ADDENDUM NO. 1

Project: NDOR District 3 Niobrara Maintenance Facility

Issued: February 10, 2017

Bid Date: February 24, 2017

This Addendum is issued to all known plan holders before receipt of proposals.

The following shall be included with, and considered a part of, the original contract documents to the same extent as if they were included therein, for the construction of the above mentioned project. The Project Manual and Drawings shall be modified or revised as herein described. Where at variance with the original work, this Addendum shall have precedence.

This Addendum modifies the original Bidding Documents. The Bidder must acknowledge receipt of this Addendum in the space provided on the Proposal Form. Failure to do so may subject bidder to disqualification.

ARCHITECTURAL ADDENDA ITEMS:

AD1.1. Pre-Bid Conference: Attached is the **agenda and sign-in sheet** from the February 9th Pre-Bid Conference held in Niobrara.

AD1.2. General Note: Various Specification sections for concrete and soils may refer to testing requirements during construction, some of which may incorrectly mention testing by the Owner. **All testing during construction shall be the responsibility of the Contractor** to engage a qualified testing agency to perform testing and inspections and prepare test reports to be submitted to the Architect.

AD1.3. Specification Section 00 20 00 Instructions to Bidders – Clarification: Part 3.01B. Plans and Specifications are being sent to the following three additional locations for viewing:

Construction Industry Center
Christina Mason
2771 Plant St.
Rapid City, SD 57702

Plains Builders Exchange, Inc
220 N. Kiwanis Ave.
Sioux Falls, SD 57104

Sioux City Construction League
3900 Stadium Drive P.O. Box 3346
Sioux City, IA 51102-3346

209 South 9th Street **402.475.1787 Tel.**
Lincoln, Nebraska 68508 **402.475.1800 Fax**

AD1.4. Specification Section 00 20 00 Instructions to Bidders – Clarification: 3.02B. Direct questions for clarification or interpretation of the Bidding Documents to the Architect, **Trevor Hull** at trevor@ericksonsullivan.net or at 402-475-1787.

AD1.5. Specification Section 00 20 00 Instructions to Bidders – Clarification: Part 4.03D. The question was asked if the bid could be mailed and if bid adjustments could be faxed prior to the bid time. **No alterations to the bid are allowed via electronic means or facsimile**. All bids and any alterations to the bids must be received via mail or hand delivery, per Part 4.04 Modification or Withdrawal of Bids.

AD1.6. Specification Section 015000 Temporary Facilities and Controls – Clarification: Part 3.04E. A 6 foot chain link construction fence will not be required around all on-site work prior to the installation of the final fencing. However, it is recommended that the contractor secure and control the site with snow fencing or equivalent. The Contractor is responsible for site security.

STRUCTURAL ADDENDA ITEMS:

AD1.7. Specification Section 13 34 19 Metal Building Systems – Correction: Part 1.5A – The building shall be designed in accordance with the **2012 International Building Code** as this is the code adopted by the State of Nebraska.

AD1.8. Specification Section 13 34 19 Metal Building Systems – Clarification: Part 1.5B, 6. Collateral roof dead load shall be **10lbs/sf** as indicated. This is due to possibility for equipment that may be installed in the future and hung from the roof structure.

CIVIL ADDENDA ITEMS:

AD1.9. Specification Section 31 00 00 - The Geotechnical Report was omitted from the Specifications booklet. Please refer to the **attached Geotechnical Report** and Addendum A for information regarding the required site work.

APPROVED SUBSTITUTIONS:

The following are product substitutions which were received at least seven (7) days prior to receipt of bids and shall be considered approved by the Architect. The manufacturers listed herein will be considered approved for bidding, however the proposed product substitution must meet the intent of the specifications and will be subject to shop submittal approval during construction. Bidders shall include in their bid, any changes required in the Work to accommodate such substitutions.

Section 13 34 19 – Metal Building Systems **American Buildings Company**

General Contractor shall acknowledge receipt of this Addendum on the Proposal Form in the space provided.

END OF ADDENDUM NO. 1

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF ROADS

SIGN-IN SHEET

NDOR Niobrara Maintenance Facility
AFE K-300
9 February 2017
1:00 PM Local Time

	Name:	Company/Firm/Agency:	Phone Number:	E-Mail Address:
1.	Joshua Cowan	NDOR – CAP FAC	402.479.3746	joshua.cowan@nebraska.gov
2.	Ray Branstiter	NDOR – District 3 - District Operations Maintenance Manager	402.370.3470	ray.branstiter@nebraska.gov
3.	Tony Tschirren	NDOR – District 3 - Highway Maintenance Superintendent	402.887.5441	anthony.tschirren@nebraska.gov
4.	Jerry Fritz	NDOR – District 3 - Highway Maintenance Supervisor	402.857.3722	jerry.fritz@nebraska.gov
5.	Keith Koertje	NDOR – District 3 - Highway Project Manager	402.254.6552	keith.koertje@nebraska.gov
6.	Trevor Hull	Erickson Sullivan Architects Project Architect	402.475.1787	trevor@ericksonsullivan.net
7.	Kevin Bender	Welfl Construction	605-665-3255	benderkevin@welfl.com
8.	John Pinkelman	Meyford Electric	402-357-2113	meyfordelectric@gpcom.net
9.	Bryant Larson	WS Construction	605-351-3452	Bryant@wsconstruction management.com

10.	Adam Houdeshell	Summit Contracting	605-337-2841	Jason [redacted]@summitcontractingsd.com
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF ROADS

PRE-BID CONFERENCE

District 3 - Niobrara

NDOR Maintenance Building

PROJECT AFE K-300

Thursday, February 9, 2017

1:00 PM – Local Time

INTRODUCTORY REMARKS:

INTRODUCE SELF – GOOD AFTERNOON! I am Joshua Cowan – Facilities Construction Coordinator II for the Nebraska Department of Roads. I would like to THANK YOU for your interest in the Niobrara Maintenance Building Project.

The Purpose of this conference is to answer any Administrative or Technical questions you may have and to provide you with an opportunity to look at the Project Site.

INTRODUCTIONS – I would like to make some Introductions:

Ray Branstiter, District 3 District Operations Maintenance Manager – NDOR

District 3 Crew Introductions by Ray Branstiter

Trevor Hull, Project Architect – Erickson Sullivan Architects

SIGN IN SHEET– Has everyone had a chance to sign the Sign-In Sheets that are circulating? Be sure and sign in before you leave.

