

| AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT | | | 1. CONTRACT ID CODE | PAGE OF PAGES | |
|---|----------------------------------|---|--|---|---|
| | | | J | 1 | 2 |
| 2. AMENDMENT/MODIFICATION NO. 0001 | 3. EFFECTIVE DATE 30-Jul-2004 | 4. REQUISITION/PURCHASE REQ. NO. W38XGR-4090-8361 | | 5. PROJECT NO.(If applicable) W912EQ-04-B-0020 | |
| 6. ISSUED BY US ARMY ENGINEER DISTRICT, MEMPHIS 167 N MAIN STREET B202 MEMPHIS TN 38103-1894 | CODE W912EQ | 7. ADMINISTERED BY (If other than item 6) See Item 6 | | CODE | |
| 8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code) | | | X | 9A. AMENDMENT OF SOLICITATION NO. W912EQ-04-B-0020 | |
| | | | X | 9B. DATED (SEE ITEM 11) 02-Jul-2004 | |
| | | | | 10A. MOD. OF CONTRACT/ORDER NO. | |
| | | | | 10B. DATED (SEE ITEM 13) | |
| CODE | FACILITY CODE | | | | |
| 11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS | | | | | |
| <input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified. | | | | | |
| 12. ACCOUNTING AND APPROPRIATION DATA (If required) | | | | | |
| 13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14. | | | | | |
| A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A. | | | | | |
| B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B). | | | | | |
| C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: | | | | | |
| D. OTHER (Specify type of modification and authority) | | | | | |
| E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office. | | | | | |
| 14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) This solicitation for the New Madrid Pumping Station, New Madrid, Missouri scheduled to open 19 August 2004 at 2:30 p.m. is amended as follows: | | | | | |
| Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect. | | | | | |
| 15A. NAME AND TITLE OF SIGNER (Type or print) | | | 16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) | | |
| | | | TEL: _____ EMAIL: _____ | | |
| 15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign) | 15C. DATE SIGNED | 16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer) | | 16C. DATE SIGNED 30-Jul-2004 | |

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

The following items are applicable to this modification:

SECTION SF30 - BLOCK 14 CONTINUATION PAGE

BLOCK 14 CONTINUATION PAGE

1. SECTION 00010 – SOLICITATION CONTRACT FORM – SF 1442, BLOCK 10: Delete the information and replace with the following:

“New Madrid Pumping Station, New Madrid, MO

The work consists of constructing a 1500 cfs pumping station including inlet channel excavation, substructure excavation, earthen cofferdam, dewatering system, reinforced concrete pumphouse substructure and superstructure, installation of mechanical and electrical equipment (pumps, motors, overhead crane, HVAC system, plumbing, lighting system, emergency generator, power, and distribution system, etc.), gravity flow conduit, discharge structure, and environmental protection. The North American Industrial Classification System (NAICS) code is 237110 and the size standard is \$28,500,000.00..

The estimated value of the proposed work is over \$10,000,000.

This will be an unrestricted procurement with Price Evaluation for HUBZone small business concerns.

Any award issued from this solicitation is pursuant to the Small Business Competitiveness Demonstration Program.”

2. SECTION 02240, DEEP VIBRO COMPACTION OF SOIL – Insert the following Section 02240 in the Technical Specifications between Sections 02222 and 02330.

DIVISION 2 - SITE WORK

SECTION 02240

DEEP VIBRO COMPACTION OF SOIL

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FIGURE 1-2

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SECTION 02240

DEEP VIBRO COMPACTION OF SOIL

PART 1 GENERAL

1.1 DESCRIPTION

The work of this section includes all labor, materials, equipment and services necessary to perform the deep vibro compaction of existing soils and to perform in-situ testing by Standard Penetration Tests and/or piezocone soundings for verification of compaction. All work shall be in accordance with Section 02221 EXCAVATION, FILL, BACKFILL AND EMBANKMENT FOR STRUCTURES.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

| | |
|-------------|--|
| ASTM D 1586 | (1999) Penetration Test and Split-Barrel Sampling of Soils |
| ASTM D 2487 | (1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System) |
| ASTM D 2488 | (1993)e1 Description and Identification of Soils (Visual-Manual Procedure) |
| ASTM D 3441 | (1998) Deep, Quasi-Static, Cone and Friction-Cone Penetration Tests of Soil |
| ASTM D 4633 | (1986) Test Method for Stress Wave Energy Measurement for Dynamic Penetrometer Testing Systems |

1.3 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES;

SD-01 Data

Equipment; FIO.

