B-4 STANDARDS AND SPECIFICATIONS

FOR

VEGETATIVE STABILIZATION

Definition

Using vegetation as cover to protect exposed soil from erosion.

Purpose

To promote the establishment of vegetation on exposed soil.

Conditions Where Practice Applies

On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

Effects on Water Quality and Quantity

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment

Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.

1. Adequate vegetative stabilization requires 95 percent groundcover.
2. If an area has less than 40 percent groundcover, reestablish following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4-1 STANDARDS AND SPECIFICATIONS

FOR

INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes.

Purpose

To provide timely vegetative cover on cut and fill slopes as work progresses.

Conditions Where Practice Applies

Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Criteria

A. Incremental Stabilization - Cut Slopes

1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
2. Construction sequence example (Refer to Figure B.1):
   a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
   b. Perform Phase 1 excavation, prepare seedbed, and stabilize.
   c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
   d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

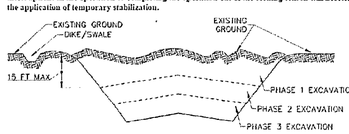


Figure B.1: Incremental Stabilization – Cut

B. Incremental Stabilization - Fill Slopes

1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
4. Construction sequence example (Refer to Figure B.2):
   a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
   b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
   c. Place Phase 1 fill, prepare seedbed, and stabilize.
   d. Place Phase 2 fill, prepare seedbed, and stabilize.
   e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

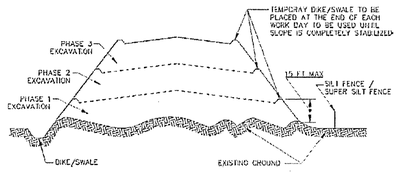


Figure B.2: Incremental Stabilization – Fill

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. Seedbed 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:
      i. Soil pH between 6.0 and 7.0.
      ii. Soluble salts less than 500 parts per million (ppm).
      iii. 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 lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
      iv. Soil contains 1.5 percent minimum organic matter by weight.
      v. 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 seedbed 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. Seedbed 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.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
   a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment with limestone is not feasible.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
   a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
   b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, mat sedge, poison ivy, thistle, or others as specified.
   c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
6. Topsoil Application
   a. Erosion and sediment control practices must be maintained when applying topsoil.
   b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
   c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

1. Soil tests must be performed to determine the exact rates and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B-4-3 STANDARDS AND SPECIFICATIONS

FOR

SEEDING AND MULCHING

Definition

The application of seed and mulch to establish vegetative cover.

Purpose

To protect disturbed soils from erosion during and at the end of construction.

Conditions Where Practice Applies

To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

Criteria

A. Seeding

1. Specifications
   a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rates.
   b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
   c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
   d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.
2. Application
   a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
      i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
   b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
      i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
   c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
      i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P_2O_5 (phosphorous), 200 pounds per acre; K_2O (potassium), 200 pounds per acre.
      ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when by hydroseeding.
      iii. Mix seed and fertilizer on site and seed immediately and without interruption.
      iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching

1. Mulch Materials (in order of preference)
   a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. Note: Use only sterile straw mulch in areas where one species of grass is desired.
   b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
      i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly sprayed slurry.
      ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
      iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
      iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
      v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.
2. Application
   a. Apply mulch to all seeded areas immediately after seeding.
   b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.
   c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
3. Anchoring
   a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:
      i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
      ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
      iii. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited.
      iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

B-4-4 STANDARDS AND SPECIFICATIONS

FOR

TEMPORARY STABILIZATION

Definition

To stabilize disturbed soils with vegetation for up to 6 months.

Purpose

To use fast growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

Criteria

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

Temporary Seeding Summary

Hardiness Zone (from Figure B.3): 6b Seed Mixture (from Table B.1):				Fertilizer Rate (10-20-20)	Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
	Annual Ryegrass	40	3/1-5/15 8/1-10/15	½"	436 lb/ac (10 lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
	Foxtail Millet	30	5/16-7/31	½"		

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
   a. 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 condition 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.
   b. 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.
   c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
   d. For areas receiving low maintenance, apply urea form fertilizer (16-0-0) at 3 ½ 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 turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
   b. 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.
      i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
      iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1½ to 3 pounds per 1000 square feet.

      Notes:
      Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland"

      Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line
   c. Ideal Times of Seeding for Turf Grass Mixtures

      Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)

      Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)

      Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)
   d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
   e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

Permanent Seeding Summary

Hardiness Zone (from Figure B.3): 6b Seed Mixture (from Table B.3): 11				Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P_2O_5	K_2O	
	Creeping Red Fescue	30	3/1-10/15	¼- ½ in	45 pounds per acre (1.0 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
	Chewings Fescue	30	3/1-10/15	¼- ½ in				
	Kentucky Bluegrass	15	3/1-10/15	¼- ½ in				

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

1. General Specifications
   a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
   b. Sod must be machine cut at a uniform soil thickness of ¾ inch, plus or minus ½ inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
   c. 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.
   d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
   e. 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
   a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
   b. 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 roots.
   c. 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.
   d. 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.
3. Sod Maintenance
   a. 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.
   b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
   c. Do not mow until the sod is firmly rooted. No more than ⅓ 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.

B-4-6 STANDARDS AND SPECIFICATIONS

FOR

STOCKPILE AREA

Definition

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and damages to drainage patterns.

Conditions Where Practice Applies

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosive/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 2.5:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

B-5 STANDARDS AND SPECIFICATIONS

FOR

DUST CONTROL

Definition

Controlling the suspension of dust particles from construction activities.

Purpose

To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

Conditions Where Practice Applies

Areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

Specifications

1. Mulches: See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section B-4-3 Seeding and Mulching, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to prevent blowing.
2. Vegetative Cover: See Section B-4-4 Temporary Stabilization.
3. Tillage: Till to roughen surface and bring clods to the surface. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment that may produce the desired effect.
4. Irrigation: Sprinkle site with water until the surface is moist. Repeat as needed. The site must not be irrigated to the point that runoff occurs.
5. Barriers: Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing.
6. Chemical Treatment: Use of chemical treatment requires approval by the appropriate plan review authority.

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

John R Robertson 4/24/14

HOWARD SOIL CONSERVATION DISTRICT DATE

ENGINEER'S CERTIFICATION

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

Walter P. Miller 4/10/2014

SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) WALTER P. MILLER DATE

DEVELOPER'S CERTIFICATION

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

Steve Shavar 7/11/14

SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14

CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14

CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

WR&A

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: CYH
DRN: CYH
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL NOTES

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J-4237

DWG. ED-02

SCALE N/A

SHEET 51 OF 136

N:\42038-00J\CADD\pES-N002_BPJ.dgn
April 23, 2014

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

1) NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100–YEAR FLOODPLAIN.

2) PLACE MATERIALS IN A 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.

3) 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.

4) PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100–YEARFLOODPLAIN.

5) 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.

6) RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100–YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.

7) 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 (UNIOLA 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 FESCUE 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.

8) AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST–CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.

9) 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 I THROUGH JUNE I5, 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.

10) STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.

11) CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

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

John R Robertson 4/24/14
HOWARD SOIL CONSERVATION DISTRICT DATE

ENGINEER'S CERTIFICATION

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

Walter P. Miller 6/10/2014
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) WALTER P. MILLER DATE

DEVELOPER'S CERTIFICATION

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

Steve Shaver 7/11/14
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410–313–1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL 1, CHAPTER 12 OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. 51), SOD (SEC. 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52).TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS:

   TOTAL AREA OF SITE: 298.08 ACRES
   AREA DISTURBED: 27.43 ACRES
   AREA TO BE ROOFED OR PAVED ACRES: 7.76 ACRES
   AREA TO BE VEGETATIVELY STABILIZED ACRES: 19.67 ACRES
   TOTAL CUT CU. YDS.: 75,604 CU. YDS.
   TOTAL FILL: 31,573 CU. YDS.
   OFFSITE WASTE/BORROW AREA LOCATION: TO BE DETERMINED BY CONTRACTOR
8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK–FILLED AND STABILIZED BY THE END OF EACH WORK DAY, WHICHEVER IS SHORTER.

HOWARD SOIL CONSERVATION DISTRICT TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE RE–DISTURBED WHERE A SHORT–TERM VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: — LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: — APPLY 600 IBS/ACRE 10–10–10 FERTILIZER (14 IBS/1000 SQ. FT.).

SEEDING: — FOR PERIODS MARCH 1 — APRIL 30 AND FROM AUGUST 15 — OCTOBER 15, SEED WITH 2–1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 IBS/1000 SQ. FT.). FOR THE PERIOD MAY 1 — AUGUST 14, SEED WITH 3 IBS/ACRE OF WEEPING LOVEGRASS (.07 IBS/1000 SQ. FT.). FO~ THE PERIOD NOVEMBER 16 — FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS/ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

MULCHING: — APPLY L–1/2 TO 2 TONS/ACRE (70 TO 90 IBS/1000 SQ. FT.) OF UNROTTED WEED–FREE, SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GAL. PER ACRE (5 GAL/1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPE 8 FT. OR HIGHER, USE 348 GAL. PER ACRE (8 GAL/1000 SQ. FT.) FOR ANCHORING.

REFER TO THE 1994 MAR4AND STANDARDS AND SPECIFICATIONS FOR SOL EROSION AND SEDIMENT CONTROL FOR ADDITIONAL RATES AND METHODS NOT COVERED.

HOWARD SOIL CONSERVATION DISTRICT PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG–LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

1. PREFERRED — APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 IBS/1000 SQ. FT.) AND 600 IBS/ACRE 10–10–10 FERTILIZER (14 IBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 IBS/ACRE 30–0–0 UREAFORM FERTILIZER (9 IBS/1000 SQ. FT.)

2. ACCEPTABLE — APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 IBS/1000 SQ. FT.) AND 1000 IBS/ACRE 10–10–10 FERTILIZER (23 IBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL.

SEEDING — FOR THE PERIODS MARCH 1 — APRIL 30, AND AUGUST 1 — OCTOBER 15, SEED WITH 60 IBS/ACRE (1.4 IBS/1000 SQ. FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 — JULY 31, SEED WITH 60 IBS KENTUCKY 31 TALL FESCUE PER ACRE AND 2 IBS/ACRE (.05 IBS/100() SQ. FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 — FEBRUARY 28, PROTECT SITE BY:
   OPTION 1 – TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING.
   OPTION 2 –USE SOD.
   OPTION 3 – SEER: WITH 60 IBS/ACRE KENTUCKY 30 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.

MULCHING — APPLY 1–1/2 TO 2 TONS PER ACRE (70 TO 90 IBS/1000 SQ. FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPE 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ. FT.) FOR ANCHORING.

MAINTENANCE — INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD, COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — NO. 19165 — PROFESSIONAL ENGINEER

DES: CYH
DRN: CYH
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL NOTES

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J – SOUTH

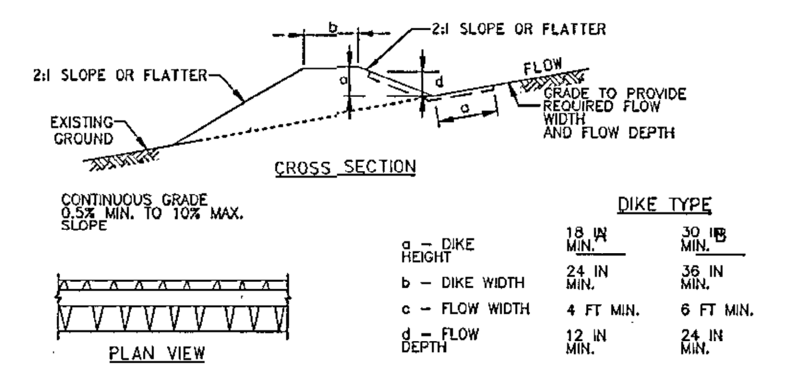
CAPITAL PROJECT # J–4237

DWG. ED–03
SCALE N/A
SHEET 52 OF 136

N:\42038–00J\CADD\pES–N003_BPJ.dgn
April 23, 2014

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL A-1 (PLACE DESIGNATION (e.g. A-1) ON FLOW CHANNEL SIDE OF DIKE)



	DIKE TYPE	
a - DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b - DIKE WIDTH	24 IN MIN.	36 IN MIN.
c - FLOW WIDTH	4 FT MIN.	6 FT MIN.
d - FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

A-1 SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)

A-2/B-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.

A-3/B-3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

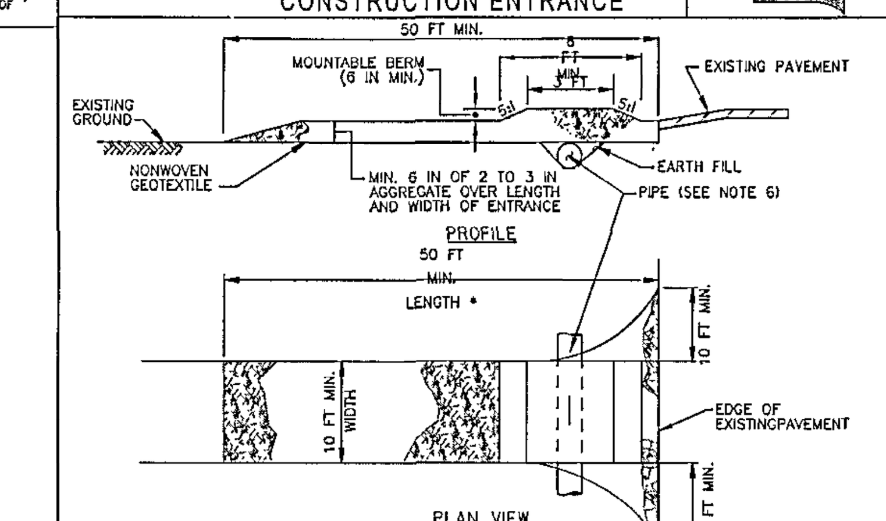
CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL SCE



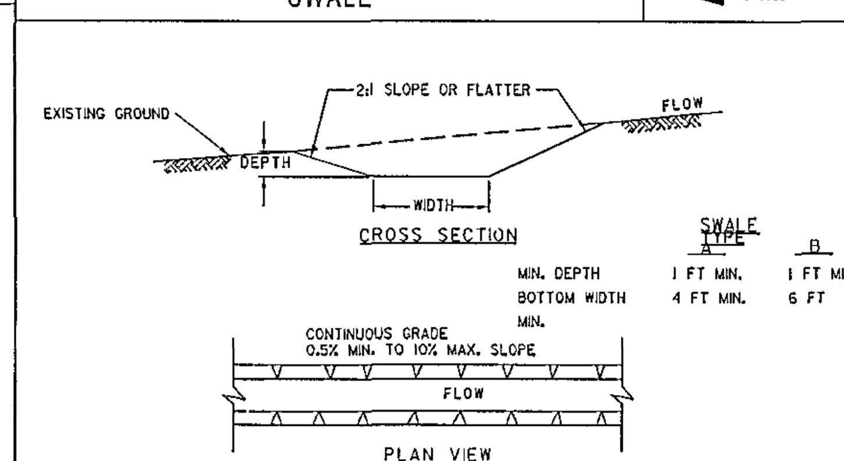
CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-2 TEMPORARY SWALE

STANDARD SYMBOL A-1



SWALE TYPE	A	B
MIN. DEPTH	1 FT MIN.	1 FT MIN.
BOTTOM WIDTH MIN.	4 FT MIN.	6 FT

FLOW CHANNEL STABILIZATION

A-1 SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)

A-2/B-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.

A-3/B-3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

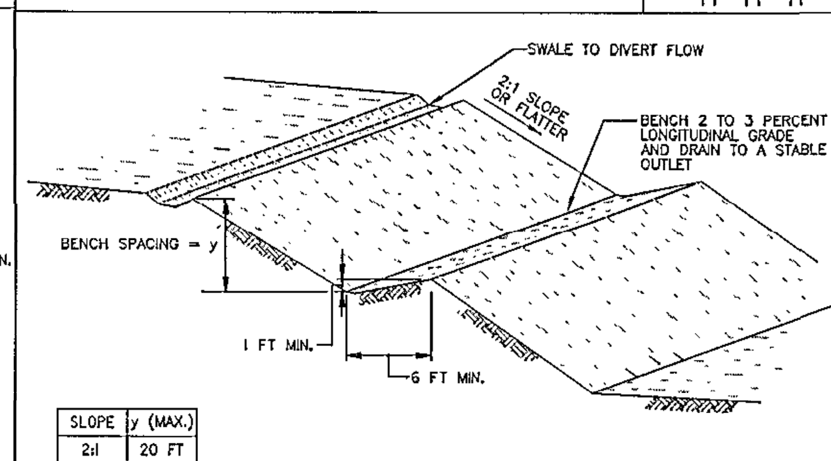
CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF TEMPORARY SWALE.
2. EXCAVATE OR SHAPE TEMPORARY SWALE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. STABILIZE TEMPORARY SWALE WITHIN THREE DAYS OF INSTALLATION. STABILIZE SWALES USED FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP TEMPORARY SWALE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
7. UPON REMOVAL OF TEMPORARY SWALE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-3-1 BENCHING

STANDARD SYMBOL BENCHING



SLOPE	y (MAX.)
2:1	20 FT
3:1	30 FT
4:1	40 FT

CONSTRUCTION SPECIFICATIONS

1. USE FILL MATERIAL FREE OF BRUSH, RUBBISH, ROCKS, LOGS, STUMPS, BUILDING DEBRIS, AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
2. DO NOT INCORPORATE FROZEN, SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS INTO FILL SLOPES OR STRUCTURAL FILLS. DO NOT PLACE FILL ON A FROZEN FOUNDATION.
3. PLACE ALL FILL IN LOOSE LIFTS NOT TO EXCEED 8 INCHES AND THEN COMPACT.
4. COMPACT ALL FILLS AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, OR OTHER RELATED PROBLEMS. COMPACT FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES, CONDUITS, ETC., IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
5. HANDLE SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION IN ACCORDANCE WITH SECTION H-2 SUBSURFACE DRAINS OR OTHER APPROVED METHODS.
6. MAINTAIN LINE, GRADE, AND CROSS SECTION OF BENCHING. STABILIZE IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION CRITERIA OR AS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. INSTALLATION OF EROSION CONTROL MATTING MAY BE NECESSARY IN BENCH/SWALE INVERTS. CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
7. KEEP ALL BENCHES FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT.

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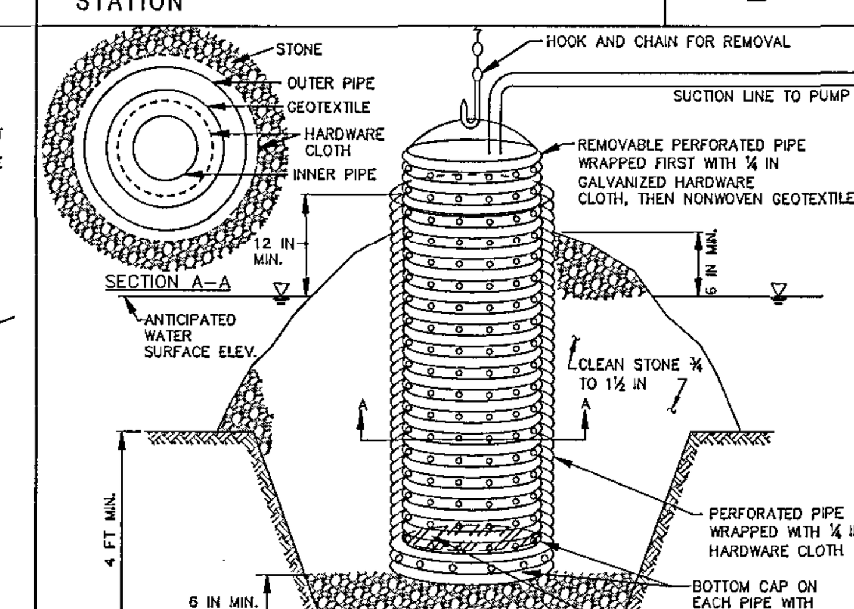
DETAIL F-1 REMOVABLE PUMPING STATION

STANDARD SYMBOL RPS



CONSTRUCTION SPECIFICATIONS

1. USE CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS 6 INCHES ON CENTER.
2. USE A MINIMUM 12 INCH DIAMETER INNER PIPE WITH AN OUTER PIPE A MINIMUM 6 INCHES LARGER IN DIAMETER. BOTTOM OF EACH PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
3. WRAP EACH PIPE WITH ¼ INCH GALVANIZED HARDWARE CLOTH. ON INNER PIPE WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
4. EXCAVATE 8 FEET X 8 FEET X 4 FEET DEEP PIT FOR PIPE PLACEMENT. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
5. SET TOP OF INNER AND OUTER PIPES MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION (OR RISER CREST ELEVATION WHEN DEWATERING A BASIN).
6. BACKFILL PIT AROUND THE OUTER PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
7. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A REMOVABLE PUMPING STATION REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, PULL OUT INNER PIPE AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

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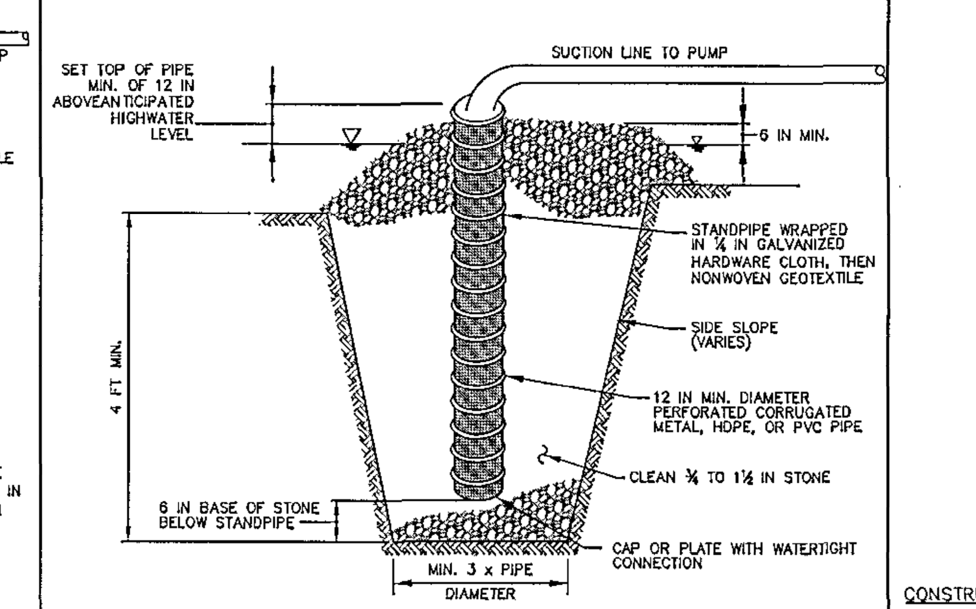
DETAIL F-2 SUMP PIT

STANDARD SYMBOL SP



CONSTRUCTION SPECIFICATIONS

1. USE 12 INCH OR LARGER DIAMETER CORRUGATED METAL, HDPE, OR PVC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER. BOTTOM OF PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
2. WRAP PIPE WITH ¼ INCH GALVANIZED HARDWARE CLOTH AND WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
3. EXCAVATE PIT TO THREE TIMES THE PIPE DIAMETER AND FOUR FEET IN DEPTH. PLACE ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
4. SET TOP OF PIPE MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
5. BACKFILL PIT AROUND THE PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
6. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
7. A SUMP PIT REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, REMOVE PERFORATED PIPE AND REPLACE GEOTEXTILE AND STONE. KEEP POINT OF DISCHARGE FREE OF EROSION.

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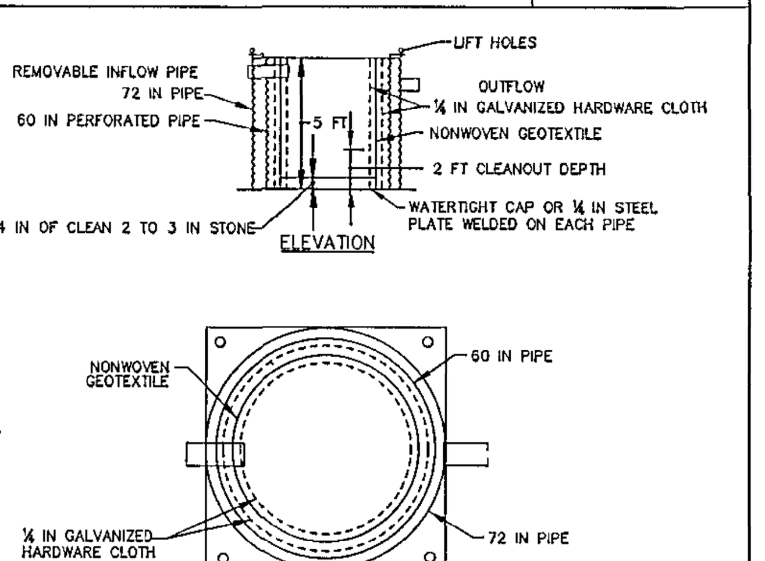
DETAIL F-3 PORTABLE SEDIMENT TANK

STANDARD SYMBOL PST



CONSTRUCTION SPECIFICATIONS

1. PROVIDE 1 CUBIC FOOT OF STORAGE FOR EACH GALLON PER MINUTE OF PUMP CAPACITY. REQUIRED STORAGE VOLUME MAY BE ATTAINED BY PLACEMENT OF TANKS IN PARALLEL WITH INFLOW EVENLY DISTRIBUTED AMONG TANKS. OVERTOPPING OF TANKS IS NOT PERMITTED.
2. USE 60 INCH CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER FOR THE INNER PIPE. LINE PIPE WITH NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, SANDWICHED BETWEEN, AND ATTACHED TO, ¼ INCH HARDWARE CLOTH.
3. OVERLAP GEOTEXTILE 8 INCHES MINIMUM AT VERTICAL SEAM AND AT THE BOTTOM PLATE.
4. ANCHOR GEOTEXTILE AT BOTTOM OF TANK WITH 4 INCHES OF 2 TO 3 INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE.
5. USE 72 INCH CORRUGATED METAL OR PLASTIC OUTER PIPE WITH PERMANENT OUTFLOW PIPE WITH INVERT LOWER THAN INFLOW PIPE
6. INFLOW PIPE MUST DISCHARGE INTO INNER PIPE AND BE REMOVABLE.
7. PLACE TANK ON LEVEL SURFACE AND DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A PORTABLE SEDIMENT TANK REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT FROM INNER PIPE WHEN IT REACHES TWO FEET IN DEPTH. IF SYSTEM CLOGS, PULL OUT INNER PIPE, REMOVE ACCUMULATED SEDIMENT, AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

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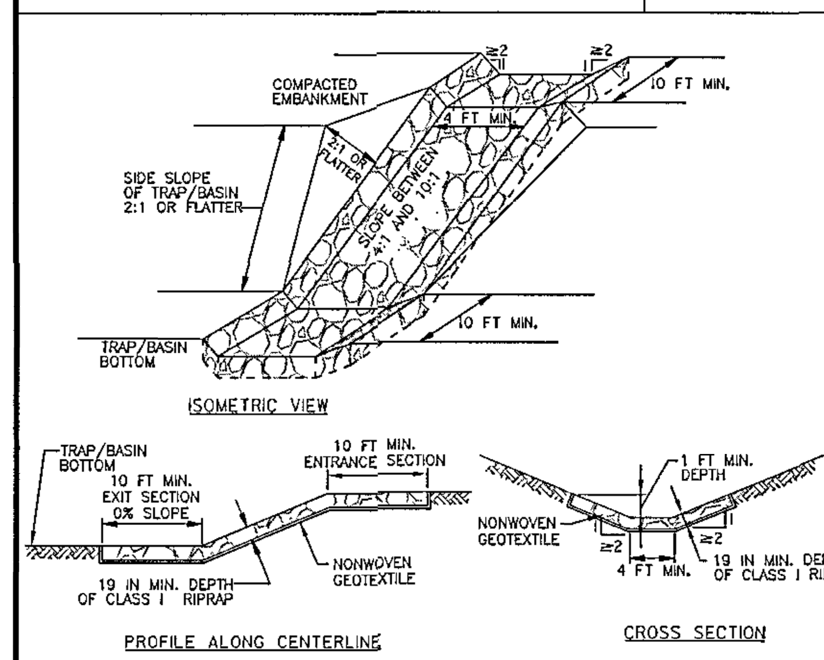
DETAIL D-3-1 RIPRAP INFLOW PROTECTION

STANDARD SYMBOL RRP



CONSTRUCTION SPECIFICATIONS

1. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL RIPRAP.
2. CONSTRUCT INFLOW CHANNEL WITH CLASS I RIPRAP OR EQUIVALENT RECYCLED CONCRETE LINING TO A MINIMUM DEPTH OF 19 INCHES (2 x D_{50}) AND A 1 FOOT DEEP FLOW CHANNEL. INFLOW RIPRAP PROTECTION CHANNEL MUST HAVE A TRAPEZOIDAL CROSS SECTION WITH 2:1 OR FLATTER SIDE SLOPES AND A 4 FOOT MINIMUM BOTTOM WIDTH.
3. INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.
4. BLEND RIPRAP INTO EXISTING GROUND.
5. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION.

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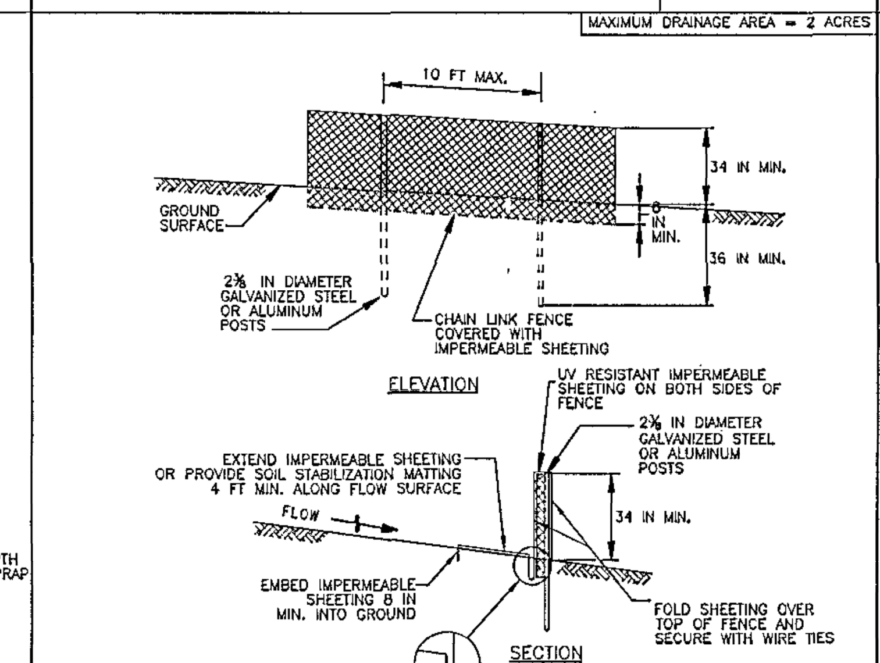
DETAIL C-9 DIVERSION FENCE

STANDARD SYMBOL DF

MAXIMUM DRAINAGE AREA = 2 ACRES



CONSTRUCTION SPECIFICATIONS

1. USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2⅜ INCH MAXIMUM OPENING).
2. USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
4. SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
5. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
6. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
7. KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

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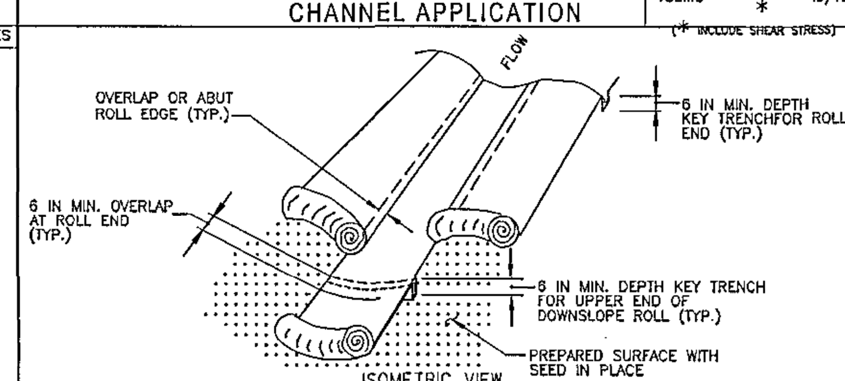
DETAIL B-4-6-A TEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL TSSMC - * lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE 'U' OR 'T' SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. 'U' SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. 'T' SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
7. OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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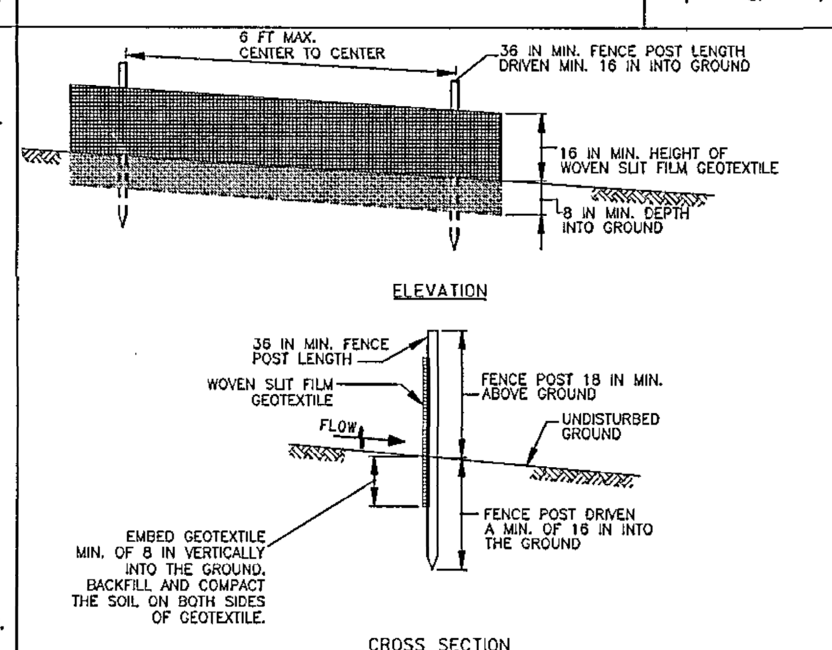
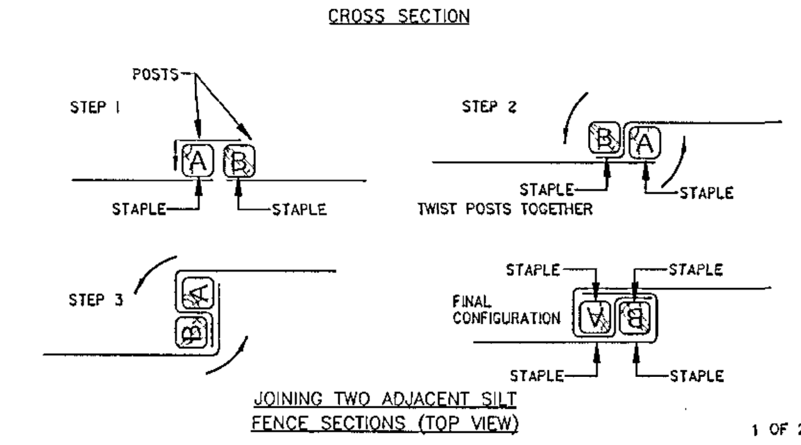
DETAIL E-1 SILT FENCE

STANDARD SYMBOL SF





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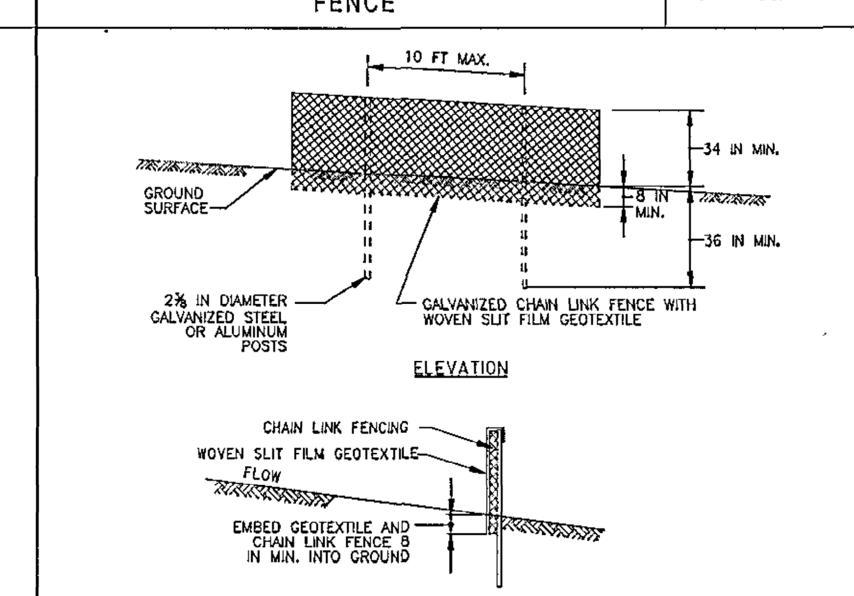
DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL SSF



CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

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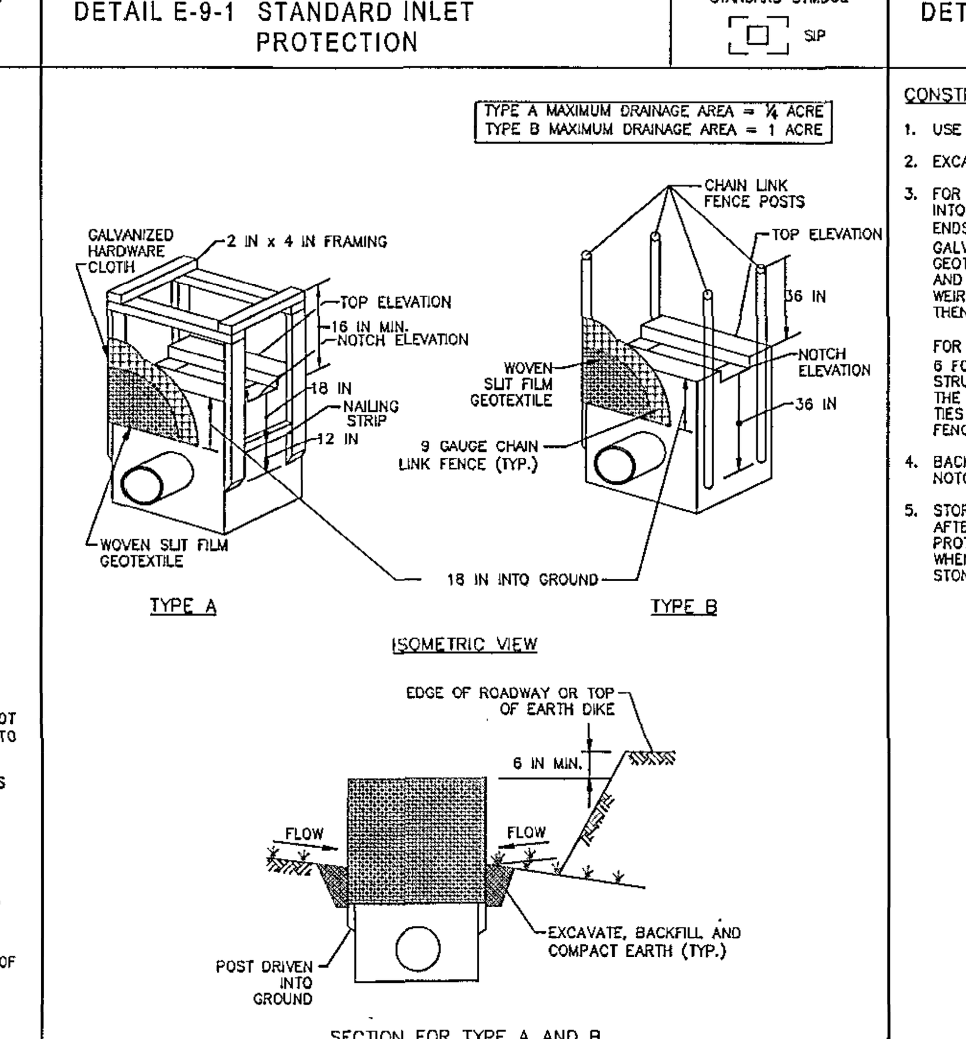
DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE



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DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH ½ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

   FOR TYPE B, USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
5. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

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DETAIL E-1 SILT FENCE

STANDARD SYMBOL SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ⅜ ⅛ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD 'T' OR 'U' SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

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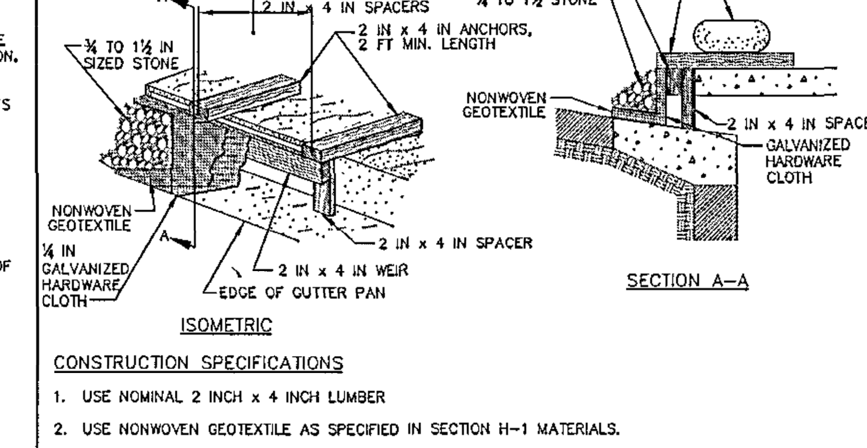
DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

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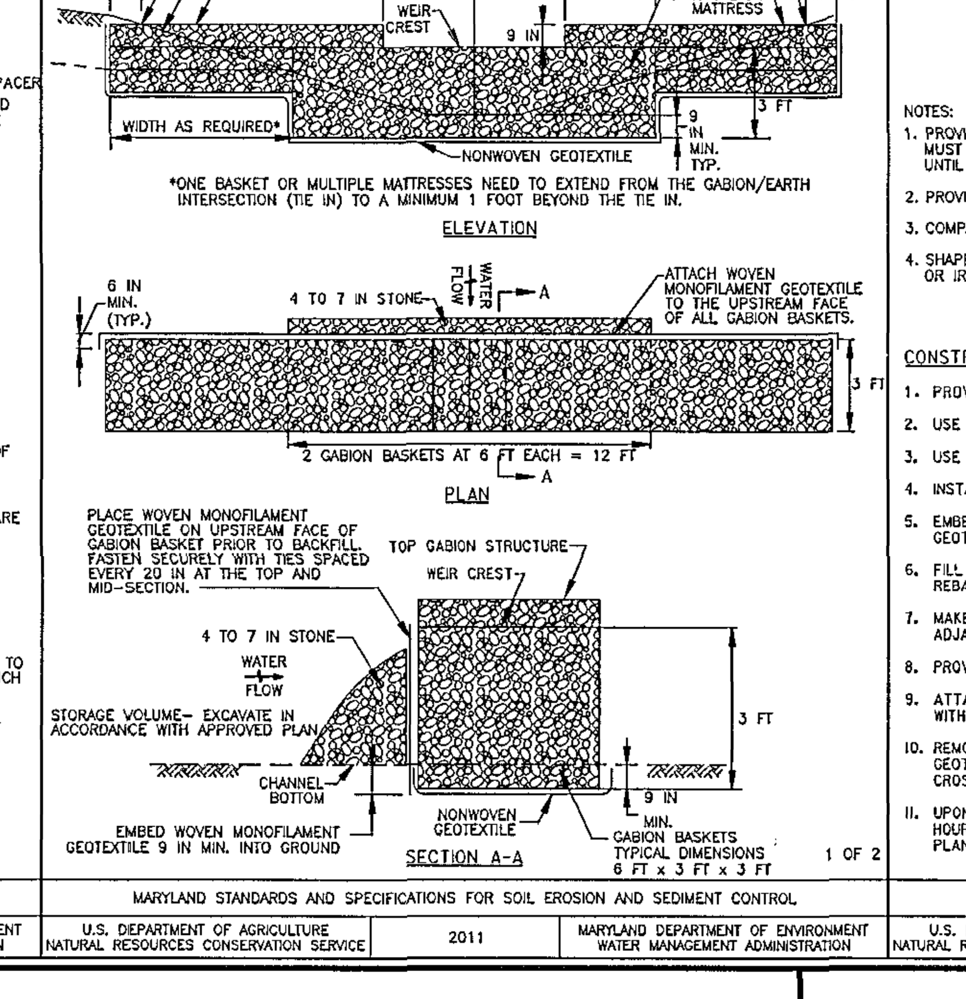
DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL TGOS

MAXIMUM DRAINAGE AREA = 1½ ACRE

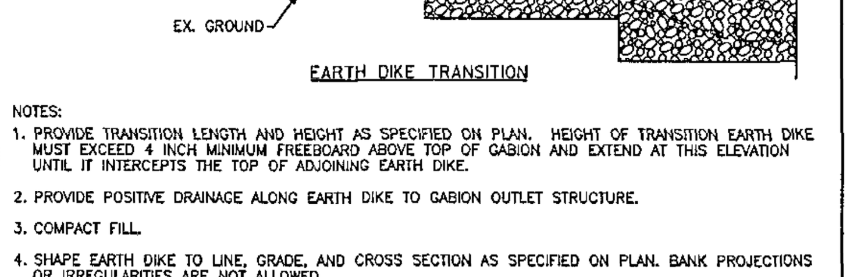


1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL TGOS



NOTES:

1. PROVIDE TRANSITION LENGTH AND HEIGHT AS SPECIFIED ON PLAN. HEIGHT OF TRANSITION EARTH DIKE MUST EXCEED 4 INCH MINIMUM FREEBOARD ABOVE TOP OF GABION AND EXTEND AT THIS ELEVATION UNTIL IT INTERCEPTS THE TOP OF ADJOINING EARTH DIKE.
2. PROVIDE POSITIVE DRAINAGE ALONG EARTH DIKE TO GABION OUTLET STRUCTURE.
3. COMPACT FILL.
4. SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED ON PLAN. BANK PROJECTIONS OR IRREGULARITIES ARE NOT ALLOWED.