ADDENDUMS

No addendums have been issued

All attending today will receive any addendums. Those on the Plan holders list at A&D will also receive the addendums. Please sign the attendance sheet to ensure that you receive any addendums for this project.

BID FORM

On completing the Bid Proposal Form contained in the Bid Packet (Section 004000):

1. Please fill out the Bid form completely for all applicable items.
2. Sign the Bid Form in Blue Ink.
   - Bids received without original signature or
   - Signed in pencil will not be accepted.
3. Return all four (4) pages of the Bid Form, pages 004000-1 – 004000-4.
4. On the Bid Form, there is a Total Base Bid Amount
5. Be sure to enter your Bid Proposal amounts correctly in both words and figures as required on the Bid Proposal Form.
6. The Bid Review Committee will review the Bids for any discrepancies.
7. Be sure to fill out the Schedule of Values on the Bid Form.
8. Be sure to provide the bid in an envelope marked "BID".
   - Preferred to say:

BID
District 3 Niobrara
NDOR Maintenance Facility
AFE K-300

CONTRACT TIME

1. Contractor is to ensure days indicated on bid form are correct. The days should reflect the time required from issuance of "Notice To Proceed" thru Substantial Completion of the project.

2. The Bid Form will indicate a not to exceed date, which is the maximum amount of time we have allotted for the project. (270 days) Your number of days can be less just not more than that timeline.

BIDS DUE

1. The Bids are due NO LATER THAN @ 3:00 PM on Thursday, February 23, 2017, at the Nebraska Department of Roads Operations Division, 5001 S. 14th Street, Lincoln, Nebraska.
2. Parking is available in the South Parking Lot.
3. The Bids will be publicly opened and recorded in Conference Room #110. You are welcome to stay and attend the Bid Opening.

DRUG POLICY

By signing the Bid Proposal, the Bidder is committed to provide a drug free workplace environment. If requested by the Nebraska Department of Roads, the Bidder must furnish evidence that they have a Drug Free Workplace Policy.

BID REVIEW COMMITTEE

The "Bid Review Committee" will meet within one week after the Public Bid Opening to review the bids for any irregularities and to award the contract on the Project.

CONTRACT REVIEW

Contracts will then be prepared and sent to the NDOR Attorney's Office for review. The contract review takes about two weeks. Once the contract review is complete, the contracts go to the Contractor for signature.

LIQUIDATED DAMAGES

Liquidated damages will be assessed for this project in the amount of $500/day for every calendar day the work remains unfinished after the substantial completion date.

MANDATORY MEETINGS

After the Contract is fully executed, a PRE-CONSTRUCTION MEETING will be held on site after the Contracts, Performance Bonds, and Certificate of Insurance have been received.

INVOICE PAYMENTS ON PROJECT

1. Payments will be made by DIRECT DEPOSIT on the project in accordance with State of Nebraska procedures. Payments will be made within 45 days after the invoices are received at the CAP FAC Office.

2. The Nebraska State Treasurer requires that payments in excess of $25,000 will be made by direct deposit instead of State Warrants (checks).

3. The Contractor must establish a direct deposit payments enrollment with the State Treasurer (ACH – Automated Clearing House). The enrollment form will be provided at the Pre-Construction Meeting.

HOURS OF OPERATION AT THE PROJECT LOCATION:

No limitation to hours of operations

COORDINATION ON OTHER CONSTRUCTION AT FACILITY

None at this time

EQUIPMENT STORAGE & MATERIAL STORAGE AT THE SITE

The Contractor is responsible for the security of their equipment and any materials left at the site.

The Contractor is expected to keep the construction site clean and free of trash and debris during the project. Daily cleaning shall be completed.

USE OF SANITARY FACILITIES:

There is not any existing Facilities available

ADMIN QUESTIONS (Space for Notes)

USE OF SITE

The Contractor is responsible for the security and safety of the site at all times. The construction area should be kept neat and tidy, and adjacent space and roads to be kept clean and clear. Contractor responsible for repair of any damages to facilities and property.

ALTERNATIVE/ADDITIVE BID ITEMS

NONE

UNIT PRICE ITEMS

There will be a Unit Price issued by Addendum, along with an updated Bid Form, for cost/lineal foot for additional well depth beyond the depth shown on the Drawings.

ARCHITECT COMMENTS (Space for Notes)

CONTRACTOR QUESTIONS AND COMMENTS (Space for Notes)

See Addendum #1 for answers to questions asked during the Pre-Bid.

MEETING ADJOURNED:
ALL ARE WELCOME AND ENCOURAGED TO VISIT THE SITE

PROJECT SITE EXAMINATION (Space for Notes)

The building corners have been staked on site for review.

The Owner has begin bringing in suitable fill for the site.

Please note, the City of Niobrara has a building adjacent to the site which shares an access drive. Access to this building must be maintained at all times.

SECTION 31 00 00

GEOTECHNICAL REPORT

REFER TO THE FOLLOWING PAGES

MID-STATE
ENGINEERING & TESTING

REPORT OF GEOTECHNICAL INVESTIGATION

NDOR MAINTENANCE FACILITY
NIOBRARA, NEBRASKA

M.S. PROJECT NO. 200-92-22
JUNE 2, 2016
A-3044

Prepared for:

Erickson Sullivan Architects
209 S. 9th Street
Lincoln, NE. 68508

TABLE OF CONTENTS

APPENDICES

MID-STATE
ENGINEERING &
TESTING, INC.

REPORT OF GEOTECHNICAL INVESTIGATION

NDOR MAINTENANCE FACILITY NIOBRARA, NEBRASKA

M.S. PROJECT NO. 200-92-22
JUNE 2, 2016
A-3044

INTRODUCTION

This report presents the results of a Geotechnical Investigation performed at the site of a proposed Nebraska Department of Roads Maintenance facility located in Niobrara, NE. This investigation was authorized by Mr. Scott Sullivan with Erickson Sullivan Architects based on our written proposal.

Included in this investigation were five (5) soil borings, lab evaluation, and a report of findings and recommendations. The scope of our report was limited to the following:

- Identify in-situ soil conditions
- Evaluating the engineering properties of the various soil strata
- Evaluating soil bearing capacity and settlement
- Recommend types and depths of foundation elements
- Providing recommendations for earthwork and soils related construction.

