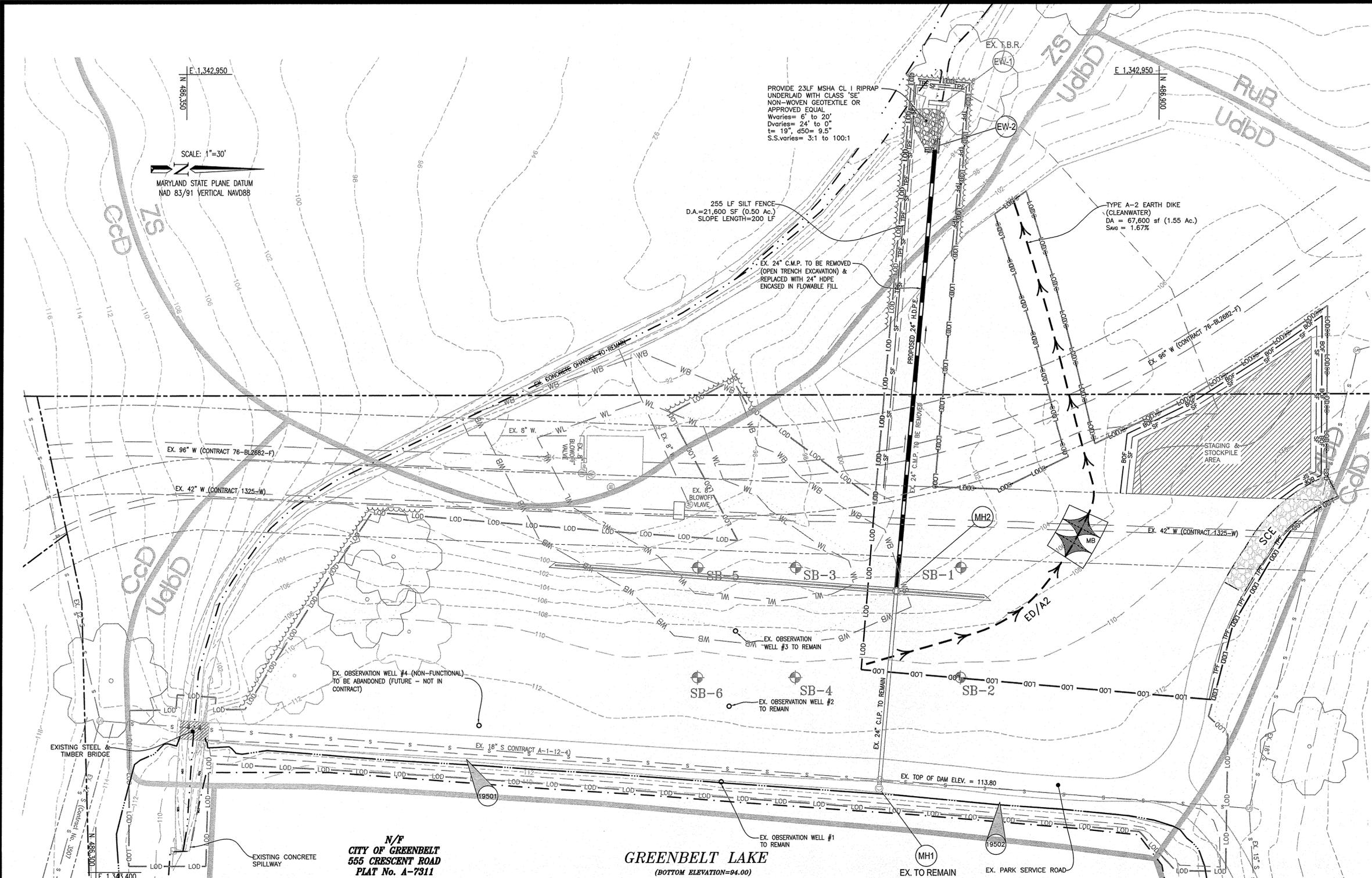
MISS UTILITY
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SPILLWAY REPLACEMENT NOTES & DETAILS
MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

CPJ Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers • Planners • Landscape • Architects • Surveyors
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CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 14	OF: 22
DRAFT: JMV	S-2	S-2
DATE: FEB, 2015	FILE NO: 38-146-241	
SCALE: 1/2"=1'-0"		

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PROJECT AREA ACCESS ROAD OVERALL
(SCALE: 1" = 200')

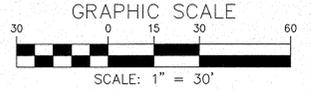
N/F
CITY OF GREENBELT
555 CRESCENT ROAD
PLAT No. A-7311

GREENBELT LAKE
(BOTTOM ELEVATION=94.00)

- GENERAL NOTES:**
- THIS PLAN SHALL ONLY BE USED FOR CONSTRUCTION OF SEDIMENT CONTROL AND ASSOCIATED SEDIMENT CONTROL IMPROVEMENTS AS SHOWN. THIS PLAN SHALL NOT BE USED FOR ANY OTHER CONSTRUCTION PURPOSE. THIS PLAN SHALL NOT BE USED FOR GRADING OF THE SITE.
 - ALL SEDIMENT CONTROL ARE TO BE MAINTAINED TO THE SATISFACTION OF THE PRINCE GEORGE'S COUNTY SEDIMENT CONTROL INSPECTOR AT ALL TIMES AT NO ADDITIONAL COST TO THE OWNER.
 - THE EXISTING UTILITIES SHOWN HEREON HAVE BEEN LOCATED USING INFORMATION AVAILABLE AT THE TIME THIS PLAN WAS PREPARED. PRIOR TO DIGGING, THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES VIA TEST PIT WITHIN THE LIMITS OF CONSTRUCTION SHOWN ON THIS PLAN AND CONFIRM THAT NO CONFLICTS EXIST. ANY CONFLICTS MUST BE BROUGHT TO THE ATTENTION OF CPJ AND THE OWNER PRIOR TO STARTING CONSTRUCTION.

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PLANS APPROVED BY
Harold W. Van Aller, P.E.
Harold W. Van Aller
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment

PRINCE GEORGE'S SOIL CONSERVATION DISTRICT
ENVIRONMENTAL SITE DEVELOPMENT APPROVAL
GRADING, EROSION AND SEDIMENT CONTROL

SSC# - 23-15 - 00 01/26/18

EXPIRATION DATE

PRELIMINARY POND (PPP)