CONSTRUCTION SPECIFICATIONS

1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
2. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
3. USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
4. INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
5. EMBED THE GABION OUTLET STRUCTURE INTO THE SOIL A MINIMUM OF 9 INCHES. PROVIDE NONWOVEN GEOTEXTILE UNDER ALL GABIONS.
6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.
7. MAKE THE WEIR CREST OF THE GABION OUTLET STRUCTURE 9 INCHES LOWER THAN THE TOP OF THE ADJACENT GABIONS.
8. PROVIDE A MINIMUM WEIR CREST OF 6 FEET.
9. ATTACH WOVEN MONOFILAMENT GEOTEXTILE TO THE UPSTREAM FACE OF GABION BASKETS AND COVER WITH 4 TO 7 INCH STONE.
10. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 12 INCHES OF THE WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO FUNCTION. MAINTAIN LINE, GRADE, AND CROSS SECTION.
11. UPON REMOVAL OF GABION 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.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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

John R Robertson 4/24/14
HOWARD SOIL CONSERVATION DISTRICT DATE

ENGINEER'S CERTIFICATION

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

SIGNATURE OF ENGINEER WALTER P. MILLER 6/10/2014
(PRINT NAME BELOW SIGNATURE) DATE

DEVELOPER'S CERTIFICATION

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

Steve Sharar 7/11/14
SIGNATURE OF DEVELOPER DATE
(PRINT NAME BELOW SIGNATURE)

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS	7/15/14	CHIEF, BUREAU OF ENGINEERING	7/11/14
CHIEF, BUREAU OF HIGHWAYS	7.1.14	CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION	7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

STATE OF MARYLAND WALTER P. MILLER No. 19165 PROFESSIONAL ENGINEER

DES: CYH				
DRN: CYH				
CHK: AUO				
DATE: 4/24/2014	BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL DETAILS

TAX MAP 36 BLOCK NO. 5

BLANDAIR REGIONAL PARK PHASE J - SOUTH

CAPITAL PROJECT # J-4237

ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

DWG. ED-04
SCALE N/A
SHEET 53 OF 136

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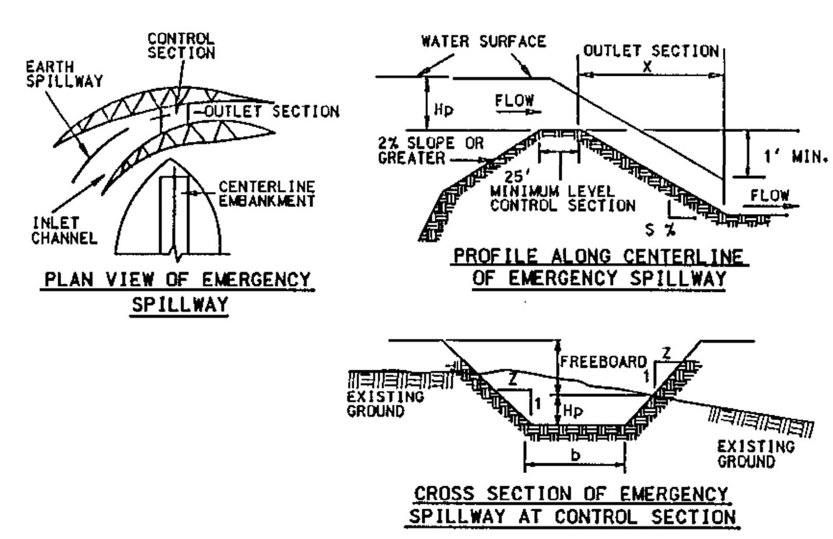
April 23, 2014

DETAIL 12 - EMERGENCY SPILLWAY



LEGEND

n= manning's Coefficient of Roughness.
Hp= Difference in elevation between the crest of the emergency spillway and the control section and water surface of the reservoir. In feet.
b= Bottom width of emergency spillway at the control section. In feet. (8' Minimum)
Q= Total discharge. In cfs.
V= Velocity. In feet per second, that will exist in the channel below the control section, at design Q, if constructed to slope (S) that is shown. (Vmax = 5 fps.)
S= Flattest slope (S), in %, allowable for the channel below the control section.
X= Minimum length of the channel below the control section, in feet.
Z= Side slope ratio.
Minimum Z = 2

NOTES

1. For a given Hp a decrease in the exit slope from S as given in the table decreases the spillway discharge but increasing the exit slope from S does not increase the discharge. If an exit slope (Se) steeper than S is used, then the velocity (Ve) in the exit channel will increase according to the following relationship:

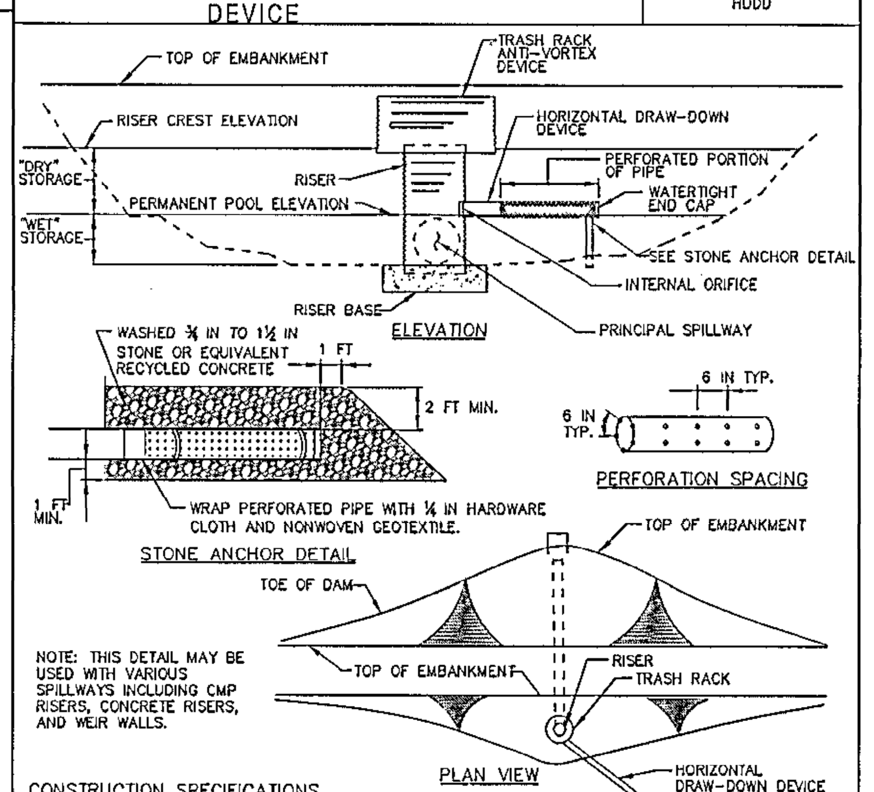
$$Ve = V \left(\frac{Se}{S}\right)^{0.3}$$

2. Data to the right of the heavy vertical lines on Table 14 should be used with caution, as the resulting sections will be either poorly proportioned or have velocities in excess of 5 ft./sec.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - 10 - 20	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-2-6 SEDIMENT BASIN SCHEMATIC HORIZONTAL DRAW-DOWN DEVICE

STANDARD SYMBOL
HDDD



NOTE: THIS DETAIL MAY BE USED WITH VARIOUS SPILLWAYS INCLUDING CMP RISERS, CONCRETE RISERS, AND WEIR WALLS.

CONSTRUCTION SPECIFICATIONS

1. PERFORATE PIPE WITH 1 INCH DIAMETER PERFORATIONS SPACED 6 INCHES APART LONGITUDINALLY AND RADIALLY OR IN ACCORDANCE WITH APPROVED PLAN.
2. WRAP THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE FIRST WITH ¼ INCH GALVANIZED HARDWARE CLOTH, THEN WITH NONWOVEN GEOTEXTILE. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE.
3. AS AN ALTERNATE TO STONE ANCHORING, SECURE DRAW-DOWN DEVICE WITH TWO 1 INCH STEEL ANGLES SET 3 FEET MINIMUM INTO THE GROUND ATTACHED TO DRAW-DOWN DEVICE BY A 1 INCH WIDE GALVANIZED STEEL STRAP OR 12 GAUGE OR HEAVIER WIRE.
4. REMOVE SEDIMENT WHEN IT ACCUMULATES TO CLEANOUT ELEVATION (50% OF THE WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA IN A SUCH A MANNER THAT IT WILL NOT ERODE. MAINTAIN WATER TIGHT CONNECTIONS. REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION

DESCRIPTION

The work should consist of installing sandbag or stone flow diversions for the purpose of erosion control when construction activities occur within the stream channel.

EFFECTIVE USES & LIMITATIONS

Diversions are used to isolate work areas from flow during the construction of in stream projects. Diversions which have an insufficient flow capacity can fail and severely erode the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low rainfall. This temporary measure may not be practical in large channels.

MATERIAL SPECIFICATIONS

Materials for sandbag and stone stream diversions should meet the following requirements:

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

INSTALLATION GUIDELINES

All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during periods of low flow. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.

Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should proceed as follows (refer to Detail 1.5):

1. The diversion structure should be installed from upstream to downstream.
2. The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration less than 2 weeks, the height of the diversion should be one half the streambank height, measured from the channel bed, plus 1 foot (0.3 meters) or bankfull height, whichever is greater. For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures utilizing sandbags, the stream bed should be hand prepared prior to placement of the base layer of sandbags in order to ensure a water tight fit. Additionally, it may be necessary to prepare the bank in a similar fashion.
3. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
4. Sediment-laden water from the construction area should be pumped to a dewatering basin.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

PAGE 1.5 - 1

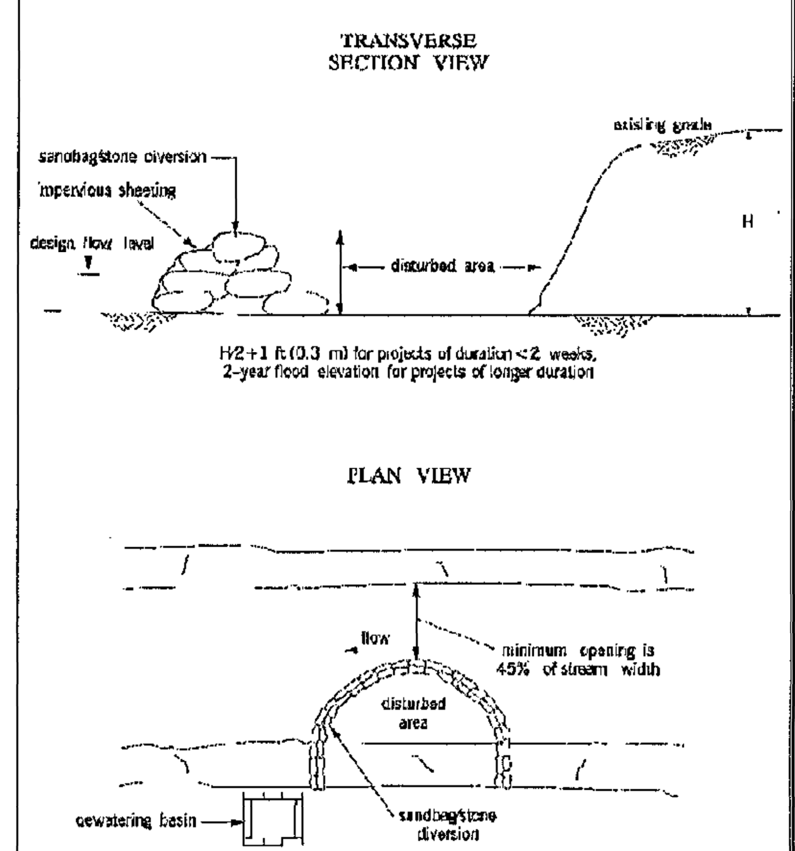
MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION

5. Sheeting on the diversion should be positioned such that the upstream portion covers the downstream portion with at least a 18 inch (0.45 meters) overlap.
6. Sandbag or stone diversions should not obstruct more than 55% of the stream width. Additionally, bank stabilization measures should be placed in the constricted section if accelerated erosion and bank scour are observed during the construction time or if project time is expected to last more than 2 weeks.
7. Prior to removal of these temporary structures, any accumulated sediment should be removed, deposited and stabilized in an approved area outside the 100-year floodplain unless authorized by the WMA.
8. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

PAGE 1.5 - 2

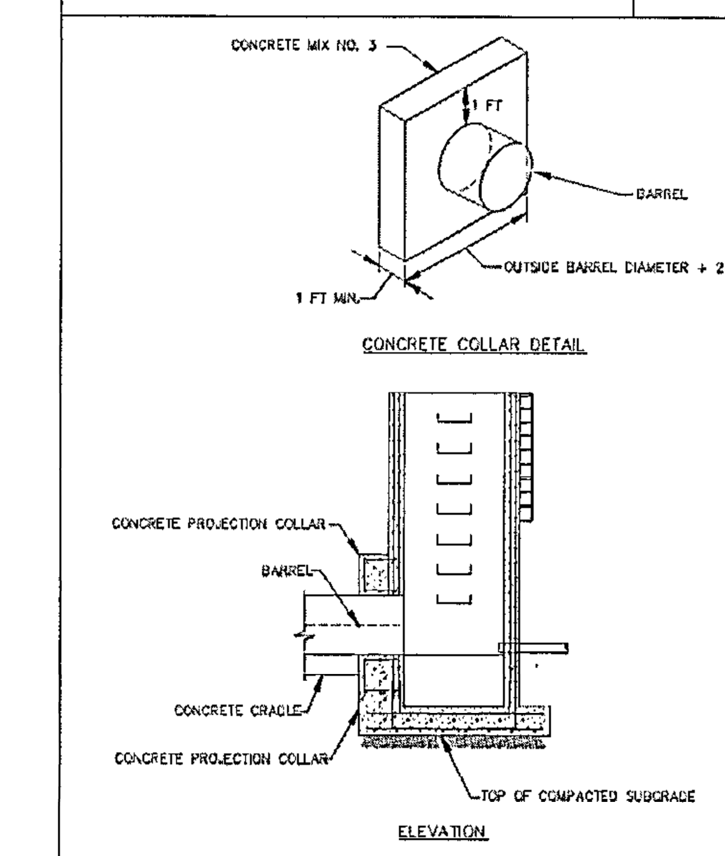
Maryland's Guidelines To Waterway Construction
DETAIL 1.5: SANDBAG/STONE DIVERSION



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.5 - 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-2-9 PROJECTION COLLAR

STANDARD SYMBOL



CONSTRUCTION SPECIFICATIONS

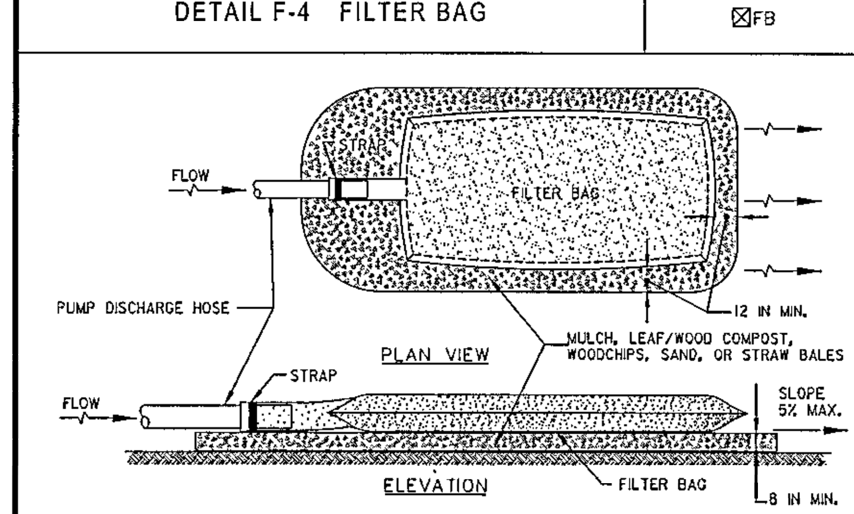
1. CAST 1 FOOT THICK CONCRETE COLLAR TO OUTLET STRUCTURE WITH FOUR #4 U-SHAPED REBARS.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-4 FILTER BAG

STANDARD SYMBOL
☒FB



CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT²	ASTM D-4491
PERMITTIVITY (SEC⁻¹)	1.2 SEC⁻¹	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15–0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

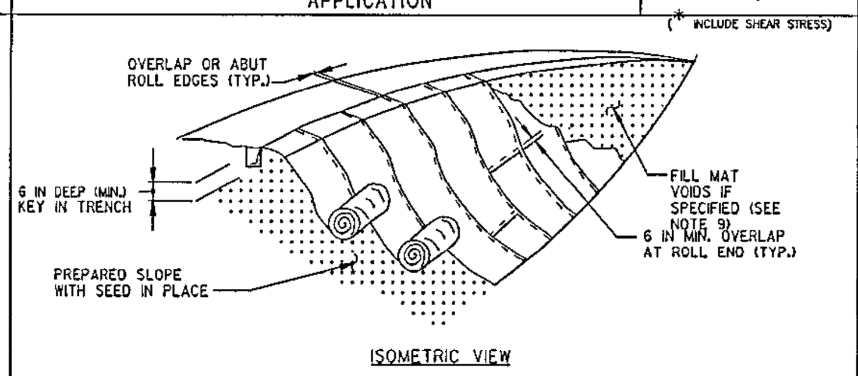
6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL
PSSMS – * lb/ft²
(* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

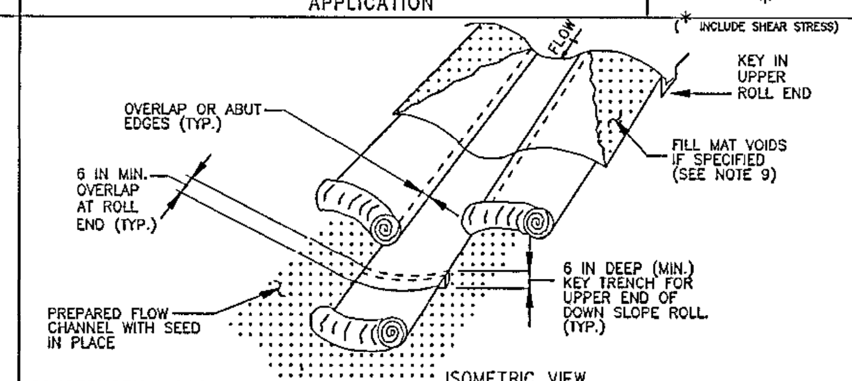
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE 'U' OR 'T' SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. 'U' SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. 'T' SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL
PSSMC – * lb/ft²
(* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

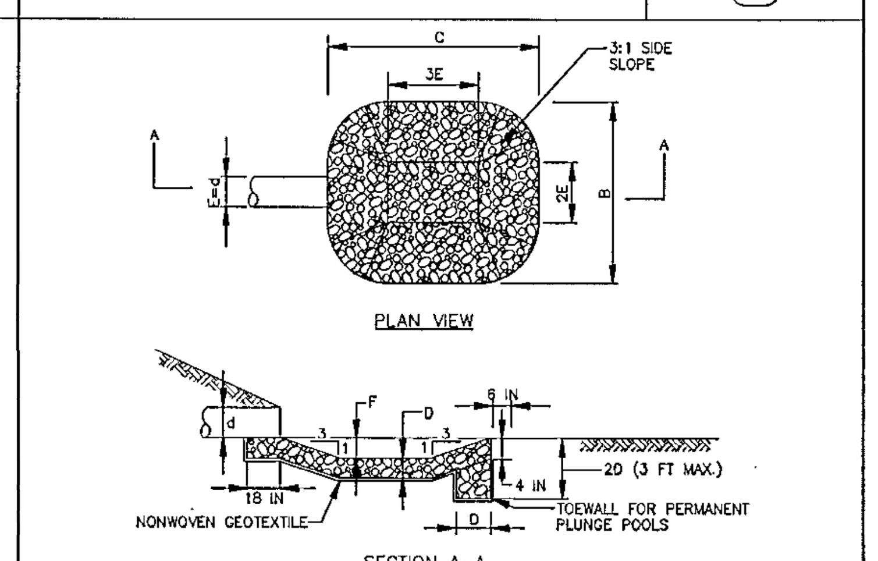
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE 'U' OR 'T' SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. 'U' SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. 'T' SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL D-4-2 PLUNGE POOL

STANDARD SYMBOL
PP



CONSTRUCTION SPECIFICATIONS

1. USE SPECIFIED CLASS OF RIPRAP.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCHING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE.
3. PREPARE THE SUBGRADE FOR THE PLUNGE POOL TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EMBED THE GEOTEXTILE A MINIMUM OF 4 INCHES AND EXTEND THE GEOTEXTILE A MINIMUM OF 6 INCHES BEYOND THE EDGE OF THE SCOUR HOLE.
5. STONE FOR THE PLUNGE POOL MAY BE PLACED BY EQUIPMENT. CONSTRUCT TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. DELIVER AND PLACE THE STONE FOR THE PLUNGE POOL IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE STONE FOR THE PLUNGE POOL IN A MANNER TO PREVENT DAMAGE TO THE GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. AT THE PLUNGE POOL OUTLET, PLACE THE STONE SO THAT IT MEETS THE EXISTING GRADE.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

Definition

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

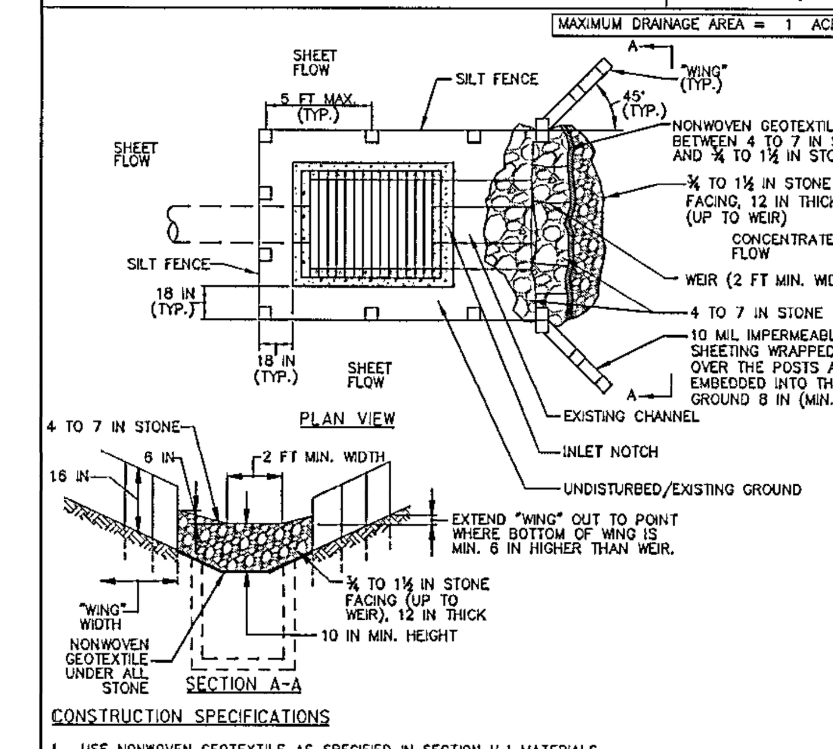
The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

B.43

DETAIL E-9-4 MEDIAN INLET PROTECTION

STANDARD SYMBOL
MIP

MAXIMUM DRAINAGE AREA = 1 ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. INSTALL SILT FENCE ON ALL SIDES OF INLET RECEIVING SHEET FLOW. FENCE IS TO BE INSTALLED IN ACCORDANCE WITH SILT FENCE DETAIL E-1, EXCEPT POSTS ARE TO BE SPACED A MAXIMUM OF 5 FEET APART.
3. INSTALL STONE STRUCTURE WITH THE WEIR 10 INCHES ABOVE THE INVERT OF THE CHANNEL AND THE WEIR OPENING THE SAME WIDTH AS THE CHANNEL BOTTOM OR 2 FEET MINIMUM. USE CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE. PLACE NONWOVEN GEOTEXTILE ON THE UPSTREAM FACE AND COVER WITH A 12 INCH THICK LAYER OF CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
4. CONSTRUCT "WINGS" IN ACCORDANCE WITH DIVERSION FENCE DETAIL C-9.
5. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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

John R Robertson 4/24/14
HOWARD SOIL CONSERVATION DISTRICT — DATE

ENGINEER'S CERTIFICATION

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

[signature] WALTER P. MILLER — 6/10/2014
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) — DATE

DEVELOPER'S CERTIFICATION

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

Steve Sharar — 7/11/14
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

[signature] 7/8/14 — DIRECTOR OF PUBLIC WORKS — DATE
[signature] — CHIEF, BUREAU OF ENGINEERING — DATE
[signature] 7.11.14 — CHIEF, BUREAU OF HIGHWAYS — DATE
Steve Sharar 7/11/14 — CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: PDS	BY	NO.	REVISION	DATE
DRN: CYH				
CHK: AUO				
DATE: 4/24/2014				

EROSION AND SEDIMENT CONTROL DETAILS

TAX MAP 36 — BLOCK NO. 5

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J–4237

ELECTION DISTRICT 3 /7 — HOWARD COUNTY, MARYLAND

DWG. ED–05
SCALE N/A
SHEET 54 OF 136

N:\42038-00J\CADD\pES-D002_BPJ.dgn
April 23, 2014

EP–1.1

LIMIT OF DISTURBANCE				
NO	STATION	OFFSET(FT)	NORTHING	EASTING
1	1028+50.5	4.9 LT	564387.9	1358897.2
2	1030+52.6	6.2 LT	564212.8	1358998.1
3	1031+49.8	11.5 LT	564130.8	1359050.5
4	1033+30.8	10.0 LT	563972.7	1359138.6
5	1026+01.3	42.8 RT	564491.0	1358783.0
6	1026+02.0	57.6 RT	564489.6	1358774.8
7	1027+08.8	55.7 RT	564481.3	1358774.5
8	1027+10.1	39.3 RT	564488.3	1358789.4
9	1027+11.5	91.6 RT	564461.2	1358744.7
10	1027+58.4	3.1 RT	564464.2	1358844.8
11	1028+05.4	102.0 RT	564374.4	1358781.9
12	1031+04.3	113.9 RT	564108.6	1358919.0

EP–1.2

LIMIT OF DISTURBANCE				
NO	STATION	OFFSET(FT)	NORTHING	EASTING
1	1034+13.0	7.1 LT	563899.7	1359176.6
2	1036+17.4	9.5 LT	563723.1	1359279.5
3	1037+33.0	6.0 LT	563620.8	1359333.4
4	1038+34.8	6.8 LT	563533.0	1359384.6
5	1039+69.3	7.5 LT	563419.3	1359455.9
6	1041+00.2	8.8 LT	563312.4	1359530.8
7	1042+18.3	6.3 LT	563216.8	1359599.6
8	1044+00.9	7.0 LT	563077.5	1359717.0
9	1045+10.9	5.3 LT	562995.9	1359790.5
10	1046+48.4	6.0 LT	562900.0	1359888.5
11	1034+10.6	120.7 RT	563838.8	1359064.3
12	1036+44.3	114.6 RT	563638.5	1359184.8
13	1038+23.9	145.0 RT	563465.9	1359248.0
14	1041+15.0	146.5 RT	563209.1	1359413.9
15	1041+75.9	114.5 RT	563177.1	1359477.5
16	1042+26.0	112.6 RT	563137.0	1359511.0
17	1043+65.4	149.5 RT	563001.3	1359575.6
18	1044+89.0	108.3 RT	562933.5	1359693.0

EP–1.3

LIMIT OF DISTURBANCE				
NO	STATION	OFFSET(FT)	NORTHING	EASTING
1	1047+67.1	6.4 LT	562820.9	1359976.7
2	1048+33.5	6.5 LT	562778.2	1360027.4
3	1049+57.5	5.7 LT	562700.8	1360123.9
4	1050+51.0	6.3 LT	562646.3	1360199.6
5	1051+92.6	6.6 LT	562567.9	1360317.1
6	1053+83.5	5.3 LT	562470.1	1360480.6
7	1054+97.0	6.1 LT	562418.6	1360581.4
8	1056+03.4	4.3 LT	562371.7	1360676.8
9	1047+34.9	109.0 RT.	562755.7	1359876.1
10	1049+19.3	112.2 RT	562630.9	1360021.3
11	1050+81.0	114.9 RT	562529.4	1360155.3
12	1052+36.0	114.0 RT	562442.2	1360290.8
13	1054+40.8	99.1 RT	562350.6	1360483.0
14	1054+21.6	50.2 RT	562403.0	1360488.2
15	1055+20.6	46.2 RT	562361.2	1360579.9

EP–1.4

LIMIT OF DISTURBANCE				
NO	STATION	OFFSET(FT)	NORTHING	EASTING
1	1200+70.3	42.2 LT	561380.3	1359993.6
2	1200+89.3	40.5 LT	561394.1	1359980.6
3	1200+85.4	1.9 RT	561423.3	1360011.5
4	1201+62.8	1.7 RT	561474.4	1359953.4
5	1202+88.9	2.4 LT	561544.4	1359848.7
6	1203+53.7	0.5 LT	561576.1	1359792.3
7	1204+08.9	5.2 RT	561603.0	1359743.8
8	1205+10.2	0.2 RT	561637.4	1359648.3
9	1205+77.1	1.8 LT	561661.3	1359585.8
10	1206+57.5	2.7 LT	561691.5	1359511.2
11	1207+04.2	1.7 LT	561710.4	1359468.5
12	1207+77.7	2.6 RT	561743.7	1359403.2
13	1208+34.4	5.4 LT	561768.5	1359351.3
14	1209+56.0	48.9 LT	561843.8	1359235.1
15	1210+00.9	64.8 RT	561928.4	1359322.2
16	1209+74.6	64.4 RT	561909.1	1359329.3
17	1209+31.3	68.7 RT	561881.6	1359348.9
18	1208+87.3	68.1 RT	561854.0	1359368.4
19	1208+35.9	68.2 RT	561826.4	1359396.8
20	1207+60.6	70.3 RT	561797.7	1359446.7
21	1206+94.4	72.5 RT	561775.1	1359506.2
22	1206+14.8	59.8 RT	561732.7	1359574.7
23	1206+12.8	56.9 RT	561729.2	1359575.5
24	1205+96.1	55.4 RT	561721.4	1359590.3
25	1205+87.8	53.4 RT	561716.4	1359597.3
26	1204+85.1	62.2 RT	561684.9	1359695.4
27	1204+78.3	64.8 RT	561684.7	1359702.7
28	1204+52.2	63.8 RT	561673.7	1359726.3
29	1204+16.5	77.0 RT	561672.2	1359764.4
30	1203+83.4	73.3 RT	561656.0	1359793.5
31	1203+17.4	72.8 RT	561624.7	1359859.0
32	1203+10.6	77.8 RT	561625.6	1359868.1
33	1203+07.4	113.3 RT	561655.0	1359888.3
34	1203+05.5	139.2 RT	561676.5	1359902.8
35	1202+91.7	151.8 RT	561679.3	1359923.5
36	1202+80.9	155.1 RT	561675.4	1359936.6
37	1202+61.3	146.5 RT	561655.5	1359952.5
38	1202+32.6	136.1 RT	561627.5	1359975.5
39	1202+03.7	135.7 RT	561606.7	1360003.3
40	1201+66.4	149.8 RT	561589.1	1360047.2
41	1201+39.0	148.4 RT	561568.7	1360068.3
42	1201+21.1	138.4 RT	561549.3	1360075.1
43	1201+05.8	119.5 RT	561525.0	1360074.0
44	1201+00.1	101.6 RT	561507.8	1360066.5
45	1200+98.0	43.7 RT	561463.0	1360029.7
46	1200+85.9	32.1 RT	561446.3	1360031.1
47	1200+62.2	42.4 RT	561438.4	1360055.7
48	1200+85.0	109.7 RT	561503.9	1360083.2
49	1200+58.9	79.4 RT	561463.9	1360082.7
50	1200+50.7	54.6 RT	561439.9	1360072.4
51	1200+66.1	4.1 RT	561412.3	1360027.5

EP–1.5

LIMIT OF DISTURBANCE				
NO	STATION	OFFSET(FT)	NORTHING	EASTING
1	1210+21.2	117.5 LT	561897.1	1359141.4
2	1210+36.6	63.2 LT	561929.0	1359189.6
3	1211+00.0	62.6 LT	561966.1	1359184.5
4	1211+39.1	53.7 LT	561981.6	1359192.1
5	1211+96.0	65.6 LT	562055.4	1359183.5
6	1212+40.8	69.4 LT	562128.5	1359198.1
7	1212+98.2	67.7 LT	562174.7	1359220.6
8	1213+38.3	52.0 LT	562257.9	1359281.4
9	1213+69.3	68.0 LT	562285.6	1359277.7
10	1214+06.6	68.0 LT	562318.8	1359294.8
11	1214+16.4	41.0 LT	562315.1	1359323.3
12	1214+63.4	41.0 LT	562356.8	1359344.9
13	1214+63.4	35.5 LT	562354.3	1359349.7
14	1214+86.8	49.1 LT	562381.3	1359348.5
15	1215+42.5	46.5 LT	562429.6	1359376.3
16	1215+90.9	42.4 LT	562470.7	1359402.2
17	1216+36.6	45.3 LT	562512.6	1359420.7
18	1216+36.9	49.5 LT	562514.8	1359417.1
19	1216+60.4	49.0 LT	562532.9	1359426.4
20	1217+10.4	80.5 LT	562580.0	1359409.3
21	1216+98.5	149.8 LT	562591.1	1359340.5
22	1214+16.8	190.3 LT	562383.9	1359190.9
23	1214+19.6	423.4 LT	562493.6	1358985.1
24	1214+18.4	429.3 LT	562495.2	1358979.4
25	1214+08.3	449.3 LT	562495.4	1358956.9
26	1214+08.3	469.5 LT	562504.7	1358938.9
27	1214+22.7	469.8 LT	562517.6	1358945.3
28	1215+34.5	315.0 LT	562545.8	1359134.2
29	1221+12.4	256.6 LT	562760.2	1359149.5
30	1221+56.6	215.3 LT	562829.9	1359148.3
31	1221+81.4	181.6 LT	562878.3	1359156.7
32	1222+28.2	139.4 LT	562953.9	1359162.6
33	1222+81.4	104.4 LT	563029.6	1359168.5
34	1223+02.2	116.7 LT	563046.5	1359149.7
35	1222+92.3	70.5 RT	563097.7	1359330.0
36	1222+87.8	116.0 RT	563108.2	1359374.6
37	1222+64.3	171.0 RT	563111.9	1359431.8
38	1222+04.2	191.6 RT	563088.1	1359465.9
39	1222+07.8	156.9 RT	563073.2	1359434.5
40	1222+27.9	112.9 RT	563059.4	1359389.0
41	1221+76.7	138.3 RT	563045.6	1359431.9
42	1221+43.3	158.9 RT	563038.8	1359459.0
43	1221+25.6	188.7 RT	563046.3	1359491.1
44	1219+55.3	189.0 RT	562899.0	1359605.2
45	1219+21.4	199.0 RT	562855.5	1359642.1
46	1218+94.2	217.7 RT	562821.0	1359678.1
47	1218+46.2	236.0 RT	562745.2	1359720.1
48	1218+01.8	194.7 RT	562663.6	1359690.0
49	1217+85.1	210.4 RT	562636.0	1359706.7
50	1217+69.2	132.0 RT	562612.5	1359627.8
51	1217+49.2	89.3 RT	562588.5	1359583.0
52	1217+35.5	73.3 RT	562573.4	1359564.9
53	1217+29.2	82.2 RT	562564.0	1359572.3
54	1217+20.4	72.5 RT	562555.0	1359560.6
55	1217+14.4	61.2 RT	562550.3	1359547.9
56	1217+10.9	61.9 RT	562546.1	1359547.6
57	1216+52.4	63.4 RT	562478.9	1359525.3
58	1215+84.8	74.2 RT	562411.7	1359503.0
59	1215+25.8	89.8 RT	562352.1	1359489.8
60	1214+85.4	75.4 RT	562322.9	1359458.4
61	1214+65.5	51.2 RT	562316.3	1359427.8
62	1214+17.9	50.3 RT	562274.5	1359405.1
63	1213+85.6	89.4 RT	562227.9	1359425.0
64	1211+94.1	71.6 RT	562074.5	1359328.5
65	1211+20.9	64.9 RT	562020.8	1359310.8
66	1210+64.0	62.1 RT	561976.1	1359308.8