This report was prepared by Mid-State Engineering and Testing, Inc. by a professional engineer registered in the State of Nebraska. Recommendations are based on the applicable standards of the profession at the time of this study. This report has been prepared for the exclusive use of Erickson Sullivan Architects, R.O. Youker, Inc., and the owner for specific application to the proposed construction. All work was conducted in accordance with generally accepted soil and foundation engineering practices.

11 EAST 11TH STREET
KEARNEY, NEBRAKSA 68847
PHONE (308)-237-0187

279 ROAD D
COLUMBUS, NEBRASKA 68601
PHONE (402)-562-7824

PROJECT DESCRIPTION

As proposed, construction will include an approximate 13,000 square foot, single story, slab on grade steel frame structure. An approximate 1,000 square foot mezzanine is included on the north portion of the structure. Also included in the development will be new concrete parking and approach slabs around the facility.

It is anticipated maximum structural loads will be on the order of 70 kips for isolated columns and 2-3 klf for walls.

FIELD WORK

The field investigation was conducted on May 17th, 2016. The exploratory program consisted of five (5) soil borings located as noted on the attached site plan (Appendix A). Boring locations were determined in the field based on a preliminary site plan provided by Erickson Sullivan Architects and information provided by NDOR personnel on-site. Boring locations were documented utilizing GPS coordinates. The locations of the borings should be considered accurate to the degree implied by the means and methods used.

The exploratory borings were advanced to depths of 10 to 20 feet below existing site elevations with a truck-mounted Mobile-drilling rig using continuous flight augers. Since the borings remained open while drilling and stabilization drilling methods were not required within the depths investigated.

Soil samples were obtained at the sampling intervals noted on the Boring Logs (Appendix B). Recovered samples were extruded in the field, sealed in plastic containers, labeled, and protected for transportation to the laboratory for testing. Undisturbed samples, designated "U" samples, were obtained with a 3.0-inch (outside diameter), thin-walled, tube samplers hydraulically pushed in general accordance with ASTM D1587-83 (Thin walled Sampling of Soils). Split-barrel samples, designated "S" samples, were obtained while performing Standard Penetration Tests (SPT) with a 1.50-inch (inside diameter), thick-walled sampler driven in general accordance with ASTM D1586-84 (Penetration Test and Split-Barrel Sampling of Soils). The N-value, reported in blows per foot, equals the number of blows required to drive the split-barrel sampler over the last 12 inches of a normal 18-inch sampling interval.

The field Boring Logs was prepared by an experienced soils engineer in general accordance with ASTM D2488-84, (Description of Soils by the Visual-Manual Procedure). Stratification lines represent the approximate boundary between soil types. In-situ, the transition between sediments may be gradual. Water level readings were made in the drill holes at the times and under conditions noted on the boring logs.

LABORATORY TESTING

The field boring logs were reviewed to outline the depth, thickness, and extent of the soil stratum encountered. Based on site stratigraphy and the construction proposed, a testing program was established to evaluate the engineering properties of the bearing strata. Specific tests performed include:

- Soil Moisture Contents
- Atterberg Limit Tests
- Unit Weight Determinations
- Unconfined Compression Tests
- #200 Washed Sieve Analysis

All tests were conducted in general accordance with current ASTM or state-of-the-art test procedures. Laboratory test results are presented in Appendix C.

Moisture contents, sand contents, unit weight determinations, and the standard penetration tests performed in the field were used to define the overall uniformity/variability of on-site soils for evaluating bearing capacity and settlement.

Atterberg limit tests were used to quantify soil plasticity and to classify the soils based on the Unified Soil Classification System (USCS).

Based on the results of this testing program, the field logs were reviewed and supplemented as shown in Appendix B. These final logs represent our interpretation of the field logs and reflect the additional information gained from the laboratory-testing program. A summary of the laboratory tests is shown on the attached spreadsheet in Appendix C.

SITE CONDITIONS

Currently, the site is surfaced with a crushed rock/asphalt milling materials. Previously, it was ag land used for row crop production. The site slopes gently to the northeast, with approximately 3 to 4 feet variance in elevation across the site. There are no signs of prior development visible at this time.

SOIL CONDITIONS

This site lies within the upland plains overlooking the Missouri River flood plain. The generalized subsurface profile for this region consists of water deposited (alluvium) soils of various ages. To the depths investigated, the site soils consists of a thin layer of Old Fill Material atop Colluvial Sediments which are underlain by Alluvial Sands.

Old fill and/or a tilled agricultural zone was encountered beneath the gravel surfacing and was variable in both thickness and consistency. This approximate 1 to 2½ foot thick layer of old fill and disturbed soils were described as dark grey brown, and brown, moist to very moist, firm, silty and sandy lean clays, and clayey sands, with some rock and asphalt millings. These deposits exhibit the following range in in-situ engineering properties.

Moisture Content (%)	12 – 15
Dry Unit Weight (pcf)	112 – 115
Material Passing #200 Sieve (%)	2 – 59

Based on lab and visual evaluation, these old fill materials ranged in classification from moderately plastic sandy lean clays (CL) silty and clayey sands (SM/SC) and clayey sands, with rock and asphalt millings (SM/SC/SP).

Colluvial Deposits are naturally occurring sediments which accumulate through the action of wind and local wash. These deposits were encountered below the surface fill, extending beyond the bottom of the 10 and 15 foot boring depths and to a depth of 16½ feet in boring location DH-3. These sediments were described as dark grey brown, dark brown, brown, and light brown, moist to saturated, very soft to stiff, sandy lean clays and clayey sands. Specific in situ engineering properties are as follows:

Moisture Contents (%)	21 – 46 (Saturated)
Dry Unit Weights (pcf)	83 – 96
Material Passing #200 Sieve (%)	45 – 95
Unconfined Compressive Strength (tsf)	0.5 – 2.0
Plastic Index	18
SPT Blow Counts (N)	4 – 12

Based on Atterberg Limit testing and visual evaluation, these deposits classify as low to moderately plastic sandy lean clays (CL) clayey sands (SC).

Alluvial sands were encountered below the Colluvial sediments in boring location DH-3, extending to the termination depth of the boring. These water deposited sediments were described as light brown, saturated, firm, poorly graded sands. In-situ engineering properties are as follows:

Moisture Contents (%)	18 (Saturated)
SPT Blow Counts (N)	18

Based on standard penetration testing, and visual evaluation, these soils classify as poorly graded fine sands (SP).

