



# Iowa Department of Transportation

## DEVELOPMENTAL SPECIFICATIONS FOR CONTRACTOR FURNISHED BORROW

Effective Date  
February 18, 2014

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

Make the following revisions to the Standard Specifications:

### **2102.02, D, Borrow.**

**Replace the title and Article:**  
**Borrow Material Suitability.**

#### **1. Select Treatment Material.**

##### **a. Cohesive Soils.**

Meet all of the following requirements:

- 1) 45% or less silt size fraction.
- 2) 110 pcf (1750 kg/m<sup>3</sup>) or greater density (AASHTO T 99 Proctor Density or Materials I.M. 309).
- 3) Plasticity index greater than 10.
- 4) A-6 or A-7-6 soils of glacial origin.

##### **b. Granular Soils.**

Meet all of the following requirements:

- 1) 15% or less silt and clay.
- 2) 110 pcf (1750 kg/m<sup>3</sup>) or greater density (AASHTO T 99 Proctor Density or Materials I.M. 309).
- 3) Plasticity index, 3 or less.
- 4) A-1, A-2, or A-3 (0).

##### **c. Special Backfill Material Material.**

Meet the requirements of Section 4132.

##### **d. Modified Subbase Material.**

Meet the requirements of Section 4123.

#### **2. Suitable Soils.**

- a. Ensure all soils provided for the construction of embankments meet the requirements below. They are suitable when moisture control or moisture and density control is designated.

- 1) 95 pounds per cubic foot (1500 kg/m<sup>3</sup>) or greater density (AASHTO T 99 Proctor Density or Materials I.M. 309).
- 2) AASHTO M 145-94 index of less than 30.

- 3) Liquid Limit (LL) less than 50.
  - b. Soils not meeting these requirements are considered unsuitable soils, regardless of classification.
  - c. When placing soil below water, use clean granular material.
- 3. Unsuitable Soils.**  
Place in the work only as specified by Standard Road Plan EW-102. Use in the work will be according to the definitions in Table 2102.02-1:

**Table 2102.02-1: Uses for Unsuitable Soils**

Definition	Use
<ul style="list-style-type: none"> <li>1. Peat or Muck.</li> <li>2. Soils with a plasticity index of 35 or greater.</li> <li>3. A-7-5 or A-5 having a density less than 85 pcf (1350 kg/m<sup>3</sup>) (AASHTO T 99 Proctor Density or Materials I.M. 309).</li> </ul>	Slope Dressing Only.
<ul style="list-style-type: none"> <li>1. All soils other than A-7-5 or A-5 having a density of 95 pcf (1500 kg/m<sup>3</sup>) or less (AASHTO T 99 Proctor Density or Materials I.M. 309).</li> <li>2. All soils other than A-7-5 or A-5 containing 3.0% or more carbon.</li> </ul>	Type C placement placed 3 feet (1 m) below top of subgrade in fills.
<ul style="list-style-type: none"> <li>1. A-7-6 (30 or greater).</li> <li>2. Residual clays (overlying bedrock), Paleosols, gumbo, and gumbotils regardless of classification.</li> </ul>	Type B placement placed 5 feet (1.5 m) below top of subgrade in fills.
<ul style="list-style-type: none"> <li>1. Shale.</li> <li>2. A-7-5 or A-5 soils having a density greater than 86 pcf (1351 kg/m<sup>3</sup>) but less than 95 pcf (1500 kg/m<sup>3</sup>) (AASHTO T 99 Proctor Density or Office or Materials I.M. 309).</li> </ul>	Type A placement placed in layers 5 feet (1.5 m) below top of subgrade in fills (Alternate layers to consist of suitable soils or Type C placement soils).

**2102.03, F, Borrow.****Replace the Article:****1. General.**

- a. Unless provided otherwise in the contract documents, when the quantity of material required for embankments is not available within the limits of the roadway cross sections or specific borrow areas as indicated, make up the deficiency from borrow areas the Contracting Authority provides and defines on the plans or furnish equivalent material from alternate borrow areas (in lieu of plan borrows) or Contractor furnished borrow.
- b. The following definitions apply to this specification:

**1) Designated Borrow Areas.**

A general term for borrow areas the Contracting Authority provides; including mandatory and optional borrow areas.

**a) Mandatory Borrow Areas.**

An area provided by the Contracting Authority from which the Contractor is expected to obtain borrow material and to operate in the area according to the contract documents. Mandatory borrow areas will be designated in the contract documents.

**b) Optional Borrow Area.**

An area provided by the Contracting Authority from which the Contractor may obtain borrow material. If so obtained, the Contractor is expected to operate in

the area according to the contract documents. Borrow areas are optional borrow areas unless specifically designated as mandatory borrow areas.

**2) Alternate Borrow Areas.**

An area outside the highway right-of-way provided by the Contractor from which the Contractor may obtain borrow material in lieu of designated borrow areas and to be used according to the contract documents.

**3) Contractor Furnished Borrow.**

A general term for borrow material provided by the Contractor. ~~The type of material shall be as specified in the contract documents. If the type of material is not specified, provide Suitable Soils. Contractor may elect to provide Select Treatment Material in lieu of Suitable Soils. Unsuitable Type A, B, and C materials, with the exception of shale and residual clays, will be allowed. Place unsuitable materials as specified in Standard Road Plan EW-102.~~

- c. Upon completion of designated borrows, excavate borrow areas that are sufficiently regular in cross section to permit accurate measurement. Carefully blend to natural land forms and avoid unnecessary damage to the land. Do not turn natural drainage of surface water on to adjoining owners. Use diligence in draining the surface water in its natural course or channel. Complete excavation consistent with the existing natural drainage conditions or as shown in the contract documents.
  - d. Where a mandatory borrow area is designated in the contract documents, it is mandatory that borrow material be obtained from the borrow location designated and in accordance with the borrow design on the contract documents, unless permission is obtained from the Engineer to obtain borrow from another location.
  - e. Unless the contract documents designate borrow areas as mandatory borrow areas, borrow areas will be considered optional borrow areas. The Contractor has the option of either using the optional borrow areas or proposing to furnish equivalent material from alternate borrow areas.
  - f. Do not place the estimated edge of water for a pond borrow closer than 100 feet (30 meters) from any public right-of-way. A pond borrow is a borrow that has the intention of excavation below natural ground and leaving a body of water for a designated purpose.
  - g. Refer to Federal Aviation Administration (FAA) Advisory Circular 150/5200-33B for separation criteria for hazardous wildlife attractants on or near airports.
- 2. Contactor's Plan for Alternate Borrow or Revisions to Designated Borrow.**
- a. Submit a plan to the Engineer for use of proposed alternate or designated borrow intended to be used in a manner different from that shown in the contract documents. Also, sample the proposed alternate borrow areas by core drilling or test pits. When the Contracting Authority determines it is necessary, sample in the presence of the Engineer. Test samples and provide results and verification samples to the Contracting Authority
  - b. The submission for use of alternate borrow areas shall include all such areas necessary or contemplated for completion of the planned work.
  - c. Approval of materials and their use will be based on AASHTO M 145-94 and includes the following:
    - 1) Select Treatment Materials.**
      - a) The Engineer's approval is required for all soils required for select subgrade treatments. The Contractor may elect to substitute with special backfill material or modified subbase material at one-half the required rate at no additional cost to the Contracting Authority. If special backfill material or modified subbase material is used in lieu of select material, ~~the Contractor shall~~ provide for suitable surface and subsurface drainage of this material and provide suitable soils in lower portion of original subgrade treatment layer at no additional cost to the Contracting Authority.
      - (1) Cohesive Soils.**  
Meet the requirements of Article 2102.02, D, 1, a.
      - (2) Granular Soils.**  
Meet the requirements of Article 2102.02, D, 1, b.

