

2. AMENDMENT/MODIFICATION NO. <b>1</b>	3. EFFECTIVE DATE <b>22-May-2003</b>	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. <i>(If applicable)</i>
6. ISSUED BY <b>US Army Corps of Engineers, Kansas City District 760 Federal Building, 601 East 12th Street Kansas City, Missouri 64106-2896</b>		7. ADMINISTERED BY <i>(If other than item 6)</i>	

8. NAME AND ADDRESS OF CONTRACTOR <i>(No., street, county, State and ZIP Code)</i>	(x)	9a. AMENDMENT OF SOLICITATION NO. <b>DACA41-03-B-0002</b>
	X	9B. DATED <i>(SEE ITEM 11)</i> <b>4/28/2003</b>
		10A. MODIFICATION OF CONTRACT/ORDER NO.
		10B. DATED <i>(SEE ITEM 13)</i>
CODE	FACILITY CODE	

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

The above number solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers  is extended,  is not extended.

Offers 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 one copy of the amendment. (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegraph 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.**

(x)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: <i>(Specify authority)</i> THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBER CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES <i>(such as changes in paying office, appropriation date, etc.)</i> SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF:
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER <i>(Specify type of modification and authority)</i>

**E. IMPORTANT:** Contractor  is not,  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.)*

**Access Control Facilities  
Fort Leonard Wood, Missouri**

The Solicitation is amended in accordance with the attached pages.

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 <i>(Type or print)</i>	16A. NAME AND TITLE OF CONTRACTING OFFICER <i>(Type or print)</i>
15B. CONTRACTOR/OFFEROR	16B. UNITED STATES OF AMERICA
15C. DATE SIGNED	16C. DATE SIGNED
_____ <i>(Signature of person authorized to sign)</i>	BY _____ <i>(Signature of Contracting Officer)</i>

The SOLICITATION is amended as follows:

1. SPECIFICATIONS:

Narrative Change: Any references made to the following sections throughout the Specification are revised as indicated.

<u>References to:</u>	<u>Changes:</u>
01572	change to: 01100 General
01781	change to: 01780 Closeout Submittals
02330	reference deleted
02556A	reference deleted
02630	reference deleted
13110	reference deleted
13202A	reference deleted
13920A	reference deleted
15950A	change to: 15951A Direct Digital Controls for HVAC
16475A	reference deleted

New Pages: The following pages are added to the Specification. Copies of the new pages are attached.

Pages 1 of 125 and 2 of 125 were inadvertently omitted from the initial issue of the Specification and are added by this amendment.

An Example Sub-Contracting Plan, 10 pages, is added to the Solicitation.

A cover sheet for Attachment A is added to the attachment.

Revised Page: Page 121 of 126 is deleted and replaced with a revised page of the same number. The revised page is attached.

Revised Sections: The following sections are deleted and replaced with revised sections of the same numbers. Copies of the revised sections are attached.

Section 01100	GENERAL
Section 02315A	EXCAVATION, FILLING, AND BACKFILLING FOR BUILDINGS
Section 02741A	HOT-MIX ASPHALT (HMA) FOR ROADS
Section 02921A	SEEDING
Section 09915	COLOR SCHEDULE
Section 11035:	BULLET-RESISTANT COMPONENTS
	HARDWARE SCHEDULE

New Section: Section 01670 RECYCLED/RECOVERED MATERIALS is a new section and is added to the Specification. A copy of the new section is attached.

Deleted Section: Section 02922A SODDING is deleted in its entirety.

Attachments: The following attachments are added following Section 01100.

ATTACHMENT B: Missouri Highway and Transportation Commission Right-of-Entry for Construction

ATTACHMENT C: Photos of Structures To Be Demolished

ATTACHMENT D: Property Inspection Report

## 2. DRAWINGS:

Narrative Changes: The following changes are made narratively to the drawings as indicated.

Volumes 1 and 2, Covers:

Fort Leonard Wood no longer has an active landfill area. Disregard indicated landfill areas on the cover sheets, G000 and G001 of Volumes 1 and 2.

**See Insert Drawings 1 and 2, attached.**

Volume 1, Drawing Sheet CD102 Demolition Plan:

Seven existing single-story, wood framed structures, within MODOT property, at the northwest end, and outside the Fort Leonard Wood property line are to be demolished under this Contract. These structures are to be removed from the site and properly disposed of in accordance with Division 1 Specification requirements.

The existing concrete slabs on grade and footings and foundations of these structures are not required to be removed. All existing utilities must be properly terminated in accordance with the local utility service's requirements, near, at, or under the existing grade, as appropriate, and at the nearest power pole.

The MODOT property may be used by the Contractor for staging purposes during the construction period. See Specification Section 01100. Access to the staging area shall not inhibit the proper operational activities and access of the Fort Leonard Wood installation by the public or by installation personnel at any time during the construction period.

**See Insert Drawing 3, attached.**

Volume 1, Drawing Sheet CU505 Yard Hydrants:

The above grade yard hydrants shall be installed such that the nozzle is **30 inches** above finish grade.

Volume 1, Drawing Sheet MS601 Gas Water Boiler Schedule:

30-psi working pressure boilers are acceptable, provided remaining requirements of Plans and Specifications are met.

Volumes 1 and 2, Common Drawing Sheet EC901, Detail 1: CDB1 Controls Ductbank Detail:

Revise indicated height of ductbank to read **32"** instead of 28" previously shown.

**See Insert Drawing 4, attached.**

3. For convenience, on the revised Specification pages, essential changes have been emphasized by underlines. However, all portions of the revised Specification pages shall apply whether or not changes have been indicated.

4. Bidders are required to acknowledge receipt of this amendment on the Bidding Form, in the space provided, or by separate letter or telegram prior to opening of bids. Failure to acknowledge all amendments may cause rejection of the bid.

5. Bids will be received until 2:00 p.m., local time, 3 June 2003, in Room 748 Federal Building, 601 E. 12<sup>th</sup> Street, Kansas City, Missouri 64106-2896, and at that time publicly opened. Points of Contact are as follows:

Contract Specialist:	Earl Smith	816-983-3846
Project Manager:	Clif Rope	816-983-3476

<b>SOLICITATION, OFFER, AND AWARD</b> <i>(Construction, Alteration, or Repair)</i>	1. SOLICITATION NO.	2. TYPE OF SOLICITATION	3. DATE ISSUED	PAGE OF	PAGES
	DACA41-03- B-0002	<input checked="" type="checkbox"/> SEALED BID (IFB) <input type="checkbox"/> NEGOTIATED (RFP)	4/28/2003	1	125

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4.	5. REQUISITION/PURCHASE REQUEST NO. W58XUW-2311-0552	6. PROJECT NO.
7. ISSUED BY  U.S. Army Engineer District, Kansas City 760 Federal Building, 601 E. 12th Street Kansas City, Missouri 64106-2896  Tel: (816) 983-3845 Fax: (816) 426-5169	CODE	8. ADDRESS OFFER TO  See Item 7  Bid Opening Room: 748
9. FOR INFORMATION CALL:	A. NAME Earl V. Smith	B. TELEPHONE NO. (Include area code) 816-983-3846 Ext. (NO COLLECT CALLS)

**SOLICITATION**

NOTE: In sealed bid solicitation "offer" and "offeror" mean "bid" and "Bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS (Title, identifying no., date):

Access Control Facilities  
Fort Leonard Wood, Missouri

Description of Work: Work to be performed includes, but is not limited to, construction of three Access Control Points for the north main gate, and the south and east secondary gates at Fort Leonard Wood, Missouri. The main gate complex will incorporate a visitors center/guard administration building, a guard monitoring building, several traffic lanes with a main canopy over ten guard booths, a detail truck inspection area with canopy, a detail inspection area for passenger vehicles, also with canopy, and separate visitors and guard parking lots. The south and east gate access control facilities involve a small gate house and an inspection canopy area, site improvements, security lighting and utilities. Work also includes landscaping at each location.

11. The Contractor shall begin performance within 10 calendar days and complete it within 540 calendar days after receiving  award  notice to proceed. This performance period is  mandatory,  negotiable. (See 52.211-1 )

12A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? <i>(If "YES", indicate within how many calendar days after award in Item 12B.)</i> <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	12B. CALENDAR DAYS  10
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13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and one copies to perform the work required are due at the place specified in Item 8 by 2:00 p.m. local time 6/3/2003 (date). If this is a sealed bid solicitation, offers will be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee  is,  is not required. NOT TO EXCEED 20% OF TOTAL BID AMOUNT

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 90 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

**OFFER** (Must be fully completed by offeror)

DACA41-03-B-0002-0001

14. NAME AND ADDRESS OF OFFEROR (Include ZIP Code)	15. TELEPHONE NO. (Include area code)  (FAX # _____ )
DUNS NO: CODE                      FACILITY CODE	16. REMITTANCE ADDRESS (Include only if different from Item 14)

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within     90     calendar days after the date offers are due. (Insert any number equal to or greater than the minimum requirement stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)

AMOUNTS: See attached Bidding Schedule

18. The offeror agrees to furnish any required performance and payment bonds.

**19. ACKNOWLEDGEMENT OF AMENDMENTS**

(The offeror acknowledges receipt of amendments to the solicitation - give number and date of each)

AMENDMENT NO.								
DATE								

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)	20B. SIGNATURE	20C. OFFER DATE
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**AWARD** (To be completed by Government)

21. ITEMS ACCEPTED

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA	
24. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified)	ITEM	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO
26. ADMINISTERED BY	CODE	<input type="checkbox"/> 10 U.S.C. 2304(c) ( ) <input type="checkbox"/> 41 U.S.C. 253(c) ( )
27. PAYMENT WILL BE MADE BY		

**CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE**

<input type="checkbox"/> 28. NEGOTIATED AGREEMENT (Contractor is required to sign this document and return ___ copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all work requirements identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications incorporated by reference in or attached to this contract.	<input type="checkbox"/> 29. AWARD (Contractor is not required to sign this document) Your offer on this solicitation is hereby accepted as to the items listed. This award commutes the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.
30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN (Type of print)	31A. NAME OF CONTRACTING OFFICER (Type or print)
30B. SIGNATURE	31b. UNITED STATES OF AMERICA      31C. AWARD DATE

## Section 00800 - Special Contract Requirements

## CLAUSES INCORPORATED BY FULL TEXT

## 52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

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 540 calendar days . The time stated for completion shall include final cleanup of the premises.

(End of clause)

## 52.211-12 LIQUIDATED DAMAGES--CONSTRUCTION (SEP 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of \$730 dollars for each calendar day of delay until the work is completed or accepted.

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

(End of clause)

52.231-5000 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE  
MAR 1995)--EFARS

(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 V. 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

## SUBCONTRACTING PLAN

Subcontracting Plan for subject project includes the requirements of Public Law 95-507, Public Law 101-507 Public Law 99-661, Public Law 100-180, FAR Part 19, FAR Clause 52.219-9 and Acquisition Letter 92-9.

CONTRACTOR NAME: \_\_\_\_\_

PROJECT TITLE: \_\_\_\_\_

CONTRACT NUMBER: \_\_\_\_\_

SOLICITATION NUMBER: \_\_\_\_\_

**NEGOTIATED ACQUISITION:** When a contract or contract modification, inclusive of all options, which individually is expected to exceed \$500,000 (\$1,000,000 for construction) and has subcontracting possibilities, shall require the apparently successful offeror to submit an acceptable subcontracting plan which separately identifies subcontracts with Small Business and Small Disadvantaged Businesses as required by FAR 19.7 prior to award.

**SEALED BID ACQUISITION:** When a contract or contract modification, inclusive of all options, which individually is expected to exceed \$500,000 (\$1,000,000 for construction) and has subcontracting possibilities, shall require the bidder selected for award to submit an acceptable subcontracting plan which separately identifies subcontracting with Small Business and Small Disadvantaged Businesses as required by FAR 19.7 prior to award.

### SMALL BUSINESS AND SMALL DISADVANTAGED BUSINESS SUBCONTRACTING PLAN

DATE: \_\_\_\_\_

The following, together with any attachments, are hereby submitted as a Subcontracting Plan to satisfy the applicable requirements of public law 99-661, Public Law 100-180, public law 95-507, public law 99-661, Public Law 100-800, FAR 19.7, FAR Clause 52.219-9 and Acquisition Letter 92-9.

1. The firm of \_\_\_\_\_ has issued a Policy Statement and Evidence of Internal Guidance to Company buyers recognizing commitment to public law 99-661 and Public Law 100-180. This Policy Statement defines the Corporate and Management Commitment as evidenced in an individual plan and master plan by specifically referencing the Public Laws regarding Small Disadvantaged Businesses (SDB's) and Historically Black Colleges and Universities/Minority Institutions (HBCU/MI's).

2. (A) the total contract or modification amount, inclusive of all options, are \$.

(b) The following estimated dollar value of all planned subcontracting dollars (to all types of business concerns) under this contract is \$. (Leave blank if an Indefinite Delivery Type Contract)

**GOALS FOR THE BASIC CONTRACT**

(c) The following percentage goals are applicable to the contract cited above or to the contract awarded under the solicitation cited.

(i) Small Business concerns: % of total planned subcontracting dollars under this contract will go to subcontractors who are Small Business concerns. (If an Indefinite Delivery Type Contract - this percentage will be applied to all Delivery Orders.) (U.S. Army Corps of Engineers Goal - 61.0%)

(ii) Small Disadvantaged Business (SDB) Concerns: % of total subcontract dollars under this contract will go to subcontractors who are small business concerns owned and controlled by socially economically disadvantaged individuals (SDB's). (USACE and EPA SDB Goal - 8.0 Percent) (PL 101-507) This percentage is a subset of 2. (c)(i).

Per DFAR 219.704, SDB Concerns also include: Historically Black Colleges and Universities/ Minority Institutions (HBCU/MI's). % of total subcontract dollars under this contract will go to subcontractors who are HBCU/MI's. This percentage is a subset of 2. (c)(ii).

Per Public Law 101-57 (EPA-Superfund Projects Only) SDB includes Small Women-Owned Business Concerns. % of total subcontract dollars under this contract will go to Small Women-Owned Businesses. This percentage is a subset of 2. (c)(ii). (USACE & EPA SDB Goal for Superfund are - 8% of total contract dollars).

(d) The following dollar values correspond to the percentage goals shown in (c) above.

(i) Total dollars planned to be subcontracted to small business concerns: \$\_. (Leave Blank if an Indefinite Delivery Contract).

(ii) Total dollars intended to be subcontracted to small disadvantaged business concerns: \$\_\_\_\_. This dollar amount is included in the amount shown under 2.(c)(i), above, as a subset. (Leave Blank if an Indefinite Delivery Contract).

Total dollars intended to be subcontracted to HBCU/MI's: \$\_\_\_\_\_. This dollar amount is included in the amount shown under 2.(c)(ii), above, as a subset. (Leave Blank if an Indefinite Delivery Contract).

Total dollars intended to be subcontracted to Small Women-Owned Businesses: \$\_\_\_\_\_. For EPA Superfund this dollar amount is included in the amount shown under 2.(c)(ii), above, as a subset. (Leave Blank if an Indefinite Delivery Contract).

**GOALS FOR OPTIONS (when applicable)**

Separate goals are established for each option. The following must be completed for each Option:

Option Description: \_\_\_\_\_

The following percentage goals are applicable to the option referenced above.

(i) Small Business concerns: \_\_\_% of total planned subcontracting dollars under this option will go to subcontractors who are Small Business concerns. (U.S. Army Corps of Engineers Goal - 61.0%)

(ii) Small Disadvantaged Business (SDB) Concerns: \_\_\_% of total subcontract dollars for this Option will go to subcontractors who are small business concerns owned and controlled by socially economically disadvantaged individuals (SDB's). (USACE and EPA SDB Goal - 8.0 Percent) (PL 101-507) This percentage is a subset of 2.(c)(i).

Per DFAR 219.704, SDB Concerns also include: Historically Black Colleges and Universities/ Minority Institutions (HBCU/MI's). \_\_\_% of total subcontract dollars under this option will go to subcontractors who are HBCU/MI's. This percentage is a subset of 2.(c)(ii).

Per Public Law 101-57 (EPA-Superfund Projects Only) SDB include Small Women-Owned Business Concerns. \_\_\_% of total subcontract dollars under this option will go to Small Women-Owned Businesses. This percentage is a subset of 2.(c)(ii). (USACE & EPA SDB Goal for Superfund are - 8% of total dollars).

#### OPTIONS

The following dollar values correspond to the percentage goals shown above.

(i) Total dollars planned to be subcontracted to small business concerns: \$\_\_\_\_\_. (Leave Blank if an Indefinite Delivery Contract).

(ii) Total dollars intended to be subcontracted to small disadvantaged business concerns: \$\_\_\_\_\_. This dollar amount is included in the amount shown under 2.(c)(i), above, as a subset. (Leave Blank if an Indefinite Delivery Contract).

Total dollars intended to be subcontracted to HBCU/MI's: \$\_\_\_\_\_. This dollar amount is included in the amount shown under 2.(c)(ii), above, as a subset. (Leave Blank if an Indefinite Delivery Contract).

Total dollars intended to be subcontracted to Small Women-Owned Businesses: \$\_\_\_\_\_. For EPA Superfund this dollar amount is included in the amount shown under 2.(c)(ii), above, as a subset. (Leave Blank if an Indefinite Delivery Contract).

(e) The following principal supplies and/or services along with the firm name for the Small business or Small Disadvantaged Business Concern (if known) for traditional and non-traditional areas will be subcontracted under this contract, and distributed among small and small disadvantaged business concerns (FAR 52.219-9(d)(3)) is as follows:

Note: \* To be subcontracted to small business concerns.

\*\* To be subcontracted to small disadvantaged business concerns.

\*\*\* To be subcontracted to HBCU/MI's.

\*\*\*\* To be subcontracted to Small & Women-Owned business concerns.

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(f) A description of supplies and services to be subcontracted and planned for subcontracting to Small and Small Disadvantaged Businesses are as follows:

(1) Discussion of proposal preparation with the Small and SDB firms and/or extent to which subcontracting to these firms may reasonably be assured will be accomplished by:

\_\_\_\_\_  
\_\_\_\_\_

(2) Generic listing of routine supplies and services included in the materials listing for this contract

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(3) Projects will be reviewed for possible breakout of work effort for SDB acquisitions. (FAR 52.219(e)(1)/(2))

\_\_\_\_\_  
\_\_\_\_\_

(4) Specific areas will be targeted, when appropriate, for technical review and identify specific areas for consideration for breakout for SDB competition. Efforts will be made to work with large business subcontractors to insure flow down.

\_\_\_\_\_  
\_\_\_\_\_

(g) The following method was used in developing subcontract goals (i.e. statement explaining how the product and service areas to be subcontracted were established, how the areas to be subcontracted to small and small disadvantaged business concerns were determined and how small and small disadvantaged business concerns' capabilities were determined, to include identification of sources used in making those determinations.) Goals will be sought that are realistic in view of actions stated to be taken in other portions of the plan and make or buy plan, if applicable. The goal as established is reasonable in comparison with past experience, yet indicates reasonable effort to improve on past experience in terms of dollars, number of SDBs involved, and movement into areas without previous SDB involvement. SDBs will be given every opportunity to perform on large projects as a subcontractor. Forecasts for improvement will be sought toward subcontracting efforts to Small and SDBs.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(h) Efforts to increase awards to small and small disadvantaged business for non-complex and general housekeeping supplies or services has been accomplished by:

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(i) Efforts to increase the number of SDB sources awarded subcontracts and establishing plans to use SDB set-asides and the extent of our intention to use SDB set-asides (DFAR 219.705.4(a)(3)) is as follows:

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(j) Efforts to increase the number of HBCU & MI awarded subcontracts (DFAR 219.705.4) is as follows:

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(k) Obstacles in awarding subcontracts to SDB & HBCU/MI's currently on file are:

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(l) Indirect and overhead costs (check one below):

have been  have not been

included in the goals specified in 2.

If "have been" is checked, explain the method used in determining the proportionate share of indirect and overhead cost to be allocated as subcontracts to small business concerns and small disadvantaged business concerns.

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The following individual will administer the subcontracting program:

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

This individual's specific duties, as they relate to the firm's subcontracting program, are as follows:

General overall responsibility for this company's Small Business Program, the development, preparation and execution of individual subcontracting plans and for monitoring performance relative to contractual subcontracting requirements contained in this plan, including but not limited to:

- (a) Developing and maintaining bidders lists of small and small disadvantaged business concerns from all possible sources.
- (b) Ensuring that procurement packages are structured to permit small and small disadvantaged business concerns to participate to the maximum extent possible.
- (c) Assuring inclusion of small and SDB concerns in all solicitations for products or services which they are capable of providing.
- (d) Reviewing solicitations to remove statements, clauses, etc. which may tend to restrict or prohibit SB and SDB participation.
- (e) Ensuring periodic rotation of potential subcontractors on bidders lists.
- (f) Ensuring that the bid proposal review board documents its reasons for not selecting low bids submitted by small and small disadvantaged business concerns.
- (g) Ensuring the establishment and maintenance of records of solicitations and subcontract award activity.
- (h) Attending or arranging for attendance of company counselors at Business Opportunity Workshops, Minority Business Enterprise Seminars, Trade Fairs, etc.
- (i) Monitoring attainment of proposal goals.
- (j) Preparing and submitting periodic subcontracting reports required.
- (k) Coordinating contractor's activities during the conduct of compliance reviews by Federal agencies.
- (l) Counsel and discuss subcontracting opportunities with representatives of small and small disadvantaged business firms.
- (m) Provide notice to subcontractors concerning penalties for misrepresentations of business status as small business or small disadvantaged business for the purpose of obtaining a subcontract.
- (n) Coordinating the conduct of contractor's activities involving its small and small disadvantaged business subcontracting program.
- (o) Additions to (or deletions from) the duties specified above are as follows:

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4. The following efforts will be taken to insure that small and small disadvantaged business concerns will have an equitable opportunity to compete for subcontracts:

(a) Outreach efforts will be made as follows:

(i) Efforts are made to contact and work with specific commercial, trade associations, minority and small business trade associations or governmental organizations to assist in identifying potential sources for items not traditionally awarded to Small Business and SDB's (FAR 52.219) are as follows:

\_\_\_\_\_  
\_\_\_\_\_

(ii) Contacts with business development organizations.

(iii) Attendance at small and minority business procurement conferences and trade fairs.

(iv) Sources will be requested from SBA's PASS system.

(b) The following internal efforts will be made to guide and encourage buyers:

(i) Workshops, seminars and training program will be conducted.

(ii) Activities will be monitored to evaluate compliance with this subcontracting plan.

(iii) Evaluation of the small and SDB award performance and program effectiveness (19.704(a)(6) against the established goals, company-wide and for all individual plans will be accomplished by:

\_\_\_\_\_  
\_\_\_\_\_

(iv) All efforts will be made to include small and SDB firms by name as members of the original team for providing major services.

(v) Special efforts will be made to establish long-range relationship, including leader-follower techniques (FAR 19.705-4(d)).

(c) Small and small disadvantaged business concern source lists, guides and other data identifying small and small disadvantaged business concerns will be maintained and utilized by buyers in soliciting subcontracts.

(d) In areas where appropriate, efforts to review HBCU/MI's for involvement in corporate planning or individual contract plan will be sought. (DFAR 219.705-4)

(e) Additions to (or deletions from) the above listed efforts are as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. \_\_\_\_\_(Firm Name) agrees that the clause entitled Utilization of Small Business Concerns and Small Business Concerns Owned and Controlled by Socially and Economically Disadvantaged Individuals (FAR 52.219-8) will be included in all subcontracts which offer further subcontracting opportunities. All subcontractors except small business concerns who receive subcontracts in excess of \$500,000 (\$1,000,000 for Construction) will be required to adopt and comply with a subcontracting plan similar to this one. (FAR 19.708(b). Such plans will be reviewed by comparing them with the provisions of Public Law 95-507 and FAR Clause 52.219-9 and assuring that all minimum requirements of an acceptable subcontracting plan have been satisfied. The acceptability of percentage goals shall be determined on a case-by-case basis depending on the supplies/services involved, the availability of potential small and small disadvantaged subcontractors, and prior experience. Once approved and implemented, plans will be monitored through the submission of periodic reports, and/or, as time and availability of funds permit, periodic visits to subcontractors facilities to review applicable records and subcontracting program progress.

6. \_\_\_\_\_(Firm Name) agrees to submit such periodic reports, and cooperate in any studies or surveys as may be required by the contracting agency or the Small Business Administration in order to determine the extent of compliance by the bidder with the subcontracting plan and with the clause entitled Utilization of Small Business Concerns and Small Business Concerns Owned and Controlled by Socially and Economically Disadvantaged Individuals, contained in this contract. The Contractor further agrees to submit SF 294 and SF 295 in accordance with the instructions on the back of each form.

7. \_\_\_\_\_(Firm Name) agrees that they will maintain at least the following types of records to document compliance with this subcontracting plan:

(a) Small and small disadvantaged business concern source lists, guides and other data identifying SB/SDBC vendors.

(b) Organizations contacted for small and disadvantaged business sources.

(c) On a contract-by-contract basis, records on all subcontract solicitations over \$100,000, indicating on each solicitation (!) whether small business concerns were solicited, and if not, why not; (2) whether small disadvantaged business concerns were solicited, and if not, why not; and (3) reasons for the failure of solicited small or small disadvantaged business concerns to receive the subcontract award.

(d) Records to support other outreach efforts: Contacts with Minority and Small Business Trade Associations, etc. Attendance at small and minority business procurement conferences and trade fairs.

(e) Records to support internal activities to guide and encourage buyers; workshops, seminars, training programs, etc. Monitoring activities to evaluate compliance.

(f) On a contract-by-contract basis, records to support subcontract award data to include name and address of subcontractor.

(g) Records to be maintained in addition to the above are as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contractor's Signature: \_\_\_\_\_

Typed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

This Plan is Accepted By: \_\_\_\_\_  
Contracting Officer

Date: \_\_\_\_\_

## **SMALL BUSINESS TARGETS**

### **PRIME CONTRACT AWARDS**

Small Business	<b>43.8%</b>
Small Disadvantaged Business	<b>18.0%</b>
Women – Owned Small Business	<b>6.5%</b>
HUBZone Small Business	<b>3.0%</b>
Service – Disabled Veteran – Owned Small Business	<b>12.9%</b>

### **SUBCONTRACT AWARDS**

Small Business	<b>57.2%</b>
Small Disadvantaged Business	<b>8.9%</b>
Women – Owned Small Business	<b>8.1%</b>
HUBZone Small Business	<b>3.0%</b>
Service – Disabled Veteran – Owned Small Business	<b>3.0%</b>

## SECTION 01100

## GENERAL

## PART 1 GENERAL

## 1.1 INQUIRIES

Pursuant to SECTION 00100 paragraph titled "Explanation to Prospective Bidders", any inquiries regarding this Invitation, before bids are opened, should be addressed to the District Engineer, Kansas City District, Corps of Engineers, 700 Federal Building, Kansas City, Missouri 64106, ATTN: Mr. Clif Rope. Inquiries for which oral explanation or advice on the plans and specifications will suffice may be referred to Mr. Rope by calling Area Code 816-983-3476. Telephone calls concerning the mailing of plans and specifications should be made to Contracting Division at Area Code 816-983-3975. Collect telephone calls will not be accepted. (KCDO APR 84)

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. 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-01 Preconstruction Submittals

Storm Water Pollution Prevention Plan (SWPPP); G, RE

Contractor shall develop, submit, and receive approval for a Storm Water Pollution Prevention Plan (SWPPP) before removing any site vegetation or disturbing any earth.

## 1.3 SUPERINTENDENCE OF SUBCONTRACTORS

(a) The Contractor shall be required to furnish the following:

(1) If more than 50% and less than 70% of the value of the contract work is subcontracted, one superintendent shall be provided at the site and on the Contractor's payroll to be responsible for coordinating, directing, inspecting and expediting the subcontract work.

(2) If 70% or more of the value of the work is subcontracted, the Contractor shall be required to furnish two such superintendents to be responsible for coordinating, directing, inspecting and expediting the subcontract work.

(b) If the Contracting Officer, at any time after 50% of the subcontracted work has been completed, finds that satisfactory progress is being made, he may waive all or part of the above requirement for additional superintendence subject to the right of the Contracting Officer to reinstate such requirement if at any time during the progress of the remaining work he finds that satisfactory progress is not being made.

## 1.4 IDENTIFICATION OF EMPLOYEES

The Contractor shall be responsible for furnishing to each employee and for requiring each employee engaged on the work to display identification as may be approved and directed by the Contracting Office. All prescribed identification shall immediately be delivered to the Contracting Officer, for cancellation upon the release of any employee. When required by the Contracting Officer the Contractor shall obtain and submit fingerprints of all persons employed or to be employed on the project. Contractor and subcontractor personnel shall wear identifying markings on hard hats clearly identifying the company for whom the employee works.

#### 1.5 REGISTRATION OF MOTOR VEHICLES, FORT LEONARD WOOD

##### 1.5.1 Effective Date

Effective 1 September 2001 all motor vehicles within the boundaries of Fort Leonard Wood, Missouri, utilized by the Contractor and/or his employees (POVs included) must be registered with the Law Enforcement Command(LEC). Vehicle registration is a Department of the Army requirement.

##### 1.5.2 Coordination

All motor vehicles will be registered utilizing Department of Defense temporary vehicle passes or decals with expiration dates and installation identification. Registration will be coordinated through the Fort Leonard Wood Area Office.

##### 1.5.3 Registration

A Department of Defense temporary pass or decal will be issued for each registered vehicle. Contractors and Contractor employees will be issued a pass or decal depending upon the length of time of the contract. For contracts of a year or more in duration, an annually renewable decal will be issued. For those contracts of less than one year, a temporary pass will be issued. Contractor personnel who are eligible to register as retired military or dependent of military must register in such a manner.

##### 1.5.4 Required Documentation

Required documentation for registration consists of the following:

- current valid driver's license -
- state vehicle registration
- proof of insurance
- motorcycle safety course (applicable to motor cycle registration
- military, civilian or contractor identification

##### 1.5.5 Decals

Decals must be permanently affixed to the vehicle. Authorized location is the upper center of the windshield, under the rear view mirror (right front post for motorcycles). All individuals are responsible for their decals. If the vehicle is sold, traded, incapacitated in any way, or employment is terminated, the individual must remove (scrape decal off window) the decal and return it to the LEC and they will destroy the sticker. All temporary passes and decals must be returned before final pay will be processed. Vehicles without authorized passes or decals are subject to being stopped for purposes of identification and/or issuance of a daily or visitor pass.

#### 1.6 APPLICATION OF WAGE RATES

The inclusion of the Davis-Bacon Act General Wage Decision or the Service Contract Act Wage Determination in the solicitation is a statutory requirement. It is not a representation by the U.S. Army Corps of Engineers that any specific work task can be performed by any specific trade. Which work tasks can be performed by what trades depends on and is determined by the prevailing area practice for the local area where the contract is being performed. It is the sole responsibility of the bidder to determine and comply with the prevailing area practice. Inquiries regarding a prevailing area practice should be directed to the Corps of Engineers, Contractor Industrial Relations Specialist (telephone number 816-983-3723) or to the Department of Labor Regional Wage and Hour Division.

Application of wage rates and fringe benefits: For the application of the wage rates and fringe benefits contained in the Decisions of the Secretary of Labor, attached to and a part of this contract, all work required within 5 feet outside building lines shall be considered Building Construction. All other construction not defined herein as Building Construction shall be considered Heavy Construction.

#### 1.7 PAYMENTS TO SUBCONTRACTORS

The Contractor's attention is directed to CONTRACT CLAUSE titled "Payment Under Fixed-Price Construction Contracts." In addition to the requirements set forth in the referenced paragraph, the Government will reimburse the Contractor, upon request, for amount of premiums paid by the subcontractors for performance and payment bonds (including coinsurance and reinsurance agreements, when applicable) after the Contractor furnishes evidence of full payment to the surety.

#### 1.8 PAYMENTS TO CONTRACTOR (KCD MAY 90 - FORMERLY FAR 52.2/9101(a))

The following is an example of a Contractor's release of claims clauses required to comply with the provisions of paragraph (h) of the CONTRACT CLAUSE titled "Payments Under Fixed-Price Construction Contracts":

##### RELEASE OF CLAIMS

The undersigned Contractor under contract dated \_\_\_\_\_, 2000, between the United States of America and said Contractor for the \_\_\_\_\_ located at \_\_\_\_\_, in accordance with paragraph (h) of the CONTRACT CLAUSE titled "Payments Under Fixed-Price Construction Contracts" of said contract, hereby releases the United States, its officers, agents, and employees from any and all claims arising under or by virtue of said contract or any modification or change thereof except with respect to those claims, if any, listed below:

(Here itemize claims and amounts due.)

#### 1.9 PARTNERING

The Government intends to encourage the foundation of a cohesive partnership with the Contractor and its subcontractor. This partnership will be structured to draw on the strengths of each organization to identify and achieve mutual goals with the intent to complete the Contract within budget, on schedule and in accordance with plans and specifications. This partnership will be bilateral in makeup, and participation will be totally voluntary. Any cost associated with implementing this partnership will be agreed to by the Contractor and the Government, and will be shared equally with no change in Contract price.