GROUNDWATER

Groundwater was encountered at depths of 4½ to 8 feet below existing site elevations during the drilling operations. At this time, it is not expected that groundwater at this elevation will have a significant impact on the proposed slab on grade building and pavement construction. Any excavation depths deeper that 5 feet should expect to encounter groundwater or high soil moisture. It should also be recognized that fluctuations in groundwater elevation can occur due to seasonal variations in rainfall, runoff, temperature, or other factors that differ from those at the time of drilling.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

In the event the recommendations of this report are followed, this site is considered suitable for the planned development. The undisturbed site soils encountered are generally capable of supporting

anticipated foundation loads, and groundwater was not encountered within a depth that is expected to significantly impact foundation construction or performance.

The primary concern for this project includes the consistency of the undocumented surface fill material, the variable consistency of the upper bearing soils (Colluvial Sediments), and the relatively high groundwater levels. Due to the variable consistency and thickness of the old fill and site soils we recommend removing a minimum of one foot of surface materials from building and paving areas. We recommend the stripped/overexcavated subgrade be scarified, compacted and observed by the Geotechnical Engineer to verify conditions. Unstable/unsuitable old fill material identified at this time will need to be removed or stabilized as recommended by the engineer.

Due to the variable soil conditions and moderate foundation loads, we recommend foundation elements bearing within the undisturbed soils be designed utilizing a conservative bearing capacity for foundation design. We recommend all building subgrades be observed and approved by the Geotechnical Engineer.

Recommendations regarding these and other aspect of this project are included in the following sections of this report.

FOUNDATION DESIGN

If the recommendations presented in this report are followed, the site appears suitable for use of conventional spread footings. The selection of an allowable soil bearing pressure for shallow foundation elements must fulfill two requirements. First, the loads must be sufficiently less than the ultimate bearing capacity of the foundation to insure stability. Second, total and differential settlement must not exceed an amount, which will produce adverse behavior of the superstructure.

In order to meet the previous criteria, we have explored both the bearing capacity and load settlement characteristics of the on-site soil assuming maximum loads of 3 kips per linear foot for walls and 70 kips for isolated columns. Bearing capacity is based on a factor of safety of 3 against the full dead load plus normal live load. A maximum total settlement of 1 inch and differential settlement of 1/2 to 3/4 inches are generally considered acceptable and were used in our analyses. The allowable bearing pressure is expressed in terms of the net pressure transferred to the soil.

If the recommendations presented in this report are followed, and load bearing footings bear within undisturbed site soils approved by the engineer, a net allowable soil bearing pressure of up to 1,500 pounds per square foot may be used for shallow foundation design. Foundation elements designed in this manner will limit maximum total settlement, due to foundation loads, to approximately 3/4 inch or less, while limiting differential settlement to approximately 5/8 inch per 100 linear feet.

We recommend exterior footings and footings in unheated areas bear at a minimum depth of 48 inches below surrounding grade for frost protection. Interior footings, protected from the effects of frost, may bear directly below the floor slab. We recommend foundation excavations be cleaned of loose soil or debris prior to reinforcing steel or concrete placement. All footings will require steel reinforcement and should conform to applicable building code sizes and regulations.

EARTHWORK AND EXCAVATIONS

Prior to overall site grading, we recommend organic topsoil, surface vegetation, and rock surface material be stripped and stockpiled for later use in non-loaded (green) areas or removed from the site. To identify potential issues and evaluate in-situ conditions, we recommend the site be over excavated a minimum of 12 inches below existing site elevations. Once completed, we recommend the engineer verify suitability of subgrade prep as well as the removal of unsuitable old undocumented fill material where encountered. Once observed and approved, we recommend the upper 8 inches of the resultant subgrade be scarified, moisture conditioned as needed, and recompacted to establish a stable base for placement of structural fill. We recommend the compacted subgrade be observed by the engineer to verify subgrade conditions prior to new fill placement. Unstable or unsuitable soil conditions identified by the engineer will need to be corrected as required to establish a firm, unyielding subgrade prior to concrete or new fill placement.

We recommend off-site borrow material consist of a clean, select lean clay or sandy clay soils having a liquid limit less than 45 and a plastic index between 12 and 25. We do not recommend the use of clean sand fill due to the cohesive nature of the site soils. In addition, we recommend all fill for pavements consist of cohesive lean clay soils to minimize moisture infiltration into the bearing soils.

We recommend fill and backfill material be placed in loose lifts of 8 inches or less in thickness, with each lift compacted with a sheepfoot type compactor to a minimum 95 percent of the material's standard Proctor maximum dry density (ASTM D698-00). Moisture content at the time of compaction should be controlled between -3 and +3 percent of optimum. As previously stated, sand backfill which can transfer surface water to the bearing soils is not recommended.

We recommend backfill soils in utility trenches within the structure be placed in 6-inch loose lifts with each lift compacted to a minimum 95 percent of the material's Standard Proctor maximum dry density (ASTM D698-00). If hand operated compaction equipment is required for limited access areas, a maximum loose lift thickness of 4 inches is recommended. To reduce the potential for moisture infiltration of bearing soils, clean granular backfill material is not recommended for use on this project.

We recommend a technician, working under the supervision of a Mid-State engineer, periodically monitor earthwork operations to evaluate compliance with the above recommendations.

Vertical cuts and excavations may stand for short periods but should not be considered stable in any case. All excavations should be sloped back, shored, or shielded for protection of workers. Trenching and excavation activities should conform to federal and local regulations as a minimum.

According to OSHA Standards for the Construction Industry, the cohesive soils encountered above free groundwater levels (about 8 feet) are considered to be Type B soils. The maximum slope for excavations within the Type B soil is 1H:1V.

FLOOR SLAB SUBGRADES

We recommend floor slabs be supported atop a minimum of twelve (12) inches of select lean clay fill. We recommend fill below the floor slabs be compacted to a minimum 95 percent of the material's standard Proctor maximum dry density (ASTM D698-00), with soil moisture controlled between -3 and +3 percent of optimum. If a granular cushion is used or rock base required beneath the floor slab, this layer should be free-draining and compacted by vibration to a uniform thickness prior to placing concrete.

