

SOL	CONSERVATION HARYLAND	SERVICE
CONSTI	RUCTION SPECIN	PICATIONS
	FOR	
	PONDS	

These specifications are appropriate to ponds within the scope of the Standard. for practice 378.

# 1. SITE PPEPARATION

Areas designated for borrow areas, embankment, and structural works shall be clasted, 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.

Areas to be covered by the pond or 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.

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 stockpilled in a suitable location for use on the embankment and other designated areas.

### II. EARTH FILL

# Material

The fill material shall be taken from approved designated borrow area or areas. It shall be free of roots, stumps, wood, rubbish, oversize stones, frozen or other objectionable materials. The embankment shall be constructed to an elevation which provides for anticipated settlement to the design elevation. The fill height all slong the length of the embankment shall be increased above the design elevation (including freeboard) as shown on the plans,

### Placement

Areas on/which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in 8-inch maximum thickness (before compaction) layers which are to be continuous over the entire length of the fill. The most porous borrow material shall be placed in the downstream portions of the embankment. Compection

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 the equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction can be obtained with the equipment used.

Where a minimum required density is specified, each layer of fill shall be compacted as necessary to obtain that density and is to be certified by the Engineer.

### Cutoff Trench

Where specified, a cutoff trench shall be excavated along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be as shown on the drawings, with the minimum width being four feet. The depth shall be at least four feet or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill material for the cutoff trench shall be the most impervious material available and shall be compacted with equipment or rollers to assure maximum density and minimum permeability.

## III. STRUCTURAL BACKFILL

Backfill material 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 tempers or other 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 twenty-four inches or greater over the structure or pipe.

# IV. PIPE CONDUITS

All pipes shall be circular in cross section.

### A. Corrugated Metal Pipe

1. Haterials - (Steel Pipe) - This pipe and its appurtenances shall be galvanized and fully bituminous coated and shall conform to the requirements of AASHTO Specification M-190 Type A with watertight coupling bands. Any bituminous costing demaged or otherwise removed shall be replaced with cold spalied bituminous coating

- following coatings are commercially available: Hexon, Plasti-Cote, Blac-Klad, and Beth-Cu-Loy. Coated corrugated steel pipe shall meet the requirements of AASRIO H-245 and H-246. Materials - (Aluminized Steel Pipe) - This pipe and its
  - appurtenances shall conform to the requirements of AASHTO Specification H-274-791 with watertight coupling bands or flanges.
  - Materials (Alumnous Pipe) This pipe and its appurtenances shall conform to the requirements of AASRTO Specification H-196 or H-211 with vatertight coupling bands or flanges. Coupling bands, anti-seep collars, end sections, etc. must be composed of the same material as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness. Aluminum surfaces that are to be in contact with concrete shall be painted with one cost of zinc chromate primer. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be less than 9 and greater than 4.
  - 2. 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. Watertight coupling bands or flanges shall be used at all joints. Anti-scep collars shall be connected to the pipe in such a manner as to the completely watertight. Dimple bands are not considered to be 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. Laying pipe The pipe shall be placed with inside circumferential laps pointing downstream and with the longitudinal laps at the sides.
  - 5. Backfilling shall conform to structural backfill as shown above.
  - 5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.
  - B. Reinforced Concrete Pipe
  - 1. Materials Reinforced concrete pipe shall have a rubber gasket joint and shall equal or exceed ASTM Specification C-361. An approved equivalent is AWA Specification C-301.
  - 2. Bedding All reinforced concrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 10% of its outside dismeter with a minimum thickness of 3", or as shown on the drawings."
  - 3. Laying pipe Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe.
  - 4. Backfilling shall conform to structural backfill as shown above.
  - 5. Other details (anti-scop collars, valves, etc.) shall be as shown
  - C. For pipes of other materials, specific specifications shall be shown

on the drawings.

# CONCRETE

# 1. <u>Materials</u>

- a. Cement Bormal Portland cement shall conferm to the latest ASTM Specification 0-150.
- b. Vater The water used in concrete shall be clean, free from eil, acid, alkali, scales, organic matter or other objectionable emistances.
- c. Sand The sand used in concrete shall be clean, hard, strong and carable, and shall be well graded with 100 percent passing a one-quarter inch sieve. Linestone send shall not be used.
- d. Coarse Aggregate The coarse aggregate shall be clean, hard, strong and durable, and free from eley or dirt. It shall be wall graded with a maximum diss of our and can-half (1-1/2) inches.
- e. Reinforcing Steel The reinforcing steel shall be deformed bars of intermediate grade billet steel or rail steel conforming to ASTM Specificatica A-615.
- 2. Design Mix The concrete chall be mined in the following proportions, measured by weight. The water-cement ratio shall be 5-1/2 to 6 U.S. Gallons of water per 94 pound bag of essent. The properties of materials for the trial wix shall be 1:2:3-1/2. The combination of aggregates may be edjusted to produce a plastic and workable win that will not produce herehouses in plecing or hempossing in the structure.

Mixing - The concrete ingrodients shall be mixed in batch mixers watil the mixture is homogeneous and of uniform consistency. The mixing of each batch shall continue for not less then one and ene-half minutes after all the ingredients, except the full except of vetor, are in the niver. The minimum mixing time is predicted on proper systrol of the

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DIVISION OF COMMUNITY PLANNING & LAND DEVELOPMENT HOWARD COUNTY, MARYLAND DATE 3-31-89	Sediment Contr On My Persona Prepared In Ac Soil Conservati Must Provide 1 Built <sup>®</sup> Plan Of Pome	This Plan For Pond Construction, E rol Represents A Practical And Wor al Knowledge Of The Site Conditions ccordance With The Requirements O ion District. I Have Notified The Da The Howard Soil Conservation Distri The Pond Within 30 Days Of Comp <u>-W</u> Signature of Engineer	kable Plan Based s. This Plan Was If The Howard eveloper That He ct Wilh An "As-	APPR	ROVED : For Priva Sewerage Department Gonly Health
APPROVED : Howard County Office of Plann Zoning Planning Director Masser S. J. Caryth- Chiel, Division of Community Planning and Land Development	<b>8.10.89</b> Dale 22/25 Dale	I Certify That All Developm Done According To These Personnel Involved In The Certificate of Altendance A Resources Approved Traini Sediment and Erosion Belo Provide The Howard Soil ( Buill" Plan Of The Pond W Also Authorize Periodic On Soil Conservation District. Jamas Die Verso Signature of De	Plans, and That Any Res Construction Project Will H At A Department of Nature ing Program for the Contr re Beginning The Project. Conservation District With Within 30 Days Of Complet Site Inspections By The Sufference State Stat	sponsible dave A al ol of I Will An *As- lion. I	APPROVED : Fo Ho Prector Chief Bureau of E

These Plans Have Been Reviewed For The Howard Soil Conservation District And Meet The

Technical Requirements For Small Pond Con-

struction, Soil Erosion And Sediment Control.

Steel pipes with polymeric coatings shall have a minimum costing thickness of 0.01 inch (10 mil) on both sides of the pipe. The

ite Water and Private Septic Systems. Howard County Health <

or Storm Drainage Systems and Public Roads loward County Department of Public Works.

