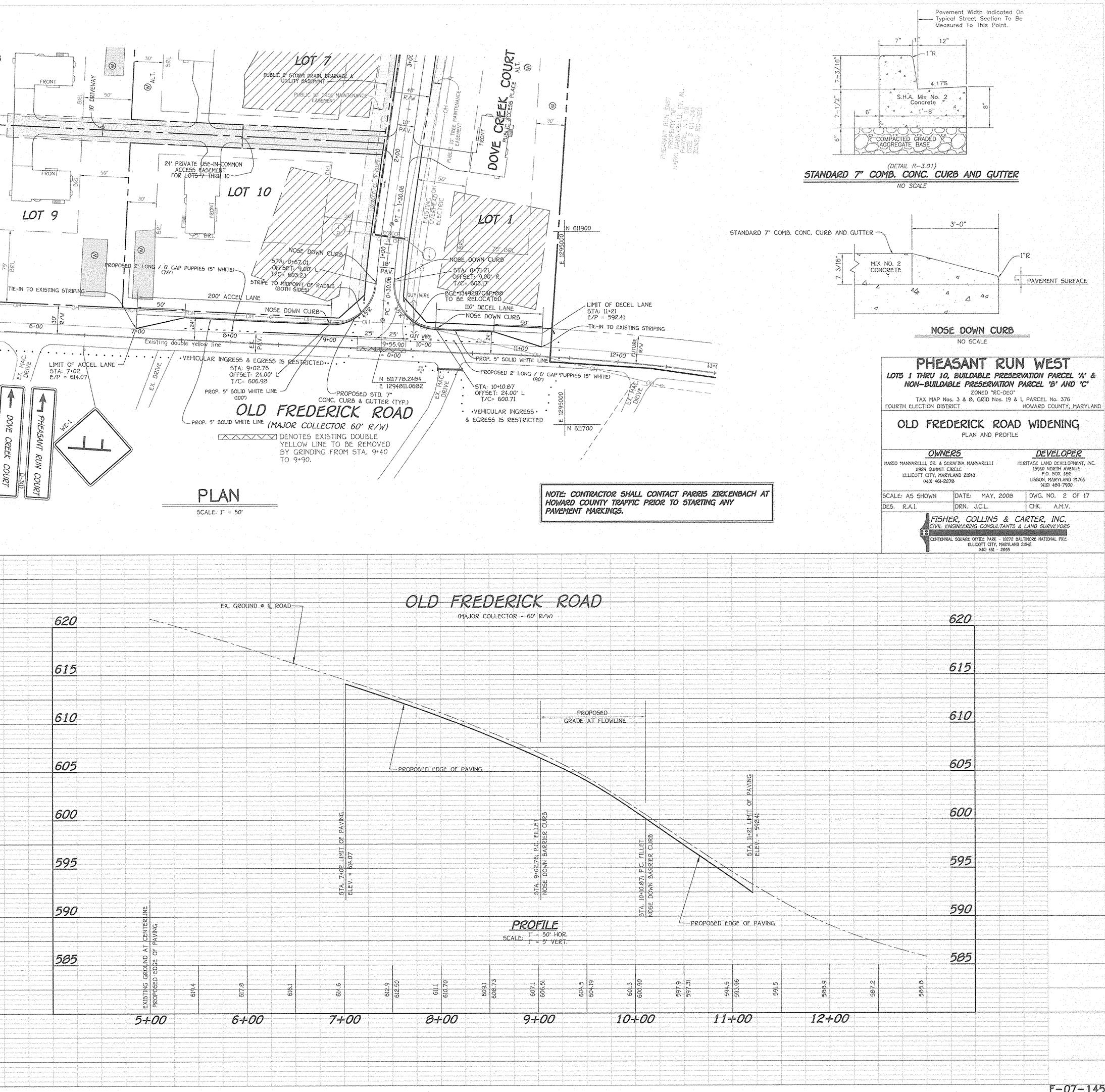
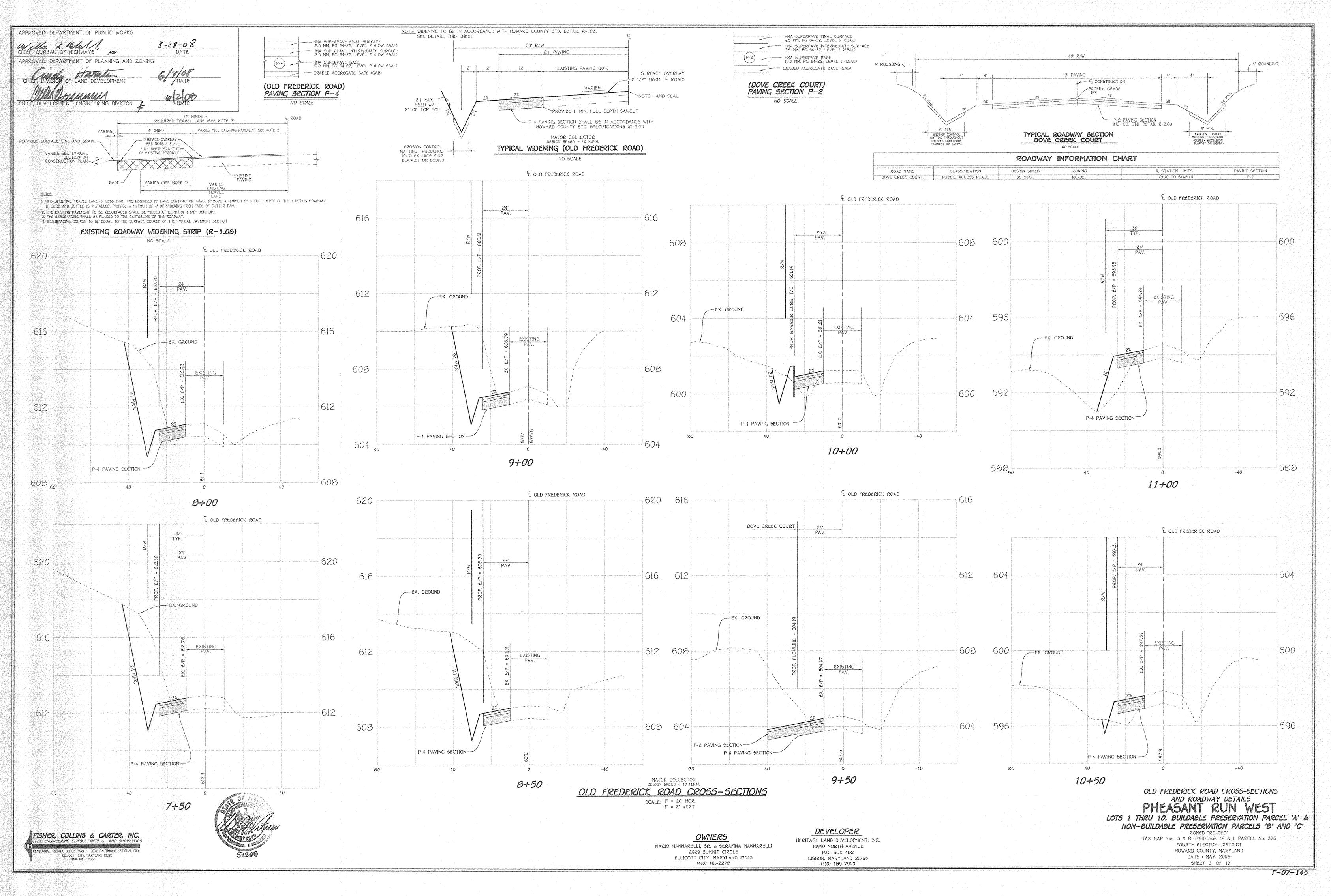


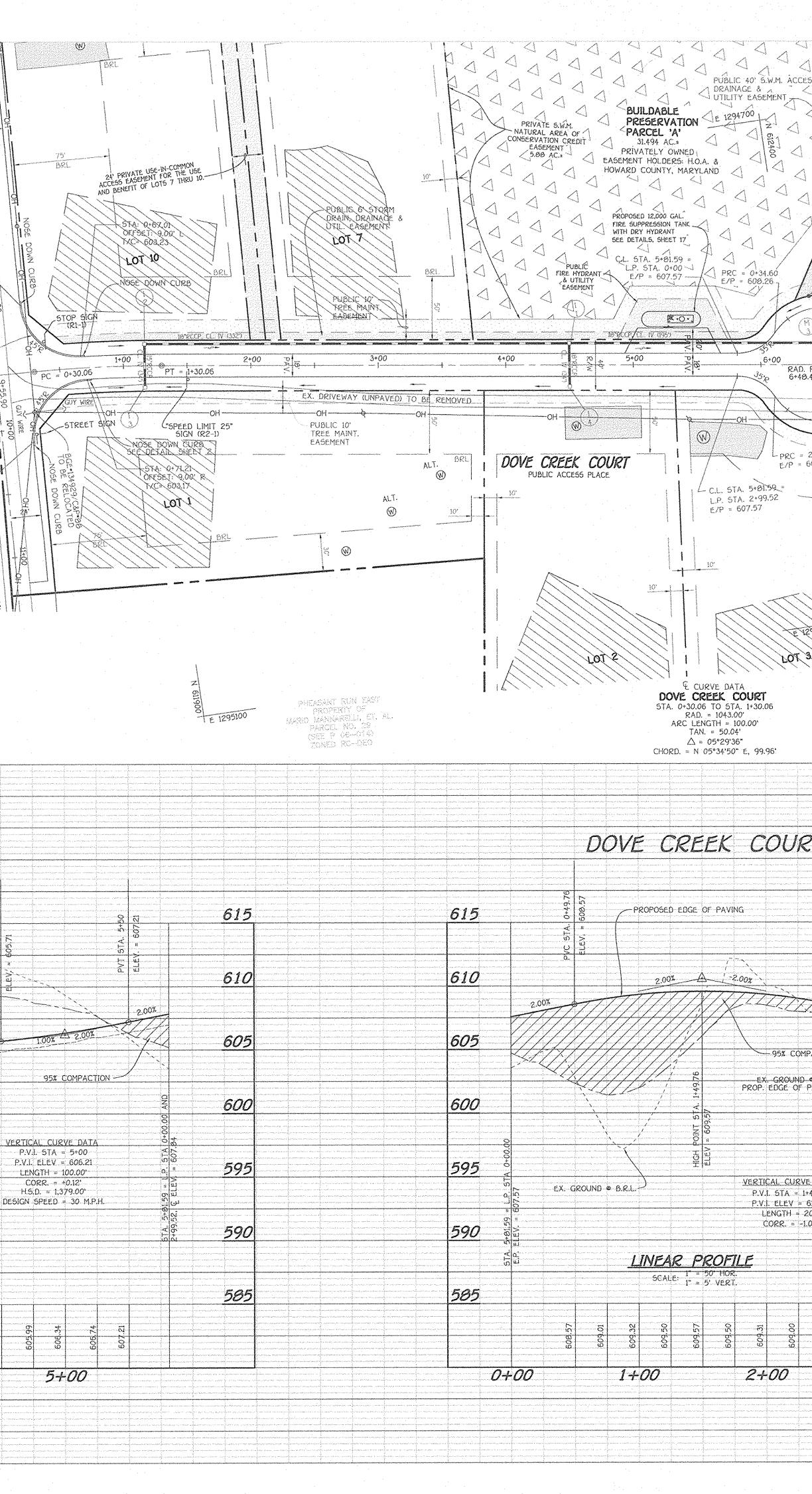
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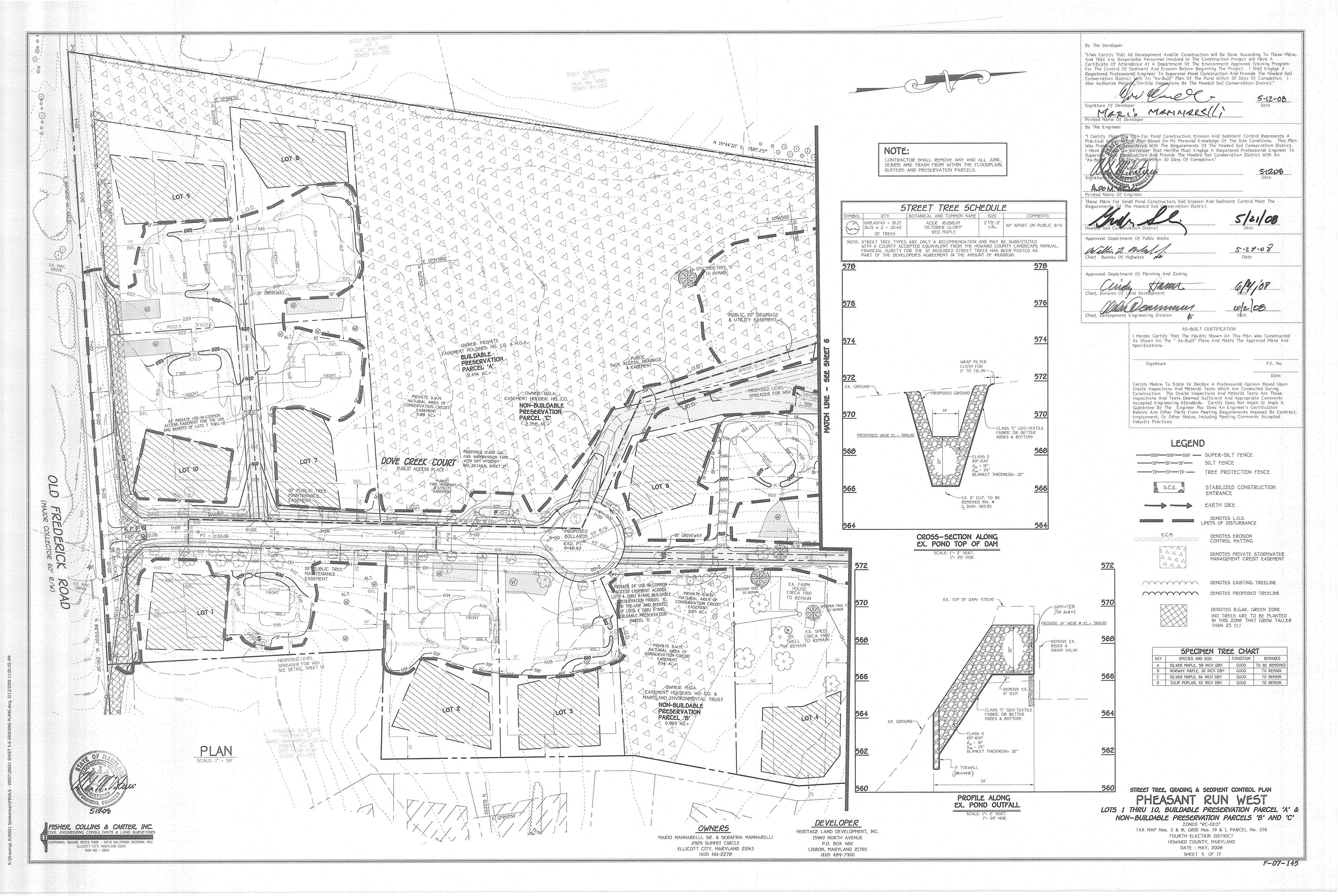