We recommend concrete for floor slabs be designed to have a minimum cement content of 564 lbs/yd^3 and a minimum compressive strength of 3500 psi. An NDOR 47B or six sack Sand and Gravel mix placed at a normal water/cement ratio (less than 0.45) is recommended for floor slabs. An entrained air content of 3 to 5 percent is recommended for strength and workability. If interior floor slabs require a power trowel finish, the concrete mix should be non-air entrained.

PAVEMENT SUBGRADE

Pavement performance is directly affected by the degree of compaction, uniformity, and stability of the subgrade soil. Based on anticipated traffic (primarily cars and light trucks), we recommend a minimum of 12 inches of structural fill be provided below paving areas. We recommend structural fill be compacted to a minimum of 95 percent of the material's standard Proctor maximum dry density (ASTM D698-91). Soil moisture should be controlled to within +3 to -3 percent of optimum. We recommend the final subgrade be proof rolled immediately prior to the placement of concrete or asphalt to detect any localized areas of instability. Areas which appear unstable at that time should be reworked as necessary to provide a uniform stable subgrade.

It should be noted these subgrade compaction requirements are minimum recommended values and more stringent requirements based on a specific pavement design should supersede these recommendations. In the event the above recommendations are followed, a soaked CBR of 4 (modules of subgrade reaction of 135 pci) is recommended for pavement design.

We recommend Portland Cement concrete be air-entrained and have a minimum compressive strength of 4000 psi (600 psi flexural strength). State of Nebraska Type 47B-3625 concrete (5-7.5% entrained air) has proven to be very durable in this area.

SURFACE DRAINAGE AND LANDSCAPING

The success of the shallow foundation and slab-on-grade floor system is contingent upon keeping the subgrade soils at relative constant moisture content and by not allowing an avenue for surface moisture reaching the bearing soils. Positive surface drainage away from the structure should be maintained at all times. Landscaped areas should be designed and built in such a way that irrigation and other surface water will be collected and carried away from foundation elements.

The final grade of the foundation backfill and any overlying pavement should have a positive slope away from foundation walls on all sides. A minimum slope of 1 inch per foot for the first 5 to 10 feet is recommended. However, the slope may be decreased if the ground surface next to foundations is covered with concrete slabs or asphalt pavements. A minimum slope of 2 percent is

recommended for all other areas. Pavement and exterior slabs next to structures should be carefully sealed against moisture intrusion at the joints.

All downspouts and faucets should discharge onto splash blocks that slope away from foundation walls and extend a minimum of 3 feet from the building line.

GENERAL COMMENTS

If any changes in the nature, design, or location of this project are planned, the conclusions and recommendations contained in this report shall not be considered valid unless those changes are reviewed and the conclusions of this report either modified or verified in writing by the geotechnical engineer.

The analysis and recommendations submitted in this report are based in part upon the data obtained from the five (5) soil borings. The nature and extent of variations of the on-site soils between borings may not become evident until construction. If variations appear, it will be necessary to re-evaluate the recommendations of this report.

It is recommended the geotechnical engineer be allowed to review the final design and specifications to verify compliance with respect to the recommendations of this study. It is also recommended the geotechnical engineer be retained to provide QA/QC engineering and testing services during the earthwork excavation and foundation construction phase of the project to verify site suitability and to provide recommendations if subsurface conditions differ from those expected.

Respectfully Submitted,
Mid-State Engineering and Testing, Inc.

Jim Musilek, P.E.
Nebraska Reg. #E-5935

APPENDIX A
BORING LOCATION PLAN

Google earth

feet 600
meters 200

Mid-State

Engineering & Testing, Inc.

279 Road 'D', Columbus, NE. 68601

BORING LOCATION PLAN

NDOR BUILDING

NIOBRARA, NEBRASKA

APPENDIX B
BORING LOGS

Mid-State Engineering & Testing, Inc.

BORING LOG

PROJECT: NDOR Building
LOCATION: Niobrara, Nebraska
JOB NO.: 200-92-22
DATE: 5/17/16

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	TOTAL DEPTH
DH-1	N42 45" 03.4' W98 01" 11.8'			10.0'

WATER LEVEL OBSERVATIONS			TYPE OF SURFACE	DRILLER
WHILE DRILLING	END OF DRILLING	2 HOURS	Gravel and Rocks	Robert Reiling
			DRILLING METHOD	LOGGER
5.0'	5.0'		4 1/2" Continuous Flight Auger	Richard Ringler

DEPTH FT.	SAMPLE NO. & TYPE	N" BLOWS / FT.	REC %	COLOR	MOIST	CONS.	SOIL TYPE (Class)	GEOLOGIC DESCRIPTION & OTHER REMARKS	MOIST %	DRY WEIGHT PCF	QU TSF	DEPTH FT.
							SM/SC	**Gravel/Rock Surfacing**				
				Brown	Very Moist	Firm	CL/SC	**Fill Material w/ Gravel**				
	U-1			Dark Grey Brown	Very Moist	Stiff	CL	**COLLUVIAL DEPOSITS** w/ Rust an Carbon Stains Some Sand	14.0	112.2		
5	U-2								33.2	89.1	2.0	5
					Saturated	Firm						
						Soft						
10	S-3	3/2/3 (5)							44.3			10
								Bottom of Hole 10.0'				
15												15
20												20
25												25
30												30
35												35

Mid-State Engineering & Testing, Inc.

BORING LOG

PROJECT: NDOR Building
LOCATION: Niobrara, Nebraska
JOB NO.: 200-92-22
DATE: 5/17/16

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	TOTAL DEPTH
DH-2	N42 45" 02.5' W98 01" 10.9'			15.0'

WATER LEVEL OBSERVATIONS			TYPE OF SURFACE	DRILLER
WHILE DRILLING	END OF DRILLING	HOURS	Gravel and Rocks	Robert Reiling
			DRILLING METHOD	LOGGER
6.5	7.0'		4 1/2" Continuous Flight Auger	Richard Ringler

DEPTH FT.	SAMPLE NO. & TYPE	N" BLOWS / FT	REC %	COLOR	MOIST	CONS.	SOIL TYPE (Class)	GEOLOGIC DESCRIPTION & OTHER REMARKS	MOIST %	DRY WEIGHT PCF	QU TSF	DEPTH FT.
							SM/SC/CL	**Gravel and Rock Surface**				
	U-1			Brown	Moist	Firm	CL	**COLLUVIAL DEPOSITS** w/ Roots and Root Holes Carbon Stains Trace Sand	14.9	112.9		
5	U-2								20.5	96.3	0.8	5
				Light Brn	Saturated	Soft/Loose	CL/SC	Clayey Fine Sands				
	U-3											
10							SC		27.8	90.4		10
				Brown		Soft	CL	w/ Rust				
15	S-4	3/2/3 (5)							35.8			15
								Bottom of Hole 15.0'				
20												20
25												25
30												30
35												35

Mid-State Engineering & Testing, Inc.

