

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE	PAGE OF PAGES	
				J	1	3
2. AMENDMENT/MODIFICATION NO. 0003		3. EFFECTIVE DATE 10-Mar-2004	4. REQUISITION/PURCHASE REQ. NO. W68MD9-4035-9142		5. PROJECT NO.(If applicable)	
6. ISSUED BY USA ENGINEER DISTRICT, SEATTLE ATTN: CENWS-CT 4735 EAST MARGINAL WAY SOUTH SEATTLE WA 98134-2329		CODE W912DW	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. W912DW-04-R-0019	
				X	9B. DATED (SEE ITEM 11) 24-Feb-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 _____ 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.) Provide Geotech Report and correct bid schedule and other revised sections.						
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		15C. DATE SIGNED	16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
_____ (Signature of person authorized to sign)			BY _____ (Signature of Contracting Officer)		15-Mar-2004	

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

The following items are applicable to this modification:CONT. SHEET

Cont. Sheet, SF 30

A. This amendment is issued to include the following in this solicitation:

1. Replace the Bid Schedule in its entirety.
2. Replace Section 00110 in its entirety, noting the following changes to the section.
 - a. Section 00110, Delete paragraph “**2.1.1.2. Qualifications of Key Team Members**”
 - b. Section 00110, paragraph 2.1.1.3. re-number to read as follows: “**2.1.1.2. Past Performance of the Prime Firm**”
 - c. Correct Section 00110, paragraph 4.1. (Formatting) to read as follows:

“4.1. Relevant experience of the prime firm or joint venture partnership. The Offeror shall submit three (3) projects demonstrating relevant experience. “Relevant experience” is defined as experience constructing facilities similar in scope, cost, and complexity to the project in this solicitation, **such as** the following: 1) construction or modification of aircraft hangars to include significant structural steel fabrication and installation, and installation of aircraft hangar doors, for either civilian or military use, and/or 2) extensive interior renovation of administrative facilities of at least 6700 SF. Only those projects for which the Offeror was the Prime Contractor and were completed within the past five (5) years shall be submitted. The projects selected should clearly demonstrate the construction capabilities of the Offeror. The projects selected should clearly demonstrate the construction capabilities of the Offeror in one or more of the areas described in relevant experience above. As a minimum, for each project listed, provide:”
 - d. Correct Section 00110, paragraph 4.2. Delete “**Qualifications of key team members**”:
 - e. Correct Section 00110, paragraph 4.3. change the paragraph number to read as follows:

“4.2. Past Performance of the Prime. Past performance of the prime contractor will be evaluated using the CCASS database and Customer Survey Forms. All available (CCASS.....”
3. Replace Section 00800 in its entirety.

4. Replace Section 00800B in its entirety. Geotechnical Investigation Report, titled "Addition to Building 375, Portland Air National Guard (PANG), Portland Oregon", dated April 11, 2003
5. Replace Section 01025 in its entirety.
6. Replace Section 01451 in its entirety.
7. Replace Section 02465 in its entirety.
8. Replace Section 08950 in its entirety.

B. THE PROPOSAL DUE DATE AND TIME HAS NOT BEEN CHANGED, 2:00 PM (PDT), March 25, 2004.

C. NOTICE TO OFFERORS: Offerors must acknowledge receipt of this amendment by number and date on Standard Form 1442, BACK, Block 19, or by telegram.

D. All Technical Amendments are available for download this date on the Army Corps of Engineers website at <http://www.nws.usace.army.mil/ct/>.

Enclosures

Bid Schedule

Rev. Section 00110, Proposal Submission And Evaluation

Section 00800

Section 00800B

Section 01025

Section 01451

Section 02465

Section 08950

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SCHEDULE

<u>Item No.</u>	<u>Description of Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
BASE ITEMS					
0001	All Work for Addition to Maintenance Hangar Bldg 375, including Associated Site Work and Utilities Except for Items Separately Priced	1	JOB	L.S.	\$_____
0002	All Work to Alter Squadron Operations Facility, Bldg 304, including Associated Site Work and Utilities Except for Items Separately Priced	1	JOB	L.S.	\$_____
0003	All Work for As-Built Drawings as specified in Section 01702 from preparation to final approval	1	JOB	L.S.	\$25,000.00
0004	All Work for O&M Manuals as specified in Section 01701 from preparation to final approval	1	JOB	L.S.	\$60,000.00
0005	All Work for Form 1354 Checklist and Equipment in Place List as specified in Sections 01704 and 01705 from preparation to final approval	1	JOB	L.S.	\$12,000.00
TOTAL BASE ITEMS					\$_____
OPTIONAL ITEMS					
0006	All Work for Covered Patio - Bldg 304	1	JOB	L.S.	\$_____
0007	All Work for Locker Room Upgrade and Restrooms 1005, 1007, 1008, and 1009 - Bldg 304	1	JOB	L.S.	\$_____
0008	All Work for Curved Counter in Room 1038 - Bldg 304	1	JOB	L.S.	\$_____
0009	All Work for Upgrade to Restroom 1043 - Bldg 304	1	JOB	L.S.	\$_____
0010	All Work for Auditorium Seating Removal - Bldg 304	1	JOB	L.S.	\$_____

03060

ADD/ALTER FLIGHTLINE FACILITIES, BLDG 304 & 375, PORTLAND ANG, OR

SCHEDULE

<u>Item No.</u>	<u>Description of Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
OPTIONAL ITEMS					
0011	All Work for New Exterior Windows - Bldg 304	1	JOB	L.S.	\$_____
0012	All Work for Flooring Within Existing Portion of Hangar Bay, Tug Bay and Existing Door Pockets in Lieu of Existing Floor As Is - Bldg 375	1	JOB	L.S.	\$_____
0013	All Work for Painting Within Existing Portion of Hangar Bay, Existing Tug Bay and Existing Door Pockets Above 7'-0" and the 3" Wide Perimeter Stripe Around the Existing Hangar Bay - Bldg 375	1	JOB	L.S.	\$_____
0014	All Work for Liner Panels on Exterior Walls Except at Wall Between Pockets 119 and 120 - Bldg 375	1	JOB	L.S.	\$_____
0015	All Work for High Bay Lighting Within Existing Portion of Hanger Bay - Bldg 375	1	JOB	L.S.	\$_____
<u>0016</u>	<u>Auger Piles – Variations from Principal Sum-</u>				
<u>0016AA</u>	<u>Additional Pile Length (See note 2)</u>	<u>570</u>	<u>LF</u>	<u>\$_____</u>	<u>\$_____</u>
<u>0016BA</u>	<u>Each Additional Test Pile</u>	<u>1</u>	<u>EA</u>	<u>\$_____</u>	<u>\$_____</u>
<u>0016CA</u>	<u>Each Additional Pile Load Test</u>	<u>1</u>	<u>EA</u>	<u>\$_____</u>	<u>\$_____</u>
<u>0016DA</u>	<u>Each Additional Auger Withdrawal (See note 3)</u>	<u>5</u>	<u>EA</u>	<u>L.S.</u>	<u>\$_____</u>
TOTAL OPTIONAL ITEMS 0006 THROUGH 001 <u>65</u>					\$_____
TOTAL ALL ITEMS 0001 THROUGH 001 <u>65</u>					\$_____

NOTES:

1. The dollar amounts established in Items No. 0003, 0004 and 0005 shall not be revised by offerers.
2. The quantity established is 15 percent of the principal sum.(See Section 01025 for quantity required under the principal sum). This item will be awarded on actual use basis within the established 15 percent variation and is not subject to the CONTRACT CLAUSE “VARIATIONS IN QUANTITIES. If the total amount of variation in quantity exceeds 15 percent from the principle sum then the additional variation will be subject to the CONTRACT CLAUSE “VARIATIONS IN QUANTITIES.”
3. This item will be awarded on actual use basis and is not subject to the CONTRACT CLAUSE “VARIATIONS IN QUANTITIES within the first 5 units

03060

ADD/ALTER FLIGHTLINE FACILITIES, BLDG 304 & 375, PORTLAND ANG, OR

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SECTION 00110
PROPOSAL SUBMISSION AND EVALUATION**1. INTRODUCTION.**

1.1. Your firm is invited to submit a proposal in response to Request for Proposal No. W912DW-04-R-0019 entitled "Add/Alter Flightline Facilities, Buildings 304 & 375, Portland Air National Guard Base, Oregon". Prospective offerors are required to prepare and submit proposals that will be evaluated in accordance with this section of the solicitation. In accordance with Federal Acquisition Regulations (FAR), Part 15.101-2, proposals will be evaluated using the lowest price technically acceptable source selection process. The evaluation process will be to first determine those proposals that are technically acceptable and then from those proposals determine which firm is the lowest price. The firm offering the **lowest price technically acceptable offer will be awarded the contract.**

1.2. Project Description Construct an approximately 8,900 SF addition to a Fuel Cell facility (Building 375) and Renovation of approximately 21,000 SF Operations Facility (Building 304) and all associated utilities. The additions and modifications shall be constructed with reinforced concrete footings, foundations, and floor slab; structural steel framing, precast metal wall panels; metal roof decking, and preformed metal roofing panels, fascias and trim. New hangar doors are to be included. The project includes building mechanical and electrical systems, site utilities, pavements, and site improvements.

2. EVALUATION FACTORS.**2.1. Technical Evaluation Factors.**

2.1.1. The technical evaluation factors identified below will be evaluated on an ACCEPTABLE/NON-ACCEPTABLE basis only:

2.1.1.1. Relevant Experience of the Prime Firm

2.1.1.2. Past Performance of the Prime Firm

2.2. Basis of the source selection evaluation - This Section establishes the method to be implemented with regard to the evaluation of the proposals. Evaluation is to be based exclusively on the merits and contents of the proposal and any subsequent discussions required. Offerors not meeting the minimum requirements of ***all*** technical evaluation factors shall be determined to be **NON-ACCEPTABLE** and will not be considered for award. Technical Proposals will be evaluated on an **ACCEPTABLE** or **NON-ACCEPTABLE** basis only. Proposals must set forth full, accurate, and complete information as required by this RFP. Absence of information will be deemed as if no support for that factor was provided. Award will be made to the lowest price technically acceptable offeror.

2.2.1. Technical Evaluation Ratings - Definitions

2.2.1.1. Acceptable: An acceptable rating indicates that the offeror has provided sufficient information to meet the minimum qualifications/standards described in the technical evaluation factor.

2.2.1.2. Non-Acceptable: A non-acceptable rating indicates that the offeror has not provided sufficient information to meet the minimum qualifications/standards described in the technical evaluation factor.

3. GENERAL SUBMITTAL REQUIREMENTS. Proposals shall be submitted in two parts: (a) **technical proposal**, and (b) **price proposal**. Each shall be submitted in a separate envelope or package with the type of proposal (i.e., technical or price) clearly printed on the outside of the envelope or package. The maximum number of pages in the technical proposal should not exceed 60 one-sided pages with a font size no smaller than 10 point. Offerors submitting proposals should limit submission to data essential for evaluation of proposals so that a minimum of time and moneys are expended in preparing information required by the RFP. Proposals are to be on 8 ½ x 11-inch paper, to the maximum extent practicable, and submitted in standard letter (8½ x 11-inch) hardback loose-leaf binders. Contents of binders shall be tabbed and labeled to afford easy identification from the proposal Table of Contents. No material shall be incorporated by reference or reiteration of the RFP. Any such material will not be considered for evaluation. It shall be presented in a manner, which allows it to "STAND ALONE" without need for evaluators to reference other documents. Table of Contents, Index Tabs, and Photographs **will not** be considered a page. Unnecessarily elaborate brochures or other presentation materials beyond those sufficient to present complete and effective responses are not desired and may be construed as an indication of the Offeror's lack of cost-consciousness. Penalty for making false statements in proposals is prescribed in 18 U.S.C. 1001.

4. MINIMUM SUBMITTAL REQUIREMENTS

4.1. Relevant experience of the prime firm or joint venture partnership. The Offeror shall submit three (3) projects demonstrating relevant experience. "Relevant experience" is defined as experience constructing facilities similar in scope, cost, and complexity to the project in this solicitation, **such as** the following: 1) construction or modification of aircraft hangars to include significant structural steel fabrication and installation, and installation of aircraft hangar doors, for either civilian or military use, and/or 2) extensive interior renovation of administrative facilities of at least 6700 SF. Only those projects for which the Offeror was the Prime Contractor and were completed within the past five (5) years shall be submitted. The projects selected should clearly demonstrate the construction capabilities of the Offeror. The projects selected should clearly demonstrate the construction capabilities of the Offeror in one or more of the areas described in relevant experience above. As a minimum, for each project listed, provide:

4.1.1 Project title and location

4.1.2 Dollar value of construction

4.1.3 Construction period (month/year start to month/year end)

4.1.4 Description of the project scope of work

4.1.5 Brief description of how the project is relevant, and meets the requirements of this RFP project.

4.1.6 Current primary point of contact for the customer (name, relationship to project, agency/firm affiliation, city and state, phone number).

4.2. Past Performance of the Prime. Past performance of the prime contractor will be evaluated using the CCASS database and Customer Survey Forms. All available (CCASS or Customer Survey Forms) performance ratings for the past 5 years shall be considered. If an offeror does not have past performance available in CCASS or wishes to augment the CCASS system ratings, the offerors may ask customers to submit one of the Customer Survey Forms found at the end of this section. For each project constructed for private industry, provide a completed Customer Survey form for each applicable project within the last 5 years. All Customer Surveys must be submitted to the Government directly from the customer or agency that is providing the information. Further instructions are found at the top of the Customer Survey form. It is requested that only relevant projects be included. A relevant project is one of the same scope, cost and complexity as this solicitation. Should the offerors want to review the CCASS ratings contained in the Corps of Engineers CCASS Database, they may request the information by fax on company letterhead at the following fax number: (503) 808-4596. The Government reserves the right to contact the evaluator on previous Government or Private Sector work to verify the Offeror's construction experience. In the case of an offeror without a record of past performance or for whom information on past performance is not available, the offeror **may not be evaluated as favorable or unfavorable** on past performance (See FAR 15.305(a)(2)(iv)). An overall rating of satisfactory or above on CCASS performance evaluations and an **overall** acceptable rating on Customer Surveys will be given an acceptable rating.

4.2.1. Offeror Submitted Surveys. Surveys submitted directly by the offeror may not be considered. Please ensure envelopes containing surveys being submitted to this office do not contain the offeror's return address.

4.2.2. As a maximum, no more than five (5) Customer Surveys will be considered for the prime firm or joint venture partnership (i.e., the firm signing the Standard Form 1442, Solicitation, Offer and Award) for work not listed (i.e. civilian projects) in the Government CCASS system.

5. PROPOSAL CONTENTS/FORMAT.

5.1. Technical Proposal Format. As a minimum, each copy of the technical proposal should contain the information and follow the general format specified below. Pages should be numbered from beginning to end, without repeating for new sections.

5.2. Technical Proposal Format- Five (5) sets required, original plus four (4) copies**TECHNICAL PROPOSAL FORMAT**

1. *Technical Proposal Cover Letter, to include:*
 - a. *Solicitation Number*
 - b. *Name, address, and telephone and facsimile numbers of the Offeror (and electronic address, if available)*
 - c. *A statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation and agreement to furnish any or all items upon which prices are offered at the price set opposite each item*
 - d. *Name, titles, and telephone and facsimile numbers (and electronic addresses if available) of persons authorized to negotiate on the Offeror's behalf with the Government in connection with this solicitation*
 - e. *Name, title, and signature of person authorized to sign the proposal. Proposals signed by an agent shall be accompanied by evidence of that agent's authority, unless that evidence has been previously furnished to the issuing office.*
 - f. *Table of Contents. List all sections for the technical proposal. Any future amendments, additions and/or revisions to proposal shall include updated Table of Contents for each set.*
2. *Relevant Experience data*
3. *Past Performance data.*

5.3. Price Proposal Format. The price proposal shall be submitted in an **ORIGINAL plus 1 copy** and must be signed by an official authorized to bind your firm. Note that Standard Form 1442, Block 13D, provides the number of calendar days after the date of the offer for which the proposal is firm. The price proposal, to be submitted at the same time as the technical proposal, should include:

5.4 Price Proposal - Original and one (1) copy

1. *SF 1442, Solicitation, Offer and Award and Award and Corporate certificate*
2. *Acknowledge all amendments by number and date in Block 19 on the back of the SF 1442.*
3. *Pricing Schedule*
4. *Section 00600, Representation, Certifications and Other Statements of Offerors and Pre-award Information*
5. *Banking and Bonding information*
6. *Bid Bond*
7. *Subcontracting plan (large business only)*

5.5. Additional Instructions.

5.5.1. Small Business Subcontracting - Plan Offerors must submit pricing for all items in the Schedule. In addition, **large businesses are required to submit a subcontracting plan** (See FAR Clause 52.219-9 Alt II, Small Business Subcontracting Plan, Jan 2002) with initial price proposals. Award will not be made under this solicitation without an approved subcontracting plan. (See the "Notice to Large Business Firms" located in the front of this solicitation.) Provide the name, point of contact, phone number, and address for the bank and bonding company of the firm signing the SF 1442.

5.5.2. Bid Bonds - Bid Bonds must be accompanied by a Power of Attorney containing an original signature from the surety, which must be affixed to the Power of Attorney after the Power of Attorney has been generated. Computer generated and signed Power's of Attorney will only be accepted if accompanied by an original certification from a current officer of the surety attesting to its authenticity and continuing validity.

