



Maintenance Plan
Ash Area No. 1

TVA Johnsonville Fossil Plant
New Johnsonville, Tennessee

Design with community in mind

Prepared for:
Tennessee Valley Authority
Chattanooga, Tennessee

May 28, 2014

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Maintenance Plan

Ash Area No. 1

TVA Johnsonville Fossil Plant

New Johnsonville, Tennessee

1.0 Introduction

1.1 Facility Description

Johnsonville Fossil Plant (JOF) is located on 685 acres in west-central Tennessee near New Johnsonville along the eastern bank of the Tennessee River (See **Figure 1**). The site is approximately 12 miles west of Waverly, TN. TN State Highway 70 is located to the south of the reservation and E.I. du Pont de Nemours and Company (DuPont) is located to the north and east.

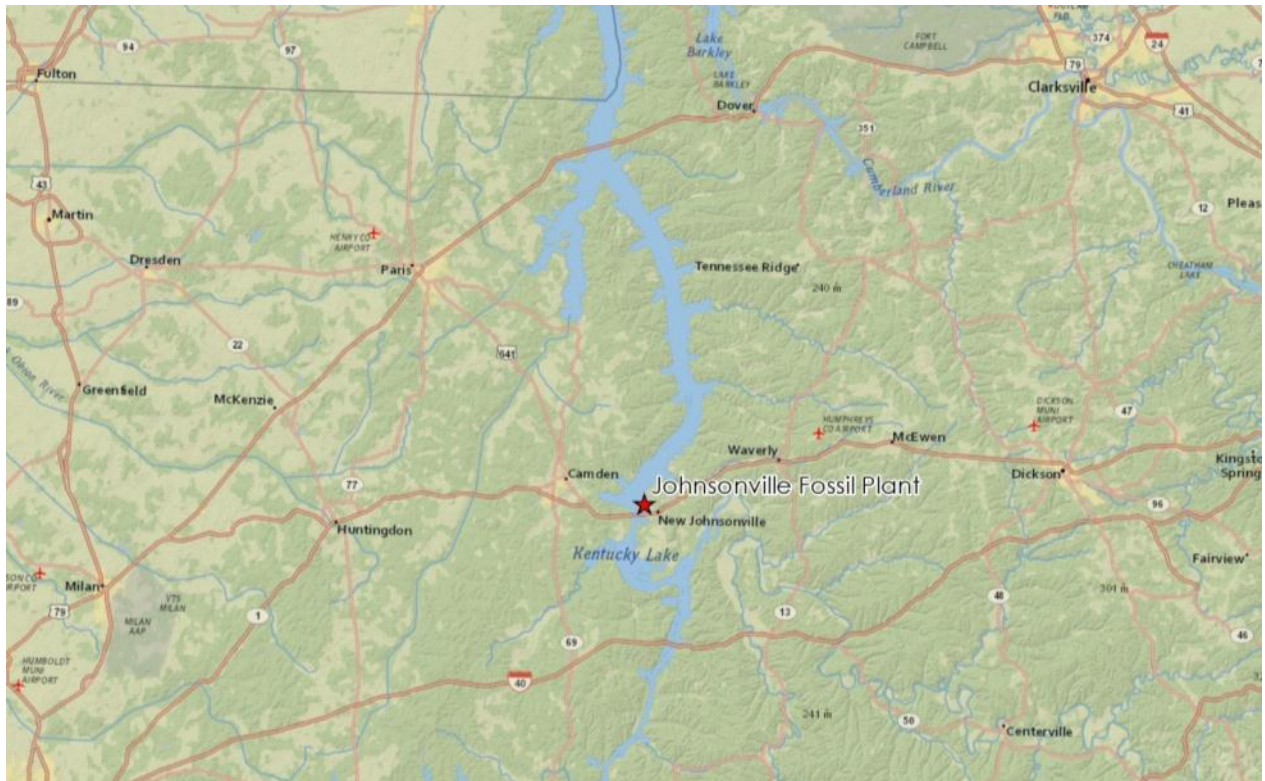


Figure 1. Vicinity Map

Three tracts of land including GIR-5186 (**Figure 2**) were granted by A.W. Lucas in the 1940's to the United States of America. In 1952, the United States of America split GIR-5186 and granted the northern 133 acres (Tract XGIR-580) to DuPont. In the same year, DuPont granted the United States of America a 5.7 acre tract, identified as JSP-12 that was originally part of another tract previously acquired by DuPont. Ash Area No. 1 is situated on these three tracts.

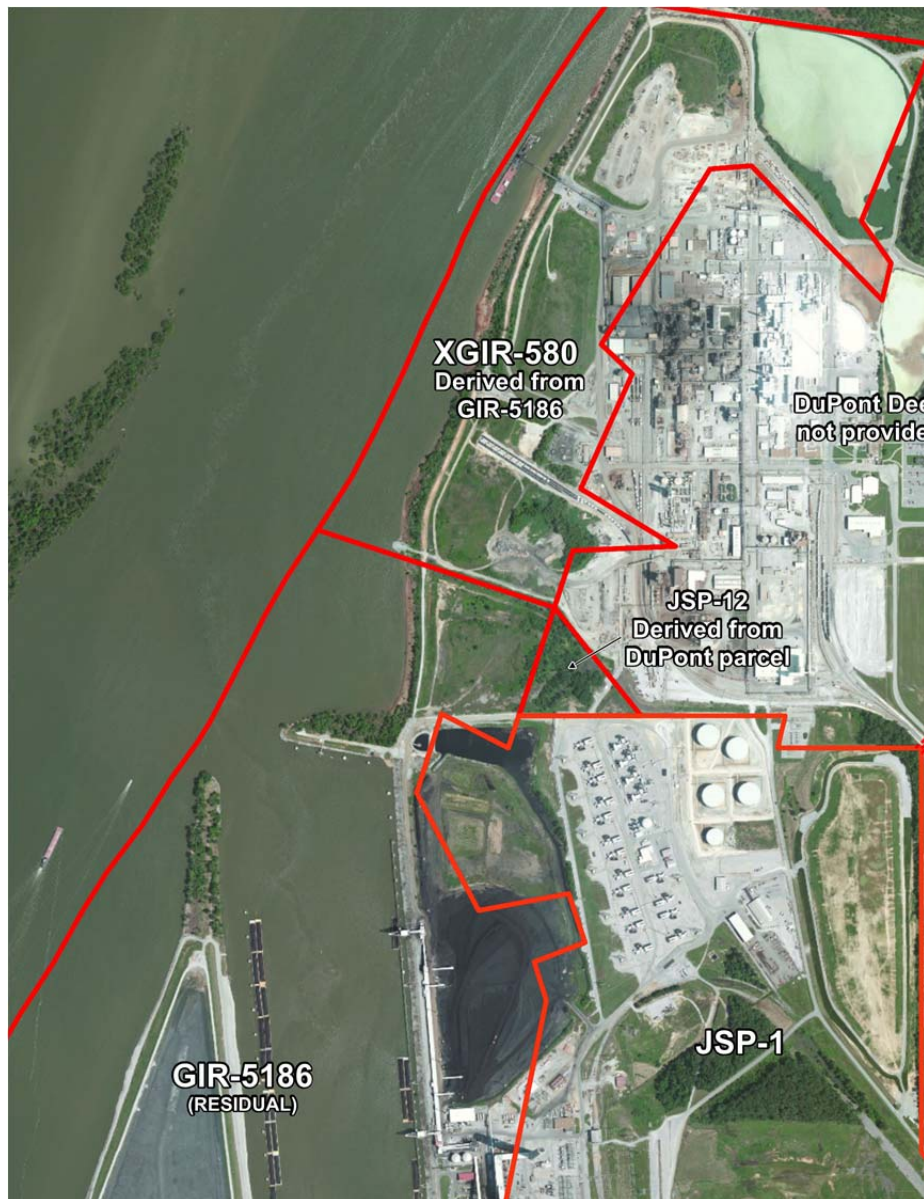


Figure 2. Property Deed Boundaries

JOF is the oldest operating fossil plant in TVA's system. Construction began in May 1949 and the first unit came on-line in October 1951. Five additional units were added by February 1953, and the remaining four were completed by 1959. Through a co-generation configuration, JOF Units 1 through 4 also provides steam to a nearby DuPont plant.

1.2 Operational History

The coal combustion process results in the production of by-products that include both fly ash and bottom ash. When JOF began operations in the 1950s and until 1970, the primary management of fly ash, bottom ash, and residual materials produced during coal pulverization at JOF was in Ash Area No. 1. Ash Area No. 1 is located north of the coal yard drainage basin as shown in **Figure 3**. An earth dike was constructed north

along approximately 5,000 feet of the Kentucky Lake shoreline and heads east extending to high ground.



Figure 3. Plant Overview Map

Within the dike, three ponds (Pond A, B, and C) were constructed as shown in **Figure 4**. TVA granted the major portion of this area, including Ponds B and C and a portion of Pond A, to DuPont in 1952, with a condition that TVA would continue to fill on the site for a fifteen-year period. Beginning in 1970, and after the completion of construction of Ash Pond D (the island), TVA ceased to discharge ash or water into these ponds. During the 1970s, Ponds A and B were graded, reclaimed, and retired by TVA. DuPont ceased use of Pond A in 1975. In 1977, DuPont installed a fence on the property boundary between TVA and DuPont and assumed total control and responsibility for waste disposal and maintenance for the area north of the fence line. DuPont covered their portion with 2-feet of soil in the 1980's. In 2005, DuPont received a notice of no further action required from TDEC concerning Ash Pond A being "closed." Only a portion of former Pond A is located on TVA's property and the majority of Ash Area No. 1 lies within DuPont's fence line in the now closed DuPont Ash Pond A under 2-feet of soil.

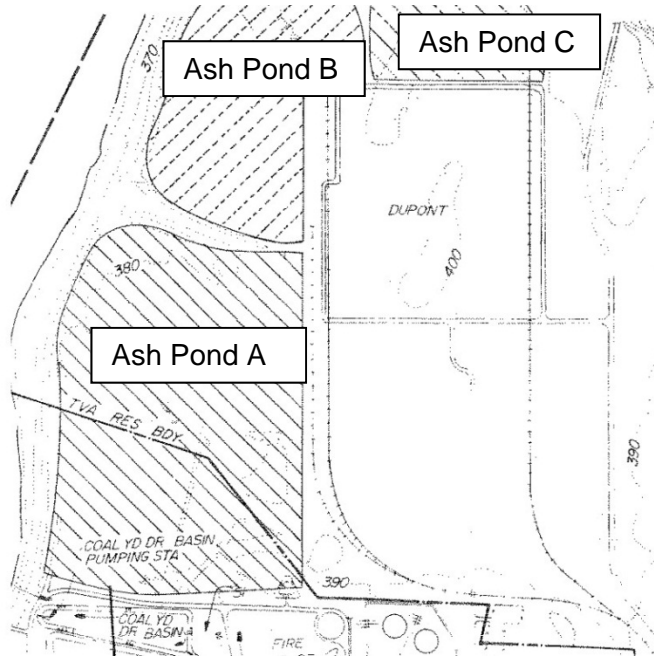


Figure 4. Historic TVA Drawing of Ash Ponds

This Maintenance Plan addresses the 16 acre portion of Ash Area No. 1 on TVA's property. TVA plans to perform maintenance in this area by constructing a two phase project. The first phase (North Drainage Culvert) will address the existing culvert through the dike, the deep drainage channel that parallels DuPont's fence line, and the poorly drained area east of Ash Area No. 1 as shown in Figure 5.



Figure 5. Phase 1 - North Drainage Culvert Limits

The second phase of the project (Cap Installation) will result in the capping and grading of the area within the project limits as depicted below on **Figure 6**. More detail for the work to be performed is provided in Section 2.0.



Figure 6. Phase 2 – Cap Installation Limits

1.3 Expected Year of Maintenance Activities

Construction is planned to begin in summer of 2014 and will be completed in 2015.

1.4 Facility Contact

The TVA contact for the plant (as of the date of this report) is listed as follows:

Tennessee Valley Authority (TVA)
 Contact: Clay Cherry, Plant Manager
 Johnsonville Fossil Plant
 P.O. Box 259 – Hwy 70
 New Johnsonville, TN 37134
 (615) 535-2501

2.0 Maintenance Activities

2.1 Site Preparation

During 2013, following approval of Categorical Exclusion Checklist 29364 including a bat habitat assessment, TVA bush-hogged the site of woody vegetation to facilitate a survey for the maintenance projects. Site preparation for both projects will involve removing wood mulch that was allowed to remain as stabilizing material, stump removal and grubbing. Any ponded water in the area of Ash Area No. 1 will be

removed and disposed of in the JOF Ash Pond D (Outfall 001 of NPDES Permit TN0005444).

Currently, surface runoff from Ash Area No. 1 generally flows to the perimeter of the site. Surface area slopes within Ash Area No. 1 vary from less than 1 percent to greater than 50 percent. There are several flat areas throughout Ash Area No. 1 where water ponds and eventually infiltrates into the ground or evaporates. To prepare the site, minor regrading and shaping will occur to promote positive surface runoff and reduce infiltration. Grading will focus on the areas where ponding occurs (in the southeastern portion of the site) and along the northern and western swales.

2.2 Drainage System

Currently, a drainage channel immediately south of the TVA/DuPont fence drains the entire site. This channel flows in a westerly direction and drains off-site areas on both TVA and DuPont properties that total approximately 60 acres. The channel is relatively deep and exhibits steep slopes, making it difficult to inspect and maintain.

The channel conveys its flows through the dike into Kentucky Lake via a 36-inch corrugated polyethylene drainage pipe. Due to the pipe condition, it will be replaced as part of the maintenance activities.

Objectives of the first phase of this project includes making it easier to inspect and maintain the drainage system, addressing standing water, improving through drainage without increasing headwater onto DuPont property, and replacing the existing culvert through the dike. The first project is described in the following paragraphs.

The existing 36-inch culvert will be removed and replaced with a 48-inch HDPE split wall butt-fused pipe. A reinforced concrete headwall, with a weir to facilitate storm water sampling, will be constructed at the downstream end of the new pipe. Material removed from the dike will be used onsite as fill material within Ash Area No. 1. The pipe excavation in the dike will be backfilled using clay from an off-site borrow source. The gravel access road will be reconstructed and a shallow, erosion-resistant overflow will be built to handle extreme runoff events. All construction work associated with replacing the existing storm water 36-inch culvert will take place above the high water level of Kentucky Lake and will not require a Corps of Engineers permit or a TDEC ARAP permit.

The 48-inch pipe will be continued up the drainage channel a distance currently estimated at about 1,000 feet, and will end with a reinforced concrete headwall. The pipe will be bedded in crushed stone and the ditch will be backfilled using clay from an off-site borrow source. Storm water inlets will be located as necessary along the pipe to prevent ponding.

Clay from a TDEC approved and permitted off-site borrow source will be used to fill the poorly drained areas that exist east of the ash limits and towards the TVA/DuPont boundary. The fill will be graded so that runoff flows into the pipe and that ponding on DuPont's property is not exacerbated.

During the second phase of this project, a geomembrane cap will be placed above the old drainage channel. The geomembrane cap will prevent infiltration into the pipe backfill and the ash below the filled in channel.

A storm water management system will be established consisting of overland flow and grass-lined swales to convey runoff. Storm water management and erosion/sediment controls will be maintained in a functional state until the vegetative cover is established. A Storm Water Pollution Prevention Plan (SWPPP) will be developed and submitted for approval for the site during the design stage that covers both phases of the project.

Conceptual drawings of the drainage improvements are included in Appendix A.

2.3 Final Cover Over Ash Area No. 1

During the second phase of the project, it is anticipated that the final cover will consist of the following materials and thicknesses, as listed in order of construction (bottom to top):

- 40-mil LLDPE flexible geomembrane
- Geocomposite drainage layer
- 24-inches of cover soil, the top 6-inches for the support of vegetative cover

Soil characteristics of borrow site locations will be investigated as part of the design phase of the project. It is anticipated there will not be a permeability requirement for the cover soil (i.e. 10^{-7} cm/s) since a 40-mil LLDPE flexible geomembrane will be placed over the entire area. This is a similar design to the JOF DuPont Dredge Cell Closure project and the John Sevier Dry Fly Ash Stack Final Closure project. The cover soil was required to be clay or silt (USCS Classifications CL, CH, MH, or ML). The cap will be graded to encourage positive drainage of surface water and sodded to establish a vegetative cover for erosion control.

2.4 Vegetative Cover

As described above, a vegetative cover will be established on the final cover. The conditioning, fertilizing, and sodding will begin immediately upon placement of the final cover. No nuisance or invasive species will be used as vegetative cover.

2.5 Maintenance Activities Schedule

TVA plans to start maintenance activities on September 4, 2014 at JOF Ash Area No. 1.

The first phase of the maintenance activity will focus on the drainage ditch area located at the TVA property boundary with DuPont. This phase of the maintenance activities will be to replace the existing 36-inch culvert with a 48-inch HDPE split wall butt-fused pipe. A reinforced concrete headwall, with a weir to facilitate storm water sampling, will be constructed at the downstream end of the new pipe. Material removed from the dike will be used onsite as fill material within Ash Area No. 1. The pipe excavation in the dike will be backfilled using clay from an off-site borrow source. The

gravel access road will be reconstructed and a shallow, erosion-resistant overflow will be built to handle extreme runoff events. All construction work associated with replacing the existing storm water 36-inch culvert will take place above the high water level of Kentucky Lake and will not require a Corps of Engineers permit or a TDEC ARAP permit.

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During the second phase of this project, a geomembrane cap will be placed above the old drainage channel. The geomembrane cap will prevent infiltration into the pipe backfill and the ash below the filled in channel.

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- 40-mil LLDPE flexible geomembrane
- Geocomposite drainage layer; and,
- 24-inches of cover soil, the top 6-inches for the support of vegetative cover.

Soil characteristics of borrow site locations will be investigated as part of the design phase of the project. It is anticipated there will not be a permeability requirement for the cover soil (i.e. 10⁻⁷ cm/s) since a 40-mil LLDPE flexible geomembrane will be placed over the entire area. This is a similar design to the JOF DuPont Dredge Cell Closure project and the John Sevier Dry Fly Ash Stack Final Closure project. The cover soil was required to be clay or silt (USCS Classifications CL, CH, MH, or ML). The cap will be graded to encourage positive drainage of surface water and sodded to establish a vegetative cover for erosion control.

A storm water management system will be established consisting of overland flow and grass-lined swales to convey runoff. Storm water management and erosion/sediment controls will be maintained in a functional state until the vegetative cover is established. A SWPPP will be developed and submitted for approval for the site during the design stage that covers both phases of the project.

2.6 Post-Maintenance Care Activities

TVA will implement a post-maintenance plan for Ash Area No. 1 within the TVA property boundary that will involve inspection and maintenance activities. Regularly scheduled inspection of Ash Area No. 1 shall be performed to verify that the maintenance plan procedures have been effectively implemented.

During the post-maintenance care period, the following activities will be performed on the closed portions of the facility:

- A. Maintain the approved final contours and drainage systems of the site such that erosion of the cover is minimized, precipitation on the fill is controlled and directed off the area, and unintended ponding is eliminated.
- B. Maintain the final cover established for sediment and erosion control.
- C. Nesting pests will be eradicated as needed.

If problems are observed, corrective measures will be implemented. Inspection records will be maintained at the site.

2.7 Cost Estimate/ Financial Assurance

TVA is an agency and instrumentality of the United States created by the TVA Act of 1933, 16 U.S.Code 831-831dd (1988). TVA is not required to provide financial assurance in accordance with DSWM Solid Waste Regulations rule 0400-11-01.03 (1) (b) (2) page 45.

The estimate of probable maintenance costs is in the order of \$3,000,000.

3.0 Quality Assurance/ Quality Control

3.1 General

A Construction Quality Assurance / Quality Control (QA/QC) Plan will be developed prior to maintenance construction as part of the design phase. Construction observations will be conducted and recorded to document the maintenance construction and QA/QC testing. Appendix B includes example forms that will be used in the QA/QC plan for Ash Area No. 1. Sections of the QA/QC plan will include:

- A. Purpose and Scope
- B. Limitations
- C. Responsibility and Authority
- D. Project Settings
- E. Quality Control Activities
- F. Product Submittals and Material Testing
- G. Project Documentation



The purpose of this plan is to establish standards that must be followed by the registered professional engineer or geologist in order to assure that construction of the facility meets the specifications given in the design documents. The professional engineer or geologist shall use sound judgment when determining what additional procedures may be required in order to further assure the construction quality.

The Quality Assurance/ Quality Control shall be performed by personnel that are independent of all other construction contractors involved in construction for the Ash Area No. 1. The plan will be performed in addition to any Construction Quality Control Programs implemented by construction contractors.