A list of proposed equipment to be used in performance of deep vibro-compaction of soil, including details, specifications, and dimensions of equipment proposed for deep vibro-compaction of soil.

SD-04 Drawings

Drawings; FIO.

Working drawings shall be submitted showing the following: schedule and construction sequence for deep vibro-compaction of soil, location of initial test area, layout and spacing and numbering of compaction probings and quality control test holes for initial test area, and location and numbering of all deep vibro-compaction probings and all quality control test holes. A pre-densification plan for the test area showing the locations for driving and extracting vibratory probe holes and the surface elevation at each location to the nearest 0.01 feet prior to starting densification activities. A post-densification plan for the test area showing locations for driving and extracting vibratory probe holes and the surface elevation at each location to within 0.01 feet at the completion of the following day.

SD-13 Certificates

Qualifications; GA.

The Contractor shall submit qualifications for personnel proposed for deep vibro-compaction operations, and quality control testing. The Contractor shall also submit documentation of the successful application of the proposed deep vibro-compaction method and equipment on previous projects. The testing firm shall submit a description of quality control testing including the drilling and sampling methods and equipment for standard penetration tests and cone penetration testing. Details of the electric piezocone, load cells, data logging equipment and all other ancillary equipment, including applicable calibration information, along with examples of the data output and presentation format. No deep vibro-compaction nor quality control testing work shall commence until the deep vibro-compaction Contractor and supervisor and testing firm and testing supervisor have been approved. The information submitted shall include, but not be limited to, the resumes of key personnel and company experience history described in paragraph 1.4. A bidder who submits false, incorrect or incomplete data, or does not provide the required experience described above, will not be approved.

SD-09 Reports

Deep Vibro-Compaction Probings; GA.

The Contractor shall provide within 72 hours of completion an accurate record of deep vibro-compaction probings, including:

- a. The date, start time and completion of probing.
- b. The probing number or identification, location, ground surface elevation prior to densification and bottom of probe elevation.
- c. Equipment used, including operating energy and resistance amperage.
- d. Time vibratory probe is held at final tip elevation, and total time for vibratory probe driving and extraction.
- e. Any unusual occurrences during deep compaction probings.
- f. Reproducible as-built drawings showing the exact location of deep compaction probings.

At the completion of each day of quality control testing and vibro compaction, the testing firm shall provide a complete and accurate record of quality control tests, including:

- a. The type of test performed, and test equipment used.
- b. The date, start time and completion time of each test hole.
- c. The test hole number, location, ground surface elevation and bottom elevation of test hole.
- d. Standard penetration test data obtained including a complete log of materials encountered including description of soil encountered, number of blows required to drive a standard split-spoon sampler for each six inches of penetration, weight and fall of drop hammer used to drive the split-spoon sampler, length of sample obtained, type of material in split-spoon sample, and elevation of standard penetration tests.
- e. A complete record for driving borehole casing, if used, including size and weight of casing, weight of hammer, height of hammer drop and number of blows per foot required to drive the casing.
- f. Electric piezocone penetration data obtained including a presentation of all data in accordance with ASTM D 3441. Presentation shall be both tabular and graphical format and shall present tip resistance, sleeve friction, combined sleeve friction and cone resistance, and friction ratio, all presented versus depth below ground surface. Relative density and equivalent N-value versus depth below ground surface shall be presented in tabular and graphical format for each piezocone test at the completion of the following day.
- g. After completion of the test section, and weekly during production deep vibro-compaction, the Contractor shall submit a bound data report presenting all standard penetration test data and tabular and graphical penetrometer test data generated during the work, along with documentation of the methods of testing and data reduction, and any applicable references.
- h. Any unusual occurrence during performance of quality control tests.

