AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE		PAGE 1	OF PAGES 9
2. AMENDMENT/MODIFICATION NO. 0001	3. EFFECTIVE DATE 4 Sep 1998	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*

6. ISSUED BY CODE

Department of the Army
Corps of Engineers
Fort Worth District

7. ADMINISTERED BY *(If other than Item 6)* CODE

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

CODE FACILITY CODE

(√) X

9A. AMENDMENT OF SOLICITATION NO. DACA63-98-B-0055

9B. DATED *(SEE ITEM 11)* 17 August 1998

10A. MODIFICATION OF CONTRACTS/ORDER NO.

10B. DATED *(SEE ITEM 13)*

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered 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 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(√) A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☐ 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.)*

The Solicitation for LAUNCH COMPLEX REVITALIZATION, WHITE SANDS MISSILE RANGE, NEW MEXICO, is amended as follows:

See Continuation Sheet (or sheets)

NOTE: Bid opening date is 16 September 1998, 2 p.m., CDT, as previously announced.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

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

Item 14. Continued.

a. Table of Contents.

Replace the Table of Contents with the accompanying new Table of Contents, bearing the notation "ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-98-B-0055":

b. Standard Form 1442.- Replace this form (2 pages) with the accompanying new form (2 pages).

c. Wage Rates.- Following the last page of Section 00700 Contract Clauses, replace the page containing the note concerning rates of wages with the attached pages 00710-1 through 00710-26, each page bearing the notation "ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-98-B-0055."

d. Affirmative Action Plan.- Following Section 00710 Wage Rates, replace the page containing the note concerning the Affirmative Action Plan with the attached pages 00720-1 and 00720-2, each page bearing the notation "ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-98-B-0055."

e. Specifications.

(1) Reissued Sections

Replace the following sections with the accompanying new sections of the same number and title, each bearing the notation "ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-98-B-0055":

01000	CONSTRUCTION SCHEDULE
01412	ENVIRONMENT PROTECTION FOR WHITE SANDS MISSILE RANGE
02051	REMOVAL, RECYCLING AND DISPOSAL OF REGULATED MATERIALS PRIOR TO SITE DEMOLITION
02080	ASBESTOS ABATEMENT
02090	LEAD-BASED PAINT ABATEMENT
02221	EXCAVATION, FILLING AND BACKFILLING FOR BUILDINGS
02225	EARTHWORK
02316	EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS
08700	DO0RS & WINDOWS
10100	MISCELLANEOUS ITEMS
10270	RAISED FLOOR SYSTEM
15250	THERMAL INSULATION FOR MECHANICAL SYSTEMS
16721	FIRE DETECTION AND ALARM SYSTEM

(2) New Sections

Add the accompanying new sections, each bearing the notation "ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-98-B-0055."

01420	STORM WATER POLLUTION PREVENTION PLAN FOR CONSTRUCTION ACTIVITY
02722	GRADED, CRUSHED AGGREGATE BASE COURSE

f. Drawings.

(1) Add Sequence Numbers

Add sequence numbers to each drawing in accordance with the following table:

Sequence No.	Dwg #	Sheet TitleVOLUME 1
1	00G00A	COVER SHEET
2	00G001	INDEX OF DRAWINGS
3	00G003	OVERALL PLAN KEY PLAN
4	00G004	VICINITY AND HAUL ROUTE MAP
5	01C201	LAYOUT AND DIMENSION PLAN
6	01C301	GRADING PLAN
7	01C401	UTILITY PLAN
8	01C601	EROSION AND SEDIMENT CONTROL
9	01A200	FLOOR PLAN
10	01A210	LIFE SAFETY PLAN
11	01A300	BUILDING ELEVATIONS
12	01A600	REFLECTED CEILING PLAN
13	01A700	ROOF PLAN
14	01S201	FOUNDATION PLAN
15	01M200	FLOOR PLAN
16	01P200	FLOOR PLAN
17	01P300	RISER DIAGRAMS
18	01E100	SITE PLAN
19	01E200	LIGHTING PLAN
20	01E300	POWER AND COMMUNICATION PLAN
21	01F300	FIRE ALARM PLAN
22	02C101	DEMOLITION PLAN
23	02C201	LAYOUT AND DIMENSION PLAN
24	02C301	GRADING PLAN
25	02C401	UTILITY PLAN
26	02C601	EROSION AND SEDIMENT CONTROL
27	02A200	FLOOR PLAN
28	02A210	LIFE SAFETY PLAN
29	02A300	BUILDING ELEVATIONS
30	02A600	REFLECTED CEILING PLAN
31	02A700	ROOF PLAN
32	02S201	FOUNDATION PLAN
33	02M200	FLOOR PLAN
34	02P200	FLOOR PLAN
35	02P300	RISER DIAGRAMS
36	02E100	SITE PLAN
37	02E200	LIGHTING PLAN
38	02E300	POWER AND COMMUNICATION PLAN
39	02F300	FIRE ALARM PLAN
40	03C101	DEMOLITION PLAN
41	03C201	LAYOUT AND DIMENSION PLAN
42	03C301	GRADING PLAN
43	03C401	UTILITY PLAN
44	03C601	EROSION AND SEDIMENT CONTROL

45	03A200	FLOOR PLAN
46	03A210	LIFE SAFETY PLAN
47	03A300	BUILDING ELEVATIONS
48	03A310	BUILDING SECTION
49	03A600	REFLECTED CEILING PLAN
50	03A700	ROOF PLAN
51	03S201	FOUNDATION PLAN
52	03S501	FOUNDATION DETAILS
53	03S502	FOUNDATION DETAILS
54	03S601	ANTENNA PLATFORM DETAILS
55	03S602	ANTENNA PLATFORM DETAILS
56	03M200	FLOOR PLAN
57	03P200	FLOOR PLAN
58	03P300	RISER DIAGRAMS
59	03E100	SITE PLAN
60	03E200	LIGHTING PLAN
61	03E300	POWER PLAN
62	03E400	COMMUNICATIONS PLAN
63	03E700	RISER DIAGRAM
64	03F200	FIRE SPRINKLER PLAN
65	03F300	FIRE ALARM PLAN
66	04C101	DEMOLITION PLAN
67	04C201	LAYOUT AND DIMENSION PLAN
68	04C301	GRADING PLAN
69	04C401	UTILITY PLAN
70	04C601	EROSION AND SEDIMENT CONTROL
71	04A200	FLOOR PLAN
72	04A210	LIFE SAFETY PLAN
73	04A300	BUILDING ELEVATIONS
74	04A600	REFLECTED CEILING PLAN
75	04A700	ROOF PLAN
76	04S201	FOUNDATION PLAN
77	04M200	FLOOR PLAN
78	04P200	FLOOR PLAN
79	04P300	RISER DIAGRAMS
80	04E100	SITE PLAN
81	04E200	LIGHTING PLAN
82	04E300	POWER AND COMMUNICATION PLAN
83	04F300	FIRE ALARM PLAN
84	11C401	WATER MAIN PLAN
85	11C402	WATER MAIN PLAN
86	11C403	WATER MAIN PROFILE
87	11C404	WATER MAIN PROFILE
88	11C601	EROSION AND SEDIMENT CONTROL
89	11C602	EROSION AND SEDIMENT CONTROL
VOLUME 2		
90	00G00	COVER SHEET
91	00G001	INDEX
92	00C001	LEGEND
93	00C002	PAVEMENT DETAILS
94	00C003	PAVEMENT DETAILS II
95	00C004	WATER AND SEWER DETAILS
96	00C005	SANITARY SEWER DETAILS
97	00C006	EROSION AND SEDIMENT CONTROL

98	00C800	BORING LEGEND AND ABBREVIATIONS
99	00C801	BORING LOGS
100	00C802	BORING LOGS
101	00H001	REGULATED MATERIAL SAMPLE LOCATIONS AND QUANTITIES
102	00A001	ABBREVIATIONS, SYMBOLS, AND GENERAL NOTES
103	00A100	ROOM FINISH SCHEDULES
104	00A110	SIGNAGE SCHEDULE
105	00A200	DOOR AND FRAME SCHEDULES
106	00A210	DOOR AND FRAME DETAILS
107	00A220	DOOR AND FRAME DETAILS
108	00A300	WINDOW SCHEDULE AND DETAILS
109	00A310	WINDOW DETAILS
110	00A400	EXTERIOR WALL SECTIONS
111	00A410	EXTERIOR WALL SECTIONS
112	00A420	EXTERIOR WALL SECTIONS
113	00A430	GENERAL DETAILS
114	00A500	INTERIOR WALL TYPES AND INTERIOR DETAILS
115	00A510	TOILET ELEVATIONS
116	00A600	ENLARGED TOILET PLANS
117	00A700	MILLWORK ELEVATIONS
118	00S001	ABBREVIATIONS AND GENERAL NOTES
119	00S002	GENERAL NOTES
120	00S003	TYPICAL DETAILS
121	00S004	TYPICAL DETAILS
122	00M001	ABBREVIATIONS
123	00M002	LEGEND AND GENERAL NOTES
124	00M003	SCHEDULES
125	00M004	DETAILS
126	00E000	SYMBOL LEGEND AND ABBREVIATION
127	00E700	BUILDING 20813, 23686, 24050 ONE-LINE DIAGRAMS
128	00E800	DETAILS
129	00E801	DETAILS
130	00E802	DETAILS
131	00E900	FIXTURE SCHEDULE
132	00E901	PANEL SCHEDULE
133	00E902	PANEL SCHEDULE
134	00F001	NOTES, ABBREVIATIONS AND SYMBOLS

(2) New Drawings

The new drawing[s] listed below which [accompany][accompanies] this amendment, bearing the notation "AM #0001," shall be added to and become a part of the contract drawings:

Dwg No.	Title
00C800	SOIL CLASSIFICATION
00C802	BORING LOGS

(3) Reissued Drawings

Replace the drawings listed below with the attached new drawing[s] of the same number, each bearing the notation "AM #0001":

Seq #	Dwg#	Title
3	00G003	OVERALL PLAN KEY PLAN
9	01A200	FLOOR PLAN
10	01A210	LIFE SAFETY PLAN
15	01M200	FLOOR PLAN
16	01P200	FLOOR PLAN
17	01P300	RISER DIAGRAMS
19	01E200	LIGHTING PLAN
20	01E300	POWER AND COMMUNICATION PLAN
24	02C301	GRADING PLAN
28	02A210	LIFE SAFETY PLAN
33	02M200	FLOOR PLAN
34	02P200	FLOOR PLAN
35	02P300	RISER DIAGRAMS
36	02E100	SITE PLAN
37	02E200	LIGHTING PLAN
38	02E300	POWER AND COMMUNICATION PLAN
40	03C101	DEMOLITION PLAN
41	03C201	LAYOUT AND DIMENSION PLAN
42	03C301	GRADING PLAN
45	03A200	FLOOR PLAN
46	03A210	LIFE SAFETY PLAN
56	03M200	FLOOR PLAN
57	03P200	FLOOR PLAN
58	03P300	RISER DIAGRAMS
59	03E100	SITE PLAN
60	03E200	LIGHTING PLAN
61	03E300	POWER PLAN
62	03E400	COMMUNICATIONS PLAN
65	03F300	FIRE ALARM PLAN
67	04C201	LAYOUT AND DIMENSION PLAN
68	04C301	GRADING PLAN
71	04A200	FLOOR PLAN
72	04A210	LIFE SAFETY PLAN
74	04A600	REFLECTED CEILING PLAN
77	04M200	FLOOR PLAN
78	04P200	FLOOR PLAN
79	04P300	RISER DIAGRAMS
81	04E200	LIGHTING PLAN
82	04E300	POWER AND COMMUNICATION PLAN
83	04F300	FIRE ALARM PLAN
93	00C002	PAVEMENT DETAILS
94	00C003	PAVEMENT DETAILS II
95	00C004	WATER AND SEWER DETAILS
96	00C005	SANITARY SEWER DETAILS
101	00H001	REGULATED MATERIAL SAMPLE LOCATIONS AND QUANTITIES
104	00A110	SIGNAGE SCHEDULE
116	00A600	ENLARGED TOILET PLANS

117	00A700	MILLWORK ELEVATIONS
124	00M003	SCHEDULES
126	00E000	SYMBOL LEGEND AND ABBREVIATION
127	00E700	BUILDING 20813, 23686, 24050 ONE-LINE DIAGRAMS

(4) Narrative Changes to Drawings. - Revise drawings in accordance with the narrative description listed below:

Sequence No.	Dwg #	Description of Change
11	01A300	DELETE NOTE SYMBOL #6 AT ELEVATIONS 1 AND 2.
13	01A700	DELETE MIDSPAN DOWN SPOUTS AND SPLASH BLOCKS. PROVIDE SIX DOWN SPOUTS AND SPLASH BLOCKS , ONE AT EACH BUILDING CORNER. NOTE AT ENTRY DOWN SPOUT AND SPLASH BLOCK TO WRAP AROUND TO WEST ELEVATION AWAY FROM SIDE WALK.
14	01S201	DIMENSION FROM COLUMN LINE "1" GOING EAST THAT DIMENSIONS THE MEN'S RESTROOM (ROOM 104), CHANGE FROM "15'-9"" TO "14'-5"". DIMENSION FROM COLUMN LINE "E" GOING NORTH THAT DIMENSIONS THE MEN'S RESTROOM (ROOM 104) CHANGE FROM "6'-5"" TO "8'-3"". DIMENSION FROM COLUMN LINE "2" GOING EAST THAT DIMENSIONS THE WOMEN'S RESTROOM (ROOM "B" 103)CHANGE FROM "8'-4"" TO "9'-1"".
18	01E100	ADD NOTE 3 "PROVIDE DIRECT BURIED COMM. DUCT (PVC) WITH PULL STRING. COMM. CABLING WILL BE PROVIDED BY OTHERS."
27	02A200	CHANGE PARTITIONS AROUND JANITOR ROOM 128 AND ELECTRICAL 122 ARE TO BE 1-HR. RATED AND EXTEND UP TO ROOF STRUCTURE. THESE PARTITIONS WILL BE TYPE E. PARTITIONS AROUND JANITOR - 128 TO BE 1-HR. RATED AND EXTEND UP TO ROOF STRUCTURE. THESE PARTITIONS WILL BE TYPE E. KEY NOTE - 11, CHANGE TO READ. CEILING - FLUSH MOUNTED PROJECTION SCREEN, RE: DETAIL 5/00A500.
29	02A300	NORTH ELEVATION -3, CORRECT SECTION CUT 4/A410 TO READ 5/A510.
51	03S201	THE DIMENSION THAT IS SOUTH OF COLUMN LINE "7" AND EAST OF COLUMN LINE "7" THAT DIMENSIONS THE MEN AND WOMEN'S RESTROOMS (ROOMS 123 AND 124), CHANGE FROM "24'-0"" TO "24'-5"".
56	03M200	NOTE BY SYMBOL #6, REPLACE "PVC" WITH "COPPER". ADD RETURN AIR DEVICE TAG FOR 22/22 RR-1 DEVICE.

63	03E700	ADD NOTE BY SYMBOL #3. NOTE SHALL READ: “PROVIDE TVSS UNIT WITH INTEGRAL DISCONNECT. TVSS UNIT SHALL BE RATED FOR A SINGLE PULSE SURGE OF 150,000 AMPS AND A MINIMUM OF 5,500 IMPULSES.” ADD NOTE BY SYMBOL #4. NOTE SHALL READ: “PROVIDE METERING FOR THIS SERVICE PER BASE STANDARDS.” ADD FEEDER #21 TO FEEDER SCHEDULE. FEEDER #21 SHALL BE 4#2, 1#2GND - 1 ½" C. ADD TVSS UNIT TO PANELS MDPA. ADD NOTE BY SYMBOL #3 TO TVSS UNIT SYMBOL. FEEDER #21 SHALL BE ROUTED FROM TVSS TO PANEL MDPA. ADD TVSS UNIT TO PANELS MDPB. ADD NOTE BY SYMBOL #3 TO TVSS UNIT SYMBOL. FEEDER #21 SHALL BE ROUTED FROM TVSS TO PANEL MDPB. ADD METERING TO SERVICES FOR PANEL MDPA AND MDPB. ADD NOTE BY SYMBOL #4 TO METERING EQUIPMENT SYMBOL.
76	04S201	THE DIMENSION FROM COLUMN LINE "1" GOING EAST THAT LOCATES THE WOMEN'S RESTROOM (ROOM 120) CHANGE FROM "17'-8"" TO "18'-2"". THE DIMENSION FROM COLUMN LINE "1" GOING EAST THAT LOCATES THE MEN'S RESTROOM (ROOM 133) CHANGE FROM "13'-4"" TO "12'-2"". THE DIMENSION GOING NORTH-SOUTH THAT GIVES THE LENGTH OF THE MEN'S RESTROOM (ROOM 133), CHANGE "28'-6"" TO "27'-1"". THE DIMENSION GOING SOUTH FROM COLUMN LINE "E" THAT DIMENSIONS THE LIMITS OF MEN'S RESTROOM (ROOM 133), CHANGE "17'-1"" TO "15'-8"". THE TYPICAL GRADE BEAM SPACING TO CHANGE FROM "6'-10-1/2"" TO "6'-6-1/4"" IN THIS AREA.
80	04E100	ADD GENERAL NOTE 3 "PROVIDE DIRECT BURIED COMM. DUCT (PVC) WITH PULL STRING. COMM. CABLING WILL BE PROVIDED BY OTHERS."
102	00A001	GENERAL NOTES, NO. 5 CHANGE TO READ: ALL PAN DIMENSIONS ARE TO FACE OF GYP. BD. OR CENTERLINE OF COLUMNS UNLESS OTHERWISE NOTED.
105	00A200	AT DOOR TYPE PMSATP , ADD NOTE TEMPERED GLASS TO MATCH DOOR TRANSOM GLASS SECTION. AT DOOR SCHEDULE 4, BLDG. 24050: 1.) AT DOOR 100A CHANGE GLASS TYPE TO CTG. 2.) AT DOOR 123 ADD 3/4 HR. LABEL AND CHANGE HDW SET NO. TO HW- 36. 3.) AT DOOR 135 CHANGE TO 3/4 HR. LABEL. 4.) AT DOOR 136 CHANGE TO 3/4 HR. LABEL. 5.) AT DOOR 136D CHANGE TO 3/4 HR. LABEL.

6.) AT DOOR 122 ADD 3/4 HR LABEL.
7.) AT DOOR 132 ADD 3/4 HR LABEL.

AT DOOR SCHEDULE 2, BLDG. 23686 MISSLE ENGINEERING:

1.) AT DOOR 122, CHANGE HARDWARE SET TO HW-14.
2.) AT DOOR 128, CHANGE HARDWARE SET TO HW-37 AND CHANGE TO 3/4 HR LABEL.

AT DOOR SCHEDULE 3, BLDG. 23700 RADAR SUPPORT/LAUNCH CONTROL

1.) AT DOOR 131, AND CHANGE 3/4 HR LABEL.
2.) AT DOOR 132, CHANGE HARDWARE SET TO HW-38 AND CHANGE TO 3/4 HR LABEL.
3.) AT DOOR 137 ADD TO NOTES: W/CHIPHER LOCKS. RE: SPEC. SECTION 08700.
4.) AT DOOR 137A ADD TO NOTES: W/CHIPHER LOCKS. RE: SPEC. SECTION 08700.

110	00A400	AT SECTION 3, ADD KEY NOTE 26 - ALUMINUM TRANSOM FRAME.
122	00M001	ADD THE FOLLOWING ABBREVIATION TO SHEET 00_001: THE ABBREVIATION NFWH STANDS FOR "NON-FREEZE WALL HYDRANT".
128	00E800	ADD COMMUNICATIONS GROUNDING CONDUCTOR TO DETAIL 6/00E800. ADD NOTE TO THE COMMUNICATIONS GROUNDING CONDUCTOR "REFER TO PLANS FOR SIZE". REVISE NOTE THAT READS "JUNCTION BOX WITH BLANK COVER PLATE" TO READ "REFER TO SPECIFICATIONS FOR REQUIREMENTS". REVISE ALL PLAN REFERENCES THAT READ "003800" TO 00E800".
129	00E801	DETAIL 5 CHANGE "SELECT/CLEAN BACKFILL" TO "CONCRETE". ADD NOTE BELOW "COMM. TRENCH SIMILAR BUT WITH DIRT BACKFILL".
130	00E802	DETAILS 1 AND 2 NOTE THAT PHASE WIRES SHALL BE INSTALLED 48" BELOW NEUTRAL CONDUCTOR FOR RAPTOR PROTECTION.
131	00E900	REVISE TYPE J FIXTURE AS FOLLOWS: ADD "METALUMEN CW4 SERIES OR EQUAL" TO DESCRIPTION, IN COLUMN LABELED "CORPS OF ENGR....." REVISE "TYPE 224" TO "N/A".

END OF AMENDMENT NO. 0001

PROJECT TABLE OF CONTENTS

AMENDMENT NO. 0001

BIDDING REQUIREMENTS, CONTRACT FORMS,
AND CONDITIONS OF THE CONTRACT

DOCUMENT NO. TITLE

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00100 INSTRUCTIONS, CONDITIONS AND NOTICES TO BIDDERS
00110 BIDDERS CHECKLIST
00500 FORMS
00600 REPRESENTATIONS AND CERTIFICATIONS
00700 CONTRACT CLAUSES
00710 WAGE RATES
00720 AFFIRMATIVE ACTION PLAN
00800 SPECIAL CONTRACT REQUIREMENTS

SPECIFICATIONS

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01045 ALTERATIONS TO EXISTING BUILDING(S)
01090 SOURCES FOR REFERENCE PUBLICATIONS
01122 SPECIAL PROJECT PROCEDURES FOR WHITE SANDS MISSILE RANGE
01200 PROJECT MEETINGS
01320 PROJECT SCHEDULE
01330 SUBMITTAL PROCEDURES
01340 COLOR/FINISH SAMPLE BOARDS
01360 SURVEY, LAYOUT, AND OTHER DATA
01412 ENVIRONMENT PROTECTION FOR WHITE SANDS MISSILE RANGE
01420 STORM WATER POLLUTION PREVENTION PLAN FOR CONSTRUCTION ACTIVITY [AM#1]
01451 CONTRACTOR QUALITY CONTROL
01500 TEMPORARY CONSTRUCTION FACILITIES
01560 TEMPORARY SAFETY CONTROLS
01580 BULLETIN BOARD
01700 CONTRACT CLOSEOUT

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02080 ASBESTOS ABATEMENT
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02221 EXCAVATION, FILLING AND BACKFILLING FOR BUILDINGS
02225 EARTHWORK
02230 CLEARING AND GRUBBING
02316 EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS
02373 SEPARATION/FILTRATION GEOTEXTILE
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02516 CONCRETE PAVEMENT
02526 WHEEL STOPS
02551 BITUMINOUS PAVING FOR ROADS, STREETS AND OPEN STORAGE AREAS
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02580 PAVEMENT MARKINGS
02660 WATER DISTRIBUTION SYSTEM
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03200 CONCRETE REINFORCEMENT
03250 EXPANSION JOINTS, CONTRACTION JOINTS, AND WATERSTOPS
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05061 ULTRASONIC INSPECTION OF WELDMENTS
05062 ULTRASONIC INSPECTION OF PLATES
05120 STRUCTURAL STEEL
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06100 ROUGH CARPENTRY
06410 CUSTOM CASEWORK

DIVISION 07 - THERMAL & MOISTURE PROTECTION

07416 STRUCTURAL STANDING SEAM METAL ROOF (SSSMR) SYSTEM
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08330 OVERHEAD ROLLING DOORS
08353 ACCORDION PARTITIONS, FOLDING DOORS, AND OPERABLE PARTITIONS
08520 ALUMINUM WINDOWS
08700 BUILDERS' HARDWARE
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09250 GYPSUM WALLBOARD
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15250 THERMAL INSULATION FOR MECHANICAL SYSTEMS
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15400 PLUMBING, GENERAL PURPOSE
15653 AIR-CONDITIONING SYSTEM (UNITARY TYPE)
15895 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM
15950 HEATING, VENTILATING AND AIR CONDITIONING (HVAC) CONTROL SYSTEMS
15990 TESTING, ADJUSTING, AND BALANCING OF HVAC SYSTEMS

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16370 ELECTRICAL DISTRIBUTION SYSTEM, AERIAL
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-- End of Project Table of Contents --

ACCOMPANYING AMENDMENT NO. 0001 TO DACA63-98-B-0055

SOLICITATION, OFFER, AND AWARD (Construction, Alteration, or Repair)	1. SOLICITATION NUMBER	2. TYPE OF SOLICITATION	3. DATE ISSUED	PAGE OF PAGES
	DACA63-98-B-0055	[X] SEALED BID (IFB) [ ] NEGOTIATED (RFP)	17-AUG-1998	

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

4. CONTRACT NUMBER	5. REQUISITION/PURCHASE REQUEST NUMBER	6. PROJECT NUMBER
	W45XMA-8196-4751	

7. ISSUED BY CODE DACA63

US ARMY ENGINEER DISTRICT, FT. WORTH
ATTN: CESWF-CT-M
PO BOX 17300
819 TAYLOR STREET
FORT WORTH, TEXAS 76102-0300

8. ADDRESS OFFER TO

SAME AS ITEM 7

9. FOR INFORMATION CALL ▶	A. NAME	B. TELEPHONE NUMBER (Include area code) (NO COLLECT CALLS)
	DENVER HEATH	817-978-4418

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying number, date):*

LAUNCH COMPLEX REVITALIZATION
WHITE SANDS MISSILE RANGE, NM

11. The Contractor shall begin performance within 10 calendar days and complete it within * calendar days after receiving [ ] award, [X] notice to proceed. This performance period is [X] mandatory, [ ] negotiable. *(See* *SEE SECTION 01000 *.)*

12A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE PAYMENT BONDS? *(If "YES," indicate within how many calendar days after award in Item 12B.)*	12B. CALENDAR DAYS
[X] YES [ ] NO	10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 0 copies to perform the work required are due at the place specified in Item 8 by 2:00 PM *(hour)* local time 16 SEP 1998 *(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 [X] is, [ ] is not required.

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 60 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)*

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*	15. TELEPHONE NUMBER *(Include area code)* PHONE: FAX:
DUNS NUMBER: CAGE CODE: CODE FACILITY CODE	16. REMITTANCE ADDRESS *(Include only if different than 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 _____ calendar days after the date offers are due. *(Insert any number equal or greater than the minimum requirement stated in 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS ▶ SET FORTH IN THE 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

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 ☐ 10 U.S.C. 2304(c) ( ) ☐ 41 U.S.C. 253(c) ( )
26. ADMINISTERED BY CODE		27. PAYMENT WILL BE MADE BY

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT *(Contractor is required to sign this document and return _____ copies to the 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.	☐ 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 consummates 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 or print)*	31A. NAME OF CONTRACTING OFFICER *(Type or print)*

30B. SIGNATURE	30C. DATE	31B. UNITED STATES OF AMERICA BY	31C. AWARD DATE

GENERAL DECISION NM980001 07/10/98 NM1
General Decision Number NM980001

Superseded General Decision No. NM970001

State: **New Mexico**

Construction Type:
BUILDING
HEAVY

County(ies):
STATEWIDE

STATEWIDE - EXCLUDING EDDY AND LEA COUNTIES FOR BUILDING CONSTR
GENERAL BUILDING AND HEAVY ENGINEERING CONSTRUCTION shall include the construction, alteration, repair and demolition of buildings, including office buildings, warehouses, industrial an commercial buildings, institutional and public buildings, and all air conditioning, conduit, heating and other mechanical and electrical works and site preparation for building or heavy engineering projects under this classification, stadia; and shall include electrical, gas, water, sewer lines, and other such utility construction which are part of projects under this classification and include within the property line or less than five (5) feet from the building or heavy engineering structure, whichever is closer, provided, however, regard to electrical utilities such construction shall include construction from the first attachment of incoming power source without regard to the property line or proximity to the building or the heavy engineering structure; and include construction, alteration, repair and demolition of heavy engineering work such as power generating plants, pump stations, natural gas compressing stations; covered reservoirs and covered sewage and water treatment facilities concrete linings for canals, ditches and channels; concrete dams; earth dams of one million (1,000,000) cubic yards or over; radio towers, ovens, furnaces, kilins, silos, shafts and tunnels (other than highway shafts and tunnels), hydro-electric projects; and well drilling, telephone and elecltrical transmission lines which are part of GENERAL BUILDING AND HEAVY ENGINEERING PROJECTS: mining appurtenances such as tripples, washeries and loading and discharging chutes, and specialized structures for testing, launching and recovering space and other rocket-type missles.

Modification Number	**Publication Date**
0	02/13/1998
1	04/03/1998
2	05/22/1998
3	06/05/1998
4	**07/10/1998**

COUNTY(ies):
STATEWIDE

ASBE0066D 07/01/1996

CURRY, HARDING, LEA, QUAY, ROOSEVELT, UNION COUNTIES	Rates	Fringes
ASBESTOS WORKERS/INSULATORS (Includes application of all insulating materials, protective coverings, coatings and finishings to all ltypes of mechanical systems and asbestos removal	15.13	4.24

ASBE0076B 01/01/1998

REMAINING COUNTIES	Rates	Fringes
ASBESTOS WORKERS/INSULATORS (Includes application of all insulating materials, protective coverings, coatings and finishings to all types of mechanical systems and asbestos removal)	14.70	4.82
HEAVY INDUSTRIAL: Public utility paver plants, refineries of various types, gasification plants, uranium mines and mills and cement plants	18.90	4.82

BOIL0627A 10/01/1997

	Rates	Fringes
BOILERMAKERS	18.28	9.56

BRNM0001A 04/01/1998

	Rates	Fringes
BRICKLAYERS & STONEMASONS:		
DONA ANA COUNTY	15.02	2.82
GRANT, LUNE, OTERO & SIERRA COS.	16.77	2.87
HIDALGO COUNTY	17.27	2.89

BRNM0002A 10/01/1997

	Rates	Fringes
BERNALILLO, CATRON, CIBOLA, CHAVES, COLFAX, CURRY, DEBACA, GUADALUPE, HARDING, LINCOLN, LOS ALAMOS, MCKINLEY, MORA, RIO ARRIBA, ROOSEVELT, QUAY, SANDOVAL, SAN JUAN, SAN MIGUEL, SANTA FE, SOCORRO, TAOS, TORRENCE, UNION & VALENCIA COUNTIES		
BRICKLAYERS-STONEMASONS	17.91	3.27
MARBLE MASONS, TILE LAYERS & TERRAZZO WORKERS	16.45	3.27

CARP0092A 10/01/1997

	Rates	Fringes
CARPENTERS, LATHERS, & PILEDRIVERMEN	17.30	2.92
LIGHT COMMERCIAL CONSTRUCTION**	10.65	2.22

**SEE DEFINITION AT THE END OF TRUCK DRIVERS

MILLWRIGHTS:		
ZONE I	18.45	2.92
ZONE II	20.70	2.92

BASING POINTS FOR MILLWRIGHTS ONLY FROM ALBUQUERQUE CITY HALL

ZONE I 0 TO 15 ROAD MILES
ZONE II 15 TO 35 ROAD MILES

ELEC0583B 12/01/1997

	Rates	Fringes
ELECTRICIANS		
Zone I	15.65	3.75%+3.20

Zone II	17.60	3.75%+3.20
CABLE SPLICERS:		
Zone I	15.90	3.75%+3.20
Zone II	17.85	3.75%+3.20

Zone 1: The area within a 25 mile radius from the downtown Post Office in El Paso, TX. Ft Bliss and Biggs Field proper to be included in this free zone. The area within a 15 mile radius from the Post Office in Las Cruces, NM and within a 5 mile radius from the Post Office in Alamogordo, Deming and Lordsburg. The area 10 miles East and 10 miles West of Interstate 10 between El Paso, Texas and Las Cruces NM.

Zone 2: Dona Ana, Otero, Luna and Hidalgo Counties (except that area in Zone 1.

ELEC0611B 06/01/1997

	Rates	Fringes
COMMERCIAL LINE WORK (also applies to switching stations and substations adjacent to power plants):		

Bernalillo, Catron, Chaves, Cibola, Colfax, Curry, DeBaca, Grant, Guadalupe, Harding, Lincoln, Los Alamos (USE ZONE 3 RATES), McKinley, Mora, Quay, Rio Arriba, Roosevelt, Sandoval, San Juan, San Miguel, Santa Fe, Sierra, Socorro, Taos, Torrance, Union, Valencia & White Sands Missile Range and that portion of Fort Bliss in New Mexico.

Lineman - Technicians:		
Zone I	20.00	4.85+3.75%
Zone II	21.80	4.85+3.75%
Zone III	23.00	4.85+3.75%
Zone IV	25.20	4.85+3.75%
Cable Splicers:		
Zone I	22.00	4.85+3.75%
Zone II	23.80	4.85+3.75%
Zone III	25.00	4.85+3.75%
Zone IV	27.20	4.85+3.75%
Equipment Op. (includes helicopter op.):		
Zone I	19.00	4.85+3.75%
Zone II	20.80	4.85+3.75%
Zone III	22.00	4.85+3.75%
Zone IV	24.20	4.85+3.75%

Equipment Mechanic (includes helicopter mechanic):		
Zone I	19.00	4.85+3.75%
Zone II	20.80	4.85+3.75%
Zone III	22.00	4.85+3.75%
Zone IV	24.20	4.85+3.75%
Powderman:		
Zone I	17.40	4.85+3.75%
Zone II	19.20	4.85+3.75%
Zone III	20.40	4.85+3.75%
Zone IV	22.60	4.85+3.75%
Groundman - Jackhammer Op.:		
Zone I	14.20	4.85+3.75%
Zone II	16.00	4.85+3.75%
Zone III	17.20	4.85+3.75%
Zone IV	19.40	4.85+3.75%

Zone 1 Basic Wage Rates

City	Miles From Main Post Office
*Albuquerque	25 miles
Santa Fe	10 miles
Las Vegas	8 miles
Farmington	6 miles
Raton	6 miles
Tucumcari	6 miles
Gallup	10 miles
Roswell	12 miles
Ruidoso	12 miles
Portales	12 miles
Carrizozo	12 miles
Clovis	12 miles
Belen	12 miles
Los Lunas	12 miles
Espanola	14 miles

*The eastern edge of the Albuquerque Zone extends no further than the western boundary of the Village of Tjieras.

Zone 2 extending up to twenty (20) miles beyond Zone 1, EXCEPT ALBUQUERQUE, rates per hour shall be increased by nine percent (9%) of the journeyman rate for Zone 1.

Zone 3 extending up to thirty (30) milesbeyond Zone 1, EXCEPT ALBUQUERQUE, rates per hour shall be increased by fifteen percent (15%) of the journeyman rate for Zone 1.

Zone 4 anything beyond thirty (30) miles from Zone 1, EXCEPT ALBUQUERQUE, rates per hour shall be increased by twenty-six percent (26%) of the journeyman rate for Zone 1.

ELEC0611C 06/01/1997

	Rates	Fringes
ELECTRICIANS:		
Bernalillo, Santa Fe, Torrance, DeBaca, Guadalupe, Quay, San Miguel, Mora, Harding, Union, Colfax, Taos, Rio Arriba, Grant, Sandoval, Valencia, Socorro, Catron, McKinley, Sierra, San Juan, Chaves, Curry, Lincoln, Cibola & Roosevelt Counties		
Zone 1		
Electricians	20.00	4.85+4%
Cable Splicers	22.00	4.85+4%
Zone 2		
Electricians	21.80	4.85+4%
Cable Splicers	23.80	4.85+4%
Zone 3		
Electricians	23.00	4.85+4%
Cable Splicers	25.00	4.85+4%
Zone 4		
Electricians	25.20	4.85+4%
Cable Splicers	27.20	4.85+4%

Basic Wage Rates

City	Miles From Main Post Office
*Albuquerque	25 miles
Santa Fe	10 miles
Las Vegas	8 miles
Farmington	6 miles
Raton	6 miles
Belen	12 miles
Espanola	14 miles
Los Lunas	12 miles
Tucumcari	6 miles
Roswell	12 miles
Ruidoso	12 miles
Portales	12 miles
Carrizozo	12 miles

Clovis	12 miles
Gallup	10 miles

*The eastern edge of the Albuquerque Zone extends no further than the western boundary of the Village of Tjieras.

Zone 2 extending up to twenty (20) miles beyond Zone 1, EXCEPT ALBUQUERQUE, rates per hour shall be increased by nine percent (9%) of the journeyman rate for Zone 1.

Zone 3 extending up to thirty (30) milesbeyond Zone 1, EXCEPT ALBUQUERQUE, rates per hour shall be increased by fifteen percent (15%) of the journeyman rate for Zone 1.

Zone 4 anything beyond thirty (30) miles from Zone 1, EXCEPT ALBUQUERQUE, rates per hour shall be increased by twenty-six percent (26%) of the journeyman rate for Zone 1.

FOR ESTABLISHING THE OUTLYING ZONES FROM THE ALBUQUERQUE FREE ZONE ONLY, ZONE 2 SHALL EXTEND UP TO TEN (10) MILES BEYOND ZONE 1, ZONE 3 SHALL EXTEND UP TO TWENTY (20) MILES BEYOND ZONE 1, AND ZONE 4 ANYTHING BEYOND TWENTY (20) MILES FROM ZONE 1.

ELEC0611D 06/01/1997

	Rates	Fringes
LOS ALAMOS CO.		
ELECTRICIANS	23.00	4.85+4%
CABLE SPLICERS	25.00	4.85+4%

ELEC0611E 06/01/1997

	Rates	Fringes
EDDY AND LEA COUNTIES:		
ZONE I		
ELECTRICIANS	18.45	4.85+4%
CABLE SPLICERS	18.80	4.85+4%
ZONE II		
ELECTRICIANS	18.90	4.85+4%

CABLE SPLICERS	19.25	4.85+4%
ZONE III		
ELECTRICIANS	19.05	4.85+4%
CABLE SPLICERS	19.40	4.85+4%
ZONE IV		
ELECTRICIANS	19.30	4.85+4%
CABLE SPLICERS	19.65	4.85+4%
ZONE I		
SOUNDMEN	16.45	3.45+4%
TECHNICIANS	13.16	3.45+4%
INSTALLERS	10.69	3.45+4%
ZONE II		
SOUNDMEN	16.90	3.45+4%
TECHNICIANS	13.61	3.45+4%
INSTALLERS	11.14	3.45+4%
ZONE III		
SOUNDMEN	17.05	3.45+4%
TECHNICIANS	13.76	3.45+4%
INSTALLERS	11.29	3.45+4%
ZONE IV		
SOUNDMEN	17.30	3.45+4%
TECHNICIANS	14.01	3.45+4%
INSTALLERS	11.54	3.45+4%

FROM THE MAIN POST OFFICE OF ARTESIA,
CARLSBAD, HOBBS & LOVINGTON, NEW MEXICO

ZONE I - 0 to 12 miles
ZONE II - 12 miles to 22 miles
ZONE III - 22 miles to 40 miles
ZONE IV - 40 miles and beyond

ELEC0611I 06/01/1997

	Rates	Fringes

COMMERCIAL LINE WORK (also applies to switching stations adjacent to power plants):

Eddy and Lea Counties:

Lineman - Techanicians:		
Zone I	18.45	4.40+3.75%
Zone II	18.85	4.40+3.75%
Zone III	19.05	4.40+3.75%
Zone IV	19.30	4.40+3.75%
Cable Splicers:		
Zone I	18.82	4.40+3.75%
Zone II	19.27	4.40+3.75%
Zone III	19.42	4.40+3.75%
Zone IV	19.67	4.40+3.75%
Equipment Op. and Mechanics (includes Helicopter Op. & Mechanic):		
Zone I	17.53	4.40+3.75%
Zone II	17.98	4.40+3.75%
Zone III	18.13	4.40+3.75%
Zone IV	18.38	4.40+3.75%
Powderman:		
Zone I	16.05	4.40+3.75%
Zone II	16.50	4.40+3.75%
Zone III	16.65	4.40+3.75%
Zone IV	16.90	4.40+3.75%
Groundman - Jackhammer Op.:		
Zone I	13.10	4.40+3.75%
Zone II	13.55	4.40+3.75%
Zone III	13.70	4.40+3.75%
Zone IV	13.95	4.40+3.75%

FROM THE MAIN POST OFFICE OF ARTESIA, CARLSBAD, HOBBS & LOVINGTON, NEW MEXICO

ZONE I - 0 to 12 miles
ZONE II - 12 miles to 22 miles
ZONE III - 22 miles to 40 miles
ZONE IV - 40 miles and beyond

ELEC0611Z 07/01/1996

	Rates	Fringes

COMMERCIAL LINE WORK (ALSO APPLIES TO SWITCHING STATIONS AND SUBSTATIONS ADJACENT TO POWER PLANTS):

Dona Ana, Hidalgo, Luna and Otero Cos., exclusive of White Sands Missile Range and that portion of Fort Bliss in New Mexico

Linemen - Technicians		
Zone I	15.15	3.20+3.75%
Zone II	17.10	3.20+3.75%
Cable Splicers		
Zone I	15.45	3.20+3.75%
Zone II	17.44	3.20+3.75%
Equipment Op. (includes Helicopter Op.):		
Zone I	13.18	3.20+3.75%
Zone II	14.88	3.20+3.75%
Equipment Mechanic (includes Helicopter Mech.):		
Zone I	13.18	3.20+3.75%
Zone II	14.88	3.20+3.75%
Powderman:		
Zone I	12.73	3.20+3.75%
Zone II	14.36	3.20+3.75%
Groundman - Jackhammer Op.:		
Zone I	10.76	3.20+3.75%
Zone II	12.14	3.20+3.75%

ZONE I:

a. The area within a 25 mile radius from the Downtown Post Office in El Paso, Texas. Fort Bliss and Biggs Field Property to be included in this Free Zone. Fort Bliss and Biggs Field to be defined by official U.S. Government Map

b. The area within a five mile radius of any city, town, or municipality within which an employer establishes or maintains his permanent place of business.

c. The area within a fifteen mile radius from the Post Office in Las Cruces, New Mexico, and within a five mile radius from the Post Office in Alamogordo, Deming, and Lordsburg, New Mexico.

d. The area ten miles East and ten miles West of Interstate 10, between El Paso, Texas and Las Cruces, New Mexico.