BORING LOG

PROJECT: NDOR Building
LOCATION: Niobrara, Nebraska
JOB NO.: 200-92-22
DATE: 5/17/16

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	TOTAL DEPTH
DH-3	N42 45" 02.1' W98 01" 10.4'			20.0'

WATER LEVEL OBSERVATIONS			TYPE OF SURFACE	DRILLER
WHILE DRILLING	END OF DRILLING	1 HOURS	Gravel and Rock	Robert Reiling
8.0'	Wet Cave @ 8.5'		DRILLING METHOD: 4 1/2" Continuous Flight Auger	LOGGER: Richard Ringler

DEPTH FT.	SAMPLE NO. & TYPE	N" BLOWS / FT	REC %	COLOR	MOIST	CONS.	SOIL TYPE (Class)	GEOLOGIC DESCRIPTION & OTHER REMARKS	MOIST %	DRY WEIGHT PCF	QU TSF	DEPTH FT.
								Gravel and Rock Surface				
	U-1			Brown	Moist	Firm	SC/SM/SP	**OLD FILL MATERIAL** w/ Sand/Gravel/Asphalt Millings	10.8	115.4		
5	S-2	1/2/2 (4)		Dark Grey Brown	Moist	Very Soft	CL	**COLLUVIAL DEPOSITS** w/ Carbon and Rust Stains Fine Sand	24.3			5
				Dark Brn		Soft						
10	S-3	3/2/4 (6)			Saturated	Loose	CL/SC		23.5			10
15	S-4	4/4/4 (8)							17.8			15
				Light Brn	Saturated	Firm	SP	**ALLUVIAL SANDS** Fine Sands				
20	S-5	6/8/10 (18)							18.1			20
								Bottom of Hole 20.0'				
25												25
30												30
35												35

Mid-State Engineering & Testing, Inc.

BORING LOG

PROJECT: NDOR Building
LOCATION: Niobrara, Nebraska
JOB NO.: 200-92-22
DATE: 5/17/16

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	TOTAL DEPTH
DH-4	N42 45" 03.3' W98 01" 10.4'			15.0'

WATER LEVEL OBSERVATIONS			TYPE OF SURFACE	DRILLER
WHILE DRILLING	END OF DRILLING	1/2 HOURS	Gravel and Rocks	Robert Reiling
			DRILLING METHOD	LOGGER
6.0'	5.0'	5.8'	4 1/2" Continuous Flight Auger	Richard Ringler

DEPTH FT	SAMPLE NO. & TYPE	N" BLOWS / FT	REC %	COLOR	MOIST	CONS.	SOIL TYPE (Class)	GEOLOGIC DESCRIPTION & OTHER REMARKS	MOIST %	DRY WEIGHT PCF	QU TSF	DEPTH FT
	U-1			Brown	Very Moist	Firm	CL/SC	**Gravel and Rock Surfacing** w/ Rust	12.8	113.1		
				Dark Grey Brown	Very Moist	Soft	CL	**COLLUVIAL DEPOSITS** w/ Calcium and Rust Stains Trace Fine Sands				
5	U-2								32.8	85.1	0.5	5
					Saturated							
10	S-3	2/3/4 (7)							42.8			10
15	S-4	3/3/4 (7)							45.7			15
								Bottom of Hole 15.0'				
20												20
25												25
30												30
35												35

Mid-State Engineering & Testing, Inc.

BORING LOG

PROJECT	NDOR Building
LOCATION	Niobrara, Nebraska
JOB NO.	200-92-22
DATE	5/17/16

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	TOTAL DEPTH
DH-5	N42 45" 02.0' W98 01" 12.1'			15.0'

WATER LEVEL OBSERVATIONS			TYPE OF SURFACE	DRILLER
WHILE DRILLING	END OF DRILLING	HOURS	Weeds	Robert Reiling
			DRILLING METHOD	LOGGER
6.5'	7.0'		4 1/2" Continuous Flight Auger	Richard Ringler

DEPTH FT.	SAMPLE NO. & TYPE	N" BLOWS / FT.	REC %	COLOR	MOIST	CONS.	SOIL TYPE (Class)	GEOLOGIC DESCRIPTION & OTHER REMARKS	MOIST %	DRY WEIGHT PCF	QU TSF	DEPTH FT.
								Old Fill w/ Gravel/Rock				
	U-1			Brown	Moist	Stiff	CL/SC	**COLLUVIAL DEPOSITS** w/ Rust and Carbon Stains Fine Sands	12.2	112.4		
5	U-2			Light Brn								
				Brown		Firm	CL		28.7	83.4	0.6	5
					Saturated		CL/SC					
10	S-3	2/4/8 (12)							24.7			10
							CL					
15	S-4	3/3/7 (10)							35.5			15
								Bottom of Hole 15.0'				
20												20
25												25
30												30
35												35

APPENDIX C
SUMMARY OF SOILS TEST

Mid-State Engineering & Testing, Inc.

SUMMARY OF SOILS TESTING

PROJECT	NDOR Building
LOCATION	Niobrara, Nebraska
JOB NO.	200-92-22
DATE	5/17/2016