1.4 QUALITY CONTROL

1.4.1 General

The method used for deep vibro-compaction of soils shall be a method, which has been successfully used to provide deep compaction of soils on previous projects. Supervisory personnel shall be provided who are thoroughly experienced in deep vibro-compaction of soils using the proposed compaction method. No deep vibro-compaction nor quality control testing work shall commence until the deep vibro-compaction Contractor and supervisor and testing firm and testing supervisor have been approved. A bidder who submits false, incorrect or incomplete data, or does not provide the required experience described above, will not be approved.

1. The work of this section is specialized. The Contractor performing this work shall be a reputable firm regularly engaged in the design and performance of deep compaction. He

shall have successfully completed at least five projects within the last five years of similar size and complexity in this type of installation in similar subsurface conditions. The Contractor shall have experience in design and performance of deep vibro-compaction of soils using the proposed method and quality control testing by either standard penetration test or the piezocone penetration test method.

2. The Contractor shall complete and submit copies of the Statement of Qualification forms provided herein to identify the design consultant and owner for each referenced project for which this type of work was performed. The Contractor shall provide proof to the Contracting Officer of each project no later than 15 days after Notice to Proceed. Such evidence shall include the name and location of the project, client name and address and the name and telephone number of a representative of the consultant and contracting office for whom the work was performed and who can attest to successful completion of the work.
3. A project summary shall be included for each referenced project. The project summary shall contain the start date and completion date of the project, total contract amount for the vibro-compaction, and a detailed description of the project, site conditions and subsurface conditions. The project description shall include the nature of the project, details of the deep compaction design, the deep compaction equipment and technique used or volume of deep vibro-compaction performed, acceptance criteria and target relative density, individual length of the deepest treatment installed and any other information relevant to demonstrating the Contractor's qualifications.
4. Assign an experienced, full-time supervisor, who has been in responsible charge of supervising deep vibro-compaction operations for at least five projects in the last five years. The supervisor shall be present at the work site at all times during deep vibro-compaction operations. Provide written verification of the supervisor's experience.

1.4.2 Testing

The Contractor shall employ a qualified testing firm and technicians and suitable equipment to perform quality control testing by both the Standard Penetration Test and/or piezocone penetration test methods.

1. The testing firm performing the quality control testing will be a reputable firm regularly engaged in the performance and reporting of Standard Penetration tests and split-spoon sampling of soils and/or piezocone penetration tests of soils in accordance with ASTM standards. The testing firm will have been engaged in the above referenced testing and will have performed these same type of tests on a minimum of ten projects of similar size and complexity within the last five years.
2. The testing firm shall complete and submit copies of the Statement of Qualification forms provided herein to identify the design consultant and owner for each referenced project for which this type of work was performed. The testing firm shall provide proof to the Contracting Officer of each project for approval no later than 15 days after Notice to Proceed. Such evidence shall include the name and location of the project, client name and address, and the name and telephone number of a representative of the consultant and owner for whom the work was performed and who can attest to successful completion of the work.

3. A project summary shall be included for each referenced project. The project summary shall contain the project name, location, start and completion dates, total contract amount for the testing, and site and subsurface conditions. The project description shall include the nature of the project, details of the type of quality control testing performed, total length of the piezocone testing and number and depth of standard penetration tests, individual length of the deepest cone sounding and standard penetration test, type of data logging equipment and an example of the data output and presentation prepared for the project, and any other information relevant to demonstrating the testing firm's qualifications.
4. The testing firm shall assign an experienced full-time testing supervisor and technician who has been in responsible charge of supervising and performing standard penetration testing and piezocone testing operations for at least ten projects in the last five years. The testing supervisor shall be a registered professional engineer and shall be present at the work site at all times during quality control testing and shall be responsible for preparation and submittal of all data and reports of the quality control testing. The testing firm shall provide written verification of the testing supervisors and technicians experience.