Charles P. Johnson 01/26/15
DISTRICT SIGNATURE APPROVAL DATE



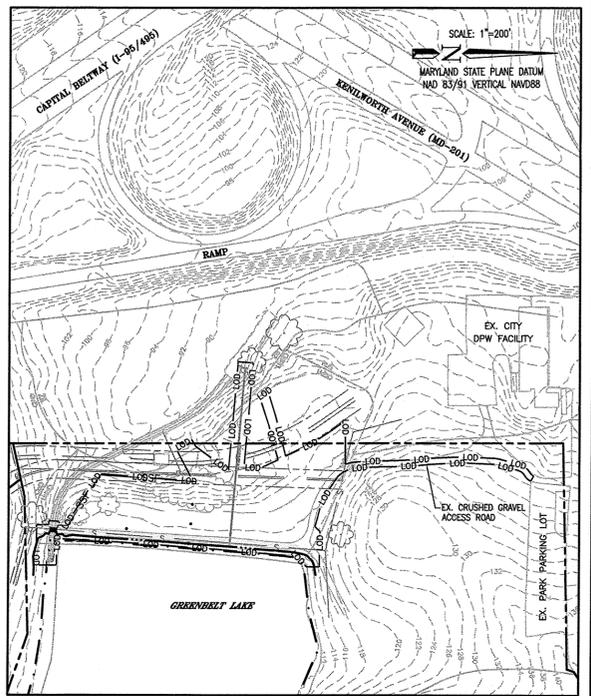
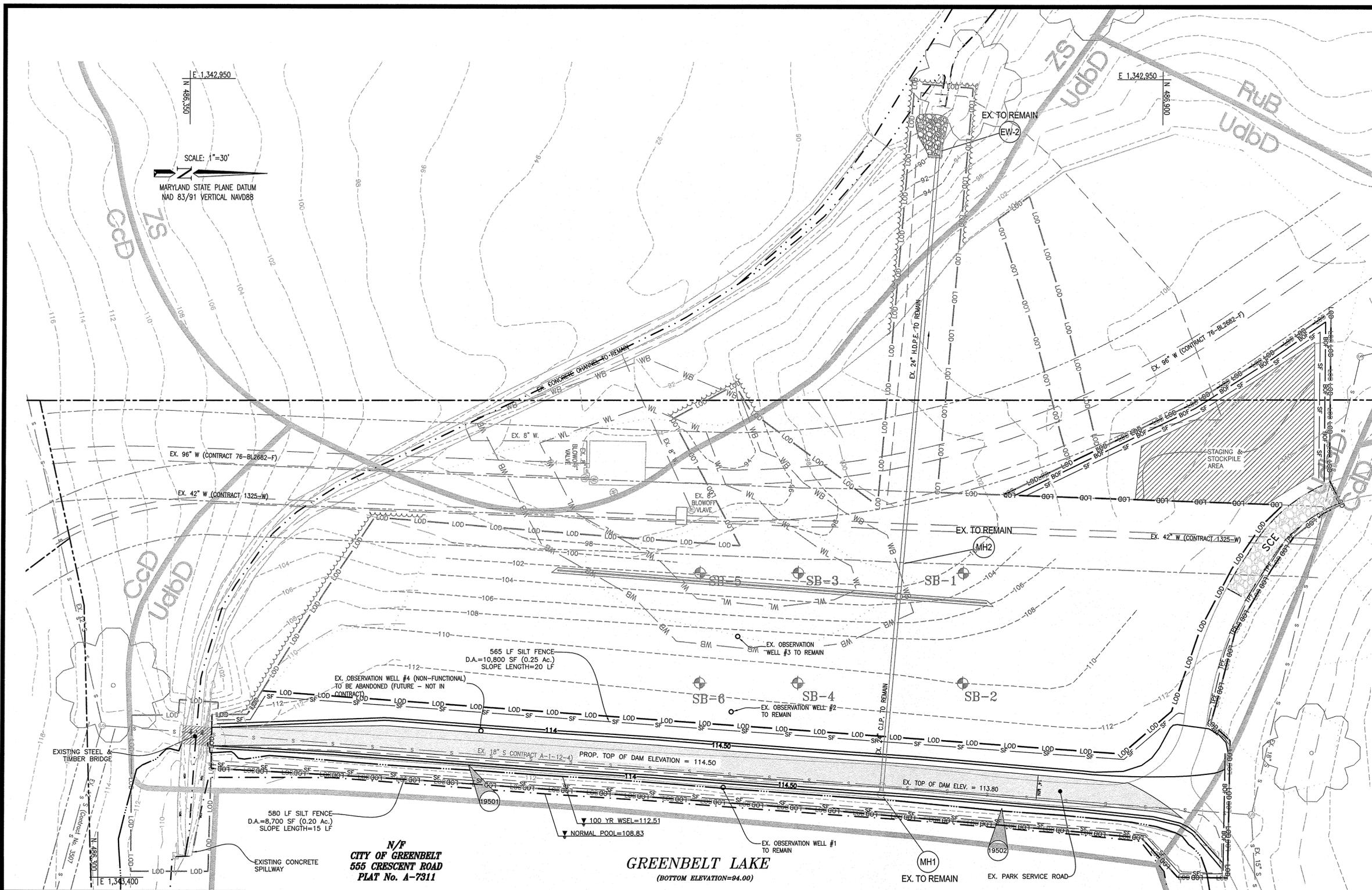
GRADING, EROSION, & SEDIMENT CONTROL PLAN PHASE I

MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

CPJ Charles P. Johnson & Associates, Inc.
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CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 555 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 15	OF: 22
DRAFT: JMV	ES-3	ES-10
DATE: FEB. 2015	FILE NO.:	
SCALE: 1" = 30'		38-146-241

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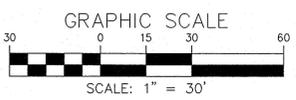


PROJECT AREA ACCESS ROAD OVERALL
(SCALE: 1" = 200')

FUTURE - NOT IN CONTRACT

GENERAL NOTES:
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PLANS APPROVED BY
 Harald W. Van Aller, P.E.
 March 19, 2015
 14-MR-0062
 Dam Safety Division
 Maryland Dept. of the Environment

PRINCE GEORGE'S SOIL CONSERVATION DISTRICT
 ENVIRONMENTAL SITE DEVELOPMENT APPROVAL
 GRADING, EROSION AND SEDIMENT CONTROL

SSC# - 23-15-00 01/26/18
 EXPIRATION DATE

PRELIMINARY POND (PP#) X

Charles P. Johnson 01/26/15
 DISTRICT SIGNATURE APPROVAL DATE



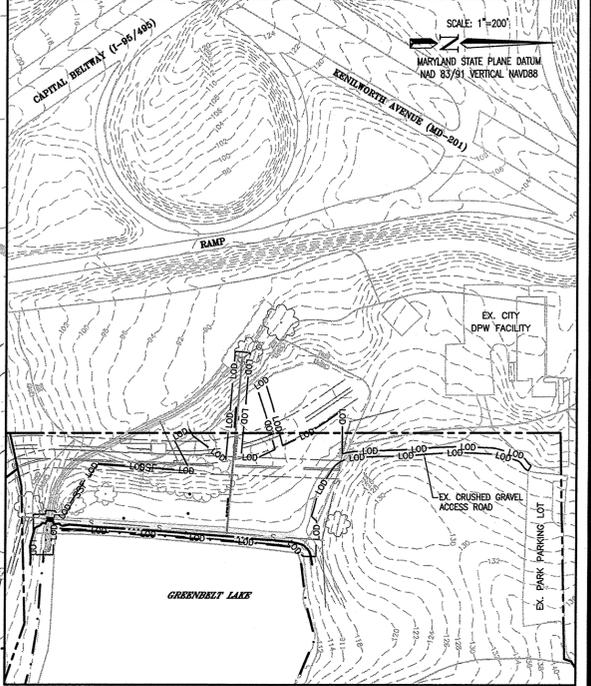
GRADING, EROSION, & SEDIMENT CONTROL PLAN PHASE 2B

MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
 BERWYN (21st) ELECTION DISTRICT
 PRINCE GEORGE'S COUNTY, MARYLAND

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CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 17	OF: 22
DRAFT: JMV	ES-5	ES-10
DATE: FEB. 2015	FILE NO.:	
SCALE: 1" = 30'		38-146-24.1

SCALE: 1"=30'
 MARYLAND STATE PLANE DATUM
 NAD 83/91 VERTICAL NAVD88



PROJECT AREA ACCESS ROAD OVERALL
 (SCALE: 1" = 200')

FUTURE - NOT IN CONTRACT

- GENERAL NOTES:**
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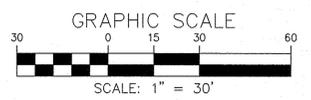
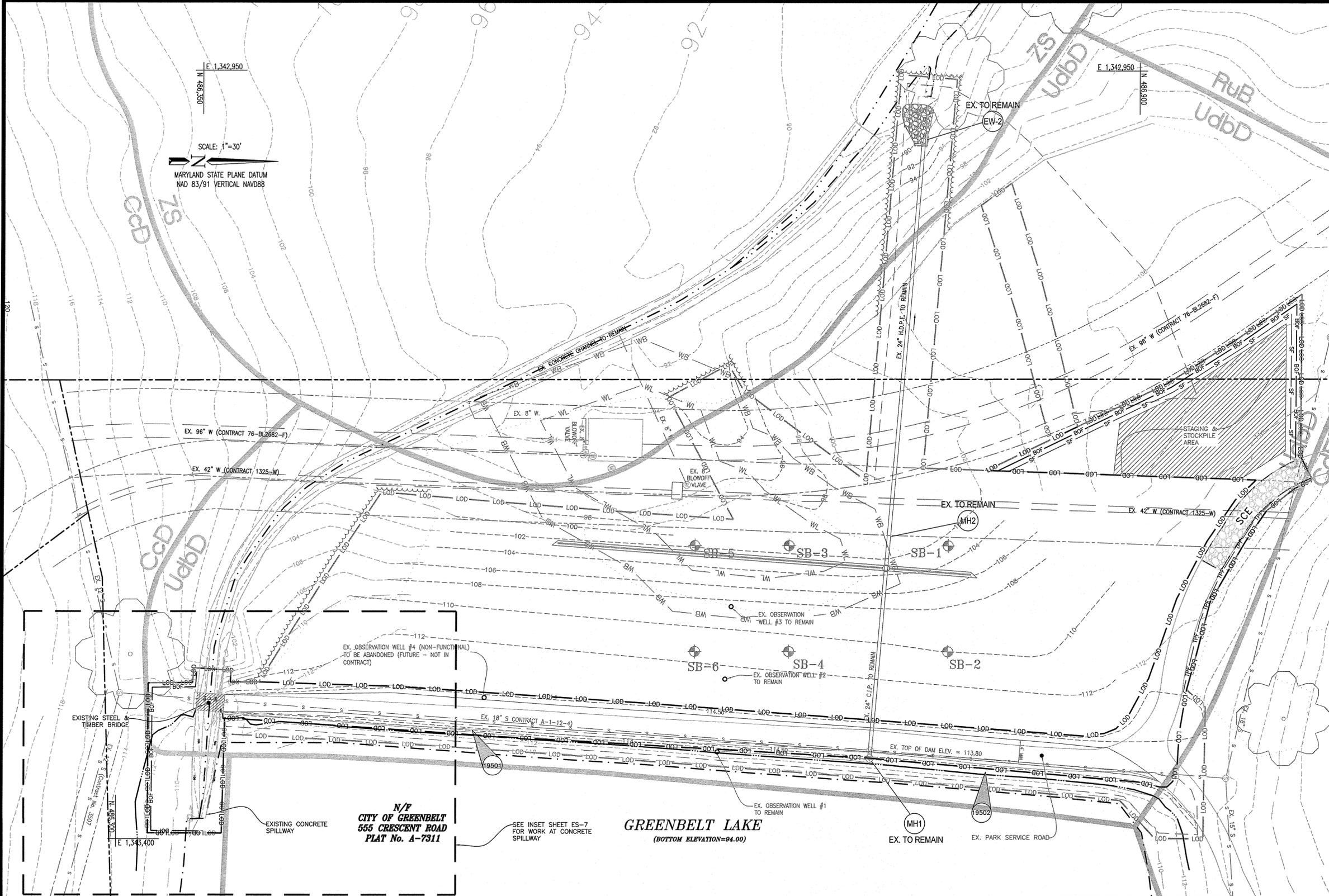
GRADING, EROSION, & SEDIMENT CONTROL PLAN PHASE 3

MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
 BERWYN (21st) ELECTION DISTRICT
 PRINCE GEORGE'S COUNTY, MARYLAND

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CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 18	OF: 22
DRAFT: JMV	DATE: FEB. 2015	FILE NO: ES-6 ES-10
SCALE: 1" = 30'	FILE NO: 38-146-241	

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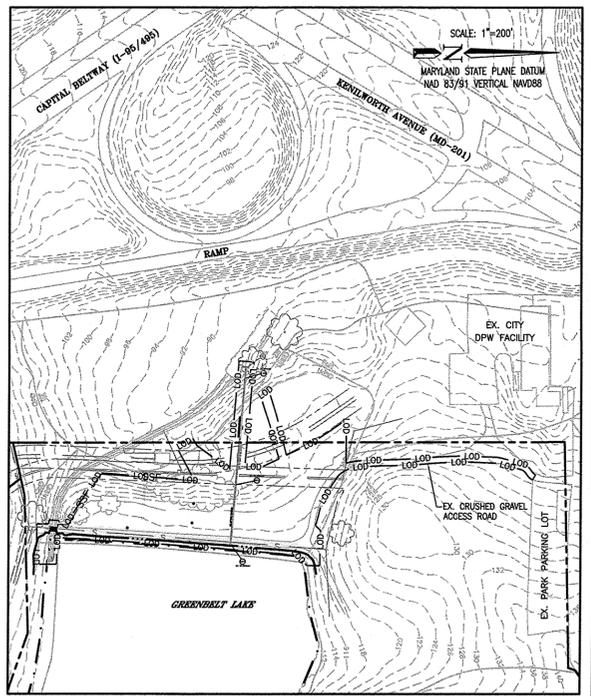
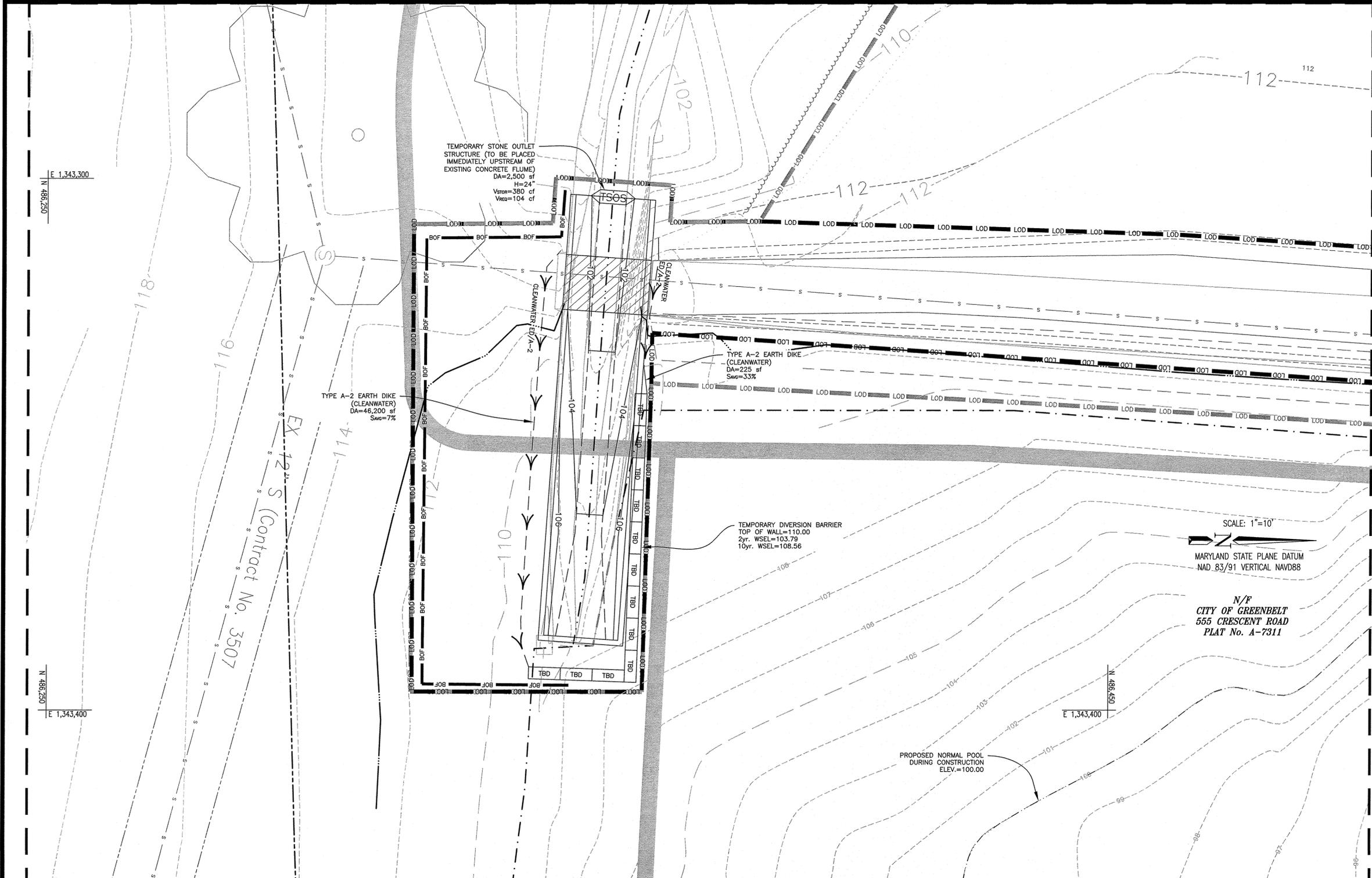


PLANS APPROVED BY
 Harald W. Van Aller, P.E.
 March 19, 2015
 14-MR-0062
 Dam Safety Division.
 Maryland Dept. of the Environment

PRINCE GEORGE'S SOIL CONSERVATION DISTRICT
 ENVIRONMENTAL SITE DEVELOPMENT APPROVAL
 GRADING, EROSION AND SEDIMENT CONTROL
 SSC# - 23-15 -00
 EXPIRATION DATE: 01/26/18
 PRELIMINARY POND (PP#) X
 DISTRICT SIGNATURE: [Signature]
 APPROVAL DATE: 01/26/15



Attached Xrefst.topo/47-0959/-/T811x17-1/08-10/08-01/08-04



PROJECT AREA ACCESS ROAD OVERALL
(SCALE: 1" = 200')

SCALE: 1" = 10'
MARYLAND STATE PLANE DATUM
NAD_83/91 VERTICAL NAVD88

N/F
CITY OF GREENBELT
555 CRESCENT ROAD
PLAT No. A-7311

FUTURE - NOT IN CONTRACT

GENERAL NOTES:
 1. THIS PLAN SHALL ONLY BE USED FOR CONSTRUCTION OF SEDIMENT CONTROL AND ASSOCIATED SEDIMENT CONTROL IMPROVEMENTS AS SHOWN. THIS PLAN SHALL NOT BE USED FOR ANY OTHER CONSTRUCTION PURPOSE. THIS PLAN SHALL NOT BE USED FOR GRADING OF THE SITE.
 2. ALL SEDIMENT CONTROL ARE TO BE MAINTAINED TO THE SATISFACTION OF THE PRINCE GEORGE'S COUNTY SEDIMENT CONTROL INSPECTOR AT ALL TIMES AT NO ADDITIONAL COST TO THE OWNER.
 3. THE EXISTING UTILITIES SHOWN HEREON HAVE BEEN LOCATED USING INFORMATION AVAILABLE AT THE TIME THIS PLAN WAS PREPARED. PRIOR TO DIGGING, THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES VIA TEST PIT WITHIN THE LIMITS OF CONSTRUCTION SHOWN ON THIS PLAN AND CONFIRM THAT NO CONFLICTS EXIST. ANY CONFLICTS MUST BE BROUGHT TO THE ATTENTION OF CPJ AND THE OWNER PRIOR TO STARTING CONSTRUCTION.