EP–1.6

LIMIT OF DISTURBANCE				
NO	STATION	OFFSET(FT)	NORTHING	EASTING
1	700+59.0	60.3 LT	563443.2	1358886.5
2	700+83.8	62.5 LT	563443.4	1358851.0
3	701+22.8	60.4 LT	563461.1	1358798.5
4	701+70.3	48.6 LT	563507.1	1358750.7
5	702+15.6	37.8 LT	563553.4	1358725.1
6	703+25.7	44.1 LT	563635.7	1358651.7
7	703+93.0	42.8 LT	563689.2	1358610.8
8	703+93.0	55.0 LT	563681.6	1358601.3
9	704+07.6	55.8 LT	563692.5	1358591.5
10	704+10.5	41.7 LT	563703.6	1358600.8
11	704+37.4	41.0 LT	563728.6	1358582.8
12	704+84.2	33.9 LT	563785.1	1358565.5
13	706+01.1	51.8 LT	563916.5	1358552.0
14	706+83.1	56.7 LT	563997.4	1358558.1
15	706+65.6	150.0 LT	563993.8	1358463.5
16	708+30.0	141.2 LT	564024.7	1358459.2
17	707+47.7	59.6 LT	564035.2	1358551.4
18	708+70.8	25.1 RT	564115.9	1358485.9
19	700+00.7	205.5 RT	563713.8	1358918.9
20	700+31.7	159.3 RT	563664.1	1358893.5
21	700+92.6	89.8 RT	563594.5	1358871.1
22	701+79.3	62.9 RT	563591.9	1358823.6
23	702+22.5	51.2 RT	563614.2	1358790.5
24	703+10.5	47.1 RT	563680.5	1358732.5
25	704+02.1	48.8 RT	563753.3	1358676.8
26	704+09.2	34.2 RT	563749.8	1358661.0
27	704+88.3	34.3 RT	563805.2	1358630.8
28	705+57.3	30.3 RT	563862.0	1358627.5
29	706+09.8	25.9 RT	563914.5	1358630.2
30	706+27.8	26.6 RT	563932.3	1358633.3
31	706+93.7	36.5 RT	563999.6	1358651.8
32	708+70.8	25.1 RT	564168.5	1358551.6
33	708+32.9	30.8 RT	564145.2	1358582.0
34	707+47.7	34.1 RT	564065.4	1358640.1
35	703+08.7	244.0 RT	563801.7	1358887.7
36	1305+65.8	93.0 RT	563618.8	1359061.9
37	1301+61.0	201.4 RT	563508.2	1359165.0
38	1300+64.9	168.6 RT	563435.1	1359235.3
39	1300+41.7	143.8 RT	563402.4	1359244.6
40	1300+23.5	128.8 RT	563380.8	1359253.9
41	1300+29.7	143.5 RT	563396.7	1359255.1
42	1300+46.0	173.8 RT	563431.1	1359254.5
43	1301+16.7	126.5 RT	563421.4	1359170.0
44	1301+37.6	141.2 RT	563444.1	1359158.1
45	1302+31.9	160.6 RT	563486.1	1359125.0
46	1304+03.3	139.1 RT	563530.7	1359081.6
47	1304+83.2	90.7 RT	563575.3	1359038.3
48	1304+86.6	71.9 RT	563582.6	1359020.8
49	1304+59.0	73.0 RT	563564.0	1359017.6
50	1304+18.8	81.2 RT	563536.6	1359023.5
51	1303+43.8	110.1 RT	563498.2	1359058.9
52	1301+27.3	109.0 RT	563410.6	1359152.6
53	1300+14.3	143.2 LT	563134.8	1359137.5
54	1300+74.5	126.7 LT	563176.9	1359091.6
55	1300+75.5	170.4 LT	563138.6	1359070.7
56	1301+17.2	180.8 LT	563148.5	1359028.8
57	1301+46.6	86.9 LT	563245.4	1359045.7
58	1302+36.5	75.6 LT	563318.7	1358958.2
59	1303+17.7	75.3 LT	563406.3	1358896.5
60	500+63.9	106.1 RT	563172.1	1359307.4
61	501+00.9	75.0 RT	563207.8	1359321.1
62	501+31.3	67.9 RT	563217.4	1359341.1
63	501+66.9	64.4 RT	563220.1	1359366.6
64	502+13.8	65.2 RT	563212.4	1359399.4

DEVELOPER'S CERTIFICATION

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

Steve Shavar — 7/11/14
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE

ENGINEER'S CERTIFICATION

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

Walter P. Miller — 6/10/2014
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) WALTER P. MILLER — DATE

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 4/24/14

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: PDS
DRN: CYH
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT LOD STAKEOUT

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J–4237

DWG. ED–06
SCALE N/A
SHEET 55 OF 136

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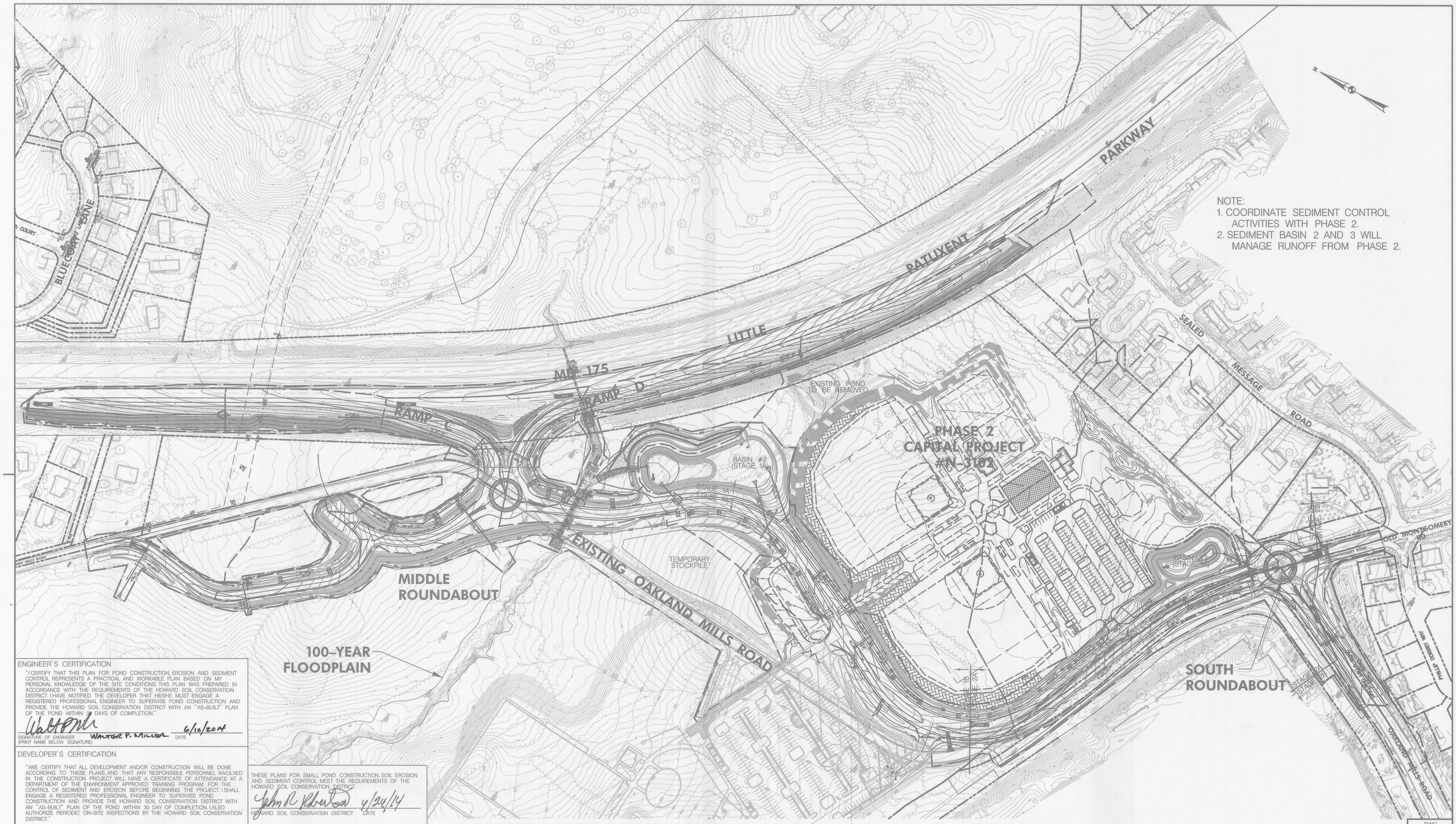
April 23, 2014



ENGINEER'S CERTIFICATION

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SIGNATURE OF ENGINEER — WALTER P. MILLER (PRINT NAME BELOW SIGNATURE) — DATE 6/10/2014

DEVELOPER'S CERTIFICATION

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

Steve Shanar — 7/11/14

SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE

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

John R Robertson — 4/24/14

HOWARD SOIL CONSERVATION DISTRICT — DATE

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/16/14

CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14

CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: PDS
DRN: PDS
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL COMPOSITE PLAN

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J-4237

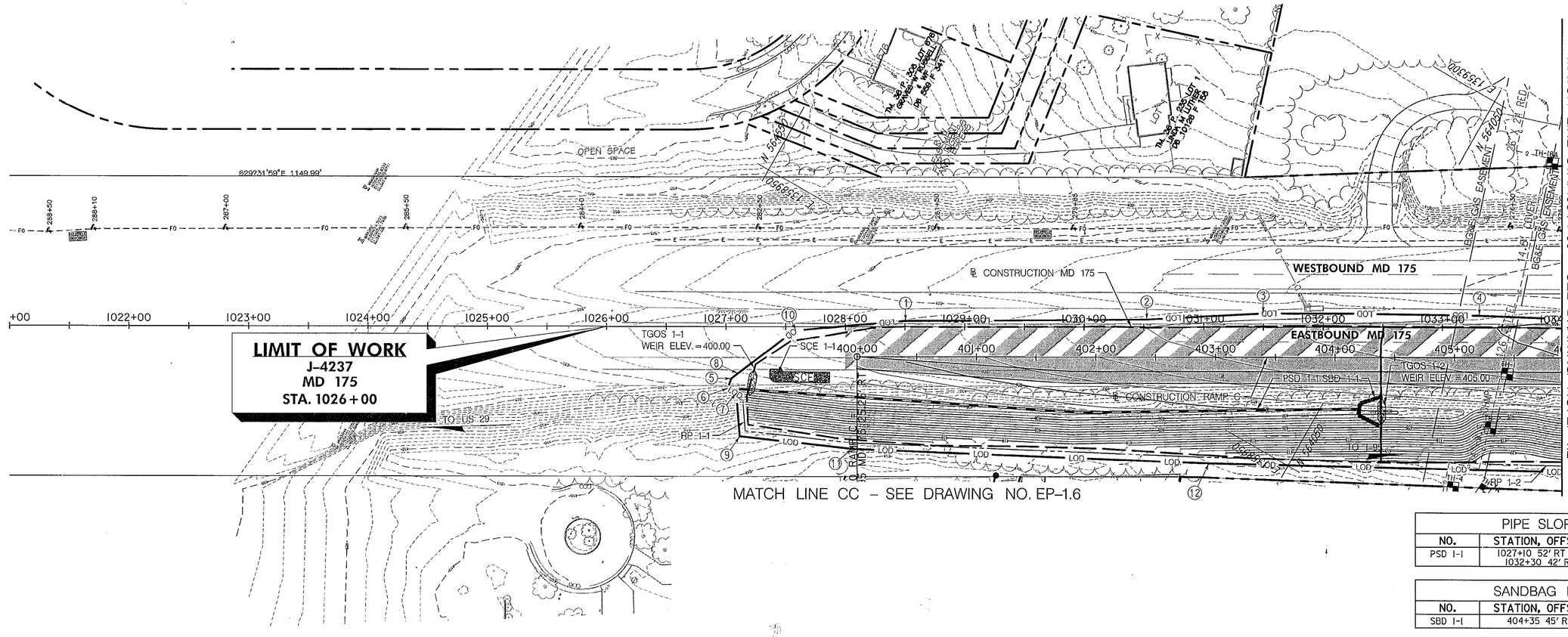
DWG. EP-0.0

SCALE 1" = 120'

SHEET 56 OF 136

N:\42038-00J\CADD\pES-1000_BPJ.dgn
April 23, 2014

ROOT PRUNING (RP)			
NO.	STATION, OFFSET	L.F.	REMARKS
RP 1-1	1027+15, 65' RT TO 1032+85, 113' RT	592	MD 175
RP 1-2	405+28, 89' RT TO 405+90, 90' RT	62	RAMP C



PIPE SLOPE DRAIN (PSD)				
NO.	STATION, OFFSET	SIZE	L.F.	REMARKS
PSD 1-1	1027+10 52' RT TO 1032+30 42' RT	18"	520	MD 175

SANDBAG DIVERSION (SBD)			
NO.	STATION, OFFSET	L.F.	REMARKS
SBD 1-1	404+35 45' RT	20	RAMP C

TEMPORARY GABION OUTLET STRUCTURE (TGOS)				
NO.	DIMENSIONS	STATION, OFFSET	D.A (AC)	REMARKS
TGOS 1-1	L=22', W=6.5'	1027+24 46' RT	1.20	MD 175
TGOS 1-2	L=22', W=6.5'	404+40 45' RT	1.04	RAMP C

STABILIZED CONSTRUCTION ENTRANCE (SCE)			
NO.	STATION, OFFSET	TONS	REMARKS
SCE 1-1	1028+00 17' RT	60	MD 175

NOTES:

1. THE CONTRACTOR SHALL NOTIFY BGE PRIOR TO WORKING WITHIN 25' OF THE HP GAS MAIN. NO MECHANICAL EQUIPMENT SHALL BE USED WITHIN 2' OF THE HP GAS MAIN. THE CONTRACTOR IS RESPONSIBLE FOR COMFORMING WITH BGE RESTRICTIONS. CONTACT BGE DAMAGE PREVENTION AT 410-470-6698 TO SCHEDULE A PRECONSTRUCTION MEETING ONE WEEK PRIOR TO CONSTRUCTION.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 4/24/14

ENGINEER'S CERTIFICATION

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

SIGNATURE OF ENGINEER — WALTER P. MILLER (PRINT NAME BELOW SIGNATURE) — DATE 6/10/2014

DEVELOPER'S CERTIFICATION

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

SIGNATURE OF DEVELOPER — (PRINT NAME BELOW SIGNATURE) — DATE 7/17/14

DWG. EP-1.1

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — NO. 19165 — PROFESSIONAL ENGINEER

DES: PDS
DRN: PDS
CHK: CYH
DATE: 4/24/2014

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN – STAGE 1

TAX MAP 36 BLOCK NO. 5

BLANDAIR REGIONAL PARK
PHASE J – SOUTH

CAPITAL PROJECT # J-4237

ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

SCALE 1" = 50'

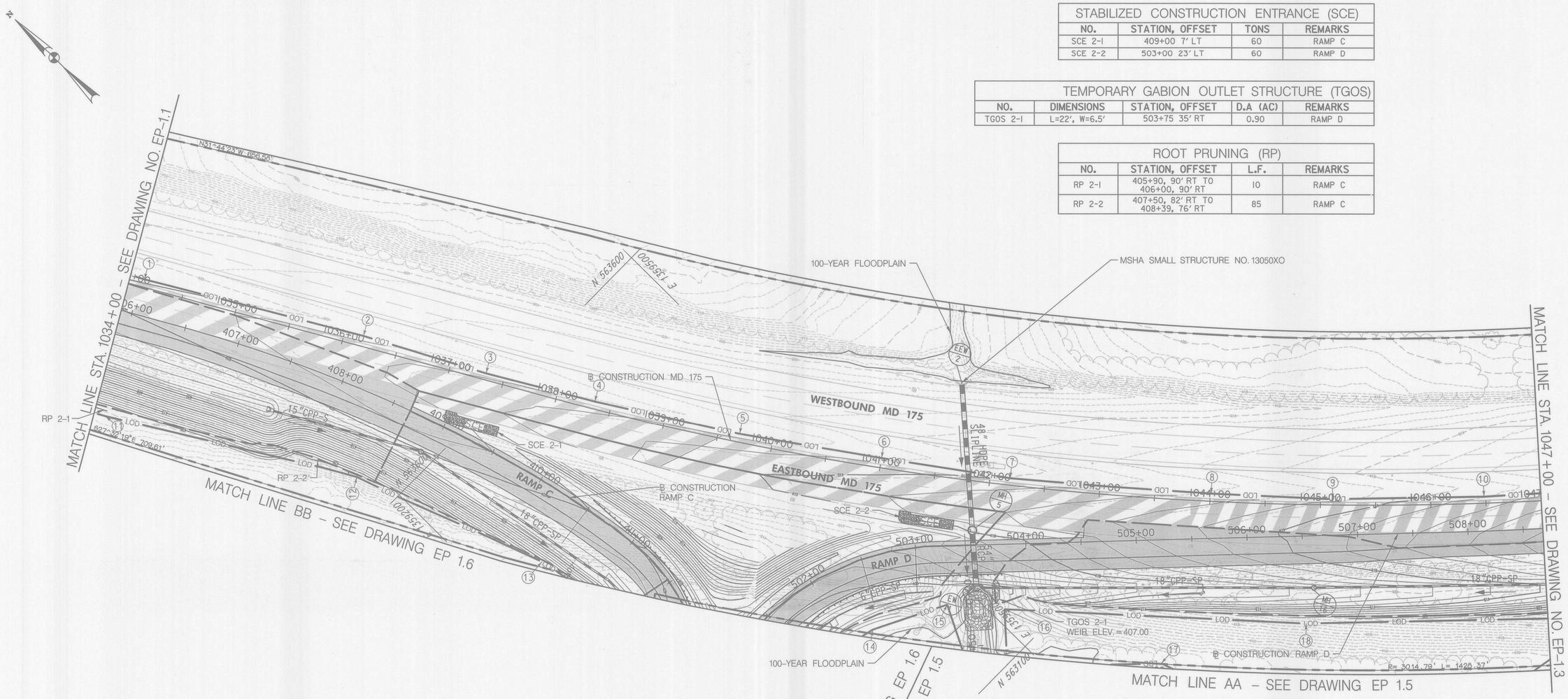
SHEET 57 OF 136

N:\42038-00J\CADD\pES-1001_BPJ.dgn
April 23, 2014

STABILIZED CONSTRUCTION ENTRANCE (SCE)			
NO.	STATION, OFFSET	TONS	REMARKS
SCE 2-1	409+00 7' LT	60	RAMP C
SCE 2-2	503+00 23' LT	60	RAMP D

TEMPORARY GABION OUTLET STRUCTURE (TGOS)				
NO.	DIMENSIONS	STATION, OFFSET	D.A (AC)	REMARKS
TGOS 2-1	L=22', W=6.5'	503+75 35' RT	0.90	RAMP D

ROOT PRUNING (RP)			
NO.	STATION, OFFSET	L.F.	REMARKS
RP 2-1	405+90, 90' RT TO 406+00, 90' RT	10	RAMP C
RP 2-2	407+50, 82' RT TO 408+39, 76' RT	85	RAMP C



"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 4/24/14

ENGINEER'S CERTIFICATION

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

SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) WALTER P. MILLER — DATE 6/10/2014

DEVELOPER'S CERTIFICATION

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

SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE 7/17/14

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14

CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14

CHIEF, BUREAU OF ENGINEERING — DATE 7/16/14

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: PDS
DRN: PDS
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN - STAGE 1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. EP-1.2
SCALE 1" = 50'
SHEET 58 OF 136

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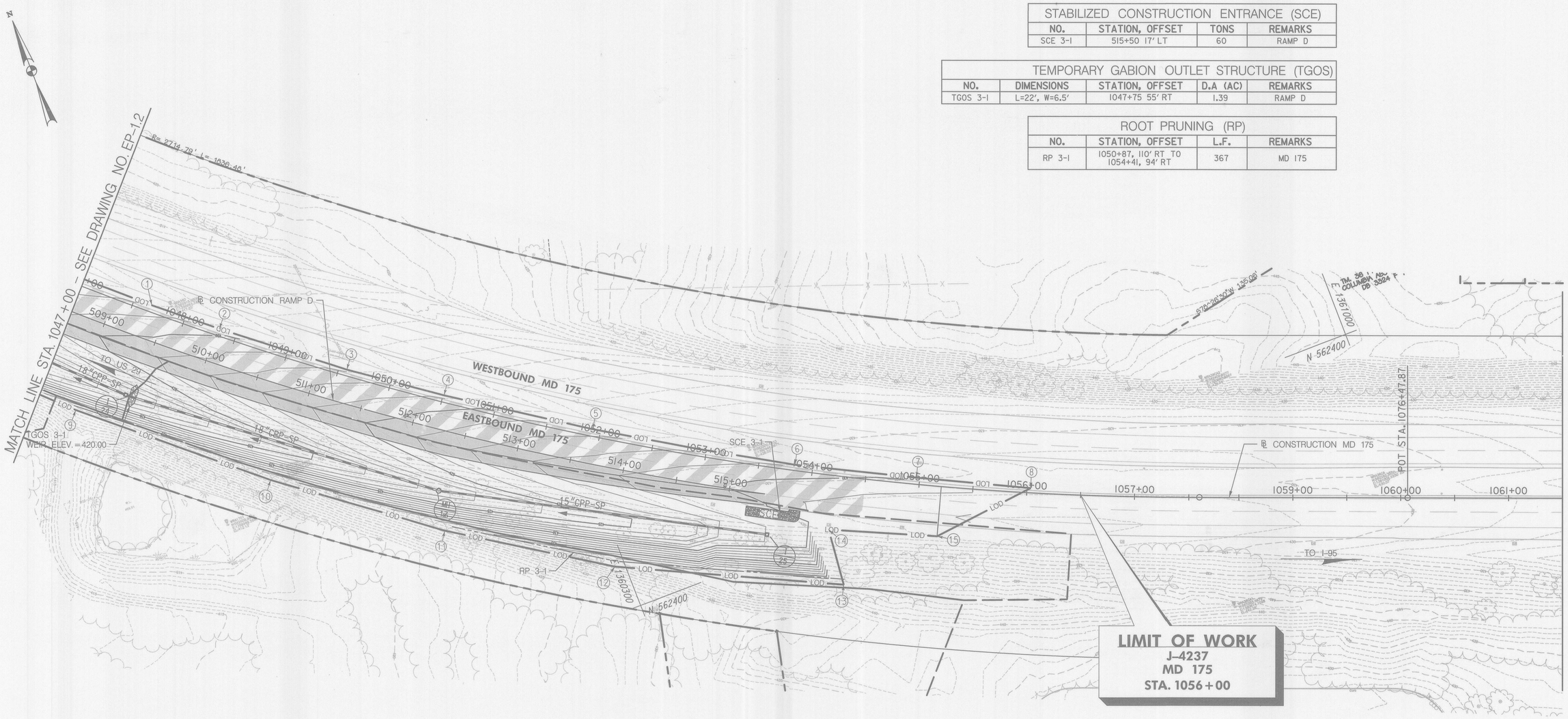
April 23, 2014

STABILIZED CONSTRUCTION ENTRANCE (SCE)			
NO.	STATION, OFFSET	TONS	REMARKS
SCE 3-1	515+50 17' LT	60	RAMP D

TEMPORARY GABION OUTLET STRUCTURE (TGOS)				
NO.	DIMENSIONS	STATION, OFFSET	D.A (AC)	REMARKS
TGOS 3-1	L=22', W=6.5'	1047+75 55' RT	1.39	RAMP D

ROOT PRUNING (RP)			
NO.	STATION, OFFSET	L.F.	REMARKS
RP 3-1	1050+87, 110' RT TO 1054+41, 94' RT	367	MD 175



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

HOWARD SOIL CONSERVATION DISTRICT — DATE 4/24/14

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

ENGINEER'S CERTIFICATION

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SIGNATURE OF ENGINEER — (PRINT NAME BELOW SIGNATURE) WALTER P. MILLER — DATE 6/6/2014

DEVELOPER'S CERTIFICATION

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

SIGNATURE OF DEVELOPER — (PRINT NAME BELOW SIGNATURE) — DATE 7/17/14

DWG. EP-1.3

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14

CHIEF, BUREAU OF HIGHWAYS — Holger Siemon — DATE 7.11.14

CHIEF, BUREAU OF ENGINEERING — Thomas E. Butler — DATE 7/11/14

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — Steve Shaver — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: PDS
DRN: PDS
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN - STAGE 1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

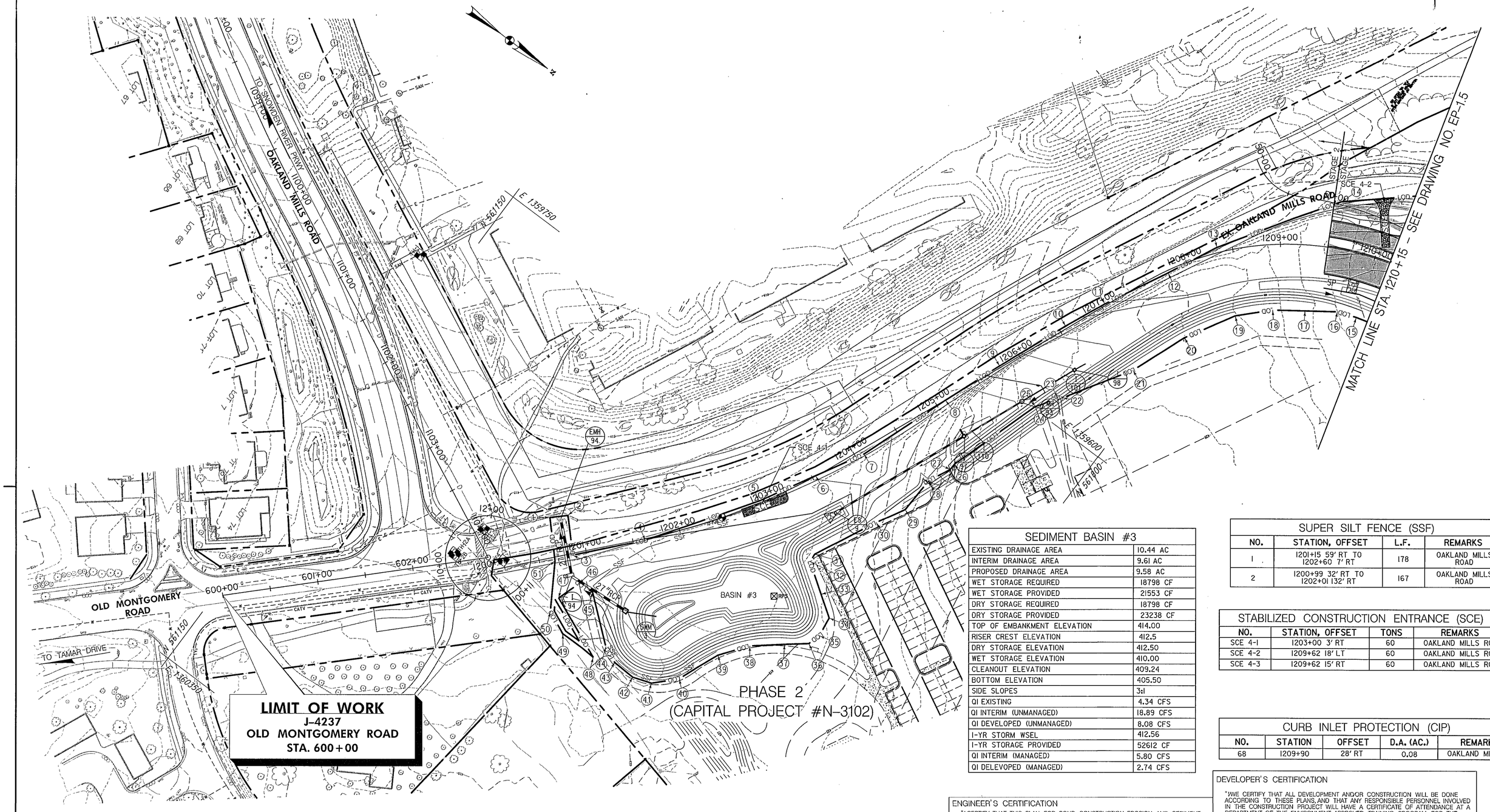
BLANDAIR REGIONAL PARK PHASE J - SOUTH

CAPITAL PROJECT # J-4237

SCALE 1" = 50'

SHEET 59 OF 136

N:\42038-00J\CADD\pES-1003_BPJ.dgn
April 23, 2014



SEDIMENT BASIN #3	
EXISTING DRAINAGE AREA	10.44 AC
INTERIM DRAINAGE AREA	9.61 AC
PROPOSED DRAINAGE AREA	9.58 AC
WET STORAGE REQUIRED	18798 CF
WET STORAGE PROVIDED	21553 CF
DRY STORAGE REQUIRED	18798 CF
DRY STORAGE PROVIDED	23238 CF
TOP OF EMBANKMENT ELEVATION	414.00
RISER CREST ELEVATION	412.5
DRY STORAGE ELEVATION	412.50
WET STORAGE ELEVATION	410.00
CLEANOUT ELEVATION	409.24
BOTTOM ELEVATION	405.50
SIDE SLOPES	3:1
QI EXISTING	4.34 CFS
QI INTERIM (UNMANAGED)	18.89 CFS
QI DEVELOPED (UNMANAGED)	8.08 CFS
1-YR STORM WSEL	412.56
1-YR STORAGE PROVIDED	52612 CF
QI INTERIM (MANAGED)	5.80 CFS
QI DELEVOPED (MANAGED)	2.74 CFS

SUPER SILT FENCE (SSF)			
NO.	STATION, OFFSET	L.F.	REMARKS
1	1201+15 59' RT TO 1202+60 7' RT	178	OAKLAND MILLS ROAD
2	1200+99 32' RT TO 1202+01 132' RT	167	OAKLAND MILLS ROAD

STABILIZED CONSTRUCTION ENTRANCE (SCE)			
NO.	STATION, OFFSET	TONS	REMARKS
SCE 4-1	1203+00 3' RT	60	OAKLAND MILLS ROAD
SCE 4-2	1209+62 18' LT	60	OAKLAND MILLS ROAD
SCE 4-3	1209+62 15' RT	60	OAKLAND MILLS ROAD

CURB INLET PROTECTION (CIP)				
NO.	STATION	OFFSET	D.A. (AC.)	REMARKS
68	1209+90	28' RT	0.08	OAKLAND MILLS ROAD

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 4/24/14

ENGINEER'S CERTIFICATION

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

SIGNATURE OF ENGINEER — DATE 6/10/2014
WALTER P. MILLER
(PRINT NAME BELOW SIGNATURE)

DEVELOPER'S CERTIFICATION

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SIGNATURE OF DEVELOPER — DATE 7/17/14
(PRINT NAME BELOW SIGNATURE)

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/15/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/15/14

PREPARED BY:
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: PDS
DRN: PDS
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

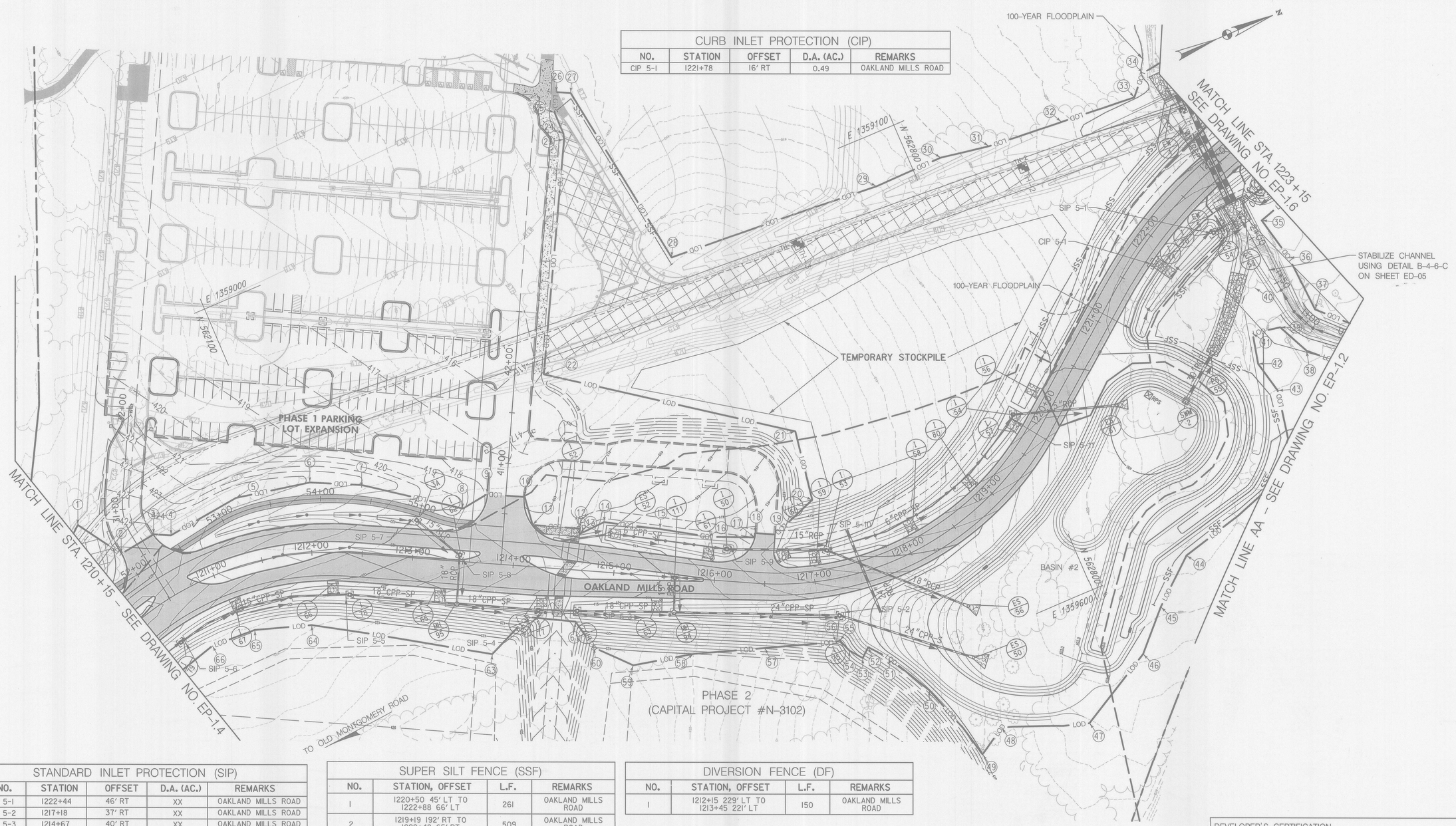
EROSION AND SEDIMENT CONTROL PLAN – STAGE 1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J – SOUTH
CAPITAL PROJECT # J-4237

DWG. EP-1.4
SCALE 1" = 50'
SHEET 60 OF 136

N:\42038-00J\CADD\pES-1004_BPJ.dgn
April 23, 2014



CURB INLET PROTECTION (CIP)				
NO.	STATION	OFFSET	D.A. (AC.)	REMARKS
CIP 5-1	1221+78	16' RT	0.49	OAKLAND MILLS ROAD

STANDARD INLET PROTECTION (SIP)				
NO.	STATION	OFFSET	D.A. (AC.)	REMARKS
SIP 5-1	1222+44	46' RT	XX	OAKLAND MILLS ROAD
SIP 5-2	1217+18	37' RT	XX	OAKLAND MILLS ROAD
SIP 5-3	1214+67	40' RT	XX	OAKLAND MILLS ROAD
SIP 5-4	1214+28	42' RT	XX	OAKLAND MILLS ROAD
SIP 5-5	1212+40	41' RT	XX	OAKLAND MILLS ROAD
SIP 5-6	1210+34	42' RT	XX	OAKLAND MILLS ROAD
SIP 5-7	1213+02	42' LT	XX	OAKLAND MILLS ROAD
SIP 5-8	1213+47	6' LT	XX	OAKLAND MILLS ROAD
SIP 5-9	1216+10	32' LT	XX	OAKLAND MILLS ROAD
SIP 5-10	1217+18	29' LT	XX	OAKLAND MILLS ROAD
SIP 5-11	1219+79	30' LT	XX	OAKLAND MILLS ROAD

SUPER SILT FENCE (SSF)			
NO.	STATION, OFFSET	L.F.	REMARKS
1	1220+50 45' LT TO 1222+88 66' LT	261	OAKLAND MILLS ROAD
2	1219+19 192' RT TO 1222+48 65' RT	509	OAKLAND MILLS ROAD
3	1214+10 451' LT TO 1215+35 308' LT	210	OAKLAND MILLS ROAD

DIVERSION FENCE (DF)			
NO.	STATION, OFFSET	L.F.	REMARKS
1	1212+15 229' LT TO 1213+45 221' LT	150	OAKLAND MILLS ROAD

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 4/24/14

ENGINEER'S CERTIFICATION

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

SIGNATURE OF ENGINEER — WALTER P. MILLER (PRINT NAME BELOW SIGNATURE) — DATE 6/10/2014

DEVELOPER'S CERTIFICATION

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

SIGNATURE OF DEVELOPER — JAY STEWART (PRINT NAME BELOW SIGNATURE) — DATE 7/17/14

DWG. EP-1.5

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: PDS
DRN: PDS
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN – STAGE 1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J-4237

SCALE 1" = 50'

SHEET 61 OF 136

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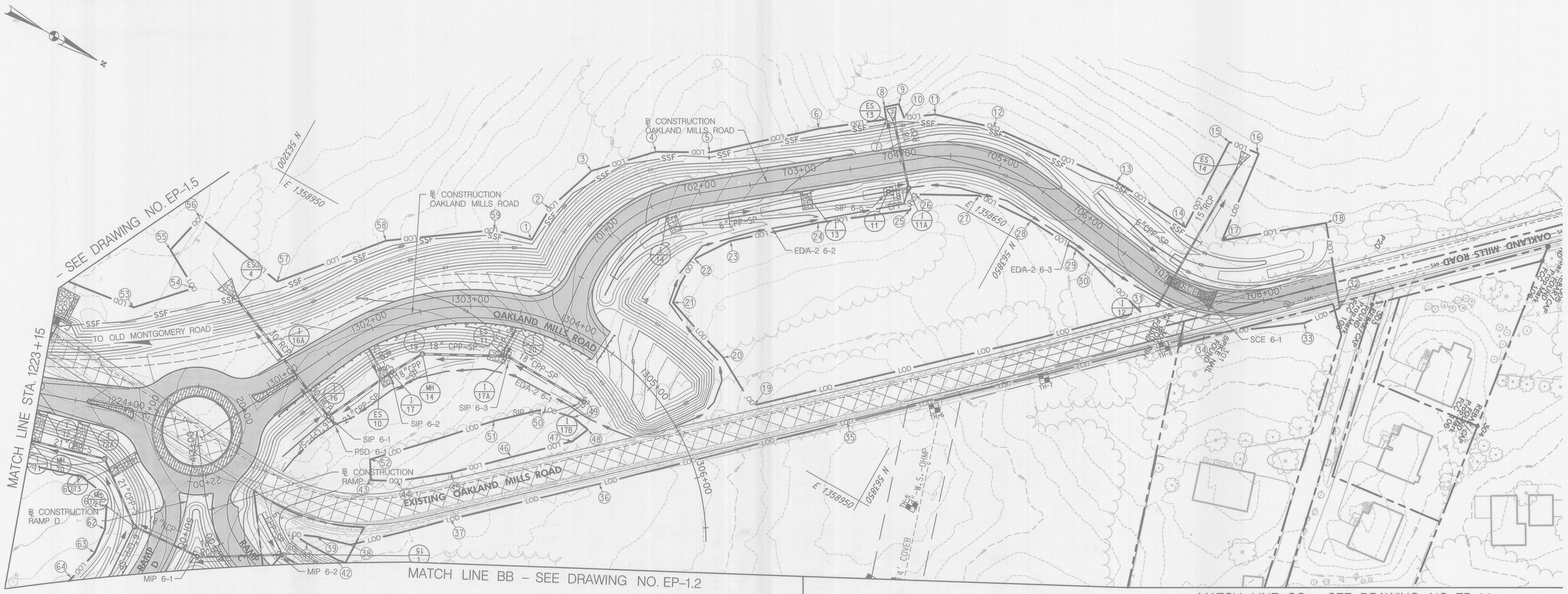
April 23, 2014



STANDARD INLET PROTECTION (SIP)

NO.	STATION	OFFSET	D.A. (AC.)	REMARKS
SIP 6-1	1301+17	51' RT	0.71	TYPE B, OAKLAND MILLS ROAD
SIP 6-2	1302+00	47' RT	0.19	TYPE A, OAKLAND MILLS ROAD
SIP 6-3	1303+45	46' RT	0.13	TYPE A, OAKLAND MILLS ROAD
SIP 6-4	1304+58	55' RT	0.09	TYPE A, OAKLAND MILLS ROAD

MEDIAN INLET PROTECTION (MIP)

NO.	STATION	OFFSET	D.A. (AC.)	REMARKS
MIP 6-1	412+00	26' LT	0.94	RAMP C
MIP 6-2	411+47	39' RT	0.54	RAMP C

EARTH DIKE (ED)

NO.	STATION	L.F.	D.A.	TYPE	REMARKS
ED 6-1	1300+49 72'RT TO 1305+30 69'RT	389	0.52	A-2	OAKLAND MILLS ROAD
ED 6-2	1305+50 0' TO 704+65 31' RT	389	0.52	A-2	OAKLAND MILLS ROAD
ED 6-3	704+65 31' RT TO 707+20 17' RT	242	0.75	A-2	OAKLAND MILLS ROAD

STABILIZED CONSTRUCTION ENTRANCE (SCE)

NO.	STATION, OFFSET	TONS	REMARKS
SCE 6-1	707+50 0'	60	OAKLAND MILLS ROAD

MATCH LINE STA. 1034+00 – SEE DRAWING NO. EP-1.2

MATCH LINE STA. 1034+00 – SEE DRAWING NO. EP-1.1

NOTES:

1. THE CONTRACTOR SHALL NOTIFY BGE PRIOR TO WORKING WITHIN 25' OF THE HP GAS MAIN. NO MECHANICAL EQUIPMENT SHALL BE USED WITHIN 2' OF THE HP GAS MAIN. THE CONTRACTOR IS RESPONSIBLE FOR COMFORMING WITH BGE RESTRICTIONS. CONTACT BGE DAMAGE PREVENTION AT 410-470-6698 TO SCHEDULE A PRECONSTRUCTION MEETING ONE WEEK PRIOR TO CONSTRUCTION.