PART 2 PRODUCTS

2.1 FILL MATERIALS

Fill material used to replace any soil volume reduction due to deep vibro-compaction shall consist of a granular material having a maximum particle size of 1.5 in. and containing not more than 10 percent by weight passing the No. 200 sieve.

PART 3 EXECUTION

3.1 GENERAL

Existing deposits shall be compacted using deep vibro-compaction methods to obtain a minimum relative density of 80 percent. Deep vibro-compaction shall be used to densify existing deposits within the limits of and for a minimum distance of 20 ft beyond the structures including the pumphouse, gate tower, conduits and stilling basin. Deep vibro-compaction shall be fully attained to at least El. 225.00 N.G.V.D. and shall be performed using vibratory probings. Water jets may be used. Equipment for deep compaction will be subject to the Contracting Officer's approval. The compaction probing locations shall be in a triangular or square pattern, with center to center spacing between compaction probing locations determined by an initial test program. The spacing between probings shall be adjusted, as necessary, during the progress of the work to maintain minimum relative density specified herein. Production compaction probings shall be performed using the same equipment, procedures and penetration/extraction rate, and same compacting probe pattern and spacing as used for the initial test program, unless otherwise specified or approved by the Contracting Officer. Compaction probe spacing shall be reduced if quality control tests indicate that the spacing used fails to achieve the required density.

3.2 QUALITY CONTROL TESTING

3.2.1 General

The existing relative density of materials will be determined by electric piezocone penetration tests

and/or standard penetration tests at the locations selected by the Contracting Officer. After deep compaction is performed, the relative density of the compacted soil shall be determined by piezocone penetration tests and/or standard penetration tests. Piezocone penetration tests will be correlated to relative density in accordance with Figure 1. Standard penetration tests will be correlated to relative density in accordance with Figure 2. The testing firm shall provide all necessary equipment and labor for performing quality control testing. Standard penetration test borings or static cone penetration soundings shall be taken both prior to and following deep vibro-compaction operations. The same equipment and operators will be utilized for both pre- and post-compaction testing. Test borings and piezocone penetration test probes taken after deep vibro-compaction shall be located at the centroid of the surrounding compaction probe locations. If quality control tests indicate that densification in any area does not meet the requirements of Section 3.1, the area affected, as determined by the Contracting Officer, shall be recompacted at the Contractor's expense and retested. After the start of production compaction operations a minimum of 27 standard penetration test borings, or 27 piezocone penetration test soundings shall be performed following deep vibro-compaction operations. The penetration tests shall be located in a grid pattern spaced a maximum of 50 ft center to center in each direction. In addition, a minimum of nine standard penetration test borings or nine piezocone penetration test soundings shall be performed prior to deep vibro-compaction at locations to be determined by the Contracting Officer. Quality control testing shall be performed by the testing firm for all deep vibro-compaction operations. Deep vibro-compaction standard penetration test borings and/or piezocone soundings shall be performed for the full depth of soil being compacted and to the minimum elevation of 200 ft.

3.2.2 Electronic Piezocone Penetration Tests

Electronic piezocone penetration tests shall be performed using an electronic piezocone penetrometer, in accordance with ASTM D 3441. Mechanical Cone and Dutch Cone equipment will not be permitted.