ZONE II: All other areas of the jurisdiction except those specified in Zone I.

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* ELEV0131A 07/01/1998

	Rates	Fringes
ELEVATOR CONSTRUCTORS:		
MECHANIC	20.225	6.405+a

FOOTNOTE: a. Under 5 years service 6%; over 5 years service 8%.
7-Paid Holidays New Years Day, Memorial Day, July 4th, Labor Day, Thansksgiving Day, Friday after Thanksgiving Day, Christmas Day.

ENGI0953C 11/01/1993

	Rates	Fringes
POWER EQUIPMENT OPERATORS:		
HEAVY CONSTRUCTION:		
GROUP I	12.00	2.65
GROUP II	13.23	2.65
GROUP III	13.32	2.65
GROUP IV	13.55	2.65
GROUP V	13.61	2.65
GROUP VI	13.73	2.65
GROUP VII	13.83	2.65
GROUP VIII	15.12	2.65

HAZARDOUS PAY - The following pay shall be applicable for every hour an operating engineer is required by governmental regulations and does wear special equipment for hazardous work at the designated levels. This is applicable in all three zones

LEVEL C - 10% above regular hourly wage
LEVEL B - 10% above regular hourly wage
LEVEL A - 15% above regular hourly wage

ZONE PAY

ZONE I - Albuquerque - 0 to 50 mile radius of Bernalillo County Court House shall be a Free Zone

- Farmington - 0 to 15 mile radius of Farmington City Hall shall be a Free Zone

- Santa Fe - 0 to 25 mile radius of the State capitol Building shall be a free zone

Zone II - Shall be $1.50 per hour above base pay. Will apply outside of above parameters up to 35 miles

Zone III - Shall be $ .75 cents per hour above Zone II for a total of $2.25 per hour and will apply after 35 miles of Zone I's parameters.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP I
Fireman, Oiler, Screedman, Scale op. such as Bin-a-Batch, Rubber Tired Farm Type Tractor, Tractors under 50 hp w/o Attachments, Breakman, Concrete Paving Curing Machine (Bridgetype).

GROUP II
Rollers, Sheepsfoot or Pneumatic Self-Propelled w/o Dozer, Concrete Conveyors, Service Truck op. (Head Oiler), Air Compressor (300 CFM & Over), Pumps (6" & Over), Screening Plants, Concrete Mixers (Under 1 CY), Concrete Saw or Grinder-Span Type, 1 Drum Hoist, Air Tugger, Elevating Belt Type Loaders, Forklift, Lumber Stacker, Tractor Farm Type (under 50 HP w/Attachments), Motorman and Industrial Locomotive op., Winch Truck, Front End Loaders (under 2 CY), Power Plants which Generate Over 15 KW., Welding Machines.

GROUP III
Bituminous Distributors, Boilers, Retort & Hot Oil Heaters Concrete Mixers, (1 CY & Over), Conc. Paver-Single Drum, Drilling Equip.,(Refrigeration, Slusher, Jumbo forms), Trenching Machines (all Types), Pumpcrete & Gunite Machines Slipfrom Paver, Mechanical Bullfloats, Concrete Slab Spreading Machine, Conc. Slab Finishing Machine, Asphalt Plants, Bituminous Finishing Machines, Crushing Plants.

GROUP IV
Front End Loaders (2 thru 10 CY), Rollers Steel Wheeled-All Types, Bulldozer, Scrapers (Motor or Towed), Elevating Graders Concrete Batching Plants, Self-Propelled Rollers - Equipped W/Dozer, Twin-Bowl Scrapers and Quad 8 or 9 Pushers (35: Over Basic Rate).

GROUP V
Hydraulic Cranes-With less than 50 feet of Boom (20 Tons and Under), Concrete Paver-Double Drum, Cat Cranes, Hysters, Side and Swingboom Cats, 2 Drum Hoist, Auto Fine Grader.

GROUP VI
Mucking Machines-All Types, Motor Grader (Finish) Mechanic Welder.

GROUP VII
Steam Engineers, Loader (Front End Over 10 CY) Concrete Pump (Snorkel Type).

GROUP VIII
All Shovel Type Equipment, Cranes, Draglines, Backhoes, Derricks, Hydraulic & Stiff Leg, Pipemobile (No 2 Operator) Piledriver, Hydrulic Cranes (20 Tons & Over), Mine Hoist, Belt Loader ("C.M.I." Type),Boom and Jibs 150 ft. Through 199 ft.-$. 25 per hour above base pay 200 ft and over- 50: per hour above base pay. Shovel (Wheel Type), Boring Machine (Tunnel or Shaft Mole), Pipe Mobile.

ENGI0953E 01/01/1998

	Rates	Fringes
POWER EQUIPMENT OPERATORS:		
BUILDING CONSTRUCTION:		
GROUP I	13.25	2.70
GROUP II	14.55	2.70
GROUP III	14.65	2.70
GROUP IV	14.90	2.70
GROUP V	15.00	2.70
GROUP VI	15.10	2.70
GROUP VII	15.20	2.70
GROUP VIII	16.60	2.70

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP I
Fireman, Oiler, Screedman, Scale op. such as Bin-a-Batch, Rubber Tired Farm Type Tractor, Tractors under 50 hp w/o Attachments, Breakman, Concrete Paving Curing Machine (Bridgetype).

GROUP II
Rollers, Sheepsfoot or Pneumatic Self-Propelled w/o Dozer, Concrete Conveyors, Service Truck op. (Head Oiler), Air Compressor (300 CFM & Over), Pumps (6" & Over), Screening Plants, Concrete Mixers (Under 1 CY), Concrete Saw or Grinder-Span Type, 1 Drum Hoist, Air Tugger, Elevating Belt Type Loaders, Forklift, Lumber Stacker, Tractor Farm Type (under 50 HP w/Attachments), Motorman and Industrial

Locomotive op., Winch Truck, Front End Loaders (under 2 CY), Power Plants which Generate Over 15 KW., Welding Machines.

GROUP III
Bituminous Distributors, Boilers, Retort & Hot Oil Heaters Concrete Mixers, (1 CY & Over), Conc. Paver-Single Drum, Drilling Equip.,(Refrigeration, Slusher, Jumbo forms), Trenching Machines (all Types), Pumpcrete & Gunite Machines Slipfrom Paver, Mechanical Bullfloats, Concrete Slab Spreading Machine, Conc. Slab Finishing Machine, Asphalt Plants, Bituminous Finishing Machines, Crushing Plants.

GROUP IV
Front End Loaders (2 thru 10 CY), Rollers Steel Wheeled-All Types, Bulldozer, Scrapers (Motor or Towed), Elevating Graders Concrete Batching Plants, Self-Propelled Rollers - Equipped W/Dozer, Twin-Bowl Scrapers and Quad 8 or 9 Pushers (35: Over Basic Rate).

GROUP V
Hydraulic Cranes-With less than 50 feet of Boom (20 Tons and Under), Concrete Paver-Double Drum, Cat Cranes, Hysters, Side and Swingboom Cats, 2 Drum Hoist, Auto Fine Grader.

GROUP VI
Mucking Machines-All Types, Motor Grader (Finish) Mechanic Welder.

GROUP VII
Steam Engineers, Loader (Front End Over 10 CY) Concrete Pump (Snorkel Type).

GROUP VIII
All Shovel Type Equipment, Cranes, Draglines, Backhoes, Derricks, Hydraulic & Stiff Leg, Pipemobile (No 2 Operator) Piledriver, Hydrulic Cranes (20 Tons & Over), Mine Hoist, Belt Loader ("C.M.I." Type),Boom and Jibs 150 ft. Through 199 ft.-$. 25 per hour above base pay 200 ft and over- 50: per hour above base pay. Shovel (Wheel Type), Boring Machine (Tunnel or Shaft Mole), Pipe Mobile.

IRON0263D 06/01/1998

	Rates	Fringes
CHAVES, CURRY, DONA DNA, EDDY, GRANT, HARDING, HIDALGO, LEA, LUNA, OTERO, QUAY, ROOSEVELT, SIERRA AND UNION COUNTIES		

IRONWORKERS:		
Ornamental; Structural and reinforcing	16.39	3.75

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* IRON0495A 07/01/1998

	Rates	Fringes

BERNALILLO, CATRON, CIBOLA, COLFAX, DeBACA, GUADALUPE, LINCOLN, LOS ALAMOS, TAOS, McKINLEY, MORA, RIO ARRIBA, SAN JUAN, SAN MIGUEL, SANDOVAL, SANTA FE, SOCORRO, TORRANCE, VALENCIA COUNTIES

IRONWORKERS:		
Work at facilities for the production of basic metals, alloys or fossil fuels; refining; meaning & smelting; pelletizing; ore or coal handling; power generation; cement plant; locks and dams:		
Ornamental; Structural and reinforcing	15.75	6.31
All other work:		
Ornamental; Structural and reinforcing	13.08	5.31

LABO0016A 10/01/1997

	Rates	Fringes
LABORERS:		
GROUP I	10.87	2.26
GROUP II	11.50	2.26
GROUP III	12.69	2.26

LABORER CLASSIFICATIONS

GROUP I: Chainmen, Stakedrivers, Demolition, Hand Flagmen, Heater Tender, Toolroom Tenders, Pick and Shovel Work, Window Cleaning and Clean-up, Carpenter Tenders, Concrete Workers, Concrete Buggy Operaators, Industrial and Plant Laborers, (Chainman and Stakedrivers working solely for an engineering firm are not subject to this agreement.)

GROUP II: Air and Power Tool Operators, Asphalt Rakers, Chain Saw Operators, Cutting Torch Operators, Gunite Rebound Men, Fog Machine Operators, Power Buggy Operators, Rodmen, Sandblasters (potmen), Wagons Core, and Diamond Driller Tenders outside w/Pumps under 6", Concrete Burners, Cement Mason Tenders,

Hodcarriers, Mortar Mixer, Plaster Spreader Operators, Plaster Tenders, Gunite Nozzlemen, Pipelayer, Pumpcrete Nozzlemen, Powdermen and Blaster.

GROUP III: Asbestos Abatement Laborer; Toxic and Hazardous Waste Removal Laborer; Lead Base Paint Removal Laborer.

MARB0002C 06/01/1995

	Rates	Fringes
MARBLE MASONS, TILE LAYERS & TERRAZZO WORKERS		
Grant, Luna, Otero and Sierra	15.76	2.79
Hidalgo	16.26	2.79

PAIN0823A 10/01/1997

	Rates	Fringes
PAINTERS:		
Mines, mills, Power plants, energy plants, refineries, coal gassification plants, nuclear related facilities & all steel work incidental thereto including stacks of all descriptions:		
Brush, roller, pot tender, sandblaster, grinder operator:		
New Work:		
Zone I	16.05	3.08
Zone II	17.05	3.08
Zone III	18.55	3.08
Repaint/remodel:		
Zone I	13.64	3.08
Zone II	14.64	3.08
Zone III	16.14	3.08
Spray; Preparation for and application of epoxy & special coatings:		
New Work:		
Zone I	16.55	3.08
Zone II	17.55	3.08
Zone III	19.05	3.08
Repaint/remodel:		

Zone I	14.08	3.08
Zone II	15.08	3.08
Zone III	16.58	3.08
Drywall finisher & ames tool op.:		
New Work:		
Zone I	17.25	3.08
Zone II	18.25	3.08
Zone III	19.75	3.08
Repaint/remodel:		
Zone I	14.66	3.08
Zone II	15.66	3.08
Zone III	17.16	3.08
Handfinisher, machine textures:		
New Work:		
Zone I	16.55	3.08
Zone II	17.55	3.08
Zone III	19.05	3.08
Paperhangers:		
New Work:		
Zone I	17.05	3.08
Zone II	18.05	3.08
ZONE III	19.55	3.08
Repaint/remodel:		
Zone I	14.49	3.08
Zone II	15.49	3.08
Zone III	16.99	3.08
All other Work: Commercial:		
Brush, roller, spray, special coatings:		
New Work:		
Zone I	13.80	3.08
Zone II	14.80	3.08
Zone III	16.30	3.08
Repaint/remodel:		
Zone I	13.80	3.08
Zone II	14.80	3.08
Zone III	16.30	3.08
Sandblaster, striping machine op.:		
New Work:		
Zone I	15.25	3.08
Zone II	16.25	3.08
Zone III	17.75	3.08
Repaint/remodel:		
Zone I	15.25	3.08
Zone II	16.25	3.08
Zone III	17.75	3.08

Sign painter:		
New Work:		
Zone I	15.60	3.08
Zone II	16.60	3.08
Zone III	18.10	3.08
Paperhanger:		
New Work:		
Zone I	15.75	3.08
Zone II	16.75	3.08
Zone III	18.25	3.08
Repaint/remodel:		
Zone I	15.75	3.08
Zone II	16.75	3.08
Zone III	18.25	3.08
Ames tool operator:		
New Work:		
Zone I	16.00	3.08
Zone II	17.00	3.08
Zone III	18.50	3.08
Repaint/remodel:		
Zone I	14.30	3.08
Zone II	15.30	3.08
Zone III	16.80	3.08
Machine texture:		
New work:		
Zone I	15.80	3.08
Zone II	16.80	3.08
Zone III	18.30	3.08
Repaint/remodel:		
Zone I	13.70	3.08
Zone II	14.70	3.08
Zone III	16.20	3.08
Drywall finisher"		
New Work:		
Zone I	15.80	3.08
Zone II	16.80	3.08
Zone III	18.30	3.08
Repaint/remodel:		
Zone I	14.05	3.08
Zone II	15.05	3.08
Zone III	16.55	3.08

PAINTERS ZONE DEFINITIONS

ALBUQUERQUE, SANTA FE AND BELEN SHALL BE CONSIDERED IN ZONE I

ZONE I - BASE PAY UP TO 30 MILES

ZONE II - EXTENDING 30 MILES TO 75 MILES BEYOND ZONE I
ZONE III - EXTENDING 75 MILES AND BEYOND

PAIN0823B 10/01/1997

	Rates	Fringes
GLAZIERS	15.70	3.08

PAIN0823C 10/01/1997

	Rates	Fringes
SOFT FLOOR LAYERS:		
ZONE I	15.23	3.08
ZONE II	16.23	3.08
ZONE III	17.73	3.08

SOFT FLOOR LAYERS ZONE DEFINITIONS

CITIES AND TOWNS BASING POINTS: ALBUQUERQUE, SANTA FE AND BELEN

ZONE I -- Up to 30 miles
ZONE II -- 30 to 75 miles
ZONE III - 75 miles and beyond

PLAS0254A 12/01/1996

	Rates	Fringes
CEMENT MASONS	15.45	2.77

PLAS0254B 12/01/1994

	Rates	Fringes
PLASTERERS	14.35	2.67

PLUM0412A 04/01/1998

	Rates	Fringes
REMAINING COUNTIES		
PLUMBERS & PIPEFITTERS	21.63	4.95

LOS ALAMOS, WHITE ROCK, SOUTH MESA, McGREGOR, WHITE SANDS MISSILE RANGE AND/OR PROVING GROUNDS

PLUMBERS & PIPEFITTERS	22.43	4.95

LIGHT COMMERCIAL :

All irrigation & lawn sprinkler	14.61	3.30

ROOF0174A 10/01/1994

	Rates	Fringes
ROOFERS	13.30	1.99

SHEE0049A 04/01/1997

	Rates	Fringes
REMAINING COUNTIES		
SHEET METAL WORKERS	19.99	5.81

SHEE0049B 04/01/1997

	Rates	Fringes
LOS ALAMOS COUNTY		
SHEET METAL WORKERS	21.99	5.87

SUNM1002A 08/11/1993

	Rates	Fringes
SPRINKLER FITTERS:		
Bernalillo, Los Alamos & Santa Fe, Counties	15.55	
Otero County	17.45	3.75
Remaining Cos. (Except Dona Ana)	16.06	2.95

TEAM0492A 06/01/1993

	Rates	Fringes
TRUCK DRIVERS:		
BUILDING CONSTRUCTION:		
Zone I:		
GROUP I	9.83	1.89
GROUP II	10.10	1.89
GROUP III	10.18	1.89
GROUP IV	10.30	1.89
GROUP V	10.35	1.89
GROUP VI	10.45	1.89
GROUP VII	10.55	1.89
GROUP VIII	10.69	1.89

GROUP IX	10.84	1.89
Zone II		
GROUP I	11.58	1.89
GROUP II	11.85	1.89
GROUP III	11.93	1.89
GROUP IV	12.05	1.89
GROUP V	12.10	1.89
GROUP VI	12.20	1.89
GROUP VII	12.30	1.89
Group VIII	12.44	1.89
Group IX	12.59	1.89
Zone III:		
GROUP I	12.08	1.89
GROUP II	12.35	1.89
GROUP III	12.43	1.89
GROUP IV	12.55	1.89
GROUP V	12.60	1.89
GROUP VI	12.70	1.89
GROUP VII	12.80	1.89
GROUP VIII	12.94	1.89
GROUP IX	13.09	1.89

BUILDING CONSTRUCTION:
Light Commercial Construction:

Zone I:		
GROUP I	7.86	1.89
GROUP II	8.08	1.89
GROUP III	8.14	1.89
GROUP IV	8.24	1.89
GROUP V	8.28	1.89
GROUP VI	8.36	1.89
GROUP VII	8.44	1.89
GROUP VIII	8.55	1.89
GROUP IX	8.67	1.89
Zone II:		
GROUP I	9.26	1.89
GROUP II	9.48	1.89
GROUP III	9.54	1.89
GROUP IV	9.64	1.89
GROUP V	9.68	1.89
GROUP VI	9.76	1.89
GROUP VII	9.84	1.89
Group VIII	9.95	1.89
Group IX	10.07	1.89
Zone III:		
GROUP I	9.66	1.89

GROUP II	9.88	1.89
GROUP III	9.94	1.89
GROUP IV	10.04	1.89
GROUP V	10.08	1.89
GROUP VI	10.16	1.89
GROUP VII	10.24	1.89
GROUP VIII	10.35	1.89
GROUP IX	10.47	1.89
HEAVY CONSTRUCTION:		
Zone I:		
GROUP I	10.08	1.79
GROUP II	10.35	1.79
GROUP III	10.43	1.79
GROUP IV	10.55	1.79
GROUP V	10.60	1.79
GROUP VI	10.70	1.79
GROUP VII	10.80	1.79
GROUP VIII	10.94	1.79
GROUP IX	11.09	1.79
Zone II:		
GROUP I	11.58	1.79
GROUP II	11.85	1.79
GROUP III	11.93	1.79
GROUP IV	12.05	1.79
GROUP V	12.10	1.79
GROUP VI	12.20	1.79
GROUP VII	12.30	1.79
GROUP VIII	12.44	1.79
GROUP IX	12.59	1.79
Zone III:		
GROUP I	11.83	1.79
GROUP II	12.10	1.79
GROUP III	12.18	1.79
GROUP IV	12.30	1.79
GROUP V	12.35	1.79
GROUP VI	12.45	1.79
GROUP VII	12.55	1.79
GROUP VIII	12.69	1.79
GROUP IX	12.84	1.79

TRUCK DRIVER (BUILDING & HEAVY CONSTRUCTION) CLASSIFICATIONS

GROUP I:
Pickup 3/4 Ton and Under, Lubrication, Light Tire Repair and Washer, Swamper, 2 or 4 and up.

GROUP II:
Dump or Batch Truck Under 8 C.Y.W.L.: Flat Bed (bobtail) 2 Ton and Under, Warehouseman including Material Check, Fork Lift Under 5 Ton MRC.

GROUP III:
Dump Trucks (Including All Highway and Off Highway) 8 up to 16 C.Y.W.L.C.; Water, Fuel or Oil Trucks Less Than 3,000 gal. Flat Bed (bobtail) Over 2 Tons.

GROUP IV:
Distributor Driver, Heavy Tire Repair, Lumber Carrier Driver, Young Buggy or Similar Equipment, Transit Mix or Agitator 2 or 3 Axle Bobtail Equipment, Scissor Truck, Bulk Cement Bobtail 2 or 3 Axle, Semi-Trailer Flat Bed or Van Single Axle Forklift 5 Ton and over M.R.C.

GROUP V:
Dumpsters and Dumpcrete Driver; Water, Fuel or Oil Trucks 3,000 to 6,000 Gallons; Lowboys and Light Equipment Driver; Euclid Type Tank Wagon Under 6,000 Gallons.

GROUP VI:
Vacuum Truck; Dump Trucks (including all highway and off-highway 16 up to 22 C.Y.W.L.C.

GROUP VII:
Transit Mix or Agitator Semi or 4 Axle Equipment Driver; Flaherty Truck Type Spreader Box Driver; Slurry Truck Driver Bulk Cement Driver; Semi-Doubles; $ Axle Bobtail; Winch Truck and "A" Frame; Dump Truck (including all Highway and Off-Highway) 22 CY up to 35 C.Y.W.L.C.

GROUP VIII:
Euclid Diesel Power Turnarocker; Terra Coba-DW20-Tourneau Pulls and Similar Diesel Powered Equipment when used to haul Materials and Assigned to a Teamster-Lowboy Heavy Equipment Driver; Water, Fuel and Oil Trucks 6,000 Gallons and Over Including Tank Wagon Drivers, Semi-Trailer Driver (Flat-Bed or Van Tandems); Light Equipment Mechanic; Dump Trucks (Including All Highway and Off-Highway) 35 C.Y.W.L.C. and Over; Truck and Trailer or Semi-Trailer (Flated); eject all.

GROUP IX:
Lowboy (Heavy Equipment Double Gooseneck); Heavy Equipment Mechanic; Welder (Body and Fender Men).

TRUCK DRIVERS ZONE PAY BASING POINTS AND DEFINITIONS LISTED BELOW FOR BUILDING AND HEAVY CONSTRUCTION - BASING POINTS ARE AS FOLLOWS:

ALAMOGORDO, ALBUQUERQUE, ARTESIA, BAYARD, BELEN, CARLSBAD, CLOVIS, DEMING, ESPANOLA, EUNICE, FARMINGTON, GALLUP, GRANTS, HOBBS, LAS CRUCES, LAS VEGS, LORDSBURG, LOVINGTON, PORTALES, RATON, ROSWELL, RUIDOSO, SANTA FE, SANTA ROSE, SILVER CITY, SOCORRO, TAOS, TUCUMCARI

ZONE I
Projects within 15 miles from the starting points above

ZONE II
Projects 15 or more road miles but less than 35 miles from above, includes all of Los Alamos County

ZONE III
Projects more than 35 road miles, or more from above.

FOOTNOTE:

**LIGHT COMMERCIAL DEFINITION

Construction, erection, alteration, repair, modification, addition to or improvement in whole or in part of structures for which the major support system is wood frame construction and will also include all apartments over 4 stories, all convenience stores, fast food restaurants, automobile service stations & motels up to 2 stories high.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(v)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

EL PASO, TX, ECO AREA

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (APR 1984) (FAR 52.222-23D) (DEVIATION)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
49%	6.9%

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs Office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

EL PASO, TX, ECO AREA

(d) The Contractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance Programs, within 10 working days following award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the--

(1) Name, address, and telephone number of the subcontractor;
(2) Employer's identification number of the subcontractor;
(3) Estimated dollar amount of the subcontract;
(4) Estimated starting and completion dates of the subcontract; and
(5) Geographical area in which the subcontract is to be performed.

(e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is:

the New Mexico Counties of Chaves, Dona Ana, Eddy, Grant, Hidalgo, Luna, Otero, and Sierra**;** and the Texas Counties of Brewster, Culberson, Hudspeth, Jeff Davis, and Presidio.

SECTION 01000

CONSTRUCTION SCHEDULE
05/1998

AMENDMENT NO. 0001

PART 1 GENERAL

1.1 SCHEDULE

Commence, prosecute, and complete the work under this contract in accordance with the following schedule and Section 00800 SPECIAL CONTRACT REQUIREMENT clauses COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK and LIQUIDATED DAMAGES:

Item of Work	Commencement of Work (calendar days)	Completion of Work (calendar days)	Liquidated Damages per calendar day
(1) New Radar Support Bldg 23700 (Except Theater Seats)	Within 10 days after receipt of Notice to Proceed	270	$ 470.00
(2) All Other Work	"	365	$ 515.00

1.1.1 Testing of Heating and Air-Conditioning Systems

The times stated for completion do not include testing of heating and air-conditioning systems. Final testing of heating and air-conditioning systems will be accomplished during the appropriate heating/cooling season as determined by the Contracting Officer.

1.2 WORK RESTRICTIONS

1.2.1 Working Hours

The normal duty working shift is Monday through Friday, 7:30 a.m. - 4:30 p.m.

1.2.2 [AM#1] Normal Work Restrictions

a. Site Evacuation Requirements

Contractor shall anticipate work interruptions due to regular missile testing at WSMR. Duration of evacuation for each incident will vary from a minimum of 2 hours to a maximum of one day. There may be times when an evacuation will run for consecutive days (two at the most). Contractor can contact WSMR Range Control at (505) 678-2222 for weekly range evacuation schedules and (505) 678-1178 for a recording of daily evacuation schedules. The following is an estimate of the average number of times per month the

launch complexes will be evacuated during the years of 1999 and 2000.

LC 33: 3 times per month
LC 38: 2 times per month

Other programs may cause roadblocks on Nike Avenue and U.S. Highway 70 preventing access to the work sites. On average, two hours of lost time can be expected due to roadblocks. These are not mutually exclusive of the specific sites requiring work on this project.

b. Security Requirements

Contractor personnel shall meet the security requriements of WSMR. Building 23656 may require additional security measures during construction such as sign in/out procedures and possibly escort requirements. A briefing on specific security requirements will be conducted at the pre-construction conference.

1.2.3 [AM#1] Building 20813

No phasing restrictions. Normal work restrictions apply.

1.2.4 [AM#1] Building 23686

No phasing restrictions. Normal work restrictions apply.

1.2.5 [AM#1] Building 23700

- Contractor shall utilize the road designated on the Contract Documents for construction access into the new Radar Support Building construction area. The access road from LC37 to LC38 can also be requested for construction vehicle access to this site through the Contracting Officer.

- Contractor personnel are restricted to the areas west and south of the existing fenced areas at the launch complex. Areas inside the fence and the existing personnel support area are off limits to Contractor personnel.

- Normal work restrictions apply.

1.3 UTILITIES

1.3.1 Payment for Utility Services

See Section 00800 SPECIAL CONTRACT REQUIREMENTS.

1.3.2 Outages

The Contractor shall coordinate all requests for utility outages with the Contracting Officer in writing 14 days prior to date of requested outage:

a. Water, gas, steam, and sewer outages shall be held to a maximum duration of 4 hours unless otherwise approved in writing.

b. Electrical outages shall have a maximum duration of 4 hours.

1.3.3 STREET CLOSINGS

The Contractor shall coordinate all requests for street closings with the

Contracting Officer in writing 14 days prior to date of requested outage:

a. One lane traffic shall be maintained at all times.

b. The final street repair shall be completed within 14 days after the start of any street crossing. Any part of the street returned to service prior to final repair shall be maintained smooth with hot-mix cold-lay surface course.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section --

SECTION 01412

ENVIRONMENT PROTECTION FOR WHITE SANDS MISSILE RANGE
02/97

AMENDMENT NO. 0001

1.1 REFERENCES

CORPS OF ENGINEERS (COE)

COE EM 385-1-1	(Latest Version) Safety and Health Requirements Manual

CODE OF FEDERAL REGULATIONS (CFR)

	40 CFR, Title 16
	40 CFR, Protection of the Environment
	CFR, Title 50: Wildlife and Fisheries
	CFR, Title 49: Department of Transportation

FEDERAL STATUTES AND EXECUTIVE ORDERS (EO's)

EO 1	Clean Air Act of 1977 and amendments of 1990
EO 2	Clean Water Act of 1977, and its amendments
EO 3	National Environmental Policy Act (NEPA) of 1969, Public Law (PL) 91-
EO 4	Toxic Substances Control Act, January 1979
EO 5	Community Right to Know, SARA Title III, CERCLA, 1986

NEW MEXICO REGULATIONS AND STATUTES

NM 1	All applicable New Mexico Regulations and Statutes

1.2 GENERAL REQUIREMENTS

The Contractor shall perform the work minimizing environmental pollution and damage as the result of construction operations. Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the utility of the environment for aesthetic, cultural and/or historical purposes. The control of environmental pollution and damage requires consideration of land, water, and air, and includes management of visual aesthetics, noise, solid waste, as well as other pollutants. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract.

1.2.1 Subcontractors

The Contractor shall ensure compliance with this section by subcontractors.

1.2.2 Environmental Protection Plan

The Contractor shall submit an environmental protection plan within 15 days after receipt of the notice to proceed. Approval of the Contractor's plan will not relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures. The environmental protection plan shall include, but shall not be limited to, the following:

a. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.

b. Methods for protection of features to be preserved within authorized work areas like trees, shrubs, vines, grasses and ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, archaeological, and cultural resources.

c. Procedures to be implemented to provide the required environmental protection, to comply with the applicable laws and regulations, and to correct pollution due to accident, natural causes, or failure to follow the procedures of the environmental protection plan.

d. Location of the solid waste disposal area.

e. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials.

f. Environmental monitoring plans for the job site, including land, water, air, and noise monitoring.

g. Traffic control plan including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather, and the amount of mud transported onto paved public roads by vehicles or runoff.

h. Methods of protecting surface and ground water during construction activities.

i. Plan showing the proposed activity in each portion of the work area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas.

j. Drawing of borrow area location. Protection measures required at the work site shall apply to the borrow areas including final restoration for subsequent beneficial use of the land.

k. A recycling and waste prevention plan with a list of measures to reduce consumption of energy and natural resources; for example: the possibility to shred fallen trees and use them as mulch shall be considered as an alternative to burning or burial.

m. Training for Contractor's personnel during the construction period.

1.2.3 Permits

The Contractor shall obtain all needed permits or licenses. The Government will not obtain any permits for this project; see Contract Clause PERMITS AND RESPONSIBILITIES. The State department of natural resources, through the national pollutant discharge elimination system (NPDES), requires general permits, a notice of intent, and a notice of discontinuation. The Contractor shall be responsible for implementing the terms and requirements of the appropriate permits as needed and for payment of all fees.

1.2.4 Preconstruction Survey

Prior to starting any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey after which the Contractor shall prepare a brief report indicating on a layout plan the condition of trees, shrubs and grassed areas immediately adjacent to work sites and adjacent to the assigned storage area and access routes as applicable. This report will be signed by both the Contracting Officer and the Contractor upon mutual agreement as to its accuracy and completeness.

1.2.5 Meetings

The Contractor shall meet with representatives of the Contracting Officer to alter the environmental protection plan as needed for compliance with the environmental pollution control program.

1.2.6 Inspection

The Contractor's yard and work area will be inspected for environmental/safety items at any time during the length of the contract. Items such as hazardous material storage, hazardous waste storage, proper labeling and containment of fuels and liquids will be inspected.

1.2.7 Notification of Noncompliance

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with the foregoing provisions. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered, to the Contractor or his authorized representative at the site of work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to promptly take corrective action, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it was later determined that the Contractor was in compliance.

1.2.8 Litigation

If work is suspended, delayed, or interrupted due to a court order of competent jurisdiction, the Contracting Officer will determine whether the order is due in any part to the acts or omissions of the Contractor, or subcontractors at any tier, not required by the terms of the contract. If it is determined that the order is not due to Contractor's failing, such suspension, delay, or interruption shall be considered as ordered by the

Contracting Officer in the administration of the contract under the contract clause SUSPENSION OF WORK.

1.2.9 Previously Used Equipment

The Contractor shall thoroughly clean all construction equipment previously used at other sites before it is brought into the work areas, ensuring that soil residuals are removed and that egg deposits from plant pests are not present; the Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

1.2.10 Payment

No separate payment will be made for work covered under this section; all costs associated with this section shall be included in the contract unit and/or lump sum prices in the Bidding Schedule.

1.3 SUBMITTALS

In addition to the Environmental Protection Plan specified above in paragraph GENERAL REQUIREMENTS, the following shall be submitted to the Contracting Officer:

[AM#1] Storm Water Pollution Prevention Plan

Submit a copy of the Contractor's Pollution Prevention Plan (SWPPP) developed in accordance with PART 1 paragraph "Storm Water Pollution Prevention Plan" and the Environmental Protection Agency's storm water discharge regulations.

Hazardous Substance Reporting

The Contractor shall submit a copy of the attached Emergency Planning and Community Right to Know notification and other reports to the Contracting Officer and to the Facility Emergency Coordinator (FEC) as specified in PART 1 paragraph EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW REQUIREMENTS.

1.4 GENERAL ENVIRONMENTAL PROTECTION PROVISIONS

1.4.1 Dust Control

The Contractor will be required to maintain all excavations, embankments, stockpiles, haul roads, permanent access roads, plant sites, borrow areas, (all work areas), free from dust which would interfere with the military mission, or cause a hazard or nuisance to others. Water is approved, however, any other type of dust control will have to be approved by the Contracting Officer or the designated representative.

1.4.1.1 Water

If water is to be used as a dust suppressant, its source, quantity, and the proposed application technique must be identified as part of the Contractor's Environmental Protection Proposal. The Contractor will not be permitted to use free-standing surface waters or well water without approval.

1.4.1.2 Harm To Wildlife

Construction water pits, ponds, reservoirs, etc., if authorized, shall be maintained by the Contractor such that they present no hazard to wildlife.

1.4.2 Borrow Pits

The use of borrow material will be approved by the Contracting Officer for each project. The Contractor cannot use borrow from unspecified borrow areas.

1.4.3 Dumping/Disposal

No solid materials, including building material wastes, shall be disposed of at the construction site. All construction and demolition debris will be taken to the Main Post Landfill or the Stallion Range Landfill depending on where the work is located. Construction and Demolition debris consists of non-water soluble materials and is nonhazardous in nature, including steel, glass, brick, concrete, asphalt roofing materials, pipe, gypsum wallboard and lumber from the construction and destruction of a structure project, and includes rocks, soil, tree remains, trees and other vegetative matter that normally results from land clearing. All other refuse will be placed in dumpsters in the Contractors yard and treated as sanitary waste. The Contractor is responsible for removing sanitary waste off post.

1.4.3.1 Dumping

No dumping of any kind is allowed on White Sands Missile Range unless approved. If any waste material is dumped in unauthorized areas, the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated, disposed of as directed by the Contracting Officer, and replaced with suitable fill material, compacted, finished with topsoil, and landscaped all at the expense of the Contractor.

1.4.3.2 Harm To Wildlife

The Contractor is prohibited from leaving construction debris, supplies and materials (e.g., rope, mesh fencing, netting, wire (smooth, barbed, concertina, communications) cabling, etc. on the work site or other Range areas where they may cause harm to wildlife.

1.4.4 Material Storage Areas

All hazardous materials and liquids must be stored in a protected, secure location away from drains and plainly labeled. Requirements vary if material is stored indoors or outdoors as well as for the type of hazard for the chemical. Containment is required for all above ground storage tanks and drums. Containment must provide 110 percent of the largest tank that is being contained. Containment must have an impermeable floor with proper electrical grounds to prevent fires.

1.4.4.1 Inspections

Inspections of material storage areas will be conducted by the Government. Inspections may be conducted without any notice to the Contractor.

1.4.4.2 Inventory

All hazardous materials will be inventoried. Quantities may be requested by the Government for purposes of reporting chemicals.

1.4.4.3 Joint Hazardous Materials Management Center (JHMMC)

The Contractor has an option to use the Joint Hazardous Materials Management Center located at building 1870 on Aberdeen Avenue. The Contractor may establish an account with the Center and use hazardous materials from the center. This is advantageous to the Contractor in that the Contractor keeps minimal amounts of hazardous material on site while the JHMMC provides the storage for you. Containers and leftovers may be taken back to the Hazmin Center for proper disposal or reuse.

1.4.5 Wellhead Protection

The Contractor is prohibited from introducing foreign materials (e.g., rocks, soil, construction debris, vegetation, etc.) into bore-hole and well casings. Wellheads, protected or not, may not be accessed by the Contractor unless approved by the Contracting Officer or the designated representative.

1.4.6 Off-Road Travel

The Contractor is required to limit the use of vehicles whenever possible. Off-Road travel is not allowed unless otherwise approved. The use of all-terrain vehicles is allowed if the Contractor chooses for remote jobsites where there are no existing roads.

1.4.7 Spills

A contractor that has any type of spill whether oil, fuel, antifreeze, chemicals, paint, water, sewer etc., must report it to the Fire Department immediately. Call 117 anywhere on the Range or 678-1234. The Contractor, when cleared by the Contracting Officer/Environmental Office, will clean-up their own spill, containerize per the Department of Transportation Regulation, and dispose of properly per 40 CFR regulations.

1.4.8 Reporting of Wildlife/Vehicle Accidents

If the Contractor has an accident with wildlife on the Range, report the incident to the Military Police at 678-1234.

1.4.9 Contractor's Yard/Field Office

1.4.9.1 Contractor's Yard

A contractor's yard will be available at the Main Post area as well as the Stallion Range area, if needed, depending on the job site. These areas will be inspected on a regular basis. (See PART 1 paragraph IMPLEMENTATION MEETING and PART 3 paragraph "Material Storage Areas" of this section).

1.4.9.2 Field Offices

Field Offices will not be allowed unless the Contractor requests this in writing and they are approved by the Environmental Office through the Contracting Officer.

1.5 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction,

the Contractor shall identify the land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without permission. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. Where such emergency use is permitted, the Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, earth or other material displaced into uncleared areas shall be removed.

1.5.1 Work Area Limits

Prior to any construction, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are to be saved and protected shall also be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

1.5.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques.

1.5.3 Unprotected Erodible Soils

Earthwork brought to final grade shall be finished as indicated. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earthwork shall be planned and conducted to minimize the duration of exposure of unprotected soils. Except in cases where the constructed feature obscures borrow areas, quarries, and waste material areas, these areas shall not initially be totally cleared. Clearing of such areas shall progress in reasonably sized increments as needed to use the developed areas as approved by the Contracting Officer.

1.5.4 Disturbed Areas

The Contractor shall effectively prevent erosion and control sedimentation through approved methods including, but not limited to, the following:

a. Retardation and control of runoff. Runoff from the construction site or from storms shall be controlled, retarded, and diverted to protected drainage courses by means of diversion ditches, benches, berms, and by any measures required by area wide plans under the Clean Water Act.

b. Erosion and sedimentation control devices. The Contractor shall construct or install temporary and permanent erosion and sedimentation control features as indicated on the drawings. Berms, dikes, drains, sedimentation basins, grassing, and mulching shall be maintained until permanent drainage and erosion control facilities are completed and operative.

c. Sediment basins. Sediment from construction areas shall be

trapped in temporary or permanent sediment basins in accordance with the drawings. The basins shall accommodate the runoff of a local 5 year storm. After each storm, the basins shall be pumped dry and accumulated sediment shall be removed to maintain basin effectiveness. Overflow shall be controlled by paved weirs or by vertical overflow pipes. The collected topsoil sediment shall be reused for fill on the construction site, and/or stockpiled for use at another site. The Contractor shall institute effluent quality monitoring programs as required by State and local environmental agencies.

1.5.5 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Borrow areas shall be managed to minimize erosion and to prevent sediment from entering nearby waters. Spoil areas shall be managed and controlled to limit spoil intrusion into areas designated on the drawings and to prevent erosion of soil or sediment from entering nearby waters. Spoil areas shall be developed in accordance with the grading plan indicated on the drawings. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas from despoilment.