**(3) Special Backfill Material.**

Meet the requirements of Section 4132.

**(4) Modified Subbase Material.**

Meet the requirements of Section 4123.

- b) Use select treatment sources with sufficient uniformity and size to assure that complete individual treatment areas will be constructed with similar material. Substitution of treatment types (cohesive, granular, special backfill, or modified subbase material) will be allowed only with the Engineer's permission.
- 2) **Suitable Soils.**  
Meet the requirements of Article 2102.02, D, 2.
- 3) **Unsuitable Soils.**  
Meet the requirements of Article 2102.02, D, 3.
- 4) **Other Materials.**  
Place materials not covered above as required by Standard Specifications.
- d. The Engineer may decline approval of an alternate borrow area when:
  - 1) Necessary clearances cannot be obtained prior to the time scheduled for commencement of work.
  - 2) Restrictions attached to clearances will delay or interfere with scheduled completion of work or may result in less than necessary quantities of required borrow materials.
  - 3) Contractor's plan for use of borrow areas, including Contractor's verification of quantity and quality of required material, is not sufficient to assure availability of required material.
  - 4) Contractor's proposed plans fail to meet requirements of the contract documents.
- e. The Engineer will be allowed time to evaluate each alternate borrow area. If the clearance is not obtained within 30 calendar days, the proposed use of that borrow area may be rejected. During this evaluation period, the Contractor will not be charged for working days the Contractor does not work because the Contractor cannot use the borrow area.
- f. The maximum allowance for each contract is not to exceed 30 working days. This allowance will not apply to work for which an intermediate completion time is specified. It will be given only when the delay will not interfere with others authorized to work on the project. It does not increase the Engineer's responsibility to provide coordination.
- g. The Contracting Authority will not be responsible for damages due to a delay in approval of an alternate borrow area or when approval of an alternate borrow area is declined.

**3. Contractor's Plan for Contractor Furnished Borrow.**

**a. General.**

- 1) Approval of materials for use as Contractor furnished select treatment materials will be based on Article 2102.02, D, 1.
- 2) Contractor may elect to substitute with special backfill material or modified subbase material as shown in the contract documents at no additional cost to the Contracting Authority. If special backfill material or modified subbase material is used in lieu of select material, provide for suitable surface and subsurface drainage of this material and provide suitable soils in lower portion of original subgrade treatment layer at no additional cost to the Contracting Authority.
- 3) The Engineer may decline approval of a contractor furnished borrow(s) when:
  - a) The Contractor's submittal fails to meet Proposed Borrow Report requirements, or
  - b) The Contractor's plan for use of borrow areas, including quantity and quality of required material, is not sufficient to assure availability of required material.

**b. Sampling and Testing**

- 1) **Total Project Quantity of Contractor Furnished Borrow Greater than 10,000 Cubic Yards (7650 m<sup>3</sup>).**

Sample and test the proposed contractor borrow areas and submit Proposed Borrow Report as specified in Appendix A. When the Contracting Authority determines it is necessary, sample in the presence of the Engineer. Submit the report electronically

to the Engineer. Include Iowa DOT Proposed Contractor Borrow Identification Form, sampling/field logs, and test reports. A minimum of 21 calendar days is required for review and approval by the Engineer. The Contracting Authority will not be responsible for damages or delays due to incomplete submittals or when approval of a borrow is declined.

**2) Total Project Quantity of Contractor Furnished Borrow less than 10,000 Cubic Yards (7650 m<sup>3</sup>).**

Sample proposed contractor borrow areas. When the Contracting Authority determines it is necessary, sample in the presence of the Engineer. Provide verification samples to the Engineer. A minimum of 14 calendar days is required for review and approval by the Engineer.

**3 4. Contractor Obtained Clearances and Permits.**

Obtain necessary environmental clearances and permits, and comply with all restrictions attached to these clearances and permits for alternate borrow areas and sites where Contractor furnished borrow is obtained.

**4 5. Restoration.**

- a. Optional borrow areas shown on the Contractor's plan shall be left in at least as good a condition as that required by the contract documents for designated borrow areas. This applies whether all or only a part of the site or the material is used for borrow.
- b. Use and rehabilitate optional borrow areas and alternate borrow areas (unless Contractor and landowner have agreed to the final design of the alternate borrow area) so that:
  - 1) The sites can continue to be used for the purpose for which they were used prior to removal of borrow.
  - 2) The sites may still be used for those higher and more profitable or better potential uses to which the site might have been put to prior to removal of borrow material.
- c. The Engineer will require restoration according to 314.12, Code of Iowa, to meet the above requirement. The overall Contractor's plan shall neither detract from nor interfere with the air, light, and view of motorists nor of adjacent landowners.

**5 6. Obligations and Payment.**

Use of an alternate borrow area shall not increase future obligations or total cost to the Contracting Authority. Complete all excavation from the roadway and the mandatory borrow areas.

**6 7. Starting Work.**

Except for exploratory purposes, do not start work and take material from an alternate borrow or a Contractor furnished borrow area until after:

- The Engineer approves the borrow proposal in writing, and
- Providing the Engineer with a written release executed by the property owner and the Contractor relieving the Contracting Authority of any and all obligations to the property owner and saving the Contracting Authority harmless from all claims for injury to persons or damage to property resulting from the Contractor's operations.

**7 8. Material Verification.**

Material supplied from alternate borrow areas ~~or Contractor furnished borrow~~ may be verified by the Contracting Authority for compliance with these requirements. When testing by the Contracting Authority is required, a minimum of ~~10 working~~ 14 calendar days is necessary for testing. When the Engineer orders, remove and replace material verified not in close compliance with these requirements, at no additional cost to the Contracting Authority.