1. Piezocone equipment shall have a tip adaptable to have the pore pressure filter mounted on either the face of the tip or the side directly behind the tip.
2. The testing firm shall provide a manufacturers certified calibration for the piezocone performed not more than 6 months prior to commencement of field testing.
3. Baseline reading shall be taken at each piezocone penetration test location prior to insertion of the probe with the piezocone tip suspended above the ground surface.
4. The electric cone shall read tip resistance and side friction, and shall provide a visual display of these data in real time. Each parameter shall be recorded at maximum two-inch intervals during advance of the cone. Constant time interval recording equipment will be acceptable provided the two-inch interval is not exceeded.
5. The piezocone shall be advanced to El. 200 ft unless otherwise directed by the Contracting Officer.
6. The Testing Firm shall have sole responsibility for any loss, damage or malfunction of his equipment, and shall replace or repair such equipment in a suitable and expeditious manner at his sole cost.
7. After completion of each cone penetration test sounding at each location, the cone tip and sleeve shall be inspected for wear and/or damage and any worn or damaged parts shall be

replaced prior to taking baseline readings for the next location.

3.2.3 Standard Penetration Tests

Standard penetration tests shall be advanced to El. 200 ft or as directed by the Contracting Officer and shall be performed in accordance with ASTM D 1586, except as specified herein. Prior to commencement of field testing, stress wave energy measurements shall be performed for the equipment, hammer and operator in accordance with ASTM D 4633.

1. Standard penetration tests shall be performed within cased boreholes. The casing shall be progressed by a series of operations which consist of driving the casing to the depth to be tested, cleaning out the hole to the bottom of the casing by approved methods, performing standard penetration test ahead of the casing, and repeating this sequence until the required depth is reached. The casing shall be extra heavy pipe with a minimum nominal inside diameter adequate for the required testing equipment.
2. Soil material within the casing shall be removed with rotary drilling methods with a suitably designed side discharge drilling bit. Washing ahead of the borehole casing to facilitate driving will not be permitted. Washing through the split-spoon sample in lieu of a properly designed bit will be prohibited. The amount of water used to clean out the casing shall be the minimum required to properly clean the casing and raise the soil particles to the surface. The use of hollow stem augers or solid stem augers will not be allowed.
3. Alternatively, if approved by the Contracting Officer, the borehole may be advanced using drilling mud of sufficient consistency to prevent the collapse of the borehole, properly clean the borehole, and raise soil particles to the surface. In the event that the hole can not be stabilized with drilling mud and borehole collapse occurs, the Testing Firm shall case the borehole.
4. In no event shall material below the bottom of the borehole where a test is to be taken be disturbed by the cleaning process.
5. A continuous record shall be kept of the blows per foot required to drive the casing. The weight of hammer shall be 300 pounds and the height of the free fall 18 inches, using a rope and cathead.
6. Standard penetration tests shall be performed at intervals of 2.5 feet, starting at the ground surface, using a standard split-spoon sampler. The sampling spoon shall be in accordance with ASTM D 1586. The inside of the split barrel shall be flush with the inside of the driving shoe.
7. The split-spoon sampler shall be driven into the soil by a 140 pound drop hammer falling freely 30 inches using a maximum of three loops of rope around a cathead. A continuous record shall be kept of the number of blows in the driving of the sampler for each six inches of eighteen inch penetration. The penetration of the sampler shall be eighteen inches unless refusal is met. An excess of 50 blows per six inches of penetration shall be considered refusal.
8. A positive hydrostatic pressure shall be maintained in the borehole at all times to prevent instability due to upward flow of water before or during testing. Additional water or drilling mud shall be added to the hole as necessary.

9. A detailed visual description shall be made of each standard penetration test sample in accordance with ASTM D 2487 and D 2488, and the description shall be entered on the boring log. Storage of samples will not be required unless requested by the Contracting Officer.

3.3 INITIAL TEST PROGRAM

The spacing of compaction probes shall be determined from an initial test program conducted prior to start of deep compaction operations. A minimum of ten compaction probings shall be made for each triangular compaction probe pattern, and a minimum of twelve compaction probings shall be made for each square compaction probe pattern. The relative density of soil shall be evaluated by quality control tests specified herein. At least three standard penetration test holes or three piezocone penetration test soundings shall be performed at the initial test areas prior to deep vibro-compaction. Following deep compaction at least three standard penetration test holes, or three piezocone penetration test soundings shall be performed for each compaction probe pattern. The quality control tests performed for the initial test program shall be in addition to the number of quality control tests specified in paragraph 3.2. If the deep compaction probe pattern initially selected fails to achieve the density requirements specified herein, additional test compaction probes shall be performed using a revised pattern of probings, and the quality control tests shall be repeated. Production compaction operations shall not commence until a suitable pattern of compaction probes is verified by the quality control tests.