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speed of rotation of the mixer and of the introduction of the materials, including water, into the mixer. Water shall be added prior to, during, and following the mixer-charging operations. violation of any applicable provisions of the specifications given here.

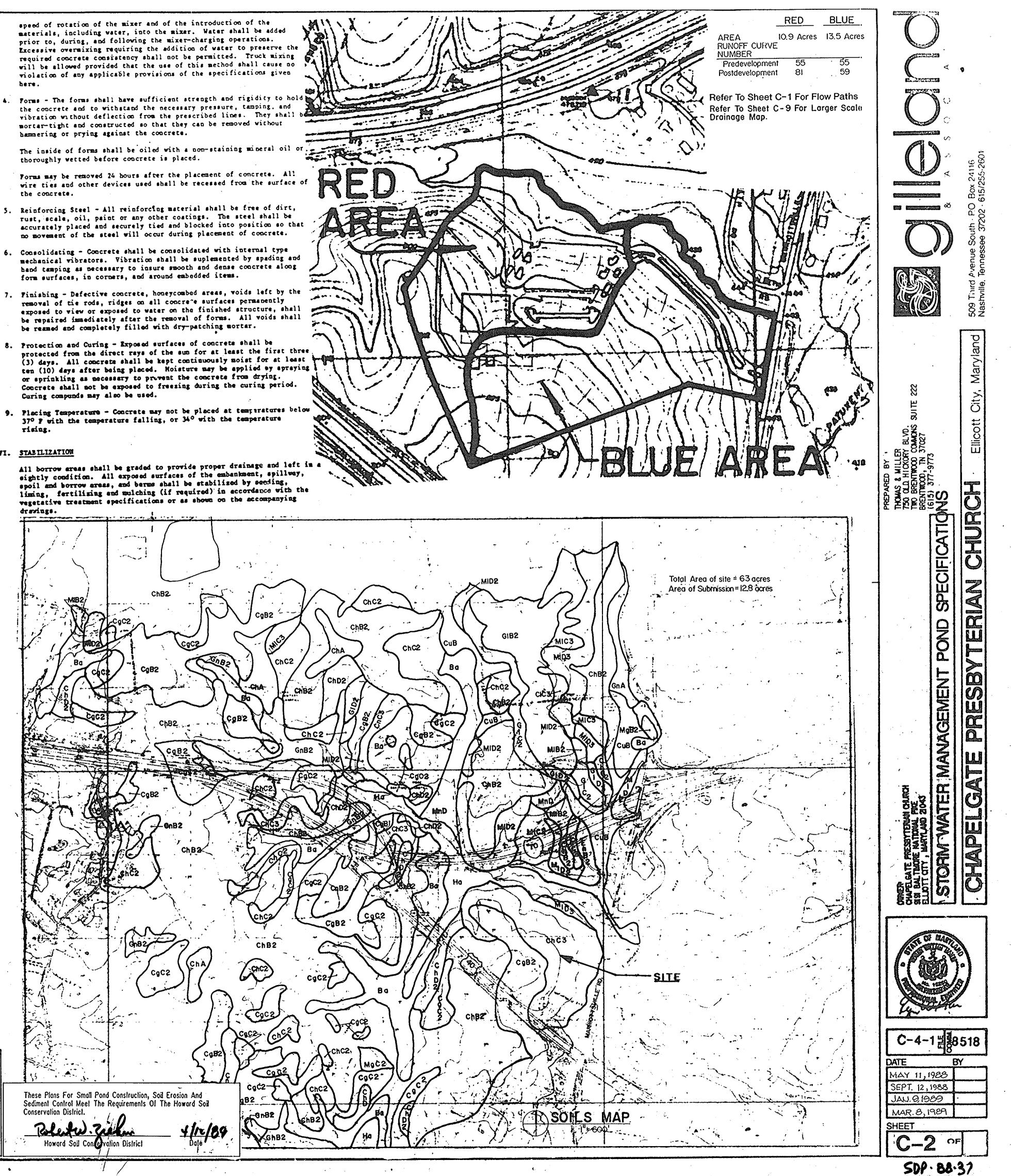
the concrete and to withstand the necessary pressure, tamping, and mortar-tight and constructed so that they can be removed without hammering or prying against the concrete.

thoroughly wetted before concrete is placed.

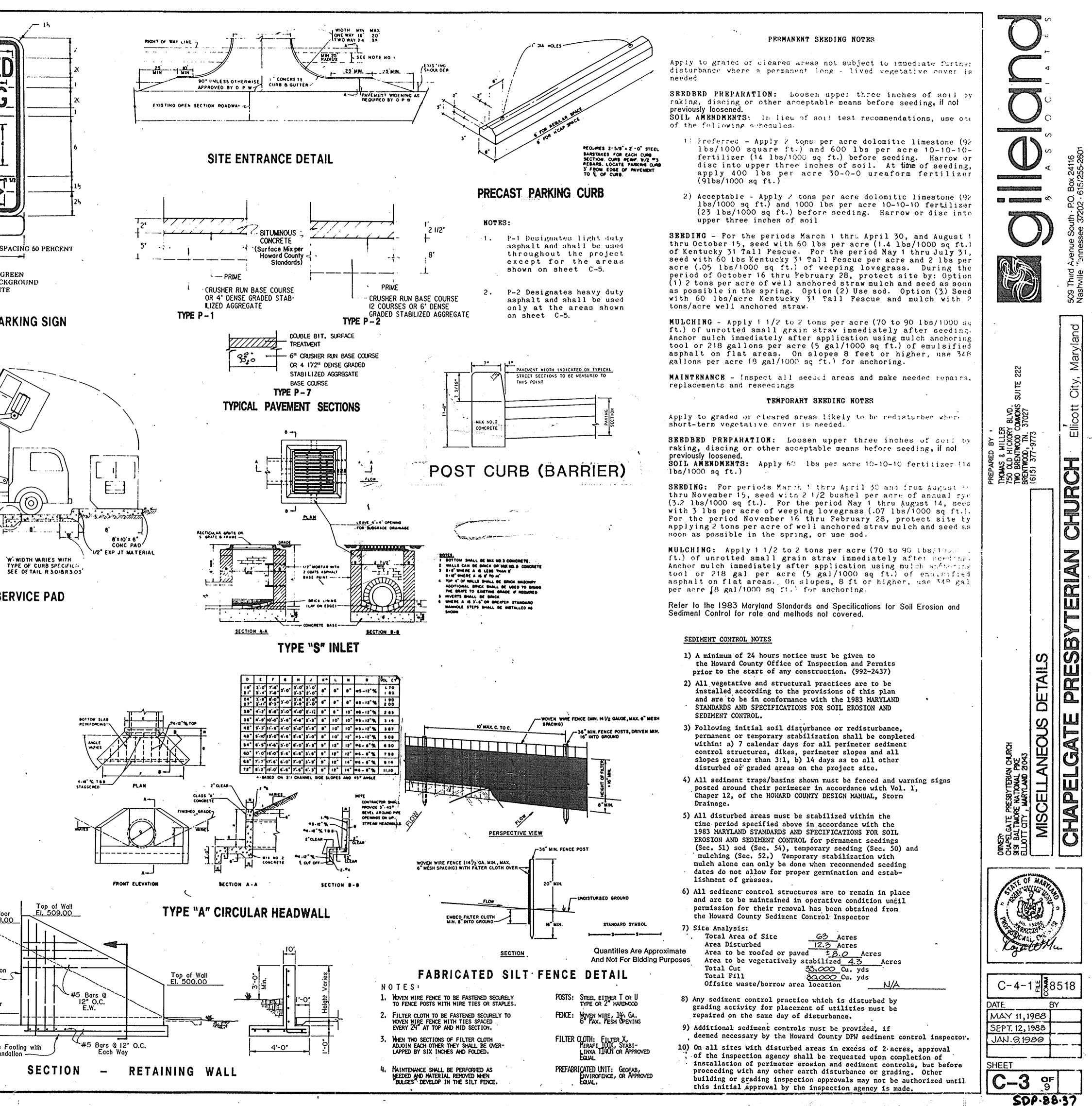
the concrete.