Detailed in this plan are the minimum standards for soil selection, minimum testing programs, minimum construction standards, and the minimum documentation required to assure that the requirements of the plans and specifications are met.

3.2 Final Cover

Final cover will include a geotextile fabric placed on the prepared subgrade. Above this an LLDPE flexible geomembrane, a geocomposite drainage layer, 18 inches of cover soil, and a vegetative layer with a minimum thickness of 6 inches will be placed. Documentation from the manufacturer will be obtained as to the permeability of the material. Soil characteristics of borrow site locations for either vegetative cover and/or compacted soil cover will be investigated as part of the design phase. A registered professional engineer or geologist will verify that a compacted final cover is constructed in accordance with the above criteria by performing quality control tests including the following:

- Upon completion of the final cover, elevations will be recorded to verify construction.
- Quality control measures will be performed and documented through field notes and certifications.
- The soil utilized for establishing vegetative cover shall have composition capable of sustaining a healthy stand of vegetation. Once this soil has been applied and tamped, the area shall be seeded as soon as practical in order to minimize soil erosion. The soil for vegetation shall not be compacted such that vegetative growth is hindered. The top surface of the soil for vegetation may need to be roughened to create a favorable environment for vegetation to grow.

3.3 Documentation

3.3.1 Daily Logs

- A. The registered professional engineer or geologist performing Quality Assurance/ Quality Control shall prepare a daily log giving the detailed descriptions of the cap construction operations.

- B. The daily log shall include but not be limited to: construction operations and their locations, operations and locations of other QA/QC engineers or geologists, all tests performed and their designation and location, all locations and designations of samples taken, meteorological conditions, and general comments and observations.
- C. A copy of the daily logs shall be kept on site and made available to TVA, the QA/QC personnel, and the construction contractor.
- D. All field and laboratory test data shall be accompanied by test/sampling data, location, reasons for the location, personnel performing the test and any comments.

3.3.2 Approval Documentation

- A. All corrective measures taken to bring unsuitable work into conformance with the design specifications must be documented. This document must describe what is at fault and the exact location and the designation(s) that shows the work to be unsuitable, the corrective measures agreed upon to bring it into conformance with design specifications, the dates that corrective work was accepted, and the test designation that shows the work to be acceptable. All work shall be documented as to quality and verified by the engineer or geologist.
- B. The documentation will be organized and indexed to enable easy access and retrieval of original inspection and testing data sheets and reports. During the construction period, originals of the documents will be maintained by the engineer or geologist and copies will be kept by the TVA. Once the construction quality assurance has been certified by an independent, registered engineer and has been accepted by the Owner, originals of the documentation will be maintained by TVA.

Appendix A
Conceptual Drawings

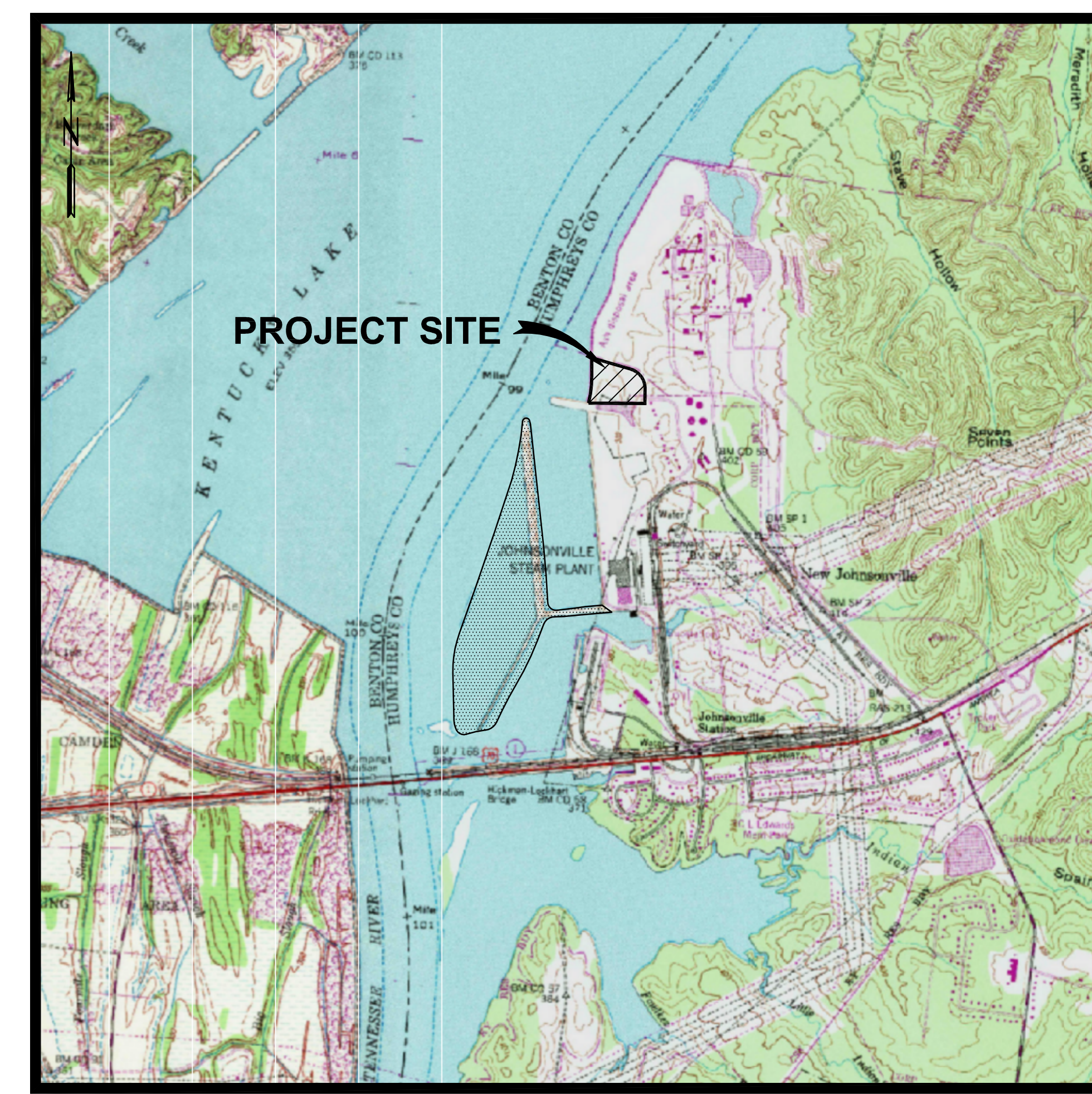
ASH AREA NO. 1 NORTH DRAINAGE CULVERT TVA PROJECT NO. 601939

JOHNSONVILLE FOSSIL PLANT NEW JOHNSONVILLE, HUMPHREYS, TENNESSEE

PREPARED FOR

TENNESSEE VALLEY AUTHORITY

PREPARED BY



VICINITY MAP
NOT TO SCALE

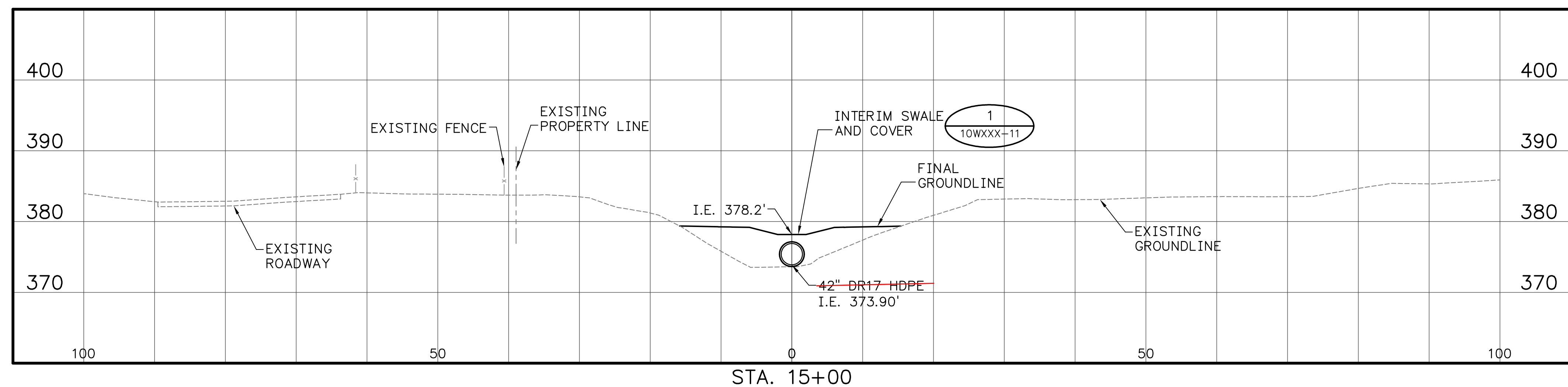
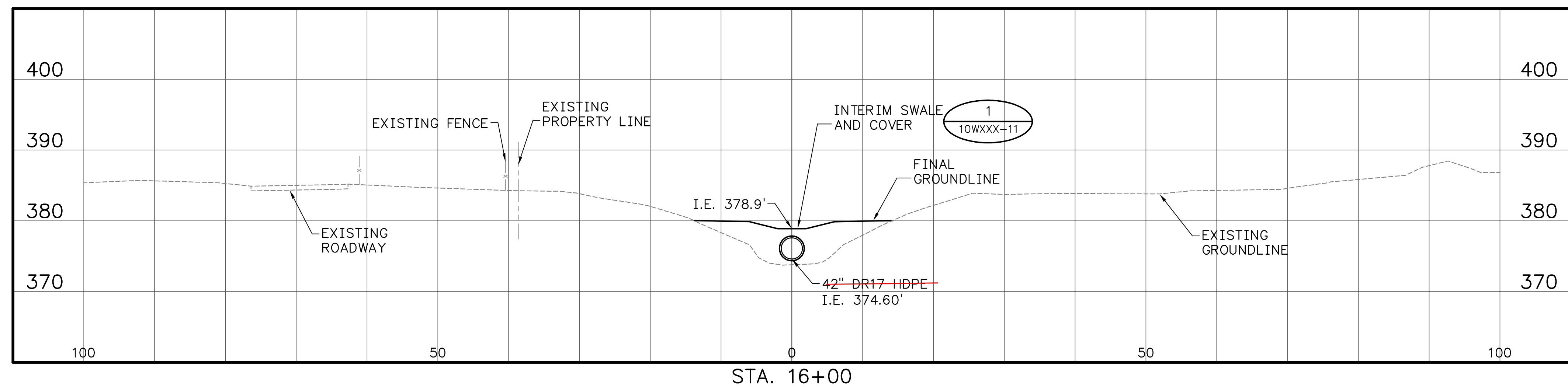
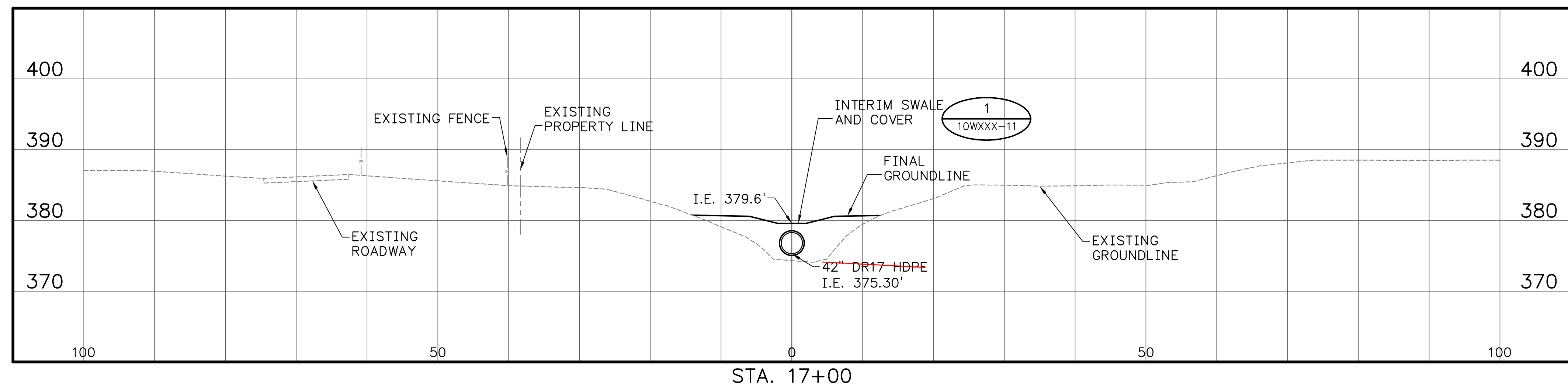
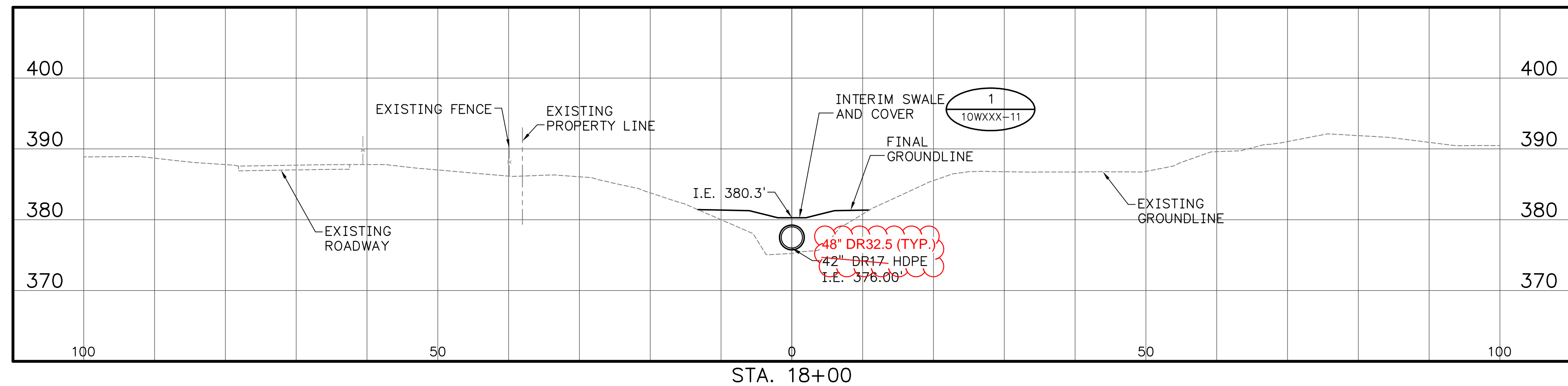
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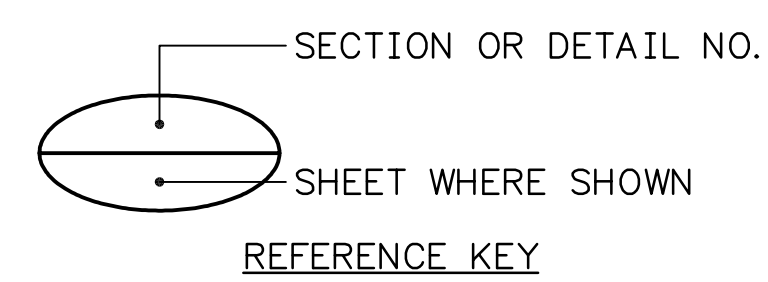
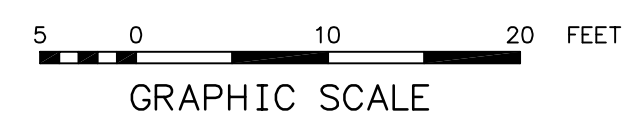
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J.E. SPALDING	R.R. PETTY	M.C. VAUGHAN	A.L. VANCE	S.H. BICKEL	M.S. TURNBOW	J.C. KAMMETER						
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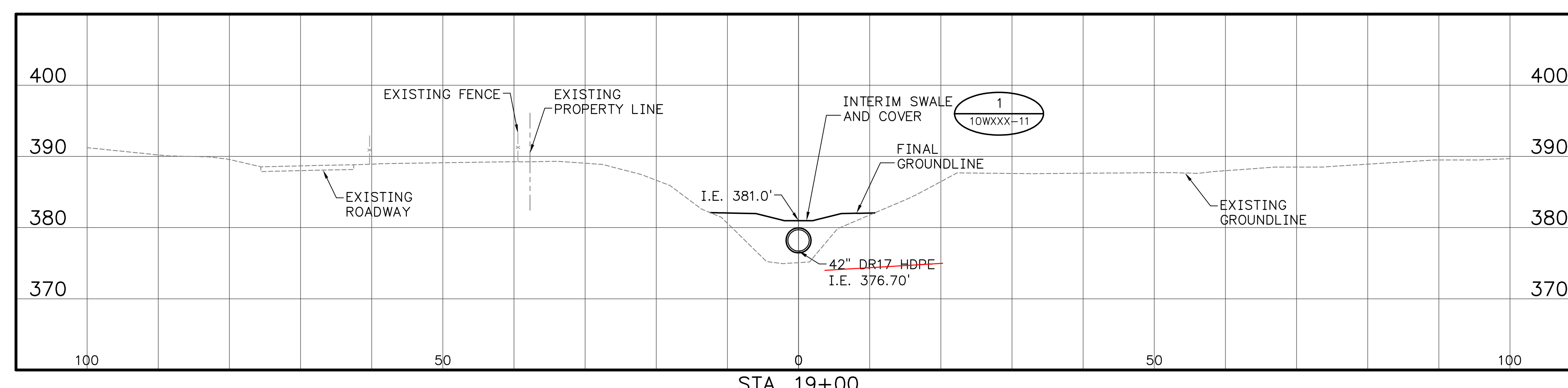
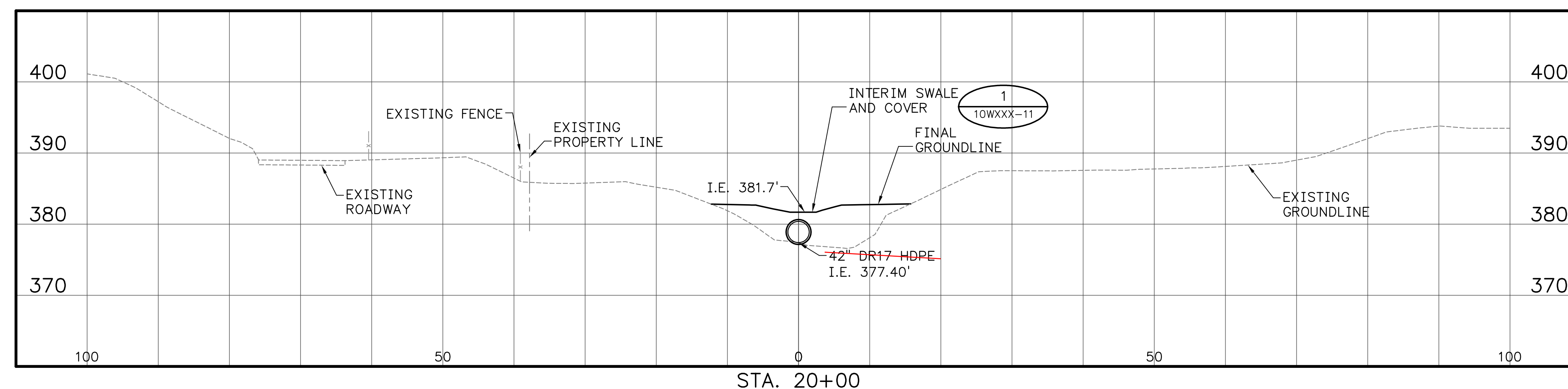
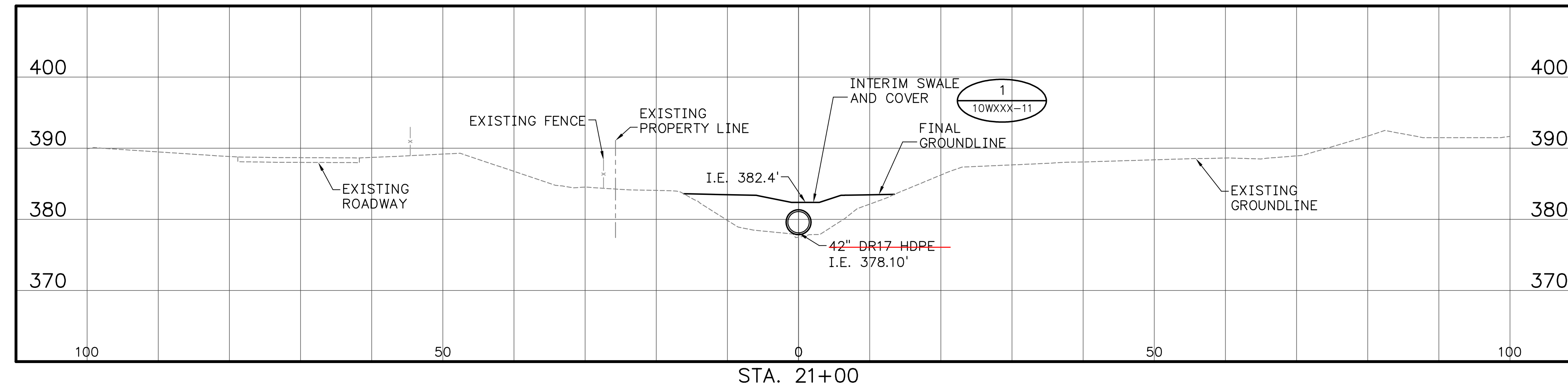
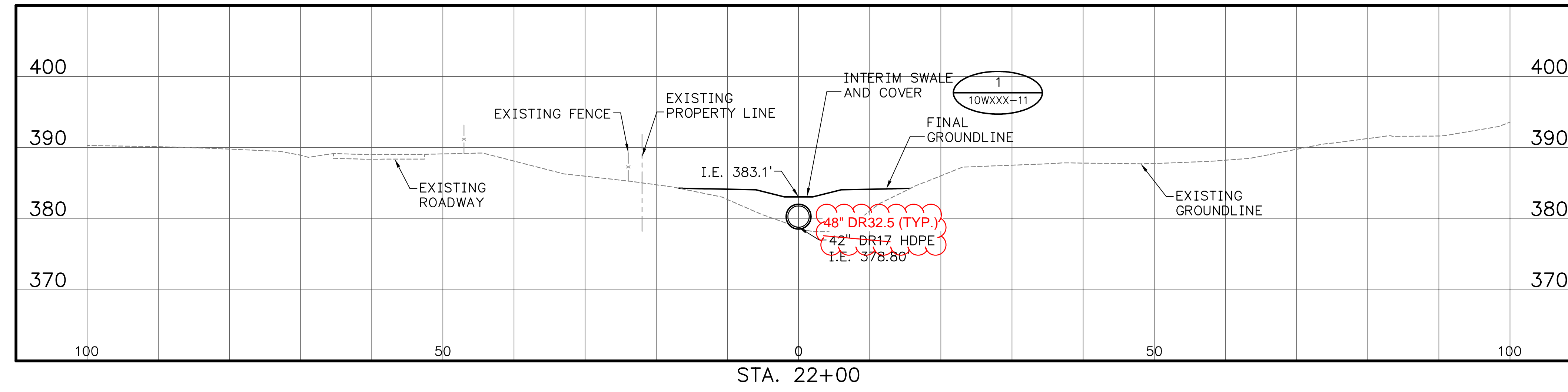


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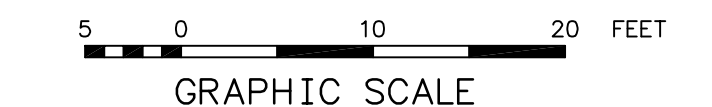
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ASH AREA NO. 1											
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J.E. SPALDING	R.R. PETTY	M.C. VAUGHAN	A.L. VANCE	S.H. BIKEL	M.S. TURNBOW	J.C. KAMMETER					
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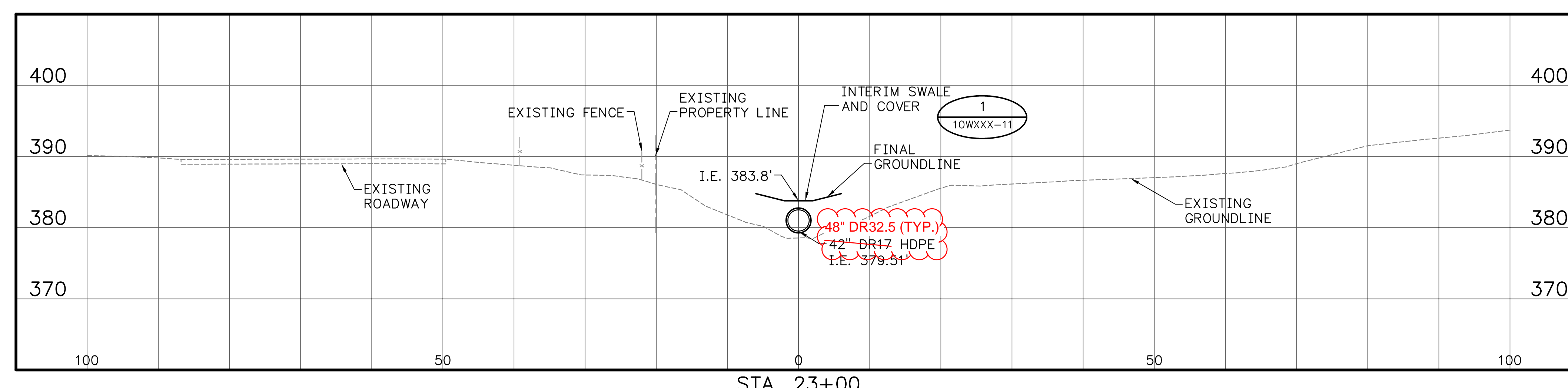
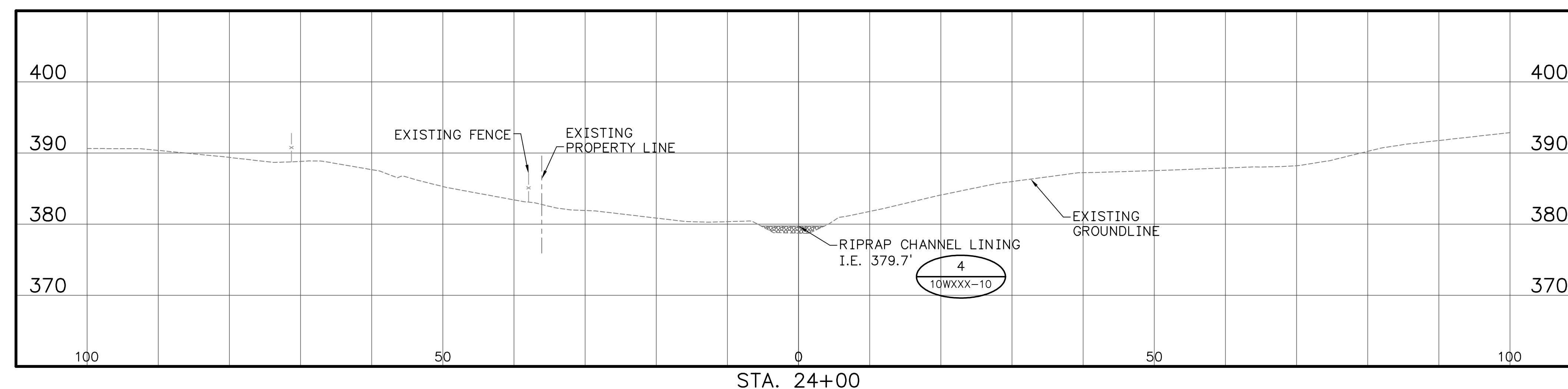
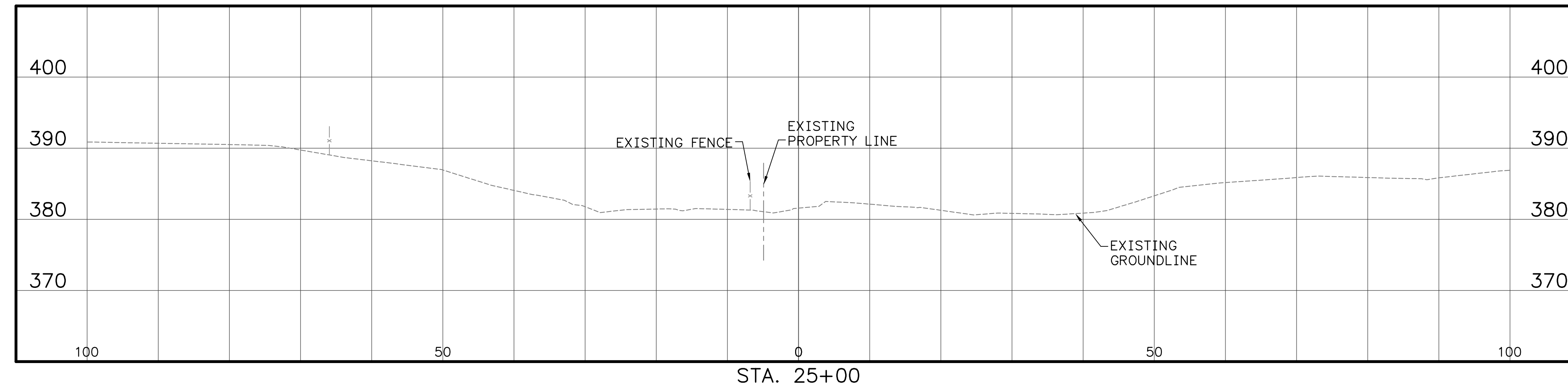


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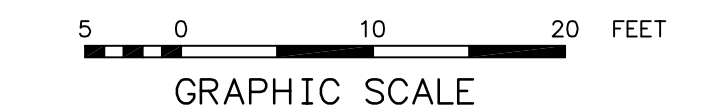
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**10% CONCEPTUAL DESIGN
ISSUED FOR REVIEW
NOT FOR CONSTRUCTION**



SECTION OR DETAIL NO.
SHEET WHERE SHOWN
REFERENCE KEY



SEE XXXXXX-XXX FOR LIST OF DESIGN, COMPANION, REFERENCE DRAWINGS AND SUPPORTING DESIGN CALCULATIONS NUMBER.

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CROSS SECTIONS											
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:					
J.E. SPALDING	R.R. PETTY	M.C. VAUGHAN	A.L. VANCE	S.H. BICKEL	M.S. TURNBOW	J.C. KAMMETER					
JOHNSONVILLE FOSSIL PLANT											
TENNESSEE VALLEY AUTHORITY											
FOSSIL AND HYDRO ENGINEERING											
AUTOCAD R 2000	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
	03/05/14	30	C	10WXXX-08	R	A					

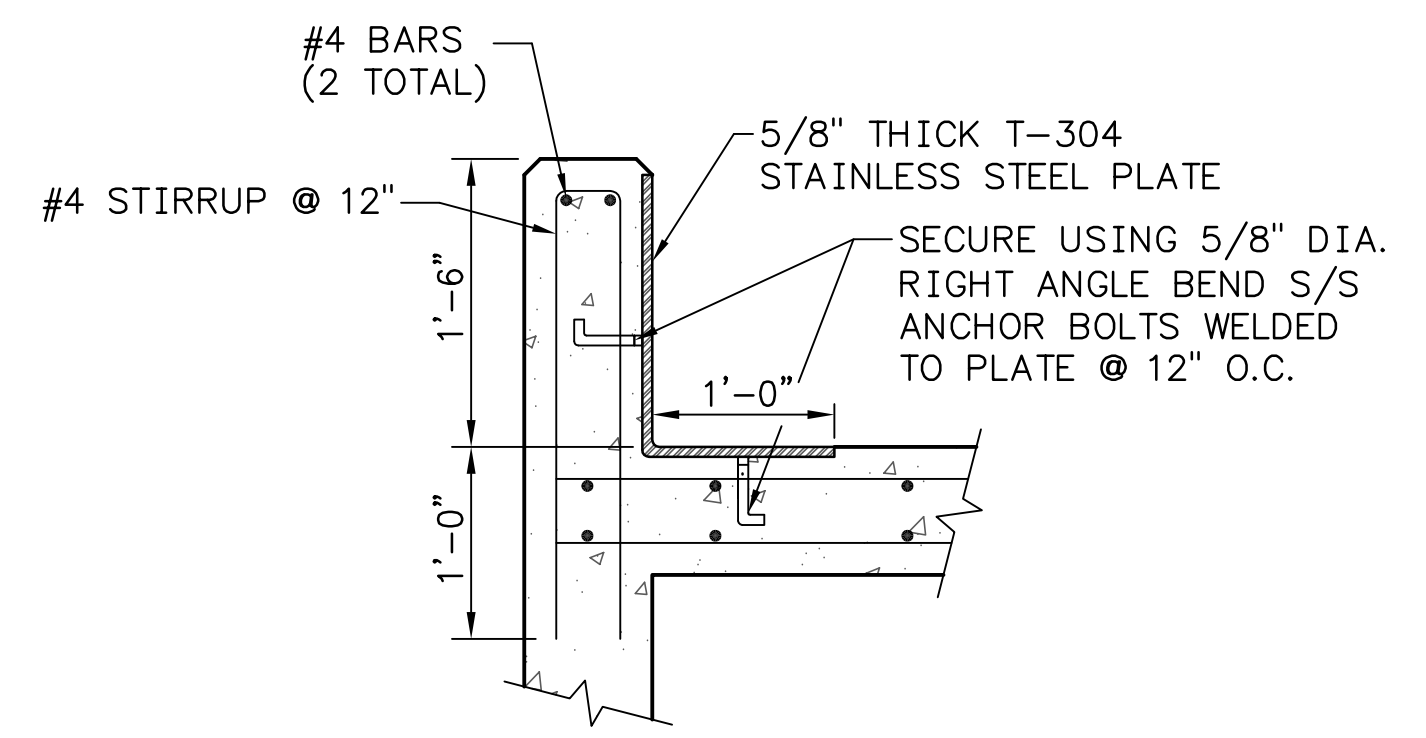
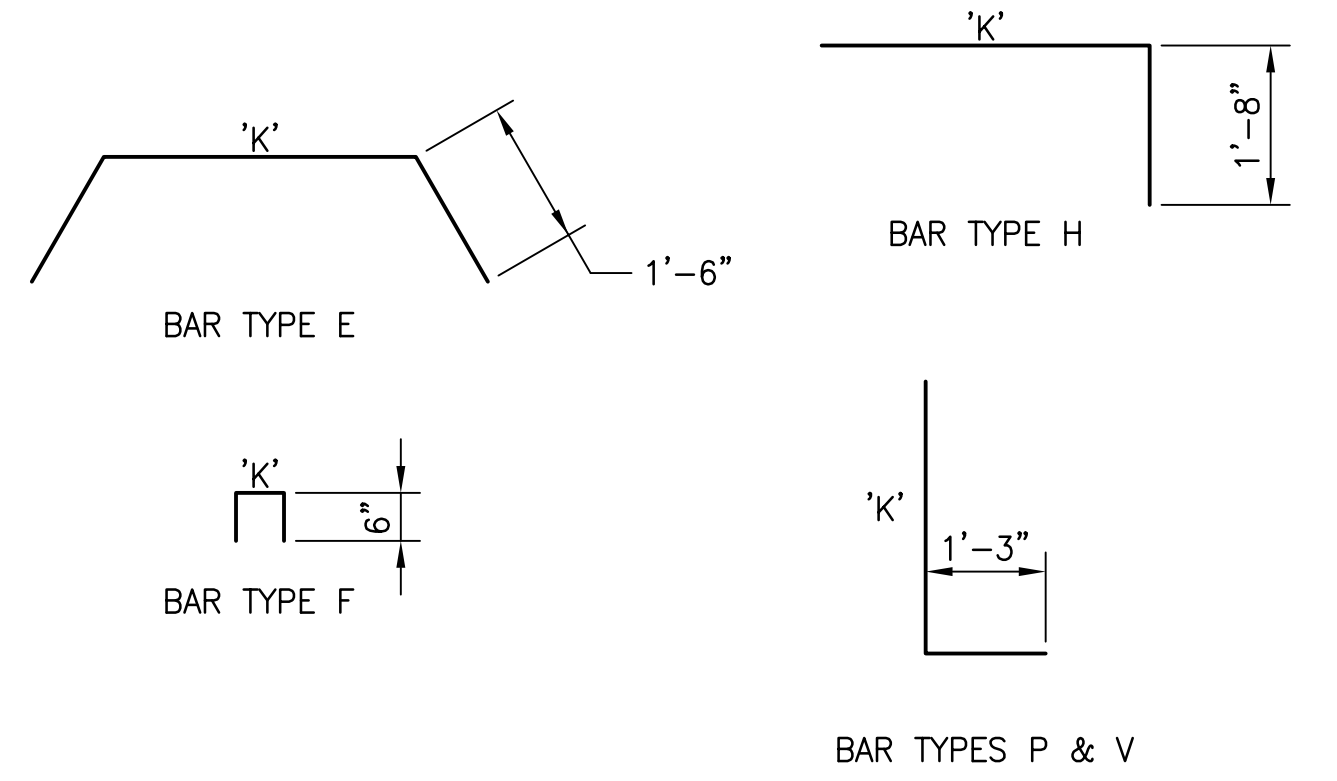
STANTEC A
TASK COMPLETED BY: REV. NO.

PLOT FACTOR: 1 W_TVA C.A.D. DRAWING DO NOT ALTER MANUALLY

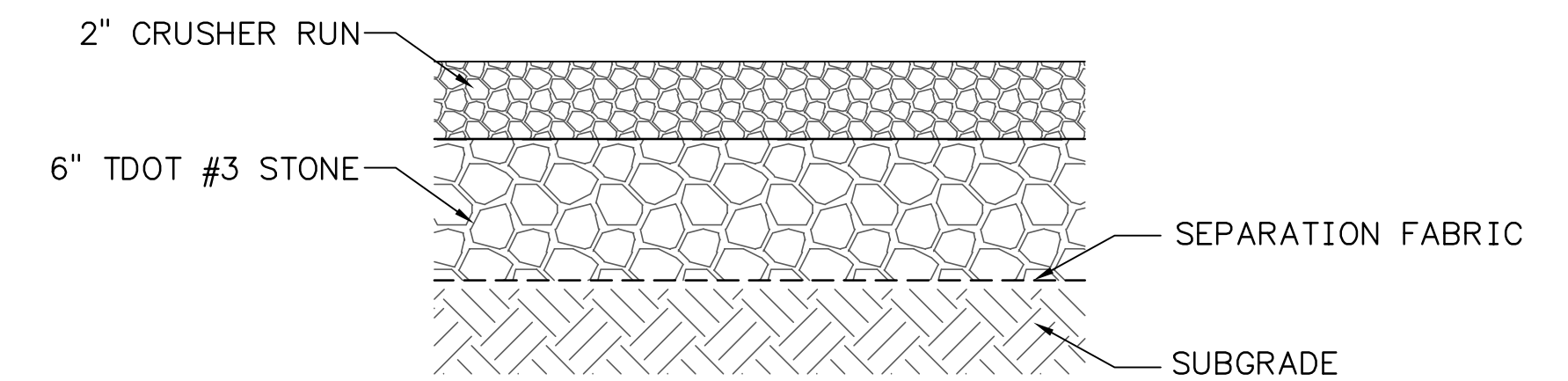
NOTES:

- DIMENSIONS FROM FACE OF CONCRETE TO STEEL SHALL BE 2" CLEAR DISTANCE.
- ENCIRCLED LETTERS, O, INDICATE STEEL BAR LOCATIONS
- BARS (B), (C), (G), (P), (M), (V) ARE SPACED 1'-0" O.C. ALL OTHERS BARS SHALL BE EVENLY SPACED.
- BARS (B) AND (V) ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE END OF EACH WING.
- BARS (C) ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE TOP OF EACH WING.
- APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE. FRONT FACE OF HEADWALL AND ENDS OF WINGS SHALL REMAIN VERTICAL.
- CONTRACTOR MAY USE PRECAST IN-LIEU OF CAST IN PLACE.
- ALL EXPOSED CONCRETE EDGES TO BE CHAMFERED 3/4".

BENT BAR SHAPES



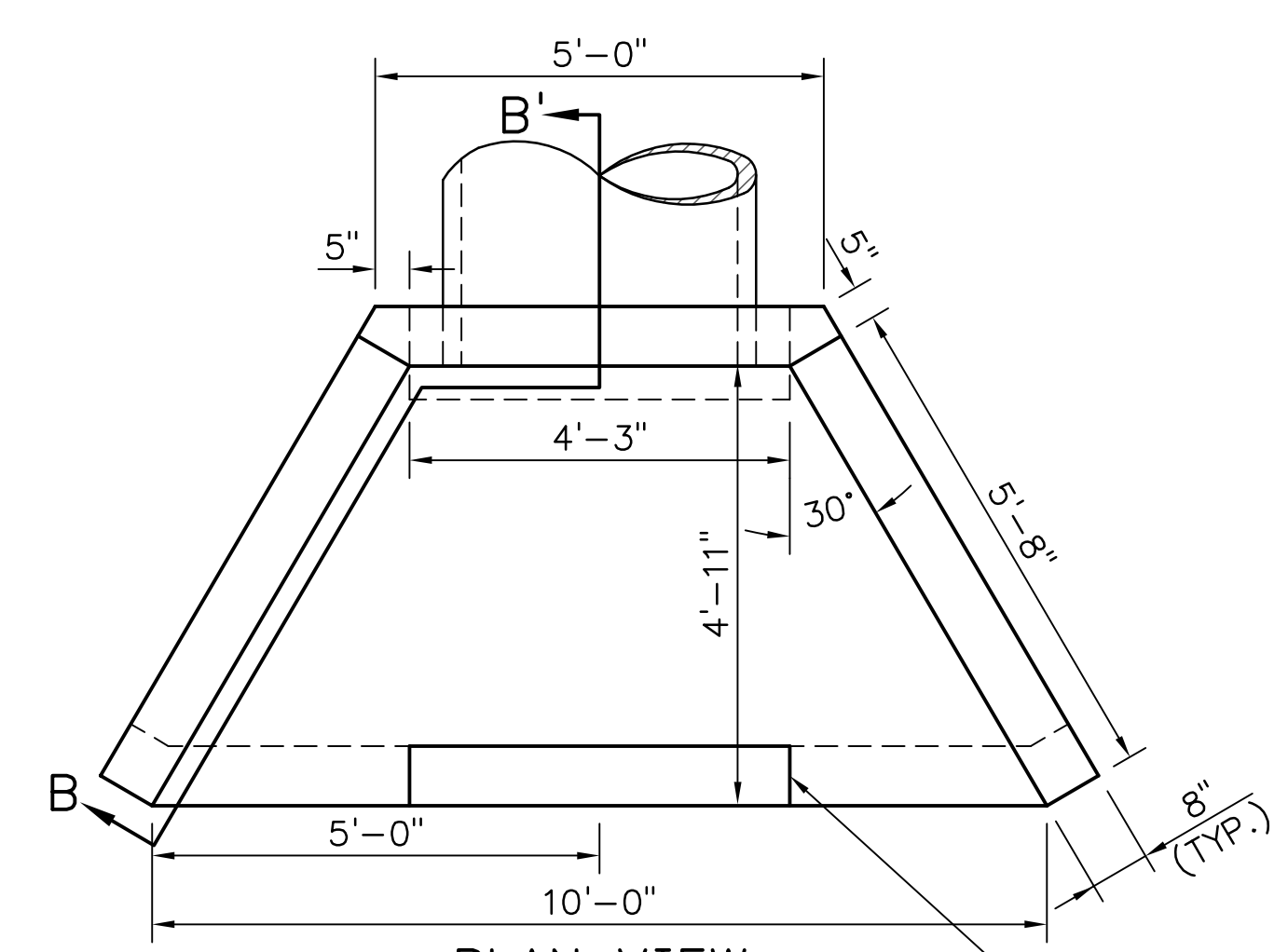
2 DETAIL - ENERGY DISSIPATER AND STAINLESS STEEL SILL GUARD SCALE: 1"=1'-0"



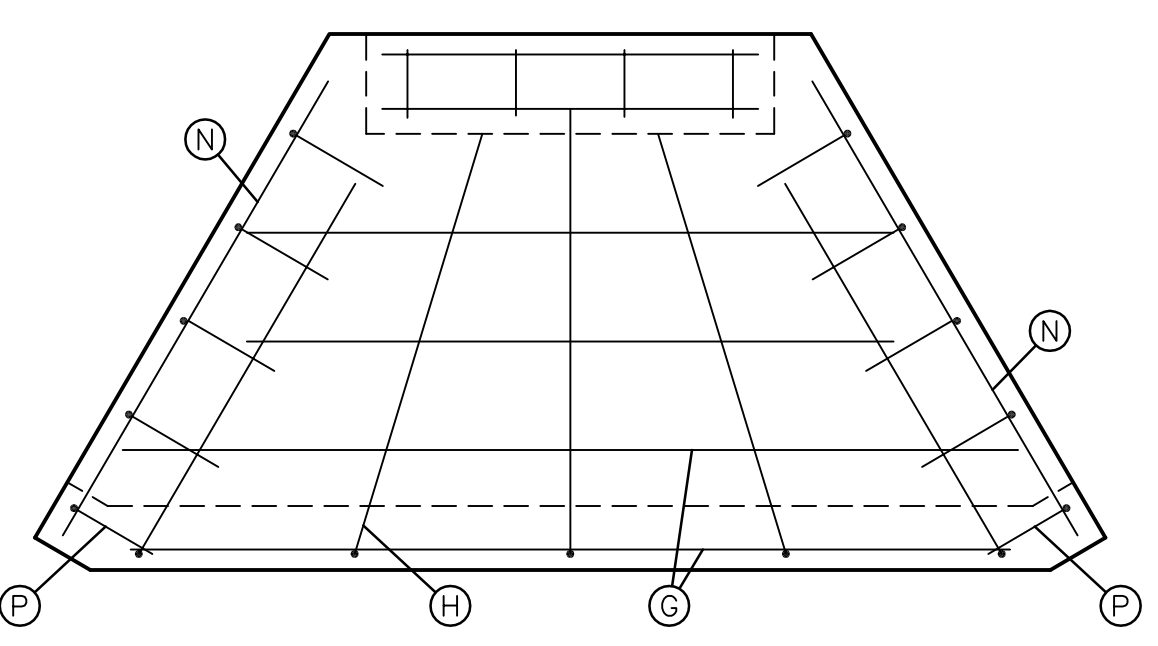
3 DETAIL - ACCESS ROAD SCALE: 1/2"=1'-0"

BAR SCHEDULE

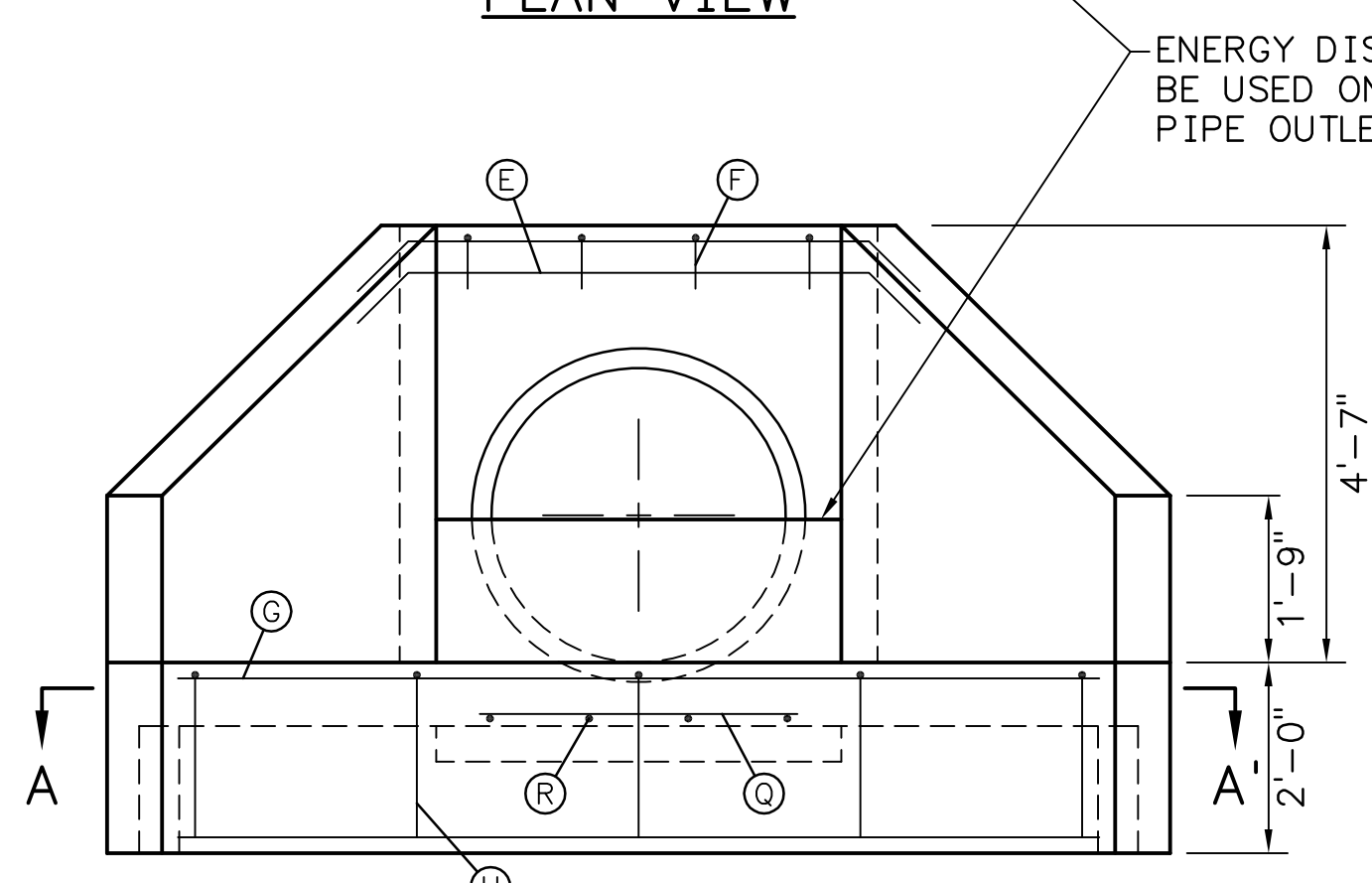
MARK	SIZE	QTY.	LENGTH	'K' LENGTH
A	5	4	6'-2"	
C1	4	2	2'-9"	
C2	4	2	4'-9"	
C3	4	2	5'-6"	
E1	5	2	7'-6"	4'-6"
E2	5	2	7'-10"	4'-10"
F	4	4	1'-3"	0'-4"
G1	4	3	6'-4"	
G2	4	3	8'-7"	
H	4	5	6'-3"	4'-7"
N	4	6	5'-6"	
Q	4	2	3'-11"	
R	4	4	0'-9"	
V1	5	4	3'-6"	2'-3"
V2	5	4	4'-6"	3'-3"
V3	5	4	5'-6"	4'-3"



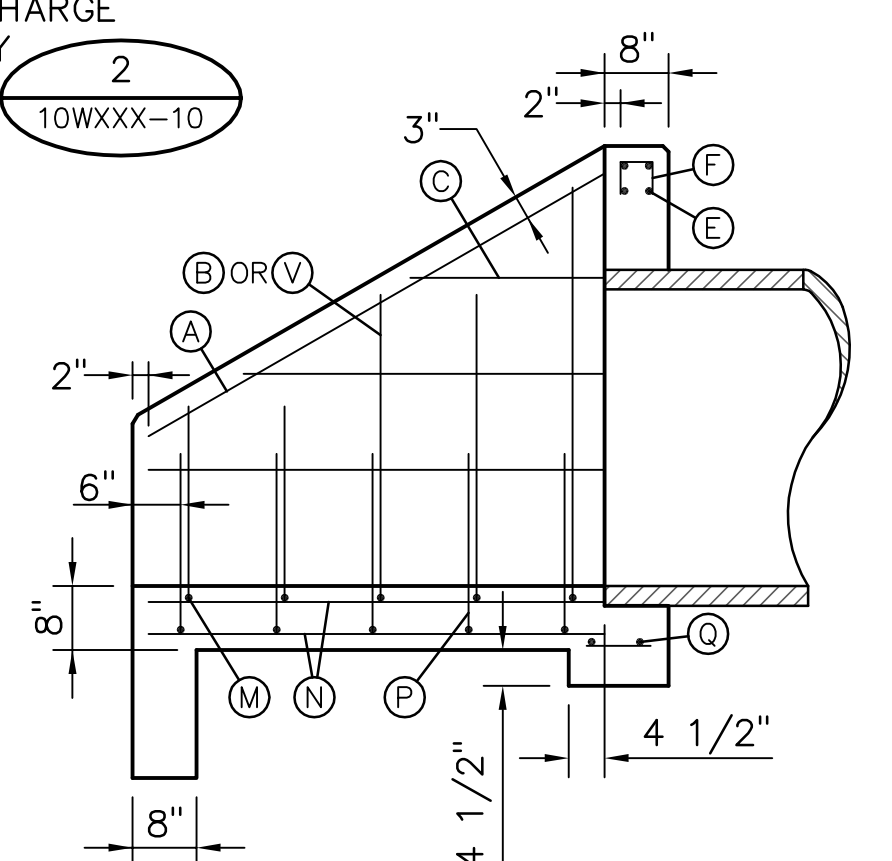
PLAN VIEW



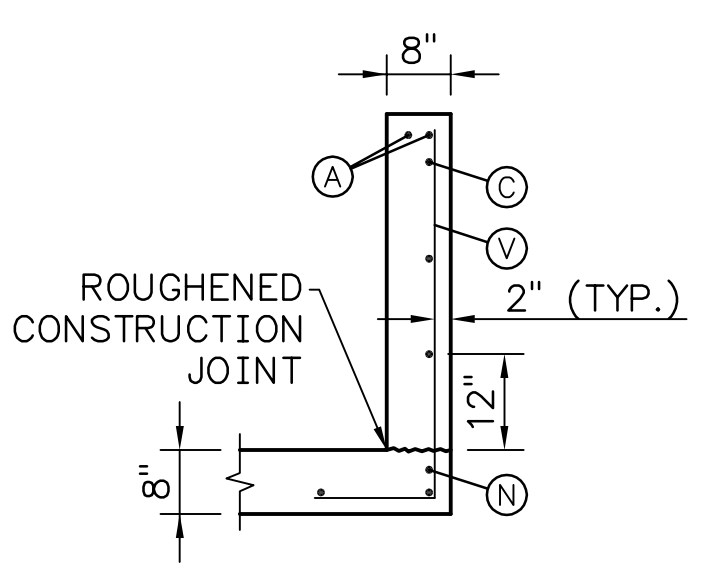
SECTION A-A'



FRONT ELEVATION

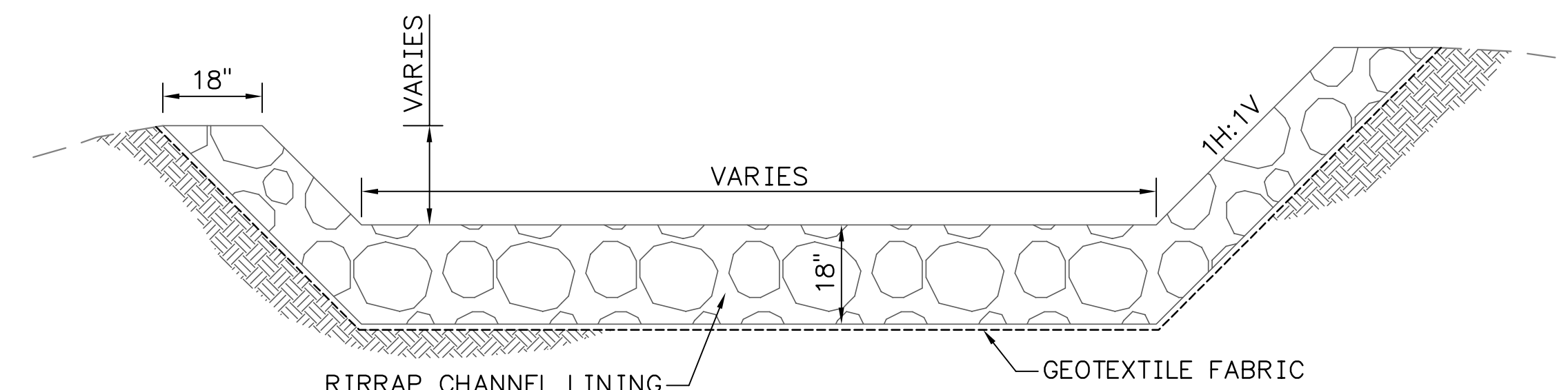


SECTION B-B'

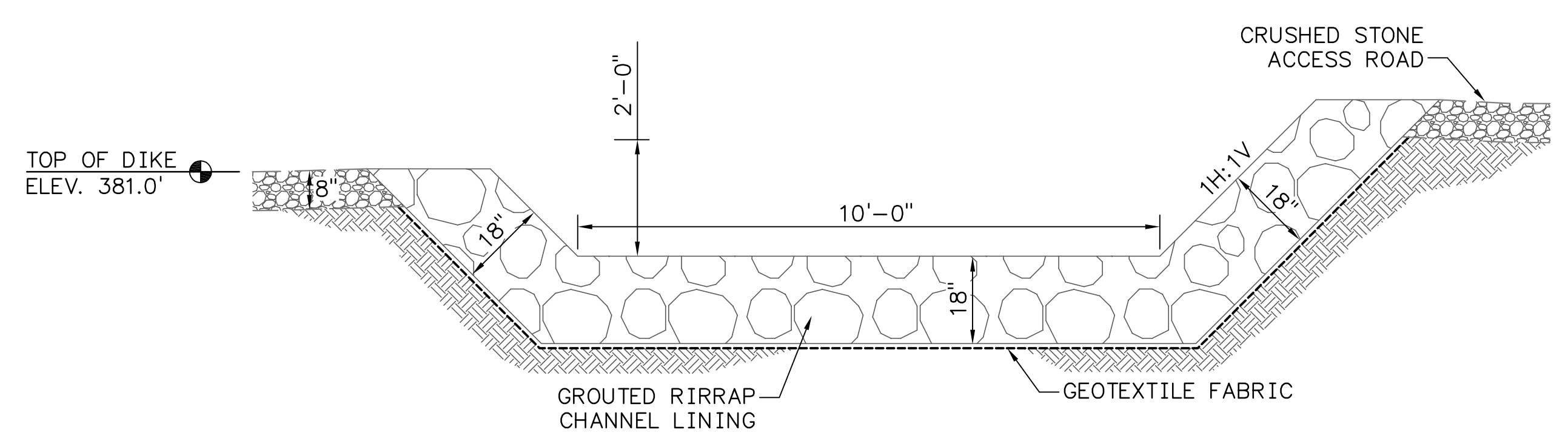


WING SECTION

1 DETAIL - CONCRETE HEADWALL - 42" PIPE SCALE: 1/2"=1'-0"

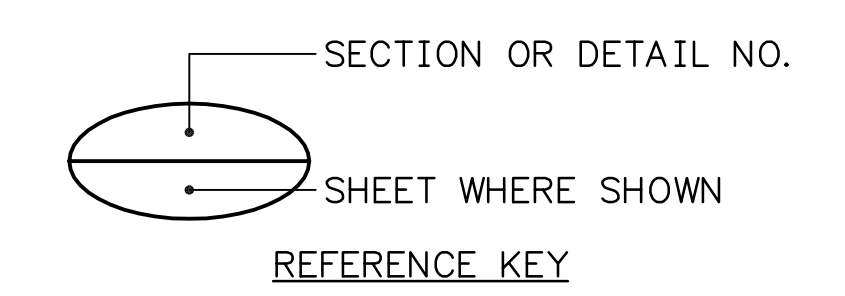


4 SECTION - RIPRAP CHANNEL LINING SCALE: 1/2"=1'-0"



5 SECTION - GROUDED RIPRAP CHANNEL LINING SPILLWAY SCALE: 1/2"=1'-0"

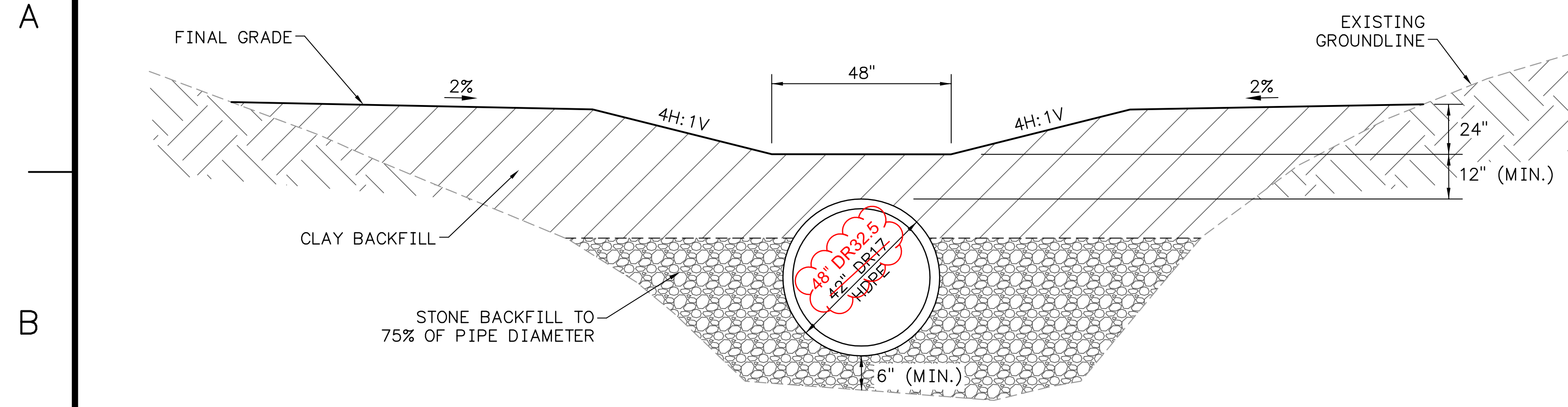
ISSUED FOR REVIEW NOT FOR CONSTRUCTION



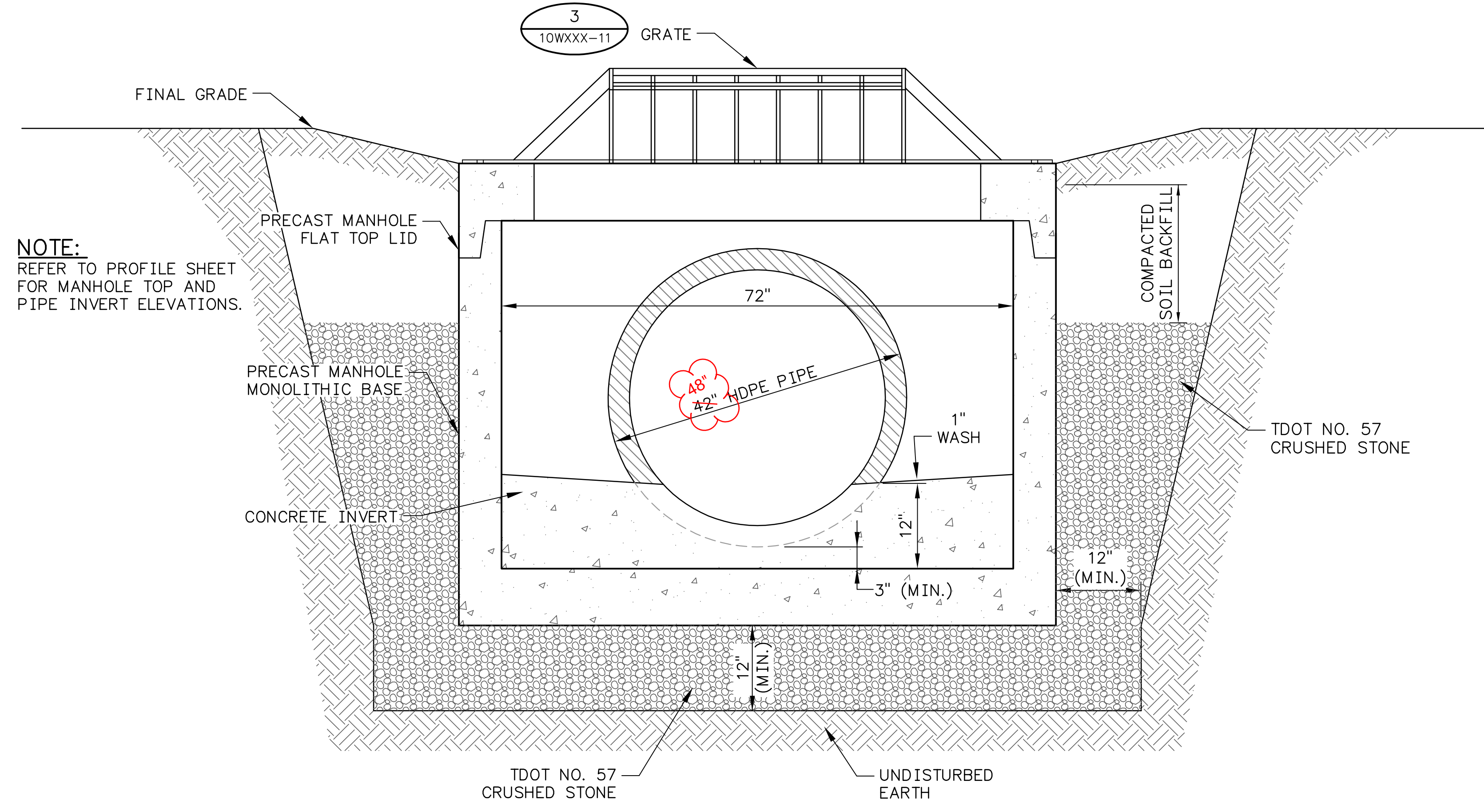
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
J.E. SPALDING	R.R. PETTY	M.C. VAUGHAN	A.L. VANCE	S.H. BIKEL	M.S. TURNBOW	J.C. KAMMETER
JOHNSONVILLE FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING						
AUTOCAD R 2000	DATE	30	C	10WXXX-09	R A	

STANTEC	A
TASK COMPLETED BY:	REV NO.

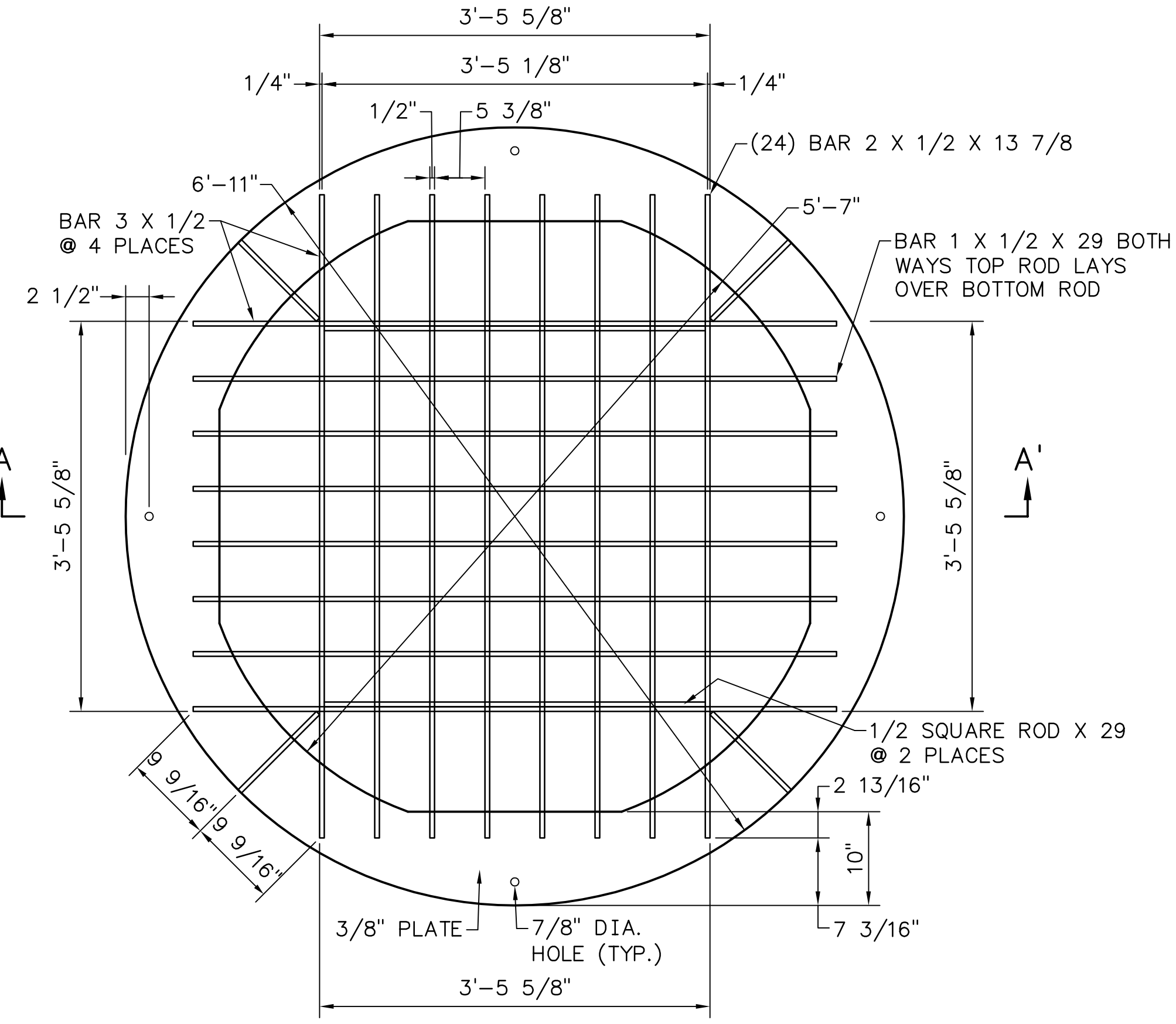
PLOT DATE: 02/27/2014 USER: R.R. PETTY, RDWG W:\V\2013\PROJECTS\10WXXX\10WXXX-09\DWG\10WXXX-09-001.dwg



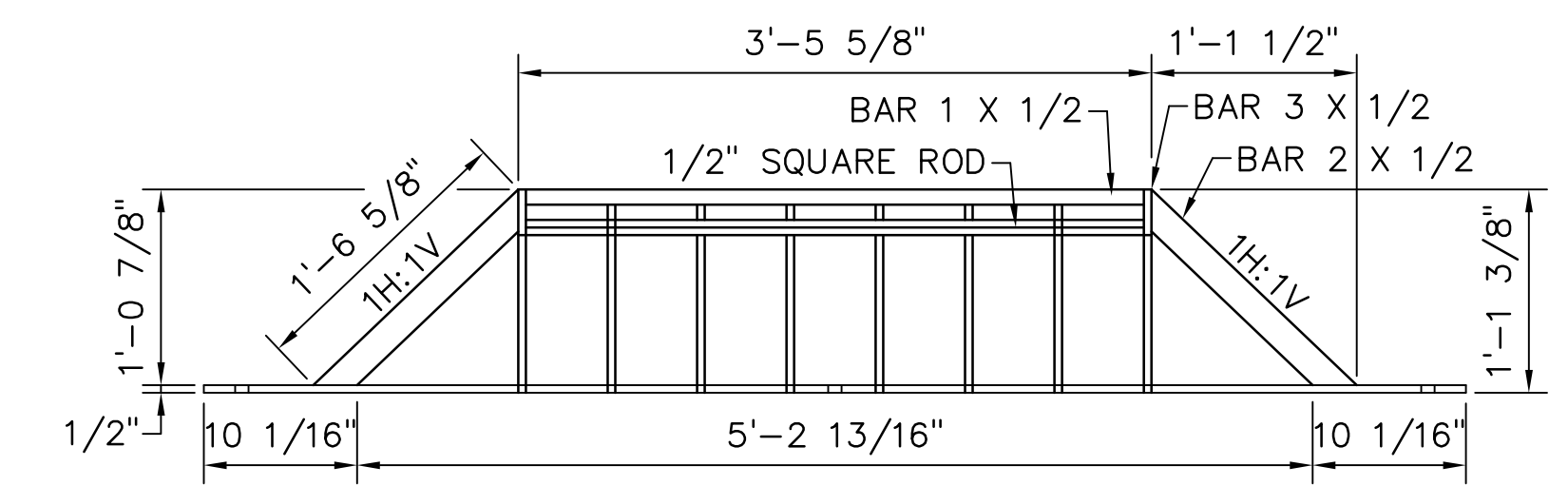
1 INTERIM SWALE AND COVER
10WXXX-11 SCALE: 1"=2'



2 DETAIL -- STORMWATER INLET STRUCTURE INSTALLATION
10WXXX-11 SCALE: 1"=1'-0"



PLAN



SECTION A-A'

NOTE:
J.R. HOE AND SONS OR APPROVED EQUAL.

3 DETAIL -- GRATE
10WXXX-11 SCALE: 1"=1'-0"

**ISSUED FOR REVIEW
NOT FOR CONSTRUCTION**

SECTION OR DETAIL NO.
SHEET WHERE SHOWN
REFERENCE KEY



DESIGNED BY:	J.E. SPALDING	DRAWN BY:	R.R. PETTY	CHECKED BY:	M.C. VAUGHAN	SUPERVISED BY:	A.L. VANCE	REVIEWED BY:	S.H. BIKEL	APPROVED BY:	M.S. TURNBOW	ISSUED BY:	J.C. KAMMETER
JOHNSONVILLE FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING													
AUTOCAD R 2000	DATE	03/05/14	30	C	10WXXX-10				R	A			

SEE XXWXXX-XXX FOR LIST OF DESIGN, COMPANION, REFERENCE DRAWINGS AND SUPPORTING DESIGN CALCULATIONS NUMBER.

STANTEC
TASK COMPLETED BY: A
REV NO.

PLOT FACTOR: XX
W_TVA
C.A.D. DRAWING
DO NOT ALTER MANUALLY

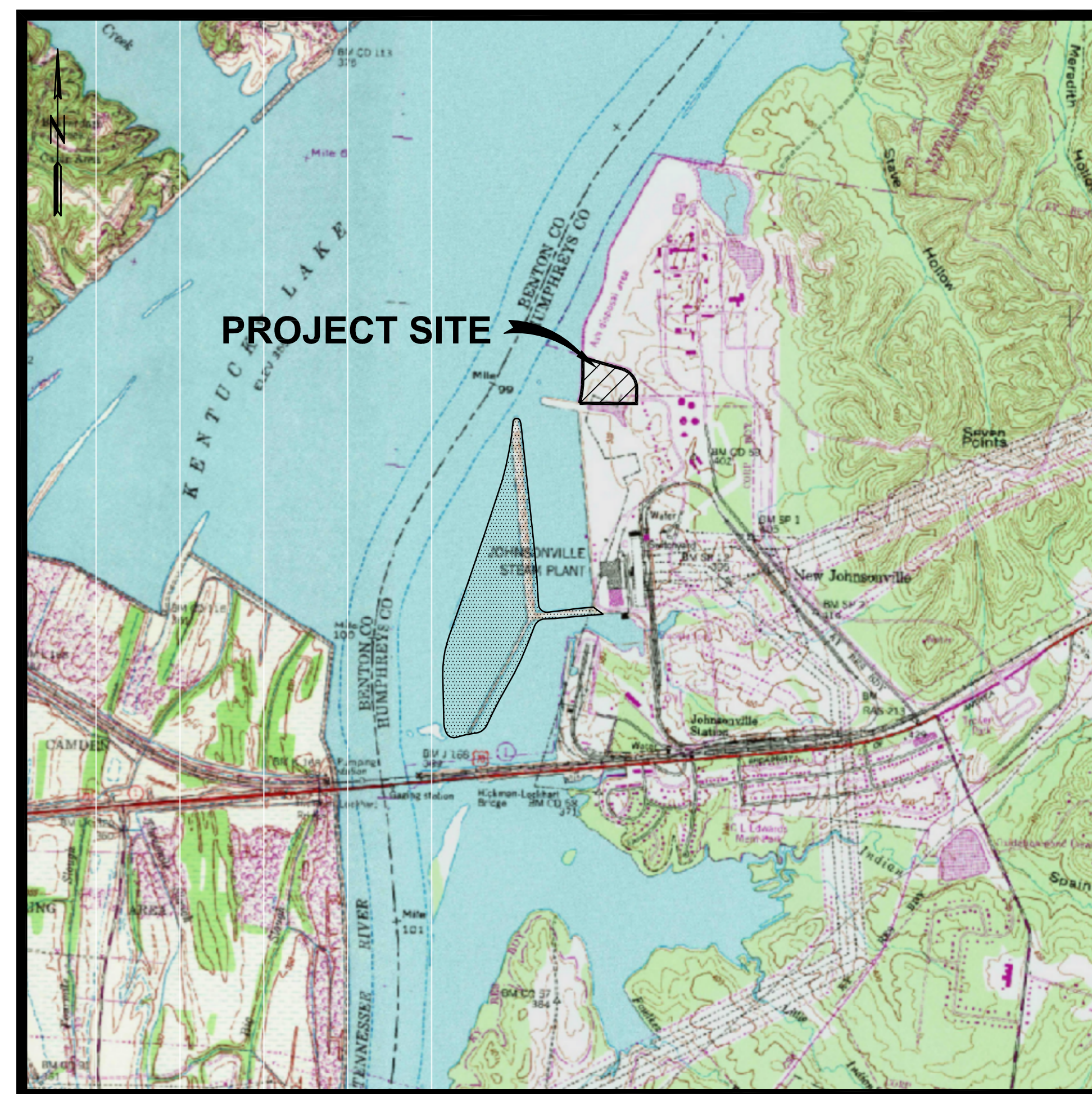
ASH AREA NO. 1 CAP INSTALLATION TVA PROJECT NO. 605790

JOHNSONVILLE FOSSIL PLANT NEW JOHNSONVILLE, HUMPHREYS, TENNESSEE

PREPARED FOR

TENNESSEE VALLEY AUTHORITY

PREPARED BY



VICINITY MAP
NOT TO SCALE

INDEX OF DRAWINGS:

- 10WXXX-01 COVER SHEET
- 10WXXX-02 EXISTING CONDITIONS
- 10WXXX-03 CAP AND GRADING
- 10WXXX-04 CROSS SECTIONS
- 10WXXX-05 CROSS SECTIONS
- 10WXXX-06 DETAILS

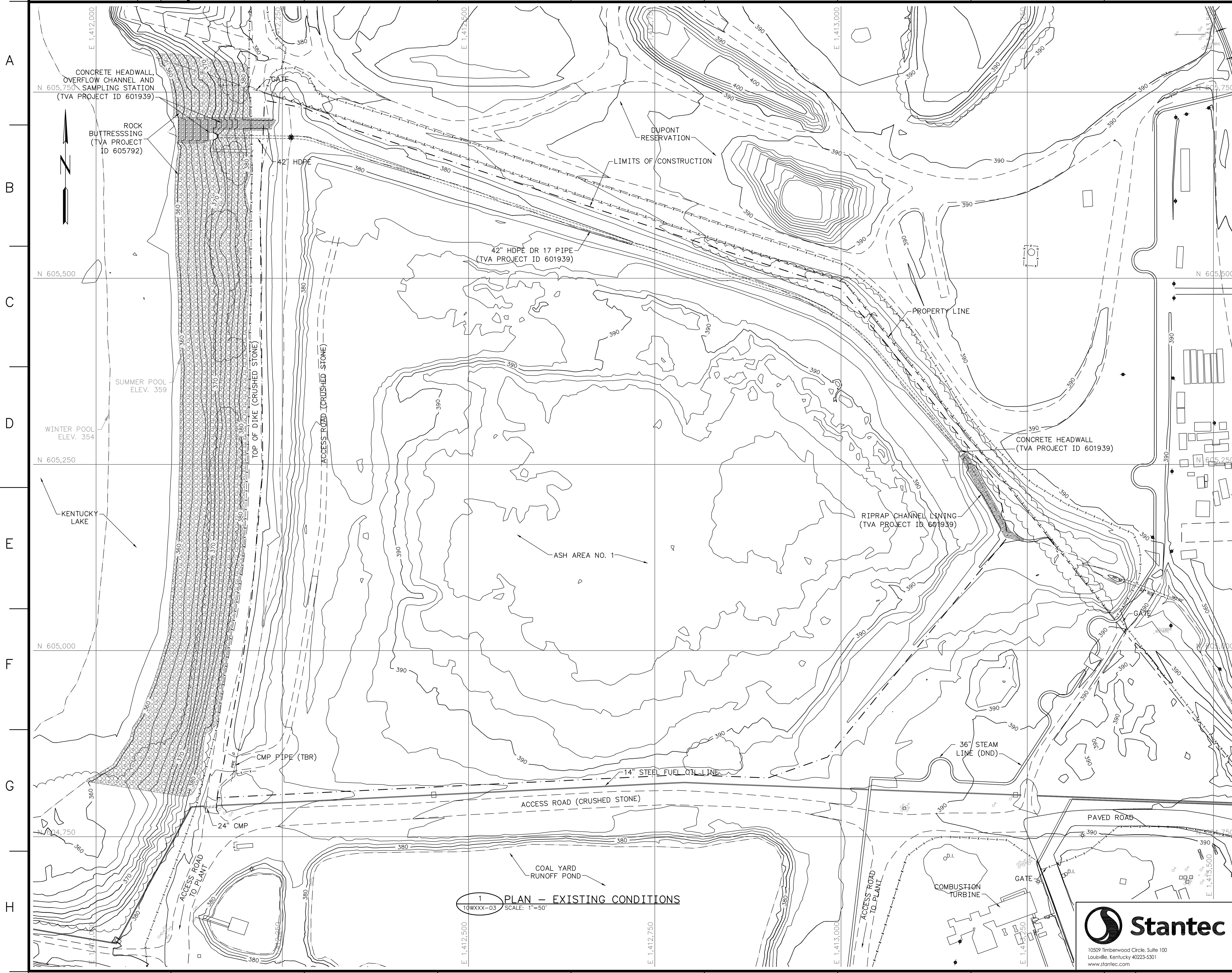
**10% CONCEPTUAL DESIGN
ISSUED FOR REVIEW
NOT FOR CONSTRUCTION**



10009 Timberwood Circle, Suite 100
Louisville, Kentucky 40223-5301
www.stantec.com

R - - - - -										DISCIPLINE	
R A 03/05/14 JES RRP MCV ALV SHB MST JCK - - -										INTERFACE	
ISSUED FOR REVIEW											
REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RWD	APPD	ISSD	PROJECT ID	AS CONST	
SCALE: NONE EXCEPT AS NOTED											
YARD ASH AREA NO. 1 ASH AREA NO. 1 CAP INSTALLATION COVER SHEET											
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:					
J.E. SPALDING	R.R. PETTY	M.C. VAUGHAN	A.L. VANCE	S.H. BICKEL	M.S. TURNBOW	J.C. KAMMETER					
JOHNSONVILLE FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING											
AUTOCAD R 2000	DATE	30	C	10WXXX-01	R A						
		PLOT FACTOR:1		W_TVA		C.A.D. DRAWING DO NOT ALTER MANUALLY					

STANTEC	A
TASK COMPLETED BY:	REV. NO.



SURVEY CONTROL NOTE:
 A GLOBAL POSITIONING SYSTEM (GPS) BASE STATION HAS BEEN ESTABLISHED AND TRANSFORMATION PARAMETERS DETERMINED BY TVA USING SELECTED SURVEY CONTROL MONUMENTS. CONTACT WITH TVA SURVEYING DEPARTMENT (423)751-8416 OR (423)751-2571 SHALL BE MADE BEFORE ANY SURVEY OR CONSTRUCTION WORK IS COMMENCED. BASE STATION FREQUENCIES AND TRANSFORMATION PARAMETERS WILL BE PROVIDED TO THE CONTRACTOR FOR USE IN CONSTRUCTION ACTIVITIES AT THE SITE. PREVIOUSLY USED OR ESTABLISHED CONTROL POINTS AND MONUMENTS SHALL NOT BE USED BY THE CONTRACTOR WITHOUT PRIOR APPROVAL BY TVA SURVEYING DEPARTMENT.

- TOPOGRAPHIC MAPPING SOURCE NOTES:**
- THESE DRAWINGS WERE PREPARED BY STANTEC CONSULTING, INC. USING TOPOGRAPHIC INFORMATION PROVIDED BY TVA DATED APRIL 2012 AND DECEMBER 2013.
 - SURVEY COORDINATES ARE REFERENCED TO TENNESSEE STATE PLANE COORDINATE SYSTEM (LAMBERT), NAD27, ELEVATIONS ARE BASE ON NGVD 29.
 - THE CAP INSTALLATION PROJECT (TVA PROJECT ID 605790) IS TO BE COMPLETED FOLLOWING THE COMPLETION OF THE NORTH DRAINAGE CULVERT PROJECT (TVA PROJECT ID 601939) AND THE ROCK BUTTRESSING PROJECT (TVA PROJECT ID 605792). THE EXISTING CONDITIONS FOR THE CAP INSTALLATION PROJECT REFLECT THE PROPOSED CONDITIONS AFTER THE COMPLETION OF THE NORTH DRAINAGE CULVERT PROJECT AND THE ROCK BUTTRESSING PROJECT.

LEGEND

	LIMITS OF CONSTRUCTION
	ROCK BUTTRESSING
	BUILDING
	LIGHT POLE
	POWER POLE
	BOLLARD
	TREE LINE
	EDGE OF WATER
	PROPERTY LINE
	CENTERLINE OF SWALE
	CULVERT
	FENCE LINE
	INDEX CONTOUR
	INTERMEDIATE CONTOUR
	UNPAVED ROAD
	PAVED ROAD
	DND DO NOT DISTURB
	CMP CORRUGATED METAL PIPE
	CPP CORRUGATED PLASTIC PIPE
	RCP REINFORCED CONCRETE PIPE
	CCP COAL COMBUSTION PRODUCTS

NOTE:
 CONTRACTOR SHALL REMOVE MULCH, ROOT BALLS AND OTHER ORGANIC MATERIALS PRESENT WITHIN THE LIMITS OF CONSTRUCTION.

GRAPHIC SCALE: 1" = 50'
 CONTOUR INTERVAL = 2 FEET

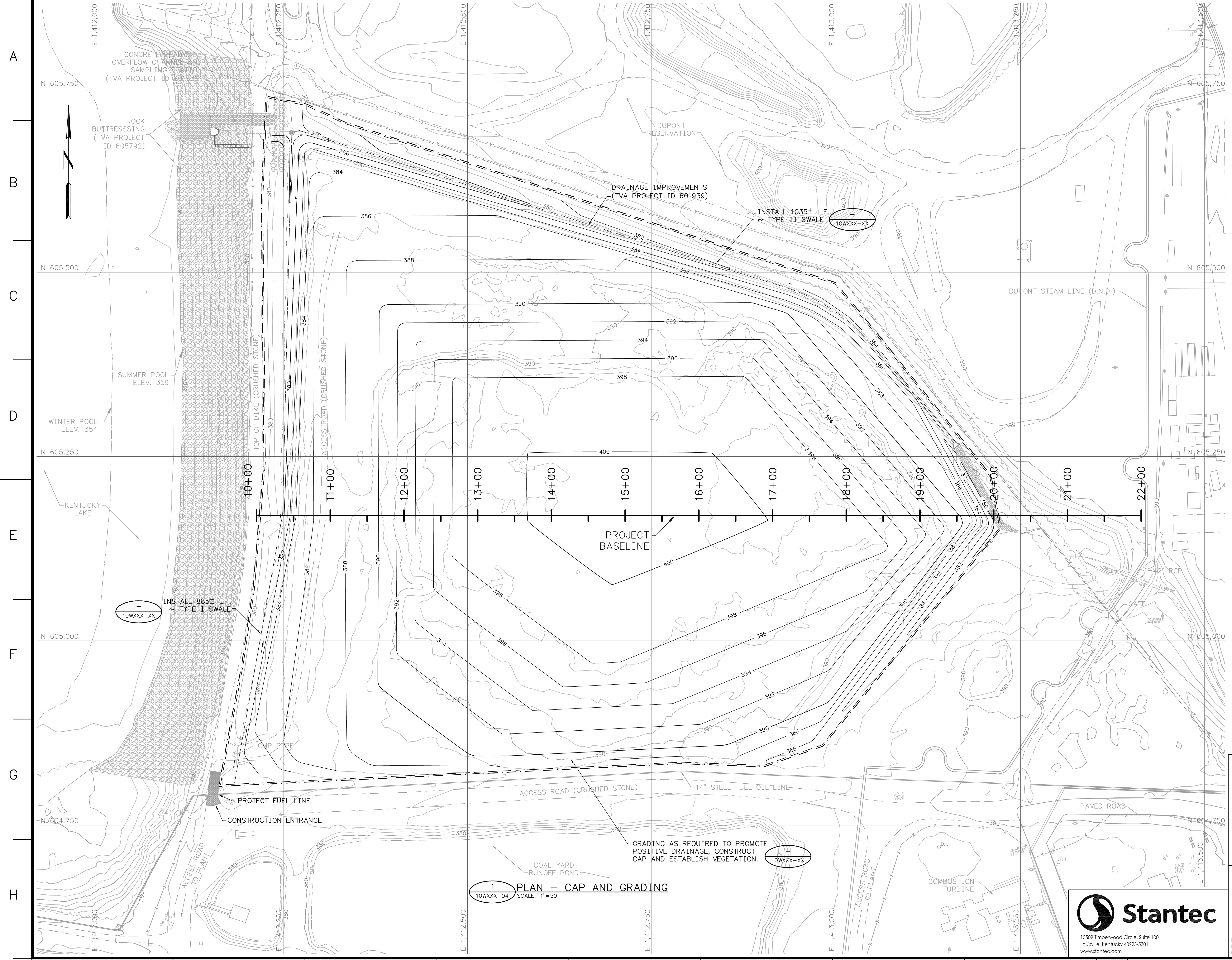
10% CONCEPTUAL DESIGN
ISSUED FOR REVIEW
NOT FOR CONSTRUCTION

1 PLAN - EXISTING CONDITIONS
 SCALE: 1" = 50'



SEE XXWXXX-XXX FOR LIST OF DESIGN, COMPANION, REFERENCE DRAWINGS AND SUPPORTING DESIGN CALCULATIONS NUMBER.

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RWD	APPD	ISSD	PROJECT	AS CONST	DISCIPLINE
1	03/05/14	JES	RRP	MCV	ALV	SHB	MST	JCK			INTERFACE
SCALE: 1" = 50' EXCEPT AS NOTED											
YARD ASH AREA NO. 1 ASH AREA NO. 1 CAP INSTALLATION EXISTING CONDITIONS											
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:					
J.E. SPALDING	R.R. PETTY	M.C. VAUGHAN	A.L. VANCE	S.H. BIKEL	M.S. TURNBOW	J.C. KAMMETER					
JOHNSONVILLE FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING											
AUTOCAD R 2000	DATE	30	C	10WXXX-02	R	A					
PLOT FACTOR: 1 W_TVA C.A.D. DRAWING DO NOT ALTER MANUALLY											



SURVEY CONTROL NOTE:
 A GLOBAL POSITIONING SYSTEM (GPS) BASE STATION HAS BEEN ESTABLISHED AND TRANSFORMATION PARAMETERS DETERMINED BY TVA USING SELECTED SURVEY CONTROL MONUMENTS. CONTACT WITH TVA SURVEYING DEPARTMENT (423)751-8416 OR (423)751-2571 SHALL BE MADE BEFORE ANY SURVEY OR CONSTRUCTION WORK IS COMMENCED. BASE STATION FREQUENCIES AND TRANSFORMATION PARAMETERS WILL BE PROVIDED TO THE CONTRACTOR FOR USE IN CONSTRUCTION ACTIVITIES AT THE SITE. PREVIOUSLY USED OR ESTABLISHED CONTROL POINTS AND MONUMENTS SHALL NOT BE USED BY THE CONTRACTOR WITHOUT PRIOR APPROVAL BY TVA SURVEYING DEPARTMENT.

- TOPOGRAPHIC MAPPING SOURCE NOTES:**
1. THESE DRAWINGS WERE PREPARED BY STANTEC CONSULTING, INC. USING TOPOGRAPHIC INFORMATION PROVIDED BY TVA DATED APRIL 2012 AND DECEMBER 2013.
 2. SURVEY COORDINATES ARE REFERENCED TO TENNESSEE STATE PLANE COORDINATE SYSTEM (LAMBERT), NAD27, ELEVATIONS ARE BASE ON NGVD 29.
 3. THE CAP INSTALLATION PROJECT (TVA PROJECT ID 605790) IS TO BE COMPLETED FOLLOWING THE COMPLETION OF THE NORTH DRAINAGE CULVERT PROJECT (TVA PROJECT ID 601939) AND THE ROCK BUTTRESSING PROJECT (TVA PROJECT ID 605792). THE EXISTING CONDITIONS FOR THE CAP INSTALLATION PROJECT REFLECT THE PROPOSED CONDITIONS AFTER THE COMPLETION OF THE NORTH DRAINAGE CULVERT PROJECT AND THE ROCK BUTTRESSING PROJECT.

LEGEND

—400—	INDEX CONTOUR
—398—	INTERMEDIATE CONTOUR
- - - -	LIMITS OF CONSTRUCTION
- - - -	LIMITS OF GEOMEMBRANE
- - - -	CENTERLINE OF TYPE I SWALE
→	FLOW ARROW
▭	CONSTRUCTION ENTRANCE
▭	BUILDING
LPG	LIGHT POLE
⊙	POWER POLE
⊙	BOLLARD
~	TREE LINE
- - - -	EDGE OF WATER
- - - -	PROPERTY LINE
- - - -	CENTERLINE OF SWALE
- - - -	CULVERT
X - X	FENCE LINE
—390—	INDEX CONTOUR
—398—	INTERMEDIATE CONTOUR
- - - -	UNPAVED ROAD
- - - -	PAVED ROAD
▨	RIPRAP

SECTION OR DETAIL NO. (circle)
 SHEET WHERE SHOWN (circle)
 REFERENCE KEY (circle)
 GRAPHIC SCALE: 1" = 50'
 CONTOUR INTERVAL = 2 FEET

10% CONCEPTUAL DESIGN
ISSUED FOR REVIEW
NOT FOR CONSTRUCTION

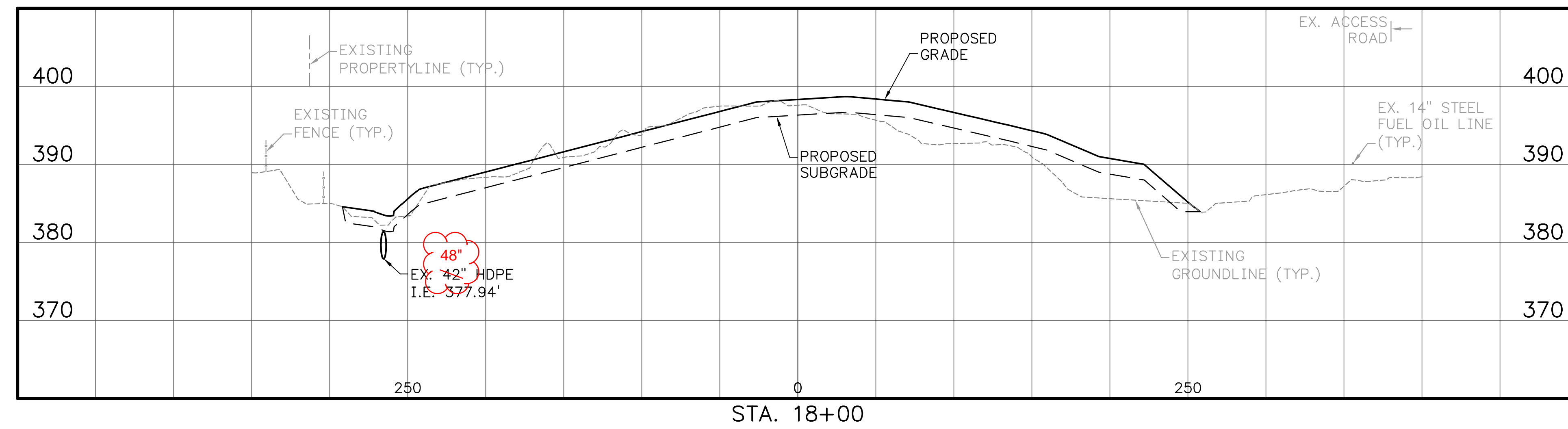
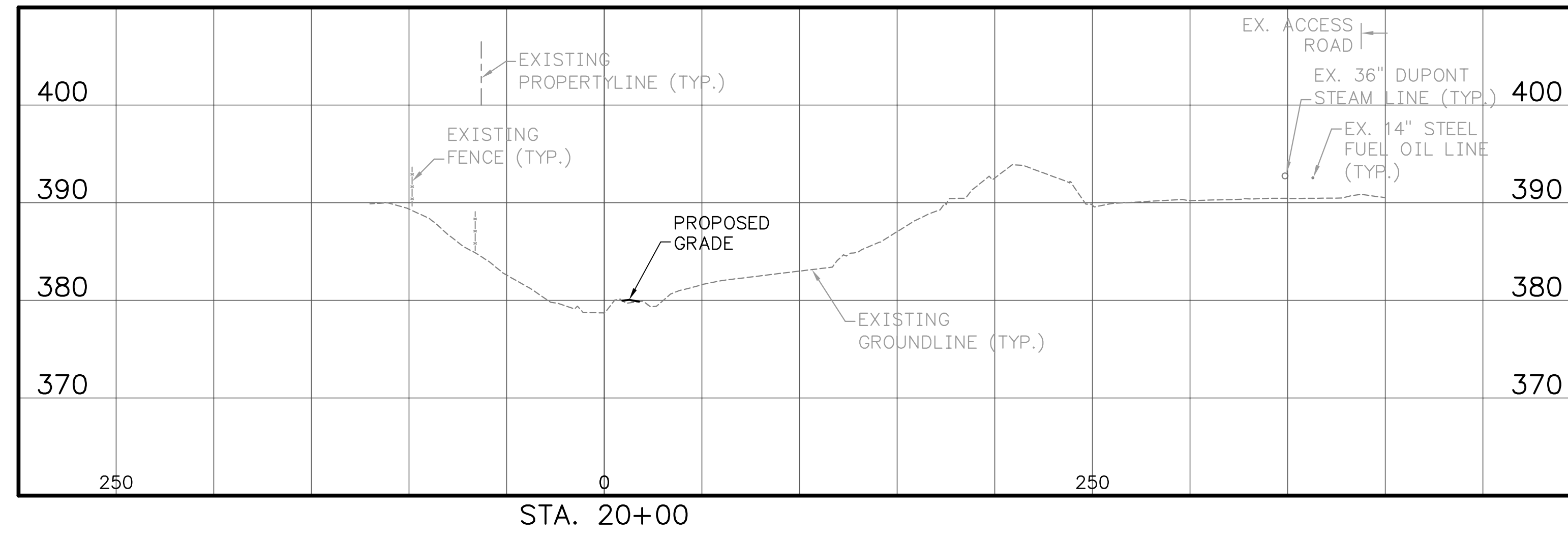
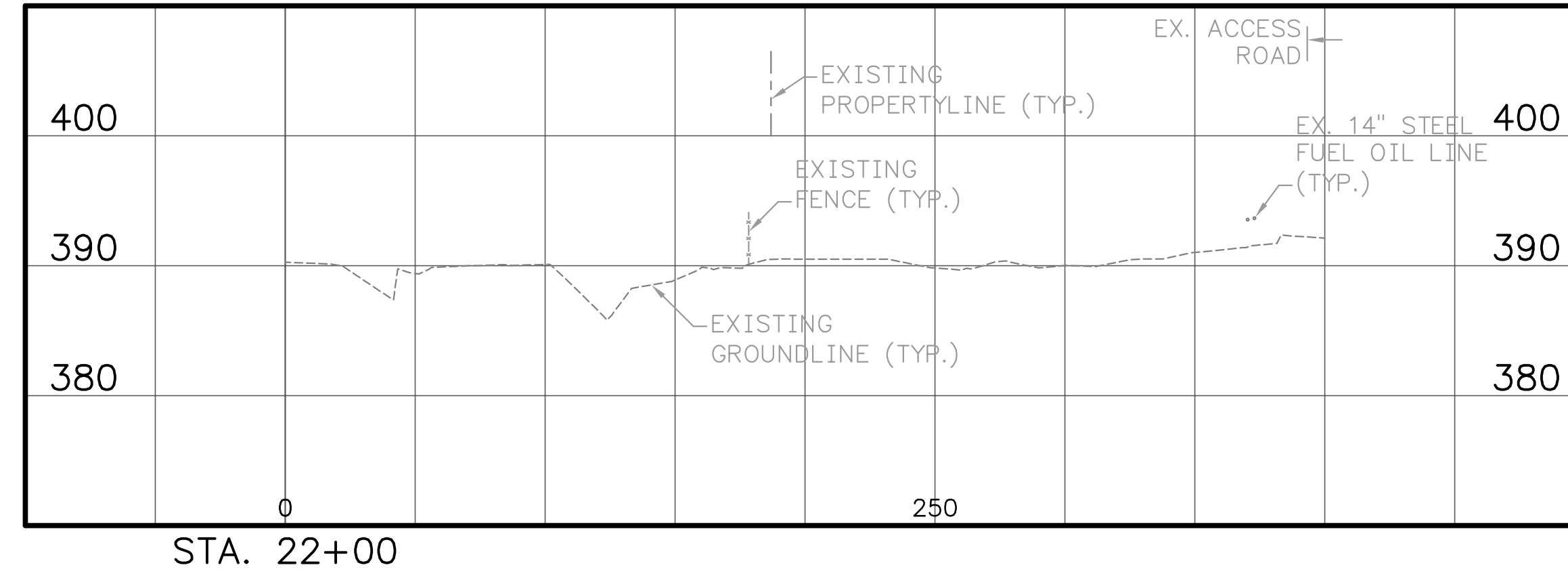
1 PLAN - CAP AND GRADING
 SCALE: 1"=50'

10059 Timberwood Circle, Suite 100
 Louisville, Kentucky 40223-5301
 www.stantec.com

SEE XXWXXX-XXX FOR LIST OF DESIGN, COMPANION, REFERENCE DRAWINGS AND SUPPORTING DESIGN CALCULATIONS NUMBER.

R - - - - -												DISCIPLINE	
RA	03/05/14	JES	RRP	MCV	ALV	SHB	MST	JCK	-			INTERFACE	
ISSUED FOR REVIEW													
REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RWDD	APPR	ISSD	PROJECT	AS CONST	100		
SCALE: 1" = 50'												EXCEPT AS NOTED	
YARD ASH AREA NO. 1													
ASH AREA NO. 1 CAP INSTALLATION													
CAP AND GRADING													
DESIGNED BY:	J.E. SPALDING	DRAWN BY:	R.R. PETTY	CHECKED BY:	M.C. VAUGHAN	SUPERVISED BY:	A.L. VANCE	REVIEWED BY:	S.H. BIKEL	APPROVED BY:	M.S. TURNBOW	ISSUED BY:	J.C. KAMMETER
JOHNSONVILLE FOSSIL PLANT													
TENNESSEE VALLEY AUTHORITY													
FOSSIL AND HYDRO ENGINEERING													
AUTOCAD R 2000	DATE	03/05/14	30	C	10WXXX-03		R A						

A
B
C
D
E
F
G
H



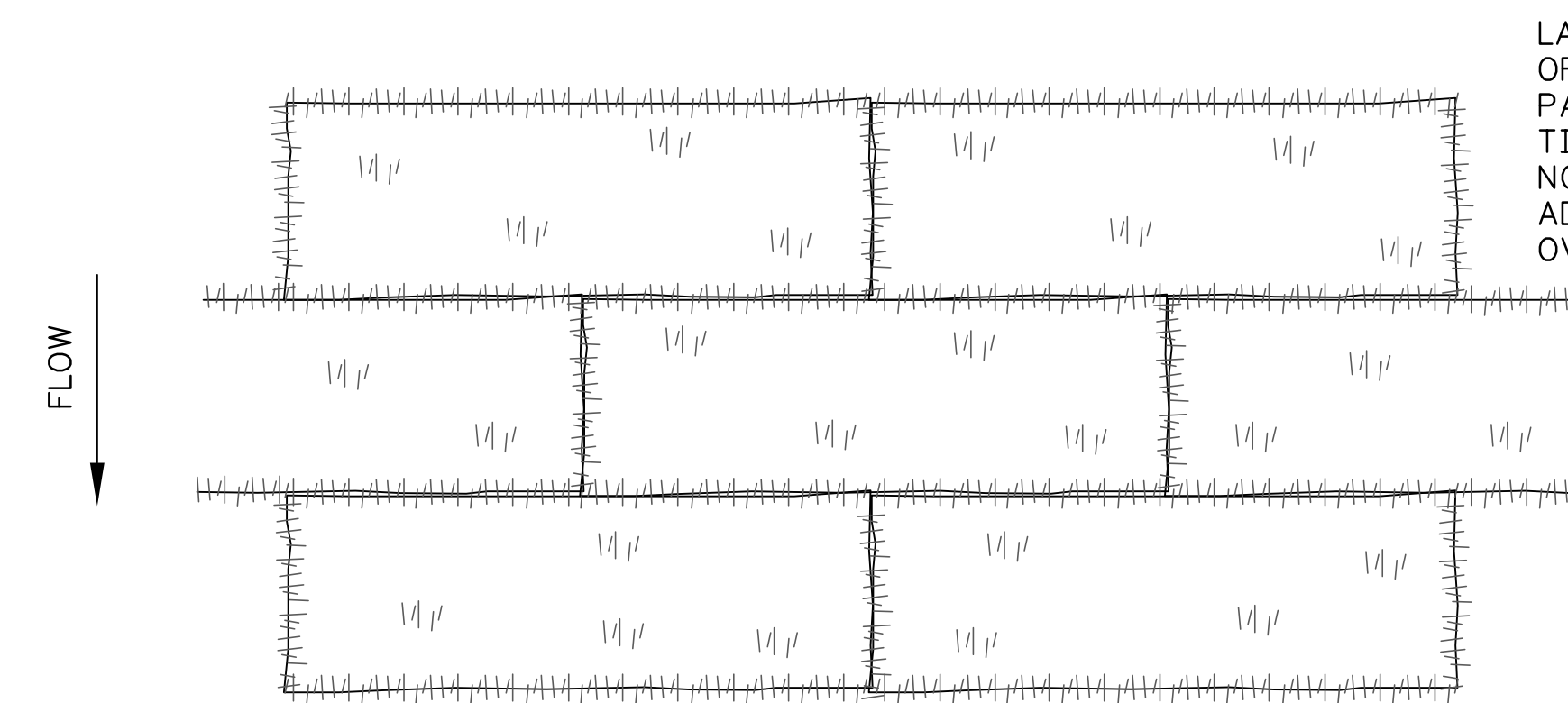
10% CONCEPTUAL DESIGN
ISSUED FOR REVIEW
NOT FOR CONSTRUCTION



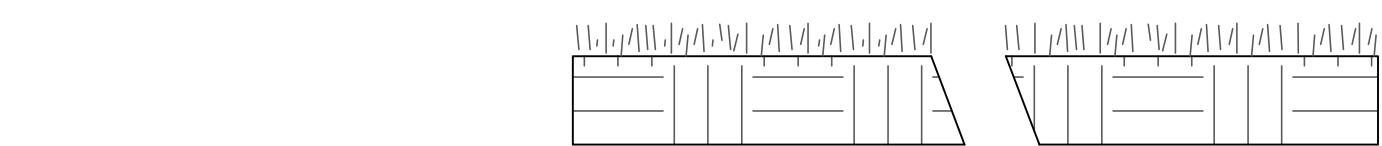
SEE XXXXXX-XXX FOR LIST OF DESIGN, COMPANION, REFERENCE DRAWINGS AND SUPPORTING DESIGN CALCULATIONS NUMBER.

REV. NO.	DATE	ISSN	DRWN	CHKD	SUPV	RWTD	APPD	ISSD	PROJECT ID	AS CONST	DISCIPLINE INTERFACE
	03/05/14	JES	RRP	MCV	ALV	SHB	MST	JCK			
SCALE: 1" = 50' HORZ. 1" = 10' VERT. EXCEPT AS NOTED											
YARD ASH AREA NO. 1 ASH AREA NO. 1 CAP INSTALLATION CROSS SECTIONS											
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:					
J.E. SPALDING	R.R. PETTY	M.C. VAUGHAN	A.L. VANCE	S.H. BICKEL	M.S. TURNBOW	J.C. KAMMETER					
JOHNSONVILLE FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING											
AUTOCAD R 2000	DATE	DATE	30	C	10WXXX-05	R A					
		PLOT FACTOR: 1		W_TVA		C.A.D. DRAWING DO NOT ALTER MANUALLY					

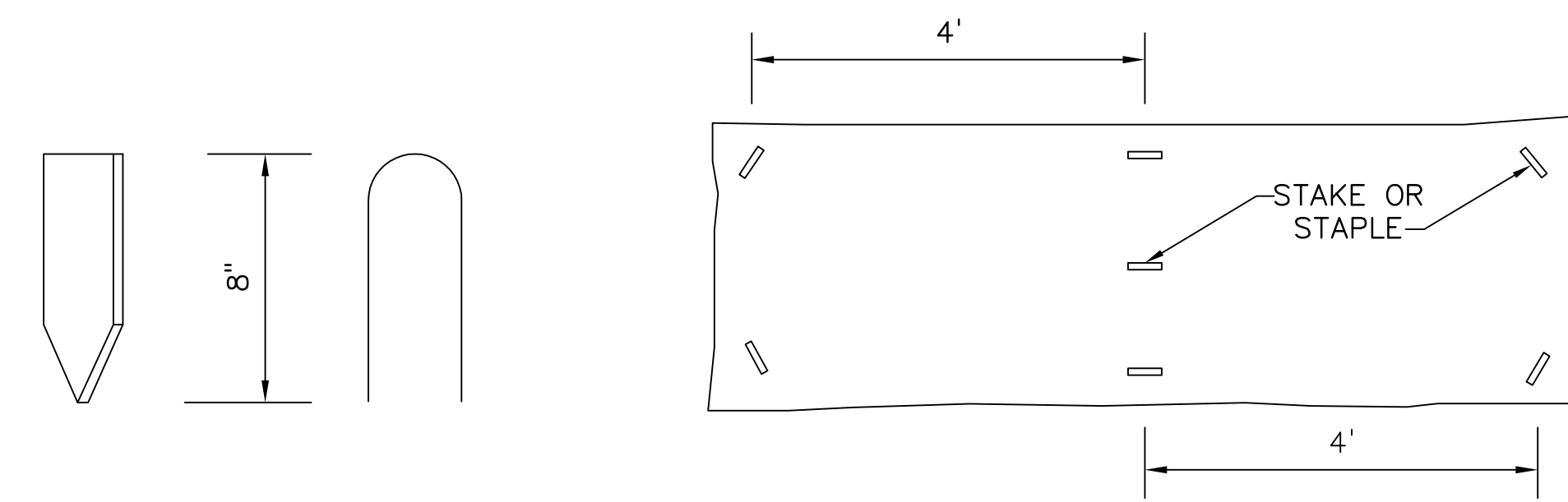
PLOT DATE: 03/05/2014 USER: R.R. PETTY, RDRWING
W:\V\2014\03\10WXXX\10WXXX-05\CROSS SECTIONS\10WXXX-05-02.DWG



LAY SOD ACROSS THE DIRECTION OF FLOW IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE GAPS BETWEEN ADJACENT STRIPS AND DO NOT OVERLAP.

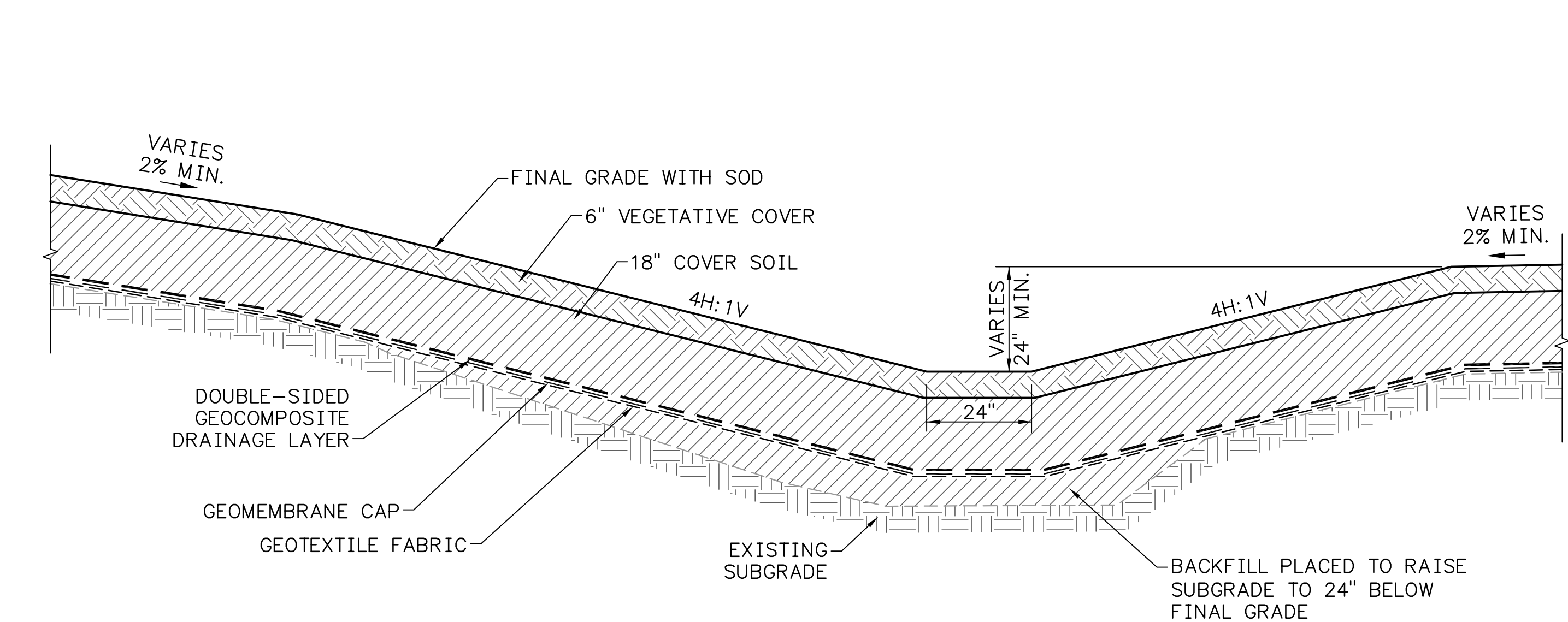


BUTTING - ANGLED ENDS CAUSED BY THE AUTOMATIC SOD CUTTER MUST BE MATCHED CORRECTLY.

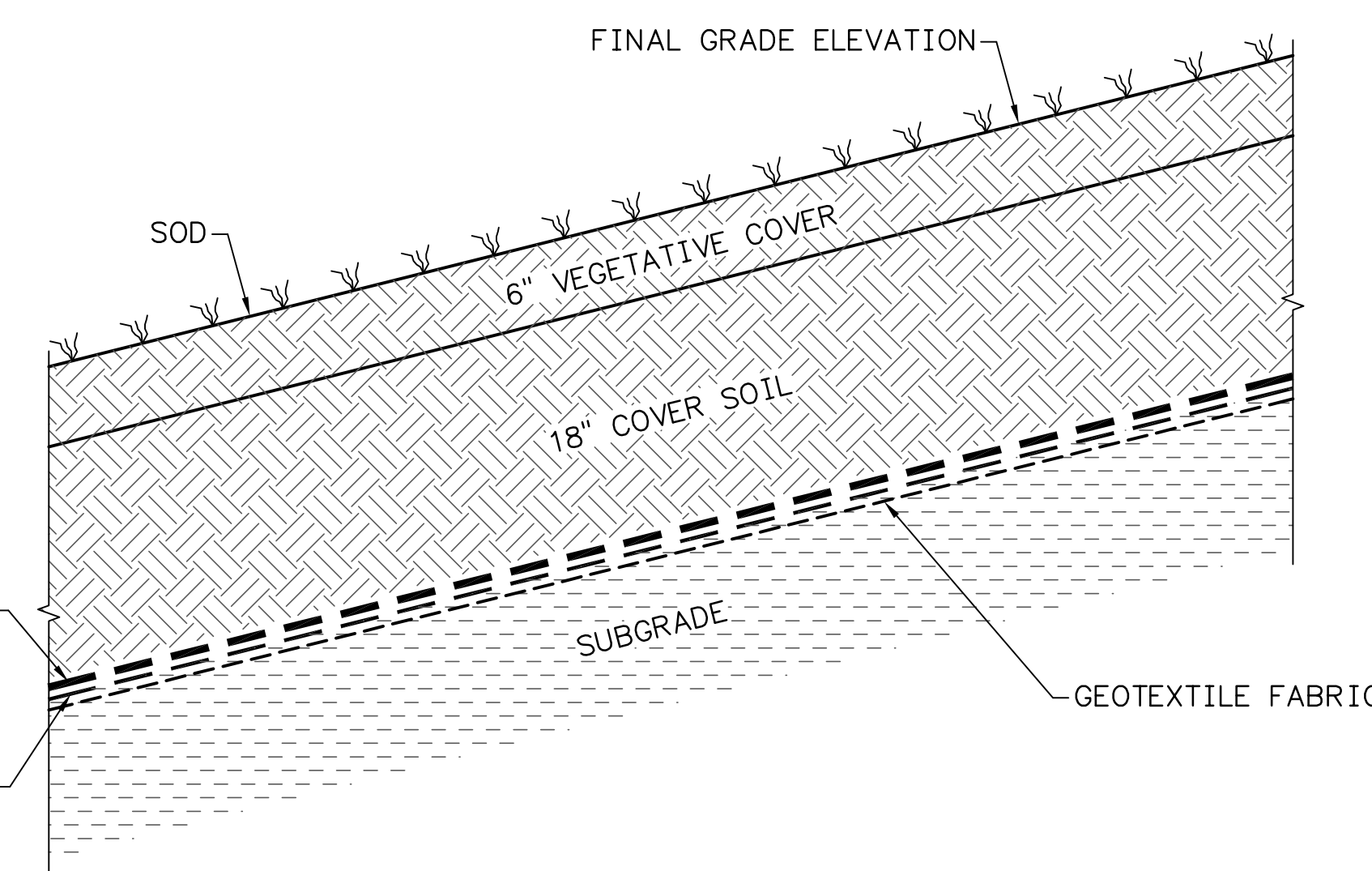


USE STAKES OR STAPLES TO FASTEN SOD FIRMLY AT THE ENDS OF STRIPS AND IN THE CENTER OR EVERY 4 FEET.

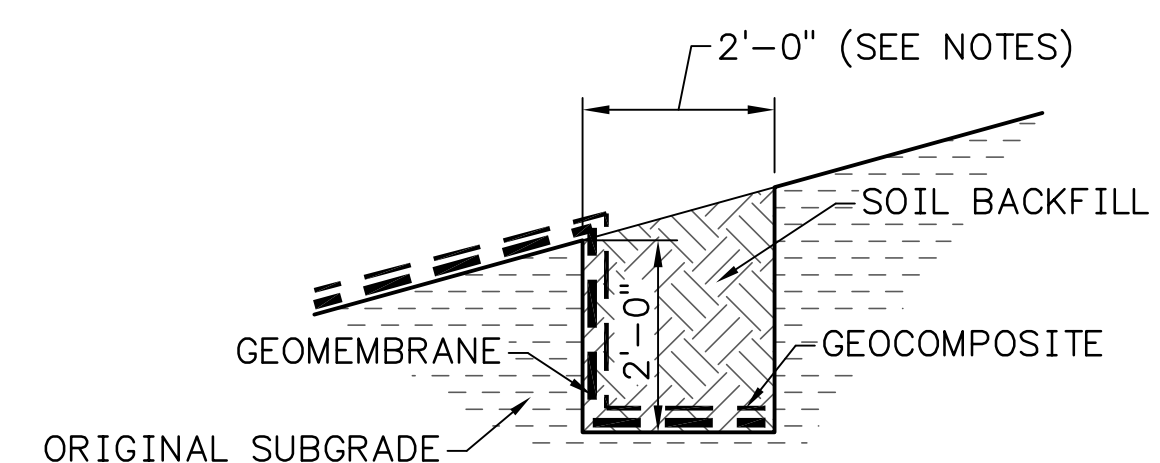
1 DETAIL - SOD INSTALLATION
10WXXX-07 NOT TO SCALE



4 TYPE I SWALE
10WXXX-07 SCALE: 1/2"=1'-0"

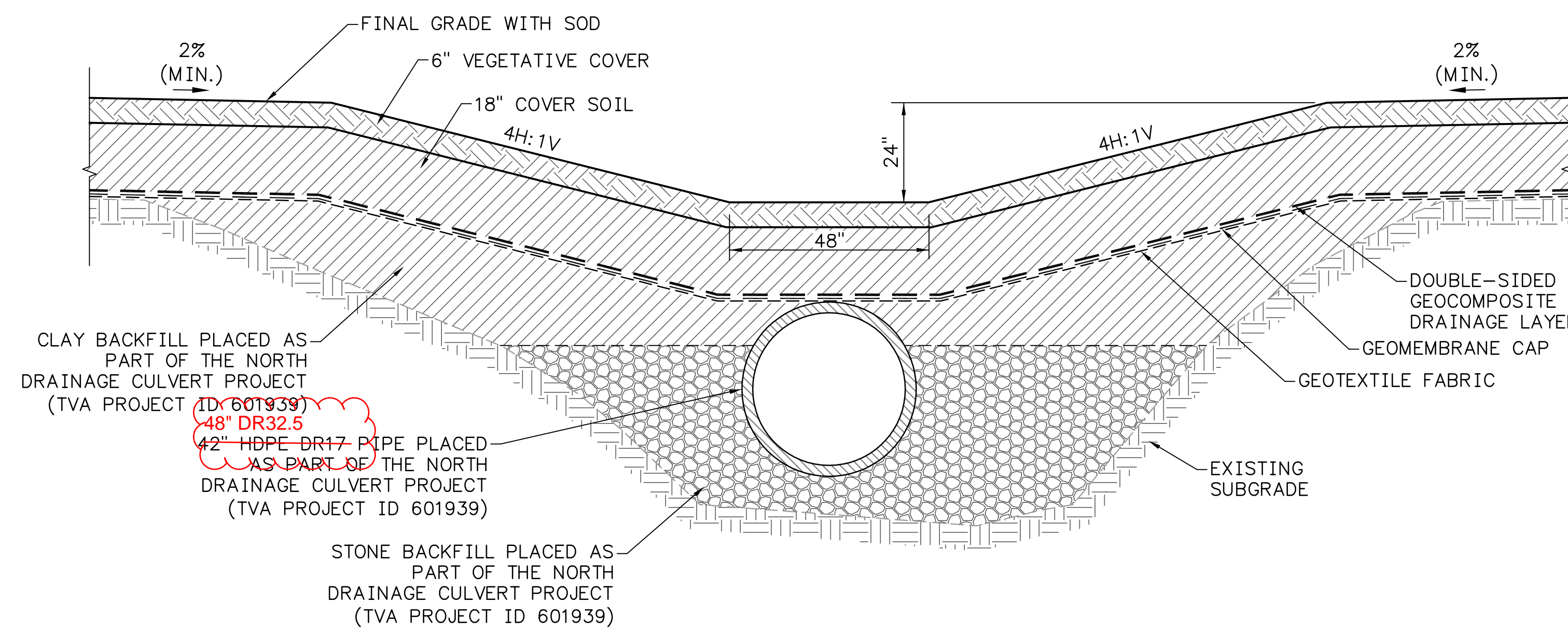


2 DETAIL - CAP SYSTEM
10WXXX-07 SCALE: 1"=1'-0"



NOTES:
1. SOIL BACKFILL IN ANCHOR TRENCH SHALL HAVE NO ROCK EXCEEDING 1 INCH MAXIMUM DIMENSION.
2. SOIL BACKFILL SHALL BE COMPACTED USING MANUALLY OPERATED TAMPERS.

3 DETAIL - ANCHOR TRENCH
10WXXX-07 SCALE: 1/2"=1'-0"



5 TYPE II SWALE
10WXXX-07 SCALE: 1/2"=1'-0"

10% CONCEPTUAL DESIGN
ISSUED FOR REVIEW
NOT FOR CONSTRUCTION

R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RA	03/05/14	JES	RRP	MCV	ALV	SHB	MST	JCK	-	-	-	-	-	-	-

SCALE: AS SHOWN EXCEPT AS NOTED														
YARD ASH AREA NO. 1														
ASH AREA NO. 1 CAP INSTALLATION DETAILS														
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:								
J.E. SPALDING	R.R. PETTY	M.C. VAUGHAN	A.L. VANCE	S.H. BICKEL	M.S. TURNBOW	J.C. KAMMEYER								
JOHNSONVILLE FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING														
AUTOCAD R 2000	DATE	03/05/14	30	C	10WXXX-06	R A								



SEE XXWXXX-XXX FOR LIST OF DESIGN, COMPANION, REFERENCE DRAWINGS AND SUPPORTING DESIGN CALCULATIONS NUMBER.

Appendix B
Sample QA/QC Forms



TVA CONFIDENTIAL INFORMATION
 10509 Timberwood Circle Suite 100
 Louisville, Kentucky 40223
 Phone: (502) 212-5000
 Fax: (502) 212-5055

Daily Field Report Activities and Observations

Owner: Tennessee Valley Authority
Distribution:

Project No:	Rep No:	Page No: 1 of 5
Project Name:		
Location or Address:		
Date:	Day of the Week:	
Weather:	Temperature:	

Client: Tennessee Valley Authority	Stantec Project Manager/Engineer:
General Contractor: TVA CS & PD	Stantec Lab Supervisor:
GC Rep.:	Stantec Field Representative:

Specialty Contractor: <input type="checkbox"/> Earthwork <input type="checkbox"/> Concrete <input type="checkbox"/> Other	Specialty Contractor Foreman:
---	-------------------------------

Plans and Specifications: By: Stantec Consulting Services Inc. Date: 07/02/2010

Project Briefing: <input type="checkbox"/> Previously Reported	Source of Fill
By:	
On:	

Contractor's Personnel Present/Equipment Observed in Use:	Stantec Equipment Used:		
	Type/Model	Manufacturer	Ser. No./ID No.

Visitor's Name	Representing	Arrive	Depart

Follow-up from prior report? No Yes _____

Did you observe everything you expected to? No Yes _____

Did you observe anything unexpected? No Yes _____

Did you see, hear, smell, or touch anything unusual or unexplained? No Yes _____

What, in particular, should be observed, checked, or tested during the next visit? _____



Project Name:	Project No:	Page No: 2 of 5
Stantec Field Representative:	Report No:	Date:
Field Observation/Contractor Activities and Discussions: <i>Indicate activities you did and did not observe.</i>		Stantec Field Representative's Activities
		Arrive
		Depart
		<p>Notice: Stantec professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations and sequences of construction.</p>
<input type="checkbox"/> This Field Report is Preliminary A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	Stantec Field Representative	Date
<input type="checkbox"/> This Field Report is Final A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	Reviewed By	Date



TVA CONFIDENTIAL INFORMATION
 10509 Timberwood Circle Suite 100
 Louisville, Kentucky 40223
 Phone: (502) 212-5000
 Fax: (502) 212-5055

Daily Field Report
Field Density Test

Project Name:	Project No:	Page No: 3 of 5
Field Representative:	Report No:	Date:

Test No.	Test Location	Dry Density (pcf)	Moisture (%)	Proctor Density (pcf)	Optimum Moisture (%)	Compaction (%)	Required Compaction (%)	Pass or Fail
	Provided By:							

Remarks: _____



10509 Timberwood Circle Suite 100
Louisville, Kentucky 40223
Phone: (502) 212-5000
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Daily Field Report

Site Sketch

Project Name:	Project No:	Page No: 4 of 5
Field Representative:	Report No:	Date:

Approximate Scale
1 Block = ft.



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Louisville, Kentucky 40223
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Fax: (502) 212-5055

Daily Field Report
Plan View Drawing

Project Name:	Project No:	Page No: 5 of 5
Field Representative:	Report No:	Date:

TVA CONFIDENTIAL INFORMATION



QC Team
Non-Compliance Report

Owner: Tennessee Valley Authority
Distribution:

Project No.:	Rep No.:	Page No: 1 of 1
Project Name:		
Location or Address:		
Date:	Day of the Week:	
Weather:	Temperature:	

Item:

Deficiencies

Proposed Resolution(s)

Date Remediated:

Print Name

Signature



Tennessee Valley Authority

Johnsonville Fossil Plant

Request for Information (RFI)		
RFI No:	Submitted By:	Date:
Project:	Area/Task:	
Subject:		
References (drawings/spec's/conditions/assumptions):		
Issues/Concerns:		
Sender's Recommendation(s):		
Reply:		
Signature:	Date:	
Other Comments:		
FDC Received Date/Initial:		

For Construction Purposes Only - Impact(s)	RFI No:
Project:	
Area/Task:	
Date:	
Scope/MOA: (yes/no description):	
Q.C. Requirements:	
Safety: (yes/no description):	
Schedule: (yes/no description):	
Cost: (yes/no description):	

TVA CONFIDENTIAL INFORMATION

**Construction Quality Control Plan
Quality Control Task Summary⁽¹⁾**

**Johnsonville Fossil Plant
Humphreys County, Tennessee**

TASK	RESPONSIBLE PERSONNEL ⁽²⁾	TASK DESCRIPTION/ ITEMIZATION	
A. General Site and Construction Tasks			
QC Testing	QC Manager	-Designate appropriate test standards and methods for field and/or laboratory testing designated in project requirements	As needed
		-Approve all proposed materials prior to site delivery and/or use	As needed
		-Perform random observations of personnel and activities working and/or performed under his direct supervision in order to complete required certifications during the course of the project.	As needed
		-Collect and maintain all QC documentation	As needed
		-Review all QC documentation to assess conformance with project requirements	As needed
		-Approve all constructed (or completed) work	As needed
	Project Meetings	QC Manager / Construction Manager	-Generate all QC related reports
-Assist QC Manager with QC duties			As needed
Field Observations	QC Manager	-Coordinate/conduct meetings to confirm all parties involved with construction activities are familiar with the design, required procedures and associated QC objectives	Prior to construction AND as needed
		-Field observations of embankment out slopes for indications of slope instability	Weekly
		-Field observations of constructed sediment control structures and overall site drainage conditions	Weekly OR Within 24 hours of Every 0.5-inch Precipitation Event
B. Subgrade and Subbase			
Materials	QC Manager/Team	-Collect representative samples of proposed soil-like borrow materials and conduct required laboratory testing to establish properties	Prior to subbase construction
QC Testing	QC Manager	-Confirm all materials proposed for use in landfill subbase (structural fill) applications meet project requirements and approve use	Prior to subbase construction
	QC Manager/Team	-Observe prepared surfaces to document that project requirements are met	Prior to subbase construction
	QC Manager/Team	-Observe proofroll of prepared surfaces using required equipment to document that project requirements are met	Prior to subbase construction
	QC Manager/Team	-Observe landfill subbase (structural fill) construction and perform required field and laboratory testing to document that project requirements are met	Varies (see testing schedule)
	QC Manager/Team	-Confirm elevations of completed subgrade/subbase	Prior to additional construction
	QC Manager/Team	-Observe proofroll of constructed subgrade/subbase surfaces using required equipment to document that project requirements are met	Prior to additional construction
	QC Manager	-Confirm subgrade/subbase constructed in accordance with project requirements and approve	Prior to additional construction

TVA CONFIDENTIAL INFORMATION

**Construction Quality Control Plan
Quality Control Task Summary⁽¹⁾**

**Johnsonville Fossil Plant
Humphreys County, Tennessee**

TASK	RESPONSIBLE PERSONNEL ⁽²⁾	TASK DESCRIPTION/ ITEMIZATION	
C. Soil Barrier			
Materials	QC Manager/Team	-Collect representative samples of proposed soil borrow materials and conduct required laboratory testing to establish properties	Prior to soil barrier construction
	QC Manager	-Confirm all materials proposed for use in soil barrier applications meet project requirements and approve use	Prior to soil barrier construction
QC Testing	QC Manager	-Submit required moisture/density/permeability relationship of all materials proposed for use in soil barrier applications to TDEC for approval	Prior to soil barrier construction
	QC Manager/Team	-Observe prepared surfaces to document that project requirements are met	Prior to soil barrier construction
	QC Manager/Team	-Observe proofroll of prepared surfaces using required equipment to document that project requirements are met	Prior to soil barrier construction
	QC Manager/Team	-Observe soil barrier construction and perform required field and laboratory testing to document that project requirements are met	Varies (see testing schedule)
	QC Manager/Team	-Confirm elevations of completed soil barrier	Prior to additional construction
	QC Manager	-Confirm soil barrier constructed in accordance with project requirements and approve	Prior to additional construction
D. Flexible Membrane Liner (FML)			
Materials	QC Manager	-Confirm all supplied materials proposed for use in FML applications and properties/specifications meet project requirements and approve use	1/supplier/year AND prior to delivery
	QC Manager	-Confirm FML panel layout meets project requirements and approve	Prior to FML deployment
QC Testing	QC Manager/Team	-Confirm supplied materials unloaded and stored in accordance with manufacturer recommendations and generate inventory log	At time of delivery
	QC Manager/Team	-Observe FML deployment to document that project requirements are met	Varies (see testing schedule)
	QC Manager/Team	-Observe FML seaming and perform required field and laboratory testing to document that project requirements are met	Varies (see testing schedule)
	QC Manager	-Confirm FML installed in accordance with project requirements and approve	Prior to additional construction
E. Leachate Collection System			
Materials	QC Manager/Team	-Collect representative samples of proposed granular drainage media and conduct required laboratory testing to establish properties	Prior to drainage media construction
	QC Manager	-Confirm all granular drainage media proposed for use in leachate collection system applications meet project requirements and approve use	Prior to drainage media construction
QC Testing	QC Manager	-Confirm all supplied materials proposed for use in leachate collection system applications and properties/specifications meet project requirements and approve	1/supplier/year AND prior to delivery
	QC Manager/Team	-Confirm supplied materials unloaded and stored in accordance with manufacturer recommendations and generate inventory log	At time of delivery
	QC Manager/Team	-Observe leachate collection system construction and perform required field and laboratory testing to document that project requirements are met	Varies (see testing schedule)
	QC Manager	-Confirm leachate collection system constructed in accordance with project requirements and approve	Prior to additional construction

TVA CONFIDENTIAL INFORMATION

**Construction Quality Control Plan
Quality Control Task Summary⁽¹⁾**

**Johnsonville Fossil Plant
Humphreys County, Tennessee**

TASK	RESPONSIBLE PERSONNEL ⁽²⁾	TASK DESCRIPTION/ ITEMIZATION	
F. Waste Embankment			
Waste Stream	QC Manager/Team	-Collect representative samples of proposed waste stream and conduct required laboratory testing to establish properties	Prior to waste embankment construction
	QC Manager	-Confirm waste stream proposed for use in waste embankment applications meet project requirements and approve use	Prior to waste embankment construction
QC Testing	QC Manager/Team	-Observe waste embankment construction and perform required field and laboratory testing to document that project requirements are met	Varies (see testing schedule)
	QC Manager	-Confirm waste embankment constructed in accordance with project requirements and approve	Prior to additional construction
G. Final Cover			
Materials	QC Manager/Team	-Collect representative samples of proposed soil borrow materials and conduct required laboratory testing to establish properties	Prior to final cover construction
	QC Manager/Team	-Establish fertilizer/lime application rates for applicable soil borrow materials	Prior to final cover construction
	QC Manager	-Confirm all materials proposed for use in final cover applications meet project requirements and approve use	Prior to final cover construction
QC Testing	QC Manager/Team	-Observe prepared surfaces to document that project requirements are met	Prior to final cover construction
	QC Manager/Team	-Observe final cover construction and perform required field and laboratory testing to document that project requirements are met	Varies (see testing schedule)
	QC Manager/Team	-Confirm elevations of completed final cover	As needed
	QC Manager	-Confirm final cover constructed in accordance with project requirements and approve	As needed
H. Adjacent Clay Structures			
Materials	QC Manager/Team	-Collect representative samples of proposed soil borrow materials and conduct required laboratory testing to establish properties prior to construction	Prior to construction of adjacent clay structures
	QC Manager	-Confirm all soil borrow materials proposed for use in construction of the adjacent clay structures meet project requirements and approve use	Prior to construction of adjacent clay structures
	QC Manager	-Confirm all supplied materials proposed for use in adjacent clay structure applications and properties/specifications meet project requirements and approve	1/supplier/year AND prior to delivery
QC Testing	QC Manager/Team	-Confirm supplied materials unloaded and stored in accordance with manufacturer recommendations and generate inventory log	At time of delivery
	QC Manager/Team	-Observe prepared surfaces to document that project requirements are met	Prior to construction of adjacent clay structures
	QC Manager/Team	-Observe proofroll of prepared surfaces using required equipment to document that project requirements are met	Prior to construction of adjacent clay structures
	QC Manager/Team	-Observe construction of adjacent clay structures and perform required field and laboratory testing to document that project requirements are met	Varies (see testing schedule)
	QC Manager/Team	-Confirm elevations of completed adjacent clay structures	As needed
	QC Manager	-Confirm adjacent clay structures constructed in accordance with project requirements and approve	As needed
Notes:			
¹⁾ The task summary is intended to be a generalized list of key responsibilities and minimum QC activities for the project as established in the QC plan narrative and associated testing schedule.			
²⁾ Refer to the QC plan narrative for a more detailed description and minimum qualifications of QC personnel			
³⁾ QC tasks shall be completed as established in the QC plan narrative and associated testing schedule.			

TVA CONFIDENTIAL INFORMATION

**Construction Quality Control Plan
Product Submittals**

**Johnsonville Fossil Plant
Humphreys County, Tennessee**

MATERIAL	REQUIREMENTS	Value	Minimum Frequency
Filter Materials			
No. 57	Supplier certification and gradation test from representative sample of source material verifying material meets specifications.	per TDOT Specification 903.22	1/ supplier / source
No. 3	Supplier certification and gradation test from representative sample of source material verifying material meets specifications.	per TDOT Specification 903.22	1/ supplier / source
Concrete Sand	Supplier certification and gradation test from representative sample of source material verifying material meets specifications.	per TDOT Specification 903.01	1/ supplier / source
Class B Machined Riprap	Supplier certification and gradation test from representative sample of source material or letter issued by TDOT verifying material meets	per TDOT Specification 709.03	1/ supplier / source
Crusher Run	Supplier certification and gradation test from representative sample of source material or letter issued by TDOT verifying material meets	per TDOT Specification 903.04	1/ supplier / source
Geosynthetics			
Geotextile Filter Fabrics	Supplier certification and all other available documentation to demonstrate that the supplied material meets project requirements.	per Technical Specifications	1/ supplier
Turf			
Seed	Supplier certification and all other available documentation to demonstrate that the supplied material meets project requirements.	per TDOT Specification 801	1/ supplier
Erosion Control Blanket	Supplier certification and all other available documentation to demonstrate that the supplied material meets project requirements.	per Technical Specifications	1/ supplier
Sod	Supplier certification and all other available documentation to demonstrate that the supplied material meets project requirements.	per TDOT Specification 803	1/ supplier

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**Construction Quality Control Plan
Material Testing Schedule**

**Johnsonville Fossil Plant
Humphreys County, Tennessee**

MATERIAL	PROPERTY	TEST METHOD	Value	Minimum Frequency
A. Landfill Subbase (Structural Fill)				
	Classification	ASTM	Project Requirements	1/ 20,000 CY/ material type
	Moisture/Density	ASTM	Project Requirements	1/ 20,000 CY/ material type
	Nuclear Density and Moisture	ASTM	Min. 92% standard Proctor max. dry density @ minus 4% and plus 2% of opt. moisture	5/ acre/lift
	Thickness		Project Requirements	Project Requirements
B. Soil Barrier				
<i>Prior to Construction</i>				
	Classification	ASTM	Project Requirements	1/ 5,000 CY/ material type
	Moisture/Density	ASTM	Project Requirements	1/ 5,000 CY/ material type
	Permeability	ASTM	Max. 1×10^{-6} cm/sec	1/ 10,000 CY/ material type
<i>During Construction</i>				
	Soil Classification	ASTM	Project Requirements	1/ 5,000 CY/ material type
	Moisture/Density	ASTM	Project Requirements	1/ 5,000 CY/ material type
	Nuclear Density and Moisture	ASTM	Min. 92% standard Proctor max. dry density within est. perm. window	5/ acre/lift
	Thickness		2' (min.)	Project Requirements
C. Flexible Membrane Liner (FML) (60 mil HDPE-Textured)				
	Refer to GRI-GM13 specifications for current manufacturer testing parameters and frequencies ⁽²⁾			

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D. Leachate Collection System				
Granular Drainage Media	Gradation	ASTM	Project Requirements	1/ 1,500 CY/ material type
	Permeability	ASTM	Min. 1×10^{-3} cm/sec	1/ 3,000 CY/ material type
	Carbonate Content	ASTM	Project Requirements	1/ 3,000 CY/ material type
Piping	Project Requirements	Varies	Project Requirements	1/ MQC/year ⁽³⁾
Crushed Stone	Gradation	TDOT	per TDOT	1/ supplier/year
E. Waste Embankment				
	Classification	ASTM	Project Requirements	1/ quarter/ test pad
	Moisture/Density	ASTM	Project Requirements	1/ quarter/ test pad
	Nuclear Density and Moisture	ASTM	Min. 90% standard Proctor max. dry density @ minus 4% and plus 4% of opt. moisture QC Manager adjust compaction methodology based on test pad	5/ quarter/ test pad
	Thickness		Project Requirements	Project Requirements
F. Final Cover				
Lower 4-foot thick Layer	Classification	ASTM	Project Requirements	1/ 20,000 CY/ material type
	Moisture/Density	ASTM	Project Requirements	1/ 20,000 CY/ material type
	Nuclear Density and Moisture	ASTM	Min. 92% standard Proctor max. dry density @ minus 4% and plus 2% of opt. moisture	5/ acre/lift
	Thickness		4' (min.)	Project Requirements
Upper 6-inch thick Layer	Classification	ASTM	Project Requirements	1/ year/ material type
	Fertilizer/Lime Rates	NRCS ⁽⁴⁾	per NRCS	1/ year/ material type
	Thickness		6" (min.)	Project Requirements
G. Adjacent Clay Structures				
	Classification	ASTM	Project Requirements	1/ 20,000 CY/ material type
	Moisture/Density	ASTM	Project Requirements	1/ 20,000 CY/ material type
	Nuclear Density and Moisture	ASTM	Min. 95% standard Proctor max. dry density @ minus 2% and plus 2% of opt. moisture	5/ acre/lift
	Thickness		Project Requirements	Project Requirements
H. Geotextile Filter Fabric				
Cushion Layer	Refer to GRI-GT12a specifications for current manufacturer testing parameters and frequencies			
Separator Layer	Refer to GRI-GT13 Class 1 specifications for current manufacturer testing parameters and frequencies			

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I. Precast Concrete				
Headwalls	TDOT	TDOT	TDOT	1/ supplier/year
Other Structures	TDOT	TDOT	TDOT	1/ supplier/year
J. Durable Coarse Aggregates				
No. 2 Coarse Aggregate	Gradation	TDOT	TDOT	1/ supplier/year
No. 53 Dense Graded Aggregate	Gradation	TDOT	TDOT	1/ supplier/year
No. 9 Coarse Aggregate	Gradation	TDOT	TDOT	1/ supplier/year
Class 1 Riprap	Gradation	TDOT	TDOT	1/ supplier/year
K. Piping				
	Project Requirements	Varies	Project Requirements	1/ MQC/year
<p>Notes:</p> <p>⁽¹⁾ or one (1) test per noted change in material or waste production/processing change (whichever is applicable)</p> <p>⁽²⁾ GRI - Geosynthetic Research Institute Testing Method</p> <p>⁽³⁾ MQC - Manufacturer Quality Control Plan: Manufacturer shall provide written certification materials meet all specified values and related MQC data.</p> <p>⁽⁴⁾ NRCS - Natural Resources Conservation Service</p>				