1.5.6 Temporary Excavation and Embankments

If the Contractor proposes to construct temporary roads or embankments and excavations for plant and/or work areas, he shall submit the following for approval at least thirty (30) days prior to scheduled start of such temporary work:

a. A layout of all temporary roads, excavations, and embankments to be constructed within the work area.

b. Details of road construction and stabilization.

c. Details of the completed quarry or borrow excavation.

d. Plans and cross sections of proposed embankments and their foundations, including a description of proposed materials and methods of embankment stabilization.

e. A landscaping plan prepared by a competent landscape architect showing the proposed restoration of the area. Removal of any necessary trees and shrubs outside the limits of required clearing or quarry, borrow, or waste areas shall be indicated. The plan shall also indicate location of required guard posts or barriers required to control vehicular traffic passing close to trees and shrubs to be maintained undamaged. The plan shall provide for the obliteration of construction scars as such and shall provide for a reasonably natural appearing final condition of the area. Modification of the Contractor's plans shall be made only with the written approval of the Contracting Officer. No unauthorized road construction, excavation or embankment construction (including disposal areas) will be permitted.

[AM#1] f. A revision of the Pollution Prevention Plan to include temporary excavation and embankments.

1.6 WATER RESOURCES

The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation when such application may cause contamination of the fresh water reserve. Monitoring of water areas affected by construction shall be the Contractor's responsibility. All water areas affected by construction activities shall be monitored by the Contractor.

1.6.1 Washing and Curing Water

Waste waters directly derived from construction activities] shall not be allowed to enter water areas. Waste waters shall be collected and placed in retention ponds where suspended material can be settled out or the water evaporates to separate pollutants from the water. Analysis shall be performed and results reviewed and approved before water in retention ponds is discharged.

1.6.2 Cofferdam and Diversion Operations

Construction operations for dewatering, removal of cofferdams, tailrace excavation, and tunnel closure shall be controlled at all times to limit the impact of water turbidity on the habitat for wildlife and on water quality for downstream use.

1.6.3 Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State or local government.

1.6.4 Fish and Wildlife

The Contractor shall minimize interference with, disturbance to, and damage of fish and wildlife. Species that require specific attention along with measures for their protection shall be listed by the Contractor prior to beginning of construction operations.

1.6.5 [AM#1] Storm Water Pollution Prevention Plan

For project sites greater than 5 acres in size (including all temporary access roads, trailer sites, storage areas, and any other disturbed area associated with the project), the Contractor shall develop a Storm Water Pollution Prevention Plan (SWPPP) and complete a Notice of Intent (NOI) for Storm Water Discharges as required for an NPDES General Permit administered by the Environmental Protection Agency (EPA). The Contractor's detailed SWPPP shall be developed within the guidelines of the basic SWPPP provided in Section 01420 STORM WATER POLLUTION PREVENTION PLAN FOR CONSTRUCTION ACTIVITY. The Contractor shall obtain the Base's (STEWS-NRES-E) approval and signature submit the NOI to EPA not later than 48 hours prior to start of work. A dated copy of the Contractor's SWPPP and NOI shall be submitted to the Contracting Officer prior to commencement of construction activities. In addition, the Contractor shall post a copy of the Corps' NOI, the Contractor's NOI, and a brief project description on the project bulletin board. For the project description, the Contractor may use Section 1.1 of the SWPPP or write a brief description.

1.5 AIR RESOURCES

Equipment operation and activities or processes performed by the Contractor in accomplishing the specified construction shall be in accordance with the State's rules and all Federal emission and performance laws and standards. Ambient Air Quality Standards set by the Environmental Protection Agency shall be maintained. Monitoring of air quality shall be the Contractor's responsibility. All air areas affected by the construction activities shall be monitored by the Contractor.

1.7 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs.

1.7.1 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise.

1.6 WASTE DISPOSAL

Disposal of wastes shall be as specified in Section 02050 DEMOLITION and as specified below.

1.6.1 Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. The Contractor shall comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

1.8 Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be disposed of in accordance with Federal and local laws and regulations.

1.8.1 Hazardous Wastes

The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing and shall collect waste in suitable containers observing compatibility. The Contractor shall transport hazardous waste off Government property and dispose of it in compliance with Federal and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility.

1.8.2 Burning

Burning will be allowed only if permitted in other sections of the specifications or authorized in writing by the Contracting Officer. The specific time, location, and manner of burning shall be subject to approval. Fires shall be confined to a closed vessel, guarded at all times, and shall be under constant surveillance until they have burned out or have been extinguished. Burning shall be thorough reducing the materials to ashes.

1.9 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area will be so designated by the Contracting Officer if any has been identified. The Contractor shall take precautions to preserve all such resources as they existed at the time they were first pointed out. The Contractor shall provide and install protection for these resources and be responsible for their preservation during the life of the contract. If during excavation or other construction activities any previously unidentified or unanticipated resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rocks or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer. While waiting for instructions the Contractor shall record, report, and preserve the finds [by installing protective devices such as off limits markings, fencing, barricades or other devices until the proper authorities have be notified. The Contractor shall leave the archeological find undisturbed and shall flag an area of 50 feet radius around the find. Any work required to preserve or protect these finds will be accomplished by change order under the clause entitled Changes of the CONTRACT CLAUSES.

1.10 SPECIAL ENVIRONMENTAL PROVISIONS

1.11.1 Construction Permit for Septic Tank and Leach Field at WSMR

[AM#1] Construction permits are required for on-site sewerage treatment systems including septic tanks and leach fields at several locations. Prior to start of work, the Contractor shall obtain these permits from the New Mexico Environmental Department (NMED), phone (505) 524-6300. The on-site treatment system design parameters have been provided by the A/E designer on the permit application forms which are available at the Corps of Engineers Area Office, P.O.C: Mr. Ed. Gill. The Contractor shall complete the "Application Permit For On-Site Liquid Waste Permit" and mail

it to:

New Mexico Environmental Department
1001 North Solano
Las Cruces, NM 88001

A copy of the completed permit application shall be sent to White Sands Missile Range. The address is:

Commander
US Army White Sands Missile Range
ATTN: STEWS-NRES-E (Mr. Robert Myers)
White Sands Missile Range, NM 88002

After construction permits approved by the NMED, the Contractor performing work shall notify Mr. Robert Myers, phone 505/678-8751 or Mr. Robert Andreoli, phone 505/678-7926. [AM#1] 2 copies of the approved permits shall be provided to the Contracting Officer and an identical set shall be mailed to WSMR (see address above).

1.10.2 Mercury Switches/Thermostats

Mercury switches that are encountered will be collected and turned over to the Government. They will not be taken to the WSMR Landfill.

1.10.3 Oils

All oils will be collected in closed head 30 gallon or 55 gallon drums. Size will depend on the amount generated. The drum will be labeled "Used Oil". The Contractor will handle the oil per 40 CFR 279, Standards for the Management of Used Oil. The Contractor will sample the used oil for the constituents in 40 CFR 279.11 and provide the results to the Government. The Contractor is responsible for disposing of the oil off-post. Contractor shall provide official documentation that the oil was recycled or disposed of properly.

1.10.4 Salvageable Units

The Contractor will salvage units that are being replaced as much as possible. Units will be taken to the WSMR salvage yard.

1.10.5 Protection of the Stratospheric Ozone

The Contractor shall comply wth 40 CFR Part 82 "Protection of Stratospheric Ozone." To the maximum extent practicable, the Contractor shall choose safe alternatives and products made with or containing safe alternatives to Class I or II ozone depleting substances, identified under 42 U.S.C. 7671k, and in accordance with the paragraph "Ozone Depleting Chemicals." The Contractor shall screen the contract specifications and inform the Contracting Officers Representative when the specifications require the use of materials or equipment that use ozone depleting substances in their manufacture or operation so the Government can revise the guide specifications when appropriate.

1.10.6 Ozone Depleting Chemicals

1.10.6.1 Refrigerants

Class I HVAC refrigerants (CFCs: R-11, R-12, R-13, etc.) are prohibited from being used in new HVAC equipment. If an alternative to CFCs cannot be found the Contractor shall submit written justification fifteen (15) working days before the purchase of such equipment. The Government shall approve or disapprove the equipment at no additional cost to the Government.

The Contractor shall give the highest priority to HVAC equipment which utilizes HFC refrigerants (R-134a) in consideration of other factors in selecting HVAC equipment as follows (capacity required, initial costs, energy efficiency, maintenance costs, low or high pressure, physical size, etc. If equipment utilizing HFC refrigerants is not available for the application or the HFC refrigerant is not in the Government's best interest (unusually toxic or flammable) the Contractor shall procure HVAC equipment which utilizes Class II HVAC refrigerants (R-22, R-123, R401A, R401B, etc.). All refrigerants, except existing, shall have a ASHRAE Standard 34-1992 safety classification of A1, B1 safety coded refrigerants shall be used only if leak detection equipment is installed. Exceptions shall be granted on a case by case basis only. The Contractor shall submit a written request for approval fifteen (15) working days before the purchase of the refrigerant. The Government will approve or disapprove the equipment and refrigerants at no additional cost to the Government.

The Contractor shall give serious consideration to the installation of natural gas cooling equipment. The natural gas cooling equipment shall not exceed 1.0 million BTU/H output. The Government shall approve or disapprove the equipment at no additional cost to the Government.

1.10.6.2 Refrigerant Monitoring and Leak Detection Equipment

The Contractor shall obtain and install refrigerant area monitoring and leak detection equipment when required by ASHRAE Standard ANSI/ASHRAE 15-1994 Safety Code for Mechanical Refrigeration or when using A2, A3, B1, B2, B3 ASHRAE safety coded refrigerants.

The area monitoring and leak detection equipment shall be limited to solid state or infrared leak detection equipment only and shall be installed in accordance with the manufacturers instructions and ANSI/ASHRAE 15-1994, which ever is more stringent. The equipment shall be matched to the application when required. The priority for choosing the type of area monitoring and leak detection equipment shall be cost. The equipment with the lowest cost which meets or exceeds the requirements shall be given the highest priority. The Contractor shall supply all equipment, labor, materials, tools, and accessories necessary to install the monitoring and leak detection equipment so that the equipment functions as intended.

The Contractor shall test and calibrate the equipment in accordance with the manufacturers instructions. If need be, the Contractor shall consult or solicit the services of the equipment manufacturers service representative to test and calibrate the equipment. The Contractor shall provide training to maintenance personnel on the use, maintenance, and calibration of the equipment. Training shall include O & M manuals as necessary. Testing, calibration, training, factory representatives and O & M manuals shall be provided at no additional cost to the Government.

The Government will approve or disapprove the equipment at no additional cost to the Government.

1.10.6.3 Qualifications for Technicians and Servicing Equipment

Technicians servicing refrigerant based HVAC equipment shall be certified in accordance with EPA regulations. Qualifications shall be submitted. The Government shall approve or disapprove the qualifications at no additional cost to the Government. Servicing equipment for the recovery of refrigerants shall be certified in accordance with EPA regulations. Equipment specifications shall be submitted. The Government will approve or disapprove the equipment at no additional cost to the Government.

1.10.7 Cooling Fluids/Circulating Water

All fluids will be collected in a drum of sufficient size to contain the water. These fluids will not be dumped down any type of storm drain, sewer drain, pipe drain, etc. The water will be sampled to determine if it a hazardous waste as defined in 40 CFR 260, 261. Sample results will be provided to the Government. Waters generated from the replacement of units will be taken off-post to an approved pre-treatment facility if necessary. Official documentation of the disposal of the fluids will be submitted to the Government.

1.10.8 Paint

1.10.8.1 Lead and Mercury Free

All paint shall be lead and mercury free.

1.10.8.2 Type of Paint

Water based paint should be used whenever possible. If solvent based paint is used limit the amount of Volatile Organic Contents (VOC) to 250 grams/liter for architectural paints and 420 grams/liter for all other paints.

1.10.8.3 Open Air Abrasive Blasting

Open air abrasive blasting without containment is prohibited. All open air abrasive blasting shall be contained in accordance with Steel Structures Painting Council (SSPC) Guide 6I (CON).

1.10.8.4 Dry Sanding or Dry Scrapping

Dry sanding or dry scrapping of surfaces containing lead, in the form of lead paint is prohibited unless a HEPA vacuuming system is installed.

1.11 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction.

1.12 RESTORATION OF LANDSCAPE DAMAGE

The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work areas.

1.10 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

1.13 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental pollution control.

1.14 EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW REQUIREMENTS

The Contractor shall comply with the requirements of Sections 301 through 312 of the Emergency Planning and Community Right-to-Know Act (EPCRA), also known as Superfund Amendments and Reauthorization Act (SARA) Title III, as published in 40 CFR Part 355. The Contractor shall also comply with all state regulations and procedures which result from EPCRA and the hazard communication program requirements of COE EM 385-1-1. The following planning and reporting requirements involve the Contractor's reporting requirements but are not all inclusive; i.e. transport regulations are not addressed. It is the Contractor's responsibility to comply with all Federal, state, and local emergency planning and reporting requirements.

1.14.1 Definitions and Acronyms

1.14.1.1 CERCLA Hazardous Substance (CHS)

A CERCLA Hazardous Substance (CHS) is any substance listed in Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act, also referred to as Superfund; the list of substances also appears in Table 302.4 of 40 CFR 302.

1.14.1.2 Contracting Officer (CO)

The Contracting Officer (CO) is the site owner or operator's construction representative.

1.12.1.3 Extremely Hazardous Substance (EHS)

An Extremely Hazardous Substance (EHS) is any substance listed in Appendices A and B of 40 CFR 355.

1.14.1.4 Facility Emergency Coordinator (FEC)

Facility Emergency Coordinator (FEC) is the representative of the facility Owner or Operator. The Contractor shall identify the FEC and notify the FEC as described below each time the Contractor brings a hazardous substance onto the construction site.

1.14.1.5 Hazardous Chemical Substance (HCS)

A Hazardous Chemical Substance (HCS) is any substance defined as hazardous under 29 CFR 1910.1200, with exceptions as listed in 40 CFR 370.2; generally any substance with a Material Safety Data Sheet (MSDS).

1.14.1.6 Reportable Quantity (RQ)

Reportable Quantity (RQ) is a specified minimum amount of a CHS or an EHS which, if released, must be reported immediately to the FEC. The RQ for a CHS is listed in Table 302.4 of 40 CFR 302; the RQ for an EHS is 0.45 kg (1

pound).

1.14.1.7 Threshold Planning Quantity (TPQ)

Threshold Planning Quantity (TPQ) is a specified minimum amount of an EHS which, if brought onto the construction site, must be reported within a stated time to the FEC. The TPQ for an EHS is listed in Appendices A and B of 40 CFR 355 or is the quantity published in state code, whichever is less.

1.14.2 Hazardous Substance Reporting

Whenever a HCS or an EHS substance is brought onto the construction site, the Contractor shall submit the attached reporting form to the FEC, the fire department with jurisdiction over the site, and the Contracting Officer as described below:

a. within 5 days for an EHS substance which (1) equals or exceeds its TPQ, or (2) is a solid or liquid weighing 225 kg (500 pounds) or more, whichever is less, or

b. within 10 days for a HCS substance which equals or exceeds 10,000 pounds for a solid or 55 gallons for a liquid.

1.14.3 Emergency Release Notification for Listed Hazardous Substances

The Contractor shall immediately notify the FEC and the Contracting Officer if there is a release of an EHS or a CHS substance whose quantity equals or exceeds its RQ.

1.14.3.1 Emergency Notification Information

Emergency notifications shall consist of the following information:

a. The Contractor's name, the name and telephone number of the person making the report, and the name and telephone number of the Contractor's contact person;

b. The chemical name and identification;

c. An estimate of the quantity released;

d. The location of the release;

e. The time and duration of the release;

f. The medium receiving the release (air, land, water);

g. Known acute or chronic health risks;

h. Medical advice when necessary; and

i. Recommended community precautions.

1.14.3.2 Follow-Up Notice

Within 5 days of the release, a written follow-up notice of the release shall be provided to the FEC and the Contracting Officer. The written notice shall update information provided in the initial report, provide detailed information on the response actions taken, and provide advice

regarding medical attention necessary for exposed individuals.

1.14.3.3 State EPCRA Agency

The Contractor may call the following agency for information about EPCRA requirements:

New Mexico Department of Public Safety
New Mexico Emergency Response Commission
P.O. Box 1628
Santa Fe, New Mexico 87504-1628
Telephone Number 505-827-9923

1.15 FORMS

See Attachments A and B on the following pages.

ATTACHMENT A

SEE SECTION 01420 STORM WATER POLLUTION PREVENTION PLAN FOR CONSTRUCTION ACTIVITY.

ATTACHMENT B

STORM WATER POLLUTION PREVENTION PLAN

INSPECTION AND MAINTENANCE REPORT

INSPECTOR:_____
DATE:_____

INSPECTOR'S QUALIFICATIONS:
_____
_____
_____
_____

DAYS SINCE LAST RAINFALL:_____ AMOUNT OF LAST RAINFALL:_____INCHES

STABILIZATION MEASURES

AREA	DATE SINCE LAST DISTURBANCE	DATE OF NEXT DISTURBANCE	STABILIZED? (YES/NO)	STABILIZED WITH?	CONDITION

_____

STABILIZATION REQUIRED:
_____
_____
_____
_____

TO BE PERFORMED BY:_____ ON OR BEFORE:_____

STORM WATER POLLUTION PREVENTION PLAN

INSPECTION AND MAINTENANCE REPORT

STRUCTURAL CONTROLS - EARTH DIKE(S)

FROM	TO	IS DIKE STABILIZED?	IS THERE EVIDENCE OF WASH-OUT OR OVERTOPPING?

MAINTENANCE REQUIRED FOR THE EARTH DIKE(S):

_____

_____

_____

_____

TO BE PERFORMED BY:_____ ON OR BEFORE: _____

STRUCTURAL CONTROLS - SEDIMENT BASIN(S)

DEPTH OF SEDIMENT IN BASIN	CONDITION OF BASIN SIDE SLOPES	ANY EVIDENCE OF OVERTOPPING OF THE EMBANKMENT?	CONDITION OF OUTFALL FROM THE SEDIMENT BASIN?

STORM WATER POLLUTION PREVENTION PLAN

INSPECTION AND MAINTENANCE REPORT

MAINTENANCE REQUIRED FOR SEDIMENT BASIN(S):

_____
_____
_____
_____

TO BE PERFORMED BY:_____ ON OR BEFORE:_____

STRUCTURAL CONTROLS - SILT FENCE(S)

FROM	TO	IS THE BOTTOM OF THE FABRIC STILL BURIED?	IS THE FABRIC IN GOOD CONDITION?	HOW DEEP IS THE SEDIMENT?

MAINTENANCE REQUIRED FOR THE SILT FENCE(S):

_____
_____
_____
_____

TO BE PERFORMED BY:_____ ON OR BEFORE:_____

STORM WATER POLLUTION PREVENTION PLAN

INSPECTION AND MAINTENANCE REPORT

OTHER CONTROLS - STABILIZED CONSTRUCTION ENTRANCE

IS MUCH SEDIMENT TRACKED ONTO THE ROAD?	ARE DUST AND SEDIMENT CONTROL MEASURES WORKING?	DOES ALL TRAFFIC USE THE STABILIZED ENTRANCE TO THE SITE?	ARE ASSOCIATED DRAINAGE STRUCTURES WORKING?

MAINTENANCE REQUIRED FOR CONSTRUCTION ENTRANCE:

TO BE PERFORMED BY:_____ ON OR BEFORE:_____

OTHER CONTROLS - DEVELOP SITE SPECIFIC TABLES AS NEEDED

FOR ALL STABILIZATION MEASURES, STRUCTURAL AND NON-STRUCTURAL CONTROLS

CHANGES REQUIRED TO THE POLLUTION PREVENTION PLAN:

STORM WATER POLLUTION PREVENTION PLAN

INSPECTION AND MAINTENANCE REPORT

REASONS FOR CHANGES:

_____
_____
_____
_____
_____
_____
_____
_____

INSPECTOR'S SIGNATURE:_____
DATE:_____

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section --

SECTION 01420

STORM WATER POLLUTION PREVENTION PLAN FOR CONSTRUCTION ACTIVITY

STORM WATER POLLUTION PREVENTION PLAN FOR CONSTRUCTION ACTIVITY

WSMR Launch Complex Revitalization
New Construction at Launch Complexes 33 and 38
White Sands Missile Range
Material Test Directorate
White Sands Missile Range, NM 88002

Prepared For:

U.S. Army Corps of Engineers - Fort Worth District
P.O. Box 17300
Fort Worth, TX 76102-0300

Date

August 1998

Prepared by:

Carter Burgess
Consultants in Planning, Engineering, Architecture, Construction Management, and Related Services

3880 Hulen

Fort Worth, Texas 76107
817-735-6000

C&B No. 961470018

EXECUTIVE SUMMARY

PROJECT:

WSMR Launch Complex Revitalization
White Sands Missile Range
Material Test Directorate
White Sands Missile Range, NM 88002

The United States Environmental Protection Agency (USEPA) promulgated storm water regulations pursuant to the National Pollutant Discharge Elimination System (NPDES) Program. This Storm Water Pollution Prevention Plan (SWPPP) has been developed in accordance with the conditions of the General Permit for Storm Water Discharges from Construction Activity authorized pursuant to the USEPA NPDES Program.

The purpose of the SWPPP is to minimize the potential release of pollutants directly or indirectly into the storm water collection system or waters of the United States. To achieve this objective, the permittee(s) will be required to implement the USEPA NPDES policies and procedures presented in this SWPPP including, but not limited to, the following:

- File a Notice of Intent (NOI) with the US EPA at least 48 hours prior to the beginning the construction activities (a copy of the NOI is located in ***Appendix 1***). Upon receipt, place a copy of the Permit Coverage Notice from USEPA in ***Appendix 2***.
- Prominently post in a place for public viewing at the construction site (such as along side a building permit) a copy of the following: the NPDES permit number for the project or a copy of the NOI if a permit number has not yet been assigned; the name and telephone number of a local contact person; a brief Project description the location of the SWPPP if the site is inactive or does not have an on-site location to store the plan.
- Implement and properly maintain all erosion and sediment controls presented in this SWPPP.
- Maintain a record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the Project site, and when final stabilization measures are implemented (a copy of the Record of Temporary/ Permanent Ceasing of Construction Activities sheet is provided in ***Appendix 3***).
- Conduct regular inspections of the erosion and sediment controls. These inspections must occur at least once every fourteen (14) calendar days and within 24 hours of the end of a storm that is 0.5 inches or greater (a copy of the Inspection Report sheet is provided in ***Appendix 4***). Each inspection report will be submitted to _____ of U.S. Army Corps of Engineers - Fort Worth District for signature in accordance with the USEPA NPDES Storm Water General Permit, Part VI.G and filed in this SWPPP.
- Based on the outcome of the inspections, implement any needed repairs or modifications to the control(s) within seven calendar days following the inspection. Modifications specific to construction projects must be approved by the U.S. Army Corps of Engineers - Fort Worth District prior to implementation by the Contractor and/or subcontractors.
- This SWPPP must be updated within seven calendar days each time a significant modification to the construction activities or pollutant control practices occur. These modifications shall be recorded on the Record of Revision sheet located in ***Appendix 5*** and in additional appendix material, if required.

- All contractors/subcontractors and operators are required to complete the appropriate Certification sheet supplied in ***Appendix 6***.
- This SWPPP must be compliance certified by the appropriate authorized representative of the U.S. Army Corps of Engineers - Fort Worth District on the Compliance Certification sheet and Authorized Signatory sheet located in ***Appendix 7***.
- Maintain a copy of this SWPPP on the Project Site throughout the duration of construction activities.
- Upon completion of the construction activities and final stabilization, submit a Notice of Termination (NOT) to the US EPA (a copy of the NOT is located in ***Appendix 8***).
- This SWPPP along with supporting documentation must be retained for a period of three (3) years after the completion of the Project. It is recommended that each of the operator(s) maintain a copy of the SWPPP for the three-year period.
- White Sands Missile Range is preparing a Record of Environmental Consideration for this project. It is anticipated this document will be ready by mid/late September. The Contractor is required to include the NEPA Compliance documentation and approval date in the Contractor's detailed SWPPP. The WSMR POCs for the NEPA Compliance information are Mr. Bob Stewart, Launch Complex Revitalization PM (505) 678-6125 and Mr. Bob Andreoli, WSMR Environmental Office, (505) 678-7926.

The SWPPP has been developed for the construction activities to occur at the above-referenced Project. The SWPPP allows flexibility in complying with the provisions of the USEPA NPDES General Permit for Storm Water Discharges Associated With Construction Activity.

The _____ (Authorized Signatory) is responsible for ensuring that the _____ (Contractor) and all other participating subcontractors are in compliance with the provisions of the SWPPP. It is the policy of U.S. Army Corps of Engineers - Fort Worth District that all construction activities performed by the contractor and/or a subcontractor are in compliance with all federal, state, and local environmental laws and regulations.

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APPENDIX 15 -- Region VI General Construction Permit Language

1.0 SITE DESCRIPTION

1.1 Site Name

The areas scheduled for construction are known as Launch complexes 33 and 38 of the White Sands Missile Range (hereinafter referred to as the “Project”).

1.2 Project Location

The individual construction sites at the White Sands Missile Range, Material Test Directorate White Sands Missile Range, NM 88002, are located at the following latitudes and longitudes.

Launch Complex	Latitude	Longitude
33	32° 23' 55"	106° 22 40"
38	32° 24' 30"	106° 16' 40"

1.3 Owner’s Information

Name: U.S. Army Corps of Engineers - Fort Worth District
Address: P.O. Box 17300, Fort Worth, TX 76102-0300
Representative:
Title:
Telephone:
Facsimile:

1.4 Operator’s Information

Name: White Sands Missile Range - Material Test Directorate
Address: White Sands Missile Range, NM 88002
Representative:
Title: Commander
Telephone:
Facsimile:

1.5 Contractor’s Information

1.5.1 General Contractor

Name:
Address:
Representative:
Title:
Telephone/ FAX:

1.5.2 Subcontractors

The following subcontractor(s) have read and signed the Subcontractor Certification statement, understand their role in preventing storm water pollution, and are approved for working at the Project site. New subcontractors should be certified and entered in the SWPPP document before beginning their respective jobs.

Name:
Address:
Representative:
Title:
Telephone/FAX:

1.6 Notice of Intent

All parties defined as owners or operators must submit a Notice of Intent (NOI) at least 48 hours prior to commencement of on site construction activities. Submittal of late NOI's is not prohibited, however, authorization under the construction general permit is only for discharges that occur after permit coverage is granted. Unpermitted discharges may be subject to enforcement actions by the EPA. For the purposes of this permit, an operator is defined as any party meeting either of the following requirements:

- The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications.
- The party has day-to-day operational control of those activities at a project which are necessary to ensure compliance with a storm water pollution prevention plan for the site or other permit conditions.

Copies of all NOI's associated with this construction operation are included in Appendix A of this SWPPP.

1.7 Project Description/Nature of Construction Activity

New construction projects proposed as part of the Launch Complex Revitalization project include facilities located at Launch Complex 33 (LC 33), LC 38. The Corps' Standard Industrial Classification (SIC) code as part of this project is 8711. Proposed new construction at each of these areas is as follows:

Launch Complex 33: A new launch control building will be constructed, referenced as building number 20813. An access road and parking lot will be constructed in association with this building. Additionally, a new septic tank and leach field will be constructed.

Launch Complex 38: Three new facilities will be constructed in this area. Included are building numbers 23686, 23700, and 24050. Approximately one mile of water main will be constructed to service these areas. Additionally, septic tanks and leach fields will be provided at building numbers 23686, 23700, and 24050.

A copy of these Project descriptions are provided in ***Appendix 1*** for posting at the construction site.

1.8 Sequence of Construction Activities

The anticipated sequence of construction activities which will disturb significant amounts of soil are provided below. Construction is anticipated to begin in November 1998 and be completed in January or February 2000.

- Clear area for sediment traps and silt fence
- Construct sediment traps and silt fence
- Utility removal
- Site excavating, backfilling and grading activities
- Trenching for storm sewer, sanitary sewer, water lines, etc.
- Drilling for concrete pier building foundations
- Construction of buildings
- Concrete/asphalt paving
- Final soil stabilization

1.9 Estimate of Total Construction Site Area and Disturbed Area

The Project site is approximately 2,000,000 acres of which a total of 9 acres will be disturbed by construction activities. Construction activities are intended to disturb as little area beyond the limits of grading as possible in order to minimize the impacts on any existing vegetation.

1.10 Estimate of Runoff Coefficient

The runoff coefficient is an estimate of the fraction of total rainfall that will appear as runoff. The Project site will be developed with launch control buildings and parking lots which have a runoff coefficient of between 0.70 and 0.90 in those immediate areas (indicating that between 70 and 90% of rain will end up as runoff). (Source: *Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices*, EPA Document No. EPA 832-R--92-005, Typical “C” Value runoff-coefficients)

1.11 Soil Types, Topography and Climate

1.11.1 Soils

Soils in the project area, Launch Complex 33 (LC 33) and LC 38 are typified as fine, powdery gypsum sand. These sands result from the breakdown of the crystalline form of gypsum, selenite. The selenite originated from the gypsum formations in the mountains surrounding the Tularosa Basin. These sands are susceptible to both water and wind erosion. The following, site specific information was detailed in foundation design analyses prepared by Tierra Engineering Consultants, Inc.

Launch Complex 33: The upper 2.5' in this area is reported as brown fine silty sands and sandy clay.

Launch Complex 38: The upper 2.5' in this area is reported as light brown fine silty gypsum sand and brown fine silty gypsum sand.

(Sources: *http://www.viva.com/nm/se.ws.lucero.html, July 1998*, *LC - 33 Area Building 20813 - Launch Control Facility White Sands Missile Range, New Mexico Foundation Design Analyses prepared by Tierra Engineering Consultants, Inc.*, and *LC - 38 Area Building 24050 - Patriot Test Operations, Building 23700 - Radar Support / Launch Control Building 23686 - Missile Engineering White Sands Missile Range, New Mexico Foundation Design Analysis* prepared by Tierra Engineering Consultants, Inc., June 1998)

1.11.2 Topography

The project site is located in the Tularosa Basin. The basin resulted from the collapse of an uplifted dome and is now surrounded by the remaining sides of the former dome; the Sacramento Mountains on the East and the San Andres and Organ Mountains on the West. The Tularosa Basin has no natural surface drainage and has little variations in the near level topography.

Launch Complex 33: The topography at the site of building number 20813 ranges from 3978 feet above sea level to 3980 feet above sea level. The site slopes from east to west.

Launch Complex 38: The topography at the site of building number 23686 ranges from 4045 feet above sea level to 4044 feet above sea level. The site slopes from west to the east.

The topography at the site of building number23700 ranges generally from 4037 feet above sea level to 4033 feet above sea level. The site slopes gently from north to south and contains three small sand dunes at or near the location of building 23700 .

The topography at the site of building number 24050 ranges from 4037 feet above sea level to 4034 feet above sea level. The site slopes from northwest to the southeast.

The topography at the site of building number 23642 ranges from 4041 feet above sea level to 4038 feet above sea level. The site slopes gently from north to the south.

(Source: *http://www.viva.com/nm/se.ws.lucero.html, July 1998*, and *Carter and Burgess, Inc. Construction Drawings for White Sands Missile Range, August 1998*)

1.11.3 Climate

The climate in White Sands is generally mild with summers ranging from the mid-nineties to the mid-sixties and winters ranging from low to high thirties. The high average daily temperature is 96.4°F which occurs in June; the low average daily temperature is 31.2°F which occurs in January. Rainfall tends to peak in the summer months and decline in the winter months. The maximum average rainfall is 2.7” in August and the minimum average monthly rainfall is 0.28” in March.

(Source: *National Weather Service*, *July 1998*)

1.12 Facility and Project Area Maps

The following erosion and sediment control plans are located in ***Appendix 9***:

- General Site Location Map
- Launch Complex Revitalization Launch Complex 33 - Building 20813 - Test Control - Drawing Number 01C601
- Launch Complex Revitalization Launch Complex 38 - Building 23626 - High Bay - Drawing Number 06C601
- Launch Complex Revitalization Launch Complex 38 - Building 23686 - Missile Engineering - Drawing Number 02C301
- Launch Complex Revitalization Launch Complex 38 - Building 23700 - Radar Support/Launch Control - Drawing Number 03C601
- Launch Complex Revitalization Launch Complex 38 - Building 23700 - Radar Support/Launch Control (water main) - Drawing Number 11C601
- Launch Complex Revitalization Launch Complex 38 - Building 23700 - Radar Support/Launch Control (water main) - Drawing Number 11C602
- Launch Complex Revitalization Launch Complex 38 - Building 24050 - Patriot Test Operations - Drawing Number 04C301
- Launch Complex - Erosion and Sediment Control Details - Drawing Number 00C006

1.13 Construction and Waste Materials to be Stored On-Site

The following construction materials will be staged or stored on site at various points during development of the site:

- structural fill
- construction fill storage and staging areas
- road base
- cement construction blocks
- cinder construction bocks
- wooden and steel studs
- precast concrete and structural steel beams and girders
- grouting sand
- metal sheathing
- plywood / structural sheathing

- plastic sheathing
- structural steel
- power delivery and transmission poles (wood and metal)
- wooden cement forms
- plastic drainage pipe
- ductile iron watermain pipe and appurtenances
- pvc watermain pipe and appurtenances
- concrete drainage pipe
- concrete culverts
- precast concrete manholes
- groundcover bricks, rock, and stones
- rock rip rap
- underground electrical power conduits
- electric wire and cable
- electric connectors, terminal boxes, controllers and appurtenances
- electric transformers
- facility plumbing materials
- construction planking (wood and metal)
- hazardous material storage
- paint lockers
- material storage sheds

The following waste materials will be stored temporarily on site prior to appropriate disposal:

- broken / waste cement construction blocks
- broken / waste cinder construction bocks
- excess lengths of steel studs
- excess / scrap wood
- excess lengths of metal sheathing
- excess structural steel
- excess / waste plastic drainage pipe
- ductile iron watermain pipe and appurtenances
- excess / waste pvc watermain pipe
- broken / waste precast concrete
- packaging material
- litter

1.14 Receiving Waters

There are no obvious receiving waters for the Project area. Surface runoff eventually drains to Parker Lake via sheet flow, roadside swales and intermittent channels during periods of brief, intense rainfall.

1.15 Endangered and Threatened Species

The following species have been identified as threatened or endangered within Dona Ana County by the Fish and Wildlife Service and the EPA's general Construction Permit (released Tuesday, February 17,1997):

- Eagle, Bald
- Falcon, Northern Aplomado
- Falcon, American Peregrine
- Owl, Mexican Spotted
- Tern, Interior (Population) Least
- Ferret, Black Footed
- Cactus, Sneed Pincushion
- Crane, Whooping
- Flycatcher, Southwestern Willow
- Falcon, Arctic Peregrine

The following species have been identified as threatened or endangered within Otero County by the Fish and Wildlife Service and the EPA's general Construction Permit (released Tuesday, February 17,1997):

- Eagle, Bald
- Falcon, Northern Aplomado
- Falcon, American Peregrine
- Owl, Mexican Spotted
- Cactus, Kuenzler Hedgehog
- Pennyroyal, Todsen's
- Poppy, Sacramento Prickly
- Thistle, Sacramento Mountains
- Tern, Interior (Population) Least
- Ferret, Black Footed
- Flycatcher, Southwestern Willow
- Onion, Goddin's
- Falcon, Arctic Peregrine

(Source: *Reissuance of NPDES General Permits for Storm Water Discharges from Construction Activities* and *http://ifw2es.fws.gov/endspcs/lists/ListSpecies.cfm*)

Initial contact has been made with the local branch of the Fish and Wildlife Service. Copies of correspondence submitted to the Fish and Wildlife service are included in ***Appendix 10***.

1.16 Notice of Termination

Compliance of the site with the General Construction Permit remains the responsibility of all operators that have submitted an NOI until such time as they have submitted a Notice of Termination (NOT). The permittee's authorization to discharge under the General Construction Permit terminates at midnight of the day the NOT is signed.

All permittees must submit an NOT within thirty (30) days after one or more of the following conditions have been met:

- Final stabilization has been achieved on all portions of the site for which the permittee was responsible.
- Another operator/permittee has assumed control over all areas of the site that have not been finally stabilized.

2.0 MEASURES AND CONTROLS

2.1 Erosion and Sediment Controls

Erosion and sediment control practices can be divided into three broad categories: (1) soil stabilization, (2) structural controls, and (3) management practices. Each of these categories have temporary and permanent control measures to be considered. Soil stabilization and structural practices should be selected and designed in accordance with the EPA's *Best Management Practices and Erosion Control Manual for Construction Activities* (BMP Manual). Not all of the structural controls discussed in the BMP Manual will necessarily apply to this project. Management practices are construction management techniques which, if properly utilized, can minimize the need for physical controls and possibly reduce costs.

2.1.1 Soil Stabilization

Where land disturbance is necessary, the following methods of soil stabilization will include the following:

- preservation of trees and existing vegetation
- contouring and protection of sensitive areas
- geotextiles/erosion control matting

Sample design specifications and details for soil stabilization are provided in ***Appendix 11***.

The USEPA NPDES Storm Water General Permit requires all disturbed ground that will remain dormant for longer than 21 days to be seeded with temporary seed and/or protected with mulch. The seeding and/or mulching must take place within 14 days after construction ceases. Erosion and sediment control plans must contain provisions for permanent stabilization of disturbed areas. Permanent stabilization must take place within 14 days after construction activity has ceased. In arid areas (areas with an average annual rainfall of 0-10 inches) and semi-arid areas (areas with an average annual rainfall of 10-20 inches), where the initiation of stabilization measures by the 14th day after construction activity has a temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

Permanent vegetation will include native grasses, shrubs, and trees.

2.1.2 Structural Controls

Erosion and sediment controls should be selected, designed and constructed according to the standards in the *BMP Manual* and construction drawings. Listed below are the structural controls to be used at the Project site and a copy of construction specifications and details for these controls are provided in ***Appendix 12***.

- Silt Fence
- Stabilized Construction Entrance

2.1.3 Management Practices

The following are some management considerations which should be employed in conjunction with the erosion and sediment controls described above:

- Sequence construction so that no area remains exposed for unnecessarily long periods of time.
- Anticipate the site conditions that will exist as the construction progresses toward the final product.
- Have the materials on-hand to complete the work without delay.
- Apply temporary stabilization immediately after grading.
- Stage the construction, if possible, so that one area can be stabilized before another is disturbed.
- Consider the time of year; be prepared for sudden thunderstorms.
- Install erosion and sediment controls immediately.
- Physically mark off limits of disturbance on the site with tape, signs or other methods, so that workers can see areas to be protected.
- Carry out a regular maintenance schedule for erosion and sediment control practices.
- Designate one individual responsible for implementing the erosion and sediment control plan. Make sure that all workers understand the provisions of the erosion and sediment control plan. Establish reporting procedures for problems identified by workers.

2.2 Storm Water Management Controls

During the construction activities, storm water will be managed through the erosion and sediment controls discussed in this SWPPP. Storm water management controls are presented in the construction drawings provided in ***Appendix 9***.

2.3 Other Controls

This section refers to additional controls related to construction activity at the Project. Additional details pertaining to these controls are presented in ***Appendix 13***.

2.3.1 Solid Waste Disposal

No solid material, including building materials, is permitted to be discharged to surface waters or buried on site. All solid waste materials, including disposable materials incidental to the construction activity, must be collected in containers or closed dumpsters. The collection containers must be emptied periodically and the collected material hauled to a landfill permitted by the State and/or appropriate local municipality to accept the waste for disposal.

A foreman or supervisor should be designated in writing to oversee, enforce and instruct construction workers on proper solid waste procedures.

2.3.2 Hazardous Waste

Whenever possible, minimize the use of hazardous materials and generation of hazardous wastes. All hazardous waste materials will be disposed in the manner specified by federal, state, or local regulations or by the manufacturer.

Use contaminant berms in fueling and maintenance areas and where potential for spills is high.

A foreman or supervisor should be designated in writing to oversee, enforce and instruct construction workers on proper hazardous waste procedures.

2.3.3 Dust Control/Off-Site Vehicle Tracking

During construction, water trucks should be used, as needed, by each contractor or subcontractor to reduce dust. After construction, the site should be stabilized to reduce dust.

Construction traffic should enter and exit the site at a Construction Entrance with a rock pad or equivalent device. The purpose of the rock pad is to minimize the amount of soil and mud that is tracked onto existing streets. If sediment escapes the construction site, offsite accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts.

2.3.4 Sanitary/Septic

Contractors and subcontractors must comply with all state and local sanitary sewer, portable toilet or septic system regulations. Sanitary facilities shall be provided at the site by each contractor or subcontractor throughout construction activities. The sanitary facilities should be utilized by all construction personnel and be serviced regularly. All expenses associated with providing sanitary facilities are the responsibility of the contractors and subcontractors.

2.3.5 Water Source

Water used to establish and maintain grass, to control dust, and for other construction purposes must originate from a public water supply or private well approved by the State or local health department.

2.3.6 Equipment Fueling and Storage Areas

During construction the contractor and subcontractors should employ the following practices:

- Equipment fueling, maintenance and cleaning should only be done in protected areas (i.e., bermed area). Leaking equipment and

maintenance fluids will be collected and not allowed to discharge onto soil where they may be washed away during a rain event.

- Equipment wash down (except for wheel washes) should take place within an area surrounded by a berm. The use of detergents is prohibited.

