

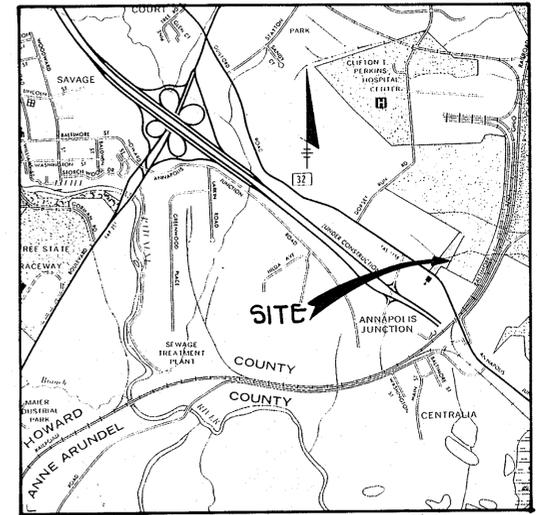
| SHEET INDEX | |
|-------------|--|
| NO. | DESCRIPTION |
| 1 | TITLE SHEET |
| 2 | SITE DEVELOPMENT PLAN AND DETAILS |
| 3 | DETAILS AND PLANTING PLAN |
| 4 | SEDIMENT CONTROL PLAN, SWM PLAN, AND DRAINAGE AREA MAP |
| 5 | SWM NOTES AND DETAILS |
| 6 | SEDIMENT CONTROL NOTES AND DETAILS |

SITE DEVELOPMENT PLAN

HEALTH WATERS BUILDING 2

6TH ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

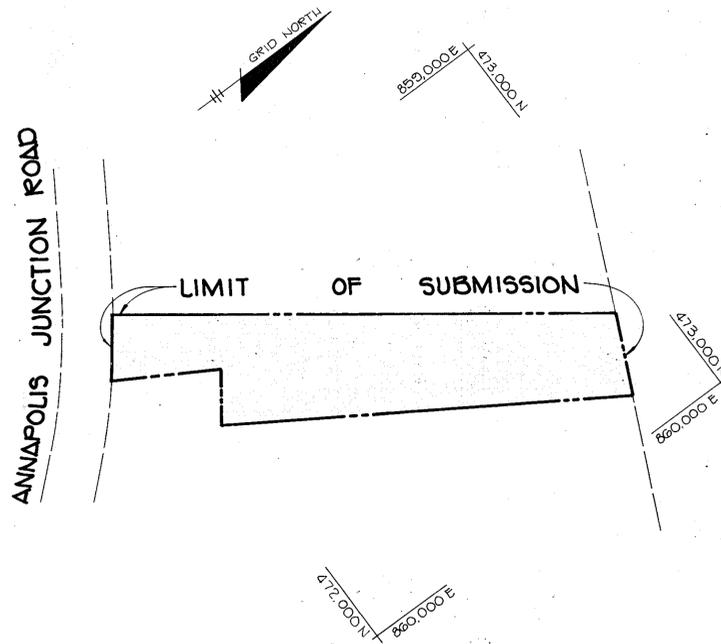


VICINITY MAP
SCALE: 1" = 2000'

GENERAL NOTES

- ALL WATER LINES SHALL BE CONSTRUCTED A MINIMUM OF 42" COVER BELOW FINISHED GRADE.
- CORRUGATED STEEL PIPE SECTIONS WILL BE JOINED WITH A SINGLE OR TWO PIECE CORRUGATED BAND WITH A WATERTIGHT NEOPRENE GASKET. DIMPLETED BAND CONNECTORS WILL NOT BE PERMITTED.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, I.E., STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.
- APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL TEST PIT EXISTING UTILITIES, WHERE DIRECTED BY THE ENGINEER, A MINIMUM OF TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS.
- CONTRACTOR TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK SHOWN ON THIS/ THESE DRAWINGS:

| | |
|---|---------------|
| C & P TELEPHONE COMPANY | 725-9976 |
| HOWARD COUNTY BUREAU OF UTILITIES | 992-2366 |
| AT&T CABLE LOCATION DIVISION | 393-3553 |
| BALTIMORE GAS AND ELECTRIC COMPANY | 685-0123 |
| STATE HIGHWAY ADMINISTRATION | 531-5533 |
| HOWARD COUNTY CONSTRUCTION/INSPECTION SURVEY DIVISION | 992-2417/2418 |
- ALL INLETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOWARD COUNTY STANDARDS.
- ALL PIPE ELEVATIONS SHOWN ARE INVERT *OR* ELEVATIONS.
- THE CONTRACTOR SHALL PROVIDE A JOINT IN ALL SEWER MAINS WITH 2'-0" OF EXTERIOR MANHOLE WALLS.
- PROFILE STATIONS SHALL BE ADJUSTED AS NECESSARY TO CONFORM TO PLAN DIMENSIONS.
- NO PIPE SHALL BE LAID UNTIL LINES OF EXCAVATION HAVE BEEN BROUGHT TO SUBGRADE.
- TOPO TAKEN FROM FIELD RUN SURVEY BY TRACY, SCHULTE AND ASSOCIATES, INC DATED OCTOBER, 1986



PLAN
SCALE: 1" = 200'

| | | |
|--|------------------|----------|
| APPROVED: FOR PUBLIC WATER AND PRIVATE SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT. | | |
| <i>J. J. ...</i> COUNTY HEALTH OFFICER | 12-10-87 DATE | |
| APPROVED: FOR PUBLIC WATER, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS. HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS | | |
| <i>James M. ...</i> DIRECTOR | 12/15/87 DATE | |
| APPROVED: CHIEF, BUREAU OF ENGINEERING. 12-14-87 DATE | | |
| APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING. | | |
| <i>W. ...</i> PLANNING DIRECTOR | 12-17-87 DATE | |
| APPROVED: DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION. 12/16/87 DATE | | |
| NO. | DATE | REVISION |

