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Roy F. Weston, Inc.
1 Weston Way
West Chester, Pennsylvania 19380-1499
® 610-701-3000 • Fax 610-701-3186

10 February 1998

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FEB 17 1998
DIVISION OF MINING &
SOLID WASTE PERMITTING
BLWM

Mr. Jeffrey Herbig
South Carolina Department of Health and Environmental Control (DHEC)
2600 Bull Street
Columbia, SC 29201

Re: Request for Supplemental Information
Landfill Closure Plan
Laurens Ceramics Site
Laurens, South Carolina

Dear Mr. Herbig:

On behalf of the Minnesota Mining and Manufacturing Company (3M) and General Electric Company (GE), Roy F. Weston, Inc. (WESTON®) is pleased to submit the supplemental information requested for the closure of the landfill at the Laurens Ceramics site. As you recall in August 1997, the Landfill Closure Plan was submitted to DHEC as required under the Consent Agreement between 3M/GE and DHEC. In your November 1997 telephone conversation with Ms. Sheryl Corrigan (3M), the following supplemental information was requested:

- A final grading plan for the landfill,
- Specified maximum slope,
- Two cross section details,
- Landfill final cover cross section detail,
- Specifications for the GCL (including maximum permeability), and
- Provisions for stormwater management.

These items are provided in the attached drawings and in the text below.

The Final Grading Plan for the Landfill is shown in Drawing No. 1 and depicts contours for top of cover. Minor revisions to the final elevations may be made during construction to reflect actual quantities of material being consolidated and imported sub-base material. The final grades specify a maximum average slope of 4H:1V at the "progressive bank" area (at the westernmost portion of the landfill) and a minimum 3% grade on top of the landfill to maintain positive drainage. The 4H:1V slope for the progressive bank area is "flatter" than the present slope which is too steep to provide long term-stability for the final cover. This slope will be regraded via cut of the excess material which will be relocated to the toe of slope. This is shown in the Drawing No. 2 cross-section.



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The final 4:1 slope will allow for greater stability and ease of maintenance of this area. Cross section details are provided in Drawing Nos. 2 and 3. Please note that we have used an exaggerated vertical scale in the cross-sections to better display the details. It is estimated that approximately 500 cubic yards of material will be excavated from the progressive bank area and the area outside the existing fence on the north side of the landfill. This material will be consolidated at the new toe of slope for the progressive bank and within the central and western portions of the landfill prior to construction of the final cover system. Drawing No. 4 depicts the present approximate limit of the existing landfill, area where waste will be excavated for consolidation, the waste stabilization area, and limit of the final cover system.

As previously indicated in the Closure Plan and shown in Drawing No. 5, the final cover cap system design will consist of the following layers:

- Sub-base suitable for placement of the Geosynthetic Clay Liner (GCL) cap.
- A GCL cap will be placed over the sub-base. The GCL consist of a layer of bentonite clay sandwiched between geotextile material and will have a maximum permeability of $5 \times 10^{-9}$ cm/sec.
- Eighteen inches of clean soil will be placed over the GCL to provide protection to the cap and a physical barrier over waste. The clean soil cover will be substantially free of rock fragments.
- A six-inch thick top cover layer will be placed over the 18-inches of clean soil to provide a suitable base for establishment of a vegetative cover.
- Grasses, such as rye, fescue, bermuda, or other low maintenance type grass will be seeded and established.

Several (4-5) passive gas vents will be installed through the final cap. Even though there is not a substantial amount of biodegradable material (i.e., wood, paper) in the landfill, these passive vents are being installed as a contingency measure to prevent possible accumulation of small amounts of landfill gas under the GCL.

To effectively manage runoff from the final cover and bank area, stormwater will be collected in a new swale that will be constructed along the southern and western sides of the landfill. Along the north side of the landfill, a diversion swale will be constructed to divert any stormwater run-on from areas upgradient of the final cover system. The steeper sections of the swales will be lined with riprap to minimize erosion within the channel.

At the western side of the landfill, the swales will discharge onto riprap aprons. The aprons will serve to dissipate the energy of the water and spread the flows evenly across the flat area of the aprons before running off-site via natural drainageways. This stormwater drainage plan is shown in Drawing No. 1.