To implement this partnership initiative, it is anticipated that thirty (30) days after Notice to Proceed, a team building workshop will be conducted. Follow-up workshops will be held periodically throughout the duration of the Contract as agreed to by the Contractor and the Government.

#### 1.10 PROSPECTIVE CONTRACTOR RESPONSIBILITY

Each bidder shall furnish, within 3 calendar days after receipt of request therefor, data which will show the bidder's ability to perform the work or services required by this Invitation for Bids. Such data shall include as a minimum: Bank certification of financial capability, or a financial statement not over 60 days old, which will be treated as confidential (if over 60 days old, a certificate shall be attached thereto stating that the financial condition is substantially the same or, if not the same, the changes that have taken place); names of commercial and financial reporting agencies from whom credit reports may be obtained; trade creditors; name and address of bonding company; business and construction experience; past record of performance of Government contracts; and construction plant and equipment available for this job, with resume of work in progress or other data that will assure that the bidder is in a position to perform the work within the time specified.

In addition, if the bid exceeds \$1,000,000, the bidder shall furnish upon request, a certified statement listing:

(a) Each contract awarded to him within the preceding three-month period exceeding \$1,000,000 in value with brief description of the contract.

(b) Each contract awarded to him within the preceding three-year period not already physically completed and exceeding \$5,000,000 in value with brief description of the contract.

(c) If the prospective Contractor is a joint venture, each joint venture member will be required to submit the above defined certification. There shall also be furnished any other available information which will serve to substantiate the bidder's qualifications as a responsible prospective Contractor. (KCD APR 84)

#### 1.11 PERFORMANCE OF WORK BY CONTRACTOR

Bidder's attention is directed to SPECIAL CLAUSE titled "Performance of Work by Contractor." The successful bidder will be required to furnish the Contracting Officer, a description of the work which he will perform with his own organization (e.g., earthwork, paving, etc.), the percentage of the total work this represents, and the estimated cost thereof. Such description of work to be performed by the Contractor's own organization shall be furnished to the Contracting Officer within 10 days after award of the contract.

#### 1.12 LABORATORY AND TESTING FACILITIES

The Contractor shall provide and maintain all measuring and testing devices, laboratory equipment, instruments, transportation, and supplies necessary to accomplish the required testing. All measuring and testing devices shall be calibrated at established intervals against certified standards. The Contractor's measuring and testing equipment shall be made available for use by the Government for verification of their accuracy and condition as well as for any inspection or test desired pursuant to the CONTRACT CLAUSE titled "Inspection of Construction." The location of the

laboratory shall be convenient to the site such that test results are available prior to proceeding with the next sequential phase of the work. (KCD)

1.13 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

(a) This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with the CONTRACT CLAUSE titled "Default: (Fixed Price Construction)." In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

(1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

(b) The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities for the duration of the project.

Note: After the original contract completion date has passed, adverse weather that causes delay for the completion of the project will be granted day-for-day without deducting anticipated adverse weather delay days.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY

WORK DAYS BASED ON (5) DAY WORK WEEK

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(8)	(5)	(5)	(5)	(6)	(5)	(4)	(4)	(4)	(4)	(5)	(6)

(c) Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor shall record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical path activities for 50 percent or more of the Contractor's scheduled work day.

( \* Monthly anticipated weather delays shall be adjusted proportionally if work is performed in a work week with greater than or less than a five-day work week. The following formula shall be used to adjust the monthly anticipated weather delays:

adjusted monthly anticipated weather delays = A multiplied by (B divided by C); where

A = The monthly anticipated adverse weather delay for a particular month based on a five-day work week.

B = The actual average number of days worked per week during that particular month.

C = The number five (5).

eg., If the monthly anticipated adverse weather delay for January based on a five day work week is 10 days, but the Contractor actually worked an average of a six-day work week for that month, the monthly anticipated weather delay would be adjusted by applying the above formula as follows:  $10 \times (6/5) = 12$  days.

#### 1.14 REQUIRED INSURANCE SCHEDULE

In accordance with CONTRACT CLAUSE titled "Insurance - Work On A Government Installation," the Contractor shall procure and maintain during the entire period of his performance under this contract the following minimum insurance.

Type	Amount
Workmen's Compensation	coverage complying with applicable State Statute
Employers' Liability	minimum amount of \$100,000.00
General Liability on Comprehensive Form of Policy	minimum limits of \$500,000 per occurrence for bodily injury which includes, but is not limited to, insurance for all work required herein
Comprehensive Automobile Liability	minimum limits of \$200,000 per person and \$500,000 per occurrence for bodily injury, and \$20,000 per occurrence for property damage

(End of clause)

#### 1.15 CONTRACTOR-FURNISHED EQUIPMENT DATA

At or before 120 days prior to final inspection and acceptance of the work, the Contractor shall submit the data mentioned in the following subclauses.

(1) Equipment List. An itemized equipment list showing unit retail value and nameplate data including serial number, model number, size, manufacturer, etc., for all Contractor-furnished items of mechanical equipment, electrical equipment, and fire protection systems installed under this contract.

(2) Guarantees. A list of all equipment items which are specified to be guaranteed accompanied by a copy of each specific guarantee therefor. For each specific guaranteed item, a name, address, and telephone number shall be shown on the list for subcontractor who installed equipment, equipment supplier or distributor and equipment manufacturer. The completion date of the guarantee period shall correspond to the applicable specification requirements for each guaranteed item.

(3) Warranty Service Calls. The Contractor shall furnish to the Contracting Officer the names of local service representatives and/or Contractors that are available for warranty service calls and who will respond to a call within the time periods as follows: 4 hours for heating, air-conditioning, refrigeration, air supply and distribution, and critical electrical service systems and food service equipment, and 24 hours for all other systems. The names, addresses, and telephone numbers for day, night,

weekend, and holiday service responses shall be furnished to the Contracting Officer and also posted at a conspicuous location in each mechanical and electrical room or close to the unit.

1.16 DATE OF SAFETY AND HEALTH REQUIREMENTS MANUAL (EM 385-1-1)

(a) EM 385-1-1 and its changes are available at <http://www.hq.usace.army.mil> (at the HQ homepage, select Safety and Occupational Health). See Section 00700, Contract Clause titled "Accident Prevention."

(b) Section 06.I of EM 385-1-1 is deleted. Job hazard analysis for confined space entry procedures is still required, as per 01.A.09 of EM 385-1-1. OSHA Standards 29 CFR 1910.146 or 29 CFR 1926 shall apply.

(c) Before initiation of work at the job site, an accident prevention plan, written by the prime contractor for the specific work and hazards of the contract and implementing in detail the pertinent requirements of EM 385-1-1, will be reviewed and found acceptable by designated Government personnel.

1.17 COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)

The Contractor shall comply with OSHA standards as well as the most current edition of the Corps of Engineers General Safety Requirements Manual (EM 385-1-1). The OSHA standards are subject to change and such changes may affect the Contractor in his performance under the contract. It is the Contractor's responsibility to know such changes and effective dates of changes.

1.18 CONSTRUCTION EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE

Whenever a modification or equitable adjustment of contract price is required, the Contractor's cost proposal for equipment ownership and operating expenses shall be as set forth in SPECIAL CLAUSE titled "Equipment Ownership and Operating Expense Schedule." A copy of EP 1110-1-8 "Construction Equipment Ownership and Operating Expense Schedule" dated August 1995 can be ordered from the Government Printing Office (GPO) by calling Telephone No. 202-512-1800.

1.19 SUBMITTALS

(a) Submittal Procedures. See Division One SECTION: SUBMITTAL PROCEDURES, and SECTION: CLOSEOUT SUBMITTALS.

(b) CADD Files: The Government will provide to the Contractor, within 30 calendar days after Notice of Award, copies of the CADD computer files of the contract drawings for the production of as-built drawings. These files will be in Bentley MicroStation format. The Government provides no warranty, expressed or implied, of the CADD computer files. The Contractor shall assume all responsibility to verify the CADD drawing files. The Contractor will not utilize the CADD drawing computer files to resolve dimensional or other discrepancies. The Government will not guarantee the measurable accuracy of the CADD drawing computer files.

(c) Purchase Orders: Each purchase order issued by the Contractor or his subcontractors for materials and equipment to be incorporated into the project, shall be maintained on file at the Contractor's field office for inspection and review by Government representatives. Each purchase order

shall (1) be clearly identified with applicable DA contract number, (2) carry an identifying number, (3) be in sufficient detail to identify the material being purchased, (4) indicate a definite delivery date, and (5) display the DMS priority rating. At the option of the Contractor, the copies of the purchase orders may or may not indicate the price of the articles purchased. (MRD Ltr 22 Oct 74)

(d) Color Boards:

1. The Contractor shall submit a minimum of three (3) complete sets of color boards within 120 calendar days of receipt of Notice to Proceed. Construction color boards shall be submitted in a 3-ring notebook binder with all materials securely mounted on rigid 8-1/2 by 11-inch presentation (mat) board, with a maximum spread of 25-1/2 by 33 inches for foldouts, clearly coded regarding location of materials in the facility.

2. An index shall be provided listing pertinent contract specifications and drawings for each sample and any proposed substitutions or variances shall be so designated. The Contractor shall also certify, in writing, that all submittal items technically comply with the project specifications.

3. Color boards shall reflect all actual finish textures, patterns, and colors required for this contract as specified on the Interior Room Finish Schedule, the Exterior Finish Schedule and Interior Finish Materials Legend located in the Contract Drawings, and the sample requirements of the submittal registers. All materials must be labeled with the manufacturer's name, pattern and color reference. Patterned material samples (i.e., carpet) must be of sufficient size to enable evaluation of the pattern. Samples shall be keyed or coded to match any key or code system in the Contract Drawings.

4. The Contractor shall express mail a minimum of three (3) copies of the color boards to the Contracting Officer for Government review and concurrence. Concurrence or comments will be provided not later than 45 calendar days after receipt of the submittal. This paragraph does not cover the quality of finishing materials. The quality, physical requirements, and method of installation shall be submitted with the appropriate shop drawings. The Contractor shall not submit any of the above requirements with the color boards. Specific locations where the various materials are required are shown on the drawings.

1.20 SPECIAL REFERENCES

1.20.1 Approved Equal

The Contractor's attention is directed to SPECIAL CLAUSE titled "Approved Equal". The drawings and the TECHNICAL PROVISIONS of these specifications may, in some instances, refer to certain items of equipment, material, or article by trade name. References of this type shall not be construed as limiting competition, but shall be regarded as establishing a standard of quality. In this respect, the Contractor's attention is directed to CONTRACT CLAUSE titled "Material and Workmanship."

1.20.2 Shop Drawings

The Contractor's attention is directed to clause "Specifications and Drawings for Construction" of the Contract Clauses. The Contractor's attention is directed to SPECIAL CLAUSE titled "Shop Drawings". The basic requirements for Shop Drawings are set forth in CONTRACT CLAUSES and

## SPECIAL CLAUSES.

## 1.20.3 Payment to Subcontractors

The Contractor's attention is directed to SPECIAL CLAUSE titled "Payments to Subcontractors".

## 1.21 DIFFERENCES IN DRAWINGS

In addition to the provisions of CONTRACT CLAUSE paragraph "Specifications and Drawings for Construction," the structural drawings shall govern in cases where they differ from the architectural drawings.

## 1.22 DAMAGE TO WORK (1966 MAR OCE)

The responsibility for damage to any part of the permanent work shall be as set forth in the CONTRACT CLAUSE titled "Permits and Responsibilities". However, if, in the judgment of the Contracting Officer, any part of the permanent work performed by the Contractor is damaged by flood or earthquake, which damage is not due to the failure of the Contractor to take reasonable precautions or to exercise sound engineering and construction practices in the conduct of the work, the Contractor shall make the repairs as ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable contract unit or lump sum prices as fixed and established in the contract. If, in the opinion of the Contracting Officer, there are no contract unit or lump sum prices applicable to any part of such work, an equitable adjustment pursuant to CONTRACT CLAUSE titled "Changes" of the contract will be made as full compensation for the repairs of that part of the permanent work for which there are no applicable contract unit or lump sum prices. Except as herein provided, damage to all work (including temporary construction), utilities, materials, equipment and plant shall be repaired to the satisfaction of the Contracting Officer at the Contractor's expense, regardless of the cause of such damage.

## 1.23 SCHEDULE OF WORK

The Contractor's attention is directed to CONTRACT CLAUSE titled "Schedule for Construction Contracts," wherein if, in the opinion of the Contracting Officer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve its progress, including those that may be required by the Contracting Officer.

## 1.24 UPKEEP OF ROADWAY AREAS WITHIN A MILITARY INSTALLATION WHICH THE CONTRACTOR USES

In addition to the requirements in CONTRACT CLAUSE titled "Operations and Storage Areas," the Contractor shall comply with the following requirements: Where the construction work is on or adjacent to, or involves hauling over public roads, streets, or highways located on or off a military installation, all herein referred to as "roads," the said roads shall except as otherwise specified or directed, be kept open for traffic at all times during the construction period. The Contractor shall, during said construction, provide, erect and maintain warning signs, lanterns or torches or other safety devices and, when necessary, provide flagmen for protection of traffic to the satisfaction of the Contracting Officer and local authorities. The Contractor shall keep the roads including adjacent construction site free of debris including litter, waste construction material, mud etc., that might be caused to accumulate thereon by his

operations, and upon completion of the work, shall clean up the said roads and construction site and repair any damage occasioned with his operations under this contract to the satisfaction of the Contracting Officer. The drainage from the roads shall not be obstructed by the construction work. The Contractor shall be responsible for obtaining and paying for all permits required for operation on all roads.

#### 1.25 MODIFICATIONS PRIOR TO DATE SET FOR OPENING BIDS

The right is reserved, as the interest of the Government may require, to revise or amend the specifications or drawings or both prior to the date set for opening bids. Such revisions and amendments, if any, will be announced by an amendment or amendments to this Invitation for Bids. If the revisions and amendments are of a nature which requires material changes in quantities or prices bid or both, the date set for opening bids may be postponed by such number of days as in the opinion of the issuing officer will enable bidders to revise their bids. In such cases, the amendment will include an announcement of the new date for opening bids. (KCD APR 84)

#### 1.26 EXPEDITING NOTICE TO PROCEED

Notwithstanding the requirements of Block 12 on page 00010-1 of SECTION 00010 and SECTION 00100 paragraph titled "Late Submissions, Modifications, and Withdrawals of Bids," in order to expedite award of contract and issuance of NOTICE TO PROCEED, it is requested that an officer of the company or corporation determined to be the successful bidder shall appear in the office of the Commander, Kansas City District, Corps of Engineers, 757 Federal Building, 601 East 12th Street, Kansas City, Missouri, for signing contract documents. Therefore, upon written acceptance of this bid, mailed or otherwise furnished within 60 calendar days after the date of opening of bids, it is requested that the successful bidder shall within 48 hours after receipt of notification appear in the office of the Commander and execute Notice to Proceed documents, and give performance and payment bonds on Government Standard forms 25 and 25A with good and sufficient surety. It is also requested that the successful bidder furnish insurance certificates required in SPECIAL CLAUSE titled "Required Insurance Schedule" at this time.

#### 1.27 UNEXPECTED HAZARDOUS SUBSTANCES

In the event that suspected hazardous substances are revealed during construction activities, all such construction activities in the immediate area shall be immediately suspended. Hazardous substances for purposes of this specification only, shall be defined as CERCLA hazardous substances, infectious or radioactive wastes, asbestos or oil. The Contractor shall leave the materials undisturbed and shall immediately report the find to the Contracting Officer's Representative (COR) so that proper authorities can be notified. The Contractor shall not resume construction activities in the vicinity of the suspected hazardous substances until written clearance is received from the COR. Identification and removal of any such materials will be conducted in accordance with all Federal, state and local environmental laws and regulations according to the CONTRACT CLAUSE titled "Differing Site Conditions."

#### 1.28 SURVEY MARKERS

Reference is made to CONTRACT CLAUSE titled "Permits and Responsibilities", Chapter 60 of the Missouri Revised Statutes 1969, and rules titled

"Maintenance of the Original US Public Land Survey Corners" adopted by the Division of Geology and Land Survey, Missouri Department of Natural Resources. The Contractor shall be responsible for removing and relocating survey markers. Relocation shall be performed by a professional registered Land Surveyor.

#### 1.29 DISPOSAL OF WASTE

: All construction and/or demolition waste shall be disposed of off-base in accordance with all applicable Federal, State and local regulations, including "Chapter 260, RSMO" of the "Missouri Department of Natural Resources."

#### 1.30 EXCAVATION NOTIFICATION

Prior to any excavation on either public or private properties, Missouri law requires that you notify all owners and operators of underground facilities in your dig site. Missouri One Call System (MOCS) can help you comply with the law; "Chapter 319, RSMO" of the "Missouri Department of Natural Resources," by calling this one toll-free number 1-800-344-7483.

#### 1.31 EROSION CONTROL PERMIT

Project site plans include minimum requirements for erosion control measures. They include, but are not limited to, siltation fences, siltation ponds, grading requirements and other measures. These measures represent the minimum required effort, as determined by designers, to preclude products of erosion from migrating beyond the limits of construction or into adjacent watercourses or streams. The Contractor shall provide this minimum effort and any further measures, implementing necessary best management practices for site specific requirements to comply with Federal, State and local laws and regulations. The Contractor shall prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) which meets the specific requirements of the Missouri Department of Natural Resources (MDNR) State Operating Permit No. MO-R-105177, General State Operating Permit for Fort Leonard Wood - Access Control Facilities (ATTACHMENT A following this section). The erosion control measures/Best Management Practices contained in the Contractor's SWPPP shall be specific and shall be implemented in accordance with requirements of the MDNR General Permit. The Contractor shall implement additional Erosion Control Measures to address all exceedences. All fines levied by the regulatory agency are the responsibility of the Contractor. The Contractor may request a deviation from said site plan requirements in writing to the Resident Engineer. In addition to such actions required to eliminate products or erosion from migrating off site, the Contractor shall be fully responsible and liable for all construction activities and their consequences. Compliance with environmental laws and regulations will not alleviate responsibility for damages that may be caused by Contractor operations.

#### 1.32 UTILITY/DIGGING PERMIT POLICY

(a) General. The Contractor must obtain an excavation permit from the Directorate of Public Works (DPW) prior to digging on Fort Leonard Wood. this allows for the proper marking of existing utilities, thereby preventing damages and outages to those utilities.

(b) Procedures. The Excavation Permit Request and the Utilities Flagging Request are one and the same. The Contractor will use FLW Form 364 to initiate all flagging requests. A copy of FLW Form 364 is

attached. The Contractor will be required to request flagging at least ten calendar days in advance of when he plans to dig in an area. He will indicate the area to be flagged, the resulting utility outage from this flagging effort, and the requirement date on the Excavation Permit which he submits to the Corps of Engineers Area Office (FM-WD). FM-WD will turn the request over to the DPW on the same day as well. FM-WD and the DPW will both keep track of when the request was received and when the permit was issued. These dates will be reconciled at the weekly coordination meeting. It is the Contractor's responsibility to route the digging permit through the appropriate offices.

(1) The Contractor will be required to call 1-800-DIG-RITE to get the telephone company to mark its lines. This is in addition to the utilities to be marked by the DPW.

(2) The utility provided/operator will flag all other utilities and return the approved Excavation Permit to FM-WD. The Corps of Engineers QA representative and the Contractor will jointly mark up their individual contract drawings to document the flagging.

(3) Once the flagging is registered, the Contractor is responsible for replacing missing markings.

(4) If the utilities are not flagged within 10 calendar days of the submittal to the DPW, contract drawings will be used for showing utilities locations. Post utilities drawings will be used as backup.

(c) Accidental Cuts. If the utility is cut within a zone of 3 feet either side of the marking, or, if there is no marking, the location shown on the contract drawings or the post utilities drawings, the Contractor shall immediately notify the utility provider/operator which will perform repairs at the Contractor's expense. If the utility is cut outside of this 6-foot-wide zone, the Contractor shall immediately notify the utility provider/operator which will perform repairs at no cost to the Contractor.

(d) Initial Flagging. The Contractor will be required to include with his proposal a plan showing all areas to be excavated within the first fourteen calendar days of construction. This plan will be provided to the DPW and used to flag the required utilities to allow the Contractor to proceed with site work immediately upon contract award.

### 1.33 INSTALLATION ACCESS DURING LABOR DISPUTES

(a) Subject to the limitations outlined in paragraphs (b) and (c), the Contractor may generally seek access to the installation for the performance of the contract utilizing any entrance to the installation open to public transportation.

(b) In case of labor unrest, including but not limited to strikes and informational pickets, the installation Garrison or Installation Commander has the right to implement a "reserve gate" plan. Pursuant to such a plan (1) the picketed contractor may be limited to the use of only one gate for all access on and off the installation; and (2) other contractors may be restricted from the use of the gate utilized by the Contractor(s) involved in the labor dispute. For purposes of this clause the term "picketed contractor" shall include all employees, subcontractors, suppliers, materialmen and agents of the contractor involved in the labor dispute.

(c) The choice of gate or gates to be utilized by the picketed Contractor(s) shall rest solely with the Garrison or Installation Commander based on the needs of the Government. Any delay or costs associated with the inability to use a particular entrance to the installation shall not be grounds for an equitable adjustment. Any entitlement to an extension of the performance period shall be determined pursuant to the Default Clause of the Contract.

#### 1.34 MISSOURI SALES AND USE TAX

In accordance with FAR Clause 52.229, notice is given that the contract price excludes the Missouri sales tax and compensating (use) tax on all sales of tangible personal property and materials purchased by the Contractor or subcontractors for the construction of projects, including repairing or remodeling facilities, for the United States. In accordance with Section 144.062, RSMo., the Contracting Officer will issue and furnish to the Contractor an exemption certificate (example copy appears at the end of this section) for this project with the Notice to Proceed. The Contractor and the subcontractors will use the exemption certificate for this project in the purchase of supplies, materials and furnishings for incorporation in the project. The Contractor and the subcontractors shall furnish a copy of such certificate to all suppliers/materialmen from whom such purchases are made, and the suppliers shall execute invoices covering the same bearing the number of such certificate. (KCD OC)

#### 1.35 CONTRACT OPTIONS

Following are detailed descriptions of the items contained in the OPTION SCHEDULE of the BIDDING SCHEDULE, Section 00010. The following descriptions are included only to assist prospective bidders in understanding the general scope of each bid option and are not comprehensive descriptions. Bidders shall rely on the plans and specifications to determine the scope of each option.

##### 1.35.1 OPTION 1 (Bid Item 0003): Radiant Heaters at North Main Gate Canopy

Furnish and install radiant heaters including mounting hardware, brackets, gas piping, vents, wiring, switches, and controls, for a proper and complete installation, at each guard booth location, as indicated in the electrical and mechanical drawings.

##### 1.35.2 OPTION 2 (Bid Item 0004): Security Cameras and Monitoring System

Furnish and install all security cameras including housings for the cameras, and all CCTV and ESS electronic equipment including optical fiber data/video modems and multiplexors, and associated low-voltage cabling and individual optical fiber cables to remote CCTV enclosures, as indicated in the electrical drawings.

##### 1.35.3 OPTION 3 (Bid Item 0005): Pop-Up Vehicle Crash Barriers, North Main Gate, Inbound Lanes

- Furnish and install concrete walls adjacent to crash barriers, pop-up vehicle crash barriers, traffic control arms, flashing lights and horns, and vehicle detection loops, for the inbound lanes of the north main gate.
- System shall include four barriers with four flashing lights, horns,

remote control panels, and two traffic control arms for the inbound lanes. This option includes all required additional conduit and complete wiring for a fully operational and complete installation.

- Furthermore, this option includes the snow melting system around each barrier, and Panels HB and LB including feeders. See electrical drawings for further description and clarification of the required system.

- Pop-up vehicle crash barriers shall meet K12/L3 Government Certification level, and be equal to Delta DSC 501 high-security, high-cycle, shallow foundation, "Phalanx" hydraulic system. Each barrier shall be operated independently.

#### 1.35.4 OPTION 4 (Bid Item 0006): Pop-Up Vehicle Crash Barriers, North Main Gate, Outbound Lanes

- Furnish and install pop-up vehicle crash barriers, traffic control arms, flashing lights and horns, and vehicle detection loops, for the outbound lanes of the north main gate.

- System shall include three barriers with three flashing lights, horns, remote control panels, and one traffic control arm for the outbound lanes. This option includes all required additional conduit and complete wiring for a fully operational and complete installation.

- Furthermore, this option includes the snow melting system around each barrier. Panels HB and LB, including feeders, shall be a part of this option unless option 3 is accepted. See electrical drawings for further description and clarification of the required system.

- Pop-up vehicle crash barriers shall meet K12/L3 Government Certification level, and be equal to Delta DSC 501 high-security, high-cycle, shallow foundation, "Phalanx" hydraulic system.

#### 1.35.5 OPTION 5 (Bid Item 0007): Voice Electronic Equipment at South and East Gates

- Furnish and install all telephone/voice electronic equipment at the South and East Gates and associated equipment at Building 404, including hand sets and voice/multi-service delivery terminals to multiplex voice-over single mode fiber at South and East Gates and two (2) voice/multi-service delivery terminal units at Building 404.

#### 1.35.6 OPTION 6 (Bid Item 0008): Circular Planter Walls

Furnish and install two circular concrete planter walls with sandstone veneer as indicated on the North Gate Architectural Site Plan, Sheet AS100, and as indicated in Detail 4 on Sheet AS500, complete with soil compaction in footing areas and friable soil fill inside the planters to 18 inches above elevation of bottoms of footings. Remaining topsoil fill and mulch within planter walls are N.I.C.

#### 1.36 GAS LINE AND POWER POLE RELOCATIONS

The Installation will contract with Omega Gas and Show-Me Power for relocation of the gas line and power pole at the Main Gate. The Contractor shall coordinate with those contractors for that work.

1.37 RIGHT-OF-ENTRY AGREEMENT

The Government has executed a Right-of-Entry agreement with the Missouri Department of Transportation (MODOT) (See ATTACHMENT B), dated 25 April 2003. Provisions of the 25 April 2003 Right-of-Entry Agreement are hereby incorporated by reference, as though fully set forth herein. The Contractor shall comply with requirements of the Right-of-Entry Agreement.

• Construction work on a MODOT contract is underway concurrently with this Contract. Coordination and cooperation with the MODOT construction contractor is required. The obligations of the Contractor under this Contract will include jointly planning and scheduling the work, on a cooperative basis, with the MODOT contractor involved in order to minimize delays and other interferences.

• Other requirements include, but shall not be limited to, demolition of structures, as shown on Exhibit C of the Right-of-Entry Agreement, as well as removal of miscellaneous debris such as concrete blocks, vinyl siding, fencing near the structures, and the sign adjacent to Structure 4.

• ATTACHMENT C provides photos of the structures to be demolished. ATTACHMENT D is the Property Inspection Report, dated 16 Dec 2002.

• As described in the Right-of-Entry agreement, the Contractor may utilize the MODOT property as a construction staging area. All utility coordination is at Contractor expense.

• Upon completion of the project: All disturbed areas shall be graded to drain and seeded. Gravel placed for construction staging activities may remain on site. All materials brought to or constructed upon the MODOT property shall be removed, including utilities. Prior to final inspection, Contractor shall mow the property to a maximum height of 6-inches.

1.38 DEMOLITION OF EXISTING VISITOR'S CENTER

The Contractor shall notify the Contracting Officer two (2) weeks prior to demolition of the existing Visitor's Center in order to coordinate with concurrent construction work being performed by another contractor.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

\* \* \* \* \*

EXCAVATION PERMIT  
Fort Leonard Wood, Missouri  
(FLW Suppl I to AR 420-17)

REQUESTED BY: (Unit/Activity doing Excavation)

\_\_\_\_\_

POINT OF CONTACT NAME: \_\_\_\_\_ PHONE NUMBER: \_\_\_\_\_

DESCRIPTION AND LOCATION OF PROPOSED EXCAVATION: (Include a detailed map or drawing showing location.)

\_\_\_\_\_  
**GAS (NATURAL)**  
Reviewer (Signature): \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_  
**EXTERIOR ELECTRICAL CONTRACTOR (High Voltage)**  
Reviewer (Signature): \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_  
**DPW MAINTENANCE CONTRACTOR**  
Heat/AG \_\_\_\_\_  
Water/Sewer \_\_\_\_\_  
Electrical (Secondary) \_\_\_\_\_  
Fuel \_\_\_\_\_

DIRECTOR OF PUBLIC WORKS: \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_  
**ARMY TELEPHONE (DOIM)**  
Reviewer (Signature): \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_  
**SPRINT TELEPHONE COMPANY (Commercial)**  
**FOR APPROVAL CALL 1-800-DIG-RITE \*\*48 HOUR NOTICE\*\***

RANGE \_\_\_\_\_ TOWNSHIP \_\_\_\_\_ SECTION \_\_\_\_\_  
Reviewer (Signature): \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_  
**SPRINT BARRACKS TELEPHONE COMPANY (Commercial)**  
**FOR APPROVAL CALL 329-4603 OR 329-8200**  
Reviewer (Signature): \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_  
**CABLE TV COMPANY**  
**FOR APPROVAL CALL 336-5284 \*\*48 HOUR NOTICE\*\***  
Reviewer (Signature): \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_  
**DOL (J-SIDDS)**  
Reviewer (Signature): \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_  
**FINAL REVIEWER**  
Final Reviewer (Signature): \_\_\_\_\_ Date: \_\_\_\_\_

FLW Form 364 (Rev 1 Jul 95) Previous Edition Obsolete

EXCAVATION PERMIT  
Fort Leonard Wood, Missouri  
(Supplement to FLW 364, Excavation Permit)

1. All personnel requesting a form FLW 364, Excavation Permit, must in addition to all other requirements, read and acknowledge by signature the following DPW requirements. Refusal to comply with these requirements will void future requests for an Excavation Permit. Deficiencies to these requirements will result in a request to correct the deficiencies within 30 days. If deficiencies are not corrected, DPW will correct them and a bill for those costs will be presented to the permit holder for payment.
2. All roads shall be bored under, unless prior approval has been granted by the Chief of the Operations Branch, DPW, Building 2222.
3. All disturbed turf areas shall be restored by placing 4 inches of topsoil, fertilizing with 13-13-13 fertilizer at a rate of 4 pounds per 1000 square feet, seeding with a mixture of 90% Turf Type Tall Fescue and 10% annual rye at a rate of 4 pounds per 1000 square feet, and mulching four ways, with clean, weed free, cereal straw. Turf areas are considered all areas that are unsurfaced grounds. Disturbed areas are not limited to areas of the excavation. They also include ruts, gouges, etc., caused by a Contractor's vehicles or equipment.
4. All buried utilities shall include a tracer wire with the utility and, in addition, magnetic tracer tape above the utility, but 12 inches below ground level. The tracer wire shall be terminated in a manner that makes it accessible at all manholes, handholes, pedestals, or other termination points.
5. Magnetic tracer tape shall be placed above any communication line buried 12 inches below ground level.
6. At the finish of work, as-built drawings shall be delivered to the Engineer Design Branch, DPW, Building 2200.
7. Use of Fire Hydrants-The temporary use of fire hydrants as sources of water is not authorized without prior approval by the Fire Department, 596-0886. Fire hydrant connections shall include an approved backflow preventer. Back flow preventers shall either be RPZ (reduced pressure zone) type or a double check valve arrangement. Each backflow preventer shall have a tag with the date that it was last certified by a Certified Technician. The backflow preventer must have been certified within the last year. The Contractor shall furnish and use an approved fire plug wrench to open and close the hydrant. Pipe wrenches shall not be used. When the hydrant is not being used, it shall be shut off. When the need for the hydrant is finished, the hydrant shall be shut off, the temporary connection and backflow preventer shall be removed, the fire hydrant cap shall be replaced, and the Fire Department shall be notified that the hydrant will no longer be used.

Signature of permit requestor:  
\_\_\_\_\_

Date of Signature: \_\_\_\_\_

ROUTING EXCAVATION PERMITS  
Points of Contact

OFFICE NAME	POC	BLDG #	TELEPHONE
Omega Pipeline Company (Natural Gas)	UTILICORP		1-800-282-4916
Exterior Electriccal Contractor	Mr. Williams	2272	596-0068
Rust Constructors, Inc. (DPW Maintenance Contractor)	MS Jeanne Barnett	2226	596-0074/0693
Directorate of Public Works, Work Management Branch ATZT-DPW-BW	Mr. Harold Campbell Mr. Gary Powell	2200	596-0926 596-1790 FAX 596-0868
Army Telephone (DOIM)		404	596-0681 FAX #6-1201
1-800-DIG-RITE (1-800-344-7483) Sprint Telephone Company			
Barracks Phone Service	Mr. Rick Vire	470	329-4603/8200 FAX 329-4586
Cable TV Company St. Robert	MS Susan Hall		336-5284 FAX 336-4556
J-SIDDS Commun/Electronics ATZT-DL-B-M-CE/DOL		5265	596-0874

EXAMPLE

STATE OF MISSOURI

PROJECT EXEMPTION CERTIFICATE FOR EXEMPT ENTITY CONSTRUCTION

UNITED STATES OF AMERICA

NAME OF EXEMPT ENTITY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

TAX IDENTIFICATION NUMBER (None required)

PROJECT IDENTIFICATION NUMBER \_\_\_\_\_

PLEASE PROVIDE THE PROJECT LOCATION AND A BRIEF DESCRIPTION BELOW:

CONTRACT DATE \_\_\_\_\_

CERTIFICATE EXPIRATION DATE \_\_\_\_\_

Contractors are required to provide a copy of this project exemption certificate to their vendors.

