

**HISTORY OF CONSTRUCTION FOR EXISTING CCR SURFACE IMPOUNDMENT
PLANT GORGAS GYPSUM POND
40 CFR 257.73(c)(1)(i)-(xii)**

(i) Site Name and Ownership Information:

Site Name: William C. Gorgas Electric Generating Plant

Site Location: Parrish, Alabama

Site Address: 460 Gorgas Rd.
Parrish, Alabama 36512

Owner: Alabama Power Company

Address: 600 North 18th Street
Birmingham, AL 35203

CCR Impoundment Name: Plant Gorgas Gypsum Pond

NID ID: NA

EPA's "Disposal of Coal Combustion Residuals from Electric Utilities" Final Rule (40 C.F.R. Part 257 and Part 261), §257.73(c)(1), requires the owner or operator of an existing CCR surface impoundment to compile a history of construction. To the extent feasible, the following information is provided:

(ii) Location of CCR Unit:

33.626385, -87.183952

See Location Map in the Appendix

(iii) Purpose of CCR Impoundment:

The William C. Gorgas Electric Generating Plant is a 5-unit electric generating facility, all of which are coal-fired units. The Plant Gorgas Gypsum Pond is designed to receive and store coal combustion residuals (gypsum) produced during the electric generating process at Plant Gorgas. The gypsum slurry from the flue gas desulfurization operation is wet-sluiced to the gypsum storage area. The gypsum is allowed to settle and the water decants to the sedimentation pond. The decant water flows from the sedimentation pond to a clear pool before it is returned to the scrubber process.

(iv) Watershed Description:

Plant Gorgas is located within the Baker Creek-Mulberry Fork HUC 12 watershed which has a total area of 37,044 acres. The Baker Creek-Mulberry Fork Watershed is located within the Mulberry HUC 8 watershed which has a drainage area of 878,212 acres. No run-on from the surrounding watershed flows into the Gypsum Pond.

(v) Description of physical and engineering properties of CCR impoundment foundation/abutments:

The Plant Gorgas Gypsum Pond is located within the Warrior Basin physiographic region of the Cumberland Plateau and is a subsection of the Appalachian Plateaus physiographic province. The Warrior Basin consists of a broad upland with moderate relief, and is formed on gently dipping strata of the Pottsville Formation. The upper reaches of the surface geology are dominated by the Pratt Coal Group and the Cobb Coal Group consisting of shale, siltstone, sandstone, and coal seams.

The specific area of the Gypsum Pond was filled with mine spoil after previous surface mining activities. Borings taken in the undisturbed areas of the site suggest that only a thin layer of soil (5 to 20 feet) was present above the residual Pottsville Formation. General soil conditions in most areas consisted of dark gray to black, fine to gravelly, shale and sandstone coal mine spoils. The topography of the area was variable. A terrace-type stratigraphy exists at the gypsum storage location due to the previous strip mining operations and backfilling of this area with mine spoils.

(vi) Summary of Site Preparation and Construction Activities:

The Gypsum Pond was constructed in 2007. An area approximately 50 acres in size was used to create the first cell of the gypsum storage area. The Gypsum Pond itself covers approximately 18 acres. There is an area to the east at a lower elevation that consists of a sedimentation pond, clear pool, and an emergency storage pond. The ponds are lined with an HDPE liner.

As a part of construction, the existing soils/minespoil was graded, the subgrade proofrolled and a granular fill was placed beneath the liner. Embankments were constructed of compacted soil fill obtained from nearby borrow pits. Subsequent to initial construction, the downstream slopes of the embankment were surfaced with limestone riprap.

(vii) Engineering Diagram:

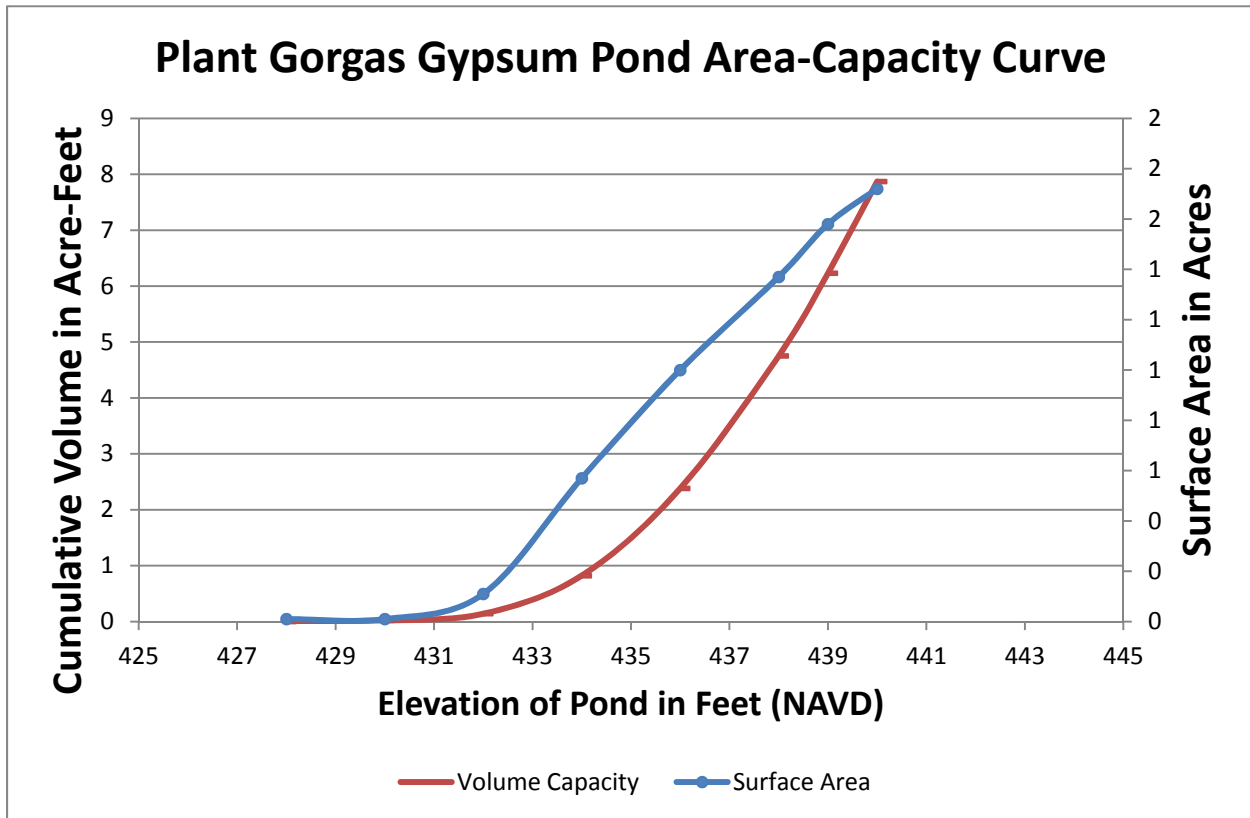
The following drawings reflecting the construction of the Plant Gorgas Gypsum Pond can be found in the Appendix:

- 2007 Site Grading Plan
- 2007 Cell Sections and Details
- 2007 Grading Plan Pond Sections and Details
- 2007 Grading Details

(viii) Description of Instrumentation:

There is currently no instrumentation at the Plant Gorgas Gypsum Pond.

(ix) Area-capacity curves:



(x) Spillway/Diversion design features and capacity calculations:

The Plant Gorgas Gypsum Pond spillway design consists of a 48-inch HDPE riser pipe that connects to a 36-inch pipe that discharges into the sedimentation pond. There is an additional 36-inch HDPE pipe that collects stormwater runoff from the perimeter ditch and discharges into the same 36-inch discharge pipe. The combined capacity of this discharge structure is approximately 100 cfs at a pond elevation of 439.0 ft.

(xi) Provisions for surveillance, maintenance and repair:

Inspections of dams and dikes are critical components and are conducted on a regular basis—at least annually by professional dam safety engineers and at a minimum interval of every seven days by qualified persons at the plant. In addition, inspections are performed after unusual events such as storms. The inspections provide assurance that structures are sound and that action is taken, as needed, based on the findings. Specific items addressed during the inspections include observations of pond levels, weather conditions, rainfall since the prior inspection, conditions of slopes and drains, erosion, animal damage, ant hills, alignment of retaining structures and more. Dam safety engineers assess any maintenance or remediation performed since the previous inspection, check the status of work recommended at prior inspections, ensure that the posting of emergency notification information is up to date and evaluate any items noted during plant personnel inspections.

Construction Specifications:

The following specifications relevant to the construction of the Plant Gorgas Gypsum Pond can be found in the Appendix:

- 2007 Technical Specifications for New Gypsum Storage Facility
- 2007 General Notes

(xii) Known record of structural instability:

There are no known instances of structural instability at the CCR unit.

Appendix



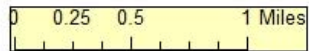
Plant Gorgas Gypsum Pond

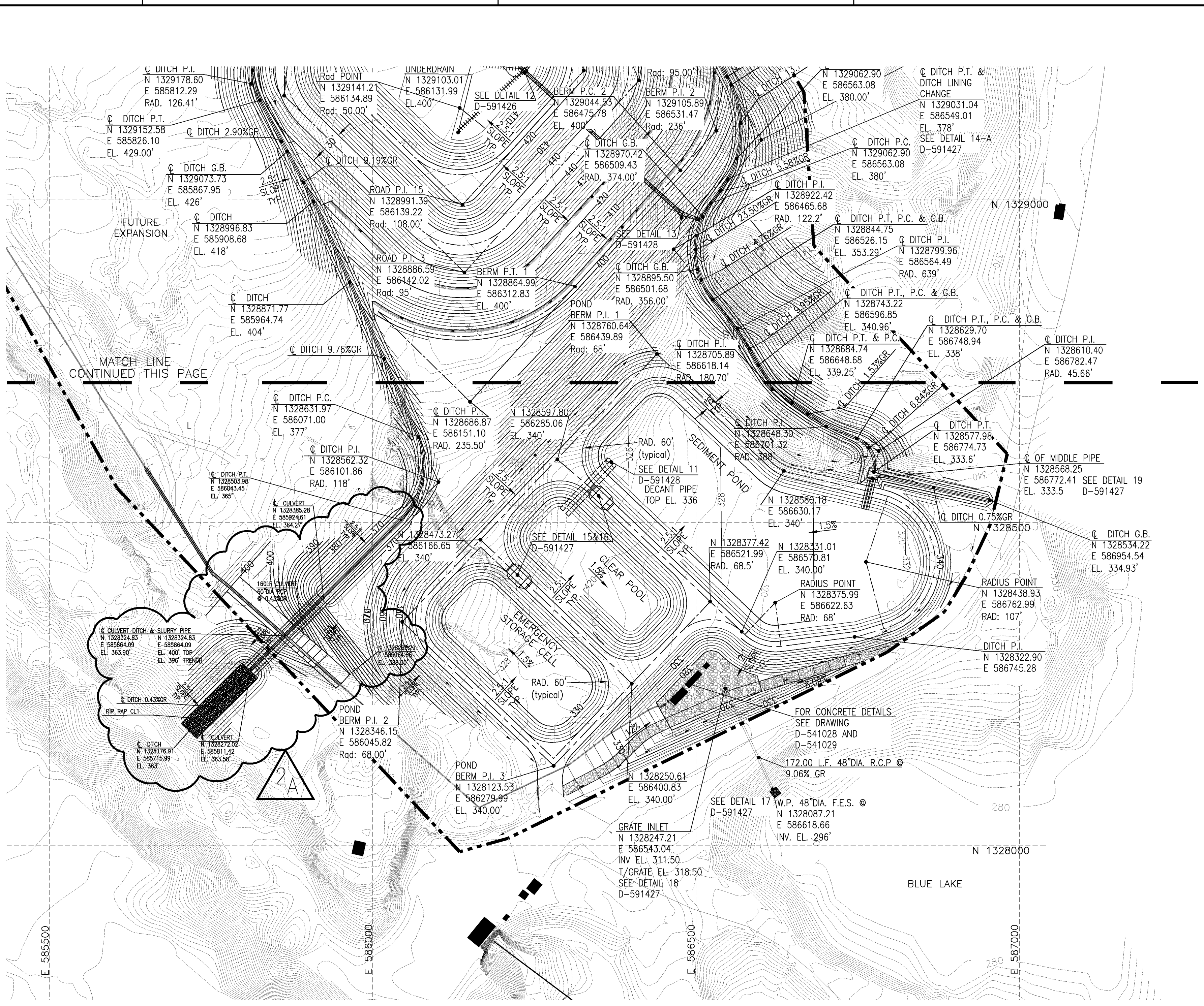
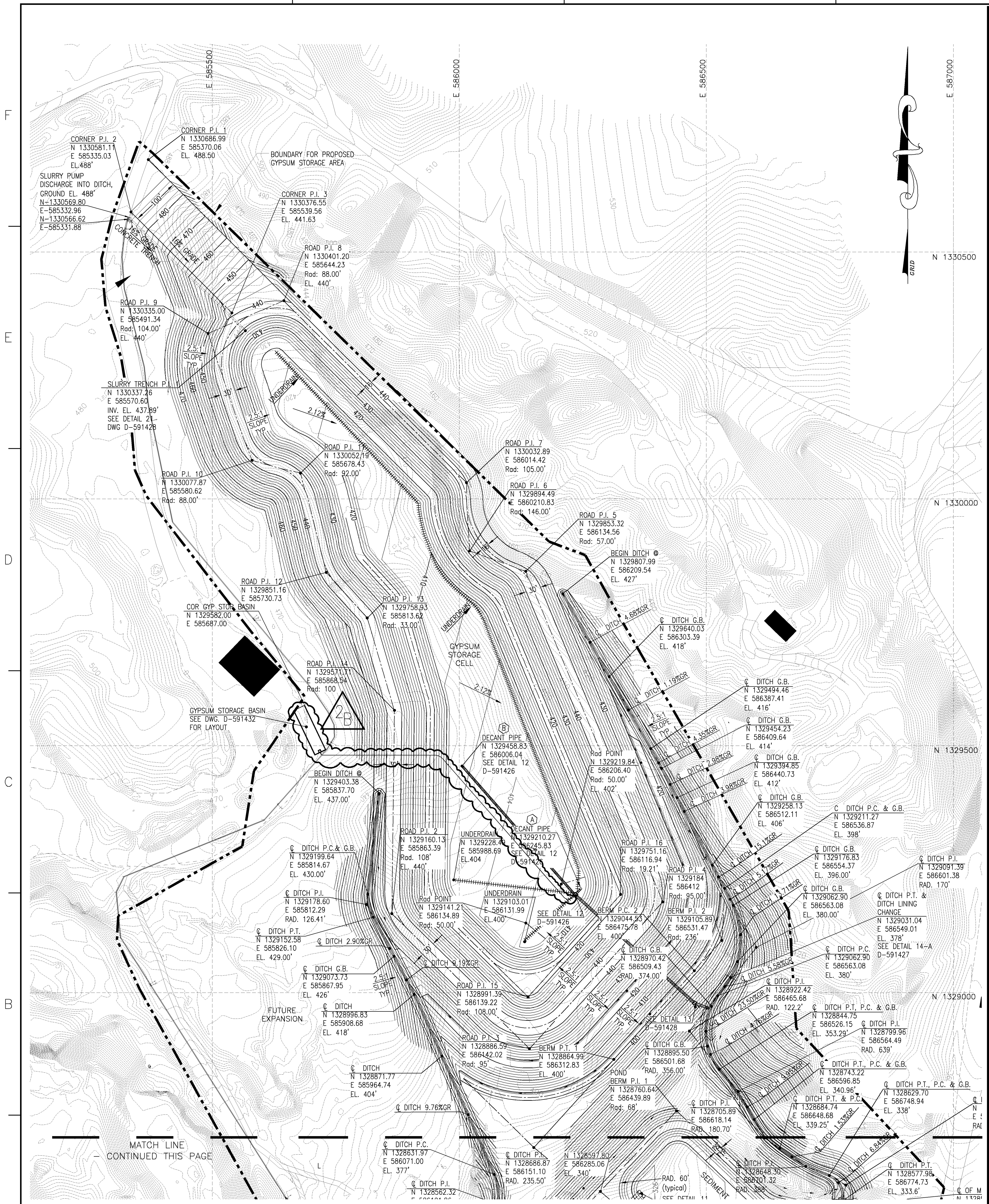
☆ Gypsum Pond Location

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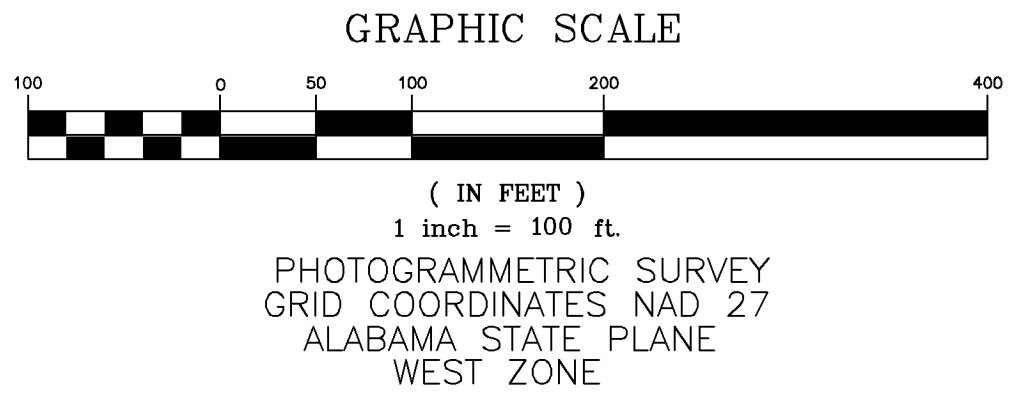
USA Topo Maps





LEGEND:

- PROJECT BOUNDARY
- 420 --- EXISTING GRADE CONTOURS (10')
- 400 --- EXISTING GRADE CONTOURS (2')
- 400 --- FINAL GRADE CONTOURS (10')
- 400 --- FINAL GRADE CONTOURS (2')
- STRUCTURES
- ||||| UNDERDRAINS
- ▨ RECYCLED DITCH LINING
- ▨ CONCRETE DITCH LINING
- ▨ HDPE DITCH LINING
- ▨ CRUSHED AGGREGATE



NOTES:

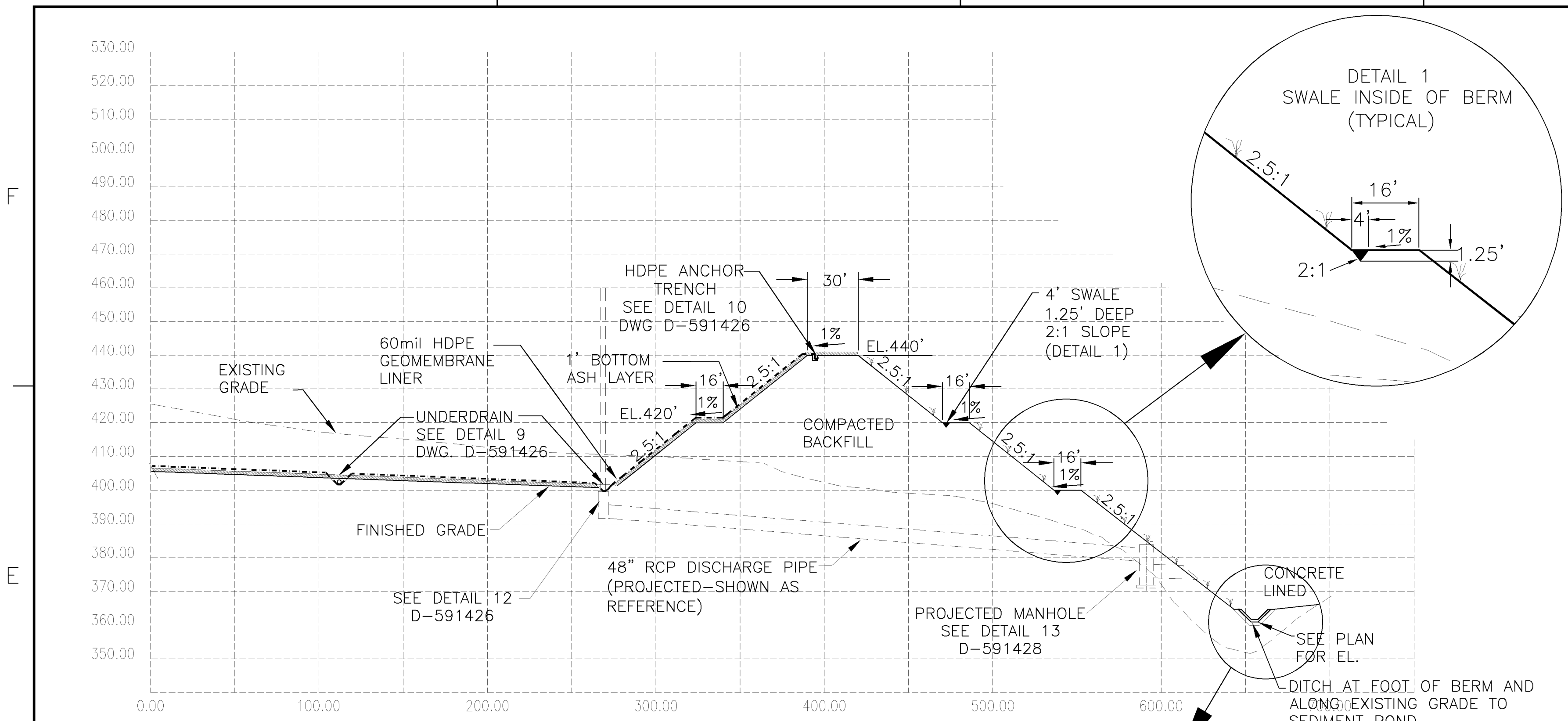
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- 2) PHOTOGRAMMETRIC DATA COLLECTED 05/13/2003
- 3) CONTOURS WERE PRODUCED BY DIGITAL TERRAIN MODEL
- 4) CONTOUR INTERVAL 2 FEET
- 5) CONTOURS APPROXIMATE IN AREAS OF DENSE VEGETATION
- 6) RASTER OVERLAY OF GOODS SPRINGS 7 1/2 Min. USGS QUAD SHEET
- 7) DRAWING IS ACCURATE ONLY AT ORIGINAL SCALE.
- 8) FOR REFERENCE DRAWINGS AND GENERAL NOTES SEE DRAWING NUMBER D-591420.
- 9) FINISHED GRADE CONTOURS REPRESENT BOTTOM OF 1' ASH LAYER WHEN ASH LAYER IS SHOWN ON SECTIONS.
- 10) FINISHED GRADE CONTOURS REPRESENT TOP OF TOPSOIL WHERE TOPSOIL IS REQUIRED AND NO ASH IS PRESENT.