**2102.04, A.**

**Add the Articles:**

**8. Contractor Furnished Select Treatment.**

Cubic yards (cubic meters) shown in the contract documents, adjusted by changes in available on site select treatments.

**9. Contractor Furnished Embankment-in-Place.**

Cubic yards (cubic meters) shown in the contract documents.

**2102.05, A.**

**Add the Articles:**

**8. Contractor Furnished Select Treatment.**

According to Article 2102.05, A, 3. Payment includes furnishing material.

**9. Contractor Furnished Embankment-in-Place.**

According to Article 2102.05, A, 3. Payment includes furnishing material.

**2105.02, Materials.**

**Replace the article:**

For topsoil furnished by the Contractor, provide material meeting the requirements of Articles 4170.09, A, 1, and 4170.09, A, 3, or strip existing topsoil from beneath template fill sections within the project limits if stripping of that topsoil is not already included as part of the project. Replace topsoil stripped from beneath template fill with an equivalent quantity of Class 10 or Embankment-in-Place material at no additional cost to the Contracting Authority.

**2108.05, Basis of Payment.**

**Add the article:**

**C.** Overhaul will not be paid for Contractor furnished material (such as borrow or topsoil) and waste material.

## APPENDIX A

## CONTRACTOR FURNISHED BORROW

**GENERAL**

This procedure describes requirements on sampling, testing, submittal, and approval of Contractor furnished borrow sites/sources where project quantity of Contractor furnished borrow is greater than 10,000 cubic yards (7650 m<sup>3</sup>).

Types of borrows covered in this Appendix are:

1. Excavated, which includes:

Drainable Borrow: A drainable borrow is one that has the intention of returning the site, as close as possible, to the previous activity/use, and

Pond Borrow: A pond borrow is one that has the intention of excavation below the natural ground and leaving a body of water for a designated purpose.

2. Non-excavated, such as stockpiled material, which includes:

Closed/Existing: A stockpile that will not have material added during the course of the project, and

Open/Active: A stockpile that will have material added during the course of the project.

**PROPOSED BORROW REPORT SUBMITTAL REQUIREMENTS**

A complete investigation of each proposed borrow shall include an adequate boring layout, a field log of each boring, appropriate sampling, and complete test results. Test pits instead of borings are allowed; however, this applies only for soil layer descriptions and sampling above the water table.

Only those sites that the Contractor intends to utilize for project construction shall be submitted as proposed borrows. The proposed borrows shall collectively satisfy the borrow need for project construction.

The Engineer will inform the Contractor of the acceptance or non-acceptance of the Proposed Borrow Reports.

If the volume of available suitable soil is insufficient due to the disapproval of a borrow or borrows, the Contractor shall make a new submittal. Any new submittal shall follow the same procedure as previous submittals.

An open/active stockpile submittal will require information on the stockpile material currently in place (see submittal requirements for non-excavated borrows) and information on material that will be excavated and added to the stockpile during the course of the project (see submittal requirements for excavated borrows).

The purpose of the proposed borrow submittal is only for the evaluation of the site. There will be no spatial requirements, restrictions, or limitations placed on the borrow design (conceptual or final).

A complete Proposed Borrow Report for each proposed borrow shall include:

1. Completed Iowa DOT Proposed Contractor Borrow Identification Form (provided at the end of this document).

2. Aerial photo showing the location of the proposed borrow site or the location of the proposed stockpile (this includes the geospatial extent/limits of either). A marked-up recent Google Earth photo should be sufficient.

For excavated borrows: in addition to the location of the borrow site, the aerial photo shall show the conceptual design and the location of the borings along with their identification numbers. A conceptual design is a general outline of the proposed borrow excavation limits.

For non-excavated borrows: in addition to the location of the stockpile, the aerial photo shall show the sampling locations along with their identification numbers.

a. Sample/Boring Layouts:

- i. For excavated borrows, a boring layout pattern shall spatially cover a potential borrow site to adequately identify the soil layers encountered throughout the site, and provide for sufficient profile representation. Borings shall be spaced to maximize the coverage and at intervals no greater than 400 feet (120 m) (subject to borrow shape and general outline). An example of a boring layout is provided at the end of this document.

As an example: a 40 acre (16.2 ha) (square) borrow site will typically require a minimum of nine borings.

Boring depths shall extend to a reasonable depth below the anticipated maximum excavation for both drainable and pond borrows (such as 10 feet (3 m)) to help accommodate potential material shortfalls. If additional excavation during construction is required to meet the borrow need, additional borings (with sampling and testing) are required.

- ii. For non-excavated borrows, a sampling layout pattern shall spatially cover a potential borrow site to adequately represent the site and define the composition of soil material to be encountered. Sampling shall be spaced to maximize coverage and represent the entire site. Spacing shall be no greater than 400 feet (120 m) (subject to borrow shape and general outline).

b. Samples:

- i. Loose/bulk samples of sufficient size (30 - 40 pounds (14 - 18 kg)) shall be taken, multiple times throughout the borrow site, for each soil layer encountered for excavated borrows or for each soil type for non-excavated borrows. For excavated borrows, a sample may only represent a similar layer in an adjacent boring no more than 400 feet (120 m) distant. Each sample shall be labeled with the boring ID and depth of sample, and shall be tested for mechanical analysis, determination of Atterberg limits, Munsell color comparison, percent of grain sizes, USDA textural and AASHTO classification, etc. (see Section "Laboratory test results" below). At least two samples for each predominant soil layer encountered shall be tested for Proctor density and optimum moisture.
- ii. Samples obtained prior to execution of contract shall be preserved by the Contractor. For samples obtained after execution of contract, the Engineer shall collect verification samples (split samples) from boring or test pits sampled by the Contractor. At the discretion of the Engineer, random verification samples (split samples) shall be submitted to the Central Materials Lab for verification testing.

3. Sampling/field logs:

- a. For excavated borrows, a descriptive field log of each borrow boring shall be submitted. An example is provided below. The following is the expected information for each boring in a borrow boring field log.
  - Boring ID number and GPS location (either State Plane or Lat/Long Coordinates).