This project exemption certificate does not allow contractors to purchase machinery, equipment, or tools used in fulfilling this contract, tax exempt.

Suppliers accepting this project exemption certificate are required to render to the contractor invoices bearing the name of the exempt entity and the project identification number.

An exempt entity that fails to revise the expiration date on this certificate as necessary to complete any work required by the contract will be liable for any sales tax determined due as a result of an audit of the contractor.

The Contractor shall provide this project exemption to all subcontractors purchasing construction materials for this project.

SIGNATURE OF AUTHORIZED AGENT

EXHIBIT A

-- End of Section --

ATTACHMENT A

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES  
GENERAL STATE OPERATING PERMIT

ATTACHMENT B

MISSOURI HIGHWAY AND  
TRANSPORTATION COMMISSION  
RIGHT-OF-ENTRY FOR CONSTRUCTION

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

RIGHT-OF-ENTRY FOR CONSTRUCTION

ACCESS CONTROL FACILITY  
FORT LEONARD WOOD, MISSOURI

WHEREAS, the Missouri Highway and Transportation Commission (Commission) has acquired certain right of way for construction in Pulaski County, Missouri and;

WHEREAS, United States of America by and through the Secretary of the Army (Government) desires to enter upon and cross a portion of the acquired right of way in order to construct Fort Leonard Wood's new Access Control Facility and;

WHEREAS, Commission has no objection under the following conditions for Government to do so;

WHEREAS, in consideration for this Right of Entry, Commission desires the demolition of certain buildings located on this acquired Right of Entry. The Government agrees to perform the demolition of the buildings to the top of the foundation walls identified in the attached Exhibit C;

WHEREAS, as further consideration, Commission will provide a perpetual easement to the United States of America over, across, and upon the parcel of land as shown as the Easement Area on Exhibit A attached hereto and made a part hereof. The purpose of the easement is to maintain the slope area;

THEREFORE, Commission grants a Right of Entry to Government and its, agents, employees and contractors to cross that Commission Right of Way for use of a parcel of land in the County of Pulaski, State of Missouri.

All that Part of the East Half (E $\frac{1}{2}$ ) of Lot Two (2) of the Northeast Quarter (NE $\frac{1}{4}$ ) of Section Four (4) Township Thirty-five (35) North, Range Eleven West of the 5<sup>th</sup> P.M. described as follows:

Beginning at the Southeast corner of Lot Two (2) of the Northeast Quarter (NE $\frac{1}{4}$ ) of said Section Four (4); thence North 89° 31' 20" West for a distance of 310.0 feet to the East line of a tract conveyed to Maurice Vaughan and wife recorded in Book 247, Page 419; thence North 5° 43' 50" East for a distance of 478.98 feet along the East line of Vaughan tract; thence North 47° 54' 10" East for a distance of 184.32 feet to the Southwest right-of-way of Fort Leonard Wood Spur (also known as I-44 Spur); thence South 38° 19' 00" East for a distance of 204.74 feet to the East line of Lot Two (2) of the Northeast Quarter (NE $\frac{1}{4}$ ); thence South 0° 12' 00" West for a distance of 442.11 feet along the east line of said Lot Two (2) to the point of beginning.

The Commission, hereby grants to the Government and its contractor(s) an irrevocable right to enter upon the lands described above at any time within a period of thirty six (36) months from the date of this instrument, in order to make slope/grading improvements (Exhibit A and B), demolition of buildings 2, 3, 4, 5, 6, 7 and 8 to the top of the foundation walls (Exhibit C) and utilize said lands as a construction staging area and to perform construction work of any nature. The Government shall remove and remediate any asbestos material or lead-based paint present in the buildings to the commission's representative's satisfaction, but shall not be responsible for removal or remediation of any other environmental conditions which may be found in the buildings on the land.

During construction of the Government's Access Control Facility, Commission will have a separate contract that will include work along the north edge of the previously described land. Commission's project is shown on Exhibit A as MoDOT Project By Others. Full cooperation of the contractors involved in this improvement, in careful and complete coordination of their respective activities in the area, will be required. Each contractor involved shall so schedule and conduct their work as to avoid unnecessary inconvenience and delay to another and shall conduct his/her work in such a manner as not to damage work being performed or completed by another. When necessary for proper execution of work, each contractor shall permit the other access through the overlapping areas.

The right of entry includes the right of ingress and egress on other lands of the Commission not described above, provided that such ingress and egress is necessary and not otherwise conveniently available to the Government.

All tools, equipment, buildings, improvements, and other property taken upon or placed upon the land by the Government shall remain the property of the Government and will be removed by the Government prior to the expiration of this right of entry.

The Commission shall have the right to patrol and police the lands described above during the period of this right of entry.

If any action of the Government's employees or agents in the exercise of this right of entry results in damage to the real property, the Government will, at its option, either repair such damage or make an appropriate settlement with the Commission. In no event shall such repair or settlement exceed the fair market value of the fee interest of the real property at the time immediately preceding such damage. The Government's liability under this clause may not exceed appropriations available for such payment and nothing contained in this agreement may be considered as implying that Congress will at a later date make appropriations available for such payment and sufficient to meet deficiencies. The provisions of this clause are without prejudice to any rights the Commission may have to make a claim under applicable laws for any other damages than provided herein.

IN WITNESS WHEREOF, the parties have hereunto and to a duplicate hereof set their hands the 25 day of APRIL, 2003.

MISSOURI DEPARTMENT OF  
TRANSPORTATION

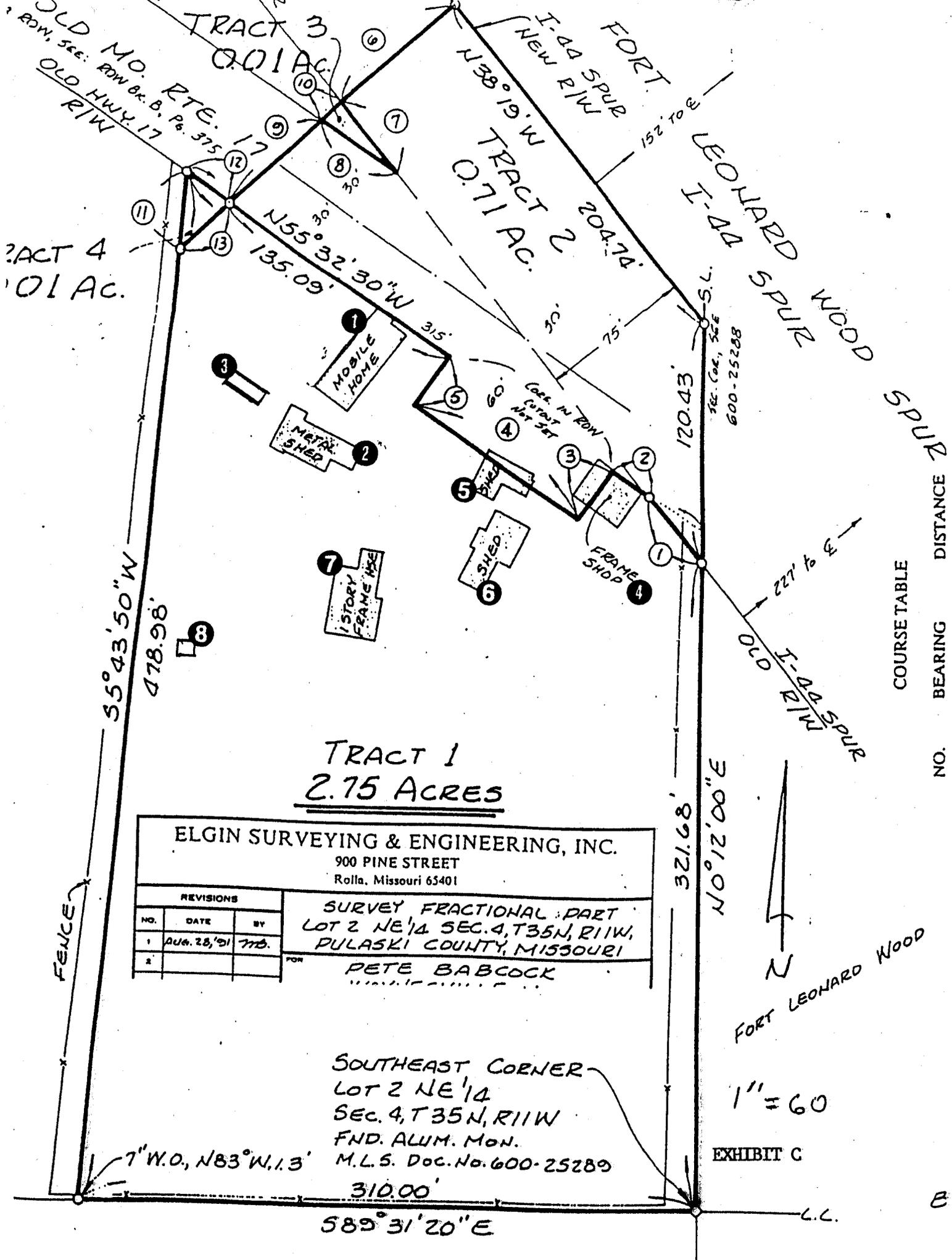
UNITED STATES OF AMERICA

BY:   
TOM STEHN  
District Engineer

BY:   
GREG G. WILSON  
CHIEF REAL ESTATE  
DIVISION







ATTACHMENT C

PHOTOS OF BUILDINGS IDENTIFIED FOR DEMOLITION  
IN EXHIBIT C OF RIGHT-OF-ENTRY AGREEMENT  
BETWEEN MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION  
AND THE UNITED STATES OF AMERICA

Bldgs 2 and 3:



Bldg 4:



Bldg 5:



Bldg 5 back side:



Bldg 6:



Bldg 7:



Bldg 7 from rear:



Bldg 7 from side:



Bldg 8:



ATTACHMENT D

MISSOURI DEPARTMENT OF TRANSPORTATION  
CONSTRUCTION AND MATERIALS CENTRAL LABORATORY  
PROPERTY INSPECTION REPORT



## MEMORANDUM

### Missouri Department of Transportation Construction and Materials Central Laboratory

**TO:** Jimmie L. Cook-9rw

**COPY:** Diane Heckemeyer-de

**FROM:** Diane Roegge *DR*  
Environmental Chemist

**DATE:** December 16, 2002

**SUBJECT:** Materials  
Asbestos & Heavy Metal Paint Inspection  
Route I-44  
Job No. J9S0492  
Parcel 1  
Pulaski County

We are providing you with the results of the requested inspection on the above referenced property. The inspection report contains an asbestos and a heavy metals survey, unless otherwise requested. The asbestos inspection included sample collection of suspect asbestos-containing material and National Voluntary Laboratory Accreditation Program (NVLAP) accredited testing to confirm the presence of asbestos. This asbestos and heavy metal paint report includes five different report forms. Form T746 lists all of the samples taken during the asbestos inspection. Form T747 shows only those samples that tested positive for Category I and Category II nonfriable asbestos-containing materials that may remain in the structure during demolition, if kept adequately wet to avoid visible air emissions. Form T748 shows only those samples that tested positive for asbestos and require removal prior to demolition. Form C760 lists all paint samples taken during the heavy metal paint inspection and their metal content. Form C761 will detail all heavy metal paint samples that have been subjected to a Toxicity Characteristic Leaching Procedure (TCLP) test. This information may be required for sanitary landfill or hazardous waste disposal.

In accordance with the National Emissions Standard for Hazardous Air Pollutants (NESHAP), as well as city and county asbestos abatement regulations - Registration, Notification, and Performance Requirements, regulated asbestos-containing material (RACM) namely, Friable and Category II nonfriable, have a high probability of becoming friable under normal demolition forces. Practices and procedures for removal prior to demolition, disposal, and clearances should be in accordance with referenced regulations. Missouri Department of Transportation policy is to perform asbestos abatements in accordance with NESHAP.

In accordance with Missouri Department of Natural Resources' Technical Bulletin "Managing Construction and Demolition Waste" dated January 2001, a heavy metal paint inspection has been performed on the above referenced property. We are providing you with the results of this

*Materials efficiently administers highway contracts so the traveling public can have a safe, high quality transportation system.*

TO: Jimmie L. Cook-9rw

Page 2

December 16, 2002

inspection. The inspection includes locating painted concrete, block and/or brick surfaces, sampling the painted surface(s) and testing the paint(s) to determine if hazardous heavy metals are present. Non-hazardous painted concrete, blocks, or bricks may be used as clean fill materials, if properly handled. You must contact the general headquarters design unit for proper handling of the reported painted surfaces.

Although our survey included observing and sampling behind walls, above ceilings, beneath floors, etc., it is possible that potentially hidden asbestos-containing materials may exist within the structure. To our knowledge, we have located all suspect asbestos-containing and all painted concrete, block and brick surfaces. If suspect asbestos-containing materials or if painted concrete, block and/or brick surfaces are observed in addition to those reflected in this inspection report, then please advise us immediately so that we may schedule a follow-up inspection.

Should you have any questions regarding these reports, please contact me at (573) 526-4359.

db

J:\barred\asbestos\District 9\9S0492\dr212161.doc

Attachments

MISSOURI DEPARTMENT OF TRANSPORTATION  
CONSTRUCTION AND MATERIALS  
Asbestos Survey Report  
All Suspect ACM

ROUTE: I-44  
MODOT JOB NO.: J9S0492  
DISTRICT: 9  
COUNTY: Pulaski  
DATE OF SURVEY: November 22, and December 12, 2002  
PARCEL NO.: 1

SURVEYED BY: Diane Roegge & Todd Beunett  
CERTIFICATION #: 7028021302MOIR7165 DR & 7028021302MOIR7164 TB  
SITE ADDRESS: 1143 Missouri Avenue, Saint Robert, MO 65583  
TYPE STRUCTURES: #1-Modular Home, #2-Garage & Storage Building, #3-Storage Building, #4-2-Car Garage & Shop, #5-Storage Shed, #6-Garage/Storage/Well House, #7-Office, and #8-Utility Shed

Sample ID	Type of Materials	Location of Material	Friability Category	Field Measure
	<b>#1 - Modular Home</b>			
2MDIR 959	Asphalt Roofing Shingles	Roof, 2 Layers	N-ACM	
2MDIR 960	Asphalt Joint Compound	Roof, Around Vents and Pipes	I NF	10 Sq. Ft.
2MDIR 961	Insulation	Crawlspace, Under Sub-floors	N-ACM	
2MTLB 570	Floor Sheeting/Adhesive	Kitchen, Dining Room, Utility Room, Pantry, Entryway of Living Room, Bathrooms #1 & #2, Over Wood	N-ACM	
2MTLB 571	Light Fixture Backing	Ceiling Lights in Bedrooms #2 & #3	N-ACM	
2MTLB 572	Surfacing Material/Sheetrock	Ceilings, Kitchen, Dining Room, Utility Room, Pantry	N-ACM	
2MTLB 573	Surfacing Material/Sheetrock	Ceilings, Living Room, Bedroom #1 & Bathroom #1	N-ACM	
2MTLB 574	Surfacing Material/Sheetrock	Ceilings, Bedrooms #2 & #3 and Bathroom #2	N-ACM	
2MTLB 575	Insulation	Attic, Blown-In	N-ACM	
2MTLB 576	Insulation	On Ductwork	N-ACM	
	<b>#2 - Garage &amp; Storage Building</b>			
2MDIR 962	Aluminized Asphalt Joint Compound	Flat Roof	I NF	900 Sq. Ft.
2MDIR 963	Asphalt Shingles	Exterior Siding and Some Interior Walls	N-ACM	
2MDIR 964	Asphalt Felt Material	Under Asphalt Shingles	N-ACM	
2MDIR 965	Caulking On Windows	2 Interior 4-Paned Windows, 2'x2'	II NF	32 Lin. Ft.
2MDIR 966	Floor Tile (9"x9", Green)	Loose, Stacks (Approximately 50 tiles)	I NF	28 Sq. Ft.
2MDIR 967	Ceiling Tile	Loose, Boxes	N-ACM	
2MDIR 968	Asphalt Felt Material	Loose, Roll	N-ACM	
2MDIR 969	Insulation	Loose	N-ACM	
2MDIR 970	Insulation	Walls	N-ACM	

N-ACM = Non-Asbestos Containing Material    I NF = Category I Nonfriable    II NF = Category II Nonfriable    F = Friable  
NAFD = No Asbestos Fiber Detected    \* = Tested By Point Count Procedure



NVLAP LAB CODE 30044-P

MISSOURI DEPARTMENT OF TRANSPORTATION  
CONSTRUCTION AND MATERIALS  
Asbestos Survey Report  
All Suspect ACM

ROUTE: I-44  
MODOT JOB NO.: J9S0492  
DISTRICT: 9  
COUNTY: Pulaski  
DATE OF SURVEY: November 22, and December 12, 2002  
PARCEL NO.: 1

SURVEYED BY: Diane Rosage & Todd Bennett  
CERTIFICATION #: 7028021302MOIR7165 DR & 7028021302MOIR7164 TB  
SITE ADDRESS: 1143 Missouri Avenue, Saint Robert, MO 65583  
TYPE STRUCTURES: #1-Modular Home, #2-Garage & Storage Building, #3-Storage Building, #4-2-Car Garage & Shop, #5-Storage Shed, #6-Garage/Storage/Well House, #7-Office, and #8-Utility Shed

Sample ID	Type of Materials	Location of Material	Friability Category	Field Measure
	<b>#3 - Storage Building</b>			
2MDIR 971	Aluminized Asphalt Joint Compound	Flat Roof, Seams	INF	250 Sq. Ft.
2MDIR 972	Fiberboard	Walls, Under Siding	N-ACM	
2MDIR 973	Floor Tile/Adhesive	Floors Throughout, Over Wood	INF	261 Sq. Ft.
	<b>#4 - 2 Car Garage and Shop</b>			
2MDIR 974	Asphalt Roofing Material	Flat Roof	N-ACM	
2MDIR 975	TSI Tape	Around Furnace Flue Pipe	F	1 Sq. Ft.
2MDIR 976	Asphalt Fiberboard	Walls and Ceiling	N-ACM	
2MDIR 977	Insulation	Walls	N-ACM	
	<b>#5 - Storage Shed</b>			
2MDIR 978	Asphalt Joint Compound	Flat Roof, Around Vent	INF	2 Sq. Ft.
2MDIR 979	TSI Tape	Roof, Vent Pipe	F	1 Sq. Ft.
	<b>#6 - Garage/Storage/Well House</b>			
2MDIR 980	Asphalt Joint Compound	Flat Roof	INF	252 Sq. Ft.
2MDIR 981	Asphalt Joint Compound	Loose, Flue Pipe	INF	1 Sq. Ft.
2MDIR 982	Asphalt Shingles/Asphalt Felt Material	Walls	N-ACM	
2MDIR 983	Transite Panels	Walls, Well House	II NF	12 Sq. Ft.
	<b>#7 - Office</b>			
2MDIR 984	Asphalt Roofing Material	Flat Roof	N-ACM	
2MDIR 985	Asphalt Joint Compound	Flat Roof, On Edges	INF	36 Sq. Ft.
2MDIR 986	Fiberboard	Exterior Siding, Back	N-ACM	



N-ACM = Non-Asbestos Containing Material    I NF = Category I Nonfriable    II NF = Category II Nonfriable    F = Friable  
NAFD = No Asbestos Fiber Detected    \* = Tested By Point Count Procedure

MISSOURI DEPARTMENT OF TRANSPORTATION  
CONSTRUCTION AND MATERIALS  
Asbestos Survey Report  
All Suspect ACM

ROUTE: I-44  
 MODOT JOB NO.: 19S0492  
 DISTRICT: 9  
 COUNTY: Pulaski  
 DATE OF SURVEY: November 22, and December 12, 2002  
 PARCEL NO.: 1

SURVEYED BY: Diane Roesge & Todd Bennett  
 CERTIFICATION #: 7028021302MOIR7165 DR & 7028021302MOIR7164 TB  
 SITE ADDRESS: 1143 Missouri Avenue, Saint Robert, MO 65583  
 TYPE STRUCTURES: #1-Modular Home, #2-Garage & Storage Building, #3-Storage Building, #4-2-Car Garage & Shop, #5-Storage Shed, #6-Garage/Storage/Well House, #7-Office, and #8-Utility Shed

Sample ID	Type of Materials	Location of Material	Friability Category	Field Measure
	<b>#7 - Office (continued)</b>			
2MDIR 987	Transite Siding	Exterior Siding, Front and Sides, and Loose Under Crawlspace	II NF	650 Sq. Ft.
2MDIR 988	Asphalt Felt Material	Under Exterior Siding	N-ACM	
2MDIR 989	Caulking On Windows	5 1/2' x 4' Windows, 16-Paned (3) Kitchen, Office #1	II NF	228 Lin. Ft.
2MDIR 990	Caulking On Windows	3' x 3' Windows, 6-Paned (2) Kitchen	N-ACM	
2MDIR 991	Caulking On Window	2 1/2' x 3' Window, Bathroom	II NF	16 Lin. Ft.
2MDIR 992	Floor Tile/Adhesive (12"x12", White)	Kitchen, Replacement Tiles, Over Wood	NAFD	
2MDIR 993	Floor Tile/Adhesive (9"x9", Green)	Kitchen, 1 <sup>st</sup> Layer, Over Wood	I NF	
2MDIR 994	Floor Tile/Adhesive (9"x9", White)	Kitchen, 1 <sup>st</sup> Layer, Over Wood	I NF	230 Sq. Ft.
2MDIR 995	Floor Sheeting/Felt Material/Adhesive	Kitchen, 2 <sup>nd</sup> Layer, Over Wood	N-ACM	
2MDIR 996	Floor Sheeting/Felt Material/Adhesive	Office #1 & Hallway to Bathroom & Sun Room, Over Wood	N-ACM	
2MDIR 997	Floor Tile/Adhesive	Bathroom, 1 <sup>st</sup> Layer, Over Wood	NAFD	
2MDIR 998	Floor Sheeting/Adhesive	Bathroom, 2 <sup>nd</sup> Layer, Over Wood	N-ACM	
2MDIR 999	Floor Sheeting/Adhesive	Hall Closet, Floor & Shelf Liner	N-ACM	
2MDIR A01	Ceiling Tile	Kitchen, Dropped Ceiling	N-ACM	
2MDIR A02	Ceiling Tile	Office #2, Office #3 and Sun Room	N-ACM	
2MDIR A03	Adhesive	Ceiling Tile, Office #2, Office #3 & Sun Room	II NF	400 Sq. Ft.
2MDIR A04	Paneling, Faux Ceramic Tile	Walls, Kitchen	N-ACM	
2MDIR A05	Paneling, Faux Ceramic Tile	Walls, Bathroom	N-ACM	
2MDIR A06	Fiberboard	Walls & Ceilings	N-ACM	



NVLAP LAB CODE 2905440

N-ACM = Non-Asbestos Containing Material    I NF = Category I Nonfriable    II NF = Category II Nonfriable    F = Friable  
 NAFD = No Asbestos Fiber Detected    \* = Tested By Point Count Procedure



MISSOURI DEPARTMENT OF TRANSPORTATION  
CONSTRUCTION AND MATERIALS

Asbestos Survey Report

Nonfriable Asbestos-Containing Materials

(Abatement not required if not made friable during demolition.)

ROUTE: I-44  
 MODOT JOB NO.: J9S0492  
 DISTRICT: 9  
 COUNTY: Pulaski  
 DATE OF TESTS: Nov. 25-27, and Dec. 2-4, 11, 13, and 16, 2002  
 PARCEL NO.: J

TESTED BY: Diane Roegge & Leonard A. Vader

CERTIFICATION #: 7028021302MOIR7165 D.R. & 7028021302MOIR2672 L.A.V.

SITE ADDRESS: 1143 Missouri Avenue, Saint Robert, MO 65883

TYPE STRUCTURES: #1-Modular Home, #2-Garage & Storage Building, #3-Storage Building, #4-2-Car Garage & Shop, #5-Storage Shed, #6-Garage/Storage/Well House, #7-Office, and #8-Utility Shed

Sample ID	Type of Material	Location of Material	Friability Category	Field Measure	Asbestos Type	Percent
2MD1R 960	#1 - MODULAR HOME Asphalt Joint Compound	Flat Roof, Around Vents and Pipes	INF	10 Sq. Ft.	Chrysotile	15-30
2MD1R 962	#2 - Garage & Storage Building Aluminized Asphalt Joint Compound	Flat Roof	INF	900 Sq. Ft.	Chrysotile	20-40
2MD1R 966	Floor Tile (9"x9", Green)	Loose, Stacks (Approximately 50 tiles)	INF	28 Sq. Ft.	Chrysotile	10-20
2MD1R 971	#3 - Storage Building Aluminized Asphalt Joint Compound	Flat Roof, Seams	INF	250 Sq. Ft.	Chrysotile	20-40
2MD1R 973	Floor Tile/Adhesive	Floors Throughout, Over Wood	INF	261 Sq. Ft.	Chrysotile	3-8
	#4 - 2 Car Garage and Shop	None Located	INF			
2MD1R 978	#5 - Storage Shed Asphalt Joint Compound	Flat Roof, Around Vent	INF	2 Sq. Ft.	Chrysotile	15-30
2MD1R 980	#6 - Garage/Storage/Well House Asphalt Joint Compound	Flat Roof	INF	252 Sq. Ft.	Chrysotile	15-30
2MD1R 981	Asphalt Joint Compound	Loose, Flue Pipe	INF	1 Sq. Ft.	Chrysotile	15-30
2MD1R 985	#7 - Office Asphalt Joint Compound	Flat Roof, On Edges	INF	36 Sq. Ft.	Chrysotile	15-30
2MD1R 993	Floor Tile/Adhesive (9"x9", Green)	Kitchen, 1 <sup>st</sup> Layer, Over Wood	INF	230 Sq. Ft.	Chrysotile	1-5
2MD1R 994	Floor Tile/Adhesive (9"x9", White)	Kitchen, 1 <sup>st</sup> Layer, Over Wood	INF		Chrysotile	1-5

All necessary work to handle this material is the contractor's responsibility.

I NF = Category I Nonfriable II NF = Category II Nonfriable





**MISSOURI DEPARTMENT OF TRANSPORTATION  
CONSTRUCTION AND MATERIALS**

**Asbestos Survey Report**

All materials requiring removal or special handling.

**ROUTE:** I-44  
**MODOT JOB NO.:** J9S0492  
**DISTRICT:** 9  
**COUNTY:** Pulaski  
**DATE OF TESTS:** Nov. 25-27, and Dec. 2-4, 11, 13, and 16, 2002  
**PARCEL NO.:** 1

**TESTED BY:** Diane Roegge & Leonard A. Vader  
**CERTIFICATION #:** 7028021302MOIR165 D.R. & 7028021302MOIR2672 L.A.V.  
**SITE ADDRESS:** 1143 Missouri Avenue, Saint Robert, MO 65583  
**TYPE STRUCTURES:** #1-Modular Home, #2-Garage & Storage Building, #3-Storage Building, #4-2-Car Garage & Shop, #5-Storage Shed, #6-Garage/Storage/Well House, #7-Office, and #8-Utility Shed

Bid Item No.	Sample ID	Type of Material	Location of Material	Friability Category	Field Measure	Asbestos Type	Percent
		<b>#1 - MODULAR HOME</b>	None Located	F			
			None Located	II NF			
		<b>#2 - GARAGE &amp; STORAGE BUILDING</b>					
202-40.46	2MDIR 965	Caulking On Windows	2 Interior 4-Paned Windows, 2'x2'	II NF	28 Lin. Ft.	Chrysotile	1-3
			None Located	F			
		<b>#3 - STORAGE BUILDING</b>					
			None Located	F			
			None Located	II NF			
		<b>#4 - 2-CAR GARAGE &amp; SHOP</b>					
202-40.27	2MDIR 975	TSI Tape	Around Furnace Flue Pipe	F	1 Sq. Ft.	Chrysotile	80-95
			None Located	II NF			
		<b>#5 - STORAGE SHED</b>					
202-40.27	2MDIR 979	TSI Tape	Roof, Vent Pipe	F	1 Sq. Ft.	Chrysotile	85-95
			None Located	II NF			
		<b>#6 - GARAGE/STORAGE/WELL HOUSE</b>					
202-40.38	2MDIR 983	Transite Panels	Walls, Well House	II NF	12 Sq. Ft.	Chrysotile	15-30
			None Located	F			
		<b>#7 - OFFICE</b>					
202-40.38	2MDIR 987	Transite Siding	Exterior Siding, Front and Sides, and Loose Under Crawlspace	II NF	650 Sq. Ft.	Chrysotile	20-40
202-40.46	2MDIR 989	Caulking On Windows	3 - 5 1/2' x 4' Windows, 16-Paned Kitchen & Office #1 Windows	II NF	228 Lin. Ft.	Chrysotile	3-7

\* = Tested By Point Count Procedure

F = Friable

II NF = Category II Nonfriable

I NF = Category I Nonfriable





MISSOURI DEPARTMENT OF TRANSPORTATION  
CONSTRUCTION AND MATERIALS

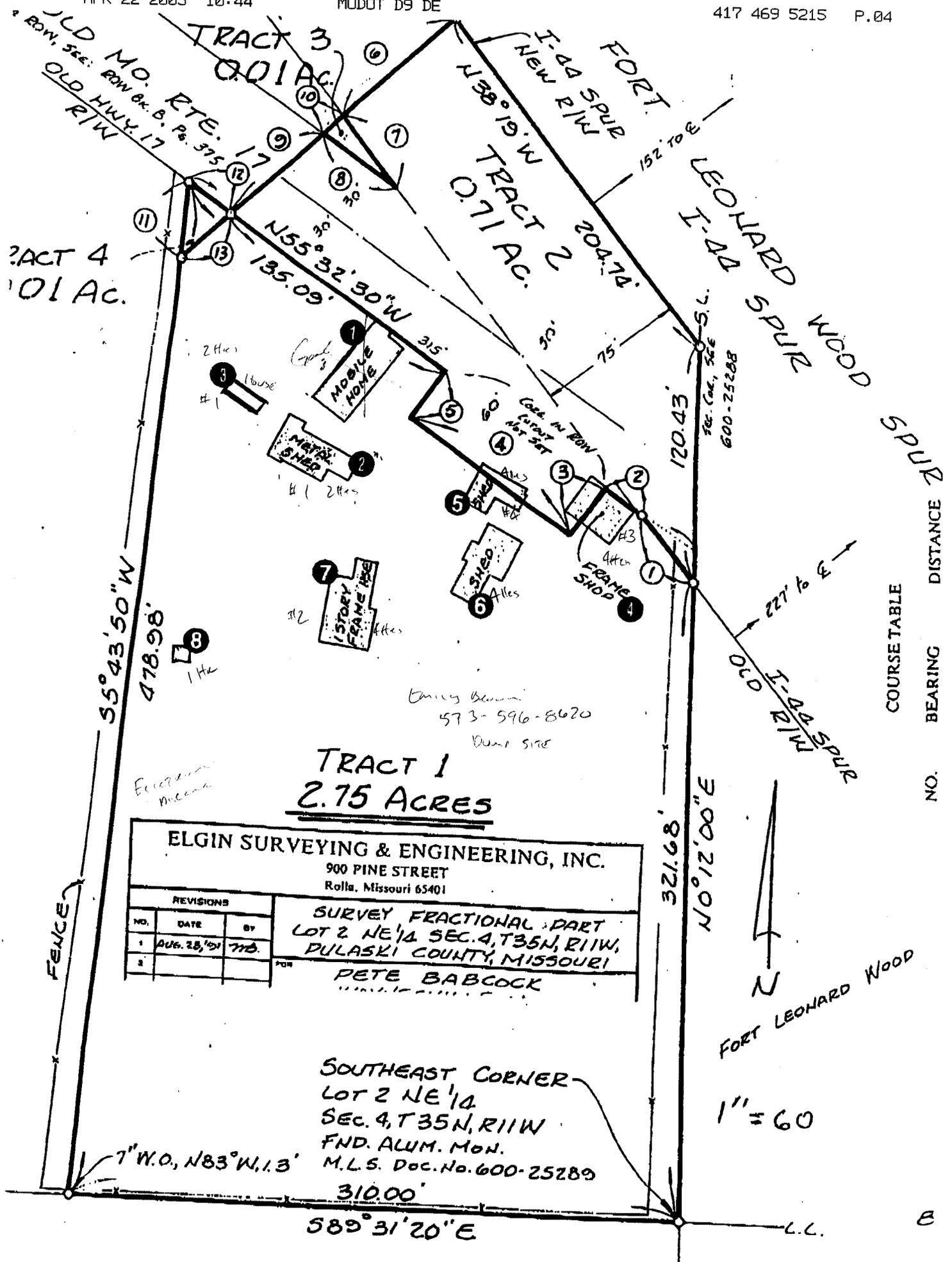
Metals Survey Report of Painted Concrete, Block, Brick Surfaces

ROUTE: I-44  
MODOT JOB NO.: J9S0492  
DISTRICT: 9  
COUNTY: Pulaski  
SURVEYED BY: Diane Roegge & Todd Bennett  
DATE OF SURVEY: November 22, 2002

TESTED BY: N/A  
DATE OF TESTS: N/A  
PARCEL NO.: 1  
SITE ADDRESS: 1143 Missouri Avenue, Saint Robert, MO 65583  
TYPE STRUCTURES: #1-Modular Home, #2-Garage & Storage Building, #3-Storage Building, #4-2-Car Garage & Shop, #5-Storage Shed, #6-Garage/Storage/Well House, #7-Office, and #8-Utility Shed

Sample ID	Location of Material/Substrate	Metals (ppm)								
		As	Cr	Pb	Cd	Sc	Ba	Hg	Ag	
#1 - MODULAR HOME	No samples taken. No painted surfaces located.									
#2 - GARAGE & STORAGE BUILDING	No samples taken. No painted surfaces located.									
#3 - STORAGE BUILDING	No samples taken. No painted surfaces located.									
#4 - 2-CAR GARAGE & SHOP	No samples taken. No painted surfaces located.									
#5 - STORAGE SHED	No samples taken. No painted surfaces located.									
#6 - GARAGE/STORAGE/ WELL HOUSE	No samples taken. No painted surfaces located.									
#7 - OFFICE	No samples taken. No painted surfaces located.									
#8 - UTILITY SHED	No samples taken. No painted surfaces located.									