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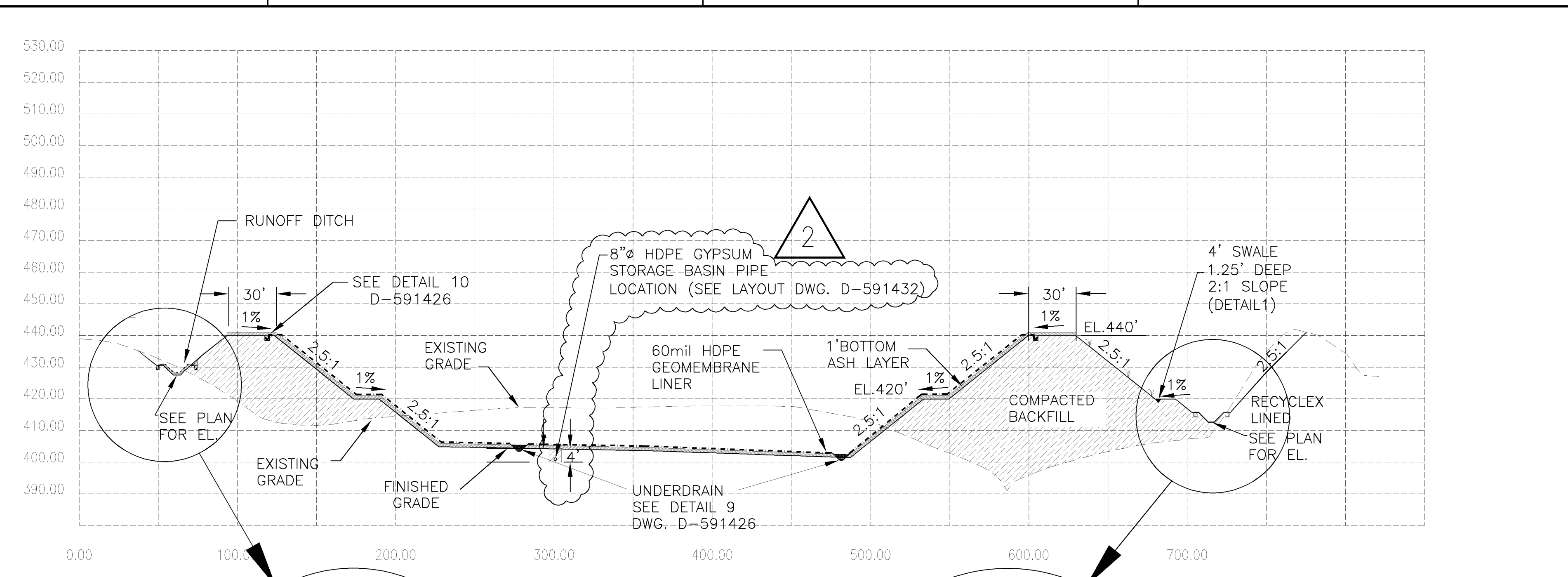
Southern Company Services, Inc.
FOR

Alabama Power Company
Plant Gorgas Units 8, 9 & 10 FGD Project
GYPSUM STORAGE AREA
GRADING PLAN
INITIAL SITE DEVELOPMENT
SITE GRADING PLAN

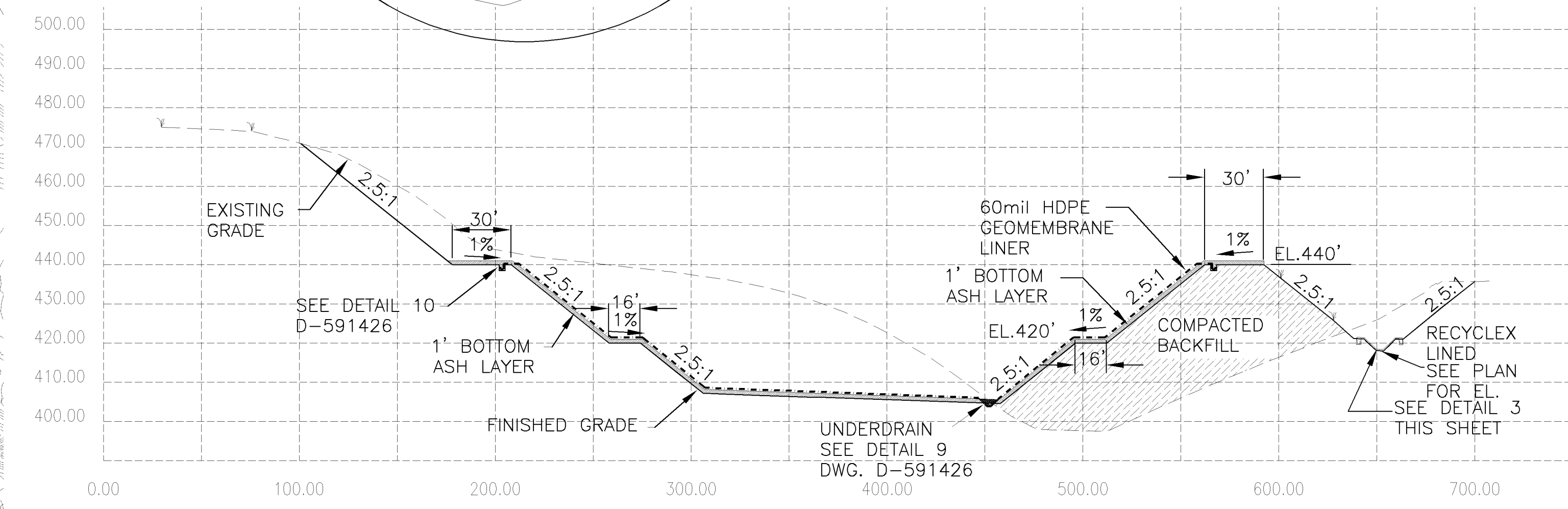
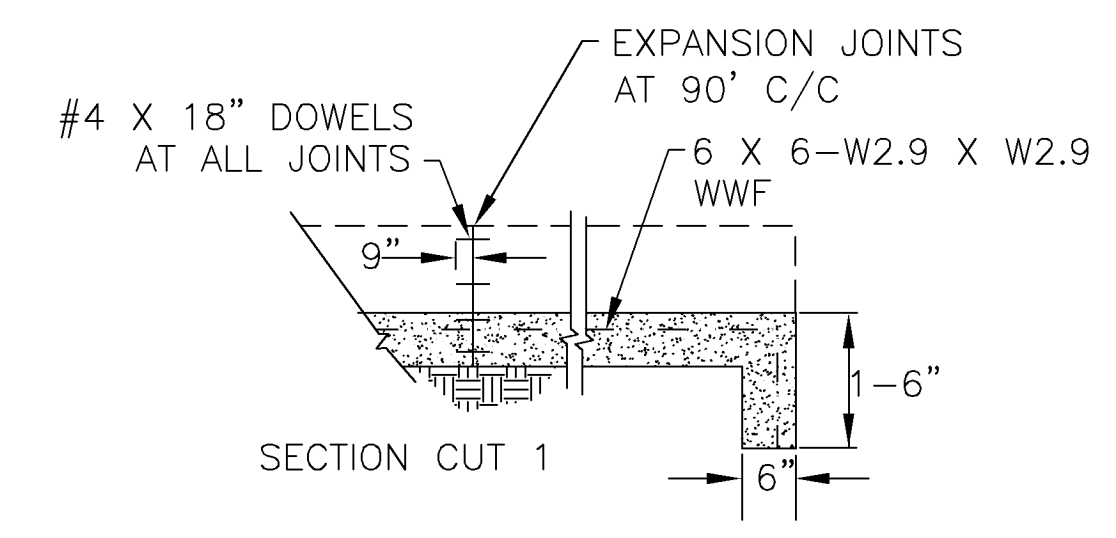
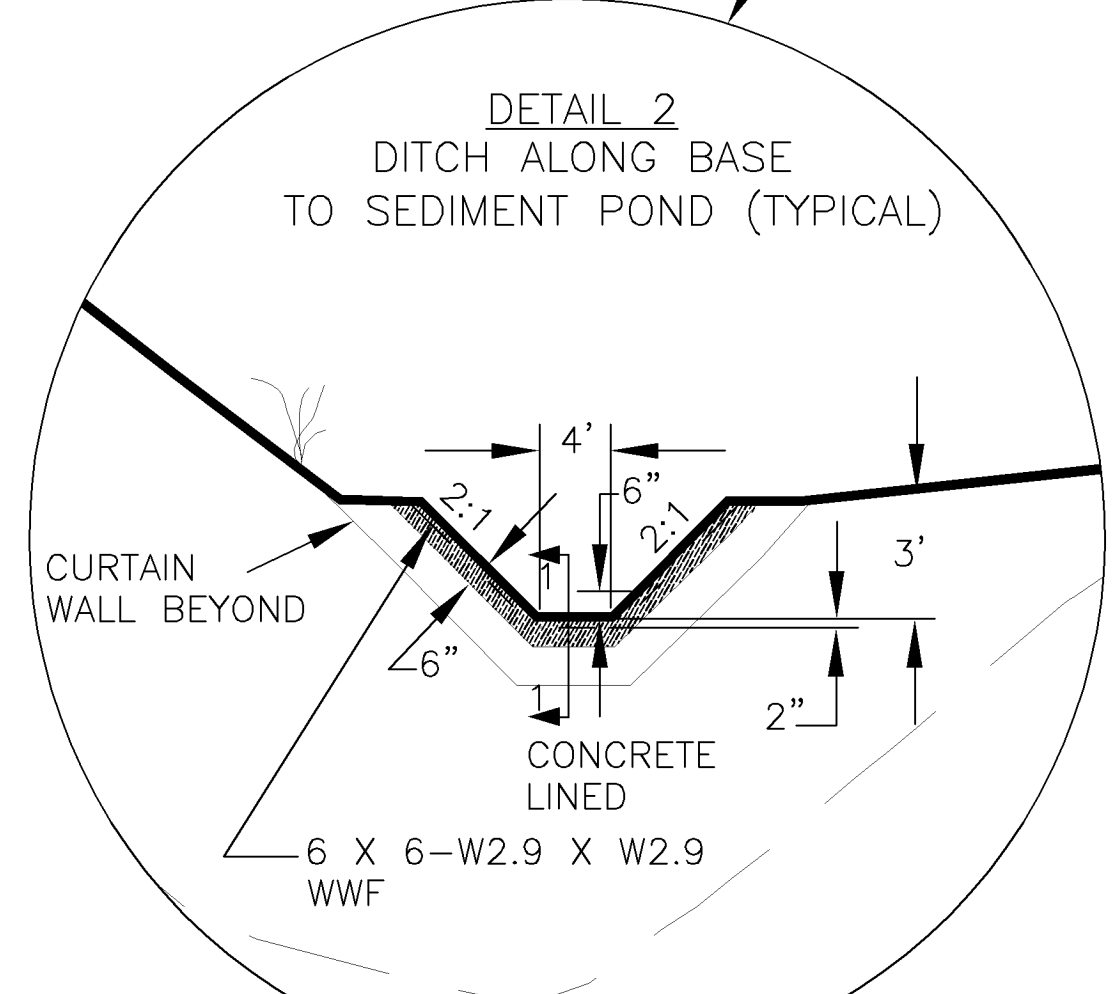
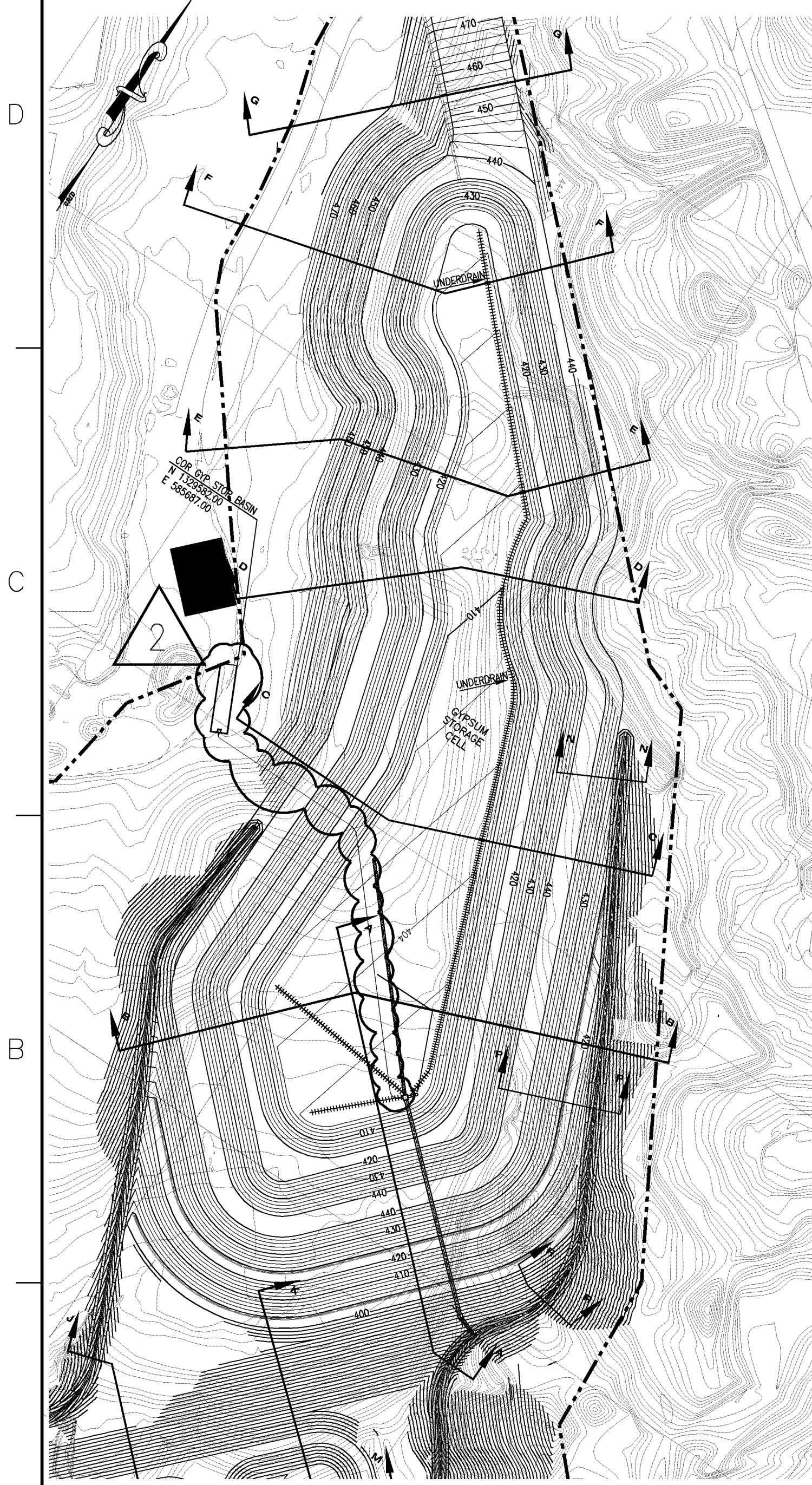
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2	03/15/2007	1	09/21/2006	0	05/12/2006																													
A. ADDED NEW DESIGN FOR CULVERT OVER WEST DITCH FOR SLURRY PIPE.				ADDED 2' CONTOURS ON ROAD				ISSUED FOR CONSTRUCTION																										
B. ADDED INFORMATION FOR GYPSUM STORAGE BASIN AND DRAIN.																																		
EWO 2119				GO-05001				EWO 2119				GO-05001																						
BY	CHK'D	CIVL APPR	ELECT APPR	U/C APPR	MECH APPR	MGR APPR	BY	CHK'D	CIVL APPR	ELECT APPR	U/C APPR	MECH APPR	MGR APPR	BY	CHK'D	CIVL APPR	ELECT APPR	U/C APPR	MECH APPR	MGR APPR	BY	CHK'D	CIVL APPR	ELECT APPR	U/C APPR	MECH APPR	MGR APPR	BY	CHK'D	CIVL APPR	ELECT APPR	U/C APPR	MECH APPR	MGR APPR
ASF	SSS	ALM/RCB	JPS	RDP	DEK	KoM	ASF	SSS	ALM/RCB	JPS	RDP	DEK	MDS	ASF	SSS	ALM/RCB	JPS	RDP	DEK	MDS	ASF	SSS	ALM/RCB	JPS	RDP	DEK	MDS	SCALE	PROJ. ID.	DRAWING NUMBER	SH	CONTD	REV	
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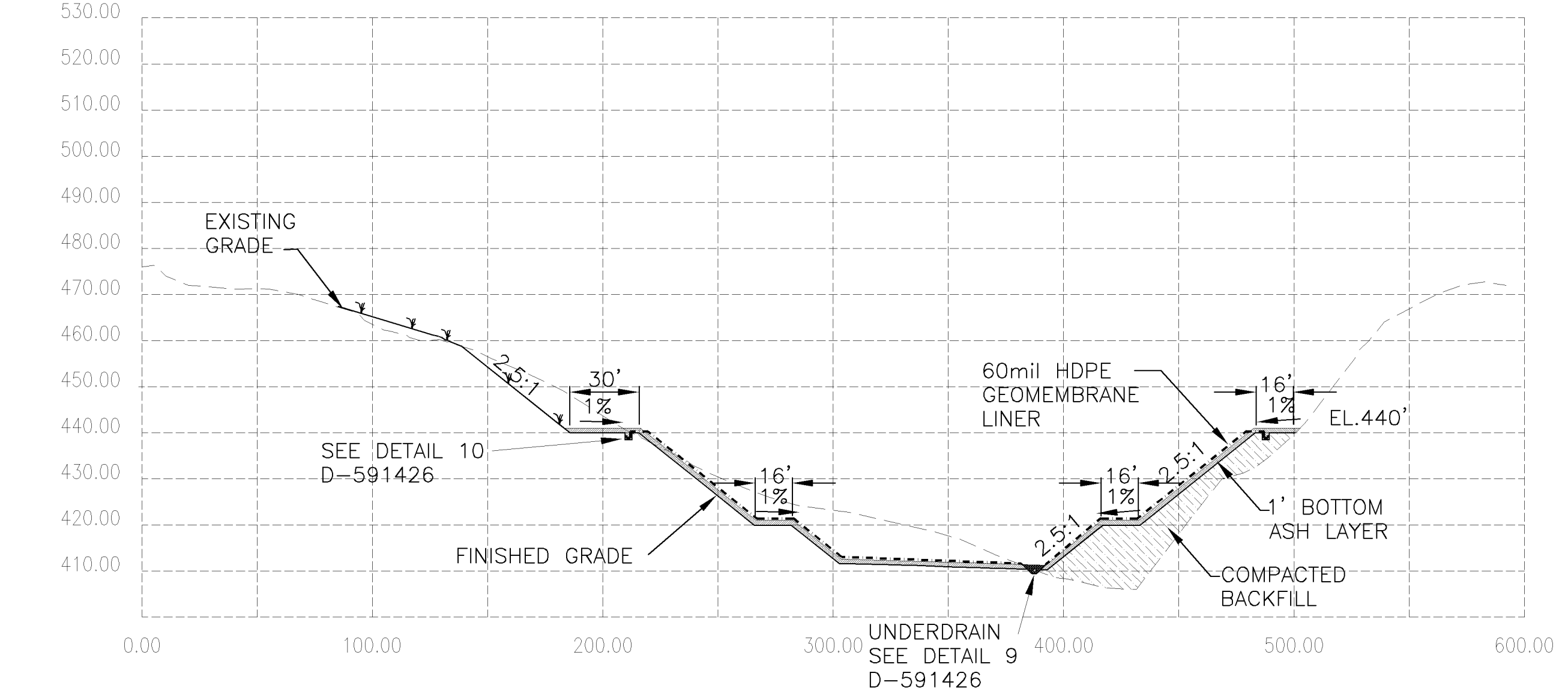
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Vert. 1" = 25'