- A field description of each soil layer (color, soil type, consistency, and geologic origin if possible).
  - Depth to bottom of each soil layer.
  - A notation indicating if a layer was sampled.
  - In-place moisture conditions of the soil layers.
  - Measured water table depth and amount of time between drilling and reading.
- b. For non-excavated borrows, a descriptive log of each sampling site shall be submitted. An example is provided at the end of this document. The following is the expected information for a sampling log.
- Sample ID number and GPS location (either State Plane or Latitude and Longitude Coordinates).
  - A field description of each sample (color, soil type, and consistency) and depth.
4. Laboratory test results:
- The testing of the borrow samples shall be performed by an accredited lab in accordance with Materials I.M. 208.
- The test results shall be submitted in report or tabulated form. An example of a tabulated form is provided at the end of this document.
- Each test report shall contain:
- Boring/Sample ID number, and GPS Location (either State Plane or Latitude and Longitude Coordinates).
  - For excavated borrows only, depth of sample (from – to) and in units of feet (meters).
  - Atterberg Limits (AASHTO T 89 and T 90, or ASTM D 4318).
  - Percent Gravel, Sand, Silt, and Clay (AASHTO T 88 or ASTM D 422).
  - Textural classification (USDA).
  - AASHTO classification (AASHTO M 145).
  - Proctor density and optimum moisture, when tested (see Section “Samples” above) (AASHTO T 99, ASTM D 698, or Materials I.M. 309)
  - Percent Carbon Content, where applicable (Office of Materials Test Method No. Iowa 111).
  - Sieve analysis (Percent Passing) (AASHTO T 88 or ASTM D 422).
  - Munsell Color comparison.
5. For excavated borrows only, provide profile views through the proposed borrow. A minimum of one profile is acceptable as long as the profile reasonably depicts all borings within the borrow and within close proximity (no more than 100 feet (30 m)) from the borrow edge. These profiles may be hand drawn. The profiles shall: include the location of each boring, depict the depths of the sampling in each boring, show the general soil layers through the borings, and illustrate the extent and depth of the anticipated excavation.

#### **PROCESSING CONTRACTOR BORROW SUBMITTALS, APPROVAL, AND ACTIVITY**

This section outlines the procedures that the Engineer, Office of Construction and Materials, and Soils Design Section of the Office of Design will follow for excavated and non-excavated contractor furnished borrow.

##### **A. Verification Sampling.**

1. The Engineer will be responsible for monitoring boring/sampling activity that occurs after execution of contract. At the discretion of the Engineer, random verification samples (split samples) will be obtained from those collected by the Contractor (minimum frequency: one for every ten Contractor samples).

2. If taken, the Engineer will submit verification samples to the Central Material Laboratory of the Office of Construction and Materials, for verification testing.
3. The Central Material Laboratory will send the verification test results to Engineer, the Office of Construction and Materials, and the Soils Design Section.

**B. Proposed Borrow Report.**

1. The Engineer will forward the reports to the Office of Construction and Materials, and the Soils Design Section.
2. The Office of Construction and Materials, and the Soils Design Section will evaluate the quality (soil suitability) and quantity (soil type availability) of the proposed borrows.
3. The Office of Construction and Materials, and the Soils Design Section will coordinate a reply to the Engineer. The coordinated reply will include the approval or disapproval of the proposed borrows, and any applicable comments.
4. The Engineer will convey the approvals or disapprovals and any applicable review comments or requirements to the contractor.

**C. Borrow Excavation/Use.**

The Engineer will monitor the use of the borrow material. If there are questions concerning quality of borrow material, the Engineer will request verification samples to determine material suitability and acceptable use.

## IOWA DOT PROPOSED BORROW IDENTIFICATION FORM

Date \_\_\_\_\_

Project Number \_\_\_\_\_ County \_\_\_\_\_

Project Description \_\_\_\_\_

Contractor \_\_\_\_\_ Phone \_\_\_\_\_

1. Borrow ID#: \_\_\_\_\_
2. Location (Legal Description): \_\_\_\_\_  
\_\_\_\_\_
3. Size (acres (hectares)): \_\_\_\_\_
4. Type:
 

<input type="checkbox"/> Drainable borrow	<input type="checkbox"/> Stockpiled Borrow – Closed/Existing
<input type="checkbox"/> Pond Borrow	<input type="checkbox"/> Stockpiled Borrow – Open/Active
<input type="checkbox"/> Other _____	
5. Estimated quantities (in cubic yards (cubic meters)):
 

Class 10 (suitable) _____
Select _____
Unsuitable _____
6. Name, address, phone number, and email of contact person from Contractor if additional information is required: \_\_\_\_\_  
\_\_\_\_\_