SITE DATA TABULATION

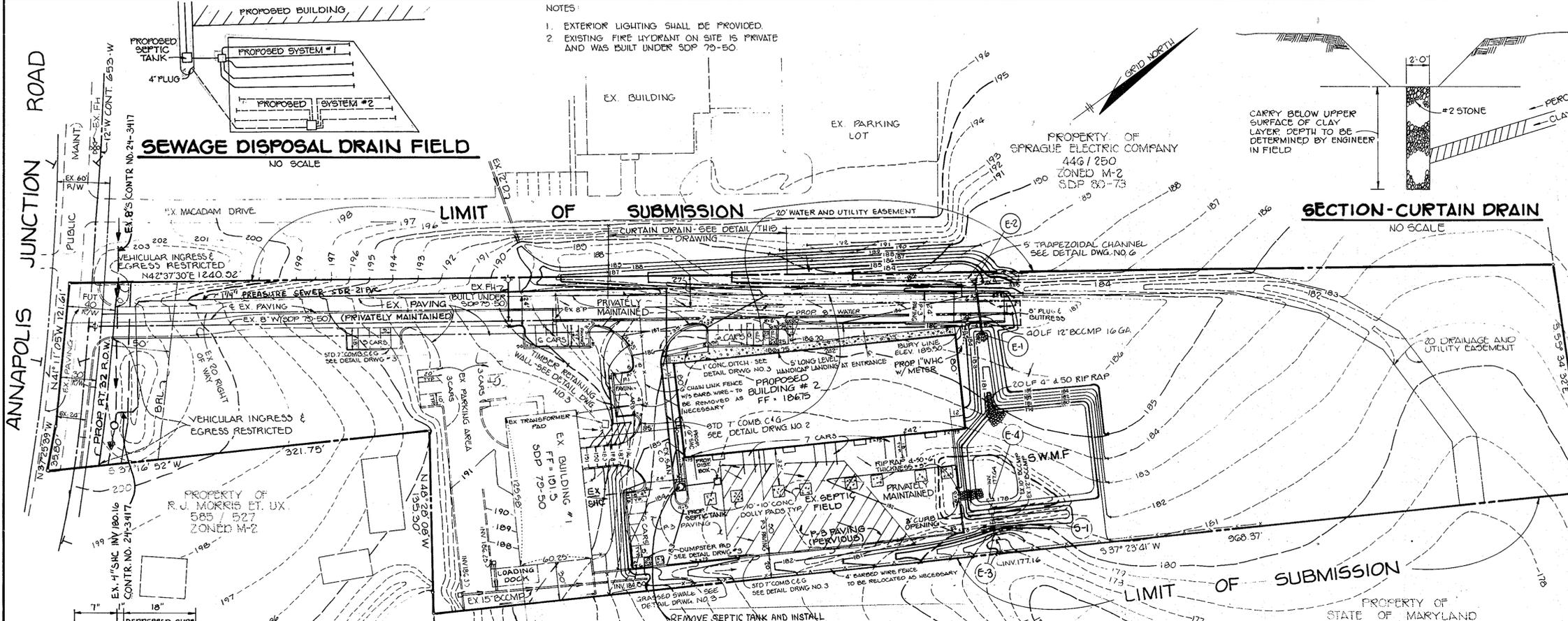
| | | |
|---|-----------------------------|------------|
| TOTAL NUMBER OF PARCELS | 1 | |
| AREA OF PARCEL | 6.137 Ac. (267,328 sq. ft.) | |
| ZONING | M-2 | |
| BUILDING USE | OFFICE/WAREHOUSE | |
| OFFICE | 3,840 sq. ft. | |
| WAREHOUSE | 15,360 sq. ft. | |
| BUILDING AREA | TOTAL 19,200 sq. ft. | |
| MAXIMUM EMPLOYEES PER SHIFT: | EX. BUILDING 1 | BUILDING 2 |
| OFFICE | 8 | 17 |
| WAREHOUSE | 4 | 20 |
| TOTAL | 12 | 37 |
| PARKING SPACES: | EX. BUILDING 1 | BUILDING 2 |
| REQUIRED | 6 | 34 |
| OFFICE (@ 1/200 s.f.) | 19.2 | |
| WAREHOUSE (@ 1/1500 s.f.) | 10.24 | |
| PROVIDED | 6 | 34 |
| OPEN SPACE TO REMAIN (GREEN AREA) (@ 27%) | 4.28 Ac. | |
| BUILDING COVERAGE (Ex. Bldg. - 7500 sq. ft.) | 20% 10% | |
| AREA OF PARKING LOTS (Prop. Bldg. - 19,200 sq. ft.) | 6480 sq. ft. | |
| LANDSCAPED ISLANDS (PROVIDED IN THE PARKING LOTS) | 14% (882 sq. ft.) | |
| DISTURBED AREA | 303 Ac. | |
| AREA TO BE RESEDED | 181 Ac. | |

APPROVED
DIVISION OF LAND DEVELOPMENT &
ZONING ADMINISTRATION
HOWARD COUNTY, MARYLAND
DATE 10-9-87

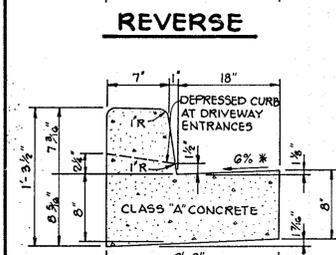
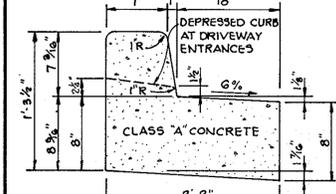
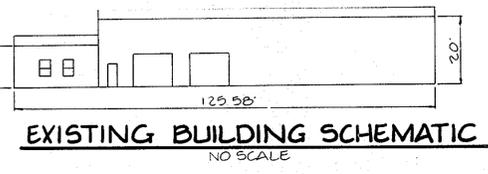
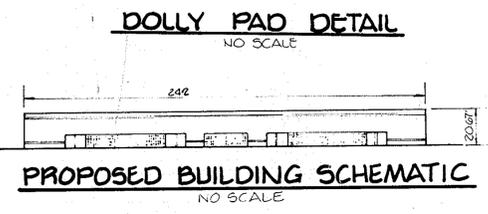
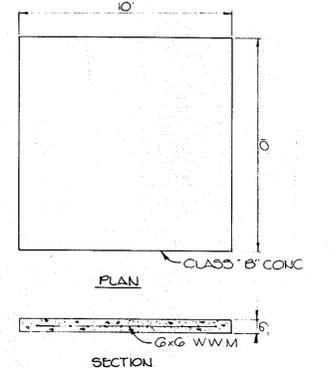
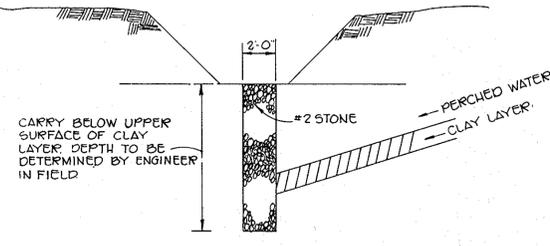
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| ADDRESS CHART | | | | | |
|---------------|---------------------|------------|------------|--------------|------|
| Bldg. No. | STREET ADDRESS | | | | |
| 1 | 10984 GUILFORD ROAD | | | | |
| 2 | 10984 GUILFORD ROAD | | | | |
| NAME | HEALTH WATERS, INC. | SECT./AREA | N/A | PARCEL | 69 |
| PLAT*OR L/F | 922/247 | BLOCK # | 14 | ZONE | M-2 |
| TAX/ZONE | 4B | MAPELECT. | 6 | DISTCENSUSTA | 6004 |
| WATER CODE | N/A | | SEWER CODE | N/A | |