SECTION B-B
Scale: Horz. 1" = 50'
Vert. 1" = 25'



SECTION C-C
Scale: Horz. 1" = 50'
Vert. 1" = 25'



SECTION D-D
Scale: Horz. 1" = 50'
Vert. 1" = 25'

- LEGEND:**
- RECYCLEX DITCH LINING
 - CONCRETE DITCH LINING
 - HDPE DITCH LINING

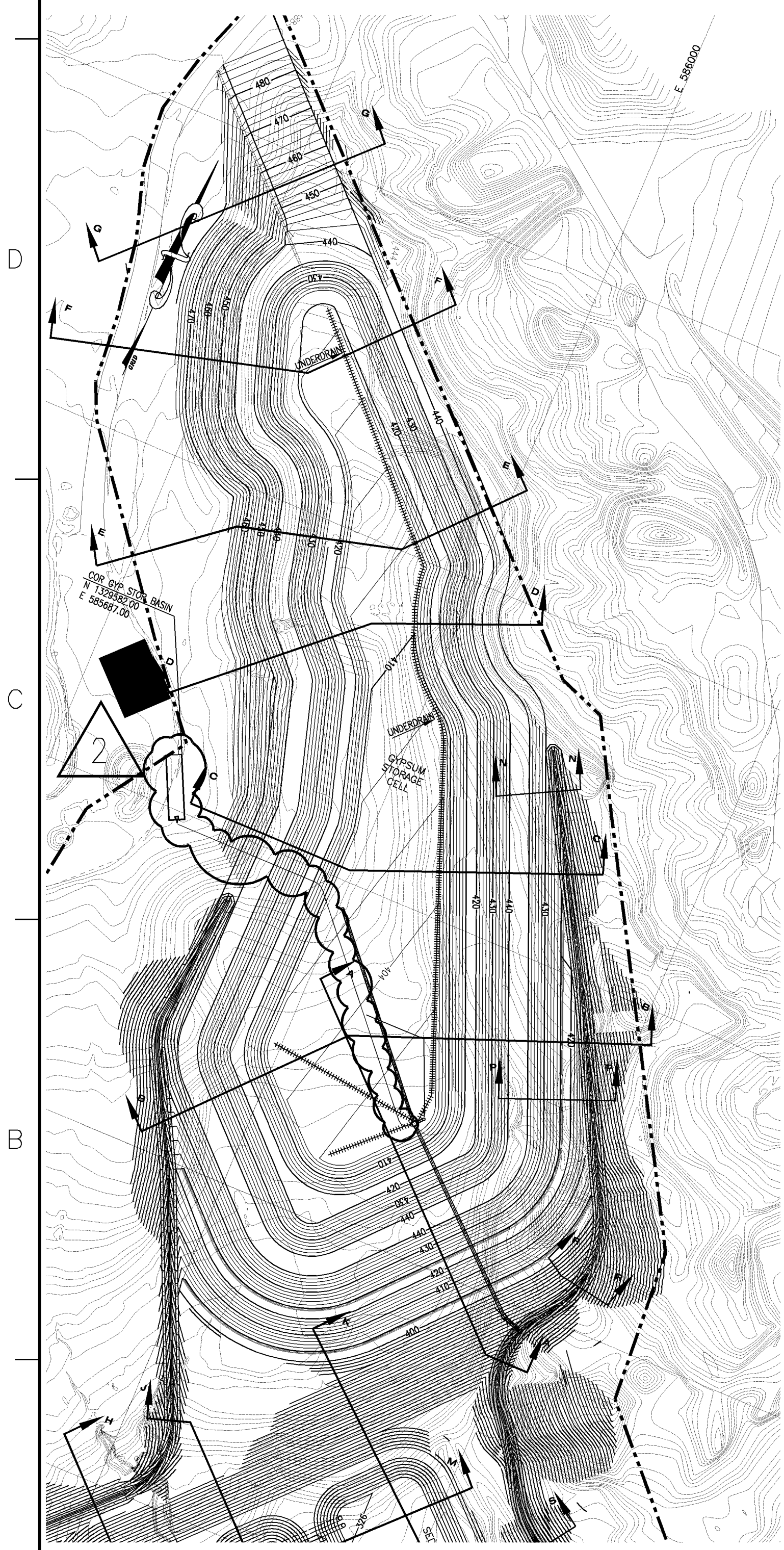
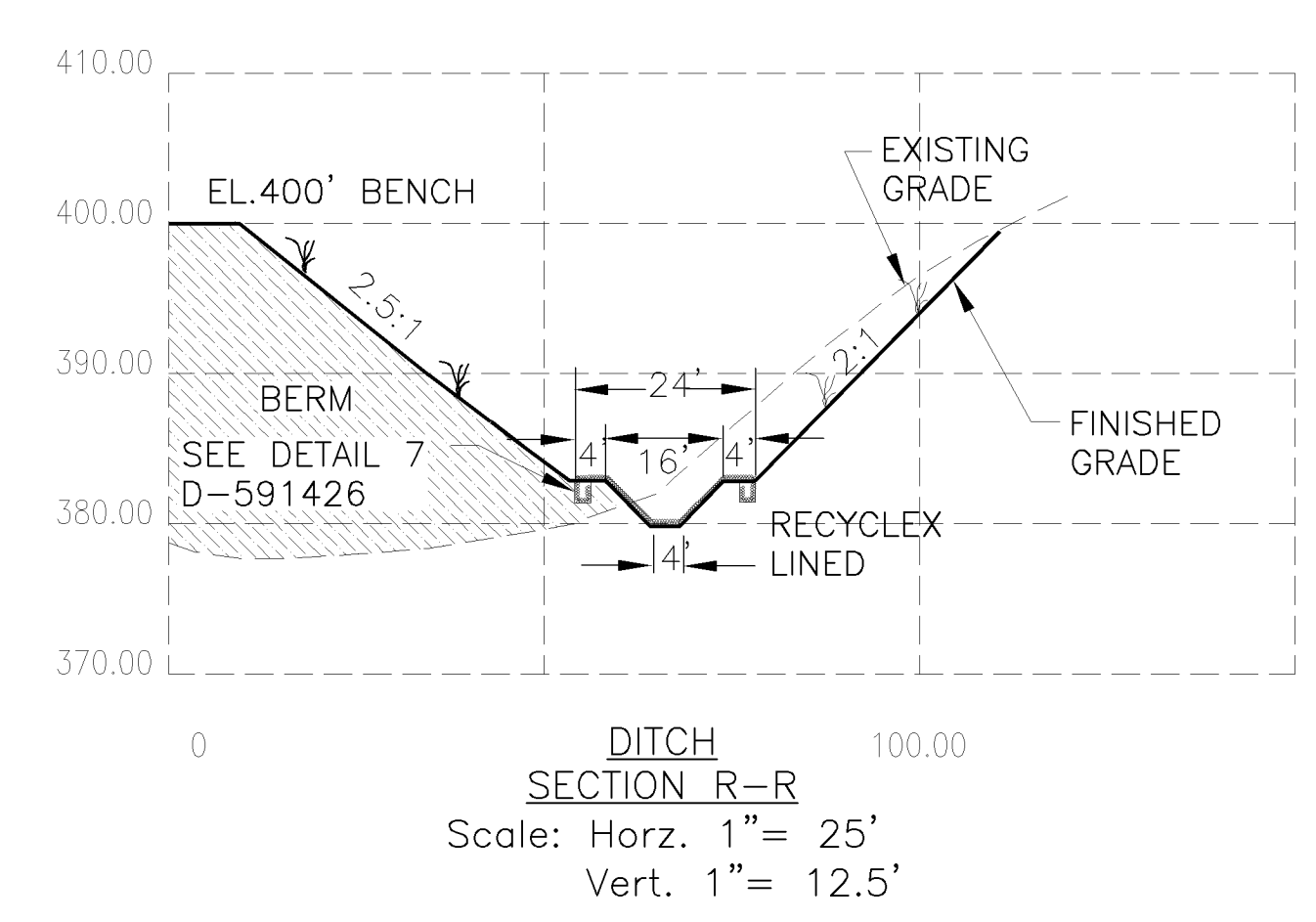
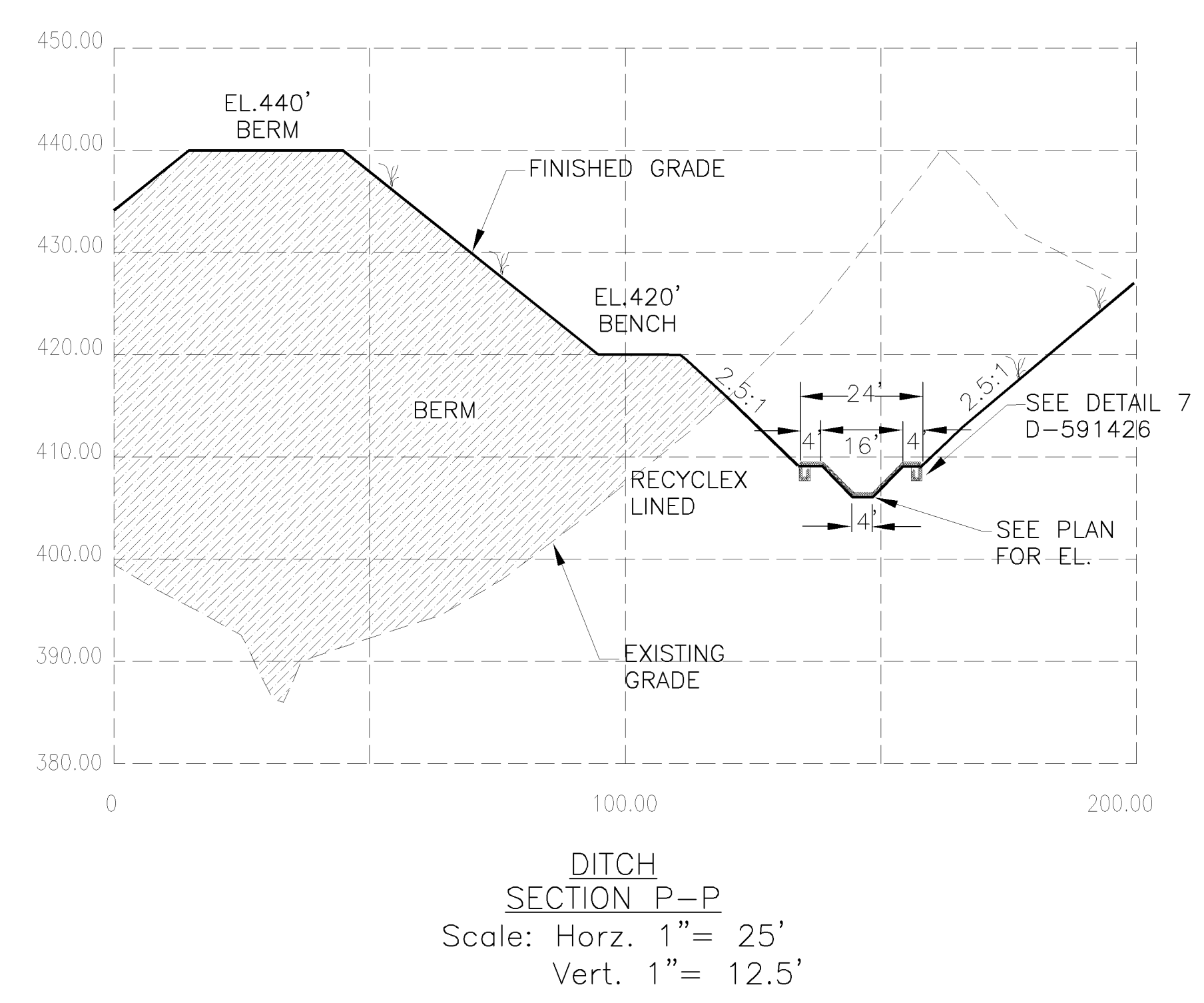
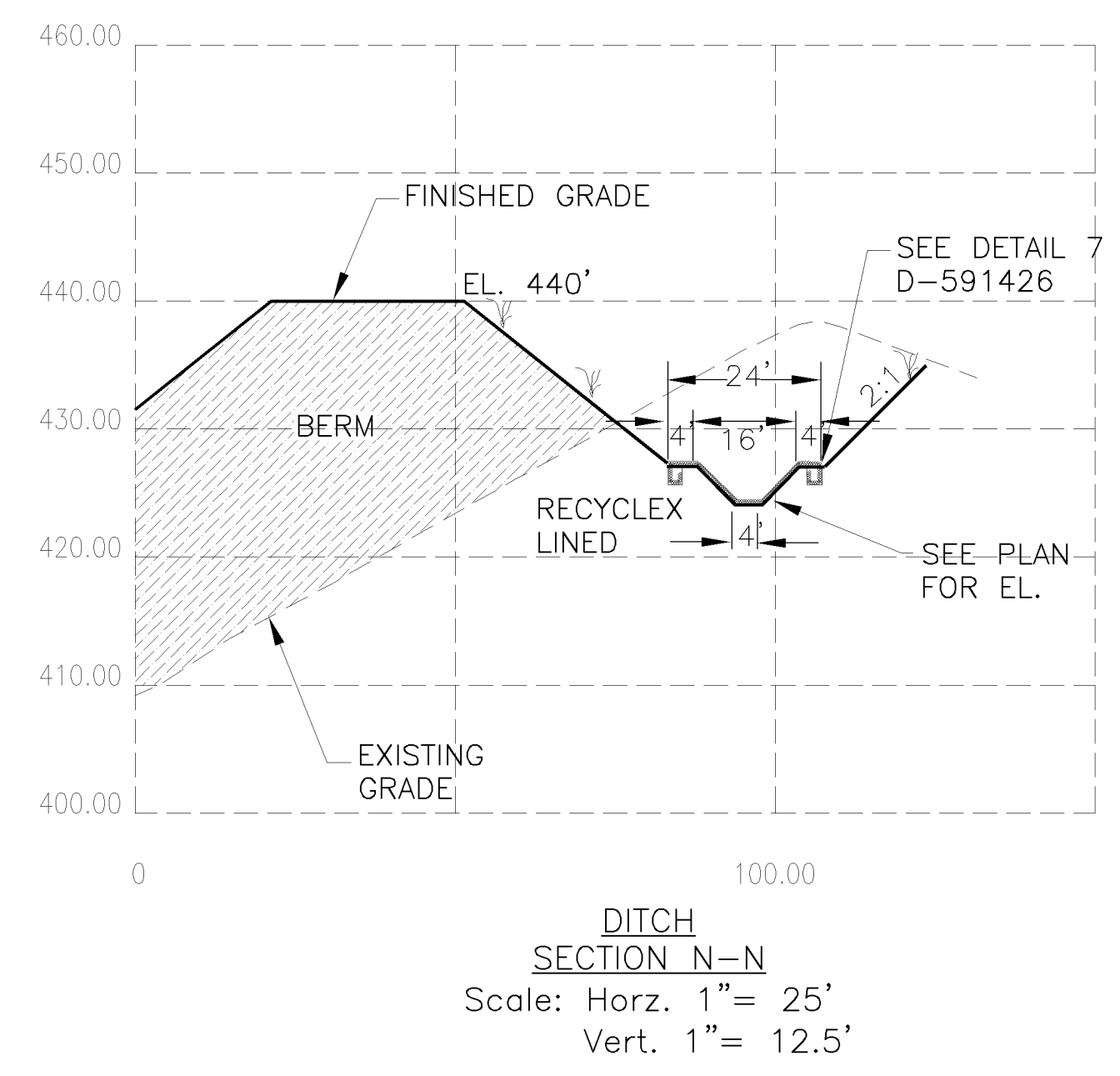
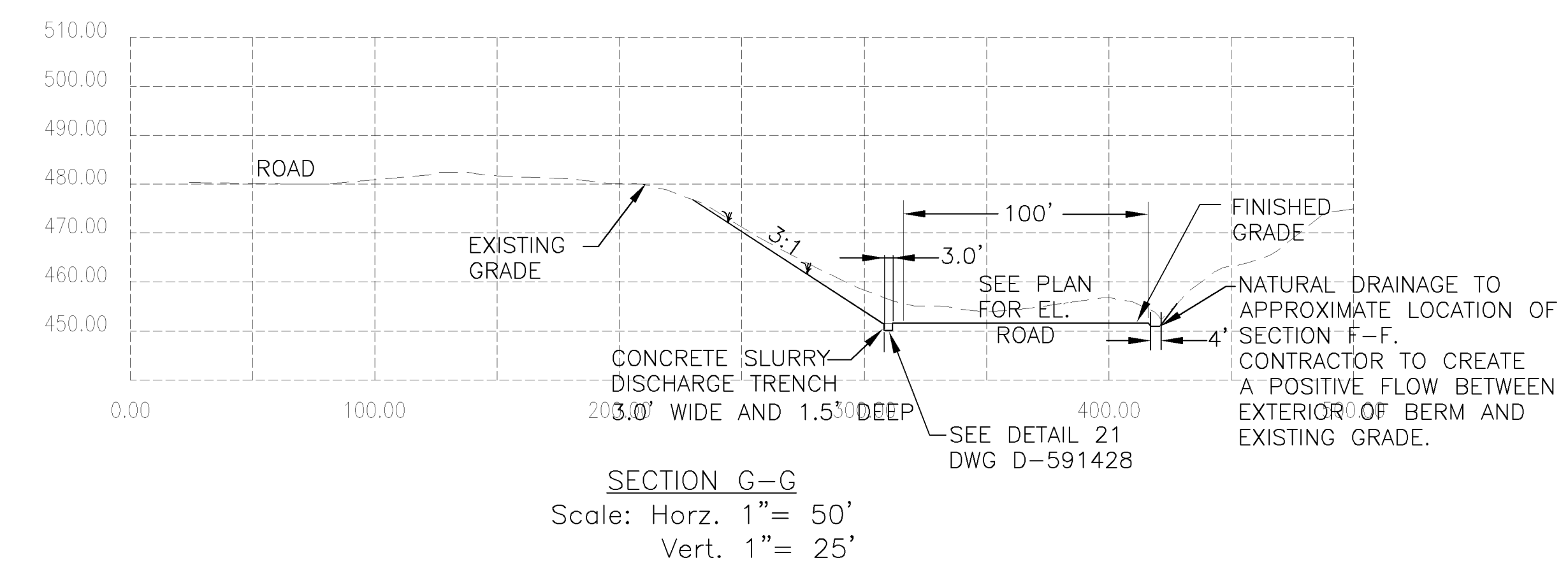
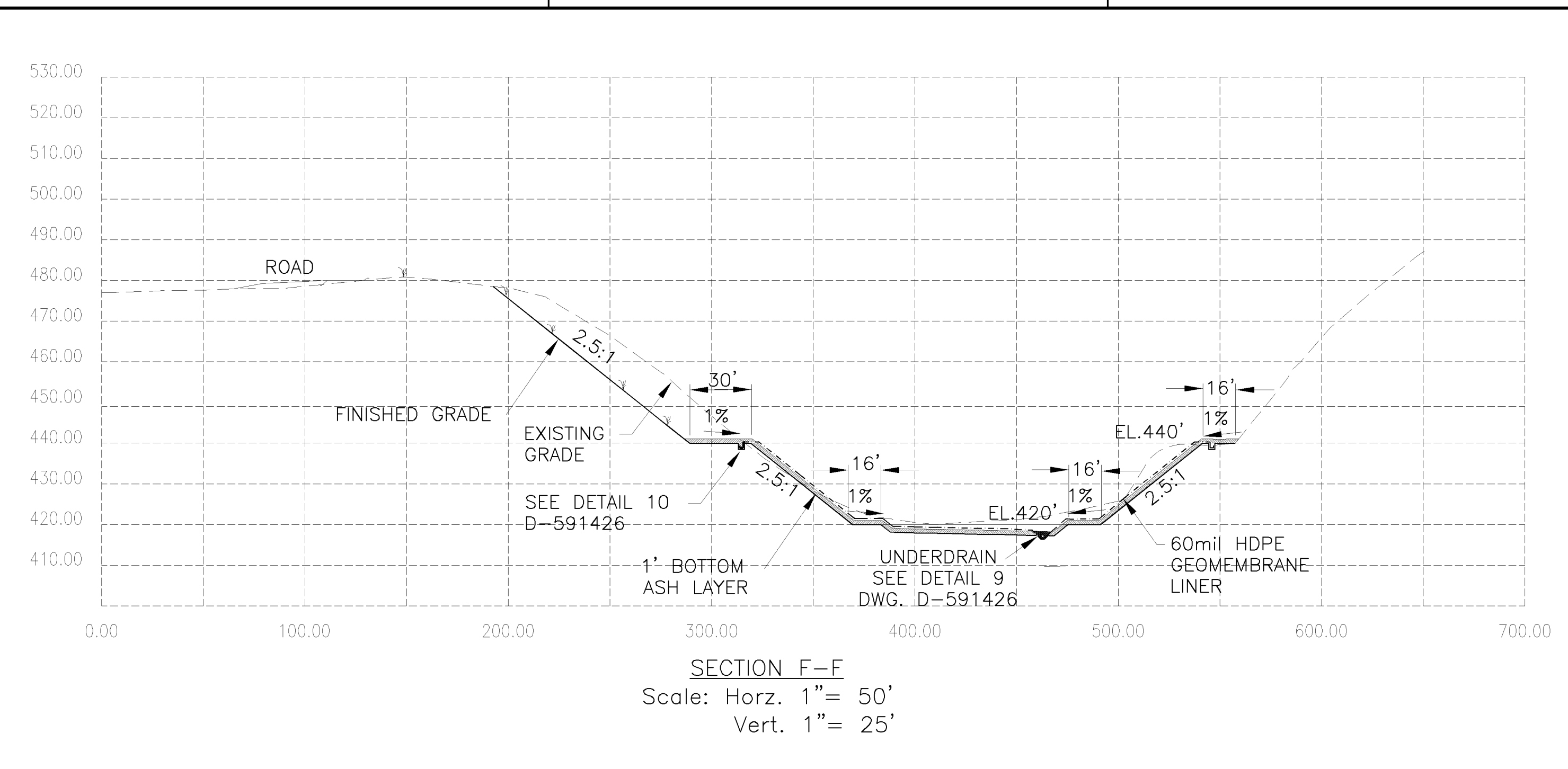
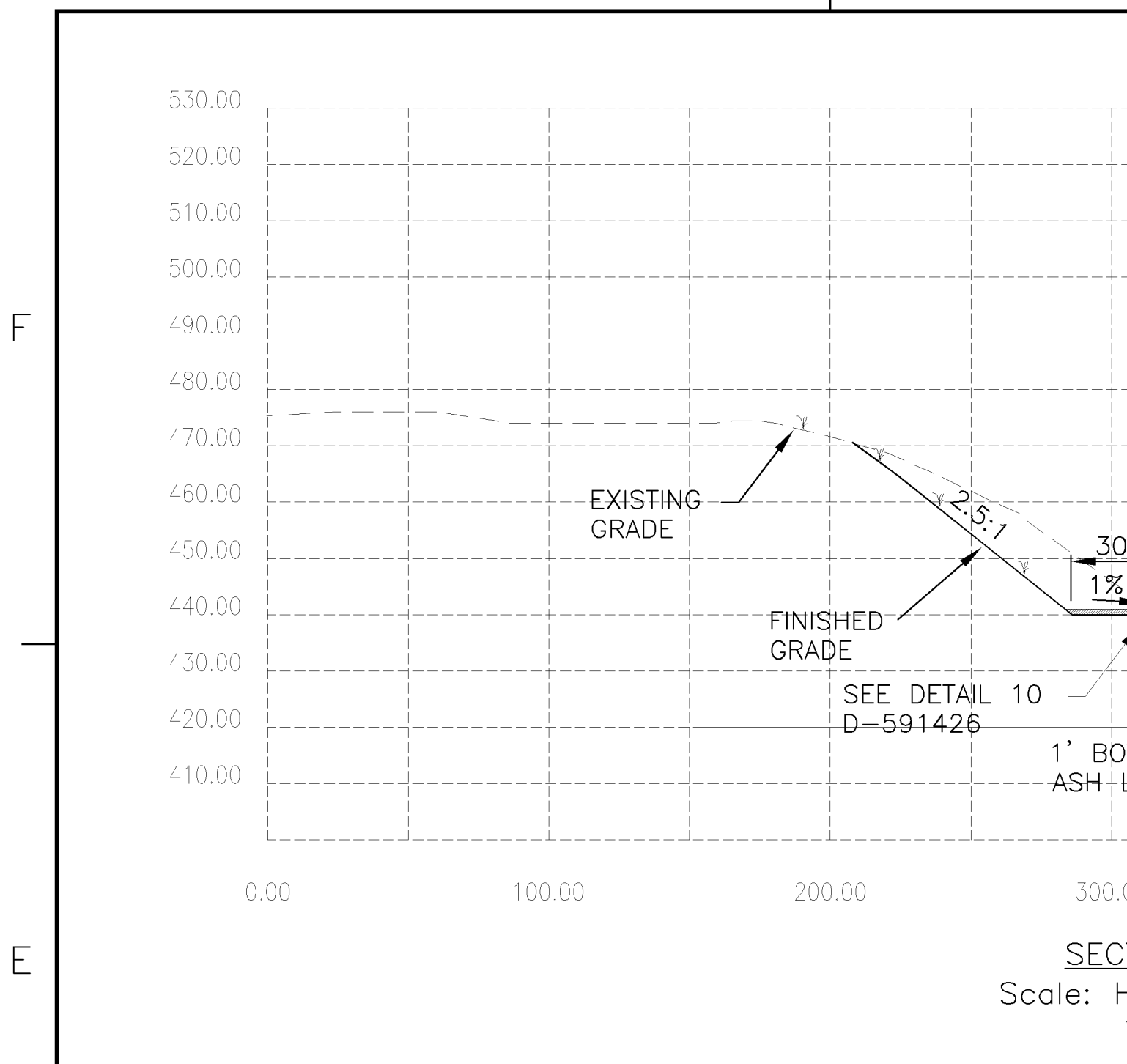
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 - FINAL GRADE CONTOURS
 - FINAL GRADE CONTOUR AREAS TO RECEIVE TOPSOIL AND GRASSING
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Southern Company Services, Inc.
FOR