MISS UTILITY

Call "Miss Utility" at 1-800-257-7777, 72 hours prior to the start of work. The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation.



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PRINCE GEORGE'S SOIL CONSERVATION DISTRICT
ENVIRONMENTAL SITE DEVELOPMENT APPROVAL
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SSC# - 23-15-00 01/26/18 EXPIRATION DATE

PRELIMINARY FOND (PP#) X

Supriya 01/26/15 APPROVAL DATE

DISTRICT SIGNATURE APPROVAL DATE



GRADING, EROSION, & SEDIMENT CONTROL PLAN PHASE 3

MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

CPJ Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers • Planners • Landscape • Architects • Surveyors
1751 Elton Rd., Ste 300 Silver Spring, MD 20903 301-434-7000 Fax: 301-434-9594
www.cpja.com • Silver Spring, MD • Gaithersburg, MD • Annapolis, MD • College Park, MD • Frederick, MD • Fairfax, VA

CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MS. CELIA CRAZE	PRELIMINARY PLAN NO: N/A	SITE PLAN NO: N/A
DESIGN: JBB	SHEET: 19	OF: 22
DRAFT: JMV	ES-7	ES-10
DATE: FEB, 2015	FILE NO.:	
SCALE: 1" = 10'	38-146-241	

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SEDIMENT CONTROL NOTES

- All sediment control measures are to be adjusted to meet field conditions at time of construction, upon approval of P.G.S.C.D.
- All erosion and sediment control measures are to be constructed and maintained in accordance with the applicable published "Standards and Specifications" for soil erosion and sediment control.
- All sediment and erosion control facilities are to be constructed prior to grading and that shall be in an operational condition before grading construction begins.
- Periodic inspection and maintenance are to be provided to insure efficiency of all facilities.
- Contractor installing the above shall obtain and follow the "Standard & Specs for Soil Erosion & Sediment Control".
- All structures utilizing compacted earth fill are to be composed of material taken from approved borrow areas and shall be free of roots, woody vegetation, rocks and other objectionable material. A minimum of 10% shall be allowed for settlement fills to be placed in 6" lifts and compacted as laid.
- All areas of ingress-egress are to be protected from tracking mud onto public rights-of-way.
- All sediment control structures shall be functional at the end of each day.
- Grading and construction may begin upon completion and acceptance of all items shown, required or specified herein.
- Areas disturbed by on site grading that are not to be constructed on within 7 days are to be stabilized with a semi-permanent type seeding and mulching. See page 54.01 through 54.04 of referenced stds. and specs.
- All slopes steeper than 3:1 shall be stabilized immediately with sod. See pages 54.01 through 54.04 of reference stds. and specs.
- All disturbed areas shall be finally stabilized with permanent seeding upon completion of fine grading. See pages 51.01 through 51.08 of referenced stds. and specs.
- Sediment traps and earth dikes are to receive temporary seeding immediately after they are constructed. See pages 50.01 through 50.05 of referenced stds. and specs.
- The throats of all storm drainage inlets shall be protected and kept free of any deposits of sediment, i.e., through use of sandbags, gravel or other applicable method until the uphill areas have been stabilized and the streets have been paved.
- Silt traps and other items must be maintained and periodic clean-out at the design clean-out levels shall be performed by the developer.
- The contractor shall not install concrete curb and gutter or sidewalk in the areas indicated until the uphill areas have been stabilized.
- Sediment control devices (ditches-dikes-traps, etc.) are to remain in place until contributing water-shed has been stabilized. Maintenance to sediment control devices during the under going grading, construction and development should be done as necessary. Removal of these devices shall be with the approval of the sediment control inspector on site after removal of sediment practices contractor to shape, stabilize immediately.
- All perimeter sediment control dikes must be temporarily seeded and mulched as per standards and specs within 7 days of construction.
- All slopes greater than 3:1 must be temporarily seeded and mulched as per standards and specs within 3 days of construction.

GENERAL NOTES:

- THIS PLAN SHALL ONLY BE USED FOR CONSTRUCTION OF SEDIMENT CONTROL AND ASSOCIATED SEDIMENT CONTROL IMPROVEMENTS AS SHOWN. THIS PLAN SHALL NOT BE USED FOR ANY OTHER CONSTRUCTION PURPOSE. THIS PLAN SHALL NOT BE USED FOR GRADING OF THE SITE.
- ALL SEDIMENT CONTROL ARE TO BE MAINTAINED TO THE SATISFACTION OF THE PRINCE GEORGE'S COUNTY SEDIMENT CONTROL INSPECTOR AT ALL TIMES AT NO ADDITIONAL COST TO THE OWNER.
- THE EXISTING UTILITIES SHOWN HEREON HAVE BEEN LOCATED USING INFORMATION AVAILABLE AT THE TIME THIS PLAN WAS PREPARED. PRIOR TO DIGGING, THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES VIA TEST PIT WITHIN THE LIMITS OF CONSTRUCTION SHOWN ON THIS PLAN AND CONFIRM THAT NO CONFLICTS EXIST. ANY CONFLICTS MUST BE BROUGHT TO THE ATTENTION OF CPJ AND THE OWNER PRIOR TO STARTING CONSTRUCTION.

Stabilization Note:

Stabilization practices on all projects must be in compliance with the requirements of COMAR 26.17.1.08 G regulations by January 9, 2013, regardless of when an erosion and sediment control plan was approved.

Following initial soil disturbance or re-disturbance, permanent or temporary stabilization must be completed within:

- Three (3) calendar days as to the surface of all perimeter dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and
- Seven (7) calendar days as to all other disturbed or graded areas on the project site not under active grading.

MISS UTILITY

Call "Miss Utility" at 1-800-257-7777, 72 hours prior to the start of work. The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation.

B-4-2 STANDARDS AND SPECIFICATIONS

FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

The process of preparing the soils to sustain adequate vegetative stabilization.

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation

1. Temporary Stabilization

a. Seeded preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.

b. Apply fertilizer and lime as prescribed on the plans.

c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.

2. Permanent Stabilization

a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:

- Soil pH between 6.0 and 7.0.
- Soluble salts less than 500 parts per million (ppm).
- Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if loesslike soil is planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
- Soil contains 1.5 percent minimum organic matter by weight.
- Soil contains sufficient pore space to permit adequate root penetration.

b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.

c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.

d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.

e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seeded preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seeded loosening may be unnecessary on newly disturbed areas.

B. Topsoiling

1. 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.

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

Criteria

A. Seed Mixtures

1. General Use

i. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site conditions or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.

ii. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in:

- USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
- For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
- For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.

2. Turfgrass Mixtures

a. Areas where turfgrasses may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.

- Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.

Permanent Seeding Summary

Hardness Zone (from Figure B.3)	No. Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N		P2O5		K2O		Lime Rate
					45 pounds per acre (1.0lb / 1000sf)	80 pounds per acre (2lb / 1000sf)	90 pounds per acre (2lb / 1000sf)	2 tons per acre (90lb / 1000sf)			

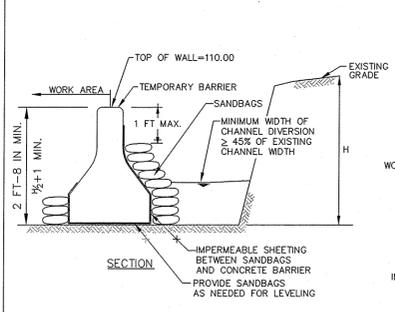
Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

1. General Specifications

- Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
 - Sod must be machine cut at a uniform soil thickness of 1/2 inch, plus or minus 1/8 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and tons or uneven ends will not be acceptable.
 - Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
 - Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
 - Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.
2. Sod Installation
- During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
 - Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the sod.
 - Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
 - Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

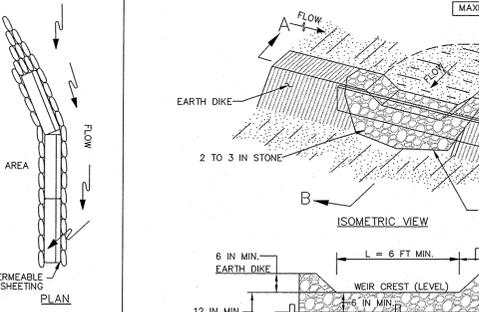
- Soil Maintenance
 - In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
 - After the first week, sod watering is required as necessary to maintain adequate moisture content.
 - Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

DETAIL C-7 TEMPORARY BARRIER DIVERSION



- CONSTRUCTION SPECIFICATIONS**
- FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.
 - USE BARRIER MADE OF CONCRETE OR OTHER APPROVED MATERIAL.
 - USE 10 MIL OR THICKER, UV RESISTANT, IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNCTURING AND TEARING.
 - ESTABLISH TOP ELEVATION AT H/2 + 1 FOOT FOR PROJECTS OF DURATION LESS THAN 2 WEEKS OR AS SPECIFIED ON APPROVED PLAN.
 - INSTALL DIVERSION STRUCTURE FROM UPGRADE TO DOWNGRADE.
 - PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.
 - USE SANDBAG BASE FOR LEVELING AND TO ESTABLISH MINIMUM TOP ELEVATION OF THE BARRIER AS REQUIRED.
 - DISPOSE OF ALL EXCAVATED MATERIALS IN AN APPROVED DISPOSAL AREA OUTSIDE OF THE 100-YEAR FLOODPLAIN.
 - DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.
 - KEEP ABUTMENTS BETWEEN CONCRETE BARRIERS WATER TIGHT. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.