| | |
|---|--|
| OWNER HEALTH WATERS, INC. 10984 ROUTE 32 ANNAPOLIS JUNCTION, MD. 20701 | PROJECT HEALTH WATERS BUILDING # 2 L 322, F 247 |
| DEVELOPER HEALTH WATERS, INC. 10984 ROUTE 32 ANNAPOLIS JUNCTION, MD. 20701 | LOCATION TAX MAP NO 48 PARCEL 60 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND |
| TITLE SHEET | TITLE Bldg No 2- ADDITION TO SDP 79-50 |
| SOP 07-219 | DATE MAY 1, 1987 |
| DES RJW | DRN JLI/KMN |
| SCALE AS SHOWN | PROJECT NO 8657 SDP |
| | DRAWING 1 OF 6 |

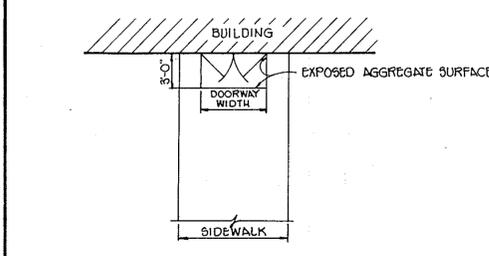


NOTES:
 1. EXTERIOR LIGHTING SHALL BE PROVIDED.
 2. EXISTING FIRE HYDRANT ON SITE IS PRIVATE AND WAS BUILT UNDER SDP 70-50.



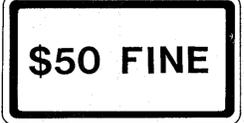
HOWARD COUNTY DESIGN MANUAL VOLUME IV STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (DRAWING R-3.01)
 GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AS THE PAVEMENT.

STANDARD 7" COMBINATION CURB AND GUTTER
NO SCALE



DETAIL BUILDING ENTRANCE TEXTURAL IDENTIFICATION FOR THE BLIND
NO SCALE

NOTE: TO BE USED FOR ALL BUILDING ENTRANCES EXCEPT THOSE THAT ARE EXCLUSIVELY FIRE EXITS.

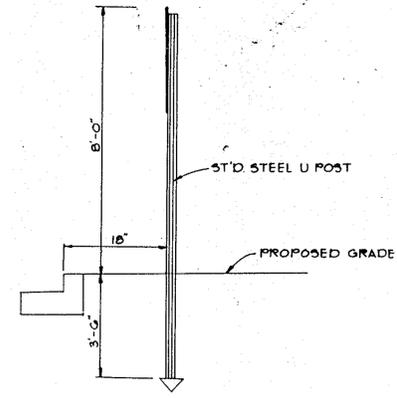


\$50 FINE VIOLATION FINE SIGN DETAIL
NO SCALE

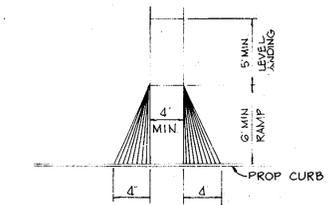


HANDICAP PARKING SIGN DETAIL
NO SCALE

NOTE: CONTRACTOR SHALL MAINTAIN A MINIMUM CLEARANCE OF ONE FOOT BELOW ALL WATER LINES WITH THE 1/4" PRESSURE SEWER LINE.

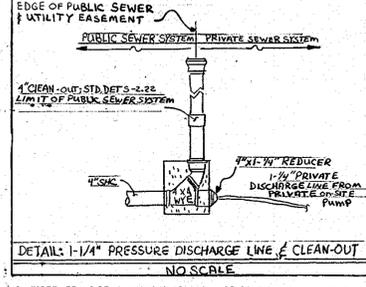


HANDICAP SIGN POST DETAIL
NO SCALE



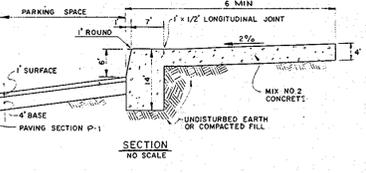
HANDICAP RAMP
NO SCALE

PLAN
SCALE: 1" = 50'

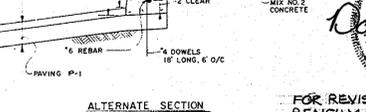


DETAIL: 1-1/4" PRESSURE DISCHARGE LINE & CLEAN-OUT
NO SCALE

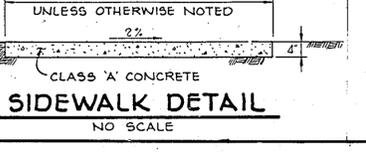
NOTES:
 1. LONGITUDINAL JOINT BETWEEN SIDEWALK AND CURB SHALL BE CONTINUOUS AND TO A DEPTH OF 1/4 THE SIDEWALK THICKNESS OR 1" MAX. LATITUDINAL JOINTS SHALL RUN FROM BACK EDGE OF SIDEWALK, CONTINUOUS TO THE BOTTOM FACE OF CURB TO A DEPTH OF 1/4 AND SPACED 5' APART.
 2. PROVIDE 1/2" EXPANSION JOINTS AT 15' INTERVALS. IN LATITUDINAL JOINTS TO FULL CROSS-SECTION.