A Stormwater Management and Sediment Control Plan will be prepared and submitted to DHEC for approval prior to any construction activity. It is anticipated that temporary erosion control measures such as hay bales, silt fence and check dams will be used during construction to minimize the transport of soils off-site. Upon achieving final grades, vegetation will be established over the entire site to stabilize the cover soils and minimize erosion of the cap system.

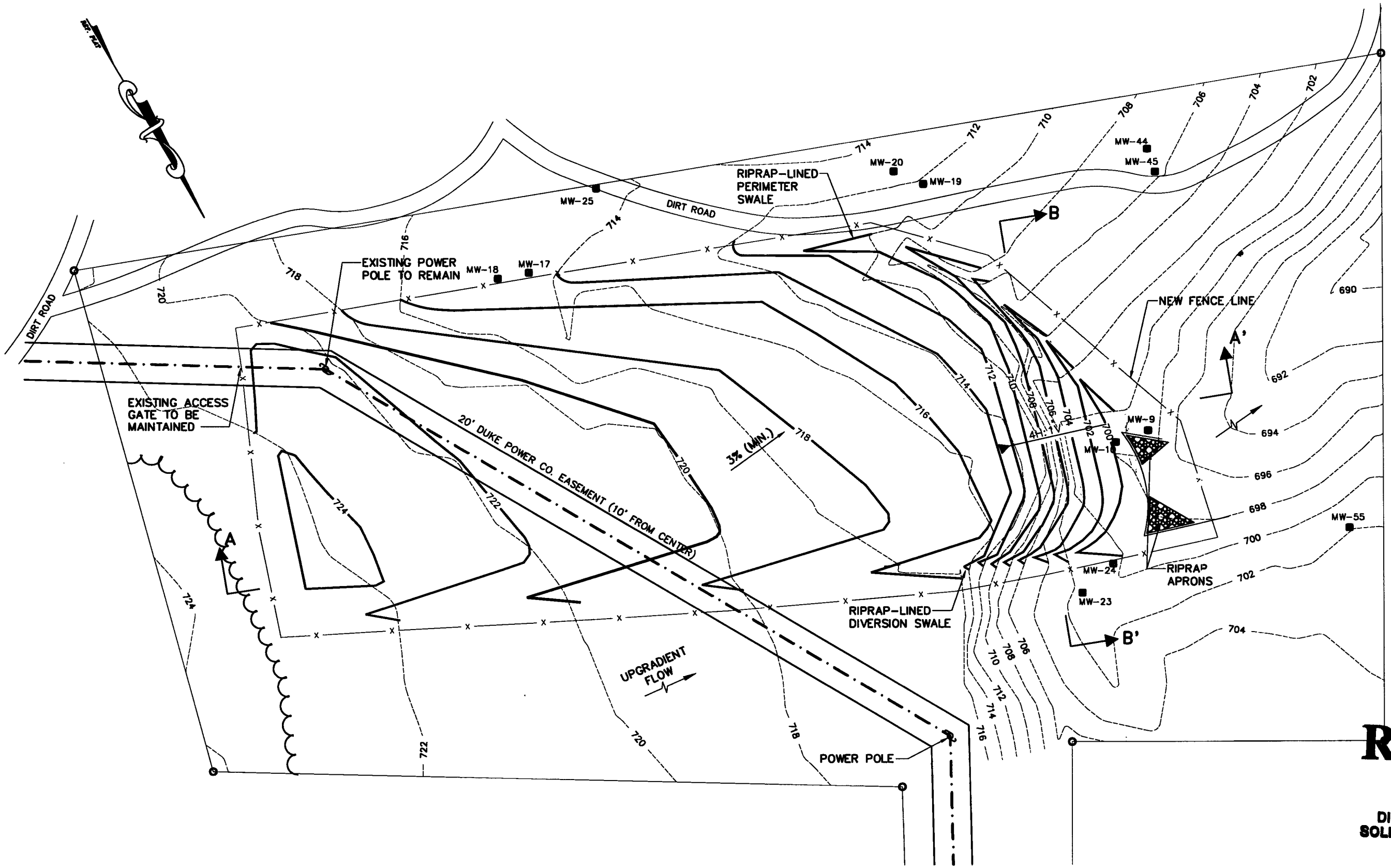
If you have any question or comment, please do not hesitate to contact us.

Sincerely,

Roy F. Weston, Inc.