2.3.7 Hazardous Material Storage

Chemicals, paints, solvents, fertilizers and other toxic or hazardous materials should be stored in their original containers (if original container is not resealable, store the products in clearly labeled, waterproof containers). Except during application, the containers should be kept in trucks or in bermed areas within covered storage facilities. Runoff containing such materials shall be collected, removed from the site and disposed of in accordance with the federal, state and local regulations.

As may be required by federal, state or local regulations, the Contractor should have a Hazardous Materials Management Plan and/or Hazardous Materials Spill and Prevention Program in place. A foreman or supervisor should be designated in writing to oversee, enforce and instruct construction workers on proper hazardous materials storage and handling procedures.

3.0 APPROVED STATE OR LOCAL PLANS

The following local regulations and/or guidelines should be followed during the construction activities:

- EPA's *Best Management Practice and Erosion Control Manual for Construction Sites*

4.0 INSPECTION AND MAINTENANCE

The following items are to be integrated into the inspection and maintenance program:

4.1 Inspection Schedule/Reporting

All impacted areas, as well as all erosion and sediment control devices, will be inspected every fourteen (14) calendar days and within 24 hours after a rainfall of 0.5 inches or greater. EPA also recommends that "walk throughs" be conducted prior to anticipated storm events. Where sites have been finally or temporarily stabilized, runoff is unlikely due to winter conditions (e.g. site is covered with snow, ice, or frozen ground exists), or during seasonal arid periods in arid regions (areas with an average annual rainfall of 0 to 10 inches)and semi-arid regions (areas with an average annual rainfall of 10 to 20 inches) such inspections shall be conducted at least once every month.

Inspections shall be conducted, and a written report prepared, by a designated and qualified person familiar with the USEPA NPDES Storm Water General Permit, this

SWPPP, and the Project. U.S. Army Corps of Engineers - Fort Worth District personnel, contractors and subcontractors will conduct the inspections and write up the findings. Inspection reports are not required for “walk throughs” in anticipation of storm events.

Inspection reports shall be completed including scope of the inspection, name(s) and qualifications of personnel making the inspection, the date of the inspection, observations relating to the implementation of the SWPPP, and any actions taken as a result of incidents of non compliance noted during the inspection. The inspection report should state whether the site was in compliance or identify any incidents of non-compliance. The report shall be signed in accordance with the signatory requirements in Part VI. Standard Permit Conditions section of the Construction General Permit and filed in this SWPPP. The contractor will submit the inspection reports to the Site Engineer of the U.S. Army Corps of Engineers - Fort Worth District. A sample Inspection Report is included in ***Appendix 4***. Inspection reports shall be kept in this SWPPP for at least three years from the date the site achieves stabilization.

4.2 Construction Entrance

Locations where vehicles exit the site shall be inspected for evidence of off-site sediment tracking. Each contractor and subcontractor shall be responsible for maintaining the Construction Entrance and other controls as described in this SWPPP.

4.3 Material Storage Inspections

Inspectors must evaluate areas used for storage of materials that are exposed to precipitation. The purpose is to ensure that materials are protected and/or impounded so that pollutants cannot discharge from storage areas. Offsite material storage areas used solely by the subject project are considered to be part of the project by the EPA and must be included in the site inspection report.

4.4 Soil Stabilization Inspections

Seeded areas will be inspected to confirm that a healthy stand of revegetated native species is maintained. The site has achieved final stabilization once all areas are covered with pavement, or have a stand of grass with at least 70% density. The density of 70% or greater must be maintained to be considered as stabilized. The contractors/subcontractors will water, fertilize and reseed disturbed areas as needed to achieve this goal.

4.5 Erosion and Sediment Control Inspections

All controls should be inspected at least once every fourteen (14) calendar days (every day for sandbag berms) and within 24 hours following any storm event of 0.5 inches or greater. It is also recommended that “walk throughs” be conducted prior to storm events. The following is a list of inspection/maintenance practices that will be used for specific controls:

- Silt Fence: Removal of built up sediment will occur when the sediment reaches one-third the height of the fence.

- Stabilized Construction Entrance: Periodic regrading and top dressing with additional stones.
- Vegetation: Protect newly seeded areas from excessive runoff and traffic until vegetation is established. Establish a watering and fertilizing schedule.
- Good Housekeeping: Litter, construction debris, and construction chemicals exposed to storm water shall be prevented from becoming a pollutant source for storm water discharges through screening of outfalls and daily pickup of litter.

In the event that sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize adverse impacts. An example of this may be the situation where sediment has washed into the street and could be carried into the storm sewers by the next rainfall and/or pose a safety hazard to users of base access routes.

4.6 Modifications/Revisions to SWPPP

Based on inspection results, any necessary modification to this SWPPP shall be implemented within seven (7) calendar days of the inspection. A modification is necessary if a control measure or operational procedure does not provide adequate pollutant control. All revisions shall be recorded on the Record of Revisions ***(Appendix 5***) within 7 calendar days of the inspection.

It is the responsibility of each contractor or subcontractor to maintain effective pollutant discharge controls. Physical site conditions or contractor/subcontractor practices could make it necessary to install more controls than were originally planned. For example, localized concentrations of surface runoff or unusually steep areas could require additional silt barrier, or other structural controls. Assessing the need for, and installing additional controls will be a continuing contractor/subcontractor responsibility until final stabilization is achieved. Contractors and subcontractors implementing this SWPPP must remain alert to the need to periodically refine and update this SWPPP in order to accomplish the intended goals.

5.0 NON-STORM WATER DISCHARGES

The following non-storm water discharges are allowed as documented in this SWPPP:

- Discharges from fire fighting activities
- Vehicle washwater if detergents are not used
- Dust control runoff in accordance with permit conditions
- Fire hydrant flushings
- Potable water sources including water line flushings
- Uncontaminated ground water resulting from dewatering activities
- Irrigation drainage
- Routine external building wash down which does not use detergents
- Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used
- Air conditioning condensate
- Spring water

- Uncontaminated ground water
- Foundation or footer drain water where flows are not contaminated with process materials such as solvents.

A copy of the Non-Storm Water Discharge Inspection Report is available in ***Appendix 14***.

6.0 PROCEDURAL REQUIREMENTS

During construction, the U.S. Army Corps of Engineers - Fort Worth District, contractors and subcontractors must comply with the following requirements of the USEPA NPDES Storm Water General Permit:

- This SWPPP must be compliance certified for the Project prior to submission of the Notice of Intent (NOI).
- The NOI (EPA Form 3510-6 (8/98)) must be completed, signed and postmarked at least 2 days or 48 hours prior to beginning of the Project construction. Each entity meeting either of the two criteria for an operator must submit an NOI to the USEPA, Storm Water Notice of Intent (4203), 401 M Street, SW, Washington, DC 20460. The NOI should be mailed either certified or registered mail with return receipt requested.
- A notice describing the construction activity and SWPPP must be conspicuously posted near the main entrance of the site. If displaying the notice near the main entrance is infeasible, the notice can be posted in a local public building such as the town hall or public library. The permit notice must include the project's permit number, the name and phone number of a local contact, a brief project description, and the location of the SWPPP if not kept on site. The EPA encourages that the general public have access to the SWPPP at reasonable hours.
- Contractors and/or subcontractors are required to keep a signed copy of this SWPPP and supporting documents. In maintaining plans, all records and supporting documents should be compiled together in an orderly fashion. Federal regulations require permittee(s) to keep the SWPPP and all reports and documents for at least three years after the project is complete. This provision ensures that all records are available in the event the documents need to be reviewed.
- All contractors/subcontractors involved in clearing, grubbing, grading and excavation construction activities, must sign the appropriate certification statement located in ***Appendix 6***. At a minimum, this includes the grading, underground utility, and paving contractors, etc.
- U.S. Army Corps of Engineers - Fort Worth District, contractor and/or subcontractor will conduct inspections of the project as described previously to assure compliance with this SWPPP. Based on inspection results, this SWPPP and BMPs may require modification by the contractors and/or subcontractors, to assure the quality of storm water or the identified non-storm water discharges, is leaving the site in compliance with the EPA NPDES Storm Water General Permit. Refer to the USEPA NPDES Storm Water General Permit, Part IV.4, for specific inspection requirements. All modifications must be implemented within 7 calendar days after the inspection.

  Modifications specific to construction projects must be approved by U.S. Army Corps of Engineers - Fort Worth District prior to implementation by the contractor and/or subcontractor as required under the USEPA NPDES Storm Water General Permit. This SWPPP may be amended at any time if it is found to inadequately address

conditions of the USEPA NPDES Storm Water General Permit or any amendments to the permit.

This SWPPP must be updated within 7 calendar days from the date of inspection each time there are significant modifications to construction activities, contractors/ subcontractors, or pollutant control practices. The Record of Revision is located in ***Appendix 5***.

- Discharge of hazardous substances or oil into storm water is subject to reporting requirements. In the event of a spill of a hazardous substance, the operator is required to notify the National Response Center (1-800-424-8802) to properly report the spill. In addition, the operator shall submit a written description of the release (including the type and amount of material released, the date of the release, the circumstances of the release, and the steps to be taken to prevent future spills) to the EPA regional office in Dallas. The SWPPP must be revised within 14 calendar days after the release to reflect the release, stating the information above along with modifications to minimize the possibility of future occurrences. Each contractor and subcontractor is responsible for complying with these reporting requirements.
- Upon completion of the construction activities and final stabilization of the site, the operator and/or contractor must complete and submit a Notice of Termination (NOT) to the USEPA, Storm Water Notice of Termination (4203), 401 M Street, SW, Washington, DC 20460 upon final stabilization of the construction site. A copy of the NOT (Form 3510-7) is included in ***Appendix 8***.
- A copy of the General Construction Permit is included in ***Appendix 15***. Questions regarding the USEPA NPDES program and the General Construction Permit can be directed to the EPA Region VI at 1-800-245-6510 or the Notice of Intent Processing Center (703) 931-3230.
- This SWPPP along with supporting documentation must be retained for a period of three (3) years after the completion of the Project. It is recommended that each of the operator(s) maintain a copy of the SWPPP for the three-year period.

The SWPPP is not submitted to the USEPA unless the Director specifically requests a copy for review. However, when the Director requests the SWPPP, the permittee(s) should submit it in a timely manner. In addition, when requested, permittee(s) should also submit the SWPPP to state or local sediment and erosion or storm water management agencies, or to a municipal operator, where the site discharges through a USEPA NPDES storm water permitted municipal separate storm sewer system.

APPENDIX 1 -- Notice of Intent (NOI)

PROJECT DESCRIPTION

New Construction

Launch Complex 33

A new launch control building will be constructed, referenced as building number 20813. An access road and parking lot will be constructed in association with this building. Additionally, a new septic tank and leach field will be constructed.

PROJECT DESCRIPTION

New Construction

Launch Complex 38

Three new facilities will be constructed in this area. Included are buildings 23686, 23700, and 24050. Approximately one mile of water main will be constructed to serve this area. Additionally, new septic tanks and leach fields will be provided at building numbers 23686, 23700, and 24050.

APPENDIX 2 -- Permit Coverage Notice from EPA

TO BE INSERTED UPON RECEIPT FROM EPA

APPENDIX 3 -- Record of Temporary/Permanent Ceasing of Construction Activities

RECORD OF
TEMPORARY / PERMANENT
CEASING OF CONSTRUCTION ACTIVITIES

Storm Water Pollution Prevention Plan
For Storm Water Discharges Associated with Construction Activity

PROJECT:

WSMR Launch Complex Revitalization
White Sands Missile Range
Material Test Directorate
White Sands Missile Range, NM 88002

Project Activity Area	Date Activities Ceased	Temporary or Permanent	Date Soil Stabilization Implemented	Date Activities Resumed

APPENDIX 4 -- Inspection Report

SWPPP INSPECTION REPORT

WSMR Launch Complex Revitalization - New Construction
White Sands Missile Range - Material Test Directorate
White Sands Missile Range, NM 88002

Inspector: _____ Date: _____

Inspector's Qualifications: _____

Site: ___LC 33 ___LC 38 ___bldg 23686 ___bldg 23700 ___bldg 24050
(check appropriate site)

Site Conditions: _____

___BIWEEKLY ___RAIN EVENT ___OTHER_____

Measures & Controls	In Conformance with Design Standards	Effective Pollutant Control Practice
Construction Entrance	YES / NO	YES / NO
Silt Fence	YES / NO	YES / NO
Soil Stabilization	YES / NO	YES / NO
Solid Waste Disposal	YES / NO	YES / NO
Equipment Fueling/Storage	YES / NO	YES / NO
Hazardous Materials Storage	YES / NO	YES / NO
Hazardous Waste	YES / NO	YES / NO
Sanitary / Septic	YES / NO	YES / NO

VIOLATIONS NOTED: (Explain each "NO" circled above)

RECOMMENDED REMEDIAL ACTIONS:

COMMENTS:

Based on the results of the inspection, necessary control modifications shall be implemented within seven (7) calendar days. These reports shall be kept on file as part of the Storm Water Pollution Prevention Plan for at least three years from the date that the site is finally stabilized. A copy of the SWPPP shall be kept at the site at all times during construction.

Certification Statement:
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____ Telephone: _____

Printed Name: _____

APPENDIX 5 -- Record of Revisions

STORM WATER POLLUTION PREVENTION PLAN -- RECORD OF REVISIONS

PROJECT:

WSMR Launch Complex Revitalization
White Sands Missile Range
Material Test Directorate
White Sands Missile Range, NM 88002

Date	Sections Modified	Description of Modification	Approval Signatures

APPENDIX 6 -- Contractor and Subcontractor Certifications

CONTRACTOR CERTIFICATION

Storm Water Pollution Prevention Plan
For Storm Water Discharges Associated with Construction Activity

PROJECT:

WSMR Launch Complex Revitalization
White Sands Missile Range
Material Test Directorate
White Sands Missile Range, NM 88002

Each contractor engaged in activities under this SWPPP that disturb surface soil must be identified and must sign the following certification statement.

Name of Contractor: _____

Address: _____

_____

Telephone No.: _____ Facsimile: _____

Type of Construction Service to be provided: _____

Certification Statement:

> "I certify under penalty of law that I understand the terms and conditions of the National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification."

This certification is hereby signed in reference to construction at the above-referenced project.

By:

_____
Signature

_____
Name

_____
Title

_____
Date

SUBCONTRACTOR CERTIFICATION

Storm Water Pollution Prevention Plan
For Storm Water Discharges Associated with Construction Activity

PROJECT:

WSMR Launch Complex Revitalization
White Sands Missile Range
Material Test Directorate
White Sands Missile Range, NM 88002

Each subcontractor engaged in activities under this SWPPP that disturb surface soil must be identified and must sign the following certification statement.

Name of Subcontractor: _____

Address: _____

_____

Telephone No.: _____ Facsimile: _____

Type of Construction Service to be provided: _____

Certification Statement:

> "I certify under penalty of law that I understand the terms and conditions of the National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification."

This certification is hereby signed in reference to construction at the above-referenced project.

By:

_____
Signature

_____
Name

_____
Title

_____
Date

APPENDIX 7 -- Compliance Certifications

OPERATOR COMPLIANCE CERTIFICATION

Storm Water Pollution Prevention Plan
For Storm Water Discharges Associated with Construction Activity

PROJECT:

WSMR Launch Complex Revitalization
White Sands Missile Range
Material Test Directorate
White Sands Missile Range, NM 88002

Name of Operator: _____

Name of Facility: _____

Address: _____

_____

Telephone: _____ Facsimile: _____

Certification Statement:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

This certification is hereby signed in reference to Storm Water Discharges Associated with Construction Activity at the above-referenced project.

By:

_____
Signature

_____
Name

_____
Title

_____
Date

AUTHORIZED SIGNATORY

Storm Water Pollution Prevention Plan
For Storm Water Discharges Associated with Construction Activity

PROJECT:
WSMR Launch Complex Revitalization
White Sands Missile Range
Material Test Directorate
White Sands Missile Range, NM 88002

In accordance with the USEPA NPDES General Permit for Storm Water Discharges Associated With Construction Activity, Part IV.C.3., signature and plan review requirements are as follows:

1. *All Notices of Intent shall be signed as follows:*

   a. *For a corporation: By a responsible corporate officer. For the purposes of this section, a responsible corporate officer means: (1) A president, secretary, treasurer, or vice-president of the corporation in charge of principal business function, or any person who performs similar policy or decision-making functions for the corporation; or (2) the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;*

   b. *For a partnership or sole proprietorship: by a partner or the proprietor, respectively; or*

   c. *For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For the purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g. Regional Administrators of USEPA).*

2. *All reports required by the permit or other information requested by the Director (USEPA) or authorized representative of the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:*

   a. *The authorization is made in writing by a person described above and submitted to the Director (USEPA).*

   b. *The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).*

The following authorized representative position responsible for signing all reports related to the National Pollutant Discharge Elimination System Permit for the construction activity located at the above-referenced project is:

Name
Title

I certify that I meet the requirements of the USEPA NPDES General Permit for Storm Water Discharges Associated With Construction Activity, Part IV.C.3.:

Name of Authorized Signatory _____ Position/Title

Signature of Authorized Signatory _____ Date

APPENDIX 8 -- Notice of Termination (NOT)

APPENDIX 9 -- Maps

APPENDIX 10 -- Fish and Wildlife Service / Endangered Species Correspondence

APPENDIX 11 -- Soil Stabilization Specifications/Details

APPENDIX 12 -- Structural Control Specifications/Details

APPENDIX 13 -- Specifications/Details for Other Controls

APPENDIX 14 -- Non-Storm Water Discharges Inspection Report

SWPPP NON-STORM WATER INSPECTION REPORT

WSMR Launch Complex Revitalization - New Construction
White Sands Missile Range - Material Test Directorate
White Sands Missile Range, NM 88002

Site: ___LC 33 ___LC 38 ___bldg 23686 ___bldg 23700 ___bldg 24050
(check appropriate site)

___BIWEEKLY ___RAIN EVENT ___OTHER_____

Non-Storm Water Discharge Types	LOCATED ON PROJECT SITE
Discharges from fire fighting activities	YES / NO
Vehicle wash water if no detergents are used	YES / NO
Dust control runoff in accordance with General Construction Permit conditions	YES / NO
Fire hydrant flushings	YES / NO
Potable water sources including water line flushings	YES / NO
Uncontaminated groundwater resulting from dewatering activities	YES / NO
Irrigation drainage	YES / NO
Routine external building wash down which does not use detergents	YES / NO
Pavement washwaters where spills or leak of toxic or hazardous materials have not occurred and where detergents were not used	YES / NO
Air conditioning condensate	YES / NO
Spring water	YES / NO
Uncontaminated groundwater	YES / NO
Foundation or footer drain water where flows are not contaminated with process materials such as solvents	YES / NO

The construction area associated with the grading and typical utility trenching have been inspected and evaluated for non-storm water discharges as indicated above.

Signed: _____

Name: _____

Date: _____

APPENDIX 15 -- Region VI General Construction Permit Language

SECTION 02051

REMOVAL, RECYCLING AND DISPOSAL OF REGULATED MATERIALS PRIOR TO SITE DEMOLITION

PART 1 - GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 923 (1986)	Standard Test Method for Sampling Electrical Insulating Liquids

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA SW-846	Test Methods for Evaluation Solid Waste, Physical/Chemical Methods

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 82	Protection of Stratospheric Ozone
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 270	EPA Administered Permit Programs: The Hazardous Waste Permit Program
40 CFR 273	Standards for Universal Waste Management
40 CFR 761	Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce and Use Prohibitions
49 CFR 171	General Information, Regulations and

	Definitions
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
49 CFR 172	Hazardous Materials Tables, Hazardous Materials Communications Requirements and Emergency Response Information Requirements
49 CFR 178	Specifications for Packagings

U.S.ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	Safety and Health Requirements Manual (September 1996)

1.2 DEFINITIONS

1.2.1 Regulated Materials

Regulated materials are arsenic (As), cadmium (Cd), chlordane, creosote, lead (Pb), mercury (Hg), ozone depleting chemicals (ODCs), polychlorinated biphenyls (PCBs), trichlorobenzene (TCB), diethylhexyl phthalate (DEPH), and tritium (low-level radioactive gas). Requirements for asbestos containing material (ACM) and lead-based paint (LBP), if present in the buildings to be demolished, are covered in Sections 02080 and 02090, respectively.

1.2.2 Arsenic

A solid and poisonous element that is commonly metallic, steel-gray, crystalline, and brittle. A poisonous trioxide of arsenic is used especially as an insecticide or weed killer. The wood utility poles are typically treated with arsenic trioxide.

1.2.3 Ballast

a. A ballast is a device used to give starting voltage and/or stabilizing current to a fluorescent light tube. Ballast is a metal case filled with a solid or semisolid asphalt/tar substance that contain a capacitor. The capacitor may contain the following regulated materials: PCBs, TCB or DEPH.

b. PCBs was prohibited 1979 per 40 CFR 761. Approximately half of the ballasts made before 1979 contained PCBs. "No PCBs" labels have been used to identify ballasts without PCBs since 1 July 1978. Therefore all ballasts without "No PCBs" labels and with no known date of fabrication are assumed as PCB ballasts. PCB ballasts are regulated and are not to be disposed of in a landfill.

c. The non-PCB ballasts are also regulated and are not to be disposed of in a landfill. The ballasts from 4-foot lighting fixtures made before 1985 and from all other sizes of fixtures made before 1991 contained wet capacitors. The replacement dielectric fluid for PCBs in these wet capacitors is mineral oil and solvents. The hazardous solvents are typically TCB or DEPH. The non-PCB ballasts are presumed to contain TCB or DEPH.

1.2.4 Cadmium

A bluish, white, malleable, ductile, toxic, bivalent, and metallic element. It is especially used in protective plating, bearing metals, and electrodes for batteries.

1.2.5 Chlordane

It was typically used for treatment of termites in soil at the building foundation and perimeter of structure. Sampling and testing are required for soil disposal.

1.2.6 Creosote

A brownish oily liquid, consisting chiefly of aromatic hydrocarbons. It is obtained by distillation of coal tar and used especially as a wood preservative (i.e. wood utility poles).

1.2.7 Emergency Lights

The emergency lights are operated by a back-up power source such as a battery. Mercury, cadmium, and lead are typically used in batteries.

1.2.8 Fluorescent Light Tube

A light bulb (or tube) of a fluorescent lighting fixture.

1.2.9 Lead

A heavy, soft, malleable, ductile, plastic but inelastic, bluish white, and metallic element. It is found mostly in combination and used especially in pipes, cable sheaths, batteries, solder, and shield against radioactivity.

1.2.10 Lighted Exit Signs and Smoke Detectors

The lighted exit signs possibly contains a low-level radioactive gas, tritium and the smoke detectors possibly contains cesium.

1.2.11 Lighting Fixture

A unit containing a fluorescent light tube, light reflector, casing and ballast.

1.2.12 Mercury (Hg)

Mercury is a metal that is liquid at room temperature with a small vapor pressure. Mercury-containing items addressed in this specification are thermostats, fluorescent light tubes, and rechargeable battery.

1.2.13 Mercury Bulb Thermostat

A temperature control device containing a mercury ampule attached to a bimetallic sensing element.

1.2.14 Ozone Depleting Chemicals (ODCs)

ODCs include chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halon, tetra (and tri) chloroethane, carbon tetrachloride and all isomers

of methyl chloroform. A complete list of ODCs are in 40 CFR 82 Subpart A, Appendixes A and B. Items potentially containing ODC's are refrigeration equipment for HVAC systems, freezers, refrigerators, drinking fountains, ice machines, beverage and refrigerated food dispensers, halon fire extinguishers, and biomedical equipment.

1.2.15 Polychlorinated Biphenyls (PCBs)

PCBs are defined in 40 CFR 761. They are oily in pure form and prolong exposures have been known to increase the risk of cancer, and cause adverse reproductive and developmental defects in animals. PCB-containing items addressed in this specification are ballasts and transformers (see definition of Ballast below).

1.2.16 Retorting Mercury

The retorting of mercury is a process whereby mercury is distilled from other materials by using heat. During the fluorescent light tube recycling process, mercury is retorting from phosphor powder that coats the inside of the glass tube.

1.2.17 Transformer

A device employing the principle of mutual induction to convert variations of current in a primary circuit into variations of voltage and current in a secondary circuit. It contains PCBs, TCB and/or DEPH. It is pole-mounted or pad-mounted.

1.2.18 Utility Pole

It is typically used for mounting power cable, panel, lighting, control switch, or electrical device such as transformers. An exterior wood pole is typically preserved by pressure treatment with application of arsenic trioxide or creosote.

1.3 DESCRIPTION OF WORK

Transformers and light poles, at sites to be demolished for construction of new facilities 23686 and 23700, shall be removed. One thermostat and one [AM#1]portable fire extinguisher inside of Building 23670 and two [AM#1] portable fire extinguishers in the parking lot of Building 23670 shall also be removed.

1.4 CONTRACTOR'S QUALIFICATIONS

The Contractor and subcontractors shall have at least 2 years experience with thermostats and be familiar with Universal Waste Rules in accordance with 40 CFR 273. The Contractor and subcontractors shall have at least 2 years experience with PCB-containing items and familiar with 40 CFR 761. [AM#1]The Contractor and subcontractors shall have experience with ozone depleting chemicals and familiar with 40 CFR 82.

1.5 SUBMITTALS

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

SD-01 Data

Contractor's Qualifications; GA.

Documentation of work experience in removal, recycling and /or disposal of items containing regulated material (see paragraph 1.4).

Licenses and Permits; FIO.

[AM#1]_____. A copy of the state permit for hauling and transporting hazardous waste in accordance with 40 CFR 263.

Plans; FIO.

A written Spill Prevention Plan shall be prepared in accordance with paragraph 3.4, SPILLS AND SAFETY of this section.

Environmental Pollution Insurance; FIO.

[AM#1]_____.

SD-08 Statements

Closure Report; GA.

A closure report, including a statement of compliance, shall be prepared in accordance with paragraph 3.8, CLOSURE REPORT of this Section.

1.6 WASTE MINIMIZATION, SALVAGE AND RECLAMATION

The Contractor shall practice waste minimization, salvage and reclamation of items containing regulated materials. The Contractor shall not dispose of any item in its entirety to the landfill or by incineration. [AM#1]_____.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 VERIFICATION OF REGULATED MATERIALS

Prior to initiation of work in this section, the Contractor shall field verify the drawings showing the actual locations, quantities and categories of items containing regulated materials. The Contractor shall notify the Contracting Officer of any discrepancies or conflicts before performing work.

3.2 REMOVAL, HANDLING AND PACKAGING

3.2.1 Mercury Bulb Thermostats

The Contractor shall remove and handle mercury bulb thermostats in accordance with 40 CFR 273. Leaking or broken ones shall be placed in a container with absorbent such as vermiculite and labeled as "Broken Mercury Bulb Thermostats". Intact bulb thermostats shall be packed and labeled as "Mercury Bulb Thermostats." They shall be delivered to the WSMR Joint Service Hazardous Material Mininmization Center, Building 1870, POC: Thermon Smith 505/678-5998. They shall be transported and disposed of in accordance with 40 CFR 262, 40 CFR 263, and 40 CFR 264.

3.2.2 ODCs Items

The Contractor shall deliver the [AM#1]portable fire extinguishers to the WSMR Joint Service Hazardous Material Mininmization Center, Building 1870, POC: Thermon Smith 505/678-5998.

3.2.3 Transformers

The Contractor shall verify the location of transformer shown on the electrical and/or civil demolition plans. The contractor shall perform sampling and analyses for PCBs in accordance with ASTM D 923 and EPA SW-846 if no analytical results are available from the installation. The Contractor shall obtain data plates information from transformers to be removed. Disconnection of electrical services shall be approved by the [AM#1]White Sands Environmental Services Division (NRES-E) or the Contracting Officer. The Contractor shall prepare government Form 1340, list transfomers identification numbers, types, sizes, and attach PCBs test results from a currently licensed analytical laboratory (independent from the Contractor). A copy of Form 1340 shall be submitted to [AM#1]NRES-E or the Contracting Officer and scheduled for pre-inspection. The Contractor shall remove and transport the transformers to a Contracting Officer's approved and secured staging area at the project site for pre-inspection. The Contractor shall provide containment or liner (HDPE plastic, minimum thickness of 45 mils) at the staging area to prevent pollution of storm runoff. The leaked transformer shall be placed in an overpacked container with absorbent materials. The Contractor shall prepare manifests for both PCBs contaminated transformers (with PCBs levels greater than 50 parts per millions (ppm) but less than 500 ppm), and PCBs transformers (with PCBs levels equal to or greater than 500 ppm). After approval of pre-inspection, the Contractor shall remove PCB oil, perform triple rinse, and deliver the oil and rinsate with Form 1340s to the WSMR Joint Service Hazardous Material Mininmization Center, Building 1870, POC: Thermon Smith 505/678-5998. The transformer shall be packaged and transported to recycling or disposal in accordance with 49 CFR 173 and 49 CFR 178. The transformer shall be transported with all applicable documents in accordance with 40 CFR 761, and Form 1340s indicating that oil contaminated PCBs has been removed and triple rinsed. If soil, asphalt or concrete pavement have oil stained from leaked transformer, these materials shall be excavated and removed after test results confirmed the presence of PCBs in the transformer insulating liquid. These materials shall be contained in overpacked drums, manifest, and disposed of as PCBs contaminated materials and incinerated or destructed in permitted facility. All work shall be performed in accordance with applicable Federal, state, and local regulations.

3.2.4 Utility Poles

The Contractor shall verify locations and sizes of wood poles as shown on the electrical utility demolition plans. The Contractor shall coordinate with the [AM#1]White Sands Environmental Services Division (NRES-E) or others as directed to verify used utility poles to be removed in this project. [AM#1]Utility poles shall be salvaged and turned in to WSMR JSHMMC, Building 1870, POC Thermon Smith, 505/678-5998.

3.3 LABELING AND RECORD KEEPING

Labeling and record keeping of regulated materials to be salvaged, recycled, incinerated or placed in a landfill shall be in accordance with

40 CFR 262, 40 CFR 263, 40 CFR 264, and all other applicable Federal, State and local regulations. Bill of lading shall be prepared for each item to be shipped to recycling and/or destruction. Information shall include initial date of storage, generator's name and address, destination address and telephone number and the shipping weight. [AM#1]A final disposition paperwork will be provided to the WSMR Environmental Office.

3.4 SPILLS AND SAFETY

The Contractor shall prepare, maintain and implement a Spill Prevention Plan. The plan shall establish policies and procedures to prevent spills, minimize spill impact on its surroundings and methods to cleanup. The plan shall encompass all activities including at the site, transportation to recycling and/or destruction facilities. It shall address all the safety and health concerns in accordance with 29 CFR 1926 in event of a spill. It shall address clean-up requirements in accordance with 29 CFR 1910.120 paragraphs (b) through (o). Clean-up personnel shall meet the training requirements of 29 CFR 1910.38 (a); 29 CFR 1910.134; and 29 CFR 1910.1200. As a minimum, the following items shall be addressed in the plan: cleanup of spill by the Contractor; verification and approval of final clearance by the Contracting Officer; personal protective equipment (PPE) and decontamination procedures; equipment and material required for cleanup; reporting required to notify state, local, and the Contracting Officer verbally and in writing. The plan shall be kept on-site. Spills greater than 1 pound (typically from 16 or more ballasts) of PCBs shall be reported to National Response Center (1-800-424-8802), the Contracting Officer and cleaned up immediately. The Contractor shall assume full responsibility for compliance with all Federal, state, and local regulations for workers protection, work practices, site safety, transportation and disposal.

3.5 STORAGE

A temporary storage area shall be provided by the Contractor and approved by the Contracting Officer. Storage time limits are 30 days for ballasts containing PCBs (40 CFR 761) and 1 year for thermostats containing Hg (40 CFR 273). All regulated materials must be removed from the site before final acceptance of this project by the Government.

3.6 TRANSPORTATION

Items containing regulated materials shall be transported by a licensed, hazardous waste hauler. The Spill Prevention Plan shall be enforced by the Contractor to prevent spillage in accordance with 49 CFR 171 and 49 CFR 173. The hauler shall not store regulated materials longer than 10 days in accordance with 40 CFR 263 and 40 CFR 273. Vehicle loading, vehicle placarding, waste tracking, notification and record keeping shall be in accordance with all applicable Federal, State and local regulations.

[AM#1]_____

3.7 [AM#1]APPLICABLE FINAL DISPOSITION DOCUMENTS

The Contractor shall prepare and submit a closure report to the Contracting Officer within 10 working days after completion of work specified herein. The report shall contain: (a) A signed cover letter certifying completion of work described herein, (b) A signed Statement of Compliance, appended herein, (c) A brief narrative of worker protection and waste removal, handling, separation, packaging, transportation, and ultimate method of disposal (i.e. recycled, destroyed, landfill), (d) A description of

accidents, ruptures, leaks, subsequent response procedures and cleanup, and (e) Final disposition documentation of all items containing regulated materials including copy of notifications, signed manifest of waste, signed certificates or receipts (Bill of Lading)of recycling or destruction.

STATEMENT OF COMPLIANCE

I hereby certify that:

(1) the appropriate state manifest form has been completely and properly filled out;

(2) the packing, marking, labeling and placarding of the waste meets all applicable regulations;

(3) the waste transportation, recycling, destruction and disposal meets all applicable Federal, State and local regulations.

Name _____

Title _____

Date _____

-- End of Section --

SECTION 02080

ASBESTOS ABATEMENT

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 NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z9.2	(1979; R 1991) Fundamentals Governing the Design and Operation of Local Exhaust Systems
ANSI Z87.1	(1989; Errata; Z87.1a) Occupational and Educational Eye and Face Protection
ANSI Z88.2	(1992) Respiratory Protection

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 732	(1995) Aging Effects of Artificial Weathering on Latex Sealants
ASTM D 522	(1993a) Mandrel Bend Test of Attached Organic Coatings
ASTM D 1331	(1989; R 1995) Surface and Interfacial Tension of Solutions of Surface-Active Agents
ASTM D 2794	(1993) Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
ASTM D 4397	(1991) Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
ASTM E 84	(1995a) Surface Burning Characteristics of Building Materials
ASTM E 96	(1995) Water Vapor Transmission of Materials
ASTM E 119	(1995a) Fire Tests of Building Construction and Materials
ASTM E 736	(1992) Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members
ASTM E 1368	(1990) Visual Inspection of Asbestos Abatement Projects

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 61	National Emissions Standards for Hazardous Air Pollutants
40 CFR 763	Asbestos
42 CFR 84	Approval of Respiratory Protective Devices
49 CFR 107	Hazardous Materials Program Procedures
49 CFR 171	General Information, Regulations and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 173	Shippers - General Requirements for Shipments and Packagings

COMPRESSED GAS ASSOCIATION (CGA)

CGA G-7	(1990) Compressed Air for Human Respiration
CGA G-7.1	(1989) Commodity Specification for Air

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 340/1-90-018	(1990) Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance
EPA 340/1-90-019	(1990) Asbestos/NESHAP Adequately Wet Guidance
EPA 560/5-85-024	(1985) Guidance for Controlling Asbestos-Containing Materials in Buildings

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 701	(1996) Methods of Fire Test for Flame-Resistant Textiles and Films

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH Pub No. 84-100	(1984; Supple 1985, 1987, 1988 & 1990) NIOSH Manual of Analytical Methods

UNDERWRITERS LABORATORIES (UL)

UL 586	(1990; Rev Apr 1995) High-Efficiency, Particulate, Air Filter Units

UNITED STATES ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(1996) Safety and Health Requirements Manual

1.2 DEFINITIONS

1.2.1 Adequately Wet

A term defined in 40 CFR 61, Subpart M, and EPA 340/1-90-019 meaning to sufficiently mix or penetrate with liquid to prevent the release of particulate. If visible emissions are observed coming from asbestos-containing material (ACM), then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wetted.

1.2.2 Aggressive Method

Removal or disturbance of building material by sanding, abrading, grinding, or other method that breaks, crumbles, or disintegrates intact asbestos-containing material (ACM).

1.2.3 Amended Water

Water containing a wetting agent or surfactant with a surface tension of at least 29 dynes per square centimeter when tested in accordance with ASTM D 1331.

1.2.4 Asbestos

Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophylite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

1.2.5 Asbestos-Containing Material (ACM)

Any materials containing more than one percent asbestos.

1.2.6 Asbestos Fiber

A particulate form of asbestos, 5 micrometers or longer, with a length-to-width ratio of at least 3 to 1.

1.2.7 Authorized Person

Any person authorized by the Contractor and required by work duties to be present in the regulated areas.

1.2.8 Building Inspector

Individual who inspects buildings for asbestos and has EPA Model Accreditation Plan (MAP) "Building Inspector" training; accreditation required by 40 CFR 763 Subpart E, Appendix C.

1.2.9 Certified Industrial Hygienist (CIH)

An Industrial Hygienist certified in the practice of industrial hygiene by

the American Board of Industrial Hygiene.

1.2.10 Class I Asbestos Work

Activities defined by OSHA involving the removal of thermal system insulation (TSI) and surfacing ACM.

1.2.11 Class II Asbestos Work

Activities defined by OSHA involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos- containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic. Certain "incidental" roofing materials such as mastic, flashing and cements when they are still intact are excluded from Class II asbestos work. Removal of small amounts of these materials which would fit into a glovebag may be classified as a Class III job.

1.2.12 Class III Asbestos Work

Activities defined by OSHA that involve repair and maintenance operations, where ACM, including TSI and surfacing ACM, is likely to be disturbed. Operations may include drilling, abrading, cutting a hole, cable pulling, crawling through tunnels or attics and spaces above the ceiling, where asbestos is actively disturbed or asbestos-containing debris is actively disturbed.

1.2.13 Class IV Asbestos Work

Maintenance and custodial construction activities during which employees contact but do not disturb ACM and activities to clean-up dust, waste and debris resulting from Class I, II, and III activities. This may include dusting surfaces where ACM waste and debris and accompanying dust exists and cleaning up loose ACM debris from TSI or surfacing ACM following construction.

1.2.14 Clean Room

An uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.

1.2.15 Competent Person

In addition to the definition in 29 CFR 1926 Section .32(f), a person who is capable of identifying existing asbestos hazards as defined in 29 CFR 1926 Section .1101, selecting the appropriate control strategy, has the authority to take prompt corrective measures to eliminate them and has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training; accreditation required by 40 CFR 763 Subpart E, Appendix C.

1.2.16 Contractor/Supervisor

Individual who supervises asbestos abatement work and has EPA Model Accreditation Plan "Contractor/Supervisor" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.

1.2.17 Critical Barrier

One or more layers of plastic sealed over all openings into a regulated

area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a regulated area from migrating to an adjacent area.

1.2.18 Decontamination Area

An enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.

1.2.19 Demolition

The wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.

1.2.20 Disposal Bag

A 6 mil thick, leak-tight plastic bag, pre-labeled in accordance with 29 CFR 1926 Section .1101, used for transporting asbestos waste from containment to disposal site.

1.2.21 Disturbance

Activities that disrupt the matrix of ACM, crumble or pulverize ACM, or generate visible debris from ACM. Disturbance includes cutting away small amounts of ACM, no greater than the amount which can be contained in one standard sized glovebag or waste bag in order to access a building component. In no event shall the amount of ACM so disturbed exceed that which can be contained in one glovebag or waste disposal bag which shall not exceed 60 inches in length and width.

1.2.22 Equipment Room or Area

An area adjacent to the regulated area used for the decontamination of employees and their equipment.

1.2.23 Employee Exposure

That exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

1.2.24 Fiber

A fibrous particulate, 5 micrometers or longer, with a length to width ratio of at least 3 to 1.

1.2.25 Friable ACM

A term defined in 40 CFR 61 Subpart M and EPA 340/1-90-018 meaning any material which contains more than 1 percent asbestos, as determined using the method specified in 40 CFR 763 Subpart F, Appendix A, Section 1, Polarized Light Microscopy (PLM), that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent, as determined by a method other than point counting by PLM, the asbestos content shall be verified by point counting using PLM.

1.2.26 Glovebag

Not more than a 60 by 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.

1.2.27 High-Efficiency Particulate Air (HEPA) Filter

A filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.

1.2.28 Homogeneous Area

An area of surfacing material or thermal system insulation that is uniform in color and texture.

1.2.29 Industrial Hygienist

A professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards.

1.2.30 Intact

ACM which has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix. Removal of "intact" asphaltic, resinous, cementitious products does not render the ACM non-intact simply by being separated into smaller pieces.

1.2.31 Model Accreditation Plan (MAP)

USEPA training accreditation requirements for persons who work with asbestos as specified in 40 CFR 763 Subpart E, Appendix C.

1.2.32 Modification

A changed or altered procedure, material or component of a control system, which replaces a procedure, material or component of a required system.

1.2.33 Negative Exposure Assessment

A demonstration by the Contractor to show that employee exposure during an operation is expected to be consistently below the OSHA Permissible Exposure Limits (PELs).

1.2.34 NESHAP

National Emission Standards for Hazardous Air Pollutants. The USEPA NESHAP regulation for asbestos is at 40 CFR 61 Subpart M.