MONOLITHIC CURB & SIDEWALK
NO SCALE



ALTERNATE SECTION
NO SCALE



SIDEWALK DETAIL
NO SCALE

| | |
|---|------|
| ** BITUMINOUS CONCRETE SURFACE | 1.5" |
| ** BITUMINOUS CONCRETE BASE | 4.5" |
| ** 6" CRUSHER RUN BASE COURSE OR 4" DENSE GRADED STABILIZED AGGREGATE BASE COURSE | * |

(ALTERNATE)

| | |
|--------------------------------|------|
| ** BITUMINOUS CONCRETE SURFACE | 1.5" |
| ** BITUMINOUS CONCRETE BASE | 1.5" |
| ** BITUMINOUS CONCRETE BASE | 5" |

HOWARD COUNTY DESIGN MANUAL VOLUME IV STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (DRAWING R-2.01)
8" PAVING, P-3
NO SCALE

** NOTE: THIS PAVING SECTION IS TO HAVE A PERVIOUS PAVING MIX WHEN CONSTRUCTED OVER SEPTIC ABSORPTION FIELD.



APPROVED
 DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION
 HOWARD COUNTY, MARYLAND
 DATE 10-9-87

APPROVED: FOR PUBLIC WATER AND PRIVATE SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

James K. May
 COUNTY HEALTH OFFICER
 DATE 12-10-87

APPROVED: FOR PUBLIC WATER, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS.
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

James K. May
 DIRECTOR
 DATE 12/15/87

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

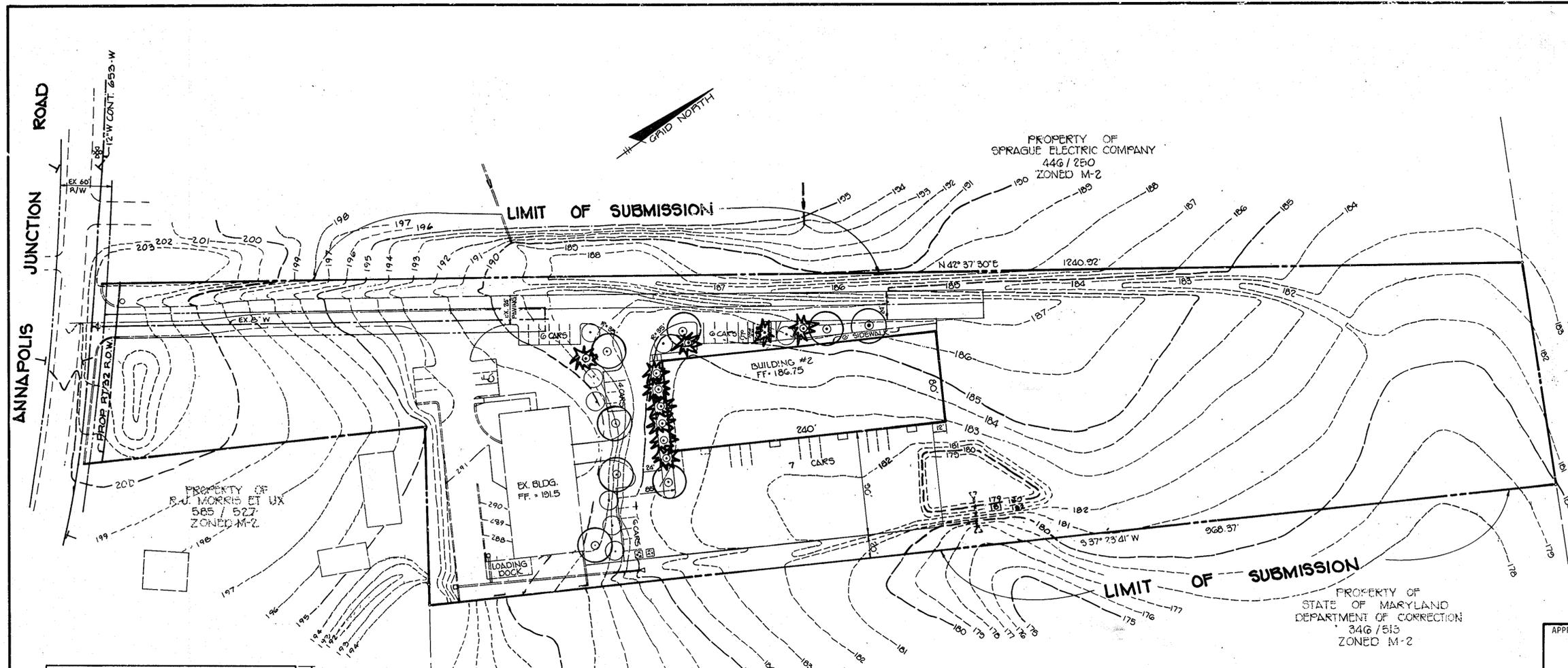
James K. May
 PLANNING DIRECTOR
 DATE 12-17-87

APPROVED: DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION
 DATE 12/16/87

| | | | |
|----|---------|--|----------|
| NO | 6-14-01 | REVISED GRINDER PUMP NO. FROM 2016 TO 2014 | REVISION |
| NO | 3-13-01 | ADD CONNECTION TO PUBLIC SEWER | REVISION |

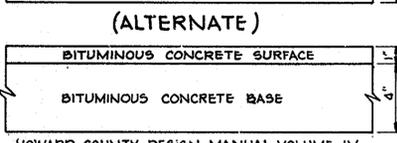
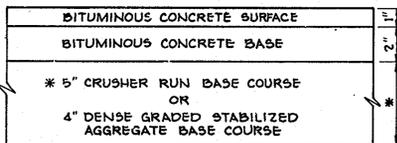
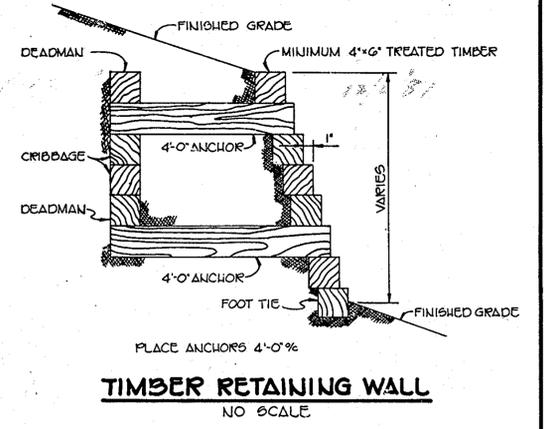
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| | | | |
|-----------|---|------------|---|
| OWNER | HEALTH WATERS, INC. 10984 ROUTE 32, ANNAPOLIS JUNCTION, MD 20701 | PROJECT | HEALTH WATERS BUILDING # 2 LOCATION TAX MAP NO. 48 PARCEL 60 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND |
| DEVELOPER | HEALTH WATERS, INC. 10984 ROUTE 32, ANNAPOLIS JUNCTION, MD 20701 | TITLE | SDP 87-219 SITE DEVELOPMENT PLAN AND DETAILS |
| DATE | MAY 1, 1987 | PROJECT NO | 8657 SDP |
| DES | RJW | DRN | KMN/JH |
| SCALE | AS SHOWN | DRAWING | 2 OF 6 |