6. PROPOSAL EVALUATIONS AND AWARD. A firm fixed-price contract will be awarded to one firm submitting the proposal that:

6.1. Conforms to this request for proposals (RFP),

6.2. Is the technically acceptable, lowest price offer, and

6.3. Is determined to be in the best interest of the Government.

6.4. To be considered for award, proposals shall conform to the terms and conditions contained in the RFP. No proposal shall be accepted that does not address all factors specified in this solicitation or which includes stipulations or qualifying conditions.

6.5. Price. Price will be evaluated for reasonableness and to assess the offeror's understanding of the contract requirements and any risk inherent in the offeror's approach. Financial capacity and bonding ability will be checked.

6.6. Award. It is the intent of the Government to make award based upon the lowest price technically acceptable initial offer, without further discussions or additional information. Therefore, proposals shall be submitted initially on the most favorable terms from a price and technical standpoint. Do not assume you will be afforded the opportunity to clarify, discuss or revise your proposal. If award is not made on initial offers, discussion will be conducted as described below.

6.6.1. Competitive Range. After initial evaluation of proposals, should the Contracting Officer determine that discussions need to be conducted, the Contracting Officer will establish a competitive range comprised only of the technically acceptable proposals that have a reasonable chance of being selected. Discussions will be held only with firms in the competitive range.

6.6.2. Discussions. The Government may conduct written discussions with all offerors determined to be in the competitive range. In addition, if all proposals are determined to be non-acceptable, at the Contracting Officer's discretion, all firms will be requested to participate in discussions. As a result of discussions, offerors may make revisions to their initial offers. Discussions will culminate in a request for Final Proposal Revision, the date and time of which will be common to all offerors.

7. DEBRIEFINGS.

7.1 Pre-award. Offerors excluded from the competition before award will receive a notice and may request a debriefing before award by submitting a written request for a debriefing to the Contracting Officer within three (3) days after receipt of the notice of exclusion from the competition.

7.2 Post-award. Unsuccessful Offerors shall request post-award debriefing within three (3) days after the date on which the offeror received notification of contract award. Point-by-point comparisons with other offerors' proposals will not be made, and debriefings will not reveal any information that is exempt from release under the Freedom of Information Act.

8. PROPOSAL EXPENSES AND PRECONTRACT COSTS PROPOSAL EXPENSES AND PRECONTRACT COSTS: This RFP does not commit the Government to pay costs incurred in preparation and submission of the initial and any subsequent proposals or any other costs incurred prior to execution of a formal contract.

**END OF SECTION 00110 -
SEE CUSTOMER SURVEY
FOLLOWING THIS PAGE**

TABLE OF CONTENTS

SPECIAL CLAUSES

PARAGRAPH NO.	PARAGRAPH TITLE
SC-1	COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK
SC-1.1	OPTION FOR INCREASED QUANTITY
SC-2	LIQUIDATED DAMAGES - CONSTRUCTION
SC-3	TIME EXTENSIONS
SC-4	<u>DELETED</u> – VARIATIONS IN ESTIMATED QUANTITIES - SUBDIVIDED ITEMS
SC-5	INSURANCE - WORK ON A GOVERNMENT INSTALLATION
SC-6	<u>DELETED</u> – CONTINUING CONTRACTS
SC-7	PERFORMANCE OF WORK BY THE CONTRACTOR
SC-8	PHYSICAL DATA
SC-9	<u>DELETED</u> – QUANTITY SURVEYS
SC-10	LAYOUT OF WORK
SC-11	RESERVED
SC-12	AIRFIELD SAFETY PRECAUTIONS
SC-13	<u>DELETED</u> – IDENTIFICATION OF GOVERNMENT-FURNISHED PROPERTY
SC-14	EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE
SC-15	PAYMENT FOR MATERIALS DELIVERED OFF-SITE
SC-16	<u>DELETED</u> – ORDER OF PRECEDENCE
SC-17	<u>DELETED</u> – LIMITATION OF PAYMENT FOR DESIGN
SC-18	CONTRACT DRAWINGS AND SPECIFICATIONS
SC-19.	<u>DELETED</u> – TECHNICAL PROPOSAL - COPIES TO BE FURNISHED UPON AWARD
SC-20.	<u>DELETED</u> – COMPLIANCE CERTIFICATION
SC-21.	<u>DELETED</u> – VALUE ENGINEERING
SC-22.	EPA ENERGY STAR
SC-23	RECOVERED MATERIALS
ATTACHMENT A	INDEX OF DRAWINGS

03060

ADD/ALTER FLIGHTLINE FACILITIES, BLDG 304 & 375, PORTLAND ANG, OR

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SPECIAL CLAUSES

SC-1. COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984) (FAR 52.211-10).

The Contractor shall be required to (a) commence work under this Contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 270 calendar days after date of receipt by Contractor of notice to proceed. The time stated for completion shall include final cleanup of the premises.

SC-1.1 OPTION FOR INCREASED QUANTITY

a. The Government may increase the quantity of work awarded by exercising one or more of the Optional Bid Item(s) 0006 through 0016 ~~5~~ at any time, or not at all, but no later than ~~6~~ 90 calendar days after receipt by Contractor of notice to proceed. Notice to proceed on work Item(s) added by exercise of the option(s) will be given upon execution of consent of surety.

b. The parties hereto further agree that any option herein shall be considered to have been exercised at the time the Government deposits written notification to the Contractor in the mails.

c. The time allowed for completion of any optional items awarded under this contract will be the same as that for the base item(s), and will be measured from the date of receipt of the notice to proceed for the base item(s).

SC-2. LIQUIDATED DAMAGES - CONSTRUCTION (SEP 2000) (FAR 52.211-12)

(a) If the Contractor fails to complete the work within the time specified in the Contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of \$631.00 for each day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, the resulting damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess cost of repurchase under the Termination clause of the CONTRACT CLAUSES.

SC-3. TIME EXTENSIONS (Sept 2000) (FAR 52.211-13): Time extensions for contract changes will depend upon the extent, if any, by which the changes cause delay in the completion of the various elements of construction. The change order granting the time extension may provide that the Contract completion date will be extended only for those specific elements related to the changed work and that the remaining contract completion dates for all other portions of the work will not be altered. The change order also may provide an equitable readjustment of liquidated damages under the new completion schedule.

SC-4 DELETED.

SC-5. INSURANCE - WORK ON A GOVERNMENT INSTALLATION (JAN 1997) (FAR 52.228-5)

(a) The Contractor shall, at its own expense, provide and maintain during the entire performance period of this Contract at least the kinds and minimum amounts of insurance required in the Insurance Liability Schedule or elsewhere in the Contract.

(b) Before commencing work under this Contract, the Contractor shall certify to the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective:

(1) for such period as the laws of the State in which this Contract is to be performed prescribe;

or

(2) until 30 days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.

(c) The Contractor shall insert the substance of this clause, including this paragraph (c), in subcontracts under this Contract that require work on a Government installation and shall require subcontractors to provide and maintain the insurance required in the Schedule or elsewhere in the Contract. The Contractor shall maintain a copy of all subcontractors' proofs of required insurance, and shall make copies available to the Contracting Officer upon request.

SC-5.1 REQUIRED INSURANCE IN ACCORDANCE WITH FAR 28.307-2:

(1) Workers' compensation and employer's liability. Contractors are required to comply with applicable Federal and State workers' compensation and occupational disease statutes. If occupational diseases are not compensable under those statutes, they shall be covered under the employer's liability section of the insurance policy, except when Contract operations are so commingled with a Contractor's commercial operation that it would not be practical to require this coverage. Employer's liability coverage of at least \$100,000 shall be required, except in states with exclusive or monopolistic funds that do not permit workers' compensation to be written by private carriers.

(2) General Liability.

(a) The Contracting Officer shall require bodily injury liability insurance coverage written on the comprehensive form of policy of at least \$500,000 per occurrence.

(b) Property damage liability insurance shall be required only in special circumstances as determined by the agency.

(3) Automobile liability. The Contracting Officer shall require automobile liability insurance written on the comprehensive form of policy. The policy shall provide for bodily injury and property damage liability covering the operation of all automobiles used in connection with performing the Contract. Policies covering automobiles operated in the United States shall provide coverage of at least \$200,000 per person and \$500,000 per occurrence for bodily injury and \$20,000 per occurrence for property damage.

The amount of liability coverage on other policies shall be commensurate with any legal requirements of the locality and sufficient to meet normal and customary claims.

(4) Aircraft public and passenger liability. When aircraft are used in connection with performing the Contract, the Contracting Officer shall require aircraft public and passenger liability insurance. Coverage shall be at least \$200,000 per person and \$500,000 per occurrence for bodily injury, other than passenger liability, and \$200,000 per occurrence for property damage. Coverage for passenger liability bodily injury shall be at least \$200,000 multiplied by the number of seats or passengers, whichever is greater.

(5) Environmental Liability If this contract includes the transport, treatment, storage, or disposal of hazardous material waste the following coverage is required.

The Contractor shall ensure the transporter and disposal facility have liability insurance in effect for claims arising out of the death or bodily injury and property damage from hazardous material/waste transport, treatment, storage and disposal, including vehicle liability and legal defense costs in the amount of \$1,000,000.00 as evidenced by a certificate of insurance for General, Automobile, and Environmental Liability Coverage. Proof of this insurance shall be provided to the Contracting Officer.

SC-6 DELETED.

SC-7. PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984) (FAR 52.236-1): The Contractor shall perform on the site, and with its own organization, work equivalent to at least fifteen percent (15%) of the total amount of work to be performed under the Contract. The percentage may be reduced by a supplemental agreement to this Contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

SC-8. PHYSICAL DATA (APR 1984) (FAR 52.236-4): Data and information furnished or referred to below is for the Contractor's information. The Government will not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

(a) Physical Conditions: The indications of physical conditions on the drawings and in the specifications are the result of site investigations including by test holes, ~~shown on the drawings.~~ [A geotechnical report containing soil exploration data is included at the end of these Special Contract Requirements as Attachment B.](#)

(b) Weather Conditions: Each bidder shall be satisfied before submitting his bid as to the hazards likely to arise from weather conditions. Complete weather records and reports may be obtained from any National Weather Service Office.

(c) Transportation Facilities: Each bidder, before submitting his bid, shall make an investigation of the conditions of existing public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress at the jobsite. The unavailability of transportation facilities or limitations thereon shall not become a basis for claims for damages or extension of time for completion of the work.

SC-9 DELETED.

SC-10. LAYOUT OF WORK (APR 1984) (FAR 52.236-17): The Contractor shall lay out its work from Government-established base lines and bench marks indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at its own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through its negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due, or to become due, to the Contractor.

SC-11. RESERVED

SC-12. AIRFIELD SAFETY PRECAUTIONS

(a) Definitions: As used in this clause --

(1) "Landing Areas" means:

(i) the primary surfaces which are comprised of the surface of the runways, the runway shoulders, and the lateral safety zones (the length of each primary surface is the same as the runway length; the width of each primary surface is 610 meters (2,000 feet), 305 meters (1,000 feet) on each side of the runway centerline; (see footnote at end of clause)).

(ii) the "clear zone" beyond the ends of each runway, i.e., the extension of the "primary surface" for a distance of 305 meters (1,000 feet) beyond each end of each runway;

(iii) all taxiways plus the lateral clearance zones along each side for the length of the taxiways (the outer edge of each lateral clearance zone is laterally 76 meters (250 feet) from the far or opposite edge of the taxiway, i.e., a 23 meters (75-foot)-wide taxiway would have a combined width of taxiway and lateral clearance zones of 130 meters (425 feet); and

(iv) all aircraft parking aprons plus the area 38 meters (125 feet) in width extending beyond each edge all around the aprons.

(2) "Safety precaution areas" means those portions of approach-departure clearance zones and transitional zones where placement of objects incident to Contract performance might result in vertical projections at or above the approach-departure clearance surface or the transitional surface.

(i) The "approach-departure clearance surface" is an extension of the primary surface and the clear zone at each end of each runway, for a distance of 15,240 meters (50,000 feet), first along an inclined (glide angle) and then along a horizontal plane, both flaring symmetrically about the runway centerline extended.

(a) The inclined plane (glide angle) begins in the clear zone 61 meters (200 feet) past the end of the runway (and primary surface) at the same elevation as the end of the runway, and continues upward at a slope of 50:1 (.3048 meter (one foot) vertically for each 15.24 meters (50 feet) horizontally) to an elevation of 152 meters (500 feet) above the established airfield elevation; at that point the plane becomes horizontal, continuing at that same uniform elevation to a point 15,240 meters (50,000 feet) longitudinally from the beginning of the inclined plane (glide angle) and ending there.

(b) The width of the surface at the beginning of the inclined plane (glide angle) is the same as the width of the clear zone; thence it flares uniformly, reaching the maximum width of 4,877 meters (16,000 feet) at the end.

(ii) The "approach-departure clearance zone" is the ground area under the approach-departure clearance surface.

(iii) The "transitional surface" is a sideways extension of all primary surfaces, clear zones, and approach-departure clearance surfaces along inclined planes.

(a) The inclined plane in each case begins at the edge of the surface.

(b) The slope of the inclined plane is 7:1 (.3048 meter (one foot) vertically for each 2.13 meters (7 feet) horizontally), and it continues to the point of intersection with

(1) Inner horizontal surface (which is the horizontal plane 46 meters (150 feet) above the established airfield elevation) or

(2) Outer horizontal surface (which is the horizontal plane 152 meters (500 feet) above the established airfield elevation), whichever is applicable.

(iv) The "transitional zone" is the ground area under the transitional surface. (It adjoins the primary surface, clear zone and approach-departure clearance zone.)

(b) General

(1) The Contractor shall comply with the requirements of this clause while

(i) Operating all ground equipment (mobile or station art);

(ii) Placing all materials; and

(iii) Performing all work, upon and around all airfields.

(a) The requirements of this clause are in addition to any other safety requirements of this contract.

(c) The Contractor shall--

- (1) Report to the Contracting Officer before initiating any work;
- (2) Notify the Contracting Officer of proposed changes to locations and operations;
- (3) Not permit either its equipment or personnel to use any runway for purposes other than aircraft operation without permission of the Contracting Officer, unless the runway is--
 - (i) Closed by order of the Contracting Officer, and
 - (ii) Marked as provided in paragraph (d)(2) of this clause;
- (4) Keep all paved surfaces such as runways, taxiways, and hardstands, clean at all times and, specifically, free from small stones which might damage aircraft propellers or jet aircraft;
- (5) Operate mobile equipment according to the safety provisions of this clause, while actually performing work on the airfield. At all other times, the Contractor shall remove all mobile equipment to locations--
 - (i) Approved by the Contracting Officer,
 - (ii) At a distance of at least 229 meters (750 feet) from the runway centerline, plus any additional distance; and
 - (iii) Necessary to ensure compliance with the other provisions of this clause; and
- (6) Not open a trench unless material is on hand and ready for placing in the trench. As soon as practicable after material has been placed and work approved, the Contractor shall backfill and compact trenches as required by the contract. Meanwhile, all hazardous conditions shall be marked and lighted in accordance with the other provisions of this clause.

(e) Landing Areas

The Contractor shall--

- (1) Place nothing upon the landing areas without the authorization of the Contracting Officer.
- (2) Outline those landing areas hazardous to aircraft, using (unless otherwise authorized by the Contracting Officer) red flags by day, and electric, battery-operated low-intensity red flasher lights by night;
- (3) Obtain, at an airfield where flying is controlled, additional permission from the control tower operator every time before entering any landing area, unless the landing area is marked as hazardous in accordance with paragraph (d)(2) of this clause;

(4) Identify all vehicles it operates in landing areas by means of a flag on a staff attached to, and flying above, the vehicle. The flag shall be .9144 meters (3 feet) square, and consist of a checkered pattern of international orange and white squares of .3048 meter (1 foot) on each side (except that the flag may vary up to 10 percent from each of these dimensions);

(5) Mark all other equipment and materials in the landing areas, using the same marking devices as in paragraph (d)(2) of this clause; and

(6) Perform work so as to leave that portion of the landing area which is available to aircraft free from hazards, holes, piles of material, and projecting shoulders that might damage an airplane tire.

(e) Safety Precaution Areas

The Contractor shall--

(1) Place nothing upon the safety precaution areas without authorization of the Contracting Officer;

(2) Mark all equipment and materials in safety precaution areas, using (unless otherwise authorized by the Contracting Officer) red flags by day, and electric, battery-operated, low-intensity red flasher lights by night; and

(3) Provide all objects placed in safety precaution areas with a red light or red lantern at night, if the objects project above the approach-departure clearance surface or above the transitional surface.

SC-13 DELETED.

SC-14. EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAR 1995)-(EFARS 52.231-5000)

(a) This clause does not apply to terminations. See 52.249-5000, Basis for Settlement of Proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule, Region VIII. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet.

(e) Copies of EP1110-1-8 "Construction Equipment Ownership and Operating Expense Schedule" Volumes 1 through 12 are available in Portable Document Format (PDF) and can be viewed or downloaded at <http://www.usace.army.mil/inet/usace-docs/eng-pamphlets/cecw.htm>. A CD-ROM containing (Volumes 1-12) is available through either the Superintendent of Documents or Government bookstores. For additional information telephone 202-512-2250, or access on the Internet at http://www.access.gpo.gov/su_docs.