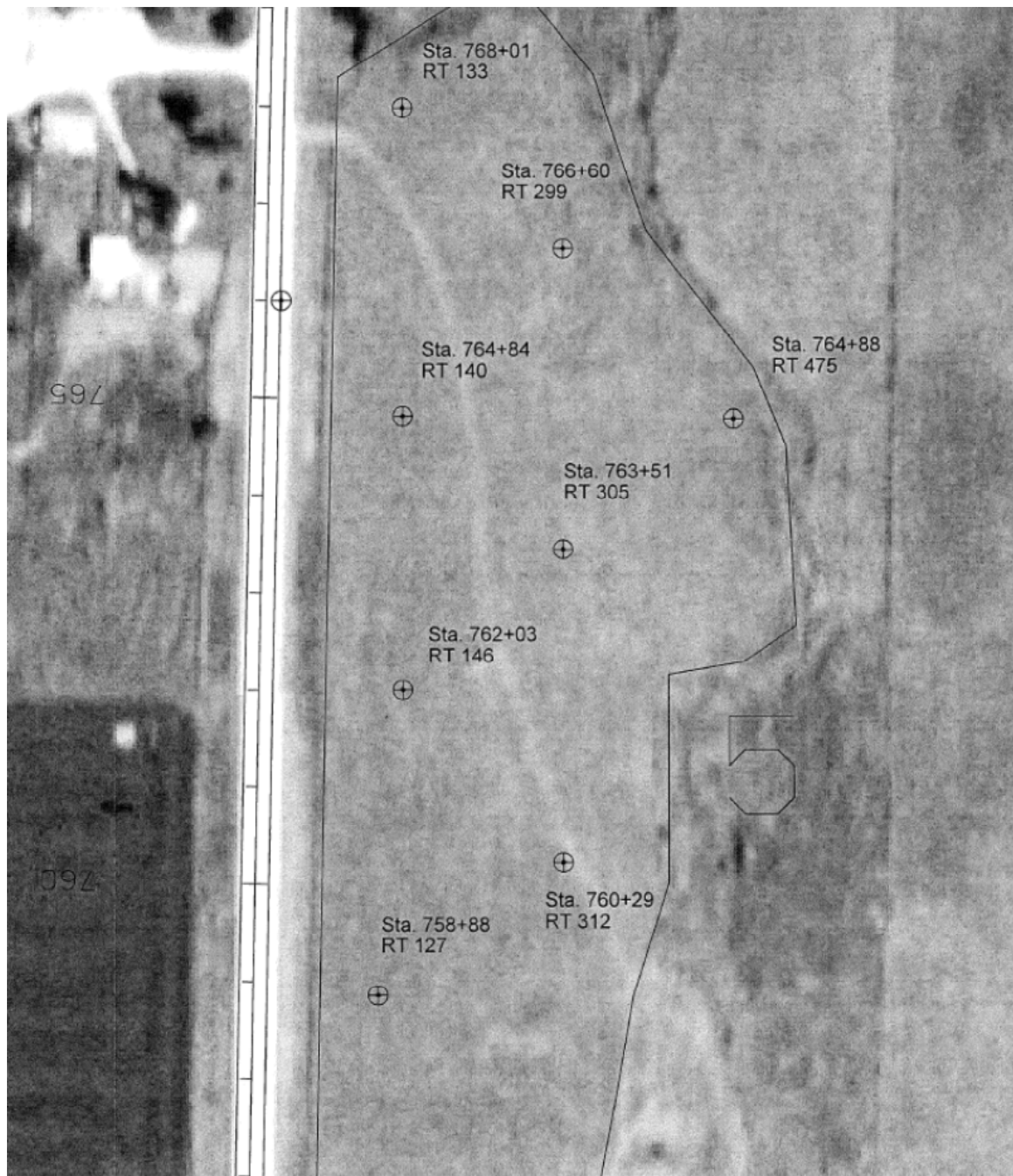
Attachment: ☐ Proposed Borrow Report

Office of Construction &amp; Materials \_\_\_\_\_ Date \_\_\_\_\_

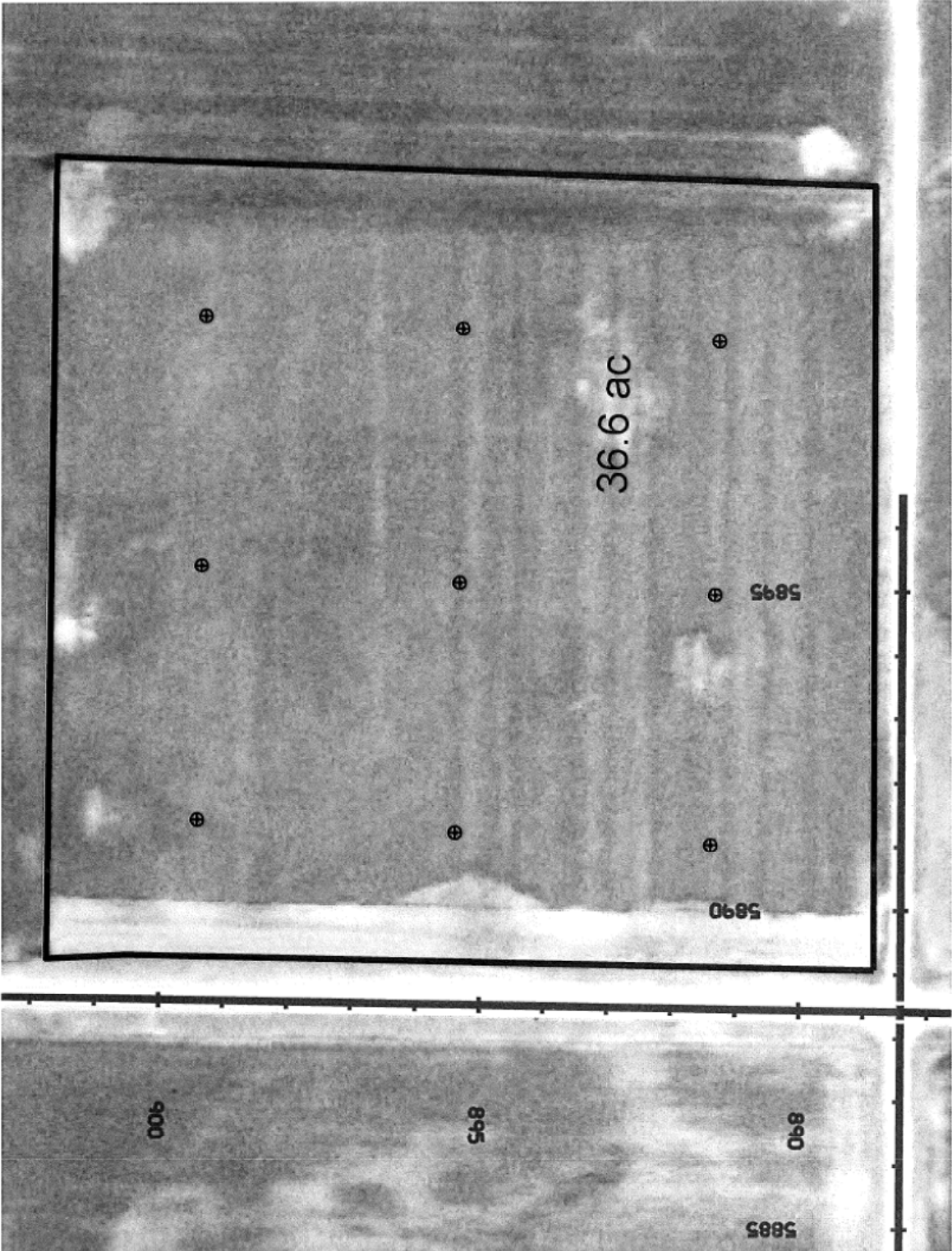
Office of Design, Soils Design \_\_\_\_\_ Date \_\_\_\_\_