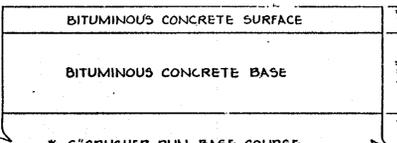


| PLANT LIST | | | |
|------------|----------|--|--|
| SYMBOL | QUANTITY | NAME | REMARKS |
| ⊙ | 8 | QUERCUS BOREALIS RED OAK ACER RUBRUM RED MAPLE ACER SACCHARUM SUGAR MAPLE | 1 1/2" - 2" CAL 10' - 12' HEIGHT B & B FULL HEAD |
| ○ | 8 | PYRUS CALLERYANA BRADFORD BRADFORD PEAR | 8' - 10' HEIGHT B & B FULL HEAD |
| ⊛ | 10 | PINUS THUMBERGII JAPANESE WHITE PINE | 5' - 6' HEIGHT B & B FULL HEAD |

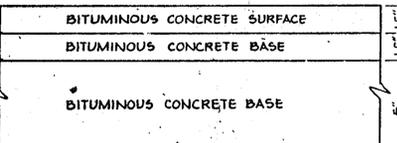
NOTES:
 1. PLACING OF PLANT MATERIAL SHOWN HERE IS THE RESPONSIBILITY OF THE BUILDER.
 2. THE LOCATION OF TREES SHOWN HEREON IS SUBJECT TO FIELD MODIFICATION.



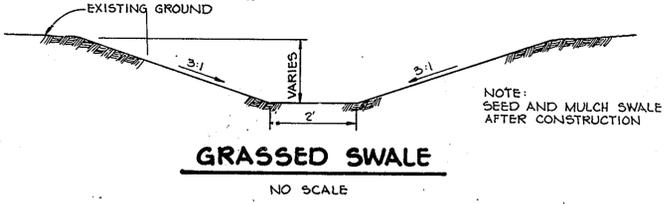
5" PAVING, P-1
 NO SCALE
 USE IN PARKING AREAS ONLY PRIVATELY MAINTAINED



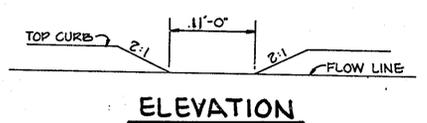
(ALTERNATE)



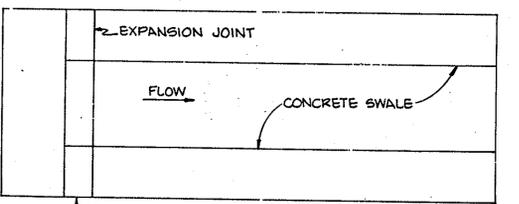
8" PAVING, P-3
 NO SCALE
 TO BE USED IN ALL ROADWAYS AND LOADING AREAS PRIVATELY MAINTAINED



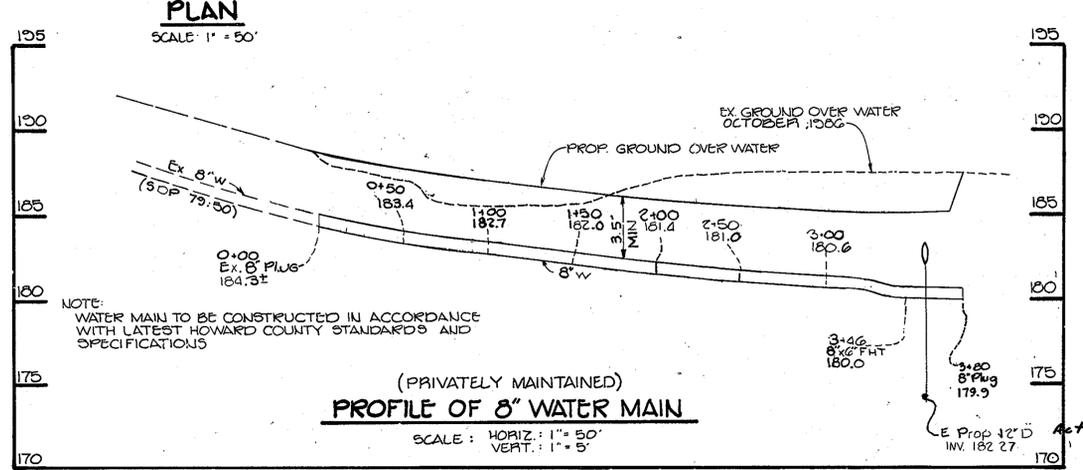
GRASSED SWALE
 NO SCALE



ELEVATION



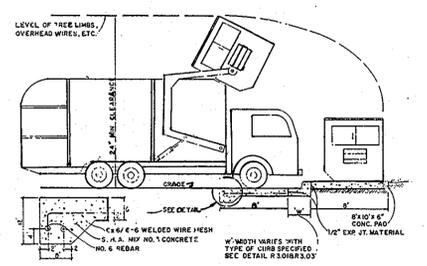
CONCRETE SWALE SECTION
 NO SCALE



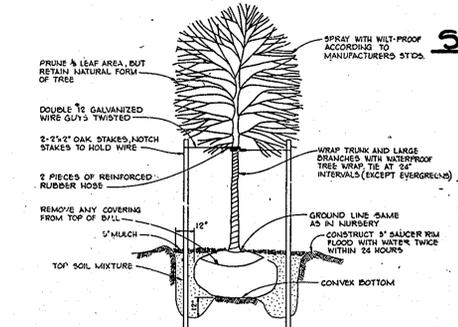
PROFILE OF 8" WATER MAIN
 SCALE: HORIZ: 1" = 50'
 VERT: 1" = 5'