SC-15. PAYMENT FOR MATERIALS DELIVERED OFF-SITE (MAR 1995)-(EFARS 52.232-5000)

(a) Pursuant to FAR clause 52.232-5, Payments Under Fixed Priced Construction Contracts, materials delivered to the contractor at locations other than the site of the work may be taken into consideration in making payments if included in payment estimates and if all the conditions of the General Provisions are fulfilled. Payment for items delivered to locations other than the work site will be limited to: (1) materials required by the technical provisions; or (2) materials that have been fabricated to the point where they are identifiable to an item of work required under this contract.

(b) Such payment will be made only after receipt of paid or receipted invoices or invoices with canceled check showing title to the items in the prime contractor and including the value of material and labor incorporated into the item. In addition to petroleum products, payment for materials delivered off-site is limited to the following items: Any other construction material stored offsite may be considered in determining the amount of a progress payment.

SC-16 AND SC-17 DELETED.

SC-18. CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000)(DOD FAR SUPP 252.236-7001)

(a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall--

- (1) Check all drawings furnished immediately upon receipt;
- (2) Compare all drawings and verify the figures before laying out the work;
- (3) Promptly notify the Contracting Officer of any discrepancies;
- (4) Be responsible for any errors which might have been avoided by complying with this paragraph (b); and
- (5) Reproduce and print contract drawings and specifications as needed.

(c) In general—

- (1) Large scale drawings shall govern small scale drawings; and
- (2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified in the index of drawings attached at the end of the Special Clauses.

SC-19 THROUGH SC-21 DELETED.

SC-22. EPA ENERGY STAR: The Government requires that certain equipment be Energy Star compliant. Initially, the sole Energy Star requirement shall be the self certification by the bidder that the specified equipment is Energy Star compliant. Within 3 months of the availability of an EPA sanctioned test for Energy Star compliance, the Contractor shall submit all equipment upgrades and additions for testing and provide proof of compliance to the Government upon completion of testing. Testing shall be at the Contractor's expense.

SC-23. RECOVERED MATERIALS: The Corps of Engineers encourages all bidders to utilize recovered materials to the maximum extent practicable. The attached APPENDIX R contains procurement guidelines for products containing recovered materials.

APPENDIX R

PART 247 - COMPREHENSIVE PROCUREMENT GUIDELINE FOR PRODUCTS CONTAINING RECOVERED MATERIALS

40 CFR Ch. 1 (9-1-99 Edition)

Subpart B-Item Designations

§ 247.10 Paper and paper products.

Paper and paper products, excluding building and construction paper grades.

§ 247.11 Vehicular products.

- (a) Lubricating oils containing re-refined oil, including engine lubricating oils, hydraulic fluids, and gear oils, excluding marine and aviation oils.
- (b) Tires, excluding airplane tire
- (e) Reclaimed engine coolants, excluding coolants used in non-vehicular applications.

247.12 Construction products.

- (a) Building insulation product including the following items:
 - (1) Loose-fill insulation, including but not limited to cellulose fiber, mineral fibers (fiberglass and rock vermiculite, and perlite;
 - (2) Blanket and batt insulation, including but not limited to mineral fibers (fiberglass and rock wool).
 - (3) Board (sheathing, roof decking wall panel) insulation, including but not limited to structural fiberboard and laminated paperboard products perlite composite board, polyurethane, polyisocyanurate, polystyrene, phenolics, and composites; and
 - (4) Spray-in-place insulation, including but not limited to foam-in-place polyurethane and polyisocyanurate and spray-on cellulose.
- (b) Structural fiberboard and laminated paperboard products for applications other than building insulation, including building board, sheathing shingle backer, sound deadening board, roof insulating board, insulating wallboard, acoustical and non-acoustical ceiling tile, acoustical and non-acoustical lay-in panels, floor underlayments, and roof overlay (cover board).
- (c) Cement and concrete, including concrete products such as pipe and block, containing coal fly as ground granulated blast furnace (GGBF) slag.
- (d) Carpet made of polyester fiber use in low- and medium-wear applications.
- (e) Floor tiles and patio block containing recovered rubber or plastic.
- (f) Shower and restroom dividers/partitions containing recovered plastic or steel.
- (g) (1) Consolidated latex paint used for covering graffiti; and
- (2) Reprocessed latex paint used for interior and exterior architectural applications such as wallboard, ceilings, and trim; gutter boards; and concrete, stucco, masonry, wood and metal surfaces.

§247.13 Transportation products.

- (a) Traffic barricades and traffic cones used in controlling or restricting vehicular traffic.
- (b) Parking stops made from concrete or containing recovered plastic or rubber.
- (c) Channelizers containing recovered plastic or rubber.
- (d) Delineators containing recovered plastic, rubber, or steel.
- (e) Flexible delineators containing recovered plastic.

§ 247.14 Park and recreation products

- (a) Playground surfaces and running tracks containing recovered rubber or plastic.
- (b) Plastic fencing containing recovered plastic for use in controlling snow or sand drifting and as a warning/safety barrier in construction or other applications.

247.15 Landscaping products.

- (a) Hydraulic mulch products containing recovered paper or recovered wood used for hydroseeding and as an over-spray for straw mulch in landscaping, erosion control, and soil reclamation.
- (b) Compost made from yard trimmings, leaves, and/or grass clippings for use in landscaping, seeding of grass or other plants on roadsides and embankments, as a nutritious mulch under trees and shrubs, and in erosion control and soil reclamation.
- (c) Garden and soaker hoses containing recovered plastic or rubber.
- (d) Lawn and garden edging containing recovered plastic or rubber.

§ 247.16 Non-paper office product.

- (a) Office recycling containers and office waste receptacles.
- (b) Plastic desktop accessories.
- (c) Toner cartridges.
- (d) Binders.
- (e) Plastic trash bags.
- (f) Printer ribbons.
- (g) Plastic envelopes.

§ 247.17 Miscellaneous products.

Pallets containing recovered wood, plastic, or paperboard.

END OF SECTION

03060

ADD/ALTER FLIGHTLINE FACILITIES, BLDG 304 & 375, PORTLAND ANG, OR

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April 11, 2003

3795 GEOTECHNICAL RPT
(ISSUED 5/30/2003)

Berger / ABAM Engineers, Inc.
830 NE Holladay Street, Suite 150
Portland, OR 97232-5101

Attention: Jeffrey Feeney, PE

**SUBJECT: Geotechnical Investigation
Addition to Building 375 Portland Air National Guard (PANG)
Portland, Oregon**

At your request, GRI has completed a geotechnical investigation for the proposed addition to Building 375 at the Portland Air National Guard (PANG) base in Portland, Oregon. The general location of the site is shown on the Vicinity Map, Figure 1. The investigation was conducted to evaluate subsurface materials and conditions at the site and develop recommendations for use in the design of the proposed improvements. Our investigation consisted of subsurface explorations, laboratory testing, and engineering studies and analyses. This report describes the work accomplished and provides our conclusions and recommendations for use in the design and construction of the project.

PROJECT DESCRIPTION

Building 375 is the existing fuel maintenance/corrosion control hangar. Based on our conversations with you, we understand the proposed addition to the building will include new hangar doors and a small addition to the north side of the structure. The location and configuration of the addition is shown on the Site Plan, Figure 2. We understand the maximum column loads for the new hangar doors will be about 400 kips, and other foundation loads associated with the addition will be about 213 kips. The floor of the addition will be subject to KC-135 aircraft. There will be no basement or other significant below-grade structure, and the maximum depth of new underground utilities is anticipated to be less than 10 ft. In addition, only minor site grading will likely be necessary.

SITE DESCRIPTION

General

As shown on Figure 2, the Building 375 is located between buildings 374 and 380, along Hayes Loop Road, at the Air National Guard Base at Portland International Airport. Existing site grades range from about elevation 16 to 18 ft, NGVD. The existing hangar opens to the flightline on the north side of the building. Areas adjacent to the hangar driveway are landscaped with grass.

Geology

The site is located on the former floodplain of the Columbia River. In this area, the ground surface is generally mantled with a variable thickness of fill. The fill is underlain by naturally occurring alluvial silt and sand that are underlain by gravel at depth. The depth to gravel generally increases from south to north across the base.

SUBSURFACE CONDITIONS

General

Subsurface conditions at the site were investigated on January 22, 2003, with one boring, designated B-1, and one cone penetration test (CPT) probe, designated P-1. The locations of the explorations are shown on Figure 2. The field exploration and laboratory testing programs completed for this investigation are discussed in detail in Appendix A. Logs of the boring and CPT probe are provided in Appendix A. The terms used to describe the soils disclosed in the boring are defined in Table 1A.

Soils

The subsurface explorations for this investigation were advanced to a maximum depth of 110 ft. The explorations indicate the site is mantled with a layer of sand fill that is about 13 ft thick. The fill is underlain by alluvium that consists primarily of silt with varying percentages fine-grained sand and interbedded layers of silty sand and sand to a depth of about 51 ft. The soils below a depth of about 51 ft consist primarily of fine-grained sand. For the purpose of discussion, the soils disclosed by the subsurface explorations have been grouped into the following categories, based on their physical characteristics and engineering properties.

1. **FILL**
2. **SILT with layers of SAND**
3. **SAND**

1. **FILL.** The boring and CPT probe encountered a surface layer of sand fill that extends to a depth of about 13 ft. The sand is brown, fine grained, and contains a trace of silt and scattered subangular gravel. N-values of 41 blows/ft to refusal, defined as more than 50 blows for 6 in of penetration of the split-spoon sampler, indicate the relative density of the sand fill is dense. The natural moisture content of the sand fill obtained from boring B-1 ranges from about 18 to 23%.

2. **SILT with layers of SAND.** The fill is underlain by gray to gray-brown alluvial silt with interbedded layers of sand that are up to 5 ft thick. The silt contains a trace of clay and varying percentages of fine-grained sand. N-values ranging from 6 to 14 blows/ft and CPT tip resistance values ranging from about 10 to 52 tsf indicate the relative consistency of the silt is medium stiff to stiff, and the relative density of the interbedded sand is medium dense. The natural moisture content of the alluvial soils obtained from boring B-1 ranges from about 37 to 54%. The silt extends to a depth of about 51 ft in boring B-1 and CPT probe P-1.

3. **SAND.** Alluvial sand was encountered at a depth of about 51 ft below the ground surface. The sand is typically gray, fine grained, and contains a trace to some silt and interbedded layers of silt. N-values ranging from 16 to 41 blows/ft and CPT tip resistance values ranging from about 15 to 180 tsf indicate the relative density of the sand ranges from loose to very dense. The sand becomes dense to very dense below about 85 ft. The natural moisture content of the sand samples obtained from boring B-1 ranges from about 32 to 37%. Boring B-1 was terminated in a silt interbed at a depth of 81.5 ft below the ground surface. CPT probe P-1 was terminated in sand at a depth of 110 ft.

Groundwater

Drainage canals and sloughs in this part of the floodplain are operated by the Multnomah County Drainage District to control the water levels in the floodplain. Pumping maintains the water level in the sloughs and drainages at about elevation +8 ft in the project area. Seasonal variations can occur during extreme highs and lows of the Columbia River and during the wet, winter months. Groundwater levels at locations away from the sloughs are commonly higher than the water level in the sloughs and may approach the ground surface during prolonged wet weather. The borings for this investigation were drilled using mud-rotary methods, which does not permit the measurement of groundwater levels during drilling. However, based on our previous work in this area, we anticipate the groundwater level ranges from about elevation +7 to +12 ft during the dry season.

CONCLUSIONS AND RECOMMENDATIONS

General

The subsurface explorations indicate the site is mantled with dense sand fill to a depth of about 13 ft. Below the sand fill is a thick deposit of compressible silt that contains interbedded layers of medium dense sand and sandy silt; the layered silt and sand are underlain by a deposit of dense sand. The results of our investigation indicate there is the potential for partial or complete liquefaction of the soils between a depth of about 25 and 45 ft during a strong seismic event. This liquefaction may result in significant amounts of total and differential settlement across the site. Due to the relatively high foundation loads for the hangar doors and the liquefaction risk, we recommend supporting these loads on a deep pile foundation system established in the dense sand. Depending on the structural requirements and/or the amount of tolerable settlement, the lighter foundation loads may be supported on shallow spread footings established in the sand fill that caps the site. The following sections of this report provide our conclusions and recommendations for design and construction of foundations for the proposed addition and other geotechnical-related items.

Site Preparation and Grading

We recommend that organic material be removed from the ground surface within the limits of the proposed addition. Stripping of organic materials should be accomplished to a depth of about 6 in; however, greater or lesser amounts of stripping may be required locally. In our opinion, the stripped materials should be removed from the site or stockpiled on-site for used as fill in landscape areas. Upon completion of site stripping, the exposed subgrade should be observed by a qualified geotechnical engineer. Any soft areas should be overexcavated to firm, undisturbed soil and backfilled with structural fill.

We recommend that existing pavement be removed from within the limits of the proposed addition. The upper 12 in. of the floor slab subgrade should be compacted to at least 95% of the maximum dry density as determined by ASTM D 1557. Moderately heavy to heavy, smooth, steel-wheeled vibratory rollers are most effective for compaction of the sand fill. Wetting of the sand will probably be required to achieve the recommended compaction. The existing sand fill should provide an all-weather working surface for construction operations.

In new pavement areas, the existing pavement can remain in place, provided it is broken into pieces of about 12-in. maximum dimension and is at least 12 in. below subgrade for the new pavements. In our opinion, any removed AC could be crushed to a maximum nominal size of 1 1/2 in. and used in pavement

areas as structural fill, trench backfill, or as a substitution for a portion of the granular base course outside the limits of the addition.

Structural Fill

In our opinion, on-site or imported, relatively clean, granular material approved by the geotechnical engineer may be used to construct structural fills. Imported granular materials used to construct structural fills or work pads should consist of material with a maximum size of up to 6 in. and not more than about 5% passing the No. 200 sieve (washed analysis). The granular fill should be placed in 12-in.-thick (loose) lifts. All lifts should be compacted with a medium-weight (48-in.-diameter drum), smooth, steel-wheeled, vibratory roller until well keyed. Generally, a minimum of four passes with the roller are required to achieve compaction.

All backfill placed in utility trench excavations within the limits of the building and paved areas should consist of sand, sand and gravel, or crushed rock with a maximum size of up to 1 1/2 in., and not more than 5% passing the No. 200 sieve (washed analysis). In our opinion, the granular backfill should be placed in lifts and compacted using vibratory plate compactors or tamping units to at least 95% of the maximum dry density as determined by ASTM D 1557 in the upper 3 ft of the trench. Backfill below this depth should be compacted to at least 92% of the aforementioned maximum dry density. Flooding or jetting the backfilled trenches with water to achieve the recommended compaction should not be permitted.

Foundation Support

In our opinion, foundation support for the new hangar doors should be provided by a deep foundation system that extends into the lower sand layer that underlies the site. Based on previous experience at nearby sites and our understanding of the project, we anticipate that either steel pipe piles or augercast piles will be suitable for support of the hangar doors. Support for other foundation loads can be provided by either piles or conventional wall- and column-type spread footings.

Spread Footings. All footings should be established on a firm, well-compacted sand subgrade or compacted structural fill at a minimum depth of 2 ft. below the lowest adjacent finished grade. The width of footings should not be less than 18 in. for wall footings or 24 in. for isolated column footings. All footings should be excavated with a smooth-edge bucket. For footings founded on sand, it is likely that the footing subgrade will be disturbed during excavation. Therefore, we recommend wetting the bottom of all footing excavations founded in sand and compacting the sand with several passes of a heavy, hand-operated vibratory plate compactor just prior to placing the reinforcing steel for the footing. The bottom of the footing excavations should be wetted prior to placing the concrete. Any zones of unsuitable subgrade material detected at this time, such as silt lenses in the sand fill beneath the footings, will require overexcavation and replacement. Footings established in accordance with these criteria can be designed on the basis of an allowable soil bearing pressure of 2,500 psf. This value applies to the total of dead load plus frequently and/or permanently applied live loads and can be increased by one-third for the total of all loads; dead, live, and wind or seismic.

For footings established in accordance with the above criteria, we anticipate the settlement of column footings supporting a load of up to 213 kips will be less than 1 in. In our opinion, differential settlement between any two adjacent column footings should be less than half the total settlement of similarly loaded columns. The estimated settlement is based on the assumption that footings will have at least one footing

width between the edges of adjacent footings. It is also anticipated that floor live loads will be less than 100 psf, and the thickness of new fills will not exceed 2 ft.

Lateral forces due to wind or seismic loads can be resisted partially or completely by frictional forces developed between the base of spread footings and the underlying soils. The shear resistance between the footing and the soil should be taken as the normal force, i.e., the sum of all vertical forces (dead load plus real live load), times the coefficient of friction between the sand and the base of the footing. We recommend an ultimate value of 0.40 for the coefficient of friction for mass concrete placed directly on sand. If additional lateral resistance is required, passive soil resistance from embedded footings may be evaluated on the basis of an equivalent fluid having a unit weight of 250 pcf. This design passive soil resistance would only be effective if the backfill for the footing is placed and compacted as recommended for granular structural fill.