- 5. Reinforcing Steel All reinforcing material shall be free of dirt, rust, scale, oil, paint or any other coatings. The steel shall be accurately placed and securely tied and blocked into position so that no movement of the steel will occur during placement of concrete.
- hand tamping as necessary to insure smooth and dense concrete along form surfaces, in corners, and around embedded items.
- removal of the rods, ridges on all concrete surfaces permanently be repaired immediately after the removal of forms. All voids shall be reamed and completely filled with dry-patching mortar.
- protected from the direct rays of the sun for at least the first three ten (10) days after being placed. Hoisture may be applied by spraying or sprinkling as necessary to prevent the concrete from drying. Concrete shall not be exposed to freezing during the curing period.
- 37° F with the temperature falling, or 34° with the temperature

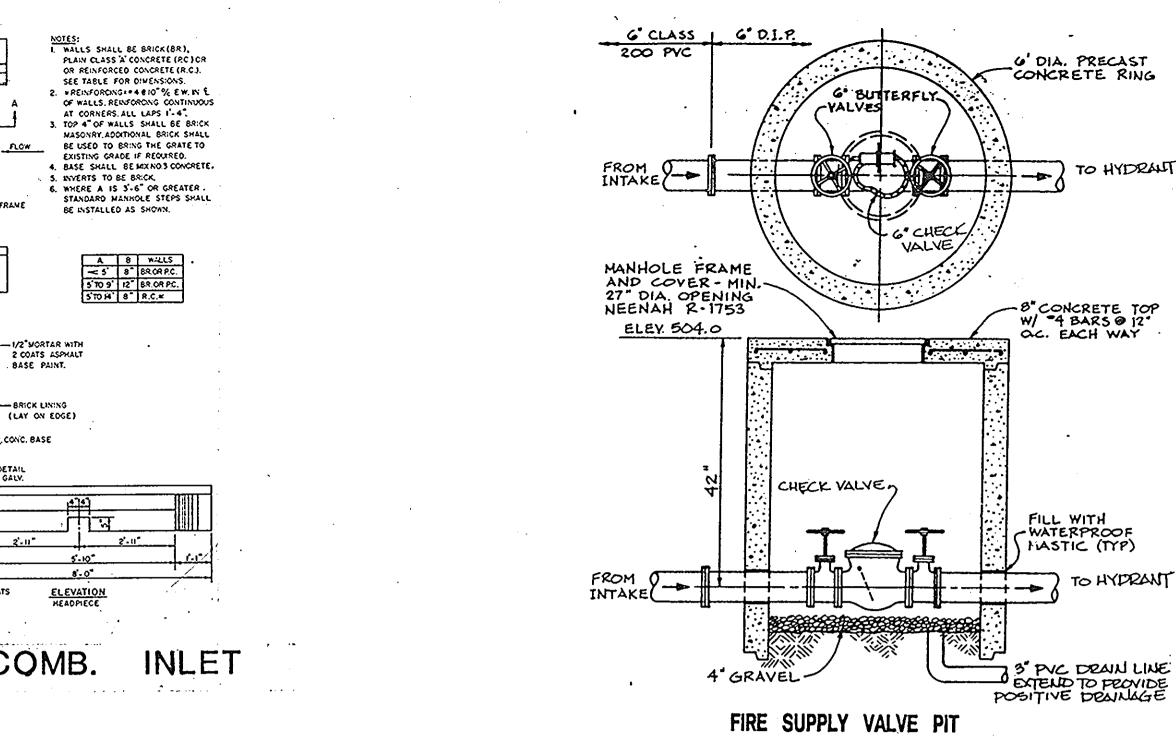
VI. STABILIZATION



STANDARD SYMBOL --- 3/8 EXISTING PAVEMENT Filter / PROFILE MOUNTABLE BERM Cloth (Optional) Existing ground The state of the state of EXISTING PAVEMENT PLAN VIEW \$50.00 FINE CONSTRUCTION SPECIFICATIONS 1. Stone Size - Use 2" stone, or reclaimed or recycled concrete equivalent. STD. R7-8 • REDUCE SPACING 50 PERCENT 7'-0'-2. Length - As required, but not less than 50 feet (except on a single resi-MIN. TO dence lot where a 30 foot minimum length would apply) 3. Thickness - Not less than six (6) inches. GRADE 12" COLORS 4. Width - Ten (10) foot minimum, but not less than the full width at LEGEND AND BORDER --- GREEN points where ingress or egress occurs. WHITE SYMBOL ON BLUE BACKGROUND 5. Filter Cloth - Will be placed over the entire area prior to placing of stone. BACKGROUND WHITE Filter will not be required on a single family residence lot. 6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted. HANDICAPPED PARKING SIGN 7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately Mashing - Wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area LEVEL OF TREE LIMBS. stabilized with stone and which drains into an approved sediment trapping OVERHEAD WIRES, ETC. device. Periodic inspection and needed maintenance shall be provided after each rain. STABILIZED CONSTRUCTION ENTRANCE 530 ----520 -PHASE 1A PHASE 1B 510 -Second FFE 508.0 500 --isl FFE 496.0 490 ---A SECTION 480 ----C-3 SCALE + Horiz.-1"=120' Verl.-1"=40' Star 6 - 6 WELDED WIRE MESH -S.H.A MIX NO.3 CONCRETE NO. 6 REBAR SOLID WASTE SERVICE PAD 520 ----510 -Second FFE 508.0 500 ---490 -SECTION C-3 SCALE + Horiz.-1"=120' Verl.-1"=40' APPROVED : For Private Water and Private Septic Sewerage Systems. Howard County Health APPROVED : For Storm Drainage Systems and Public Roads Howard County Department of Public Works. Date hiel Bureau of Engineering These Plans Have Been Reviewed For The Howard Soil Conservation District And Meet The Technical Requirements For Small Pond Construction, Soil Erosion And Sediment Control. I Certify That All Development and/or Construction Will Be Done According To These Plans, and That Any Responsible 4 12 89 Helm17 Personnel Involved in The Construction Project Will Have A U.S. Soil Conservation Service Dale Certificate of Allendance At A Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion Before Beginning The Project, I Will Provide The Howard Soil Conservation District With An "As-Buill" Plan Of The Pond Within 30 Days Of Completion. I Also Authorize Periodic On-Site Inspections By The Howard Soil Conservation District. James Di Virgilio APPROVED 4/12/89\_ Signature of Developer DIVISION of COMMUNITY PLANMING First Floor El. 508.00 & LAND DEVELOPMENT i Certify That This Plan For Pond Construction, Erosion and Sedment Control Represents A Practical and Workable HOWARD COUNTY, Plan Based On My Personal Knowledge of the Site Conditions. MARYLAND This Plan Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District. I Have Notified The DATE 3-3/-89 Developer That He Must Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Construction 1977 and all all all all and all a series and a series of the series of Of Completion. Joint \_\_\_\_\_ am Mon Inalure of Engineer Ground Floor El. 496.00 APPROVED : Howard County Office of Planning and These Plans for Small Pond Construction, Soil Erosion and Segment Control Meet The Requirements of the Howord 8.10.27 Soil Conservation District Place Concrete Fooling with Dale Building Foundation 412 89 -2/12/81 Chief, Division of Community Planning and Howard Soil Conservation (District Lond Development