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 - HDPE DITCH LINING

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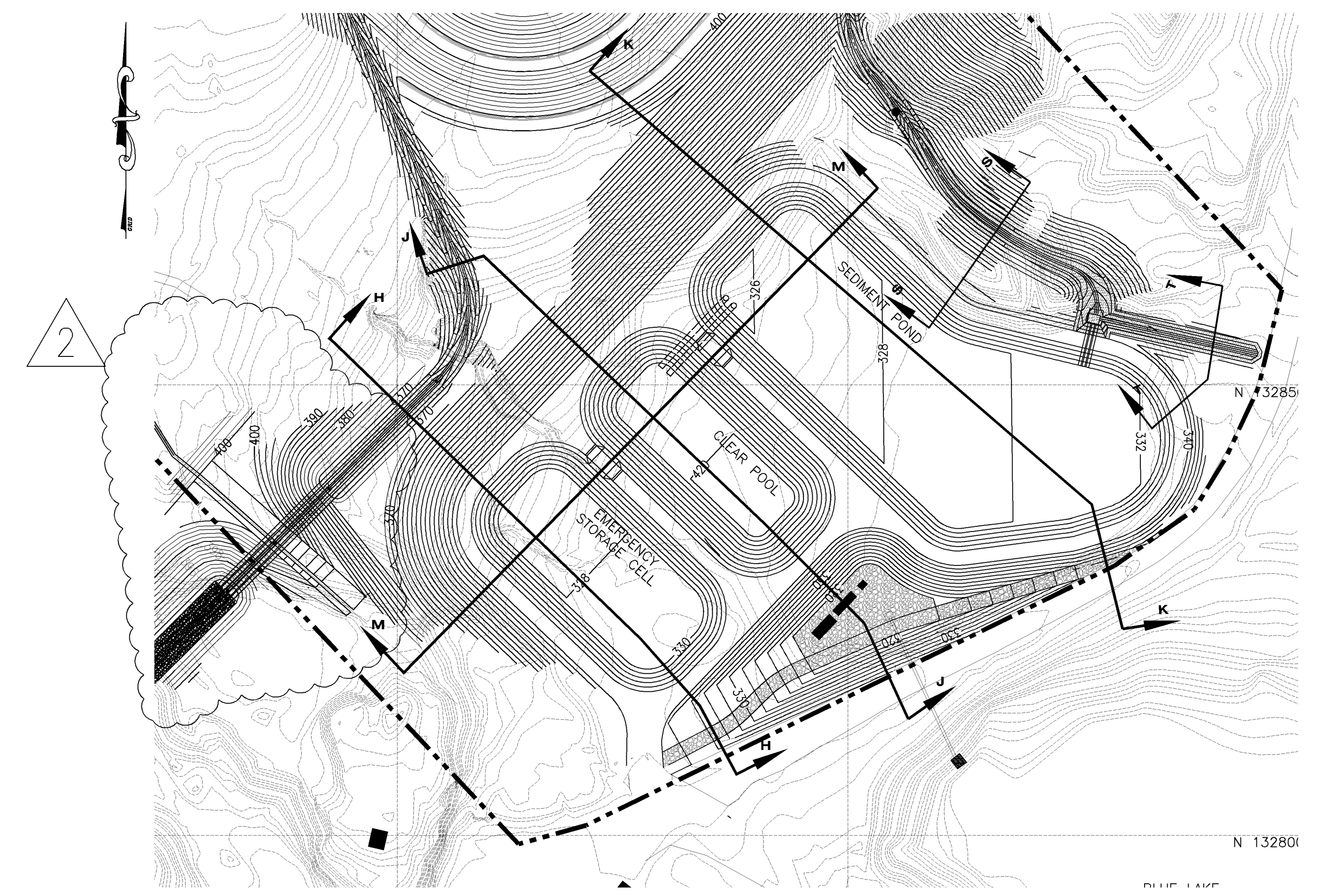
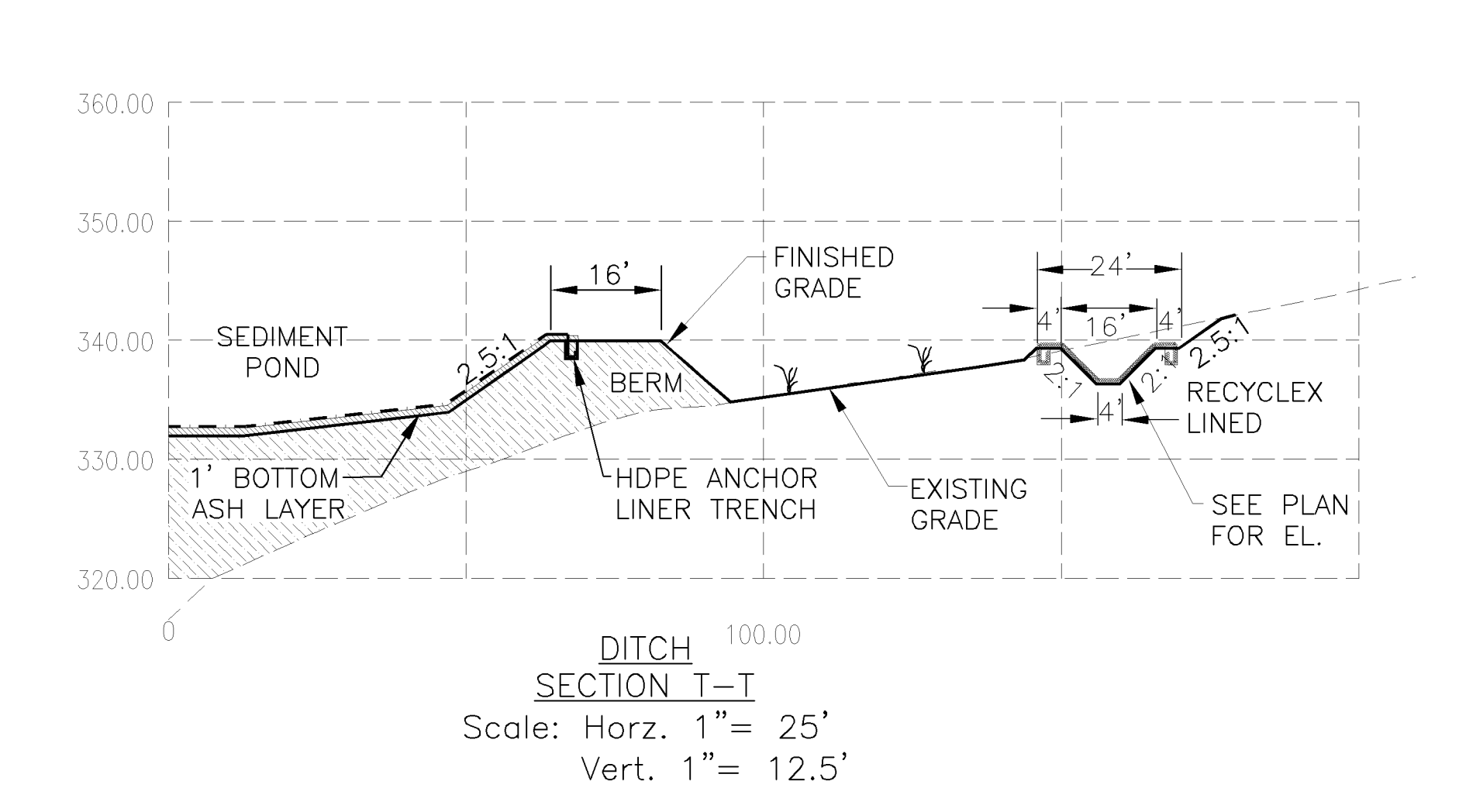
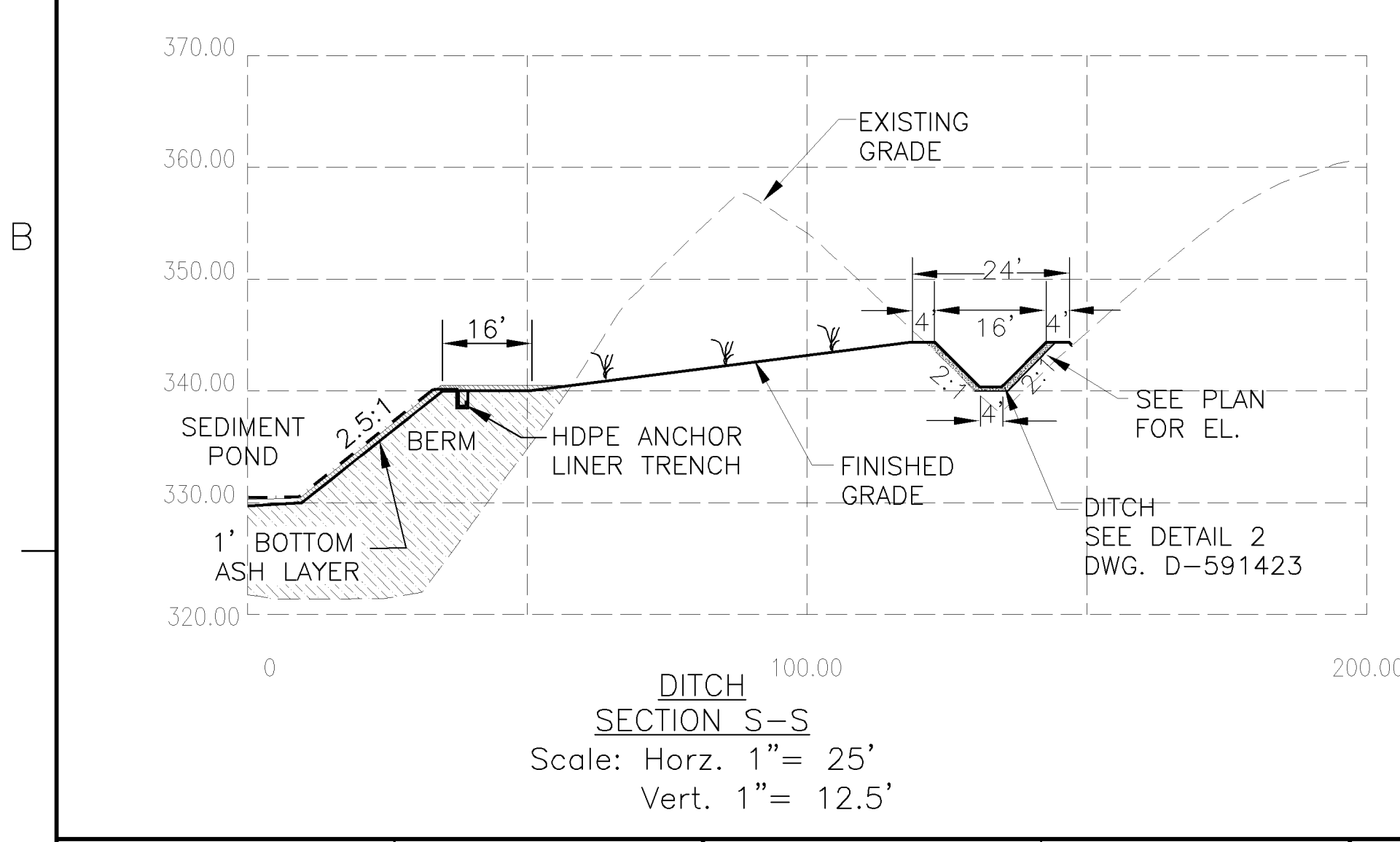
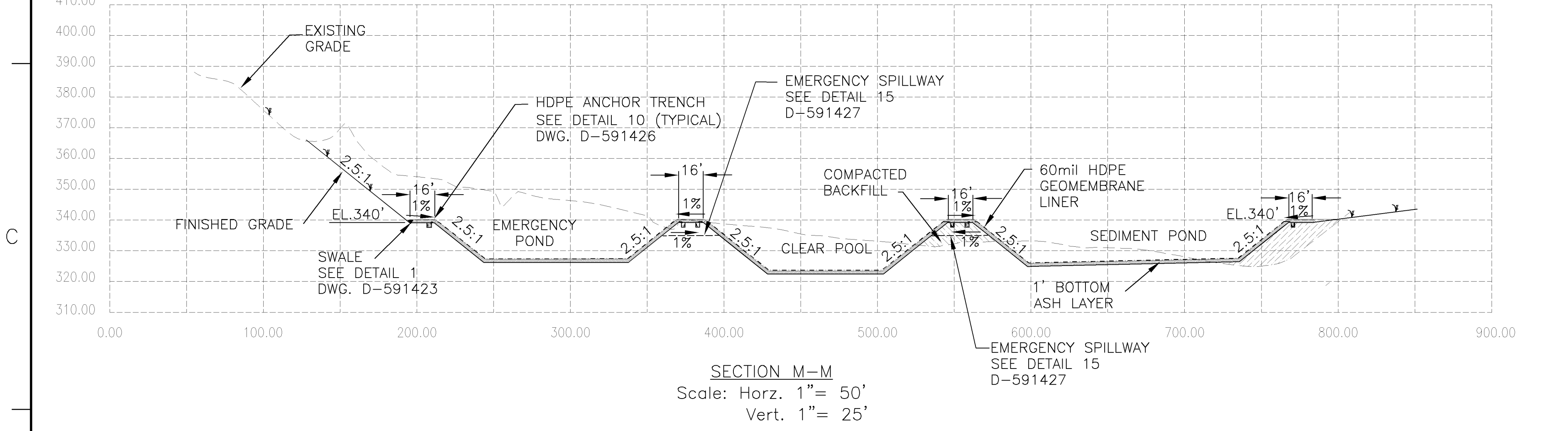
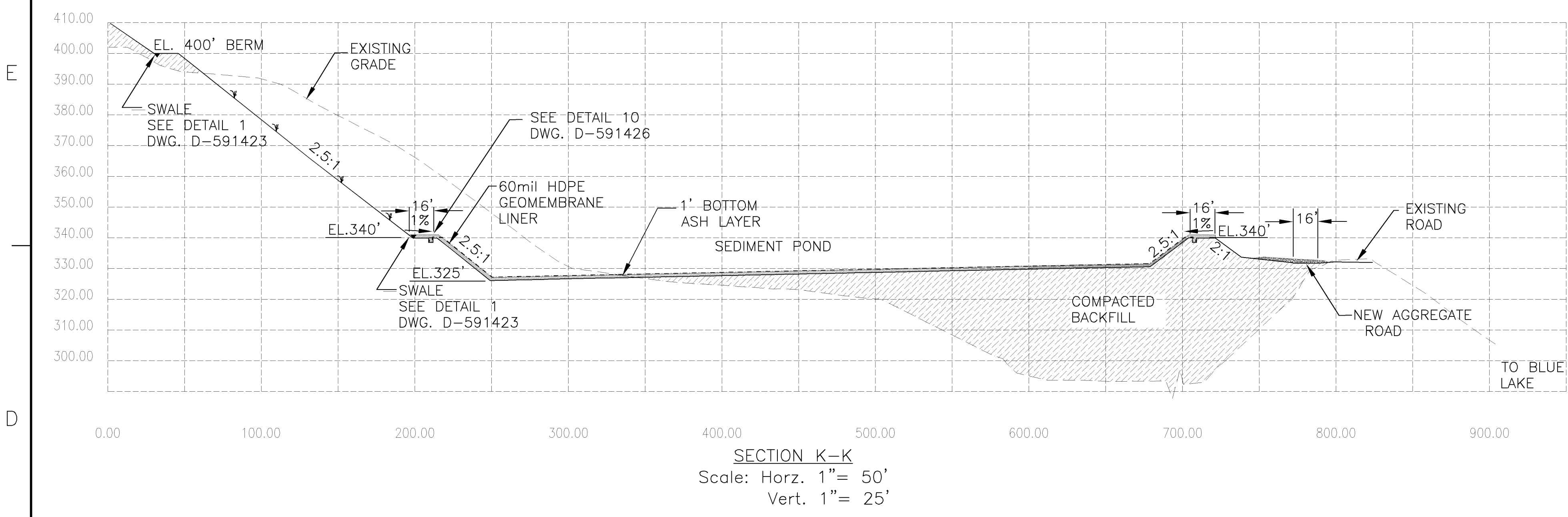
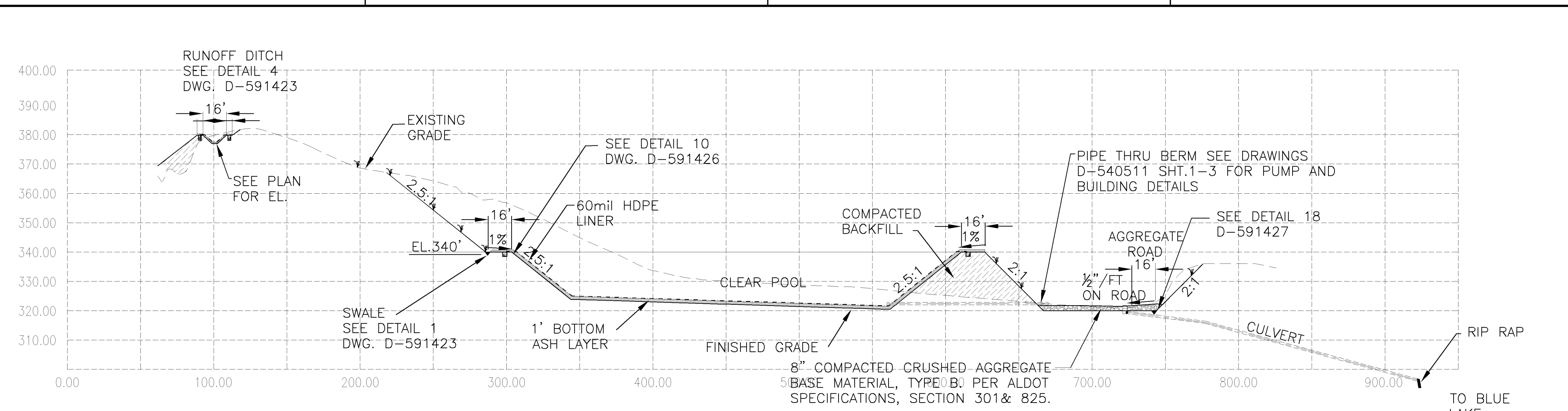
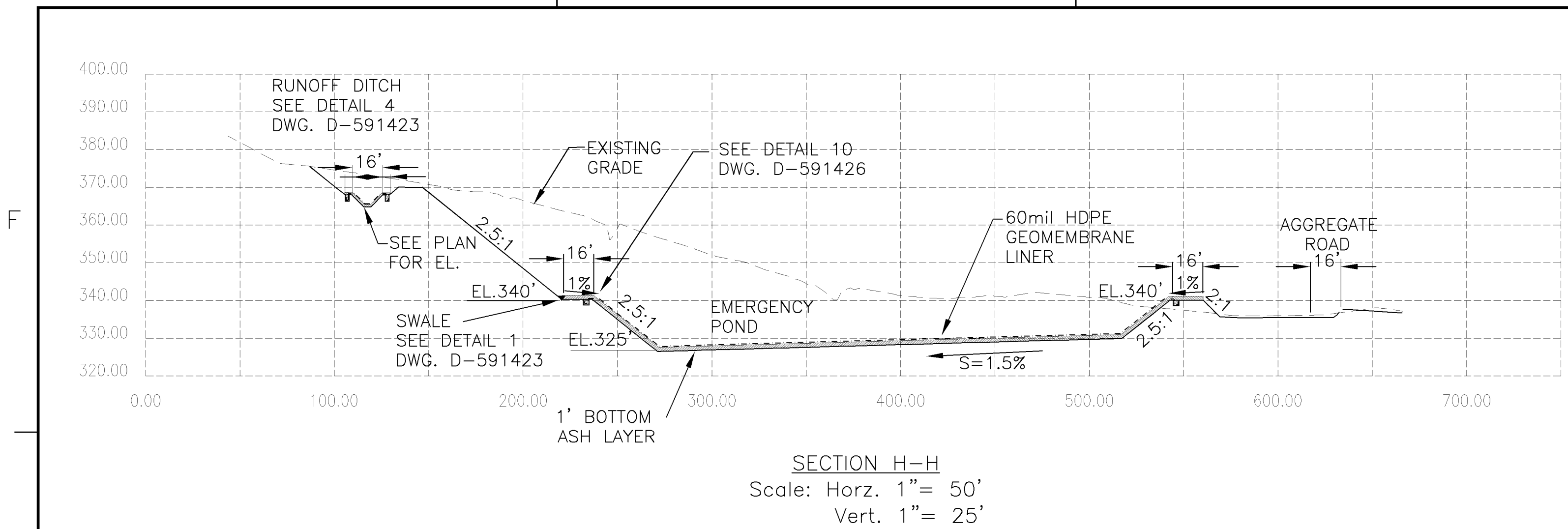
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FOR
Alabama Power Company
Plant Gorgas Units 8, 9 & 10 FGD Project
GYPSUM STORAGE AREA
GRADING PLAN
INITIAL SITE DEVELOPMENT
CELL SECTIONS & DETAILS SHEET 2