Pile Foundations. Allowable capacities for piles will depend on pile type, pile diameter and/or size, and penetration into the lower sand layer. The following table summarizes our recommended allowable compression (downward) and tension (uplift) criteria for steel pipe piles and augercast piles.

Pile Type	Estimated Minimum Penetration into Lower Sand, ft	Allowable Capacity, tons	
		Compression	Tension
PP 12.75 x 0.375 (open-end)	30	60	30
16-in.-diameter augercast	30	70	35

The above design capacities assume the piles will be installed to a tip elevation of about -65 ft. The estimated penetrations into the lower sand are based on the subsurface explorations and liquefaction analysis of the site. In this regard, the allowable capacities refer to real loads, i.e., the total of dead load plus frequently or permanently applied live loads, including transient seismic loads, and include a reduction for downdrag. The allowable pile capacities are based on soil support considerations and include an estimated factor of safety of at least 2 for static loading conditions and a factor of safety of 1.5 for all loads, including seismic loading and downdrag. The structural strength of the pile may limit the allowable capacities to lower values.

We acknowledge that other pile types and capacities may be appropriate for this site depending on the specific pile design load requirements. The above pile capacities are intended to provide you with pile types and capacities that have been commonly used in these types of soils.

We anticipate the settlement of steel pipe or augercast piles installed in accordance with the criteria presented herein will be relatively small and limited to the elastic shortening of the pile.

Lateral Load Analysis. Lateral structural loads can be resisted by piles in bending and the passive resistance of the soil adjacent to the pile cap. Lateral loading of pipe piles was analyzed with the aid of the computer software program L-Pile, version 4.0, by Ensoft, Inc. of Austin, Texas. The program computes deflection, shear, bending moment, and soil response with respect to depth. The soil behavior was modeled with p-y curves internally generated by the software following published recommendations for various types of soils.

The steel pipe piles used in the analysis have a diameter of 12.75 in. and a wall thickness of 0.375 in. For the seismic case, the group effects were ignored. This is based on the assumption that the cyclic loading during a seismic event will remold the soil around the pile causing the weakened soils to become less effective in transferring the induced stresses to the neighboring piles. This effect would be most significant for relatively small pile groups with a minimum spacing of 3D (where D equals the pile diameter) driven in soft and loose soils, typical of the subsurface conditions at the site. The piles were analyzed for the fixed- and free-head conditions. The lateral loads were applied at the head of the pile.

The soil profile was developed using the results of the subsurface explorations. Soil properties were selected on the basis of the results of our field investigation, laboratory testing, review of existing information for the area, and our experience with other projects in the vicinity of the site, particularly at the Portland International Airport.

For the site, groundwater was assumed to occur at the ground surface. The seismic case was analyzed, and information from our liquefaction study was used to identify layers that are likely to liquefy. These layers were assigned residual shear strength values based on published data. The typical residual shear strength values ranged from 100 to 200 psf. The lower sand layer was assigned an effective shear strength, ϕ' , of 35°. The cyclic loading option in L-Pile was used. The results of lateral load analyses for the steel piles are tabulated below.

SUMMARY OF LATERAL LOAD ANALYSIS FOR SINGLE PILES

Pile Type	Lateral Load for ½-in. Deflection, kips (Fixed-Head Condition)		Lateral Load for ½-in. Deflection, kips (Free-Head Condition)	
	Non-Seismic Case	Seismic Case	Non-Seismic Case	Seismic Case
PP12.75 x 0.375	10.0	6.0	5.0	2.5
16-in.-diameter augercast	12.0	7.0	6.0	3.0

Additional resistance to lateral forces can be provided by passive earth pressure against the pile cap. The magnitude of the passive earth pressure will depend, in part, on the anticipated limiting deflection. In our opinion, passive resistance can be evaluated on the basis of an equivalent fluid having a unit weight of 250 pcf for deformations of ½ in. This value assumes the excavations for the pile caps will be backfilled with compacted granular fill.

Installation Criteria for Steel Pipe Piles

Steel pipe piles should be installed with a center-to-center spacing of at least three pile diameters. The piles may be driven with an air, steam, or diesel hammer exerting at least 32,000 ft-lb of energy per blow, or as necessary to achieve the required pile tip elevation. A vibratory pile hammer/extractor may be used to install the open-end pipe piles. The vibratory hammer must be capable of installing the piles to the required tip elevations.

In this regard, we recommend that all pile-driving operations be observed on a full-time basis, and a continuous record of pile installation resistance versus depth of penetration should be maintained for each pile. All pile driving records should be reviewed by the geotechnical engineer as the work progresses.

Installation Criteria for Concrete Augercast Piles

Augercast piles are constructed by rotating a hollow-stem auger into the ground to the desired depth. As the auger is slowly withdrawn, grout is pumped through the hollow auger stem and out the bottom of the auger. It is essential that the tip of the auger be maintained at least 4 to 6 ft below the surface of the grout as the auger is withdrawn. Augercast piles should only be installed by an experienced contractor with a proven record of pile installation in similar conditions. Concrete augercast pile installation should be observed on a full-time basis by a qualified geotechnical engineer. Augercast piles typically include a rebar cage in the upper portion of the pile and a full-length reinforcing bar to transmit uplift (tension forces).

To minimize disturbance of recently grouted piles that have not yet attained their initial set, we recommend that a 24-hour waiting period be specified for installing piles spaced closer than five pile diameters. In addition, particular care should be taken during installation of augercast piles to prevent the inclusion of any spoils or cuttings within the grouted column. This requires withdrawing the auger and grouting the column in a continuous operation, while maintaining a positive head of grout within the stem of the auger at all times. Consideration should be given to carefully centering rebar cages and using spacers along the length of the cage to maintain proper cover for the steel around the perimeter of the pile. Provisions should be made to top off the grout column if the grout settles before it sets and to protect the heads of freshly completed piles.

Floor Support

We anticipate the finish floor elevation will be established near existing site grades. To provide more uniform floor support and a capillary break, we recommend placing a minimum 6-in.-thick granular base course beneath the concrete floor slab. The base course material should consist of crushed rock with a maximum size up to about 1 in. and less than about 2% passing the No. 200 sieve (washed analysis). Base course material should be compacted to at least 95% of the maximum density as determined by ASTM D 1557. In addition, it may be appropriate to install a vapor-retarding membrane beneath slab-on-grade floors in areas where damp floors may be a concern. Typical details for a vapor-retarding membrane are shown on Figure 3. Assuming the floor slab subgrade and base course are suitably prepared, we recommend using a modulus of subgrade reaction (k) of 225 pci for the evaluation of concrete slabs that are subjected to heavy floor loads.

Pavement Design

Based on our conversations with you, we anticipate the floor of the addition and any new apron areas around the hangar building will be subjected to traffic of aircraft and heavy vehicles. Although specific traffic information is not available, information provided by Berger/ABAM Engineers for a KC-135R aircraft indicate main and nose gear wheel loads are about 38 kips and 11 kips, respectively. This information was used to estimate a rigid concrete pavement (Portland Cement Concrete) section for areas subject to aircraft traffic. For areas subject to heavy vehicles and aircraft, we recommend a pavement section consisting of a 12-in. thickness of concrete underlain by a minimum 6-in.-thick base course of crushed rock installed over compacted sand subgrade.

All areas to be paved should be prepared as recommended in previous sections of this report. Prior to placing base course materials, all paved areas should be proof rolled with a fully loaded 10 yd³ dump truck. Any soft areas that are detected by the proof rolling should be overexcavated to firm ground and backfilled with compacted structural fill.

Properly installed drainage is an essential aspect of pavement design. All paved areas should be provided with positive drainage to remove surface water and water within the base course. This will be particularly important in cut sections or at low points within the paved areas, such as at catch basins. Effective methods to prevent saturation of the base course materials include providing weep holes in the sidewalls of catch basins, subdrains in conjunction with utility excavations, and separate trench drain systems.

Seismic Considerations

GRI completed a site-specific seismic hazard study for Helix Architecture for the nearby proposed Fire Station project. The results of our investigation are described in our March 20, 2003, draft report entitled, "Geotechnical Investigation and Site-Specific Seismic Hazards Study, Fire Station at Portland Air National Guard (PANG), Portland, Oregon." Based on this seismic study and the subsurface materials and conditions at the Building 375 site, it is our opinion that there is a moderate to high potential for partial or complete liquefaction of the alluvial silts and sands between a depth of about 25 and 45 ft during a strong seismic event. The evaluation of liquefaction potential for the site was based on the soil profile disclosed in boring B-1 and CPT probe P-1. Depending on actual river and groundwater levels at the time of the earthquake, we estimate liquefaction-induced settlements at the site could be in the range of 6 to 12 in, assuming groundwater at a depth of about 3 ft and an earthquake magnitude of 7 with a peak ground acceleration of 0.2 g, corresponding to a local crustal event in the Portland area. Additionally, an earthquake with a larger magnitude producing the same acceleration at the site will result in larger settlements. It should be assumed that significant differential settlement could occur across the footprint of the building. We also anticipate that a significant portion of the settlement will occur after the shaking stops.

Based on the criteria defined in the 2000 International Building Code and the potential for liquefaction at the site, the site classification is Class F, which requires site-specific evaluation. However, in our opinion, based on the results of our nearby site-specific seismic study, Class E may be used for the seismic evaluation of the structure.

Based on the site topography, it is our opinion that the risk for earthquake-induced slope instability is low. Based on the elevation and location of the site, the risk of damage by tsunamis and/or seiches is absent. Based on the results of our site-specific seismic hazards study for the PANG fire station, no faults are mapped on or near the site, and it is our opinion that the potential for fault rupture at the site is low.

Design Review and Construction Services

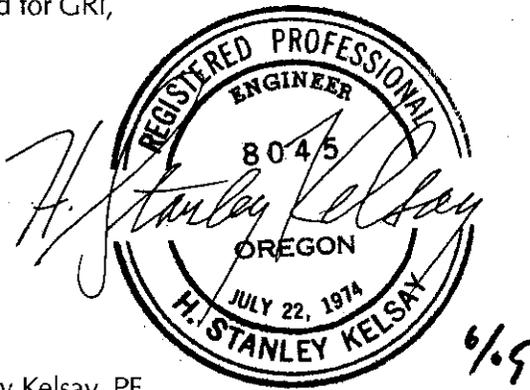
We welcome the opportunity to review and discuss construction plans and specifications for this project as they are being developed. In addition, GRI should be retained to review all geotechnical-related portions of the plans and specifications to evaluate whether they are in conformance with the recommendations provided in our report. Additionally, to observe compliance with the intent of our recommendations, design concepts, and the plans and specifications, we are of the opinion that all construction operations dealing with earthwork and foundations should be observed by a GRI representative. Our construction-phase services will allow for timely design changes if site conditions are encountered that are different from those described in this report. If we do not have the opportunity to confirm our interpretations, assumptions, and analyses during construction, we cannot be responsible for the application of our recommendations to subsurface conditions that are different from those described in this report.

LIMITATIONS

This report has been prepared to aid the engineer in the design of this project. The scope is limited to the specific project and location described herein, and our description of the project represents our understanding of the significant aspects of the project relevant to the design and construction of the proposed structure. In the event that any changes in the design and location of the structure as outlined in this report are planned, we should be given the opportunity to review the changes and to modify or reaffirm the conclusions and recommendations of this report in writing.

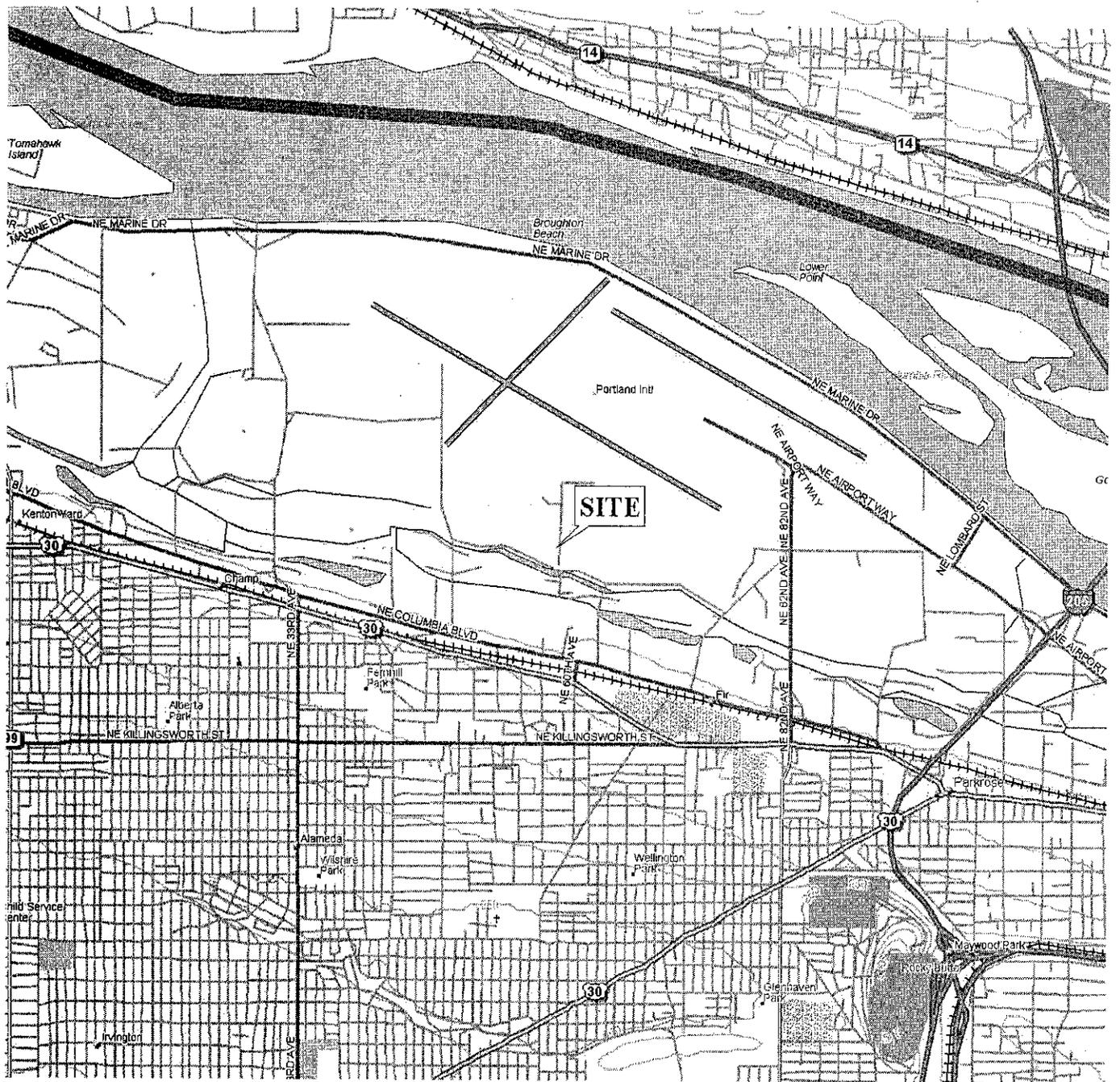
The conclusions and recommendations submitted in this report are based on the data obtained from the boring and CPT probes made at the locations indicated on Figure 2 and from other sources of information discussed in this report. In the performance of subsurface investigations, specific information is obtained at specific locations at specific times. However, it is acknowledged that variations in soil conditions may exist between subsurface explorations. If, during construction, subsurface conditions different from those encountered in the explorations are observed, we should be advised at once so that we can observe and review these conditions and reconsider our recommendations where necessary.