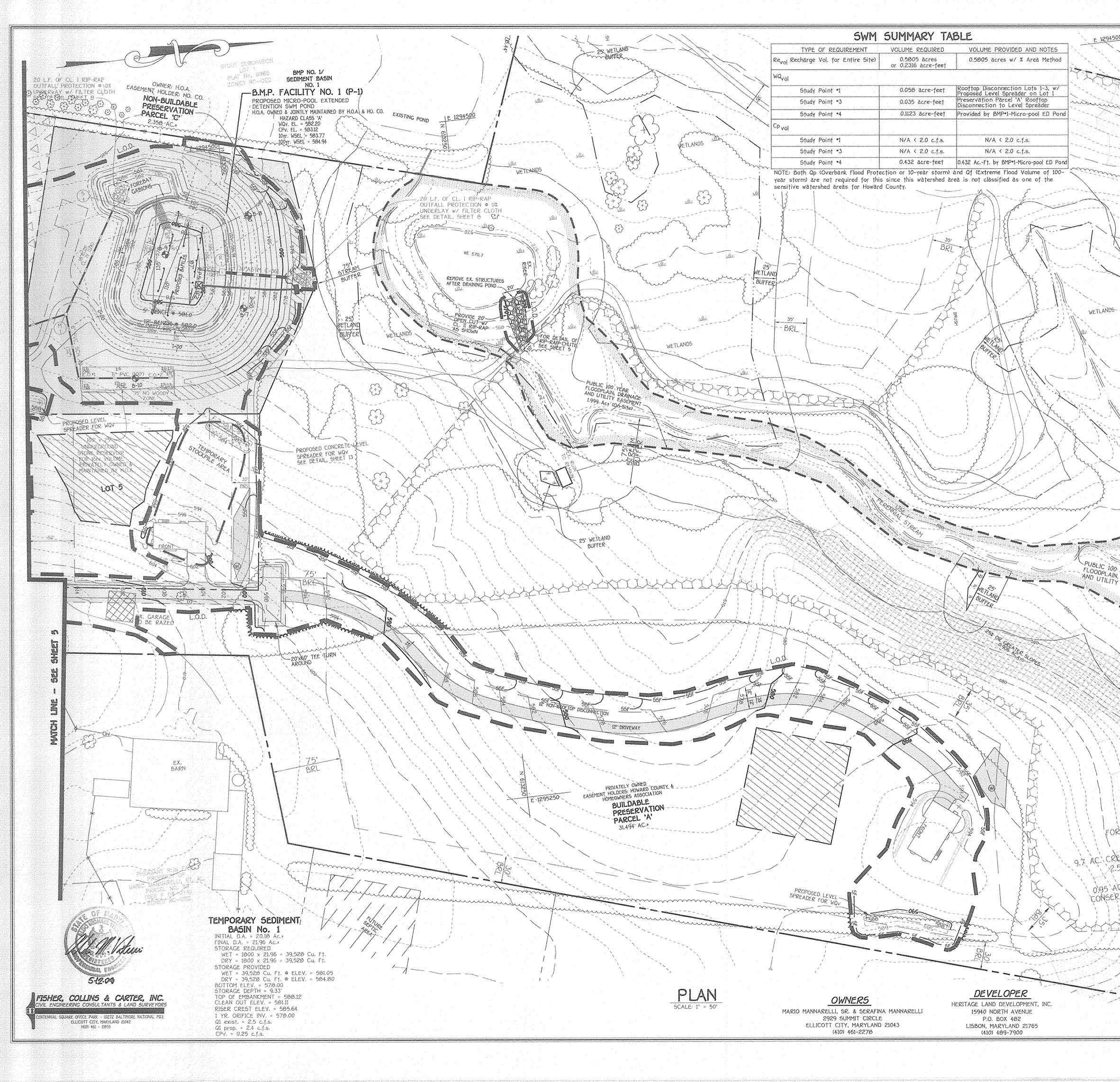
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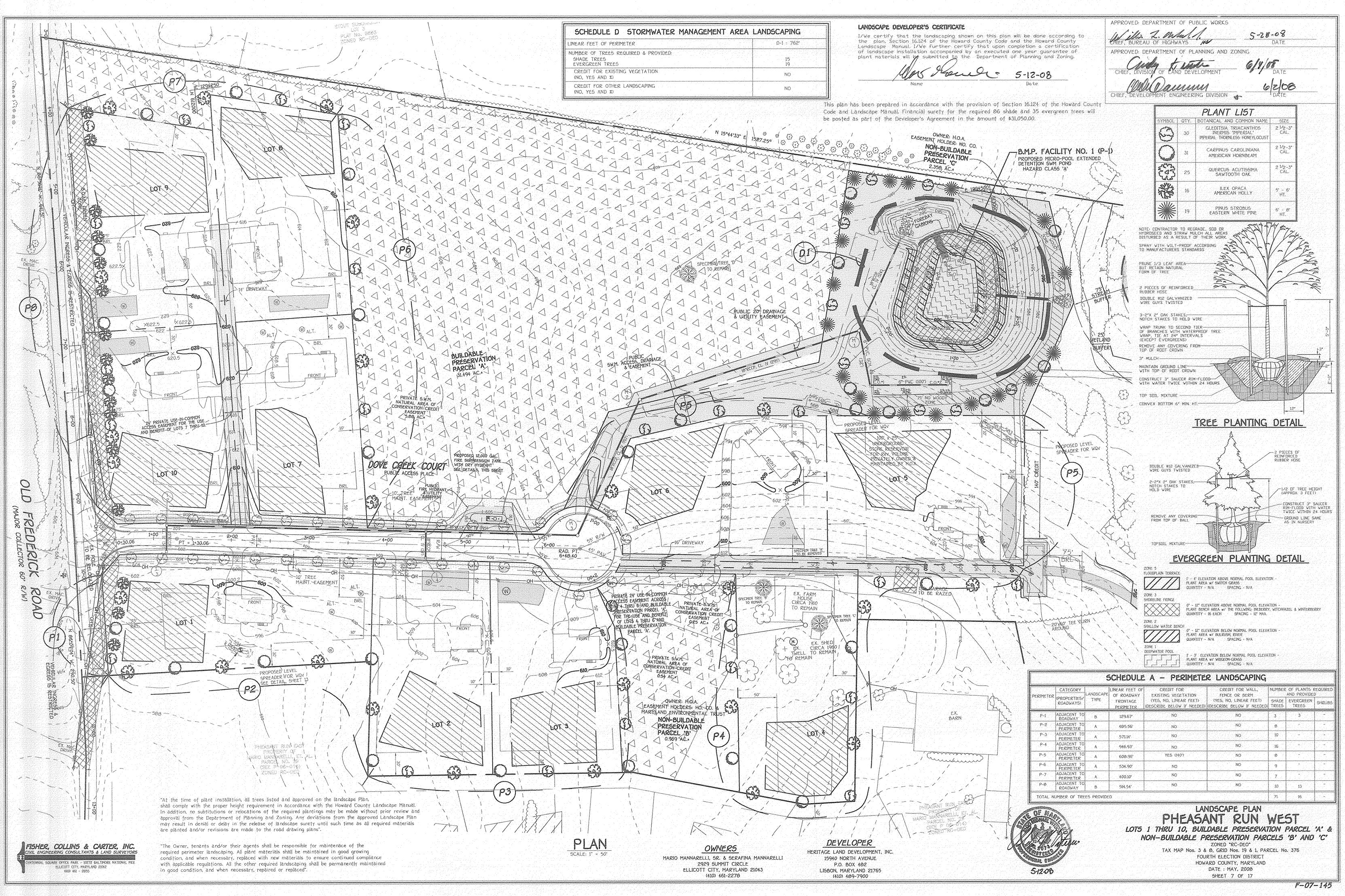
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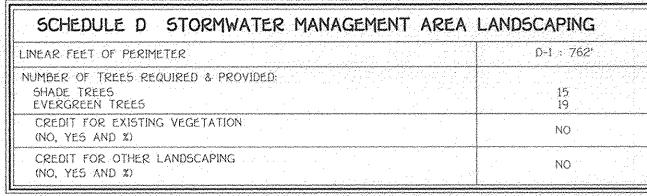


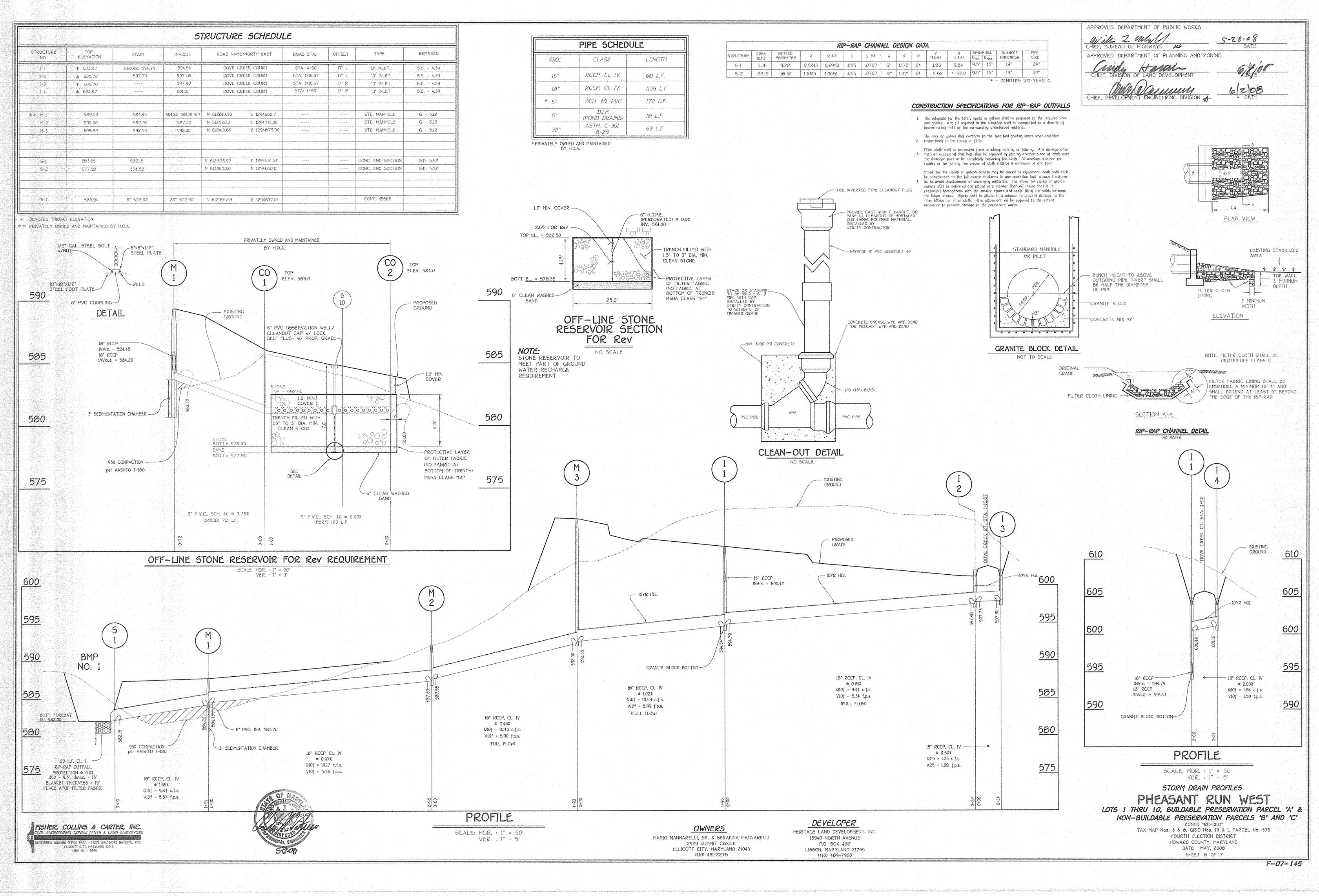


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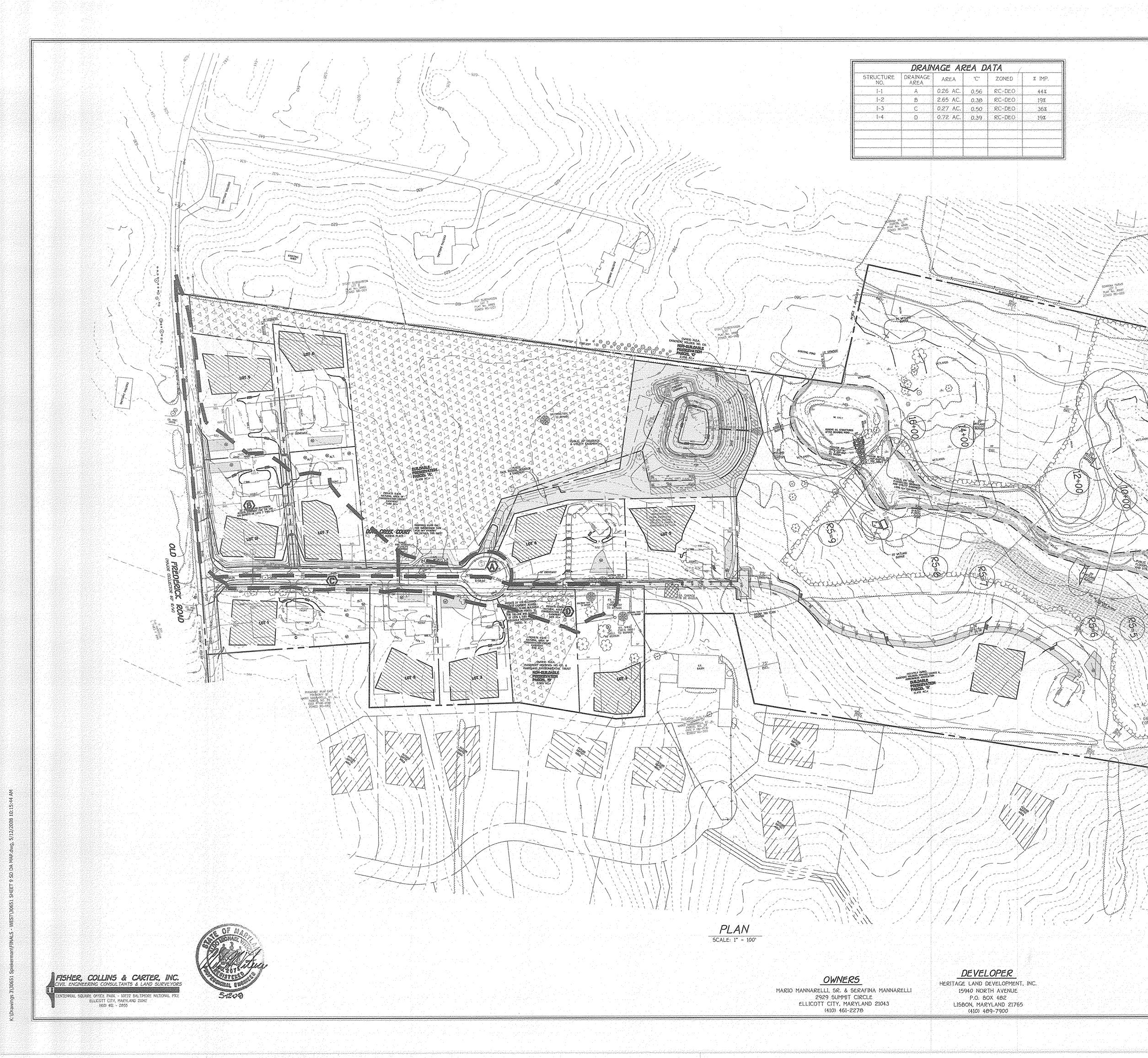
By The Developer: "I/We Certify That All Development And/Or Construction Will Be Done According To These Plans, And That Any Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of The Environment Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Shall Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion: 1 Also Authorize Periodic On-Site Inspections By The Howard Soil Conservation District." Signature Of Developer MARIO MANNARELLI Printed Name Of Developer 5-12-08 Date By The Engineer: "I Certify That This Plan For Pond Construction, Erosion And Sediment Control Represents A Practical And Autochle Plan Based On My Personal Knowledge Of The Site Conditions. This Plan Was Preprediate Accordance With The Requirements Of The Howard Soil Conservation District. I Have Active The Scholaper That He/She Must Engage A Registered Professional Engineer To Super 14 The Construction and Provide The Howard Soil Conservation District With An "As-1 for Side Op The Pond Within 30 Days Of Completion." 51208 These Plans for Small Pond Construction, Soil Erosion And Sediment Control Meet The Requirements e Howard Soil Conservation District. 5/21/08 EXISTING WOODS. Approved Department Of Public Works 5-28-08 alitti 2. anter 11. Chief Bureau Of Highways Approved: Department Of Planning And Zoning made 6/4/08 TRACT Chief, Division Of Land Development Moh Dennun Chief. Development Engineering Division AS-BUILT CERTIFICATION I Hereby Certify That The Facility Shown On This Plan Was Constructed As Shown On The " As-Built" Plans And Meets The Approved Plans And Specifications. P.E. No. Signature Date: Certify Means To State Or Declare A Professional Opinion Based Upon Onsite Inspections And Material Tests Which Are Conducted During Construction. The Onsite Inspections And Material Tests Are Those Inspections And Tests Deemed Sufficient And Appropriate Commonly Accepted Engineering Standards. Certify Does Not mean Or Imply A Guarantee By The Engineer Nor Does An Engineer's Certification Relieve Any Other Party From Meeting Requirements Imposed By Contract, Employment, Or Other Means, Including Meeting Commonly Accepted Industry Practices. 100 YEAR-LOODPLAIN, DRAINAGE LEGEND SF-SF-SF-SF-SILT FENCE TP-TP-TP-TP TREE PROTECTION FENCE S.C.E. STABILIZED CONSTRUCTION ENTRANCE EARTH DIKE DENOTES L.O.D. LIMITS OF DISTURBANCE E.C.M. DENOTES EROSION CONTROL MATTING 10000 DENOTES PRIVATE STORMWATER 1 A A A MANAGEMENT CREDIT EASEMENT ADDI La Dennertour DENOTES EXISTING TREELINE DENOTES PROPOSED TREELINE DENOTES 15% TO 24.9% SLOPES FOREST CONSERVATION EASEMENT NO. 11 AC. CREDITED FOREST CONSERVATION AC. CREDITED FOREST CONSERVATION 2.51 AC. AFFORESTATION 72 AC RETENTION 0.95 AC. NON-CREDITED FOREST ONSERVATION INITHIN FLOODPLAIN DENOTES 25% OR GREATER SLOPES NOTE: CONTRACTOR SHALL REMOVE ANY AND ALL JUNK, DEBRIS AND TRASH FROM WITHIN THE FLOODPLAIN; BUFFERS AND PRESERVATION PARCELS. STREET TREE, GRADING & SEDIMENT CONTROL PLAN PHEASANT RUN WEST LOTS 1 THRU 10, BUILDABLE PRESERVATION PARCEL 'A' & NON-BUILDABLE PRESERVATION PARCELS 'B' AND 'C' ZONED "RC-DEO" TAX MAP Nos. 3 & 8, GRID Nos. 19 & 1, PARCEL No. 376 FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND DATE : MAY, 2008 SHEET 6 OF 17 F-07-145