1.2.35 Non-friable ACM

A NESHAP term defined in 40 CFR 61 Subpart M and EPA 340/1-90-018 meaning any material containing more than 1 percent asbestos, as determined using the method specified in 40 CFR 763 Subpart F, Appendix A, Section 1, Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.

1.2.36 Nonfriable ACM (Category I)

A NESHAP term defined in 40 CFR 61 Subpart M and EPA 340/1-90-018 meaning

asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in 40 CFR 763 Subpart F, Appendix A, Section 1, Polarized Light Microscopy.

1.2.37 Nonfriable ACM (Category II)

A NESHAP term defined in 40 CFR 61 Subpart M and EPA 340/1-90-018 meaning any material, excluding Category I non-friable ACM, containing more than 1 percent asbestos, as determined using the methods specified in 40 CFR 763 Subpart F, Appendix A, Section 1, Polarized Light Microscopy, that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

1.2.38 Exposure Limits (PELs)

a. PEL-Time weighted average(TWA): Concentration of asbestos not in excess of 0.1 fibers per cubic centimeter of air (f/cc) as an eight hour time weighted average (TWA), as determined by the method prescribed in 29 CFR 1926 Section .1101, Appendix A, or the current version of NIOSH analytical method 7400.

b. PEL-Excursion Limit: An airborne concentration of asbestos not in excess of 1.0 f/cc of air as averaged over a sampling period of 30 minutes as determined by the method prescribed in 29 CFR 1926 Section .1101, Appendix A, or the current version of NIOSH analytical method 7400.

1.2.39 Regulated Area

An OSHA term defined in 29 CFR 1926 Section .1101 meaning an area established by the Contractor to demarcate areas where Class I, II, and III asbestos work is conducted; also any adjoining area where debris and waste from such asbestos work accumulate; and an area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limit.

1.2.40 Removal

All operations where ACM is taken out or stripped from structures or substrates, and includes demolition operations.

1.2.41 Repair

Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM attached to structures or substrates. (If the amount of asbestos so "disturbed" cannot be contained in one standard glovebag or waste bag, Class I precautions are required).

1.2.42 Spills/Emergency Cleanups

Cleanup of sizable amounts of asbestos waste and debris which has occurred, for example, when water damage occurs in a building, and sizable amounts of ACM are dislodged. A Competent Person evaluates the site and ACM to be handled, and based on the type, condition and extent of the dislodged material, classifies the cleanup as Class I, II, or III. Only if the material was intact and the cleanup involves mere contact of ACM, rather than disturbance, could there be a Class IV classification.

1.2.43 Surfacing ACM

Asbestos-containing material which contains more than 1% asbestos and is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.

1.2.44 Thermal System Insulation (TSI) ACM

ACM which contains more than 1 percent asbestos and is applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain or water condensation.

1.2.45 Transite

A generic name for asbestos cement wallboard and pipe.

1.2.46 Worker

Individual (not designated as the Competent Person or a supervisor) who performs asbestos work and has completed asbestos worker training required by 29 CFR 1926 Section .1101 to include EPA Model Accreditation Plan (MAP) "Worker" training; accreditation required by 40 CFR 763 Subpart E, Appendix C, if required by the OSHA Class of work to be performed or by the state where the work is to be performed.

1.3 DESCRIPTION OF WORK

The work covered by this section includes the removal of asbestos containing materials (ACM) which are encountered prior to demolition of Buildings 23670, 23672, and the 7-foot diameter corrugated metal pipe tunnel located north of both buildings at White Sands Missile Range, White Sands, New Mexico. This section described activities associated with this project and describes procedures and equipment required to protect workers and occupants of the regulated area from contact with airborne asbestos fibers and ACM dust and debris. Abatement activities include OSHA Class I and Class II work operations involving ACM. The work also includes containment, storage, transportation and disposal of the generated ACM wastes. The detailed and specific operational procedures shall be discussed in the Contractor's Accident Prevention Plan and its subcomponents, the Asbestos Hazard Abatement Plan and Activity Hazard Analyses required in paragraph SAFETY AND HEALTH PROGRAM AND PLANS. The Contractor shall field verify abatement quantities and locations prior to work.

1.3.1 Abatement Work Tasks

The specific ACM to be abated is identified on the environmental drawings no. 00H001. The Asbestos survey results are include as Attachment A to this section. A sample of summary of work task data elements for the No.1 work is listed in Table 1, "Individual Work Task Data Elements" at the end of this section.

1.3.2 Unexpected Discovery of Asbestos

For any previously untested building components suspected to contain asbestos and located in areas impacted by the work, the Contractor shall notify the Contracting Officer who will have the option of ordering up to

one bulk samples to be obtained at the Contractor's expense and delivered to a laboratory accredited under the National Institute of Standards and Technology (NIST) "National Voluntary Laboratory Accreditation Program (NVLAP)" and analyzed by PLM at no additional cost to the Government. Any additional components identified as ACM that have been approved by the Contracting Officer for removal shall be removed by the Contractor and will be paid for by an equitable adjustment to the contract price under the CONTRACT CLAUSE titled "changes". Sampling activities undertaken to determine the presence of additional ACM shall be conducted by personnel who have successfully completed the EPA Model Accreditation Plan (MAP) "Building Inspector" training course required by 40 CFR 763 Subpart E, Appendix C.

1.4 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTAL PROCEDURES:

SD-01 Data

Materials and Equipment; FIO.

Manufacturer's catalog data for all materials and equipment to be used in the work, including brand name, model, capacity, performance characteristics and any other pertinent information. Test results and certificates from the manufacturer of encapsulants substantiating compliance with performance requirements of this specification. Material Safety Data Sheets for all chemicals to be used onsite in the same format as implemented in the Contractor's HAZARD COMMUNICATION PROGRAM. Data shall include, but shall not be limited to, the following items:

a. High Efficiency Filtered Air (HEPA) local exhaust equipment

b. Vacuum cleaning equipment

c. Pressure differential monitor for HEPA local exhaust equipment

d. Air monitoring equipment

e. Respirators

f. Personal protective clothing and equipment

(1) Coveralls
(2) Underclothing
(3) Other work clothing
(4) Foot coverings
(5) Hard hats
(6) Eye protection
(7) Other items required and approved by Contractors Designated IH and Competent Person

g. Glovebag

h. Duct Tape

i. Disposal Containers

(1) Disposal bags
(2) Fiberboard drums
(3) Paperboard boxes

j. Sheet Plastic

(1) Polyethylene Sheet - General
(2) Polyethylene Sheet - Flame Resistant
(3) Polyethylene Sheet - Reinforced

k. Wetting Agent

(1) Amended Water
(2) Removal encapsulant

l. Strippable Coating

m. Prefabricated Decontamination Unit(s)

n. Other items

o. Chemical encapsulant

p. Chemical encasement materials

q. Material Safety Data Sheets (for all chemicals proposed)

SD-04 Drawings

Site Layout; GA.

Descriptions, detail project drawings, and site layout to include worksite containment area techniques, local exhaust ventilation system locations, decontamination and load-out units, other temporary waste storage facility, access tunnels, location of temporary utilities (electrical, water, sewer) and boundaries of each regulated area shall be identified in the Contractor's Asbestos Hazard Abatement Plan.

SD-08 Statements

Qualifications; GA.

A written report providing evidence of qualifications for personnel, facilities and equipment assigned to the work (see paragraph 1.5, QUALIFICATIONS).

Training Program; FIO.

A copy of the written project site-specific training material as indicated in 29 CFR 1926 Section .1101 that will be used to train onsite employees. This training document shall be signed by the Contractor's Designated IH and Competent Person.

Medical Requirements; FIO.

Physician written result.

Encapsulants; GA.

Certificates stating that encapsulants meet the applicable specified performance requirements (see paragraph 2.1, ENCAPSULANTS).

SD-09 Reports

Exposure Assessment and Air Monitoring; GA.

Initial exposure assessments, negative exposure assessments, air-monitoring results and documentation (see paragraph 3.9, EXPOSURE ASSESSMENT AND AIR MONITORING).

Local Exhaust Ventilation; FIO.

Pressure differential recordings.

Licenses, Permits and Notifications; GA.

Licenses, permits and notifications as described in paragraph 1.14, LICENSES, PERMITS AND NOTIFICATIONS.

SD-13 Certificates

Vacuum, Filtration and Ventilation Equipment; FIO.

Manufacturer's certifications showing compliance with ANSI Z9.2 for:

a. Vacuums.

b. Water filtration equipment.

c. Ventilation equipment.

d. Other equipment required to contain airborne asbestos fibers.

SD-18 Records

Respiratory Protection Program; GA.

Records of the respirator program as described in paragraph 1.12, RESPIRATORY PROTECTION PROGRAM.

Safety/Accident Prevention and Abatement Plan; GA.

Requirements are described in paragraph 1.7, Safety and Health Program and Plans.

Closure Report; GA.

A copy of each waste shipment record, weigh bill, delivery ticket, daily narrative log of work including problems and resolution, exposure assessment, and analytical results shall be provided with the Closure Report (also reference paragraph 3.11 Cleanup and Disposal in this section).

1.5 QUALIFICATIONS

1.5.1 Written Qualifications and Organization Report

The Contractor shall furnish a written qualifications and organization report providing evidence of qualifications of the Contractor, Contractor's Project Supervisor, Designated Competent Person, supervisors and workers; Designated IH (person assigned to project and firm name); independent testing laboratory (including name of firm, principal and analyst(s) who will perform analyses); all subcontractors to be used including disposal transportation and disposal facility firms, subcontractor supervisors, subcontractor workers; and any others assigned to perform asbestos abatement and support activities. The report shall include an organization chart showing the Contractor's staff organization for this project by name and title, chain of command and reporting relationship with all subcontractors. The report shall be signed by the Contractor, the Contractor's onsite project manager, Designated Competent Person, Designated IH, designated testing laboratory and the principals of all subcontractors to be used. The Contractor shall include the following statement in the report: "By signing this report I certify that the personnel I am responsible for during the course of this project fully understand the contents of 29 CFR 1926 Section .1101, 40 CFR 61 Subpart M, and the federal, state and local requirements specified in paragraph SAFETY AND HEALTH COMPLIANCE for those asbestos abatement activities that they will be involved in."

1.5.2 Specific Requirements

The Contractor shall designate in writing, personnel meeting the following qualifications:

a. Designated Competent Person: The name, address, telephone number, and resume of the Contractor's Designated Competent Person shall be provided. Evidence that the full-time Designated Competent Person is qualified in accordance with 29 CFR 1926 Sections .32 and .1101, has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763 Subpart E, Appendix C, and is experienced in the administration and supervision of asbestos abatement projects, including exposure assessment and monitoring, work practices, abatement methods, protective measures for personnel, setting up and inspecting asbestos abatement work areas, evaluating the integrity of containment barriers, placement and operation of local exhaust systems, ACM generated waste containment and disposal procedures, decontamination units installation and maintenance requirements, site safety and health requirements, notification of other employees onsite, etc. The duties of the Competent Person shall include the following: controlling entry to and exit from the regulated area; supervising any employee exposure monitoring required by 29 CFR 1926 Section .1101; ensuring that all employees working within a regulated area wear the appropriate personal protective equipment (PPE), are trained in the use of appropriate methods of exposure control, and use the hygiene facilities and decontamination procedures specified; and ensuring that engineering controls in use are in proper operating conditions and are functioning properly. This Designated Competent Person shall be responsible for compliance with applicable federal, state and local requirements, the Contractor's Accident Prevention Plan and Asbestos Hazard Abatement Plan. The Designated Competent Person shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher

training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Contractor shall submit evidence that this person has a minimum of 2 years of on-the-job asbestos abatement experience relevant to OSHA competent person requirements. The Designated Competent Person shall be onsite at all times during the conduct of this project.

b. Project and Other Supervisors: The Contractor shall provide the name, address, telephone number, and resume of the Project Supervisor and other supervisors who have responsibility to implement the Accident Prevention Plan, including the Asbestos Hazard Abatement Plan and Activity Hazard Analyses, the authority to direct work performed under this contract and verify compliance and have EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763 Subpart E, Appendix C. The Project Supervisor and other supervisors shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Contractor shall submit evidence that the Project Supervisor has a minimum of 2 years of on-the-job asbestos abatement experience relevant to project supervisor responsibilities and the other supervisors have a minimum of 1 years on-the-job asbestos abatement experience commensurate with the responsibilities they will have on this project.

c. Certified (or Designated) Industrial Hygienist (CIH) and Industrial Hygienist Technician (IHT): The Contractor shall provide the name, address, telephone number, documentation of certification, and other specified information of the Certified Industrial Hygienist (CIH) who is selected to prepare the Contractor's Asbestos Hazard Abatement Plan, prepare training requirements and perform training, direct air monitoring, and assist the Contractor's Competent Person in ensuring safety and health requirements are met during asbestos abatement work. The CIH shall be certified by the American Board of Industrial Hygiene (ABIH), has a minimum of 2 years of comprehensive experience in planning and overseeing asbestos abatement activities, and has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763 Subpart E, Appendix C. The CIH shall provide the Contractor, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate, the CIH's current valid ABIH certificate for required refresher training, and the employee "Certificate of Worker Acknowledgment" required by this paragraph. The CIH shall be completely independent from the Contractor according to federal, state, or local regulations. The independent status is negated, if the CIH is a Contractor's employee, an employee or principal of a firm in a business relationship with the Contractor. The CIH shall be available for visits to the project site on emergencies or as needed by the IHT. In addition, the CIH shall prepare, and the Contractor shall submit, the name, address, telephone numbers and resumes, air monitoring license for the IHT who will be performing onsite tasks under direction of the CIH. The IHT shall have a minimum of 2 full years of practical onsite asbestos abatement experience and have a current air monitoring technician license. The IHT shall be independent of the Contractor and will be oniste during the entire abatement project execution.

d. Asbestos Abatement Workers: Asbestos abatement workers shall meet the requirements contained in 29 CFR 1926 Section .1101, 40 CFR 61 Subpart M and other applicable federal, state and local requirements. Worker training documentation shall be provided as required on the "Certificate of Workers Acknowledgment" in this paragraph.

e. Worker Training and Certification of Worker Acknowledgment: Training documentation shall be required for each employee who will perform OSHA Class I, Class II, Class III, or Class IV asbestos abatement operations. Such documentation shall be submitted on a Contractor generated form titled "Certificate of Workers Acknowledgment" to be completed for each employee in the same format and containing the same information as the example certificate at the end of this section. All training course completion certificates (initial and most recent update refresher) required by the information checked on the form shall be attached.

f. Physician: The Contractor shall provide the name, medical qualifications, address, telephone number and resume of the physician who will or has performed the medical examinations and evaluations of the persons who will conduct the asbestos abatement work tasks. The physician shall be currently licensed by the state where the workers will be or have been examined, have expertise in pneumoconioses and shall be responsible for the determination of medical surveillance protocols and for review of examination/test results performed in compliance with 29 CFR 1926 Section .1101 and paragraph MEDICAL REQUIREMENTS. The physician shall be familiar with the site's hazards and the scope of this project. The medical consultant's name, qualifications, and knowledge of the site's conditions and proposed activities shall be included in the Accident Prevention Plan.

g. First Aid and CPR Trained Persons: The names of at least two persons who are currently trained in first aid and CPR by the American Red Cross or other approved agency shall be designated and shall be onsite at all times during site operations. They shall be trained in universal precautions and the use of PPE as described in the Bloodborne Pathogens Standard of 29 CFR 1910 Section .1030 and shall be included in the Contractor's Bloodborne Pathogen Program. These persons may perform other duties but shall be immediately available to render first aid when needed. A copy of each designated person's current valid First Aid and CPR certificate shall be provided.

h. Independent Testing (including air monitoring) Laboratory and Technicians: The Contractor shall provide the name, address/telephone number, and license number with expiration date of the independent testing laboratory and technicians selected to perform the sample analyses and report the results. The testing laboratory and technicians shall be completely independent from the Contractor as recognized by federal, state or local regulations. Written verification of the following criteria, signed by the testing laboratory principal and the Contractor, shall be submitted:

(1) Phase contrast microscopy (PCM): The laboratory is fully equipped and proficient in conducting PCM of airborne samples

using the methods specified by 29 CFR 1926 Section .1101, OSHA method ID-160, the most current version of NIOSH Pub No. 84-100 Method 7400, and NIOSH Pub No. 84-100 Method 7402, transmission electron microscopy (TEM); the laboratory is currently judged proficient (classified as acceptable) in counting airborne asbestos samples by PCM by successful participation in each of the last 4 rounds in the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing (PAT) Program; the names of the selected microscopists who will analyze airborne samples by PCM with verified documentation of their proficiency to conduct PCM analyses by being judged proficient in counting samples as current participating analysts in the AIHA PAT Program, and having successfully completed the Asbestos Sampling and Analysis course (NIOSH 582 or equivalent) with a copy of course completion certificate provided; when the PCM analysis is to be conducted onsite, documentation shall be provided certifying that the onsite analyst has successfully participated in the laboratory's PAT program or is currently proficient in the AIHA Asbestos Analyst Registry (AAR) Program.

(2) Polarized light microscopy (PLM): The laboratory is fully equipped and proficient in conducting PLM analyses of suspect ACM bulk samples in accordance with 40 CFR 763 Subpart E, Appendix E; the laboratory is currently accredited by NIST under the NVLAP for bulk asbestos analysis and will use analysts (names shall be provided) with demonstrated proficiency to conduct PLM to include its application to the identification and quantification of asbestos content. The laboratory is proficient in conducting analysis using an improved EPA test method titled "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116". This method provides more precise analysis of floor tiles and bulk materials where multiple layers are present.

(3) PCM/TEM: The laboratory is fully equipped and each analyst (name shall be provided) possesses demonstrated proficiency in conducting PCM and TEM analysis of airborne samples using NIOSH Pub No. 84-100 Method 7400 PCM and NIOSH Pub No. 84-100 Method 7402 (TEM confirmation of asbestos content of PCM results) from the same filter.

i. Disposal Facility, Transporter: The Contractor shall provide written evidence that the landfill to be used is approved for asbestos disposal by the state and local regulatory agencies. Copies of signed agreements between the Contractor (including subcontractors and transporters) and the asbestos waste disposal facility to accept and dispose of all asbestos containing waste generated during the performance of this contract shall be provided. Qualifications shall be provided for each subcontractor or transporter to be used, indicating previous experience in transport and disposal of asbestos waste to include all required state and local waste hauler requirements for asbestos. The Contractor and transporters shall meet the DOT requirements of 49 CFR 171, 49 CFR 172, and 49 CFR 173 as well as registration requirements of 49 CFR 107 and other applicable state or local requirements. The disposal facility shall meet the requirements of 40 CFR 61 Sections .154 or .155 as required in 40 CFR 61 Section .150(b) and other applicable state or local requirements.

1.5.3 Federal, State or Local Citations on Previous Projects

The Contractor and all subcontractors shall submit a statement, signed by an officer of the company, containing a record of any citations issued by Federal, State or local regulatory agencies relating to asbestos activities (including projects, dates, and resolutions); a list of penalties incurred through non-compliance with asbestos project specifications including liquidated damages, overruns in scheduled time limitations and resolutions; and situations in which an asbestos-related contract has been terminated (including projects, dates, and reasons for terminations). If there are none, there will be a negative declaration signed by an officer of the company.

1.5.4 Liability

The Contractor shall obtain without additional expense to the Government, the asbestos abatement liability insurance as required by this contract. The Contractor shall assume full responsibility and liability for the compliance of all Federal, state, and local regulations pertaining to work practices, hazard communication, hauling, disposal, and protection of workers, visitors to the project site, and persons occupying area adjacent to the project site.

1.6 REGULATORY REQUIREMENTS

In addition to detailed requirements of this specification, work performed under this contract shall comply with EM 385-1-1, applicable federal, state, and local laws, ordinances, criteria, rules and regulations regarding handling, storing, transporting, and disposing of asbestos waste materials. This includes, but is not limited to, OSHA standards, 29 CFR 1926, especially Section .1101, 40 CFR 61 Subpart M and 40 CFR 763. Matters of interpretation of standards shall be submitted to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply. The following state and local laws, rules and regulations regarding demolition, removal, encapsulation, construction alteration, repair, maintenance, renovation, spill/emergency cleanup, housekeeping, handling, storing, transporting and disposing of asbestos material apply: State of New Mexico Asbestos Control Program.

1.7 SAFETY AND HEALTH PROGRAM AND PLANS

The Contractor's Designated IH shall develop and submit a written comprehensive site-specific Accident Prevention Plan at least 30 days prior to the preconstruction conference. The Accident Prevention Plan shall address all requirements of EM 385-1-1, Appendix A, covering onsite work to be performed by the Contractor and all subcontractors. The Accident Prevention Plan shall incorporate an Asbestos Hazard Abatement Plan, and Activity Hazard Analyses as separate appendices into one site specific Accident Prevention Plan document. Any portions of the Contractor's overall Safety and Health Program that are referenced in the Accident Prevention Plan, e.g., respirator program, hazard communication program, confined space entry program, etc., shall be included as appendices to the Accident Prevention Plan. The plan shall take into consideration all the individual asbestos abatement work tasks identified in Table 1. The plan shall be prepared, signed, sealed with certification number, and dated by the Contractor's Designated IH, Competent Person, and Project Supervisor.

1.7.1 The Asbestos Hazard Abatement Plan Appendix

The Asbestos Hazard Abatement Plan appendix to the Accident Prevention Plan shall include, but not be limited to, the following:

a. The personal protective equipment to be used (i.e. coveralls, head coverings, etc.);

b. The location and description of regulated areas including clean and dirty areas, access tunnels, and decontamination unit (clean room, shower room, equipment room, storage areas such as load-out unit);

c. Initial exposure assessment in accordance with 29 CFR 1926 Section .1101;

d. Level of supervision;

e. Method of notification of other employers at the worksite;

f. Abatement method to include containment and control procedures;

g. Interface of trades involved in the construction;

h. Sequencing of asbestos related work;

i. Storage and disposal procedures and plan;

j. Type of wetting agent, asbestos encapsulant, and strippable coating to be used;

k. Location of local exhaust equipment;

l. Air monitoring methods (personal, environmental and clearance);

m. Bulk sampling and analytical methods (if required);

n. A detailed description and illustration of the method to be employed in order to control the spread of ACM wastes and airborne fiber concentrations;

o. Fire and medical emergency response procedures;

p. The security procedures to be used for all regulated areas.

q. Type of hygiene facility to be used.

r. Type of surfaces which required precleaning (see paragraph 3.5)

s. Table 1 for all abatement work tasks (see paragraph 1.3.1, Abatement Work Tasks.

1.7.2 The Activity Hazard Analyses Appendix

Activity Hazard Analyses, for each major phase of work, shall be submitted and updated during the project. The Activity Hazard Analyses format shall be in accordance with EM 385-1-1 (Figure 1-1). The analysis shall define the activities to be performed for a major phase of work, identify the sequence of work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an

acceptable level. Work shall not proceed on that phase until the Activity Hazard Analyses has been accepted and a preparatory meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activities, including the onsite Government representatives. The Activity Hazard Analyses shall be continuously reviewed and, when appropriate, modified to address changing site conditions or operations.

1.8 PRECONSTRUCTION CONFERENCE AND ONSITE SAFETY

The Contractor and the Contractor's Designated Competent Person, Project Supervisor, and Designated IH shall meet with the Contracting Officer prior to beginning work at a safety preconstruction conference to discuss the details of the Contractor's submitted Accident Prevention Plan to include the Asbestos Hazard Abatement Plan and Activity Hazard Analyses appendices. Deficiencies in the Accident Prevention Plan will be discussed and the Accident Prevention Plan shall be revised to correct the deficiencies and resubmitted for acceptance. Any changes required in the specification as a result of the Accident Prevention Plan shall be identified specifically in the plan to allow for free discussion and acceptance by the Contracting Officer prior to the start of work. Onsite work shall not begin until the Accident Prevention Plan has been accepted. A copy of the written Accident Prevention Plan shall be maintained onsite. Changes and modifications to the accepted Accident Prevention Plan shall be made with the knowledge and concurrence of the Designated IH, the Project Supervisor, Designated Competent Person, and the Contracting Officer. Should any unforeseen hazard become evident during the performance of the work, the Designated IH shall bring such hazard to the attention of the Project Supervisor, Designated Competent Person, and the Contracting Officer, both verbally and in writing, for resolution as soon as possible. In the interim, all necessary action shall be taken by the Contractor to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment. Once accepted by the Contracting Officer, the Accident Prevention Plan, including the Asbestos Hazard Abatement Plan and Activity Hazard Analyses will be enforced as if an addition to the contract. Disregard for the provisions of this contract or the accepted Accident Prevention Plan shall be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

1.9 SECURITY

Fenced and locked security area shall be provided for each regulated area. A log book shall be kept documenting entry into and out of the regulated area. Entry into regulated areas shall only be by personnel authorized by the Contractor and the Contracting Officer. Personnel authorized to enter regulated areas shall be trained, be medically evaluated, and wear the required personal protective equipment, for the specific regulated area to be entered.

1.10 MEDICAL REQUIREMENTS

Medical requirements shall conform to 29 CFR 1926 Section .1101.

1.10.1 Medical Examinations

Before being exposed to airborne asbestos fibers, workers shall be provided with a medical examination as required by 29 CFR 1926 Section .1101 and other pertinent state or local requirements. This requirement must have been satisfied within the last 12 months. The same medical examination shall be given on an annual basis to employees engaged in an occupation

involving asbestos and within 30 calendar days before or after the termination of employment in such occupation. X-ray films of asbestos workers shall be identified to the consulting radiologist and medical record jackets shall be marked with the word "asbestos."

1.10.1.1 Information Provided to the Physician

The Contractor shall provide the following information in writing to the examining physician:

a. A copy of 29 CFR 1926 Section .1101 and Appendices D, E, G, and I;

b. A description of the affected employee's duties as they relate to the employee's exposure;

c. The employee's representative exposure level or anticipated exposure level;

d. A description of any personal protective and respiratory equipment used or to be used;

e. Information from previous medical examinations of the affected employee that is not otherwise available to the examining physician.

1.10.1.2 Written Medical Opinion

For each worker, a written medical opinion prepared and signed by a licensed physician indicating the following:

a. Summary of the results of the examination.

b. The potential for an existing physiological condition that would place the employee at an increased risk of health impairment from exposure to asbestos.

c. The ability of the individual to wear personal protective equipment, including respirators, while performing strenuous work tasks under cold and/or heat stress conditions.

d. A statement that the employee has been informed of the results of the examination, provided with a copy of the results, informed of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure, and informed of any medical condition that may result from asbestos exposure.

1.10.2 Medical and Exposure Records

The Contractor shall maintain complete and accurate records of each employee's medical examinations, medical records and exposure data as required by 29 CFR 1910 Section 29 CFR 1910.20 and 29 CFR 1926 Section .1101 for a period of 30 years after termination of employment. Records of the required medical examinations and exposure data shall be made available, for inspection and copying, to the Assistant Secretary of Labor for Occupational Safety and Health (OSHA) or authorized representatives of the employee and an employee's physician upon request of the employee or former employee. A copy of the required medical certification for each employee shall be maintained on file at the worksite for review, as requested by the Contracting Officer or the representatives.

1.11 TRAINING PROGRAM

1.11.1 General

The Contractor shall establish a training program as specified by EPA Model Accreditation Plan (MAP), training requirements at 40 CFR 763 Subpart E, Appendix C, OSHA requirements at 29 CFR 1926 Section .1101(k)(9), State of New Mexico Asbestos Control Program. Contractor employees shall complete the required training for the type of work they are to perform and such training shall be documented and provided to the Contracting Officer as specified in paragraph QUALIFICATIONS.

1.11.2 Project Specific Training

Prior to commencement of work, each worker shall be instructed by the Contractor's Designated IH and Competent Person in the following project specific training:

a. The hazards and health effects of the specific types of ACM to be abated;

b. The content and requirements of the Contractor's Accident Prevention Plan to include the Asbestos Hazard Abatement Plan and Activity Hazard Analyses and site-specific safety and health precautions;

c. Hazard Communication Program;

d. Hands-on training for each asbestos abatement technique to be employed;

e. Heat and/or cold stress monitoring specific to this project;

f. Air monitoring program and procedures;

g. Medical surveillance to include medical and exposure record keeping procedures;

h. The association of cigarette smoke and asbestos-related disease;

i. Security procedures;

j. Specific work practice controls and engineering controls required for each Class of work in accordance with 29 CFR 1926 Section .1101.

1.12 RESPIRATORY PROTECTION PROGRAM

The Contractor's Designated IH shall establish in writing, and implement a respiratory protection program in accordance with 29 CFR 1926 Section .1101, 29 CFR 1910 Section .134, ANSI Z88.2, CGA G-7, CGA G-7.1. The Contractor's Designated IH shall establish minimum respiratory protection requirements based on measured or anticipated levels of airborne asbestos fiber concentrations encountered during the performance of the asbestos abatement work. The Contractor's respiratory protection program shall include, but not be limited to, the following elements:

a. The company policy, used for the assignment of individual

responsibility, accountability, and implementation of the respiratory protection program.

b. The standard operating procedures covering the selection and use of respirators. Respiratory selection shall be determined by the hazard to which the worker is exposed.

c. Medical evaluation of each user to verify that the worker may be assigned to an activity where respiratory protection is required.

d. Training in the proper use and limitations of respirators.

e. Respirator fit-testing, i.e., quantitative, qualitative and individual functional fit checks.

f. Regular cleaning and disinfection of respirators.

g. Routine inspection of respirators during cleaning and after each use when designated for emergency use.

h. Storage of respirators in convenient, clean, and sanitary locations.

i. Surveillance of regulated area conditions and degree of employee exposure (e.g., through air monitoring).

j. Regular evaluation of the continued effectiveness of the respiratory protection program.

k. Recognition and procedures for the resolution of special problems as they affect respirator use (e.g., no facial hair that comes between the respirator face piece and face or interferes with valve function; prescription eye wear usage; contact lenses usage; etc.).

l. Proper training in putting on and removing respirators.

1.12.1 Respiratory Fit Testing

A qualitative or quantitative fit test conforming to 29 CFR 1926 Section .1101, Appendix C shall be conducted by the Contractor's Designated IH for each Contractor worker required to wear a respirator, and for the Contracting Officer and authorized visitors who enter a regulated area where respirators are required to be worn. A respirator fit test shall be performed for each worker wearing a negative-pressure respirator prior to initially wearing a respirator on this project and every 6 months thereafter. The qualitative fit tests may be used only for testing the fit of half-mask respirators where they are permitted to be worn, or of full-facepiece air purifying respirators where they are worn at levels at which half-facepiece air purifying respirators are permitted. If physical changes develop that will affect the fit, a new fit test for the worker shall be performed. Functional fit checks shall be performed by employees each time a respirator is put on and in accordance with the manufacturer's recommendation.

1.12.2 Respirator Selection and Use Requirements

The Contractor shall provide respirators, and ensure that they are used as required by 29 CFR 1926 Section .1101 and in accordance with the

manufacturer's recommendations. Respirators shall be approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health (MSHA/NIOSH), under the provisions of 42 CFR 84, for use in environments containing airborne asbestos fibers. Personnel who handle ACM, enter regulated areas that require the wearing of a respirator, or who are otherwise carrying out abatement activities that require the wearing of a respirator, shall be provided with approved respirators that are fully protective of the worker at the measured or anticipated airborne asbestos concentration level to be encountered. For air-purifying respirators, the particulate filter portion of the cartridges or canister approved for use in airborne asbestos environments shall be high-efficiency particulate air (HEPA). The initial respirator selection and the decisions regarding the upgrading or downgrading of respirator type shall be made by the Contractor's Designated IH based on the measured or anticipated airborne asbestos fiber concentrations to be encountered. All recommendations made by the Contractor's Designated IH to downgrade respirator type shall be submitted in writing to the Contracting Officer. The Contractor's Designated Competent Person in consultation with the Designated IH, shall have the authority to take immediate action to upgrade or downgrade respiratory type when there is an immediate danger to the health and safety of the wearer. Respirators shall be used in the following circumstances:

a. During all Class I asbestos jobs.

b. During all Class II work where the ACM is not removed in a substantially intact state.

c. During all Class II which is not performed using wet methods. Respirators need not be worn during removal of ACM from sloped roofs when a negative exposure assessment has been made and ACM is removed in an intact state.

d. During all Class II asbestos jobs where the Contractor does not produce a negative exposure assessment.

e. Where TSI or surfacing ACM is being disturbed.

f. During all work where employees are exposed above the PEL-TWA or PEL-Excursion Limit.

g. In emergencies

1.12.3 Class I Work

The Contractor shall provide a tight-fitting, powered air purifying respirator equipped with high efficiency filters or a full-facepiece supplied air respirator operated in the pressure demand mode, equipped with HEPA egress cartridges or an auxiliary positive pressure self-contained breathing apparatus for all employees within the regulated area where Class I work is being performed for which a negative exposure assessment has not been produced and the exposure level will not exceed 1 f/cc as an 8-hour time weighted average. A full-facepiece supplied air respirator, operated in the pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus shall be provided under such conditions, if the exposure assessment indicates exposure levels above 1 f/cc as an 8-hour time weighted average.

1.12.4 Class II Work

The Contractor shall provide a half-mask air purifying respirator, other than a disposable respirator, equipped with high-efficiency filters whenever the employee performs Class II asbestos jobs where the Contractor does not produce a negative exposure assessment; and where TSI or surfacing ACM is being disturbed.

1.12.5 Sanitation

Employees who wear respirators shall be permitted to leave work areas to wash their faces and respirator facepieces whenever necessary to prevent skin irritation associated with respirator use.

1.13 HAZARD COMMUNICATION PROGRAM

A hazard communication program shall be established and implemented in accordance with 29 CFR 1926 Section .59. Material safety data sheets (MSDSs) shall be provided for all hazardous materials brought onto the worksite. One copy shall be provided to the Contracting Officer's onsite Representative and one copy shall be included in the Contractor's Hazard Communication Program.

1.14 LICENSES, PERMITS AND NOTIFICATIONS

1.14.1 General Requirements

Necessary licenses, permits and notifications shall be obtained in conjunction with the project's asbestos abatement, transportation and disposal actions and timely notification furnished of such actions as required by federal, state, regional, and local authorities. The Contractor shall notify in writing, the Air Pollution Control Bureau, New Mexico Environmental Department, prior to the commencement of work in accordance with 40 CFR 61 Subpart M, state and local requirements. [AM#1] The Notice of Intent (NOI), New Mexico Environmental Department (NMED), ASBESTOS DEMOLITION/RENOVATION NOTIFICATION shall be received by the White Sands Environmental Services Division (NRES-E) 20 working days prior to the stated date for the initiation of the disturbance of Regulated Asbestos Containing Material (ACM). The NRES-E will mail to the NMED a cover letter signed by the National Range Environment and Safety Director with the document by Certified Mail/Return Receipt Requested within 10 working days. The Asbestos Hot-Line of Air Pollution Control Bureau is (800) 224-7009. The Contractor shall furnish copies of the receipts to the Contracting Officer, in writing, prior to the commencement of work. Local fire department shall be notified 3 days before fire-proofing material is removed from a building and the notice shall specify when the material contains asbestos. A copy of the rental company's written acknowledgment and agreement shall be provided as required by paragraph Rental Equipment. For licenses, permits and notifications that the Contractor is responsible for obtaining, the Contractor will pay any associated fees or other costs incurred.

1.14.2 Litigation and Notification

The Contractor shall notify the Contracting Officer if any of the following occur:

a. The Contractor or any of the subcontractors are served with notice of violation of any law, regulation, permit or license which relates to this Contract;

b. Proceedings are commenced which could lead to revocation of related permits or licenses; permits, licenses or other Government authorizations relating to this Contract are revoked;

c. Litigation is commenced which would affect this contract;

d. The Contractor or any of the subcontractors become aware that their equipment or facilities are not in compliance or may fail to comply in the future with applicable laws or regulations.

1.15 PERSONAL PROTECTIVE EQUIPMENT

One complete sets of personal protective equipment shall be made available to the Contracting Officer and authorized visitors for entry to the regulated area. Contracting Officer and authorized visitors shall be provided with training equivalent to that provided to Contractor employees in the selection, fitting, and use of the required personal protective equipment and the site safety and health requirements. Contractor workers shall be provided with personal protective clothing and equipment and the Contractor shall ensure that it is worn properly. The Contractor's Designated IH and Designated Competent Person supervisor shall select and approve all the required personal protective clothing and equipment to be used.

1.15.1 Respirators

See paragraph RESPIRATORY PROTECTION PROGRAM.

1.15.2 Whole Body Protection

Personnel exposed to airborne concentrations of asbestos that exceed the PELs, or for all OSHA Classes of work for which a required negative exposure assessment is not produced, shall be provided with whole body protection and such protection shall be worn properly. The Contractor's Designated IH and Competent Person supervisor shall select and approve the whole body protection to be used. The Competent Person shall examine work suits worn by employees at least once per work shift for rips or tears that may occur during performance of work. When rips or tears are detected while an employee is working, rips and tears shall be immediately mended, or the work suit shall be immediately replaced. Disposable whole body protection shall be disposed of as asbestos contaminated waste upon exiting from the regulated area. Reusable whole body protection worn shall be either disposed of as asbestos contaminated waste upon exiting from the regulated area or be properly laundered in accordance with 29 CFR 1926 Section .1101. Whole body protection used for asbestos abatement shall not be removed from the worksite by a worker to be cleaned. All recommendations made by the Contractor's Designated IH to downgrade whole body protection shall be submitted in writing to the Contracting Officer. The Contractor's Designated Competent Person in consultation with the Designated IH, shall have the authority to take immediate action to upgrade or downgrade whole body protection when there is an immediate danger to the health and safety of the wearer.

1.15.2.1 Coveralls

Disposable-breathable with a zipper front shall be provided by the Contractor and identified on the Contractor's Asbestos Hazard Abatement Plan. Sleeves shall be secured at the wrists, and foot coverings secured

at the ankles.

1.15.2.2 Underwear

Disposable underwear shall be provided. If reusable underwear are used, they shall be disposed of as asbestos contaminated waste or laundered in accordance with 29 CFR 1926 Section .1101. Asbestos abatement workers shall not remove contaminated reusable underwear worn during abatement of ACM from the site to be laundered.

1.15.2.3 Work Clothing

An additional coverall shall be provided when the abatement and control method employed does not provide for the exit from the regulated area directly into an attached decontamination unit. Cloth work clothes shall be provided for wear under the protective coverall and foot coverings when work is being conducted in low temperature conditions. Cloth work clothes shall be either disposed of as asbestos contaminated waste or properly laundered in accordance with 29 CFR 1926 Section .1101.

1.15.2.4 Gloves

Gloves shall be provided to protect the hands. Where there is the potential for hand injuries (i.e., scrapes, punctures, cuts, etc.) a suitable glove shall be provided and used.

1.15.2.5 Foot Coverings

Cloth socks shall be provided and worn next to the skin. Footwear, as required by OSHA and EM 385-1-1, that is appropriate for safety and health hazards in the area shall be worn. Rubber boots shall be used in moist or wet areas. All reusable footwear removed from the regulated area shall be thoroughly decontaminated or disposed of as ACM waste. All disposable protective foot covering shall be disposed of as ACM waste. If rubber boots are not used, disposable foot covering shall be provided.

1.15.2.6 Head Covering

Hood type disposable or reusable head covering shall be provided. The type of head covering to be used shall be identified in the Contractor's Asbestos Hazard Abatement Plan. In addition, protective head gear (hard hats) shall be provided as required. Hard hats shall only be removed from the regulated area after being thoroughly decontaminated.

1.15.2.7 Protective Eye Wear

Eye protection provided shall be in accordance with ANSI Z87.1.

1.16 HYGIENE FACILITIES AND PRACTICES

The Contractor shall establish a decontamination area for the decontamination of employees, material and equipment. The Contractor shall ensure that employees enter and exit the regulated area through the decontamination area. The Contractor shall indicate the type of hygiene facility to be used in the Contractor's Asbestos Hazard Abatement Plan.

1.16.1 Shower Facilities

Shower facilities, when provided, shall comply with 29 CFR 1910 Section

.141(d)(3).