Submitted for GRI,



H. Stanley Kelsay, PE
Principal

Tova R. Peltz
Staff Engineer

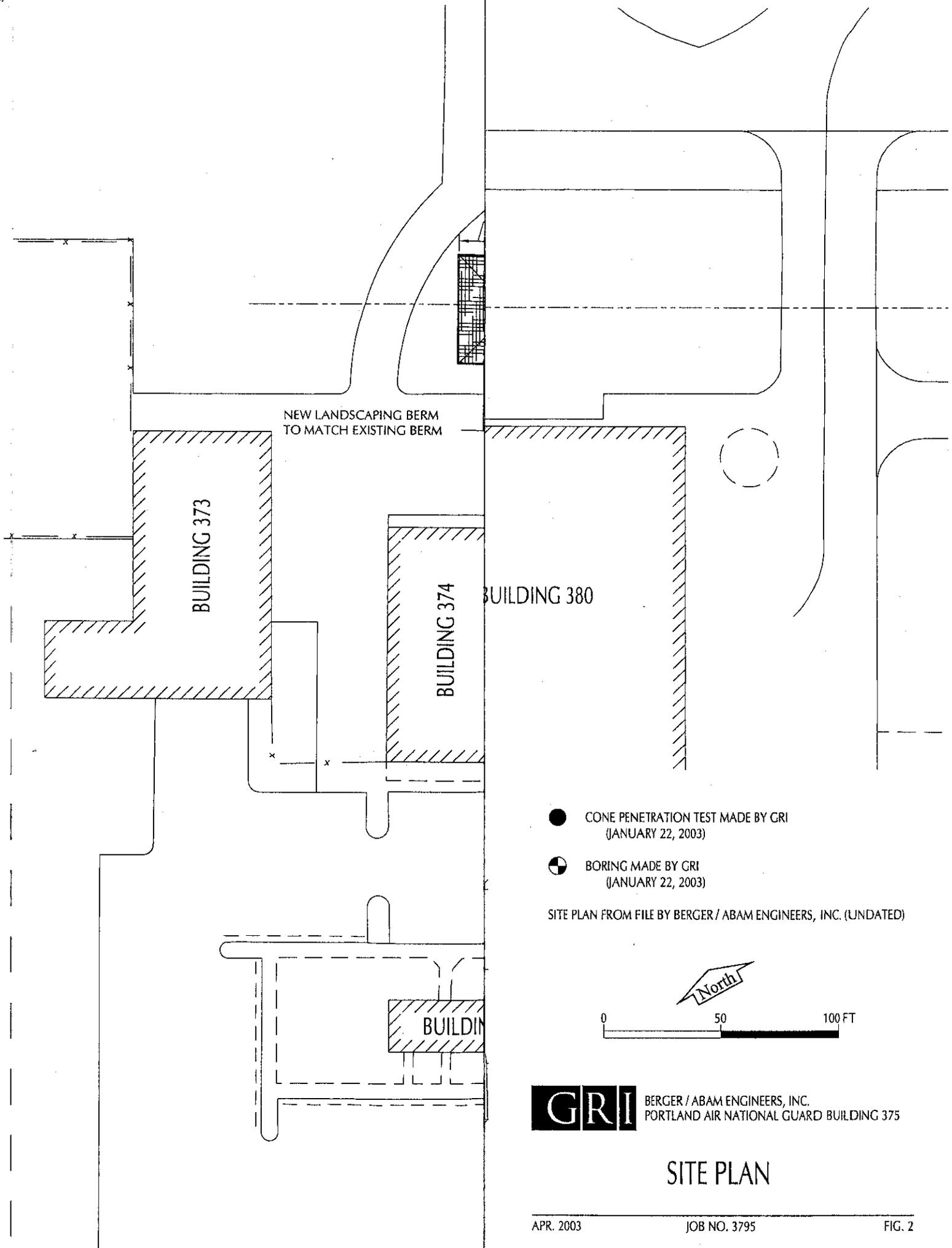


DELORME 3-D TOPOQUADS, OREGON WEST
MOUNT TABOR, OREG. (2cd) 1999



BERGER / ABAM ENGINEERS, INC.
PORTLAND AIR NATIONAL GUARD BUILDING 375

VICINITY MAP



NEW LANDSCAPING BERM
TO MATCH EXISTING BERM

BUILDING 373

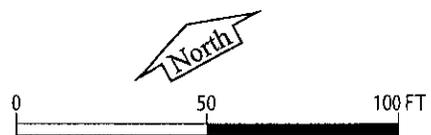
BUILDING 374

BUILDING 380

BUILDING 375

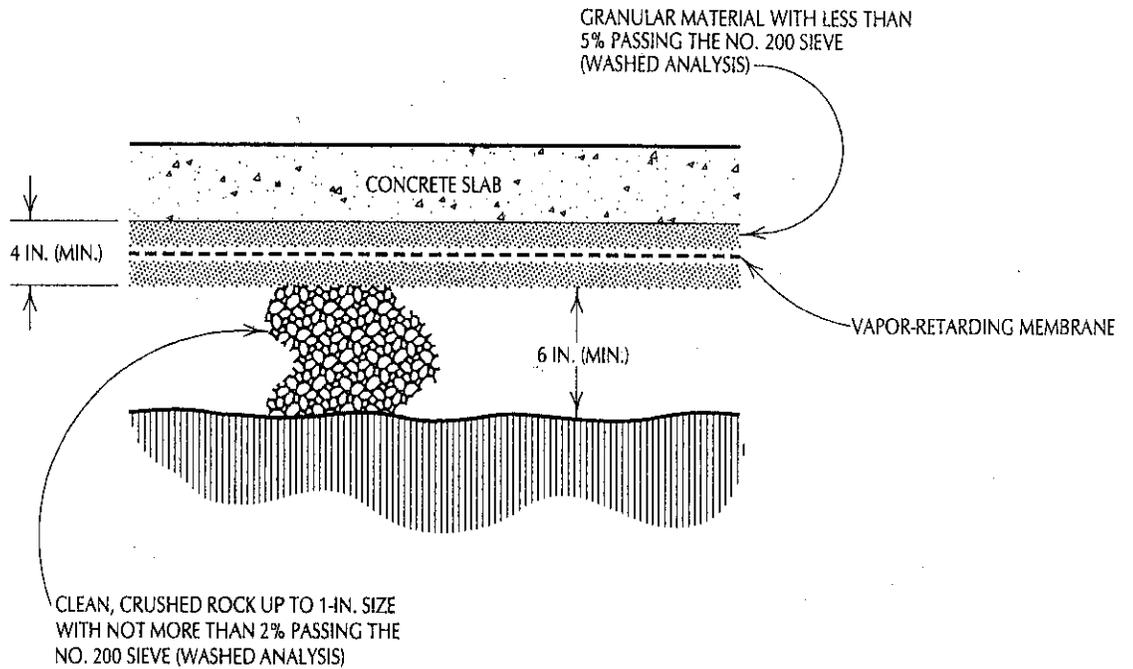
- CONE PENETRATION TEST MADE BY GRI
(JANUARY 22, 2003)
- ⊕ BORING MADE BY GRI
(JANUARY 22, 2003)

SITE PLAN FROM FILE BY BERGER / ABAM ENGINEERS, INC. (UNDATED)



GRI BERGER / ABAM ENGINEERS, INC.
PORTLAND AIR NATIONAL GUARD BUILDING 375

SITE PLAN



NOT TO SCALE

UNDERSLAB DRAINAGE DETAIL

APPENDIX A

FIELD EXPLORATIONS AND LABORATORY TESTING

FIELD EXPLORATIONS

General

Subsurface materials and conditions at the site were investigated on January 22, 2003, with one boring, designated B-1, and one cone penetration test (CPT) probe, designated P-1. The locations of the explorations are shown on Figure 2. The boring was drilled to a depth of 81.5 ft with mud-rotary techniques using a truck-mounted drill rig provided and operated by Subsurface Explorations of Banks, Oregon. The CPT probe was advanced to a depth of 110 ft and was also completed by Subsurface Explorations. An experienced geotechnical engineer provided by our firm observed the drilling and sampling and maintained a detailed log of the materials disclosed during the course of the work.

Boring

Disturbed and undisturbed samples were obtained from the boring at 2.5-ft intervals of depth in the upper 15 ft and at 5-ft intervals below this depth. Disturbed samples were obtained using a standard split-spoon sampler. At the time of sampling, the Standard Penetration Test was conducted. This test consists of driving a standard split-spoon sampler into the soil a distance of 18 in. using a 140-lb hammer dropped 30 in. The number of blows required to drive the sampler the last 12 in. is known as the standard penetration resistance, or N-value. The N-values provide a measure of the relative density of granular soils, such as sand, and the relative consistency, or stiffness, of cohesive soils, such as silt. The soil samples obtained in the split-spoon sampler were carefully examined in the field, and representative portions were saved in airtight jars for further examination and physical testing in our laboratory.

A log of boring B-1 is provided on Figure 1A. The log provides a descriptive summary of the various types of materials encountered in the boring and notes the depth at which the materials and/or characteristics of the materials change. To the right of the descriptive summary, the numbers and types of samples taken during the drilling operation are indicated. Farther to the right, N-values are shown graphically, along with the natural moisture contents. The terms used to describe the soils encountered in the boring are defined in Table 1A.

Cone Penetration Test Probe

The cone penetration test (CPT) consists of forcing a hardened steel cone vertically into the soil at a constant rate of penetration. The thrust required to cause penetration at a constant rate can be related to the bearing capacity of the soil immediately surrounding the point of the penetrometer cone. This value is known as the cone penetration resistance. After making the cone thrust measurement, a measurement is obtained of the magnitude of thrust required to force a special friction sleeve, attached above the cone, through the soil. The thrust required to move the friction sleeve can be related to the undrained shear strength of fine-grained soils. The dimensionless ratio of sleeve friction to point bearing capacity provides an indication of the type of soil penetrated. The cone penetration resistance and the sleeve friction are determined at about 8-in. intervals in the probe hole and can be used to evaluate the relative density of cohesionless soils and the relative consistency of cohesive soils, respectively.

A log of CPT probe P-1 is provided on Figure 2A. The log provides a descriptive summary of the various types of materials encountered in the probe and notes the depth at which the materials and/or characteristics of the materials change.

LABORATORY TESTING

General

All samples obtained from the boring were returned to our laboratory where the physical characteristics of the samples were noted and the field classifications were modified where necessary. The laboratory testing program included determinations of natural moisture content and grain size. The following paragraphs describe the testing program in more detail.

Natural Moisture Content

The natural moisture content of the soil samples was determined in substantial conformance with ASTM D 2216. The results are shown graphically on Figure 1A.

Grain Size Analyses

Grain size analyses of selected samples were performed in general conformance with ASTM D 421 and 422 to determine the percentage of material passing the No. 200 sieve. The test results are tabulated below.

SUMMARY OF GRAIN SIZE ANALYSES

<u>Boring</u>	<u>Sample</u>	<u>Depth, ft</u>	<u>Percent Passing No. 200 Sieve</u>	<u>Soil Description</u>
B-1	S-8	20	17	SAND; fine grained, some silt
	S-9	25	75	SILT; some fine-grained sand
	S-13	45	57	SILT; some fine-grained sand
	S-16	60	16	SAND; some silt
	S-20	80	72	SILT; some fine-grained sand

Table 1A

GUIDELINES FOR CLASSIFICATION OF SOIL

Description of Relative Density for Granular Soil

<u>Relative Density</u>	<u>Standard Penetration Resistance (N-values) blows per foot</u>
very loose	0 - 4
loose	4 - 10
medium dense	10 - 30
dense	30 - 50
very dense	over 50

Description of Consistency for Fine-Grained (Cohesive) Soils

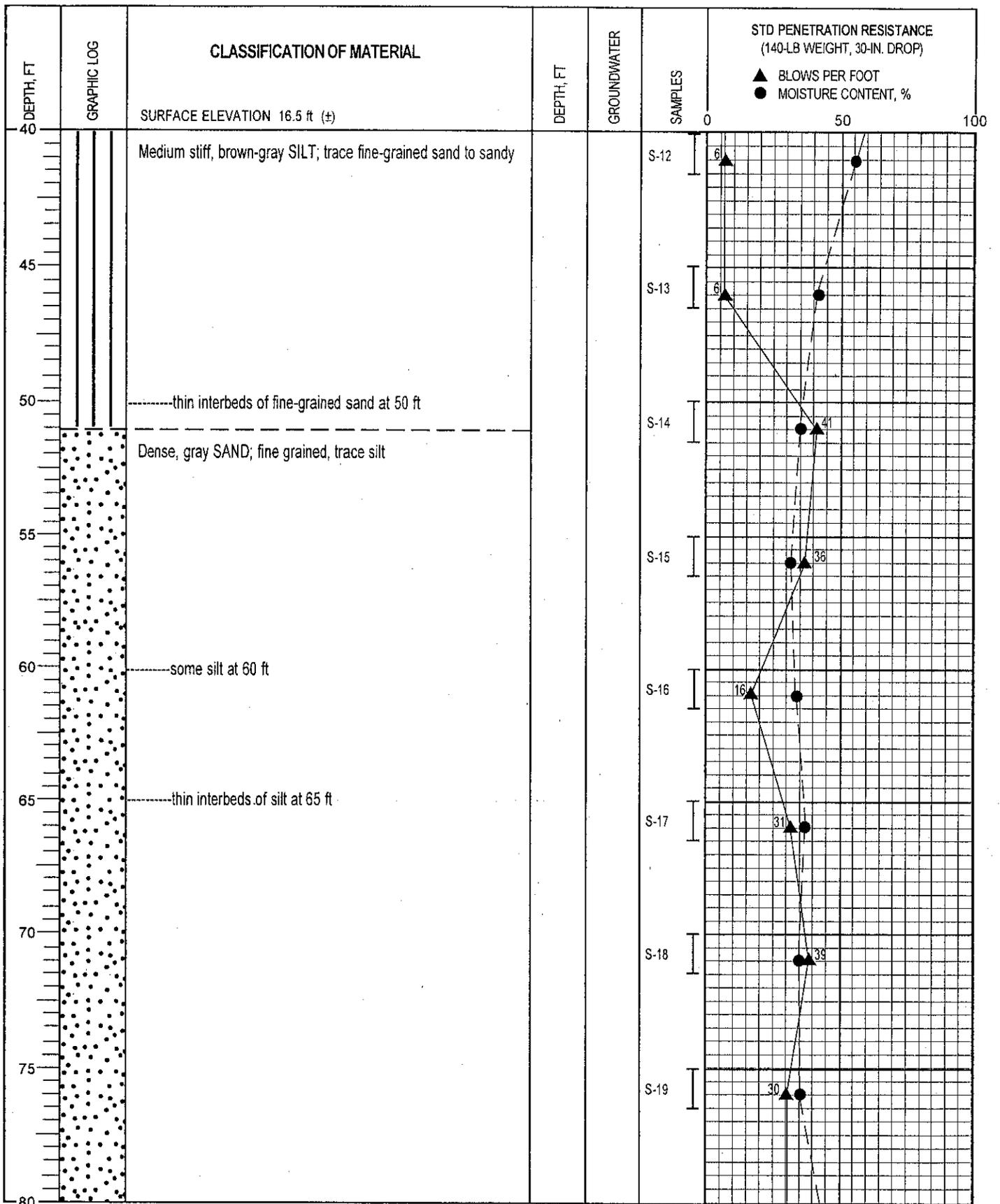
<u>Consistency</u>	<u>Standard Penetration Resistance (N-values) blows per foot</u>	<u>Torvane Undrained Shear Strength, tsf</u>
very soft	2	less than 0.125
soft	2 - 4	0.125 - 0.25
medium stiff	4 - 8	0.25 - 0.50
stiff	8 - 15	0.50 - 1.0
very stiff	15 - 30	1.0 - 2.0
hard	over 30	over 2.0

Sandy silt materials which exhibit general properties of granular soils are given relative density description.

Grain-Size Classification

Modifier for Subclassification

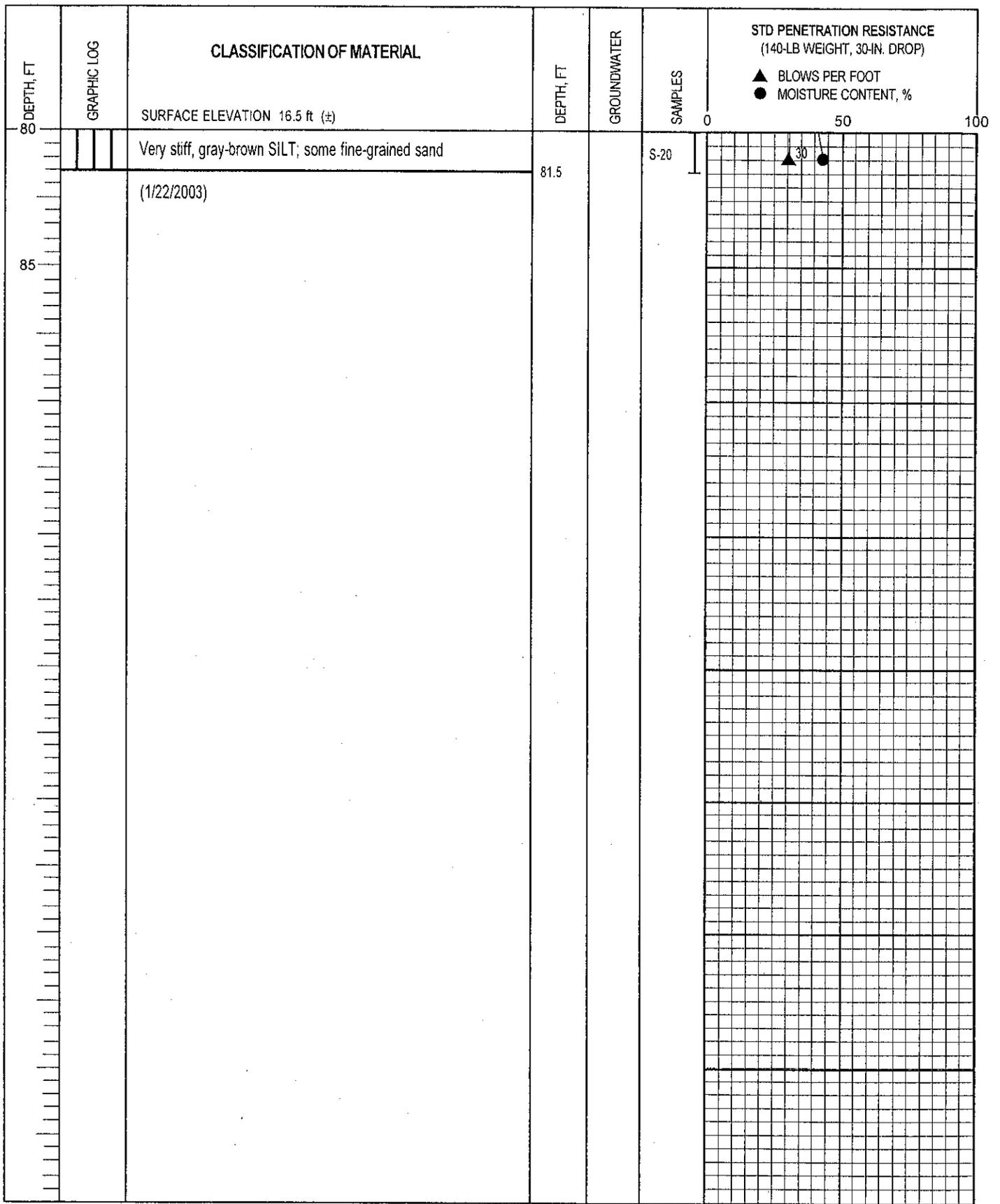
<u>Grain-Size Classification</u>	<u>Adjective</u>	<u>Percentage of Other Material In Total Sample</u>
<i>Boulders</i> 12 - 36 in.		
<i>Cobbles</i> 3 - 12 in.	clean	0 - 2
<i>Gravel</i> 1/4 - 3/4 in. (fine) 3/4 - 3 in. (coarse)	trace some	2 - 10 10 - 30
<i>Sand</i> No. 200 - No. 40 sieve (fine) No. 40 - No. 10 sieve (medium) No. 10 - No. 4 sieve (coarse)	sandy, silty, clayey, etc.	30 - 50
<i>Silt/Clay</i> - pass No. 200 sieve		