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F-07-145

STORM DRAIN DRAINAGE AREA MAP

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 embarkment.

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 embarkment 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 B-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 the specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

Corrugated Metal Pipe - All of the following criteria shall apply for corrugated metal pipe:

1. Materials - (Polymer Coated steel pipe) - Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Stel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling banks or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

2. Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

3. Connections- All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.



All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24-inches in diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, prepunched to the flange bolt circle, sandwiched between adjacent flanges; a 12-inch wide standard lap type band with 12-inch wide by 3/8-inch thick closed cell circular neoprene gasket; and a 12-inch wide hugger type band with o-ring gaskets having a minimum diameter of 1/2-inch greater than the corrugation depth. Pipes 24-inches in diameter and larger shall be connected by a 24-inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12-inches on the end of each pipe. Flanged joints with 3/8-inch closed cell gaskets the full width of the flance is also acceptable

Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead. 4. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire

length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

5. Backfilling shall conform to "Structure Backfill".

6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings. 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 "Stucture 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. Plastic Pipe

The following criteria shall apply for plastic pipe: 1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" - 10" inch pipe shall meet the requirement of AASHTO M252 Type 5, and 12" through 24" inch shall meet the requirement of AASHTO M294 Type 5.

2. Joints and connections to anti-seep collars shall be completely watertight.

3. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

4. Backfilling shall conform to "Structure Backfill".

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings. Drainage Diaphragms - When a drainage diaphragm is used, a registered

professional engineer will supervise the design and construction inspection. Concrete Concrete shall meet the requirements of Maryland Department of Transportation.

State Highway Administration Standard Specifications for Construction and

Materials, Section 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 performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require 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.

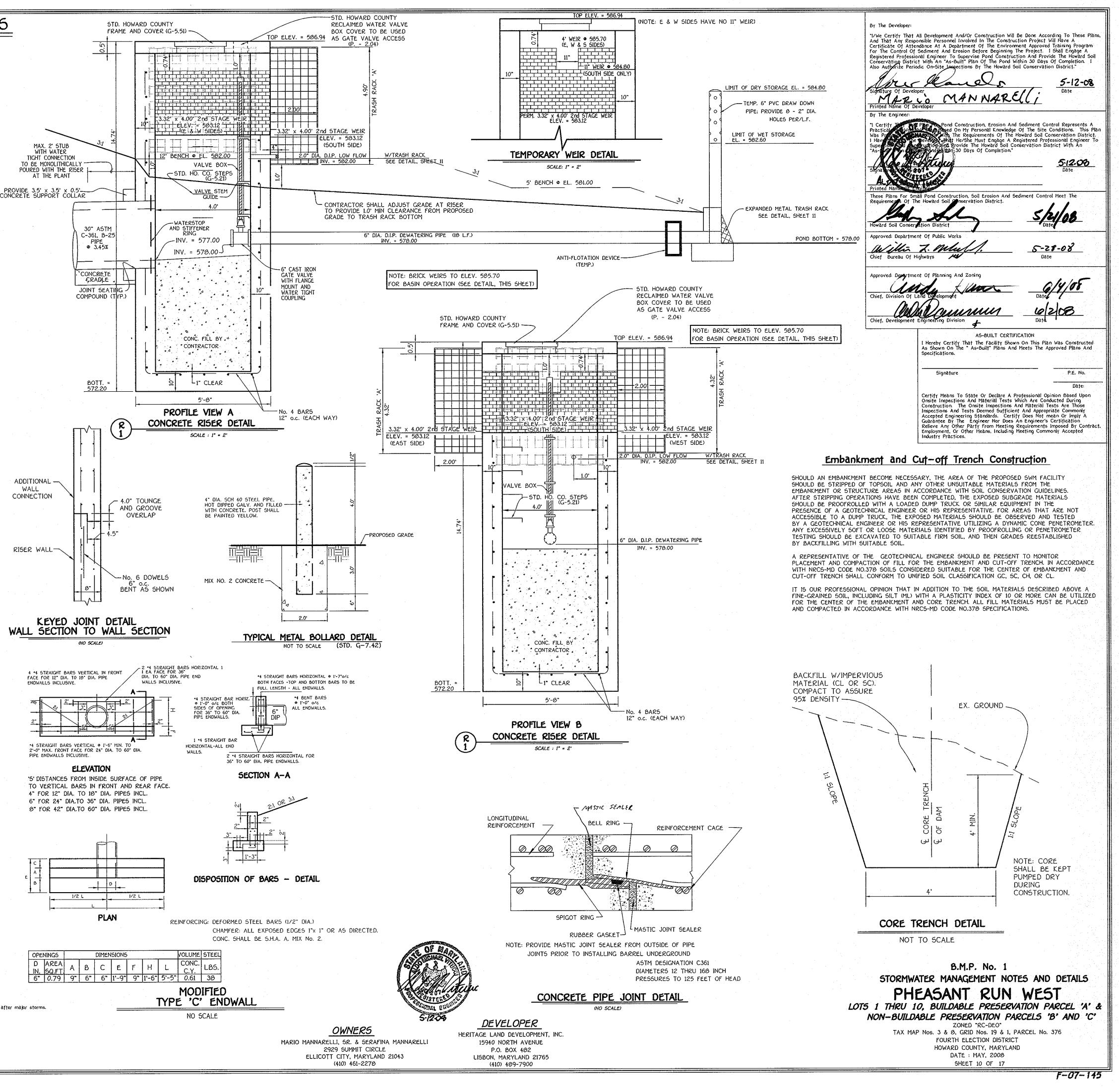
OPERATION AND MAINTENANCE

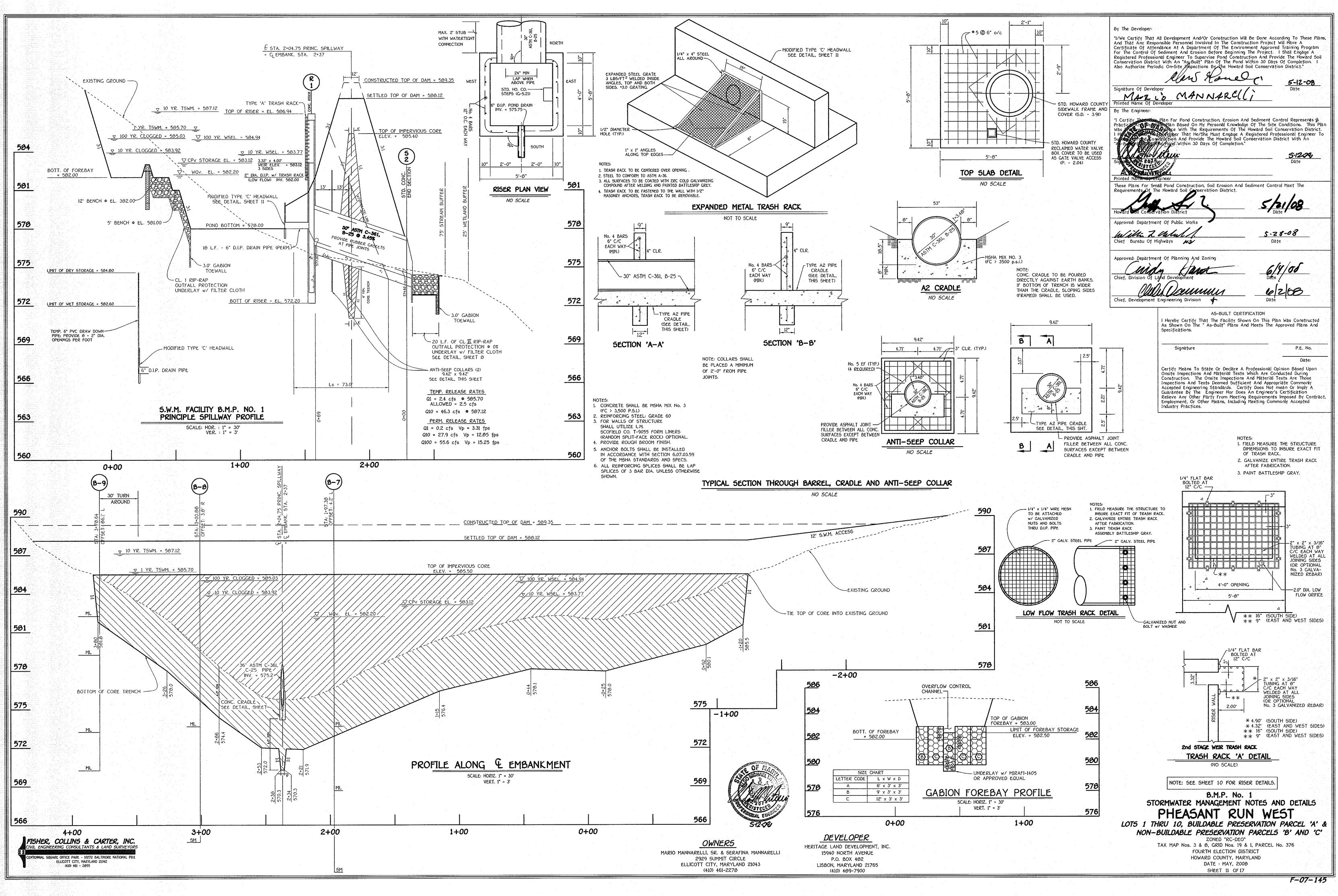
An operation and maintenance plan in accordance with Local or State Regulations will be prepared for all ponds. As a minimum, the dam inspection checklist located in Appendix A shall be included as part of the operation and maintenance plan and performed at least annually. Written records of maintenance and major repairs needs to be retained in a file. The issuance of a Maintenance and Repair Permit for any repairs or maintenance that involves the modification of the dam or spillway from its original design and specifications is required. A permit is also required for any repairs or reconstruction that involve a substantial portion of the structure. All indicated repairs are to be made as soon as practical.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND JOINTLY MAINTAINED STORMWATER MANAGEMENT FACILITIES FOR BMP POND #1 & UNDERGROUND STONE RESERVOIR

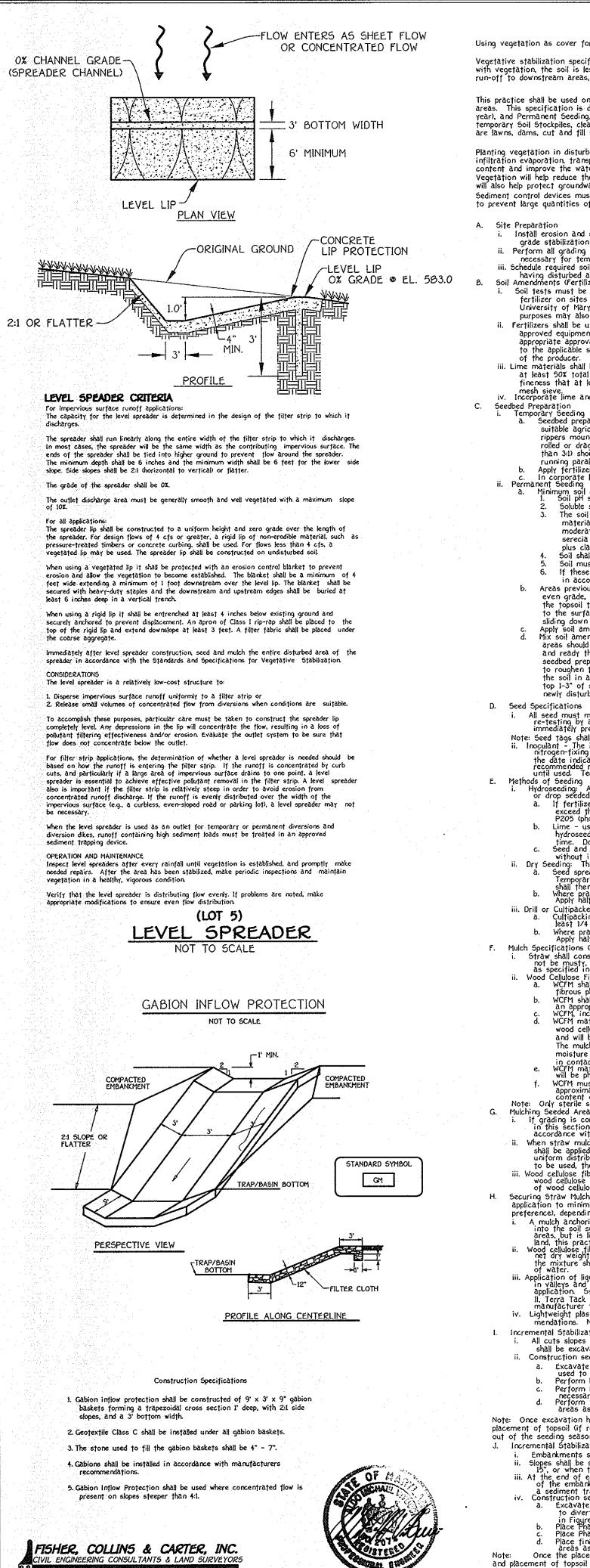
ROUTINE MAINTENANCE (HOA)

- 1. Facility shall be inspected annually and after major storms. Inspections shall be preformed during wet weather to determine if the pond is functioning properly.
- 2. Top and side slopes of the embankment shall be mowed a minimum
- of two (2) times a year, once in June and once in September. Other side slopes and maintenance access should be mowed as
- 3. Debris and litter shall be removed during regular mowing
- operations and as needed.
- 4. Visible signs of erosion in the pond as well as the rip-rap or gabion outlet area shall be repairer as soon as it is noticed.
- 5. The off-line storm drain (M-1 to CO-2) and underground reservoir shall be inspected annually and after major storms. NON-ROUTINE MAINTENANCE (Ho. Co.)
- 1. Structural components of the pond such as the dam, the riser, and the pipes shall be repaired upon the detection of any damage. The components shall be inspected during routine maintenance operations.
- 2. Sediment shall be removed from the pond, and forebay, no later than when the capacity of the pond or forebay, is half full of sediment, or, when deemed necessary for aesthetic reasons, upon approval from the Department of Public Works.