Resident Construction Engineer \_\_\_\_\_ Date \_\_\_\_\_

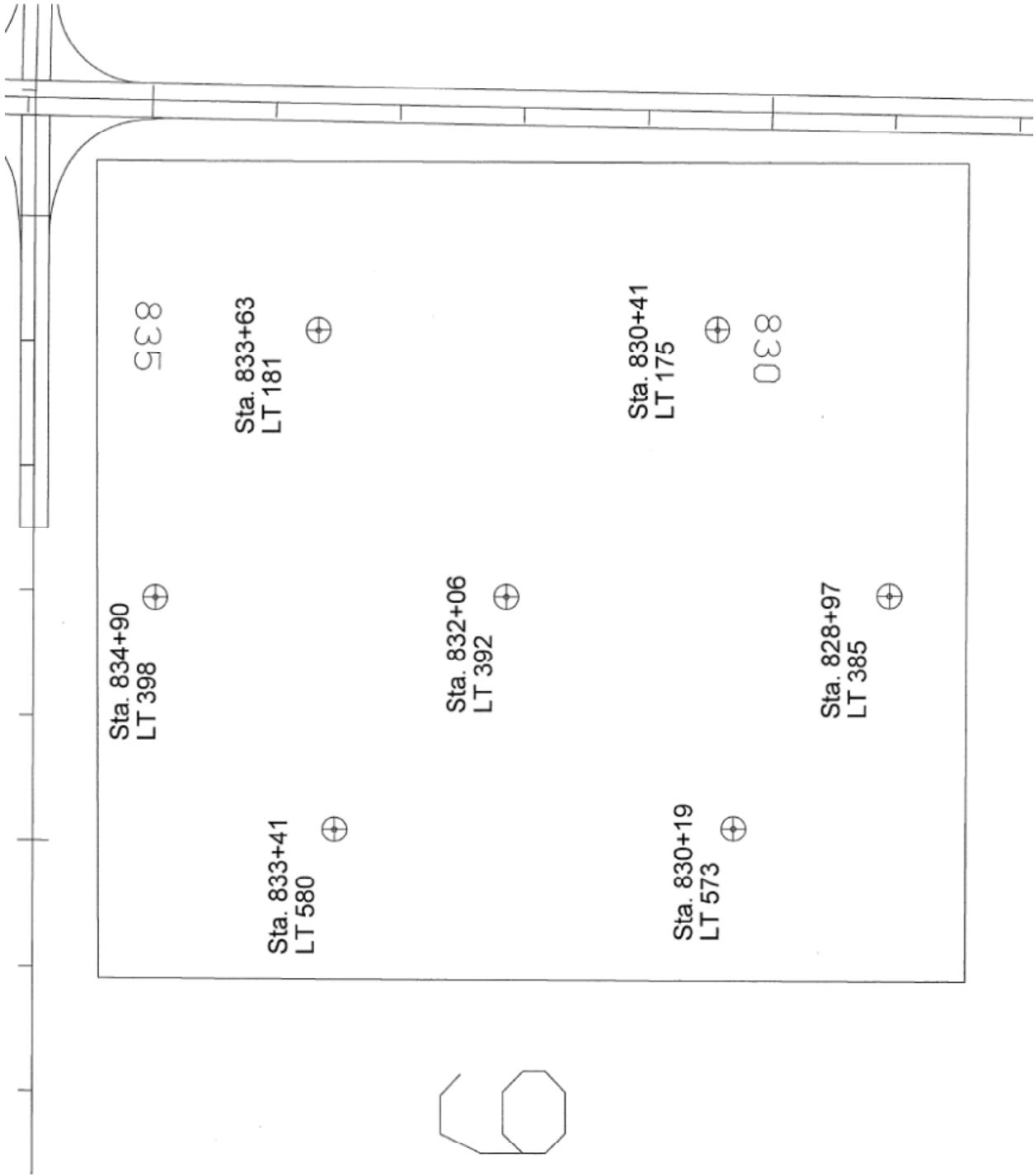
EXAMPLES: BORING LAYOUT, SAMPLING/BORING LOG, LABORATORY RESULTS, AND  
PROPOSED CONCEPTUAL DESIGN AND PROFILES



**Example of boring layout**



Example of boring layout



Example of boring layout

Date 4/15/2011

Project # NHS-141-1(025)--3H-31 Borrow (Stockpile)

Boring ID	GPS(x,y,z)	Sample or Referral	Depth	Layer	Description
M-0022	X: 4270090.23	Sample	0.5	A	Dark Brown Silty Loam
Borrow 1	Y: 3650678.897	Sample	15.4	B	Gray to Brown Sandy Clay
Location 8	Z: 900.5				
M-0023	X: 4269290.588	M-0022-A	0.4	A	Dark Brown Silty Loam
Borrow 1	Y: 3650678.999	Sample	12.9	B	Brown Sandy Clay
Location 9	Z: 902.4				
M-0024	X: 4269690.6	Sample	0.5	A	Dark Brown Silty Loam
Borrow 1	Y: 3650677.004	M-0023-B	14.8	B	Brown Sandy Clay
Location 10	Z: 901.3				

Example of stockpile sampling log

Date 7/15/2000

Borrow

Project # NHS-065-12(003)—3H-68

Boring ID	GPS(x,y,z)	Soil Moisture	Sample or Referral	Depth	Layer	Description
R-0296	X: 529277.001	Moist	Sample	1.5	A	Black to Brown Silty Loam (Topsoil)
Borrow 1	Y: 4550344.034	Wet	Sample	8.5	B	Gray to Brown Sandy Glacial Clay
Hole 1	Z: 1000.35	Wet	Sample	16.0	C	Gray Medium Sand
		Wet	Sample	20.0	D	Gray Sandy Glacial Clay
		Wet	Sample	33.0	E	Dark Gray Glacial Clay with Occasional Sand Seams
Comment:				2.5	Wet	24 Hr H2O reading
R-0297	X: 529680.061	Moist	R-0296-A	2.0	A	Black to Brown Silty Loam (Topsoil)
Borrow 1	Y: 4550344.002	Wet	Sample	4.5	B	Gray to Brown Sandy Glacial Clay
Hole 2	Z: 1001.40	Wet	Sample	11.0	C	Brown to Gray Sand with binder
		Wet	R-0296-C	25.3	D	Gray Medium Sand
		Wet	R-0296-E	35.4	E	Dark Gray Glacial Clay with Occasional Sand Seams
Comment:				2.1	Wet	24 Hr H2O reading
R-0298	X: 5230079.325	Moist	Sample	1.2	A	Black Silty Loam (Topsoil)
Borrow 1	Y: 4550345.005	Moist	Sample	3.5	B	Brown Silty Clay Loam (Loess)
Hole 3	Z: 1000.30	Wet	R-0297-B	12.0	C	Gray to Brown Sandy Glacial Clay
		Wet	Sample	24.6	D	Gray to Brown Medium Sand
		Wet	Sample	30.8	E	Dark Gray Glacial Clay with Occasional Sand Seam
Comment:				3.5	Wet	12 Hr H2O reading