- I 2-IN.-OD SPLIT-SPOON SAMPLER
- II 3-IN.-OD THIN-WALLED SAMPLER
- G GRAB SAMPLE OF DRILL CUTTINGS
- NX CORE RUN
- SLOTTED PVC PIPE
- ▼ Water Level (date)
- ◆ TORVANE SHEAR STRENGTH, TSF
- UNDRAINED SHEAR STRENGTH, TSF
- * NO RECOVERY
- Liquid Limit
- Moisture Content
- Plastic Limit



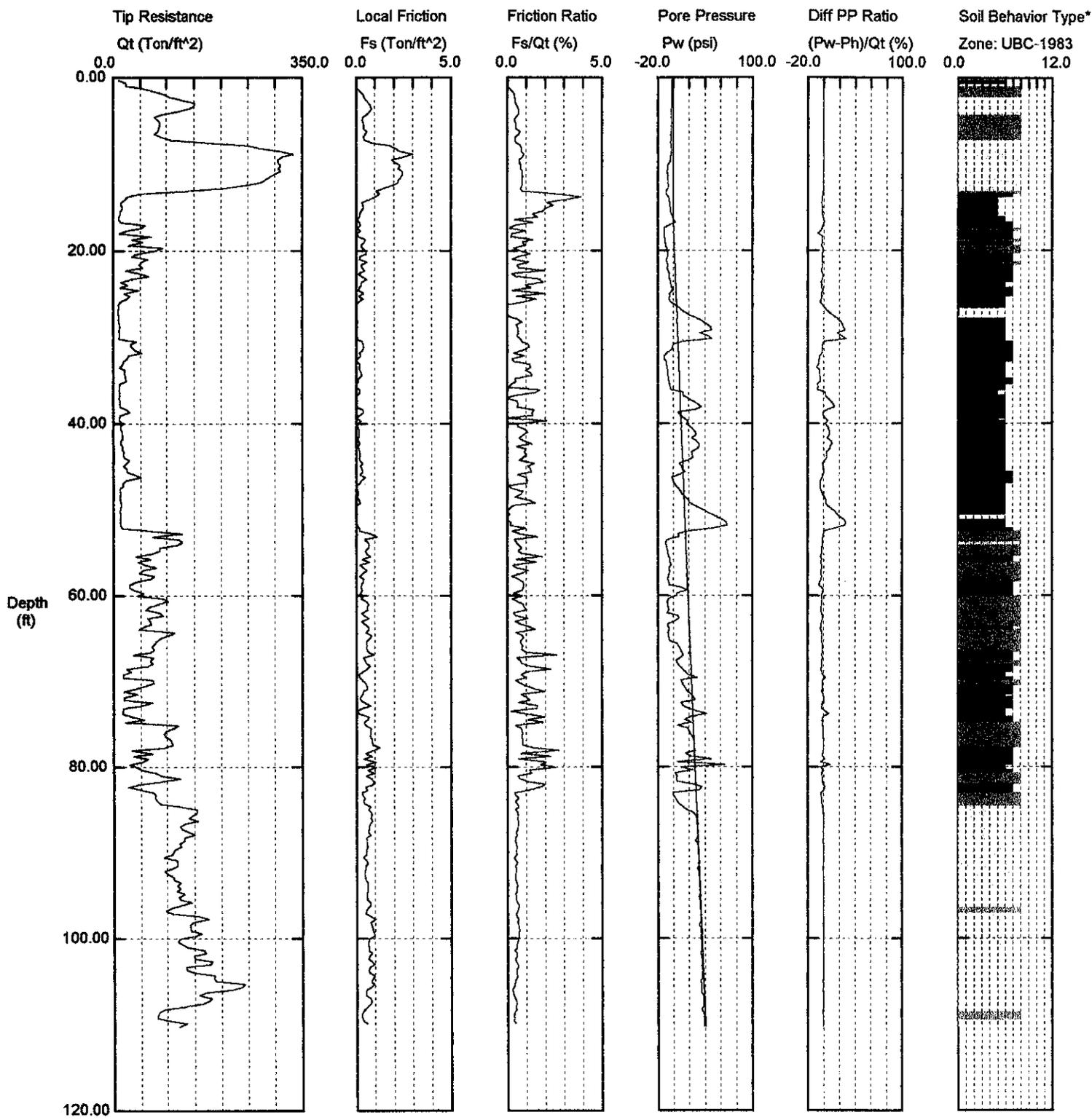
BORING B-1 (cont.)



- I 2-IN.-OD SPLIT-SPOON SAMPLER
- II 3-IN.-OD THIN-WALLED SAMPLER
- G GRAB SAMPLE OF DRILL CUTTINGS
- █ NX CORE RUN
- SLOTTED PVC PIPE
- ▼ Water Level (date)
- ◆ TORVANE SHEAR STRENGTH, TSF
- UNDRAINED SHEAR STRENGTH, TSF
- * NO RECOVERY
- Liquid Limit
- Moisture Content
- Plastic Limit



BORING B-1 (cont.)



Maximum Depth = 110.24 feet

Depth Increment = 0.33 feet

- 1 sensitive fine grained
- 2 organic material
- 3 clay

- 4 silty clay to clay
- 5 clayey silt to silty clay
- 6 sandy silt to clayey silt

- 7 silty sand to sandy silt
- 8 sand to silty sand
- 9 sand

- 10 gravelly sand to sand
- 11 very stiff fine grained (*)
- 12 sand to clayey sand (*)



CONE PENETRATION TEST P-1

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SECTION 01025

PAYMENT

PART 1 GENERAL

1.1 GENERAL

The contract price for each item shall constitute full compensation for furnishing all plant, labor, materials, appurtenances, and incidentals and performing all operations necessary to construct and complete the items in accordance with these specifications and the applicable drawings, including surveying performed by the Contractor. Payment for each item shall be considered as full compensation, notwithstanding that minor features may not be mentioned herein. Work paid for under one item will not be paid for under any other item. No separate payment will be made for the work, services, or operations required by the Contractor, as specified in DIVISION 1, GENERAL REQUIREMENTS, to complete the project in accordance with these specifications; all costs thereof shall be considered as incidental to the work.

1.2 PAYMENT

1.2.1 ITEM 0001 (BASE ITEM)

Payment will be made at the contract lump sum price for Item No. 0001, All Work for Addition to Maintenance Hangar Bldg 375, including Associated Site Work and Utilities Except for Items Separately Priced, payment of which shall constitute full compensation for costs associated with the item of work as shown on the drawings and as specified, complete. This item also includes but is not limited to the following feature of work:

- a. Painting of exposed girts at exterior walls. (The exterior siding is already finished on both sides so painting is not required.) See corresponding optional item for additional work in these areas.

b. Auger Piles, Principal Sum

The principal sum shall be based on 16 inch diameter piles, having a total aggregate length of 3,800 linear feet and shall include 0 pile load tests and 6 pile auger withdrawals.

(1) The Contractor's furnished price shall include all necessary equipment, tools, material, labor, and supervision required for installing and cutting off the piles (including test piles), and for auger withdrawals in order to meet the applicable contract requirements. Payments for piles will be on the basis of the lengths of the piles measured from cut-off elevations to final tip elevations. No additional payment will be made for withdrawn, damaged, or rejected piles, for any portion of a piles remaining above the cut-off elevation, for cutting off piles, nor for any cut off lengths of piles. Payment for auger withdrawal will be made for each auger withdrawal made at the direction of the Contracting Officer.

(2) See corresponding optional item for additional piling work and for variation in length of piling.

1.2.2 ITEM 0002 (BASE ITEM)

Payment will be made at the contract lump sum price for Item No. 0002, All Work to Alter Squadron Operations Facility, Bldg 304, including Associated Site Work and Utilities Except for Items Separately Priced, payment of which shall constitute full compensation for costs associated with the item of work as shown on the drawings and as specified, complete. This item also includes but is not limited to the following features of work:

- a. For Locker Rooms and Restrooms 1005, 1007, 1008, 1009, 1010, and 1011 provide painting of wall and ceiling, new carpet, and cleaning and regrouting of ceramic tile surfaces.
- b. New floor finish in room 1038. See corresponding optional item for additional work in room 1038.
- c. (Deleted)
- d. New grab bars in room 1043 at water closet. See corresponding optional item for additional work in room 1043.
- e. New floor finish in auditorium. See corresponding optional item for additional/alternative work in auditorium.

1.2.3 ITEM 0003 (BASE ITEM)

Payment will be made at the contract lump sum price for Item No. 0003, All Work for As-Built Drawings as specified in Section 01702 from preparation to final approval, payment of which shall constitute full compensation for costs associated with the item of work, complete. No partial or total payment will be made for this item until the as-built drawings, both marked up blue prints and electronic files are fully approved by the Government (A or B action) and all copies of approved drawings and electronic media received by the Government.

1.2.4 ITEM 0004 (BASE ITEM)

Payment will be made at the contract lump sum price for Item No. 0004, All Work for O&M Manuals as specified in Section 01701 from preparation to final approval, payment of which shall constitute full compensation for costs associated with the item of work, complete. No partial or total payment will be made for this item until all O&M manuals are fully approved by the Government (A or B action) and all copies of final manuals are received by the Government in their final binders.

1.2.5 ITEM 0005 (BASE ITEM)

Payment will be made at the contract lump sum price for Item No. 0005, All Work for Form 1354 Checklist and Equipment in Place List as specified in Sections 01704 and 01705 from preparation to final approval, payment of which shall constitute full compensation for costs associated with the item of work, complete. No partial or total payment will be made for this item until both the 1354 Checklist and Equipment in Place List are fully approved by the Government (A or B action) and all copies of approved lists received by the Government.

1.2.6 Item No. 0006 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Item No. 0006, All Work for Covered Patio-Bldg 304, payment of which shall constitute full compensation for costs associated with the item of work as shown on the drawings and as specified.

1.2.7 Item No. 0007 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Item No. 0007, All Work for Locker Room Upgrade and Restrooms 1005, 1007, 1008, 1009, 1010, and 1011-Bldg 304, payment of which shall constitute full compensation for costs associated with the item of work as shown on the drawings and as specified.

1.2.8 Item No. 0008 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Item No. 0008, All Work for Curved Counter in Room 1038-Bldg 304, payment of which shall constitute full compensation for costs associated with the item of work as shown on the drawings and as specified.

1.2.9 Item No. 0009 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Item No. 0009, All Work for Upgrade to Restroom 1043-Bldg 304, payment of which shall constitute full compensation for costs associated with the item of work as shown on the drawings and as specified.

1.2.10 Item No. 0010 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Item No. 0010, All Work for Auditorium Seating ~~Removal~~placement-Bldg 304, payment of which shall constitute full compensation for costs associated with the item of work as shown on the drawings and as specified. Installation of new seating will be performed by others.

1.2.11 Item No. 0011 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Item No. 0011, All Work for New Exterior Windows-Bldg 304, payment of which shall constitute full compensation for costs associated with the item of work as shown on the drawings and as specified.

1.2.12 Item No. 0012 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Item No. 0012, All Work for Flooring Within Existing Portion of Hangar Bay, Tug Bay and Existing Door Pockets in Lieu of Existing Floor As Is-Bldg 375, payment of which shall constitute full compensation for costs associated with the item of work as shown on the drawings and as specified.

1.2.13 Item No. 0013 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Item No. 0013, All Work for Painting Within Existing Portion of Hangar Bay, Existing Tug Bay and Existing Door Pockets Above 7'-0" and the 3" Wide Perimeter Stripe Around the Existing Hangar Bay-Bldg 375, payment of which shall constitute full compensation for costs associated with the item of work as shown on the drawings and as specified.

1.2.14 Item No. 0014 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Item No. 0014, All Work for Liner Panels on Exterior Walls Except at Wall Between Pockets 119 and 120-Bldg 375, payment of which shall constitute full compensation for costs associated with the item of work as shown on the drawings and as specified. Painting of girts covered by the liner panels is not required under this item (deduct corresponding work under Base item from this item).

1.2.15 Item No. 0015 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Item No. 0015, All Work for High Bay Lighting Within Existing Portion of Hanger Bay-Bldg 375, payment of which shall constitute full compensation for costs associated with the item of work as shown on the drawings and as specified.

1.2.16 Item No. 0016 (OPTIONAL ITEM)1.2.16.1 Variations in Pile Quantities

From the results of laboratory tests on soil samples, the Contracting Officer will determine and will list for the Contractor "calculated" pile tip elevations for all piles. The Contracting Officer reserves the right to increase the total length of piles to be furnished and installed by changing the pile locations or elevations, and requiring the installation of additional piles. Should the total pile length installed vary from that specified as the basis for bidding because of added or variations in the pile lengths, the principal sum shall be adjusted by the amount bid per linear foot for

a. Item 0016AA "Additional Pile Length"1.2.16.2 Variations in Pile Test and Load Test Quantities

The Contracting Officer reserves the right to increase the number of test piles or pile load tests from that specified for the basis of bidding. For changes in the number of test piles or pile load tests required, the contract principal sum price shall be adjusted by the amount bid for the following items:

a. Item 0016BA "Each Additional Test Pile"

b. Item 0016CA "Each Additional Pile Load Test"

1.2.16.3 Variations in Auger Withdrawal Quantities

Should the number of auger withdrawals be increased above the specified contract number at the direction of the Contracting Officer, the contract principal sum shall be adjusted by the amount bid for Item 0016DA "Each Additional Auger Withdrawal."

1.3 PROGRESS PAYMENT INVOICE

Requests for payment shall be submitted in accordance with Federal Acquisition Regulations (FAR) Subpart 32.9, entitled "PROMPT PAYMENT", and Paragraphs 52.232-5 and 52.232-27, entitled "Payments Under Fixed-Price Construction Contracts", and "Prompt Payment for Construction Contracts", respectively. In addition each request shall be submitted in the number of copies and to the designated billing office as shown in the Contract.

1.3.1 When submitting payment requests, the Contractor shall complete Blocks 1 through 12 of the "PROGRESS PAYMENT INVOICE" Form as directed by the Contracting Officer. (A sample form is attached at the end of this Technical Specification Section.) The completed form shall then become the cover document to which all other support data shall be attached.

1.3.2 One additional copy of the entire request for payment, to include the "PROGRESS PAYMENT INVOICE" cover document, shall be forwarded to a separate address as designated by the Contracting Officer.

1.3.3 The Contractor shall submit with each pay request, a list of subcontractors that have worked during that pay period. The listing shall be broken down into weeks, identifying each subcontractor that has worked during a particular week, and indicate the total number of employees that have worked on site for each subcontractor for each week. The prime Contractor shall also indicate the total number of employees for its on site staff for each week.

PARTS 2 and 3 NOT USED

SECTION 01451

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3740 (1999b) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

ASTM E 329 (1998a) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures:"

SD-01 Preconstruction Submittals

CQC Laboratory Validation; G

Quality Control Plan; G

1.3 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

1.4 LABORATORY VALIDATION

The testing laboratory shall be validated by Corps of Engineers Material Testing Center (MTC) for all tests required by contract. See paragraph 3.7 TESTS.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract

Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site.

3.2 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than 10 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 60 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

3.2.1 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:

- a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.
- b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.
- c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.

- d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01330 SUBMITTAL PROCEDURES.
- e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities will be approved by the Contracting Officer.)
- f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
- g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.
- h. Reporting procedures, including proposed reporting formats.
- i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.

3.2.2 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.3 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Preconstruction Conference, before start of construction, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 5 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and

offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of the CQC staff. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, show drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a graduate engineer, graduate architect, or a graduate of construction management, with a minimum of 5 years construction experience on construction similar to this contract or construction person with a minimum of 10 years in related work. This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned as System Manager but may have duties as ~~project superintendent~~ Safety Manager in addition to quality control. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager.

3.4.3 Additional Requirement

In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered at AGC offices throughout the state of Washington and Oregon.