SUPER SILT FENCE (SSF)

NO.	STATION, OFFSET	L.F.	REMARKS
1	1223+20 68' LT TO 708+58 42' LT	627	OAKLAND MILLS ROAD

PIPE SLOPE DRAIN (PSD)

NO.	STATION, OFFSET	SIZE	L.F.	REMARKS
PSD 6-1	1301+17, 62' RT	18"	9	OAKLAND MILLS ROAD

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HOWARD SOIL CONSERVATION DISTRICT — DATE 4/24/14

ENGINEER'S CERTIFICATION

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SIGNATURE OF ENGINEER — DATE 6/10/2014
(PRINT NAME BELOW SIGNATURE) WALTER P. MILLER

DEVELOPER'S CERTIFICATION

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

SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE 7/17/14

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/16/14

CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14

CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — NO. 19165 — PROFESSIONAL ENGINEER

DES: PDS
DRN: PDS
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN – STAGE 1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J-4237

HOWARD COUNTY, MARYLAND

DWG. EP-1.6

SCALE 1" = 50'

SHEET 62 OF 136

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April 23, 2014

STABILIZED CONSTRUCTION ENTRANCE (SCE)

NO.	STATION, OFFSET	TONS	REMARKS
SCE 21-1	601+731 12' RT	60	OLD MONTGOMERY ROAD
SCE 21-2	1103+03 2' LT	60	OAKLAND MILLS ROAD
SCE 21-3	1209+00 2' RT	60	OAKLAND MILLS ROAD

STANDARD INLET PROTECTION (SIP)

NO.	STATION	OFFSET	D.A. (AC.)	REMARKS
SIP 21-1	1202+19	41' LT	0.89	TYPE B, OAKLAND MILLS ROAD
SIP 21-2	1202+70	0'	0.37	TYPE B, OAKLAND MILLS ROAD
SIP 21-3	1205+07	7' RT	0.13	TYPE B, OAKLAND MILLS ROAD
SIP 21-4	1206+42	42' RT	0.77	TYPE B, OAKLAND MILLS ROAD

CURB INLET PROTECTION (CIP)

NO.	STATION, OFFSET	D.A.	REMARKS
CIP 21-1	1101+96 27' LT	0.25	OAKLAND MILLS ROAD
CIP 21-2	1200+80 22' RT	0.25	OAKLAND MILLS ROAD
CIP 21-3	1202+01 27' LT	0.25	OAKLAND MILLS ROAD
CIP 21-4	1204+31 30' LT	0.25	OAKLAND MILLS ROAD
CIP 21-5	1206+23 30' LT	0.25	OAKLAND MILLS ROAD

EARTH DIKE (ED)

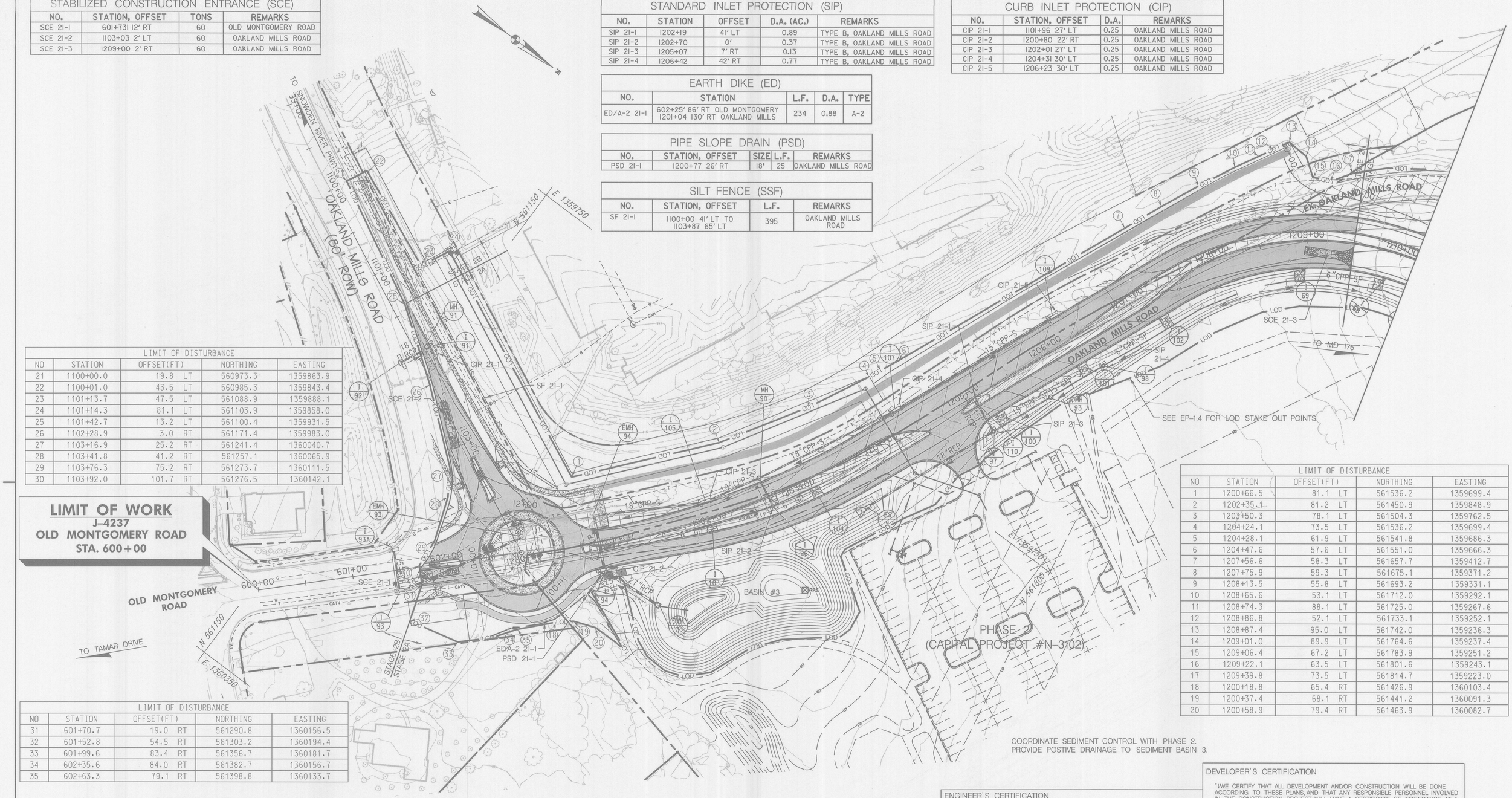
NO.	STATION	L.F.	D.A.	TYPE
ED/A-2 21-1	602+25' 86' RT OLD MONTGOMERY 1201+04 130' RT OAKLAND MILLS	234	0.88	A-2

PIPE SLOPE DRAIN (PSD)

NO.	STATION, OFFSET	SIZE	L.F.	REMARKS
PSD 21-1	1200+77 26' RT	18"	25	OAKLAND MILLS ROAD

SILT FENCE (SSF)

NO.	STATION, OFFSET	L.F.	REMARKS
SF 21-1	1100+00 41' LT TO 1103+87 65' LT	395	OAKLAND MILLS ROAD



LIMIT OF DISTURBANCE

NO	STATION	OFFSET(FT)	NORTHING	EASTING
21	1100+00.0	19.8 LT	560973.3	1359863.9
22	1100+01.0	43.5 LT	560985.3	1359843.4
23	1101+13.7	47.5 LT	561088.9	1359888.1
24	1101+14.3	81.1 LT	561103.9	1359858.0
25	1101+42.7	13.2 LT	561100.4	1359931.5
26	1102+28.9	3.0 RT	561171.4	1359983.0
27	1103+16.9	25.2 RT	561241.4	1360040.7
28	1103+41.8	41.2 RT	561257.1	1360065.9
29	1103+76.3	75.2 RT	561273.7	1361111.5
30	1103+92.0	101.7 RT	561276.5	1360142.1

LIMIT OF DISTURBANCE

NO	STATION	OFFSET(FT)	NORTHING	EASTING
1	1200+66.5	81.1 LT	561536.2	1359699.4
2	1202+35.1	81.2 LT	561450.9	1359848.9
3	1203+50.3	78.1 LT	561504.3	1359762.5
4	1204+24.1	73.5 LT	561536.2	1359699.4
5	1204+28.1	61.9 LT	561541.8	1359686.3
6	1204+47.6	57.6 LT	561551.0	1359666.3
7	1207+56.6	58.3 LT	561657.7	1359412.7
8	1207+75.9	59.3 LT	561675.1	1359371.2
9	1208+13.5	55.8 LT	561693.2	1359331.1
10	1208+65.6	53.1 LT	561712.0	1359292.1
11	1208+74.3	88.1 LT	561725.0	1359267.6
12	1208+86.8	52.1 LT	561733.1	1359252.1
13	1208+87.4	95.0 LT	561742.0	1359236.3
14	1209+01.0	89.9 LT	561764.6	1359237.4
15	1209+06.4	67.2 LT	561783.9	1359251.2
16	1209+22.1	63.5 LT	561801.6	1359243.1
17	1209+39.8	73.5 LT	561814.7	1359223.0
18	1200+18.8	65.4 RT	561426.9	1360103.4
19	1200+37.4	68.1 RT	561441.2	1360091.3
20	1200+58.9	79.4 RT	561463.9	1360082.7

LIMIT OF DISTURBANCE

NO	STATION	OFFSET(FT)	NORTHING	EASTING
31	601+70.7	19.0 RT	561290.8	1360156.5
32	601+52.8	54.5 RT	561303.2	1360194.4
33	601+99.6	83.4 RT	561356.7	1360181.7
34	602+35.6	84.0 RT	561382.7	1360156.7
35	602+63.3	79.1 RT	561398.8	1360133.7

LIMIT OF WORK
J-4237
OLD MONTGOMERY ROAD
STA. 600+00

COORDINATE SEDIMENT CONTROL WITH PHASE 2.
PROVIDE POSTIVE DRAINAGE TO SEDIMENT BASIN 3.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

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HOWARD SOIL CONSERVATION DISTRICT — DATE 4/24/14

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SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) WALTER P. MILLER — DATE 6/10/2014

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SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) Jay Steward — DATE 7/17/14

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/14/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/14/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

STATE OF MARYLAND — WALTER P. MILLER — NO. 19165 — PROFESSIONAL ENGINEER

DES: BWJ
DRN: SAD
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN - STAGE 2A

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. EP-2A
SCALE 1" = 50'
SHEET 63 OF 136

N:\42038-00J\CADD\pES-2001_BPJ.dgn
April 23, 2014

LIMIT OF DISTURBANCE				
NO	STATION	OFFSET(FT)	NORTHING	EASTING
1	1101+39.8	17.8 LT	561099.9	1359926.2
2	1101+41.8	48.2 LT	561114.7	1359899.6
3	1099+97.1	44.7 LT	560982.7	1359840.8
4	1099+95.2	16.0 LT	560968.6	1359865.9
5	1099+68.1	18.8 RT	560928.9	1359885.0
6	1099+68.7	39.6 RT	560920.1	1359903.8
7	1099+97.4	46.9 RT	560943.2	1359923.4
8	1101+93.4	55.5 RT	561116.9	1360015.3
9	1102+92.2	11.1 RT	561225.2	1360017.5
10	1103+21.7	21.4 RT	561247.5	1360039.5
11	1103+54.9	46.0 RT	561267.0	1360075.9
12	1103+78.9	70.3 RT	561278.2	1360108.2
13	1103+25.2	88.7 RT	561221.8	1360101.8
14	1103+45.8	108.7 RT	561231.8	1360128.6
15	1103+49.9	138.0 RT	561223.0	1360156.9

CURB INLET PROTECTION (CIP)				
NO.	STATION	OFFSET	D.A. (AC.)	REMARKS
CIP 22-1	1102+00	25' RT	1.02	OAKLAND MILLS ROAD
CIP 22-2	601+46	20' RT	0.55	OLD MONTGOMERY ROAD

LIMIT OF DISTURBANCE				
NO	STATION	OFFSET(FT)	NORTHING	EASTING
16	601+73.7	1.7 LT	561280.8	1360142.2
17	601+75.1	20.5 RT	561294.9	1360154.5
18	601+68.7	27.2 RT	561295.1	1360163.8
19	600+00.0	26.3 RT	561173.5	1360283.4
20	600+00.0	26.3 RT	561136.1	1360247.2

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SIGNATURE OF ENGINEER — WALTER P. MILLER (PRINT NAME BELOW SIGNATURE) — DATE 4/16/2014

DEVELOPER'S CERTIFICATION

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SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE 7/17/14

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/8/14

CHIEF, BUREAU OF HIGHWAYS — Holger Serrano — DATE 7.1.14

CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — Steve Sharar — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

WR&A

STATE OF MARYLAND — WALTER P. MILLER — NO. 19165 — PROFESSIONAL ENGINEER

DES: BWJ
DRN: S/D
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN – STAGE 2B

TAX MAP 36 BLOCK NO. 5

BLANDAIR REGIONAL PARK
PHASE J – SOUTH

CAPITAL PROJECT # J-4237

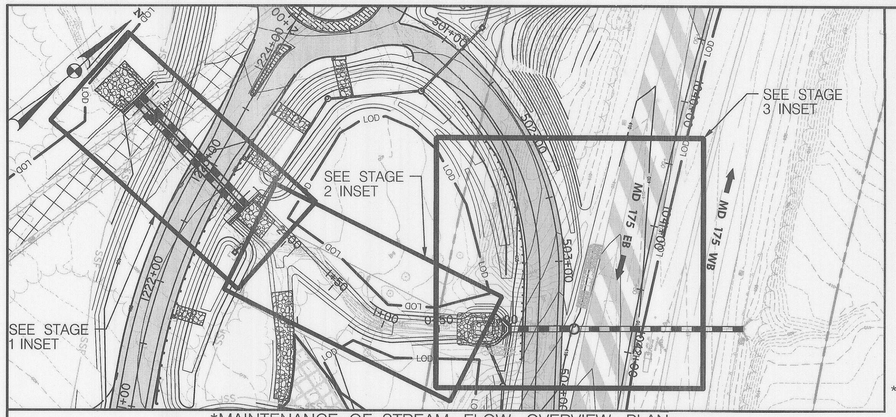
ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

DWG. EP-2B

SCALE 1" = 50'

SHEET 64 OF 136

N:\42038-00J\CADD\pES-3001_BPJ.dgn
April 23, 2014



*MAINTENANCE OF STREAM FLOW OVERVIEW PLAN

SCALE 1" = 60'

SANDBAG DIVERSION (SBD)			
NO.	STATION-OFFSET	L.F.	REMARKS
SBD 1-1	1222+95, 99' LT.	37'	℄ OAKLAND MILLS
SBD 1-2	1222+61, 56' RT.	68'	℄ OAKLAND MILLS
SBD 2-1	1222+34, 65' RT.	42'	℄ OAKLAND MILLS
SBD 2-2	503+35, 69' RT.	33'	℄ RAMP D
SBD 3-1	503+35, 68' RT.	33'	℄ RAMP D
SBD 3-2	1041+52, 89' LT.	23'	℄ MD 175 EB

PUMP SYSTEM (P)			
NO.	STATION	OFFSET (FT)	REMARKS
P-1	503+46	62' RT.	℄ RAMP D

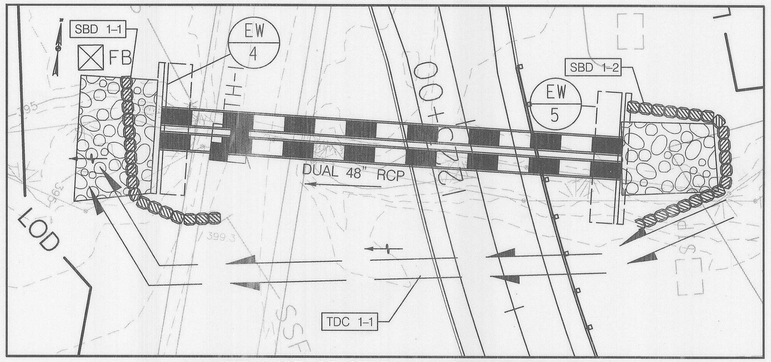
TEMPORARY DIVERSION CHANNEL (TDC)			
NO.	STATION	L.F.	REMARKS
TDC 1-1	1222+58, 61' RT. TO 1223+08, 82' LT.	171	℄ OAKLAND MILLS

ROCK OUTLET PROTECTION (ROP)					
NO.	STATION, OFFSET	LENGTH	WIDTH	S.Y.	REMARKS
ROP 3-1	1039+14, 164' LT.	9	5	5	℄ MD 175 EB

PUMP SYSTEM (P)			
NO.	STATION	OFFSET (FT)	REMARKS
P-2	1041+81	202' LT.	℄ MD 175 EB

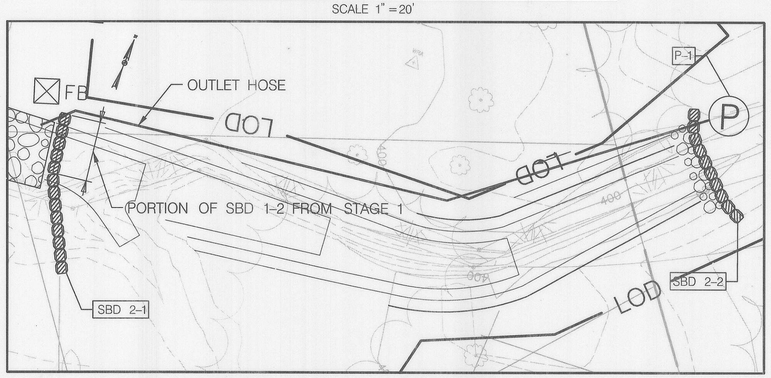
FILTER BAG (FB)
FILTER BAGS (FB) SHALL BE USED FOR DEWATERING SEDIMENT LADEN RUNOFF AS NECESSARY. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE QUANTITY OF BAGS AND PUMPS AND STABLE OUTFALLS FOR PUMPED DISCHARGE.

*FULL BUILD OUT CONDITIONS SHOWN ON OVERVIEW PLAN FOR REFERENCE



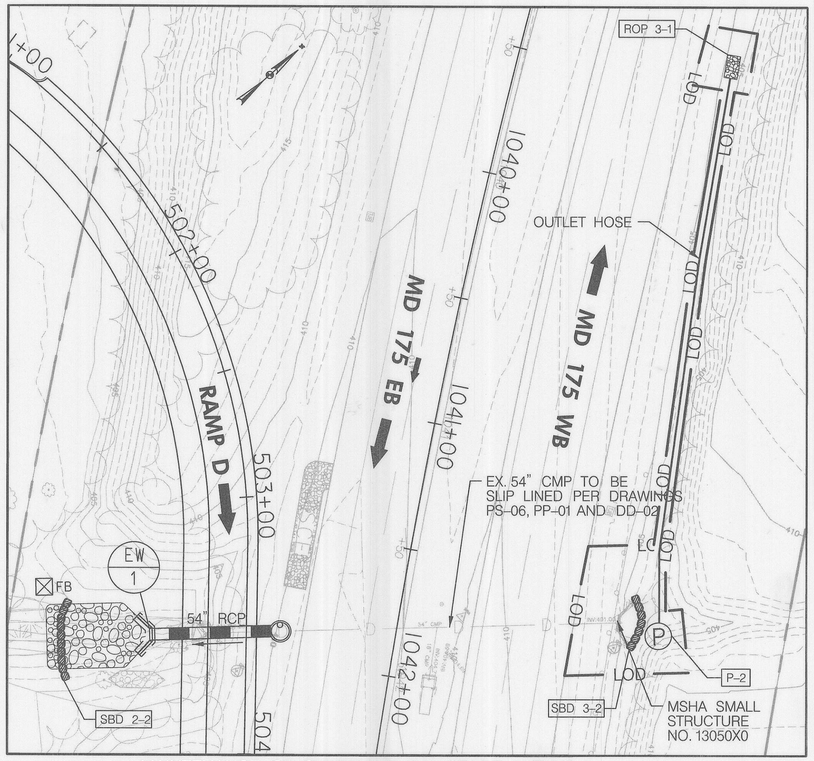
MAINTENANCE OF STREAM FLOW STAGE 1 PLAN

SCALE 1" = 20'



MAINTENANCE OF STREAM FLOW STAGE 2 PLAN

SCALE 1" = 20'



MAINTENANCE OF STREAM FLOW STAGE 3 PLAN

SCALE 1" = 30'

SEQUENCE OF CONSTRUCTION

CULVERT CONSTRUCTION SHALL PROCEED DOWNSTREAM TO UPSTREAM BEGINNING WITH STAGE 1 AND PROGRESSING TO PHASE 3 PER PLANS THIS SHEET. ALL IN STREAM WORK SHALL BE COMPLETED PRIOR TO ANY DISTURBANCE OF AREAS UPSTREAM. INSTREAM CULVERTS SHALL BE INSTALLED PRIOR TO ALL UPSTREAM STORM DRAIN SYSTEMS. MAINTENANCE OF STREAM FLOW CONTROLS SHALL COORDINATE WITH PHASE 1 SEDIMENT CONTROLS PER SHEETS EP-1.01 THROUGH EP-1.06. ANY AREAS DISTURBED BY PLACEMENT OF MAINTENANCE OF STREAM FLOW CONTROLS SHALL BE STABILIZED IMMEDIATELY. NO INSTREAM WORK MAY BE PERFORMED BETWEEN MARCH 1 AND MAY 31 DUE TO STREAM CLOSURE

STAGE 1

1. DURING DRY WEATHER FORECAST, INSTALL PROPOSED RIPRAP OUTFALL PROTECTION DOWNSTREAM OF SBD 1- 1 AND INSTALL SBD 1-1. EXCAVATE TEMPORARY DIVERSION CHANNEL TCD 1-1 WORKING DOWNSTREAM TO UPSTREAM AND STABILIZE IMMEDIATELY. PROVIDE A STABLE OUTFALL FOR TCD 1-1 USING PROPOSED RIPRAP OUTFALL PROTECTION. UPON STABILIZATION OF TCD 1-1, DIVERT STREAM INTO TCD 1-1 BY INSTALLING SBD 1-2.
2. ONCE DIVERSION IS COMPLETE, COMPLETE PROPOSED RIPRAP OUTFALL PROTECTION UPSTREAM OF SBD 1-1 AND BEGIN 42-INCH DUAL RCP CULVERT CONSTRUCTION BEGINNING WITH EW-4 AND PROCEEDING UPSTREAM TO EW-5. DEWATER EXCAVATION AREAS AS REQUIRED USING A FILTER BAG USING RIPRAP OUTFALL PROTECTION AS A STABLE OUTFALL. UPON INSTALLATION OF EW-5, INSTALL UPSTREAM RIPRAP INFLOW PROTECTION.
3. UPON CULVERT INSTALLATION, SBD 1-1 AND PORTION OF SBD 1-2 (NOT TO REMAIN FOR STAGE 2) MAY BE REMOVED AND FLOW DIVERTED INTO THE NEWLY CONSTRUCTED CULVERTS. REMOVE TCD 1-1 AND IMMEDIATELY STABILIZE ANY DISTURBANCE RESULTING FROM THE REMOVAL PROCESS.

STAGE 2

1. INSTALL PORTION OF SBD 2-1 NOT REMAINING FROM STAGE 1 AND INSTALL SBD 2-2 BULKHEADING FLOWS UPSTREAM. PUMP STREAM FLOW AROUND THE PROPOSED CHANNEL USING PUMP P-1. RIPRAP INFLOW PROTECTION INSTALLED IN STAGE 1 UPSTREAM OF EW-5 SHALL BE USED AS A STABLE OUTFALL FOR PUMP P-1 OUTLET HOSE.
2. BEGIN GRADING OPERATIONS FOR THE PROPOSED STREAM CHANNEL BEGINNING AT SBD 2-1 AND WORKING UPSTREAM. DEWATER EXCAVATION AREAS AS NECESSARY USING A FILTER BAG USING RIPRAP INFLOW PROTECTION UPSTREAM OF EW-5 AS A STABLE OUTFALL. INSTALL PORTION OF EW-1 RIPRAP OUTFALL PROTECTION DOWNSTREAM OF SBD 2-2.
3. UPON COMPLETION OF CHANNEL GRADING OPERATIONS AND AFTER CHANNEL STABILIZATION, REMOVE SBD 2-1. SBD 2-2 MAY REMAIN IN PLACE FOR STAGE 3 CONSTRUCTION.

STAGE 3

1. ENSURE SBD 2-2 IS INSTALLED CORRECTLY AND FUNCTIONING AS INTENDED. INSTALL SBD 3-2 BULKHEADING FLOWS UPSTREAM OF EXISTING 54-INCH CMP ENDWALL. PUMP STREAM FLOWS TO THE WEST ALONG MD 175 OUTFALLING IN THE EXISTING ROADWAY DITCH ONCE POSITIVE DRAINAGE IS ACHIEVED TO THE WEST. INSTALL RIPRAP OUTFALL PROTECTION ROP 3-1 TO PROVIDE A STABLE OUTFALL FOR PUMP P-2 OUTLET HOSE.
2. INSTALL REMAINDER OF PROPOSED RIPRAP OUTFALL PROTECTION DOWNSTREAM OF EW-1 AND 54-INCH RCP BEGINNING WITH EW-1 AND WORKING UPSTREAM TO MH-5. DEWATER EXCAVATION AREA AS REQUIRED USING FILTER BAG, OUTLETTING FILTER BAG ONTO RIPRAP OUTFALL PROTECTION. UPON INSTALLATION OF MH-5, COMMENCE SLIP LINING OPERATION OF EXISTING 54-INCH CMP BEGINNING WITH MH-5 AND WORKING UPSTREAM TO THE EXISTING 54 INCH CMP ENDWALL PER DETAIL, SHEET DD-02.
3. UPON COMPLETION OF SLIP LINING OPERATION AND STABILIZATION OF ALL SURROUNDING AREAS, SBD 3-1 AND SBD 3-2 MAY BE REMOVED AND STREAM FLOW RESTORED THROUGH THE LINED CULVERT AND NEWLY EXCAVATED CHANNEL DOWNSTREAM. ANY DISTURBANCE DUE TO THE REMOVAL PROCESS MUST BE IMMEDIATELY STABILIZED. UPON REMOVAL OF ALL MAINTENANCE OF STREAM FLOW MEASURES, CONSTRUCTION MAY PROCEED IN AREAS UPSTREAM.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR, OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/16/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/16/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: CSC
DRN: DKE
CHK: JDC
DATE: 7/11/2014

BY	NO.	REVISION	DATE

MAINTENANCE OF STREAM FLOW PLAN

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J-4237

DWG. SD-01
SCALE AS SHOWN
SHEET 65 OF 138

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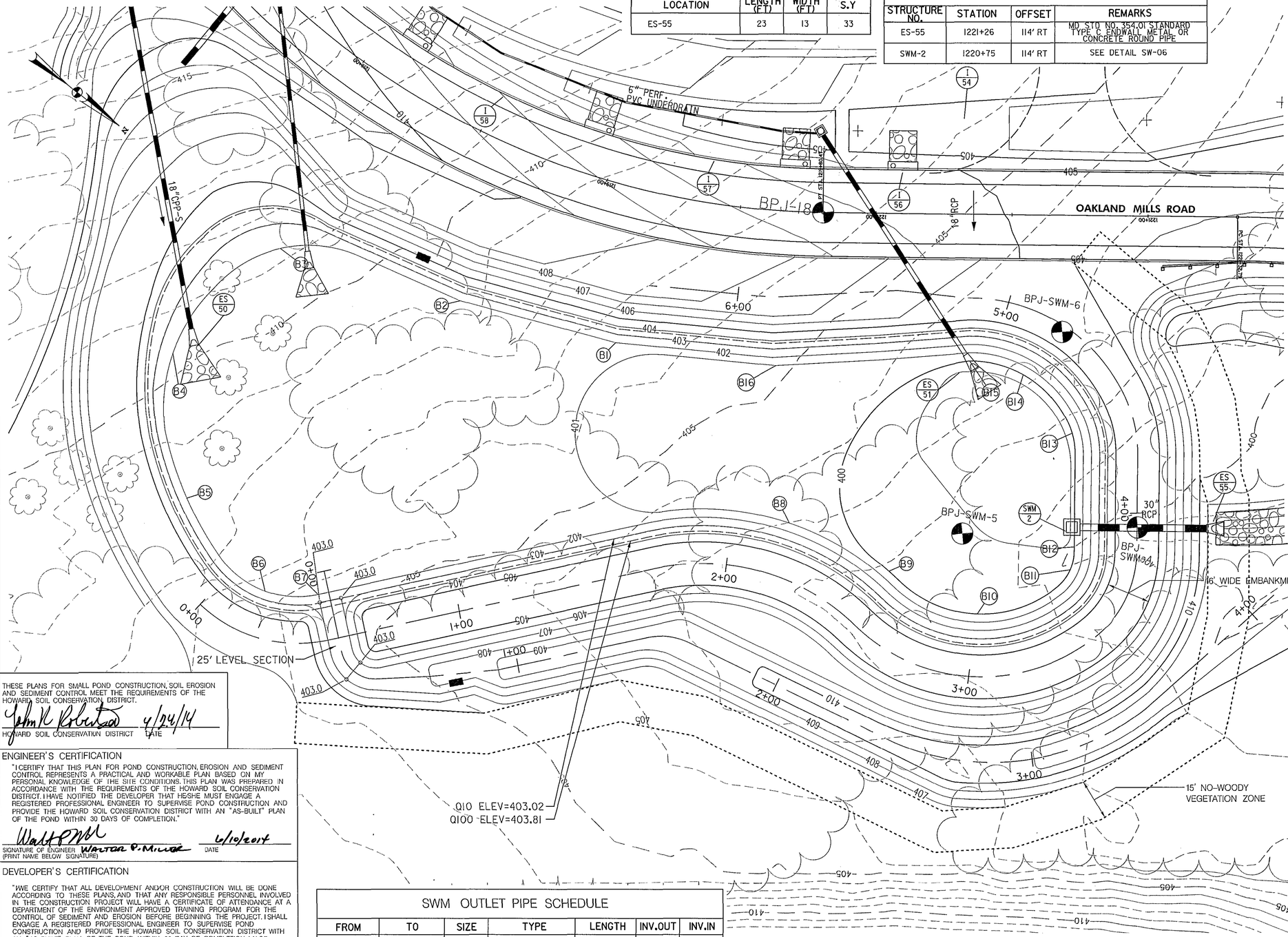
July 07, 2014

SHA SHEET 33 OF 76

CLASS 1 RIPRAP			
LOCATION	LENGTH (FT)	WIDTH (FT)	S.Y
ES-55	23	13	33

SWM STRUCTURE SCHEDULE			
STRUCTURE NO.	STATION	OFFSET	REMARKS
ES-55	1221+26	114' RT	MD STD NO. 354.01 STANDARD TYPE C ENDWALL METAL OR CONCRETE ROUND PIPE
SWM-2	1220+75	114' RT	SEE DETAIL SW-06



POND EMERGENCY SPILLWAY C/L STAKEOUT						
	OMR BASELINE					
C/L STATION	STATION	OFFSET	POINT	R	DELTA	T
0+00	18+61.68	170.4' RT	POB/PT	-	-	-
0+29.9	18+72.26	194.9' RT	PC	13'	76.55°	10.25'
0+47.3	18+81.39	200.1' RT	PT	-	-	-
1+48.4	19+39.22	160.7' RT	PC	24'	38.12°	8.29'
1+64.4	19+49.34	160.4' RT	PT	-	-	-
2+48.3	20+08.69	193.7' RT	PC	91.55	64.63°	57.91'
3+51.4	21+04.83	176.8' RT	PT	-	-	-

POND EMBANKMENT C/L STAKEOUT						
	OMR BASELINE					
C/L STATION	STATION	OFFSET	POINT	R	DELTA	T
0+00	18+39.74	201.1' RT	POB/PC	52.29'	55.56°	27.55'
0+50.7	18+68.60	193.0' RT	PT	-	-	-
1+60.5	19+37.38	136.0' RT	PC	81.10'	57.77°	44.74'
2+53.3	19+93.71	150.9' RT	PCC	67.03'	84.17°	60.53'
3+51.8	20+83.53	152.9' RT	PCC	40.37'	48.47°	18.17'
3+85.9	20+96.95	122.6' RT	PT	-	-	
4+21.0	20+97.00	87.5' RT	PC	50.00'	32.76°	14.70'
4+49.6	20+89.04	60.4' RT	PCC	62.25'	60.08°	36.00'
5+14.9	20+34.30	30.6' RT	PI	-	-	-
5+41.1	20+08.25	28.1' RT	PI	-	-	-
5+87.0	19+64.16	31.7' RT	PI	-	-	-

POND BOTTOM STAKEOUT					
STATION	OFFSET	POINT	R	DELTA	T
19+16.33	56.8' RT	B1	-	-	-
18+66.91	59.7' RT	B2	-	-	-
18+32.57	61.3' RT	B3	46.31'	71.21°	33.16'
18+02.66	99.6' RT	B4	61.79'	52.80°	30.67'
18+12.53	152.7' RT	B5	126.49'	23.63°	26.46'
18+39.39	182.9' RT	B6	35.29'	64.29°	22.18'
18+62.58	179.1' RT	B7	-	-	-
19+39.97	113.5' RT	B8	101.11'	50.92°	48.14'
20+02.21	127.9' RT	B9	104.11'	5.24°	4.76'
20+09.44	134.1' RT	B10	43.99'	84.15°	39.71'
20+68.37	135.6' RT	B11	17.19'	48.39°	7.72'
20+73.96	122.7' RT	B12	-	-	-
20+74.00	87.5' RT	B13	27.09'	33.80°	8.23'
20+69.41	72.4' RT	B14	39.25	60.08°	22.70'
20+34.90	53.6' RT	B15	-	-	-
19+66.37	56.6' RT	B16	-	-	-

SWM OUTLET PIPE SCHEDULE						
FROM	TO	SIZE	TYPE	LENGTH	INV.OUT	INV.IN
SWM-2	ES-55	30"	RCP	46'	397.00'	398.50'

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

John R. Robertson 4/24/14
HOWARD SOIL CONSERVATION DISTRICT DATE

ENGINEER'S CERTIFICATION

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

Walter P. Miller 6/10/2014
SIGNATURE OF ENGINEER WALTER P. MILLER (PRINT NAME BELOW SIGNATURE) DATE

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Jay Stewart 7/17/14
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/16/14
CHIEF, BUREAU OF HIGHWAYS — Helgen Serrano — DATE 7.11.14
CHIEF, BUREAU OF ENGINEERING — Steve Shaw — DATE 7/11/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE

PREPARED BY:
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: CYH
DRN: CYH
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

STORMWATER MANAGEMENT PLAN POND 2

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. SW-01
SCALE 1" = 20'
SHEET 66 OF 136

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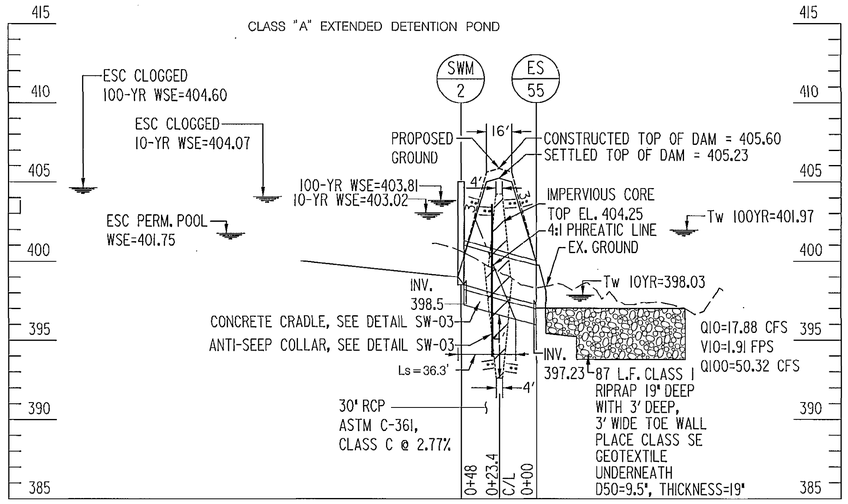
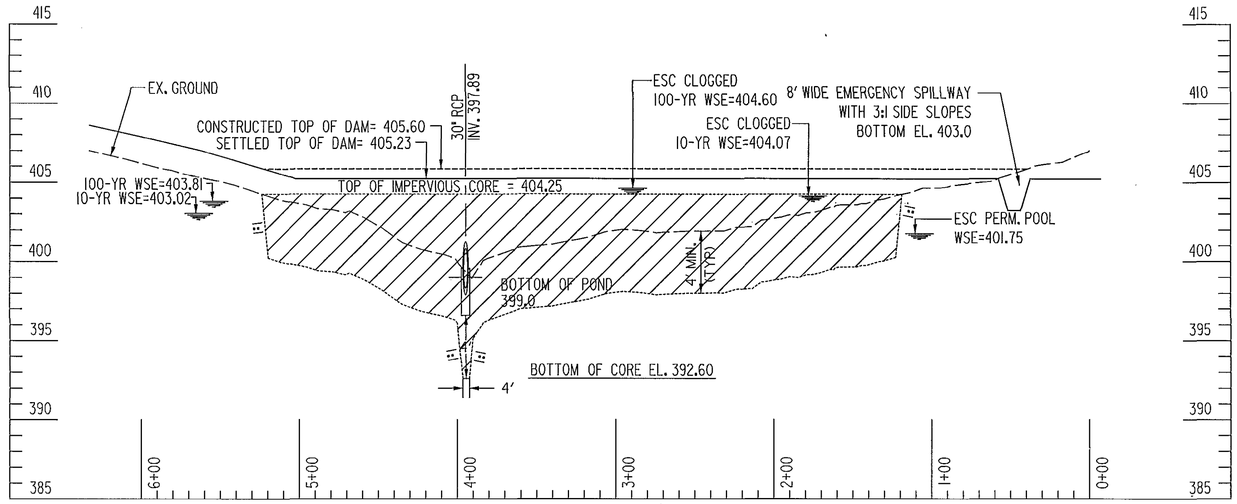
April 23, 2014



POND 2 PRINCIPLE SPILLWAY PROFILE
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



POND 2 EMBANKMENT CENTERLINE PROFILE
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'

OPERATION AND MAINTENANCE SCHEDULE

INSPECTION SCHEDULE

1. ANNUALLY: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS TO INSPECT ANNUALLY AND GENERATE ANNUAL INSPECTION REPORT.
2. SIXTY HOURSE AFTER THE END OF EASH SIGNIFICANT RAINFALL EVENT: (≥2.6 INCHES OF RAINFALL). CHECK FOR PONDING WATER, SEDIMENT DEPOSITION IN THE FOREBAYS, EROSION DAMAGE, TRASH AND CLOGGING OF THE SPILLWAY ORIFICIS.

ROUTINE MAINTENANCE

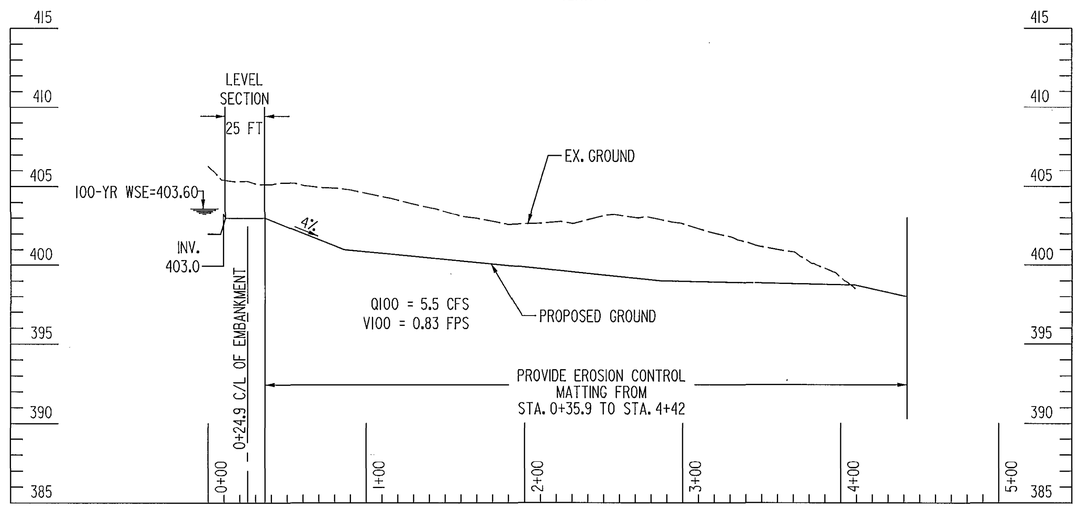
1. MOW GRASS ON EMBANKMENT TWICE PER YEAR OR WHEN GRASS HEIGHT EXCEEDS 18 INCHES.
2. ANNUALLY REMOVE ANY WOODY VEGETATION FROM EMBANKMENT WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT AND WITHIN 25 FEET OF THE PRINCIPAL SPILLWAY.

MAINTENANCE REQUIREMENTS

1. REMOVAL OF SILT WHEN ACCUMULATION EXCEEDS FOUR (4) INCHES IN FOREBAY.
2. REMOVAL OF ACCUMULATED PAPER, TRASH AND DEBRIS AS NECESSARY.
3. VEGETATION GROWING ON THE EMBANKMENT TOP AND FACES IS NOT ALLOWED TO EXCEED 18 INCHES IN HEIGHT AT ANY TIME.
4. ANNUAL INSPECTION AND REPAR OF THE STRUCTURE.
5. CORRECTIVE MAINTENANCE IS REQUIRED ANY TIME THE EXTENDED DETENTION BASIN OR FOREBAYS DO NOT DRAIN WITHIN 60 HOURS.
6. IF MINIMUM COVERAGE OF 50% IS NOT ACHIEVED IN THE PLANTED WETLAND ZONES AFTER THE SECOND GROWING SEASON, A REINFORCEMENT PLANTING WILL BE REQUIRED.