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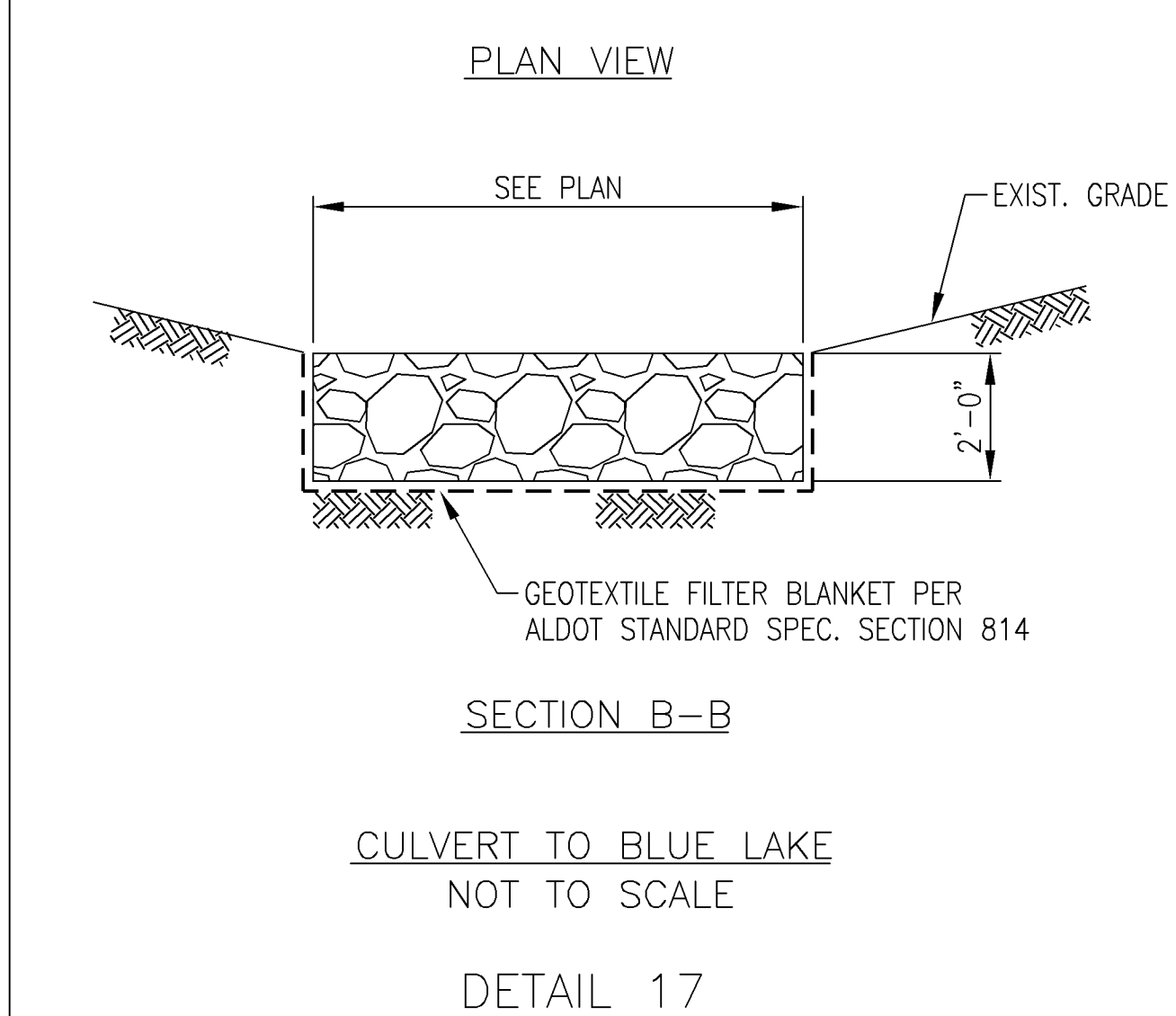
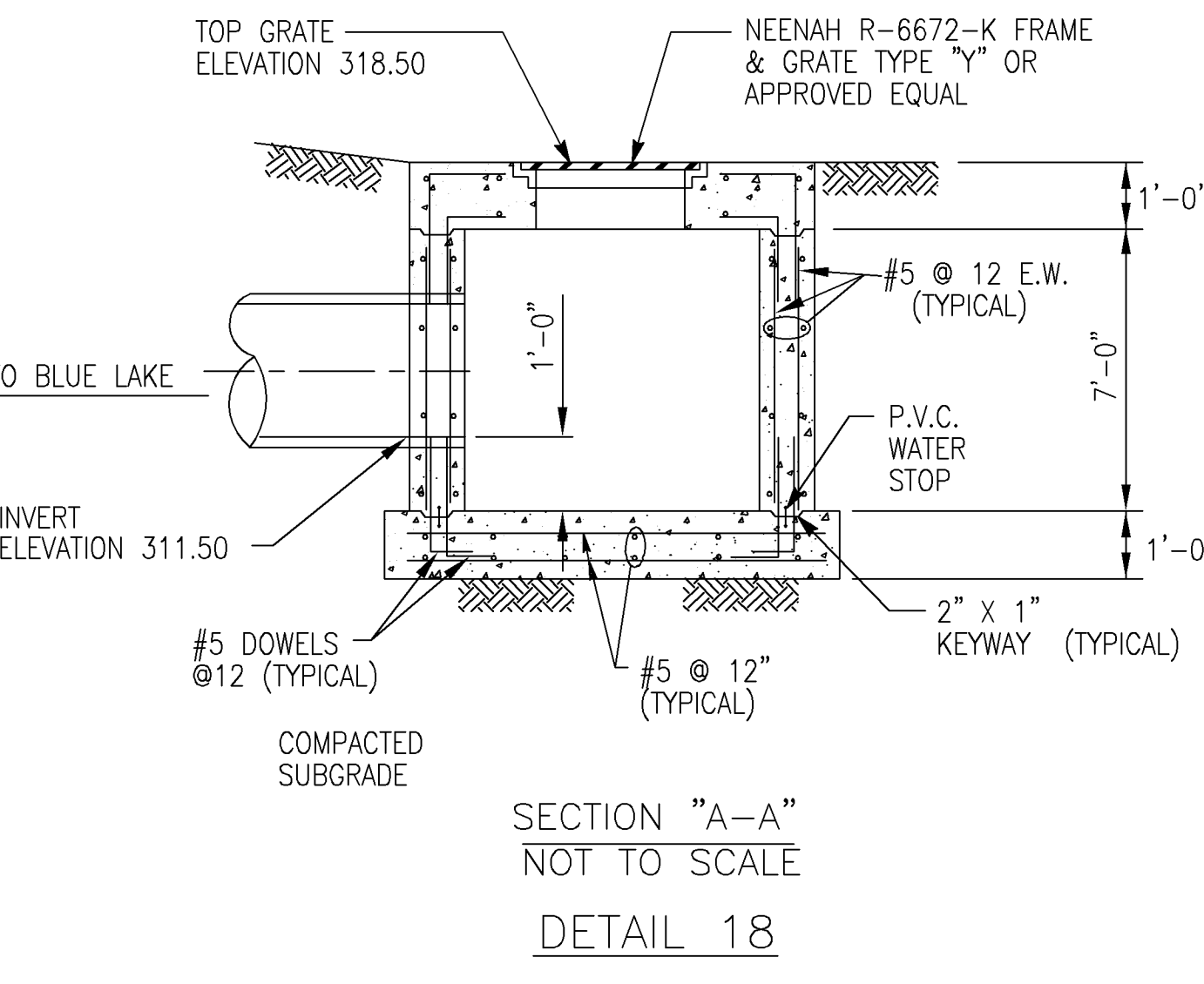
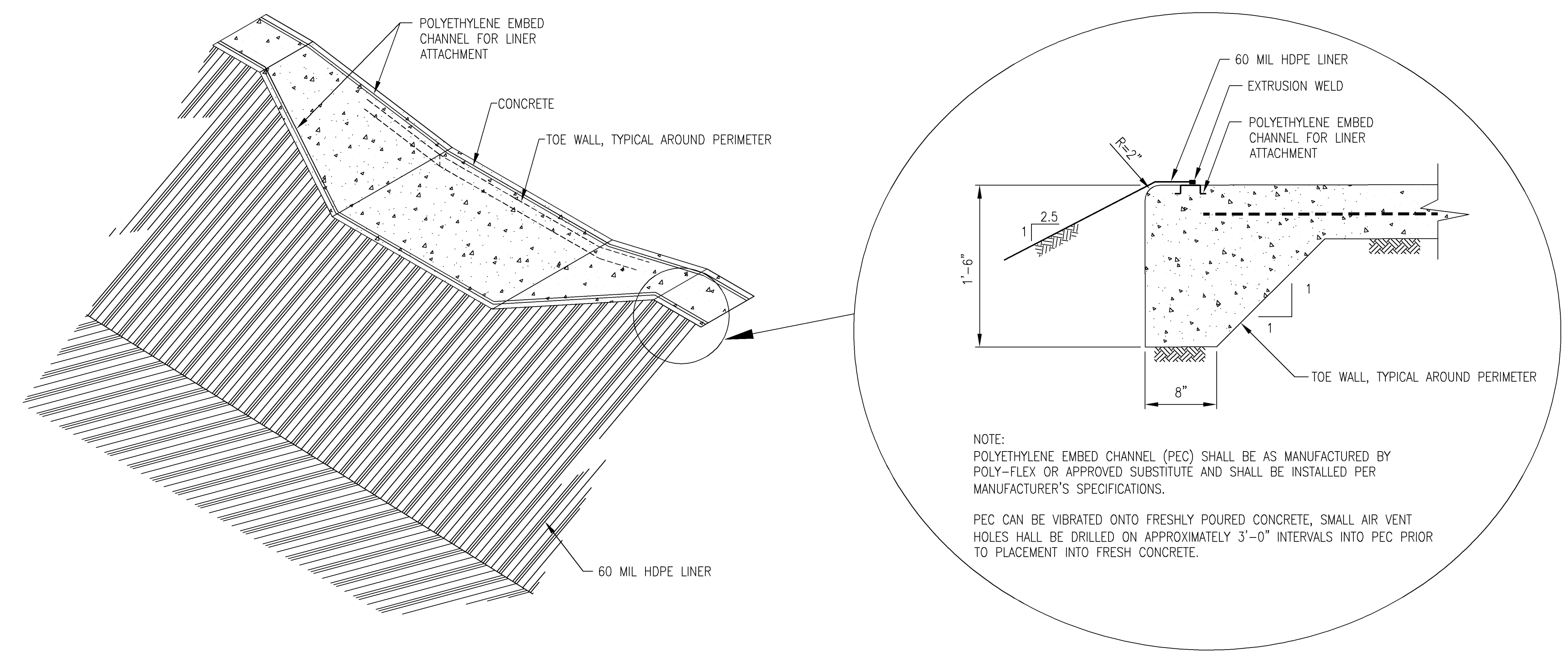
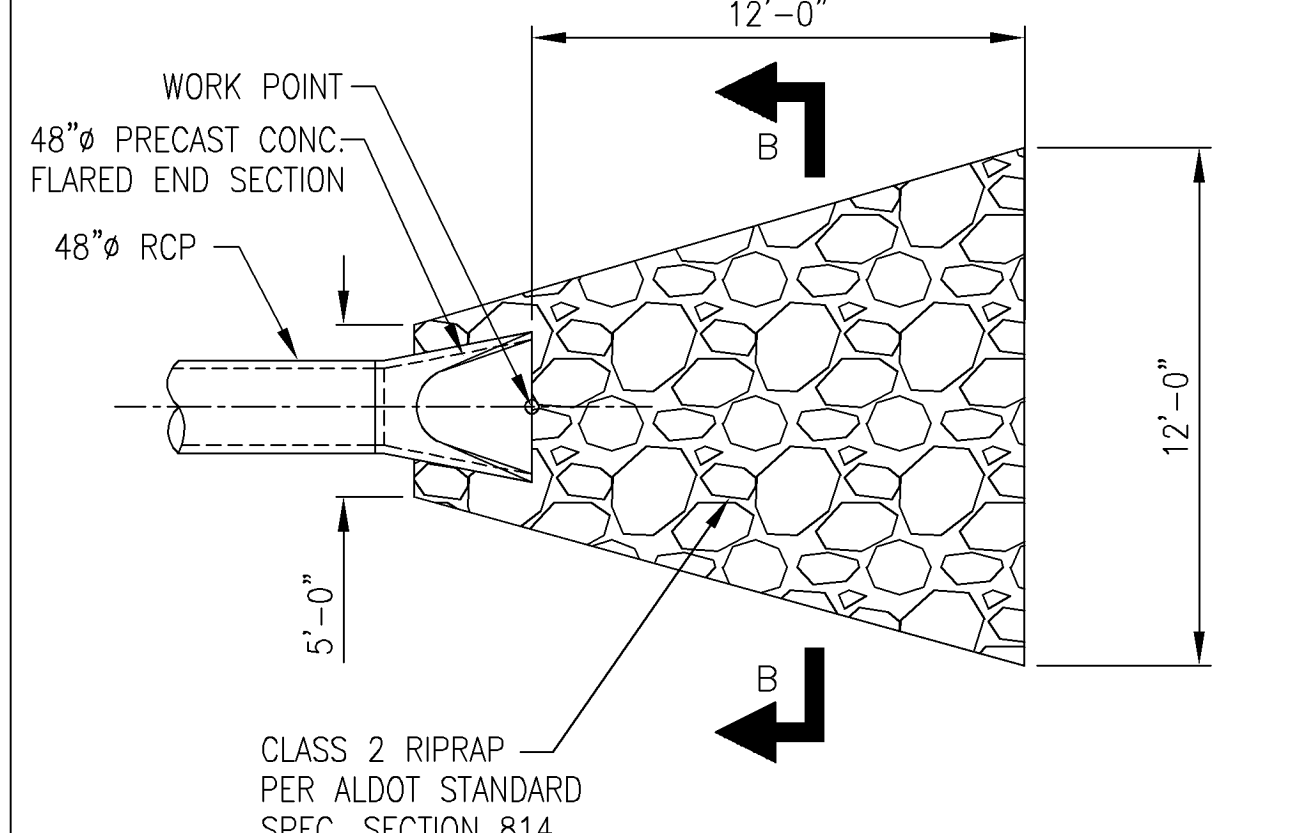
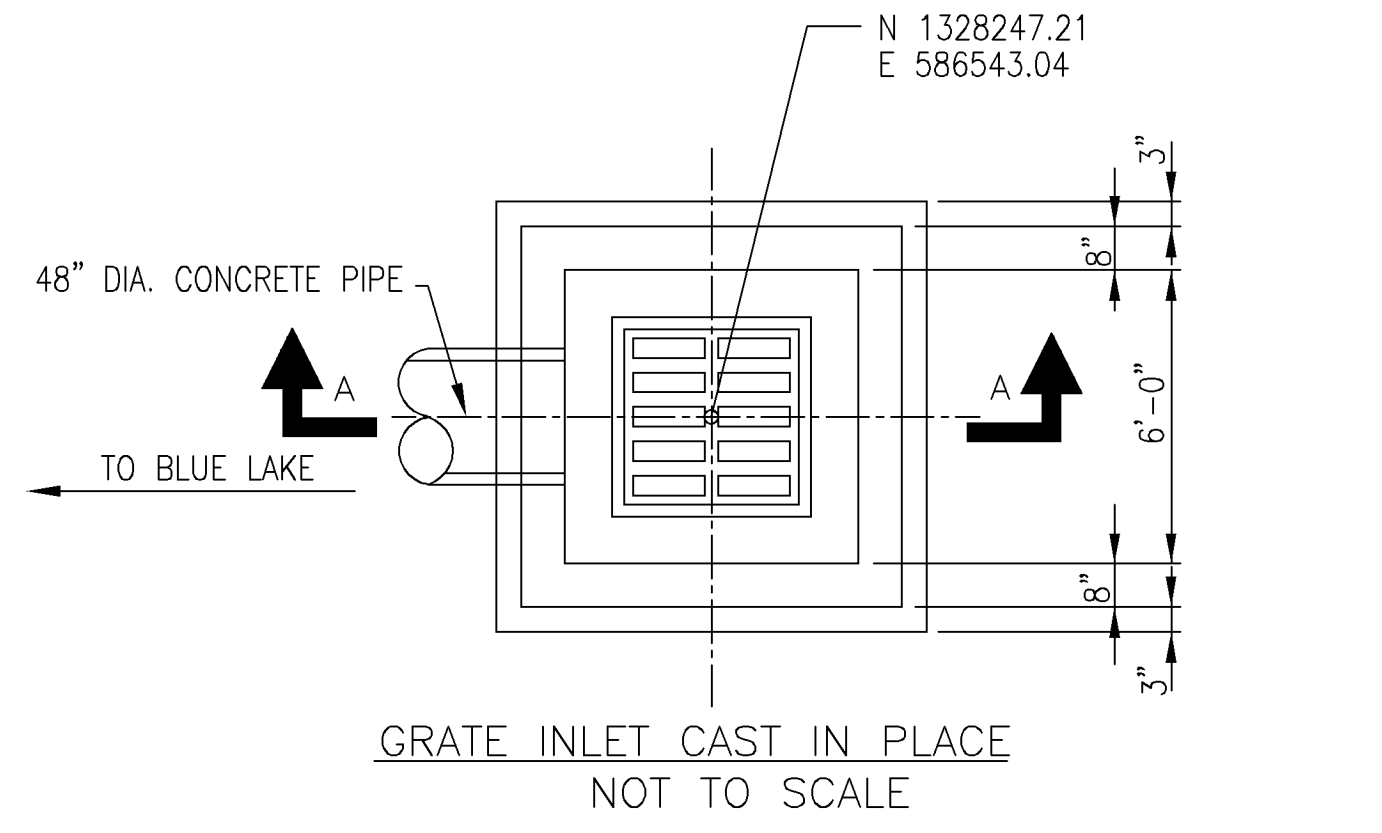