3.4 INSPECTION

The Contractor shall notify the Contracting Officer of the initial test program schedule at least 30 days prior to commencement of the initial test program, so that the Contracting Officer may observe the test. The Contracting Officer reserves the right at any time to observe and inspect the initial test program and production compaction operations. The Contracting Officer may direct additional standard penetration test holes or cone penetration testing be performed.

STATEMENT OF QUALIFICATIONS - VIBRO - COMPACTION

Nature of Work (Installation):

References for Five Most Recent Jobs:

1. Name of Project:

Location of Project:

Client (Owner) Name and Address:

Point of Contact and Telephone Number:

2. Name of Project:

Location of Project:

Client (Owner) Name and Address:

Point of Contact and Telephone Number:

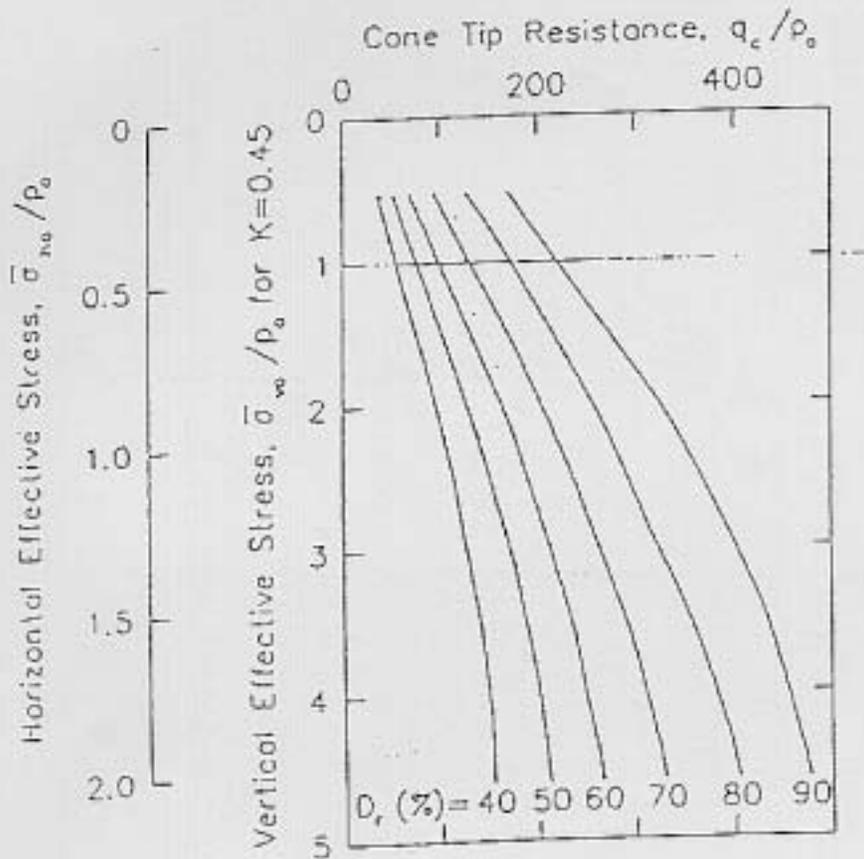
3. Name of Project:

Location of Project:

Client (Owner) Name and Address:

Pont of Contact and Telephone Number:

End of Section



Relative Density from CPT

Source: Robertson, P. K. and Campanella, R. G., "Interpretation of Cone Penetration Tests. Part I: Sand", Canadian Geotechnical Journal, Vol. 20, No. 4, Nov. 1983, pp. 718-733.