DETAIL E-7 TEMPORARY STONE OUTLET STRUCTURE



- CONSTRUCTION SPECIFICATIONS**
- PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
 - USE NONWOVEN GEOTEXTILE ON INTERFACE BETWEEN GROUND AND STONE.
 - PERFORATE BAFFLE BOARD WITH 3 ROWS OF 1 INCH DIAMETER HOLES 6 INCHES ON CENTER. EMBED A MINIMUM OF 4 INCHES INTO GROUND. AND EXTEND BAFFLE BOARD MINIMUM OF 12 INCHES INTO EARTH DIKE.
 - USE CLEAN 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE. PLACE WOVEN MONOFILAMENT GEOTEXTILE ON UPSTREAM FACE AND COVER WITH A MINIMUM OF 6 INCHES OF ADDITIONAL STONE.
 - USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
 - SET WEIR CREST OF STONE 6 INCHES LOWER THAN THE TOP OF EARTH DIKE. USE MINIMUM LENGTH OF 6 FEET FOR WEIR CREST.
 - REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 6 INCHES OF WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO DRAIN. MAINTAIN LINE, GRADE, AND GROSS SECTION.
 - UPON REMOVAL OF STONE OUTLET STRUCTURE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

PERMANENT SEEDING SUMMARY

No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Fertilizer Rate (20-10-10)			Lime Rate
					N	P205	K20	
3	GREeping RED FESCUE	60	3/1-5/15 8/1-10/15	1/4"-1/2"				
3	KENTUCKY BLUEGRASS	15	3/1-5/15 8/1-10/15	1/4"-1/2"	125 lb/ac (2.9 lb / 1000 sf)	62 lb/ac (1.5 lb / 1000 sf)	62 lb/ac (1.5 lb / 1000 sf)	2 tons/ac (90 lb / 1000 sf)
3	TALL FESCUE	100	3/1-5/15 8/1-10/15	1/4"-1/2"				

TEMPORARY SEEDING SUMMARY

No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20)			Lime Rate
					N	P205	K20	
-	ANNUAL RYEGRASS	40	3/1-5/15 5/1-10/15	1/2"				
-	RYE (+ FOXTAIL MILLET)	150 LBS	2/1-4/30 5/1/8/14 10/15-X	1"				

PRINCE GEORGE'S SOIL CONSERVATION DISTRICT
ENVIRONMENTAL SITE DEVELOPMENT APPROVAL
GRADING, EROSION AND SEDIMENT CONTROL

SSC# - 23-15-00 01/26/18
EXPIRATION DATE

PRELIMINARY POND (PP#)

Harold W. V. Allen
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment

[Signature] 01/26/15
DISTRICT SIGNATURE APPROVAL DATE

GRADING, EROSION, & SEDIMENT CONTROL DETAILS

MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
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CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MRS. CELIA CRAZEZ	PRELIMINARY PLAN NO. N/A	SITE PLAN NO. N/A
DESIGN JBB	SHEET 20	OF 22
DRAFT JMV	DATE FEB. 2015	FILE NO. ES-8 ES-10
SCALE AS-SHOWN	COPYRIGHT © LATEST DATE HEREON CHARLES P. JOHNSON & ASSOCIATES, INC. ALL RIGHTS RESERVED. UNAUTHORIZED USE OR REPRODUCTION IS PROHIBITED.	
	38-146-241	

H.2 STANDARDS AND SPECIFICATIONS

FOR
SUBSURFACE DRAINS

Definition

A conduit, such as tile, pipe, or tubing, installed beneath the ground surface which intercepts, collects, and/or conveys drainage water.

Purpose

To serve one or more of the following purposes:

1. Improve the environment for vegetative growth by regulating the water table and groundwater flow.
2. Intercept and prevent water movement into a wet area.
3. Relieve artesian pressures.
4. Remove surface runoff.
5. Provide internal drainage of slopes to improve their stability and reduce erosion.
6. Provide internal drainage behind bulkheads, retaining walls, etc.
7. Replace existing subsurface drains that are interrupted or destroyed by construction operations.

Conditions Where Practice Applies

Subsurface drains are used in areas having a high water table or where subsurface drainage is required. The soil must have enough depth and permeability to permit installation of an effective system. This standard does not apply to storm drainage systems or foundation drains. An outlet for the drainage system must be available, either by gravity flow or by pumping. The outlet must be adequate for the quantity of water to be discharged without causing damage above or below the point of discharge and must comply with State and local laws.

Design Criteria

Base the design and installation on adequate surveys and on-site soils investigations.

1. **Capacity of Drains:** Determine the required capacity by one or more of the following:
 - a. Where subsurface drainage is to be uniform over an area through a systematic pattern of drains, use a Drainage Coefficient of 1 inch.
 - b. Where subsurface drainage is to be by a random interceptor system, use a minimum in-flow rate of 0.5 cfs per 1000 feet of line to determine the required capacity. If actual field tests and measurements of flow amounts are available, they may be used for determining capacity. For interceptor subsurface drains on sloping land, increase the in-flow rate as follows:

H.4

Land Slopes
2 to 5 percent
5 to 12 percent
Over 12 percent

Increase Inflow Rate By
10 percent
20 percent
30 percent

c. Additional design capacity must be provided if surface water is allowed to enter the system.

2. **Size of Drains:** Determine the size of subsurface drains from Figure H.1: Drain Chart - Corrugated Plastic Drain Tubing. The minimum subsurface drain size is 4 inches.

3. **Depth and Spacing:**

- a. Provide a minimum depth of cover on the subsurface drains of 24 inches where possible. The minimum depth of cover may be reduced to 15 inches where it is not possible to attain the 24 inch depth and where the drain is not subject to equipment loading or frost action. Roots from some types of vegetation can plug drains as the drains get closer to the surface.
- b. The spacing of drain laterals will be dependent on the permeability of the soil, the depth of installation of the drain and degree of drainage required. Generally, drains installed 36 inches deep and spaced 50 feet center-to-center will be adequate.

4. **Minimum Velocity and Grade:** The minimum grade for subsurface drains is 0.10 percent. Where surface water enters the system, use a velocity of not less than 2 feet per second to establish the minimum grade. Prevent debris or sediment from entering the system by means of filters.

5. **Materials for Subsurface Drains:**

- a. Acceptable subsurface drain materials include perforated, continuous closed joint conduits of polyethylene plastic, concrete, corrugated metal, asbestos-cement, bituminized fiber, and polyvinyl chloride.
- b. Meet the strength and durability requirements of the site.

6. **Loading:** Base the allowable loads on subsurface drain conduits on the trench and bedding conditions specified for the job. Use a factor of safety of not less than 1.5 when computing the maximum allowable depth of cover for a particular type of conduit.

7. **Envelopes and Envelope Materials:**

- a. Use envelopes around subsurface drains for proper bedding and to provide better flow into the conduit. Use a minimum of 3 inches of envelope material for the sand-gravel envelopes. Where necessary to improve the characteristics of flow of groundwater into the conduit, more envelope material may be required.
- b. Place envelope material to be uniform over the upstream seepage strata. Behind bulkheads and retaining walls, go to within 12 inches of the top of the structure. This standard does not cover the design of filter materials where needed.
- c. Use materials for the envelopes that contain no materials which will cause an accumulation of sediment in the conduit or render the envelope unsuitable for bedding of the conduit. Provide envelope materials consisting of either geotextile or sand-gravel material with 100 percent passing a 1/2 inch sieve, 90 to 100 percent passing a 3/4 inch sieve, and not more than 10

H.5

percent passing a No. 60 sieve.

d. Use woven monofilament geotextile envelopes where 10 percent or more of the backfill material passes a No. 200 sieve. Place the envelope in such a manner that once the conduit is installed, it will be completely encased. For other soils use nonwoven geotextile.

e. Place and bed the conduit in a sand-gravel envelope. Place a minimum of 3 inches of envelope material on the bottom of a conventional trench. Place the conduit on this and fill the trench completely with envelope material to a minimum depth of 3 inches above the conduit.

f. Stabilize soft or yielding soils under the drain where required and protect lines from settlement by adding gravel or other suitable material to the trench, by placing the conduit on plank or other rigid support, or by using long sections of perforated or watertight pipe with adequate strength to ensure satisfactory subsurface drain performance.

g. Where local regulations do not allow sand-gravel envelopes, follow the local design for type and size of envelope material.