Example of boring log

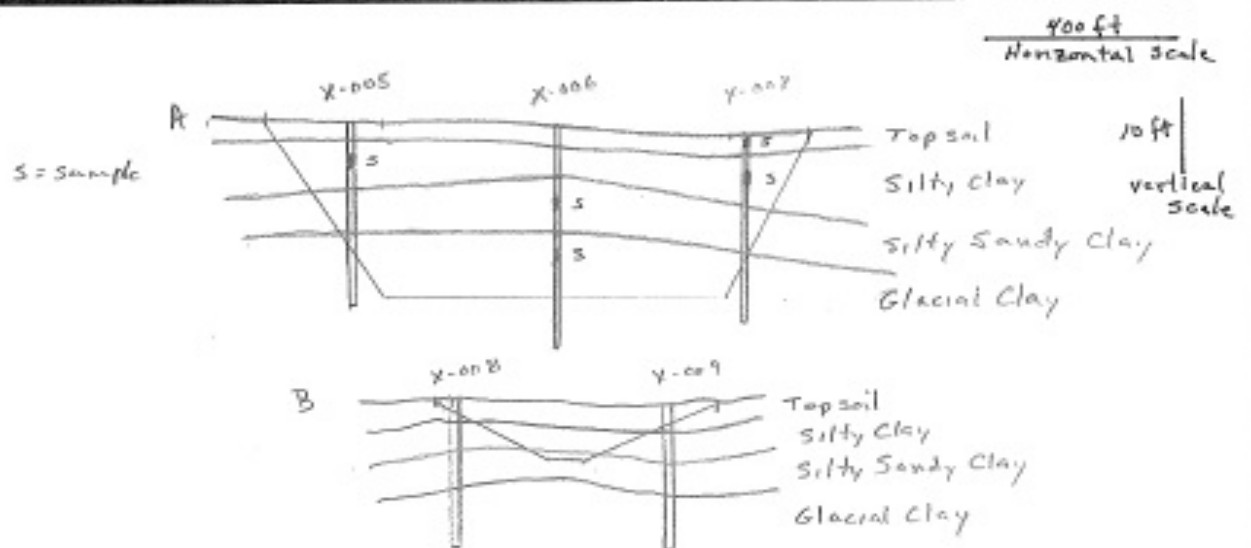
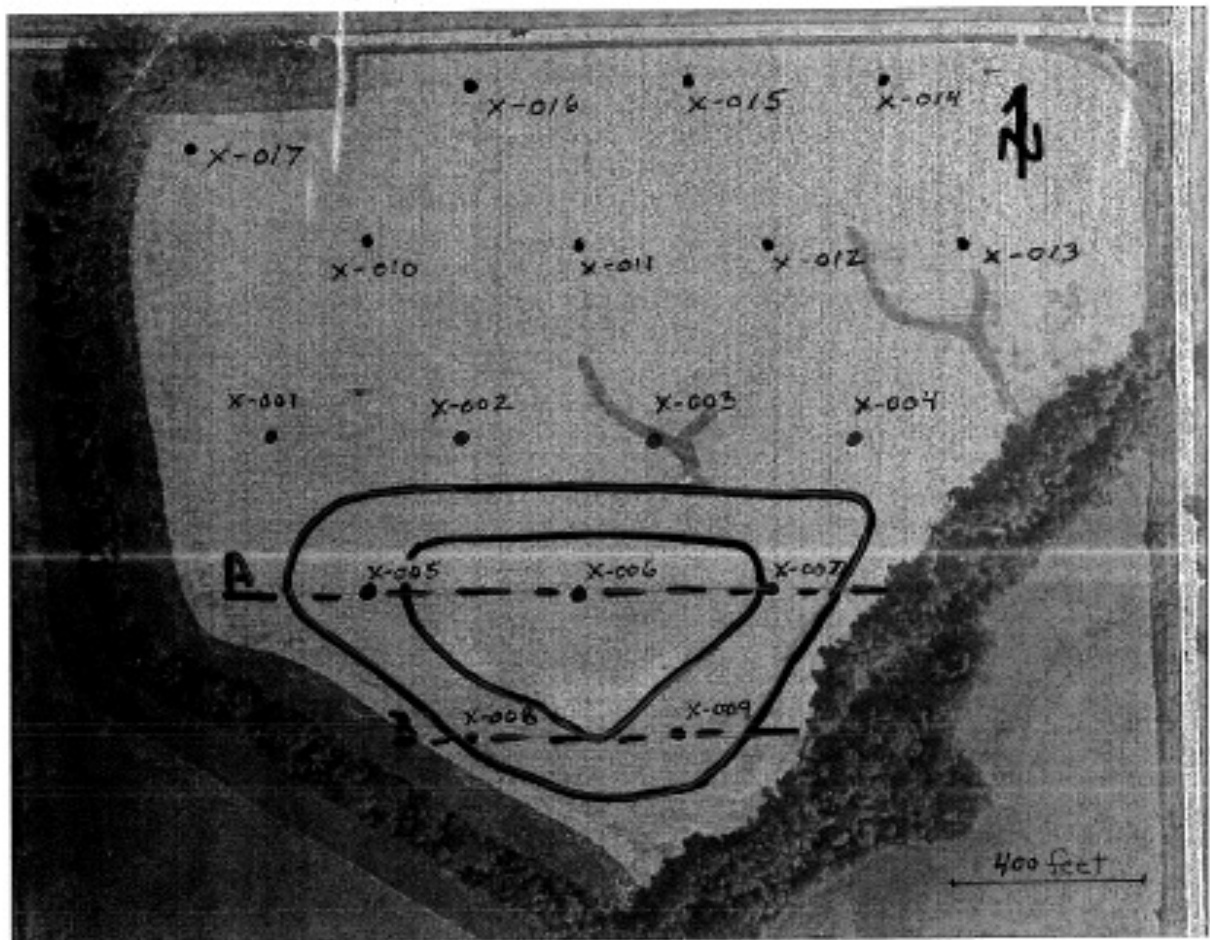