<u>NOTES</u> L SEE GENERAL NOTES APPLICABLE TO 2 - 7 ADDITIONAL ALL PRECAST MANHOLES ON DETAIL 65.11 2. FOR PIPE SIZES 42" AND LARGER USE DETAIL 65.03 3. WHERE "A" IS LESS THAN 4.5 USE SHALLOW MANHOLE.  $\mathbf{X} \times \mathbf{X} \mathbf{W} \times \mathbf{X} \times \mathbf{X} \mathbf{W}$ Grated Manhole Frame & Cover For Stormwater Inte RECTICULAR GRATE & FRAM SLAB REINFORCING CEMENT MORTAL HALLOW PRECAST MANHOLI PLAN TO GRADE 2 COURSES MIN. 6 COURSES MAX.-HOLE STEPS DET. 65.21 MINIMUM CIRCUMFERENTIAL REINFORCING+ (48" DIA. & TAPER) "A" ~ 20" + A + 0.17 SQ. IN /FT. "A" ₩ 20" + A + 0.22 SQ.IN./FT. PRECAST CONCRETE CONICAL TOP SECTION UNIMUM LONGITUDINAL REINFORCING (TYP.) FOR ALL SECTIONS + AS + 0.02 SO. IN. /FT. ------R.C.P. IN 1,2,3 OR 4' LENGTHS 4000 PSI CONCRETE CIRCUMFERENTIAL REINFORCING: IN ALL BELLS AND SPIGOTS I % MAXIMUM. RUBBER GASKE -MINIMUM CIRCUMFERENTIAL REINFORCING ( 60"01A. 8 "A" ~ 20" 1A, + 0,23 SQ. IN./FT. A TALL JOINTS "A"= 20" A = 0.28 SQ. IN./FT. -BRICK LINING SLAB FOR 4'. 0" 48" DIA CTION A-A 8" MIN CONC. BASE Y------UZ WHEN DEPRESSED IND COVER-4 SEE SECTION A-A DETAIL . \_ \_ \_ \_ \_ \_ \_ MINIMUM SLAB REINFORCING -1/2"MOTAR WITH 2 COATS ASPHALT BASE PAINT. A1 = 0.23 SQ. IN/FT.E.W.~ C' GRANULA - BRICK LINING (LAY ON EDGE) STANDARD PRECAST MANHOLE SHALLOW PRECAST MANHOLE NUX NO 3 CONCRETE SECTION 8-8 STANDARD PRECAST MANHO DOUBLE TYPE "S" COMB. · •---APPROVEN DIVISION OF COMMUNITY PLANNING & LAND DEVELOPMENT HOWARD COUNTY, MARYLAND DATE 3-31-89 Con APPROVED : Howard County Office of Planning and ).(0,8) Date Chiel, Division of Community Planning and Date Date Land Development I Certify That All Development and/or Construction Will Be Done According To These Plans, and That Any Responsible Personnel Involved In The Construction Project Will Have A Certificate of Atlendance At A Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion Before Beginning The Project. I Will Provide The Howard Soil Conservation District With An "As-Buill" Plan Of The Pond Within 30 Days Of Completion. I Also Authorize Periodic On-Site Inspections By The Howard Soil Conservation District These Plans Have Been Reviewed For The Howard Soil Conservation District And Meet The Technical Requirements For Small Pond Con-struction, Soil Erosion And Sediment Control. 412/89 Dole -12-U.S. Soil Conservation Service Soil Conservation District. James Di Virgilio 12/89 APPROVED : For Private Water and Private Septic Signature of Developer Date Sewerage Systems. Howard County Health Department. I Cerlily Thal This Plan For Pond Construction, Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Sile Conditions. This Plan Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District. I Have Notilied The Developer That He Must Provide The Howard Soil Conservation District With An "As-28. Dlfice Built" Plan Of The Pond Wilhin 30 Days Of Completion. Loven W. Mon APPROVED : For Storm Drainage Systems and Public Roads Howard County Department of Public Works. Signature of Engineer Date These Plans For Small Pond Construction, Soil Erosion And Sediment Control Meet The Requirements Of The Howard Soil Conservation District. 4/12/89 2 Case & Tel 5-23-89 Contili Howard Soil Conservation District Chief Bureau of Engineering P. - ¥.