All results are by XRF unless otherwise indicated: a = USEPA SW-846 Method 3050  
b = USEPA SW-846 Method 7471



COURSE TABLE

COURSE NO.	BEARING	DISTANCE
1	227° 16' E	
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		

**ELGIN SURVEYING & ENGINEERING, INC.**  
 900 PINE STREET  
 Rolla, Missouri 65401

REVISIONS		
NO.	DATE	BY
1	AUG. 28, '01	TTB
2		

**SURVEY FRACTIONAL PART**  
 LOT 2 NE 1/4 SEC. 4, T35N, R11W,  
 DULASKI COUNTY, MISSOURI  
**PETE BABCOCK**

SOUTHEAST CORNER  
 LOT 2 NE 1/4  
 SEC. 4, T35N, R11W  
 FND. ALUM. MON.  
 M.L.S. Doc. No. 600-25289  
 310.00'  
 58° 31' 20" E

1" = 60  
 FORT LEONARD WOOD

## SECTION 01670

## RECYCLED / RECOVERED MATERIALS

12/01

## 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.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 247

Comprehensive Procurement Guideline for  
Products Containing Recovered Materials

## 1.2 OBJECTIVES

Government procurement policy is to acquire, in a cost effective manner, items containing the highest percentage of recycled and recovered materials practicable consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials. The Environmental Protection Agency (EPA) has designated certain items which must contain a specified percent range of recovered or recycled materials. EPA designated products specified in this contract comply with the stated policy and with the EPA guidelines. The Contractor shall make all reasonable efforts to use recycled and recovered materials in providing the EPA designated products and in otherwise utilizing recycled and recovered materials in the execution of the work.

## 1.3 EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

Various sections of the specifications contain requirements for materials that have been designated by EPA as being products which are or can be made with recovered or recycled materials. These items, when incorporated into the work under this contract, shall contain at least the specified percentage of recycled or recovered materials unless adequate justification (non-availability) for non-use is provided. When a designated item is specified as an option to a non-designated item, the designated item requirements apply only if the designated item is used in the work.

## 1.4 EPA PROPOSED ITEMS INCORPORATED IN THE WORK

Products other than those designated by EPA are still being researched and are being considered for future Comprehensive Procurement Guideline (CPG) designation. It is recommended that these items, when incorporated in the work under this contract, contain the highest practicable percentage of recycled or recovered materials, provided specified requirements are also met.

## 1.5 EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

There are many products listed in 40 CFR 247 which have been designated or proposed by EPA to include recycled or recovered materials that may be used by the Contractor in performing the work but will not be incorporated into the work. These products include office products, temporary traffic control products, and pallets. It is recommended that these non-construction products, when used in the conduct of the work, contain the highest practicable percentage of recycled or recovered materials and that these products be recycled when no longer needed.

-- End of Section --

## SECTION 02315A

EXCAVATION, FILLING AND BACKFILLING FOR BUILDINGS  
08/98

## 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.

## ASTM INTERNATIONAL (ASTM)

ASTM D 1557	(1991; R 1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 2487	(1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(1996e1) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 2937	(1994) Density of Soil in Place by the Drive-Cylinder Method
ASTM D 3017	(1988; R 1996e1) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 4318	(1998) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

## 1.2 DEGREE OF COMPACTION

Degree of compaction is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557, abbreviated as percent laboratory maximum density.

## 1.3 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-06 Test Reports

Testing

Copies of all laboratory and field test reports within 24 hours of the completion of the test.

## PART 2 PRODUCTS

### 2.1 MATERIALS

#### 2.1.1 Satisfactory Materials

Satisfactory materials shall comprise any materials classified by ASTM D 2487 as GW, GP, GM, GC, SW, SP, SM, SC and CL.

#### 2.1.2 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills, trash, refuse, or backfills from previous construction. Unsatisfactory material also includes material classified as satisfactory which contains root and other organic matter, frozen material, and stones larger than 3 inches. The Contracting Officer shall be notified of any contaminated materials.

#### 2.1.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM, GP-GM, GW-GM, SW-SM, SP-SM, and SM shall be identified as cohesionless only when the fines are nonplastic.

#### 2.1.4 Expansive Soils

Expansive soils are defined as soils that have a plasticity index equal to or greater than 16 when the LL testing "wet method" is performed in accordance with ASTM D 4318.

#### 2.1.5 Nonfrost Susceptible (NFS) Material

Nonfrost susceptible material shall be a uniformly graded washed sand with a maximum particle size of 0.25-inch and less than 5 percent passing the No. 200 size sieve, and with not more than 3 percent by weight finer than 0.02 mm grain size.

### 2.2 CAPILLARY WATER BARRIER

Capillary Water Barrier shall consist of clean, crushed, nonporous rock, crushed gravel, or uncrushed gravel. The maximum particle size shall be 1-1/2 inches and no more than 2 percent by weight shall pass the No. 4 size sieve.

## PART 3 EXECUTION

### 3.1 CLEARING AND GRUBBING

The areas within lines 5 feet outside of each building and structure line shall be cleared and grubbed of trees, stumps, roots, brush and other vegetation, debris, existing foundations, pavements, utility lines, structures, fences, and other items that would interfere with construction operations. Stumps, logs, roots, and other organic matter shall be

completely removed and the resulting depressions shall be filled with satisfactory material, placed and compacted in accordance with paragraph FILLING AND BACKFILLING. Materials removed shall be disposed of outside the limits of Government-controlled property at the Contractor's responsibility.

### 3.2 TOPSOIL

Topsoil shall be stripped to a depth of 6 inches below existing grade within the designated excavations and grading lines and deposited in storage piles for later use. Excess topsoil shall be disposed as specified for excess excavated material.

### 3.3 EXCAVATION

Excavation shall conform to the dimensions and elevations indicated for each building, structure, and footing except as specified, and shall include trenching for utility and foundation drainage systems to a point 5 feet beyond the building line of each building and structure, and all work incidental thereof. Excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms. Excavations below indicated depths will not be permitted except to remove unsatisfactory material. Unsatisfactory material encountered below the grades shown shall be removed as directed and replaced with satisfactory material to the indicated elevation grade; and payment will be made in conformance with the CHANGES clause of the CONTRACT CLAUSES. Satisfactory material removed below the depths indicated, without specific direction of the Contracting Officer, shall be replaced, at no additional cost to the Government, with satisfactory materials to the indicated excavation grade; except that concrete footings shall be increased in thickness to the bottom of the overdepth excavations and over-break in rock excavation. Satisfactory material shall be placed and compacted as specified in paragraph FILLING AND BACKFILLING. Determination of elevations and measurements of approved overdepth excavation of unsatisfactory material below grades indicated shall be done under the direction of the Contracting Officer.

### 3.4 DRAINAGE

#### 3.4.1 Drainage

Surface water shall be directed away from excavation and construction sites to prevent erosion and undermining of foundations. Diversion ditches, dikes and grading shall be provided and maintained as necessary during construction. Excavated slopes and backfill surfaces shall be protected to prevent erosion and sloughing. Excavation shall be performed so that the site, the area immediately surrounding the site, and the area affecting operations at the site shall be continually and effectively drained.

### 3.5 SHORING

Shoring, including sheet piling, shall be furnished and installed as necessary to protect workmen, banks, adjacent paving, structures, and utilities. Shoring, bracing, and sheeting shall be removed as excavations are backfilled, in a manner to prevent caving.

### 3.6 CLASSIFICATION OF EXCAVATION

Excavation will be unclassified regardless of the nature of material

encountered. Rock excavation shall consist of the removal and disposal of boulders 1 cubic yard or more in volume; solid rock; materials that cannot be removed without systematic drilling and blasting such as rock material in ledges or aggregate conglomerate deposits that are so firmly cemented as to possess the characteristics of solid rock; and concrete or masonry structures exceeding 1 cubic yard in volume, except sidewalks and paving. Hard and compact materials such as cemented gravel, glacial till, and relatively soft or disintegrated rock that can be removed without continuous and systematic drilling and blasting will not be considered as rock excavation. Rock excavation will not be considered as such because of intermittent drilling and blasting that is performed merely to increase production. Excavation of the material claimed as rock shall not be performed until the material has been cross sectioned by the Contractor and approved by the Contracting Officer. Common excavation shall consist of all excavation not classified as rock excavation.

### 3.7 BLASTING

Blasting will be permitted.

### 3.8 UTILITY AND DRAIN TRENCHES

Trenches for underground utilities systems and drain lines shall be excavated to the required alignments and depths. The bottoms of trenches shall be graded to secure the required slope and shall be tamped if necessary to provide a firm pipe bed. Recesses shall be excavated to accommodate bells and joints so that pipe will be uniformly supported for the entire length. Rock, where encountered, shall be excavated to a depth of at least 6 inches below the bottom of the pipe, and the overdepth shall be backfilled with satisfactory material placed and compacted in conformance with paragraph FILLING AND BACKFILLING.

### 3.9 BORROW

Where satisfactory materials are not available in sufficient quantity from required excavations, approved materials shall be obtained as specified in Section 02300A EARTHWORK.

### 3.10 EXCAVATED MATERIALS

Satisfactory excavated material required for fill or backfill shall be placed in the proper section of the permanent work required under this section or shall be separately stockpiled if it cannot be readily placed. Satisfactory material in excess of that required for the permanent work and all unsatisfactory material shall be disposed of as specified in Section 02300A EARTHWORK.

### 3.11 FINAL GRADE OF SURFACES TO SUPPORT CONCRETE

Excavation to final grade shall not be made until just before concrete is to be placed. Only excavation methods that will leave the foundation rock in a solid and unshattered condition shall be used. Approximately level surfaces shall be roughened, and sloped surfaces shall be cut as indicated into rough steps or benches to provide a satisfactory bond. Shales shall be protected from slaking and all surfaces shall be protected from erosion resulting from ponding or flow of water. Building foundations supporting concrete shall bear on natural subgrade or properly compacted select fill. Excavations and surfaces supporting concrete shall be clean and thoroughly "crumbed out," being free of clumps of loose earth and unsatisfactory

materials. If, in the opinion of the Contracting Officer, a surface supporting concrete has been "softened" due to ponding of water or freezing, or remolded due to traffic or improper excavation techniques, the material in question shall be removed.

### 3.12 SUBGRADE PREPARATION

Unsatisfactory material in surfaces to receive fill or in excavated areas shall be removed and replaced with satisfactory materials as directed by the Contracting Officer. The surface shall be scarified to a depth of 6 inches before the fill is started. Sloped surfaces steeper than 1 vertical to 4 horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When subgrades are less than the specified density, the ground surface shall be broken up to a minimum depth of 6 inches, pulverized, and compacted to the specified density. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches and compacted as specified for the adjacent fill. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil being compacted. Material shall be moistened or aerated as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used. Minimum subgrade density shall be as specified in paragraph FILLING AND BACKFILLING.

### 3.13 FILLING AND BACKFILLING

Satisfactory materials shall be used in bringing fills and backfills to the lines and grades indicated and for replacing unsatisfactory materials. Satisfactory materials shall be placed in horizontal layers not exceeding 8 inches in loose thickness, or 6 inches when hand-operated compactors are used. After placing, each layer shall be plowed, disked, or otherwise broken up, moistened or aerated as necessary, thoroughly mixed and compacted as specified. Backfilling shall not begin until construction below finish grade has been approved, underground utilities systems have been inspected, tested and approved, forms removed, and the excavation cleaned of trash and debris. Backfill shall be brought to indicated finish grade. Backfill shall not be placed in wet or frozen areas. Where pipe is coated or wrapped for protection against corrosion, the backfill material up to an elevation 2 feet above sewer lines and 1 foot above other utility lines shall be free from stones larger than 1 inch in any dimension. Heavy equipment for spreading and compacting backfill shall not be operated closer to foundation or retaining walls than a distance equal to the height of backfill above the top of footing; the area remaining shall be compacted in layers not more than 4 inches in compacted thickness with power-driven hand tampers suitable for the material being compacted. Backfill shall be placed carefully around pipes or tanks to avoid damage to coatings, wrappings, or tanks. Backfill shall not be placed against foundation walls prior to 7 days after completion of the walls. As far as practicable, backfill shall be brought up evenly on each side of the wall and sloped to drain away from the wall. Each layer of fill and backfill shall be compacted to not less than the percentage of maximum density specified below:

	Percent Laboratory maximum density	
	Cohesive material	Cohesionless material
<hr/>		
Fill, embankment, and backfill		
<hr/>		
Under structures, building slabs, steps, paved areas, around footings, and in trenches	90	95
Under sidewalks and grassed areas	85	90
Expansive materials	Compacted to not less than 90 percent nor more than 93 percent	
Nonfrost susceptible materials		95
<hr/>		
Subgrade		
<hr/>		
Under building slabs, steps, and paved areas, top 12 inches	90	95
Under sidewalks, top 6 inches	85	90

Approved compacted subgrades that are disturbed by the Contractor's operations or adverse weather shall be scarified and compacted as specified herein before to the required density prior to further construction thereon. Recompaction over underground utilities and heating lines shall be by hand tamping.

3.14 TESTING

Testing shall be the responsibility of the Contractor and shall be performed at no additional cost to the Government. Testing shall be performed by an approved commercial testing laboratory or may be performed by the Contractor subject to approval. Field in-place density shall be determined in accordance with ASTM D 1557 or ASTM D 2922. When ASTM D 2922 is used, the calibration curves shall be checked and adjusted if necessary by the procedure described in ASTM D 2922, paragraph ADJUSTING CALIBRATION CURVE. ASTM D 2922 results in a wet unit weight of soil and when using this method ASTM D 3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall also be checked along with density calibration checks as described in ASTM D 3017. The calibration checks of both the density and moisture gauges shall be made at the beginning of a job on each different type of material encountered and at intervals as directed by the Contracting Officer. ASTM D 2937 shall be used only for soft, fine-grained, cohesive soils. The following number of tests, if performed at the appropriate time, shall be the minimum acceptable for each type operation.

3.14.1 Nuclear Testing

Frequency of nuclear testing shall be as follows: One test per 5,400 square feet of each lift of fill, or compacted backfill areas, shall be performed in accordance with ASTM D 1557 and used as a check of the results obtained with ASTM D 2922D/ASTM D 3017. ASTM D 2937 shall be used only for soft, fine-grained, cohesive soils. Test results shall be furnished to the Contracting Officer within 24 hours of making the test. When test results indicate that compaction is not as specified, the material shall be removed and replaced or recompacted to meet Specification requirements at no additional cost to the Government. Subsequent tests on recompacted area shall be performed to determine conformacne with the Specification requirements. Inspections and test results shall be certified by a registered Professional Civil Engineer. These certifications shall state that the tests and observations were performed by or under the direct supervision of the Engineer and that the results are representative of the materials or conditions being certified by the tests.

#### 3.14.2 Moisture Content

Moisture content shall be tested in accordance with ASTM D 2216 and checked for compliance with allowable limits relative to the laboratory optimum moisture. Atterberg limits (ASTM D 4318) and/or particle gradation tests (ASTM D 422) shall be made as required by the Contracting Officer in conjunction with each moisture content test in order to establish similarity with the material used to determine the laboratory maximum density. The use of fly ash or other drying agent, approved by the Contracting Officer, to adjust the moisture content of excavated or borrow materials to within acceptable moisture ranges shall be the Contractor's option and shall be made at no additional cost to the Government. The request for approval shall be accompanied with a moisture/density curve developed for the soil in question with the minimum amount of drying agent required to reduce the moisture content from that encountered in situ to the maximum allowed relative to the laboratory optimum moistures. Henceforth, this moisture/density curve with the drying agent incorporated shall be used to determine the maximum laboratory density.

#### 3.15 CAPILLARY WATER BARRIER

Capillary water barrier under concrete floor and area-way slabs on grade shall be placed directly on the subgrade and shall be compacted with a minimum of two passes of a hand-operated plate-type vibratory compactor.

#### 3.16 GRADING

Areas within 5 feet outside of each building and structure line shall be constructed true-to-grade, shaped to drain, and shall be maintained free of trash and debris until final inspection has been completed and the work has been accepted.

#### 3.17 SPREADING TOPSOIL

Areas outside the building lines from which topsoil has been removed shall be topsoiled. The surface shall be free of materials that would hinder planting or maintenance operations. The subgrade shall be pulverized to a depth of 2 inches by disking or plowing for the bonding of topsoil with the subsoil. Topsoil shall then be uniformly spread, graded, and compacted to the thickness, elevations, slopes shown, and left free of surface irregularities. Topsoil shall be compacted by one pass of a cultipacker, roller, or other approved equipment weighing 100 to 160 pounds per linear foot of roller. Topsoil shall not be placed when the subgrade is frozen,

excessively wet, extremely dry, or in a condition otherwise detrimental to seeding, planting, or proper grading.

3.18 PROTECTION

Settlement or washing that occurs in graded, topsoiled, or backfilled areas prior to acceptance of the work, shall be repaired and grades reestablished to the required elevations and slopes.

-- End of Section --

## SECTION 02741A

HOT-MIX ASPHALT (HMA) FOR ROADS  
09/99

## 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 ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS  
(AASHTO)

AASHTO MP 1	(1998) Provisional Specification for Performance Graded Asphalt Binder
AASHTO TP 53	(1998; Interim 1999) Determining Asphalt Content of Hot Mix Asphalt by the Ignition Method
AASHTO T 168	(1991) Sampling Bituminous Paving Mixtures
AASHTO T 248	(1984) Reducing Field Samples of Aggregate to Testing Size
AASHTO T 283	(1989) Resistance of Compacted Bituminous Mixtures to Moisture Induced Damage

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 88	(1999a) Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C 117	(1995) Materials Finer than 75 micrometer (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 131	(1996) Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	(1996a) Sieve Analysis of Fine and Coarse Aggregates
ASTM C 566	(1997) Evaporable Total Moisture Content of Aggregate by Drying
ASTM C 1252	(1998) Uncompacted Void Content of Fine Aggregate (as Influenced by Particle Shape, Surface Texture, and Grading)

ASTM D 140	(1998) Sampling Bituminous Materials
ASTM D 242	(1995) Mineral Filler for Bituminous Paving Mixtures
ASTM D 995	(1995b) Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures
ASTM D 1461	(1985)) Moisture or Volatile Distillates in Bituminous Paving Mixtures
ASTM D 1559	(1989) Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus
ASTM D 2041	(1995) Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
ASTM D 2172	(1995) Quantitative Extraction of Bitumen from Bituminous Paving Mixtures
ASTM D 2419	(1995) Sand Equivalent Value of Soils and Fine Aggregate
ASTM D 2489	(1984; R 1994e1) Degree of Particle Coating of Bituminous-Aggregate Mixtures
ASTM D 2726	(1996e1) Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixture
ASTM D 2950	(1997) Density of Bituminous Concrete in Place by Nuclear Method
ASTM D 3665	(1999) Random Sampling of Construction Materials
ASTM D 3666	(1998) Minimum Requirements for Agencies Testing and Inspecting Bituminous Paving Materials
ASTM D 4125	(1994e1)Asphalt Content of Bituminous Mixtures by the Nuclear Method
ASTM D 4791	(1999) Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D 4867/D 4867M	(1996) Effect of Moisture on Asphalt Concrete Paving Mixtures
ASTM D 5444	(1998) Mechanical Size Analysis of Extracted Aggregate

ASTM D 6307 (1998) Asphalt Content of Hot Mix Asphalt  
by Ignition Method

ASPHALT INSTITUTE (AI)

AI MS-2 (1997) Mix Design Methods for Asphalt  
Concrete and Other Hot-Mix Types

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 171 (1995) Test Method for Determining  
Percentage of Crushed Particles in  
Aggregate

## 1.2 DESCRIPTION OF WORK

The work shall consist of pavement courses composed of mineral aggregate and asphalt material heated and mixed in a central mixing plant and placed on a prepared course. HMA designed and constructed in accordance with this section shall conform to the lines, grades, thicknesses, and typical cross sections shown on the drawings. Each course shall be constructed to the depth, section, or elevation required by the drawings and shall be rolled, finished, and approved before the placement of the next course.

## 1.3 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-03 Product Data

Mix Design; G .

Submittals for asphalt cement binder and aggregate test reports shall be included in the mix design submittal.

Proposed JMF.

Contractor Quality Control; G.

Quality control plan.

Material Acceptance; G.

Acceptance test results.

### SD-06 Test Reports

Aggregates; G.

QC Monitoring; G.

Aggregate and QC test results.

### SD-07 Certificates

Asphalt Cement Binder; G.

Copies of certified test data.

Testing Laboratory; G.

Certification of compliance.

Plant Scale Calibration Certification

#### 1.4 ASPHALT MIXING PLANT

Plants used for the preparation of hot-mix asphalt shall conform to the requirements of ASTM D 995 with the following changes:

a. Truck Scales. The asphalt mixture shall be weighed on approved certified scales at the Contractor's expense. Scales shall be inspected and sealed at least annually by an approved calibration laboratory.

b. Testing Facilities. The Contractor shall provide laboratory facilities at the plant for the use of the Government's acceptance testing and the Contractor's quality control testing.

c. Inspection of Plant. The Contracting Officer shall have access at all times, to all areas of the plant for checking adequacy of equipment; inspecting operation of the plant; verifying weights, proportions, and material properties; checking the temperatures maintained in the preparation of the mixtures and for taking samples. The Contractor shall provide assistance as requested, for the Government to procure any desired samples.

d. Storage Bins. Use of storage bins for temporary storage of hot-mix asphalt will be permitted as follows:

(1) The asphalt mixture may be stored in non-insulated storage bins for a period of time not exceeding 3 hours.

(2) The asphalt mixture may be stored in insulated storage bins for a period of time not exceeding 8 hours. The mix drawn from bins shall meet the same requirements as mix loaded directly into trucks.

#### 1.5 HAULING EQUIPMENT

Trucks used for hauling hot-mix asphalt shall have tight, clean, and smooth metal beds. To prevent the mixture from adhering to them, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other approved material. Petroleum based products shall not be used as a release agent. Each truck shall have a suitable cover to protect the mixture from adverse weather. When necessary to ensure that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated or heated and covers (tarps) shall be securely fastened.

#### 1.6 ASPHALT PAVERS

Asphalt pavers shall be self-propelled, with an activated screed, heated as necessary, and shall be capable of spreading and finishing courses of hot-mix asphalt which will meet the specified thickness, smoothness, and

grade. The paver shall have sufficient power to propel itself and the hauling equipment without adversely affecting the finished surface.

1.6.1 Receiving Hopper

The paver shall have a receiving hopper of sufficient capacity to permit a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed without segregation. The screed shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture.

1.6.2 Automatic Grade Controls

If an automatic grade control device is used, the paver shall be equipped with a control system capable of automatically maintaining the specified screed elevation. The control system shall be automatically actuated from either a reference line and/or through a system of mechanical sensors or sensor-directed mechanisms or devices which will maintain the paver screed at a predetermined transverse slope and at the proper elevation to obtain the required surface. The transverse slope controller shall be capable of maintaining the screed at the desired slope within plus or minus 0.1 percent. A transverse slope controller shall not be used to control grade. The controls shall be capable of working in conjunction with any of the following attachments:

- a. Ski-type device of not less than 30 feet in length.
- b. Taut stringline set to grade.
- c. Short ski or shoe for joint matching.
- d. Laser control.

1.7 ROLLERS

Rollers shall be in good condition and shall be operated at slow speeds to avoid displacement of the asphalt mixture. The number, type, and weight of rollers shall be sufficient to compact the mixture to the required density while it is still in a workable condition. Equipment which causes excessive crushing of the aggregate shall not be used.

1.8 WEATHER LIMITATIONS

The hot-mix asphalt shall not be placed upon a wet surface or when the surface temperature of the underlying course is less than specified in Table 1.

Table 1. Surface Temperature Limitations of Underlying Course

Mat Thickness, inches	Degrees F
3 or greater	40
Less than 3	45

PART 2 PRODUCTS

2.1 AGGREGATES

Aggregates shall consist of crushed stone, crushed gravel, screenings, natural sand and mineral filler, as required. The portion of material retained on the No. 4 sieve is coarse aggregate. The portion of material passing the No. 4 sieve and retained on the No. 200 sieve is fine aggregate. The portion passing the No. 200 sieve is defined as mineral filler. The total aggregate (coarse aggregate, fine aggregate, and the material passing the No. 200 sieve) shall contain at least 80 percent crushed material. All aggregate test results and samples shall be submitted to the Contracting Officer at least 30 days prior to start of construction.

#### 2.1.1 Coarse Aggregate

Coarse aggregate shall consist of sound, tough, durable particles, free from films of material that would prevent thorough coating and bonding with the asphalt material and free from organic matter and other deleterious substances. All individual coarse aggregate sources shall meet the following requirements:

- a. The percentage of loss shall not be greater than 40 percent after 500 revolutions when tested in accordance with ASTM C 131.
- b. The percentage of loss shall not be greater than 18 percent after five cycles when tested in accordance with ASTM C 88 using magnesium sulfate.
- c. At least 80 percent by weight of coarse aggregate shall have at least two or more fractured faces when tested in accordance with COE CRD-C 171. The area of each fractured face shall be at least 80 percent of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between planes of fractures shall be at least 30 degrees to count as two fractured faces. Fractured faces shall be produced by crushing.
- d. The particle shape shall be essentially cubical and the aggregate shall not contain more than 20% percent, by weight, of flat and elongated particles (3:1 ratio of maximum to minimum) when tested in accordance with ASTM D 4791.

#### 2.1.2 Fine Aggregate

Fine aggregate shall consist of clean, sound, tough, durable particles including natural sand or crushed stone or gravel that meets the requirements for wear and soundness specified for coarse aggregate. Fine aggregate produced by crushing gravel shall have at least 90 percent by weight of crushed particles having two or more fractured faces in the portion retained on the No. 30 sieve. This requirement shall apply to the material before blending with natural sand when blending is necessary. The aggregate particles shall be free from coatings of clay, silt, or any objectionable material and shall contain no clay balls. All individual fine aggregate sources shall have a sand equivalent value not less than 45 when tested in accordance with ASTM D 2419.

The fine aggregate portion of the blended aggregate shall have an uncompacted void content not less than 43.0 percent when tested in accordance with ASTM C 1252 Method A.

#### 2.1.3 Mineral Filler

Mineral filler shall be nonplastic material meeting the requirements of ASTM D 242, and the following additional requirements. At least 50 percent of the mineral filler shall be hydrated lime, limestone dust, or portland cement conforming to ASTM C 150 Type I or II. However, in areas where long service has shown that there has been no problem with stripping when the proposed aggregates are used, this additional requirement may be waived by the Contracting Officer when requested in writing.

2.1.4 Aggregate Gradation

The combined aggregate gradation shall conform to gradations specified in Table 2, when tested in accordance with ASTM C 136 and ASTM C 117, and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve or vice versa, but grade uniformly from coarse to fine. The Contractor shall be responsible for furnishing a combined aggregate which will produce a bituminous mixture meeting the specified requirements. Aggregate gradations which fail to produce a bituminous mixture conforming to the specified requirements shall be rejected and replaced with a satisfactory aggregate gradation at no additional cost to the Government. No extension of time shall be allowed due to any delay caused by such replacement.

Table 2. Aggregate Gradations

<u>Sieve Size, inch</u>	<u>Gradation 1 Percent Passing by Mass</u>	<u>Gradation 2 Percent Passing by Mass</u>	<u>Gradation 3 Percent Passing by Mass</u>
1	100	---	---
3/4	76-96	100	---
1/2	68-88	76-96	100
3/8	60-82	69-89	76-96
No. 4	45-67	53-73	58-78
No. 8	32-54	38-60	40-60
No. 16	22-44	26-48	28-48
No. 30	15-35	18-38	18-38
No. 50	9-25	11-27	11-27
No. 100	6-18	6-18	6-18
No. 200	3-6	3-6	3-6

2.2 ASPHALT CEMENT BINDER

Asphalt cement binder shall conform to AASHTO MP 1 Performance Grade (PG) 64-22. Test data indicating grade certification shall be provided by the supplier at the time of delivery of each load to the mix plant. Copies of these certifications shall be submitted to the Contracting Officer. The supplier is defined as the last source of any modification to the binder. The Contracting Officer may sample and test the binder at the mix plant at any time before or during mix production. Samples for this verification testing shall be obtained by the Contractor in accordance with ASTM D 140 and in the presence of the Contracting Officer. These samples shall be furnished to the Contracting Officer for the verification testing, which shall be at no cost to the Contractor. Samples of the asphalt cement specified shall be submitted for approval not less than 30 days before start of the test section.

2.3 MIX DESIGN

The Contractor shall develop the mix design. The asphalt mix shall be composed of a mixture of well-graded aggregate, mineral filler if required, and asphalt material. The aggregate fractions shall be sized, handled in separate size groups, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula (JMF). No hot-mix asphalt for payment shall be produced until a JMF has been approved. The hot-mix asphalt shall be designed using procedures contained in AI MS-2 and the criteria shown in Table 3. The Tensile Strength Ratio (TSR) of the composite mixture, shall be determined in accordance with ASTM D 4867/D 4867M or AASHTO T 283. The test specimens shall be conditioned by the freezing and thawing method. The Tensile Strength Ratio (TSR) shall be at least 75. If the Tensile Strength Ratio (TSR) is less than 75, the aggregates shall be rejected or the asphalt mixture treated with an approved anti-stripping agent. The amount of anti-stripping agent added shall be sufficient to produce a TSR of not less than 75. If an antistrip agent is required, it shall be provided by the Contractor at no additional cost. Mix design Tensile Strength Ratio (TSR) testing shall be accomplished on the design mix without an anti-stripping agent and with the proposed anti-stripping agent, the results of both tests shall be submitted with the mix design. When the water absorption of any aggregate in the mixture exceeds 1.25 percent as determined by ASTM C 127 and ASTM C 128, the material for the theoretical specific gravity ASTM D 2041 and for the Marshall specimens shall be cured at 135 degrees C for 2 hours in a closed oven after the mix is produced in the laboratory. The plant-produced mixture shall not be tested until the mix is 2 hours old. The mixture shall not be reheated.

#### 2.3.1 JMF Requirements

The job mix formula shall be submitted in writing by the Contractor for approval at least 30 days prior to the start of the test section and shall include as a minimum:

- a. Percent passing each sieve size.
- b. Percent of asphalt cement.
- c. Percent of each aggregate and mineral filler to be used.
- d. Asphalt binder type and source, with mill test report.
- e. Number of blows of hammer per side of molded specimen.
- f. Laboratory mixing temperature.
- g. Lab compaction temperature.
- h. Temperature-viscosity relationship of the asphalt cement.
- i. Plot of the combined gradation on the 0.45 power gradation chart, stating the nominal maximum size.
- j. Graphical plots of stability, flow, air voids, voids in mineral aggregate, and unit weight versus asphalt content as shown in AI MS-2.
- k. Specific gravity and absorption of each aggregate.
- l. Percent natural sand.