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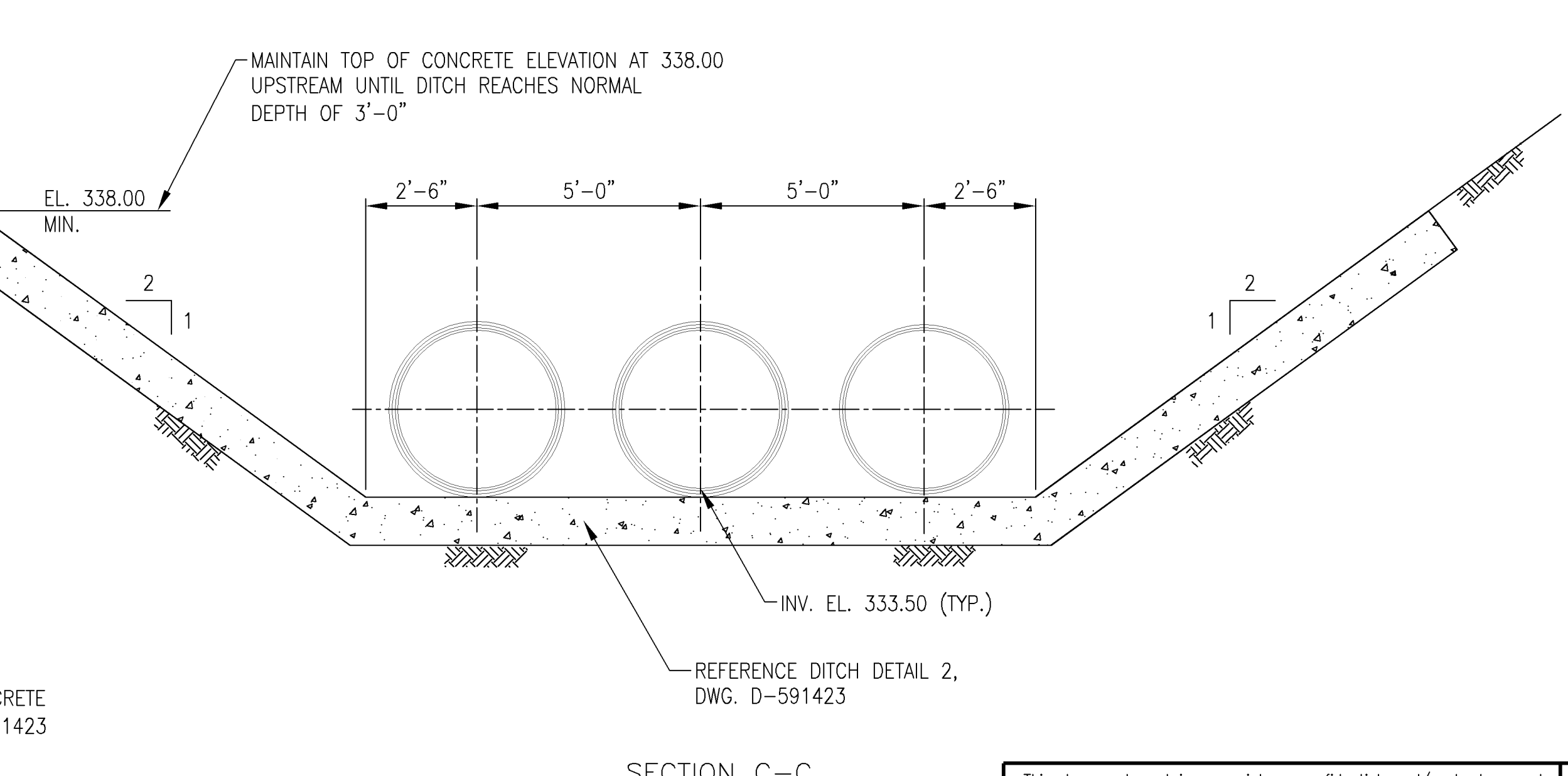
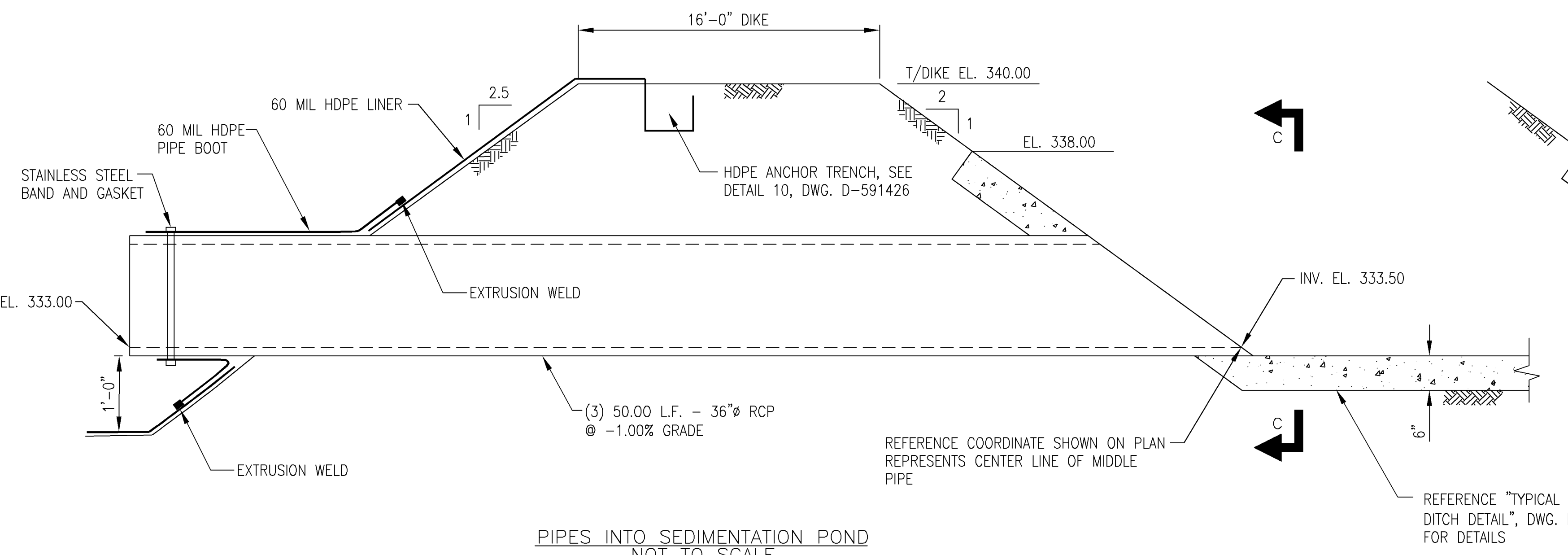
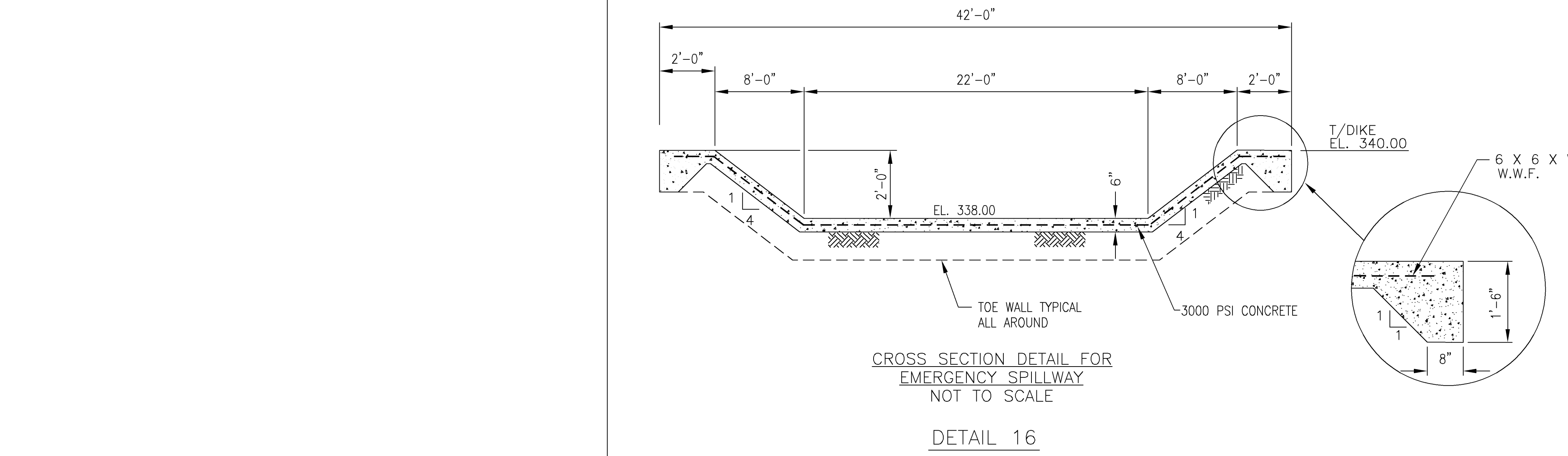
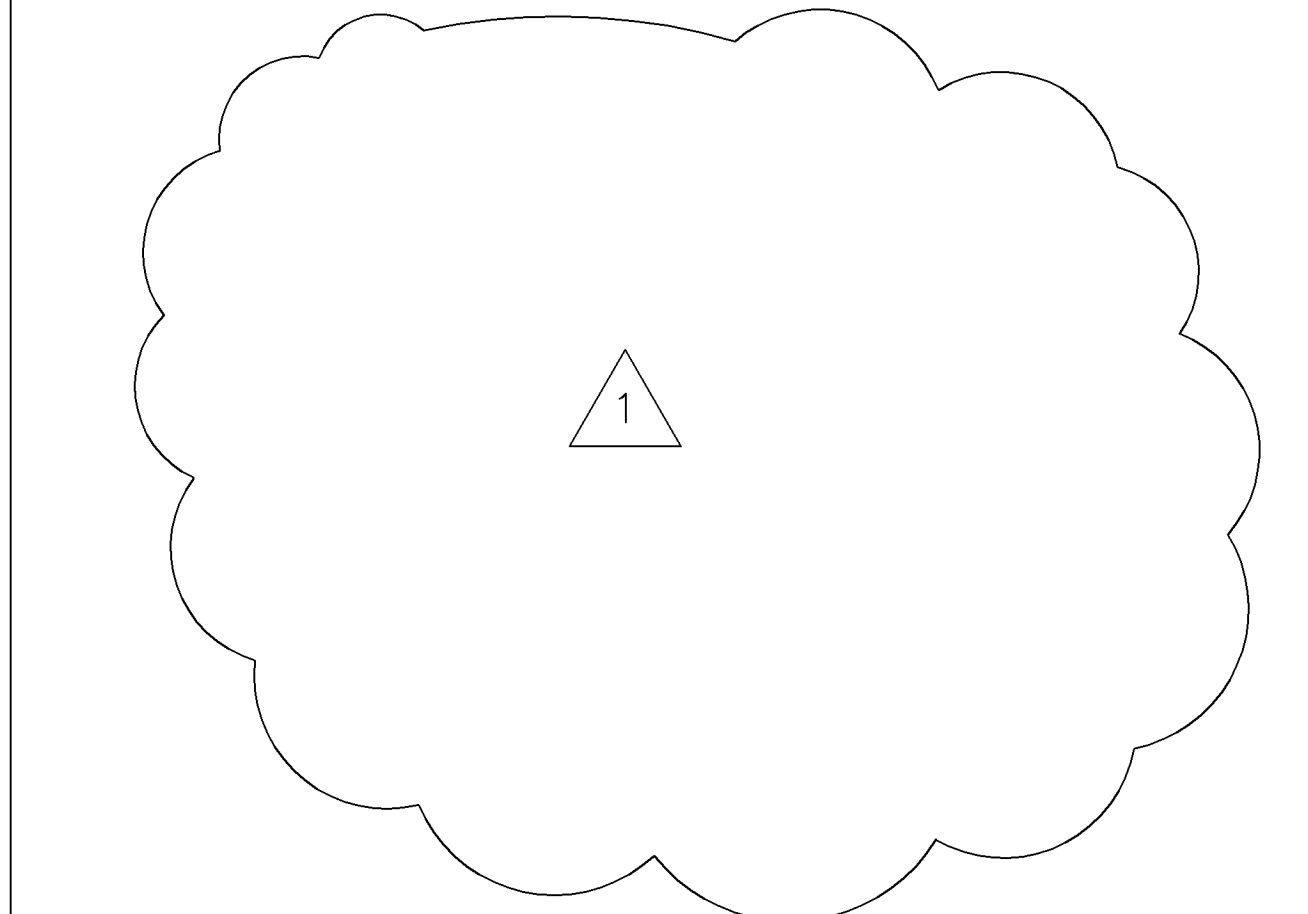
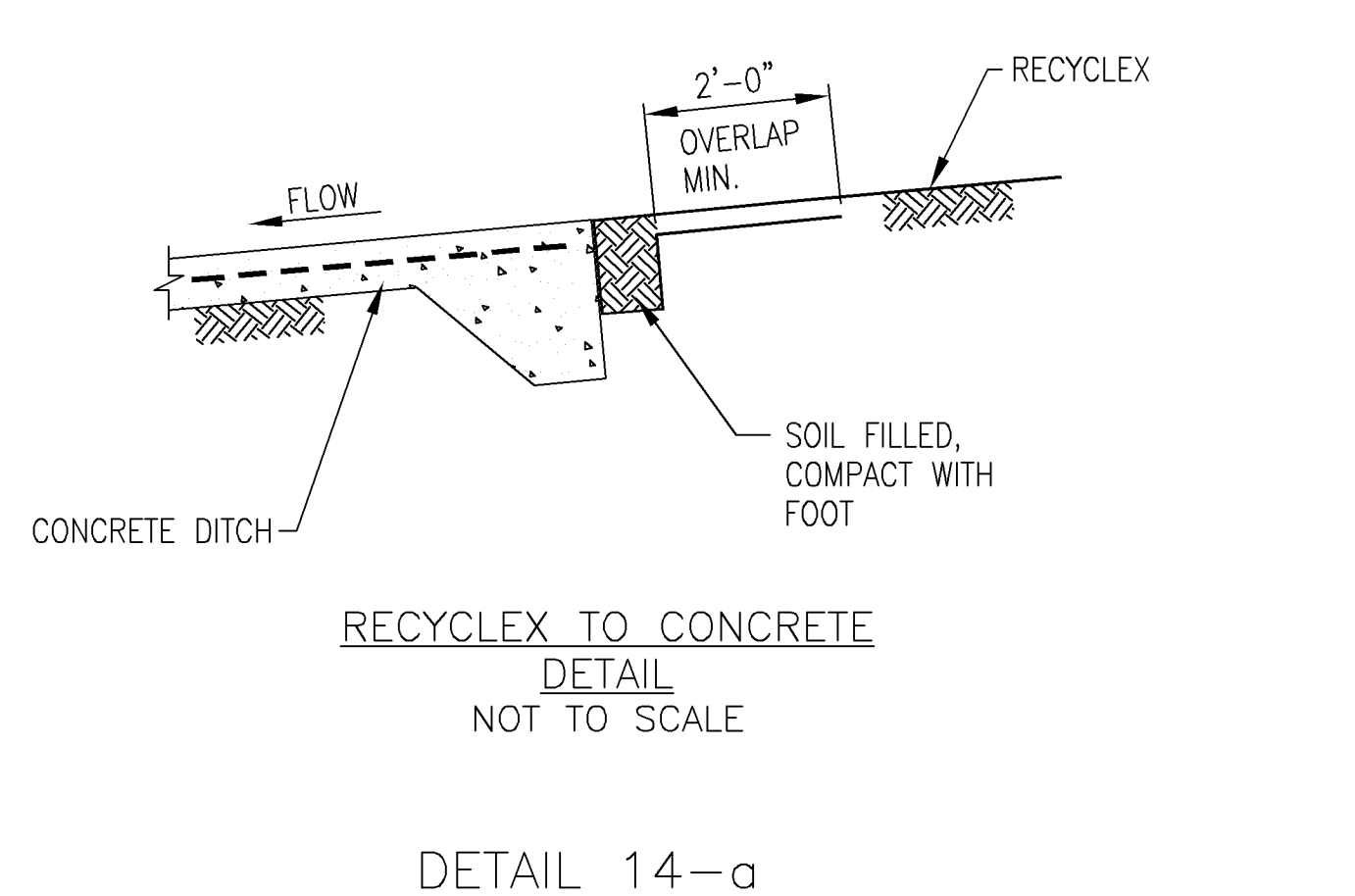
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POND SECTIONS & DETAILS

REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION 2	DATE 03/16/2007	REVISION 1	DATE 09/21/2006	REVISION 0	DATE 05/12/2006		
								ADDED NEW DESIGN FOR CULVERT OVER WEST DITCH FOR SLURRY PIPE. NO EFFECT TO SECTIONS ON THIS DRAWING		NO REVISION THIS SHEET		ISSUED FOR CONSTRUCTION			
BY	CHK'D	CIVL APPR	ELECT APPR	I/C APPR	MECH APPR	MGR APPR	BY	CHK'D	CIVL APPR	ELECT APPR	I/C APPR	MECH APPR	MGR APPR		
AS F	SSS	AKM	RCE	JPS	RDP	DEK	AS F	SSS	HLH	KoM	RCE	JPS	RDP	DEK	MDS
SCALE	PROJ. ID.	DRAWING NUMBER	SH	CONT'D	REV										
AS SHOWN	210100	D-591425	1	FINAL	2										



EMERGENCY SPILLWAY DETAIL
NOT TO SCALE
DETAIL 15



NOTES
FOR GENERAL NOTES AND REFERENCE DRAWINGS
SEE DRAWING D-591420.

REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE							
										1	09/20/2006	0	05/12/2006													
												REMOVED DETAIL 14. DETAIL NOT USED				ISSUED FOR CONSTRUCTION				Southern Company Services FOR Alabama Power Company Plant Gorgas Units 8, 9 & 10 FGD Project GYPSUM STORAGE AREA GRADING PLAN INITIAL SITE DEVELOPMENT DETAILS - SHEET 2						
												EWO 2119 GO-05001				EWO 2119 GO-05001										
BY	CHK'D	CIVIL APPR	ELECT APPR	I/C APPR	MECH APPR	MGR APPR	BY	CHK'D	CIVIL APPR	ELECT APPR	I/C APPR	MECH APPR	MGR APPR	BY	CHK'D	CIVIL APPR	ELECT APPR	I/C APPR	MECH APPR	MGR APPR	SCALE	PROJ. ID.	DRAWING NUMBER	SH.	CONT'D	REV.
																					NONE	210100	D-591427	1	FINAL	1

INQUIRY NUMBER 000057593

**GENERAL TECHNICAL SPECIFICATIONS
FOR
EARTHWORK
FOR
NEW GYPSUM STORAGE FACILITY
FOR
PLANT GORGAS - UNITS 8, 9 AND 10 FGD PROJECT**

TABLE OF CONTENTS

1.0	<i>APPLICABLE DOCUMENTS</i>	1
2.0	<i>SUBMISSIONS BY CONTRACTOR</i>	3
3.0	<i>SEDIMENT AND EROSION CONTROL</i>	4
4.0	<i>CLEARING, GRUBBING, AND STRIPPING</i>	4
5.0	<i>FILL MATERIALS AND PROCEDURES</i>	5
6.0	<i>DEWATERING</i>	9
7.0	<i>GRASSING AND SLOPE PROTECTION</i>	9

INQUIRY NUMBER 000057593

**GENERAL TECHNICAL SPECIFICATIONS
FOR
EARTHWORK
FOR
NEW GYPSUM STORAGE FACILITY
FOR
PLANT GORGAS - UNITS 8, 9 AND 10 FGD PROJECT
ALABAMA POWER COMPANY
PARRISH, ALABAMA**

1.0 APPLICABLE DOCUMENTS

1.1 CODES AND STANDARDS

The following Codes, Standards, Specifications, Publications, and/or Regulations shall be made part of these Specifications and will become part of the contract entered into for performance of the work covered herein. The latest edition in effect at the time of the contract shall apply.

- A. U.S. Department Of Labor, Occupational Safety and Health Administration (OSHA).

OSHA 29 CFR 1926 - Safety and Health Regulations for Construction

- B. American Society for Testing and Materials (ASTM) Standards:

ASTM D420 - Standard Guide to Site Characterization for Engineering Design and Construction Purposes.

ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils.

ASTM D698 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort

ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort

ASTM D2216 - Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.

ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

ASTM D2488 Description and Identification of Soils (Visual-Manual Procedure)

ASTM D2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

ASTM D2937 Test Method for Density of Soil In Place by the Drive Cylinder Method

ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

ASTM D4643 Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method

ASTM D4959 Test Method for Determination of Water (Moisture) Content of Soil by Direct Heating Method

- C. The Storm Water Management For Construction Activities - Developing Pollution Prevention Plans And Best Management Practices Document, as amended, as adopted by the EPA
- D. The Alabama Nonpoint Source Management Program Document, as amended, as adopted by the Department and approved by the EPA.

1.2 REFERENCES

1.2.1 Geotechnical Investigation

Soil test borings and rock cores have been performed in conjunction with the Subsurface Investigation for this area. This report and logs of these borings are included with this specification. The title of this report is, "Gorgas Steam Plant, Subsurface Investigation Report for Gypsum Storage Area, ES1341", dated December 2005.

1.2.2 Grading Drawings and Plans

The following drawings should be considered part of these specifications:

Drawing No.	Rev. No.	Drawing Title	
D591420	0	DRAWING INDEX & VICINITY MAP	
D591421	1	EXISTING TOPOGRAPHY	BORINGS & POWER LINE LOCATIONS
D591422	0	INITIAL SITE DEVELOPMENT	SITE GRADING PLAN
D591423	0	INITIAL SITE DEVELOPMENT	CELL SECTIONS & DETAILS SHEET 1
D591424	0	INITIAL SITE DEVELOPMENT	CELL SECTIONS & DETAILS SHEET 2
D591425	0	INITIAL SITE DEVELOPMENT	POND SECTIONS & DETAILS
D591426	0	INITIAL SITE DEVELOPMENT	DETAILS - SHEET 1
D591427	0	INITIAL SITE DEVELOPMENT	DETAILS - SHEET 2
D591428	0	INITIAL SITE DEVELOPMENT	DETAILS - SHEET 3
D591429	1	FUTURE DEVELOPMENT PLAN	
D591430	0	FUTURE DEVELOPMENT	SECTIONS & DETAILS SHEET 1
D591431	0	FUTURE DEVELOPMENT	CELL SECTIONS & DETAILS SHEET 2
D591432	1	FUTURE DEVELOPMENT	DETAILS

2.0 SUBMISSIONS BY CONTRACTOR

The Contractor shall submit the following information to the Purchaser for review and appropriate action within the specified time unless otherwise noted or otherwise required in the contract documents. These submittals include, but are not limited to the following:

2.1 Submittals with Proposal

Submit to the Purchaser with the proposal, the following:

- A. The name and statement of qualifications for the Contractor's proposed testing laboratory, from the approved list for the Purchaser's approval.

2.2 Preconstruction Submittals

Submit to the Purchaser for review, at least 30 days prior to commencement of construction, the following:

- A. Compaction Equipment: Manufacturer's description of the compaction equipment to be used, including weight and tamping pressure data, drawings, and the densification character and depth efficiency of the equipment.

2.3 Construction Submittals

Submit to the Purchaser, for records, within 5 working days of completing each compaction operation, one copy of each the following:

- A. Documentation that all areas received the proper compaction in accordance with this section. Documentation shall include details on compaction equipment used.
- B. Documentation of results of in-place moisture content and density tests required by this section.

3.0 SEDIMENT AND EROSION CONTROL

- 3.1 The Construction Storm Water permit is being obtained by the Owner. The Contractor will be expected to periodically inspect the work areas to ensure that erosion control measures are still in place and performing their intended function. The Contractor is also expected to inspect the work areas and provide additional erosion control measures as required.
- 3.2 Sediment and erosion control measures shall be taken as required by Alabama Department of Environmental Management (ADEM) or as directed by the Owner to minimize erosion of soil.
- 3.3 During the course of this project, the Contractor shall plan and coordinate his work to minimize the amount of suspended soil particles entering rivers and streams or leaving the general work area and being deposited in undesirable places. Any property damage or fines resulting from the Contractor's negligence or the negligence of his subcontractors shall be borne by the Contractor.
- 3.4 The Contractor shall be responsible for ensuring that all Construction Storm Water Permit Compliance requirements are satisfied. However, said Permit does not require that the Contractor test for turbidity and Contractor shall not perform such test.
- 3.5 The Contractor shall not excavate, uncover or denude areas of work until adequate erosion and sediment control measures are installed. The Contractor's earthmoving operations shall at all times be in full compliance with the requirements of ADEM.
- 3.6 The Owner will inspect the sediment and erosion control practices employed to evaluate their effectiveness. Any deficiencies shall be immediately corrected by the Contractor at no cost to the Owner.

4.0 CLEARING, GRUBBING, AND STRIPPING

- 4.1 The area proposed for construction of the New Gypsum Storage Facility consisting of, but not limited to, the sediment pond, clear pool, emergency storage cell, gypsum storage cell, and all associated roads and construction areas will

require clearing, grubbing, and stripping prior to excavation and/or fill operations. These areas shall be cleared, grubbed, and stripped of any vegetation, organic matter and/or any other deleterious materials.

- 4.2 Grubbing and stripping shall be performed to ten (10) feet outside the greatest limits of any cut or fill slopes.
- 4.3 Trees, stumps, and brush cleared from the borrow areas shall be disposed of by burning or by removal to a designated area on site. Timber may also be sold by the Contractor.
- 4.4 Burning operations shall be conducted only in previously cleared areas and away from standing timber, structures, flammable vegetation or other flammable materials outside the cleared area. All burning shall be done in accordance with all State Regulations. Burn pits shall be located outside of the construction area and off right-of-ways (transmission or otherwise). Materials to be burned shall be properly stacked, by dozers, in piles sufficiently large enough to facilitate the complete burning of all the materials in the pile. The Contractor shall be subject to all public laws governing such burning operations and shall be responsible for any damage to life or property as a result of burning either on the Owner's property or the property of others. Fires shall not be started unless tractors are available in the immediate vicinity to check the spread of fire outside the cleared area. Fires shall be guarded at all times and shall be under constant attendance until they have burned out or have been extinguished.
- 4.5 Topsoil material, when encountered, shall be stockpiled only in areas designated by the Owner. The Contractor shall slope the spoil area for drainage. These materials will be used later to establish vegetation on slopes and any disturbed areas.
- 4.6 Spoil material shall be stockpiled only in areas shown or designated by the Owner. The Contractor shall slope the spoil area for drainage.
- 4.7 The Contractor shall install and maintain a "Construction Exit" for the site. This exit shall be 50' x 20' and constructed using No. 3 stone. The Contractor shall replace the stone with clean stone when plugged. The Contractor is responsible for disposing of the plugged stone.

5.0 FILL MATERIALS AND PROCEDURES

5.1 SOIL AND OTHER FILL MATERIALS

- 5.1.1 Non-organic, non-plastic soils excavated from the site are generally suitable for fill materials. Coal mine spoils present in the area are also suitable for fill materials.

- 5.1.2 On site soils consist of clay with various fractions of weathered rock. Coal mine spoils, consisting of predominantly gravel size particles, are also present.
- 5.1.3 Topsoil for the surface vegetation layer will be obtained predominantly from offsite. It shall be the responsibility of the Contractor to slope the topsoil stockpile area for drainage.

5.2 ROCK

- 5.2.1 Rock at the site consists of Shale and Sandstone.
- 5.2.2 Rock materials excavated from the site may be used for fill materials under the following conditions:
 - 5.2.2.1 Rock fragments larger than 3 inches may not be used as structural fill.
 - 5.2.2.2 Rock fill may not be placed within the upper 5 feet of any fill area.
- 5.2.3 Rock materials shall be placed as deep in the fill areas as possible.
- 5.2.4 Rock shall at no time be placed directly beneath a liner.

5.3 BOTTOM ASH

- 5.3.1 Bottom ash will be provided by the Owner for placement directly beneath the liner.
- 5.3.2 The Contractor will be provided a location to load and transport the bottom ash.
- 5.3.3 Bottom ash loaded directly from the pond will have to be stockpiled until it obtains the proper moisture content for fill placement and compaction.
- 5.3.4 Haul trucks used must be able to travel on county roads. Haul trucks will not be allowed to drive through the plant site.

5.4 STRUCTURAL FILL PLACEMENT

- 5.4.1 Structural fill will be required for the construction of the berms for the sedimentation pond, a clear pool, an emergency storage cell, the gypsum storage cell and other uses, if any, requiring compacted fill.
- 5.4.2 Fill material shall be obtained from the required excavation area.

- 5.4.3 Compacted fill shall consist of the soil, rock or mine spoils materials meeting the requirements stated herein and shall be placed and compacted in accordance with these Specifications.
- 5.4.4 Preparation for fill shall consist of the removal of any organic or deleterious materials present within the extent of the fill operation.
- 5.4.5 Deleterious materials are soft, wet, or highly plastic materials that cannot be densified in place. These materials may be found by proof-rolling the area that is to receive fill.
- 5.4.6 Proof-rolling the foundation area shall be conducted using a 20 to 30 ton loaded, tandem wheel, dual rear axle dump truck or other pneumatic tired vehicle of similar size, weight and load distribution under the supervision of the Contractor. Unsuitable materials and/or conditions shall be removed, placed in the designated spoil pile and replaced with compacted fill. Prior to receiving fill, the area shall be scarified by harrowing or other suitable means.
- 5.4.7 No fill shall be placed on any part of the foundation until such areas have been inspected and approved by the Owner.
- 5.4.8 Fill shall be placed in uniform layers of eight inches, nominal thickness, loose measurement, for one foot beyond the full width of the fill on each side. Each layer shall be kept level with the necessary grading equipment. Upon completion of compaction, the slopes shall be cut back to the final slope. Particular care must be used to obtain the required compaction along the edges of the fill slopes. Slopes will require compaction after they have been cut back to minimize water infiltration and erosion.
- 5.4.9 During the dumping and spreading processes, the Contractor shall maintain at all times a force of men adequate for removal of roots and debris from all structural fill materials and all stones greater than three inch maximum dimension. Stones, roots, and debris shall be removed from the structural fill and disposed of in an approved manner.
- 5.4.10 When moisture content is too low, the moisture content shall be adjusted to within the specification. Moisture adjustment shall be done by wetting and disking sufficiently to bring the moisture content within the specified range.
- 5.4.11 If the moisture content is too high, the Contractor will be permitted to stockpile and disk the fill material to promote drying to bring it back within the allowable moisture range. Scarifying of the lift and recompaction after drying shall also be permitted.

- 5.4.12 The Contractor will be required to remove any compacted material that does not comply with the compaction requirements (density or moisture) and replace the fill at his own expense.
- 5.4.13 Fill which cannot be compacted with roller equipment because of inadequate clearances shall be spread in 4-inch layers and compacted with power tampers to the extent required by the specifications for structural fill material.
- 5.4.14 Compaction tests shall be performed daily in all types of soil being placed. A minimum frequency will be maintained of at least one field moisture and density test for every 10,000 square feet of lift area, or more often if deemed necessary in the opinion of the Owner. As a minimum, three in place density tests shall be performed for each lift in each area for each day fill material is placed.
- 5.4.15 If the construction of the embankment is interrupted, the Contractor shall be required to shape and smooth the last layer of earth fill material placed on the fill to provide a surface that will shed as much water as possible during the interruption. When the work is resumed, the Contractor shall be required to level, scarify and compact the last layer of fill material before placing additional layers.