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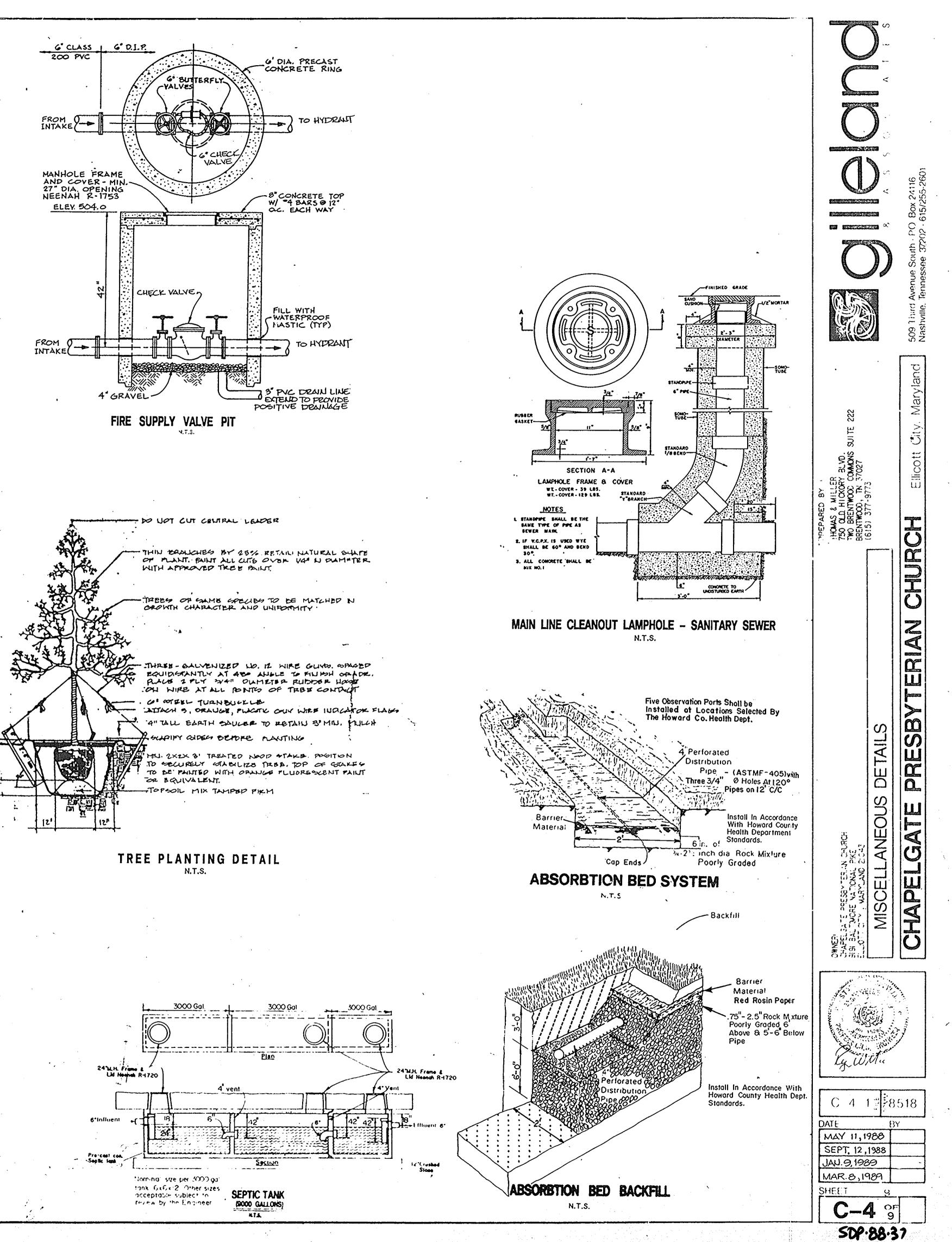
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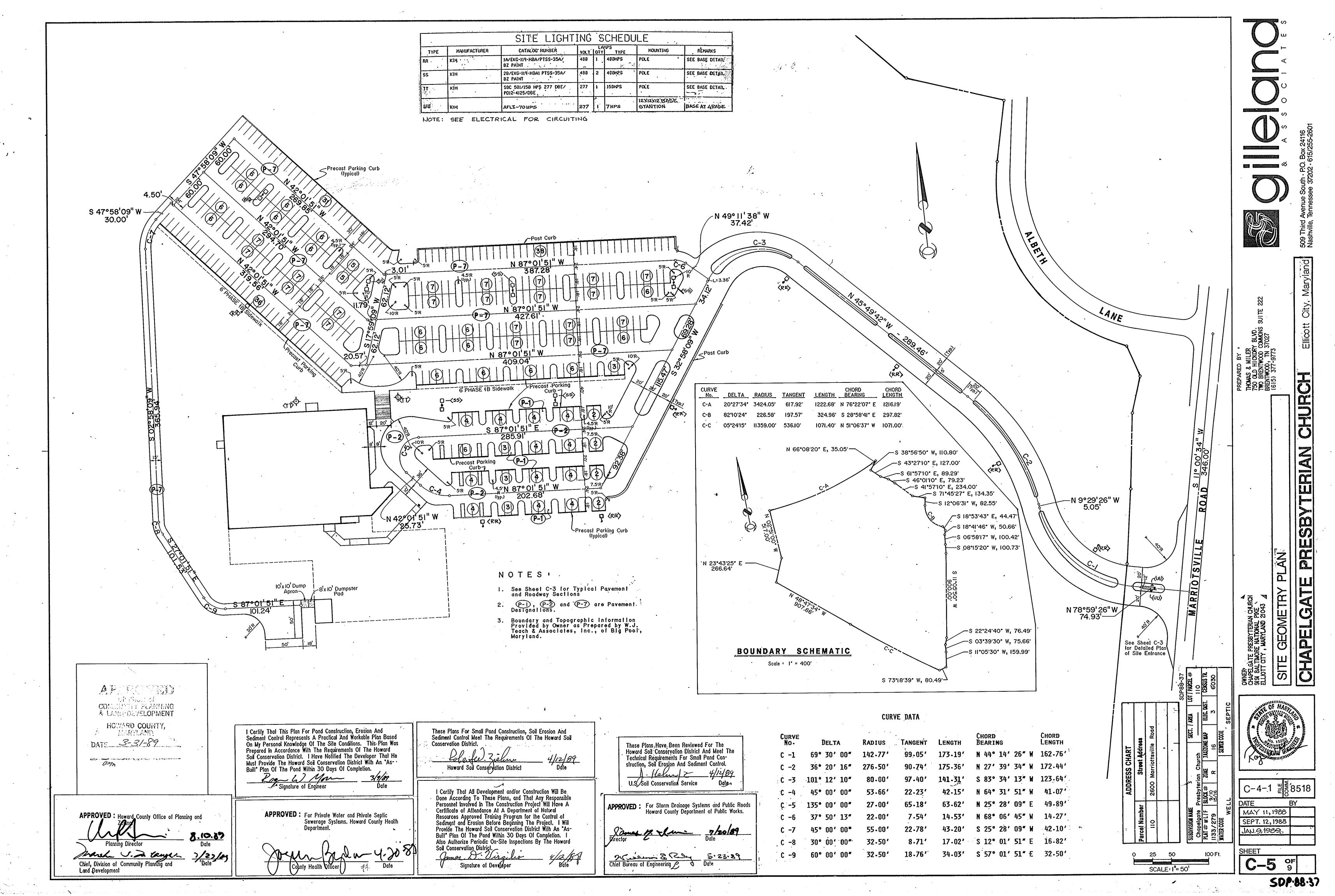
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GROWTH CHARACTER AND UNIFORMITY