Thomas A. Drew, P.G.
Project Manager

c: Sheryl Corrigan - 3M
Lisa Hamilton - GE
B. Thomas Knight - DHEC
Eric Cathcart - DHEC




GRAPHIC SCALE

0 25 50 100

( IN FEET )

1 inch = 000 ft.

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LAURENS CERAMIC SITE
LANDFILL CLOSURE

FINAL GRADING PLAN

LAURENS, SOUTH CAROLINA

ROY F. WESTON, INC.
WESTON
MANAGERS DESIGNERS/CONSULTANTS

| DRAWN | DATE | DES. ENG. | DATE | W. O. NO. |
|---|---|---|---|---|
| MEF | 1/19/98 | BMZ | 1/19/98 | 02181-052-025 |
| CHECKED | DATE | APPROVED | DATE | DWG. NO. |
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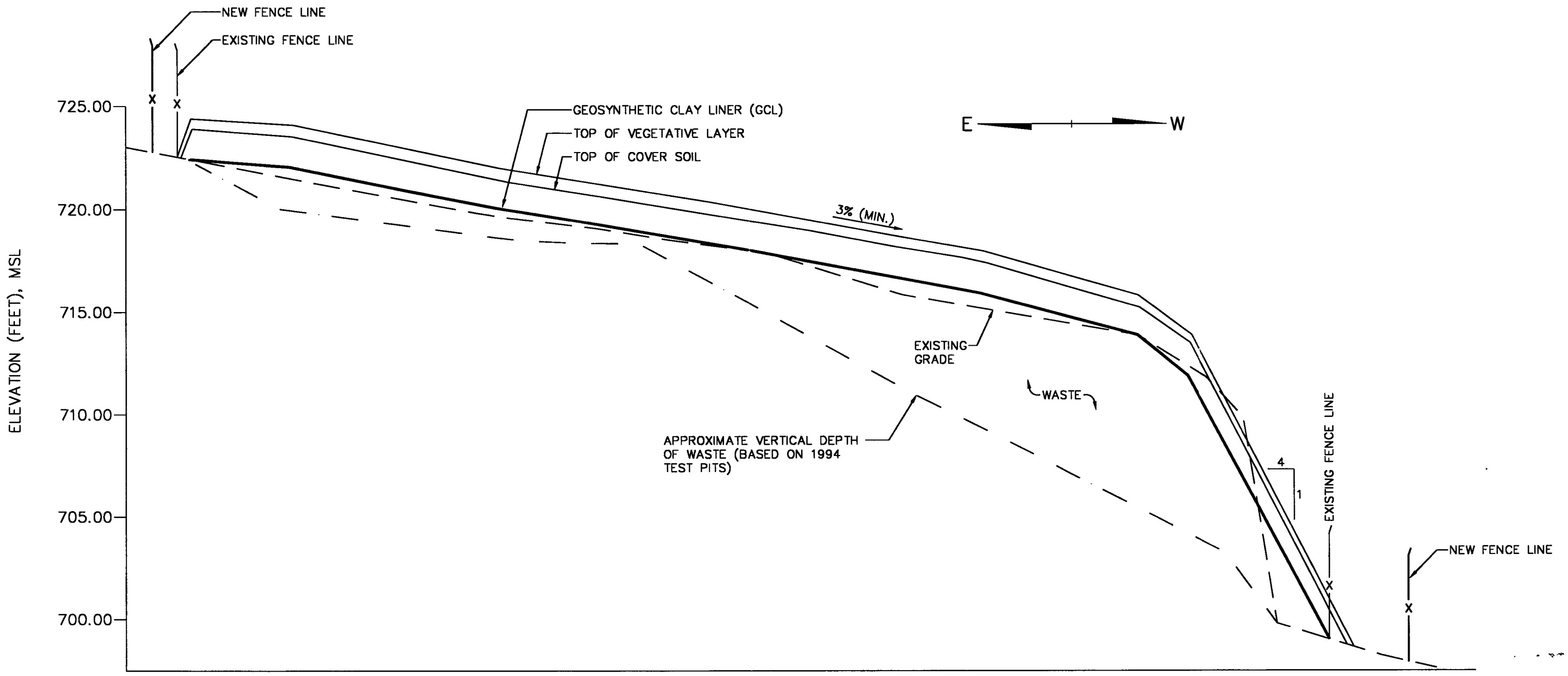


1"=5' VERTICAL
1"=40' HORIZONTAL



LAURENS CERAMIC SITE
LANDFILL CLOSURE

**SECTION A–A'**

LAURENS, SOUTH CAROLINA

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FILE NO.