1.16.2 3-Stage Decontamination Area

A temporary negative pressure decontamination unit that is adjacent and attached in a leak-tight manner to the regulated area shall be used. Utilization of prefabricated units shall have prior approval of the Contracting Officer. The decontamination unit shall have an equipment room and a clean room separated by a shower that complies with 29 CFR 1910 Section .141 (unless the Contractor can demonstrate that such facilities are not feasible). All equipment and surfaces of containers filled with ACM must be cleaned prior to removing them from the equipment room or area. Surfaces of the equipment room shall be wet wiped two times after each shift. Materials used for wet wiping shall be disposed of as asbestos contaminated waste. Two separate lockers shall be provided for each asbestos worker, one in the equipment room and one in the clean room. The Contractor shall provide a minimum 40 gal. electric water heater with minimum recovery rate of 20 gal. per hour and a temperature controller for each showerhead. The Contractor shall provide a minimum of two showers. Instantaneous type in-line water heater may be incorporated at each shower head in lieu of hot water heater upon approval by the Contracting Officer. Flow and temperature controls shall be located within the shower and be adjustable by the user. The wastewater pump shall be sized for 1.25 times the showerhead flow-rate at a pressure head sufficient to satisfy the filter head loss and discharge line losses. The pump shall supply a minimum 25 gpm flow with 35 ft. of pressure head. Used shower water shall be collected and filtered to remove asbestos contamination. Filters and residue shall be disposed of as asbestos contaminated material. Filtered water shall be discharged to the sanitary system. Wastewater filters shall be installed in series with the first stage pore size of 20 microns and the second stage pore size of 5 microns. The floor of the decontamination unit's clean room shall be kept dry and clean at all times. Water from the shower shall not be allowed to wet the floor in the clean room. Surfaces of the clean room and shower shall be wet-wiped 2 times after each shift change with a disinfectant solution. Proper housekeeping and hygiene requirements shall be maintained. Soap and towels shall be provided for showering, washing and drying. Any cloth towels provided shall be disposed of as ACM waste or be laundered in accordance with 29 CFR 1926 Section .1101.

1.16.3 Load-Out Unit

A temporary load-out unit that is adjacent and connected to the regulated area and access tunnel shall be provided. Utilization of prefabricated units shall be noted in the Contractor's Asbestos Hazard Abatement Plan and shall have prior approval of the Contracting Officer. The load-out unit shall be attached in a leak-tight manner to each regulated area. Surfaces of the load-out unit and access tunnel shall be adequately wet-wiped 2 times after each shift change. Materials used for wet wiping shall be disposed of as asbestos contaminated waste.

1.16.4 Single Stage Decontamination Area

A decontamination area (equipment room/area) shall be provided for Class I work involving less than 25 feet or 10 square feet of TSI or surfacing ACM, and for Class II asbestos work operations where exposures exceed the PELs or where there is no negative exposure assessment produced before the operation. The equipment room or area shall be adjacent to the regulated area for the decontamination of employees, material, and their equipment

which is contaminated with asbestos. The equipment room or area shall consist of an area covered by an impermeable drop cloth on the floor or horizontal working surface. The area must be of sufficient size to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination beyond the area. Surfaces of the equipment room shall be wet wiped two times after each shift. Materials used for wet wiping shall be disposed of as asbestos contaminated waste.

1.16.5 Decontamination Area Entry Procedures

The Contractor shall ensure that employees entering the decontamination area through the clean room or clean area:

a. Remove street clothing in the clean room or clean area and deposit it in lockers.

b. Put on protective clothing and respiratory protection before leaving the clean room or clean area.

c. Pass through the equipment room to enter the regulated area.

1.16.6 Decontamination Area Exit Procedures

The Contractor shall ensure that the following procedures are followed:

a. Before leaving the regulated area, respirators shall be worn while employees remove all gross contamination and debris from their work clothing using a HEPA vacuum.

b. Employees shall remove their protective clothing in the equipment room and deposit the clothing in labeled impermeable bags or containers (see Detail Sheets 9 and 14) for disposal and/or laundering.

c. Employees shall not remove their respirators in the equipment room.

d. Employees shall shower prior to entering the clean room. If a shower has not been located between the equipment room and the clean room or the work is performed outdoors, the Contractor shall ensure that employees engaged in Class I asbestos jobs: a) Remove asbestos contamination from their work suits in the equipment room or decontamination area using a HEPA vacuum before proceeding to a shower that is not adjacent to the work area; or b) Remove their contaminated work suits in the equipment room, without cleaning worksuits, and proceed to a shower that is not adjacent to the work area.

e. After showering, employees shall enter the clean room before changing into street clothes.

1.16.7 Lunch Areas

The Contractor shall provide lunch areas where the airborne concentrations of asbestos are below 0.01 f/cc.

1.16.8 Smoking

Smoking is discouraged but, if allowed by the Contractor, shall only be permitted in designated areas approved by the Contracting Officer.

1.17 REGULATED AREAS

All Class I and Class II asbestos work shall be conducted within regulated areas. The regulated area shall be demarcated to minimize the number of persons within the area and to protect persons outside the area from exposure to airborne asbestos. Where critical barriers or negative pressure enclosures are used, they shall demarcate the regulated area. Access to regulated areas shall be limited to authorized persons. The Contractor shall control access to regulated areas, ensure that only authorized personnel enter, and verify that Contractor required medical surveillance, training and respiratory protection program requirements are met prior to allowing entrance.

1.18 WARNING SIGNS AND TAPE

Warning signs and tape printed bilingually, in English and Spanish. Pictographs and graphics shall be provided at the regulated boundaries and entrances to regulated areas. The Contractor shall ensure that all personnel working in areas contiguous to regulated areas comprehend the warning signs. Signs shall be so located to allow personnel to read the signs and take the necessary protective steps required before entering the area. Warning signs shall be in vertical format conforming to 29 CFR 1910 and 29 CFR 1926 Section .1101, minimum 20 by 14 inches and displaying the following legend in the lower panel:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA

Spacing between lines shall be at least equal to the height of the upper of any two lines. Warning tape shall be provided. Decontamination unit signage shall be posted.

1.19 WARNING LABELS

Warning labels shall be affixed to all asbestos disposal containers used to contain asbestos materials, scrap, waste debris, and other products contaminated with asbestos. Containers with preprinted warning labels conforming to requirements are acceptable. Warning labels shall conform to 29 CFR 1926 Section .1101 and shall be of sufficient size to be clearly legible displaying the following legend:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

1.20 LOCAL EXHAUST VENTILATION

Local exhaust ventilation units shall conform to ANSI Z9.2 and 29 CFR 1926 Section .1101. Filters on local exhaust system equipment shall conform to ANSI Z9.2 and UL 586. Filter shall be UL labeled.

1.21 TOOLS

Vacuums shall be leak proof to the filter, equipped with HEPA filters, of sufficient capacity and necessary capture velocity at the nozzle or nozzle attachment to efficiently collect, transport and retain the ACM waste material. Power tools shall not be used to remove ACM unless the tool is equipped with effective, integral HEPA filtered exhaust ventilation capture and collection system or has otherwise been approved for use by the Contracting Officer. All residual asbestos shall be removed from reusable tools prior to storage and reuse. Reusable tools shall be thoroughly decontaminated prior to being removed from regulated areas.

1.22 RENTAL EQUIPMENT

If rental equipment is to be used, written notification shall be provided to the rental agency, concerning the intended use of the equipment, the possibility of asbestos contamination of the equipment and the steps that will be taken to decontaminate such equipment. A written acceptance of the terms of the Contractor's notification shall be obtained from the rental agency.

1.23 AIR MONITORING EQUIPMENT

The Contractor's Designated IH shall select and approve air monitoring equipment to be used to collect samples. The equipment shall include, but not be limited to:

a. High-volume sampling pumps that can be calibrated and operated at a constant airflow up to 16 liters per minute when equipped with a sampling train of tubing and filter cassette.

b. Low-volume, battery powered, body-attachable, portable personal pumps that can be calibrated to a constant airflow up to approximately 3.5 liters per minute when equipped with a sampling train of tubing and filter cassette, and a self-contained rechargeable power pack capable of sustaining the calibrated flow rate for a minimum of 10 hours. The pumps shall also be equipped with an automatic flow control unit which shall maintain a constant flow even as filter resistance increases due to accumulation of fiber and debris on the filter surface.

c. Single use standard 25 mm diameter cassette, open face, 0.8 micron pore size, mixed cellulose ester membrane filters and cassettes with 50 mm electrically conductive extension cowl, and shrink bands, to be used with low flow pumps in accordance with 29 CFR 1926 Section .1101 for personal air sampling.

d. Single use standard 25 mm diameter cassette, open face, 0.45 micron pore size, mixed cellulose ester membrane filters and cassettes with 50 mm electrically conductive cowl, and shrink bands, to be used with high flow pumps when conducting environmental area sampling using NIOSH Pub No. 84-100 Methods 7400 and 7402.

e. Appropriate plastic tubing to connect the air sampling pump to the selected filter cassette.

f. A flow calibrator capable of calibration to within plus or minus 2 percent of reading over a temperature range of minus 4 to plus 140 degrees F and traceable to a NIST primary standard.

1.24 EXPENDABLE SUPPLIES

1.24.1 Disposal Containers

Leak-tight disposal containers shall be provided for ACM wastes as required by 29 CFR 1926 Section .1101. Leak-tight means that solids, liquids or dust cannot escape or spill out.

1.24.2 Leak-tight Wrapping

Two layers of 6 mil minimum thick polyethylene sheet stock shall be used for the containment of removed asbestos-containing components or materials such as reactor vessels, large tanks, boilers, insulated pipe segments and other materials too large to be placed in disposal bags. Upon placement of the ACM component or material, each layer shall be individually leak-tight sealed with duct tape.

1.24.3 Sheet Plastic

Sheet plastic shall be polyethylene of 6 mil minimum thickness and shall be provided in the largest sheet size necessary to minimize seams.

1.24.4 Viewing Inspection Window

Where feasible, a minimum of 1 clear, 1/8 inch thick, acrylic sheet, 18 by 24 inches, shall be installed as a viewing inspection window at eye level on a wall in each containment enclosure. All such windows shall be sealed leak-tight with industrial grade duct tape.

1.24.5 Wetting Agents

Removal encapsulant (a penetrating encapsulant) shall be provided when conducting removal abatement activities that require a longer removal time or are subject to rapid evaporation of amended water. The removal encapsulant shall be capable of wetting the ACM and retarding fiber release during disturbance of the ACM equal to or greater than provided by amended water. Performance requirements for penetrating encapsulants are specified in paragraph ENCAPSULANTS.

1.24.6 Strippable Coating

The Contractor shall specify if this is required in the Contractor's Asbestos Hazard Abatement plan. If used, it shall be removed cleanly by stripping at the completion of work. This work shall only be done in well ventilated areas.

1.25 MISCELLANEOUS ITEMS

A sufficient quantity of other items shall be provided including, but not limited to, scrapers, brushes, brooms, staple guns, tarpaulins, shovels, rubber squeegees, dust pans, other tools, scaffolding, staging, enclosed chutes, wooden ladders, lumber necessary for the construction of containments, UL approved temporary electrical equipment, material and cords, ground fault circuit interrupters, water hoses of sufficient length, fire extinguishers, first aid kits, portable toilets, logbooks, log forms, markers with indelible ink, spray paint in bright color to mark areas, project boundary fencing, etc.

PART 2 PRODUCTS

2.1 ENCAPSULANTS

Encapsulants shall conform to USEPA requirements, shall contain no toxic or hazardous substances and no solvent and shall meet the following requirements:

ALL ENCAPSULANTS

Requirement	Test Standard
Flame Spread - 25, Smoke Emission - 50	ASTM E 84
Combustion Toxicity Zero Mortality	Univ. of Pittsburgh Protocol
Life Expectancy, 20 yrs Accelerated Aging Test	ASTM C 732
Permeability - Minimum 0.4 Perms	ASTM E 96

Additional Requirements for Bridging Encapsulant

Requirement	Test Standard
Cohesion/Adhesion Test, 730 N/m	ASTM E 736
Fire Resistance, Negligible affect on fire resistance rating over 3 hour test (Classified by UL for use over fibrous and cementitious sprayed fireproofing)	ASTM E 119
Impact Resistance, Min. 4.7 N-m (Gardner Impact Test)	ASTM D 2794
Flexibility, no rupture or cracking (Mandrel Bend Test)	ASTM D 522

Additional Requirement for Penetrating Encapsulant

Requirement	Test Standard
Cohesion/Adhesion Test, 730 N/m	ASTM E 736
Fire Resistance, Negligible affect on fire resistance rating over 3 hour test (Classified by UL for use over fibrous and cementitious sprayed fireproofing)	ASTM E 119
Impact Resistance, Min. 4.7 N-m (Gardner Impact Test)	ASTM D 2794
Flexibility, no rupture or cracking (Mandrel Bend Test)	ASTM D 522

Additional Requirement for Lockdown Encapsulant

Requirement	Test Standard
Fire Resistance, Negligible affect on fire resistance rating over 3 hour test (Tested with fireproofing over encapsulant applied directly to steel member)	ASTM E 119
Bond Strength, 1.5 kN/m (Tests compatibility with cementitious and fibrous fireproofing)	ASTM E 736

2.2 MISCELLANEOUS MATERIALS

2.2.1 Glovebag

Glovebags shall be provided as described in 29 CFR 1926 Section .1101. The glovebag assembly shall be 6 mil thick plastic, prefabricated and seamless at the bottom with preprinted OSHA warning label.

2.2.2 Duct Tape

Industrial grade duct tape of appropriate widths suitable for bonding sheet plastic and disposal container shall be provided.

2.2.3 Disposal Bags

Leak-tight bags, 6 mil thick, shall be provided for placement of asbestos generated waste.

2.2.4 Fiberboard Drums

Fiberboard drums, if used, shall be waxed coated 55-gallon capacity with metal ring at the top for lifting.

2.2.5 Cardboard Boxes

Heavy-duty corrugated cardboard boxes coated with plastic or wax to retard deterioration from moisture shall be provided, if required by state and local requirements. Boxes shall fit into selected ACM disposal bags. Filled boxes shall be sealed leak-tight with duct tape.

2.2.6 Polyethylene Sheet

Film shall be clear and conform to ASTM D 4397.

2.2.6.1 Flame Resistant

Where a potential for fire exists, flame-resistant sheets shall be provided. Film shall be frosted and shall conform to the requirements of NFPA 701.

2.2.6.2 Reinforced

Reinforced sheets shall be provided where high skin strength is required such as where it constitutes the only barrier between the regulated area and the outdoor environment. The sheet stock shall consist of translucent, nylon-reinforced or woven-polyethylene thread laminated between two layers of polyethylene film. Film shall meet flame resistant standards of NFPA 701.

2.2.7 Amended Water

Amended water shall meet the requirements of ASTM D 1331.

2.2.8 Mastic Removing Solvent

Mastic removing solvent shall be nonflammable and shall not contain methylene chloride, glycol ether, or halogenated hydrocarbons. Solvents used onsite shall have a flash point greater than 140 degrees F.

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall use the engineering controls and work practices required in 29 CFR 1926 Section .1101(g) in all operations regardless of the levels of exposure. Personnel shall wear and utilize protective clothing and equipment as specified. Eating, smoking, drinking, chewing or applying cosmetics shall not be permitted in the regulated area. All hot work (burning, cutting, welding, etc.) shall be conducted under strictly controlled conditions in conformance with 29 CFR 1926 Section .352, Fire Prevention and in compliance with Activity Hazard Analyses Appendix (see paragraph 1.7.2). Personnel of other trades, not engaged in asbestos abatement activities, shall not be exposed at any time to airborne concentrations of asbestos unless all the administrative and personal protective provisions of the Contractor's Accident Prevention Plan are complied with. Power to the regulated area shall be locked-out and tagged in accordance with 29 CFR 1910 and temporary electrical service with ground fault circuit interrupters shall be provided as needed. Temporary electrical service shall be disconnected when necessary for wet removal. The Contractor shall stop abatement work in the regulated area immediately when the airborne total fiber concentration: (1) equals or exceeds 0.01 f/cc or the pre-abatement concentration, whichever is greater, outside the regulated area, or (2) equals or exceeds 1.0 f/cc inside the regulated area. The Contractor shall correct the condition to the satisfaction of the Contracting Officer, including visual inspection and air sampling, at no additional expense to the government. Work will resume only upon notification by the Contracting Officer. Corrective actions shall be documented.

3.2 PROTECTION OF ADJACENT WORK OR AREAS TO REMAIN

Asbestos abatement shall be performed without damage to or contamination of adjacent work or area. Where such work or area is damaged or contaminated, as verified by the Contracting Officer using visual inspection or sample analysis, it shall be restored to its original condition or decontaminated by the Contractor at no expense to the Government as deemed appropriate by the Contracting Officer. This includes inadvertent spill of dirt, dust or debris in which it is reasonable to conclude that asbestos may exist. When these spills occur, work shall stop in all effected areas immediately and the spill shall be cleaned. When satisfactory visual inspection and air sampling analysis results are obtained and have been evaluated by the Contractor's Designated IH and the Contracting Officer, work may proceed.

3.3 OBJECTS

The Government will remove objects such as furniture and equipment to be salvaged by the Government.

3.4 BUILDING VENTILATION SYSTEM AND CRITICAL BARRIERS

Building ventilating systems supplying air into or returning air out of an regulated area shall be shut down and isolated by lockable switch or other positive means in accordance with 29 CFR 1910 Section .147. The components of the ventilation system passing through a regulated area shall be completely isolated by airtight seals to prevent the spread of contamination throughout the system. Air-tight critical barriers shall be installed on all building ventilating openings located inside the regulated area that supply or return air from the building ventilation system or serve to exhaust air from the building. The critical barriers shall consist of air-tight rigid covers for building ventilation supply and

exhaust grills where the ventilation system is required to remain in service during abatement with at least 2 layers of polyethylene sheet. Edges to wall, ceiling and floor surfaces shall be sealed with industrial grade duct tape.

3.5 PRECLEANING

Surfaces shall be cleaned by HEPA vacuum and adequately wet wiped prior to establishment of containment. The Contractor shall identify these surfaces in the Contractor's Asbestos Hazard Abatement Plan.

3.6 METHODS OF COMPLIANCE

3.6.1 Mandated Practices

The Contractor shall employ proper handling procedures in accordance with 29 CFR 1926 and 40 CFR 61 Subpart M, and the specification requirements herein. The specific abatement techniques and items identified shall be detailed in the Contractor's Asbestos Hazard Abatement Plan including, but not limited to, details of construction materials, equipment, and handling procedures. The Contractor shall use the following engineering controls and work practices in all operations, regardless of the levels of exposure:

a. Vacuum cleaners equipped with HEPA filters to collect debris and dust containing ACM.

b. Wet methods or wetting agents to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup; except where it can be demonstrated that the use of wet methods is unfeasible due to, for example, the creation of electrical hazards, equipment malfunction, and in roofing.

c. Prompt clean-up and disposal in leak-tight containers of wastes and debris contaminated with asbestos.

d. Inspection and repair of polyethylene in work and high traffic areas.

e. Cleaning of equipment and surfaces of containers filled with ACM prior to removing them from the equipment room or area.

3.6.2 Control Methods

The Contractor shall use the following control methods to comply with the PELs:

a. Local exhaust ventilation equipped with HEPA filter dust collection systems;

b. Enclosure or isolation of processes producing asbestos dust;

c. Ventilation of the regulated area to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter;

d. Use of other work practices and engineering controls;

e. Where the feasible engineering and work practice controls described above are not sufficient to reduce employee exposure to

or below the PELs, the Contractor shall use them to reduce employee exposure to the lowest levels attainable by these controls and shall supplement them by the use of respiratory protection that complies with paragraph, RESPIRATORY PROTECTION PROGRAM.

3.6.3 Unacceptable Practices

The following work practices and engineering controls shall not be used for work related to asbestos or for work which disturbs ACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments:

a. High-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air.

b. Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.

c. Dry sweeping, shoveling, or other dry clean-up of dust and debris containing ACM.

d. Employee rotation as a means of reducing employee exposure to asbestos.

3.6.4 Class I Work

In addition to requirements of paragraphs Mandated Practices and Control Methods, the following engineering controls and work practices shall be used:

a. A Competent Person shall supervise the installation and operation of the control system.

b. For jobs involving the removal of more than 25 feet or 10 square feet of TSI or surfacing material, the Contractor shall place critical barriers over all openings to the regulated area.

c. HVAC systems shall be isolated in the regulated area by sealing with a double layer of plastic or air-tight rigid covers.

d. Impermeable dropcloths (6 mil or greater thickness) shall be placed on surfaces beneath all removal activity.

e. Objects within the regulated area shall be handled as specified in paragraph OBJECTS.

f. Where a negative exposure assessment has not been provided or where exposure monitoring shows the PEL was exceeded, the regulated area shall be ventilated to move contaminated air away from the employee's breathing zone toward a HEPA unit or collection device.

3.6.5 Specific Control Methods for Class I Work

In addition to requirements of paragraph Class I Work, Class I asbestos work shall be performed using the control methods identified in the

subparagraphs below.

3.6.5.1 Negative Pressure Enclosure (NPE) System

The NPE system shall provide at least 4 air changes per hour inside the containment. The local exhaust unit equipment shall be operated 24 hours per day, until the containment is removed and shall be leak-proof to the filter and equipped with HEPA filters. Air movement shall be directed away from the employees and toward a HEPA filtration device. The NPE shall be smoke tested for leaks at the beginning of each shift. Local exhaust equipment shall be sufficient to maintain a minimum pressure differential of minus 0.02 inch of water column relative to adjacent, unsealed areas. Pressure differential shall be monitored continuously, 24 hours per day, with an automatic manometric recording instrument. Pressure differential recordings shall be provided daily on the same day collected. Readings shall be reviewed by the Contractor's Designated Competent Person and IH prior to submittal. The Contracting Officer shall be notified immediately if the pressure differential falls below the prescribed minimum. In no case shall the building ventilation system be used as the local exhaust system for the regulated area. The local exhaust system shall terminate out of doors unless an alternate arrangement is allowed by the Contract Officer. All filters used shall be new at the beginning of the project and shall be periodically changed as necessary and disposed of as ACM waste.

3.6.5.2 Glovebag Systems

The glovebag system shall be used to remove ACM from straight runs of piping and elbows and other connections. Glovebags shall be used without modification and shall be smoke-tested for leaks and any leaks sealed prior to use. Glovebags shall be installed to completely cover the circumference of pipe or other structures where the work is to be done. Glovebags shall be used only once and shall not be moved. They shall not be used on surfaces whose temperature exceeds 150 degrees F. Prior to disposal glovebags shall be collapsed by removing air within them using a HEPA vacuum. Before beginning the operation, loose and friable material adjacent to the glovebag operation shall be wrapped and sealed in two layers of plastic or otherwise rendered intact. At least two persons shall perform Class I glovebag removal. Asbestos regulated work areas shall be established as specified and shown on detailed drawings and plans for glovebag abatement. Designated boundary limits for the asbestos work shall be established with rope or other continuous barriers and all other requirements for asbestos control areas shall be maintained including area signage and boundary warning tape.

a. In addition to requirements for negative pressure glovebag systems above, the Contractor shall attach HEPA vacuum systems or other devices to the bag to prevent collapse during removal of ACM from straight runs of piping and elbows and other connections.

b. The negative pressure glove boxes used to remove ACM from pipe runs shall be fitted with gloved apertures and a bagging outlet and constructed with rigid sides from metal or other material which can withstand the weight of the ACM and water used during removal. A negative pressure shall be created in the system using a HEPA filtration system. The box shall be smoked tested for leaks prior to each use.

3.6.5.3 Mini-Enclosures

Single Bulkhead Containment, Double Bulkhead Containment or Mini-Containment (small walk-in enclosure) to accommodate no more than two persons, may be used if the disturbance or removal can be completely contained by the enclosure with the following specifications and work practices. The mini-enclosure shall be inspected for leaks and smoke tested before each use. Air movement shall be directed away from the employee's breathing zone within the mini-enclosure.

3.6.6 Class II Work

In addition to the requirements of paragraphs Mandated Practices and Control Methods, the following engineering controls and work practices shall be used:

a. A Competent Person shall supervise the work.

b. For indoor work, critical barriers shall be placed over all openings to the regulated area.

c. Impermeable dropcloths shall be placed on surfaces beneath all removal activity.

3.6.7 Specific Control Methods for Class II Work

In addition to requirements of paragraph Class II Work, Class II work shall be performed using the following methods:

3.6.7.1 Vinyl and Asphalt Flooring Materials

When removing vinyl and asphalt flooring materials which contain ACM, the Contractor shall use the practices as described in the Contractor's Asbestos Hazard Abatement Plan. Resilient sheeting shall be removed by adequately wet methods. Tiles shall be removed intact (if possible); wetting is not required when tiles are heated and removed intact. Flooring or its backing shall not be sanded. Scraping of residual adhesive and/or backing shall be performed using wet methods. Mechanical chipping is prohibited unless performed in a negative pressure enclosure. Dry sweeping is prohibited. The Contractor shall use vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) to clean floors.

3.6.7.2 Other Class II Jobs

The Contractor shall use the following work practices when performing Class II removal of ACM: The material shall be thoroughly wetted with amended water prior and during its removal. The material shall be removed in an intact state. Cutting, abrading or breaking the material shall be prohibited. The ACM removed shall be immediately bagged or wrapped.

3.6.8 Cleaning After Asbestos Removal

After completion of all asbestos removal work, surfaces from which ACM has been removed shall be wet wiped or sponged clean, or cleaned by some equivalent method to remove all visible residue. Run-off water shall be collected and filtered through a dual filtration system. A first filter shall be provided to remove fibers 20 micrometers and larger, and a final filter provided that removes all fibers 5 micrometers and larger. After the gross amounts of asbestos have been removed from every surface, all

remaining visible accumulations of asbestos on floors shall be collected using plastic shovels, rubber squeegees, rubber dustpans, and HEPA vacuum cleaners as appropriate to maintain the integrity of the regulated area. When all TSI and surfacing material has been removed, workmen shall use HEPA vacuum cleaners to vacuum every surface. Particular attention shall be paid to those surfaces or locations which could harbor accumulations or residual asbestos dust.

3.6.9 Class I Asbestos Work Response Action Detail Sheets

The Contractor shall describe the abatement method and set-up details to be used for each abatement work task in Table 1, in the Contractor's Asbestos Hazard Abatement Plan.

3.6.10 Class II Asbestos Work Response Action Detail Sheets

The Contractor shall describe the abatement method and set-up details to be used for each abatement work task in Table 1, in the Contractor's Asbestos Hazard Abatement Plan.

3.6.11 Abatement of Asbestos Contaminated Soil (Only applicable if Contractor has contaminated soil with asbestos waste)

Soil shall be removed to a minimum depth of 2 inches., if it is contaminated by asbestos waste during execution of this project. Soil shall be thoroughly dampened with amended water and then removed by manual shoveling into labeled containers. The workers shall be closely monitored for exposure to asbestos fiber and heat exhaustion. The minimum ventilation shall be 8 air changes per hour through a local exhaust HEPA system.

3.6.12 Sealing Contaminated Items Designated for Disposal

Contaminated architectural, mechanical, and electrical appurtenances such as Venetian blinds, full height partitions, carpeting, duct work, pipes and fittings, radiators, light fixtures, conduit panels, and other contaminated items designated for removal shall be coated with an asbestos lockdown encapsulant at the demolition site before being removed from the asbestos control area. These items need to be vacuumed prior to application of the lockdown encapsulant. The asbestos lockdown encapsulant shall be tinted a contrasting color and shall be spray applied by airless method. Thoroughness of sealing operation shall be visually gauged by the extent of colored coating on exposed surfaces.

3.7 FINAL CLEANING AND VISUAL INSPECTION

Upon completion of abatement, the regulated area shall be cleaned by collecting, packing, and storing all gross contamination. A final cleaning shall be preformed using HEPA vacuum and wet cleaning of all exposed surfaces and objects in the regulated area. Upon completion of the cleaning, the Contractor shall conduct a visual pre-inspection of the cleaned area in preparation for a final inspection before final air clearance monitoring and recleaning, as necessary. Upon completion of the final cleaning, the Contractor and the Contracting Officer shall conduct a final visual inspection of the cleaned regulated area in accordance with ASTM E 1368 and document the results on the Final Cleaning and Visual Inspection. If the Contracting Officer rejects the clean regulated area as not meeting final cleaning requirements, the Contractor shall reclean as necessary and have a follow-on inspection conducted with the Contracting

Officer. Recleaning and follow-up reinspection shall be at the Contractor's expense.

3.8 LOCKDOWN

Prior to removal of plastic barriers and after clean-up of gross contamination and final visual inspection, a post removal (lockdown) encapsulant shall then be spray applied to ceiling, walls, floors, and other surfaces in the regulated area.

3.9 EXPOSURE ASSESSMENT AND AIR MONITORING

3.9.1 General Requirements

Exposure assessment, air monitoring and analysis of airborne concentration of asbestos fibers shall be performed in accordance with 29 CFR 1926 Section .1101, the Contractor's air monitoring plan, and as specified. Personal exposure air monitoring (collected at the breathing zone) that is representative of the exposure of each employee who is assigned to work within a regulated area shall be directed by the CIH and performed by the IHT (see paragraph 1.5.2, subpart c). The Contractor shall be responsible for fees associated with exposure assessment, air monitoring and final clearance. Breathing zone samples shall be taken for at least 25 percent of the workers in each shift, or a minimum of two, whichever is greater. Air monitoring results at the 95 percent confidence level shall be calculated as shown in Table 2 at the end of this section. The Contractor shall provide an independent testing laboratory with qualified analysts and appropriate equipment to conduct sample analyses of air samples using the methods prescribed in 29 CFR 1926 Section .1101 to include NIOSH Pub No. 84-100 Method 7400.] Preabatement and abatement environmental air monitoring shall be performed by the IHT. Final clearance environmental air monitoring, shall be performed by the IHT. Environmental and final clearance air monitoring shall be performed using NIOSH Pub No. 84-100 Method 7400 (PCM) with optional confirmation of results by NIOSH Pub No. 84-100 Method 7402 (TEM). For environmental and final clearance, air monitoring shall be conducted at a sufficient velocity and duration to establish the limit of detection of the method used at 0.005 f/cc. Confirmation of asbestos fiber concentrations (asbestos f/cc) from environmental and final clearance samples collected and analyzed by NIOSH Pub No. 84-100 Method 7400 (total f/cc) may be conducted using TEM in accordance with NIOSH Pub No. 84-100 Method 7402. When such confirmation is conducted, it shall be from the same sample filter used for the NIOSH Pub No. 84-100 Method 7400 PCM analysis. For all Contractor required environmental or final clearance air monitoring, confirmation of asbestos fiber concentrations, using NIOSH Pub No. 84-100 Method 7402, shall be at the Contractor's expense. Monitoring may be duplicated by the Government at the discretion of the Contracting Officer. Results of breathing zone samples shall be posted at the job site and made available to the Contracting Officer. The Contractor shall maintain a fiber concentration inside a regulated area equal to or less than 0.1 f/cc expressed as an 8 hour, time-weighted average (TWA) during the conduct of the asbestos abatement. If fiber concentration rises above 0.1 f/cc, work procedures shall be investigated with the Contracting Officer to determine the cause. At the discretion of the Contracting Officer, fiber concentration may exceed 0.1 f/cc but shall not exceed 1.0 f/cc expressed as an 8-hour TWA. The Contractor's workers shall not be exposed to an airborne fiber concentration in excess of 1.0 f/cc, as averaged over a sampling period of 30 minutes. Should either an environmental concentration of 1.0 f/cc expressed as an 8-hour TWA or a personal excursion concentration of 1.0

f/cc expressed as a 30-minute sample occur inside a regulated work area, the Contractor shall stop work immediately, notify the Contracting Officer, and implement additional engineering controls and work practice controls to reduce airborne fiber levels below prescribed limits in the work area. Work shall not restart until authorized by the Contracting Officer.

3.9.2 Initial Exposure Assessment

The Contractor's Designated IH shall conduct an exposure assessment immediately before or at the initiation of an asbestos abatement operation to ascertain expected exposures during that operation. The assessment shall be completed in time to comply with the requirements which are triggered by exposure data or the lack of a negative exposure assessment, and to provide information necessary to assure that all control systems planned are appropriate for that operation. The assessment shall take into consideration both the monitoring results and all observations, information or calculations which indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the operations of the Contractor which indicate the levels of airborne asbestos likely to be encountered on the job. For Class I asbestos work, until the employer conducts exposure monitoring and documents that employees on that job will not be exposed in excess of PELs, or otherwise makes a negative exposure assessment, the Contractor shall presume that employees are exposed in excess of the PEL-TWA and PEL-Excursion Limit.

3.9.3 Negative Exposure Assessment

The Contractor shall provide a negative exposure assessment for the specific asbestos job which will be performed. The negative exposure assessment shall be provided within 2 days of the initiation of the project and conform to the following criteria for each type of abatement work task.

a. Objective Data: Objective data demonstrating that the product or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the PEL-TWA and PEL-Excursion Limit under those work conditions having the greatest potential for releasing asbestos;

b. Prior Asbestos Jobs: Where the Contractor has monitored prior asbestos jobs for the PEL and the PEL-Excursion Limit within 12 months of the current job, the monitoring and analysis were performed in compliance with asbestos standard in effect; and the data were obtained during work operations conducted under workplace conditions "closely resembling" the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor's current operations, the operations were conducted by employees whose training and experience are no more extensive that of employees performing the current job, and these data show that under the conditions prevailing and which will prevail in the current workplace there is a high degree of certainty that employee exposures will not exceed the PEL-TWA and PEL-Excursion Limit; or

c. Initial Exposure Monitoring: The results of initial exposure monitoring of the current job made from breathing zone air samples that are representative of the 8-hour PEL-TWA and 30-minute short-term exposures of each employee covering operations which

are most likely during the performance of the entire asbestos job to results in exposures over the PELs.

3.9.4 Preabatement and Environmental Air Monitoring

Preabatement environmental air monitoring shall be established 1 day prior to the masking and sealing operations for each regulated area to determine background concentrations before abatement work begins. As a minimum, preabatement air samples shall be collected using NIOSH Pub No. 84-100 Method 7400, PCM at these locations: outside the building; inside the building, but outside the regulated area perimeter; and inside each regulated work area. One sample shall be collected for every 2000 square feetof floor space. At least two samples shall be collected outside the building: at the exhaust of each HEPA unit; and downwind from the abatement site. The PCM samples shall be analyzed within 24 hours; and if any result in fiber concentration greater than 0.01 f/cc, asbestos fiber concentration shall be confirmed using NIOSH Pub No. 84-100 Method 7402 (TEM).

3.9.5 Environmental Air Monitoring During Abatement

Until an exposure assessment is provided to the Contracting Officer demonstrating that the product or material containing asbestos minerals, or the abatement involving such product or material, cannot release airborne asbestos fibers in concentrations exceeding 0.01 f/cc as a TWA under those work conditions having the greatest potential for releasing asbestos, environmental air monitoring shall be conducted at locations and frequencies that will accurately characterize any evolving airborne asbestos fiber concentrations. The monitoring shall be at least once per shift at locations including, but not limited to, close to the work inside each regulated area; preabatement sampling locations; outside entrances to regulated areas; close to glovebag operations; representative locations outside of the perimeter of regulated areas; inside each clean room; and at the exhaust discharge point of each local exhaust system ducted to the outside of a containment (if used). If the sampling outside regulated area shows airborne fiber levels have exceeded background or 0.01 f/cc, whichever is greater, all work shall be stopped immediately, and the Contracting Officer notified. The condition causing the increase shall be corrected. Work shall not restart until authorized by the Contracting Officer.

3.9.6 Final Clearance Air Monitoring

Prior to conducting final clearance air monitoring, the Contractor and the Contracting Officer shall conduct a final visual inspection of the regulated area where asbestos abatement has been completed. The certification of the final visual inspection shall be completed as appended herein. Final clearance air monitoring shall not begin until acceptance of the Contractor's final cleaning by the Contracting Officer. The Contractor's Designated IH shall conduct final clearance air monitoring using aggressive air sampling techniques as defined in EPA 560/5-85-024 or as otherwise required by federal or state requirements. The sampling and analytical method used will be NIOSH Pub No. 84-100 Method 7400 (PCM) and Table 3 with confirmation of results by NIOSH Pub No. 84-100 Method 7402 (TEM).

3.9.6.1 Final Clearance Requirements, NIOSH PCM Method

For PCM sampling and analysis using NIOSH Pub No. 84-100 Method 7400, the

fiber concentration inside the abated regulated area, for each airborne sample, shall be less than 0.01 f/cc. The abatement inside the regulated area is considered complete when every PCM final clearance sample is below the clearance limit. If any sample result is greater than 0.01 total f/cc, the asbestos fiber concentration (asbestos f/cc) shall be confirmed from that same filter using NIOSH Pub No. 84-100 Method 7402 (TEM) at Contractor's expense. If any confirmation sample result is greater than 0.01 asbestos f/cc, abatement is incomplete and recleaning is required. Upon completion of any required recleaning, resampling with results to meet the above clearance criteria shall be done.

3.9.6.2 Air Clearance Failure

Should clearance sampling results fail to meet the final clearance requirements, the Contractor shall pay all costs associated with all required recleaning, resampling and analysis until final clearance requirements are met.

3.9.7 Air-Monitoring Results and Documentation

Air sample fiber counting shall be completed and results provided within 24 hours (breathing zone samples), and 24 hours (environmental/clearance monitoring) after completion of a sampling period. The Contracting Officer shall be notified immediately of any airborne levels of asbestos fibers in excess of established requirements. Written sampling results shall be provided within 5 working days of the date of collection. The written results shall be signed by testing laboratory analyst, testing laboratory principal and the Contractor's Designated IH. The air sampling results shall be documented on a Contractor's daily air monitoring log. The daily air monitoring log shall contain the following information for each sample:

a. Sampling and analytical method used;

b. Date sample collected;

c. Sample number;

d. Sample type: BZ = Breathing Zone (Personal), P = Preabatement, E = Environmental, C = Abatement Clearance;

e. Location/activity/name where sample collected;

f. Sampling pump manufacturer, model and serial number, beginning flow rate, end flow rate, average flow rate (L/min);

g. Calibration date, time, method, location, name of calibrator, signature.

h. Sample period (start time, stop time, elapsed time (minutes);

i. Total air volume sampled (liters);

j. Sample results for final clearance;

k. Laboratory name, location, analytical method, analyst, confidence level. In addition, the printed name and a signature and date block for the Industrial Hygienist who conducted the sampling and for the Industrial Hygienist who reviewed the daily air monitoring log verifying the accuracy of the information.

3.10 CLEARANCE CERTIFICATION

When asbestos abatement is complete and all ACM waste is removed from the regulated areas, and final clean-up is completed, the Contracting Officer will certify the areas as safe before the warning signs and boundary warning tape can be removed. After final clean-up and acceptable airborne concentrations are attained, but before the HEPA unit is turned off and the containment removed, the Contractor shall remove all pre-filters on the building HVAC system and provide new pre-filters. The Contractor shall dispose of such filters as asbestos contaminated materials. HVAC mechanical, and electrical systems shall be re-established in proper working order. The Contractor and the Contracting Officer will visually inspect all surfaces within the containment for residual material or accumulated debris. The Contractor shall reclean all areas showing dust or residual materials. The Contracting Officer will certify in writing that the area is safe before unrestricted entry is permitted. The Government will have the option to perform monitoring to certify the areas are safe before entry is permitted.

3.11 CLEANUP AND DISPOSAL

3.11.1 Title to ACM Materials

ACM material resulting from abatement work, except as specified otherwise, shall become the property of the Contractor and shall be disposed of as specified and in accordance with applicable federal, state and local regulations.

3.11.2 Collection and Disposal of Asbestos

All ACM waste including contaminated wastewater filters, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing, shall be collected, wetted adequately, placed in leak-tight containers such as double plastic bags; sealed double wrapped polyethylene sheet; sealed fiberboard boxes; or other approved containers. All friable and non-friable asbestos waste and asbestos contaminated waste shall be disposed of at the WSMR Asbestos Landfill. For temporary storage, sealed impermeable containers shall be stored in an asbestos waste load-out unit or in a storage/transportation conveyance (i.e., dumpster, roll-off waste boxes, etc.) in a manner acceptable to and in an area assigned by the Contracting Officer. Procedure for hauling and disposal shall comply with 40 CFR 61 Subpart M, state, regional, and local standards.

3.11.3 Scale Weight Measurement

Scales used for measurement shall be public scales. Weighing shall be at a point nearest the work at which a public scale is available. Scales should be standard truck scales of the beam type and shall be equipped with the type registering beam and an "over and under" indicator and be capable of accommodating the entire vehicle. Scales shall be tested, approved and sealed by an inspector of the State of New Mexico. Scales shall be calibrated and resealed as often as necessary and at least once every three months to insure continuous accuracy. Vehicles used for hauling ACM shall be weighed empty daily at such time as directed and each shall bear a plainly legible identification mark.

3.11.4 Weigh Bill and Delivery Tickets

Copies of weigh bills and delivery tickets shall be submitted to the Contracting Officer during the progress of the work. The Contractor shall furnish the Contracting Officer scale tickets for each load of ACM weighed and certified. These tickets shall include tare weight, identification mark for each vehicle weighed, date, time and location of loading and unloading. Tickets shall be furnished at the point and time individual trucks arrive at the worksite. A master log of all vehicle loading shall be furnished for each day of loading operations. Before the final statement is allowed, the Contractor shall file with the Contracting Officer certified weigh bills and/or certified tickets and manifests of all ACM actually disposed by the Contractor for this contract.

3.11.5 Asbestos Waste Shipment Record

The Contractor shall complete and provide the Contracting Officer final completed copies of the Waste Shipment Record for all shipments of waste material as specified in 40 CFR 61 Subpart M and other required state waste manifest shipment records within 3 days of delivery to the landfill. Each Waste Shipment Record shall be signed and dated by the generator, the waste transporter and disposal facility operator.