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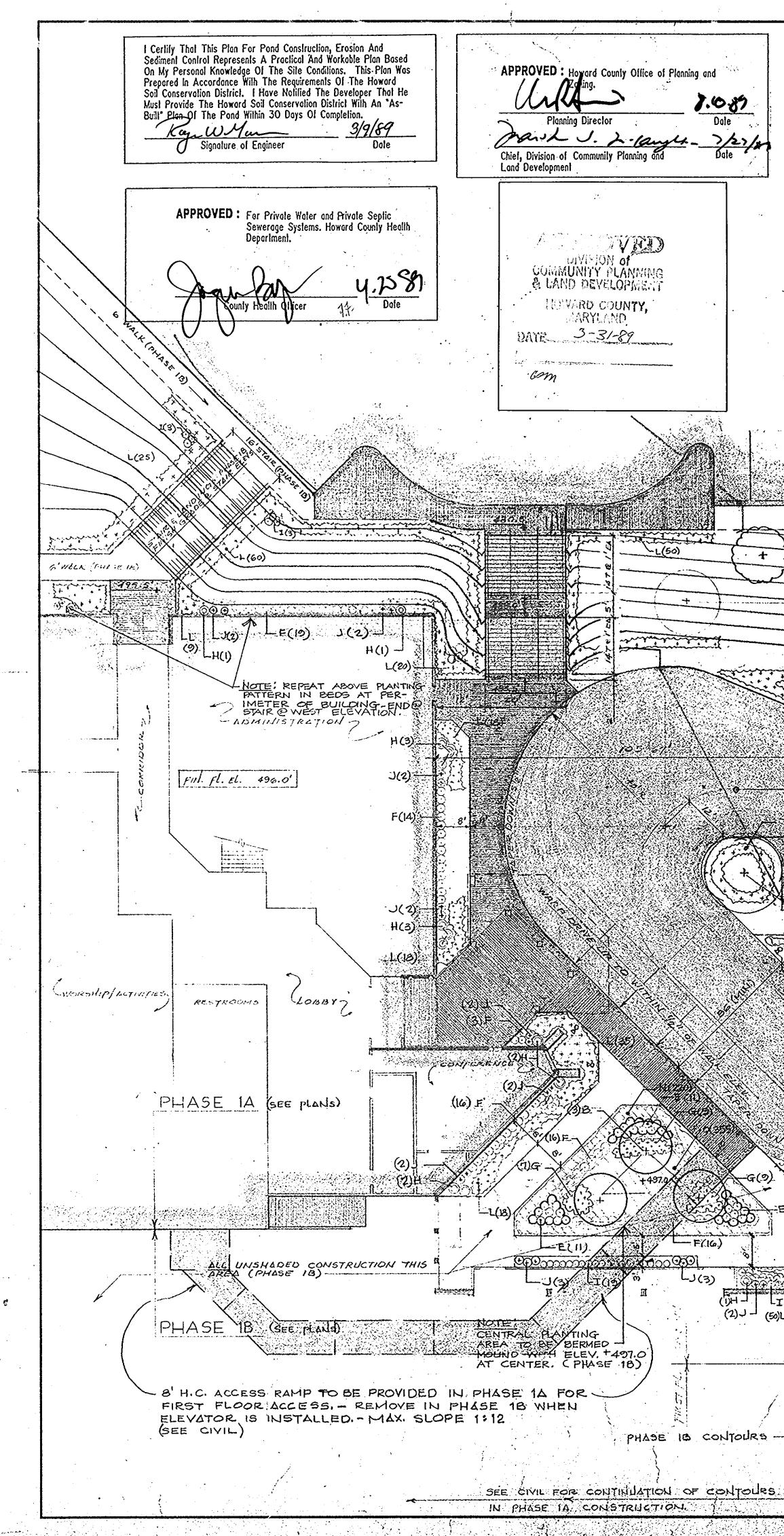
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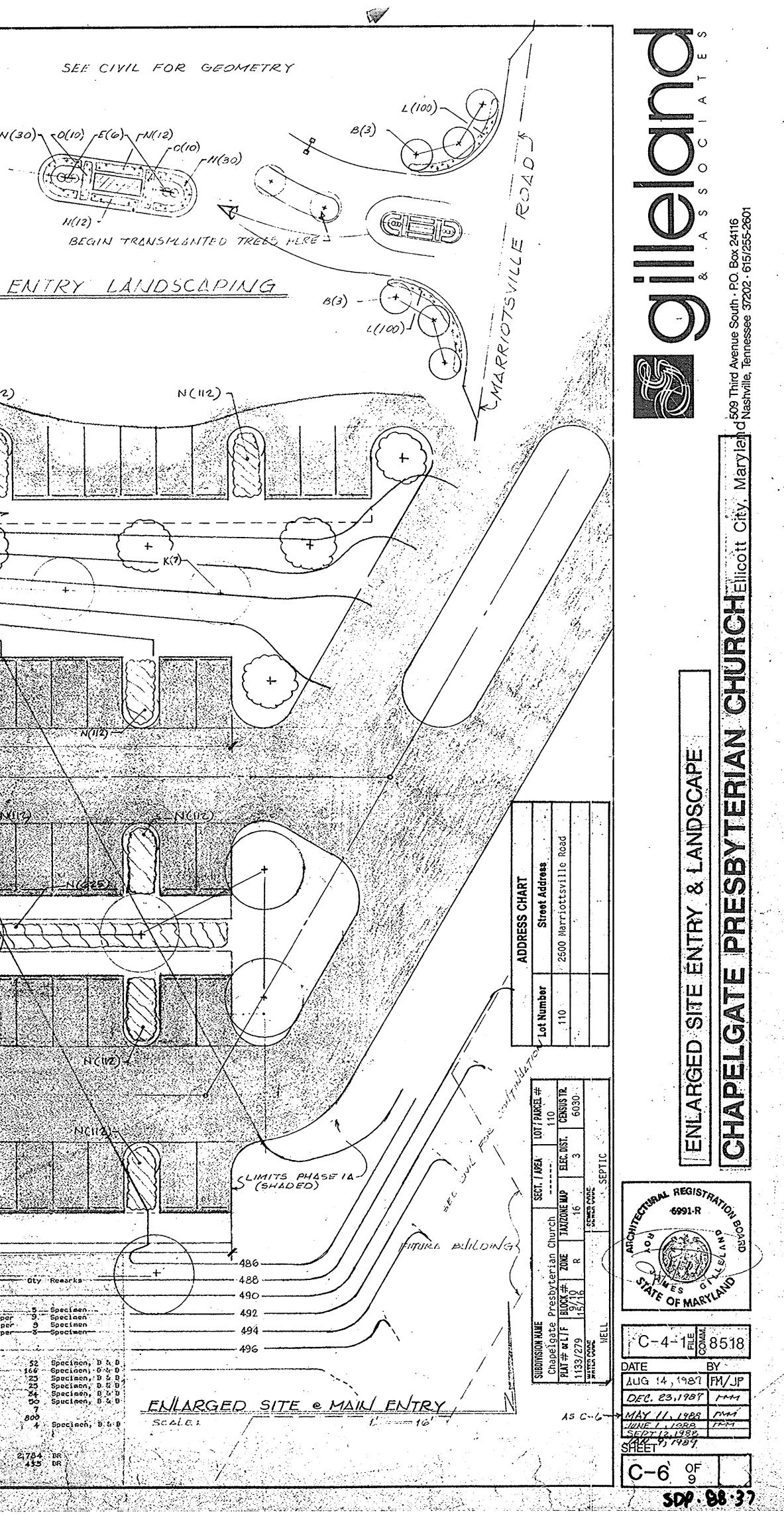