3.4.4 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in Section 01330 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals are in compliance with the contract requirements. When Section 15950A HEATING, VENTILATING AND AIR CONDITIONING (HVAC) CONTROL SYSTEMS, 15951A DIRECT DIGITAL CONTROL FOR HVAC; 15990A TESTING, ADJUSTING, AND BALANCING OF HVAC SYSTEMS; or 15995A COMMISSIONING OF HVAC SYSTEMS are included in the contract, the submittals required by these sections shall be coordinated with Section 01330 SUBMITTAL PROCEDURES to ensure adequate time is allowed for each type of submittal required. All Contractor forms for submitting test results are subject to Contracting Officer approval.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of work as follows:

3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

- a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.
- b. A review of the contract drawings.
- c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
- d. Review of provisions that have been made to provide required control inspection and testing.
- e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

- f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
- g. A review of the appropriate activity hazard analysis to assure safety requirements are met.
- h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.
- i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.
- j. Discussion of the initial control phase.
- k. The Government shall be notified at least 48 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

- a. A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.
- b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.
- c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.
- d. Resolve all differences.
- e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
- f. The Government shall be notified at least 24 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. The Contractor shall perform the following activities and record and provide the following data:

- a. Verify that testing procedures comply with contract requirements.
- b. Verify that facilities and testing equipment are available and comply with testing standards.
- c. Check test instrument calibration data against certified standards.
- d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
- e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

a. Validation

The testing laboratory shall be validated by the Corps of Engineers Materials Testing Center (MTC) for all tests required by the contract prior to the performance of any such testing. The validation of a laboratory is site specific and cannot be transferred or carried over to a facility at a different location. Any and all costs associated with this Government laboratory validation shall be borne by the laboratory and/or the Contractor. Validation of a laboratory is not granted for the entire laboratory activity, but only for the specific procedures requested by the inspected laboratory. The inspected laboratory has full choice of the procedures to be inspected except that the Quality Assurance portion of [ASTM E 329](#) is mandatory to be inspected.

(1) Validation Procedures

Validation of a laboratory may consist of either an inspection or audit as defined herein. Validation of all material testing laboratories shall be performed by the MTC. Validation may be accomplished by one of the following processes:

(a) Inspection. Inspection shall be performed by the MTC in accordance with American Society for Testing and Materials (ASTM) standards [ASTM E 329](#) and [ASTM D 3740](#).

(b) Audit. A laboratory may be validated by auditing if it has been accredited by the Concrete and Cement Reference Laboratory (CCRL) or AASHTO Materials Reference Laboratory (AMRL) within the past two years in accordance with ASTM E329. Audit shall be performed by the MTC. Inspection by MTC may be required after auditing if one or more of the critical testing procedures required in the project specification were not included in the CCRL or AMRL inspection report or if there is any concern that the laboratory may not be able to provide required services.

b. Standards of Acceptability

(1) Aggregate, concrete, bituminous materials, soil, and rock. Laboratories for testing aggregate, concrete, bituminous materials, soil, and rock shall be validated for compliance with ASTM E 329, Engineer Manual (EM) 1110-2-1906, or project specifications, as applicable.

(2) Water, sediment, and other samples. Laboratories engaged in analysis of water, sediment, and other samples for chemical analysis shall be inspected to assure that they have the capability to perform analyses and quality control procedures described in references in Appendix A as appropriate. The use of analytical methods for procedures not addressed in these references will be evaluated by the CQAB for conformance with project or program requirements.

(3) Steel and other construction materials. Laboratories testing steel and other construction materials shall be validated for capabilities to perform tests required by project requirements and for compliance with [ASTM E 329](#).

c. Validation Schedule

(1) For all contracted laboratories and project Quality Assurance (QA) laboratories testing aggregate, concrete, bituminous materials, soils, rock, and other construction materials, an initial validation shall be performed prior to performance of testing and at least every two (2) years thereafter.

(2) Laboratories performing water quality, wastewater, sludge, and sediment testing shall be approved at an interval not to exceed eighteen (18) months.

(3) All laboratories shall be revalidated at any time at the discretion of the Corps of Engineers when conditions are judged to differ substantially from the conditions when last validated.

d. Validation Process

If a validated laboratory is unavailable or the Contractor selects to use a laboratory which has not been previously validated, Contractor shall coordinate with Corps of Engineers Material Testing Center (MTC) to obtain validation and pay all associated costs. Point of contact at MTC is Daniel Leavell, telephone (601) 634-2496, fax (601) 634-4656, email daniel.a.leavell@erdc.usace.army.mil, at the following address:

U.S. Army Corps of Engineers
 Materials Testing Center
 Waterways Experiment Station
 3909 Hall Ferry Road
 Vicksburg, MS 39180-6199

Procedure for Corps of Engineers validation, including qualifications and inspection/audit request forms are available at the MTC web site:

<http://www.wes.army.mil/SL/MTC/mtc.htm>

Contractor shall coordinate directly with the MTC to obtain validation. Contractor is cautioned the validation process is complicated and lengthy, may require an onsite inspection by MTC staff, correction of identified deficiencies, and the submittal and approval of significant documentation. Estimate a minimum of 60 days to schedule an inspection/submittal and receive a validation. Schedule of costs:

Full Onsite Inspection	1 - 15 procedures	\$3500 + travel expenses
	16 - 40 procedures	\$4500 + travel expenses
	41 + procedures	\$5500 + travel expenses
Full Desk Audit (AASHTO inspected)		\$3000
Abbreviated Audit by AASHTO Accreditation		\$1500
Additional Procedures after Validation		\$500 each to a maximum of four procedures; more than four additional procedures calls for an onsite inspection of the additional procedures.

Travel time and associated costs will be determined from Vicksburg MS. The Contractor will be invoiced for actual travel costs and shall submit payment direct to the MTC made payable to the ERDC Finance and Accounting Officer prior to the scheduling of the inspection and/or audit. The Contractor shall copy the Contracting Officer of all correspondence and submittals to the MTC for purposes of laboratory validation.

3.7.3 Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4 Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials shall be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the Corps of Engineers Division Laboratory, f.o.b., at the following address:

U.S. Army Corps of Engineers
Materials Testing Center
Waterways Experiment Station
3909 Hall Ferry Road
Vicksburg, MS 39180-6199
Phone: (601) 634-2496 or (601) 634-3261

ATTN: Project _____, Contract Number _____

Coordination for each specific test, exact delivery location and dates will be made through the Area Office. If samples are scheduled to arrive at the laboratory on a weekend (after 1700 Friday through Sunday) notify the laboratory at least 24 hours in advance at (601) 634-2496 to arrange for delivery.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the completion of all work or any increment thereof established by a completion time stated in the Special Clause entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the CQC System Manager shall conduct an inspection of the work and develop a punch list of items which do not conform to the approved drawings and specifications. Such a list of deficiencies shall be included in the CQC documentation, as required by paragraph DOCUMENTATION below, and shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups, and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

- a. Contractor/subcontractor and their area of responsibility.
- b. Operating plant/equipment with hours worked, idle, or down for repair.
- c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.
- d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.
- e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

- f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.
- g. Offsite surveillance activities, including actions taken.
- h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- i. Instructions given/received and conflicts in plans and/or specifications.
- j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 SAMPLE FORMS

Sample forms enclosed at the end of this section.

3.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

5. DAILY SAFETY INSPECTIONS (Include comments on new hazards to be added to the Hazard Analysis and corrective action of any safety issues):

6. REMARKS (Include conversations with or instructions from the Government representatives; delays of any kind that are impacting the job; conflicts in the contract documents; comments on change orders; environmental considerations; etc.):

CONTRACTOR'S VERIFICATION: The above report is complete and correct. All material, equipment used, and work performed during this reporting period are in compliance with the contract documents except as noted above.

CONTRACTOR QC REPRESENTATIVE

(Sample of Typical Contractor's Test Report)

TEST REPORT

STRUCTURE OR BUILDING _____

CONTRACT NO. _____

DESCRIPTION OF ITEM, SYSTEM, OR PART OF SYSTEM TESTED:

DESCRIPTION OF TEST: _____

NAME AND TITLE OF PERSON IN CHARGE OF PERFORMING TESTS FOR THE CONTRACTOR:

NAME _____

TITLE _____

SIGNATURE _____

I HEREBY CERTIFY THAT THE ABOVE DESCRIBED ITEM, SYSTEM, OR PART OF SYSTEM HAS BEEN TESTED AS INDICATED ABOVE AND FOUND TO BE ENTIRELY SATISFACTORY AS REQUIRED IN THE CONTRACT SPECIFICATIONS.

SIGNATURE OF CONTRACTOR
QUALITY CONTROL INSPECTOR _____

DATE _____

REMARKS

-- End of Section --

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SECTION 02465

AUGER-PLACED GROUT PILES

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 31/C 31M	(2001e1) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(1999ae1) Concrete Aggregates
ASTM C 39	(1996) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 109/C 109M	(1999) Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens)
ASTM C 150	(2002) Portland Cement
ASTM C 618	(2000) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 937	(1997) Grout Fluidifier for Preplaced-Aggregate Concrete
ASTM C 939	(1997) Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
ASTM D 1143	(1981; R 1994e1) Piles Under Static Axial Compressive Load

1.2 ~~(DELETED) LUMP SUM BASIS FOR BIDS AND PAYMENT~~

~~1.2.1 Principal Sum~~

~~The contract price for piling shall be a principal sum based on 16 inch diameter piles, (including 1 test piles), having a total aggregate length of 3,800 linear feet and shall include 1 pile load tests having a capacity of 40-ton and 6 pile auger withdrawals.~~

~~1.2.2 Variations in Pile Quantities~~

~~From the results of laboratory tests on soil samples and data obtained as a result of placing and loading the test piles specified herein, the Contracting Officer will determine and will list for the Contractor "calculated" pile tip elevations for all piles. The Contracting Officer~~

~~reserves the right to increase or decrease the total length of piles to be furnished and installed by changing the pile locations or elevations, requiring the installation of additional piles, or directing the omission of piles from the requirements shown and specified. Should the total pile length installed vary from that specified as the basis for bidding because of added or omitted piles or variations in the pile lengths, the principal sum shall be adjusted by the amount bid per linear foot for "Additional Pile Length" or "Omitted Pile Length".~~

~~1.2.3 Variations in Pile Load Test Quantities~~

~~The Contracting Officer reserves the right to increase or decrease the number of pile load tests from that specified for the basis of bidding. For changes in the number of load tests required, the contract principal sum price shall be adjusted by the amount bid for "Each Additional Pile Load Test" or "Each Omitted Pile Load Test."~~

~~1.2.4 Variations in Auger Withdrawal Quantities~~

~~Should the number of auger withdrawals be increased above the specified contract number at the direction of the Contracting Officer, the contract principal sum shall be adjusted by the amount bid for "Each Additional Auger Withdrawal."~~

~~1.2.5 Lump Sum Basis of Payment~~

~~The Contractor's furnished price shall include all necessary equipment, tools, material, labor, and supervision required for installing and cutting off the piles (including test piles), for conducting the load tests and for auger withdrawals in order to meet the applicable contract requirements. Payment for piles will be on the basis of the lengths of the piles measured from cut-off elevations to final tip elevations. No additional payment will be made for withdrawn, damaged, or rejected piles, for any portion of a pile remaining above the cut-off elevation, for cutting off piles, nor for any cut off lengths of piles. Payment for load tests will be made for each load test satisfactorily performed. Payment for auger withdrawal will be made for each auger withdrawal made at the direction of the Contracting Officer.~~

1.3 ~~(DELETED) UNIT PRICE BASIS FOR BIDS AND PAYMENTS~~

~~1.3.1 Piles~~

~~The lump sum contract price does not include foundation piles, test piles, or the placement thereof; payment for which will be made in accordance with paragraph Unit Price Basis of Payment.~~

~~1.3.2 Unit Price Basis of Payment~~

~~The Contracting Officer reserves the right to increase or decrease the length of piles to be furnished and installed by changing the foundation pile locations or elevations, by requiring the installation of additional piles, or by requiring omission of piles from the requirements shown and specified. Whether or not such changes are made, the Contractor will be paid at the contract unit price per linear foot (including control test piles), multiplied by the total linear feet of acceptable piles actually installed; provided however, that in the event the Contracting Officer requires an increase or decrease in the total length of piles furnished and~~

~~installed, the contract unit price will be adjusted in accordance with SPECIAL CONTRACT REQUIREMENTS.~~

~~1.3.3 Full Compensation~~

~~Payment in accordance with paragraph Unit Price Basis of Payment shall constitute full compensation for furnishing, delivering, handling, and/or installing (as applicable) all material, labor and equipment necessary to meet contract requirements applicable to the foundation piles. The Contractor will not be allowed payment for withdrawn, broken, or rejected piles nor (except for control test piles) for a portion of any pile remaining above the cut-off point.~~

~~1.3.4 Load Tests~~

~~The contract includes 1 pile load tests. The Contracting Officer reserves the right to increase or decrease the number of pile tests. Adjustments in the contract price will be made for such increases or decreases in the amounts bid for "Each Additional Pile Load Test" or "Each Omitted Pile Load Test."~~

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Auger-placed Grout Piles; G

Drawings to demonstrate compliance of augering, mixing, and pumping equipment, and installation and installed piles with contract documents. Drawings shall include detail and erection details and reinforcement as specified.

Test Piles; G

A complete and accurate record of all auger-placed grout piles (both test piles and production piles). The record shall indicate the pile location, diameter, length, elevation of tip and top of pile, and the quantity and strength of grout material actually pumped in each pile hole. Any unusual conditions encountered during pile installation shall be reported immediately to the Contracting Officer.

SD-03 Product Data

Grout Pump; G

Materials; G

Grout Specimens for Laboratory Tests; G

Grout specimens for Contractor Tests; G

A description of the materials to be used and the proposed methods of operations.

SD-07 Certificates

Auger-placed Grout Piles; G

Evidence to the Contracting Officer that the Contractor has been engaged in the successful installation of auger-placed grout piles for at least 5 years.

1.5 DESCRIPTION

Auger-placed grout piles are formed by the rotation of a continuous flight hollow-shaft auger into the ground to the tip elevation established by the requirements specified elsewhere in this section. Grout is then injected through the auger shaft as the auger is being withdrawn in such a way as to exert removing pressure on the withdrawing earth-filled auger as well as lateral pressure on the soil surrounding the grout-filled pile hole.

1.6 REQUIREMENTS

The ground surface at each pile location at the time of augering and grouting shall be at least 12 inches higher than the required pile cut-off elevation, and the augered hole shall be completely filled with grout. All materials shall be fed to the mixer accurately measured by weight, except water that may be measured by volume. The order of placing the materials shall be as follows: (1) water, (2) fluidifier, and (3) other solids in order of increasing particle size. Time of mixing shall not be less than 1 minute. Except where auger withdrawal is required or directed by the Contracting Officer, each pile hole shall be drilled and filled with grout in an uninterrupted operation. When the auger is withdrawn to check the soil profile, it shall be reinserted in the pile hole to the required tip elevation and the pile hole then filled with grout without interruption. The minimum inside diameter of the hollow shaft of the augerflight shall be 1-1/4 inches. Grout injection equipment shall be provided with a grout pressure gauge in clear view of the equipment operator. Rate of grout injection and rate of auger withdrawal from the soil shall be so coordinated as to maintain at all times a positive pressure on this gauge which will, in turn, indicate the existence of a "removing pressure" on the bottom of the augerflight. Magnitude of this pressure and performance of other augering and grouting procedures, such as rate of augering, rate of grout injection, and control of grout return around the augerflight, are dependent on soil conditions and equipment capability and shall be at the option of the Contractor, subject to review by the Contracting Officer. The auger hoisting equipment shall be capable of withdrawing the auger smoothly and at a constant rate. If the auger jumps upward during withdrawal, it shall be reinserted to the original tip elevation and the rate of withdrawal decreased to prevent further jumping. Material excavated by augering shall be disposed of by the Contractor outside the limits of right-of-way unless otherwise directed. No pile shall be left partially completed overnight but must be completely grouted and protected at the termination of each day's operation.

1.7 SUBSURFACE DATA

Subsurface soil data logs are shown -in the geotechnical report (See 00800B attached to the SPECIAL CONTRACT REQUIREMENTS).

1.8 GROUT PUMP

Grout pump shall be a positive displacement pump of an approved design. The pump discharge capacity shall be calibrated in strokes per cubic foot or revolutions per cubic foot by a method approved by the Contracting Officer. Oil or other rust inhibitors shall be removed from mixing drums and pressure grout pumps prior to mixing and pumping.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Grout

Grout shall consist of a mixture of portland cement, a pozzolanic material when approved, fluidifier, sand, and water proportioned and mixed to produce a grout capable of being pumped with an ultimate compressive strength of 5,000 psi at 28 days. Other admixtures shall not be used.

2.1.1.1 Portland Cement

Portland cement shall conform to ASTM C 150.

2.1.1.2 Pozzolan

Pozzolan shall be a fly ash or other approved pozzolanic material conforming to ASTM C 618.

2.1.1.3 Grout Fluidifier

Grout fluidifier shall conform to ASTM C 937, except that expansion shall not exceed 4 percent. The fluidifier shall be a compound possessing characteristics which will increase the flowability of the mixture, assist in the dispersal of cement grains, and neutralize the setting shrinkage of the high-strength cement mortar.

2.1.1.4 Water

Water shall be fresh, clean, and free from sewage, oil, acid, alkali, salts, or organic matter.