8. **Use of Heavy Duty Corrugated Plastic Drainage Tubing:** Specify heavy duty corrugated drainage tubing where rocky or gravelly soils are expected to be encountered during installation operations. The quality of tubing will also be specified when cover over this tubing is expected to exceed 24 inches for 4, 5, 6, or 8 inch tubing. Larger size tubing designs will be handled on an individual job basis.

9. **Auxiliary Structure and Subsurface Drain Protection:**

- a. Protect the outlet against erosion and undermining of the conduit, against damaging periods of submergence, and against entry of rodents or other animals into the subsurface drain. Install an animal guard on the outlet end of the pipe. Use a continuous 10 foot section of corrugated metal, cast iron, or steel pipe without perforations at the outlet end of the line and outlet 1.0 foot above the normal elevation of low flow in the outlet channel or above mean high tide in tidal areas. Do not provide envelope material around this 10 foot section of pipe.
- b. Design conduits under roadways and embankments to be watertight and to withstand the expected loads.
- c. Where surface water is to be admitted to subsurface drains, design the inlets to exclude debris and prevent sediment from entering the conduit. Design lines flowing under pressure to withstand the resulting pressures and velocity of flow. Use surface waterways where feasible.
- d. Cap the upper end of each subsurface drain line with a tight fitting cap of the same material as the conduit or other durable material unless connected to a structure.

Maintenance

The point of discharge must be kept free of erosion and the animal guard at the outlet maintained.

H.6

H.1 STANDARDS AND SPECIFICATIONS

FOR
MATERIALS

Table H.1: Geotextile Fabrics

PROPERTY	TEST METHOD	MINIMUM AVERAGE ROLL VALUE ¹					
		WOVEN SPLIT FILM GEOTEXTILE		WOVEN MONOFILAMENT GEOTEXTILE		NONWOVEN GEOTEXTILE	
		MD	CD	MD	CD	MD	CD
Grab Tensile Strength	ASTM D-4632	200 lb	200 lb	370 lb	250 lb	200 lb	200 lb
Grab Tensile Elongation	ASTM D-4632	15%	10%	15%	15%	50%	50%
Trapezoidal Tear Strength	ASTM D-4533	75 lb	75 lb	100 lb	60 lb	80 lb	80 lb
Puncture Strength	ASTM D-5241	450 lb		900 lb		450 lb	
Apparent Opening Size ²	ASTM D-4751	U.S. Sieve 30 (0.60 mm)		U.S. Sieve 70 (0.25 mm)		U.S. Sieve 70 (0.25 mm)	
Permittivity	ASTM D-4491	0.05 sec ²		0.28 sec ²		1.1 sec ²	
Ultraviolet Resistance Retained at 500 hours	ASTM D-4355	70% strength		70% strength		70% strength	

¹ All numeric values except apparent opening size (AOS) represent minimum average roll values (MARV). MARV is calculated as the typical minus two standard deviations. MD is machine direction; CD is cross direction.

² Values for AOS represent the average maximum opening.

Geotextiles must be evaluated by the National Transportation Product Evaluation Program (NTPPEP) and conform to the values in Table H.1.

The geotextile must be inert to commonly encountered chemicals and hydrocarbons and must be rot and mildew resistant. The geotextile must be manufactured from fibers consisting of long chain synthetic polymers and composed of a minimum of 95 percent by weight of polyolefins or polyesters, and formed into a stable network so the filaments or yarns retain their dimensional stability relative to each other, including selvages.

When more than one section of geotextile is necessary, overlap the sections by at least one foot. The geotextile must be pulled taut over the applied surface. Equipment must not run over exposed fabric. When placing riprap on geotextile, do not exceed a one foot drop height.

H.1

Table H.2: Stone Size

TYPE	SIZE RANGE	d ₁₀	d ₅₀	AASHTO	MIDSIZE WEIGHT ¹
NUMBER 57 ¹	3/8 to 1 1/2 inch	3/8 in	1 1/2 in	M-43	N/A
NUMBER 1	2 to 3 inch	2 1/2 in	3 in	M-43	N/A
RIPRAP ² (CLASS 0)	4 to 7 inch	5 1/2 in	7 in	N/A	N/A
CLASS I	N/A	9 1/2 in	15 in	N/A	40 lb
CLASS II	N/A	16 in	24 in	N/A	200 lb
CLASS III	N/A	23 in	34 in	N/A	600 lb

¹ This classification is to be used on the upstream face of stone outlets and check dams.

² This classification is to be used for gabions.

³ Optimum gradation is 50 percent of the stone being above and 50 percent below the midsize.

Stone must be composed of a well graded mixture of stone sized so that fifty (50) percent of the pieces by weight are larger than the size determined by using the charts. A well graded mixture, as used herein, is defined as a mixture composed primarily of larger stone sizes but with a sufficient mixture of other sizes to fill the smaller voids between the stones. The diameter of the largest stone in such a mixture must not exceed the respective d₁₀ selected from Table H.2. The d₅₀ refers to the median diameter of the stone. This is the size for which 50 percent, by weight, will be smaller and 50 percent will be larger.

Note: Recycled concrete equivalent may be substituted for all stone classifications for temporary control measures only. Concrete broken into the sizes meeting the appropriate classification, containing no steel reinforcement, and having a minimum density of 150 pounds per cubic foot may be used as an equivalent.

Table H.3: Compost

Parameters ¹	Acceptable Range
pH	5.0 - 8.5
Moisture content	30% - 60%, wet weight basis
Organic matter content	25% - 65%, dry weight basis
Particle size	% passing a selected mesh size, dry weight basis 3 in (75 mm), 100% passing 1 in (25 mm), 90 - 100% passing 0.75 in (19 mm), 70 - 100% passing 0.25 in (6.4 mm), 30 - 60% passing 0.04 in (1 mm), 30% min. passing
Physical contaminants (manmade inerts)	<1% dry weight basis

Adapted from AASHTO Standards Specs for Compost Filter Socks and EPA Example Compost Filter Parameters.

¹ Recommended test methodologies are provided in Test Methods for the Examination of Composting and Compost (TMEC), The U.S. Composting Council.

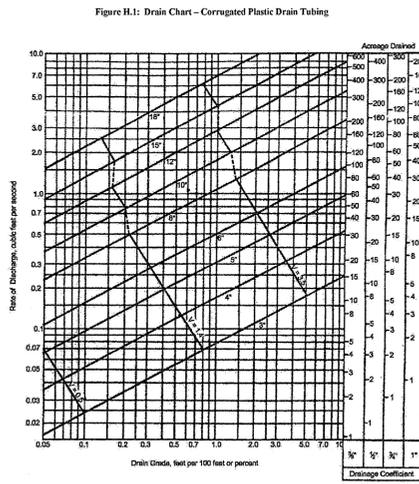
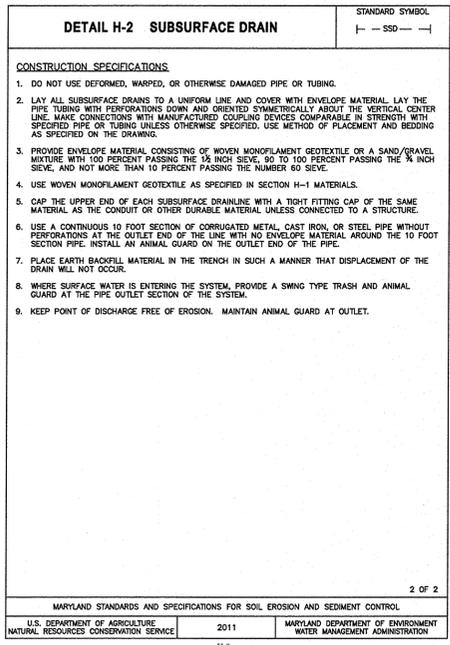
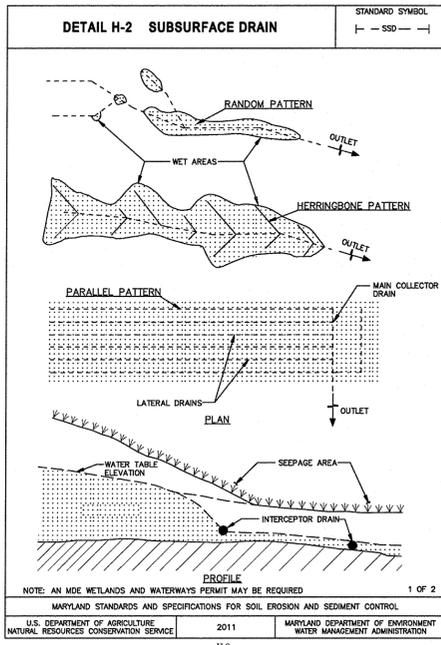
PLANS APPROVED BY
Harold W. Van Ailer, P.E.
Harold W. Van Ailer
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment

PRINCE GEORGE'S SOIL CONSERVATION DISTRICT
ENVIRONMENTAL SITE DEVELOPMENT APPROVAL
GRADING, EROSION AND SEDIMENT CONTROL

SSC# - 23-15 - 00 01/26/18
EXPIRATION DATE

PRELIMINARY FOND (PP#) X

Charles P. Johnson 01/26/15
DISTRICT SIGNATURE APPROVAL DATE



H.7

Stabilization Note:

Stabilization practices on all projects must be in compliance with the requirements of COMAR 26.17.1.08 G regulations by January 9, 2013, regardless of when an erosion and sediment control plan was approved.