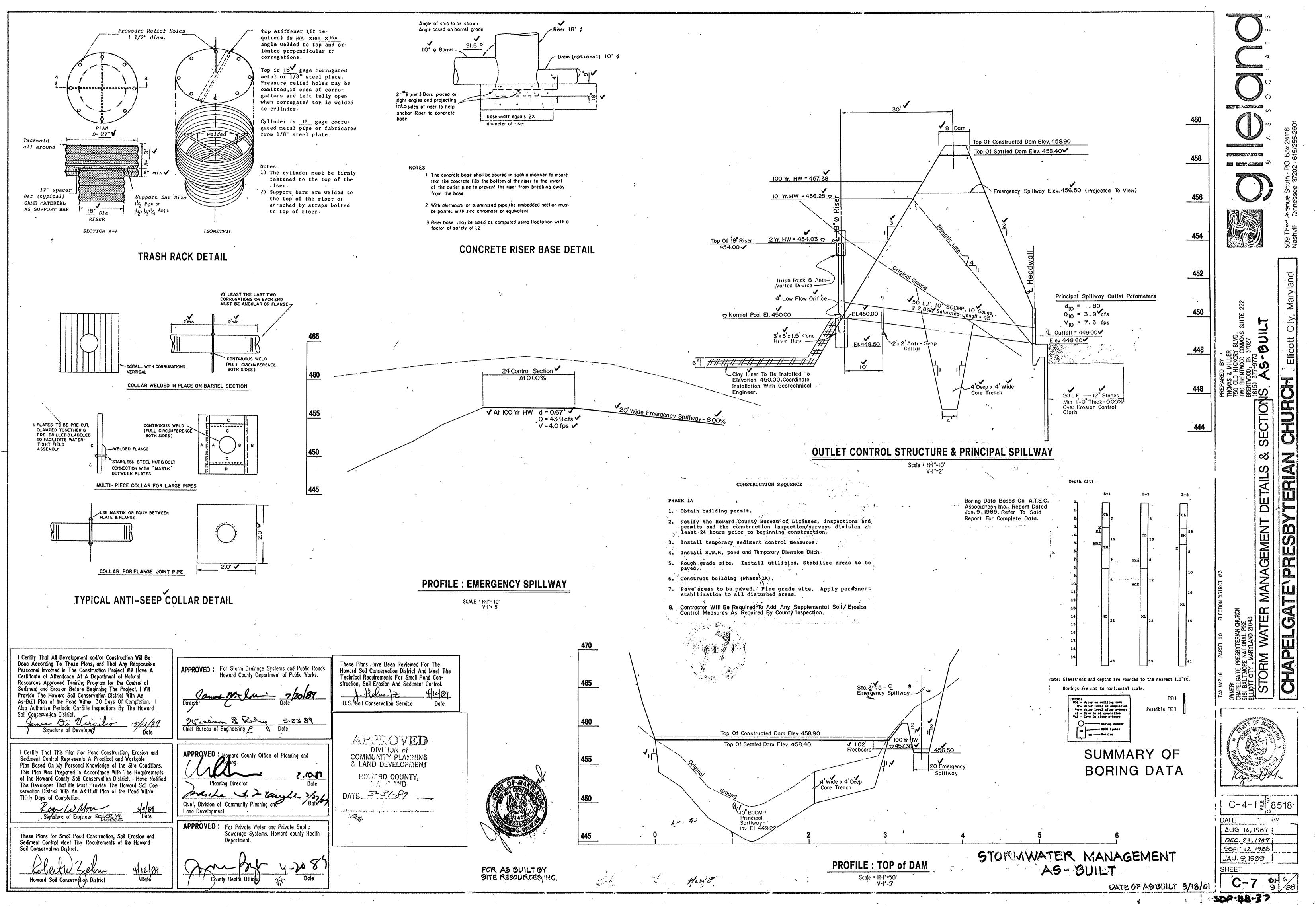
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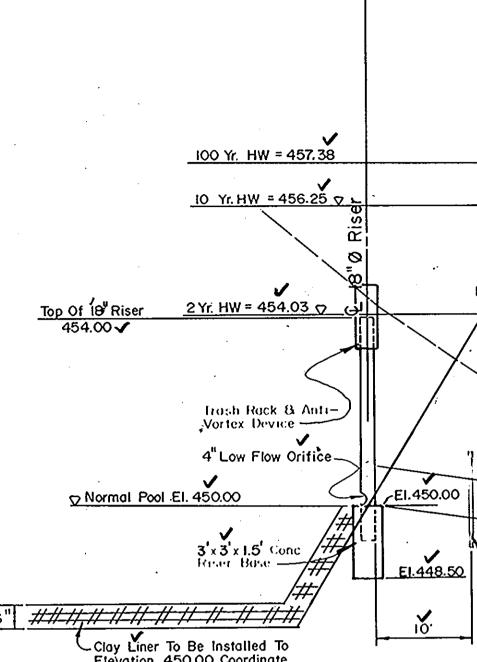
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These Plans Have Been Reviewed For The Howard Soil Conservation District And Meel The Technical Requirements For Small Pond Con-struction, Soil Erosion And Sediment Control. These Plans For Small Pond Construction, Soil Erosion And Sediment Control Meet The Requirements Of The Howard Soil Conservation District. Pole li Zi 12/84 12 8 Howard Soil Conservation District U.S. Soil Conservation Service Dole N(30)~ ~0(10) rE(6)~ rN(12) I Cerlify 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 Cerlificate of Attendance At A Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion Before Beginning The Project. I Will Provide The Howard Soil Conservation District With An "As-Buill" Plan Of The Pond Wilhin 30 Days Of Completion. I Also Authorize Periodic On-Site Inspections By The Howard Soil Conservation District. APPROVED : For Storm Drainage Systems and Public Roads Howard Counly Department of Public Works. 7/20/8 11(12) ames 12 x la Chief Bureau of Engineering & 5123-89 Dole 1 ames DiVirgilio Signalure of Developer CANOSCAPING - ALT. NO. 19) PROJECT MENUL (TYP) 1(112) = N(112) - G' WALK (PHASE IB) --- L (35) (112),-> 1(2) 4.5. -NUIQ The N CICE Anz Los <u>}</u> € (25) (j====\$1(312) Tricing Street NCII2)-8'WALK & RAMPS (PHASE IB) 216.91 PLANT LIST LI(9) Reaarks Key Botanical Name Shon Nasi Size { (50) المحمر والمحدث أربكم المراجع المراجع المحام 7112118 .5. Specimen 9. Specimen 9. Specimen Sucut Gun Iree A-Liquidiaber-Styracifiua-B Prunus Wanzan C Pyrus Calteryana Bradford Japaness Cherry Dradford Pear Rawthorne Speciaen, B & B Speciaen, D & B Speciaen, B & B Speciaen, D & B Speciaen, B & B Prunus, otto, Luykens -Taxus consiforeis 24=-30 24=-30 24=-30 30=-36 24=-30 24=-30 2 gallon cans 24=-30 Otto Luyken Laurol Dense Yew -52 -- M(5) Dense fow Burning Bush Nollig Stevens Bolly: Dwarf Burford Holly Dwarf Chinese Holly Beaked Willow Blue Shoro Juniper Maple Leaf Viburnum Euonyeus atridurpurcus Liex Nellie Ry Stovens 25 llex Cornuta burfordi nana llex cornuta rotunda Specimen, B & B Salix Deobiana Juniperus conferta blue pacific Specimen, 8.4 B Viburnus acerfolius. -----Ground Covers Euonysus fortunci coloratus Purpleleaf Hintercreeper 10\*-12\* Silver Overn (Varigated - 10\*-12\* 2,784 DR 18 435 ER Euonisus fortunes