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20.0 STANDARDS AND SPECIFICATIONS VEGETATIVE STABILIZATION

. Using vegetation as cover for barren soil to protect it from forces that cause erosion. **PURPOSE** Vegetative stabilization specifications 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 run-off to downstream areas, and improving wildlife habitat and visual resources.

CONDITIONS WHERE PRACTICE APPLIES This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or critically eroding areas. This specification is divided into Temporary Seeding, to quickly establish vegetative cover for short duration Olup to one year, and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary Soil Stockpiles, cleared areas being left idle between construction phases, earth dikes, etc. and for Permanent Seeding are lawns, dams, cut and fill slopes and other areas at final grade, former stockpile and staging areas, etc.

EFFECTS ON WATER QUALITY AND QUANTITY 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. Vegetation, over time, 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 ill also help protect groundwater supplies by assimilating those substances present within the root zone. Sediment control devices must remain in place during grading, seedbed preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from washing into surface waters.

SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS i. Install erosion and sediment control structures (either temporary of permanent) such as diversions, orade stabilization structures, berms, waterways, or sediment control basins ii. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.

iii. Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres. Soil Amendments (Fertilizer and Lime Specifications) i. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering

purposes may also be used for chemical analyses. ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according , the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee

iii. Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a *100 mesh sieve and 98-100% will pass through a *20 mesh sieve. iv. Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.

Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" 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 should not be rolled or dragged smooth, but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges

in Sci should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
b. Apply fertilizer and lime as prescribed on the plans.
c. In corporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.
ii. Permanent Seeding

a. Minimum soil conditions required for permanent vegetative establishment:
1. Soil pH shall be between 6.0 and 7.0. Soluble salts shall be less than 500 parts per million (ppm). The soil shall contain less than 40% clay, but enough fine grained material (>30% silt plus clay) to provide the capacity to hold a

moderate amount of moisture. An exception is if lovegrass of serecia lespedezas is to be planted, then a sandy soil (<30% silt plus clay) would be acceptable. Soil shall contain 1.5% minimum organic matter by weight.

Soil must contain sufficient pore space to permit adequate root penetration. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3-5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.

Apply soil amendments as per soil test or as included on the plans. Mix soil amendments into the top 3-5° of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed and application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment o roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1-3" of soil should be loose and friable. Seedbed loosening may not be necessary on

All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job. Note: Seed tags shall be made available to the inspector to verify type and rate of seed used. ii. Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on 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°-80° F. can weaken bacteria and make the inoculant less effective. Methods of Seeding i. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeded, or a cultipacker seeder.

a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: nitrogen, maximum of 100 lbs. per acre total of soluble nitrogen. P205 (phosphorous): 200 lbs/ac; K20 (potassium): 200 lbs/ac. 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 hydroseeding. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and

without interruption. ii. Dry Seeding: This includes use of conventional drop or broadcast spreaders. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 265 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction. iii. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil 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. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction

F. Mulch Specifications (in order of preference) Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonable bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law. Wood Cellulose Fiber Mulch (WCEM) WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.

WCFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry. WCFM, including dye, shall contain no germination or growth inhibiting factors. WCFM materials shall 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 shall form a blotter-like ground cover, on application, having noisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings. WCFM material shall contain no elements or compounds at concentration levels that will be phytol-toxic.

f. WCFM must conform to the following physical requirements: fiber length to approximately 10 mm., diameter approximately 1 mm., pH range of 4.0 to 8.5, ash content of 1.6% maximum and water holding capacity of 90% minimum. Note: Only sterile straw mulch should be used in areas where one species of grass is desired. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding. i. If grading is completed outside of the seeding season, mulch along shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch

shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre. iii. Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water. Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by

preference), depending upon size of area and erosion hazard: A mulch anchoring tool is a tractor drawn implement designed to purch and anchor mulch into the soil surface a minimum of two (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 be used on the contour if possible.
Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the word and anchor shall be applied at a net dry weight of 750 pounds/acre. the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons

iii. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and crest of barks. The remainder of area should be appear uniform after binder application. Synthetic binders - such as Acrylic DLR (Agro-Tack), DCA-70 Petroset, Terra Tax manufacturer to anchor mulch. v. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recom-

mendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long. Incremental Stabilization - Cut Slopes All cuts slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and stabilized in equal increments not to exceed 15' ii. Construction sequence (Refer to Figure 3 below):

a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
b. Perform Phase 1 excavation, dress, and stabilize. Perform Phase 2 excavation, dress and stabilize. Overseed Phase 1 areas as d. Perform final phase excavation, dress and stabilize. Overseed previously seeded 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 int he operation of completing the operation out of the seeding season will necessitate the application of temporary stabilization.

Incremental Stabilization of Embankments - Fill Slopes Embankments shall be constructed in lifts as prescribed on the plans. ii. Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches
iii. Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches
iii. At the end of each day, temporary berms and pipe slope drains should be constructed along the top edge of the embankment to intercept surface runoff and convey it down the slope in a non-erosive manner to

a sediment trapping device. Construction sequence: Refer to Figure 4 (below). Excavate and stabilize all temporary swales, side ditches, or berms that will be used to divert runoff around the fill. Construct slope silt fence on low side of fill as shown in Figure 5, unless other methods shown on the plans address this area. Place Phase 1 embankment, dress and stabilize. Place Phase 2 embankment, dress and stabilize

Place final phase embankment, dress and stabilize. Overseed previously seeded Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of and placement of topsoil (if required) grading 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.

SECTION 2 - TEMPORARY SEEDING

Vegetation - annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, Permanent Seeding is required. A. Seed mixtures - Temporary Seeding

. Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardiness Zone (from Figure 5) 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 plans and completed, then Table 26 must be put on the plans.

ii. For sites having soil tests performed, the rates shown on this table shall be deleted and the rates recommended by the testing agency shall be written in. Soil tests are not required for Temporary Seeding.

5e	ed Mixture (Hard From	iness Zone <u>6b</u> n Table 26		Fertilizer Rate	Lime Rate		
No.	Species	Application Rate (b/ac)	Seeding Dates	Seeding Depths	(10-10-10)		
1	BARLEY OATS RYE	122 96 140	3/1 - 5/15, 8/15 - 10/15	1" - 2" 1" - 2" 1" - 2"	600 b/ac (15 b/1000sf)	2 tons/ac (100 lb/1000st)	

SECTION 3 - PERMANENT SEEDING Seeding grass and legumes to establish groung cover for a minimum of one year on disturbed areas

generally receiving low maintenance. A. Seed mixtures - Permanent Seeding

i. Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Permanent Seeding Summary below, along with application rates and seeding dates. Seeding depths can be estimated using Table 26. If this summary is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional planting specifications for exceptional sites such as shorelines, streambanks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-SCS Techinical Field Office Guide. Section - Critical Area Planting. For special lawn maintenance areas, see Sections IV Sod and V Turfgrass.

ii. For sites having disturbed area over 5 areas, the rates shown on this table shall be deleted and the rates recommended by the soil testing agency shall be written in

iii. For areas receiving low maintenance, apply ureaform fertilizer (46-0-0) at 3 1/2 lbs/1000 sq. ft. (150 lbs/ac), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

	Seed Mixture (Hardiness Z From Table				Lime Rate				
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	N P205			
3	TALL FESCUE (05%) PERENNIAL RYE GRASS (10%) KENTUCKY BLUEGRASS (5%)	125 15 10	3/1 - 5/15, 8/15 - 10/15	1" - 2"	90 jb/ac (2.0 jb/	175 jb/ac (4 jb/	175 b/ac (4 b/	2 tons/ac (100 lb/	
10	TALL FESCUE (00%) HARD FESCUE (20%)	120 30	3/1 - 5/15, 8/15 - 10/15	1" - 2"	1000sf)	1000sf)	1000sf)	1000sf)	

TOPSOIL NOTES

Definition Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

Purpose

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. Conditions Where Practice Applies

- 1. This practice 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.
- For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the plans.
 - Construction and Material Specifications
- Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experimental Station.
- Topsoil Specifications Soil to be used as topsoil must meet the following:
- i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 11/2" in diameter.
- ii. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified. iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.
- For sites having, disturbed areas under 5 acres:
- i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization Section I Vegetative Stabilization Methods and Materials. For sites having disturbed areas over 5 acres:
- i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
- a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be perscribed to raise the pH to 6.5 or higher. b. Organic content of topsoil shall be not less than 1.5 percent by weight.
- c. Topsoil havina soluble salt content greater than 500 parts per million shall not be used. d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appopriate approval authority, may be used in lieu of natural topsoil. ii. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

Topsoil Application

- i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins. ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 0" higher in elevation.
- iii. Topsoil shall be uniformly distributed in a 4" 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seedine can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
- iv. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.
- Alternative for Permanent Seeding Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below: i. Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:
- a. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.
- b. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a Ph of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
- c. Composted sludge shall be applied at a rate of I ton/1,000 square feet iv. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 1b/1,000 mare feet, and 1/3 the normal lime application rate
- References: Guideline Specifications, Soil Preparation and Sodding. MD-VA, Pub. *1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973.

A. General Design Recommendations It is recommended that the geotechnical aspects of the pond design and construction be in accordance with MD 378/2000 specifications.

B. Principal Spillway From review of the preliminary plans, it appears that principal spillways would be located below basin grade at boring locations B-1, B-8, and between B-5 and B-6. Firm soils were encountered immediately below the topsoil in B-8; however, soft or loose soils were found to a depth of 3 feet in B-1 and to 6 feet in B-5 and B-6. Depending upon basin cut depth, it may be necessary to undercut weak soils and replace with controlled compacted fill for adequate riser and outfall pipe support.

C. <u>Earth Slope Stability</u>

Given the soft to barely medium stiff and loose nature of the residual soils encountered in many of the borings, it is recommended that the cut and fill slopes be no steeper 3H:1V for slope stability. These soil types are highly susceptible to erosion and the slopes may require periodic maintenance until uniformly thick mature grass cover can be established. Also, ground water seepage from the base of the slopes may result in toe instability requiring the installation of drains or undercutting and replacing failed materials with more suitable soils or aggregate. The location and extent of drains and undercuts would best be determined at the time of construction. D. <u>Core Trench</u>

The core trench, may be excavated to the typical MD 378/2000 specified dimensions below stripped existing grade or at least 2 feet into original soils below any undercut backfill, whichever depth is greater: Given the relatively gradual gentle slopes downstream of the proposed pond areas, and the 'expected limited height of embankment, excessive seepage beneath the slope is not expected to be a problem in embankment stability with proper core trench construction.

A review of test boring results and laboratory data indicate that Unified "C" classification soils would be available in the approximate upper 3 feet of cut at boring B-2. It has been our experience in similar geologic areas, however, that the Unified "C" classification soils are of limited quantity and have excessive moisture content. Consequently, it is expected that at least some off site borrow would be required for completion of core trench and dam core fill.

E. Permanent Ground Water Control Groundwater would be a consideration for basins excavated pear or below the indicated aroundwater levels. Ground water control was addressed to some extent in the slope stability section. In addition to slope drains, it may be necessary to construct pilot channels in the basins to direct seepage into a low flow orifice to prevent shallow accumulation of water.

EARTHWORK CONSTRUCTION Prior to placement of embankment fill, we recommend that the stripped surface from toe to toe of the embankment footprint be proofrolled and any exceptionally soft yielding areas undercut to expose firmer soils. Undercuts of 3 to 6 feet deep could be expected at six of the nine boring locations. Any undercut should extend at least 1 foot beyond each proposed toe of slope for every foot depth of undercut. Upon achieving an acceptable surface, the undercut should be backfilled with approved soils. placed and compacted in accordance with APPENDIX 1, COMPACTED FILL. Undercut backfill soils should exclude Unified GP, GW, SP or SW materials but need not be particularly impermeable since the core trench would be extended down through the fill after embankment undercut and backfilling is complete. Undercut backfill should have an AASHTO T-99 maximum compacted dry density of at least 100 PSF Examination of the moisture/compacted density relationship test results presented on SHEETS 1 through 3, COMPACTION TEST indicates that the tested proposed cut soils have acceptably high compacted maximum dry densities, but the existing moistures at the time of sampling were approximately 6 to 10 percent above the optimum for most efficient compaction. These soils types would be suitable for use as embankment or site development fill. Only the sample from B-2 would be of suitable classification for use as core trench fill. With the existing moistures averaging 8 percent over optimum, the soils would require significant drying by aeration prior to use as controlled compacted fill. Given the limited area of a core trench for drying, it may be more feasible to bring in approved off-site clay borrow for core trench fill. Given the elevated soil moistures and the clayer soil types near the surface, it is imperative that earthwork operations be performed during the normally warmer drier summer and early fail construction season when more intense sun and warmer

temperatures will maximize drying capabilities. Clearing, grubbing, and topsoil stripping operations during wet weather may mix topsoil into the wet surface clayer soils resulting in deeper surface stripping. Construction during the colder, wetter seasons of the year may make these high moisture soils unavailable for use as controlled, compacted fill. Further, construction during the cooler, wetter seasons of the year may result in saturated or frozen subgrades requiring undercut and replacement with more suitable materials. Normal soil excavation techniques will be sufficient for removal of materials encountered

in the test borings with the exception of materials with standard penetration resistances exceeding 100 blows per foot. Depending upon type of excavation, ripping and/or rock removal techniques may be required in the equivalent 100 plus blow count material at the base of borings B-5 and B-6. Temporary ground water control will be required in excavations extended below indicated ground water levels. In residual soils, seepage rates are usually low, unless a fractured rock seam is encountered, and can be controlled by a series of pits, trenches and pumps during construction.

INFILTRATION POTENTIAL The Maryland Department of the Environment (MDE) requires that design storm 'waterdisposal by infiltration be considered only in undisturbed native soils with an infiltration rate of at least 0.52 inches/hour. Howard County has more stringent minimum requirements of 1.02 inches/hour. It is further required that the bottom of the infiltration structure be at least 4 feet above the ground water table or rock (i.e. impermeable materials).

Ground water levels will prohibit design storm water disposal by infiltration in any of the three basins if basin or filter grades are within close proximity to the groundwater table. The water level in B-9 eliminated infiltration testing at the 6-foot depth.

Tests were performed in accordance with the procedures outlined in MDE storm water management manual. The test results and test procedures are presented in TABLE 2, INFILTROMETER TEST DATA. The test results indicate that infiltration would be possible in the Sandy Loam soil between depths of 3 and 6 feet in B-2. We would recommend a design infiltration rate of 1.02 inches per hour.