Following initial soil disturbance or re-disturbance, permanent or temporary stabilization must be completed within:

- a) Three (3) calendar days as to the surface of all perimeter dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and
- b) Seven (7) calendar days as to all other disturbed or graded areas on the project site not under active grading.

MISS UTILITY

Call "Miss Utility" at 1-800-257-7777, 72 hours prior to the start of work. The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation.

GENERAL NOTES:

1. THIS PLAN SHALL ONLY BE USED FOR CONSTRUCTION OF SEDIMENT CONTROL AND ASSOCIATED SEDIMENT CONTROL IMPROVEMENTS AS SHOWN. THIS PLAN SHALL NOT BE USED FOR ANY OTHER CONSTRUCTION PURPOSE. THIS PLAN SHALL NOT BE USED FOR GRADING OF THE SITE.
2. ALL SEDIMENT CONTROL ARE TO BE MAINTAINED TO THE SATISFACTION OF THE PRINCE GEORGE'S COUNTY SEDIMENT CONTROL INSPECTOR AT ALL TIMES AT NO ADDITIONAL COST TO THE OWNER.
3. THE EXISTING UTILITIES SHOWN HEREON HAVE BEEN LOCATED USING INFORMATION AVAILABLE AT THE TIME THIS PLAN WAS PREPARED. PRIOR TO DIGGING, THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES VIA TEST PIT WITHIN THE LIMITS OF CONSTRUCTION SHOWN ON THIS PLAN AND CONFIRM THAT NO CONFLICTS EXIST. ANY CONFLICTS MUST BE BROUGHT TO THE ATTENTION OF CPJ AND THE OWNER PRIOR TO STARTING CONSTRUCTION.



GRADING, EROSION, & SEDIMENT CONTROL DETAILS

MD DAM No. 8 DAM REPAIRS
GREENBELT LAKE
BERWYN (21st) ELECTION DISTRICT
PRINCE GEORGE'S COUNTY, MARYLAND

CPJ Associates
Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers • Planners • Landscape • Architects • Surveyors
1751 Elton Rd., Ste 500 Silver Spring, MD 20903 301-434-7000 Fax: 301-434-9394
www.cjpa.com • Silver Spring, MD • Gaithersburg, MD • Annapolis, MD • College Park, MD • Frederick, MD • Fairfax, VA

CLIENT: CITY OF GREENBELT DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT 15 CRESCENT ROAD GREENBELT, MD 20770-1886 CONTACT: MRS. CELIA CRAZE	PRELIMINARY PLAN NO. N/A	SITE PLAN NO. N/A
DESIGN: JBB	SHEET 21	OF 22
DRAFT: JMV	ES-9	ES-10
DATE: FEB. 2015	FILE NO.:	
SCALE: AS-SHOWN	38-146-241	

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H.3 STANDARDS AND SPECIFICATIONS

FOR CHANNEL

Definition

An open drainage conveyance lined with vegetation, riprap, gabions, concrete or other approved material.

Purpose

To convey concentrated runoff in a non-erosive manner.

Conditions Where Practice Applies

A channel is used when permanent conveyance of runoff is necessary. A channel lined with concrete should be considered only after other design options have been deemed infeasible.

Design Criteria

- Capacity:** The channel must have a minimum capacity to adequately convey the peak rate of runoff from the 10-year, 24-hour storm.

Use the following Manning's coefficient of roughness (n):

Lined Material	Manning's n
Grass with soil stabilization matting for d ≤ 6 inches	0.060
d > 6 inches	0.040
Concrete (typ.)	
Trowel Finish	0.015
Flatt Finish	0.019
Camie	0.019
Riprap	Determine from Figure H.2
Gabion	0.030

- Velocity:** The maximum allowable design velocity for type of channel lining is shown in Table H.4.

Table H.4: Maximum Velocities for Channels

Channel Lining	Maximum Velocity (fps)
Seed and mulch	2.5
Solid sodding	4.0
Temporary soil stabilization matting over seed and mulch	4.0
Grass with permanent soil stabilization matting	8.5
Riprap	Refer to Figures D.2 and D.3
Gabion	Unlimited
Concrete	Unlimited

H.10

- Mortar:** Use mortar consisting of a mix of cement, sand, and water with a water-cement ratio of not more than 6 gallons of water per bag of cement for placement of flagstone.

- Construction Joints:** Allow for form construction joints in concrete linings, where required, transverse to a depth of about 1/3 the thickness of the lining at a uniform spacing in the range of 10 to 15 feet.

- Rock Riprap:** Provide stone used for riprap or gabions of a density and hardness to withstand exposure to air, water, freezing, and thawing.

- Cutoff Walls:** Use cutoff walls at the beginning and ending of concrete lining and for rock riprap lining, and key into the channel bottom at both ends of the lining.

- Gabion Baskets:** Fabricate gabions in such a manner that the sides, ends, and lid can be assembled at the site into rectangular baskets of similar size. Install gabion baskets according to the manufacturer specifications.

- Geotextile:** Provide for nonwoven geotextile beneath all riprap and gabions.

Construction Specifications

- Clear the foundation area of trees, stumps, roots, sod, loose rock, or other objectionable material.
- Excavate the cross-section to the lines and grades as shown on the plans. Backfill over-excavated area with moist soil compacted to the density of the surrounding material.
- Construct the grade or horizontal alignment of the lined channel as per the plans.
- Place concrete linings to the thickness shown on the plans and finish in a professional manner. Protect freshly placed concrete from freezing or extremely high temperatures to ensure proper curing.
- Place filter, bedding, and riprap to line and grade in the manner specified.
- Construct channels in such a manner that erosion, air, and water pollution will be minimized and hold within legal limits. The completed jobs will have a professional appearance. Vegetate all disturbed areas or otherwise protect against soil erosion.

Maintenance

The line, grade, and cross section must be maintained. Maintain the lining as designed to prevent undermining and deterioration. Positive drainage must be maintained. Accumulated sediment and debris must be removed. The channel and the point of discharge must be kept free of erosion.

H.12

- Cross-Section:** Cross-sections should be triangular, parabolic, or trapezoidal in shape. Monolithic concrete or gabions may be rectangular.

- Freeboard:** The lined section must extend up the side slopes to a minimum of 0.25 feet above the design depth. The side slopes above the permanent lining must be vegetated or otherwise stabilized and extend a minimum of 0.25 feet above the top of the lining.

- Side Slopes and Lining Thickness:** Steepest permissible side slopes, horizontal to vertical (H:V), and minimum lining thickness are as follows:

Table H.5: Steepest Permissible Side Slopes and Minimum Lining Thickness

Channel Type	Side Slopes	Minimum Lining Thickness
Non-reinforced concrete Hand-placed, formed concrete Height of lining, 1 1/2 feet or less	Vertical	4 inches
Non-reinforced concrete Hand-placed, screeded concrete or mortared in place flagstone Height of lining, less than 2 feet Height of lining, more than 2 feet	1:1 2:1	4 inches
Slip Form Concrete Height of lining, less than 2 feet	1:1	4 inches
Riprap	2:1	1 1/2 times max. stone size plus thickness of filter or bedding
Gabion	Per manufacturer specifications	Per manufacturer specifications
Permanent soil stabilization matting	2:1	Per manufacturer specifications

- Related Structures:** Design side inlets, drop structures, and energy dissipaters to meet the hydraulic and structural requirements of the site.

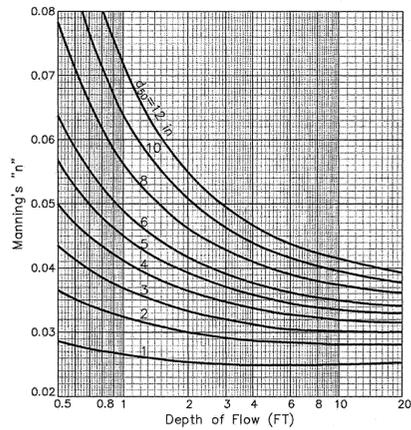
- Filters or Bedding:** Provide for filters or bedding to prevent piping, reduce uplift pressure, and collect water as required and in accordance with sound engineering design. Provide weed holes and drains as needed.