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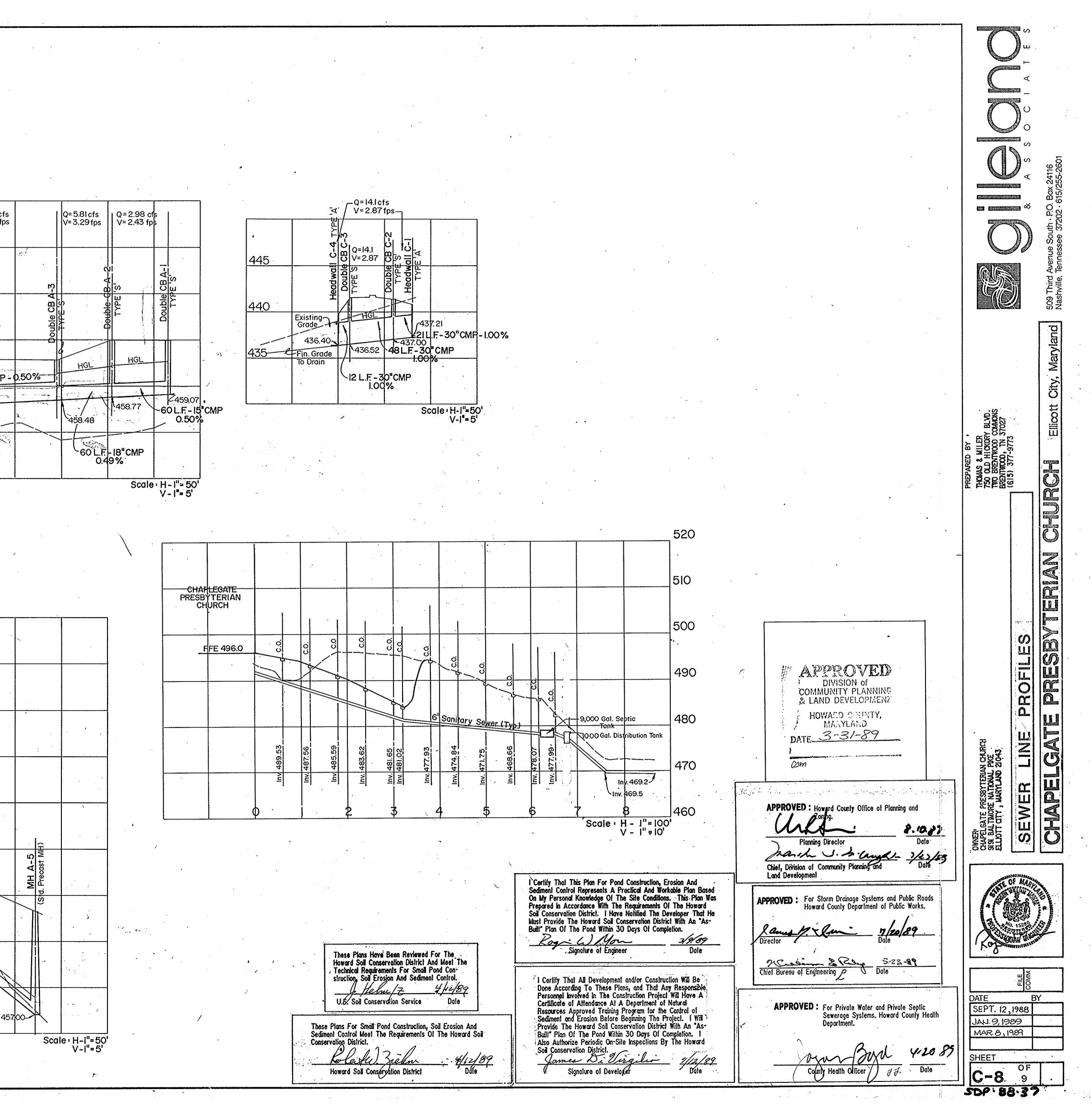
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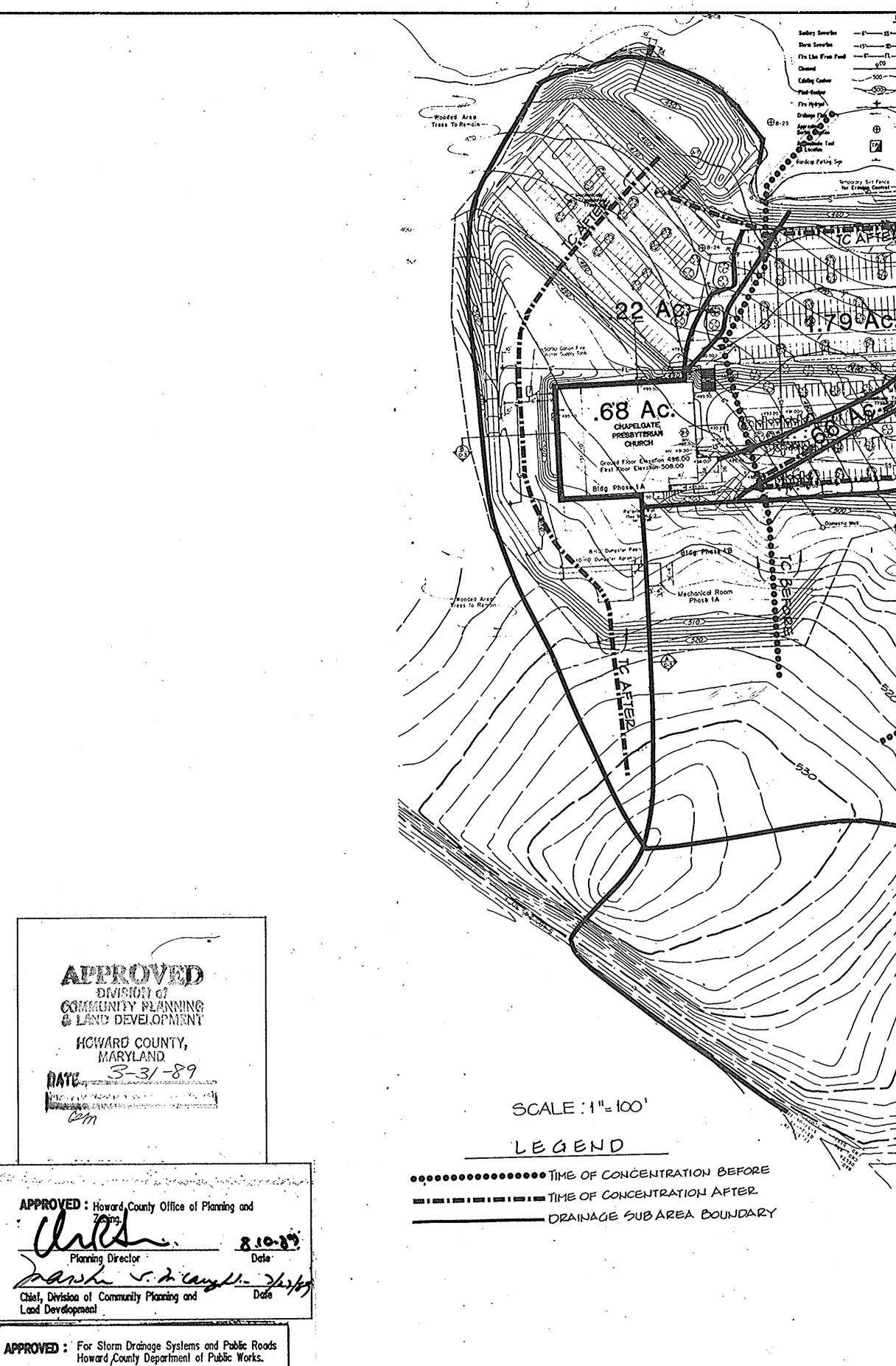
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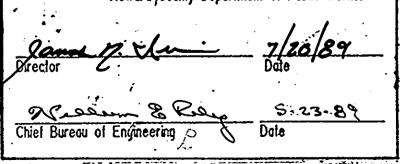
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APPROVED: For Private Water and Private Septic Sewerage Systems. Howard County Health Department.

Jounty Hraith Officer 37. Date

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