It is our opinion that infiltration rates of soils will decrease over time as very fine sediments carried in with initial storm runoff begin to cover the infiltrating surface. Consequently, all infiltration structures should have a gravity overflow discharge directed so as not to adversely affect adjacent structures or property. GEOTECHNICAL MONITORING

We recommend that Herbst/Benson & Associates be retained to provide the geotechnical monitoring and testing services during the earthwork and principal spillway construction phases of the work. This is to observe compliance with design concepts, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction. The earthwork construction including stripping, undercutting, proofrolling and controlled fill placement shall be inspected with in-place density tests taken to verify construction according to the specifications. Also, the principal spillway excavations shall be examined and the exposed soil conditions approved for the design bearing. We will provide the indicated geotechnical monitoring and testing services upon request. GENERAL CONDITIONS

This report has been prepared in accordance with generally accepted geotechnical engineering practice to aid in the evaluation and design of this project. In the event of changes or refinement in the proposed construction plans (types, elevations, locations, etc.) the conclusions and recommendations presented in this report should not be considered valid unless changes are reviewed and the conclusions of this report are modified or approved in writing by our office. The analyses and recommendations included in this report are based upon the data obtained from the test borings performed at the approximate locations indicated on the boring location plan. This report does not reflect variations which may occur between or away from the borings. The nature and extent of the variations may not become evident until the time of construction. If significant variations then become evident, it may be necessary for us to reevaluate the recommendations of this report

DEVELOPER HERITAGE LAND DEVELOPMENT, INC. 15940 NORTH AVENUE P.O. BOX 482 LISBON, MARYLAND 21765 (410) 489-7900

OWNERS MARIO MANNARELLI, SR. & SERAFINA MANNARELLI 2929 SUMMIT CIRCLE ELLICOTT CITY, MARYLAND 21043 (410) 461-2278

POND CONSTRUCTION RECOMMENDATIONS

iv The Develope "I/We Certify That All Development And/Or Construction Will Be Done According To These Plans, And That Any Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of The Environment Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I shall Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion. I Also Authorize Definite Inspections By The Howard Soil Conservation District." dande 5-12-08 MANNARELL The second secon tion, Erosion And Sediment Control Represents A 5-12.08 Construction, Soil Erosion And Sediment Control Meet The hese Plans For Small Pond he Howard Soi 5/21/09 oproved: Department Of Public Work With 2. m/m/ 5-28-08 Chief Bureau Of Highways 📈 pproved: Department Of Planning And Zon -<u>6/4/00</u> Hanne-Mannin 6208 AS-BUILT CERTIFICATION Hereby Certify That The Facility Shown On This Plan Was Constructed is Shown On The " As-Built" Plans And Meets The Approved Plans And P.E. No. Signature Date: Certify Means To State Or Declare A Professional Opinion Based Upon Certify Means to State Or Declare A Professional Opinion Based Upon Onsite Inspections And Material Tests Which Are Conducted During Construction. The Onsite Inspections And Material Tests Are Those Inspections And Tests Deemed Sufficient And Appropriate Commonly Accepted Engineering Standards. Certify Does Not mean Or Imply A Guarantee By The Engineer Nor Does An Engineer's Certification Relieve Any Other Party From Meeting Requirements Imposed By Contract, Employment, Or Other Means, Including Meeting Commonly Accepted Industry Practices.

SEQUENCE OF CONSTRUCTION

1. OBTAIN A GRADING PERMIT. (2 DAYS)

2. NOTIFY "MISS UTILITY" AT LEAST 48 HOURS BEFORE BEGINNING ANY WORK AT 1-800-257-7777. NOTIFY THE HOWARD COUNTY OFFICE OF CONSTRUCTION/INSPECTION AT 410-313-1330 AT LEAST 24 HOURS BEFORE STARTING WORK. (1 DAY)

3. INSTALL THE STABILIZED CONSTRUCTION ENTRANCE. INSTALL ALL TREE PROTECTION FENCE FOR TREES TO BE UNDISTURBED AS INDICATED ON THE PLANS. (1 DAY) 4. INSTALL SILT FENCE AND PROPOSED SEDIMENT BASIN No. 1.

5. INSTALL EARTH DIKES AND DEWATERING DEVICES FOR THE PROPOSED SEDIMENT BASIN/SWM POND AND DAM EMBANKMENTS. INSTALL THE STORM DRAIN SYSTEMS. STABILIZE ALL SLOPES IMMEDIATELY UPON COMPLETION OF GRADING. DO NOT BLOCK INLETS AS STORM DRAIN SYSTEM WILL BE USED TO CONVEY SEDIMENT RUNOFF INTO THE BASIN. NOTE: THAT NO DISTURBANCE IS ALLOWED UNTIL ALL SWM/BASIN MATERIALS FOR THE PRINCIPAL SPILLWAY ARE ON SITE AND PERMISSION FROM THE INSPECTOR IS GRANTED IN WRITING TO PROCEED. (2 WEEKS)

6. ALL DAM EMBANKMENT AND CORE TRENCH CONSTRUCTION SHALL BE COORDINATED WITH A PROFESSIONAL GEOTECHNICAL ENGINEER IN ACCORDANCE WITH THE RECOMMENDATIONS SHOWN ON THESE PLANS. NO BLASTING WILL BE PERMITTED FOR THE EXCAVATION OF SEDIMENT BASIN/SWM POND EMBANKMENT. WHERE NECESSARY, RIPPING AND JACK HAMMERING SHOULD BE UTILIZED IN THE EXCAVATION OF THE FACILITY. (1 WEEK) 7. UPON COMPLETION OF THE SWM POND/SEDIMENT BASIN CONSTRUCTION RECEIVE PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR PRIOR TO PROCEEDING. (1 DAY) 8. GRADE SITE TO PROPOSED SUBGRADE. STABILIZE ALL SLOPES IMMEDIATELY UPON COMPLETION OF GRADING. (1 WEEK)

9. CONSTRUCT ROAD BASE COURSE FOR SUBDIVISION ROAD. (3 DAYS)

10. WHEN ALL CONTRIBUTING AREAS TO THE SEDIMENT CONTROL DEVICES AND THE POND HAVE BEEN STABILIZED AND WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, THE SEDIMENT CONTROL DEVICES MAY BE REMOVED AND/OR BACKFILLED AND THE REMAINING AREAS BROUGHT TO FINAL GRADE. STABILIZE ALL AREAS IN ACCORDANCE WITH PERMANENT SEEDING NOTES. (1 WEEK)

11. THE CONTRACTOR SHALL REMOVE ALL OLD AND NEW JUNK, TRASH, DEBRIS AND OTHER UNNATURAL ITEMS FROM THE FORESTS, FLOODPLAINS, STREAMS, WETLANDS AND BUFFER AREAS. NOTIFY HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS FOR FINAL INSPECTION OF THE COMPLETED PROJECT. (I WEEK)

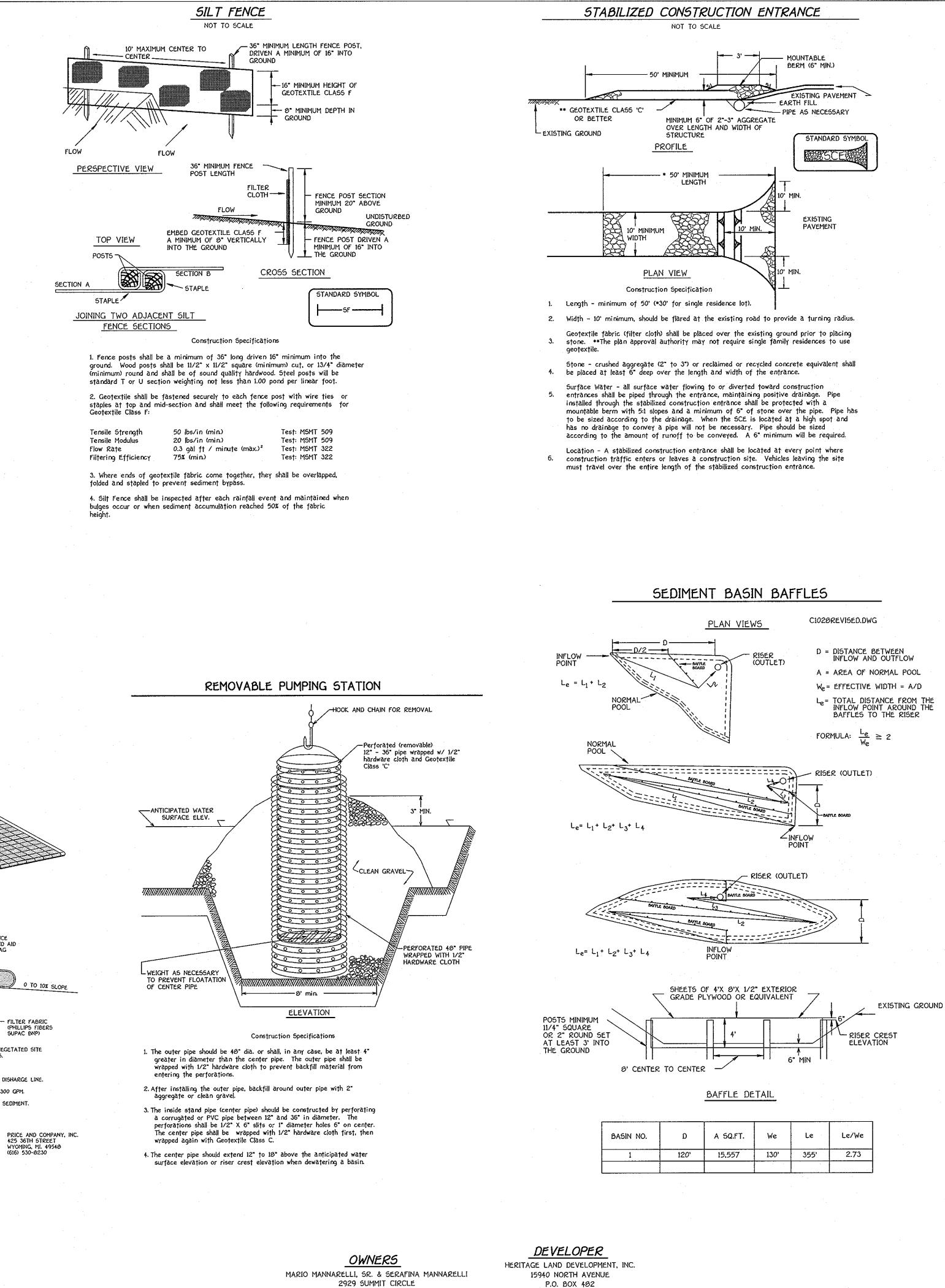
NOTE: THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON ALL SEDIMENT AND EROSION CONTROL STRUCTURES SHOWN HEREON, AFTER EACH RAINFALL AND ON A DAILY BASIS. REMOVE SEDIMENT FROM THE POND/BASIN WHEN THE CLEANOUT ELEVATION HAS BEEN REACHED. ALL SEDIMENT MUST BE PLACED UPSTREAM OF THE APPROVED TRAPPING DEVICE.

SEDIMENT AND EROSION CONTROL DETAILS PHEASANT RUN WEST LOTS 1 THRU 10. BUILDABLE PRESERVATION PARCEL 'A' &

NON-BUILDABLE PRESERVATION PARCELS 'B' AND 'C' ZONED "RC-DEO" TAX MAP Nos. 3 & Ø, GRID Nos. 19 & 1, PARCEL No. 376 FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

DATE : MAY, 2008 SHEET 12 OF 17

EARTH DIKE OF NENGINEER'S CERTIFICATE NOT TO SCALE This Plan For Erosion And Sediment Control And Workable Plan Based On My Personal b 2:1 SLOPE OR FLATTER Weite Condition And That It Was Prepared In Accordance 21 SLOPE OR FLATTER Knowl the Howard Soil Conservation District. With EXCAVATE TO PROVIDE REQUIRED FLOW WIDTH GRADE LINE 5-12-00 AT DESIGN FLOW DEPTH CUT OR FILL -CROSS SECTION DIKE A DIKE B DEVELOPER'S CERTIFICATE a-DIKE HEIGHT 18" 30" POSITIVE DRAINAGE "I/We Certify That All Development And Construction Will Be Done SUFFICIENT TO DRAIN **b-DIKE WIDTH** 24" 36' According To This Plan Of Development And Plan For Erosion And Sediment Control And That All Responsible Personnel Involved In The Construction c-FLOW WIDTH Project Will Have A Certificate Of Attendance At A Department Of Natural d-FLOW DEPTH 12" 24 Resources Approved Training Program For The Control Of Sediment And CUT OR FILL SLOPE Erosion Before Beginning The Project. I Also Authorize Periodic On-Site Inspection By The Howard Soil Conservation District Or Their Authorized PLAN VIEW Agents, As Are Deemed Necessary." STANDARD SYMBOL Wow 5-12-08 FLOW CHANNEL STABILIZATION A-2 B-3 GRADE 0.5% MIN. 10% MAX. Signature C _----/----1. Seed and cover with straw mulch. 2. Seed and cover with Erosion Control Matting or line with sod. Approved: This Development Is Approved for Erosion And Sediment Control By 3. 4" - 7" stone or recycled concrete equivalent pressed into Howard Soil Conservation District. the soil 7" minimum Construction Specifications All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%. Approved: Department Of Planning And Zoning 2. Runoff diverted from a disturbed area shall be conveyed to a 6/4/08 sediment trapping device. 3. Runoff diverted from an undisturbed area shall outlet directly into Date an undisturbed, stabilized area at a non-erosive velocity. mun 4. All trees, brush, stumps, obstructions, and other objectionable 0208 material shall be removed and disposed of so as not to interfere Development Engineering Division with the proper functioning of the dike. Approved: Howard County Department Of Public Works 5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede 5-28-08 Chief. Bureau Of Highways normal flow. 6. Fill shall be compacted by earth moving equipment. Date. 7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike. 8. Inspection and maintenance must be provided periodically and after each rain event. EROSION CONTROL MATTING NOT TO SCALE CROSS-SECTION STAKE THROUGH CONSTRUCTION FENCE TO RESTRAIN, IF SLOPE IS GREATER THAN 5 PERCENT. 2.5' MAX. OVERLAP OF MATTING STRIPS WHERE TWO OR MORE STRIP WIDTHS ARE REQUIRED. ATTACH 2" X 2"-----STAKES STAPLES ON 18" CENTERS STAPLE OUTSIDE EDGE OF MATTING ON 2' CENTERS TAPLE OUTSIDE EDGE OF MATTING ON 2' CENTERS CUT OPEN CORNER OF-BAG AND CLAMP ON DEWATERING HOSE - STAKE AT 2.5' C.C. TO HOLD ON SLOPES CONSTRUCTION FENCE FOR RESTRAINT AND AID IN LIFTING USED BAG TYPICAL STAPLES NO. 11 GAUGE WIRE Construction Specifications WATER AND-Key-in the matting by placing the top ends of the matting in a SEDIMEN narrow trench, 6" in depth. Backfill the trench and tamp firmly to conform to the channel cross-section. Secure with a row of staples SECTIO NOTES about 4" down slope from the trench. Spacing between staples is 6". 1. FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL, WELL GRADED VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREAS. 2. Staple the 4" overlap in the channel center using an 18" spacing between staples. 2. WITCH AND LENTH SHALL BE AS SHOWN IN THE TABLE. 3. THE FILTER BAG MUST BE STAKED IN PLACE AND SECURED TO THE PUMP DISHARGE LINE. Before stapling the outer edges of the matting, make sure the matting is smooth and in firm contact with the soil. FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS GREATER THAN 300 GPM. DEVICE SHALL BE REMOVED AND DISPOSED OF AFTER BAG IS FILLED WITH SEDIMENT Staples shall be placed 2' apart with 4 rows for each strip, 2 5. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA. outer rows, and 2 alternating rows down the center. AVAILABLE FROM INDIAN VALLEY INDUSTRIES, INC. P.O. BOX 810 A.C.F. ENVIRONMENTAL 1801-A WILLIS ROAD 5. Where one roll of matting ends and another begins, the end of OR JOHNSON CITY, NEW YORK 13790 (800) 659-5111 RICHMOND, VIRGINIA 23237 TOLL FREE 1-800-448-3636 the top strip shall overlap the upper end of the lower strip by 4", shiplap fashion. Reinforce the overlap with a double row of staples spaced 6" apart in a staggered pattern on either side. FILTER BAG DETAIL 6. The discharge end of the matting liner should be similarly NOT TO SCALE secured with 2 double rows of staples. Note: If flow will enter from the edge of the matting then the area effected by the flow must be keyed-in. FISHER, COLLINS & CARTER, INC. VIL ENGINEERING CONSULTANTS & LAND SURVEYORS QUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIK ELLICOTT CITY, MARYLAND 21042 (410) 461 - 2855

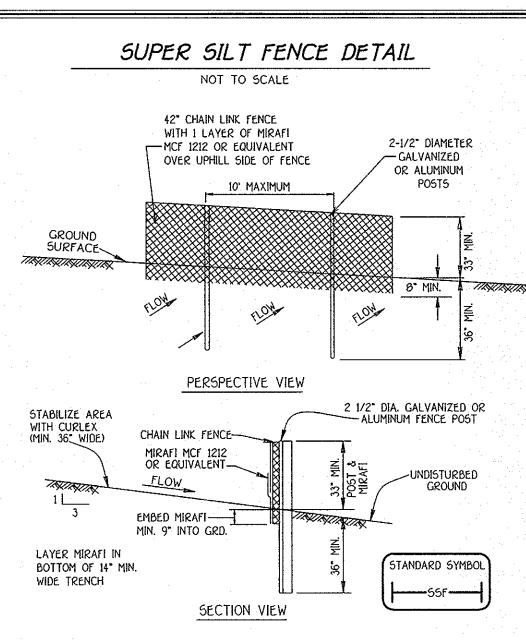


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- CONSTRUCTION SPECIFICATIONS 1. FENCING SHALL BE 42" HIGH CHAIN CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY ADMINISTRATION STANDARD DETAILS 690.01 AND 690.02 FOR CHAIN U FENCING. THE
- SPECIFICATIONS FOR A 6'-0" FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND &' POSTS. POSTS SHALL BE PLACED WITHOUT CONCRETE EMBEDMENT. 2. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO FENCE POSTS
- WITH WIRE TIES OR STAPLES. THE LOWER TENSION WIRE, BRACE AND TRUSS RODS, ANCHORS AND POST CAPS ARE NOT REQUIRED EXCEPT ON THE ENDS OF THE FENCE. 3. FILTER CLOTH TO BE FASTENED SECURELY TO CHAIN LINK FENCE
- WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. 4. FILTER CLOTH SHALL BE IMBEDDED A MINIMUM OF 9" INTO THE
- GROUND. 5. WHEN TWO SECTIONS OF DIVERSION CLOTH ADJOIN EACH OTHER THEY
- SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED. 6. MAINTENANCE SHALL BE PERFORMED AS NEEDED.