THE DAM INSPECTION CHECKLIST CAN BE FOUND IN APPENDIX A OF USDA NRCS - MARYLAND - CONSERVATION PRACTICE STANDARD - POND - CODE (MD-378) MAY BE USED TO DOCUMENT THESE REQUIREMENTS.

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.



POND 2 EMERGENCY SPILLWAY PROFILE
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'

POND DESIGN SUMMARY

EXTENDED DETENTION POND (W-1) HAZARD CLASS 'A'
DRAINAGE AREA: 18.34 AC
IMPERVIOUS AREA: 2.87 AC

DESIGN STORM	WSEL (FT)	STORAGE (AC-FT)	Qin (CFS)	Qout (CFS)
INVERT	399.0			
WQV	401.75	0.663	N/A	N/A
10-YEAR	403.02	1.241	56.65	17.88
100-YEAR	403.81	1.985	94.03	50.32

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

John R. Robertson 4/24/14
HOWARD SOIL CONSERVATION DISTRICT DATE

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Walter P. Miller 6/10/2014
SIGNATURE OF ENGINEER WALTER P. MILLER DATE
(PRINT NAME BELOW SIGNATURE)

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CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY:
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — NO. 19165 — PROFESSIONAL ENGINEER

DES: CYH
DRN: CYH
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

STORMWATER MANAGEMENT PROFILES – POND 2

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J-4237

DWG. SW- 02
SCALE 1" = 50'
SHEET 67 OF 136

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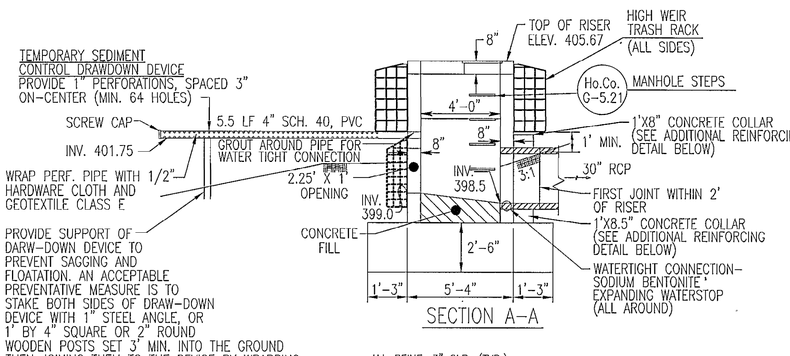
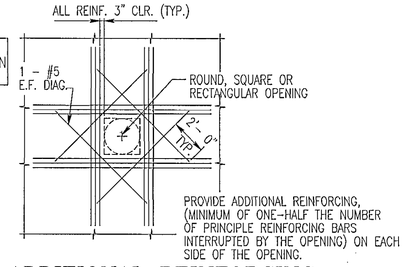
April 23, 2014



SECTION A-A

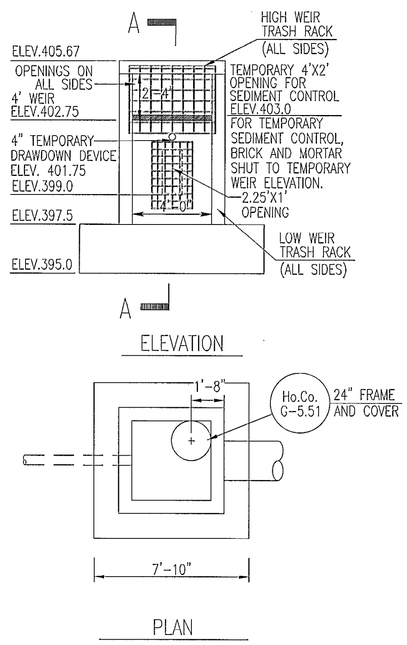
NOTE: CONTRACTOR SHALL KEEP EXTENDED DETENTION ORIFICE OPENING SHUT AND DRAIN VALVE CLOSED DURING CONSTRUCTION.



NOTE:
FOR OPENINGS LESS THAN 12" DIA., NO ADDITIONAL REINFORCING IS REQUIRED PROVIDED NO REINFORCING IS INTERRUPTED BY THE OPENING

ADDITIONAL REINFORCING AROUND OPENINGS

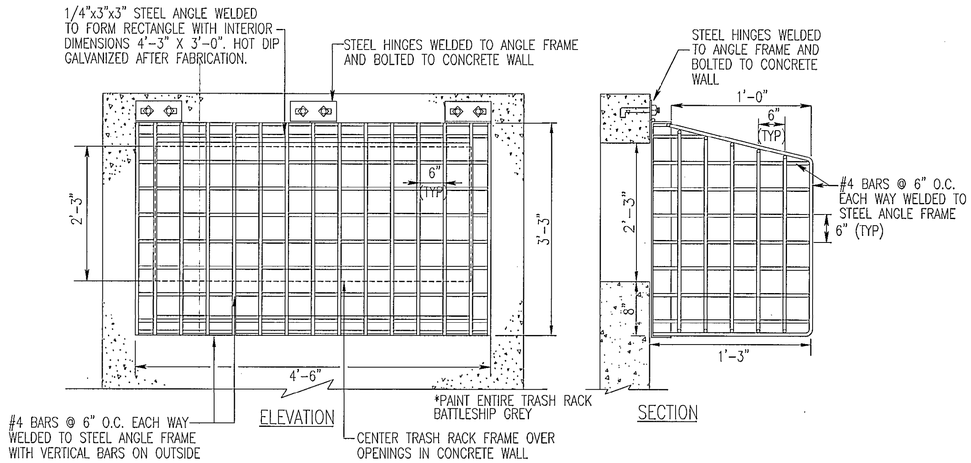
NO SCALE



NOTE: SEE SHEET SW-08 FOR POND CONSTRUCTION SPECIFICATIONS AND RISER STRUCTURAL SPECIFICATIONS.

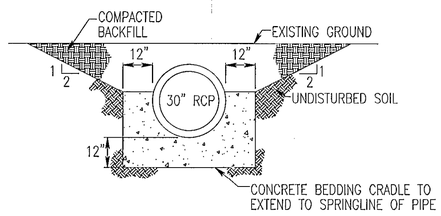
POND 2 RISER SWM-2 DETAIL

SCALE: 1/4"=1'-0"



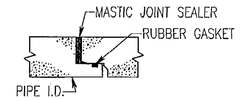
HIGH WEIR TRASH RACK DETAIL

NO SCALE



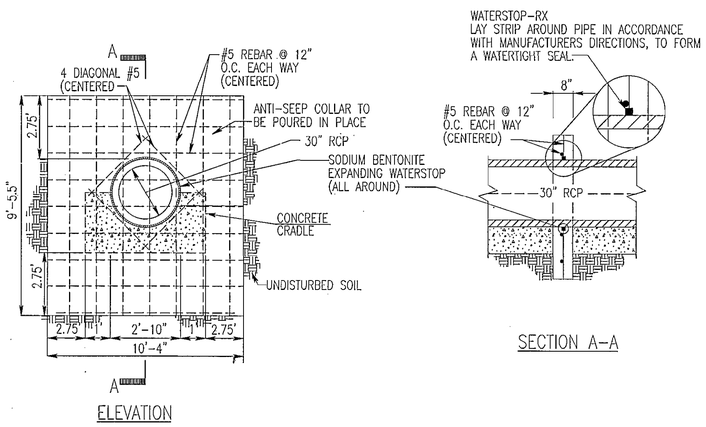
CONCRETE CRADLE

NO SCALE



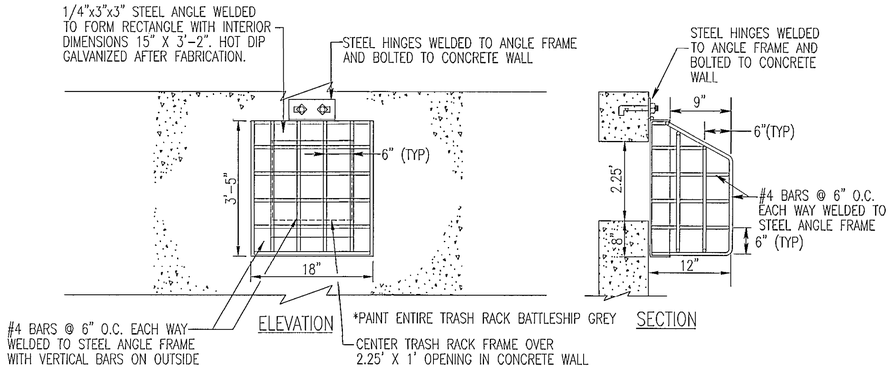
BARREL JOINT SEAL DETAIL

NO SCALE



ANTI-SEEP COLLAR DETAIL

NO SCALE



LOW TRASH RACK DETAIL

NO SCALE

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

John R Robertson 4/24/14
HOWARD SOIL CONSERVATION DISTRICT DATE

DEVELOPER'S CERTIFICATION

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

Walter P. Miller 6/10/2014
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) WALTER P. MILLER DATE

ENGINEER'S CERTIFICATION

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

Gary Stewart 7/17/14
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) DATE

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/8/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

STATE OF MARYLAND — WALTER P. MILLER — NO. 19165 — PROFESSIONAL ENGINEER

DES: PDS
DRN: PDS
CHK: CYH
DATE: 4/24/2014

BY	NO.	REVISION	DATE

STORMWATER MANAGEMENT DETAILS - POND 2

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. SW-03
SCALE AS SHOWN
SHEET 68 OF 136

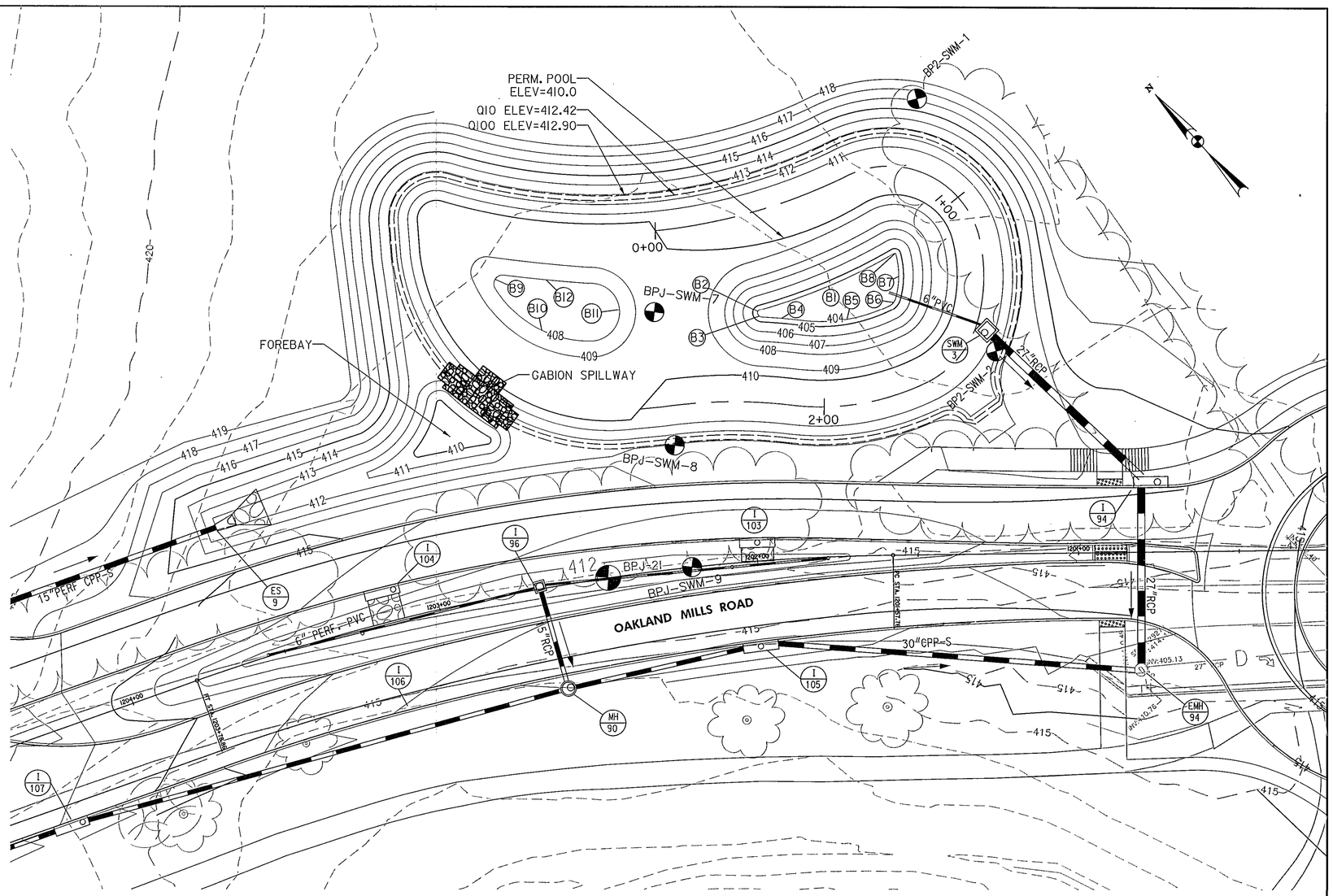
N:\42038-00J\CADD\pSW-P203_BPJ.dgn
April 23, 2014

POND EMBANKMENT C/L STAKEOUT

C/L STATION	OMR BASELINE STATION	OFFSET	POINT	R	DELTA	T
0+00	1202+20	105' RT	POB/PC	-	-	-
0+30	1201+94	105' RT	PI	175.00'	20°	30.84'
0+61	1201+69	118' RT	PCC	-	-	-
0+87	1201+39	134' RT	PI	29.17'	102.39°	36.28'
1+13	1201+30	99' RT	PCC	-	-	-
1+27	1201+26	86' RT	PI	52.62'	30.23°	14.10'
1+41	1201+30	72' RT	PCC	-	-	-
1+53	1201+34	60' RT	PI	30.33'	44.83°	12.51'
1+65	1201+45	54' RT	PCC	-	-	-
1+87	1201+65	44' RT	PI	75.05'	34.29°	23.15'
2+10	1201+87	48' RT	PCC	-	-	-
2+30	1202+05	51' RT	PI	157.08'	14.61°	20.13'
2+50	1202+24	50' RT	PT	-	-	-
2+57	1202+30	51' RT	POE	-	-	-

POND BOTTOM STAKEOUT

STATION	OFFSET	POINT	R	DELTA	T
1201+74	83' RT	B1	177.06'	14.71°	22.85'
1201+94	78' RT	B2	0.96'	96.52°	1.08'
1201+94	76' RT	B3	1.50'	67.51°	1.00'
1201+88	75' RT	B4	183.33'	3.83°	6.12'
1201+69	71' RT	B5	48.57'	33.72°	14.72'
1201+56	78' RT	B6	3.85'	40.48°	1.42'
1201+54	86' RT	B7	26.06'	30.63°	7.14'
1201+56	94' RT	B8	0.39	114.87°	0.61'
1202+67	99' RT	B9	2.80	125.20°	5.4'
1202+59	76' RT	B10	34.28'	60.62°	23.15'
-	-	B11	9.03'	179.69°	3307.21'
1202+52	94' RT	B12	447.49	3.39°	20.13'



CLASS 1 RIPRAP

LOCATION	LENGTH (FT)	WIDTH (FT)	S.Y
ES-9	10	10	8

SWM STRUCTURE SCHEDULE

STRUCTURE NO.	STATION	OFFSET	REMARKS
SWM-3	1202+23	69' RT	SEE DETAIL SW-09
I-94	12202+18	40' LT	HO CO D-4.03 PRECAST A-10 INLET

SWM OUTLET SCHEDULE

FROM	TO	SIZE	TYPE	LENGTH	INV.OUT	INV.IN
SWM-3	I-94	27"	RCP	63'	405.89'	405.59'

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 4/24/14

ENGINEER'S CERTIFICATION

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SIGNATURE OF ENGINEER — WAYNE B. MILLER (PRINT NAME BELOW SIGNATURE) — DATE 6/10/2014

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SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE 7/17/14

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/16/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WAYNE B. MILLER — NO. 19165 — PROFESSIONAL ENGINEER

DES: CYH
DRN: CYH
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

STORMWATER MANAGMENT PLAN
POND 3

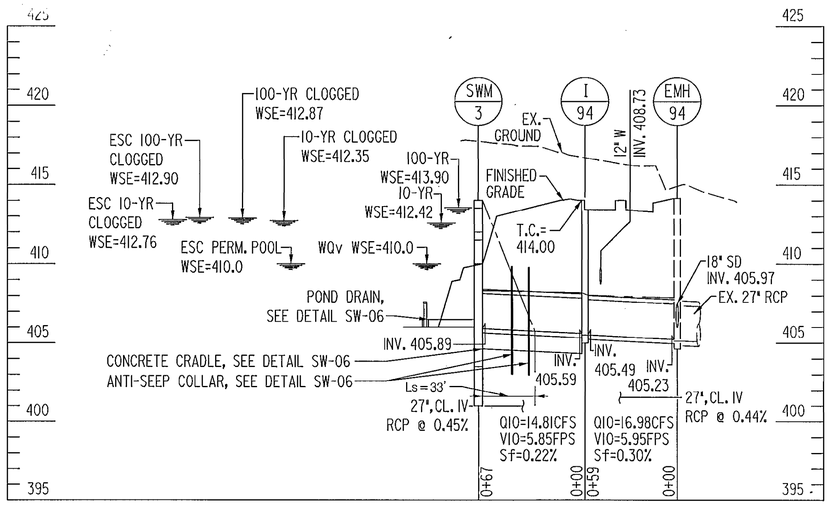
TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J – SOUTH

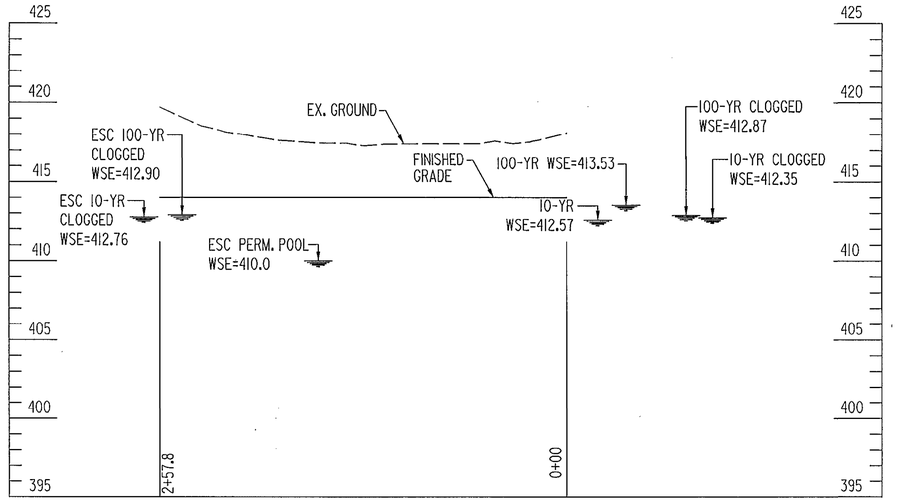
CAPITAL PROJECT # J-4237

DWG. SW- 04
SCALE 1" = 20'
SHEET 69 OF 136

N:\42038-00J\CADD\pSW-P301_BPJ.dgn
April 23, 2014



POND 3 PRINCIPLE SPILLWAY PROFILE
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



POND 3 EMBANKMENT CENTERLINE PROFILE
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'

POND DESIGN SUMMARY

EXTENDED DETENTION POND (W-1) HAZARD CLASS 'A'
DRAINAGE AREA: 18.34 AC
IMPERVIOUS AREA: 2.87 AC

DESIGN STORM	WSEL (FT)	STORAGE (AC-FT)	Qin (CFS)	Qout (CFS)
INVERT	399.0			
WQV	410.0	0.306	N/A	N/A
10-YEAR	412.42	0.684	29.04	9.32
100-YEAR	412.90	0.857	48.67	39.29

OPERATION AND MAINTENANCE SCHEDULE

INSPECTION SCHEDULE
1. ANNUALLY: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS TO INSPECT ANNUALLY AND GENERATE ANNUAL INSPECTION REPORT.
2. SIXTY HOURSE AFTER THE END OF EASH SIGNIFICANT RAINFALL EVENT: (>2.6 INCHES OF RAINFALL). CHECK FOR PONDING WATER, SEDIMENT DEPOSITION IN THE FOREBAYS, EROSION DAMAGE, TRASH AND CLOGGING OF THE SPILLWAY ORIFICIS.

ROUTINE MAINTENANCE
1. MOW GRASS ON EMBANKMENT TWICE PER YEAR OR WHEN GRASS HEIGHT EXCEEDS 18 INCHES.
2. ANNUALLY REMOVE ANY WOODY VEGETATION FROM EMBANKMENT WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT AND WITHIN 25 FEET OF THE PRINCIPAL SPILLWAY.

MAINTENANCE REQUIREMENTS
1. REMOVAL OF SILT WHEN ACCUMULATION EXCEEDS FOUR (4) INCHES IN FOREBAY.
2. REMOVAL OF ACCUMULATED PAPER, TRASH AND DEBRIS AS NECESSARY.
3. VEGETATION GROWING ON THE EMBANKMENT TOP AND FACES IS NOT ALLOWED TO EXCEED 18 INCHES IN HEIGHT AT ANY TIME.
4. ANNUAL INSPECTION AND REPAR OF THE STRUCTURE.
5. CORRECTIVE MAINTENANCE IS REQUIRED ANY TIME THE EXTENDED DETENTION BASIN OR FOREBAYS DO NOT DRAIN WITHIN 60 HOURS.
6. IF MINIMUM COVERAGE OF 50% IS NOT ACHIEVED IN THE PLANTED WETLAND ZONES AFTER THE SECOND GROWING SEASON, A REINFORCEMENT PLANTING WILL BE REQUIRED.

THE DAM INSPECTION CHECKLIST CAN BE FOUND IN APPENDIX A OF USDA NRCS - MARYLAND - CONSERVATION PRACTICE STANDARD - POND - CODE (MD-378) MAY BE USED TO DOCUMENT THESE REQUIREMENTS.

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

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

John K Robertson 4/24/14
HOWARD SOIL CONSERVATION DISTRICT DATE

ENGINEER'S CERTIFICATION

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SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) WALTER P. MILLER 6/10/2014 DATE

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SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) 7/17/14 DATE

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY:
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: CYH
DRN: CYH
CHK: AUO
DATE: 4242014

BY	NO.	REVISION	DATE

STORMWATER MANAGEMENT PROFILES – POND 3

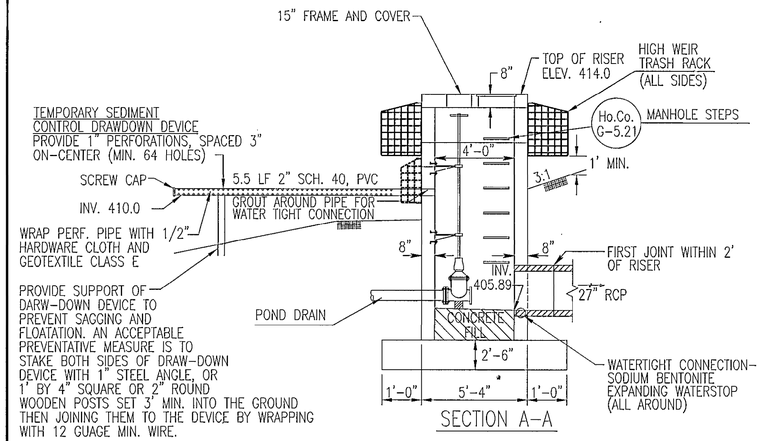
TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J-4237

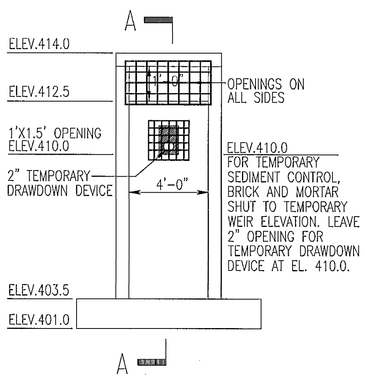
DWG. SW-05
SCALE 1" = 50'
SHEET 70 OF 136

N:\42038-00J\CADD\pSW-P302_BPJ.dgn
April 23, 2014

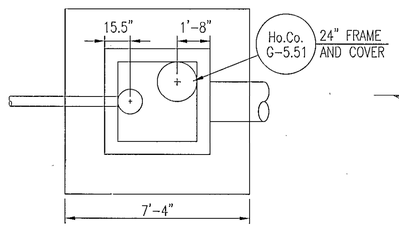


SECTION A-A

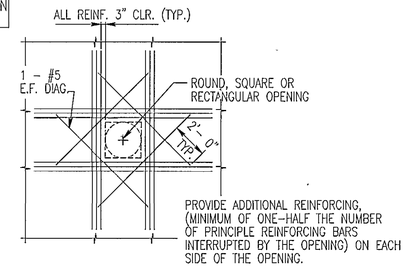
NOTE: CONTRACTOR SHALL KEEP EXTENDED DETENTION ORIFICE OPENING SHUT AND DRAIN VALVE CLOSED DURING CONSTRUCTION.



ELEVATION



PLAN



NOTE:
FOR OPENINGS LESS THAN 12" DIA., NO ADDITIONAL REINFORCING IS REQUIRED PROVIDED NO REINFORCING IS INTERRUPTED BY THE OPENING

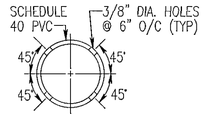
ADDITIONAL REINFORCING AROUND OPENINGS

NO SCALE

NOTE: SEE SHEET SW-08 FOR POND CONSTRUCTION SPECIFICATIONS AND RISER STRUCTURAL SPECIFICATIONS.

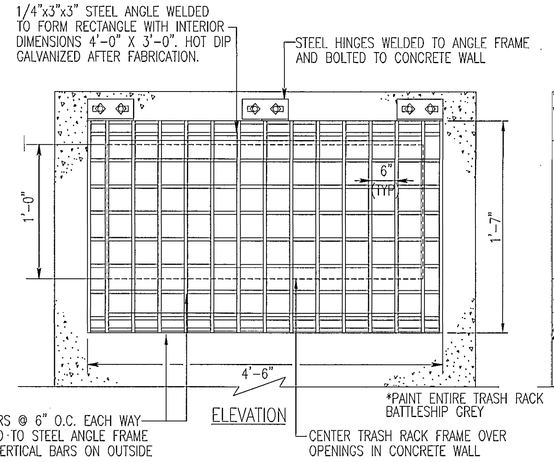
POND 3 RISER SWM-3 DETAIL

NO SCALE

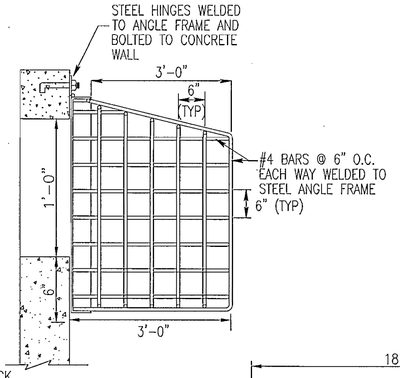


PERFORATED PVC

NO SCALE



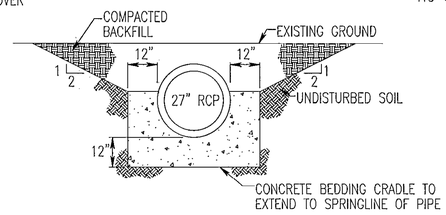
ELEVATION



SECTION

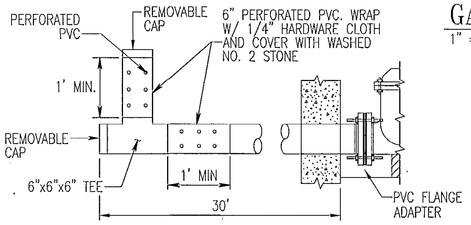
HIGH WEIR TRASH RACK DETAIL

NO SCALE



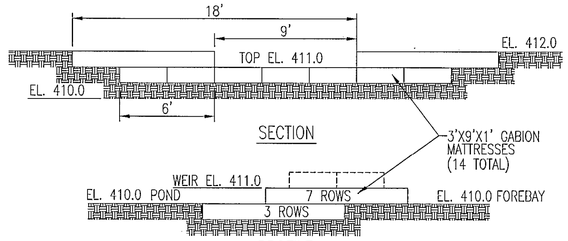
CONCRETE CRADLE

NO SCALE



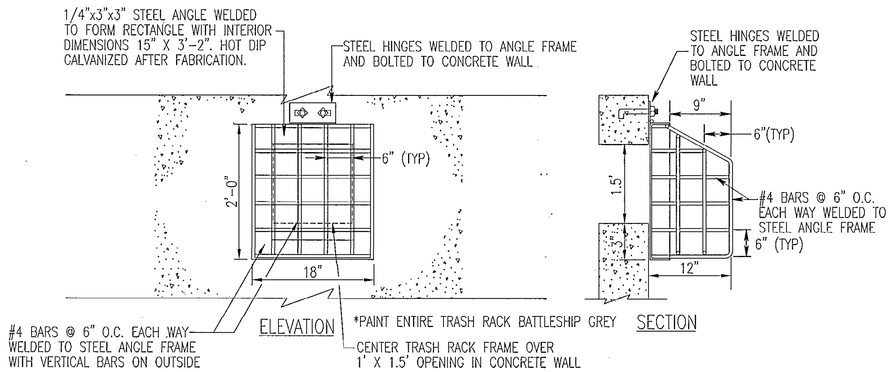
POND DRAIN DETAIL

NO SCALE



GABION 1 SPILLWAY

1" = 5'



LOW TRASH RACK DETAIL

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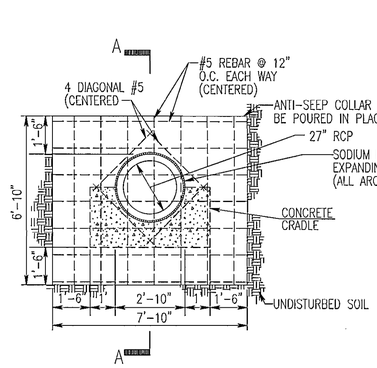

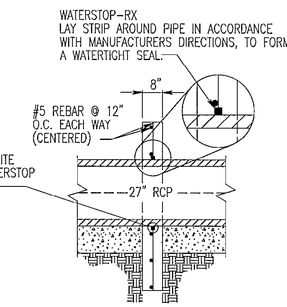

ANTI-SEEP COLLAR DETAIL

NO SCALE

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

John R Robertson 4/24/14
HOWARD SOIL CONSERVATION DISTRICT DATE

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Walter P. Miller 6/10/2014
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) WALTER P. MILLER DATE

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Jay Stewart 7/17/14
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) DATE

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: PDS
DRN: PDS
CHK: CYH
DATE: 4/24/2014

BY	NO.	REVISION	DATE

STORMWATER MANAGEMENT DETAILS - POND 3

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. SW-06
SCALE AS SHOWN
SHEET 71 OF 136

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April 23, 2014

B.4.C SPECIFICATIONS FOR MICRO–BIORETENTION AND BIO–SWALES

1. MATERIAL SPECIFICATIONS

THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

2. FILTERING MEDIA OR PLANTING SOIL

THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO–BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:

- SOIL COMPONENT – LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)
- ORGANIC CONTENT – MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%–65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
- CLAY CONTENT – MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
- PH RANGE – SHOULD BE BETWEEN 5.5 – 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE PH.

THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

3. COMPACTION

IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH–PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.

WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.

WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL

SEE LANDSCAPING PLANS.

5. PLANT INSTALLATION

COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.

ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON–SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 10TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.

TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.

GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON–GRASS GROUND COVER PLANTING SPECIFICATIONS.

THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS

UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:

- PIPE– SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTMF 758, TYPE PS 28, OR AASHTO–M–278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OR HDPE).
- PERFORATIONS – IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3⁄8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1⁄4" (NO. 4 OR 4X4) GALVANIZED HARDWARE CLOTH.
- GRAVEL – THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
- THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
- A RIGID, NON–PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,0000 SQUARE FEET) TO PROVIDE A CLEAN–OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
- A 4" LAYER OF PEA GRAVEL (1⁄8" TO 3⁄8" STCNE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN–OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

7. MISCELLANEOUS

THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

SECTION 316 STORMWATER FILTRATION FACILITIES

316.01 DESCRIPTION. Construct stormwater filtration facilities including bioretention, micro-bioretention, organic filters, surface sand filters, submerged gravel wetlands, landscape infiltration, rain gardens, infiltration berms, wet swales, dry swales, and bio-swales.

Stormwater Filtration Facilities use vegetation, specific soil mixtures, and aggregate layers to filter stormwater and are highly susceptible to contamination by sediment. Therefore installation of vegetation immediately following the construction of each facility is essential.

316.02 MATERIALS.

No. 57 Aggregate	901.01	Soil Stabilization Matting	920.05
No. 7 Aggregate	901.01	Turfgrass	920.06
No. 2 Aggregate	M-43, No. 2	Turfgrass Sod –	920.06
Topsoil	920.01.01 or .02	Plant Materials	920.07
Bioretention Soil Mix (BSM)	920.01.05	Water	920.09.01
Coarse Sand	920.01.05(a)(1)	Geotextile, Class PE, Type III	921.09
Shredded Hardwood Bark (SHB) Mulch	920.04.03		

Subdrain Pipe, Fittings and Geotextile Sock. 6 in. diameter thermoplastic pipe. Polyvinyl chloride Profile Wall Drain Pipe (PPWP) meeting F 949 or Corrugated Polyethylene Drainage Pipe (CPP-S) meeting M 252, Type S and Type SP. Perforated pipe shall have slotted perforations with an opening area of 1 in²/ft to 1.5 in²/ft. Pipe used for observation wells requires an appropriate geotextile sock as recommended and supplied by the pipe manufacturer.

316.03 CONSTRUCTION. Construct stormwater filtration facilities only after all contributing drainage areas are permanently stabilized and vegetation including turfgrass and turfgrass sod are established according to Sections 705 and 708. Do not construct stormwater filtration facilities in areas previously used as erosion and sediment control facilities. Do not stockpile materials nor store equipment in these areas.

Use methods of excavation that minimize the compaction of the underlying soil. Use excavators and backhoes operating on the adjacent ground. If the bottom width of the excavated area is greater than 15 ft, wide-track or marsh-track equipment, or light equipment with turf-type tires may be used to excavate, grade, and place fill materials. Do not use equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires.

Rototill the excavation pit bottom to a minimum depth of 6 in. to alleviate compaction from excavation activities. Remove any standing water from the excavation pit prior to rototilling. Only rototill soil that is friable. Do not rototill soil while in a muddy or frozen condition.

Geotextile. Place tightly against the vertical sides of the excavation pit, pull tight to eliminate wrinkles and folds, and pin securely. Eliminate any voids between the geotextile and the soil and avoid wrinkling and folding the geotextile. Maintain a minimum 6 in. overlap at the geotextile joint ends or breaks and pin joints and overlaps securely. Do not place geotextile on the bottom of the excavation pit.

Aggregate. Use aggregate that is clean and free of soil and fines. Prevent soil, fines, and other debris from intermixing with the aggregate. If aggregate become contaminated with soil or fines, remove and replace it with uncontaminated aggregate.

Subdrain. Cap the ends of all pipes not terminating in a cleanout, vent, or drainage structure unless otherwise specified.

Cleanouts. Install solid-wall pipe vertically and connect to horizontal subdrain with the appropriate manufactured connections. Provide a screw cap on the exposed ends.

Vents. Install solid wall pipe vertically and connect to the horizontal subdrain with the appropriate manufactured connections. Provide a ventilated screw cap on the exposed ends. Ventilation holes or slots shall be no larger than 1/4 in. in diameter or width. The sum total area of the openings shall be no less than 1 in². Ensure that the ventilation openings are above the maximum specified water surface elevation.

Observation Wells. Place vertically using perforated and solid-wall pipe. Place an appropriate geotextile sock over the perforated pipe portion and secure on both ends.. Provide a screw cap on the exposed end extending 2 in above the surface. If a concrete collar is specified, trim the top of the well flush with the surface...

Coarse Sand. Place coarse sand in horizontal layers not to exceed 12 in. in thickness. After each lift, apply water by spraying or sprinkling to saturate the entire area of coarse sand until water flows from the subdrain. Use an appropriate sediment control device to capture any discharged sediment-laden water. Prevent soil, fines and other debris from intermixing with the coarse sand. Remove and replace any contaminated coarse sand.

Bioretention Soil Mixture (BSM). Place BSM in horizontal layers not to exceed 12 in. in thickness. After each lift, apply water by spraying or sprinkling to saturate the entire area of BSM until water flows from the subdrain. Use an appropriate sediment control device to capture any discharged. Prevent soil, fines, and other debris from intermixing with the BSM. Remove and replace any contaminated BSM.

Plant Materials. Install plant materials immediately after final grading according to Sections 710 and 711.

Shredded Hardwood Fark (SHB) Mulch. Place immediately after BSM placement according to 710.03.13.

Soil Stabilization Matting. Place according to Section 709.

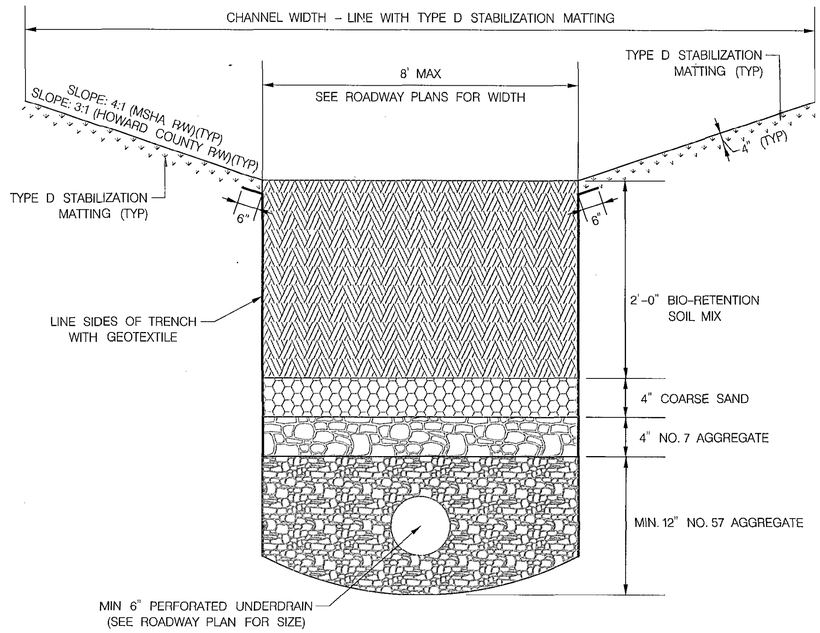
Topsoil. Place according to Section 701.

Turfgrass. Install and maintain according to Section 705. Mow by hand cutting only.

Turfgrass Sod. Install and maintain according to Section 708. Prevent damage to check dams, observations wells, vents and other features.

Check Dams. Construct check dams using No. 7 aggregate.

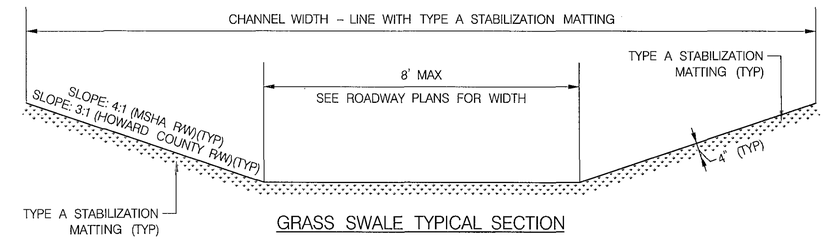
Final Acceptance. Complete and submit a Stormwater Management (SWM) Facility As-Built Certification Package for each stormwater filtration facility. Approval of the SWM As-Built Certification Package will be included in the Punch List requirements for the project.



BIO–SWALE TYPICAL SECTION

Table B.4.1 Materials Specifications for Micro–Bioretention and Bio–Swales–

Material	Specification	Size	Notes
Planting soil [2* to 4* deep]	SHA BSM	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea Gravel	ASTM–D–448	No. 8 or No. 9 (1⁄8" or 3⁄8")	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains)	AASHTO M–43	NO. 57 OR NO. 6 AGGREGATE	
Underdrain piping	F 758, Type PS 28 or AASHTO M–278	6* rigid schedule 40 PVC or as shown on plan	Slotted or perforated pipe; 3⁄8* perf. @ 6* on center, 4 holes per row; minimum of 3* of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with *–inch galvanized hardware cloth



GRASS SWALE TYPICAL SECTION

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/10/14

PREPARED BY:
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MOORE — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES: CYH
DRN: CYH
CHK: AUO
DATE: 7/11/2014

BY	NO.	REVISION	DATE

STORMWATER MANAGEMENT DETAILS – BIO–SWALES

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J–4237

DWG. SW–07
SCALE N/A
SHEET 72 OF 138

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July 07, 2014

SHA SHEET 34 OF 76

POND CODE MD-378 CONSTRUCTION SPECIFICATIONS

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD-378. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

SITE PREPARATION

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25-FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

EARTH FILL

MATERIAL – THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT, AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER. MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT.

PLACEMENT – AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION – THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

WHEN REQUIRED BY THE REVIEWING AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN *2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PROCTOR).

CUT OFF TRENCH – THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.

EMBANKMENT CORE – THE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION OR AS SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

STRUCTURE BACKFILL

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED. THE MIXTURE SHALL HAVE A 100-200 PSI; 28 DAY UNCONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM-CM. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE) OF FLOWABLE FILL SHALL BE UNDER (BEDDING), OVER AND, ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL. ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

REINFORCED CONCRETE PIPE – ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

1. MATERIALS – REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C-361.

2. BEDDING – REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING /CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING /CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE *STRUCTURE BACKFILL* SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.