ROY F. WESTON, INC.
WESTON MANAGERS DESIGNERS/CONSULTANTS

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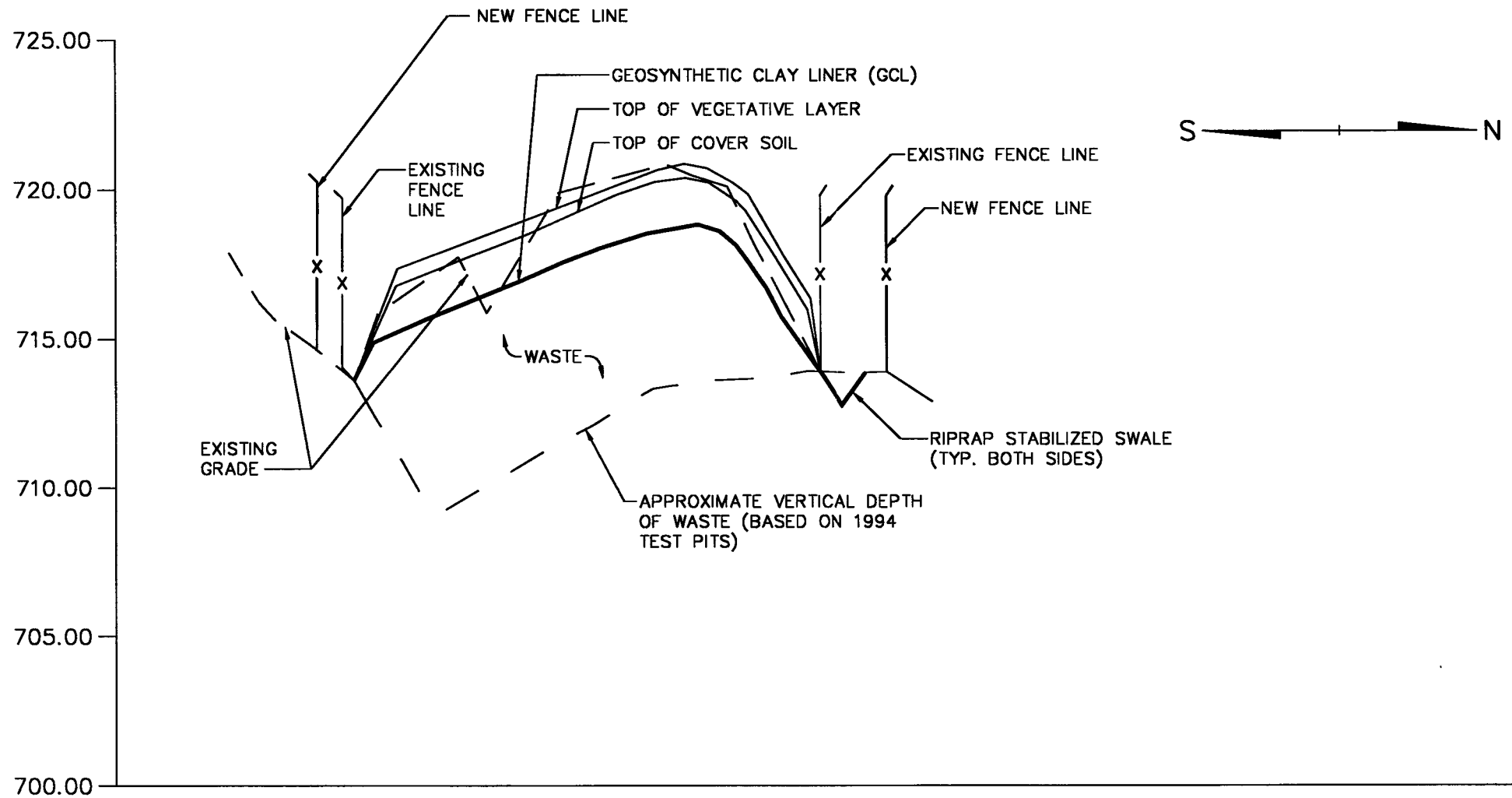


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1"=5' VERTICAL
1"=40' HORIZONTAL

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LAURENS CERAMIC SITE
LANDFILL CLOSURE