3.4.1 FIGURE 1

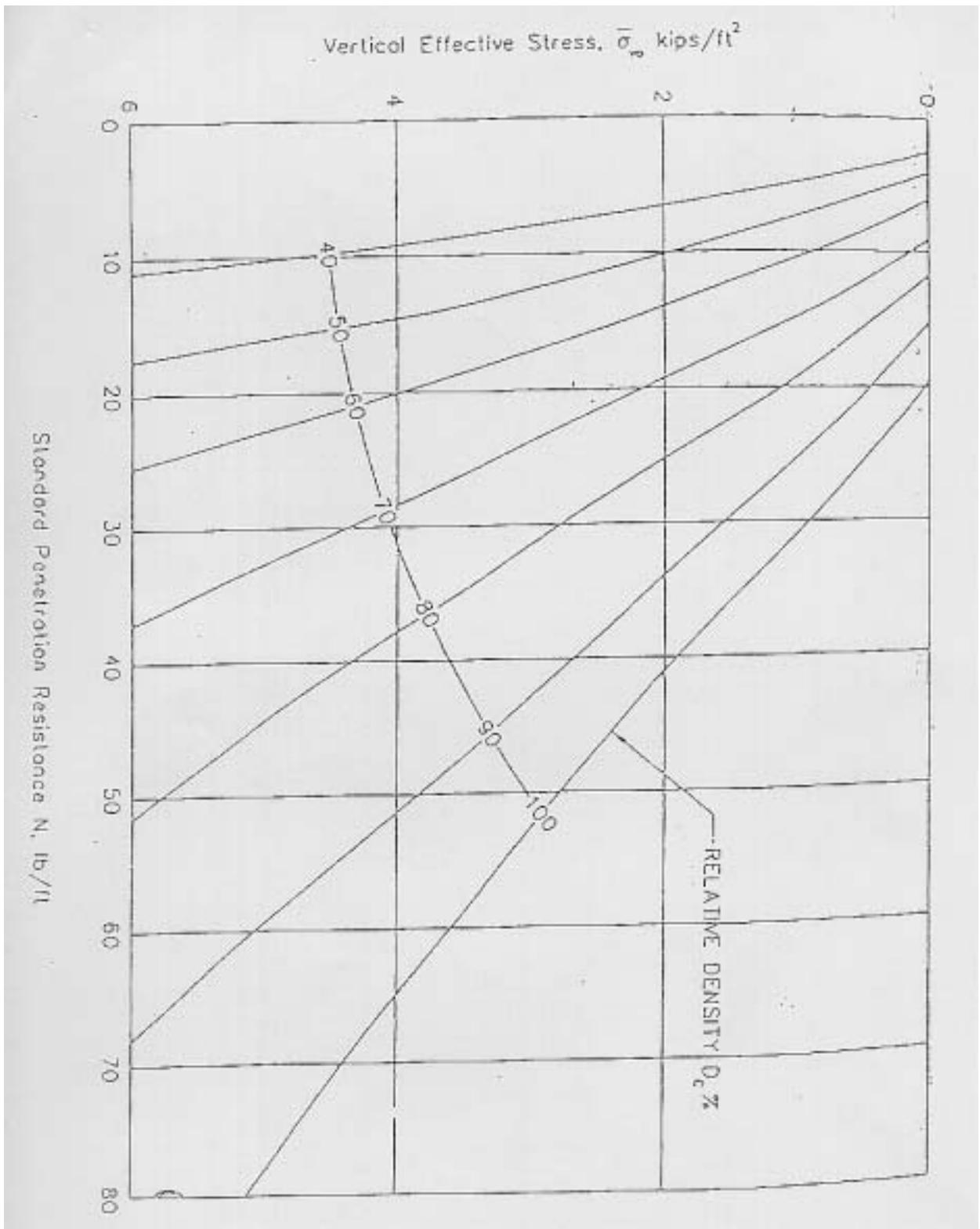


FIGURE 2