DRILL HOLE NO.	SAMPLE NO.	SAMPLE DEPTH (ft.)	WATER CONTENT %	DENSITY WET (pcf)	DENSITY DRY (pcf)	VOID RATIO (e)	SAT (%)	UNCONFINED COMPRESSION QU (tsf)	UNCONFINED COMPRESSION Strain (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	%PASS #200 SIEVE	CLASS.	SPT BLOW COUNTS	REMARKS
DH-1	U-1	1/2 - 2'	14.0	127.9	112.2	0.502	75						58.6			
	U-2	3 1/2 - 5'	33.2	118.7	89.1	0.891	100	2.0	1.3				88.0			
	S-3	8 1/2 - 10'	44.3												5	
DH-2	U-1	1/2 - 2'	14.9	129.7	112.9	0.492	82									
	U-2	3 1/2 - 5'	20.5	116.0	96.3	0.750	74	0.8	5.5	34	16	18				
	U-3	8 1/2 - 10'	27.8	115.5	90.4	0.864	87						46.2			
	S-4	13 1/2 - 15'	35.8												5	
DH-3	U-1	1/2 - 2'	10.8	127.8	115.4	0.460	63						2.4			
	S-2	3 1/2 - 5'	24.3										71.3		4	
	S-3	8 1/2 - 10'	23.5												6	
	S-4	13 1/2 - 15'	17.8										44.6		8	
	S-5	18 1/2 - 20'	18.1												18	
DH-4	U-1	1/2 - 2'	12.8	127.6	113.1	0.490	71									
	U-2	3 1/2 - 5'	32.8	113.0	85.1	0.980	90	0.5	5.4				86.4			
	S-3	8 1/2 - 10'	42.8												7	
	S-4	13 1/2 - 15'	45.7										95.2		7	
DH-5	U-1	1/2 - 2'	12.2	126.1	112.4	0.499	66						56.6			
	U-2	3 1/2 - 5'	28.7	107.4	83.4	1.020	76	0.6	3.0				84.0			
	S-3	8 1/2 - 10'	24.7												12	
	S-4	13 1/2 - 15'	35.5										78.4		10	

MID-STATE

ENGINEERING & TESTING, INC.
279 ROAD 'D', COLUMBUS, NE. 68601

SOIL PROPERTIES

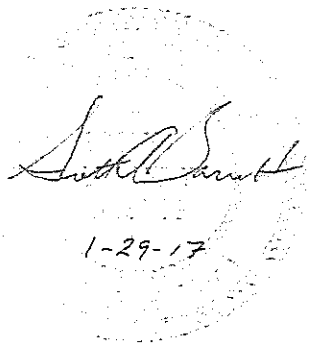
UNIFIED SOILS CLASSIFICATION

(Including Identification and Description)

Group Symbols	Typical Names	Values as Subgrade When No Subject to Frost Action	Potential Frost Action	Compressibility and Expansion	Drainage Characteristics	Compaction Equipment	Compacted Dry Unit Weight (pcf) ASTM-D-698	Typical Design Values	
								CBR	Subgrade Modulus k lb. per cu. in.
GW	Well-graded gravels, gravel-Sand mixture, little or no fines	Excellent	None to Very Slight	Almost None	Excellent	Crawler-type tractor, rubber tired roller, steel-wheeled roller	125-140	40-80	300-500
GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Good to Excellent	None to Very Slight	Almost None	Excellent	Crawler-type tractor, rubber tired roller, steel-wheeled roller	110-140	30-60	300-500
GM	Silty gravels, gravel-sand-silt mixtures, <50% Silts & Clays	Good to Excellent	Slight to Medium	Slight	Fair to Poor	Rubber-tired roller Sheepfoot roller	115-135	20-60	200-500
GC	Clayey gravels, gravel-sand-clay mixtures, <50% Silts & Clays	Good	Slight to Medium	Slight	Poor to Practically Impervious	Rubber-tired roller Sheepfoot roller	130-145	20-40	200-500
SW	Well-graded sands, gravely sands, little or no fines	Good	None to Very Slight	Almost None	Excellent	Crawler-type tractor rubber-tired roller	110-130	20-40	200-400
SP	Poorly-graded sands, gravely sands, little or no fines	Fair to Good	None to Very Slight	Almost None	Excellent	Crawler-type tractor rubber-tired roller	105-135	10-40	150-400
SM	Silty sands, sand-silt mixtures <50% Silts & Clays	Fair to Good	Slight to High	Slight	Fair to Poor	Rubber-tired roller Sheepfoot roller	120-135	15-40	150-400
SC	Clayey sands, sand-clay mixtures <50% Silts & Clays	Poor to Fair	Slight to High	Slight to Medium	Poor to Practically Impervious	Rubber-tired roller Sheepfoot roller	100-135	5-20	100-300
ML	Inorganic silts and very fine sands rock flour, silty fine sands or clayey silts with slight plasticity	Poor to Fair	Medium to Very High	Slight to Medium	Fair to Poor	Rubber-tired roller Sheepfoot roller, close control of moisture	100-120	15 or Less	100-200
CL	Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays	Poor to Fair	Medium to High	Medium	Practically Impervious	Rubber-tired roller Sheepfoot roller	90-130	15 or Less	50-150
OL	Organic silts and organic silty clays of low plasticity	Poor	Medium to High	Medium to High	Poor	Rubber-tired roller Sheepfoot roller	90-105	5 or Less	50-100
MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	Poor	Medium to Very High	High	Fair to Poor	Sheepfoot roller Rubber-tired roller	90-105	10 or Less	50-100
CH	Inorganic clays or high plasticity fat clays	Poor to Fair	High	High	Practically Impervious	Sheepfoot roller Rubber-tired roller	90-115	15 or Less	50-150
OH	Organic clays of medium to high plasticity, organic silts	Poor to Very Poor	High	High	Practically Impervious	Sheepfoot roller Rubber-tired roller	80-110	5 or Less	25-100
Pt	Peat and other highly organic soils	Not Suitable	Very High	Very High	Fair to Poor	Compaction Not Practical			

MID-STATE
ENGINEERING &
TESTING, INC.

ADDENDUM A



REPORT OF GEOTECHNICAL INVESTIGATION

NDOR MAINTENANCE FACILITY
NIOBRARA, NEBRASKA

M.S. PROJECT NO. 200-92-22
JANUARY 27, 2017
A-5160

INTRODUCTION
This addendum presents changes to the original study resulting from information gained in regards to the required fill depths required to elevate the site to new design elevations. Changes to the original report that are included in this addendum include predicted settlement estimates based on the addition of 7 feet of new fill.

PROJECT DESCRIPTION
During the initial geotechnical evaluation, it was anticipated that proposed building site elevations would be elevated approximately 2 feet, resulting in maximum cuts and fill of 2 feet. However, based on the information provided by Erickson Sullivan Architects, new site elevations illustrate the proposed building site will be elevated approximately 7 feet about existing site elevations along the north footing line and elevated approximately 4 feet along the south footing line.

Maximum structural loads will still be on the order of 70 kips for isolated columns and 2-3 klf for walls.