3. LAYING PIPE – BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 4 FEET FROM THE RISER.

4. BACKFILLING SHALL CONFORM TO *STRUCTURE BACKFILL*.

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3.

ROCK RIPRAP

ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 311.

GEOTEXTILE SHALL BE PLACED UNDER ALL RIPRAP AND SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

CARE OF WATER DURING CONSTRUCTION

ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION, AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PER- FORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE NATURAL RESOURCES CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD-342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

EROSION AND SEDIMENT CONTROL

CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES.

RISER STRUCTURAL NOTES

CONCRETE NOTES

1. REINFORCED CONCRETE SHALL BE DETAILED AND CONSTRUCTED IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE, (ACI 301) "SPECIFICATION FOR STRUCTURAL CONCRETE".
2. ALL REINFORCEMENT SHALL CONFORM TO ASTM SPECIFICATION A615, DEFORMED, GRADE 60.
3. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED.
4. THE CONTRACTOR SHALL SUBMIT SHOP DETAILS OF REINFORCING STEEL BEFORE PROCEEDING WITH FABRICATION.
5. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH ACI DETAILING MANUAL.
6. MINIMUM COVER FOR ANY BAR SHALL BE 2" UNLESS OTHERWISE NOTED, WITH THE EXCEPTION OF BARS AT THE BOTTOM AND SIDES OF FOOTING, WHICH SHALL HAVE 3" MINIMUM COVER
7. CONCRETE SLAB AND WALLS SHALL BE POURED BETWEEN INDICATED JOINTS ALLOWING A MINIMUM PERIOD OF 3 DAYS TO ELAPSE BETWEEN ADJACENT POURS.
8. CONSTRUCTION JOINTS SHALL BE AS DETAILED ON THE DRAWINGS AND NO ADDITIONAL JOINTS SHALL BE USED NOR ANY OMITTED EXCEPT BY WRITTEN AUTHORIZATION OF THE ENGINEER. ENGINEER APPROVED ADDITIONAL CONSTRUCTION JOINTS SHALL NOT RESULT IN ADDITIONAL EXPENSE TO THE OWNER.
9. CONCRETE SHALL BE IN ACCORDANCE WITH MSHA STANDARD SPECIFICATIONS SECTION 420, AND SHALL BE 4500 PSI.
10. PVC PIPE AND FITTINGS SHALL BE IN ACCORDANCE WITH MSHA STANDARD SPECIFICATIONS SECTION 905. ALL EXPOSED PVC PIPE SHALL BE GRAY IN COLOR

DESIGN LOADS

1. DEAD LOADS – ACTUAL WEIGHT OF STRUCTURE. WEIGHT OF SOIL – 100 P.C.F. TO RESIST UPLIFT. 120 P.C.F. DEAD LOAD
2. ALL STRUCTURES DESIGNED TO RESIST UPLIFT WITH WATER LEVEL AT 100 YEAR ELEVATION, WITH FACTOR OF SAFETY OF 1.5.

FOUNDATION NOTES

1. ALL EXCAVATION SHALL BE KEPT DRY. STANDING WATER SHALL NOT BE ALLOWED IN EXCAVATIONS.
2. BEFORE PLACING ANY CONCRETE ON SUBGRADE, THE CONTRACTOR SHALL NOTIFY THE INSPECTOR.
3. FOOTINGS SUBGRADE SHALL CONSIST OF UNDISTURBED SOIL UNLESS SOFT UNSUITABLE MATERIAL IS ENCOUNTERED.
4. ALL SOFT AND UNSUITABLE SOIL BELOW FOOTINGS AND SLABS SHALL BE UNDERCUT AND REPLACED WITH CONTROLLED, COMPACTED FILL OF GRADED AGGREGATE BASE MATERIAL.
5. FILL MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY AASHTO T-99.

INTEGRAL COLORED CONCRETE FOR SWM STRUCTURES

DESCRIPTION. THIS WORK SHALL CONSIST OF APPLYING INTEGRAL COLOR ADMIXTURE TO THE CONCRETE MIXTURE FOR DRAINAGE STRUCTURES AS SPECIFIED IN THE CONTRACT DOCUMENTS. APPLY SANDBLAST FINISH TO THE COMPLETED, COLORED DRAINAGE STRUCTURES.

MATERIALS. INTEGRAL CONCRETE COLOR PIGMENT ADMIXTURE. A COLORED, WATER REDUCING, ADMIXTURE CONTAINING NO CALCIUM CHLORIDE WITH COLORING AGENTS THAT ARE LIMEPROOF AND UV RESISTANT ACCORDING TO C979, C494 AND M194.

THE COLOR SHALL MEET FEDERAL STANDARD 595B. THE MANUFACTURER SHALL CHOOSE FROM THE FOLLOWING COLORS: 30277, 30145, AND 30219. THE SAME COLOR SHALL BE USED THROUGHOUT THE PROJECT. IT MAY BE NECESSARY TO USE WHITE PORTLAND CEMENT TO ACHIEVE THE COLOR. COMPROMISING THE COLOR WILL NOT BE ACCEPTABLE IN ORDER TO AVOID USING WHITE CEMENT.

CONSTRUCTION.
INTEGRAL COLORED CONCRETE STRUCTURES. WHERE SPECIFIED, CAST STORM WATER MANAGEMENT STRUCTURES USING INTEGRAL CONCRETE COLOR PIGMENT ADMIXTURE. ADD PIGMENT ADMIXTURE TO THE CONCRETE AS SPECIFIED BY THE MANUFACTURER. ENSURE UNIFORM COLORATION THROUGHOUT THE STRUCTURE.

SANDBLASTED FINISH. APPLY SANDBLAST FINISH TO COLORED DRAINAGE STRUCTURES ALLOW CONCRETE TO CURE TO SUFFICIENT STRENGTH SO THAT IS WILL NOT BE DAMAGED BY BLASTING BUT NOT LESS THAN SEVEN DAYS. APPLY CLASS 1 (BRUSH) FINISH INVOLVING A ONE PASS BRUSH BLAST WHICH WILL REMOVE THE CEMENT MATRIX AND EXPOSE THE FINE AGGREGATES ONLY. NO EXPOSED COARSE AGGREGATE IS ALLOWED.

MEET ALL LOCAL AIR POLLUTION REGULATIONS. ENSURE THE SAFETY OF THE WORKERS. EQUIP EACH BLASTER WITH AN AIR-FED HELMET.

ENSURE THAT AREAS IMMEDIATELY ADJACENT TO THE SAND-BLASTING OPERATION ARE CLEANED-UP.

SAMPLE PANEL. PRIOR TO CASTING DRAINAGE STRUCTURES WITH INTEGRAL CONCRETE COLOR PIGMENT ADMIXTURE, PROVIDE A SANDBLASTED 2 FT. BY 2 FT. BY 4 IN. SAMPLE PANEL AT THE CONSTRUCTION SITE FOR COLOR AND FINISH APPROVAL. ENSURE SUBSEQUENT STRUCTURES REQUIRING INTEGRAL COLOR MATCH THE SAMPLE PANEL. MAINTAIN THE SAMPLE AT THE CONSTRUCTION SITE AS A BASIS FOR COMPARISON WITH THE STRUCTURES.

MEASUREMENT AND PAYMENT
INTEGRAL COLORED CONCRETE WILL NOT BE MEASURED BUT WILL BE INCIDENTAL TO THE APPLICABLE PRECAST OR CAST IN PLACE CONCRETE ITEM. THE PAYMENT WILL INCLUDE INTEGRAL CONCRETE COLOR PIGMENT ADMIXTURE, SANDBLAST FINISH, CLEAN-UP AND ALL MATERIAL, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 7/24/14

ENGINEER'S CERTIFICATION

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

SIGNATURE OF ENGINEER — (PRINT NAME BELOW SIGNATURE) WARREN P. MILLER — DATE 6/10/2014

DEVELOPER'S CERTIFICATION

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

SIGNATURE OF DEVELOPER — (PRINT NAME BELOW SIGNATURE) — DATE 7/17/14

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WARREN P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: CYH
DRN: CYH
CHK: AUO
DATE: 4/24/2014

BY	NO.	REVISION	DATE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF HIGHWAYS — Holger Serrano — DATE 7.11.14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — Steve Shaver — DATE 7/11/14

STORMWATER MANAGEMENT NOTES

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J-4237

DWG. SW-08
SCALE N/A
SHEET 73 OF 136

N:\42038-00J\CADD\pSW-P500_BPJ.dgn
April 23, 2014

STORMWATER MANAGEMENT (SWM) FACILITY AS–BUILT CERTIFICATION

DESCRIPTION. Inspect stormwater management facilities during specified stages of construction, and furnish a completed (SWM) Facility As–Built Certification Package to the Administration certifying that the SWM facilities have been constructed as specified in the Contract Documents. Inspection of SWM facilities and completion of the SWM Facility As–Built Certification Package may only be performed by an As–Built Inspector.

As–Built (AB) Inspector. Furnish an approved AB Inspector to complete the As–Built Certification. AB Inspectors require licensure in the State of Maryland as a Professional Engineer or Professional Land Surveyor, experienced in SWM design and construction.

To request approval, furnish a one–page resume for the AB Inspector at least two weeks prior to the start of construction of any SWM facility. The resume shall include the AB Inspector*s name, contact information, relevant professional license(s), employer*s name, and relevant work history. Failure to receive approval for the AB Inspector or to monitor the specified construction stages will be grounds for replacement.

SWM Facility As–Built Certification Package. The Certification Package certifies that the SWM Facilities have been constructed as specified. The submitted package shall include, at a minimum, photographs during specified construction phases, written descriptions of each phase, completed tabulations and checklists, completed certification forms, material testing reports, turf/vegetation establishment report and green–line revision plans for each facility

CADD Work and Files. All work and files shall adhere to the CADD Standards established by the Administration.

The Administration will provide the approved SWM Report and MicroStation CADD files to facilitate the duties of the AB Inspector.

MATERIALS. Not applicable.

CONSTRUCTION. Inspect and complete the appropriate AB checklist for each facility. Ensure that the facility features are constructed as designed.

Stages for As–Built Inspections by the AB Inspector. Perform minimum inspections for SWM facilities as follows:

(a) Ponds.
- (1) Upon completion of excavation to sub–foundation and when required, installation of structural supports or reinforcement for structures, including, but not limited to:
  - (i) Core trenches for structural embankments.
  - (ii) Inlet and outlet structures, anti–seep collars or diaphragms, and watertight connections on pipes.
  - (iii) Trenches for enclosed storm drainage facilities.
- (2) During placement of structural fill, concrete, and installation of piping and catch basins.
- (3) During backfill of foundations and trenches.
- (4) During embankment construction.
- (5) Upon completion of final grading and establishment of permanent stabilization.

(b) Wetlands. Refer to stages specified for pond construction. Additional inspections include:
- (1) During and after wetland area planting.
- (2) During the second growing season to verify a vegetation survival rate of no less than fifty percent (50%).

(c) Infiltration Trenches.
- (1) During excavation to subgrade.
- (2) During placement and backfill of sudrain systems and observations wells.
- (3) During placement of geotextile and all filter media.
- (4) During construction of appurtenant conveyance systems such as diversion structures, pre–filters and filters, inlets, outlets, and flow distribution structures.
- (5) Upon completion of final grading and establishment of permanent stabilization.

(d) Infiltration Basins. Refer to stages specified for pond construction and add:
- (1) During placement and backfill of subdrain systems.

(e) Filtering Systems. Filtering systems include bioretention, micro– bioretention, sand filters, organic filters, bio–filters, and dry swales.
- (1) During excavation to subgrade.
- (2) During placement and backfill of subdrain systems.
- (3) During placement of geotextile and all filter media.
- (4) During construction of appurtenant conveyance systems such as flow diversion structures, pre–filters and filters, inlets, outlets, orifices, and flow distribution structures.
- (5) Upon completion of final grading and establishment of permanent stabilization.

(f) Open Channel Systems. Open channel systems include wet swales and grass channels.
- (1) During excavation to subgrade.
- (2) During installation of diaphragms, check dams, or weirs.
- (3) Upon completion of final grading and establishment of permanent stabilization.

(g) Non–Structural Practices. Upon completion of final grading and after the establishment of permanent stabilization.

Surveys, Computations, and Green–Line Revision Requirements. Upon completion of each SWM facility, survey each SWM facility and provide green–line revisions that include the following items:

(a) Core trench location, dimensions, material and compaction,

(b) Contours. Indicate the grading of the SWM facility using one foot contour intervals.

(c) Inflow and outflow ditches,

(d) Riprap. Indicate the locations dimensions of riprap within SWM facilities and immediately outside of SWM footprints.

(e) Emergency spillways. Indicate locations of emergency spillways for SWM facilities.

(f) Outfall structures. Indicate locations of outfall structures, such as risers and weirs, and include all relevant information such as elevations, dimensions at top, orifice elevations, weir lengths and elevations, and openings.

(g) Miscellaneous Features. Include all other pertinent features in and around the SWM facility, such as freeboard, water surface elevations, and setbacks.

Tolerances. Tolerance limits for green–line as–built information is as follows:

(a) Earthwork Tolerance. Elevations must be within 3 in. of elevations specified in the Contract Documents.

(b) Structures. Elevations must be within 1.2 in. (0.1 ft) for spillways, pipe inverts, orifices, and weirs.

(c) Freeboard. Freeboard must be no less than specified in the Contract Documents.

When tolerances are exceeded, furnish computations for the storage volumes, discharge rates, detention times, and other applicable documentation to demonstrate that the SWM facilities meet all of the designed parameters.

Submission Requirements. Furnish two hard–copies and one digital copy in PDF format of the SWM Facility As–Built Certification Package to the Administration. Incomplete SWM Facility As–Built Certification Packages will not be accepted. The Administration will submit one copy to the Department of the Environment (MDE) for review and approval.

When SWM facilities do not meet the design parameters, reconstruct, re–inspect, resurvey and recalculate deficient aspects of the SWM facilities and furnish the revised information in the SWM Facility As–Built Certification Package.

MEASUREMENT AND PAYMENT. Stormwater Management (SWM) Facility As–Built Certification will not be measured but will be paid for at the Contract lump sum price. The payment will be full compensation for inspection, photographs, documentation, surveys, computations, green–line revisions, completion and submission of the SWM Facility As–Built Certification Package, and for all material, labor, equipment, tools, and incidentals necessary to complete the work. Modifications to rejected SWM Facility As–Built Certification Packages including any associated corrective construction, reconstruction, grading, inspection, planting, stabilization, surveying, engineering analysis and services, and resubmittals will be at no additional cost to the Administration.

BSM SPECIFICATIONS

920.01.05 Bioretention Soil Mix (BSM). A homogeneous mixture composed by loose volume of 5 parts Coarse Sand, 3 parts Base Soil, and 2 parts Fine Bark. BSM shall conform to the following:

(a) Components. Components of BSM shall be sampled, tested and approved before mixing as follows:

(1) Coarse Sand. MSMT 356. Coarse Sand shall be washed silica sand or crushed glass that conforms to ASTM Fine Aggregate C-33. Coarse Sand shall include less than 1% by weight of clay or silt size particles, and less than 5% by weight of any combination of diabase, greystone, calcareous or dolomitic sand.

(2) Base Soil. Base Soil shall be tested and certified by the producer to conform to the following requirements:

BSM SPECIFICATIONS

COMPOSITION - BASE SOIL					
TEST PROPERTY	TEST METHOD	TEST VALUE AND AMENDMENT			
Prohibited Weeds	—	Free of seed and viable plant parts of species in 920.06.02(a)(b)(c) when inspected.			
Debris	—	No observable content of cement, concrete, asphalt, crushed gravel or construction debris when inspected.			
Grading Analysis	T 87	Sieve Size		Passing by Weight Minimum %	
		2 in.		100	
		No. 4		90	
		No. 10		80	
Textural Analysis	T 88	Particle		% Passing by Weight	
		Size	mm	Minimum	Maximum
		Sand	2.0 – 0.050	50	85
		Silt	0.050 – 0.002	5	45
		Clay	less than 0.002	5	10
Soil pH	D 4972	pH of 5.7 to 6.9.			
Organic Matter	T 194	1.0 to 10.0 % by weight.			
Soluble Salts	EC1:2 (V:V)	500 ppm (1.25 mmhos/cm) or less.			
Harmful Materials	—	920.01.01(a)			

(3) Fine Bark. Fine Bark shall be the bark of hardwood trees that is milled and screened to a uniform particle size of 2 in. or less. Fine Bark shall be composted and aged for 6 months or longer, and be free from sawdust and foreign materials.

A 1 to 2 lb sample of Fine Bark shall be submitted to the Landscape Operations Division for examination.

(b) Composition. BSM shall be sampled and tested according to the requirements of MSMT 356 and conform to the following:

COMPOSITION- BIORETENTION SOIL MIX (BSM)						
TEST PROPERTY	TEST METHOD	TEST VALUE AND AMENDMENT				
Weeds	—	Free of seed and viable plant parts of species in 920.06.02(a)(b)(c) when inspected.				
Debris	—	920.01.05(a)(2)				
Textural Analysis	T 88	Particle		% Passing by Weight		
		Size	mm	Minimum	Maximum	
		Sand	2.0 – 0.050	55	85	
		Silt	0.050 – 0.002	–	20	
		Clay	less than 0.002	1	8	
Soil pH	D 4972	pH of 5.7 to 7.1.				
Organic Matter	T 194	Minimum 1.5 % by weight.				
Nutrient Analysis and Soluble Salts	Mehlich-3	Concentration				
		Element	Minimum		Maximum	
			ppm	FIV	ppm	FIV
		Calcium (Ca)	32	25	no limit	no limit
		Magnesium (Mg)	15	25	no limit	no limit
		Phosphorus (P)	18	25	92	100
		Potassium (K)	22	25	no limit	no limit
		Sulfur (SO_4)	25	n/a	no limit	no limit
	EC1:2 (V:V)	Soluble Salts	40	n/a	500	n/a
Harmful Materials	—	920.01.01(a).				

(c) Amendment or Failure. BSM that does not conform to composition requirements for pH or nutrient analysis shall be amended as specified by the NMP. BSM that exceeds maximum phosphorus concentration or fails other composition requirements will not be accepted, and shall not be delivered or used as BSM.

(d) Storage. 920.01.02(b). BSM shall be stored in a stockpile that is protected from weather under tarp or shed. BSM stored for 6 months or longer shall be resampled, retested, and reapproved before use.

As-Built Inspection Tabulations/Checklist for BMP Number: Bio-swale 2C7 (SHA# 130610)
MDE No.:

Accepted by MDE:

Name _____ Date _____

M-8 BIO-SWALES MDE TABULATIONS

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTOR INITIALS	ACCEPTANCE DATE
As-Built Survey	N/A				
Bottom width	8				
Left side slope (ft/ ft)	4				
Right side slope (ft/ ft)	4				
Length	231				
Number of Check Dams/ Weirs	1				
10-Year Freeboard	2'				
Maximum Channel slope (ft/ft)	0.01				
Underdrain Pipe Diameter	18"				
Thickness of Filter Media	2'				
Composition of Filter Media	SHA BSM				

Revised February 2011

As-Built Inspection Tabulations/Checklist for BMP Number: Bio-swale 5B3 (SHA# 130734)
MDE No.:

Accepted by MDE:

Name _____ Date _____

M-8 BIO-SWALES MDE TABULATIONS

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTOR INITIALS	ACCEPTANCE DATE
As-Built Survey	N/A				
Bottom width	8				
Left side slope (ft/ ft)	4				
Right side slope (ft/ ft)	4				
Length	162				
Number of Check Dams/ Weirs	0				
10-Year Freeboard	2'				
Maximum Channel slope (ft/ft)	0.04				
Underdrain Pipe Diameter	6"				
Thickness of Filter Media	2'				
Composition of Filter Media	SHA BSM				

Revised February 2011

As-Built Inspection Tabulations/Checklist for BMP Number: Bio-swale 5B2 (SHA# 130612)
MDE No.:

Accepted by MDE:

Name _____ Date _____

M-8 BIO-SWALES MDE TABULATIONS

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTOR INITIALS	ACCEPTANCE DATE
As-Built Survey	N/A				
Bottom width	8				
Left side slope (ft/ ft)	4				
Right side slope (ft/ ft)	4				
Length	560				
Number of Check Dams/ Weirs	1				
10-Year Freeboard	2'				
Maximum Channel slope (ft/ft)	0.02				
Underdrain Pipe Diameter	18"				
Thickness of Filter Media	2'				
Composition of Filter Media	SHA BSM				

Revised February 2011

As-Built Inspection Tabulations/Checklist for BMP Number: Grass Swale 5B1 - 130611
MDE No.:

Accepted by MDE:

Name _____ Date _____

M-8 GRASS SWALES MDE TABULATIONS

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTOR INITIALS	ACCEPTANCE DATE
As-Built Survey	N/A				
Bottom width	8'				
Left side slope (ft/ ft)	4				
Right side slope (ft/ ft)	4				
Length	590				
Number of Check Dams/ Weirs	1				
10-Year Freeboard	2'				
Maximum Channel slope (ft/ft)	0.02				

Revised February 2011

As-Built Inspection Tabulations/Checklist for BMP Number: Grass Swale 7A - 130616
MDE No.:

Accepted by MDE:

Name _____ Date _____

M-8 GRASS SWALES MDE TABULATIONS

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTOR INITIALS	ACCEPTANCE DATE
As-Built Survey	N/A				
Bottom width	2'				
Left side slope (ft/ ft)	4				
Right side slope (ft/ ft)	4				
Length	358				
Number of Check Dams/ Weirs	0				
10-Year Freeboard	2'				
Maximum Channel slope (ft/ft)	0.02				

Revised February 2011

AS–BUILT CERTIFICATION

I HERBY CERTIFY THAT THE STORMWATER MANAGEMENT FACILITIES (BOTH BMPS AND ESD PRACTICES) SHOWN ON THE PLANS HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS APPROVED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, EXCEPT AS NOTED IN RED ON THE "AS–BUILT" DRAWINGS.

NAME _____ SIGNATURE _____

MARYLAND REGISTRATION NUMBER (PE OR LS) _____ DATE _____

FACILITIES BEING CERTIFIED (LIST EACH INDIVIDUALLY USING FACILITY ID NUMBER AND/OR DESCRIPTION

130611 GRASS SWALE 5B1

130612 BIO–SWALE 5B2

130734 BIO–SWALE 5B3

130610 BIO–SWALE 2C7

130616 GRASS SWALE 7A

"CERTIFY" MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED ON SUFFICIENT AND APPROPRIATE ONSITE INSPECTIONS AND MATERIAL TESTS CONDUCTED DURING CONSTRUCTION.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/8/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MOORE — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES: CYH
DRN: CYH
CHK: AUO
DATE: 7/11/2014

BY	NO.	REVISION	DATE

STORMWATER MANAGEMENT NOTES

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J–4237

DWG. SW–09
SCALE N/A
SHEET 74 OF 138

N:\42038-00J\CADD\pSW-P501_BPJ.dgn
July 07, 2014

SHA SHEET 36 OF 76

WORK ZONE TRAFFIC CONTROL PLAN GENERAL NOTES /WORK RESTRICTIONS

1. ALL WORK SHALL BE CONDUCTED IN ACCORDANCE WITH THE LATEST VERSION OF THE MARYLAND STATE HIGHWAY ADMINISTRATION'S (MSHA) BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES AND MSHA'S MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MDMUTCD).

2. EXISTING TRAFFIC SIGNS IN CONFLICT WITH THE WORK ZONE TRAFFIC CONTROL PLANS SHALL BE COVERED. TEMPORARY TRAFFIC SIGNS SHALL BE INSTALLED ONLY AS NECESSARY FOR EACH INDIVIDUAL STAGE OF CONSTRUCTION, WITH SIGNS RELOCATED AS APPLICABLE BETWEEN SEPARATE STAGES.

3. ALL EXISTING PAVEMENT MARKINGS AND/OR TEMPORARY PAVEMENT MARKINGS FROM A PREVIOUS STAGE OF CONSTRUCTION IN CONFLICT WITH TEMPORARY PAVEMENT MARKINGS (IN CURRENT STAGE) SHALL BE REMOVED, AS DIRECTED BY THE ENGINEER.

4. CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND MATERIAL FROM THE TRAVELED PORTION OF THE ROADWAY. ALSO, EQUIPMENT AND MATERIALS SHOULD NOT BE STORED IN SUCH A MANNER AS TO OBSTRUCT SIGHT DISTANCE AT ANY INTERSECTING ROAD.

5. FOR WORK ALONG MD 175, TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH MSHA STD. NOS. MD-104.04-01, MD-104.04-03 AND MD-104.04-05.

6. DURING ALL LANE CLOSURES ALONG OAKLAND MILLS ROAD AND OLD MONTGOMERY ROAD, TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH MSHA STD. NOS. MD 104.03-04, MD-104.03-06, MD 104.02-10, MD-104.03-12, AND MD 104.02-14.

7. PLACEMENT OF CRASH CUSHION (SAND FILLED BARRELS) MUST BE ADEQUATE FOR A 60 MPH DESIGN SPEED ON MD 175 IN ACCORDANCE WITH MSHA STD. NO. MD 104.01-72.

8. PLACEMENT OF CRASH CUSHION (SAND FILLED BARRELS) MUST BE ADEQUATE FOR A 40 MPH DESIGN SPEED ON OLD MONTGOMERY ROAD/OAKLAND MILLS ROAD IN ACCORDANCE WITH MSHA STD. NO. MD 104.01-71.

9. PRIOR TO PLACING TEMPORARY CONCRETE BARRIER AND/OR CRASH CUSHION ON UNPAVED SURFACES, THE GROUND MUST BE CLEARED AND GRADED FLATTER THAN 10:1 FOR PROPER INSTALLATION.

10. REMOVE EXISTING RAISED PAVEMENT MARKER REFLECTIVE ELEMENTS IN CONFLICT WITH TEMPORARY PAVEMENT MARKINGS AND REINSTALL RAISED PAVEMENT MARKER REFLECTIVE ELEMENT UPON FINAL PAVEMENT MARKING APPLICATION IN ACCORDANCE WITH THE MDMUTCD.

11. TEMPORARY CONCRETE TRAFFIC BARRIER SHALL BE INSTALLED IN ACCORDANCE WITH MSHA STD. NO. MD 104.01-23.

12. TEMPORARY TRAFFIC CONTROL DEVICE LOCATIONS SHALL BE APPROVED BY HOWARD COUNTY TRAFFIC DIVISION PRIOR TO INSTALLATION. CONTACT TRAFFIC AT (410)313-2430.

MAINTENANCE OF TRAFFIC ACTIVITIES

STAGE 1

1. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES AS SHOWN ON THE MAINTENANCE OF TRAFFIC AND DETOUR PLANS.
2. REMOVE/COVER THE EXISTING PAVEMENT MARKINGS AND INSTALL TEMPORARY PAVEMENT MARKINGS ON MD 175 AS SHOWN ON THE PLANS.
3. INSTALL TEMPORARY CONCRETE TRAFFIC BARRIERS, TRAFFIC CONTROL DRUMS AND CRASH CUSHIONS AS SHOWN ON THE PLANS.
4. RESURFACING OF MD 175 WILL REQUIRE LEFT AND RIGHT LANE CLOSURES AS NOTED.

STAGE 2A

1. REMOVE THE TRAFFIC CONTROL DEVICES UTILIZED IN STAGE 1.
2. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES AS SHOWN ON THE MAINTENANCE OF TRAFFIC AND DETOUR PLANS.
3. REMOVE THE EXISTING PAVEMENT MARKINGS AND INSTALL TEMPORARY PAVEMENT MARKINGS ON OAKLAND MILLS ROAD AND OLD MONTGOMERY ROAD AS SHOWN ON THE PLANS.
4. INSTALL TEMPORARY CONCRETE TRAFFIC BARRIERS, TRAFFIC CONTROL DRUMS AND CRASH CUSHION AS SHOWN ON THE PLANS.

STAGE 2B

1. REMOVE THE TRAFFIC CONTROL DEVICES UTILIZED IN STAGE 2A.
2. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES AS SHOWN ON THE PLANS.

CONSTRUCTION ACTIVITIES

STAGE 1

1. RECONSTRUCT THE EXISTING SHOULDER AND FULL DEPTH PAVEMENT ALONG MD 175 EASTBOUND AS SHOWN ON THE PLANS.
2. CONSTRUCT RAMPS C AND D, NEW ALIGNMENT OF OAKLAND MILLS ROAD INCLUDING DRIVEWAYS FOR BLANDAIR PARK ACCESS AS SHOWN ON THE PLANS.
3. RESURFACE EXISTING MD 175 EASTBOUND AS SHOWN ON THE PLANS.
4. INSTALL TRAFFIC BARRIER W BEAM AS SHOWN ON THE PLANS.
5. INSTALL PERMANENT SIGNING, MARKINGS, LIGHTING AND LANDSCAPING.

STAGE 2A

1. CONTINUE TO CONSTRUCT NEW ALIGNMENT OF OAKLAND MILLS ROAD AND CONSTRUCT ROUNDABOUT AT OAKLAND MILLS ROAD/OLD MONTGOMERY ROAD INTERSECTION AS SHOWN ON THE PLANS.

STAGE 2B

1. CONTINUE CONSTRUCTION OF ROUNDABOUT AT OAKLAND MILLS ROAD AND OLD MONTGOMERY ROAD.
2. RESURFACE EXISTING OAKLAND MILLS ROAD AND OLD MONTGOMERY ROAD AS SHOWN ON THE PLANS.
3. INSTALL PERMANENT SIGNING, MARKINGS, LIGHTING AND LANDSCAPING.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/14/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

WR&A

STATE OF MARYLAND — WALTER P. WILLIAMS — NO. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES: WRA					
DRN: WRA					
CHK: JMM					
DATE: 7/11/2014	BY	NO.	REVISION	DATE	

MAINTENANCE OF TRAFFIC GENERAL NOTES

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

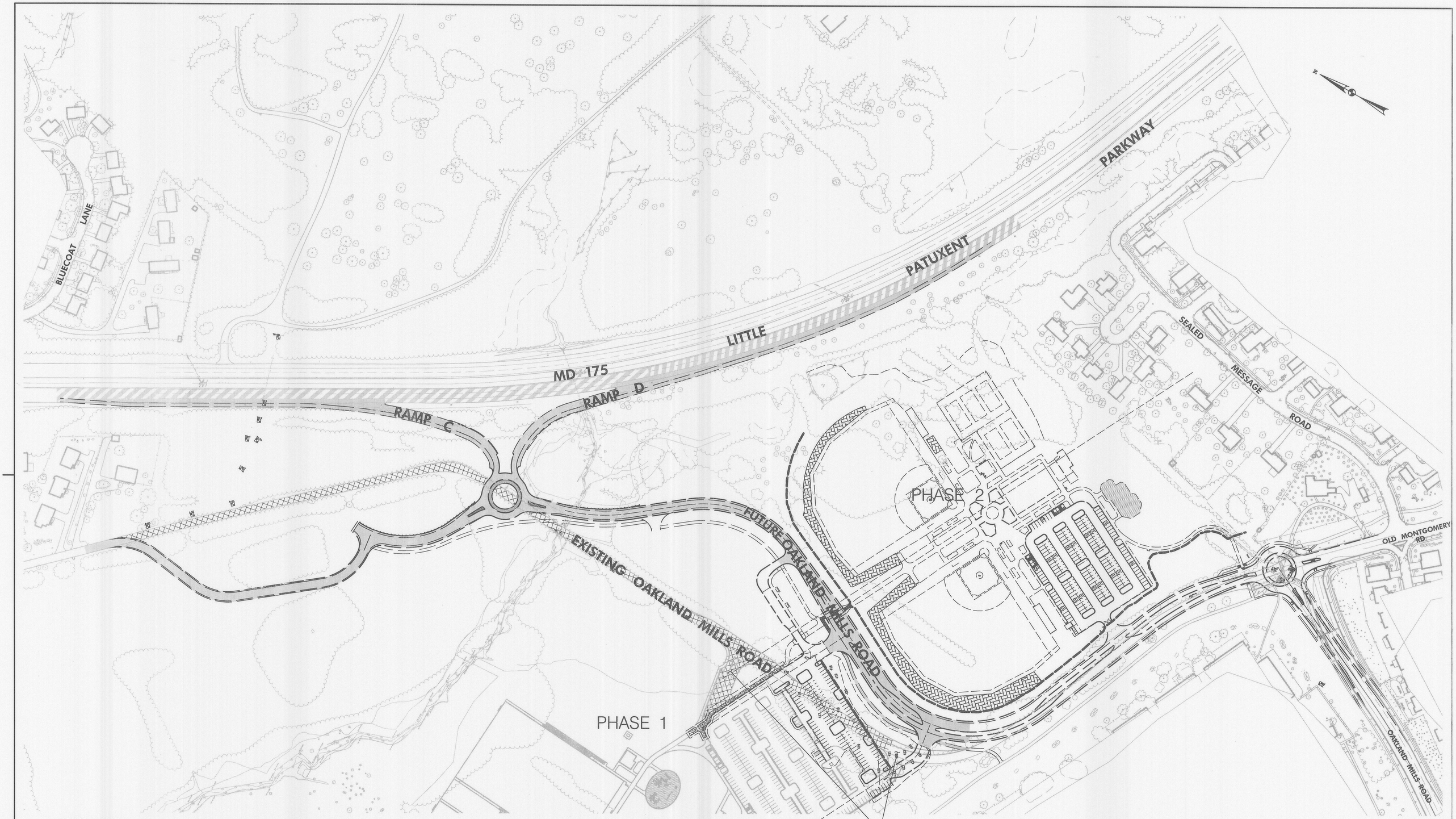
BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J-4237

DWG. MT- 01
SCALE NONE
SHEET 75 OF 138

N:\42038-00J\CADD\pMT-N001_BPJ.dgn
July 07, 2014

SHA SHEET 37 OF 76



GENERAL NOTE:

SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.

EXISTING OAKLAND MILLS RD OPEN TO TRAFFIC UP TO PHASE 1 NORTH PARKING LOT ENTRANCE. OAKLAND MILLS CLOSED FROM NORTH OF NORTH ENTRANCE TO TIE-IN AT EAST OF SOHAP LANE.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.16.14
CHIEF, BUREAU OF ENGINEERING — DATE 7/16/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/16/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MOORE — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES:	CYH
DRN:	CYH
CHK:	AUO
DATE:	7/11/2014

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC - KEY SHEET STAGE 1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. MT-02

SCALE 1" = 120'

SHEET 76 OF 138

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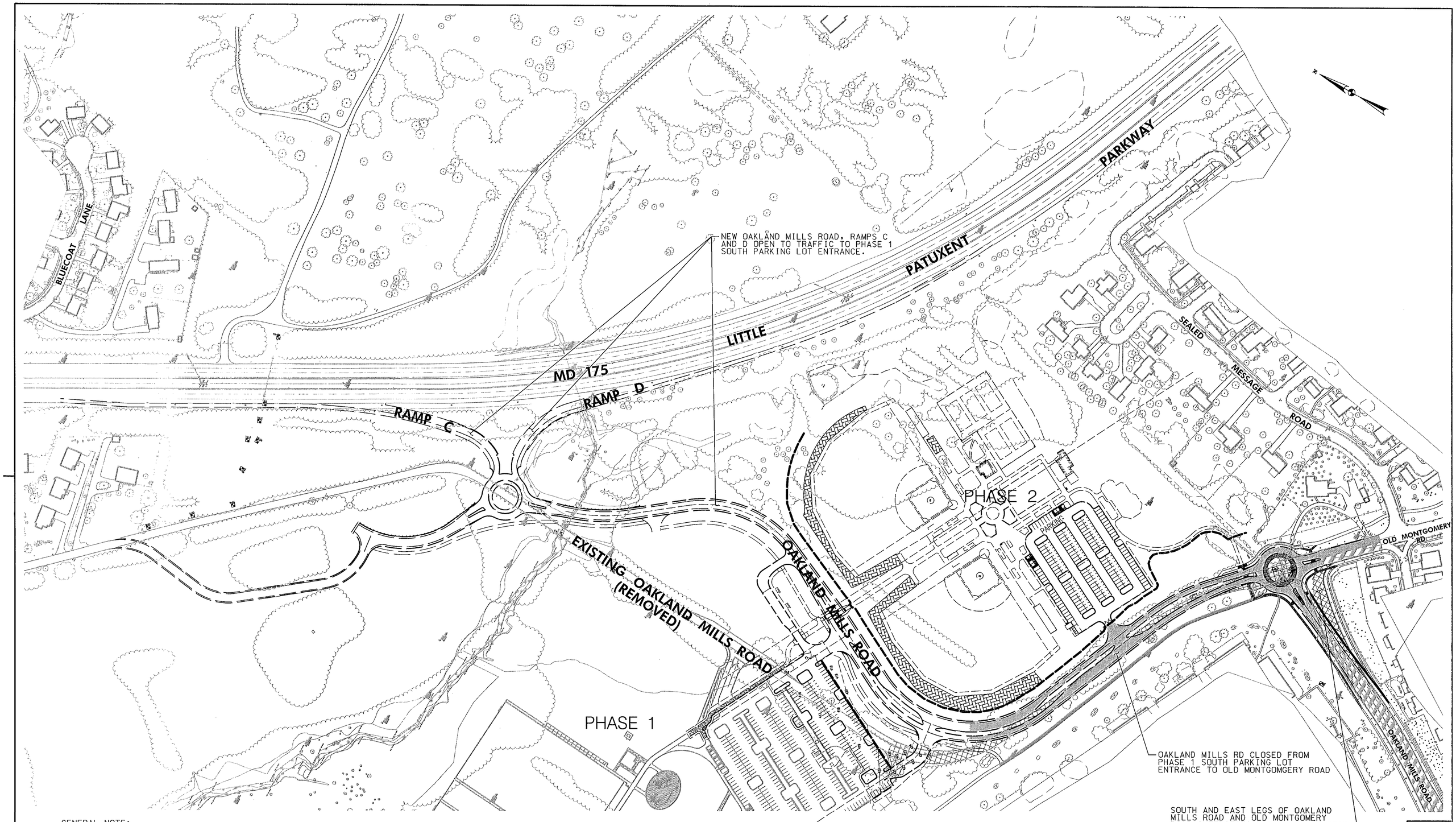
July 07, 2014

SHA SHEET 38 OF 76



GENERAL NOTE:

SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DWG. MT-03

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS	7/15/14 DATE	CHIEF, BUREAU OF ENGINEERING	7/11/14 DATE
CHIEF, BUREAU OF HIGHWAYS	7.11.14 DATE	CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION	7/11/14 DATE

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

WR&A

STATE OF MARYLAND — WALTER P. MOORE — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES: CYH
DRN: CYH
CHK: AUO
DATE: 7/11/2014

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC – KEY SHEET STAGES 2A/2B

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3/7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J -- SOUTH

CAPITAL PROJECT # J-4237

SCALE 1" = 120'

SHEET 77 OF 138

N:\42038-00J\CADD\pMT-N003_bpj.dgn
July 07, 2014

SHA SHEET 39 OF 76

GENERAL NOTES:

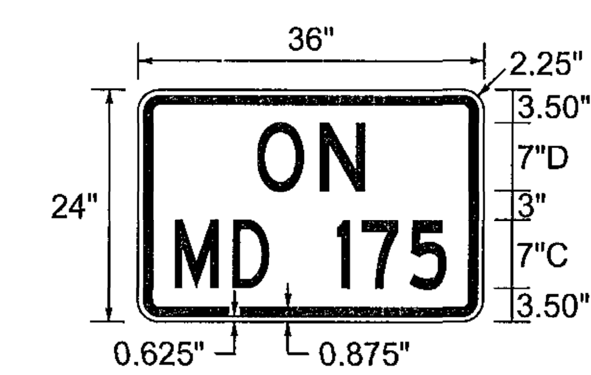
1. ANY EXISTING PAVEMENT MARKINGS IN CONFLICT WITH TEMPORARY MARKINGS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.
2. ANY EXISTING PAVEMENT MARKINGS MEETING MINIMUM TEMPORARY LANE WIDTHS REQUIREMENTS MAY REMAIN AND TEMPORARY PAVEMENT MARKINGS OMITTED AS DIRECTED BY THE ENGINEER.

MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

SIGN DETAIL

(36"x24")
BLACK ON FLUORESCENT ORANGE



"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/1/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/1/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.1.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/1/14

PREPARED BY:
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

DES: WRA
DRN: WRA
CHK: JMM
DATE: 7/1/2014

MAINTENANCE OF TRAFFIC - STAGE 1

TAX MAP 36 BLOCK NO. 5

BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

DWG. MT-1.01
SCALE 1" = 50'
SHEET 78 OF 138

SHA SHEET 40 OF 76

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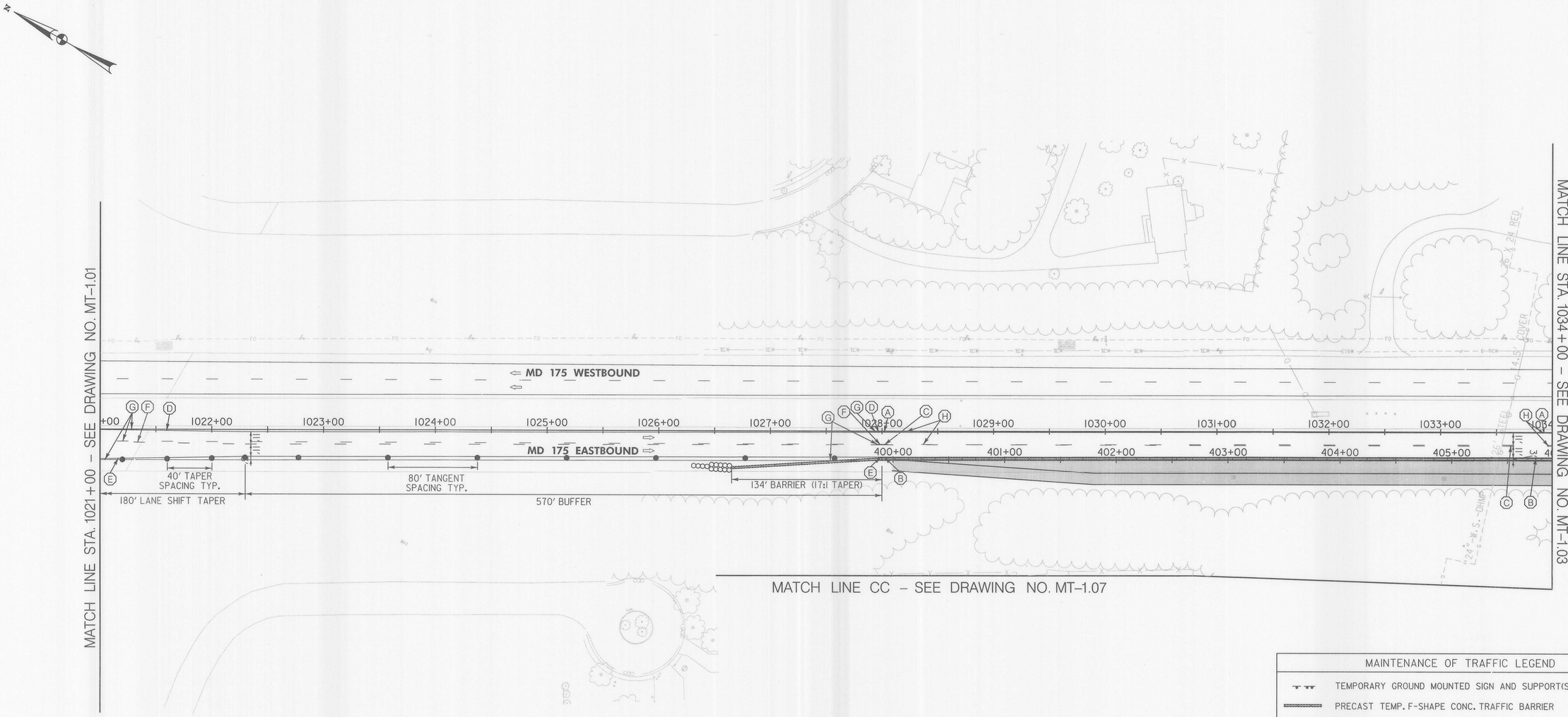
July 07, 2014



MAINTENANCE OF TRAFFIC LEGEND

	TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
	PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
	PROPOSED CONSTRUCTION THIS PHASE
	CRASH CUSHION SAND FILLED PLASTIC BARRIER
	TYPE III BARRICADE
	PLASTIC DRUM
	TRAFFIC FLOW ARROW
(A)	5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
(B)	5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
(C)	5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
(D)	5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
(E)	5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
(F)	5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
(G)	8 INCH BLACK OUT TAPE LINES
(H)	REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

GENERAL NOTES:

1. ANY EXISTING PAVEMENT MARKINGS IN CONFLICT WITH TEMPORARY MARKINGS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.
2. ANY EXISTING PAVEMENT MARKINGS MEETING MINIMUM TEMPORARY LANE WIDTHS REQUIREMENTS MAY REMAIN AND TEMPORARY PAVEMENT MARKINGS OMITTED AS DIRECTED BY THE ENGINEER.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR, OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/4/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MOORE — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES:	WRA
DRN:	WRA
CHK:	JMM
DATE:	7/11/2014

MAINTENANCE OF TRAFFIC – STAGE 1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

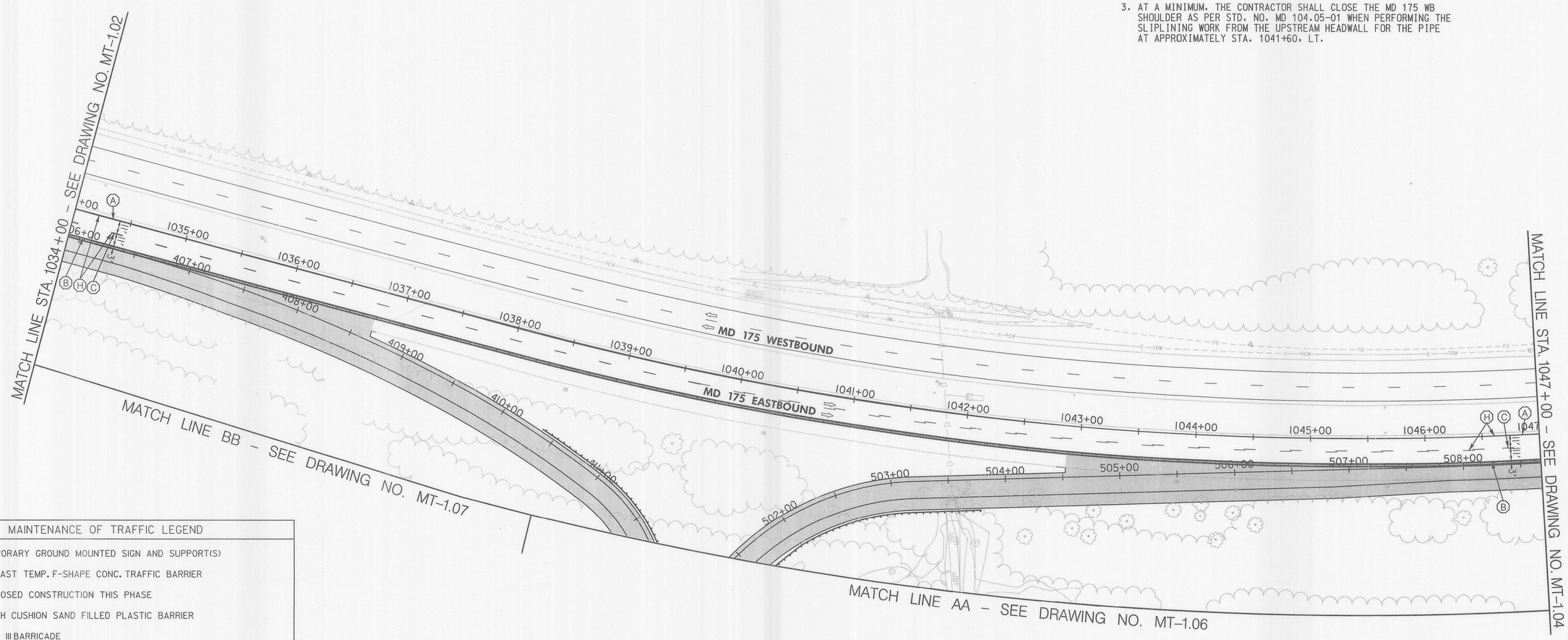
BLANDAIR REGIONAL PARK
PHASE J – SOUTH
CAPITAL PROJECT # J–4237

DWG. MT–1.02
SCALE 1" = 50'
SHEET 79 OF 138

N:\42038-00J\CADD\pMT-1002_BPJ.dgn
July 07, 2014

GENERAL NOTES:

1. ANY EXISTING PAVEMENT MARKINGS IN CONFLICT WITH TEMPORARY MARKINGS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.
2. ANY EXISTING PAVEMENT MARKINGS MEETING MINIMUM TEMPORARY LANE WIDTHS REQUIREMENTS MAY REMAIN AND TEMPORARY PAVEMENT MARKINGS OMITTED AS DIRECTED BY THE ENGINEER.
3. AT A MINIMUM. THE CONTRACTOR SHALL CLOSE THE MD 175 WB SHOULDER AS PER STD. NO. MD 104.05-01 WHEN PERFORMING THE SLIPLINING WORK FROM THE UPSTREAM HEADWALL FOR THE PIPE AT APPROXIMATELY STA. 1041+60, LT.



MAINTENANCE OF TRAFFIC LEGEND

	TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
	PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
	PROPOSED CONSTRUCTION THIS PHASE
	CRASH CUSHION SAND FILLED PLASTIC BARRIER
	TYPE III BARRICADE
	PLASTIC DRUM
	TRAFFIC FLOW ARROW
(A)	5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
(B)	5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
(C)	5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
(D)	5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
(E)	5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
(F)	5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
(G)	8 INCH BLACK OUT TAPE LINES
(H)	REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR, DEPARTMENT OF PUBLIC WORKS — DATE 7/13/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER R. HARRIS — NO. 19165 — PROFESSIONAL ENGINEER

DES:	WRA
DRN:	WRA
CHK:	JMM
DATE:	7/11/2014

MAINTENANCE OF TRAFFIC – STAGE 1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J – SOUTH

CAPITAL PROJECT # J-4237

DWG. MT-1.03
SCALE 1" = 50'
SHEET 80 OF 138

N:\42038-00J\CADD\pMT-1003_BPJ.dgn
July 07, 2014

GENERAL NOTES:

1. ANY EXISTING PAVEMENT MARKINGS IN CONFLICT WITH TEMPORARY MARKINGS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.
2. ANY EXISTING PAVEMENT MARKINGS MEETING MINIMUM TEMPORARY LANE WIDTHS REQUIREMENTS MAY REMAIN AND TEMPORARY PAVEMENT MARKINGS OMITTED AS DIRECTED BY THE ENGINEER.

MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES:	WRA
DRN:	WRA
CHK:	JMM
DATE:	7/11/2014

MAINTENANCE OF TRAFFIC - STAGE 1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

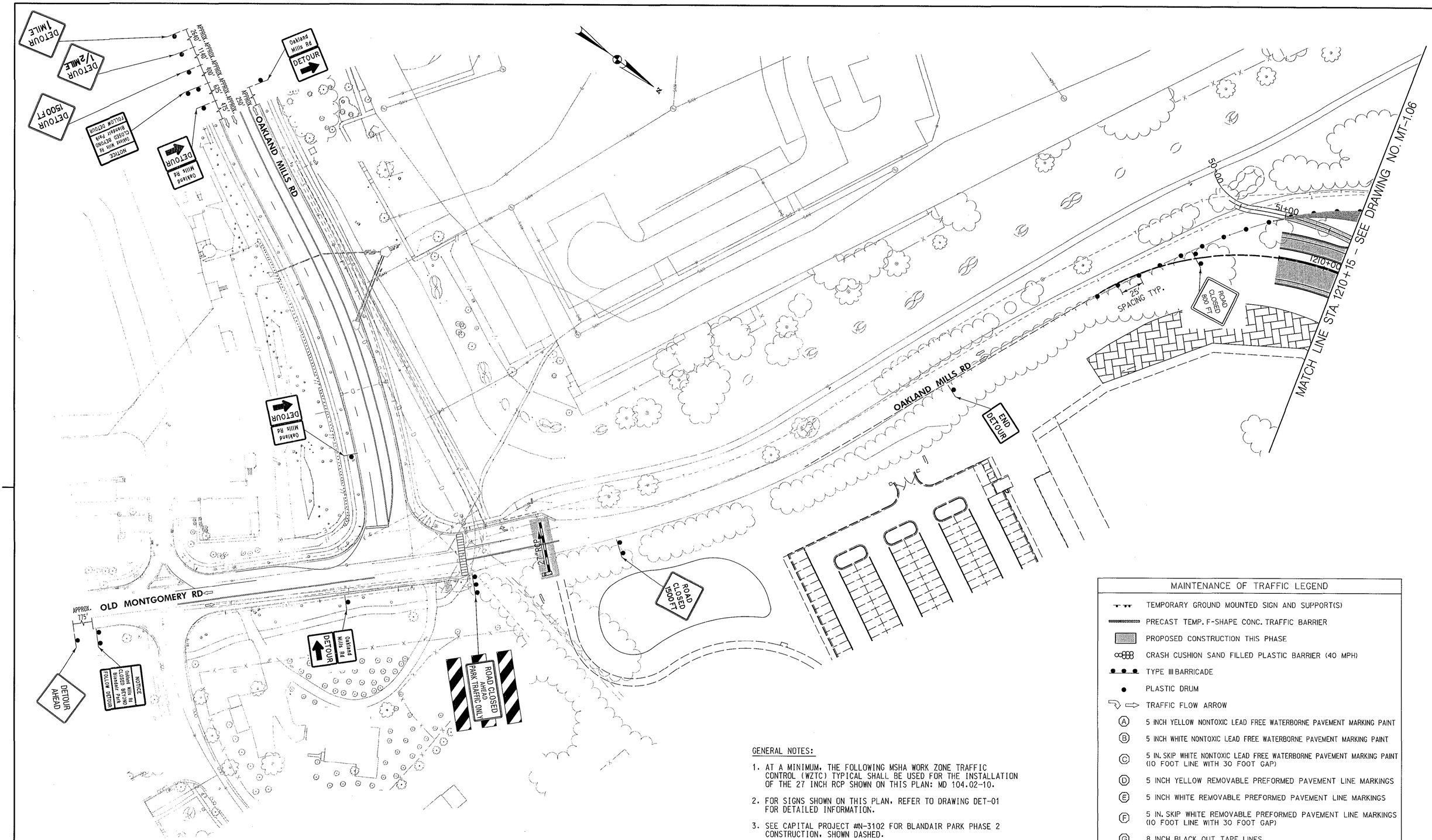
BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. MT-1.04
SCALE 1" = 50'
SHEET 81 OF 138

N:\42038-00J\CADD\pMT-1004_BPJ.dgn
July 07, 2014

SHA SHEET 43 OF 76



MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

GENERAL NOTES:

1. AT A MINIMUM, THE FOLLOWING MSHA WORK ZONE TRAFFIC CONTROL (WZTC) TYPICAL SHALL BE USED FOR THE INSTALLATION OF THE 27 INCH RCP SHOWN ON THIS PLAN: MD 104.02-10.
2. FOR SIGNS SHOWN ON THIS PLAN, REFER TO DRAWING DET-01 FOR DETAILED INFORMATION.
3. SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 2/5/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/15/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — NO. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES:	WRA
DRN:	WRA
CHK:	JMM
DATE:	7/11/2014

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC – STAGE 1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J-4237

DWG. MT-1.05
SCALE 1" = 50'
SHEET 82 OF 138

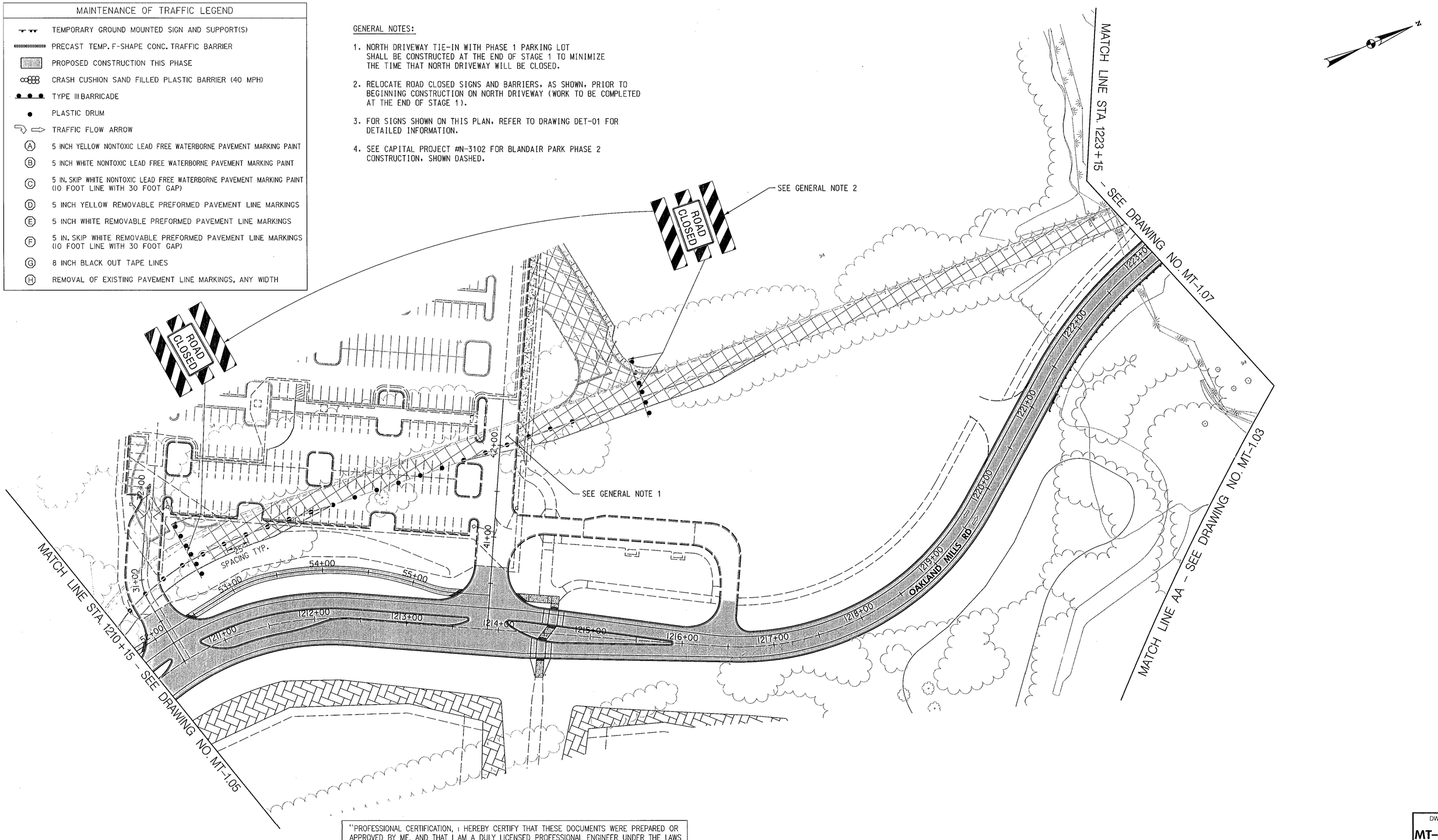
N:\42038-00J\CADD\pMT-1005_BPJ.dgn
July 07, 2014

MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

GENERAL NOTES:

1. NORTH DRIVEWAY TIE-IN WITH PHASE 1 PARKING LOT SHALL BE CONSTRUCTED AT THE END OF STAGE 1 TO MINIMIZE THE TIME THAT NORTH DRIVEWAY WILL BE CLOSED.
2. RELOCATE ROAD CLOSED SIGNS AND BARRIERS, AS SHOWN, PRIOR TO BEGINNING CONSTRUCTION ON NORTH DRIVEWAY (WORK TO BE COMPLETED AT THE END OF STAGE 1).
3. FOR SIGNS SHOWN ON THIS PLAN, REFER TO DRAWING DET-01 FOR DETAILED INFORMATION.
4. SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.



"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS	7/15/14 DATE	CHIEF, BUREAU OF ENGINEERING	7/15/14 DATE
CHIEF, BUREAU OF HIGHWAYS	7.11.14 DATE	CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION	7/10/14 DATE

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MOORE — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES:	WRA
DRN:	WRA
CHK:	JMM
DATE:	7/11/2014

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC – STAGE 1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

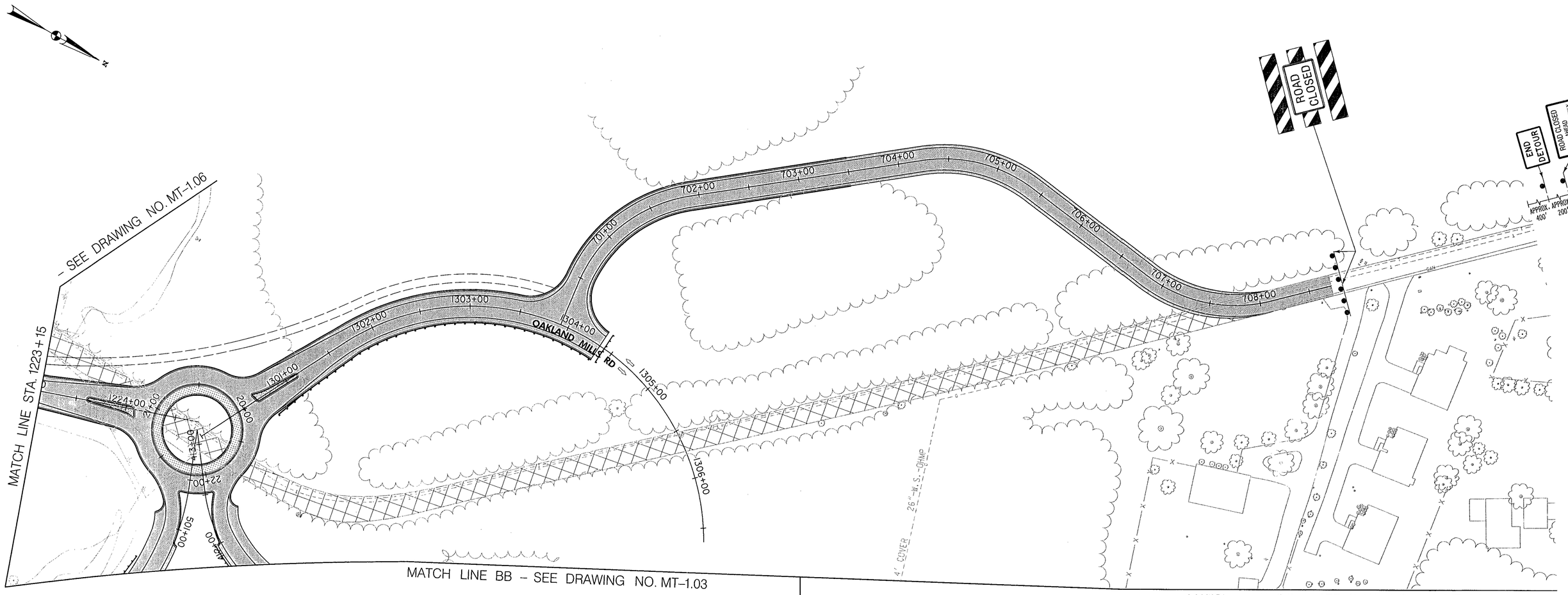
BLANDAIR REGIONAL PARK
PHASE J – SOUTH

CAPITAL PROJECT # J-4237

DWG. MT-1.06
SCALE 1" = 50'
SHEET 83 OF 138

N:\42038-00J\CADD\pMT-1006_BPJ.dgn
July 07, 2014

SHA SHEET 45 OF 76



GENERAL NOTE:

FOR SIGNS SHOWN ON THIS PLAN, REFER TO DRAWING DET-01 FOR DETAILED INFORMATION.

MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF BUREAU OF HIGHWAYS — DATE 7.16.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER R. MILLER — NO. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES:	WRA
DRN:	WRA
CHK:	JMM
DATE:	7/11/2014

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC – STAGE 1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J – SOUTH

CAPITAL PROJECT # J-4237

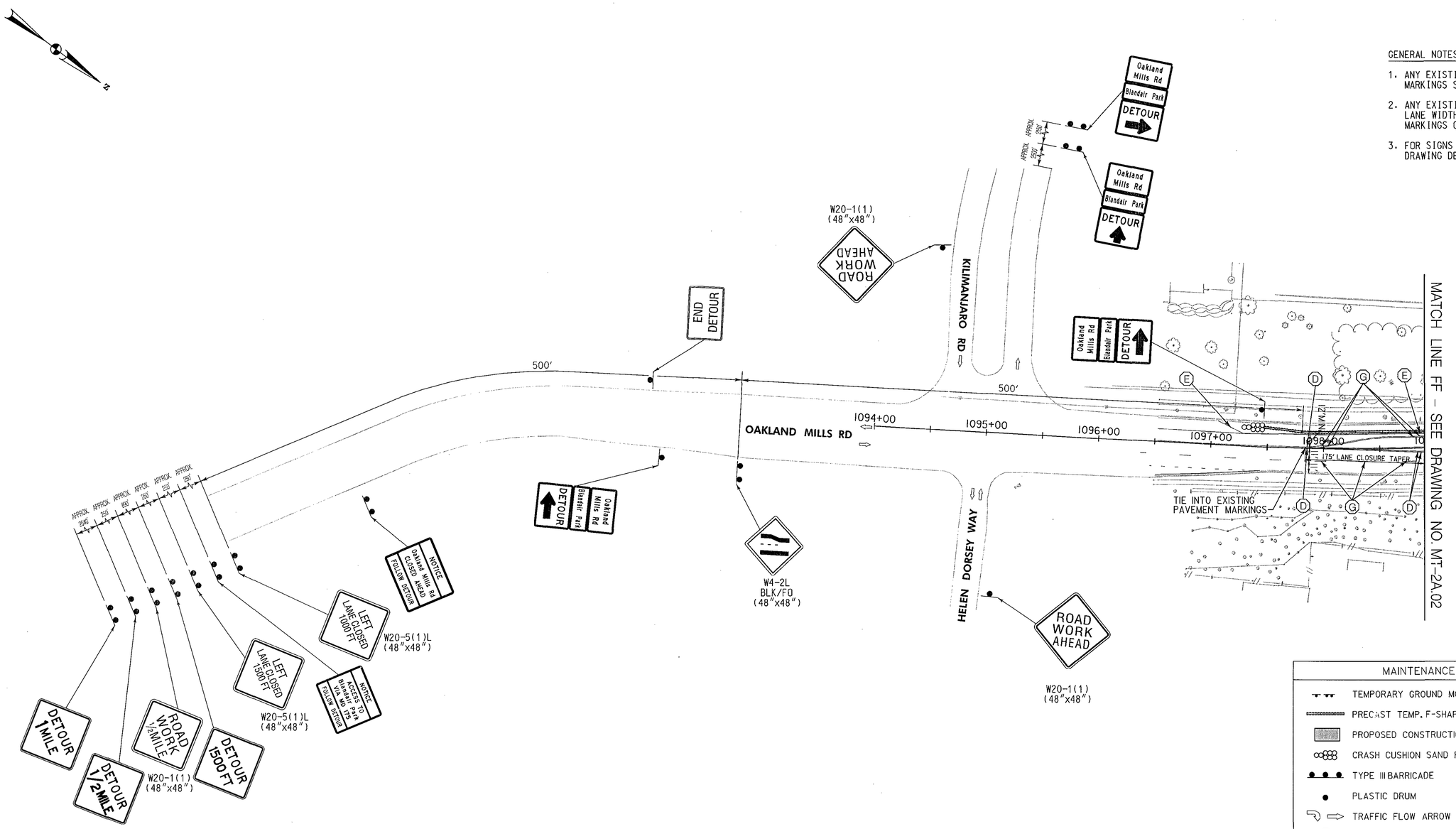
DWG. MT-1.07
SCALE 1" = 50'
SHEET 84 OF 138

N:\42038-00J\CADD\pMT-1007_BPJ.dgn
July 07, 2014

SHA SHEET 46 OF 76

GENERAL NOTES:

1. ANY EXISTING PAVEMENT MARKINGS IN CONFLICT WITH TEMPORARY MARKINGS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.
2. ANY EXISTING PAVEMENT MARKINGS MEETING MINIMUM TEMPORARY LANE WIDTHS REQUIREMENTS MAY REMAIN AND TEMPORARY PAVEMENT MARKINGS OMITTED AS DIRECTED BY THE ENGINEER.
3. FOR SIGNS SHOWN ON THIS PLAN WITHOUT SIGN DESIGNATIONS, REFER TO DRAWING DET-02 FOR DETAILED INFORMATION.



MAINTENANCE OF TRAFFIC LEGEND

	TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
	PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
	PROPOSED CONSTRUCTION THIS PHASE
	CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
	TYPE III BARRICADE
	PLASTIC DRUM
	TRAFFIC FLOW ARROW
(A)	5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
(B)	5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
(C)	5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
(D)	5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
(E)	5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
(F)	5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
(G)	8 INCH BLACK OUT TAPE LINES
(H)	REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/15/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MAY — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES:	WRA
DRN:	WRA
CHK:	JMM
DATE:	7/11/2014

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC - STAGE 2A

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

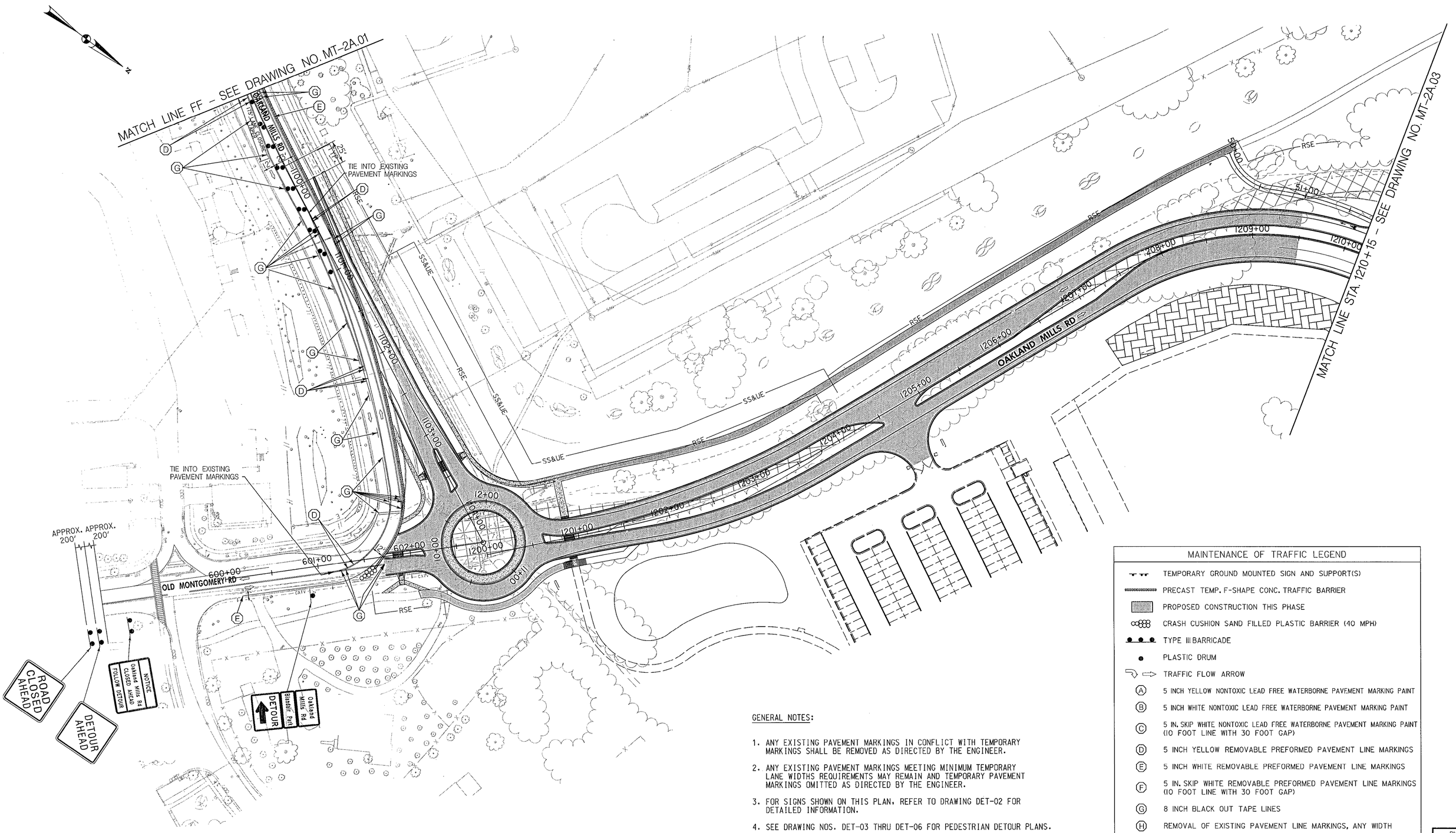
BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. MT- 2A.01
SCALE 1" = 50'
SHEET 85 OF 138

N:\42038-00J\CADD\pMT-2A01_BPJ.dgn
July 07, 2014

SHA SHEET 47 OF 76



MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

GENERAL NOTES:

1. ANY EXISTING PAVEMENT MARKINGS IN CONFLICT WITH TEMPORARY MARKINGS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.
2. ANY EXISTING PAVEMENT MARKINGS MEETING MINIMUM TEMPORARY LANE WIDTHS REQUIREMENTS MAY REMAIN AND TEMPORARY PAVEMENT MARKINGS OMITTED AS DIRECTED BY THE ENGINEER.
3. FOR SIGNS SHOWN ON THIS PLAN, REFER TO DRAWING DET-02 FOR DETAILED INFORMATION.
4. SEE DRAWING NOS. DET-03 THRU DET-06 FOR PEDESTRIAN DETOUR PLANS.
5. SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MOORE — No. 19165 — PROFESSIONAL ENGINEER

DES: WRA
DRN: WRA
CHK: JMM
DATE: 7/11/2014

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC - STAGE 2A

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. MT-2A.02
SCALE 1" = 50'
SHEET 86 OF 138

N:\42038-00J\CADD\pMT-2A02_BPJ.dgn
July 07, 2014

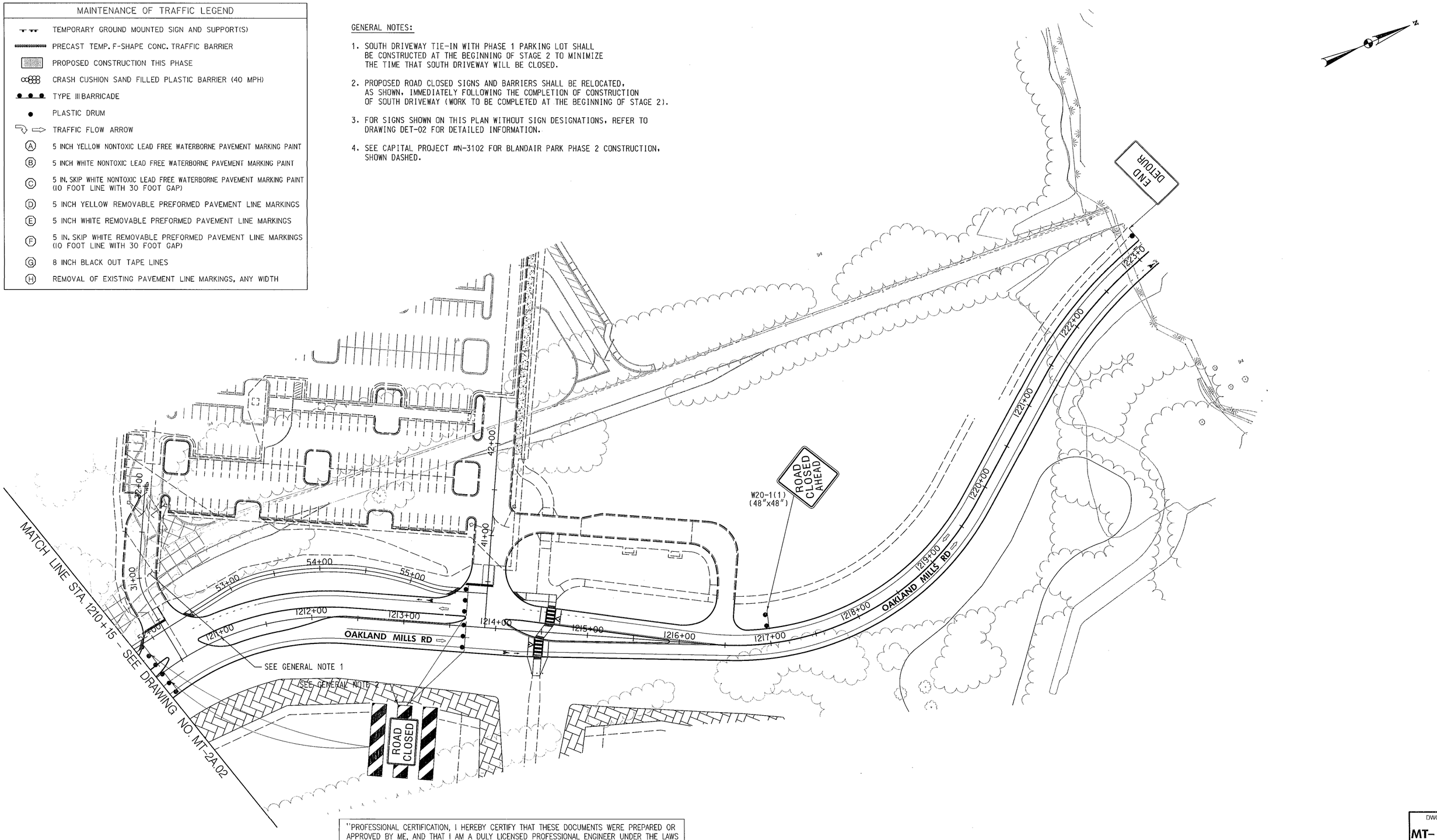
SHA SHEET 48 OF 76

MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

GENERAL NOTES:

1. SOUTH DRIVEWAY TIE-IN WITH PHASE 1 PARKING LOT SHALL BE CONSTRUCTED AT THE BEGINNING OF STAGE 2 TO MINIMIZE THE TIME THAT SOUTH DRIVEWAY WILL BE CLOSED.
2. PROPOSED ROAD CLOSED SIGNS AND BARRIERS SHALL BE RELOCATED, AS SHOWN, IMMEDIATELY FOLLOWING THE COMPLETION OF CONSTRUCTION OF SOUTH DRIVEWAY (WORK TO BE COMPLETED AT THE BEGINNING OF STAGE 2).
3. FOR SIGNS SHOWN ON THIS PLAN WITHOUT SIGN DESIGNATIONS, REFER TO DRAWING DET-02 FOR DETAILED INFORMATION.
4. SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.



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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

STATE OF MARYLAND — WALTER P. MOORE — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES:	WRA
DRN:	WRA
CHK:	JMM
DATE:	7/1/2014

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC – STAGE 2A

TAX MAP 36 BLOCK NO 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J – SOUTH

CAPITAL PROJECT # J-4237

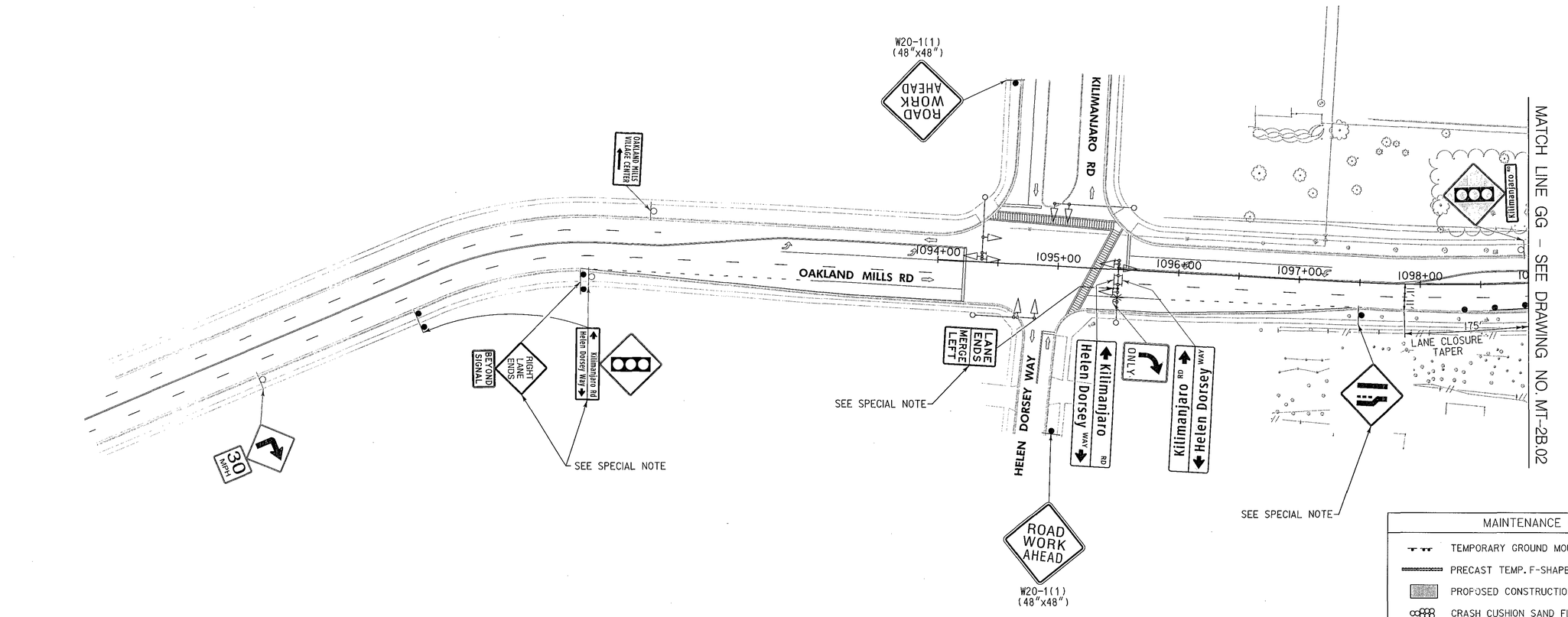
DWG. MT- 2A.03
SCALE 1" = 50'
SHEET 87 OF 138

N:\42038-00J\CADD\pMT-2A03_BPJ.dgn
July 07, 2014

SHA SHEET 49 OF 76

GENERAL NOTES:

1. ANY EXISTING PAVEMENT MARKINGS IN CONFLICT WITH TEMPORARY MARKINGS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.
2. ANY EXISTING PAVEMENT MARKINGS MEETING MINIMUM TEMPORARY LANE WIDTHS REQUIREMENTS MAY REMAIN AND TEMPORARY PAVEMENT MARKINGS OMITTED AS DIRECTED BY THE ENGINEER.
3. FOR SIGNS SHOWN ON THIS PLAN WITHOUT SIGN DESIGNATIONS, REFER TO DRAWING DET-02 FOR DETAILED INFORMATION.