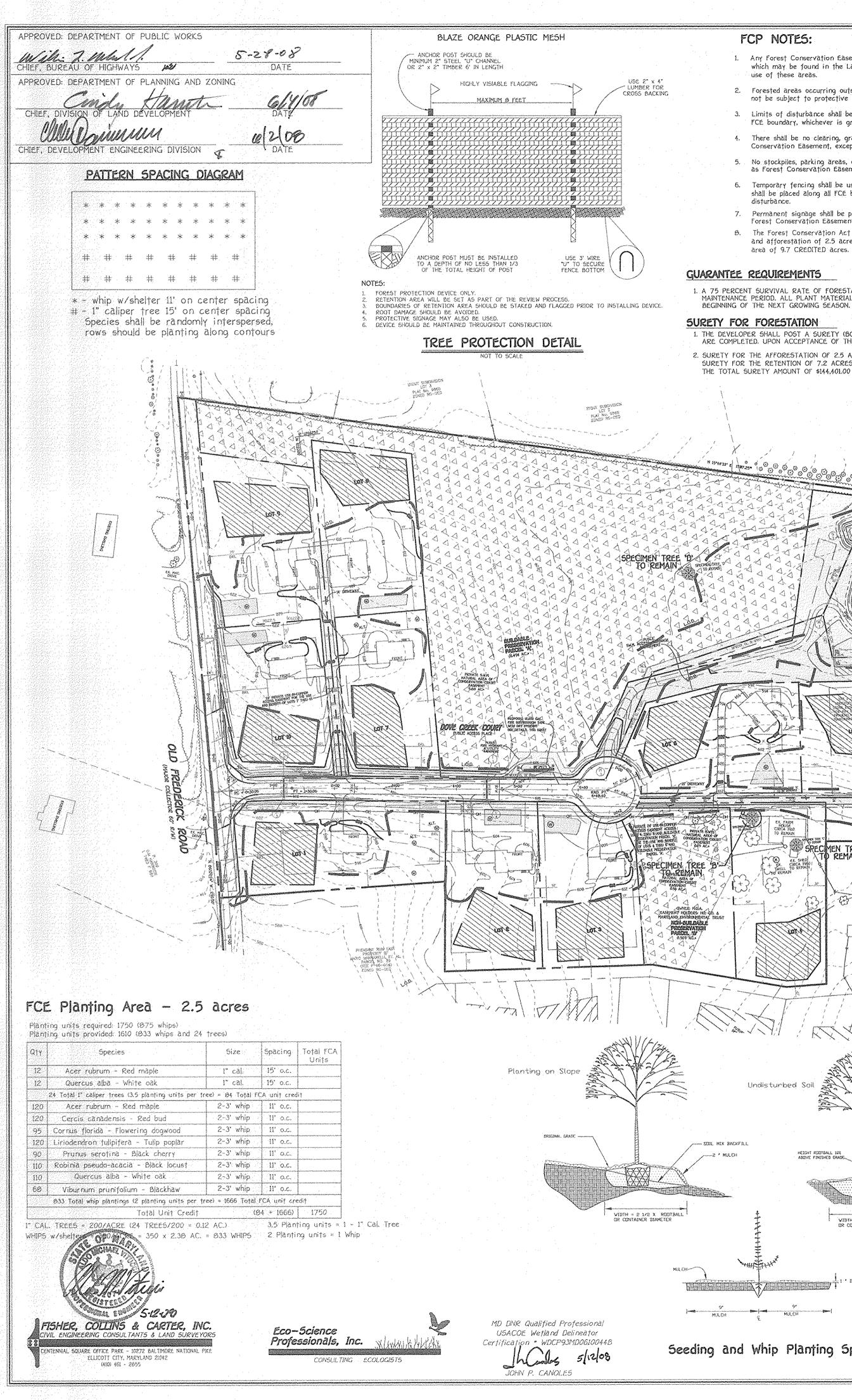
Fabric	Properties	Value	Test Method		
Grab Tens	ile Strength (lbs.)	90	A5TM D1682		
	at Failure (%)	50	ASTM DI682		
Mullen Bur	st Strength (PSI)	190	ASTM D3786		
Puncture S	otrength (lbs.)	40	ASTM D751		
Slurry Flow	Rate (gal/min/sf)	0.3	Virginia DOT VTM-51		
Equivalent	Opening Size	40-80	US Std Sieve CW-02215		
Utraviolet	Radiation Stability	(%) 90	ASTM G-26		
	Desic	n Criteria			
Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)		
0 - 10%	0 - 10:1	Unlimited	Unlimited		
0 - 20%	10:1 - 5:1	400 feet	1,500 feet		
0 - 33%	5:1 - 3:1	300 feet	1,000 feet		
3 - 50%	3:1 - 2:1	200 feet	500 feet		
50% +	2:1 +	100 feet	250 feet		

SEDIMENT CONTROL NOTES

- 1) A MINIMUM OF 40 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LISCENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855). 2) ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO. 3) FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 7 CALENDAR
- DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1, b) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE. 4) ALL SEDIMENT TRAPS/BASING 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 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. 51), SOD (SEC. 54), TEMPORARY SEEDING (SEC. 50), AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY
- BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES. 6) ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL
- HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. 7) SITE ANALYSIS: TOTAL AREA OF SITE 6.75 ACRES AREA DISTURBED
- 12.58 ACRES 0.57 ACRES AREA TO BE ROOFED OR PAVED AREA TO BE VEGETATIVELY STABILIZED 12.01 ACRES 5.000 CU.YDS. TOTAL CUT 5,000 CU.YD5. TOTAL FILL OFFSITE WASTE/BORROW AREA LOCATION N/A
- 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 CONTROLS 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 LENGHTS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.
- SEDIMENT AND EROSION CONTROL DETAILS PHEASANT RUN WEST LOTS 1 THRU 10. BUILDABLE PRESERVATION PARCEL 'A' & NON-BUILDABLE PRESERVATION PARCELS 'B' AND 'C'

ZONED "RC-DEO" TAX MAP Nos. 3 & 8, GRID Nos. 19 & 1, PARCEL No. 376 FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

DATE : MAY, 2008 SHEET 13 OF 17



FCP NOTES:

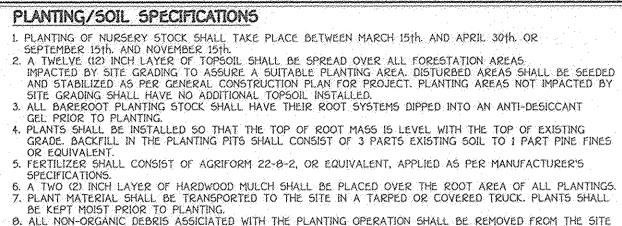
- 1. Any Forest Conservation Easement (FCE) area shown hereon is subject to protective covenants which may be found in the Land Records of Howard County which restrict the disturbance and use of these areas.
- 2. Forested areas occurring outside of the FCE shall not be considered part of the FCE and shall not be subject to protective land covenants.
- 3. Limits of disturbance shall be restricted to areas outside the limit of temporary fencing or the FCE boundary, whichever is greater.
- 4. There shall be no clearing, grading, construction or disturbance of vegetation in the Forest Conservation Easement, except as permitted by Howard County DPZ.
- 5. No stockpiles, parking areas, equipment cleaning areas, etc. shall occur within areas designated as Forest Conservation Easements.
- 6. Temporary fencing shall be used to protect forest resources during construction. The fencing shall be placed along all FCE boundaries which occur within 15 feet of the proposed limits of disturbance. 7. Permanent signage shall be placed 50-100: apart along the boundaries of all areas included in
- Forest Conservation Easements 8. The Forest Conservation Act requirements for this project include 7.2 acres of forest retention and afforestation of 2.5 acres. The forestation obligation will be met by providing a total planting/retention area of 9.7 CREDITED acres.

GUARANTEE REQUIREMENTS

1. A 75 PERCENT SURVIVAL RATE OF FORESTATION PLANTINGS WILL BE REQUIRED AT THE END OF THE 24 MONTH MAINTENANCE PERIOD. ALL PLANT MATERIAL BELOW THE 75 PERCENT THRESHOLD WILL BE REPLACED AT THE

SURETY FOR FORESTATION

1. THE DEVELOPER SHALL POST A SURETY (BOND, LETTER OF CREDIT) TO ENSURE THAT FORESTATION PLANTINGS ARE COMPLETED. UPON ACCEPTANCE OF THE PLANTINGS BY THE COUNTY, THE BOND SHALL BE RELEASED. 2. SURETY FOR THE AFFORESTATION OF 2.5 ACRES (43,560 SF/ACRE x \$0.75/5F = \$81,675.00) SURETY FOR THE RETENTION OF 7.2 ACRES (43,560 SF/ACRE x \$0.20/SF = \$62,726.00) . THE TOTAL SURETY AMOUNT OF \$144,401.00 WILL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT.



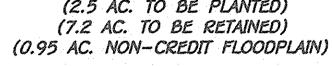
SEQUENCE OF CONSTRUCTION

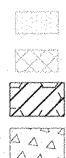
BY THE CONTRACTOR.

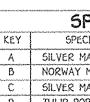
REQUIREMENTS FOR PROJECT. MAINTENANCE OF PLANTINGS

- 1. MAINTENANCE OF PLANTINGS SHALL LAST FOR A PERIOD 2. ALL PLANT MATERIAL SHALL BE WATERED TWICE A MON
- MORE OR LESS FREQUENT DEPENDING IN WEATHER CONI MAY-SEPTEMBER, IF NEEDED, 3. INVASIVE EXOTICS AND NOXIOUS WEEDS WILL BE REMOV
- SPECIES WILL BE RETAINED. 4. PLANTS WILL BE EXAMINED A MINIMUM TWO TIMES DURI DISEASES. SERIOUS PROBLEMS WILL BE TREATED WITH 5. DEAD BRANCHES WILL BE PRUNED FROM PLANTINGS.

FOREST CONSERVATION EASEMENT NO. 10.65 AC. (2.5 AC. TO BE PLANTED)







Seeding and Whip Planting Specification

HEIGHT ROUTEALL 19% ANIVE FINISHED GRAD

WIDTH = 2 1/2 X ROOTBALL OR CONTAINER DIAMETER

SRE(

CRCA 1994

100 h

Undisturbed Soil

MEN TREE 'C' D REMAIN

OWNERS MARIO MANNARELLI, SR. & SERAFINA MANNARELLI 2929 SUMMIT CIRCLE ELLICOTT CITY, MARYLAND 21043 (410) 461-2278

WIDTH = 2 1/2 X ROUTBALL BR CONTAINER DIAMSTER

BACKFILL WITH WITH 2/3 EXISTING SDIL AND 1/3 COMPOST

PLAN

SCALE: 1" = 100'