5.5 SOIL COMPACTION REQUIREMENTS

Fill for all areas may be placed at a minimum of 95 percent of standard Proctor density (ASTM D 698) at plus or minus 2 percent of optimum moisture.

5.6 ROCK COMPACTION REQUIREMENTS

- 5.6.1 Rock fill shall be observed full-time during placement by the Contractor to insure adequate compaction.
- 5.6.2 Rock fill shall receive adequate moisture to aid in compaction of the material and to wash soil fines into any void spaces between larger rock particles. It is better to have more water than not enough in rock fill placement.
- 5.6.3 Rock shall be compacted sufficiently as indicated by the Contractor.
- 5.6.4 Should the rock material break down sufficiently to be conducive to in-place density testing, it should be performed. Compaction requirements shall be the same as those for soil.

5.7 TESTING

- 5.7.1 The Contractor shall hire an independent testing firm to perform all soil testing requirements specified.
- 5.7.2 Representative samples of the proposed materials for structural fill shall be obtained and tested by the Contractor to determine their soil type (Unified Classification), Atterberg Limits (plasticity) and moisture - density (Proctor) relationship.
- 5.7.3 Testing for soil type and Proctor relationship shall take place prior to fill placement so that compaction testing can begin with fill placement.
- 5.7.4 The Owner shall be copied immediately on all testing by the Contractor.
- 5.7.5 The Owner reserves the right to perform additional testing if so desired.

6.0 DEWATERING

- 6.1 Water shall not be allowed to pond or stand on any graded soil areas or on any rock surface.
- 6.2 The Contractor is responsible for dewatering any areas that may hold water until liner placement and vegetation of required areas is completed.
- 6.3 The Contractor is responsible for all dewatering required within the limits of this site work.
- 6.4 The Contractor shall dewater by grading materials to drain or by mechanical pumps. Pumped water shall be discharged to the areas designated by the Owner.

7.0 GRASSING AND SLOPE PROTECTION

- 7.1 A 6 inch layer of topsoil shall be placed on all areas to be grassed.
- 7.2 The Contractor shall produce a satisfactory stand of perennial grass. If it is necessary to repeat any or all the work, including plowing, fertilizing, watering, mulching and seeding, the Contractor shall repeat these operations until a satisfactory stand is obtained at no additional cost to the Owner.
- 7.3 All disturbed areas shall be grassed as indicated by the Owner. Hydroseeding methods may be used.
- 7.4 A satisfactory stand of grass is defined as a full cover (at least one plant in six inches when measured in any direction) of perennial plants that are alive and growing during the first growing season following seed application.

- 7.5 Measures shall be taken to prevent erosion of the topsoil layer and vegetation until a full vegetative growth has been obtained.
- 7.6 Water required to promote a satisfactory growth shall be furnished and applied by the Contractor.
- 7.7 The Contractor shall make daily inspections of the seeded areas and repair all eroded areas to the satisfaction of the Owner.
- 7.8 Lateral drainage ditches shall be established at the top of the slopes. These ditches shall prevent runoff from traveling down the face of the slope and further eroding the soil.

PLANT GORGAS GYPSUM STORAGE AREA

VEGETATION SCHEDULE

Species	Seeding Rates	North Seeding Dates
Bermudagrass, Common	10 lbs/ac	April 1 to July 1
Bermudagrass, Hybrid (Lawn Types)	Solid Sod	Anytime
Bermudagrass, Hybrid (Lawn Types)	Sprigs 1/sq ft	March 1 to August 1
Fescue, Tall	40-50 lbs/ac	September 1 to November 1
Sericea	40-60 lbs/ac	March 15 to July 15
Sericea	40-60 lbs/ac	March 15 to July 15
Common Bermudagrass	10 lbs	March 15 to July 15

CONCRETE

- Design material and workmanship shall be in accordance with the following latest standards and specifications unless otherwise modified on the design drawings.
 - ACI-318 building code requirements for reinforced concrete.
 - ACI-315 manual of standard practice for detailing reinforced concrete structures.
 - ACI-347R recommended practice for concrete formwork.
 - CRSI recommended practice for placing reinforcing steel.
- All cast in place concrete shall develop a minimum compressive strength of 4000 PSI in 28 days, unless otherwise noted.
- Reinforcing steel shall be deformed bars conforming to ASTM A615, grade 60. Welded steel wire fabric shall be ASTM A185 plain type.
- Chamfer all exposed external corners of concrete with a 45 degree chamfer, unless otherwise noted.
- Provide a minimum cover of 3" for reinforcing steel when the concrete is placed directly against the ground, unless otherwise noted.
- Provide a minimum cover of 2" for bars larger than #5 and 1 1/2" for #5 bars or smaller if after removal of forms the concrete is exposed to weather or in contact with the ground, unless otherwise noted.
- Provide a minimum cover of 3/4" for reinforcing in slabs and 1 1/2" for reinforcing in walls not exposed directly to weather or ground, unless otherwise noted.
- Embedment and splice lengths for reinforcing steel shall conform to ACI-318, unless otherwise noted.
- All reinforcing bar hooks shown on drawings shall be ACI Standard 90 degree hooks, unless otherwise noted.
- Two #5 bars shall be placed on all sides top & bottom of openings in concrete where the largest opening exceeds 12". Extend the bar 2'-0" beyond the edge of opening, unless otherwise noted.
- Concrete keys, when shown, shall be 1 1/2" (DEEP) X 3 1/2" (WIDE), unless otherwise noted.
- Rebar fabricator shall obtain approval of his detail drawings before beginning fabrication, unless otherwise noted in purchase order.
- All concrete exposed to weather and all liquid retaining structures shall be air entrainment concrete.

GENERAL NOTES

SOIL AND FILL MATERIALS

- After excavation and before placement of any fill, the entire subgrade shall be proofrolled with a loaded, tandem wheel, dual rear axle dump truck.
- Any areas noted to be deficient during the proofrolling shall be excavated and replaced.
- The fill material may consist of excavated mine spoils from the area or other suitable materials.
- After establishing the base grade, a uniform layer of one foot of bottom ash shall be placed and compacted across the graded area.
- The placement of fill soils shall consist of lifts with a maximum loose lift thickness measurement of 6 to 8 inches. The compaction criteria for all fill materials shall be a minimum of 95% of the maximum standard Proctor dry density at +/-2% of the optimum moisture.

LINER

- The liner for the storage cell, sediment basin, clear pool and emergency storage pond shall consist of a minimum 60 mil textured high density polyethylene (HDPE) geomembrane. The liner shall be placed over the compacted mine spoil subgrade and the 1 foot protective layer of ash.
- Construction procedures for liner placement, seaming, and testing shall be according to the manufacturer's specifications.

EROSION AND SEDIMENT CONTROL

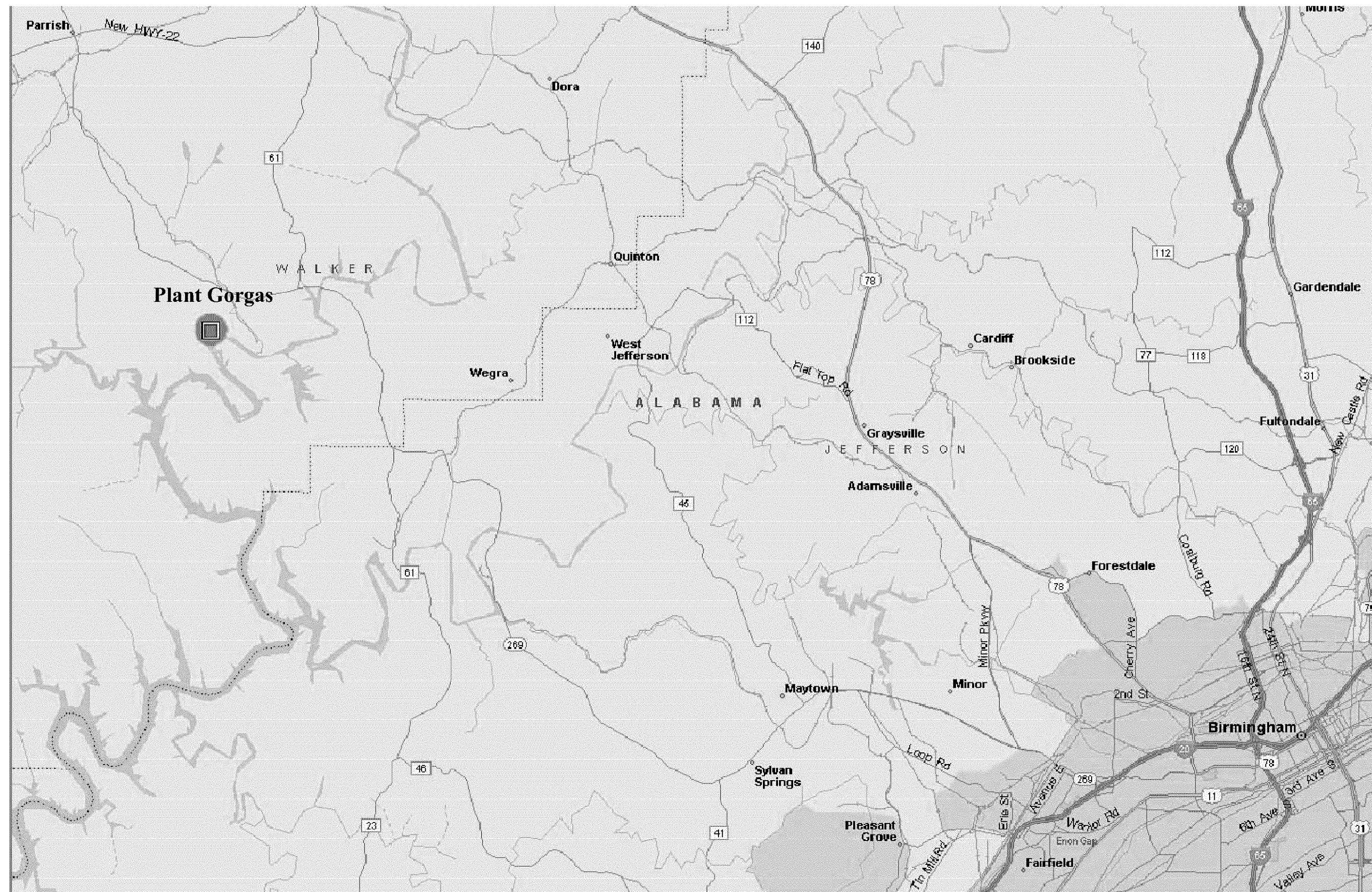
- Prior to landfill cell development, any necessary erosion and sediment control measures shall be constructed and put into place and any required diversion berms, ditches and other storm water management structures shall be constructed.
- The sediment ponds shall be constructed first to receive any runoff from the construction of the storage cell.
- The plans and details of permanent erosion and sediment control structures are included in these plans.
- All erosion and sediment control at the site shall be performed in accordance with the Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas, latest edition.

CONSTRUCTION SEQUENCING

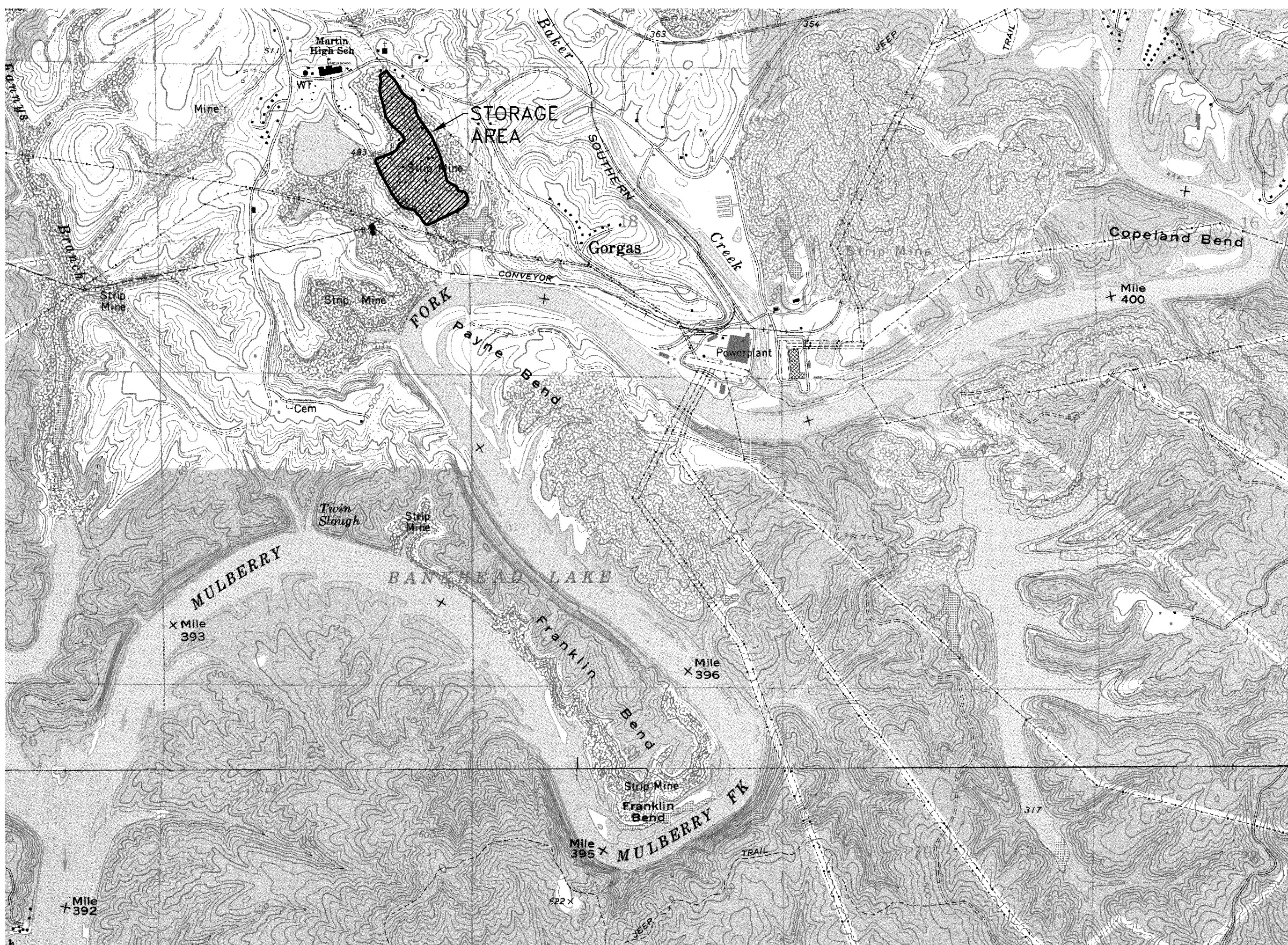
- The future development and filling operations for this site may be in several cells dependent on required life of the storage area. For this development, one cell shall be developed.
- The cell shall be graded, lined and filled with gypsum from base grade to El. 440. Additional lining and storage shall then take place in 20 foot elevation intervals, or as directed.
- Prior to the initial cell becoming full, construction on the future berms should proceed.
- The future berms should be constructed by excavating material from within the storage cell, placing gravel drains, lining, and compacting the excavated material to the grades shown.
- At liner Tie-ins, care should be taken in uncovering the liner in the trench to not damage the liner. Clean the liner well to ensure a proper seal when the two liners are welded together.

VEGETATION

- All disturbed and/or exposed areas that will remain exposed for more than three months shall be seeded, mulched and fertilized upon reaching final grades.
- Areas of structural fill shall be grassed upon reaching final grades.
- Should topsoil be required for vegetative growth, a minimum of 6 inches of topsoil shall be placed.
- The following schedule indicates the recommended species, planting dates, and fertilization requirements. Walker County is located within the North Geographical area of the state. An appropriate species shall be chosen based on the time of seeding. Proper seeding rates shall be followed. Reference the Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas, latest edition for further information.



VICINITY MAP
NTS



PROJECT LOCATION MAP
NTS

DRAWING INDEX

- D-540511 SHT.1 - GENERAL ARRANGEMENT - ISOMETRIC GYPSUM SLURRY BOOSTER PUMPS AND RETURN WATER PUMPS
- D-540511 SHT.2 - GENERAL ARRANGEMENT - PLAN VIEW GYPSUM SLURRY BOOSTER PUMPS AND RETURN WATER PUMPS
- D-540511 SHT.3 - GENERAL ARRANGEMENT - SECTIONS & DETAILS GYPSUM SLURRY BOOSTER PUMPS AND RETURN WATER PUMPS
- D-540511 SHT.4 - GENERAL ARRANGEMENT - SECTIONS & DETAILS GYPSUM SLURRY BOOSTER PUMPS AND RETURN WATER PUMPS
- D-591420 - DRAWING INDEX & VICINITY MAP
- D-591421 - EXISTING TOPOGRAPHY, BORINGS, & POWERLINE LOCATIONS
- D-591422 - INITIAL SITE DEVELOPMENT - SITE GRADING PLAN
- D-591423 - INITIAL SITE DEVELOPMENT - CELL SECTIONS & DETAILS-SHEET 1
- D-591424 - INITIAL SITE DEVELOPMENT - CELL SECTIONS & DETAILS-SHEET 2
- D-591425 - INITIAL SITE DEVELOPMENT - POND SECTIONS & DETAILS
- D-591426 - INITIAL SITE DEVELOPMENT - DETAILS-SHEET 1
- D-591427 - INITIAL SITE DEVELOPMENT - DETAILS-SHEET 2
- D-591428 - INITIAL SITE DEVELOPMENT - DETAILS-SHEET 3
- D-591429 - FUTURE DEVELOPMENT PLAN
- D-591430 - FUTURE DEVELOPMENT - SECTIONS & DETAILS-SHEET 1
- D-591431 - FUTURE DEVELOPMENT - CELL SECTIONS & DETAILS-SHEET 2
- D-591432 - FUTURE DEVELOPMENT - DETAILS
- D-591433 - INITIAL SITE DEVELOPMENT - DITCH AND CULVERT MODIFICATION
- D-541028 - OUTDOOR CONCRETE, GYPSUM STACKING AREA, FOUNDATION PLAN
- D-541029 - OUTDOOR CONCRETE, GYPSUM STACKING AREA, SECTIONS & DETAILS
- D-541030 - GYPSUM STORAGE BASIN FOUNDATION PLAN
- D-541031 - GYPSUM STORAGE BASIN SECTIONS AND DETAILS

2

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Southern Company Services, Inc.
FOR

Alabama Power Company
Plant Gorgas Units 8, 9 & 10 FGD Project
GYPSUM STORAGE AREA
GRADING PLAN
DRAWING INDEX & VICINITY MAP

REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE																		
								2	03/15/07	1	09/21/06	0	05/12/06																						
								ADDED DRAWINGS D-591433 AND TITLE D-541030 AND TITLE D-541031 AND TITLE TO THE DRAWINGS INDEX.				NO REVISION THIS SHEET				ISSUED FOR CONSTRUCTION																			
								EWO 2119 GO-05001				EWO 2119 GO-05001				EWO 2119 GO-05001																			
BY	CHK'D	CIVL APPR	ELECT APPR	I/C APPR	MECH APPR	MGR APPR		BY	CHK'D	CIVL APPR	ELECT APPR	I/C APPR	MECH APPR	MGR APPR		BY	CHK'D	CIVL APPR	ELECT APPR	I/C APPR	MECH APPR	MGR APPR	BY	CHK'D	CIVL APPR	ELECT APPR	I/C APPR	MECH APPR	MGR APPR	SCALE	PRJG ID.	DRAWING NUMBER	SH	CONT'D	REV
								ASF	SSS	AMW/RCE	JPS	RDP	DEK	KaM		ASF	SSS	AMW/RCE	JPS	RDP	DEK	MDS	ASF	SSS	AMW/RCE	JPS	RDP	DEK	MDS	NONE	210100	D-591420	1	FINAL	2