TABLE 1-A

INDIVIDUAL WORK TASK DATA ELEMENT

(NOTE: Reference Drawing No.00H001 for this item)

1. WORK TASK DESIGNATION NUMBER: No.1
2. LOCATION OF WORK TASK: Building 23670, exterior
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Black coating/yellow insulation on A/C duct
   Type of Asbestos: Chrysotile
   % asbestos content: 15 %
4. ABATEMENT TECHNIQUE TO BE USED: REM and to be specified in the Contractor's Asbestos Hazard Abatement Plan.
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK: Class I
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK: Friable
7. FORM: EA ; CONDITION OF ACM: F
8. QUANTITY: 250 Square Feet

NOTES:

(1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
(2) Specific location of work (building, floor, area i.e. Building 1421, 2nd Floor, Rm 201)
(3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
(4) Technique to be used: Removal = REM.
(5) Class designation: Class I or II(OSHA designation).
(6) Friability of materials: Check the applicable EPA NESHAP friability designation.
(7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME. Condition: Good = G; Fair = F; Poor = P.
(8) Quantity of ACM for each work task in linear feet or square feet.

TABLE 1-B

INDIVIDUAL WORK TASK DATA ELEMENT

(Note: Reference Drawing No.00H001 for this item)

1. WORK TASK DESIGNATION NUMBER: No.2
2. LOCATION OF WORK TASK: Building 23670, exterior
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Black mastic around condenser drum, 2-inch wide
   Type of Asbestos: Chrysotile
   % asbestos content: 20 %
4. ABATEMENT TECHNIQUE TO BE USED: REM and to be specified in the Contractor's Asbestos Hazard Abatement Plan.
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK: Class II
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK: non-friable
7. FORM: EA ; CONDITION OF ACM: F
8. QUANTITY: 20 Square Feet

NOTES:

(1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
(2) Specific location of work (building, floor, area i.e. Building 1421, 2nd Floor, Rm 201)
(3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
(4) Technique to be used: Removal = REM.
(5) Class designation: Class I or II(OSHA designation).
(6) Friability of materials: Check the applicable EPA NESHAP friability designation.
(7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME. Condition: Good = G; Fair = F; Poor = P.
(8) Quantity of ACM for each work task in linear feet or square feet.

TABLE 1-C

INDIVIDUAL WORK TASK DATA ELEMENT

(Note: Reference Drawing No.00H001 for this item)

1. WORK TASK DESIGNATION NUMBER: No.3
2. LOCATION OF WORK TASK: Building 23670, exterior
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: White Flexible connector, 6-inch wide
   Type of Asbestos: Chrysotile
   % asbestos content: 40 %
4. ABATEMENT TECHNIQUE TO BE USED: REM and to be specified in the Contractor's Asbestos Hazard Abatement Plan.
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK: Class I
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK: friable
7. FORM: EA ; CONDITION OF ACM: G
8. QUANTITY: 25 linear Feet

NOTES:

(1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
(2) Specific location of work (building, floor, area i.e. Building 1421, 2nd Floor, Rm 201)
(3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
(4) Technique to be used: Removal = REM.
(5) Class designation: Class I or II(OSHA designation).
(6) Friability of materials: Check the applicable EPA NESHAP friability designation.
(7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME. Condition: Good = G; Fair = F; Poor = P.
(8) Quantity of ACM for each work task in linear feet or square feet.

TABLE 1-D

INDIVIDUAL WORK TASK DATA ELEMENT

(Note: Reference Drawing No.00H001 for this item)

1. WORK TASK DESIGNATION NUMBER: No.4
2. LOCATION OF WORK TASK: Building 23670, exterior
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Caulking at door and frame, 6-inch wide
   Type of Asbestos: Chrysotile
   % asbestos content: 10 %
4. ABATEMENT TECHNIQUE TO BE USED: REM and to be specified in the Contractor's Asbestos Hazard Abatement Plan.
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK: Class II
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK: non-friable
7. FORM: EA ; CONDITION OF ACM: G
8. QUANTITY: 20 Linear Feet

NOTES:

(1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
(2) Specific location of work (building, floor, area i.e. Building 1421, 2nd Floor, Rm 201)
(3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
(4) Technique to be used: Removal = REM.
(5) Class designation: Class I or II(OSHA designation).
(6) Friability of materials: Check the applicable EPA NESHAP friability designation.
(7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME. Condition: Good = G; Fair = F; Poor = P.
(8) Quantity of ACM for each work task in linear feet or square feet.

TABLE 1-E

INDIVIDUAL WORK TASK DATA ELEMENT

(Note: Reference Drawing No.00H001 for this item)

1. WORK TASK DESIGNATION NUMBER: No.5
2. LOCATION OF WORK TASK: Building 23672, exterior
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Black coating/yellow insulation on A/C duct
   Type of Asbestos: Chrysotile
   % asbestos content: 15 %
4. ABATEMENT TECHNIQUE TO BE USED: REM and to be specified in the Contractor's Asbestos Hazard Abatement Plan.
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK: Class I
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK: friable

7. FORM: EA ; CONDITION OF ACM: F
8. QUANTITY: 250 Square Feet

NOTES:

(1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
(2) Specific location of work (building, floor, area i.e. Building 1421, 2nd Floor, Rm 201)
(3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
(4) Technique to be used: Removal = REM.
(5) Class designation: Class I or II(OSHA designation).
(6) Friability of materials: Check the applicable EPA NESHAP friability designation.
(7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME. Condition: Good = G; Fair = F; Poor = P.
(8) Quantity of ACM for each work task in linear feet or square feet.

TABLE 1-F

INDIVIDUAL WORK TASK DATA ELEMENT

(Note: Reference Drawing No.00H001 for this item)

1. WORK TASK DESIGNATION NUMBER: No.6
2. LOCATION OF WORK TASK: Building 23672, exterior
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Black mastic around condenser drum, 2-inch wide
   Type of Asbestos: Chrysotile
   % asbestos content: 20 %
4. ABATEMENT TECHNIQUE TO BE USED: REM and to be specified in the Contractor's Asbestos Hazard Abatement Plan.
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK: Class II
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK: non-friable
7. FORM: EA ; CONDITION OF ACM: F
8. QUANTITY: 20 Linear Feet

NOTES:

(1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
(2) Specific location of work (building, floor, area i.e. Building 1421, 2nd Floor, Rm 201)
(3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
(4) Technique to be used: Removal = REM.
(5) Class designation: Class I or II(OSHA designation).
(6) Friability of materials: Check the applicable EPA NESHAP friability designation.
(7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME. Condition: Good = G; Fair = F; Poor = P.
(8) Quantity of ACM for each work task in linear feet or square feet.

TABLE 1-G

INDIVIDUAL WORK TASK DATA ELEMENT

(Note: Reference Drawing No.00H001 for this item)

1. WORK TASK DESIGNATION NUMBER: No.7
2. LOCATION OF WORK TASK: Building 23672, exterior
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Flexible connector, 6-inch wide
   Type of Asbestos: Chrysotile
   % asbestos content: 40 %
4. ABATEMENT TECHNIQUE TO BE USED: REM and to be specified in the Contractor's Asbestos Hazard Abatement Plan.
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK: Class I
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK: friable
7. FORM: EA ; CONDITION OF ACM: G
8. QUANTITY: 25 Linear Feet

NOTES:

(1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
(2) Specific location of work (building, floor, area i.e. Building 1421, 2nd Floor, Rm 201)
(3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
(4) Technique to be used: Removal = REM.
(5) Class designation: Class I or II(OSHA designation).
(6) Friability of materials: Check the applicable EPA NESHAP friability designation.
(7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME. Condition: Good = G; Fair = F; Poor = P.
(8) Quantity of ACM for each work task in linear feet or square feet.

TABLE 1-H

INDIVIDUAL WORK TASK DATA ELEMENT

(Note: Reference Drawing No.00H001 for this item)

1. WORK TASK DESIGNATION NUMBER: No.8
2. LOCATION OF WORK TASK: Building 23672, exterior
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Caulking around door and door frame, 6-inch wide
   Type of Asbestos: Chrysotile
   % asbestos content: 10 %
4. ABATEMENT TECHNIQUE TO BE USED: REM and to be specified in the Contractor's Asbestos Hazard Abatement Plan.
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK: Class II
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK: non-friable
7. FORM: EA ; CONDITION OF ACM: G
8. QUANTITY: 20 Linear Feet

NOTES:

(1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
(2) Specific location of work (building, floor, area i.e. Building 1421, 2nd Floor, Rm 201)
(3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
(4) Technique to be used: Removal = REM.
(5) Class designation: Class I or II(OSHA designation).
(6) Friability of materials: Check the applicable EPA NESHAP friability designation.
(7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME. Condition: Good = G; Fair = F; Poor = P.
(8) Quantity of ACM for each work task in linear feet or square feet.

TABLE 1-I

INDIVIDUAL WORK TASK DATA ELEMENT

(Note: Reference Drawing No.00H001 for this item)

1. WORK TASK DESIGNATION NUMBER: No.9
2. LOCATION OF WORK TASK: 7-Foot diameter Corrugated Pipe Tunnel, north of Building 23670 and 23672
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Black sealant at pipe seams
   Type of Asbestos: Chrysotile
   % asbestos content: 10 %
4. ABATEMENT TECHNIQUE TO BE USED: REM and to be specified in the Contractor's Asbestos Hazard Abatement Plan.
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK: Class II
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK: non-friable
7. FORM: IA ; CONDITION OF ACM: G
8. QUANTITY: 55 Square Feet

NOTES:

(1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
(2) Specific location of work (building, floor, area i.e. Building 1421, 2nd Floor, Rm 201)
(3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
(4) Technique to be used: Removal = REM.
(5) Class designation: Class I or II(OSHA designation).
(6) Friability of materials: Check the applicable EPA NESHAP friability designation.
(7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME. Condition: Good = G; Fair = F; Poor = P.
(8) Quantity of ACM for each work task in linear feet or square feet.

TABLE 2

FORMULA FOR CALCULATION OF THE 95 PERCENT CONFIDENCE LEVEL
(Reference: NIOSH 7400)

Fibers/cc(01.95 percent CL) = X + [(X)* (1.645)* (CV)]

Where: X = ((E)(AC))/((V)(1000))

E = ((F/Nf) - (B/Nb))/Af

CV = The precision value; 0.45 shall be used unless the analytical laboratory provides the Contracting Officer with documentation (Round Robin Program participation and results) that the laboratory's precision is better.

AC = Effective collection area of the filter in square millimeters

V = Air volume sampled in liters

E = Fiber density on the filter in fibers per square millimeter

F/Nf = Total fiber count per graticule field

B/Nb = Mean field blank count per graticule field

Af = Graticule field area in square millimeters

TWA = C1/T1 + C2/T2 = Cn/Tn

Where: C = Concentration of contaminant

T = Time sampled.

TABLE 3
NI0SH METHOD 7400
PCM ENVIRONMENTAL AIR SAMPLING PROTOCOL (NON-PERSONAL)

Sample Location	Minimum No. of Samples	Filter Pore Size (Note 1)	Min. Vol. (Note 2) (Liters)	Sampling Rate (liters/min)
Inside Abatement Area	0.5/140 Square Meters	0.45 microns (Notes 3 & 4)	1500	2-10
Each Room in 1 Abatement Area Less than 140 Square meters		0.45 microns	1500	2-10
Field Blank	2	0.45 microns	0	0
Laboratory Blank	1	0.45 microns	0	0

Notes:

1. Type of filter is Mixed Cellulose Ester.
2. Ensure detection limit for PCM analysis is established at 0.005 fibers/cc.
3. One sample should be added for each additional 140 square meters. (The corresponding I-P units are 5/1500 square feet).
4. No less than 5 samples are to be taken per abatement area, plus two field blanks.

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME _____ CONTRACT NO. _____
PROJECT ADDRESS _____
CONTRACTOR FIRM NAME _____
EMPLOYEE'S NAME_____,_____,_____,_____-_____-_____
(Print) (Last) (First) (MI) Social Security Number

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH TYPES OF LUNG DISEASE AND CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NONSMOKING PUBLIC.

Your employer's contract for the above project requires that you be provided and you complete formal asbestos training specific to the type of work you will perform and project specific training; that you be supplied with proper personal protective equipment including a respirator, that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you. The Contractor's Designated Industrial Hygienist will check the block(s) for the type of formal training you have completed. Review the checked blocks prior signing this certification.

FORMAL TRAINING:

____ a. For Competent Persons and Supervisors: I have completed EPA's Model Accreditation Program (MAP) training course, "Contractor/Supervisor" that meets this State's requirements.

b. For Workers:

____ (1) For OSHA Class I work: I have completed EPA's MAP training course, "Worker" that meets this State's requirements.

____ (2) For OSHA Class II work (where there will be abatement of more than one type of Class II materials i.e. roofing, siding, floor tile, etc.): I have completed EPA's MAP training course, "Worker" that meets this State's requirements.

(3) For OSHA Class II work (there will only be abatement of one type of Class II material):

____ (a) I have completed an 8-hour training class on the elements of 29 CFR 1926 Section .1101(k)(9)(viii) in addition to the specific work practices and engineering controls of 29 CFR 1926 Section .1101(g) and hands-on training.

____ (b) I have completed EPA's MAP training course, "Worker" that meets this State's requirements.

____ (4) For OSHA Class III work: I have completed at least a 16-hour course consistent with EPA requirements for training of local education agency maintenance and custodial staff at 40 CFR 763 Section .92(a)(2) and the elements of 29 CFR 1926 Section .1101(k)(9)(viii) in addition to the specific work practices and engineering controls at 29 CFR 1926 Section .1101 and hands-on training.

____ (5) For OSHA Class IV work: I have completed at least a 2-hr course consistent with EPA requirements for training of local education agency maintenance and custodial staff at 40 CFR 763 (a)(1) and the elements of 29 CFR 1926 Section .1101(k)(9)(viii) in addition to the specific work practices and engineering controls at 29 CFR 1926 Section .1101(g) and hands-on training.

____ c. Workers, Supervisors and the Designated Competent Person: I have

completed annual refresher training as required by EPA's MAP that meets this State's requirements.0

PROJECT SPECIFIC TRAINING:
____ I have been provided and have completed the project specific training required by this Contract. My employer's Designated Industrial Hygienist and Designated Competent Person conducted the training.

RESPIRATORY PROTECTION:
____ I have been trained in accordance with the criteria in the Contractor's Respiratory Protection program. I have been trained in the dangers of handling and breathing asbestos dust and in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair and contact lens use policy of my employer.

RESPIRATOR FIT-TEST TRAINING:
____ I have been trained in the proper selection, fit, use, care, cleaning, maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the Contractor's Respiratory Program and have received a satisfactory fit. I have been assigned my individual respirator. I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time.

MEDICAL EXAMINATION:
____ I have had a medical examination within the last twelve months which was paid for by my employer. The examination included: health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made a determination regarding my physical capacity to perform work tasks on the project while wearing personal protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's Industrial Hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

___ were no limitations to performing the required work tasks.
___ were identified physical limitations to performing the required work tasks.

Date of the medical examination _____

Employee Signature _____ date _____
Contractor's Industrial Hygienist
Signature _____ date _____

ATTACHMENT

ASBESTOS BULK SAMPLE ANALYTICAL DATA

AND

SAMPLE CHAIN OF CUSTODY

-- End of Section --

SECTION 02090

LEAD-BASED PAINT ABATEMENT

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.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
49 CFR 173	Shippers - General Regulations for Shipments and Packagings
49 CFR 178	Specifications for Packaging

ENGINEERING MANUALS (EM)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

1.2 SUBMITTALS

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

SD-01 Data

Equipment List; GA.

A list of equipment and other items to be used in the work, including brand names, model, capacity, performance characteristics, quantities and other pertinent information.

SD-08 Statements

Accident Prevention Plan(APP); GA.

The Contractor shall prepare and submit APP as described in paragraph 1.10, ACCIDENTAL PREVENTION PLAN this section.

Worker Protection Plan; GA.

The Contractor shall identify the demolition items on the architectural, electrical, and mechanical demolition plans of the structure. The Contractor shall prepare a detailed Worker Protection Plan that identifies the work procedures, health, and safety measures to be used while performing work which may penetrate or disturb lead-containing paint. The plan shall address the methods to be undertaken to minimize airborne lead dust hazards to workers. The plan shall at least include the following key elements:

a. Methods of disturbing LBP or paint containing low level of lead;

b. Notifying proposed work schedules to occupants of the adjacent work areas;

c. Worker protection training requirements as required in 29 CFR 1926 .62;

d. Methods of minimizing exposure to lead dust, (i.e. dust control during work and debris transportation, wetting agent, and equipment with HEPA vacuum);

e. Personnel protective equipment; respiratory protection program and controls;

f. Engineering controls and safety measures;

g. Worker exposure assessment procedures, i.e. personal air monitoring, name of laboratory, analyst, and air monitoring technician;

h. Housekeeping;

i. Hygiene facilities and practice;

j. Medical surveillance, including medical removal protection; and

k. Sampling, testing and analytical methods to include personal air sampling requirements of 29 CFR 1926 Section .62, procedures, frequency and locations.

SD-09 Reports

Sampling Result; GA.

A daily log of the personal air sampling test results shall be reviewed by the Certified Industrial Hygienist (CIH) and submitted, in written form, no more than 48 hours after completion of the sampling cycle. The log shall list each sample result, sampling time and date, sample type, identification of personnel monitored, flow rate and duration, air volume sampled, yield of lead, cassette size, analytical method, name of

independent laboratory, analyst's and air monitoring technician, and interpretation of results. Results shall be reported in micrograms of lead per cubic meter of air. Documentation of results that exceed specified limits (personal air samples that exceed 30 micrograms per cubic meter) or as required by Federal, state or local requirements shall be highlighted in the log in such a manner to make them easily distinguishable from monitoring results that do not exceed specified or regulatory limits.

Closure Report; GA.

A Closure Report shall be provided to the Contracting Officer in 14 working days after project completion and prior to final payment (see Disposal and Documentation).

SD-13 Certificates

Quality Assurance; GA.

Certificates shall meet the requirements of paragraph QUALITY ASSURANCE. The statements shall be signed and dated by a certifying officer after the award of this contract and contain the following:

a. Contractor's name and address.

b. Project name and location.

c. The specified requirements that are being certified.

1.3 QUALITY ASSURANCE

1.3.1 Qualifications

a. Contractor: Certification that the Contractor has prior experience on projects similar in nature and extent to ensure the capability to perform the abatement in a satisfactory manner.

b. Competent Person: Certification that the Contractor's full-time onsite Competent Person meets requirements of 29 CFR 1926 Section .62 and is experienced in administration and supervision of similar projects, including work practices, protective measures for building and personnel, disposal procedures, etc. This person shall have completed a Contractor Supervisor LBP abatement course by an EPA Training Center or an equivalent certification course, and have had a minimum of 2 years on-the-job experience.

c. Testing Laboratory: The name, address, and telephone number of the independent testing laboratory selected to perform sampling and analysis for personal air samples. Documentation that the laboratory performing the analysis is an EPA National Lead Laboratory Accreditation Program (NLLAP) accredited laboratory and that it is rated proficient in the NIOSH/EPA Environmental Lead Proficiency Analytical Testing Program (ELPAT). Certification shall include accreditation for heavy metal analysis, list of experience relevant to analysis of lead in air, and a Quality Assurance and Quality Control Program. Currently, the American Association for Laboratory Accreditation (ASLA) and the American Industrial Hygiene Association (AIHA) are the EPA recognized laboratory accreditors. Documentation shall include the date of accreditation or reaccreditation.

d. Blood Lead Testing Laboratory. The name, address and telephone number of the blood lead testing laboratory; the laboratory's listing by OSHA and the U.S. Public Health Service Center for Disease Control (CDC); and documentation that the laboratory certified in the state where the work site is located.

1.3.2 Respiratory Protection Devices

Manufacturer's certification of NIOSH or the Mine Safety and Health Administration (MSHA) approval for respiratory protection devices utilized on the site.

1.3.3 Cartridges, Filters, and Vacuum Systems

Manufacturer's certification of NIOSH approval of respirator cartridges.

1.3.4 Medical Records

As required by 29 CFR 1926 Section .62 and by the state and local regulations, employees who are involved in paint disturbance shall have receive medical examinations and continued medical surveillance. Certification of such examination, including biological monitoring shall be provided by the Contractor. Records shall be retained, at Contractor expense, in accordance with 29 CFR 1910 Section .20.

1.3.5 Training

Training shall meet the requirements of 29 CFR 1926 Section .62, 29 CFR 1926 Section .59. Training shall be provided prior to the time of job assignment. Training shall be an awareness of disturbance methods specified in the Contractor's Worker Protection Plan. Training certification shall be provided prior to the start of work for all of the Contractors' workers, supervisors and Competent Person. Training shall be provided prior to start of work for all workers, supervisors, and Competent Person.

Project specific training shall be conducted prior to the start of paint disturbance work. Training shall address specific methods to be used and protection of workers as outlined in the Contractor's Worker Protection Plan.

1.4 DESCRIPTION OF WORK

This section describes the procedures and equipment required to protect workers and minimize lead dust exposure for work to be performed in Buildings 23670 and 23672 at White Sands Missile Range (WSMR), White Sands, New Mexico.

A lead survey was performed on the building materials. X-ray fluorescent (XRF) analyzer readings of the painted surfaces are appended herein.

Prior to demolition of the buildings, the Contractor shall remove LBP components in their entirety (see LBP abatement schedule on drawing no.00H001) and all other painted metallic components that have low level of lead. The Contractor shall recycle all metallic components at a scrap metal facility. The wood cover walk-way has very high XRF readings. From past experience with projects, it is very likely that the wood cover walk-way will be Toxicity Characteristic Leaching Procedure (TCLP)lead

positive for hazardous waste (5.0 mg/l). Therefore, the wood structure shall be manifested and disposed of as hazardous waste.

A composite sample of construction materials from Building 23670 was also obtained to simulate building demolition debris. The sample was tested with TCLP-lead to characterize for disposal. The composite sample TCLP-lead result is less than 0.4 milligram per liter (mg/l) which means that debris from 23670 is very likely TCLP negative for lead. Because Building 23672 is constructed at the same period of time, the building material is presumed to be TCLP negative. Therefore, the building demolition debris shall be disposed of at WSMR C and D Landfill or any state permitted lined landfill. Because the demolition structures have painted surfaces contain low level of lead, in accordance with OSHA 29 CFR 1926.62, worker protection is required unless an exposure assessment confirms the airborne level of exposure to lead is below 30 micrograms per cubic meter (ug/m3).

The Contractor shall field verify components to be removed prior to start work. Engineering controls and/or equipment which is fitted with a HEPA vacuum at the point source may be used to minimize worker exposure to lead during any disturbance of the paint surfaces (i.e. during removal of building components and demolition of the structures). Paint chips from dismantled components shall be contained, tested and disposed of in accordance with 40 CFR 261. Exposure assessment shall be performed by an independent laboratory during demolition of the structures. Documentation of the laboratory and analyst accreditation shall be included with the analytical results to be submitted in paragraph, Final Disposal.

1.5 SITE VISIT

The Contractor shall visit and investigate the site, review the drawings (both environmental and demolition plans of other engineering disciplines) with the specifications, and become familiar with conditions which will affect the work.

1.6 PROTECTION OF EXISTING WORK TO REMAIN

All work shall be performed without damaging or contaminating adjacent work areas. Where such areas are damaged or contaminated, the Contractor shall restore areas to the original condition, at no additional expense to the Government.

1.7 COORDINATION WITH OTHER WORK

Paint disturbing and disposal of debris shall be coordinated with existing work and/or concurrent work being performed in adjacent areas.

1.8 SAFETY AND HEALTH REGULATORY REQUIREMENTS

Work shall be performed in accordance with requirements of EM 385-1-1 and applicable regulations including, but not limited to 29 CFR 1910, 29 CFR 1926, especially Section .62. Matters of interpretation of the standards shall be submitted to the appropriate agency for resolution before starting work. Where these requirements vary, the most stringent shall apply.

1.9 PRECONSTRUCTION SAFETY MEETING

The Contractor and the Competent Person shall attend a preconstruction safety meeting prior to starting work. Items required to be submitted will be reviewed for completeness, and where specified, for acceptance.

1.10 ACCIDENT PREVENTION PLAN

1.10.1 Preparation and Implementation

The Accident Preparation Plan (APP) shall be prepared in accordance with EM 385-1-1, Appendix A. Where topic in Appendix A is not applicable, the APP shall justify its omission or reduced level of detail, and establish that adequate consideration was given to the topic. The APP shall cover onsite work by the Contractor or subcontractors. The Competent Person shall be responsible for development, implementation, and quality control of the content and actions required in the APP. For each anticipated work task, the APP shall establish hazards and control measures. The APP shall be easily readable and understandable by the Contractor's work force.

1.10.2 Acceptance and Modifications

The APP shall be prepared, signed and dated by the Contractors Competent Person and submitted 10 working days prior to the preconstruction safety conference. Deficiencies in the APP shall be discussed at the Preconstruction Safety Conference and the APP shall be revised to correct the deficiencies, and resubmitted for acceptance. Onsite work shall not begin until the APP has been accepted unless otherwise authorized by the Contracting Officer. One copy of the APP shall be maintained in the Contractor's jobsite file, and a second copy shall be posted where it will be accessible to personnel on the site. As work proceeds, the APP shall be adapted to new situations and conditions. Changes to the APP shall be made with concurrence of the Competent Person and Site Superintendent, and acceptance of the Contracting Officer. Should an unforeseen hazard become evident during performance of the work, the Competent Person shall bring such hazard to the attention of the Superintendent and the Contracting Officer, both verbally and in writing, for resolution as soon as possible. In the interim, the Contractor shall take necessary action to re-establish and maintain safe working conditions; and to safeguard onsite personnel, visitors, the public, and the environment. Disregard for provisions of this specification, or the accepted APP shall be cause for stopping of work until the matter is rectified.

1.10.3 Activity Hazard Analyses

An Activity Hazard Analysis (AHA) shall be prepared prior to beginning each major phase of the work and submitted for review and acceptance. Format shall be in accordance with EM 385-1-1, figure 1-1. A major phase of work is defined as an operation involving hazards not experienced in previous operations, or where a new work crew is to perform. The analysis shall define the activities and the sequence in which they are to be performed, specific hazards anticipated, and control measures to be implemented to eliminate or reduce each hazard to an acceptable level. Work shall not proceed on that phase until the Activity Hazard Analysis has been accepted and a preparatory meeting has been conducted by the Contractor to discuss content of the AHA with everyone engaged in the activity, including the Government's onsite representative. The AHA shall be continuously reviewed and modified when appropriate to address changing conditions or operations. The accepted AHA shall be appended to and become part of the APP.

1.11 RESPIRATORY PROTECTION PROGRAM

A respiratory protection program shall be established as required by 29 CFR 1926 Section .103 and .62 and in accordance with 29 CFR 1910 Section .134.

An approved respirator shall be furnished to each employee and visitor required to enter a LBP work control area. A fit test shall be conducted in accordance with 29 CFR 1926 Section .62, Appendix D.

1.12 HAZARD COMMUNICATION PROGRAM

A Hazard Communication Program shall be implemented in accordance with 29 CFR 1926 Section .59.

1.13 SAFETY AND HEALTH OVERSIGHT

The Competent Person shall be the onsite person responsible for coordination, safety, security and execution of the work. The Competent Person shall be able to identify existing and predictable lead hazards and shall have the authority to take corrective measures to eliminate them.

1.14 PREPARATORY INSPECTION MEETING

The Contractor and the Contracting Officer shall arrange and hold a preparatory inspection meeting immediately prior to beginning work. The APP, Activity Hazard Analyses, and the Contractor's Worker Protection Plan, including containment, engineering controls, worker protection, training, and monitoring, will be reviewed for completeness.

1.15 TRAINED AND COMPETENT PERSONNEL

Work shall be performed by persons, qualified and trained to perform monitoring and in subsequent cleanup of the affected environment. Workers shall comply with the appropriate Federal, state, and local regulations which mandate training requirements, work practices, and performing work under this contract.

1.16 POSTED WARNINGS AND NOTICES

A copy of the regulations, warnings, and notices shall be posted at the work site in accordance with 29 CFR 1926 Section .62. A copy shall be file in the project file.

1.16.1 Limited Access

Access to work control areas shall be limited to trained and properly protected workers and visitors until air monitoring results indicate the airborne lead level is below the Action Level of 30 ug/m3 per 29 CFR 1926 .62. Signs shall be posted at a distance from the work control areas that will allow personnel to read and take necessary protective actions before entering the work control area.

1.16.2 Worker Information

Right-to-know notices shall be placed in clearly visible areas of the work site in compliance with Federal, state, and local regulations.

1.16.3 Air Monitoring Results

Daily air monitoring results shall be prepared so as to be easily understood by the workers, and shall be placed in a clearly visible area of the work site.

1.16.4 Emergency Telephone Numbers

A list of telephone numbers shall be posted at the site. The list shall include numbers of the local hospital, emergency squad, police and fire departments, Government and Contractor representatives who can be reached 24 hours per day, and professional consultants directly involved in the project.

1.17 PERSONAL PROTECTIVE EQUIPMENT (PPE)

1.17.1 Respiratory Protection

Respirators required for worker protection during this project as approved by NIOSH for such use shall be determined by the Competent Person. Respirators shall comply with the requirements of 29 CFR 1926 Section .62 and shall be used in accordance with 29 CFR 1926 Section .103 and 29 CFR 1910 Section .134.

A sufficient supply of respirator cartridges shall be maintained at the work site to provide new cartridges to employees, authorized visitors, and Government personnel throughout the duration of the project. Cartridges shall be replaced according to the manufacturer's recommendations. A list of PPE shall be specified in the Contractor's Worker Protection Plan.

1.17.2 Protective Clothing

The Contractor shall furnish, at no cost to personnel, equipment/clothing for protection from airborne lead dust. An adequate supply of these items shall be available for worker, authorized visitor, and Government personnel use. The Type of protective clothing shall be identified in the Contractor's Worker Protection Plan.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 3.1 WORK PROCEDURES

Work that disturbed painted surfaces shall be performed in accordance with the accepted Contractor's Worker Protection Plan. Procedures and equipment required to limit occupational and environmental exposures to lead during disturbance of LCP surfaces shall be in accordance with 29 CFR 1926 Section .62, and as specified herein.

3.1.1 Personnel Protection Procedures

Personnel shall wear and use protective clothing and equipment as specified in the Contractor's Worker Protection Plan. Eating, smoking, drinking, chewing tobacco and chewing gum, and applying makeup shall not be permitted in the work control area. Electrical service shall be disconnected when wet removal is performed, and temporary electrical service protected by a ground fault circuit interrupter shall be provided.

3.1.2 Safety and Health Procedures and Responsibilities

The Competent Person shall be present on the work site throughout the abatement project to supervise, monitor, and document the project's health and safety provisions. A daily log shall be maintained documenting the progress of work, results of sampling tests, and level of worker protection throughout the project area. The Competent Person shall verify that the

worker Protection Plan is implemented and followed.

3.1.3 Engineering Controls

3.1.4 Hand Wash Station and Procedures

An operational shower and hand washing station shall be provided to the workers for washing their hands and face whenever exiting the work area and before eating, drinking or smoking. Workers shall aware of hygiene practices prior to start any work.

3.1.5 Dust Suppression

During paint disturbing work and transporting debris, dust suppression methods shall be employed to minimize airborne lead dust. Methods of dust suppression, such as using equipment with HEPA vacuum, wetting during demolition work and covering debris in truck with tarp, shall be described in the Worker Protection Plan.

3.1.6 Packagings and Storage of Materials

All components shall be packed and contained for recycling or disposal. Materials shall be stored in a place and manner which protects them from damage and contamination. Stored materials shall not present a hazard or an inconvenience to workers, visitors, and/or other occupants and employees of the building.

3.2 MONITORING

During the entire paint disturbing activities, a Competent Person shall be onsite directing the work, to ensure that health and safety requirements of this contract are met.

3.2.1 Personal Air Monitoring

Airborne concentrations of lead shall be collected and analyzed in accordance with 29 CFR 1926 Section .62. Results shall be reported in micrograms per cubic meter of air. These air monitoring results shall be used to determine the effectiveness of engineering controls, the adequacy of PPE and to determine if proper work practices are being employed. The Contracting Officer shall be notified if any personal air monitoring result equals or exceeds 30 micrograms per cubic meter (ug/m3)of air. The Contractor shall take steps to reduce the concentration of lead in the air.

3.3 CLEANUP AND DISPOSAL

3.3.1 Daily Cleanup

Maintain the work area free of visible airborne dust and accumulations of debris. Daily cleanup of work area is required. Dry sweep or compressed air shall not be used for cleanup.

3.3.2 Disposal and Documentation

The demolition debris shall be disposed of in accordance with applicable Federal, state, and local regulations. After project completion and prior to final payment the following items shall be submitted: air monitoring data, laboratory and technician accreditation document, Bill of Lading, manifest, signed receipts from recycling and treatment, storage and

disposal(TSD).

ATTACHMENT
LEAD SURVEY DATA
(XRF READINGS)

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION FOR B/23672:

Inspection Date: 04/15/98
Report Date: 5/15/98
Abatement Level: 1.0
Report No. S#01360 - 04/15/98 09:52
Total Readings: 18
Job Started: 04/15/98 09:52
Job Finished: 04/15/98 12:16

Read No.	Location	Structure	Substrate	Color	XRF Reading (mg/cm²)
1	WOOD		BLOCK		-0.1
2	WOOD		BLOCK		0.0
3	WOOD		BLOCK		0.1
4	INTERIOR	WALL	CONCRETE	WHITE	-0.1
5	INTERIOR	WALL	CONCRETE	WHITE	0.4
6	INTERIOR	WALL	CONCRETE	WHITE	0.1
7	INTERIOR	FLOOR	CONCRETE	GRAY	0.1
8	INTERIOR	FLOOR	CONCRETE	GRAY	-0.1
9	INTERIOR	CEILING	CONCRETE	WHITE	0.0
10	INTERIOR	CEILING	CONCRETE	WHITE	0.1
11	INTERIOR	AC DUCT	METAL	WHITE	0.3
12	INTERIOR	CABLE HOLDER	METAL	WHITE	0.3
13	INTERIOR	COVER	METAL	GRAY	6.5
14	INTERIOR	DOOR JAM	METAL	GRAY	-0.2
15	EXTERIOR	DOOR	METAL	GRAY	0.0
16	EXTERIOR	WINDOW	METAL	WHITE	-0.2
17	EXTERIOR	POST ON STAIRS	WOOD	BEIGE	0.0
18	EXTERIOR	STEP	WOOD	BEIGE	0.3

---- End of Readings ----

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION FOR B/23670:

Inspection Date: 04/15/98
Report Date: 5/15/98
Abatement Level: 1.0
Report No. S#01360 - 04/15/98 12:23
Total Readings: 12
Job Started: 04/15/98 12:23
Job Finished: 04/15/98 15:52

Read No.	Location	Structure	Substrate	Color	XRF Reading (mg/cm²)
1	INTERIOR	FLOOR	CONCRETE	GRAY	0.0
2	INTERIOR	COVER OVER WALKWAY	WOOD	GRAY	3.1
3	INTERIOR	WALL	CONCRETE	GRAY	0.3
4	INTERIOR	WALL	CONCRETE	BEIGE	-0.1
5	INTERIOR	WALL	CONCRETE	GRAY	-0.1
6	INTERIOR	COVER OVER CONDUIT	METAL	GRAY	6.6
7	INTERIOR	CEILING	CONCRETE	BEIGE	0.1

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION FOR B/23670:

Inspection Date: 04/15/98
Report Date: 5/15/98
Abatement Level: 1.0
Report No. S#01360 - 04/15/98 12:23
Total Readings: 12
Job Started: 04/15/98 12:23
Job Finished: 04/15/98 15:52

Read No.	Location	Structure	Substrate	Color	XRF Reading (mg/cm²)
8	INTERIOR	DUCT	METAL	BEIGE	0.6
9	EXTERIOR	DOOR JAM	STEEL	GRAY	-0.2
10	EXTERIOR	DOOR	STEEL	GRAY	1.0
11	EXTERIOR	WINDOW FRAME	METAL	GRAY	0.3
12	EXTERIOR	PARKING LOT	CONCRETE	YELLOW	-0.2

---- End of Readings ----

[AM#1]LEAD ANALYSIS	CONC.	UNIT
Sample 23670-L01		
Lead(pb) in Chips by Flame (7420)	40,700	mg/kg
Sample 23670-AEHA-1		
TCLP lead EPA 1311/6010 (composite sample)	< 0.400	mg/l

-- End of Section --

SECTION 02221

EXCAVATION, FILLING AND BACKFILLING FOR BUILDINGS
03/91

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1556	(1990) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(1991) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 2167	(1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2216	(1992) Laboratory Determination of Water (Moisture) Content of Soil, and Rock
ASTM D 2487	(1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(1991) 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 1993) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 4318	(1993) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.2 DEFINITIONS

1.2.1 Degree of Compaction

Degree of compaction required is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557[AM#1], Method D abbreviated hereinafter as percent laboratory maximum density.

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation;

submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-09 Reports

Field Density Tests; FIO. Testing of Backfill Materials; FIO.

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 include materials classified in ASTM D 2487 as GW, GM, GP, GC, SW, SP, SM, SC, and CL and shall be free of trash, debris, roots or other organic matter, or stones larger than 3 inches in any dimension. Satisfactory materials shall have a plasticity index (PI) greater than 4 and less than or equal to 12. The liquid limit shall be 35 percent or less.

2.1.2 Unsatisfactory Materials

Unsatisfactory materials include materials classified in ASTM D 2487 as Pt, OH and OL and any other materials not defined as satisfactory.

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 and SM will be identified as cohesionless only when the fines are nonplastic.

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 1.5 inch and nor more than 2 percent by weight shall pass the 0.19 inch 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 in the designated waste disposal areas.

3.2 TOPSOIL

Topsoil shall be stripped to a depth of 4 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 hereinafter, and shall include trenching for utility and foundation drainage systems to a point 5 feet beyond the building line of each building and structure, excavation for outside grease interceptors, underground fuel tanks, and all work incidental thereto. 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. Satisfactory material removed below the depths indicated without specific direction of the Contracting Officer shall be replaced at no additional cost to the Government to the indicated excavation grade with satisfactory materials, 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 AND DEWATERING

3.4.1 Drainage

Surface water shall be directed away from excavation and construction sites so as 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 and the area immediately surrounding the site and affecting operations at the site shall be continually and effectively drained.

3.4.2 Dewatering

Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. French drains, sumps, ditches or trenches will not be permitted within 3 feet of the foundation of any structure, except with specific written approval, and after specific contractual provisions for restoration of the foundation area have been made. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the in situ material. While the excavation is open, the water level shall be maintained continuously, at least 2 feet below the working level.

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.

3.7 BLASTING

Blasting will not 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.

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 at the designated disposal site. Disposal site to be defined by the Contracting Officer.

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. Approximately level surfaces shall be roughened, and sloped surfaces shall be cut as indicated into rough steps or benches to provide a satisfactory bond. All soils shall be protected from slaking or other erosion resulting from ponding or flow of water.

3.12 SUBGRADE PREPARATION

Unsatisfactory material in surfaces to receive fill or in excavated areas shall be removed and replaced with satisfactory materials. 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. The subgrade under all new buildings shall be removed to a depth of 12 inches and replaced with satisfactory material. Any additional material required to bring the area to required grade shall be satisfactory material. [AM#1]<u>The subgrade to be removed and replaced with satisfactory materials to a point 5 feet outside the building line.</u> 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. [AM#1]Satisfactory materials to be used to bring the area to the required grades to a point 5 feet outside the building line. 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 and shall include backfill for outside grease interceptors and underground fuel tanks. 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. Laboratory maximum density as defined by ASTM D 1557[AM#1], Method D :

	Percent Laboratory maximum density	
	Cohesive material	Cohesionless material
Fill, embankment, and backfill		
Under structures, building slabs, steps, paved areas, around footings, and in trenches	92	92
Under sidewalks and grassed areas	92	92

[AM#1] Subgrade

	Percent Laboratory maximum density	
	Cohesive material	Cohesionless material
Under building slabs, steps and paved areas, top 12-inches	92	92

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 In-Place Densities

3.14.1.1 In-Place Density of Fills and Backfills

One test per 1,000 square feet or fraction thereof of each lift for fill or backfill areas compacted by other than hand or hand-operated machines. The density for each lift of fill or backfill materials for trenches, pits, building perimeters or other structures or areas less than 2 feet in width, which are compacted with hand or hand-operated machines shall be tested as follows: One test per each area less than 50 square feet, or one test for each 25 linear foot of long narrow fills 50 feet or more in length. If ASTM D 2922 is used, in-place densities shall be checked by ASTM D 1557 as follows: One check per lift for each 50 linear feet of long narrow fills, and a minimum of 2 checks per lift for other fill and backfill areas.