- m. Percent particles with 2 or more fractured faces (in coarse aggregate).
- n. Fine aggregate angularity.
- o. Percent flat or elongated particles (in coarse aggregate).
- p. Tensile Strength Ratio(TSR).
- q. Antistrip agent (if required) and amount.
- r. List of all modifiers and amount.

Table 3. Marshall Design Criteria

<u>Test Property</u>	<u>75 Blow Mix</u>
Stability, pounds minimum	*1800
Flow, .01 inch	8-16
Air voids, percent	3-5
Percent Voids in mineral aggregate VMA, (minimum)	
Gradation 1	13.0
Gradation 2	14.0
Gradation 3	15.0
TSR, minimum percent	75

Note 1: This is a minimum requirement. The average during construction shall be significantly higher than this number to ensure compliance with the specifications.

Note 2: The minimum VMA percent shall conform to the requirements specified in Table 5.3, Chapter 5 of the Asphalt Institute Manual MS-2, sixth edition. Calculate VMA in accordance with AI MS-2, based on ASTM D 2726 bulk specific gravity for the aggregate.

Note 3: When the absorption is high the mixture will be tender until the asphalt is absorbed into the aggregate. Therefore, it may be beneficial to silo the mixture at the plant for a time. This is more important when the truck haul is short.

Note 4: Extraction tests shall be accomplished in accordance with ASTM D 2172.

2.3.2 Adjustments to Field JMF

The Laboratory JMF for each mixture shall be in effect until a new formula is approved in writing by the Contracting Officer. Should a change in

sources of any materials be made, a new laboratory JMF design shall be performed and a new JMF approved before the new material is used. The Contractor will be allowed to adjust the Laboratory JMF within the limits specified below to optimize mix volumetric properties with the approval of the Contracting Officer. Adjustments to the Laboratory JMF shall be applied to the field (plant) established JMF and limited to those values as shown. Adjustments shall be targeted to produce or nearly produce 4 percent voids total mix (VTM).

TABLE 4. Field (Plant) Established JMF Tolerances  
Sieves                      Adjustments (plus or minus), percent

No. 4	3
No. 8	3
No. 200	1
Binder Content	0.4
Temperature of mixing	57 degrees F

If adjustments are needed that exceed these limits, a new mix design shall be developed. Tolerances given above may permit the aggregate grading to be outside the limits shown in Table 2; while not desirable, this is acceptable.

### PART 3 EXECUTION

#### 3.1 PREPARATION OF ASPHALT BINDER MATERIAL

The asphalt cement material shall be heated avoiding local overheating and providing a continuous supply of the asphalt material to the mixer at a uniform temperature. The temperature of unmodified asphalts shall be no more than 320 degrees F when added to the aggregates. Modified asphalts shall be no more than 345 degrees F when added to the aggregates.

#### 3.2 PREPARATION OF MINERAL AGGREGATE

The aggregate for the mixture shall be heated and dried prior to mixing. No damage shall occur to the aggregates due to the maximum temperature and rate of heating used. The temperature of the aggregate and mineral filler shall not exceed 345 degrees F when the asphalt cement is added. The temperature shall not be lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

#### 3.3 PREPARATION OF HOT-MIX ASPHALT MIXTURE

The aggregates and the asphalt cement shall be weighed or metered and introduced into the mixer in the amount specified by the JMF. The combined materials shall be mixed until the aggregate obtains a uniform coating of asphalt binder and is thoroughly distributed throughout the mixture. Wet mixing time shall be the shortest time that will produce a satisfactory mixture, but no less than 25 seconds for batch plants. The wet mixing time for all plants shall be established by the Contractor, based on the procedure for determining the percentage of coated particles described in ASTM D 2489, for each individual plant and for each type of aggregate used.

The wet mixing time will be set to at least achieve 95 percent of coated particles. The moisture content of all hot-mix asphalt upon discharge from the plant shall not exceed 0.5 percent by total weight of mixture as measured by ASTM D 1461.

3.4 PREPARATION OF THE UNDERLYING SURFACE

Immediately before placing the hot mix asphalt, the underlying course shall be cleaned of dust and debris. A prime coat and/or tack coat shall be applied in accordance with the contract specifications.

3.5 TEST SECTION

Prior to full production, the Contractor shall place a test section for each JMF used. The contractor shall construct a test section 120 - 240 ft long and two paver passes wide placed for two lanes, with a longitudinal cold joint. The test section shall be of the same depth as the course which it represents. The underlying grade or pavement structure upon which the test section is to be constructed shall be the same as the remainder of the course represented by the test section. The equipment and personnel used in construction of the test section shall be the same equipment to be used on the remainder of the course represented by the test section. The test section shall be placed as part of the project pavement as approved by the Contracting Officer.

3.5.1 Sampling and Testing for Test Section

One random sample shall be taken at the plant, triplicate specimens compacted, and tested for stability, flow, and laboratory air voids. A portion of the same sample shall be tested for aggregate gradation and asphalt content. Four randomly selected cores shall be taken from the finished pavement mat, and four from the longitudinal joint, and tested for density, and conformance to the JMF. Random sampling shall be in accordance with procedures contained in ASTM D 3665. If laboratory test results demonstrate that the pavement conforms to the specified requirements, the test section shall remain as part of the project pavement. If test results fail to meet the JMF, the test section shall be removed and replaced at no cost to the Government and another test section shall be constructed.

Table 5. Test Section Requirements for Material and Mixture Properties

<u>Property</u>	<u>Specification Limit</u>
Aggregate Gradation-Percent Passing (Individual Test Result)	
No. 4 mm and larger	JMF plus or minus 8
No 8, No. 16, No. 30 and No. 50	JMF plus or minus 6
No. 100 and No. 200	JMF plus or minus 2.0
Asphalt Content, Percent (Individual Test Result)	JMF plus or minus 0.5
Laboratory Air Voids, Percent (Average of 3 specimens)	JMF plus or minus 1.0
VMA, Percent (Average of 3 specimens)	Conform to the JMF
Stability, pounds (Average of 3 specimens)	1800 minimum

Table 5. Test Section Requirements for Material and Mixture Properties

<u>Property</u>	<u>Specification Limit</u>
Flow, .01 inches (Average of 3 specimens)	8 - 18
<u>Mat Density, Percent of Marshall</u> (Average of 4 Random Cores)	97.0 - 100.5
<u>Joint Density, Percent of Marshall</u> (Average of 4 Random Cores)	95.5 - 100.5

### 3.5.2 Additional Test Sections

If the initial test section should prove to be unacceptable, the necessary adjustments to the JMF, plant operation, placing procedures, and/or rolling procedures shall be made. A second test section shall then be placed. Additional test sections, as required, shall be constructed and evaluated for conformance to the specifications. Full production shall not begin until an acceptable section has been constructed and accepted.

### 3.6 TESTING LABORATORY

The laboratory used to develop the JMF shall meet the requirements of ASTM D 3666. A certification signed by the manager of the laboratory stating that it meets these requirements or clearly listing all deficiencies shall be submitted to the Contracting Officer prior to the start of construction.

The certification shall contain as a minimum:

- a. Qualifications of personnel; laboratory manager, supervising technician, and testing technicians.
- b. A listing of equipment to be used in developing the job mix.
- c. A copy of the laboratory's quality control system.
- d. Evidence of participation in the AASHTO Materials Reference Laboratory (AMRL) program.

### 3.7 TRANSPORTING AND PLACING

#### 3.7.1 Transporting

The hot-mix asphalt shall be transported from the mixing plant to the site in clean, tight vehicles. Deliveries shall be scheduled so that placing and compacting of mixture is uniform with minimum stopping and starting of the paver. Adequate artificial lighting shall be provided for night placements. Hauling over freshly placed material will not be permitted until the material has been compacted as specified, and allowed to cool to 140 degrees F.

#### 3.7.2 Placing

Intermediate course, or any layer of surface shall not be left uncovered by the subsequent course for more than 5 days, weather permitting. Material trucks hauling materials other than asphaltic concrete or tack coat shall not travel on previously constructed layers of asphalt concrete until the final surface course is constructed. The mix shall be placed and compacted at a temperature suitable for obtaining density, surface smoothness, and

other specified requirements. Upon arrival, the mixture shall be placed to the full width by an asphalt paver; it shall be struck off in a uniform layer of such depth that, when the work is completed, it shall have the required thickness and conform to the grade and contour indicated. The speed of the paver shall be regulated to eliminate pulling and tearing of the asphalt mat. Unless otherwise permitted, placement of the mixture shall begin along the centerline of a crowned section or on the high side of areas with a one-way slope. The mixture shall be placed in consecutive adjacent strips having a minimum width of 10 feet. The longitudinal joint in one course shall offset the longitudinal joint in the course immediately below by at least 1 foot; however, the joint in the surface course shall be at the centerline of the pavement. Transverse joints in one course shall be offset by at least 10 feet from transverse joints in the previous course. Transverse joints in adjacent lanes shall be offset a minimum of 10 feet. On isolated areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the mixture may be spread and luted by hand tools.

### 3.8 COMPACTION OF MIXTURE

After placing, the mixture shall be thoroughly and uniformly compacted by rolling. The surface shall be compacted as soon as possible without causing displacement, cracking or shoving. After preliminary smoothness tests, rolling shall continue until density is obtained in all portions of each course of not less than 97.0 percent and not more than 100.5 percent of laboratory compacted Marshall specimens in the mat. The sequence of rolling operations and the type of rollers used shall be at the discretion of the Contractor. The speed of the roller shall, at all times, be sufficiently slow to avoid displacement of the hot mixture and be effective in compaction. Any displacement occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected at once. Sufficient rollers shall be furnished to handle the output of the plant. Rolling shall continue until the surface is of uniform texture, true to grade and cross section, and the required field density is obtained. To prevent adhesion of the mixture to the roller, the wheels shall be kept properly moistened but excessive water will not be permitted.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with hand tampers. Any mixture that becomes loose and broken, mixed with dirt, contains check-cracking, or is in any way defective shall be removed full depth, replaced with fresh hot mixture and immediately compacted to conform to the surrounding area. This work shall be done at the Contractor's expense. Skin patching will not be allowed.

### 3.9 JOINTS

The formation of joints shall be made ensuring a continuous bond between the courses and to obtain the required density. All joints shall have the same texture as other sections of the course and meet the requirements for smoothness and grade. Joints shall have a density of not less than 96.0 percent and not more than 100.5 percent of laboratory compacted Marshall specimens. Contact surfaces of previously constructed pavements, curbs, gutters, manholes, and other areas as shown, shall be tack coated. The tack coat shall be applied far enough in advance of placement of the paving mixture to insure adequate curing of the tack coat, and shall be protected from damage or contamination of the tack coated surface.

#### 3.9.1 Transverse Joints

The roller shall not pass over the unprotected end of the freshly laid

mixture, except when necessary to form a transverse joint. When necessary to form a transverse joint, it shall be made by means of placing a bulkhead or by tapering the course. The tapered edge shall be cut back to its full depth and width on a straight line to expose a vertical face prior to placing material at the joint. The cutback material shall be removed from the project. In both methods, all contact surfaces shall be given a light tack coat of asphalt material before placing any fresh mixture against the joint.

### 3.9.2 Longitudinal Joints

Longitudinal joints which are irregular, damaged, uncompacted, cold (less than 175 degrees F at the time of placing adjacent lanes), or otherwise defective, shall be cut back a minimum of 2 inches from the edge with a cutting wheel to expose a clean, sound vertical surface for the full depth of the course. All cutback material shall be removed from the project. All contact surfaces shall be given a light tack coat of asphalt material prior to placing any fresh mixture against the joint. The Contractor will be allowed to use an alternate method if it can be demonstrated that density, smoothness, and texture can be met.

### 3.9.3 Edges of Pavement

Edges of pavement adjacent to the shoulders shall be trimmed neatly to line. Shoulder material not less than 1 ft. wide (except as otherwise shown) shall be placed against and to the full height of the pavement surface as soon as practicable after final rolling has been completed and the pavement has sufficiently hardened.

## 3.10 CONTRACTOR QUALITY CONTROL

### 3.10.1 General Quality Control Requirements

The Contractor shall develop an approved Quality Control Plan. Hot-mix asphalt shall not be produced until the quality control plan has been approved. The plan shall address all elements which affect the quality of the pavement including, but not limited to:

- a. Mix Design
- b. Aggregate Grading
- c. Quality of Materials
- d. Stockpile Management
- e. Proportioning
- f. Mixing and Transportation
- g. Mixture Volumetrics
- h. Moisture Content of Mixtures
- i. Placing and Finishing
- j. Joints
- k. Compaction

## 1.Surface Smoothness

### 3.10.2 Testing Laboratory

All quality control sampling and testing shall be the Contractor's responsibility and shall be in accordance with Section: CONTRACTOR QUALITY CONTROL and as specified herein. All sampling and testing shall be performed by a commercial testing laboratory with the capability of performing all of the testing specified herein and shall be supervised by a registered professional engineer. The Contractor may elect to establish testing facilities of his own. However, the Contractor's laboratory shall have the capability of performing all the testing specified herein. No work requiring testing will be permitted until the Contractor's facilities have been inspected and approved. The Contractor's testing laboratory shall be supervised by a registered professional engineer. The first inspection of the facilities shall be at the expense of the Government and any subsequent inspections required because of failure of the first inspection will be at the expense of the Contractor. Such costs will be deducted from the total amount due the Contractor. The Government may perform verification tests as considered necessary. The laboratory shall meet the requirements as required in ASTM D 3666. The effective working area of the laboratory shall be a minimum of 150 square feet with a ceiling height of not less than 7.5 feet. Lighting shall be adequate to illuminate all working areas. It shall be equipped with heating and air conditioning units to maintain a temperature of 75 degrees F plus or minus 5 degrees F. Laboratory facilities shall be kept clean and all equipment shall be maintained in proper working condition. The Contracting Officer shall be permitted unrestricted access to inspect the Contractor's laboratory facility, to witness quality control activities, and to perform any check testing desired. The Contracting Officer will advise the Contractor in writing of any noted deficiencies concerning the laboratory facility, equipment, supplies, or testing personnel and procedures. When the deficiencies are serious enough to adversely affect test results, the incorporation of the materials into the work shall be suspended immediately and will not be permitted to resume until the deficiencies are corrected.

### 3.10.3 Quality Control Testing

The Contractor shall perform all quality control tests applicable to these specifications and as set forth in the Quality Control Program. The testing program shall include, but shall not be limited to, tests for the control of asphalt content, aggregate gradation, temperatures, aggregate moisture, moisture in the asphalt mixture, laboratory air voids, stability, flow, in-place density, grade and smoothness. A Quality Control Testing Plan shall be developed as part of the Quality Control Program.

#### 3.10.3.1 Asphalt Content

Test for asphalt content initially at start of each days hot mix production. Following the start up test, tests to determine asphalt content shall be performed with each Marshall test by one of the following methods: the extraction method in accordance with ASTM D 2172, Method A or B, the ignition method in accordance with the AASHTO TP 53 or ASTM D 6307, or the nuclear method in accordance with ASTM D 4125, provided the nuclear gauge is calibrated for the specific mix being used. For the extraction method, the weight of ash, as described in ASTM D 2172, shall be determined as part of the first extraction test performed at the beginning of plant production; and as part of every tenth extraction test performed

thereafter, for the duration of plant production. The last weight of ash value obtained shall be used in the calculation of the asphalt content for the mixture.

#### 3.10.3.2 Gradation

Aggregate gradations shall be tested initially at start of each days hot mix production. Following the start up test, a minimum of once per every 200 tons of asphalt concrete produced, or fraction thereof per day of paving. A minimum of two tests and a maximum of three tests shall be performed per day of paving. Gradations for extracted samples shall be determined from mechanical analysis of recovered aggregate in accordance with ASTM D 5444. When asphalt content is determined by the nuclear method, aggregate gradation shall be determined from hot bin samples on batch plants, or from the cold feed on drum mix plants. For batch plants, aggregates shall be tested in accordance with ASTM C 136 using actual batch weights to determine the combined aggregate gradation of the mixture. Additional gradation tests shall be made when new material is delivered to the plant.

Prior to production two gradation tests of hot bin material for conventional plants, or total aggregate material from the final feed belt for the dryer-drum mixer for dry-drum plants, during trial runs performed 10 days before start of production of paving mixtures. Additional tests shall be required whenever adjustments to the plant are made.

#### 3.10.3.3 Temperatures

Temperatures shall be tested initially at start of each days hot mix production. Following the start up test, a minimum of once per every 200 tons of asphalt concrete produced, or fraction thereof per day of paving. A minimum of two tests shall be performed per day of paving, at necessary locations, to determine the temperature at the dryer, the asphalt cement in the storage tank, the asphalt mixture at the plant, and the asphalt mixture at the job site.

#### 3.10.3.4 Aggregate Moisture

The moisture content of aggregate used for production shall be tested initially at start of each days hot mix production. Following the start up test, test to determine moisture content shall be performed with each aggregate gradation test in accordance with ASTM C 566.

#### 3.10.3.5 Moisture Content of Mixture

The moisture content of the mixture shall be tested initially at start of each days hot mix production. Following the start up test, test to determine moisture content shall be performed with each aggregate gradation test in accordance with ASTM D 1461 or an approved alternate procedure.

#### 3.10.3.6 Laboratory Air Voids, Marshall Stability and Flow

Mixture samples shall be taken initially at start of each days hot mix production. Following the start up test, a minimum of once per every 200 tons of asphalt concrete produced, or fraction thereof per day of paving. The mix shall be tested a minimum of two sets per day and a maximum of 4 sets per day of paving. Specimens shall be compacted, using 75 blows per side with the Marshall hammer as described in ASTM D 1559. After compaction, the laboratory air voids of each specimen shall be determined,

as well as the Marshall stability and flow.

#### 3.10.3.7 In-Place Density

The Contractor shall conduct any necessary testing to ensure the specified density is achieved. A nuclear gauge may be used to monitor pavement density in accordance with ASTM D 2950.

#### 3.10.3.8 Pavement Thickness

The Contractor shall conduct the necessary checks and tests to ensure the compacted thickness of pavement for each course conform to specified requirements and as shown on the drawings.

#### 3.10.3.9 Grade and Smoothness

The Contractor shall conduct the necessary checks and tests to ensure the grade and smoothness conform to specified requirements and as shown on the drawings.

#### 3.10.3.10 Additional Testing

Any additional testing, which the Contractor deems necessary to control the process, may be performed at the Contractor's option.

#### 3.10.3.11 QC Monitoring

The Contractor shall submit all QC test results to the Contracting Officer on a daily basis as the tests are performed. The Contracting Officer reserves the right to monitor any of the Contractor's quality control testing and to perform duplicate testing as a check to the Contractor's quality control testing.

#### 3.10.4 Sampling

When directed by the Contracting Officer, the Contractor shall sample and test any material which appears inconsistent with similar material being produced, unless such material is voluntarily removed and replaced or deficiencies corrected by the Contractor. All sampling shall be in accordance with standard procedures specified.

#### 3.11 Material Acceptance

Sampling and testing for acceptability of work shall be the Contractor's responsibility, and shall be accomplished by an independent laboratory hired by the Contractor. Test results shall be forwarded daily to the Contracting Officer. Acceptance of the plant produced mix and in-place requirements will be on a lot to lot basis. A standard lot for all requirements will be equal to 8 hours of production, or fraction thereof when a partial day of production occurs. Samples of each lot of paving shall be taken by noon of the following day and results of tests reported to the Contracting Officer by the end of that day. Acceptance of lots of hot-mix asphalt will be made based on in-place density, pavement thickness, laboratory air voids, grade and smoothness in accordance with the following paragraphs. Grade and surface smoothness determinations will be made on the lot as a whole. Exceptions or adjustments to this will be made in situations where the mix within one lot is placed as part of both the intermediate and surface courses, thus grade and smoothness measurements for the entire lot cannot be made. In order to evaluate laboratory air

voids, in-place (field) density and pavement thickness, each lot will be divided into four equal sublots. The Contractor shall furnish a power saw or core drill and labor for cutting samples and shall immediately replace the pavement. Cores shall be at least 4 inch in diameter, and sawed samples shall be at least 5 inch on each side. Sample holes shall have all surfaces tack coated. Hot-mix bituminous mix shall be placed and compacted in the sample hole to the satisfaction of the Contracting Officer. The finished surface of the repaired sample hole shall match the surface elevation of the adjacent pavement.

#### 3.11.1 Sublot Sampling

One random mixture sample for determining laboratory air voids, theoretical maximum density, and for any additional testing the Contracting Officer desires, will be taken from a loaded truck delivering mixture to each sublot, or other appropriate location for each sublot. All samples will be selected randomly, using commonly recognized methods of assuring randomness conforming to ASTM D 3665 and employing tables of random numbers or computer programs. Laboratory air voids will be determined from three laboratory compacted specimens of each sublot sample in accordance with ASTM D 1559. The specimens will be compacted within 2 hours of the time the mixture was loaded into trucks at the asphalt plant. Samples will not be reheated prior to compaction and insulated containers will be used as necessary to maintain the temperature.

#### 3.11.2 Additional Sampling and Testing

The Contracting Officer reserves the right to direct additional samples and tests for any area which appears to deviate from the specification requirements. The cost of any additional testing will be paid for by the Government. Testing in these areas will be in addition to the lot testing, and the requirements for these areas will be the same as those for a lot.

#### 3.11.3 Laboratory Air Voids

Laboratory air voids will be calculated by determining the Marshall density of each lab compacted specimen using ASTM D 2726 and determining the theoretical maximum density of every other sublot sample using ASTM D 2041. Laboratory air void calculations for each sublot will use the latest theoretical maximum density values obtained, either for that sublot or the previous sublot. The mean absolute deviation of the four laboratory air void contents (one from each sublot) from the JMF air void content will be evaluated. All laboratory air void tests will be completed and reported within 24 hours after completion of construction of each lot.

#### 3.11.4 In-place Density and Thickness

##### 3.11.4.1 General Density and Thickness Requirements

For determining in-place pavement density and thickness, one random core shall be taken from the mat (interior of the lane), and one random core taken from each longitudinal and transverse joint (immediately over the joint) of each sublot. Each random core shall be the full thickness of the layer being placed. After air drying to a constant weight, cores obtained from the mat and from the joints will be used for in-place density and pavement thickness determinations. The compacted thickness shall conform to the thickness shown on the drawings.

3.11.5 Grade

The final wearing surface of pavement shall conform to the elevations and cross sections shown and shall vary not more than 1/4 inch from the plan grade established and approved at site of work. Finished surfaces at juncture with other pavements shall coincide with finished surfaces of abutting pavements. Deviation from the plan elevation will not be permitted in areas of pavements where closer conformance with planned elevation is required for the proper functioning of drainage and other appurtenant structures involved. The final wearing surface of the pavement will be tested for conformance with specified plan grade requirements. The grade will be determined by running lines of levels at intervals of 25 feet, or less, longitudinally and transversely, to determine the elevation of the completed pavement surface. Within 5 working days, after the completion of a particular lot incorporating the final wearing surface, the Contracting Officer will inform the Contractor in writing, of the results of the grade-conformance tests. When more than 5 percent of all measurements made within a lot are outside the 1/4 inch tolerance. In areas where the grade exceeds the tolerance, the Contractor shall remove the surface lift full depth; the Contractor shall then replace the lift with hot-mix asphalt to meet specification requirements, at no additional cost to the Government. Diamond grinding may be used to remove high spots to meet grade requirements. Skin patching for correcting low areas or planing or milling for correcting high areas will not be permitted.

3.11.6 Surface Smoothness

The Contractor shall evaluate the surface smoothness of the pavement. All testing shall be performed in the presence of the Contracting Officer. Detailed notes of the results of the testing shall be kept and a copy furnished to the Government immediately after each day's testing. Where drawings show required deviations from a plane surface (crowns, drainage inlets, etc.), the surface shall be finished to meet the approval of the Contracting Officer.

3.11.6.1 Smoothness Requirements

a. Straightedge Testing: The finished surfaces of the pavements shall have no abrupt change of 1/4 inch or more, and all pavements shall be within the tolerances specified in Table 9 when checked with an approved 12 foot straightedge.

Table 9. Straightedge Surface Smoothness--Pavements

<u>Pavement Category</u>	<u>Direction of Testing</u>	<u>Tolerance, inches</u>
Intermediate Course	Longitudinal Transverse	1/4 1/4
Surface Course	Longitudinal Transverse	1/4 1/4

3.11.6.2 Testing Method

After the final rolling, but not later than 24 hours after placement, the surface of the pavement in each entire lot shall be tested by the Contractor in such a manner as to reveal all surface irregularities

exceeding the tolerances specified above. Separate testing of individual sublots is not required. If any pavement areas are ground, these areas shall be retested immediately after grinding. The entire area of the pavement shall be tested in both a longitudinal and a transverse direction on parallel lines. The transverse lines shall be 25 feet or less apart, as directed. The longitudinal lines shall be at the centerline of each paving lane for lines less than 20 feet and at the third points for lanes 20 feet or greater. Other areas having obvious deviations shall also be tested. Longitudinal testing lines shall be continuous across all joints.

a. Straightedge Testing. The straightedge shall be held in contact with the surface and moved ahead one-half the length of the straightedge for each successive measurement. The amount of surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between these two high points.

### 3.12 PROTECTION OF PAVEMENT

After final rolling of the pavement for the intermediate and surface course, no vehicular traffic of any kind shall be permitted on the pavement course until the pavement has cooled and hardened for at least 8 hours.

-- End of Section --

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SECTION 02921A

SEEDING  
01/02

PART 1 GENERAL

1.1 TEMPORARY SEEDING

Seeding as specified herein is only for the purpose of providing temporary seeding during construction in order to prevent soil erosion until the project is completed and the permanent landscaping work takes place.

There is no landscaping requirement and/or permanent seeding under this Contract.

Surface erosion control materials as specified in this section are required for the proper installation of the temporary seeding. Surface erosion control materials shall be applied at all areas, as indicated for the permanent installation of the fescue seeding, on Volume 1, Drawing Sheet L100.

1.2 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM C 602	(1995a; R 2001) Agricultural Liming Materials
ASTM D 2028	(1976; R 1997) Cutback Asphalt (Rapid-Curing Type)
ASTM D 4972	(2001) pH of Soils
ASTM D 5268	(1992; R 1997) Topsoil Used for Landscaping Purposes
ASTM D 5883	(1996e1) Use of Rotary Kiln Produced Expanded Shale, Clay or Slate (ESCS) as a Mineral Amendment in Topsoil Used for Landscaping and Related Purposes
ASTM D 977	(1998) Emulsified Asphalt

U.S. DEPARTMENT OF AGRICULTURE (USDA)

AMS Seed Act	(1995) Federal Seed Act Regulations Part 201
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1.3 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-03 Product Data

Equipment

Surface Erosion Control Material; G, AE  
Chemical Treatment Material; G, AE

Manufacturer's literature including physical characteristics, application and installation instructions for equipment, surface erosion control material and chemical treatment material.

A listing of equipment to be used for the seeding operation.

Delivery

Delivery schedule.

Finished Grade and Topsoil

Finished grade status.

Topsoil

Availability of topsoil from the stripping and stock piling operation.

Quantity Check

Bag count or bulk weight measurements of material used compared with area covered to determine the application rate and quantity installed.

Seed Establishment Period

Calendar time period for the seed establishment period. When there is more than one seed establishment period, the boundaries of the seeded area covered for each period shall be described.

Maintenance Record

Maintenance work performed, area repaired or reinstalled, diagnosis for unsatisfactory stand of grass plants.

Application of Pesticide

Pesticide treatment plan with sequence of treatment work with dates and times. The pesticide trade name, EPA registration number, chemical composition, formulation, concentration of original and diluted material, application rate of active ingredients, method of application, area treated, amount applied; and the name and state license number of the state certified applicator shall be included.

SD-04 Samples

Delivered Topsoil

Samples taken from several locations at the source.

Soil Amendments

A 10-pound sample.

Mulch

A 5-pound sample.

SD-06 Test Reports

Equipment Calibration

Certification of calibration tests conducted on the equipment used in the seeding operation.

Soil Test

Certified reports of inspections and laboratory tests, prepared by an independent testing agency, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used and compliance with recognized test standards shall be described.

SD-07 Certificates

Seed  
Topsoil  
pH Adjuster  
Fertilizer  
Organic Material  
Soil Conditioner  
Mulch  
Asphalt Adhesive  
Pesticide

Prior to the delivery of materials, certificates of compliance attesting that materials meet the specified requirements. Certified copies of the material certificates shall include the following:

- a. Seed. Classification, botanical name, common name, percent pure live seed, minimum percent germination and hard seed, maximum percent weed seed content, and date tested.
- b. Topsoil. Particle size, pH, organic matter content, textural class, soluble salts, chemical and mechanical analyses.
- c. pH Adjuster. Calcium carbonate equivalent and sieve analysis.
- d. Fertilizer. Chemical analysis and composition percent.
- e. Organic Material: Composition and source.
- f. Soil Conditioner: Composition and source.

- g. Mulch: Composition and source.
- h. Asphalt Adhesive: Composition.
- i. Pesticide. EPA registration number and registered uses.

#### 1.4 SOURCE INSPECTION

The source of delivered topsoil shall be subject to inspection.

#### 1.5 DELIVERY, INSPECTION, STORAGE, AND HANDLING

##### 1.5.1 Delivery

A delivery schedule shall be provided at least 10 calendar days prior to the first day of delivery.

##### 1.5.1.1 Delivered Topsoil

Prior to the delivery of any topsoil, its availability shall be verified in paragraph TOPSOIL. A soil test shall be provided for topsoil delivered to the site.

##### 1.5.1.2 Soil Amendments

Soil amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's chemical analysis. In lieu of containers, soil amendments may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.

##### 1.5.1.3 Pesticides

Pesticide material shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses.

##### 1.5.2 Inspection

Seed shall be inspected upon arrival at the job site for conformity to species and quality. Seed that is wet, moldy, or bears a test date five months or older, shall be rejected. Other materials shall be inspected for compliance with specified requirements. The following shall be rejected: open soil amendment containers or wet soil amendments; topsoil that contains slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over a minimum 1-1/2 inch diameter; and topsoil that contains viable plants and plant parts. Unacceptable materials shall be removed from the job site.

##### 1.5.3 Storage

Materials shall be stored in areas designated by the Contracting Officer. Seed, lime, and fertilizer shall be stored in cool, dry locations away from contaminants. Chemical treatment material shall be stored according to manufacturer's instructions and not with seeding operation materials.

##### 1.5.4 Handling

Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.

1.5.5 Time Limitation

Hydroseeding time limitation for holding seed in the slurry shall be a maximum 24 hours.

PART 2 PRODUCTS

2.1 SEED

2.1.1 Seed Classification

State-certified seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for percentages of mixture, purity, germination, hard seed, weed seed content, and inert material. Labels shall be in conformance with AMS Seed Act and applicable state seed laws.

2.1.2 Permanent Seed Species and Mixtures

Permanent seed species and mixtures shall be proportioned by weight as follows:

<u>Botanical Name</u>	<u>Common Name</u>	<u>Mixture Percent by Weight</u>	<u>Percent Pure Live Seed</u>
LAWN SEED			
Festuca arundinacea	Turf-type Tall Fescue, 'Coyote,' 'Watchdog,' 'Coronado,' 'Southern Choice,' 'Genesis,' 'Chieftain,' 'Guardian,' or combination (blend of one or more of the above cultivars)	90%	97%
Lolium Perenne	Perennial Ryegrass 'Pennfine'	10%	97%

2.1.3 Temporary Seed Species

Temporary seed species for surface erosion control or overseeding shall be as follows:

<u>Botanical Name</u>	<u>Common Name</u>	<u>Percent Pure Live Seed</u>
Lolium multiflorum	Annual Ryegrass	95%

#### 2.1.4 Quality

Weed seed shall be a maximum 1 percent by weight of the total mixture.

#### 2.1.5 Seed Mixing

The mixing of seed may be done by the seed supplier prior to delivery, or on site as directed.

#### 2.1.6 Substitutions

Substitutions will not be allowed without written request and approval from the Contracting Officer.

### 2.2 TOPSOIL

Topsoil shall be as defined in ASTM D 5268. When available, the topsoil shall be the existing surface soil stripped and stockpiled onsite in accordance with Section 02300A EARTHWORK. When additional topsoil is required beyond the available topsoil from the stripping operation, topsoil shall be delivered and amended as recommended by the soil test for the seed specified. Topsoil shall be free from slag, cinders, lumps of soil, sticks, roots, trash or other material over a minimum 1-1/2-inch diameter.

Topsoil shall be free from stones larger than 1/2-inch in any dimension. Topsoil shall be free from viable plants and plant parts.

### 2.3 SOIL AMENDMENTS

Soil amendments shall consist of pH adjuster, fertilizer, organic material and soil conditioners meeting the following requirements. Vermiculite shall not be used.

#### 2.3.1 pH Adjuster

The pH adjuster shall be an agricultural liming material in accordance with ASTM C 602. These materials may be burnt lime, hydrated lime, ground limestone, sulfur, or shells. The pH adjuster shall be used to create a favorable soil pH for the plant material specified.