Disturbed So

HEIGHT ROOTBALL 102 ABOVE FINISHED GRADE

BACKFILL VITH NATIVE SOIL

- S . WITCH

PEMIC

Marshan Marshand Marshan

DEVELOPER HERITAGE LAND DEVELOPMENT, INC 15940 NORTH AVENUE P.O. BOX 482



CONSTRUCTION PLAN FOR SITE. SITE 2. PROPOSED FORESTATION AREAS IMP. NOTE NO. 2 OF PLANTING/SOIL SPEC	ECTION DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH GENERAL SHALL BE GRADED IN ACCORDANCE WITH GENERAL CONSTRUCTION PLANS. ACTED BY SITE GRADING SHALL BE TOPSOILED AND STABILIZED AS PER	G. AREA OF FOREST ABOVE CONSERVATION TRESHOLD. IF THE EXISTING FOREST COVER (F) IS GREATER THAN THE CONSERVATION TRESHOLD (E), THEN G = F - E: OTHERWISE G = 0.
4. UPON COMPLETION OF THE PLANTING SHOWN ON THE FOREST CONSERVATION	SIGNAGE SHALL BE INSTALLED AS PER THE FOREST PROTECTION DEVICES	BREAKEVEN POINT H. BREAKEVEN POINT GAMOUNT OF FOREST THAT MUST BE RETAINED SO THAT NO MITIGATION IS 7.9
MAINTENANCE OF PLANTING 1. MAINTENANCE OF PLANTINGS SHALL L 2. ALL PLANT MATERIAL SHALL BE WA' MORE OR LESS FREQUENT DEPENDING MAY-SEPTEMBER, IF NEEDED,	Among Second	REQUIRED) (D) IF THE AREA OF FOREST ABOVE CONSERVATION TRESHOLD (G) IS GREATER THAN 0, THEN H = (0.2 x THE AREA OF FOREST ABOVE CONSERVATION TRESHOLD (G) + THE CONSERVATION TRESHOLD (E):
SPECIES WILL BE RETAINED. 4. PLANTS WILL BE EXAMINED A MINIMU	EDS WILL BE REMOVED FROM FORESTATION AREAS. OLD FIELD SUCCESSIONAL IM TWO TIMES DURING THE GROWING SEASON FOR SERIOUS PLANT PESTS AND BE TREATED WITH THE APPROPRIATE AGENT. ROM PLANTINGS.	(2) IF THE AREA OF FOREST ABOVE CONSERVATION TRESHOLD (G) IS EQUAL TO 0, THEN H = EXISTING FOREST COVER (F) 1. FOREST CLEARING PERMITTED WITHOUT MITIGATION 0 1 = EXISTING FOREST COVER (F) - BREAKEVEN POINT (H)
	SCREDAL PLOSES LOT PLAT NO. 8937 20160 SC-DCD	PROPOSED FOREST CLEARING J. TOTAL AREA OF FOREST TO BE CLEARED 0.7
		K. TOTAL AREA OF FOREST TO BE RETAINED 7.2 K = EXISTING FOREST COVER (F) - FOREST TO BE CLEARED (J)
	The owelling	PLANTING REQUIREMENTS IF THE TOTAL AREA OF FOREST TO BE RETAINED (K) IS AT OR ABOVE THE BREAKEVEN POINT (FD, NO PLANTING IS REQUIRED, AND NO FURTHER CALCULATIONS ARE NECESSARY (L=0, M=0, N=0, P=0, Q=0, R=0).
	ANNING ST	OTHERWISE, CALCULATE THE PLANTING REQUIREMENT(5) AS FOLLOWS
The second state and	CHINE	L. REFORESTATION FOR CLEARING ABOVE THE CONSERVATION TRESHOLD (1) IF THE TOTAL AREA OF FOREST TO BE RETAINED (K) IS GREATER THAN THE
		CONSERVATION TRESHOLD (E), THEN L - THE AREA OF FOREST TO BE CLEARED (J) x 0.25; (2) IF THE FOREST TO BE RETAINED (L) IS LESS THAN OR EQUAL TO THE CONSERVATION TRESHOLD
J. Paral Construction		(E) THEN L + AREA OF FOREST ABOVE CONSERVATION TRESHOLD (G) x 0.25
in the internet in the second	FIN LED ANT	M. REFORESTATION FOR CLEARING BELOW THE CONSERVATION TRESHOLD 14
ETLAN Aurres BRL	PFOIA	(1) RECONSTRUCTION TO COMPARE DECOMPLETE THAN THE CONSERVATION TRESHOLD (E) AND THE (D) IF EXISTING FOREST COVER (F) IS GREATER THAN THE CONSERVATION TRESHOLD (E) AND THE FOREST TO BE RETAINED (C) IS LESS THAN OR EQUAL TO THE CONSERVATION TRESHOLD (E), THEN M = 2.0 x (CONSERVATION TRESHOLD (E) - FOREST TO BE RETAINED (C) (2) IF EXISTING FOREST COVER (F) IS LESS THAN OR EQUAL TO THE CONSERVATION TRESHOLD (E),
The state of the s	A A A A A A A A A A A A A A A A A A A	THEN M = 2.0 × FOREST TO BE CLEARED (J)
frat	and the second s	N. CREDIT FOR RETENTION ABOVE THE CONSERVATION TRESHOLD
CHART HIT	A A A A A A A A A A A A A A A A A A A	IF THE AREA OF FOREST TO BE RETAINED IN IS GREATER THAN THE CONSERVATION TRESHOLD (E). THEN N × K - E: OTHERWISE N = 0
· · · · · · · · · · · · · · · · · · ·		P. TOTAL REFORESTATION REQUIRED P + L + M - N
The He		Q. TOTAL ATFORESTATION REQUIRED
The Mering		IF EXISTING FOREST COVER (F) IS LESS THAN THE AFFORESTATION TRESHOLD (D), THEN Q = AFFORESTATION TRESHOLD (D) - EXISTING FOREST COVER (F)
the states		R. TOTAL PLANTING REQUIREMENT R - P + Q
	POREST CONSERVATION (OREST CONSERVATION) STATUTO I CONSERVATION OF ACCORDINATION OF ACCORDINATION	A PFOIA SCIERPUS CYPERINUS, ROSA MULTIFLORA IMPATIENS, CAPENSIS, SALIX NICRA, ACER RUBRUM, FRAXINUS PENNSYLVANICA 3.6 NOTES:
	TZ AG RELITED FORESTING	5. LENGTH OF STREAM BUFFER = 1,394'± WIDTH OF STREAM BUFFER = 150'
	Starting and the starti	Chipenna ON-SITE SIGNAGE
		FOREST CONSERVATION EASEMENT
EST CONSERVATION / ASEMENT NO. 1 10.65 AC.	Messari fam (Jest March March 197) March March 197 March	UNAUTHORIZED DISTURBANCE OF VEGETATION IS PROHIBITED. S VIOLATORS SUBJECT TO PENALTIES UNDER THE HOWARD COUNTY
AC. TO BE PLANTED) C. TO BE RETAINED) ION-CREDIT FLOODPLAIN)	LEGEND	FOREST CONSERVATION ACT OF
	DENOTES 15% - 24.99% SLOPES	TREES FOR YOUR FUTURE
	(AREA = 0.906 AC.*) DENOTES PLANTING AREA	
	DENOTES PRIVATE STORMWATER MANAGEMENT CREDIT	EASEMENT
	DENOTES TREE PROTECTION FENCE DENOTES LIMIT OF DISTURBANCE	FOREST CONSERVATION PLAN PHEASANT RUN WEST
	SPECIMEN TREE CHART	LOTS 1 THRU 10, BUILDABLE PRESERVATION PARCEL 'A' & NON-BUILDABLE PRESERVATION PARCELS 'B' AND 'C'
DEVELOPER ITAGE LAND DEVELOPMENT, INC. 15940 NORTH AVENUE P.O. BOX 482 LISBON, MARYLAND 21765 (410) 489-7900	KEYSPECIES AND SIZECONDITIONREMARKSASILVER MAPLE, 50 INCH DBHGOODTO BE REMOVEDBNORWAY MAPLE, 30 INCH DBHGOODTO REMAINCSILVER MAPLE, 64 INCH DBHGOODTO REMAINDTULIP POPLAR, 42 INCH DBHGOODTO REMAIN	TAX MAP Nos. 3 & Ø, GRID Nos. 19 & 1, PARCELS B AND C TAX MAP Nos. 3 & Ø, GRID Nos. 19 & 1, PARCEL No. 376 FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND DATE : MAY, 2008 SHEET 14 OF 17
		F-07-145
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FOREST CONSERVATION WORKSHEET

B. DEDUCTIONS (CRITICAL AREA, AREA RESTRICTED BY LOCAL OR PROGRAM)

LAND USE CATEGORY: MEDIUM DENSITY RESIDENTIAL

D AFFORESTATION THRESHOLD OVET TRACT AREA ICI x 2020

E. CONSERVATION THRESHOLD (NET TRACT AREA IC) x 25x)

EXISTING FOREST COVER WITHIN THE NET TRACT AREA.

C. NET TRACT AREA NET TRACT AREA - TOTAL TRACT (A) - DEDUCTIONS (B)

ACRES

46.75

1.99

44.8

9.0

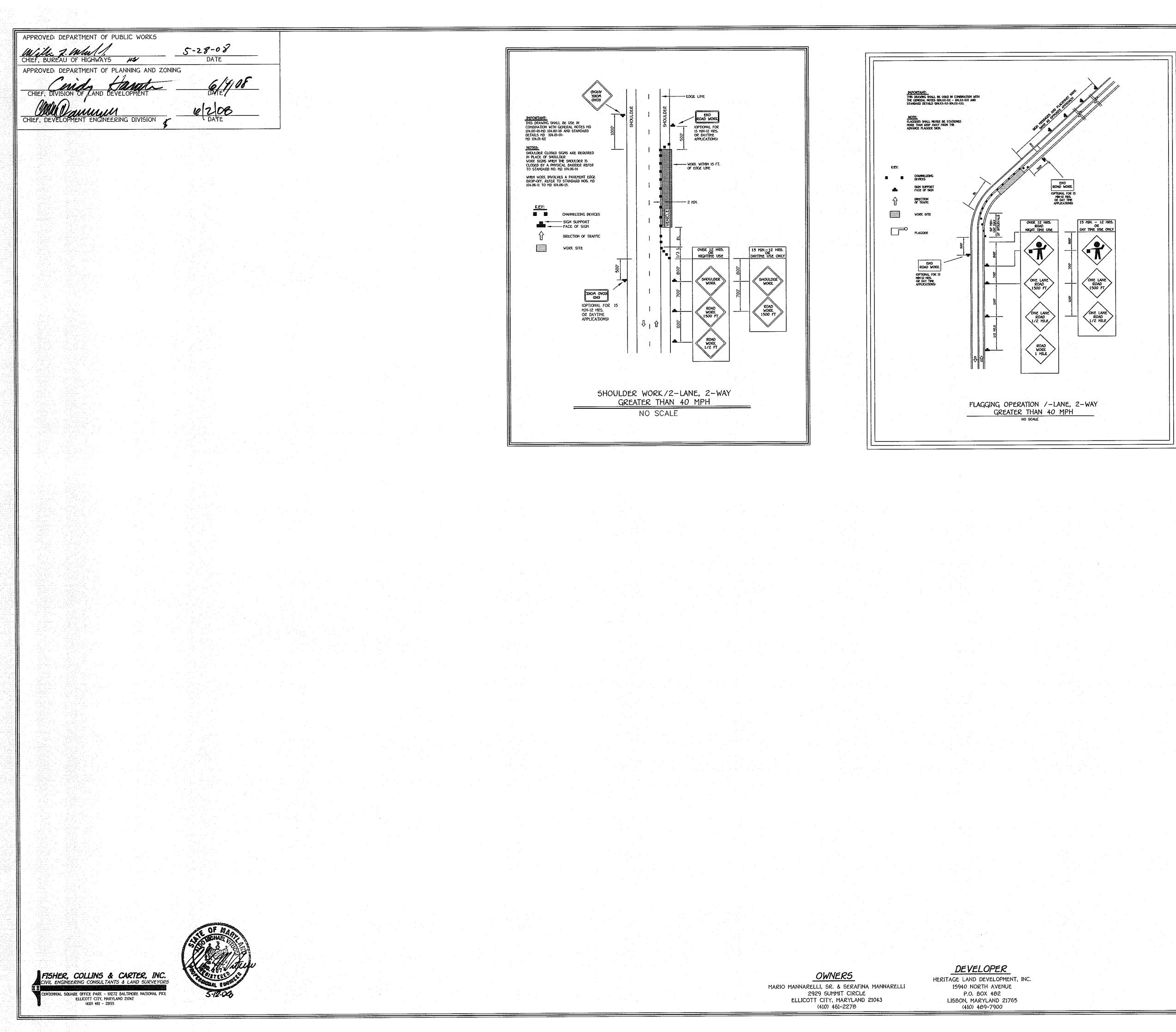
11.2

7.9

NET TRACT AREA

A. TOTAL TRACT AREA

EXISTING FOREST COVER



<u>GENERAL</u>

- 1. THE PURPOSE OF THIS PORTION OF THE SPECIAL PROVISION IS TO SET FOR THE TRAFFIC CONTROL REQUIREMENTS NECESSARY FOR THE SAFE AND EFFICIENT MAINTENANCE TO TRAFFIC WITHIN WORK AREAS, AND TO MINIMIZE ANY INCONVENIENCES TO THE TRAVELING PUBLIC AND THE CONTRACTOR AND/OR PERMITTEE.
- 2. PROPERTY TRAFFIC CONTROL THROUGH WORK AREAS IS ESSENTIAL FOR INSURING THE SAFETY AND THAT OF HIGHWAY WORKERS HAS THE HIGHEST PRIORITY OF ALL TASKS WITHIN THIS PROJECT. THE PROPERTY APPLICATION OF THE APPROVED TRAFFIC CONTROL PLAN (TCP) WILL
- PROVIDE THE DESIRED LEVEL OF SAFETY. 3. THROUGHOUT THESE SPECIAL PROVISIONS, ANY MENTION OF THE TCP SHALL BE IMPLIED TO INCLUDE ANY COMBINATION OF TYPICAL TRAFFIC CONTROL STANDARDS WHICH FORM THE OVERALL TCP FOR THIS PROJECT WHICH HAS BEEN APPROVED BY THE APPROPRIATE SHA
- TRAFFIC ENGINEER. 4. THE CONTRACTOR AND/OR PERMITTEE SHALL BE REQUIRED TO ADHERE TO THE PROVISIONS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 1988 EDITION, ESPECIALLY PART VI, AND TO SECTION 814 OF THE MARYLAND DOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS (JANUARY, 1982; INCLUDING ALL REVISIONS AND SUPPLEMENTS TO EACH.
- 5. THE CONTRACTOR AND/OR PERMITTEE SHALL BE REQUIRED TO ADHERE TO THE REQUIREMENTS SET FOR IN THE TCP AND THESE SPECIAL PROVISIONS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. ANY REQUESTS TO MAKE MINOR CHANGES TO THE TCP OR THE SPECIAL PROVISIONS WITH REGARD TO THE TRAFFIC CONTROL ITEMS SHALL BE MADE IN WRITING TO THE ENGINEER A MINIMUM OF THREE(3) WORKING DAYS PRIOR TO THE PROPOSED SCHEDULING CHANGE. THE CONTRACTOR AND/OR PERMITTEE SHALL HAVE WRITTEN APPROVAL OF THE ENGINEER PRIOR.
- TO THE IMPLEMENTATION OF ANY CHANGE. 6. NO WORK SHALL BEGIN ON ANY WORK ACTIVITY OR WORK PHASE UNTIL ALL REQUIRED TRAFFIC CONTROL PATTERNS AND DEVICES INDICATED ON THE TCP FOR THAT ACTIVITY OR PHASE ARE COMPLETELY AND CORRECTLY IN PLACE TO HAVE BEEN CHECKED FOR APPROVED USAGE. 7. GENERAL AND SPECIFIC WARNING SIGNS SHALL ONLY BE IN PLACE WHEN SPECIFIC WORK TASKS AND ACTIVITIES ARE ACTUALLY UNDERWAY OR CONDITIONS EXIST THAT POSE A POTENTIAL
- HAZARD TO THE PUBLIC, AND ANY ADDITIONAL SIGNING HAS BEEN APPROVED BY THE APPROPRIATE SHA TRAFFIC ENGINEER. NOTE: THE PRACTICE OF PLACING SIGNING AND OTHER TRAFFIC CONTROL DEVICES IN ADDITION TO THOSE INDICATED ON THE APPROVED TCP IS NOT PERMITTED. B. THE CONTRACTOR AND/OR PERMITTEE SHALL PROVIDE, MAINTAIN IN NEW CONDITION, AND MOVE
- WHEN NECESSARY, OR AS DIRECTED BY THE ENGINEER, ALL TRAFFIC CONTROL DEVICES USED FOR THE GUIDANCE AND PROTECTION OF MOTORISTS, PEDESTRIANS, AND WORKERS. 9. ALL TRAFFIC CONTROL DEVICES REQUIRED BY THE TCP SHALL BE KEPT IN GOOD CONDITION.
- FULLY PERFORMING AS SET FORTH IN THE TCP, THE MUTCD, AND/OR SECTION BIA OF THE SPECIFICATIONS. FOR REFLECTIVE DEVICES, A PARTICULAR DEVICE IS ASSUMED TO HAVE FAILED TO MEET MINIMUM OPERATIONAL STANDARDS WHEN THE DEVICE NO LONGER HAS RETRO-REFLECTANCE CAPABILITY OF AT LEAST 60XXX OF THE SPECIFIED MINIMUM VALUE OVER AT
- 10. ALL TRAFFIC CONTROL DEVICES NOT REQUIRED FOR THE SAFE CONDUCT OF TRAFFIC SHALL BE PROMPTLY REMOVED, COMPLETELY COVERED, TURNED AWAY FROM TRAFFIC, OR OTHERWISE TAKEN OUT OF SERVICE. IT IS INTENDED THAT NO TRAFFIC CONTROL DEVICE IS TO BE IN SERVICE WHEN THERE IS NO CLEAR CUT REASON FOR THE DEVICE.
- 11. THROUGHOUT THE PERIOD(S) OF WORK ACTIVITIES, TRAFFIC SHALL BE MAINTAINED BY IMPLEMENTING THE APPROVED TCP. IN LIEU OF THE TCP PREPARED FOR THIS PROJECT, AND/OR INDIVIDUAL TYPICAL TRAFFIC CONTROL STANDARDS, THE CONTRACTOR AND/OR PERMITTEE HAS THE OPTION OR PREPARING AND SUBMITTING A TCP, WHOLLY OR IN PART, OF HIS OWN DESIGN, FOLLOWING GUIDELINES SET FORTH IN THE MUTCO AND PRESCRIBED BY THE ADMINISTRATION. A TCP DEVELOPED BY THE CONTRACTOR AND/OR PERMITTEE SHALL NOT BE IMPLEMENTED UNTIL ADVANCE WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER. TCP'S
- MAY BE IMPLEMENTED WITHIN A SINGLE PROJECT OR JOINTLY BETWEEN TWO OR MORE PROJECTS. IN SITUATIONS WHERE TCP'S JOINTLY IMPLEMENTED, CARE SHALL BE EXERCISED TO PRESENT CORRECT AND NON-CONFLICTING GUIDANCE TO THE TRAVELING PUBLIC. 12. THROUGHOUT THESE SPECIAL PROVISIONS, WHERE SPEED OF TRAFFIC IS NOTED, THIS MEANS THE POSTED SPEED OR PREVAILING TRAVEL SPEED, WHICHEVER IS HIGHER, UNLESS
- OTHERWISE NOTED. 13. TRAFFIC SHALL BE MAINTAINED AT ALL TIMES THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT, UNLESS OTHERWISE NOTED. NO TRAVEL LANE(S) OTHER THAN THOSE DESIGNATED FOR POSSIBLE CLOSURE IN THE TCP SHALL BE CLOSED WITHOUT OBTAINING PRIOR APPROVAL FROM THE ENGINEER. ALL INGRESS AND EGRESS TO THE WORK AREA BY THE CONTRACTOR AND/OR PERMITTEE SHALL BE PERFORMED WITH THE FLOW OF TRAFFIC.