**SECTION B–B'**

LAURENS, SOUTH CAROLINA

ROY F. WESTON, INC.
WESTON
MANAGERS DESIGNERS/CONSULTANTS

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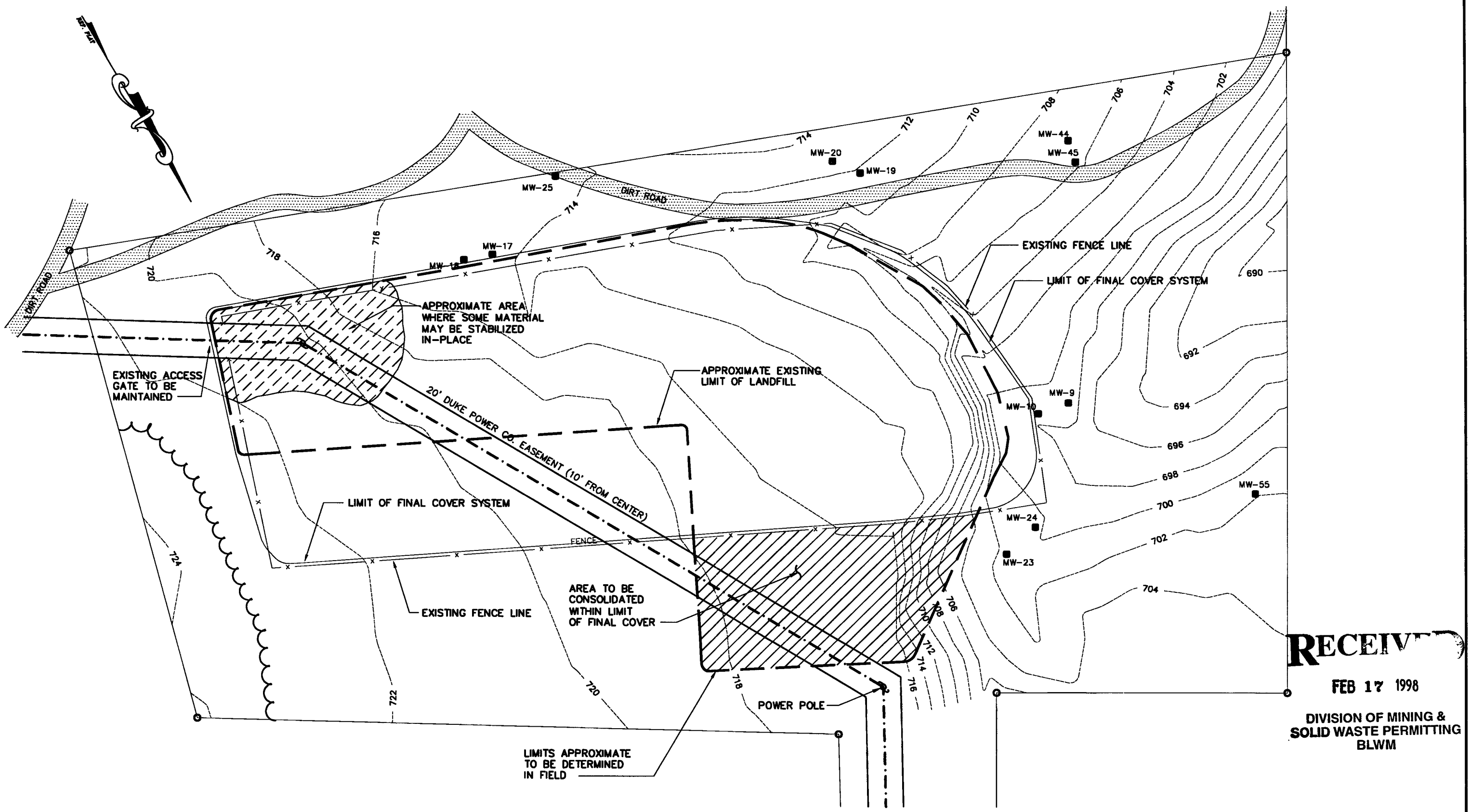


GRAPHIC SCALE

0 25 50 100

( IN FEET )

1 inch = 50 ft.

LAURENS CERAMIC SITE
LANDFILL CLOSURE

# WASTE CONSOLIDATION/ STABILIZATION AREAS, AND LIMIT OF FINAL COVER SYSTEM

LAURENS, SOUTH CAROLINA

ROY F. WESTON, INC.