FIELD WORK
Three (3) additional soil borings were performed along the north footing line of the proposed building. Laboratory testing included a One-Dimensional Consolidation test of the cohesive site soils at a depth of 8 ½ feet below existing site elevations. A Summary of Soils and Consolidation Test result are attached for your review. Site soils in the two additional borings consisted of cohesive and semi-cohesive natural soils. It should be noted the soils from the new borings are similar to the original borings. Groundwater was encountered at a depth of approximately 7 feet below existing grades.

11 East 11th Street
Kearney, Nebraska 68847
Phone (308)-237-0187

279 Road D
Columbus, Nebraska 68601
Phone (402)-562-7824

CONCLUSIONS AND RECOMMENDATIONS

Based on the information gained from the two (2) additional soil borings and laboratory testing, it appears the addition of seven (7) feet of new fill to the site will have impact with regards to total settlement. Due to the weight of new fill atop the underlying Colluvial Deposits, it's predicted an additional 1/2 inch of total settlement will occur in the areas of maximum fill depths. Considering the weight of the new fill and the building loads provided, total settlement on the order of 1 inch or less with differential settlements of 1/2 inch are expected.

Due to the variable fill depths and the additional 1/2 inch of settlement due to the weight of the seven (7) feet of new fill across a portion of the building site, we recommend all building foundations bear atop an Engineer approved subgrade (natural or fill). We feel the most cost effective and timely method of controlling settlement is to design foundations utilizing a conservative bearing capacity. If all load bearing footings bear atop an Engineer approved subgrade (new fill or natural soils), a net allowable soil bearing pressure of up to 1,500 pounds per square foot may be used for shallow foundation design.

We recommend all fill used be semi-coheseive/cohesive with no greater than 50% sand content. All new fill shall be approved by the soils engineer prior to placement. We recommend earthwork construction be performed according to the recommendations presented in the "Earthwork and Excavations" section of the original report.

This concludes our reevaluation of the building site. All other recommendations provided in the original report remain valid for this project. We recommend this Addendum be placed and kept with the original Geotechnical Study.

Respectfully submitted,
Mid-State Engineering and Testing, Inc.

Simon Schacher, E.I.

Reviewed by:

Scott A. Barnett, P.E.
Nebraska Reg. #E-13769

Mid-State Engineering & Testing, Inc.

Boring Log

PROJECT	NDOR Building
LOCATION	Niobrara. Nebraska
JOB NO.	200-92-22
DATE	1/23/2017

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	TOTAL DEPTH
DH-1A	Center of the Building 10' South of North Side			10.0'

WATER LEVEL OBSERVATIONS			TYPE OF SURFACE	DRILLER
WHILE DRILLING	END OF DRILLING	HOURS		Robert Reiling
7.0'	7.0'		DRILLING METHOD	LOGGER
				Richard Ringler

DEPTH FT	SAMPLE NO & TYPE	N° BLOWS / FT	REC %	COLOR	MOIST	CONS	SOIL TYPE (Class)	GEOLOGIC DESCRIPTION & REMARKS OTHER	MOIST %	DRY WEIGHT PCF	QU TSF	DEPTH FT
				Brown	Moist	Firm	CL/SC	COLLUVIAL DEPOSITS				
5	U-1							Sandy Clay Very Fine Sand				5
	U-2											
					Sat							
10	U-3											10
								Bottom of Hole 10.0'				

Mid-State Engineering & Testing, Inc.

Boring Log

PROJECT	NDOR Building
LOCATION	Niobrara, Nebraska
JOB NO.	200-92-22
DATE	1/23/2017

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	TOTAL DEPTH
DH-2A	10' South and 30' West of Northeast Corner of Building			6 1/2'

WATER LEVEL OBSERVATIONS			TYPE OF SURFACE	DRILLER
WHILE DRILLING	END OF DRILLING	HOURS	Grass and Fill	Robert Reiling
			DRILLING METHOD	LOGGER
None	Encountered		4 1/2' Continuous Flight Auger	Richard Ringler

DEPTH FT	SAMPLE NO & TYPE	N° BLOWS / FT	REC %	COLOR	MOIST	CONS	SOIL TYPE (Class)	GEOLOGIC DESCRIPTION & REMARKS OTHER	MOIST %	DRY WEIGHT PCF	QU TSF	DEPTH FT
								Fill Material				
				Brn	Moist	Firm	CL/SC	COLLUVIAL DEPOSITS				
5	U-1							Sandy Clay				5
	U-2			Ltr Brn				Sandy Silt w/ Some Clay				
								Bottom of Hole 6 1/2'				
10												10

Mid-State Engineering & Testing, Inc.

Boring Log

PROJECT	NDOR Building
LOCATION	Niobrara. Nebraska
JOB NO.	200-92-22
DATE	1/23/2017

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	TOTAL DEPTH
DH-3A	10' South and 20' East of Northwest Corner of Building			6 1/2'

WATER LEVEL OBSERVATIONS			TYPE OF SURFACE	DRILLER
WHILE DRILLING	END OF DRILLING	HOURS	Sandy Fill	Robert Reiling
			DRILLING METHOD	LOGGER
None	Encountered		4 1/2' Continuous Flight Auger	Richard Ringler

DEPTH FT	SAMPLE NO & TYPE	N° BLOWS FT	REC %	COLOR	MOIST	CONS	SOIL TYPE (Class)	GEOLOGIC DESCRIPTION & REMARKS	OTHER	MOIST %	DRY WEIGHT PCF	QU TSF	DEPTH FT
								Fill Material					
				Brn	Moist	Firm	CL/SC	**COLLUVIAL DEPOSITS** Sandy Clay					
5	U-1												5
	U-2			Ltr Brn				Clay Turing to Silty Sand					
								Bottom of Hole 6 1/2'					
10													10

Mid-State
Engineering & Testing
11 East 11th St. Kearney, NE

Project:	NDOR
Location:	Niobrara, NE
Job No. 200-92-22	Date: 1/25/2017

CONSOLIDATION TEST

Drill Hole # DH-1 (A) Sample # U-3 Sample Depth Interval 8 1/2 - 10

Sample Description: Dark greyish brown clayey sand

Initial Water Content (%)	30.1	Dry Unit Weight (pcf)	94.5	Initial Saturation (%)	103.7
Final Water Content (%)	22.9	Specific Gravity (Assumed)	2.70		
Liquid Limit	36	Plastic Limit	22	Plasticity Index	14
Classification	ML