3.14.2 Moisture Content

In the stockpile, excavation or borrow areas, a minimum of two tests per day per type of material or source of materials being placed is required during stable weather conditions. During unstable weather, tests shall be

made as dictated by local conditions and approved moisture content shall be tested in accordance with ASTM D 2216.

3.14.3 Optimum Moisture and Laboratory Maximum Density

Tests shall be made for each type material or source of material including borrow material to determine the optimum moisture and laboratory maximum density values. One representative test per 125 cubic yards of fill and backfill, or when any change in material occurs which may affect the optimum moisture content or laboratory maximum density will be made.

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 02225

EARTHWORK
12/94

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 33	(1993) Concrete Aggregates
ASTM C 136	(1995a) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 422	(1963; R 1990) Particle-Size Analysis of Soils
ASTM D 1140	(1992) Amount of Material in Soils Finer than the No. 200 (75-micrometer) Sieve
ASTM D 1556	(1990) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(1991) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu. m.))
ASTM D 2167	(1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2487	(1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(1991) 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 1993) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 4318	(1993) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.2 DEFINITIONS

1.2.1 Satisfactory Materials

Satisfactory materials shall comprise any materials classified by, ASTM D 2487 as GW, GP, SW, GC, GM, SP, SM, SC, CL, and CH. Satisfactory materials for grading shall be free from roots and other organic matter, trash, debris, and frozen materials and stones larger than 6 inches in any dimension.

1.2.2 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Materials classified in ASTM D 2487 as ML, MH, Pt, OH, and OL are unsatisfactory. Unsatisfactory materials also include man-made fills, refuse, or backfills from previous construction.

1.2.3 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 and SM will be identified as cohesionless only when the fines have a plasticity index of 0. Testing required for classifying materials shall be in accordance with ASTM D 4318, ASTM C 136, ASTM D 422, and ASTM D 1140.

1.2.4 Degree of Compaction

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

1.2.5 Topsoil

Material suitable for topsoils obtained from excavations is defined as natural friable surface soil possessing the characteristics of representative soils in the vicinity that produce heavy growth of crops, grass, or other vegetation.

1.3 SUBMITTALS

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

SD-08 Statements

SD-09 Reports

Testing; FIO.

Within 24 hours of conclusion of physical tests, 6 copies of test results, including calibration curves and results of calibration tests.

SD-13 Certificates

Testing; FIO.

Qualifications of the commercial testing laboratory or Contractor's testing facilities.

SD-18 Records

Earthwork; FIO.

Notification of encountering rock in the project. Advance notice on the opening of excavation or borrow areas. Advance notice on shoulder construction for rigid pavements.

1.4 SUBSURFACE DATA

Subsurface soil boring logs are shown on the Drawings. The subsoil investigation report and samples of materials taken from subsurface investigations may be examined at Contracting Officer's office. These data represent the best subsurface information available; however, variations may exist in the subsurface between boring locations.

1.5 UTILIZATION OF EXCAVATED MATERIALS

Unsatisfactory materials removed from excavations shall be disposed of outside the limits of Government controlled land and at the Contractor's responsibility. Satisfactory material removed from excavations shall be used, insofar as practicable, in the construction of fills, embankments, subgrades, shoulders, bedding (as backfill), and for similar purposes. No satisfactory excavated material shall be wasted without specific written authorization. Satisfactory material authorized to be wasted shall be disposed of outside the limits of Government controlled land and at the Contractor's responsibility. Newly designated waste areas on Government-controlled land shall be cleared and grubbed before disposal of waste material thereon. Coarse rock from excavations shall be stockpiled and used for constructing slopes or embankments adjacent to streams, or sides and bottoms of channels and for protecting against erosion. No excavated material shall be disposed of to obstruct the flow of any stream, endanger a partly finished structure, impair the efficiency or appearance of any structure, or be detrimental to the completed work in any way.

PART 2 PRODUCTS

2.1 Ground Cover Aggregate

Ground cover aggregate shall consist of gravel, crushed gravel, or crushed stone conforming to ASTM C 33 coarse aggregate size 5. [AM#1] _____

PART 3 EXECUTION

3.1 STRIPPING OF TOPSOIL

Where indicated or directed, topsoil shall be stripped to a depth of 4 inches. Topsoil shall be spread on areas already graded and prepared for topsoil, or transported and deposited in stockpiles convenient to areas that are to receive application of the topsoil later, or at locations indicated or specified. Topsoil shall be kept separate from other excavated materials, brush, litter, objectionable weeds, roots, stones larger than 2 inches in diameter, and other materials that would interfere with planting and maintenance operations. Any surplus of topsoil from excavations and grading shall be removed from the site.

3.2 EXCAVATION

The Contractor shall perform excavation of every type of material

encountered within the limits of the project to the lines, grades, and elevations indicated and as specified. Grading shall be in conformity with the typical sections shown and the tolerances specified in paragraph FINISHING. Satisfactory excavated materials shall be transported to and placed in fill or embankment within the limits of the work. Unsatisfactory materials encountered within the limits of the work shall be excavated below grade and replaced with satisfactory materials as directed. Payment therefore will be in confromance with the "changes" clause of the contract clauses. Surplus satisfactory excavated material not required for fills or embankments and all unsatisfactory materials shall be disposed of as specified in paragraph: UTILIZATION OF EXCAVATING MATERIAL. During construction, excavation and fill shall be performed in a manner and sequence that will provide proper drainage at all times. Material required for fill or embankment in excess of that produced by excavation within the grading limits shall be excavated from the borrow areas indicated or from other approved areas selected by the Contractor as specified.

3.2.1 Drainage Structures

Excavations shall be made to the lines, grades, and elevations shown, or as directed. Trenches and foundation pits shall be of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Rock or other hard foundation material shall be cleaned of loose debris and cut to a firm, level, stepped, or serrated surface. Loose disintegrated rock and thin strata shall be removed. When concrete or masonry is to be placed in an excavated area, the bottom of the excavation shall not be disturbed. Excavation to the final grade level shall not be made until just before the concrete or masonry is to be placed. Where pile foundations are to be used, the excavation of each pit shall be stopped at an elevation 1 foot above the base of the footing, as specified, before piles are driven. After the pile driving has been completed, loose and displaced material shall be removed and excavation completed, leaving a smooth, solid, undisturbed surface to receive the concrete or masonry.

3.3 SELECTION OF BORROW MATERIAL

Borrow material shall be selected to meet the requirements and conditions of the particular fill or embankment for which it is to be used. Borrow material shall be obtained from [AM#1] _____ approved sources, [AM#1] _____ selected by the Contractor. Unless otherwise provided in the contract, the Contractor shall obtain from the owners the right to procure material, pay royalties and other charges involved, and bear the expense of developing the sources, including rights-of-way for hauling. Borrow material from approved sources on Government-controlled land may be obtained without payment of royalties. Unless specifically provided, no borrow shall be obtained within the limits of the project site without prior written approval. Necessary clearing, grubbing, and satisfactory drainage of borrow pits and the disposal of debris thereon shall be considered related operations to the borrow excavation.

3.4 BACKFILL

Backfill adjacent to any and all types of structures shall be placed and compacted to at least 90 percent laboratory maximum density for cohesive materials or 95 percent laboratory maximum density for cohesionless materials to prevent wedging action or eccentric loading upon or against the structure. Compaction requirements for backfill materials shall also conform to the applicable portions of paragraph RAW SUBGRADE PREPARATION,

and Section 02720 STORM-DRAINAGE SYSTEM; and Section 02222 EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.

3.5 RAW SUBGRADE PREPARATION

3.5.1 Construction

Raw subgrade shall be shaped to line, grade, and cross section, and compacted as specified. This operation shall include plowing, disking, and any moistening or aerating required to obtain specified compaction. Soft or otherwise unsatisfactory material shall be removed and replaced with satisfactory excavated material or other approved material as directed. Rock encountered in the cut section shall be excavated to a depth of 6 inches below finished grade for the raw subgrade. Low areas resulting from removal of unsatisfactory material or excavation of rock shall be brought up to required grade with satisfactory materials, and the entire raw subgrade shall be shaped to line, grade, and cross section and compacted as specified.

3.5.2 Compaction

Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. Except for paved areas and railroads, each layer of the embankment shall be compacted to at least the percent of laboratory maximum density indicated.

3.5.2.1 Raw Subgrade for Pavements

Raw subgrade for pavements shall be compacted to at least the percentage of laboratory maximum density indicated for the depth below the surface of the pavement shown.

3.6 FINISHING

The surface of excavations, fills, embankments, and raw subgrades shall be finished to a smooth and compact surface in accordance with the lines, grades, and cross sections or elevations shown. The degree of finish for graded areas shall be within 0.1 foot of the grades and elevations indicated except that the degree of finish for raw subgrades shall be specified in paragraph RAW SUBGRADE PREPARATION. Gutters and ditches shall be finished in a manner that will result in effective drainage. The surface of areas to be turfed shall be finished to a smoothness suitable for the application of turfing materials.

3.7 PLACING TOPSOIL

On areas to receive topsoil, the compacted subgrade soil shall be scarified to a 2 inch depth for bonding of topsoil with subsoil. Topsoil then shall be spread evenly to a thickness of 2 inches and graded to the elevations and slopes shown. Topsoil shall not be spread when frozen or excessively wet or dry. Material required for topsoil in excess of that produced by excavation within the grading limits shall be obtained from offsite areas.

3.8 Placing Ground Cover Aggregate

On areas to receive ground cover aggregate, the subgrade shall be finished

to a smooth and compact surface. A woven geotextile fabric shall be placed over the prepared subgrade as specified in Section 02373. The ground cover aggregate then shall be placed to the thickness, lines, grades, and cross section or elevations shown.

3.9 TESTING

Testing shall be performed by an approved commercial testing laboratory or by the Contractor subject to approval. If the Contractor elects to establish testing facilities, no work requiring testing will be permitted until the Contractor's facilities have been inspected and approved by the Contracting Officer. The first inspection be at the expense of the Government. Cost incurred for any subsequent inspections required because of failure of the first inspection will be charged to the Contractor. Field in-place density shall be determined in accordance with ASTM D 1556 and ASTM D 2922. When ASTM D 2922 is used, the calibration curves shall be checked and adjusted using only the sand cone method as described in ASTM D 1556. ASTM D 2922results 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, the Drive Cylinder Method shall be used only for soft, fine-grained, cohesive soils. When test results indicate, as determined by the Contracting Officer, that compaction is not as specified, the material shall be removed, replaced and recompacted to meet specification requirements. Tests on recompacted areas shall be performed to determine conformance with 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. The following number of tests, if performed at the appropriate time, will be the minimum acceptable for each type operation.

3.9.1 Fill and Backfill Material Gradation

One test per 1640 cubic yards stockpiled or in-place source material. Gradation of fill and backfill material shall be determined in accordance with ASTM C 136, ASTM D 422, or ASTM D 1140.

3.9.2 In-Place Densities

a. One test per 2000 square yards, or fraction thereof, of each lift of fill or backfill areas compacted by other than hand-operated machines.

b. One test per 110 square yards, or fraction thereof, of each lift of fill or backfill areas compacted by hand-operated machines.

3.9.3 Check Tests on In-Place Densities

If ASTM D 2922 is used, in-place densities shall be checked by ASTM D 1556 as follows:

a. One check test per lift for each 10,000 square yards, or fraction thereof, of each lift of fill or backfill compacted by other than

hand-operated machines.

b. One check test per lift for each 550 square yards, of fill or backfill areas compacted by hand-operated machines.

3.9.4 Moisture Contents

In the stockpile, excavation, or borrow areas, a minimum of two tests per day per type of material or source of material being placed during stable weather conditions shall be performed. During unstable weather, tests shall be made as dictated by local conditions and approved by the Contracting Officer.

3.9.5 Optimum Moisture and Laboratory Maximum Density

Tests shall be made for each type material or source of material including borrow material to determine the optimum moisture and laboratory maximum density values. One representative test per 2000 cubic yards of fill and backfill, or when any change in material occurs which may affect the optimum moisture content or laboratory maximum density.

3.9.6 Tolerance Tests for Raw Subgrades

Continuous checks on the degree of finish specified in paragraph RAW SUBGRADE PREPARATION shall be made during construction of the raw subgrades.

3.10 RAW SUBGRADE AND FILL OR EMBANKMENT PROTECTION

During construction, fills, embankments and excavations shall be kept shaped and drained. Ditches and drains along raw subgrade shall be maintained to drain effectively at all times. The finished raw subgrade shall not be disturbed by traffic or other operation and shall be protected and maintained by the Contractor in a satisfactory condition until ballast, subbase, base, or pavement is placed. The storage or stockpiling of materials on the finished raw subgrade will not be permitted. No subbase, base course, ballast, or pavement shall be laid until the raw subgrade has been checked and approved, and in no case shall subbase, base, surfacing, pavement, or ballast be placed on a muddy, spongy, or frozen raw subgrade.

-- End of Section --

SECTION 02316

EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS
07/89

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 422	(1963; R 1990) Particle-Size Analysis of Soils
ASTM D 1556	(1990) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(1991) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu. m.))
ASTM D 2167	(1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2487	(1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System
ASTM D 2922	(1991) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(1988; R 1993) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

1.2 DEFINITIONS

1.2.1 Degree of Compaction

Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557.

1.3 SUBMITTALS

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

SD-09 Reports

Field Density Tests; FIO. Testing of Backfill Materials; FIO.

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 consist of any material classified by ASTM D 2487 as GC, GM, SP, SM, SC, CL, GW, GP, and SW.

2.1.2 Unsatisfactory Materials

Unsatisfactory materials shall be materials that do not comply with the requirements for satisfactory materials. Unsatisfactory materials include but are not limited to those materials containing roots and other organic matter, trash, debris, frozen materials and stones larger than 3 inches, and materials classified in ASTM D 2487, as ML, MH, PT, OH, and OL. Unsatisfactory materials also include man-made fills, refuse, or backfills from previous construction.

2.1.3 Cohesionless and Cohesive Materials

Cohesionless materials shall 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 and SM will be identified as cohesionless only when the fines are nonplastic.

2.1.4 Rock

Rock shall consist of boulders measuring 1/2 cubic yard or more and materials that cannot be removed without systematic drilling and blasting such as rock material in ledges, bedded deposits, unstratified masses and conglomerate deposits, and below ground concrete or masonry structures, exceeding 1/2 cubic yard in volume, except that pavements will not be considered as rock.

2.1.5 Unyielding Material

Unyielding material shall consist of rock and gravelly soils with stones greater than 3 inches in any dimension or as defined by the pipe manufacturer, whichever is smaller.

2.1.6 Unstable Material

Unstable material shall consist of materials too wet to properly support the utility pipe, conduit, or appurtenant structure.

2.1.7 Select Granular Bedding Material

Select granular bedding material shall consist of well-graded sand, gravel, crushed gravel, crushed stone or crushed slag composed of hard, tough and durable particles, and shall contain not more than 10 percent by weight of material passing a No. 200 mesh sieve and no less than 95 percent by weight passing the l inch sieve. The maximum allowable aggregate size shall be 3 inches, or the maximum size recommended by the pipe manufacturer, whichever is smaller.

2.1.8 Initial Backfill Material

Initial backfill shall consist of select granular material or satisfactory materials free from rocks 1 inch or larger in any dimension or free from rocks of such size as recommended by the pipe manufacturer, whichever is smaller. When the pipe is coated or wrapped for corrosion protection, the initial backfill material shall be free of stones larger than 1 inch in any dimension or as recommended by the pipe manufacturer, whichever is smaller.

2.1.9 Plastic Marking Tape

Plastic marking tape shall be acid and alkali-resistant polyethylene film, 6 inches wide with minimum thickness of 0.004 inch. Tape shall have a minimum strength of 1,750 psi lengthwise and 1,500 psi crosswise. The tape shall be manufactured with integral wires, foil backing or other means to enable detection by a metal detector when the tape is buried up to 3 feet deep. The tape shall be of a type specifically manufactured for marking and locating underground utilities. The metallic core of the tape shall be encased in a protective jacket or provided with other means to protect it from corrosion. Tape color shall be as specified in TABLE 1 and shall bear a continuous printed inscription describing the specific utility.

TABLE 1. Tape Color

Red:	Electric
Yellow:	Gas, Oil, Dangerous Materials
Orange:	Telephone, Telegraph, Television, Police, and Fire Communications
Blue:	Water Systems
Green:	Sewer Systems

PART 3 EXECUTION

3.1 EXCAVATION

Excavation shall be performed to the lines and grades indicated. Rock excavation shall include removal and disposition of material defined as rock in paragraph MATERIALS. Earth excavation shall include removal and disposal of material not classified as rock excavation. During excavation, material satisfactory for backfilling shall be stockpiled in an orderly manner at a distance from the banks of the trench equal to 1/2 the depth of the excavation, but in no instance closer than 2 feet. Excavated material not required or not satisfactory for backfill shall be removed from the site or shall be removed from the site. Grading shall be done as may be necessary to prevent surface water from flowing into the excavation, and any water accumulating therein shall be removed to maintain the stability of the bottom and sides of the excavation. Unauthorized overexcavation shall be backfilled in accordance with paragraph BACKFILLING AND COMPACTION at no additional cost to the Government.

[AM#1]In addition, excavation shall conform to the following New Mexico Department of Game and Fish requirements:

1. Minimize the amount of open trenches at any given time, keep trenching and backfilling crews close together.
2. Attempt to trench during the cooler months (October-March).
3. Avoid wetland and riparian areas.
4. Avoid leaving trenches open overnight. Where trenches cannot be

backfilled immediately, escape ramps must be constructed at least every 100 yards. Escape ramps can be short lateral trenches sloping to the surface or wooden planks extending to the surface. The slope should be less than 45 degrees (100 percent).

5. Trenches that have been left open overnight must be inspected and animals removed prior to backfilling.
6. All open lines will have the ends covered at the end of each day to prevent the entry of animals and debris.

3.1.1 Trench Excavation

The trench shall be excavated as recommended by the manufacturer of the pipe to be installed. Trench walls below the top of the pipe shall be sloped, or made vertical, and of such width as recommended in the manufacturer's installation manual. Where no manufacturer's installation manual is available, trench walls shall be made vertical. Trench walls more than 5 feet high shall be shored, cut back to a stable slope, or provided with equivalent means of protection for employees who may be exposed to moving ground or cave in. Vertical trench walls more than 5 feet high shall be shored. Trench walls which are cut back shall be excavated to at least the angle of repose of the soil. Special attention shall be given to slopes which may be adversely affected by weather or moisture content. The trench width below the top of pipe shall not exceed 24 inches plus pipe outside diameter (O.D.) for pipes of less than 24 inches inside diameter and shall not exceed 36 inches plus pipe outside diameter for sizes larger than 24 inches inside diameter. Where recommended trench widths are exceeded, redesign, stronger pipe, or special installation procedures shall be utilized by the Contractor. The cost of redesign, stronger pipe, or special installation procedures shall be borne by the Contractor without any additional cost to the Government.

3.1.1.1 Bottom Preparation

The bottoms of trenches shall be accurately graded to provide uniform bearing and support for the bottom quadrant of each section of the pipe. Bell holes shall be excavated to the necessary size at each joint or coupling to eliminate point bearing. Stones of 3 inches or greater in any dimension, or as recommended by the pipe manufacturer, whichever is smaller, shall be removed to avoid point bearing.

3.1.1.2 Removal of Unyielding Material

Where unyielding material is encountered in the bottom of the trench, such material shall be removed 4 inches below the required grade and replaced with suitable materials as provided in paragraph BACKFILLING AND COMPACTION.

3.1.1.3 Removal of Unstable Material

Where unstable material is encountered in the bottom of the trench, such material shall be removed to the depth directed and replaced to the proper grade with select granular material as provided in paragraph BACKFILLING AND COMPACTION. When removal of unstable material is required due to the fault or neglect of the Contractor in his performance of the work, the resulting material shall be excavated and replaced by the Contractor without additional cost to the Government.

3.1.1.4 Excavation for Appurtenances

Excavation for manholes, catch-basins, inlets, or similar structures shall

be of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Rock shall be cleaned of loose debris and cut to a firm surface either level, stepped, or serrated, as shown or as directed. Loose disintegrated rock and thin strata shall be removed. Removal of unstable material shall be as specified above. When concrete or masonry is to be placed in an excavated area, special care shall be taken not to disturb the bottom of the excavation. Excavation to the final grade level shall not be made until just before the concrete or masonry is to be placed.

3.1.1.5 Jacking, Boring, and Tunneling

Unless otherwise indicated, excavation shall be by open cut except that sections of a trench may be jacked, bored, or tunneled if, in the opinion of the Contracting Officer, the pipe, cable, or duct can be safely and properly installed and backfill can be properly compacted in such sections.

3.1.1.6 Stockpiles

Stockpiles of satisfactory shall be placed and graded as specified. Stockpiles shall be kept in a neat and well drained condition, giving due consideration to drainage at all times. The ground surface at stockpile locations shall be cleared, grubbed, and sealed by rubber-tired equipment, excavated satisfactory and unsatisfactory materials shall be separately stockpiled. Stockpiles of satisfactory materials shall be protected from contamination which may destroy the quality and fitness of the stockpiled material. If the Contractor fails to protect the stockpiles, and any material becomes unsatisfactory, such material shall be removed and replaced with satisfactory material from approved sources at no additional cost to the Government. Locations of stockpiles of satisfactory materials shall be subject to prior approval of the Contracting Officer.

3.2 BACKFILLING AND COMPACTION

Backfill material shall consist of satisfactory material, select granular material, or initial backfill material as required. Backfill shall be placed in layers not exceeding 6 inches loose thickness for compaction by hand operated machine compactors, and 8 inches loose thickness for other than hand operated machines, unless otherwise specified. Each layer shall be compacted to at least 95 percent maximum density for cohesionless soils and 90 percent maximum density for cohesive soils, unless otherwise specified.

3.2.1 Trench Backfill

Trenches shall be backfilled to the grade shown. The trench shall be backfilled to 2 feet above the top of pipe prior to performing the required pressure tests. The joints and couplings shall be left uncovered during the pressure test.

3.2.1.1 Replacement of Unyielding Material

Unyielding material removed from the bottom of the trench shall be replaced with select granular material or initial backfill material.

3.2.1.2 Replacement of Unstable Material

Unstable material removed from the bottom of the trench or excavation shall be replaced with select granular material placed in layers not exceeding 6

inches loose thickness.

3.2.1.3 Bedding and Initial Backfill

Bedding shall be of the type and thickness shown. Initial backfill material shall be placed and compacted with approved tampers to a height of at least one foot above the utility pipe or conduit. The backfill shall be brought up evenly on both sides of the pipe for the full length of the pipe. Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe.

3.2.1.4 Final Backfill

The remainder of the trench, except for special materials for roadways, railroads and airfields, shall be filled with satisfactory material. Backfill material shall be placed and compacted as follows:

a. Roadways, Railroads, and Airfields: Backfill shall be placed up to the elevation at which the requirements in Section 02225 EARTHWORK FOR ROADWAYS, control. Water flooding or jetting methods of compaction will not be permitted.

b. Sidewalks, Turfed or Seeded Areas and Miscellaneous Areas: Backfill shall be deposited in layers of a maximum of 12 inch loose thickness, and compacted to 85 percent maximum density for cohesive soils and 90 percent maximum density for cohesionless soils. Compaction by water flooding or jetting will not be permitted. This requirement shall also apply to all other areas not specifically designated above.

3.2.2 Backfill for Appurtenances

After the manhole, catchbasin, inlet, or similar structure has been constructed and the concrete has been allowed to cure for 3 days, backfill shall be placed in such a manner that the structure will not be damaged by the shock of falling earth. The backfill material shall be deposited and compacted as specified for final backfill, and shall be brought up evenly on all sides of the structure to prevent eccentric loading and excessive stress.

3.3 SPECIAL REQUIREMENTS

Special requirements for both excavation and backfill relating to the specific utilities are as follows:

3.3.1 Water Lines

Trenches shall be of a depth to provide a minimum cover of 4 feet from the existing ground surface, or from the indicated finished grade, whichever is lower, to the top of the pipe.

3.3.2 Electrical Distribution System

Direct burial cable and conduit or duct line shall have a minimum cover of 24 inches from the finished grade, unless otherwise indicated. Special trenching requirements for direct-burial electrical cables and conduits are specified in Section 16375 ELECTRICAL DISTRIBUTION SYSTEM, UNDERGROUND.

3.3.3 Plastic Marking Tape

Warning tapes shall be installed directly above the pipe, at a depth of 18 inches below finished grade unless otherwise shown.

3.4 TESTING

Testing shall be the responsibility of the Contractor and shall be performed at no additional cost to the Government.

3.4.1 Testing Facilities

Tests shall be performed by an approved commercial testing laboratory or may be tested by facilities furnished by the Contractor. No work requiring testing will be permitted until the facilities have been inspected and approved by the Contracting Officer. The first inspection shall be at the expense of the Government. Cost incurred for any subsequent inspection required because of failure of the first inspection will be charged to the Contractor.

3.4.2 Testing of Backfill Materials

Characteristics of backfill materials shall be determined in accordance with particle size analysis of soils ASTM D 422 and moisture-density relations of soils ASTM D 1557. A minimum of one particle size analysis and one moisture-density relation test shall be performed on each different type of material used for bedding and backfill.

3.4.3 Field Density Tests

Tests shall be performed in sufficient numbers to ensure that the specified density is being obtained. A minimum of one field density test per lift of backfill for every 500 feet of installation shall be performed. One moisture density relationship shall be determined for every 1,500 cubic yards of material used. Field in-place density shall be determined in accordance with ASTM D 1556 or ASTM D 2922. When ASTM D 2922 is used, the calibration curves shall be checked and adjusted using the sand cone method as described in paragraph Calibration of the ASTM publication. 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 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, at intervals as directed by the Contracting Officer. Copies of calibration curves, results of calibration tests, and field and laboratory density tests shall be furnished to the Contracting Officer. Trenches improperly compacted shall be reopened to the depth directed, then refilled and compacted to the density specified at no additional cost to the Government.

3.4.4 Displacement of Sewers

After other required tests have been performed and the trench backfill compacted to 2 feet above the top of the pipe the finished grade surface, the pipe shall be inspected to determine whether significant displacement has occurred. This inspection shall be conducted in the presence of the Contracting Officer. Pipe sizes larger than 36 inches shall be entered and examined, while smaller diameter pipe shall be inspected by shining a light or laser between manholes or manhole locations, or by the use of television cameras passed through the pipe. If, in the judgement of the Contracting

Officer, the interior of the pipe shows poor alignment or any other defects that would cause improper functioning of the system, the defects shall be remedied as directed at no additional cost to the Government.

-- End of Section --

SECTION 02722

GRADED, CRUSHED AGGREGATE BASE COURSE
12/97

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 T 180	(1993) Moisture-Density Relations of Soils Using a 10-lb. (4.54 kg) Rammer and an 18-in (457 mm) Drop

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 29/C 29M	(1991a) Unit Weight and Voids in Aggregate
ASTM C 88	(1990) 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 D 75	(1987; R 1992) Sampling Aggregates
ASTM D 1556	(1990; R 1996) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(1991) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu. m.))
ASTM D 2487	(1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(1996) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(1988; R 1993) Water Content of Soil and

	Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 4318	(1995a) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM E 11	(1995) Wire-Cloth Sieves for Testing Purposes
ASTM E 548	(1994) General Criteria Used for Evaluating Laboratory Competence

New Mexico State Highway and Transportation Department Standard Specifications.

TxDOT Standard Specification for Construction of Highways, Streets and Bridges.

1.2 SUBMITTALS

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

SD-09 Reports

Sampling and testing; FIO.

Copies of field test results.

1.3 DEGREE OF COMPACTION

Degree of compaction is a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557. This will be abbreviated herein after as percentage of laboratory maximum density.

1.4 EQUIPMENT

1.4.1 Approval

All plant, equipment, and tools used in the performance of the work will be subject to approval before the work is started and shall be maintained in satisfactory working condition at all times. The equipment shall have the capability of producing the required compaction, meeting grade controls, thickness control, and smoothness requirements as indicated.

1.4.2 Weather Limitation

Base courses shall be placed when the atmospheric temperature is above 35 degrees F. Areas of completed base course that are damaged by freezing, rainfall, or other weather conditions shall be corrected to meet specified requirement.

1.5 SAMPLING AND TESTING

Sampling and testing shall be the responsibility of the Contractor. Sampling and testing shall be performed by an approved commercial testing

laboratory, or by the Contractor, subject to approval. If the Contractor elects to establish its own testing facilities, approval of such facilities shall be based on compliance with ASTM E 548, and work requiring testing will not be permitted until the Contractor's facilities have been inspected and approved. The first inspection of the facilities will be at the expense of the Government and any subsequent inspections, required because of failure of the first inspection, shall be at the expense of the Contractor. Such costs will be deducted from the total amount due the Contractor. The materials shall be tested to establish compliance with the specified requirements. Copies of test results shall be furnished to the Contracting Officer.

1.5.1 Sampling

Sampling for material gradation, liquid limit, and plastic limit tests shall be taken in conformance with ASTM D 75. When deemed necessary, the sampling will be observed by the Contracting Officer.

1.5.2 Tests

The following tests shall be performed in conformance with the applicable standards listed.

1.5.2.1 Sieve Analyses

Sieve analyses shall be made in conformance with ASTM C 117 and ASTM C 136. Sieves shall conform to ASTM E 11.

1.5.2.2 Liquid Limit and Plasticity Index

Liquid limit and plasticity index shall be determined in accordance with ASTM D 4318.

1.5.2.3 Density Tests

Density shall be measured in the field in accordance with ASTM D 1556 or ASTM D 2922. For the method presented in ASTM D 1556 the base plate as shown in the drawing shall be used. For the method presented in ASTM D 2922 the calibration curves shall be checked and adjusted if necessary using only the sand cone method as described in paragraph Calibration of the ASTM publication. Tests performed in accordance with 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 by the prepared containers of material method, as described in paragraph Calibration of ASTM D 2922, on each different type of material being tested at the beginning of a job and at intervals as directed.

1.5.2.4 Soundness Test

Soundness tests shall be made in conformance with ASTM C 88.

1.5.2.5 Wear Test

Wear tests shall be made in conformance with ASTM C 131.

1.5.3 Approval of Material

The source of the material to be used for producing aggregates shall be selected 30 days prior to the time the material will be required in the work. Tentative approval of the source will be based on an inspection by the Contracting Officer. Tentative approval of material will be based on tests of samples for the specific job. Final approval of both the source and the material will be based on tests for gradation, liquid limit, and plasticity index performed on samples taken from the completed and compacted subbase course.

PART 2 PRODUCTS

2.1 AGGREGATES

Aggregates shall consist of clean, sound, durable particles of crushed stone, crushed slag, or crushed gravel, and screenings. The Contractor shall obtain materials that meet the specification and can be used to meet the grade and smoothness requirements specified herein, after compaction and proof-rolling operations have been completed. Slag shall be an air-cooled, blast-furnace product having a dry weight of not less than 65 pcf as determined by ASTM C 29/C 29M. The aggregates shall be free of silt and clay as defined by ASTM D 2487, vegetable matter, and other objectionable materials or coatings. The portion retained on the No. 4 sieve shall be known as coarse aggregate; that portion passing the No. 4 sieve shall be known as fine aggregate.

2.1.1 Coarse Aggregates

Coarse aggregates shall be angular particles of uniform density. The coarse aggregate shall have a loss not greater than 30 percent weighted averaged at 5 cycles when tested for soundness in magnesium sulfate in accordance with ASTM C 88. The coarse aggregate shall have a percentage of wear not to exceed 40 after 500 revolutions as determined by ASTM C 131. The percentage of flat and/or elongated particles shall not exceed 20 in the fraction retained on the 1/2 inch sieve and in the fraction passing the 1/2 inch sieve. A flat particle is one having a ratio of width to thickness greater than 3; an elongated particle is one having a ratio of length to width greater than 3. When the coarse aggregate is supplied from more than one source, aggregate from each source shall meet the specified requirements. Crushed gravel shall be manufactured from gravel particles 90 percent of which by weight are retained on the maximum-size sieve listed in TABLE I. In the portion retained on each sieve specified, the crushed gravel shall contain at least 90 percent by weight of crushed pieces having 2 or more freshly fractured faces with the area of each face being at least equal to 75 percent of the smallest midsectional area of the plane. When 2 fractures are contiguous, the angle between planes of the fractures must be at least 30 degrees in order to count as 2 fractured faces.

2.1.2 Fine Aggregate

Fine aggregate shall be angular particles produced by crushing stone, slag, or gravel that meets the requirements for wear and soundness specified for coarse aggregate. Fine aggregate shall be produced by crushing only particles larger than No. 4 sieve in size. The fine aggregate shall contain at least 90 percent by weight of particles having 2 or more freshly fractured faces in the portion passing the No. 4 sieve and retained on the No. 10 sieve, and in the portion passing the No. 10 sieve and retained on the No. 40 sieve.

2.1.3 Gradation Requirements

Requirements for gradation specified shall apply to the completed base course. The aggregates shall be continuously graded within the following limits:

Sieve Designation	Percentage by Weight Passing Square-Mesh Sieve*
1"	100
3/4"	80 - 100
No. 4	30 - 60
No. 10	20 - 45
No. 200	3 - 10

*The table is based on aggregates of uniform specific gravity and the percentages passing the various sieves are subject to appropriate corrections in accordance with ASTM C 127 and ASTM C 128 when aggregates of varying specific gravity are used. The gradation above conforms to New Mexico State Highway and Transportation Department Standard Specifications for base course, Section 304, Class I-B.

2.1.3.1 Option

At the option of the Contractor, gradation in New Mexico State Highway and Transportation Department Standard Specifications for Base Course, Section 304, Class I-B, or Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges, for flexible Base, Item 247, Type A, grade 1, may be used instead of the gradation specified hereinbefore.

2.1.4 Liquid Limit and Plasticity Index

Liquid limit and plasticity index requirements stated herein shall apply to any aggregate component that is blended to meet the required gradation and also to the aggregate in the completed base course. The portion of the aggregate passing the No. 40 sieve shall be either nonplastic or have a liquid limit not greater than 25 and a plasticity index not greater than 5.

PART 3 EXECUTION

3.1 OPERATION OF AGGREGATE SOURCES

Clearing, stripping, and excavating shall be the responsibility of the Contractor. The aggregate sources shall produce the quantity and quality of base course materials meeting these specification requirements in the specified time limits. Upon completion of the work, the aggregate sources on Government property shall be conditioned to drain readily and shall be left in a satisfactory condition. Aggregate sources on private lands shall be conditioned in agreement with local laws or authorities.

3.2 STOCKPILING MATERIAL

Prior to stockpiling of material, storage sites shall be cleared and leveled by the Contractor. All materials, including approved material available from excavation and grading, shall be stockpiled in the manner and at the locations designated. Aggregates shall be stockpiled on the cleared and leveled areas designated by the Contracting Officer to prevent segregation. Materials obtained from different sources shall be stockpiled separately.

3.3 PREPARATION OF UNDERLYING COURSE

Prior to constructing the crushed, aggregate base course, the underlying course shall be cleaned of all foreign substances. At the time of construction of the base course, the underlying course shall contain no frozen material. The underlying course shall conform to Section 02225 EARTHWORK. Ruts or soft, yielding spots in the underlying courses, areas having inadequate compaction, and deviations of the surface from the requirements specified shall be corrected by loosening and removing soft or unsatisfactory material and by adding approved material, reshaping to line and grade, and recompacting to specified density requirements. For cohesionless underlying courses containing sands or gravels as defined in ASTM D 2487, the surface shall be stabilized prior to placement of the graded, crushed aggregate base course. Stabilization shall be accomplished by mixing graded, crushed aggregate base material into the underlying course and compacting by approved methods. The stabilized material shall be considered part of the underlying course and shall meet all requirements of the underlying course. The finished underlying course shall not be disturbed by traffic or other operations and shall be maintained by the Contractor in a satisfactory condition until the base course is placed.

3.4 GRADE CONTROL

During construction, the lines and grades, including crown and cross slope indicated for the base course, shall be maintained by means of line and grade stakes placed by the Contractor.

3.5 MIXING OF MATERIALS

The coarse and fine aggregates shall be mixed in a stationary plant, or in a traveling plant or bucket loader on an approved paved working area. The Contractor shall make such adjustments in mixing procedures or in equipment as may be directed to obtain true grades, to minimize segregation or degradation, to obtain the required water content, and to ensure a satisfactory base course meeting requirements of this specification.

3.6 PLACING

The mixed material shall be placed on the prepared subgrade or subbase in layers of uniform thickness with an approved spreader. When a compacted layer 6 inches or less in thickness is required, the material shall be placed in a single layer. When a compacted layer in excess of 6 inches is required, the material shall be placed in layers of equal thickness. No layer shall exceed 6 inches or be less than 3 inches when compacted. The layers, when compacted, shall be true to the grades or levels required, with the least possible surface disturbance. Where the base course is placed in more than 1 layer, the previously constructed layers shall be cleaned of loose and foreign matter by sweeping with power sweepers, power brooms, or hand brooms, as directed. Adjustments in placing procedures or equipment shall be made as directed, to obtain true grades, to minimize segregation and degradation, to adjust the water content, and to ensure an acceptable base course.

3.7 COMPACTION

3.7.1 Requirements

Each layer of base course shall be compacted to produce an average field-measured density, through the full depth, of at least 100 percent of laboratory maximum density obtained in the laboratory. Water content shall be maintained during the compaction procedure and subsequent proof rolling

of designated areas. Water content shall be within plus or minus 3 percent of optimum water content, as determined from laboratory tests and as specified in density test procedures listed in paragraph SAMPLING AND TESTING. In places not accessible to the rollers, the base course material shall be compacted with mechanical tampers.

3.7.2 Finishing

The surface of top layer of base course shall be finished after final compaction, and proof rolled where required, by cutting any overbuild to grade and rolling with a steel-wheeled roller. Thin layers of material shall not be added to the top layer of base course to meet grade. If the elevation of top layer of base course is 1/2 inch or more below the grade, the top layer of base shall be scarified to a depth of at least 3 inches, new material shall be added, and the layer shall be blended and recompacted to bring to grade. Adjustments in rolling and finishing procedures shall be made as may be directed to obtain grades, to minimize segregation and degradation of base course material, to adjust the water content, and to ensure an acceptable base course. Material found unacceptable shall be removed and replaced, as directed, with acceptable material.

3.8 PROOF ROLLING

Proof rolling of the areas designated shall be in addition to compaction specified above and shall consist of application of 30 coverages with a heavy pneumatic-tired roller having 4 tires abreast, with each tire loaded to 30,000 pounds and tires inflated to 150 psi. In the areas designated, proof rolling shall be applied to the top lift of layer on which the base course is laid and to each layer of the base course. Water content of the lift of the layer on which the base course is placed, and of each layer of the base course, shall be maintained at optimum, or at the percentage directed, from the start of compaction to the completion of proof rolling. Materials in the base course or underlying materials indicated unacceptable by the proof rolling shall be removed and replaced, as directed, with acceptable materials.

3.9 EDGES OF BASE COURSE

Acceptable material shall be placed along the edges of the base course that will compact to the thickness of the course being constructed. When the course is being constructed in 2 or more layers, at least a 1 foot width of the shoulder shall be rolled and compacted simultaneously with the rolling and compacting of each layer of the base course, as directed.

3.10 SMOOTHNESS TEST

The surface of the top layer shall not deviate more than 3/8 inch when tested with a 10 footstraightedge applied parallel with and at right angles to the centerline of the area to be paved. Deviations exceeding 3/8 inch shall be corrected as directed.

3.11 THICKNESS CONTROL

The completed thickness of the base course shall be within 1/2 inch of the thickness indicated. The thickness of the base course shall be measured at intervals of one measurement for at least each 500 square yards of base course. The depth measurement shall be made by test holes at least 3 inches in diameter. Where the measured thickness of the base course is more than 1/2 inch deficient, such areas shall be corrected by excavating

to the required depth and replacing with new material. Where the measured thickness of the base course is 1/2 inch more than indicated, it will be considered as conforming with the requirements plus 1/2 inch, provided the surface of the base course is within 1/2 inch of established grade. The average job thickness shall be the average of the job measurements as specified above but within 1/4 inch of the thickness indicated.

3.12 MAINTENANCE

The base course shall be maintained in a condition that will meet specification requirements until accepted.

-- End of Section --

SECTION 08700

BUILDERS' HARDWARE
03/96

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 283	(1991) Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen
ASTM F 883	(1990) Padlocks

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

BHMA-01	(Effective thru Jun 1995) Directory of Certified Locks & Latches
BHMA-02	(Effective thru Jul 1995) Directory of Certified Door Closers
BHMA-03	(Effective thru Jul 1996) Directory of Certified Exit Devices
BHMA ANSI/BHMA A156.1	(1988) Butts and Hinges
BHMA ANSI/BHMA A156.2	(1989) Bored and Preassembled Locks and Latches
BHMA ANSI/BHMA A156.3	(1994) Exit Devices
BHMA ANSI/BHMA A156.4	(1992) Door Controls - Closers
BHMA ANSI/BHMA A156.5	(1992) