J.L. Arnold, Inc.

October 15, 2007

Mr. Danny Kais, P.E.
Sigma Engineers & Constructors
10305 Airline Highway
Gonzales, LA 70816

Re: Geotechnical Consultation
IESI Pick-Up Station
Covington, Louisiana
JLAI No. 07174

Dear Mr. Kais,

Provided herein are geotechnical recommendations for your use in planning construction of this new facility.

Project Description

IESI is planning to construct a new Pick-Up Station on a parcel of land about 2 miles north of Covington, Louisiana. An electronic copy (see Figure 1, attached) of a portion of the Waldheim and Martinville 7.5-minute quadrangles shows the site location in outline. This map reveals the site positioned on a broad level area distant from incised streams. The contouring indicates that land surface slopes gently southward across the site. The nominal slope is about 8 feet per mile. This observation suggests that the site is poorly drained except where man-made ditches are effective.

The project concept is illustrated on two drawings provided by Mr. Dale Steib. Figure 2 shows a proposed layout of the facility. Most of the roadway and parking areas shown thereon, including the entrance road, are to be aggregate paved at this time. Only the ramp up to the tipping floor is currently planned for concrete paving. I anticipate that the area encircled by the roadways and parking areas will be elevated by filling and shaping to achieve drainage toward the site perimeter. Fill is planned to be obtained from the pond excavation indicated.

Figure 3 show a typical section through the Pick-Up Station building. The key geotechnical observation here is that the earthen mound used to elevate the tipping floor and form the ramp will be about 15 feet high. Fill for this mound could be obtained from the pond/borrow excavation on the site. If quantities of borrow available from there are found insufficient, then off-site borrow will be arranged.

Geotechnical Information

For general site preparation, including preparation of roadway Subgrade for aggregate surfacing, reference is made to the publication, Soil Survey of St. Tammany Parish, Louisiana, Soil Conservation Service, March 1990. The shallow soil profile mapped as representative of this site is called the "Stough fine sandy loam." A copy of portions of Tables 15 and 16, descriptive of the soils to the 5 foot depth, is attached for reference herein.

The profile is seen to be comprised of low plasticity, silty and sandy materials to a depth of about 3 feet below surface grade. At and below that depth, lean clay materials are reported. This latter stratum serves to trap infiltrating rainwater within the upper low plasticity materials. The trapped water causes these soils to weaken so that construction activity is impaired due to rutting and pumping.

The depth of the lean clay stratum described by the Soil Survey is unknown at this time. However, the Soil Survey notes that these soils are developed within the Pleistocene-age Prairie Terrace formation. It is my experience that this geologic unit is comprised of competent, slightly pre-consolidated materials. The bedding includes massive clay layers and large sand lenses. The current plan is to perform one or more borings in the near term to investigate these deeper strata for purposes of foundation design and construction.

Site Development Recommendations

Recommendations for the several geotechnical aspects of site development are addressed in the following paragraphs.

Clearing and Grubbing. Recent aerial photographs such as those available on Google Earth show that the site is now covered with trees and brush. In our meeting on October 3, 2007, comment was made that a contractor is beginning to clear the site. The result of this work will likely be a disturbed Subgrade and embedded roots and stumps along with some plant debris. Your representative should visit the site to see that this work, when completed, meets the relevant provisions of the Louisiana Standard Specifications for Roads and Bridges, 2006 Edition, Section 201, published by the Louisiana Department of Transportation and Development, Baton Rouge (Hereafter called DOTD Specifications). In particular, the disturbed Subgrade should be shaped and reformed to avoid accumulation of water in puddles. This work includes excavation of shallow ditches or swales, both temporary and permanent, as needed to facilitate drainage off-site.

Note is made that the surface soils are susceptible to erosion. Thus, the clearing and grubbing work should be accompanied by measures to control erosion and the transport of sediments off-site. In this regard the provisions of DOTD Specifications, Section 204, should be adapted to the purposes of this project.

Road Bed Preparation. Figure 2 shows the alignment of an access roadway into the property. In order to facilitate construction, this roadway will need to be constructed early in the sequence. The following geotechnical recommendations are made toward that end.

First, drainage ditches on either side of the roadway should be excavated. The spoil from these excavations, less topsoil and roots or other debris, should be windrowed onto the roadway and blended with the Subgrade soils. Blending is intended to mix dissimilar soils in order to attain a more uniform soil embankment for support of overlying roadway layers described later. The blending also provides an opportunity to dry or moisten the soil as appropriate for compaction. The measures to be taken can be judged in the field by the contractor for the conditions revealed and prevailing. Once blended, the soils should be formed into a mound that drains to the side

ditches. The soil should be compacted in course of mounding. Specific compaction criteria based on earthwork testing practices are not recommended at this point. Instead, the mound should be observed for areas pumping or rutting under the construction traffic. These areas should be undercut, moisture conditioned, and compacted again until the entire length of roadway is capable of supporting construction traffic. The contactor should note that the soil used to form this mound is derived from on-site materials that are prone to weaken when wetted. Thus the foregoing recommendations presume that the mound under construction is shaped to drain in anticipation of inclement weather.

Aggregate paving atop the soil mound is currently being planned for construction and later for service during station operation. Anticipating heavy truck traffic, otherwise un-specified relative to type and axle-loading, leads me to recommend a thick aggregate section. By reference to the AASHTO Guide for Design of Pavement Structures, AASHTO, Washington, 1993, Chapter 4 (specifically Table 4.10), I suggest an initial thickness of the aggregate course of 10 to 12 inches. The provisions of DOTD Specifications Section 403 should be adapted for this work.

The foregoing recommendations are intended to serve for the interval of construction, recognizing that some road maintenance will be required, primarily reshaping of the surface and shoulders. At the end of construction, repair of any rutted areas can be done as they are seen. This work could involve excavation into the soil subgrade to remove and replace water-softened materials as well as drainage improvements.

The foregoing recommendations also apply to aggregate surfaced roadway and parking areas within the facility.

Facility Pad and Station Mound. The earthen mound required for the Pick-Up Station tipping floor and ramp will provide structural support for portions of the building. In addition, an earthen pad covering the area of operation is also anticipated. The pad will provide a soil Subgrade for these paved areas. Therefore these earthen components of the project will need to be constructed under QA/QC controls. The following paragraph provides recommended earthwork practices and controls.

Backfilling over the existing soil subgrade in the pad and building area should proceed as soon as possible after site preparation. Based on the Soil Survey characterization, at least the upper 5 feet of the soil profile from the on-site borrow area is judged suitable for these uses. This judgment should be confirmed by sampling and testing when the borrow area is first being excavated. These materials and off-site borrow should be a lean clay (CL) having a plasticity index of fifteen to twenty (15 to 20) and a maximum liquid limit of forty (40). Other materials locally available may be used if approved by a geotechnical engineer. Because of possible material variations from the excavation and variable site conditions, I recommend that all fill materials be approved or rejected by a geotechnical engineer as the work proceeds.

Testing of the borrow materials includes the following: *in-situ* moisture content, Atterberg Liquid (LL) and Plastic Limits (PL) and Plasticity Index (PI = LL-PL), moisture-density relationship (ASTM D 698), and sieve analysis or fraction passing No. 200 sieve as judged relevant to description of the materials. The *in-situ* moisture content is suggested for the purpose

of planning to dry or wet the material for compaction against the moisture density relationship.

The fill should be placed at moisture contents within 2 percent (2%) of optimum, in six to eight inch (6"- 8") loose lifts. Each lift should be compacted to a minimum dry density of at least ninety-five percent (95%) of the maximum dry density obtained in accordance with ASTM D 698 (Standard Proctor). Closer moisture control may be necessary for lower plasticity soils in order to attain the recommended percent compaction. Compaction obtained and soil materials provided for each lift should be inspected and approved or rejected by an engineering technician supervised by a geotechnical engineer before another lift is added.

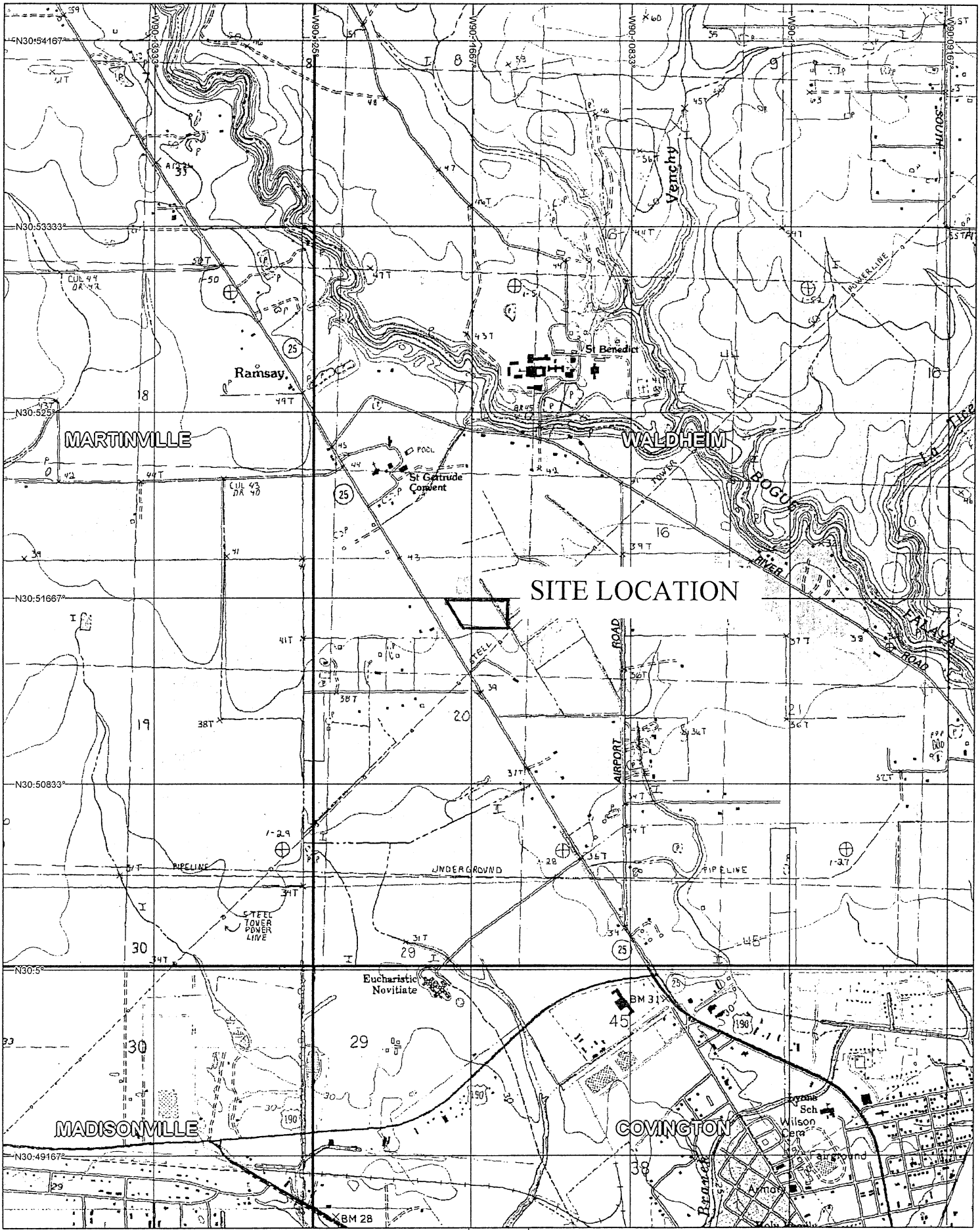
In our meeting I recommended that the earthen mound be constructed early for the purpose of preloading the underlying soils. This accomplishes at least a portion of the settlement caused by this large load. The amount of settlement is not estimated at this point since borings have not been done. However, the post-construction settlement can be reasonably predicted based on observation of settlement under the load of the mound. These observations are accomplished using settlement plates at the base of the fill. One or two plates, each at least 2-feet square, are recommended. The plates are located by survey so they can be found after covering with soil. One way to do that is by augering through the fill to refusal on the plate. Then a rod can be set on the plate and checked by survey to monitor the settlement. This method can be detailed as the mound is constructed.

I appreciate the opportunity to assist with your design work. If I can be of further assistance, then please call.

Very truly yours,
J.L. Arnold, Inc.

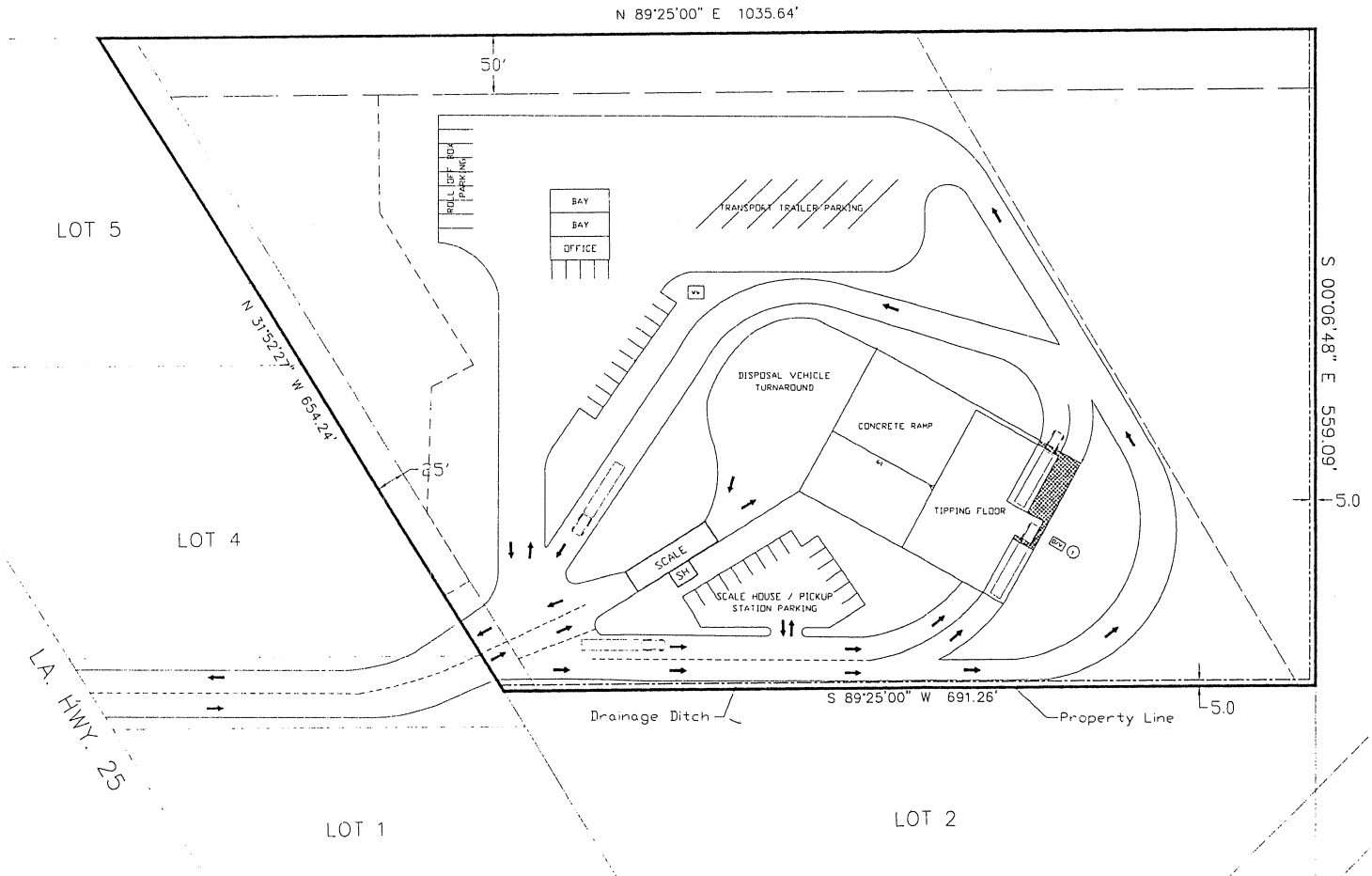
Jesse L. Arnold, P.E.

NORTH



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS | 1000 ft Scale: 1 : 25,000 Detail: 13-0 Datum: WGS

FIGURE 1
VICINITY MAP



5.1612 MAINTENANCE & REPLACEMENT

A. MAINTENANCE.

THE OWNER OR HIS AGENT SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND REPAIR OF ALL LANDSCAPING MATERIALS AND BARRIERS AS MAY BE REQUIRED BY THE PROVISIONS OF THIS SECTION.

1. PLANTING BEDS SHALL BE MULCHED TO PREVENT WEED GROWTH AND MAINTAIN SOIL MOISTURE.

2. PLANT MATERIALS SHALL BE PRUNED AS REQUIRED TO MAINTAIN GOOD HEALTH AND CHARACTER.

3. TURF AREAS SHALL BE MOWED PERIODICALLY.

4. ALL ROADWAYS, CURBS AND SIDEWALKS SHALL BE EDGED WHEN NECESSARY IN ORDER TO PREVENT ENCROACHMENT FROM THE FROM THE GRASSED AREAS.

5. THE OWNER OF THE PROPERTY SHALL BE RESPONSIBLE FOR THE PROVISION OF ADEQUATE WATER, FERTILIZER AND NUTRIENTS TO THE REQUIRED PLANT MATERIALS.

B. REPLACEMENT.

SUBJECT TO THE PROVISIONS OF SECTION 5.1605 F ENTITLED, "REPLACEMENT OF PRESERVED TREES THAT DIE", TREES AND PLANTS THAT DIE MUST BE REPLACED WITHIN SIX (6) MONTHS OF THE DEATH OF THE TREE OR PLANT WITH TREES OR PLANTS THAT MEET THE REQUIREMENTS OF SECTION 5.16. BARRIERS AND CURBS THAT ARE DAMAGED OR DESTROYED BEYOND REPAIR SHALL BE REPLACED WITHIN SIX (6) MONTHS AFTER THE DAMAGE OR DESTRUCTION.

FIGURE 2

SQUARE FOOTAGE OF EACH USE	
PICK UP STATION	18,000 S.F.
SHOP	3,000 S.F.
FUTURE RECYCLING CENTER	10,000 S.F.
OFFICE	1,000 S.F.

GRAPHIC SCALE

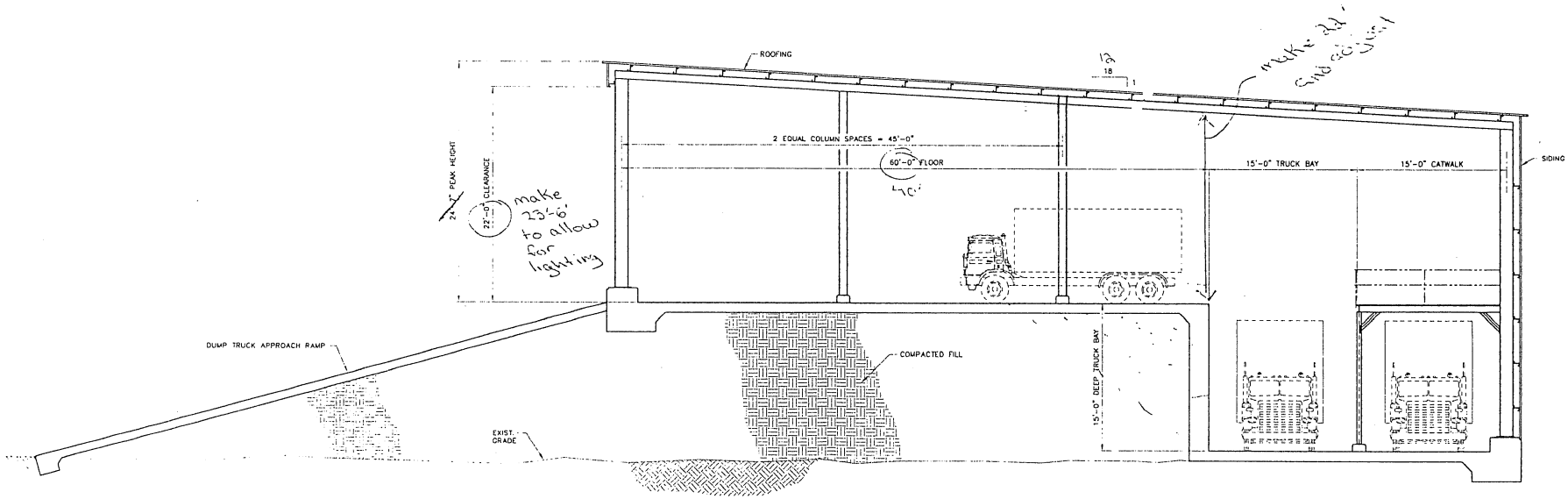
0 100' 200' 300'

HWY. 25 BUSINESS PARK, LOT 3
ST. TAMMANY PARISH, LA.
KELLY McHUGH & ASSOC., INC.
PARIS PROPERTIES, LLC

DRAWN BY: JC/JM	SCALE AS SHOWN	SHEET NO.
APPV'D. BY: JFK	DATE: 9/28/06	1 OF 1
06-502\p-u station draft 1.dwg		

NOTES:

1. FOR TITLE SHEET AND DRAWING INDEX SEE DWG 70905T01.



TYPICAL SECTION THRU PICKUP STATION

SCALE: 3/16"=1'-0"

FIGURE 3

REV	DATE	DESCRIPTION OF REVISIONS	BY
A	10/07	ISSUED FOR APPROVAL	DMD

IESI COVINGTON PICKUP STATION

TYPICAL SECTION
CIVIL/STRUCTURAL

COVINGTON, LA — OCTOBER 2007

GRSA-SIGMA
CONSULTANTS AND ENGINEERS

DESIGNED	DRAWN	CHECKED	APPROVED
DMD	DMD		

DRAWING NUMBER — REV. A

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Pr---------- Prentiss	0-25	Fine sandy loam	SC, SM-SC, SM	A-4	0	100	100	65-85	36-50	<30	NP-10
	25-62	Loam, sandy loam, fine sandy loam.	CL-ML, CL, SC, SM-SC	A-6, A-4	0	100	100	70-100	40-75	20-35	4-12
Pt---------- Prentiss	0-22	Fine sandy loam	SC, SM-SC, SM	A-4	0	100	100	65-85	36-50	<30	NP-10
	22-63	Loam, sandy loam, fine sandy loam.	CL-ML, CL, SC, SM-SC	A-6, A-4	0	100	100	70-100	40-75	20-35	4-12
Rs---------- Ruston	0-11	Fine sandy loam	SM, ML	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<20	NP-3
	11-28	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-20
	28-33	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<27	NP-7
	33-74	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-42	11-20
Rt---------- Ruston	0-17	Fine sandy loam	SM, ML	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<20	NP-3
	17-38	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-20
	38-44	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<27	NP-7
	44-64	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-42	11-20
Sa---------- Savannah	0-10	Fine sandy loam	SM, ML	A-2-4, A-4	0	98-100	90-100	60-100	30-65	<25	NP-4
	10-29	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	98-100	90-100	80-100	40-80	23-40	7-19
	29-62	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7	0	94-100	90-100	60-100	30-80	23-43	7-19
Sh---------- Savannah	0-7	Fine sandy loam	SM, ML	A-2-4, A-4	0	98-100	90-100	60-100	30-65	<25	NP-4
	7-23	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	98-100	90-100	80-100	40-80	23-40	7-19
	23-60	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7	0	94-100	90-100	60-100	30-80	23-43	7-19
Sm---------- Smithdale	0-10	Fine sandy loam	SM, SM-SC	A-4, A-2	0	100	85-100	60-95	28-49	<20	NP-5
	10-45	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-96	45-75	23-38	7-16
	45-62	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-95	36-70	<30	NP-10
St---------- Stough	0-24	Fine sandy loam	SM-SC, SM, ML, CL-ML	A-4	0	100	100	65-85	35-65	<25	NP-7
	24-37	Loam, fine sandy loam.	ML, CL, CL-ML	A-4	0	100	100	75-95	50-75	<25	NP-8
	37-60	Sandy loam, sandy clay loam, loam.	SC, CL	A-4, A-6	0	100	100	65-90	40-65	25-40	8-15

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Organic matter
									K	T	
	In	Pct	G/cc	In/hr	In/in	pH	Mmhos/cm				Pct
Rt---------- Ruston	0-17	5-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.0	<2	Low----------	0.28	5	.5-2
	17-38	18-35	1.40-1.80	0.6-2.0	0.12-0.17	4.5-6.0	<2	Low----------	0.28		
	38-44	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-6.0	<2	Low----------	0.32		
	44-64	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	<2	Low----------	0.28		
Sa---------- Savannah	0-10	3-16	1.45-1.65	0.6-2.0	0.10-0.15	3.6-5.5	<2	Low----------	0.24	3	.5-3
	10-29	18-32	1.55-1.75	0.6-2.0	0.13-0.20	3.6-5.5	<2	Low----------	0.28		
	29-62	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	<2	Low----------	0.24		
Sh---------- Savannah	0-7	3-16	1.45-1.65	0.6-2.0	0.10-0.15	3.6-5.5	<2	Low----------	0.24	3	.5-3
	7-23	18-32	1.55-1.75	0.6-2.0	0.13-0.20	3.6-5.5	<2	Low----------	0.28		
	23-60	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	<2	Low----------	0.24		
Sm---------- Smithdale	0-10	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	<2	Low----------	0.28	5	.5-2
	10-45	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	<2	Low----------	0.24		
	45-62	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	<2	Low----------	0.28		
St---------- Stough	0-24	5-15	1.40-1.55	0.6-2.0	0.12-0.18	4.5-5.5	<2	Low----------	0.37	3	---
	24-37	8-18	1.45-1.60	0.2-0.6	0.07-0.11	4.5-5.5	<2	Low----------	0.37		
	37-60	5-27	1.55-1.65	0.2-0.6	0.07-0.11	4.5-5.5	<2	Low----------	0.37		