SPECIAL NOTE:

PROPOSED SIGNS TO BE INSTALLED PRIOR TO BEGINNING STAGE 2B CONSTRUCTION. SEE DWG. NO. SN-2.11 FOR SIGN INSTALLATION DETAILS.

MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/16/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES:	WRA
DRN:	WRA
CHK:	JMM
DATE:	7/11/2014

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC – STAGE 2B

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

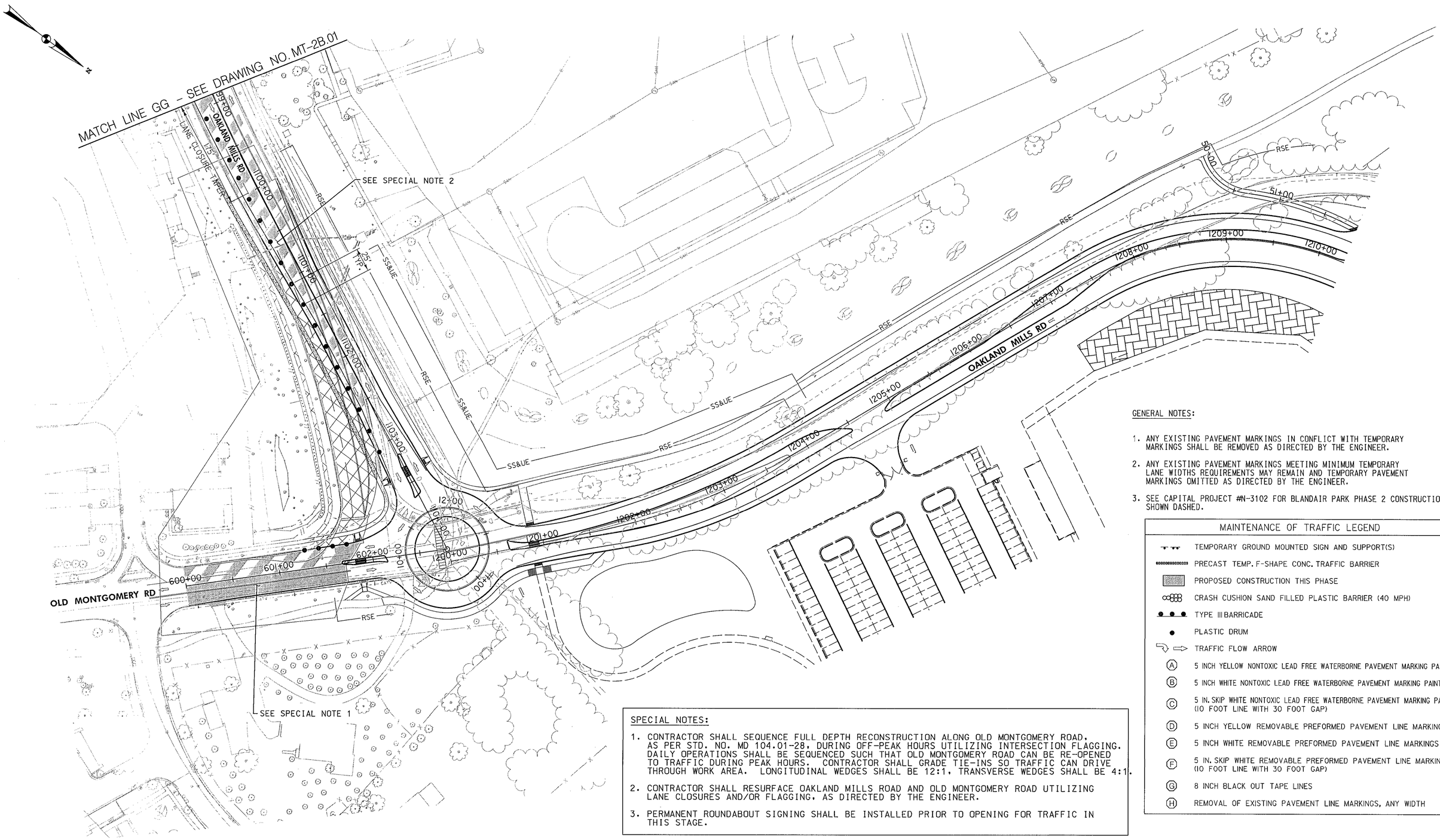
BLANDAIR REGIONAL PARK
PHASE J – SOUTH

CAPITAL PROJECT # J-4237

DWG. MT- 2B.01
SCALE 1" = 50'
SHEET 88 OF 138

N:\42038-00J\CADD\pMT-2B01_BPJ.dgn
July 07, 2014

SHA SHEET 50 OF 76



GENERAL NOTES:

1. ANY EXISTING PAVEMENT MARKINGS IN CONFLICT WITH TEMPORARY MARKINGS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.
2. ANY EXISTING PAVEMENT MARKINGS MEETING MINIMUM TEMPORARY LANE WIDTHS REQUIREMENTS MAY REMAIN AND TEMPORARY PAVEMENT MARKINGS OMITTED AS DIRECTED BY THE ENGINEER.
3. SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.

MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

SPECIAL NOTES:

1. CONTRACTOR SHALL SEQUENCE FULL DEPTH RECONSTRUCTION ALONG OLD MONTGOMERY ROAD, AS PER STD. NO. MD 104.01-28, DURING OFF-PEAK HOURS UTILIZING INTERSECTION FLAGGING. DAILY OPERATIONS SHALL BE SEQUENCED SUCH THAT OLD MONTGOMERY ROAD CAN BE RE-OPENED TO TRAFFIC DURING PEAK HOURS. CONTRACTOR SHALL GRADE TIE-INS SO TRAFFIC CAN DRIVE THROUGH WORK AREA. LONGITUDINAL WEDGES SHALL BE 12:1, TRANSVERSE WEDGES SHALL BE 4:1.
2. CONTRACTOR SHALL RESURFACE OAKLAND MILLS ROAD AND OLD MONTGOMERY ROAD UTILIZING LANE CLOSURES AND/OR FLAGGING, AS DIRECTED BY THE ENGINEER.
3. PERMANENT ROUNDABOUT SIGNING SHALL BE INSTALLED PRIOR TO OPENING FOR TRAFFIC IN THIS STAGE.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — NO. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES: WRA
DRN: WRA
CHK: JMM
DATE: 7/11/2014

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC - STAGE 2B

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

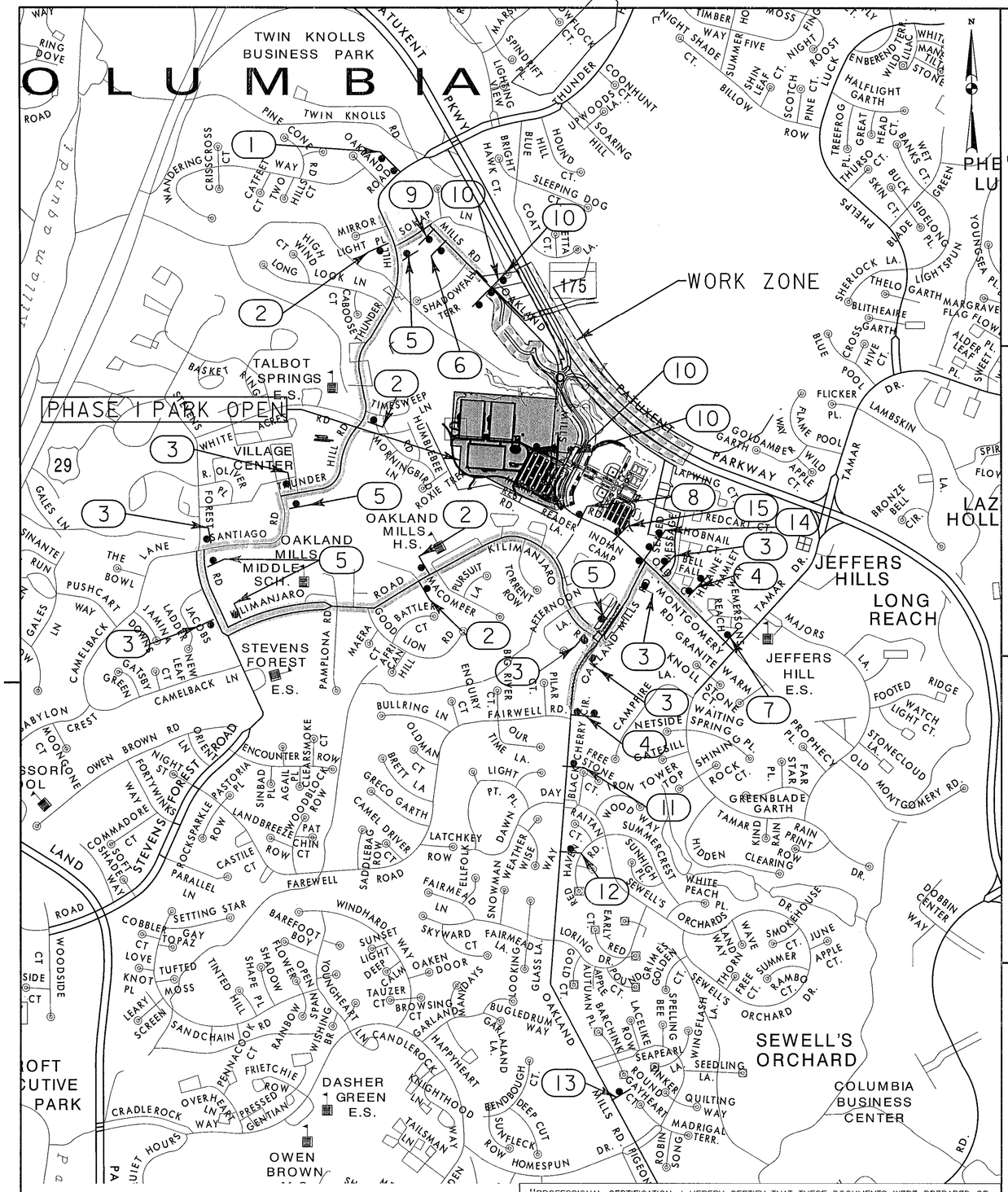
BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. MT- 2B.02
SCALE 1" = 50'
SHEET 89 OF 138

N:\42038-00J\CADD\pMT-2B02_BPJ.dgn
July 07, 2014

SHA SHEET 51 OF 76



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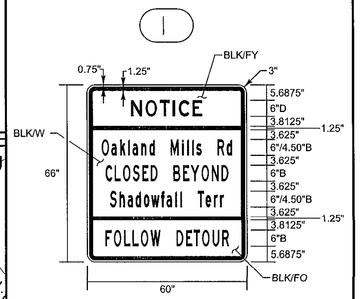


2

M4–9(1)MOD
(30" x 18")

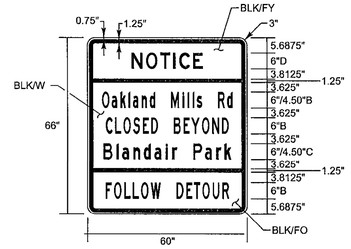
M4–9
(30" x 24")

3

M4–9(1)MOD
(30" x 18")

M4–9L
(30" x 24")

4

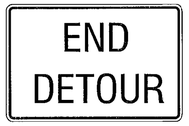


5

M4–9(1)MOD
(30" x 18")

M4–9R
(30" x 24")

6



M4–8a(1)
(36" x 24")

7

W20–2(1)
(48" x 48")

8

W20–3(1)MOD
(48" x 48")

9

R11–3aMOD
(60" x 30")

10

R11–2
(48"x30")
TYPE III BARRICADE

11

W20–2(1)
(48" x 48")

12

W20–2(1)
(48" x 48")

13

W20–2(1)
(48" x 48")

14

R11–3aMOD
(60"x30")
TYPE III BARRICADE

15

W20–3(1)
(48" x 48")

STAGE 1
BLANDAIR PARK DETOUR PLAN
SB THUNDER HILL ROAD,
WB OLD MONTGOMERY ROAD &
NB OAKLAND MILLS

SPECIAL NOTES:

1. REFER TO MAINTENANCE OF TRAFFIC STAGE 1 PLAN SHEETS FOR SIGNS THAT FALL WITHIN MAINTENANCE OF TRAFFIC PLAN SHEETS LIMITS FOR APPROXIMATE LOCATIONS. SIGNS NOT SHOWN ON MAINTENANCE OF TRAFFIC PLAN SHEETS ARE SHOWN WITH APPROXIMATE LOCATIONS ON THIS SHEET. ALL SIGNS SHALL BE MARKED IN THE FIELD BY THE ENGINEER PRIOR TO INSTALLATION.
2. SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.

DWG. DET– 01

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

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HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF HIGHWAYS — Holger Siecamus — DATE 7.11.14
CHIEF, BUREAU OF ENGINEERING — Thomas F. Butler — DATE 7/11/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — Steve Sharar — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

STATE OF MARYLAND — WALTER P. MOORE — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES: JHR
DRN: JHR
CHK: JMM
DATE: 7/11/2014

BY	NO.	REVISION	DATE

DETOUR PLAN – STAGE 1

TAX MAP 36 BLOCK NO 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J – SOUTH

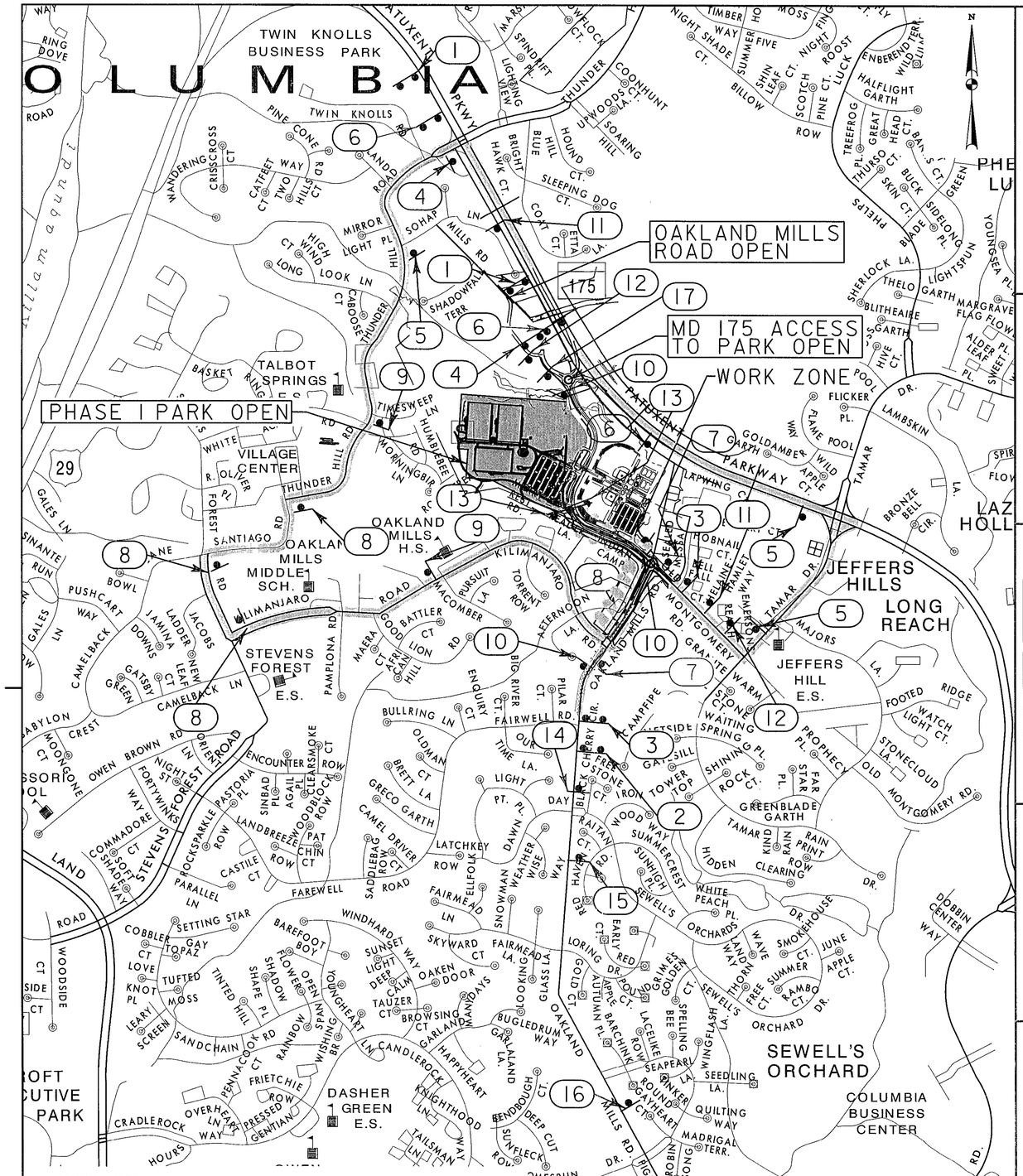
CAPITAL PROJECT # J–4237

SCALE NONE

SHEET 90 OF 138

SHA SHEET 52 OF 76

N:\42038-00J\CADD\pDET-P100_bpj.dgn
July 07, 2014

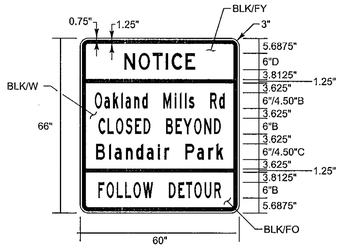


SPECIAL NOTE:

SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

1



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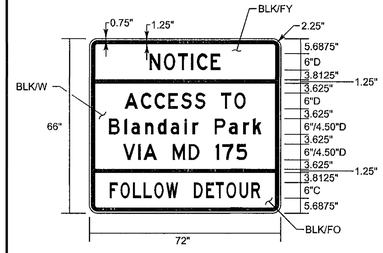

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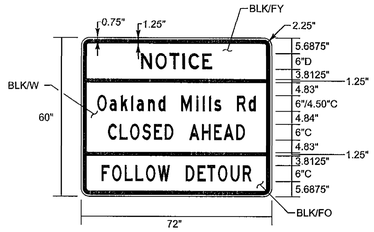


4

M4–9(1)MOD (30" x 12")
M4–9R (30" x 24")

5

M4–9(1)MOD (30" x 18")
M4–9R (30" x 24")

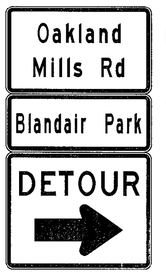
6

M4–9(1)MOD (30" x 18")
M4–9 (30" x 24")

7

M4–9(1)MOD (30" x 18")
M4–9(1)MOD (30" x 12")
M4–9L (30" x 24")

8

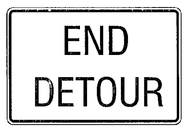


M4–9(1)MOD (30" x 18")
M4–9(1)MOD (30" x 12")
M4–9R (30" x 24")

9

M4–9(1)MOD (30" x 18")
M4–9(1)MOD (30" x 12")
M4–9 (30" x 24")

10



M4–8a(1) (36" x 24")

11

W20–2(1) MOD (48" x 48")

12

W20–3(1) (48" x 48")

13

TYPE III BARRICADE (SEE MOT PLANS FOR PLACEMENT)

14

W20–2(1) (48" x 48")

15

W20–2(1) (48" x 48")

16

W20–2(1) (48" x 48")

17

M4–9(1)MOD (30" x 18")
M4–9L (30" x 24")

STAGE 2A (NEW INTERCHANGE OPEN) OAKLAND MILLS ROAD INTO BLANDAIR PARK DETOUR PLAN

DWG. DET– 02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

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CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, BUREAU OF ENGINEERING — DATE 7/10/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY:
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLS — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES: JHR
DRN: JHR
CHK: JMM
DATE: 7/11/2014

DETOUR PLAN – STAGE 2A

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7

BLANDAIR REGIONAL PARK
PHASE J – SOUTH
CAPITAL PROJECT # J-4237
HOWARD COUNTY, MARYLAND

SCALE NONE

SHEET 91 OF 138

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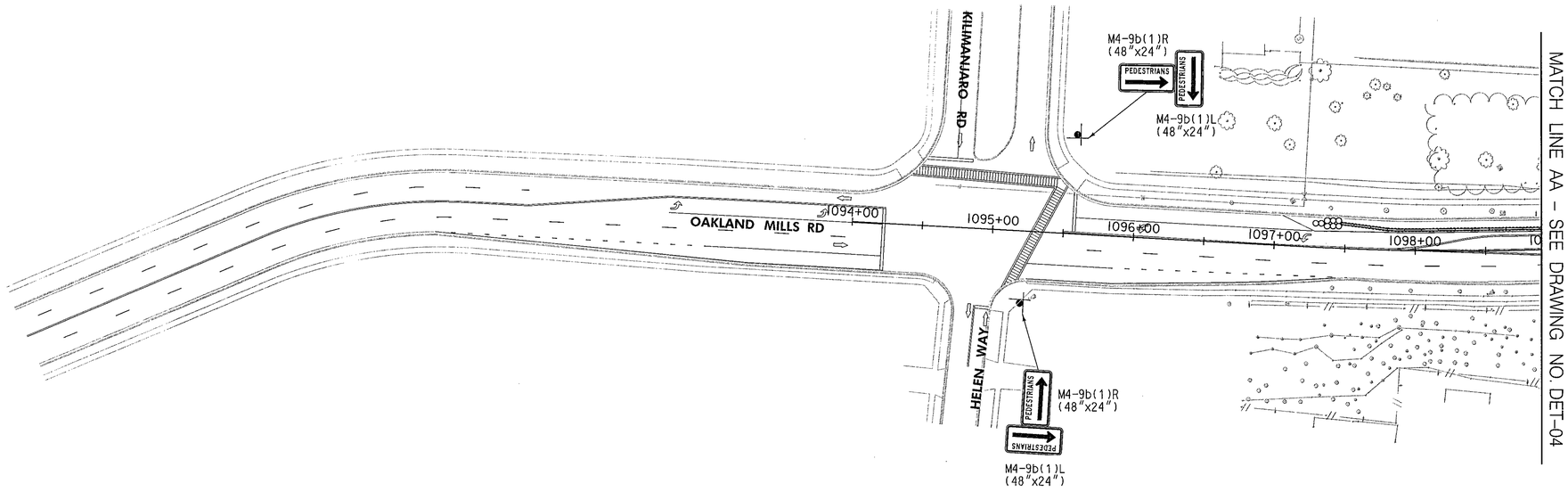
July 07, 2014

SHA SHEET 53 OF 76



MATCH LINE AA – SEE DRAWING NO. DET-04

MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

GENERAL NOTE:

FOR ROAD WORK STAGING AND DETOUR INFORMATION, REFER TO MAINTENANCE OF TRAFFIC AND DETOUR PLANS.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/8/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES: WRA
DRN: WRA
CHK: JMM
DATE: 7/11/2014

BY	NO.	REVISION	DATE

PEDESTRIAN DETOUR PLAN – STAGE 2A.1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J – SOUTH

CAPITAL PROJECT # J-4237

DWG. DET-03
SCALE 1" = 50'
SHEET 92 OF 138

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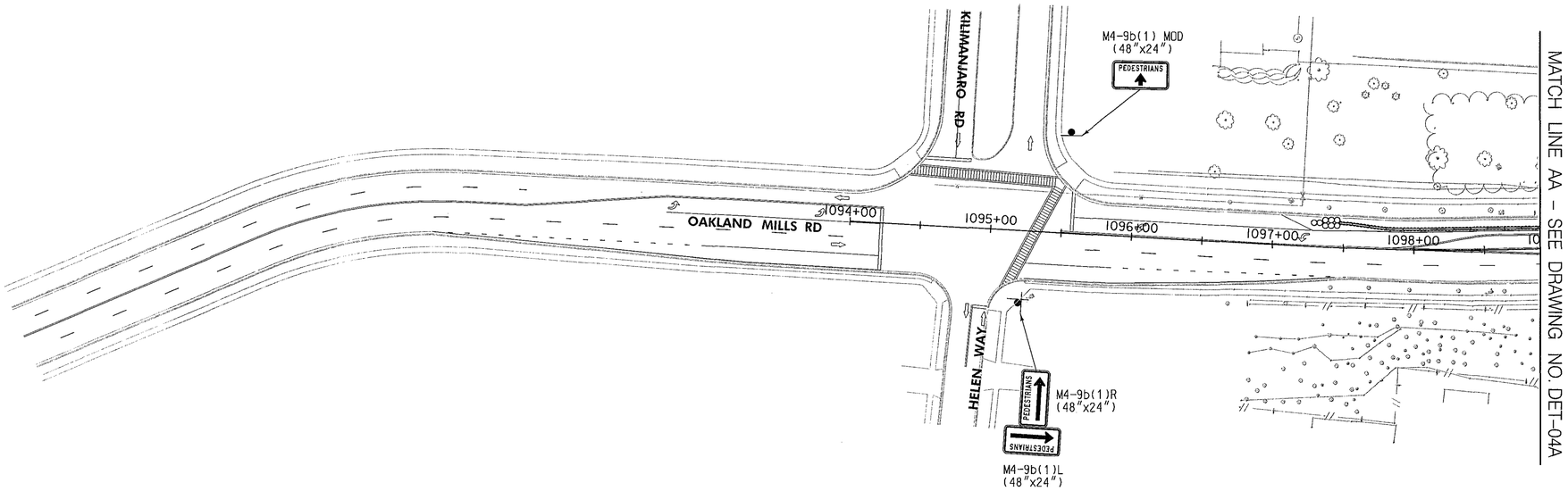
July 08, 2014



MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

GENERAL NOTES:

1. FOR ROAD WORK STAGING AND DETOUR INFORMATION, REFER TO MAINTENANCE OF TRAFFIC AND DETOUR PLANS.
2. LOCATE PROPOSED SIGN AT SIDEWALK CONNECTION, WEST OF READER LANE.
3. LOCATE PROPOSED SIGN AT NORTHWEST CORNER OF READER LANE SIDEWALK CONNECTION TO TRAIL.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MOORE — NO. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES: WRA
DRN: WRA
CHK: JMM
DATE: 7/11/2014

BY	NO.	REVISION	DATE

PEDESTRIAN DETOUR PLAN - STAGE 2A.3

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. **DET-03A**

SCALE 1" = 50'

SHEET 93 OF 138

N:\42038-00J\CADD\pDET-P102A_bpj.dgn
July 08, 2014

MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

GENERAL NOTES:

1. FOR ROAD WORK STAGING AND DETOUR INFORMATION, REFER TO MAINTENANCE OF TRAFFIC AND DETOUR PLANS.
2. FULL DEPTH RECONSTRUCTION OF TRAIL SHALL BE PROGRESSED TO MINIMIZE TIME REQUIRED FOR TRAIL CLOSURE.
3. LIMITS OF SIDEWALK WORK TO BE CONSTRUCTED FIRST, WITH IMPLEMENTATION OF PEDESTRIAN DETOUR ON DRAWING NOS. DET-03 AND DET-04.
4. SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES:	WRA
DRN:	WRA
CHK:	JMM
DATE:	7/11/2014

BY	NO.	REVISION	DATE

PEDESTRIAN DETOUR PLAN - STAGE 2A.1

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. **DET- 04**

SCALE 1" = 50'

SHEET 94 OF 138

N:\42038-00J\CADD\pDET-P103_bpj.dgn
July 08, 2014

MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

GENERAL NOTES:

1. FOR ROAD WORK STAGING AND DETOUR INFORMATION, REFER TO MAINTENANCE OF TRAFFIC AND DETOUR PLANS.
2. FULL DEPTH RECONSTRUCTION OF TRAIL SHALL BE PROGRESSED TO MINIMIZE TIME REQUIRED FOR TRAIL CLOSURE.
3. LIMITS OF SIDEWALK WORK TO BE CONSTRUCTED FIRST, WITH IMPLEMENTATION OF PEDESTRIAN DETOUR ON DRAWING NOS. DET-03 AND DET-04.
4. SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.
5. PROPOSED SIGNS AND BARRICADES LOCATED AT TRAIL WYE TO READER LANE.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/14/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY:
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — NO. 19165 — PROFESSIONAL ENGINEER

DES:	WRA
DRN:	WRA
CHK:	JMM
DATE:	7/11/2014

BY	NO.	REVISION	DATE

PEDESTRIAN DETOUR PLAN - STAGE 2A.4

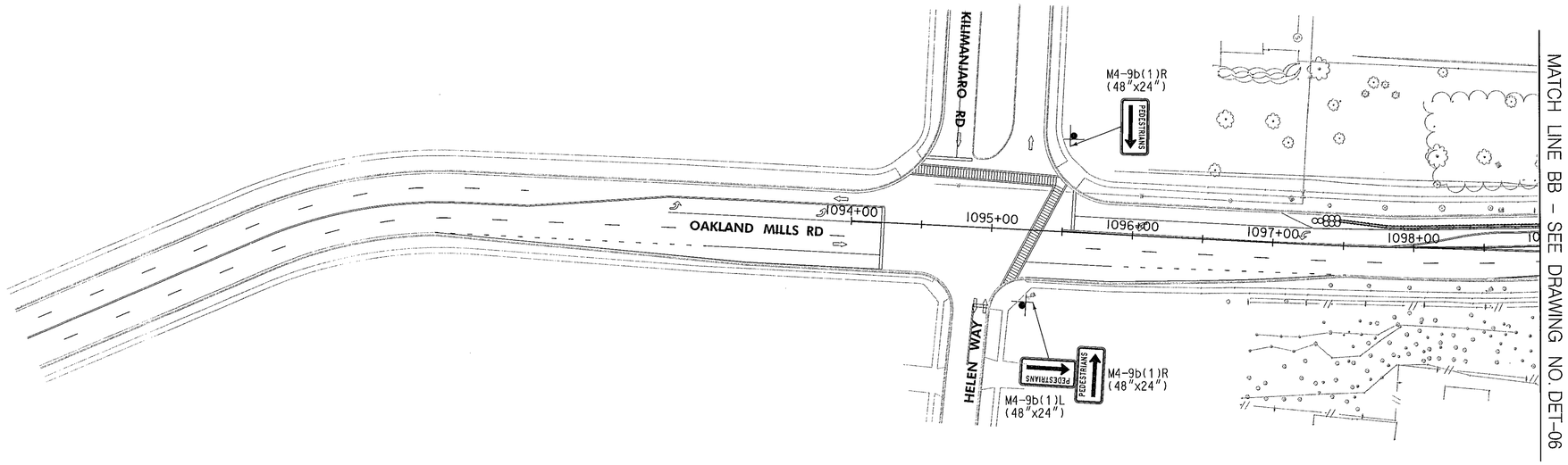
TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. DET-04A
SCALE 1" = 50'
SHEET 95 OF 138

N:\42038-00J\CADD\pDET-P103A_bpj.dgn
July 08, 2014



MATCH LINE BB - SEE DRAWING NO. DET-06

MAINTENANCE OF TRAFFIC LEGEND	
	TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
	PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
	PROPOSED CONSTRUCTION THIS PHASE
	CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
	TYPE III BARRICADE
	PLASTIC DRUM
	TRAFFIC FLOW ARROW
(A)	5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
(B)	5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
(C)	5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
(D)	5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
(E)	5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
(F)	5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
(G)	8 INCH BLACK OUT TAPE LINES
(H)	REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

GENERAL NOTE:

FOR ROAD WORK STAGING AND DETOUR INFORMATION, REFER TO MAINTENANCE OF TRAFFIC AND DETOUR PLANS.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES: WRA
DRN: WRA
CHK: JMM
DATE: 7/11/2014

BY	NO.	REVISION	DATE

PEDESTRIAN DETOUR PLAN - STAGE 2A.2

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. DET-05
SCALE 1" = 50'
SHEET 96 OF 138

N:\42038-00J\CADD\pDET-P104_bpj.dgn
July 08, 2014

GENERAL NOTES:

1. FOR ROAD WORK STAGING AND DETOUR INFORMATION, REFER TO MAINTENANCE OF TRAFFIC AND DETOUR PLANS.
2. CONTRACTOR SHALL MAINTAIN ACCESS FOR THIS PEDESTRIAN CROSSING.
3. LIMITS OF SIDEWALK WORK REQUIRING DETOUR. WORK SHALL BE COORDINATED WITH THIS DETOUR TO MINIMIZE DURATION OF DETOUR.
4. ONCE SIDEWALK WORK IS COMPLETED AS NOTED ABOVE CONTRACTOR MAY REVERT TO STAGE 2A.1 PEDESTRIAN DETOUR TO KEEP PEDESTRIANS OUT OF WORK AREA.
5. SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.

MAINTENANCE OF TRAFFIC LEGEND

Symbol	Description
(sign symbol)	TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
(barrier symbol)	PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
(shaded box)	PROPOSED CONSTRUCTION THIS PHASE
(cushion symbol)	CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
(barricade symbol)	TYPE III BARRICADE
(drum symbol)	PLASTIC DRUM
(arrow symbols)	TRAFFIC FLOW ARROW
(A)	5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
(B)	5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
(C)	5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
(D)	5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
(E)	5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
(F)	5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
(G)	8 INCH BLACK OUT TAPE LINES
(H)	REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

STATE OF MARYLAND — WALTER P. MILLER — No. 19165 — PROFESSIONAL ENGINEER

DES: WRA
DRN: WRA
CHK: JMM
DATE: 7/11/2014

BY	NO.	REVISION	DATE

PEDESTRIAN DETOUR PLAN - STAGE 2A.2

TAX MAP 36 BLOCK NO. 5

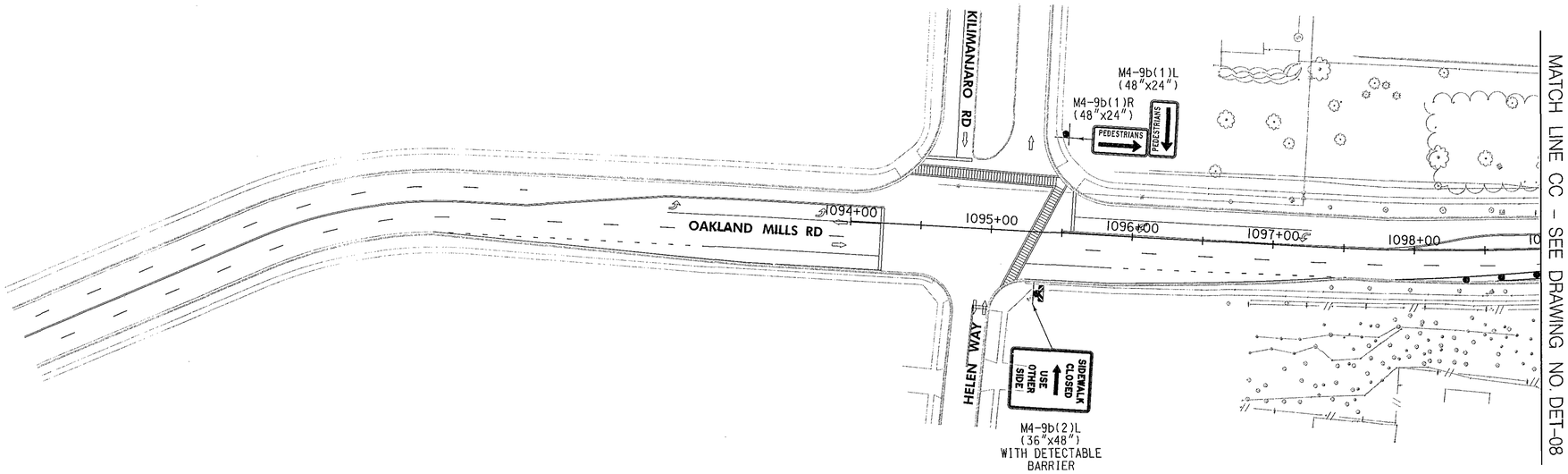
BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

DWG. DET-06
SCALE 1" = 50'
SHEET 97 OF 138

N:\42038-00J\CADD\pDET-P105_bpj.dgn
July 08, 2014



MATCH LINE CC - SEE DRAWING NO. DET-08

GENERAL NOTE:

FOR ROAD WORK STAGING AND DETOUR INFORMATION, REFER TO MAINTENANCE OF TRAFFIC AND DETOUR PLANS.

MAINTENANCE OF TRAFFIC LEGEND

- TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
- PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
- PROPOSED CONSTRUCTION THIS PHASE
- CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
- TYPE III BARRICADE
- PLASTIC DRUM
- TRAFFIC FLOW ARROW
- (A) 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (B) 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
- (C) 5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
- (D) 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (E) 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
- (F) 5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
- (G) 8 INCH BLACK OUT TAPE LINES
- (H) REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/8/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7.11.14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

STATE OF MARYLAND — WALTER P. MOORE — No. 19165 — PROFESSIONAL ENGINEER — 7/11/14

DES: WRA
DRN: WRA
CHK: JMM
DATE: 7/11/2014

BY	NO.	REVISION	DATE

PEDESTRIAN DETOUR PLAN - STAGE 2B

TAX MAP 36 BLOCK NO. 5 ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

DWG. DET-07
SCALE 1" = 50'
SHEET 98 OF 138

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July 08, 2014

MAINTENANCE OF TRAFFIC LEGEND

Symbol	Description
	TEMPORARY GROUND MOUNTED SIGN AND SUPPORT(S)
	PRECAST TEMP. F-SHAPE CONC. TRAFFIC BARRIER
	PROPOSED CONSTRUCTION THIS PHASE
	CRASH CUSHION SAND FILLED PLASTIC BARRIER (40 MPH)
	TYPE III BARRICADE
	PLASTIC DRUM
	TRAFFIC FLOW ARROW
(A)	5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
(B)	5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT
(C)	5 IN. SKIP WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT (10 FOOT LINE WITH 30 FOOT GAP)
(D)	5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
(E)	5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS
(F)	5 IN. SKIP WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS (10 FOOT LINE WITH 30 FOOT GAP)
(G)	8 INCH BLACK OUT TAPE LINES
(H)	REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH

GENERAL NOTES:

1. FOR ROAD WORK STAGING AND DETOUR INFORMATION, REFER TO MAINTENANCE OF TRAFFIC AND DETOUR PLANS.
2. SEE CAPITAL PROJECT #N-3102 FOR BLANDAIR PARK PHASE 2 CONSTRUCTION, SHOWN DASHED.

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19165, EXPIRATION DATE: 06/11/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS — DATE 7/15/14
CHIEF, BUREAU OF ENGINEERING — DATE 7/11/14
CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 7/11/14

PREPARED BY:
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231
WR&A

STATE OF MARYLAND — WALTER P. ... — No. 19165 — PROFESSIONAL ENGINEER

DES: WRA
DRN: WRA
CHK: JMM
DATE: 7/11/2014

BY	NO.	REVISION	DATE

PEDESTRIAN DETOUR PLAN - STAGE 2B

TAX MAP 36 — BLOCK NO. 5

BLANDAIR REGIONAL PARK
PHASE J - SOUTH

CAPITAL PROJECT # J-4237

ELECTION DISTRICT 3 /7 — HOWARD COUNTY, MARYLAND

DWG. DET-08
SCALE 1" = 50'
SHEET 99 OF 138

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July 08, 2014

NOTES:

1. THERE ARE 1.71 ACRES OF WOODED VEGETATION (FOREST AND HEDGEROWS) AND 40 INDIVIDUAL TREES TO BE IMPACTED BY THIS PROJECT WITHIN THE SHA RIGHT–OF–WAY.

   0.826 ACRES ARE ACCOUNTED FOR IN THE FOREST CONSERVATION PLAN.

   A MINIMUM OF 0.884 ACRES OF REVEGETATION PLANTING PLUS A MINIMUM OF 40 SENTINEL TREES ARE REQUIRED AS PART OF THIS PROJECT INSTALLATION.

2. TREES TO BE REMOVED: EVERGREEN AND HARDWOOD SPECIES, SIZES RANGING FROM 2" CALIPER TO 20" CALIPER. EVERGREEN SPECIES INCLUDE WHITE PINE AND NORWAY SPRUCE. DECIDUOUS SPECIES INCLUDE MAPLE, OAK, AND LOCUST SPECIES.

3. ROOT PRUNE ALONG TREE PROTECTION FENCING WHERE GRADING OPERATIONS OCCUR WITHIN DRIP LINE OF ADJACENT TREES TO REMAIN, OR WITHIN 20' OF ADJACENT TREE TRUNKS TO REMAIN, WHICHEVER IS GREATER.

LEGEND

- EXISTING INDIVIDUAL TREE TO REMAIN
- EXISTING INDIVIDUAL TREE TO BE REMOVED
- EDGE OF EXISTING WOODED AREA
- EXISTING WOODED AREA TO BE REMOVED
- EXISTING UNDERSTORY/BRUSH TO BE REMOVED
- — TPF — TREE PROTECTION FENCING (TEMPORARY ORANGE CONSTRUCTION FENCING)
- AREA OF BRUSH REMOVAL

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 778, EXPIRATION DATE: 12/20/2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DIRECTOR OF PUBLIC WORKS	7/15/14	CHIEF, BUREAU OF ENGINEERING	7/11/14
CHIEF, BUREAU OF HIGHWAYS	7-11-14	CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION	7/11/14

PREPARED BY :
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, MD 21231

MAHAN RYKIEL ASSOCIATES INC
The Stieff Silver Building. 800 Wyman Park Drive, Suite 100. Baltimore, MD 21211 410.235.6001

DES: CB, NS
DRN: CO
CHK: CB
DATE: 7/11/2014

BY	NO.	REVISION	DATE

SHA RIGHT–OF–WAY VEGETATION IMPACT PLANS

TAX MAP 36 BLOCK NO. 5

BLANDAIR REGIONAL PARK PHASE J – SOUTH

CAPITAL PROJECT # J–4237

ELECTION DISTRICT 3 /7 HOWARD COUNTY, MARYLAND

DWG. LD–0.1

SCALE 1" = 50'

SHEET 100 OF 138

SHA SHEET 54 OF 76