SHRUB PLANTING DETAIL
 NO SCALE



SOLID WASTE SERVICE PAD
 NO SCALE

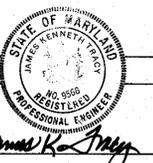


TREE PLANTING DETAIL
 NO SCALE

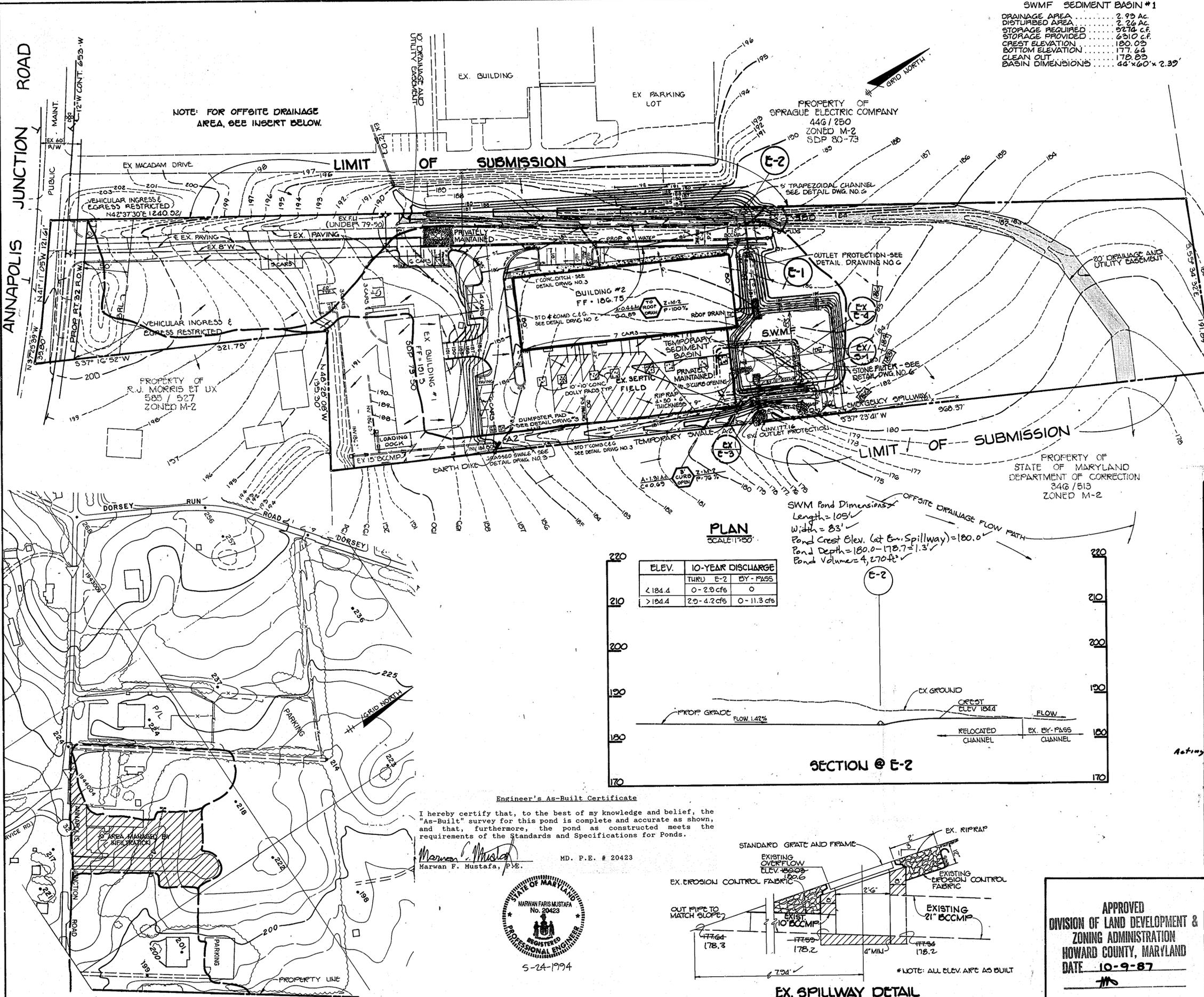
APPROVED
 DIVISION OF LAND DEVELOPMENT &
 ZONING ADMINISTRATION
 HOWARD COUNTY, MARYLAND
 DATE 10-9-87

| | | |
|---|--------------------|----------|
| APPROVED: FOR PUBLIC WATER AND PRIVATE SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT. | <i>[Signature]</i> | 11-10-87 |
| COUNTY HEALTH OFFICE | | DATE |
| APPROVED: FOR PUBLIC WATER, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS. | <i>[Signature]</i> | 12/15/87 |
| HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS | DIRECTOR | DATE |
| CHIEF, BUREAU OF ENGINEERING | <i>[Signature]</i> | 12-16-87 |
| APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING. | <i>[Signature]</i> | 12.17.87 |
| PLANNING DIRECTOR | | DATE |
| CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION | <i>[Signature]</i> | 12/16/87 |
| | | DATE |
| NO | DATE | REVISION |

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| | | | |
|-----------|--|------------|---|
| OWNER | HEALTH WATERS, INC. 711 W TIMONIUM ROAD TIMONIUM MARYLAND 21093 | PROJECT | HEALTH WATERS BUILDING # 2 L222, F247 |
| DEVELOPER | HEALTH WATERS, INC. 711 W TIMONIUM ROAD TIMONIUM, MARYLAND 21093 | LOCATION | TAX MAP NO 48 PARCEL G9 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND |
| TITLE | 5149, 116 2- ADDITION TO S0P 79-60 | DATE | SDP 87-219 MAY 1, 1987 |
| DATE | | PROJECT NO | 8657 S0P |
| DES | RJW | DRN | KMN |
| SCALE | AS SHOWN | DRAWING | 3 OF 6 |



SWMF SEDIMENT BASIN #1
 DRAINAGE AREA 2.92 AC
 DISTURBED AREA 2.26 AC
 STORAGE REQUIRED 6274 CF
 STORAGE PROVIDED 6310 CF
 CREST ELEVATION 180.05
 BOTTOM ELEVATION 177.64
 CLEAN OUT 178.83
 BASIN DIMENSIONS 44' x 60' x 2.32'

BY THE DEVELOPER:
 "I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."
 DEVELOPER: William D. Johnston DATE: 11/17/87

BY THE ENGINEER:
 "I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."
 ENGINEER: James K. Tracy, P.E. DATE: 11/17/87

REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS
James M. Hahn DATE: 12-2-87
 U.S. SOIL CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
Stephen L. Hahn DATE: 12/2/87
 HOWARD S.C.D.