##### 2.3.1.1 Limestone

Limestone material shall contain a minimum calcium carbonate equivalent of 80 percent. Gradation: A minimum 95 percent shall pass through a No. 8 sieve and a minimum 55 percent shall pass through a No. 60 sieve. To raise soil pH, agricultural grade limestone, ground and pelletized shall be used (minimum ENM or 600 lb/ton).

##### 2.3.1.2 Hydrated Lime

Hydrated lime shall contain a minimum calcium carbonate equivalent of 110 percent. Gradation: A minimum 100 percent shall pass through a No. 8 sieve and a minimum 97 percent shall pass through a No. 60 sieve.

##### 2.3.1.3 Burnt Lime

Burnt lime shall contain a minimum calcium carbonate equivalent of 140 percent. Gradation: A minimum 95 percent shall pass through a No. 8 sieve and a minimum 35 percent shall pass through a No. 60 sieve.

### 2.3.2 Fertilizer

The nutrients ratio shall be 13 or 17 percent nitrogen, 13 or 17 percent phosphorus, and 13 or 17 percent potassium. Fertilizer shall be controlled release commercial grade, free flowing, uniform in composition, and consist of a nitrogen-phosphorus-potassium ratio. The fertilizer shall be derived from sulphur coated urea, urea formaldehyde, plastic or polymer coated pills, or isobutylenediurea (IBDU). Fertilizer shall be balanced with the inclusion of trace minerals and micro-nutrients. Fertilizer shall conform to Federal Specification 0-F-241d.

### 2.3.3 Organic Material

Organic material shall consist of either bonemeal, rotted manure, decomposed wood derivatives, recycled compost, or worm castings.

#### 2.3.3.1 Bonemeal

Bonemeal shall be finely ground, steamed bone product containing from 2 to 4 percent nitrogen and 16 to 40 percent phosphoric acid.

#### 2.3.3.2 Rotted Manure

Rotted manure shall be unleached horse, chicken or cattle manure containing a maximum 25 percent by volume of straw, sawdust, or other bedding materials. It shall contain no chemicals or ingredients harmful to plants. The manure shall be heat treated to kill weed seeds and be free of stones, sticks, and soil.

#### 2.3.3.3 Decomposed Wood Derivatives

Decomposed wood derivatives shall be ground bark, sawdust, yard trimmings, or other wood waste material that is free of stones, sticks, soil, and toxic substances harmful to plants, and is fully composted or stabilized with nitrogen.

#### 2.3.3.4 Recycled Compost

Compost shall be a well decomposed, stable, weed free organic matter source. Compost shall be derived from food; agricultural or industrial residuals; biosolids (treated sewage sludge); yard trimmings; or source-separated or mixed solid waste. The compost shall possess no objectionable odors and shall not resemble the raw material from which it was derived. The material shall not contain substances toxic to plants. Gradation: The compost material shall pass through a 3/8 inch screen, possess a pH of 5.5 to 8.0, and have a moisture content between 35-55 percent by weight. The material shall not contain more than 1 percent by weight of man-made foreign matter. Compost shall be cleaned of plastic materials larger than 2 inches in length. The Contractor shall comply with EPA requirements in accordance with Section 01670 RECYCLED / RECOVERED MATERIALS.

#### 2.3.3.5 Worm Castings

Worm castings shall be screened from worms and food source, and shall be commercially packaged.

### 2.3.4 Soil Conditioner

Soil conditioner shall be sand, super absorbent polymers, calcined clay, or gypsum for use singly or in combination to meet the requirements of the soil test.

#### 2.3.4.1 Sand

Sand shall be clean and free of toxic materials. Gradation: A minimum 95 percent by weight shall pass a No. 10 sieve and a minimum 10 percent by weight shall pass a No. 16 sieve. Greensand shall be balanced with the inclusion of trace minerals and nutrients.

#### 2.3.4.2 Super Absorbent Polymers

To improve water retention in soils, super absorbent polymers shall be sized and applied according to the manufacturer's recommendations. Polymers shall be added as a soil amendment and be cross-linked polyacrylamide, with an absorption capacity of 250-400 times its weight. Polymers shall also be added to the seed and be a starch grafted polyacrylonitrile, with graphite added as a tacky sticker. It shall have an absorption capacity of 100 plus times its weight.

#### 2.3.4.3 Calcined Clay

Calcined clay shall be granular particles produced from montmorillonite clay calcined to a minimum temperature of 1200 degrees F. Gradation: A minimum 90 percent shall pass a No. 8 sieve; a minimum 99 percent shall be retained on a No. 60 sieve; and a maximum 2 percent shall pass a No. 100 sieve. Bulk density: A maximum 40 pounds per cubic foot.

#### 2.3.4.4 Gypsum

Gypsum shall be commercially packaged, free flowing, and a minimum 95 percent calcium sulfate by volume.

#### 2.3.4.5 Expanded Shale, Clay, or Slate (ESCS)

Rotary kiln produced ESCS material shall be in conformance with ASTM D 5883.

### 2.4 MULCH

Mulch shall be cereal straw, free from weeds, mold, and other deleterious materials. Mulch materials shall be native to the region.

#### 2.4.1 Straw

Straw shall be stalks from oats, wheat, rye, barley, or rice, furnished in air-dry condition and with a consistency for placing with commercial mulch-blowing equipment.

#### 2.4.2 Hay

Hay shall be native hay, sudan-grass hay, broomsedge hay, or other herbaceous mowings, furnished in an air-dry condition suitable for placing with commercial mulch-blowing equipment.

#### 2.4.3 Wood Cellulose Fiber

Wood cellulose fiber shall not contain any growth or germination-inhibiting

factors and shall be dyed an appropriate color to facilitate placement during application. Composition on air-dry weight basis: 9 to 15 percent moisture, pH range from 4.5 to 6.0.

## 2.5 ASPHALT ADHESIVE

Asphalt adhesive shall conform to the following: Emulsified asphalt, conforming to ASTM D 977, Grade SS-1; and cutback asphalt, conforming to ASTM D 2028, Designation RC-70.

## 2.6 WATER

Water will be furnished by the Government for plant material establishment near the end of project completion. Water will be of quality suitable for irrigation. Water shall not contain elements toxic to plant life.

## 2.7 PESTICIDE

Pesticide shall be insecticide, herbicide, fungicide, nematocide, rodenticide or miticide. For the purpose of this specification, a soil fumigant shall have the same requirements as a pesticide. The pesticide material shall be EPA registered and approved.

## 2.8 SURFACE EROSION CONTROL MATERIAL

Surface erosion control material shall conform to the following:

### 2.8.1 Surface Erosion Control Blanket

Blanket manufactured to prevent erosion shall be machine produced mat of wood excelsior formed from a web of interlocking wood fibers; covered on one side with either knitted straw blanket-like mat construction; covered with biodegradable plastic mesh; or interwoven biodegradable thread, plastic netting, or twisted kraft paper cord netting.

### 2.8.2 Surface Erosion Control Fabric

Fabric manufactured to prevent erosion shall be knitted construction of polypropylene yarn with uniform mesh openings 3/4- to 7/8-inch square with strips of biodegradable paper. Filler paper strips shall have a minimum life of 6 months.

### 2.8.3 Plastic Mesh

Mesh manufactured to hold straw in place shall have 3/4-inch openings, clear color, and be biodegradable.

### 2.8.4 Surface Erosion Control Chemicals

Chemicals shall be high-polymer synthetic resin or cold-water emulsion of selected petroleum resins.

### 2.8.5 Hydrophilic Colloids

Hydrophilic colloids shall be physiologically harmless to plant and animal life without phytotoxic agents. Colloids shall be naturally occurring, silicate powder based, and shall form a water insoluble membrane after curing. Colloids shall resist mold growth.

### 2.8.6 Erosion Control Material Anchors

Erosion control anchors shall be as recommended by the manufacturer.

## PART 3 EXECUTION

### 3.1 INSTALLING SEED TIME AND CONDITIONS

#### 3.1.1 Seeding Times

Lawn seed shall be installed from March 1 to May 15 for spring establishment; and from August 20 to October 15 for fall establishment.

#### 3.1.2 Seeding Conditions

Seeding operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, or other unsatisfactory conditions prevail, the work shall be stopped when directed.

When special conditions warrant a variance to the seeding operations, proposed alternate times shall be submitted for approval.

#### 3.1.3 Equipment Calibration

Immediately prior to the commencement of seeding operations, calibration tests shall be conducted on the equipment to be used. These tests shall confirm that the equipment is operating within the manufacturer's specifications and will meet the specified criteria. The equipment shall be calibrated a minimum of once every day during the operation. The calibration test results shall be provided within 1 week of testing.

#### 3.1.4 Soil Test

Delivered topsoil, existing soil in smooth graded areas, and stockpiled topsoil shall be tested in accordance with ASTM D 5268 and ASTM D 4972 for determining the particle size, pH, organic matter content, textural class, chemical analysis, soluble salts analysis, and mechanical analysis. Sample collection on site shall be random over the entire site. Sample collection for stockpiled topsoil shall be at different levels in the stockpile. The soil shall be free from debris, noxious weeds, toxic substances, or other materials harmful to plant growth. The test shall determine the quantities and type of soil amendments required to meet local growing conditions for the seed species specified.

### 3.2 SITE PREPARATION

#### 3.2.1 Finished Grade and Topsoil

The Contractor and Contracting Officer shall verify that finished grades are as indicated on drawings, and the placing of topsoil, smooth grading, and compaction requirements have been completed in accordance with Section 02300A EARTHWORK, prior to the commencement of the seeding operation.

##### 3.2.1.1 Site Preparation

Site preparation work shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, or other unsatisfactory condition prevails, the work shall be stopped when directed by the Contract Officer.

### 3.2.2 Application of Soil Amendments

#### 3.2.2.1 Applying pH Adjuster

The pH adjuster shall be applied as recommended by the soil test. The pH adjuster shall be incorporated into the soil to a maximum 4-inch depth or may be incorporated as part of the tillage operation.

#### 3.2.2.2 Applying Fertilizer

The fertilizer shall be applied as recommended by the soil test. Fertilizer shall be incorporated into the soil to a maximum 4-inch depth or may be incorporated as part of the tillage or hydroseeding operation.

#### 3.2.2.3 Applying Soil Conditioner

The soil conditioner shall be as recommended by the soil test. The soil conditioner shall be spread uniformly over the soil a minimum 1-inch depth and thoroughly incorporated by tillage into the soil to a maximum 4-inch depth.

#### 3.2.2.4 Applying Super Absorbent Polymers

Polymers shall be spread uniformly over the soil as recommended by the manufacturer and thoroughly incorporated by tillage into the soil to a maximum 4-inch depth.

### 3.2.3 Tillage

Soil on slopes up to a maximum 3-horizontal-to-1-vertical shall be tilled to a minimum 4-inch depth. On slopes between 3-horizontal-to-1-vertical and 1-horizontal-to-1 vertical, the soil shall be tilled to a minimum 2-inch depth by scarifying with heavy rakes, or other method. Rototillers shall be used where soil conditions and length of slope permit. On slopes 1-horizontal-to-1 vertical and steeper, no tillage is required. Drainage patterns shall be maintained as indicated on drawings. The pH adjuster, fertilizer, and soil conditioner may be applied during this procedure.

### 3.2.4 Finished Grading

#### 3.2.4.1 Preparation

Turf areas shall be filled as needed or have surplus soil removed to attain the finished grade. Drainage patterns shall be maintained. Turf areas compacted by construction operations shall be completely pulverized by tillage. Soil used for repair of erosion or grade deficiencies shall conform to topsoil requirements. The prepared surface shall be a maximum 1 inch below the adjoining grade of any surfaced area. New surfaces shall be blended to existing areas. The prepared surface shall be completed with a light raking to remove debris.

#### 3.2.4.2 Lawn Area Debris

Debris and stones measuring over 3/4 inch in any dimension shall be removed from the surface.

#### 3.2.4.3 Protection

Areas with the prepared surface shall be protected from compaction or

damage by vehicular or pedestrian traffic and surface erosion.

### 3.3 INSTALLATION

General: Prior to installing seed, any previously prepared surface compacted or damaged shall be reworked to meet the requirements of paragraph SITE PREPARATION. Seeding operations shall not take place when the wind velocity will prevent uniform seed distribution.

#### 3.3.1 Installing Seed

Seeding method shall be Broadcast Seeding, Drill Seeding, or Hydroseeding. Seeding procedure shall ensure even coverage. Gravity feed applicators, which drop seed directly from a hopper onto the prepared soil, shall not be used because of the difficulty in achieving even coverage, unless otherwise approved. Absorbent polymer powder shall be mixed with the dry seed at the rate recommended by the manufacturer.

##### 3.3.1.1 Broadcast Seeding

Lawn seed shall be uniformly broadcast at the rate of 10 pounds per 1000 square feet using broadcast seeders. Half the total rate of seed application shall be broadcast in 1 direction, with the remainder of the seed rate broadcast at 90 degrees from the first direction. Seed shall be covered a maximum 1/4-inch depth by disk harrow, steel mat drag, cultipacker, or other approved device.

##### 3.3.1.2 Drill Seeding

Lawn seed shall be uniformly drilled to a maximum 1/2-inch depth and at the rate of 10 pounds per 1000 square feet, using equipment having drills a maximum 7 inches distance apart. Row markers shall be used with the drill seeder. Half the total rate of seed application shall be drilled in 1 direction, with the remainder of the seed rate drilled at 90 degrees from the first direction. The drilling equipment shall be maintained with half full seed boxes during the seeding operations.

##### 3.3.1.3 Rolling

The entire area shall be firmed with a roller not exceeding 90 pounds per foot roller width. Slopes over a maximum 3-horizontal-to-1 vertical shall not be rolled. Areas seeded with seed drills equipped with rollers shall not be rolled.

#### 3.3.2 Hydroseeding

Lawn seed shall be mixed to ensure hydroseed broadcast at the rate of 10 pounds per 1000 square feet. Seed and fertilizer shall be added to water and thoroughly mixed to meet the rates specified. The time period for the seed to be held in the slurry shall be a maximum 24 hours. Wood cellulose fiber mulch and tackifier shall be added at the rates recommended by the manufacturer after the seed, fertilizer, and water have been thoroughly mixed to produce a homogeneous slurry. Slurry shall be uniformly applied under pressure over the entire area. The hydroseeded area shall not be rolled.

#### 3.3.3 Mulching

##### 3.3.3.1 Hay or Straw Mulch

Hay or straw mulch shall be spread uniformly at the rate of 2 tons per acre. Mulch shall be spread by hand, blower-type mulch spreader, or other approved method. Mulching shall be started on the windward side of relatively flat areas or on the upper part of steep slopes, and continued uniformly until the area is covered. The mulch shall not be bunched or clumped. Sunlight shall not be completely excluded from penetrating to the ground surface. All areas installed with seed shall be mulched on the same day as the seeding. Mulch shall be anchored immediately following spreading.

#### 3.3.3.2 Mechanical Anchor

Mechanical anchor shall be a V-type-wheel land packer; a scalloped-disk land packer designed to force mulch into the soil surface; or other suitable equipment.

#### 3.3.3.3 Asphalt Adhesive Tackifier

Asphalt adhesive tackifier shall be sprayed at a rate between 10 to 13 gallons per 1000 square feet. Sunlight shall not be completely excluded from penetrating to the ground surface.

#### 3.3.3.4 Non-Asphaltic Tackifier

Hydrophilic colloid shall be applied at the rate recommended by the manufacturer, using hydraulic equipment suitable for thoroughly mixing with water. A uniform mixture shall be applied over the area.

#### 3.3.3.5 Asphalt Adhesive Coated Mulch

Hay or straw mulch may be spread simultaneously with asphalt adhesive applied at a rate between 10 to 13 gallons per 1000 square feet, using power mulch equipment which shall be equipped with suitable asphalt pump and nozzle. The adhesive-coated mulch shall be applied evenly over the surface. Sunlight shall not be completely excluded from penetrating to the ground surface.

#### 3.3.3.6 Wood Cellulose Fiber, Paper Fiber, and Recycled Paper

Wood cellulose fiber, paper fiber, or recycled paper shall be applied as part of the hydroseeding operation. The mulch shall be mixed and applied in accordance with the manufacturer's recommendations.

#### 3.3.4 Watering Seed

Watering shall be started immediately after completing the seeding of an area. Water shall be applied to supplement rainfall at a rate sufficient to ensure moist soil conditions to a minimum 1 inch depth. Run-off and puddling shall be prevented. Watering trucks shall not be driven over turf areas, unless otherwise directed by the Contracting Officer. Watering of other adjacent areas or plant material shall be prevented.

#### 3.4 SURFACE EROSION CONTROL

##### 3.4.1 Surface Erosion Control Material

Where indicated or as directed, surface erosion control material shall be installed in accordance with manufacturer's instructions. Placement of the

material shall be accomplished without damage to installed material or without deviation to finished grade.

#### 3.4.2 Temporary Seeding

The application rate shall be 8 pounds per 1000 square feet. When directed during contract delays affecting the seeding operation or when a quick cover is required to prevent surface erosion, the areas designated shall be seeded in accordance with temporary seed species listed under Paragraph SEED.

##### 3.4.2.1 Soil Amendments

When soil amendments have not been applied to the area, the quantity of 1/2 of the required soil amendments shall be applied and the area tilled in accordance with paragraph SITE PREPARATION. The area shall be watered in accordance with paragraph Watering Seed.

##### 3.4.2.2 Remaining Soil Amendments

The remaining soil amendments shall be applied in accordance with the paragraph Tillage when the surface is prepared for installing seed.

#### 3.5 QUANTITY CHECK

For materials provided in bags, the empty bags shall be retained for recording the amount used. For materials provided in bulk, the weight certificates shall be retained as a record of the amount used. The amount of material used shall be compared with the total area covered to determine the rate of application used. Differences between the quantity applied and the quantity specified shall be adjusted as directed.

#### 3.6 APPLICATION OF PESTICIDE

When application of a pesticide becomes necessary to remove a pest or disease, a pesticide treatment plan shall be submitted and coordinated with the installation pest management program.

##### 3.6.1 Technical Representative

The certified installation pest management coordinator shall be the technical representative, and shall be present at all meetings concerning treatment measures for pest or disease control. They may be present during treatment application.

##### 3.6.2 Application

A state certified applicator shall apply required pesticides in accordance with EPA label restrictions and recommendations. Clothing and personal protective equipment shall be used as specified on the pesticide label. A closed system is recommended as it prevents the pesticide from coming into contact with the applicator or other persons. Water for formulating shall only come from designated locations. Filling hoses shall be fitted with a backflow preventer meeting local plumbing codes or standards. Overflow shall be prevented during the filling operation. Prior to each day of use, the equipment used for applying pesticide shall be inspected for leaks, clogging, wear, or damage. Any repairs are to be performed immediately. A pesticide plan shall be submitted.

### 3.7 RESTORATION AND CLEANUP

#### 3.7.1 Restoration

Existing turf areas, pavements, and facilities that have been damaged from the seeding operation shall be restored to original condition at Contractor's expense.

#### 3.7.2 Cleanup

Excess and waste material shall be removed from the seeded areas and shall be disposed offsite. Adjacent paved areas shall be cleaned.

### 3.8 PROTECTION OF INSTALLED AREAS

Immediately upon completion of the seeding operation in an area, the area shall be protected against traffic or other use by erecting barricades and providing signage as required, or as directed. Signage shall be in accordance with Section 10430A EXTERIOR SIGNAGE.

### 3.9 SEED ESTABLISHMENT PERIOD

#### 3.9.1 Commencement

The seed establishment period to obtain a healthy stand of grass plants shall begin on the first day of seeding work under this contract and shall continue through the remaining life of the contract and end 3 months after the last day of the seeding operation required by this contract. Written calendar time period shall be furnished for the seed establishment period. When there is more than 1 seed establishment period, the boundaries of the seeded area covered for each period shall be described. The seed establishment period shall be coordinated with Sections 02922A SODDING and 02930A EXTERIOR PLANTING. The seed establishment period shall be modified for inclement weather, shut down periods, or for separate completion dates of areas.

#### 3.9.2 Satisfactory Stand of Grass Plants

Grass plants shall be evaluated for species and health when the grass plants are a minimum 1 inch high.

##### 3.9.2.1 Lawn Area

A satisfactory stand of grass plants from the seeding operation for a lawn area shall be a minimum 100 grass plants per square foot. Bare spots shall be a maximum 6 inches square. The total bare spots shall be a maximum 2 percent of the total seeded area.

#### 3.9.3 Maintenance During Establishment Period

Maintenance of the seeded areas shall include eradicating weeds, insects and diseases; protecting embankments and ditches from surface erosion; maintaining erosion control materials and mulch; protecting installed areas from traffic; mowing; watering; and post-fertilization.

##### 3.9.3.1 Mowing

- a. Lawn Areas: Lawn areas shall for the first mowing be mowed to a minimum 1-3/4-inch height when the turf is a maximum 2-1/2 inches

high. Thereafter, lawn areas shall be mowed to a height of 2 inches when the turf is a maximum of 3 inches high. Clippings shall be removed when the amount cut prevents sunlight from reaching the ground surface.

3.9.3.2 Post-Fertilization

Post-fertilization fertilizer shall be applied 20 to 25 days following lawn seeding and 40 to 45 days following field seeding. For lawn areas, the application rate shall be 20 pounds of 12-12-12 per 1,000 square feet. The application shall be timed prior to the advent of winter dormancy and shall be made without burning the installed grass plants.

3.9.3.3 Pesticide Treatment

Treatment for disease or pest shall be in accordance with paragraph APPLICATION OF PESTICIDE.

3.9.3.4 Repair or Reinstall

Unsatisfactory stand of grass plants and mulch shall be repaired or reinstalled, and eroded areas shall be repaired in accordance with paragraph SITE PREPARATION.

3.9.3.5 Maintenance Record

A record of each site visit shall be furnished, describing the maintenance work performed; areas repaired or reinstalled; and diagnosis for unsatisfactory stand of grass plants.

-- End of Section --

## ACCESS CONTROL FACILITIES

### VISITOR'S CENTER/GUARD ADMINISTRATION BUILDING

#### HEADING V-01

PAIR DOORS 100A

TO HAVE:

4 HINGES	BB1199 - 32D 4 1/2 x 4 1/2 NRP	HAGER
2 ELECTRIC HINGES	BB1199 - ETW - 4 - 32D 4 1/2 x 4 1/2	HAGER
2 ELECTRIC/MAGNETIC LOCKS	280 + - MBS - 689	LOCKNETICS
2 SMARTBARS	690 - 36 - 628	LOCKNETICS
2 DOOR PULLS	BF157 - 32D	ROCKWOOD
2 DOOR CLOSERS	CLP7500 - 689 x 7786	NORTON
1 CARD READER *	ProxPro Reader	HID CORPORATION
1 POWER SUPPLY	510	LOCKNETICS
1 THRESHOLD	425 - 72"	NATIONAL GUARD

NOTE: DOOR BOTTOMS, ASTRAGALS AND WEATHERSTRIPPING BY ALUMINUM DOOR SUPPLIER

\* CARD READER SHALL BE FURNISHED BY THE SECURITY EQUIPMENT SUPPLIER AS SPECIFIED UNDER SECTION 16751A - IES SYSTEM

#### HEADING V-02

PAIR DOORS 100B

TO HAVE:

6 HINGES	BB1199 - 32D 4 1/2 x 4 1/2	HAGER
2 PUSH/PULL	BF15747 - 32D 33" CTC	ROCKWOOD
2 DOOR CLOSERS	CLP7500 - 689 x 7786	NORTON

#### HEADING V-03

SET SLIDING DOORS 127A, 127B

EACH SET TO HAVE:

2 MORTISE CYLINDERS	1E74 - 626 x C181 x RP3	BEST
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BALANCE OF HARDWARE BY ALUMINUM DOOR SUPPLIER

#### **HEADING V-04**

SINGLE DOOR 120A  
TO HAVE:

3 HINGES	BB1199 - 32D 4 1/2 x 4 1/2 NRP	HAGER
1 EXIT DEVICE	ED4200 - 630 x M52	CORBIN/RUSSWIN
1 RIM CYLINDER	1E72 - 626 x RP	BEST
1 MORTISE CYLINDER	1E74 - 626 x RP3	BEST
1 DOOR PULL	BF157 - 32D	ROCKWOOD
1 DOOR CLOSER	CLP7500 - 689 x 7786	NORTON
1 THRESHOLD	425 - 36"	NATIONAL GUARD

NOTE: DOOR BOTTOM AND WEATHERSTRIPPING BY ALUMINUM DOOR SUPPLIER

#### **HEADING V-05**

PAIR DOORS 104A  
TO HAVE:

6 HINGES	BB1199 - 32D 4 1/2 x 4 1/2 NRP	HAGER
2 FLUSH BOLTS	555 - 26D - 12"	ROCKWOOD
1 LOCKSET	93K - 7D - 15D - 626	BEST
2 DOOR CLOSERS	CLP7500 - 689	NORTON
2 KICK PLATES	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 THRESHOLD	425 - 72"	NATIONAL GUARD
2 DOOR BOTTOMS	101VA - 36"	NATIONAL GUARD
1 GASKETING	5050C - 7'	NATIONAL GUARD
1 SET WEATHERSTRIPPING	155V (HEAD AND JAMBS)	NATIONAL GUARD

NOTE: A) ASTRAGAL BY HOLLOW METAL DOOR SUPPLIER  
B) APPLY GASKETING TO FACE OF ASTRAGAL

#### **HEADING V-06**

SINGLE DOOR 103A  
TO HAVE:

3 HINGES	BB1199 - 32D 4 1/2 x 4 1/2 NRP	HAGER
1 LOCKSET	93K - 7D - 15D - 626	BEST
1 DOOR CLOSER	CLP7500 - 689	NORTON
1 THRESHOLD	425 - 36"	NATIONAL GUARD
1 DOOR BOTTOM	101VA - 36"	NATIONAL GUARD
1 SET WEATHERSTRIPPING	155V (HEAD AND JAMBS)	NATIONAL GUARD

**HEADING V-07**

SINGLE DOOR 125A  
TO HAVE:

3 HINGES	BB1199 - 32D 4 1/2 x 4 1/2 NRP	HAGER
1 EXIT/ALARM	ED4200 - 630 x M61	CORBIN/RUSSWIN
1 MORTISE CYLINDER	1E74 - 626 x RP3	BEST
1 DOOR CLOSER	CLP7500 - 689 x 7786	NORTON
1 THRESHOLD	425 - 36"	NATIONAL GUARD

NOTE: DOOR BOTTOM AND WEATHERSTRIPPING BY ALUMINUM DOOR SUPPLIER

**HEADING V-08**

PAIR DOORS 113A  
TO HAVE:

6 HINGES	BB1168 - 26D 4 1/2 x 4 1/2 NRP	HAGER
2 EXIT DEVICES	ED5400 - N955 - 630 x M55	CORBIN/RUSSWIN
2 RIM CYLINDERS	1E72 - 626 x RP	BEST
2 DOOR CLOSERS	PR7500 - 689	NORTON
2 KICK PLATES	.050 - 32D 10" x 2" LDW	ROCKWOOD
2 WALL STOP	409 - 32D	ROCKWOOD
2 DOOR SILENCERS	608	ROCKWOOD

**HEADING V-09**

SINGLE DOORS 118A, 118B  
TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2 NRP	HAGER
1 LOCKSET	93K - 7D - 15D - 626	BEST
1 ELECTRIC STRIKE	7002 - 24D - 630	H.E.S.
1 CARD READER *	ProxPro Reader	HID CORPORATION
1 DOOR CLOSER	PR7500 - 689	NORTON
1 KICK PLATE	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 POWER SUPPLY	505	LOCKNETICS
1 WALL STOP	409 - 32D	ROCKWOOD
3 DOOR SILENCERS	608	ROCKWOOD

\* CARD READER SHALL BE FURNISHED BY THE SECURITY EQUIPMENT SUPPLIER AS SPECIFIED UNDER SECTION 16751A - IES SYSTEM

**HEADING V-10**

SINGLE DOOR 126A  
TO HAVE:

3 HINGES	BB1199 - 32D 4 1/2 x 4 1/2	HAGER
1 PUSH/PULL	BF15747 - 32D x 33" CTC	ROCKWOOD
1 DOOR CLOSER	PR7500 - 689 x 7786	NORTON
1 WALL STOP	409 - 32D	ROCKWOOD

**HEADING V-11**

SINGLE DOOR 113B  
TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2 NRP	HAGER
1 EXIT DEVICE	ED5200 - N955 - 630	CORBIN/RUSSWIN
1 RIM CYLINDER	1E72 - 626	BEST
1 DOOR CLOSER	7500 - 689	NORTON
1 KICK PLATE	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 WALL STOP	409 - 32D	ROCKWOOD
3 DOOR SILENCERS	608	ROCKWOOD

**HEADING V-12**

SINGLE DOORS 109A, 111A  
EACH DOOR TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2	HAGER
1 PUSH PLATE	70C - 32D 4 x 16	ROCKWOOD
1 PULL PLATE	107 x 70C - 32D 4 x 16	ROCKWOOD
1 DOOR CLOSER	PR7500 - 689	NORTON
1 KICK PLATE	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 WALL STOP	409 - 32D	ROCKWOOD
3 DOOR SILENCERS	608	ROCKWOOD

**HEADING V-13**

SINGLE DOORS 105A, 121A  
EACH DOOR TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2	HAGER
1 LOCKSET	93K - 7D - 15D - 626	BEST
1 WALL STOP	409 - 32D	ROCKWOOD
<del>TEXT DELETED</del>		
1 DOOR CLOSER	PR7500-689	NORTON
1 KICK PLATE	.050-32D 10" x 2" LDW	ROCKWOOD
1 GASKETING	2525C-17'	NATIONAL GUARD

**HEADING V-14**

SINGLE DOORS 106A, 119A  
EACH DOOR TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2	HAGER
1 LOCKSET	93K - 7AB - 15D - 626	BEST
1 WALL STOP	409 - 32D	ROCKWOOD
3 DOOR SILENCERS	608	ROCKWOOD

### HEADING V-15

SINGLE DOOR 116A  
TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2	HAGER
1 LOCKSET	93K - 7R - 15D - 626	BEST
1 WALL STOP	409 - 32D	ROCKWOOD
<del>TEXT DELETED</del>		
1 DOOR CLOSER	PR7500-689	NORTON
1 KICK PLATE	.050-32D 10" x 2" LDW	ROCKWOOD
1 GASKETING	2525C-17'	NATIONAL GUARD

### HEADING V-16

SINGLE DOOR 117A  
TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2	HAGER
1 LOCKSET	93K - 7G - 15D - 626	BEST
1 WALL STOP	409 - 32D	ROCKWOOD
3 DOOR SILENCERS	608	ROCKWOOD

### HEADING V-17

SINGLE DOOR 102A  
TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2 NRP	HAGER
1 LOCKSET	93K - 7D - 15D - 626	BEST
<del>TEXT DELETED</del>		
1 KICK PLATE	.050 - 32D 10" x 2" LDW	ROCKWOOD
<del>TEXT DELETED</del>		
1 DOOR CLOSER	PR7500-689	NORTON
1 GASKETING	2525C-17'	NATIONAL GUARD

### HEADING V-18

SINGLE DOOR 124A  
TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2 NRP	HAGER
1 LOCKSET	93K - 7D - 15D - 626	BEST
1 WALL STOP	409 - 32D	ROCKWOOD
<del>TEXT DELETED</del>		
1 DOOR CLOSER	PR7500-689	NORTON
1 GASKETING	2525C-17'	NATIONAL GUARD

**HEADING V-19**

PAIR DOORS 115A  
TO HAVE:

6 HINGES	BB1279 - 26D 4 1/2 x 4 1/2 NRP	HAGER
<del>TEXT DELETED</del>		
1 LOCKSET	93K - 7D - 15D - 626	BEST
1 D.P. STRIKE	570 - 26D	ROCKWOOD
2 WALL STOPS	409 - 32D	ROCKWOOD
<del>TEXT DELETED</del>		
2 DOOR CLOSERS	PR7500-689	NORTON
1 COORDINATOR	1700-USP	ROCKWOOD
1 SET AUTO FLUSH BOLTS	942-26D	DCI
2 KICK PLATES	.050-32D 10" x 2" LDW	ROCKWOOD
1 GASKETING	5050C-27'	NATIONAL GUARD

NOTE: A) ASTRAGAL BY WOOD DOOR SUPPLIER  
B) APPLY GASKETING TO ASTRAGAL.

**HEADING V-20**

SINGLE DOOR 114A  
TO HAVE:

ALL HARDWARE BY DOOR SUPPLIER

## GUARD MONITORING BUILDING

### HEADING M-01

SINGLE DOOR 101  
TO HAVE:

3 HINGES	BB1199 - 32D 4 1/2 x 4 1/2 NRP	HAGER
1 LOCKSET	93K - 7AB - 15D - 626	BEST
1 DOOR CLOSER	CLP7500 - 689	NORTON
1 KICK PLATE	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 THRESHOLD	425 - 36"	NATIONAL GUARD
1 DOOR BOTTOM	101VA - 36"	NATIONAL GUARD
1 SET WEATHERSTRIPPING	155V (HEAD AND JAMBS)	NATIONAL GUARD

### HEADING M-02

PAIR DOORS 105  
TO HAVE:

6 HINGES	BB1199 - 32D 4 1/2 x 4 1/2 NRP	HAGER
2 FLUSH BOLTS	555 - 26D 12"	ROCKWOOD
1 LOCKSET	93K - 7D - 15D - 626	BEST
2 DOOR CLOSERS	CLP7500T - 689	NORTON
2 KICK PLATES	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 THRESHOLD	425 - 72"	NATIONAL GUARD
2 DOOR BOTTOMS	101VA - 36"	NATIONAL GUARD
1 GASKETING	5050C - 7'	NATIONAL GUARD
1 SET WEATHERSTRIPPING	155V (HEAD AND JAMBS)	NATIONAL GUARD

NOTE: A) ASTRAGAL BY HOLLOW METAL DOOR SUPPLIER  
B) APPLY GASKETING TO FACE OF ASTRAGAL

### HEADING M-03

SINGLE DOOR 103  
TO HAVE:

3 HINGES	BB1199 - 32D 4 1/2 x 4 1/2 NRP	HAGER
1 LOCKSET	93K - 7D - 15D - 626	BEST
1 DOOR CLOSER	CLP7500 - 689	NORTON
1 KICK PLATE	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 THRESHOLD	425 - 36"	NATIONAL GUARD
1 DOOR BOTTOM	101VA - 36"	NATIONAL GUARD
1 SET WEATHERSTRIPPING	155V (HEAD AND JAMBS)	NATIONAL GUARD

**HEADING M-04**

SINGLE DOOR 104  
TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2 NRP	HAGER
1 LOCKSET	93K - 7D - 15D - 626	BEST
1 KICK PLATE	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 DOOR CLOSER	PR7500-689	NORTON
1 GASKETING	2525C-17'	NATIONAL GUARD

**HEADING M-05**

SINGLE DOOR 102  
TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2	HAGER
1 PRIVACY SET	93K - 0L - 15D - 626	BEST
1 DOOR CLOSER	PR7500 - 689	NORTON
1 KICK PLATE	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 WALL STOP	409 - 32D	ROCKWOOD
3 DOOR SILENCERS	608	ROCKWOOD

**HEADING M-06**

PAIR DOORS 101A  
TO HAVE:

6 HINGES	BB1279 - 26D 4 1/2 x 4 1/2 NRP	HAGER
2 FLUSH BOLTS	557 - 26D	ROCKWOOD
1 LOCKSET	93K - 7R - 15D - 626	BEST
1 D.P. STRIKE	570 - 26D	ROCKWOOD
2 O.H. STOP	10 - 336 - 630	RIXSON
2 DOOR SILENCERS	608	ROCKWOOD

**GATE HOUSE (SOUTH & EAST GATES: EACH TO HAVE)**

**HEADING G-01**

SINGLE DOORS 101A, 101B  
EACH DOOR TO HAVE:

3 HINGES	BB1199 - 32D 4 1/2 x 4 1/2 NRP	HAGER
1 LOCKSET	93K - 7AB - 15D - 626	BEST
1 DOOR CLOSER	CLP7500 - 689	NORTON
1 KICK PLATE	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 THRESHOLD	425 - 36"	NATIONAL GUARD
1 DOOR BOTTOM	101VA - 36"	NATIONAL GUARD
1 SET WEATHERSTRIPPING	155V (HEAD AND JAMBS)	NATIONAL GUARD

**HEADING G-02**

PAIR DOORS 105  
TO HAVE:

6 HINGES	BB1199 - 32D 4 1/2 x 4 1/2 NRP	HAGER
2 FLUSH BOLTS	555 - 26D 12"	ROCKWOOD
1 LOCKSET	93K - 7D - 15D - 626	BEST
2 DOOR CLOSERS	CLP7500T - 689	NORTON
2 KICK PLATES	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 THRESHOLD	425 - 72"	NATIONAL GUARD
2 DOOR BOTTOMS	101VA - 36"	NATIONAL GUARD
1 GASKETING	5050C - 7'	NATIONAL GUARD
1 SET WEATHERSTRIPPING	155V (HEAD AND JAMBS)	NATIONAL GUARD

NOTE: A) ASTRAGAL BY HOLLOW METAL DOOR SUPPLIER  
B) APPLY GASKETING TO FACE OF ASTRAGAL

**HEADING G-03**

SINGLE DOOR 104  
TO HAVE:

3 HINGES	B1199 - 32D 4 1/2 x 4 1/2 NRP	HAGER
1 LOCKSET	93K - 7D - 15D - 626	BEST
1 DOOR CLOSER	CLP7500 - 689	NORTON
1 KICK PLATE	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 THRESHOLD	425 - 36"	NATIONAL GUARD
1 DOOR BOTTOM	101VA - 36"	NATIONAL GUARD
1 SET WEATHERSTRIPPING	155V (HEAD AND JAMBS)	NATIONAL GUARD

**HEADING G-04**

SINGLE DOOR 102  
TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2	HAGER
1 PRIVACY SET	93K - 0L - 15D - 626	BEST
1 DOOR CLOSER	PR7500 - 689	NORTON
1 KICK PLATE	.050 - 32D 10" x 2" LDW	ROCKWOOD
1 WALL STOP	409 - 32D	ROCKWOOD
3 DOOR SILENCERS	608	ROCKWOOD

**HEADING G-05**

SINGLE DOOR 103  
TO HAVE:

3 HINGES	BB1279 - 26D 4 1/2 x 4 1/2 NRP	HAGER
1 LOCKSET	93K - 7D - 15D - 626	BEST
<del>TEXT DELETED</del>		
1 KICK PLATE	.050 - 32D 10" x 2" LDW	ROCKWOOD
<del>TEXT DELETED</del>		
1 DOOR CLOSER	PR7500-689	NORTON
1 GASKETING	2525C-17'	NATIONAL GUARD

## SECTION 09915

## COLOR SCHEDULE

08/02

## PART 1 GENERAL

## 1.1 GENERAL

This section covers only the color of the exterior and interior materials and products that are exposed to view in the finished construction. The word "color" as used herein includes surface color and pattern.

Requirements for quality and method of installation are covered in other appropriate sections of the specifications. Specific locations where the various materials are required are shown on the drawings. Items not designated for color in this section may be specified in other sections. When color is not designated for items, the Contractor shall submit manufacturer's available color samples for selection.

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. 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-04 Samples

## Color Schedule; G, A/E

Four sets of color boards, 120 days after the Contractor is given Notice to proceed, complying with the following requirements:

- a. Color boards shall reflect all actual finish textures, patterns, and colors required for this contract.
- b. Materials shall be labeled with the finish type, manufacturer's name, pattern, and color reference.
- c. Samples shall be on size 8-1/2 by 11 inch boards with a maximum spread of size 25-1/2 by 33 inches for foldouts.
- d. Samples for this color board are required in addition to samples requested in other specification sections.
- e. Color boards shall be submitted to the Contracting Officer

## PART 2 PRODUCTS

## 2.1 REFERENCE TO MANUFACTURER'S COLOR

Where color is shown as being specific to one manufacturer, an equivalent color by another manufacturer may be submitted for approval. Manufacturers and materials specified are not intended to limit the selection of equal colors from other manufacturers.

## 2.2 COLOR SCHEDULE

The color schedule lists the colors, patterns and textures required for exterior and interior finishes, including both factory applied and field applied colors.

### 2.2.1 Exterior Walls

Exterior wall colors shall apply to exterior wall surfaces including recesses at entrances and projecting vestibules. Conduit shall be painted to closely match the adjacent surface color. Wall color shall be provided to match the colors listed below.

- 2.2.1.1 Brick:  
As manufactured by Eureka Blend 240 Modular Velour Crimson.
- 2.2.1.2 Mortar:  
Color to match adjacent masonry
- 2.2.1.3 Integrally Colored/Split-Faced Concrete Masonry Units:  
Trendwyth Industries, Inc. Natural MW.
- 2.2.1.4 Integrally Colored Cast Stone:  
Architectural Cast Stone, Mesa Buff.
- 2.2.1.5 Paint:  
Federal Color No. 10080.
- 2.2.1.6 Hardware and Associated Trim for Aluminum Doors:  
Dark bronze.
- 2.2.1.7 Glass and Glazing:  
Visitor's Center: Bronze Tint.  
Guard Monitoring: Solar Bronze Reflective.  
Guard Booths: Solar Bronze Reflective.  
Guard Shelters: Solar Bronze Reflective.  
Gate Houses: Solar Bronze Reflective.

### 2.2.2 Exterior Trim

Exterior trim shall be provided to match the colors listed below.

- 2.2.2.1 Steel Doors and Door Frames:  
Federal Color No. 10080.
- 2.2.2.2 Windows (mullion, muntin, sash, trim, and sill):  
Dark bronze.
- 2.2.2.3 Aluminum Doors and Door Frames:  
Dark Bronze.
- 2.2.2.4 Fascia:  
Dark bronze (to match Standing Seam Roof Color).
- 2.2.2.5 Soffits and Ceilings:  
Visitor's Center: Dark Bronze to match Standing Seam Roof Color.  
Guard Monitoring: Dark Bronze to match Standing Seam Roof Color.  
Guard Booths: Dark Bronze to match Standing Seam Roof Color.  
Guard Shelters: Dark Bronze to match Standing Seam Roof Color.

Guard Houses: Dark Bronze to match Standing Seam Roof Color.  
All Canopies: Off-White.

- 2.2.2.6 Overhang Soffits:  
Steel Pipe Gates: Off-White.
- 2.2.2.7 Canopy Soffits:  
Exposed Steel Structural Members: Federal Color No. 10080.
- 2.2.2.8 Downspouts, Gutters, Louvers, and Flashings:  
 Dark bronze (to match Standing Seam Roof Color).
- 2.2.2.9 Caulking and Sealants:  
 Bronze.
- 2.2.2.10 Control Joints:  
 Match color of adjacent materials.
- 2.2.2.11 Handrails for Outdoor Stairs:  
 Galvanized
- 2.2.2.12 Signage:  
 Refer to Section 10430 EXTERIOR SIGNAGE.
- 2.2.2.13 Pipe Bollards:  
Federal Color No. 10080.
- 2.2.2.14 Any Other Objects Attached to the Structure Which Have Not Been Specifically Mentioned:  
Federal Color No. 10080.
- 2.2.2.15 Exposed Concrete and Concrete Columns  
Gray Concrete, Light Sandblast Finish; except for Visitor's Parking Area Light Pole Bases to be: Heavy Sandblast, Exposed Red Aggregate.
- 2.2.3 Exterior Roof
- Roof color shall apply to exterior roof surfaces including sheet metal flashings and copings, mechanical units, roof trim, pipes, conduits, electrical appurtenances, and similar items. Roof color shall be provided to match the colors listed below.
- 2.2.3.1 Metal:  
 Dark bronze (to match Manufacturer's Standard Color).
- 2.2.3.2 Roofing Accessories, Roof Vents, Roof Exhausts, Flues, and Roof Equipment:  
 Dark bronze (to match Standing Seam Roof Color).
- 2.2.3.3 Miscellaneous Equipment:  
 Factory primed equipment and/or finished equipment shall have a finish coat to match Standing Seam Roof Color.
- 2.2.3.4 Translucent Skylight Panel System:  
 Upper and lower glass-fiber-reinforced panels: White.  
 Aluminum skylight frame: Clear anodized.  
 Steel structural members: Match Federal Color No. 10080.

#### 2.2.4 Interior Floor Finishes

Flooring materials shall be provided to match the colors listed below.

- 2.2.4.1 Carpet Tile:  
Heavy-duty commercial nylon grade, equal to CPT1:  
Lee's/Notion/D6566/117/Blue Willow.
- 2.2.4.2 Seamless Epoxy Flooring EPX1:  
Valspar, Quartzite, 6000, Color QB-8.
- 2.2.4.3 Vinyl Composition Tile: 12" x 12" x .125", equal to:  
VCT1: Field, Armstrong/Imperial Texture/51804/Earthstone Greige.  
VCT2: Brown Accent, Armstrong/Imperial Texture/51868/Smokey Brown.  
VCT3: Grey Accent, Armstrong/Imperial Texture/51915/Charcoal.
- 2.2.4.4 Porcelain Floor Tile: 18" x 18" Equal To:  
CTF1: Crossville Ceramics/Grand Canyon/AV114.  
CTF2: Crossville Cermaics/Plymouth Rock/AV116.  
CTF3: Crossville Ceramics/Monticello/AV111.  
CTF4: Lonestar/52.  
CTF5: Lonestar/642.  
CTF6: Lonestar/600.
- 2.2.4.5 Grout:  
  
Laticrete/#35/Mocha.
- 2.2.4.6 Entry Mat - Recessed (EM):  
C/S Group, Pedimat, Gunmetal, 7324, dark bronze rails.

#### 2.2.5 Interior Base Finishes

Base materials shall be provided to match the colors listed below.

- 2.2.5.1 Resilient Base (RB): Rubber base, equal to:  
Flexco, Outer Banks, 038, 4 inches high (distributed by Marley).
- 2.2.5.2 Transition Strips:  
Rubber strips; same color as resilient base.
- 2.2.5.3 Ceramic Tile Base:  
CTB1: 6" x 6" butt cove; Florida Tile, bright glazed 7N Natural.
- 2.2.5.4 Grout:  
To match wall or floor grout.

#### 2.2.6 Interior Wall Finishes

Interior wall color shall apply to the entire wall surface, including reveals, vertical furred spaces, grilles, diffusers, electrical and access panels, and piping and conduit adjacent to wall surfaces unless otherwise specified. Items not specified in other paragraphs shall be painted to match adjacent wall surface. Wall materials shall be provided to match the colors listed below.

- 2.2.6.1 Paint: Semigloss Enamel Finish Equal To:  
 PNT1(Field): Sherwin-Williams, SW7036, Accessible Beige.  
 PNT2 (Medium Beige): Sherwin-Williams, SW7039, Virtual Taupe.  
 PNT3 (Blue Accent): Sherwin-Williams, SW6250, Granite Peak.
- 2.2.6.2 Vinyl Wallcovering:  
 Koroseal M321-96 Melange, Gunmetal (distributed by Comwall).
- 2.2.6.3 Ceramic Wall Tile:  
 CTW1: 6" x 6"; Florida Tile, Bright Glaze 7N Natural.
- 2.2.6.4 Ceramic Tile Grout:  
 Laticrete/18/Saterne.

#### 2.2.7 Interior Ceiling Finishes

Ceiling colors shall apply to ceiling surfaces including soffits, furred down areas, grilles, diffusers, registers, and access panels. Ceiling color shall also apply to joist, underside of roof deck, and conduit and piping where joists and deck are exposed and required to be painted. Ceiling materials shall be provided to match the colors listed below.

- 2.2.7.1 Acoustical Tile and Grid:  
 24" x 24" equal to ACT1: painted patterned tile, color white.
- 2.2.7.2 Paint (PNT10):  
 Flat latex equal to Sherwin-Williams, SW7007, color Ceiling Bright White.
- 2.2.7.3 Exposed Metal Deck:  
 PNT10.
- 2.2.7.4 Exposed Structural Framing:  
Federal Color No. 10080.

#### 2.2.8 Interior Trim

Interior trim shall be provided to match the colors listed below.

- 2.2.8.1 Steel Doors:  
 Sherwin-Williams, SW3123K, Oak Mantel.
- 2.2.8.2 Steel Door Frames:  
 Semigloss enamel (PNT2), Sherwin-Williams, SW7039, Virtual Taupe.
- 2.2.8.3 Aluminum Doors and Door Frames:  
 Dark bronze.
- 2.2.8.4 Aluminum Windows (mullion, muntin, sash, trim, and sill):  
 Dark bronze.
- 2.2.8.5 Window Stools (SS1):  
 Solid-surface material equal to Corian, Canyon E, satin finish.
- 2.2.8.6 Wood Doors:  
 Stain; color/texture as selected from manufacturer's standard range.

- 2.2.8.7 Wood Stain:  
Sherwin-Williams, SW3123K, Oak Mantel.
- 2.2.8.8 Fire Extinguisher Cabinets:  
Gray.
- 2.2.8.9 Exposed Ductwork  
Paint Ceiling Bright White, PNT10.
- 2.2.8.10 Closet Shelving:  
Plastic laminate; color to be selected from manufacturer's range.
- 2.2.8.11 Benches:  
Stain/paint; color/gloss as selected from manufacturer's standard range.
- 2.2.9 Interior Window Treatment

Window treatments shall be provided to match the colors listed below.

- 2.2.9.1 Horizontal Blinds (WT1):  
Equal to Levolor, 1-inch mini blind, 310, Sand.
- 2.2.9.2 Vertical Blinds (WT2):  
Equal to Levolor, Louverdrape, 3-1/2-inch vanes, Curves, 89178;  
and as otherwise scheduled.

#### 2.2.10 Interior Miscellaneous

Miscellaneous items shall be provided to match the colors listed below.

- 2.2.10.1 Toilet Partitions, Shower Units, and Urinal Screens:  
Equal to Accurate, Solid Polymer Plastic, 9202, Tan.
- 2.2.10.2 Plastic Laminate:  
PLAM1: Vertical at millwork; Formica, 7698-58, Asher Ceramic.  
PLAM2: Horizontal at millwork; Pionite AB051 Indigo Organix,  
suede finish.  
PLAM3: Accent; Formica, 7498-58, Lapis Envision.
- 2.2.10.3 Countertops at Rest Rooms:  
Solid Surface (SS2): Avonite, Blue Pearl, K3-8000.  
Integral (adhesive bonded) lavatory bowls: Cast Avonite, in a  
contrasting color to be selected.
- 2.2.10.4 Signage Message Color (excluding handicapped signage):  
White.
- 2.2.10.5 Signage Background Color (excluding handicapped signage):  
Navy blue.
- 2.2.10.6 Chair Rail:  
CR1: C/S Group, CRWS-2, 060, Light Oak with stainless-steel  
inserts.  
CR2: C/S Group, Acrovyn SCR-40, surface-mounted, 4 inches high,  
209 Slate.
- 2.2.10.7 Corner Guards:  
CG1: C/S Group, Acrovyn, SM-10/20, 209 Slate.

CG2: C/S Group, Acrovyn, SM-10/20, 162 Charcoal.

2.2.10.8 Wall Switch Handles and Standard Receptacle Bodies:  
Gray.

2.2.10.9 Electrical Device Cover Plates:  
Gray.

2.2.10.10 Electrical Panels:  
Gray.

2.2.10.11 Casework (ST1):  
Sherwin-Williams, Oak Mantel, SW3123-K.

### 2.3 ROOM FINISH SCHEDULE

For room finish schedule, see Drawing Sheet A614.

### PART 3 EXECUTION (Not Applicable)

-- End of Section --

## SECTION 11035

BULLET-RESISTANT COMPONENTS  
04/00

## 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.

## AIR MOVEMENT AND CONTROL ASSOCIATION (AMCA)

AMCA 500 (1994) Test Methods for Louvers, Dampers and Shutters

## ALUMINUM ASSOCIATION (AA)

AA DAF-45 (1997) Designation System for Aluminum Finishes

AA SAA-46 (1978) Standards for Anodized Architectural Aluminum

## ASTM INTERNATIONAL (ASTM)

ASTM A 123/A 123M (2001a) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A 653/A 653M (2001a) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

ASTM C 1036 (2001a) Flat Glass

ASTM C 1048 (1997b) Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass

ASTM C 1172 (1996e1) Laminated Architectural Flat Glass

ASTM D 256 (2000e1) Determining the Izod Pendulum Impact Resistance of Plastics

ASTM D 542 (1995) Index of Refraction of Transparent Organic Plastics

ASTM D 570 (1998) Water Absorption of Plastics

ASTM D 635 (1998) Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position

ASTM D 638 (1999) Tensile Properties of Plastics

ASTM D 648 (1998c) Deflection Temperature of Plastics Under Flexural Load

ASTM D 696 (1998) Coefficient of Linear Thermal Expansion of Plastics Between Minus 30 degrees C and 30 degrees C

ASTM D 792 (1998) Density and Specific Gravity (Relative Density) of Plastics by Displacement

ASTM D 882 (1997) Tensile Properties of Thin Plastic Sheeting

ASTM D 905 (1998) Strength Properties of Adhesive Bonds in Shear by Compression Loading

ASTM D 1003 (1997) Haze and Luminous Transmittance of Transparent Plastics

ASTM D 1044 (1999) Resistance of Transparent Plastics to Surface Abrasion

ASTM D 1922 (1994a) Propagation Tear Resistance of Plastic Film and Thin Sheeting by Pendulum Method

ASTM D 3029 (1994) Impact Resistance of Flat Rigid Plastic Specimens by Means of a Tup (Falling Weight)

ASTM D 3595 (1997) Polychlorotrifluoroethylene (PCTFE) Extruded Plastic Sheet and Film

ASTM D 3951 (1998) Commercial Packaging

ASTM D 4093 (1995) Photoelastic Measurements of Birefringence and Residual Strains in Transparent or Translucent Plastic Materials

ASTM D 4802 (1994) Poly(Methyl Methacrylate) Acrylic Plastic Sheet

ASTM E 168 (1992) General Techniques of Infrared Quantitative Analysis

ASTM E 169 (1999) General Techniques of Ultraviolet-Visible Quantitative Analysis

ASTM E 204 (1998) Identification of Material by Infrared Absorption Spectroscopy, Using the ASTM Coded Band and Chemical Classification Index

ASTM E 831 (1993) Linear Thermal Expansion of Solid Materials by Thermomechanical Analysis

ASTM E 1300 (1998) Determining the Minimum Thickness

and Type of Glass Required to Resist a Specified Load

ASTM F 428	(1997e1) Test Method for Intensity of Scratches on Aerospace Glass Enclosures
ASTM F 520	(1977; R 1997) Environmental Resistance of Aerospace Transparencies
ASTM F 521	(1983; R 1997e1) Bond Integrity of Transparent Laminates
ASTM F 548	(1981; R 1994e1) Test Method for Intensity of Scratches on Aerospace Transparent Plastics
ASTM F 735	(1994) Abrasion Resistance of Transparent Plastics and Coatings Using the Oscillating Sand Method
ASTM F 791	(1982; R 1996) Stress Crazing of Transparent Plastics
ASTM G 26	(1996) Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

BHMA A156.1	(1997) Butts and Hinges
BHMA A156.2	(1996) Bored and Preassembled Locks and Latches
BHMA A156.4	(1992) Door Controls - Closers
BHMA A156.5	(1992) Auxiliary Locks & Associated Products
BHMA A156.8	(1994) Door Controls - Overhead Holders
BHMA A156.16	(1997) Auxiliary Hardware
BHMA A156.18	(1993) Materials and Finishes

DOOR AND HARDWARE INSTITUTE (DHI)

DHI A115.1	(1990) Preparation of 1-3/8" and 1-3/4" Standard Steel Doors and Steel Frames for Series 1000 Mortise Locks and Latches
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GLASS ASSOCIATION OF NORTH AMERICA (GANA)

GANA Glazing Manual	(1997) Glazing Manual
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H.P. WHITE LABORATORY (HPW)

HPW TP-0501.01	(1989) Ballistic Resistance of Structural Materials (Opaque and Transparent); Test
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## Procedures and Acceptance Criteria

## NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM)

NAAMM HMMA 810	(1987) Hollow Metal Manual; Section: Hollow Metal Doors
NAAMM HMMA 820	(1987) Hollow Metal Manual; Section: Hollow Metal Frames
NAAMM HMMA 830	(1987) Hollow Metal Manual; Section: Hardware Preparation and Locations for Hollow Metal Doors and Frames
NAAMM HMMA 840	(1987) Hollow Metal Manual; Section: Installation and Storage of Hollow Metal Doors and Frames
NAAMM HMMA 850	(1983) Hollow Metal Manual; Section: Fire-Rated Hollow Metal Doors and Frames
NAAMM HMMA 862	(1987) Hollow Metal Manual; Section: Guide Specifications for Commercial Security Hollow Metal Doors and Frames

## NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(1999) National Electrical Code
NFPA 80	(1999) Fire Doors and Fire Windows

## UNDERWRITERS LABORATORIES (UL)

UL 752	(1995; Rev thru May 1998) Bullet-Resisting Equipment
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## 1.2 SYSTEM DESCRIPTION

## 1.2.1 Design Requirements

Bullet-resistant components shall conform to the requirements specified for the particular items and as much as possible shall be complete assemblies by a single manufacturer.

## 1.2.2 Performance Requirements

Except for one non-rated Guard Booth (at the Detail Inspection Canopy), all items specified herein shall be bullet-resistant to the threat specified. Movable and operable components shall operate smoothly and freely. When a reference for performance is listed, operation shall conform to referenced requirements.

## 1.3 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

Installation; G, AE

Drawings containing complete wiring and schematic diagrams where appropriate and any other details required to demonstrate that the system has been coordinated and will properly function as a unit. Drawings shall show proposed layout and anchorage of components and appurtenances, and relationship to other parts of work including clearances for operation and maintenance. Drawings sufficient to show conformance to all requirements, including fabrication details, sizes, thickness of materials, anchorage, finishes, hardware location and installation.

## SD-03 Product Data

Bullet-Resistant Components; G, AE

Non-Bullet-Resistant Prefabricated Modular Enclosure; G, AE

Manufacturer's descriptive data and installation instructions. Descriptive data shall include cleaning instructions as recommended by the manufacturer. Air flow calculations for louvers and louvers in doors shall be included.

Lists including schedule of all components to be incorporated in the work with manufacturer's model or catalog numbers, specification and drawing reference numbers, warranty information, threat level certified, fire ratings, insulation "U" value, and number of items provided. Evidence that standard products essentially duplicate items that have been satisfactorily in use for two years or more, including name of purchasers, locations of installations, dates of installations, and service organizations.

Labeling; G, AE

Labels (or full-size copies of labels) that will permanently identify bullet-resistant, and similar non-bullet-resistant, equipment and enclosures.

## SD-07 Certificates

Bullet-Resistant Components

Manufacturer's certificates attesting that all components conform to the requirements on drawings and in specifications. Submittal shall include testing reports from independent testing laboratories indicating conformance to regulatory requirements.

## SD-10 Operation and Maintenance Data

Bullet Resistant Components; G, AE

Six copies of maintenance manuals for the bullet resistive components furnished. The manuals shall be approved prior to beneficial occupancy.

## 1.4 STANDARD PRODUCTS

Materials and components shall be the standard products of a manufacturer regularly engaged in the manufacture of such products unless otherwise indicated and detailed on the drawings, and shall essentially duplicate items that have been in satisfactory use for at least two years prior to bid opening. Components shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the site, or by the manufacturer. Where components are detailed on the drawings and do not conform to a manufacturer's standard product, components shall be constructed of manufacturer's standard materials which conform to the specified ballistic standard or test.

#### 1.5 COMPONENT TEST REQUIREMENTS

Bullet-resistant components shall be provided at all enclosed buildings in the project (except the main Guard/Visitors Center) to produce a continuous bullet-resistive perimeter enclosure including walls, doors, windows, louvers, vents, and glass fiber wall and roof armor panels. Unless specifically otherwise indicated, bullet-resistant components shall be in accordance with UL 752 Ballistic Level 3 protection requirements.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

Components shall be delivered to the job site with the brand, name, and model number clearly marked thereon. All components shall be delivered, stored and handled so as not to be damaged or deformed, and in accordance with ASTM D 3951. Doors, windows, and louvers shall be handled carefully to prevent damage to the faces, edges, corners, ends, and glazing. Abraded, scarred, or rusty areas shall be cleaned, repaired, or replaced immediately upon detection. Damaged components that cannot be restored to like-new condition shall be replaced. Components and equipment shall be stored in a dry location on platforms or pallets that are ventilated adequately, free of dust, water, and other contaminants, and stored in a manner which permits easy access for inspection and handling.

#### 1.7 WARRANTY

Manufacturer's warranty for 5 years shall be furnished for glazing materials. Warranty shall provide for replacement and installation of glazing if delamination, discoloration, or cracking, or crazing occurs.

### PART 2 PRODUCTS

#### 2.1 GENERAL

Bullet-resistant component assemblies shall be of size and type indicated and shall be provided at locations shown. All items included for exterior installation shall be designed to resist water penetration or entrapment.

#### 2.2 ELECTRICAL WORK

Except as otherwise specified herein, electrical wiring and conduit shall be provided as specified in Section 16415A ELECTRICAL WORK, INTERIOR.

Electrical equipment and components of Guard Shelters and Booths, including but not limited to panels, lighting, switches, receptacles, computer outlets, signal and equipment controls, and electric heat pump units, shall be as specified in this section.

#### 2.3 FINISHES

All ferrous metal components except stainless steel shall be furnished primed for painting unless otherwise indicated. Finish painting shall be in accordance with Section 09900 PAINTING, GENERAL unless otherwise indicated. Aluminum items shall be finished in standard mill finish unless otherwise specified. When anodic coatings are specified, the coatings shall conform to AA SAA-46, with coating thickness not less than that specified for protective and decorative type finish in AA DAF-45. Items to be anodized shall receive a polished satin finish pretreatment and a clear lacquer overcoat.

#### 2.4 BULLET-RESISTANT STEEL PERSONNEL DOORS

Door/frame assemblies shall be factory-fabricated units, designed to be bullet-resistant to the specified threat level, and shall conform to applicable requirements of NAAMM HMMA 810, NAAMM HMMA 820, NAAMM HMMA 862, this section, and requirements indicated on drawings. Frames shall be furnished by the door fabricator. Door silencers shall be provided to cushion the impact of the door on the frame so that steel to steel contact is not made during closing. Exterior doors shall be completely weatherstripped, weatherproof, and fully insulated. Exterior doors shall close at flush top and bottom edges. Tops of doors shall be sealed against water penetration.

##### 2.4.1 Fire Rated Doors

Fire rated doors shall be provided at locations shown on the drawings. Door assemblies shall bear the identifying label of the Underwriters Laboratories, or a nationally recognized testing agency qualified to perform certificate programs, indicating that the units conform to the requirements for Special Purpose Type Fire Doors in accordance with NFPA 80. Fire rated doors shall be constructed in accordance with NAAMM HMMA 850. Certificate may be furnished in lieu of label. For oversized fire doors, certificate shall state that doors are manufactured in compliance with the requirements for doors of this type and class, and have been tested and meet the requirements for the class indicated.

##### 2.4.2 Door and Frame Fabrication

Special care shall be exercised during welding to prevent warping. Design of stiffeners and attachment method of interior armor plates shall be such that heat-affected areas which result from welding do not allow a potential ballistic leak in product construction. The subsurfaces shall be flat, parallel, and plumb after fabrication. Doors and frames shall be constructed of bullet-resistant steel or hollow metal with internal armoring and the completed assembly shall meet the specified regulatory requirements. Doors shall be reinforced and fully insulated in accordance with manufacturer's design. Steel door frames shall be mitered or coped and welded at the corners with all welds ground smooth. Corner assemblies shall be designed to eliminate ballistic penetrable seams. Where structural channel frames are used, stops shall be made of 1-1/2 inch by 5/8 inch bars welded or top screwed to the frame at not more than 6 inch centers. Screws shall be countersunk. Stops shall be so placed that full contact with the frame will be assured. Any necessary reinforcements shall be made and the frames shall be drilled and tapped as required for the hardware. Frame channels shall be mitered or coped and welded at corners with full penetration groove welds. Exposed welds shall be dressed smooth.

##### 2.4.3 Sidelight Frames

Sidelight frames shall be constructed using door frame sections as shown on the drawings. Stop height and rabbet depth shall be as required to accommodate the bullet-resistant glazing material specified. Exterior (attack side) glazing stops shall be welded or integral to the frame. Interior (protected side) glazing stops shall be removable stops attached with high-strength alloy steel machine screws with tamper-resistant heads.

#### 2.4.4 Preparation for Hardware

Doors and frames shall be prepared for hardware in conformance with Section 08710 BUILDERS' HARDWARE, and NAAMM HMMA 830. Drilling and tapping of frames for surface applied hardware shall be performed in the field.

#### 2.4.5 Hardware

Hardware for bullet-resistant door assembly shall be provided by the door assembly manufacturer to ensure a complete bullet-resistant assembly. Where test standard requires hardware to be tested with the door assembly, hardware shall be included in the labeling and/or test certification. Keying shall be as specified in Section 08710 BUILDERS' HARDWARE.

##### 2.4.5.1 Locks and Latchsets

Locks shall be security grade cylindrical locks (or cylinders, if other type(s) of locks such as the mortise hook-bolt type (e.g., Adams Rite) are required) with removeable cores, as manufactured by Best Access Systems, and shall match existing Best locks, cylinders and cores at Ft. Leonard Wood; functions shall be as indicated in the Hardware Schedule; latchsets shall be Best, similar to and compatible with locksets; locks and latchsets shall otherwise conform to BHMA A156.2. Strikes for all locks and latches, including deadlocks, shall conform to DHI A115.1 except strikes for security doors shall be rectangular, without lip. Locks and latches for doors 1-3/4 inches thick and over shall have adjustable bevel fronts or otherwise conform to the shape of the door. Locks shall have armored fronts. Locks and latches shall have full escutcheon, thru-bolted, extruded stainless steel trim. Locks shall be masterkeyed as directed by Contracting Officer.

##### 2.4.5.2 Hinges

All 7 feet - 0 inch high doors shall be equipped with a minimum of three Grade 1 hinges in accordance with BHMA A156.1, minimum size 5 inches high, heavy, double or triple weight as required for weight of door, or a single, continuous extra-heavy-duty piano-type hinge sized to carry the weight of the door without sagging. For each additional 12 inches of door height beyond 7 feet - 0 inch, provide minimum of one more hinge shall be provided. Doors greater than 7 feet - 0 inches shall be equipped with a minimum of four hinges. Hinges shall be full mortise, half mortise, full surface or half surface design as recommended by manufacturer for frame and door design, and shall be tamperproof or mounted on the inside face of the door. The Contractor shall provide hinge manufacturer's certification that the hinge supplied meets all applicable test requirements of BHMA A156.1, type, number of hinges specified, and that the hinge is suitable for the size and weight of the door assembly on which it will be utilized. If continuous piano-type hinges are provided with door, independent laboratory reports covering both the door weight capacity and a 2,500,000-cycle testing to match BHMA A156.1 Grade 1 requirements shall be furnished by the Contractor. Interior door hinges shall be furnished in steel, prime

coated. Exterior door hinges shall be nonferrous metal or stainless steel.

#### 2.4.5.3 Electric Strikes

Electric strikes shall conform to BHMA A156.5, Grade 1. Strike boxes shall be furnished with dead bolt and latch strikes for Grade 1.

#### 2.4.5.4 Door Closers

Closers shall be extra heavy duty of size and type recommended by manufacturer, and shall be Grade 1 in accordance with BHMA A156.4. Door closer finish shall be 600, 689, 690, 691 or 692, in accordance with BHMA A156.18.

#### 2.4.5.5 Door Stops and Holders

Door stops and holders shall be extra heavy duty, Type C08511 in accordance with BHMA A156.8 Type L11251 and Type L11271 in accordance with BHMA A156.16.

#### 2.4.6 Frame Anchors

Jamb anchors shall be provided with door/frame assembly and shall conform to manufacturer's recommendations to ensure complete bullet-resistant assemblies. Provisions shall be made to stiffen the top member of all spans over 3 feet. The bottom of the frames shall extend below the finish floorline and shall be secured to the floor slab by means of angle clips and expansion bolts. Floor clips are not required for installation in pre-built or existing openings.

#### 2.4.7 Weatherstripping

Head and jambs shall be provided with compression-type neoprene bulb or closed-cell neoprene adjustable-type weatherstripping. Door stops shall be weatherstripped with a surface-mounted sponge neoprene strip in bronze housing not less than 0.070 inch thick installed to make contact with the door. Weatherstripping shall be installed in conformance with the manufacturer's directions after completion of finish painting.

#### 2.4.8 Louvers for Doors

Where indicated, doors shall be provided with full louvers or louver section. Louvers shall be certified resistant to the same ballistic threat level as the rest of the door assembly. Louvers shall be sightproof type inserted into the door. Pierced louvers shall not be used. Inserted louvers shall be stationary and shall be nonremovable from the outside of exterior doors or the threat side of interior doors. Insect screens shall be removable type with 18 by 16 mesh aluminum or bronze cloth. Where required by test standard, louvers shall be provided with a spall-resistant screen of fine stainless steel mesh. The free area of the total square feet of the louver shall be 17 percent for channel style louvers, 39 percent for chevron style louvers (inverted angles at 1 inch on center). Louver submitted shall have been tested in accordance with AMCA 500 airflow test, minimum airflow shall be 39 percent for channel style, 17 percent for chevron style. Airflow calculations and test data showing compliance shall be submitted.

### 2.5 BULLET-RESISTANT LOUVERS

Louvers and frames shall be fabricated from steel shapes to the opening

dimensions indicated. The louvers shall be factory fabricated units designed to be bullet-resistant to the specified test standard in paragraph COMPONENT TEST REQUIREMENTS. Manufacturer's descriptive data, certificate, and test report showing compliance with the specified forced entry standard shall be submitted. The free area of the louver shall be 39 percent for channel style, 17 percent for chevron style louvers (inverted angles at 1 inch on center. Louver submitted shall have been tested in accordance with AMCA 500 airflow test. Minimum airflow shall be 39 percent for channel style, 17 percent for chevron style. Airflow calculations and test data showing compliance shall be submitted.

## 2.6 BULLET-RESISTANT STEEL DOORS, FRAMES, AND HARDWARE

Bifold doors shall consist of two leaves per door, four per opening, as indicated on the drawings. Hardware shall allow easy manual movement of doors. Doors and hardware shall be either entirely jamb-supported or jamb-supported with floor rollers to reduce bearing load on hinges. Steel hinges shall be of ample length to prevent sagging, and shall be through-bolted in accordance with manufacturer's instructions. Operators and all installation hardware shall be the product of a manufacturer which specifically designs and produces hardware for heavy-duty industrial-type doors. Door surfaces shall be factory primed for painting and reinforced and prepared for hardware installation. Maximum clearance at bottom of doors shall be 1 inch. Exterior doors shall be provided with weather seals at jams, head, and sill.

## 2.7 BULLET-RESISTANT STEEL WINDOWS

Window assemblies shall be fabricated from bullet-resistant steel shapes or hollow metal with internal armoring and bullet-resistant glazing materials specified herein; the entire assembly shall meet or exceed the specified regulatory requirements. Frames shall be welded units of sizes and shapes indicated on the drawings with minimum frame face dimensions of two inches.

Glazing material shall be furnished with window assembly for on-site installation, or windows shall be factory glazed units. Entire assembly shall be furnished by same manufacturer. Exterior (attack side) glazing stops shall be welded or integral to frame. Interior (protected side) glazing stops shall be removable stops attached with high-strength alloy steel machine screws with tamper-resistant heads.

### 2.7.1 Glazing Materials

Glazing material shall be factory fabricated units designed to be bullet-resistant to the specified test standard in paragraph COMPONENT TEST REQUIREMENTS. Glazing material shall be glass, plastic, or composite with a no-spall low-spall protected (interior) face. Low-spall interior face shall meet or exceed requirements for spall resistance defined in UL 752. No-spall interior face shall meet requirements for spall resistance defined in HPW TP-0501.01. Glazing material shall conform to applicable requirements contained in ASTM C 1036, ASTM C 1048, and ASTM E 1300. Glazing materials shall be tested in accordance with the applicable sections of the following testing procedures: ASTM D 905, ASTM D 1003, ASTM F 428, ASTM F 548, ASTM D 4093, and ASTM F 520. All plastic glazing exposed to the interior or exterior environment shall have an applied hardcoat.

Ballistic Level 3 glazing for the Monitoring Building shall be untinted, and shall incorporate a silver semi-reflective mirror coating on the No. 2 surface (the inside face of the exterior lite). Ballistic Level 3 glazing

for the Guard Booths, Guard Shelters, and Gate Houses shall be tinted bronze color. Non-bullet-resistant glazing for the Guard Shelter under the Detail Inspection Canopy shall be fully tempered or laminated safety glass, tinted bronze color.

#### 2.7.1.1 Laminated Glass

Bullet-resistant laminated glass shall be all glass laminated construction conforming to applicable sections of ASTM C 1172. The adhesive interlayer material for bonding glass to glass shall be chemically compatible with the surfaces which are to be bonded. Materials selected for lamination purposes shall be tested in accordance with the following testing procedures: ASTM D 905, ASTM D 1044, ASTM F 735, ASTM D 4093, ASTM F 521, ASTM F 520, and ASTM D 1003. Glass plies used in the lamination shall be annealed float glass conforming to Type I, quality q3 Class 1, in accordance with ASTM C 1036 or heat-strengthened, or fully heat tempered, float glass, Condition A, Type I, q3 Class 1, in accordance with ASTM C 1048.

#### 2.7.1.2 Acrylic Plastic Sheets

Bullet-resistant acrylic plastic glazing sheets shall be for use "as cast" and in stretching operations with improved moisture absorption resistance conforming to ASTM D 4802. Acrylic materials shall be tested in accordance with the applicable sections of the following testing procedures: ASTM D 256, ASTM D 3029, ASTM D 542, ASTM D 570, ASTM D 635, ASTM D 648, ASTM D 638, ASTM D 696, ASTM D 792, ASTM D 1003, ASTM E 831, ASTM F 791, and ASTM G 26. Plastic glazing sheets shall be clear and smooth on both sides.

#### 2.7.1.3 Polycarbonate Plastic Sheets

Bullet-resistant laminated polycarbonate sheets, ultraviolet stabilized, high abrasion resistant sheets shall conform to ASTM D 3595. Polycarbonate materials shall be tested in accordance with the applicable sections of the following testing procedures: ASTM D 256, ASTM D 3029, ASTM D 648, ASTM D 792, ASTM F 735, ASTM D 1003, ASTM D 635, ASTM D 638, ASTM D 1044, ASTM D 882, ASTM D 1922, ASTM D 570, ASTM F 520, ASTM E 168, ASTM E 169, ASTM E 204, ASTM G 26, and ASTM F 791. Polyvinyl butyral shall not be used in contact with polycarbonate because its plasticizer may craze polycarbonate.

#### 2.7.1.4 Glass/Plastic Laminate Glazing

Bullet-resistant glass/plastic laminated glazing materials shall be glass/plastic laminated construction or glass-clad plastic "sandwich" construction conforming to applicable sections of ASTM C 1172. Polycarbonate shall be ultraviolet stabilized.

#### 2.7.2 Adhesive Interlayer Materials

Adhesive interlayer materials for bonding laminates (glass-glass, glass-plastic, or plastic-plastic bonds) shall be chemically compatible with the surfaces being bonded. Interlayer materials may be polyvinyl butyral, cast-in-place urethane, proprietary materials, sheet form urethane and other materials. Polyvinyl butyral shall not be used to bond polycarbonate. Adhesives shall be in accordance with ASTM D 905 and manufacturer's recommendations.

#### 2.7.3 Sealants

Sealants for glazings shall be chemically compatible with the glazing

materials they contact with no deleterious effects to the glazing materials or to the adhesives used in laminates. Sealants shall be in accordance with glazing manufacturer's recommendations and GANA Glazing Manual.

## 2.8 BULLET-RESISTANT PREFABRICATED MODULAR ENCLOSURES

Except as otherwise specified below (for the Detail Inspection Canopy shelter), guard shelters and booths shall consist of prefabricated aluminum construction ballistic resistant modular buildings, with floors, walls and ceilings, and with sliding or swinging doors (as indicated), windows, and necessary connecting posts, hardware, and accessories. Complete enclosures shall be submitted. Components shall be factory finished unless indicated otherwise. Exposed welds shall be dressed smooth. Workmanship shall be rigid, neat in appearance, and free from defects. Guardhouses shall be of rain and weatherproof design.

Basis of Design: Products manufactured by Porta-King Pre-Assembled Building Systems, Earth City, MO.

Products: Ballistic resistant level III construction, with factory-installed standing seam prefinished metal hip roofs with gutter and downspout(s) projecting approximately 3 inches beyond wall face; and prepared to receive field-applied 4-inch-thick split-face CMU veneer wainscot and cast stone sills below windows; size and configuration as indicated on drawings; color as scheduled, or, if not scheduled, as selected from manufacturer's range of standard finishes.

Guard Booths (At Main Canopy): Porta-King "Duraluminum" No. BR6448SL; approximate size 5 feet x 4 feet; with one sliding door with vision lite.

Guard Shelter (At Truck Canopy): Porta-King "Duraluminum" No. BR9696SW; approximate size 8 feet x 8 feet; equipped with one swinging door with vision lite and heavy-duty closer.

Provide level III ballistic resistant walls, doors, and glazing ~~TEXT DELETED~~.

Enclosures shall consist of prefabricated, bullet-resistant, modular enclosures with insulated walls and ceilings and aluminum tread plate floor panels; with doors, windows, painted steel counters, louvers, and all necessary connecting posts, hardware and accessories. Complete enclosures shall be no smaller than minimum dimensions shown on the drawings. Doors, windows, and louvers shall be in accordance with the requirements specified in those respective paragraphs. Components shall be factory-welded assemblies. All ferrous metal components shall be factory painted with rust inhibitive primer unless indicated otherwise. All exposed welds shall be dressed smooth. Workmanship shall be rigid, neat in appearance, and free from defects.

Electrical work in modular enclosures shall be in accordance with local codes, and shall consist of the following.

Each Guard Booth and Guard Shelter shall have:

- a. One interior fluorescent light fixture with lens, low temperature rated, with 120V electronic ballast(s) and two fluorescent lamps (minimum size 32W T8).

- b. One 150W quartz exterior flood light, aimed toward vehicle.
- c. Separate light switches for each of the above.
- d. Three 120V duplex receptacles, one of which is on a dedicated circuit identified as "computer".
- e. One junction box for computer outlet (network jack and category 5E wiring are specified in Division 16).
- f. One standard modular telephone jack.
- g. Duress signal button.
- h. Junction box for active vehicle barrier activation button.
- i. Communications junction box for up to four 2-inch conduits fed from below grade.
- j. One 208V single-phase through-wall HVAC heat pump unit, with bullet-resistant shroud or housing at bullet-resistant enclosures. Minimum capacity: 9900 BTU cooling and 11,600 BTU heating at 5 x 4 foot booths; 11,600 cooling and 11,600 heating at 8 x 8 foot shelters.
- k. 120/208V single-phase load center with at least 12 breakers, including at least two spare 20A breakers; minimum capacity 60A at 5 x 4 booths, 100A at 8 x 8 shelters.

In addition, the Guard Shelters under the Truck Canopy, and under the Detail Inspection Canopy (specified below as non-bullet-resistant), shall each have the following:

- a. Two 150W quartz exterior flood lights.
- b. Three switches, for control of (and identified as) canopy heaters, bird control, and bug zappers.

## 2.9 NON-BULLET-RESISTANT PREFABRICATED MODULAR ENCLOSURE

At the Detail Inspection Canopy only, a non-bullet-resistant guard shelter shall be provided, consisting of prefabricated aluminum construction modular buildings, with floors, walls, ceilings, swinging door with vision lite, necessary connecting posts, hardware, electrical components and equipment, and accessories, similar to those specified above, except with no requirement for bullet resistance. Complete enclosures shall be submitted. Components shall be factory finished unless indicated otherwise. Exposed welds shall be dressed smooth. Workmanship shall be rigid, neat in appearance, and free from defects. Shelter shall be of rain and weatherproof design. Electrical work shall be in accordance with local codes, and as specified above.

Basis of Design: Products manufactured by Porta-King Pre-Assembled Building Systems, Earth City, MO.

Guard Shelter at Detail Inspection Canopy: Porta-King "Duraluminum" Model No. 9696SW approximately 8 feet x 8 feet; not ballistic rated (and so labeled as specified below), but otherwise similar in construction, features and equipment to the rated shelter specified above for the Truck

Canopy.

## 2.10 ACCESSORIES

All accessories shall be provided for the installation or erection of above components into the surrounding structure. Anchorage shall be as strong and bullet-resistant as the components. Installation/erection shall be per manufacturer's recommended instructions.

## 2.11 LABELING

Bullet-resistant equipment shall be plainly and permanently labeled in accordance with regulatory requirements. Label shall be compatible with plastic or coating. Label shall be visible only on protected side, after installation and shall include the following information:

- a. Manufacturer's name or identifying symbol
- b. Model Number, Control Number, or equivalent
- c. Date of manufacture by week, month or quarter and year. This may be abbreviated or be in a traceable code such as the lot number.
- d. Correct mounting position including threat side and secure side (by removable label on glazing material).
- e. Code indicating bullet-resistant rating and test standard used (by removable label on glazing material).

Non-bullet-resistive equipment and enclosures that are similar to labeled bullet-resistive equipment and enclosures shall be plainly, permanently and noticeably labeled in a manner and location similar to bullet-resistive equipment and enclosure labeling as specified above, but such labels shall distinctly and noticeably state that the labeled equipment or enclosure is NOT bullet-resistant.

## 2.12 FASTENERS

Fasteners exposed to view shall match in color and finish and shall harmonize with the material to which fasteners are applied. Fasteners shall be in accordance with Section 05500A MISCELLANEOUS METAL.

## 2.13 CORROSION PROTECTION -DISSIMILAR MATERIALS

Contact surfaces between dissimilar metals and aluminum surfaces in contact with concrete, masonry, pressure-treated wood or absorptive materials subject to wetting, shall be given a protective coating in accordance with Section 09900 PAINTING, GENERAL.

## 2.14 SHOP/FACTORY FINISHING

All factory or manufactured components shall be shop finished as indicated below.

### 2.14.1 Ferrous Metal

Surfaces of ferrous metal, except galvanized and stainless steel surfaces, shall be cleaned and shop coated with the manufacturer's standard protective coating other than a bituminous protective coating, compatible

with finish coats. Prior to shop painting, surfaces shall be cleaned with solvents to remove grease and oil, and with power wire-brushing or sandblasting to remove loose rust, loose mill scale and other foreign substances. Surfaces of items to be embedded in concrete shall not be shop painted.

#### 2.14.2 Galvanizing

Items specified to be galvanized shall be hot-dip processed after fabrication. Galvanizing shall be in accordance with ASTM A 123/A 123M or ASTM A 653/A 653M as applicable.

#### 2.14.3 Aluminum

Unless otherwise specified, aluminum items shall be standard mill finish. Anodic coatings shall conform to paragraph FINISHES.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

Existing work shall be examined to ensure that it is ready for installation or erection of the components. Components shall be checked and corrected for racking, twisting, and other malformation prior to installation. Frames must be set true and plumb and remain aligned for proper installation. All surfaces and connections shall be examined for damage prior to installation.

#### 3.2 PREPARATION AND PROTECTION

The Contractor shall field verify dimensions of rough openings for components, and shall verify that surfaces of openings are plumb, true, and provide required clearances. The Contractor shall protect surrounding work prior to installation of bullet-resistant components. Surrounding work which is damaged as a result of the installation of bullet-resistant components shall be restored to like-new condition prior to acceptance of the work described herein.

#### 3.3 INSTALLATION

The finished work shall be rigid, neat in appearance and free from defects. Equipment shall be installed plumb and level, and secured rigidly in place. Installation of doors and frames shall conform to NAAMM HMMMA 840. Doors, frames, and hardware shall be installed in strict compliance with approved printed instructions and detail drawings provided by the manufacturer. The Contractor shall be responsible for proper installing of the door assembly so that operating clearances and bearing surfaces conform to manufacturer's instructions. Weatherstripping and thresholds shall be installed at exterior door openings to provide a weathertight installation. All other components shall be installed in accordance with approved manufacturer's recommended instructions. All operable parts of components shall be tested for smooth, trouble-free operation, in the presence of the Contracting Officer's representative.

#### 3.4 ELECTRICAL WORK

All electrical work shall be in accordance with Section 16415AELECTRICAL WORK, INTERIOR. Flexible connections between doors and fixed supports shall be made with extra flexible type SO cable, except in hazardous

locations where wiring shall conform to NFPA 70. The cable shall have a spring-loaded automatic take up reel, or an equivalent and approved device.

3.5 ADJUSTING/CLEANING

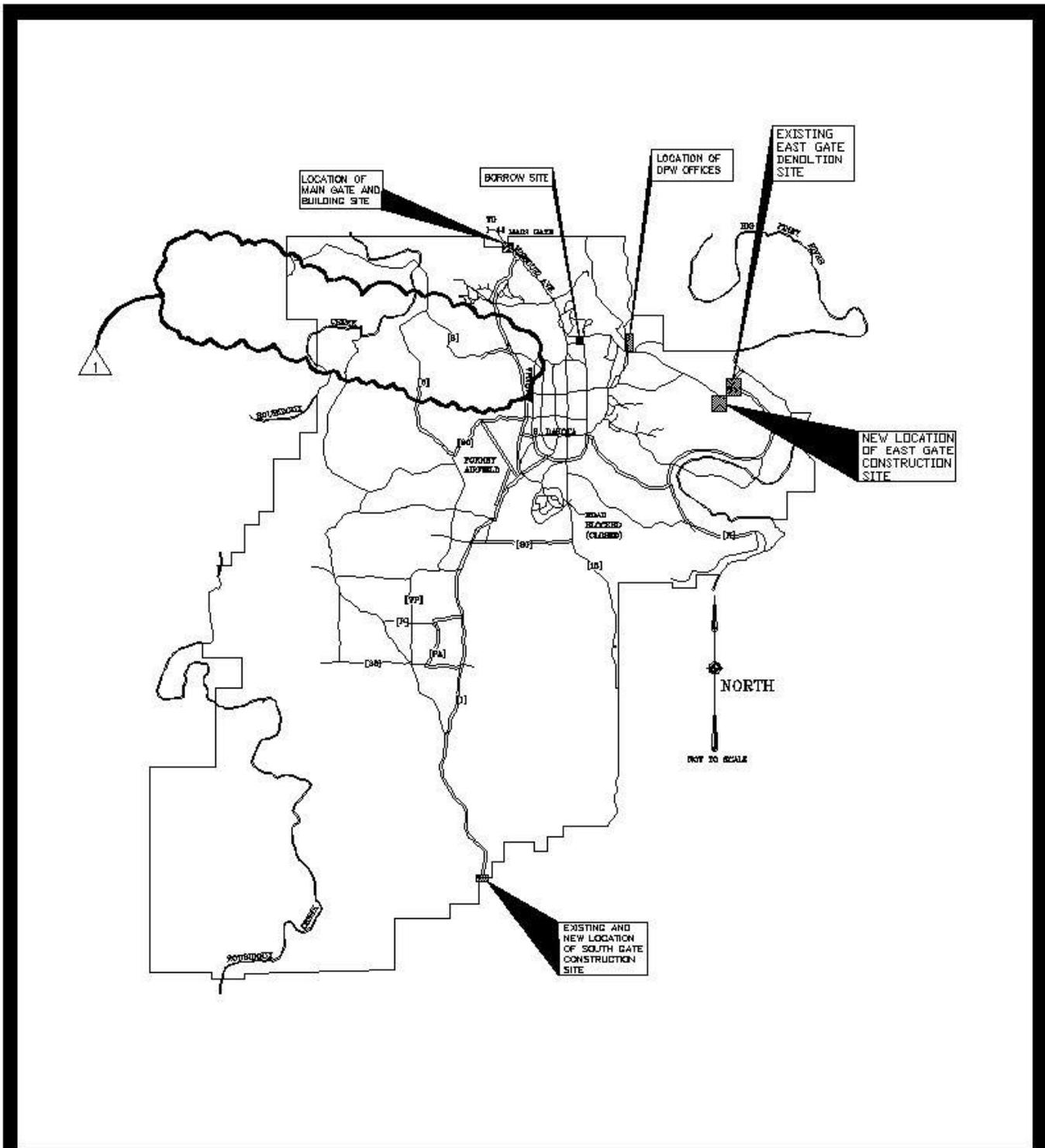
Adjustments shall be made to doors and pass-thru drawers to assure smooth operation. Units shall be weathertight when closed and locked. All components shall be cleaned in accordance with manufacturer's instructions.

3.6 SCHEDULING

Glazing of bullet-resistant windows except factory-glazed units shall occur only after all concrete, masonry, ceiling, electrical, mechanical, plumbing and adjacent finish work has been completed to avoid damage to the glazing material. Factory-glazed windows shall be covered to protect them from damage during adjacent finish work.

-- End of Section --

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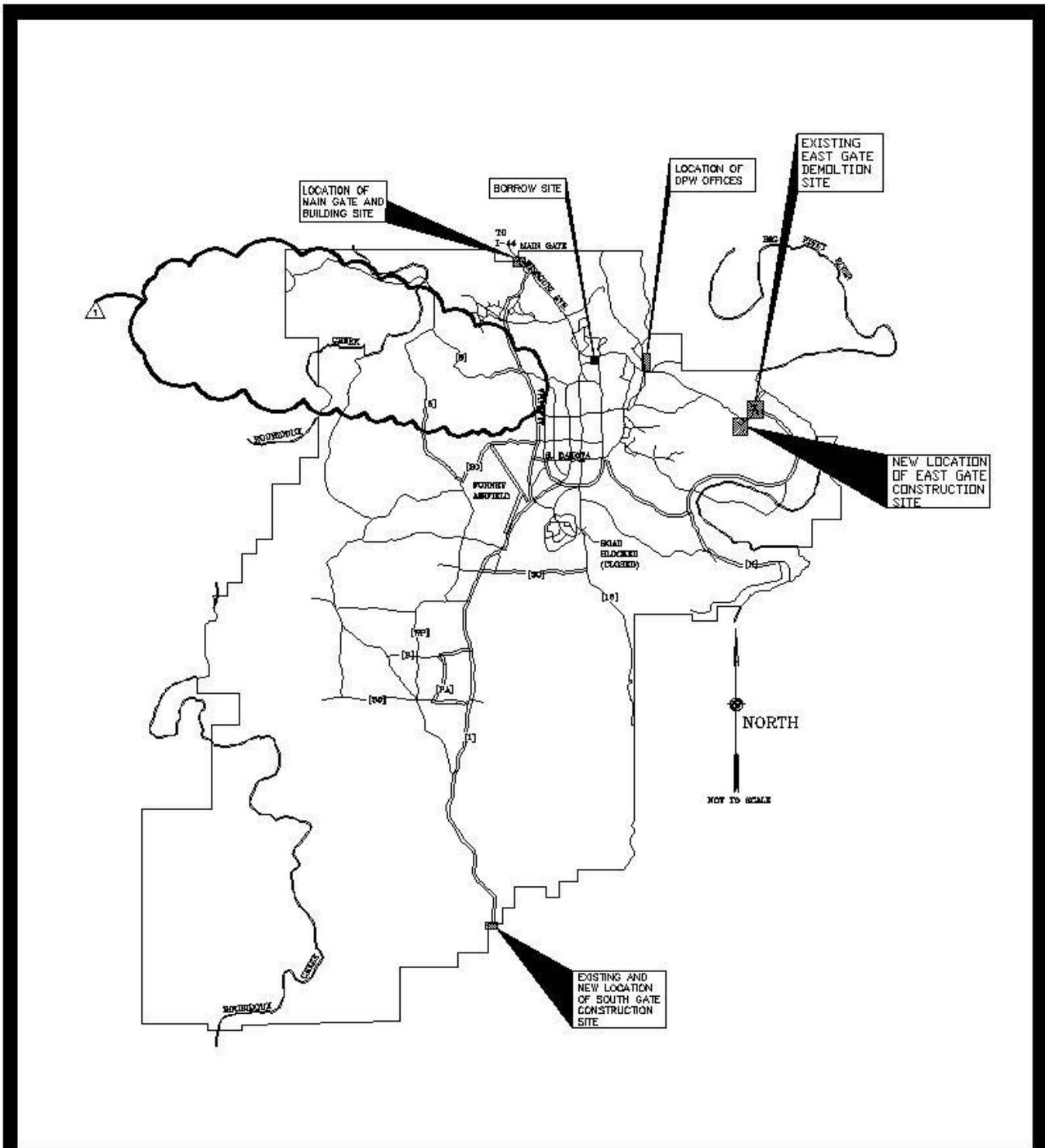


Tel: (316) 265-9367  
 Fax: (316) 265-5646  
 Email: architects@glal.com

Ref. Doc.:	G000
Proj. No:	1012.080
Date:	5-9-03

SHEET TITLE:		
G000 - COVER SHEET VOL.1		
PROJECT:		
ACCESS CONTROL FACILITIES		
Drawn By:	DGV	#1
Checked By:	VDR	#1 OF #1

Gossen Livingston Associates, Inc. 420 S. Emporia, Wichita, KS 67202



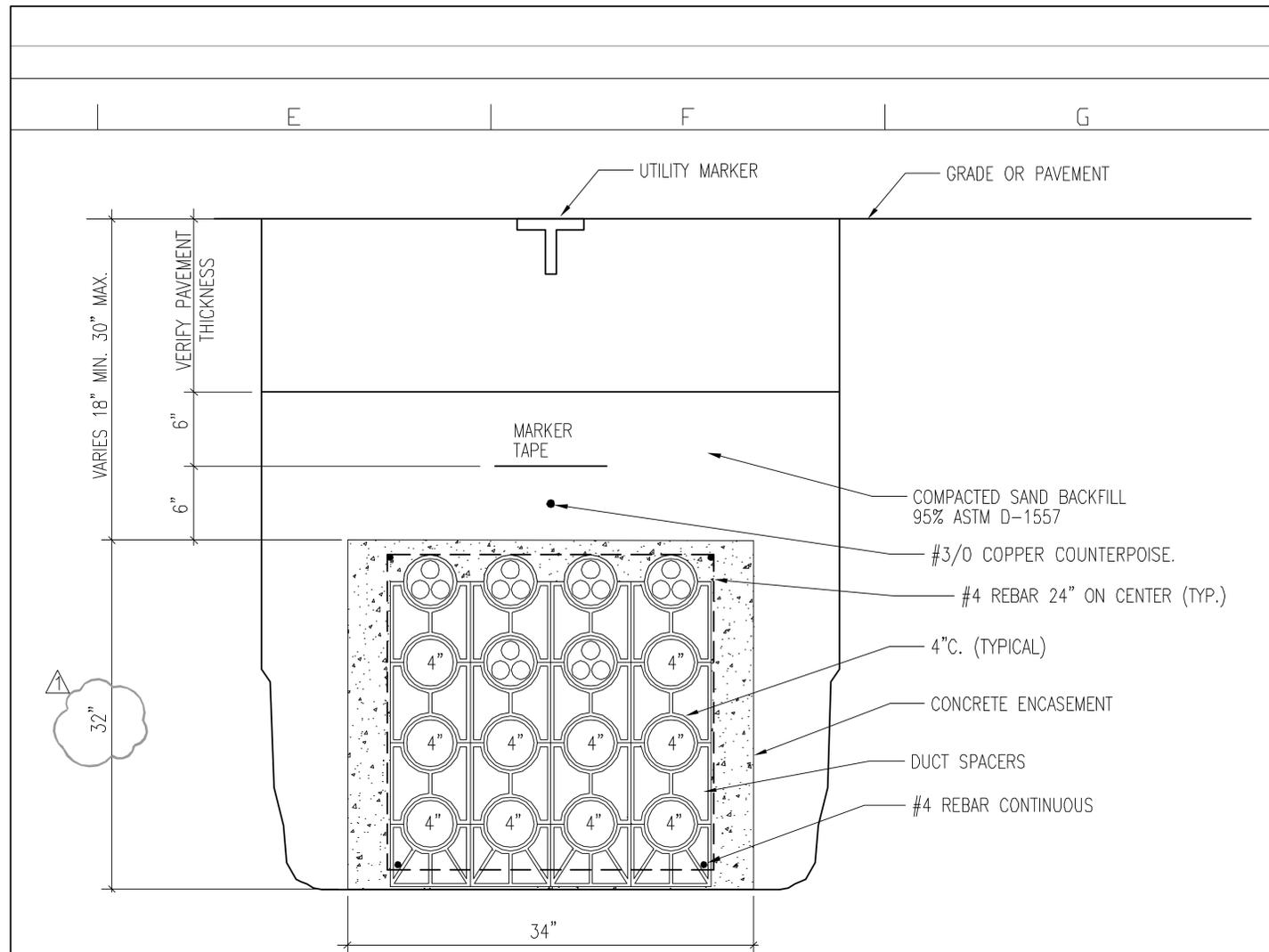
**Gossen Livingston**

Tel: (316) 265-9367  
 Fax: (316) 265-5646  
 Email: architects@gl1.com

Ref. Doc.:	G001
Proj. No:	1012.080
Date:	5-9-03

SHEET TITLE: G001 - COVER SHEET VOL.2		
PROJECT: ACCESS CONTROL FACILITIES		
Drawn By:	DGV	# 1
Checked By:	VDR	#1 OF #1





- NOTES: 1. DUCTBANK CDB9 SHALL BE SIMILAR CONSTRUCTION EXCEPT WITH (8) 4" DUCTS.
2. CONCRETE ENCASEMENT IS REQUIRED ON DUCTBANKS WITH 2 OR MORE CONDUITS.

**1** CDB1 CONTROLS DUCTBANK DETAIL  
NO SCALE

ACCESS CONTROL FACILITIES  
FOR LEONARD WOOD, MISSOURI

DUCTBANK DETAILS AND SCHEDULES



**Professional Engineering Consultants, P.A.**  
303 S. TOPEKA • WICHITA, KANSAS 67202 • 316-262-2691  
www.pec1.com • designers@pec1.com

JOB NUMBER:	00555-06B
DATE:	4-29-03
SCALE:	N.T.S.
DRAWN BY:	TRK
CHECKED BY:	DEH
SHEET NUMBER:	EC901

AREA FOR  
ENGINEER'S  
STAMP