WESTON MANAGERS DESIGNERS/CONSULTANTS

| DRAWN | DATE | DES. ENG. | DATE | W. O. NO. |
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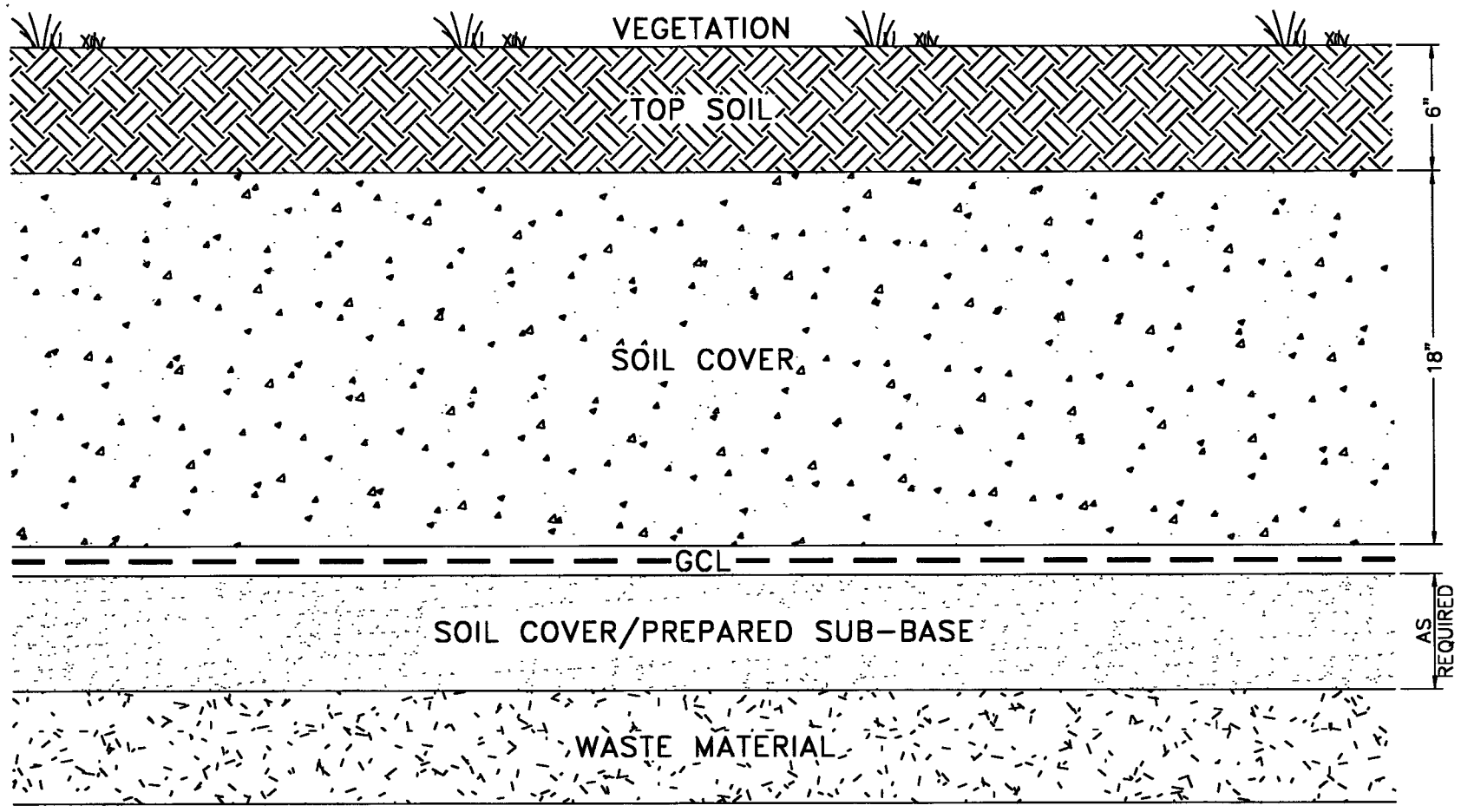




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PLT. SC.
FILE NO.

LAURENS CERAMIC SITE
LANDFILL CLOSURE

LANDFILL FINAL COVER
CROSS SECTION DETAIL

LAURENS, SOUTH CAROLINA

ROY F. WESTON, INC.
WESTON MANAGERS DESIGNERS/CONSULTANTS

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