AS-BUILT
 PREPARED BY

PROPERTY OF STATE OF MARYLAND DEPARTMENT OF CORRECTION 178/116 ZONED M-2

ENGINEERS
 PLANNERS
 SURVEYORS

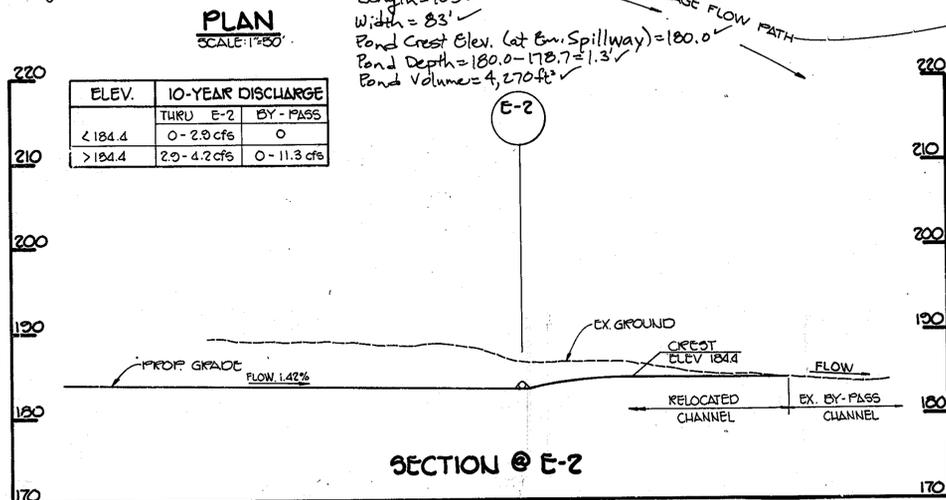
Light, Elliott, & Associates, Inc.

853 Chandler Court Waldorf, MD 20604 301-843-4927 FAX # 301-843-6589
 8506 Adelphi Road Adelphi, MD 20783 301-422-6880 FAX # 301-422-6886

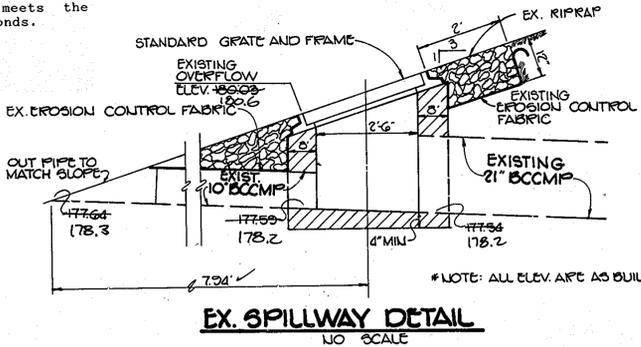
APPROVED FOR PUBLIC WATER AND PRIVATE SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.
Jogean Boyle COUNTY HEALTH OFFICER DATE: 12-10-87

APPROVED: FOR PUBLIC WATER, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS.
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
James J. Shwin DIRECTOR DATE: 12/15/87
William B. Schmitt CHIEF, BUREAU OF ENGINEERING DATE: 12-15-87

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING.
William B. Schmitt PLANNING DIRECTOR DATE: 12-17-87
James B. Schmitt CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE: 12/16/87



Engineer's As-Built Certificate
 I hereby certify that, to the best of my knowledge and belief, the "As-Built" survey for this pond is complete and accurate as shown, and that, furthermore, the pond as constructed meets the requirements of the Standards and Specifications for Ponds.
Marwan F. Mustafa, P.E. MD. P.E. # 20423



APPROVED
 DIVISION OF LAND DEVELOPMENT &
 ZONING ADMINISTRATION
 HOWARD COUNTY, MARYLAND
 DATE: 10-9-87

OFFSITE DRAINAGE AREA MAP
 SCALE: 1"=200'

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 8480 Baltimore National Pike • Ellicott City, Maryland 21043 • (301) 465 6105

OWNER: HEALTH WATERS, INC. 10984 ROUTE 32 ANNAPOLIS JUNCTION, MD 20701

DEVELOPER: HEALTH WATERS, INC. 10984 ROUTE 32 ANNAPOLIS JUNCTION, MD 20701

DES: RJW DRN: KMN

PROJECT: **HEALTH WATERS BUILDING # 2** USEC. F 247

LOCATION: TAX MAP NO. 40 PARCEL 60 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

TITLE: Sigs No 2- ADDITION TO SDP 79-50 SWM PLAN AND DRAINAGE AREA MAP SDP 07-219

DATE: MAY 1, 1987 PROJECT NO: 8657 SDP

SCALE AS SHOWN DRAWING 4 OF 6

AS-BUILT 5/24/94 SDP-87-219

I. 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.

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

II. EARTH FILL

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 along the length of the embankment shall be increased above the design elevation (including freeboard) as shown on the plans.

Placement

Areas on which fill 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.

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 track of the equipment or compaction shall be achieved by a minimum of four complete passes of a sheepfoot, 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 tampers or other compaction equipment. The material needs to fill 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. Materials - (Steel Pipe) - This pipe and its appurtenances shall be galvanized and fully bituminous coated and shall conform to the requirements of AASHTO Specifications M-190 Type A with watertight coupling bands. Any bituminous coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound.

Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. The following coatings are commercially available: Nexon, Plasti-Cote, Blac-Klad, and Beth-Cu-Loy. Coated corrugated steel pipe shall meet the requirements of AASHTO M-245 and M-246.

Materials - (Aluminized Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274-791 with watertight coupling bands or flanges.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight 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 coat 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-seep 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.

6. 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 AWWA 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 diameter 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-seep collars, valves, etc.) shall be as shown on the drawings.

C. For pipes of other materials, specific specifications shall be shown on the drawings.

V. CONCRETE

1. Materials

a. Cement - Normal Portland cement shall conform to the latest ASTM Specification C-150.

b. Water - The water used in concrete shall be clean, free from oil, acid, alkali, scales, organic matter or other objectionable substances.

c. Sand - The sand used in concrete shall be clean, hard, strong and durable, and shall be well graded with 100 percent passing a one-quarter inch sieve. Limestone sand shall not be used.

d. Coarse Aggregate - The coarse aggregate shall be clean, hard, strong and durable, and free from clay or dirt. It shall be well graded with a maximum size of one and one-half (1-1/2) inches.

e. Reinforcing Steel - The reinforcing steel shall be deformed bars of intermediate grade billet steel conforming to ASTM Specification A-615.

2. Design Mix - The concrete shall be mixed in the following proportions, measured by weight. The water-cement ratio shall be 5-1/4 to 6 U.S. Gallons of water per 94 pound bag of cement. The proportion of materials for the trial mix shall be 1:2:3-1/2. The combination of aggregates may be adjusted to produce a plastic and workable mix that will not produce harshness in placing or honeycombing in the structure.