County-		Project:		Road:		Job:		Report (Both Group Indexes)		8/1/2013		Page- 1 of 8																																	
Location		Station		Dist.		LAYER		Lab No.		Sender		No.		LL		PL		PI		GR		SA		SI		CL		Den		M		BON		CAR-		Texture		AASHTO		A (New)<Old>		Color		** Sieve Analysis(% Passing) **	
Station		Dist.		LAYER		Lab No.		Sender		No.		LL		PL		PI		GR		SA		SI		CL		Den		M		BON		CAR-		Texture		AASHTO		A (New)<Old>		Color		** Sieve Analysis(% Passing) **			
Borrow 1	Hole 1	10.0-1.5	10-460	R0948A	45	22	23	0	49	38	13	93	25	3.8	LO	Black	3/4	3/8	4	10	40	100	200																						
Borrow 1	Hole 1	1.5-12.0	10-461	R0948B	40	15	25	1	21	50	28	112	16		LO	Gr Br	100	99	97	91	82	78	51																						
Borrow 1	Hole 1	12.0-35.0	10-462	R0948C	28	14	14	4	31	46	19	121	12		LO	Dark Gr	100	99	98	96	90	74	65																						
Borrow 1	Hole 1	35.0-40.0	10-463	R0948D	29	14	15	0	31	47	19				LO	Dark Olive	100	99	98	96	78	69	64																						
Borrow 1	Hole 1	40.0-50.0	10-464	R0948E	27	13	14	1	35	47	17				LO	Dark Gr	100	99	99	95	75	64																							
Borrow 1	Hole 3	35.0-50.0	10-465	R0950D	27	15	12	1	33	49	17				LO	Dark Gr	100	99	99	95	76	66																							
Borrow 1	Hole 4	20.0-32.0	10-466	R0951C	35	15	20	1	25	56	18				SI LO	Lt O Br	100	99	99	95	82	74																							
Borrow 1	Hole 4	32.0-40.0	10-467	R0951D	27	16	11	0	27	55	18				SI LO	Olive Br	98	93	91	90	84	68	57																						
Borrow 1	Hole 5	0.0-1.0	10-468	R0952A	34	17	17	10	33	37	20				LO	Lt O Br	100	98	97	94	75	68																							
Borrow 1	Hole 5	1.0-20.0	10-469	R0952B	29	14	15	3	29	47	21				LO																														
Borrow 1	Hole 5	20.0-50.0	10-470	R0952C	28	15	13	3	36	44	17				LO																														
Borrow 1	Hole 6	0.5-3.0	10-471	R0953B	43	15	28	0	28	43	29	107	18	1.4	CL LO	Olive Br	100	99	97	90	72	61	*																						
Borrow 1	Hole 6	25.0-35.0	10-472	R0953E	32	15	17	2	36	42	20				LO	V Dk Gr	100	99	95	87	72																								
Borrow 1	Hole 6	35.0-50.0	10-473	R0953F	27	14	13	22	31	33	14				LO	Olive Br	100	99	98	88	70	62																							
Borrow 1	Hole 18	0.0-2.5	10-356	A3874A	31	20	11	1	42	41	16	110	16	2.2	LO	Dark Gr	94	88	82	78	71	55	47																						
Borrow 1	Hole 18	2.5-10.0	10-357	A3874B	31	16	15	2	30	47	21	117	14		LO	V Dk Gr	100	99	97	90	72	61	*																						
Borrow 1	Hole 18	10.0-15.0	10-358	A3874C	35	16	19	4	26	48	22	116	14		LO	Olive Br	100	99	98	92	78	68																							
Borrow 1	Hole 18	15.0-21.0	10-359	A3874D	29	15	14	4	33	44	19	120	12		LO	Olive Br	100	98	97	96	92	79	70																						
Borrow 1	Hole 18	21.0-39.0	10-360	A3874E	29	15	14	3	35	44	19	121	12		LO	Dark Gr	100	98	96	92	75	63																							
Borrow 1	Hole 18	39.0-50.0	10-361	A3874F	22	13	9	1	44	41	14	124	11		LO	Dark Gr	100	99	97	94	75	62																							
Borrow 2	Hole 7	0.0-2.0	10-491	L0018A	57	23	34	0	11	59	30	87	29	4.9	SI CL LO	Black																													
Borrow 2	Hole 7	2.0-6.0	10-492	L0018B	50	11	39	1	26	40	33			0.8	CL LO	Black																													
Borrow 2	Hole 7	6.0-12.0	10-493	L0018C	28	17	11	2	35	46	17				LO	Dk Gr Br	100	99	98	93	74	63	*																						
Borrow 2	Hole 7	12.0-40.0	10-494	L0018D	29	15	14	5	32	44	19				LO	Dk O Gr	100	98	97	95	89	73	63																						
Borrow 2	Hole 8	1.5-4.5	10-495	L0019B	28	14	14	4	52	27	17	117	13		SA LO	Dk Gr Br	100	98	97	96	87	58	44																						
Borrow 2	Hole 8	4.5-21.0	10-496	L0019C	24	16	8	4	47	37	12				LO																														
Borrow 2	Hole 9	6.0-24.0	10-497	L0020C	28	14	14	2	34	44	20				LO	Dk Gr Br	100	99	98	93	74	63	*																						
Borrow 3	Hole 3	0.0-1.5	10-498	L0023A	36	21	15	5	44	41	10	109	17	2.8	LO	Olive Br	100	99	98	93	75	64	*																						
Borrow 3	Hole 3	1.5-23.0	10-499	L0023B	25	19	6	9	32	49	10				LO	V Dk Gr	100	97	96	95	89	63	51																						
Borrow 3	Hole 3	23.0-26.0	10-500	L0023C	27	19	8	1	23	63	13				SI LO	Lt O Br	100	97	93	91	87	71	59																						
Borrow 3	Hole 3	26.0-50.0	10-501	L0023D	19	16	3	5	53	34	8				SA LO	Dark Gr	100	99	99	95	84	76																							
Borrow 8	Hole 1	0.0-1.5	10-569	R0982A	48	23	25	3	35	43	19				LO																														
Borrow 8	Hole 1	1.5-16.0	10-570	R0982B	29	14	15	7	33	41	19	121	12	3.3	LO	Olive Br	100	99	98	93	75	64	*																						
Borrow 8	Hole 1	16.0-19.0	10-571	R0982C	22	13	9	4	54	30	12	124	11		LO	V Dk Gr	100	96	94	93	85	70	60																						
Borrow 8	Hole 1	19.0-25.0	10-572	R0982D	26	13	13	4	42	37	17				LO	Lt O Br	100	98	96	85	57	42	*																						
Borrow 8	Hole 1	25.0-28.0	10-573	R0982E	48	18	30	3	25	34	38				CL LO																														
Borrow 8	Hole 1	28.0-30.0	10-574	R0982F	21	12	9	5	52	31	12				SA LO	Dark Gr	100	99	97	91	79	72																							
Borrow 8	Hole 1	30.0-35.0	10-575	R0982G	20	13	7	8	53	28	11				SA LO	Lt O Br	100	99	97	92	78	54	39																						
Borrow 8	Hole 1	35.0-50.0	10-576	R0982H	24	12	12	9	37	38	16				LO	Dk Gr Br	100	97	92	78	54	39																							
Borrow 8	Hole 3	0.0-3.0	10-577	R0984A	48	24	24	0	28	53	19				SI LO	V Dk Gr Br	100	99	96	91	83	65	54																						
Station	Dist.	Layer	Lab No.	S No.	LL	PL	PI	GR	SA	SI	CL	Den	M	CRB	Texture	A (New)<Old>	Color	3/4	3/8	4	10	40	100	200																					

Samples bracketed by asterisks (\*) meet the 'Select' criteria except for a missing proctor

Samples bracketed by asterisks (\*) meet the 'Select' criteria except for a missing proctor

Example of laboratory test results



Example of Plan and Profiles