- Concrete:**

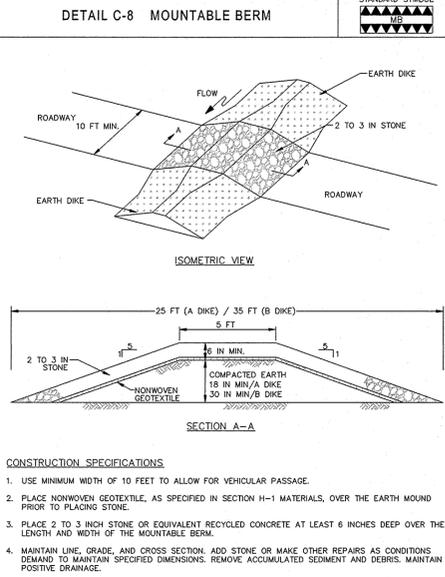
- Specify the proportion of concrete to be used for lining so that it is plastic enough for thorough consolidation and stiff enough to stay in place on side slopes. A dense durable product will be required. A mix that can be certified as suitable to produce a minimum strength of at least 3,000 pounds per square inch is required. Use Portland cement, Type I, II, IV, or V with an aggregate having a maximum diameter of 1 1/2 inches.
- Provide weed holes in concrete footings and retaining walls to allow free drainage of water. Use non-corrosive pipe for the weed holes.

H.11

Figure H.2: Determining "n" for Riprap Lined Channel using Depth of Flow



H.13



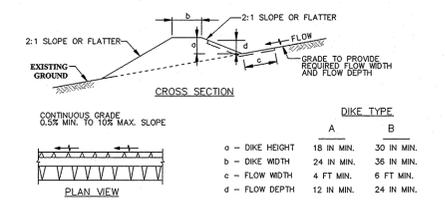
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STANDARD SYMBOL

DETAIL C-1 EARTH DIKE



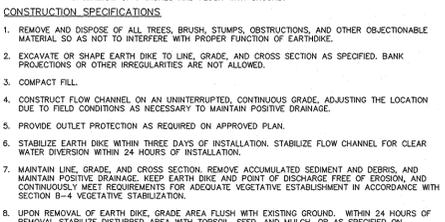
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DETAIL E-3 SUPER SILT FENCE



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STANDARD SYMBOL

DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

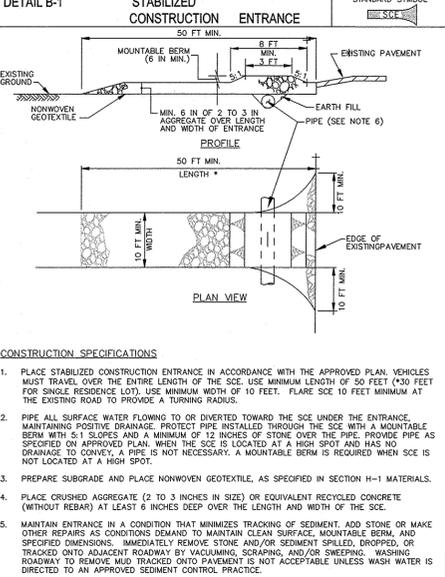


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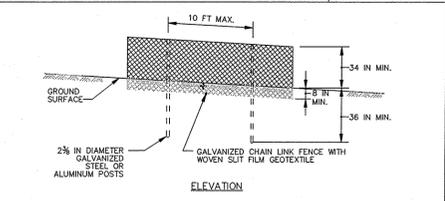
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DETAIL E-1 SILT FENCE



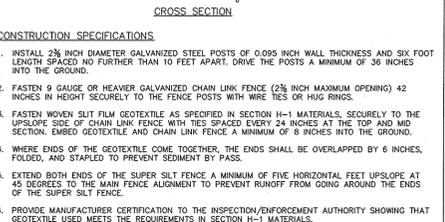
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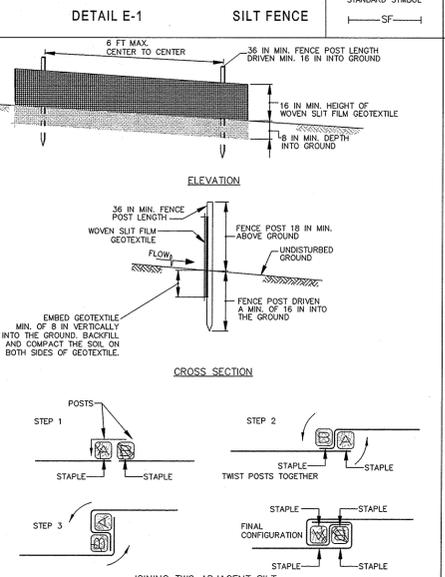


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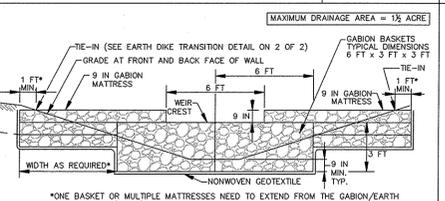
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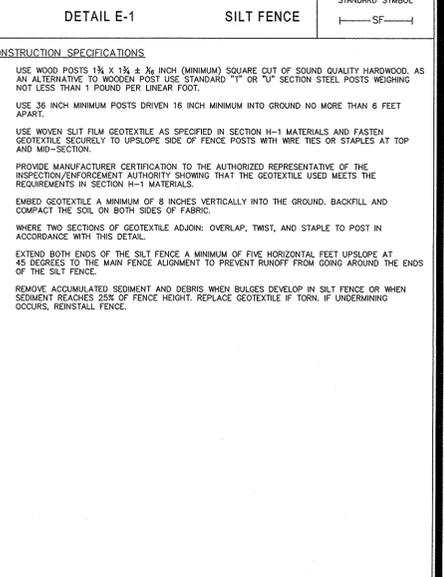


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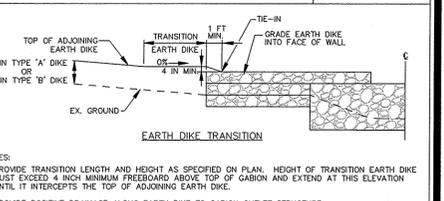
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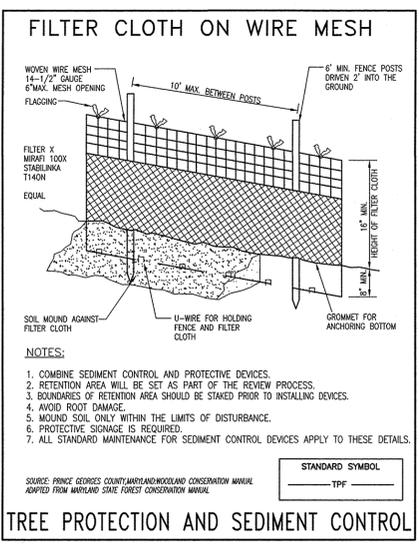
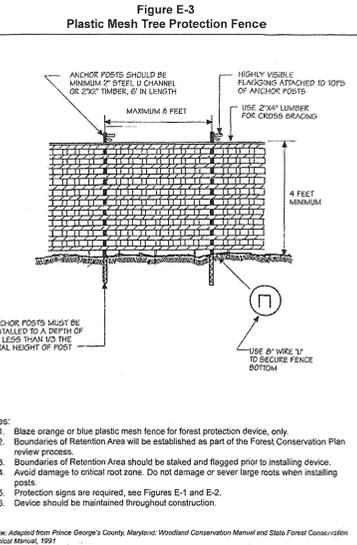


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STANDARD SYMBOL



TREE PROTECTION AND SEDIMENT CONTROL

MISS UTILITY

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PLANS APPROVED BY
Harald W. Van Aller, P.E.
Harald W. Van Aller
March 19, 2015
14-MR-0062
Dam Safety Division
Maryland Dept. of the Environment

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PRINCE GEORGE'S SOIL CONSERVATION DISTRICT
ENVIRONMENTAL SITE DEVELOPMENT APPROVAL
GRADING, EROSION AND SEDIMENT CONTROL

SSCH-23-15-00
01/26/18
EXPIRATION DATE

PRELIMINARY FOND (PH) X
Supervisor
DISTRICT SIGNATURE
APPROVAL DATE
01/26/15

GRADING, EROSION, & SEDIMENT CONTROL DETAILS

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BERWYN (21st) ELECTION DISTRICT
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CITY OF GREENBELT
DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT
15 CRESCENT ROAD
GREENBELT, MD 20770-1886
CONTACT: MS. CELIA CRAZE

PRELIMINARY PLAN NO. N/A SITE PLAN NO. N/A
DESIGN JBB SHEET 22 OF 22
DRAFT JMV
DATE FEB. 2015
SCALE AS-SHOWN FILE NO.: 38-146-241

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