3. Mixing - The concrete ingredients shall be mixed in batch mixers until the mixture is homogeneous and of uniform consistency. The mixing of each batch shall continue for not less than one and one-half minutes after all the ingredients, except the full amount of water, are in the mixer. The minimum mixing time is predicted on proper control of the 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. Excessive overmixing requiring the addition of water to preserve the required concrete consistency shall not be permitted. Truck mixing will be allowed provided that the use of this method shall cause no violation of any applicable provisions of the specifications given here.

4. Forms - The forms shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary pressure, tamping, and vibration without deflection from the prescribed lines. They shall be mortar-tight and constructed so that they can be removed without hammering or prying against the concrete.

The inside of forms shall be oiled with a non-staining mineral oil or thoroughly wetted before concrete is placed.

Forms may be removed 24 hours after the placement of concrete. All wire ties and other devices used shall be recessed from the surface of 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.

6. Consolidating - Concrete shall be consolidated with internal type mechanical vibrators. Vibration shall be supplemented by spading and hand tamping as necessary to insure smooth and dense concrete along form surfaces, in corners, and around embedded items.

7. Finishing - Defective concrete, honeycombed areas, voids left by the removal of tie rods, ridges on all concrete surfaces permanently exposed to view or exposed to water on the finished structure, shall be repaired immediately after the removal of forms. All voids shall be reamed and completely filled with dry-patching mortar.

8. Protection and Curing - Exposed surfaces of concrete shall be protected from the direct rays of the sun for at least the first three (3) days. All concrete shall be kept continuously moist for at least ten (10) days after being placed. Moisture 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. Curing compounds may also be used.

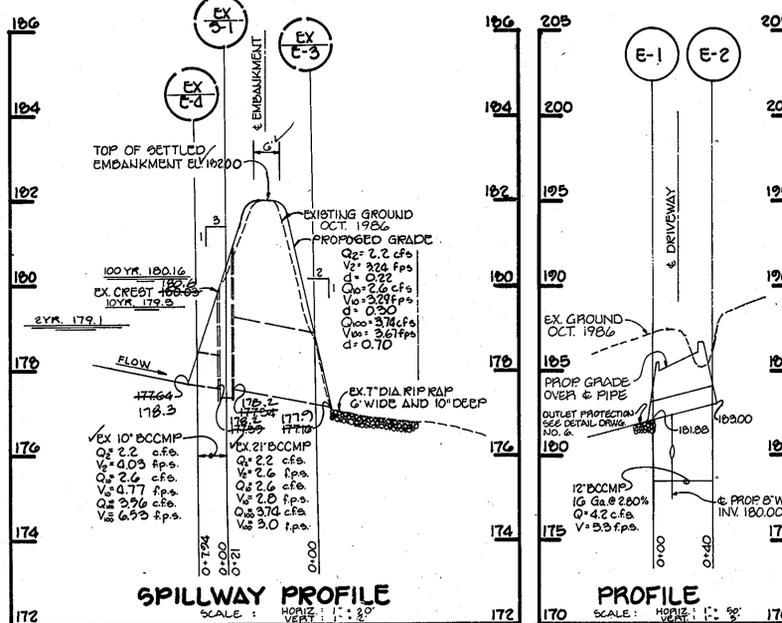
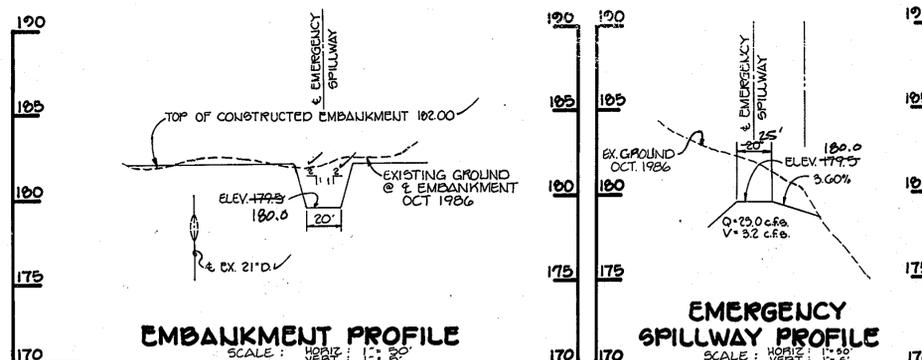
9. Placing Temperature - Concrete may not be placed at temperatures below 37°F with the temperature falling, or 34° with the temperature rising.

VI. STABILIZATION

All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching (if required) in accordance with the vegetative treatment specifications or as shown on the accompanying drawings.

VII. 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 to be employed during the construction process.



APPROVED
DIVISION OF LAND DEVELOPMENT &
ZONING ADMINISTRATION
HOWARD COUNTY, MARYLAND
DATE 10-9-87

AS-BUILT
PREPARED BY

ENGINEERS
PLANNERS
SURVEYORS

Light, Elliott, & Associates, Inc.

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Waldorf, MD 20604
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8508 Adelphi Road
Adelphi, MD 20783
301-422-6080
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BY THE DEVELOPER:
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

DEVELOPER: William D. Johnston DATE: 11/18/87

BY THE ENGINEER:
"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

ENGINEER: James K. Tracty, P.E. DATE: 11/17/87

REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS
U.S. SOIL CONSERVATION SERVICE DATE: 12-2-87

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
DATE: 12/2/87

APPROVED FOR PUBLIC WATER AND PRIVATE SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPT.
COUNTY HEALTH OFFICER DATE: 12-10-87

APPROVED FOR PUBLIC WATER STORM DRAINAGE SYSTEMS AND PUBLIC ROADS.
DATE: 12/15/87

DIRECTOR DATE: 12/15/87

CHIEF, BUREAU OF ENGINEERING DATE: 12-14-87

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING
PLANNING DIRECTOR DATE: 12-17-87

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE: 12/16/87

TRACY, SCHULTE & ASSOCIATES INC.
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8480 Baltimore National Pike - Ellicott City, Maryland 21045 - (301) 465-6105

OWNER: HEALTH WATERS, INC. 10984 ROUTE 32 ANNAPOLIS JUNCTION, MD 20701
PROJECT: HEALTH WATERS BUILDING # 2
LOCATION: TAX MAP NO. 48 PARCEL C-3 C-11 ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: Bldg No 2-ADDITION TO SDP 75-50 SWM SPECIFICATION AND DETAIL
SDP 87-219
DATE: MAY 1, 1987 PROJECT NO 8657 SDP
DES: RLW DRN: SAB SCALE: AS SHOWN DRAWING: 5 OF 6

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