2.1.1.5 Fine Aggregate

Fine aggregate shall meet the requirements of ASTM C 33. The sand shall consist of hard, dense, durable, uncoated rock particles and be free from injurious amounts of silt, loam, lumps, soft or flaky particles, shale, alkali, organic matter, mica, and other deleterious substances. If washed, a washing method shall be used that will not remove desirable fines, and the sand shall subsequently be permitted to drain until the residual-free moisture is reasonably uniform and stable. The sand shall be well-graded from fine to coarse, with fineness modulus between 1.30 and 3.40. The fineness modulus is defined as the total divided by 100 of the cumulative percentages retained on U.S. Standard Sieve Numbers 16, 30, 50, and 100.

2.1.1.6 Aggregate

Aggregate shall meet the requirements of ASTM C 33, for fine aggregate, except as to grading. The sand shall consist of hard, dense, durable, uncoated rock fragments and shall be free from injurious amounts of silt, lumps, loam, soft, or flaky particles, shale, alkali, organic matter, mica, and other deleterious substances. If washed, the method shall not remove other desirable fines, and the sand shall be permitted to drain until the residual free moisture is reasonably uniform and stable. Sand grading shall be reasonably consistent and shall conform to the following requirements as delivered to the grout mixer:

U.S. Standard Sieve Number	Cumulative Percent by Weight Passing	Cumulative Percent by Weight Retained
8	100	0
16	95-100	0-5
30	55-80	20-45
50	30-55	45-70
100	10-30	70-90
200	0-10	90-100

The sand shall have a fineness modulus of not less than 1.30 nor more than 2.10. Sand grading shown above may be modified with the approval of the Contracting Officer. Mortar test specimens made with the modified sand shall exhibit compressive strength equal to or greater than that exhibited by similar specimens made with sand meeting grading and other requirements shown above.

2.1.2 Reinforcement

Materials, assembly, and placement of reinforcement shall conform to the requirements of Section 03300 CAST-IN-PLACE STRUCTURAL CONCRETE.

PART 3 EXECUTION

3.1 GROUT VOLUME

The volume of grout per linear foot of pile shall be not less than the volume of grout per foot of test piles. All volume measurements shall be made in the presence of the Contracting Officer or his representative.

3.2 CASINGS

The Contractor may use steel cylinder casings as a soil retention liner as soil warrants. Casings shall be approved by the Contracting Officer and shall be left in place and filled with grout. Casings shall be of sufficient strength and rigidity to withstand all installation stresses, to prevent distortion caused by placing adjacent piles, and to prevent collapse due to soil or hydrostatic pressure. The casing shall be rotated by the auger drive unit or weighted or jetted to the required depth. After the casing is in place, the casing and hole shall be cleared of water, sediment, and debris prior to pouring the grout.

3.3 FLOW CONE TEST

The quantity of water used shall produce a grout having a consistency of not less than 21 seconds when tested with a flow cone in accordance with ASTM C 939.

3.4 GROUT SPECIMENS FOR LABORATORY TESTS

Grout tests shall be conducted in accordance with ASTM C 109/C 109M in a laboratory, approved by the Contracting Officer. Test specimens shall be prepared by pouring grout into 2 by 2 by 2 inch cube molds. Not less than 9 cubes shall be cast during each 8-hour shift. Three cubes shall be tested at 7 days; 3 at 28 days; and 3 at 90 days.

3.5 GROUT SPECIMENS FOR CONTRACTOR TESTS

Grout tests shall be conducted by the Contractor in accordance with ASTM C 31/C 31M and ASTM C 39. Test specimens of grout shall be prepared by pouring grout into 6 by 12 inch cylinder molds. Molds shall be provided with a top cover plate so designed as to restrain grout expansion and to permit escape of air and water. Not less than one set of cylinders shall be collected during the placing of each group of 15 piles or fraction thereof. One set shall consist of six cylinders of which three cylinders shall be tested in 7 days and three cylinders at 28 days. Any set of cylinders of which one or more cylinders test at 10 percent or more below the required strength shall be cause for rejection of the pile group.

3.6 TEST PILES

3.6.1 Placement

Test piles shall be of the type and shall be placed in the manner specified elsewhere in this section for all piling. The Government will use test pile and load test data in addition to test reports on soil samples to determine "calculated" pile tip elevations. Piles immediately adjacent to the test pile shall be placed after placing test pile and prior to load testing. Test piles that are located within the tolerances indicated for all piles and provide a safe design capacity as determined by the results of a satisfactory load test may be used in the finished work. Test loads shall not be applied to the piles until the grout has obtained a minimum strength of 5,000 psi.

3.6.2 Depth

For all test piles, the auger shall be withdrawn after reaching the "calculated" tip elevation and before grout is pumped. The Contracting Officer will be present to check the soil conditions and shall have the right to increase the test pile length if soil conditions warrant. In such cases, the Contracting Officer may require additional auger withdrawals after drilling to the lower tip elevation. Such additional auger withdrawals shall be included in the total number of auger withdrawals made. The pile hole shall not be filled with grout until the Contracting Officer has approved the final tip elevation.

3.6.3 Loading Test

Load tests shall be in accordance with ASTM D 1143, cyclic loading method. The load tests at locations shown or directed shall be made on test piles placed to the tip elevation used for establishing lengths of piles for bidding, except as otherwise directed by the Contracting Officer. Loading, testing, and recording of data shall be under the direct supervision of a registered professional engineer. The analysis of the load test data shall be done by the registered professional engineer. The registered professional engineer shall be provided and paid by the Government. The installation of contract piles shall not proceed within each area of substantially different subsoil conditions until a satisfactory load test has been performed in that area.

3.6.4 Acceptance

Test piles shall be loaded to twice the design working load of 40 tons, unless failure occurs first. The safe design capacity of a test pile as determined from the results of load tests shall be the lesser of the two values computed according to the following:

- a. One-half the load that causes a net settlement after rebound of not more than 0.01 inch per ton of total test load.
- b. One-half the load that causes a gross settlement of not more than 1 inch provided that the load settlement curve shows no sign of failure.

3.6.5 Tolerances

Piles shall be located as shown on drawings or as otherwise directed by the Contracting Officer. Piles shall be installed from the ground surface existing after general excavation work has been completed. The maximum variation of the center of any pile from the required location shall be 2 inches at the ground surface, and no pile shall be out of plumb more than 2 percent. Piles damaged, mislocated, or out of alignment beyond the maximum tolerance shall be abandoned and additional piles shall be placed as directed.

3.7 SOIL PROFILE

At 5 pile holes in addition to the test piles, the auger shall be withdrawn from the ground before the grout is pumped to check the soil profiles. The Contracting Officer will be present to verify the soil condition at the "calculated" pile tip elevation.

3.8 PROTECTION OF PILES

The sequence of pile installation shall be such that adjacent piles show no evidence of disturbance. This evidence would actually appear as a drop in the grout surface. The load applied to the soil by the drilling equipment shall be far enough away from the pile being drilled to avoid compressing or shearing of the soil which may in turn displace or squeeze-off the grout column. No piles shall be placed within 5 feet of adjacent piles until the grout in the piles has set for 3 days, unless otherwise directed by the Contracting Officer.

3.9 SPECIAL INSPECTION AND TESTING FOR SEISMIC-RESISTING SYSTEMS

Special inspections and testing for seismic-resisting systems and components shall be done in accordance with Section 01452 SPECIAL INSPECTION FOR SEISMIC-RESISTING SYSTEMS.

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08950

INSULATED TRANSLUCENT SANDWICH PANEL UNIT SYSTEM

06/03

PART 1 GENERAL

1.1 SUMMARY

Translucent panel units shall consist of 2-3/4" thick flat factory pre-fabricated sandwich panels, accessories and system, factory assembled into a single unit.

Provide all labor and materials required to install the insulated translucent panel unit system, including:

1. Pre-fabricated insulated translucent sandwich panels.
2. Aluminum installation system.

1.2 QUALITY ASSURANCE

Translucent panel system must be listed by International Conference of Building Officials, which requires quality control inspections and fire, structural, and water infiltration testing of sandwich panel systems by an approved agency; and the National Evaluation Service of the International Building Code.

Quality control inspections and required testing shall be conducted at least once each year shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with "Acceptance Criteria for Sandwich Panels" as regulated by the ICBO-ES.

Materials and products shall be manufactured by a company continuously and regularly employed in the manufacture of translucent panel systems for a period of at least ten (10) consecutive years and which can show evidence of the specified materials being satisfactorily used on at least six (6) projects of similar size and scope. At least three (3) of the projects must have been in successful use for ten (10) years or longer.

Erection shall be by installer which has been in the business of erecting insulated translucent sandwich panel systems for at least five (5) consecutive years, including 2 years installing this manufacturer's product, and who can show evidence of satisfactory completion of projects of similar size, scope, and type.

Performance Requirements: The manufacturer shall be responsible for the configuration and fabrication of the complete panel system.

1.3 SUBMITTALS

SD-02 Shop Drawings

Submit shop drawings showing in detail all system components, connections to the building, interface with other materials and methods of construction. Shop drawings must be prepared under the supervision of and be sealed by the engineer who provides the calculations of system specified.

SD-03 Design Data

Submit structural calculations, sealed by a structural engineer registered in the state where the project is located, showing the structural adequacy of the translucent panel system and all connections to the building structure.

SD-04 Samples

Submit color samples of components specified.

SD-06 Test Reports

Submit certified test reports made by an independent testing organization for each type and class of panel system. Reports are to verify that the material will meet all performance requirements of this specification. Previously completed test reports will be acceptable if current and indicative of products used on this project.

1. Flame Spread and Smoke Development (UL 723) - Submit UL Card
2. Burn Extent (ASTM D-635)
3. Color Difference (ASTM D-2244)
4. Erosion Resistance (ASTM D-4060)
5. Impact Strength (UL 972)
6. Tensile Bond Strength (ASTM C-297 after aging by ASTM D-1037)
7. Shear Bond Strength (ASTM D-1002 after five separate conditions)
8. Beam Bending Strength (ASTM E-72)
9. Insulation "U" Factor (NFRC 100)
10. NFRC Certification
11. Condensation Resistance Factor (AAMA 1503.1)
12. Class 1 Fire Approval (FM 4411)
13. Performance for Windows (AAMA/NWDA 101/I.S.2)
14. Submit current U.L. listing documenting that the interior face sheets are manufactured by the translucent panel fabricator.

SD-07 Certificates

Submit certified proof of regular, independent quality control monitoring under a building code review and listing program.

SD-10 Operation and Maintenance Data

Submit maintenance manuals for the panel systems with a sequence of items, materials and methods used for proper cleaning and maintenance.

1.4 PRODUCT HANDLING

Store translucent panels on the long edge, several inches above the ground, blocked and tied off and under cover to prevent warping.

Allow air to circulate freely around and under the material to prevent excessive condensation in the panels.

Combustion type heaters must be properly vented to the exterior to prevent possible staining of the panels.

1.5 WARRANTY

Submit a one year manufacturer's warranty agreeing to repair or replace any part of the translucent panel systems that exhibits defects in workmanship, materials or performance.

Submit a one year installer's warranty for water tightness agreeing to repair or replace any part of the installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

2.1.1 Kalwall Corporation.

2.1.1.1 Substitutions shall be of equal or higher performance

2.2 Sub Title

Translucent face sheets shall be manufactured from glass fiber reinforced thermoset resins designed specifically for architectural use. Thermoplastic faces are not acceptable.

2.2.1 Flammability of Interior Face Sheet

1. Flamespread maximum of 50 and smoke developed maximum 250 as determined by UL 723.
2. Burn extent shall be 1" or less as determined by ASTM D-635.
3. Faces shall not deform, deflect or drip when subjected to fire or flame, or delaminate when exposed to 200 deg F for 30 minutes per NBC and IBC.

2.2.2 Weatherability of Exterior Face Sheet

The exterior face sheet shall be manufactured with a full-thickness color-fast resin that does not rely on a coating or film for long term color stability.

- a. Delta E (Color Difference): When tested in accordance with ASTM D-2244, the full thickness of the white exterior face sheet shall not change color more than 3.0 units when exposed to 5 years of outdoor weathering in South Florida sloping at 5 degrees facing south. Color difference shall be determined by the average of 3 samples with and without a protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.
- b. Delta L (Light/Dark Difference): When tested in accordance with ASTM D-2244, an exterior white face sheet shall not darken more than 0.2 units when exposed to 150 degrees F for 2 weeks.

2.2.3 Exterior Face

The exterior face shall have a permanent glass erosion barrier embedded beneath the surface to provide long-term resistance to reinforcing fiber exposure. Sacrificial surface films or coatings are not acceptable erosion barriers.

2.2.4 Appearance

1. The face sheets shall be uniform in color without splotchy appearance and shall not to vary more than +10% in thickness.
 - a. Exterior face sheets shall be smooth, .070" thick and white in color.
 - b. Interior face sheets shall be .045" thick and white in color.
2. Faces shall be completely free of ridges and wrinkles which prevent proper surface contact in bonding to the aluminum grid core. Clusters of air bubbles or pinholes which collect moisture and dirt are not acceptable.

2.2.5 Strength

The exterior face sheet shall be uniform in strength, impenetrable by hand held pencil, and repel an impact equal to 70 ft. lbs. without fracture or tear per UL 972.

2.3 STRUCTURAL GRID CORE

Panels shall incorporate an aluminum I-beam grid core of 6063-T6 or 6005-T5 with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I-beam shall be no less than 7/16". The I-beam grid shall be machined to tolerances of not greater than .002".

Panels shall withstand 1200 deg F fire for minimum one hour without collapse or exterior flaming.

2.4 ADHESIVE

The laminate adhesive shall be heat and pressure resin-type engineered for structural sandwich panel use, with minimum 25-years field use.

Adhesive shall pass testing requirements specified by the International Conference of Building Officials "Acceptance Criteria for Sandwich Panel Adhesive".

1. Tensile strength must be minimum 750 PSI per ASTM C-297 after 2 exposures to 6 cycles each of the aging conditions in ASTM D-1037.
2. Shear strength, measured as an average of 5 exposures by ASTM D-1002:
 - a. 540 PSI after 50% relative humidity at 73° F.
 - b. 182° F: 100 PSI
 - c. Accelerated Aging by ASTM D-1037 at room temperature: 800 PSI
 - d. Accelerated Aging by ASTM D-1037 at 182° F: 250 PSI
 - e. 1400 PSI after 500 hour oxygen bomb by ASTM D-572

2.5 PANEL CONSTRUCTION

The translucent panels shall be a true structural sandwich panel of flat fiberglass sheets bonded with tested adhesives to a grid core of mechanically interlocking aluminum I-beams under a controlled process of heat and pressure. Tape bond systems do not meet these requirements. Panels shall be laminated under a controlled process of heat and pressure, and deflect no more than 1.9" at 30 psf in 10-foot span without a

supporting frame by ASTM E-72.

The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge.

1. In order to insure bonding strength, white spots at intersections of muntins and mullions shall not be larger than 3/64" in width nor exceed 4 for each 50 square feet of panel.

Translucent panels shall have a thickness of 2-3/4" with a U-Factor by NFRC certified laboratory of 0.29, light transmission of 20 percent and solar heat gain coefficient of 0.30. Panel and frame assembly shall have NFRC certified U-Factor of 0.53.

Grid patterns shall be nominal 12 inches by 24 inches, reverse shoji, symmetrical about the horizontal centerline of each panel.

Translucent panel units shall be pre-assembled and sealed at the factory. Panel units shall be shipped to the job site in rugged shipping units and be ready for erection as units, except for removable components, by contractor. Field assembly of major components will not be allowed.

2.6 BATTENS AND PERIMETER CLOSURE SYSTEM

Provide an extruded aluminum 6063-T5 and 6063-T6 alloy closure system, clamp-tite screw type, factory sealed to the panels.

Pre-apply flexible sealing tape to closure system under factory controlled conditions.

2.7 FASTENERS

- A. Fasteners exposed to weather are to be 300 series stainless steel.
- B. Exterior cap fasteners are to have stainless steel weather sealing washers.
- C. Anchor bolts to the building are to be zinc plated steel as engineered.
- D. All exposed fasteners are to be finished to match the aluminum components.

2.8 FINISH

Finish of all exposed aluminum shall be manufacturer's standard which meets the performance requirements of AAMA 2604. Color shall be as selected by Contracting Officer.

PART 3 EXECUTION

3.1 ACCEPTABLE INSTALLERS

Only qualified experienced craftsmen may be employed to install the work of this section. Installer must conform to the qualifications specified.

3.2 EXAMINATION

Inspect the installed work of other trades and verify that it is satisfactorily completed for the proper installation of the panel systems.

Do not proceed with installation until any discrepancies have been corrected.

3.3 PREPARATION

Isolate dissimilar materials from the aluminum system, which may cause damage by electrolysis, with concealed 3M Scotchrap-50, 10-mil vinyl corrosion protection tape, color black.

Protect surrounding work and secure staging with protection as required, to prevent damage to adjacent materials.

3.4 INSTALLATION

Install the translucent systems in strict accordance with approved engineered shop drawings. Clean all surfaces prior sealing the system. Seal the system as recommended by the manufacturer.

Install the translucent systems level, plumb and properly aligned with uniform joints and reveals. Remove and replace any components that may be defective or are damaged during installation.

After other trades have completed work on adjacent material, carefully inspect the translucent panel installation and make adjustments necessary to insure proper weather-tight performance.

Leave the interior and exterior surfaces of the translucent panel systems free of all protective material, identification labels and excess sealant.

Clean the translucent panel systems within one week of final acceptance in accordance with manufacturer's recommended methods.

-- End of Section --