TRAFFIC CONTROL PLAN PHEASANT RUN WEST LOTS 1 THRU 10, BUILDABLE PRESERVATION PARCEL 'A' &

NON-BUILDABLE PRESERVATION PARCELS 'B' AND 'C' ZONED "RC-DEO" TAX MAP Nos. 3 & 8, GRID Nos. 19 & 1, PARCEL No. 376 FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

DATE : MAY, 2008 SHEET 15 OF 17

APPROVED: DEPARTMENT OF PUBLIC WORKS Millin Z. Mlsul . CHIEF, BUREAU OF HIGHWAYS 5-28-08 DATE APPROVED: DEPARTMENT OF PLANNING AND ZONING 6/4/08 DATE LAND DEVELOPMENT DEVELOPMENT ENGINEERING DIVISION 0208 DATE CHIEF, DEVELOP STORMWATER MANAGEMENT # 1 **B-2** B-1 Topsoil Brown very moist CLAY & SILT, 0.2 Topsoil some cf sand, trace rock frags (CL) (Clay Loam) Dark brown very moist SILT & 580 CLAY, little cf sand, trace rock 3.0 frags (ML) (Silt Loam) Brown, reddish brown and gray 3.0 9 moist cf SAND, and silt, some rock frags (SM) (Sandy Loam) Brown moist SILT & CLAY, some cf sand, little rock frags (ML) (Loam) 6.0 11 Brown, reddish brown, gray and 8.0 ______sand (ML) (Loam) (Decomposed R 6.0 575 Brown, reddish brown, gray and black moist of SAND, and clayey silt, trace rock frags (SM) (Sandy Loam) (Decomposed Rock) 22 Brown and gray moist cf SAND, and silt, trace to little rock frags, trace mica (SM) (Sandy Loam) 12.0 570 15.0 21 At completion, water at 13.0°, hole caved at 13.5° 565 At completion, water at 10.2', hole caved at 12.7' 1 day after completion, water at 11.2', hole caved at 13.3' 1 day after completion, water at 10.4°, hole caved at 13.0° SECTION A-A STORMWATER MAN PHEASANT RUN HOWARD COUNTY, I FISHER, COLLINS & CARTER, INC. 5.12.00 NTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE ELLICOTT CITY, MARYLAND 21042 (410) 461 - 2855

	}	HERBST/BENSON & ASSOCIATES Geotechnical Engin	eers
		B-3	585
	0.2	Topsoil	
USXIIUSXII		Brown moist SILT & CLAY, and cf sand, trace rock frags (ML) (Loam)	
	3.0	Brown and gray moist cf SAND, and silt, trace rock frags (SM)	580
≥k	6.0	⁶ Brown and black moist Clayey SiLT, ⁶ and cf sand, trace rock frags (ML)	
Rock)	8.0		<u>575</u>
/ ck)		Brown, reddish brown and gray-brown moist cf SAND, and slit, trace to little rock frags (SM) (Sandy Loam)	
ome	15.0	9	<u>570</u>
	At co hole 1 day	ompletion, dry and caved at 12.1' ay after completion, ar at 12.0', hole caved at 13.0'	
			565
NAGEMENT STUDY	05168MD	BORING PROFILES	LATE
, MARYLAND	NOV., 2005	HORIZ 0 30 VERT 0 3 SCALE 0 3 (FEET) (FEET)	2

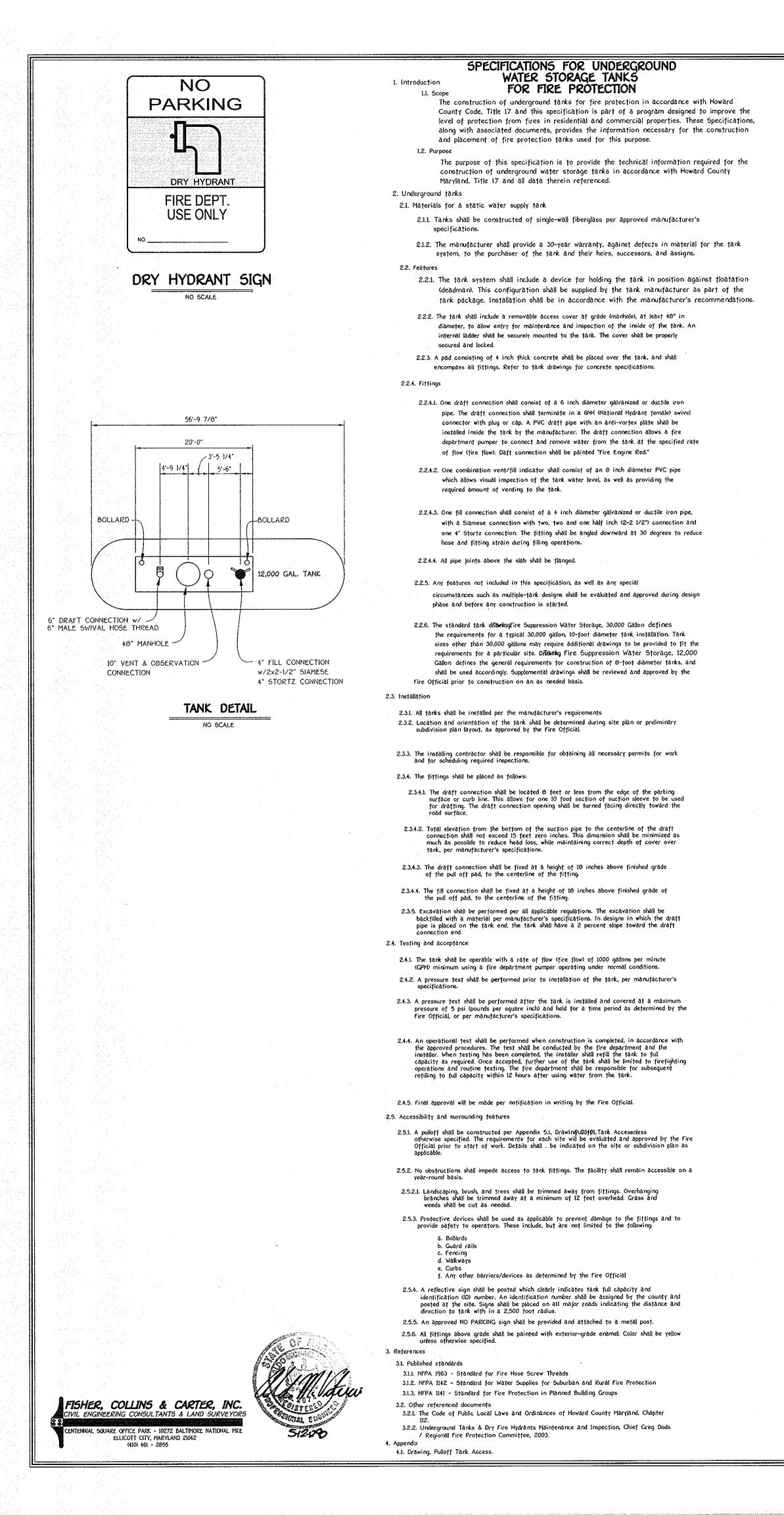
OWNERS MARIO MANNARELLI, SR. & SERAFINA MANNARELLI 2929 SUMMIT CIRCLE ELLICOTT CITY, MARYLAND 21043 (410) 461-2278 DEVELOPER HERITAGE LAND DEVELOPMENT, INC. 15940 NORTH AVENUE P.O. BOX 482 LISBON, MARYLAND 21765 (410) 489-7900

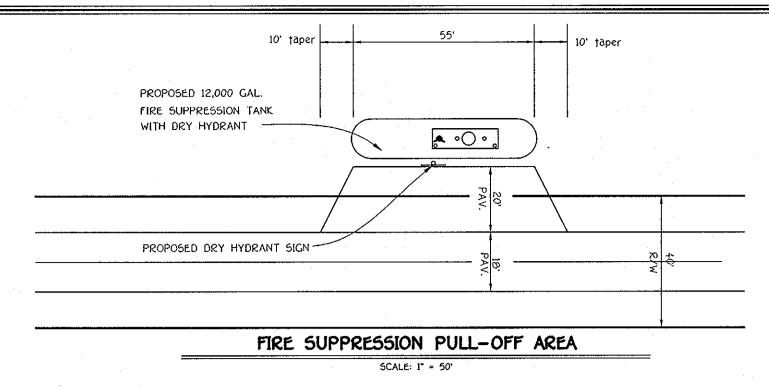
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WATER MANAGEMENT	0800	2MD	ВС	RIN		OFILE	PLATE
N WEST ITY, MARYLAND	JAN., :	2008	HORIZ SCALE (FEET)	NONE	VERT SCALE (FEET)	02	2
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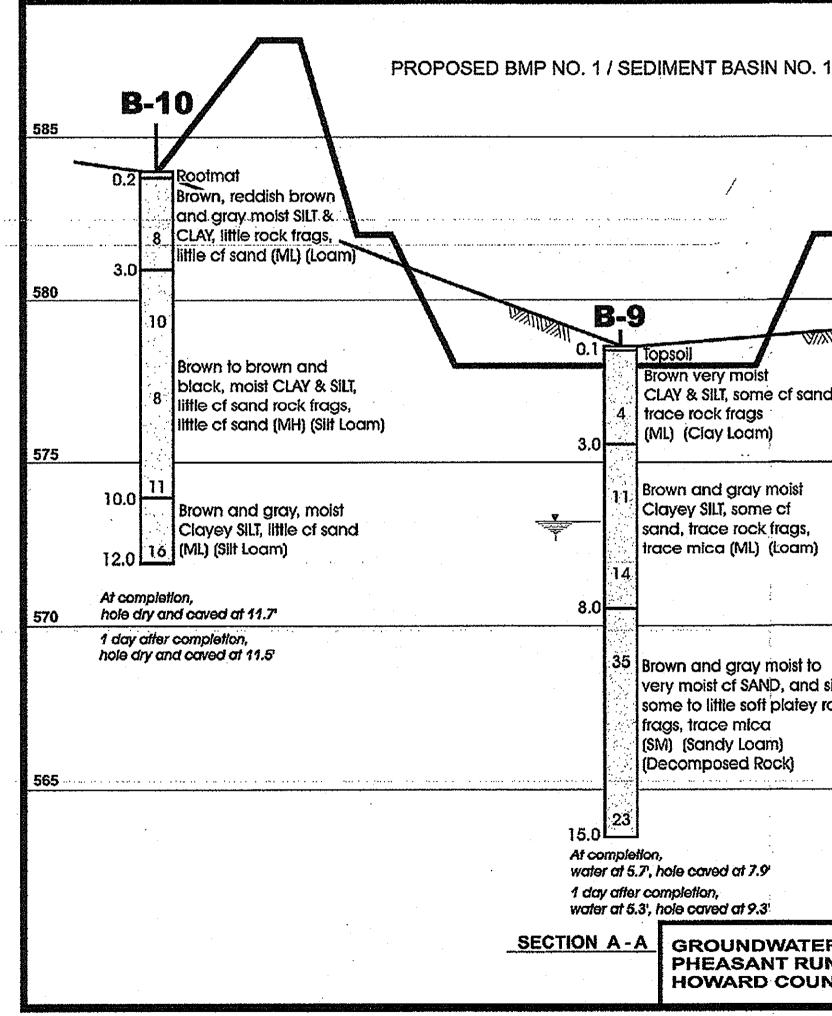
PHEASANT RUN WEST LOTS 1 THRU 10, BUILDABLE PRESERVATION PARCEL 'A' & NON-BUILDABLE PRESERVATION PARCELS 'B' AND 'C' ZONED "RC-DEO" TAX MAP NOS. 3 & Ø, GRID NOS. 19 & 1, PARCEL NO. 376 FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND DATE : MAY, 2008

SHEET 16 OF 17

SOIL BORING PROFILES







OWNERS MARIO MANNARELLI, SR. & SERAFINA MANNARELLI 2929 SUMMIT CIRCLE ELLICOTT CITY, MARYLAND 21043 (410) 461-2278 DEVELOPER HERITAGE LAND DEVELOPMENT, INC. 15940 NORTH AVENUE P.O. BOX 482 LISBON, MARYLAND 21765 (410) 489-7900

APPROVED: DEPARTMENT OF PUBLIC WORKS With R. Mah 5-28-08 CHIEF, BUREAU OF HIGHWAYS APPROVED: DEPARTMENT OF PLANNING AND ZONING **E**SS. HERBST/BENSON & ASSOCIATES Geotechnical Engineers • **B-8 B-7** Topsoll. Topsoil 0.2 Topsoil Brown and gray moist Brown and dark brown Brown very moist micaceous Clayey SILT, CLAY & SILT, some cf sand, very moist SILT[®] & CLAY, some cf sand, frace soft trace rock frags some cf sand, little rock platey rock frags (ML) (Clay Loam) frags (ML) (Loam) (ML) (Loam) Brown and gray moist SILT & CLAY, little cf sand, Brown and gray moist Clayey SILT, some cf trace rock frags sand, trace rock frags, (ML) (Silt Loam) 6.0 trace mica (ML) (Loam) Brown moist SILT & CLAY, 57 Brown and gray moist and cf sand, trace rock micaceous soft platey ROCK FRAGS, some cf frags (ML) (Loam) 30 Brown and gray moist to sand, little to some silt very moist of SAND, and silt, (SM) (Sandy Loam) some to little soft platey rock (Decomposed rock) frags, trace mica (SM) (Sandy Loam) 12.0 (Decomposed Rock) Brown and gray moist SILT, 565 and of sand, trace rock frags 15.0 55 (ML) (Loam) (Decomposed Rock) At completion, 15.0 water at 8.0, hole caved at 13.2' At completion, water at 5.7, hole caved at 7.9 1 day after completion, water at 3.2', hole caved at 12.9 water at 6.0°, hole caved at 11.2° 1 day after completion, water at 5.3', hole caved at 9.3' water at 3.2', hole caved at 10.7' PLATE SECTION A-A GROUNDWATER RECHARGE FACILITY 07152MD **BORING PROFILES** PHEASANT RUN WEST NOV., 2007 HOWARD COUNTY, MARYLAND SCA(F

SOIL BORING PROFILES PHEASANT RUN WEST LOTS 1 THRU 10, BUILDABLE PRESERVATION PARCEL 'A' &

NON-BUILDABLE PRESERVATION PARCELS 'B' AND 'C' ZONED "RC-DEO" TAX MAP Nos. 3 & 8, GRID Nos. 19 & 1, PARCEL No. 376

FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND DATE : MAY, 2008 SHEET 17 OF 17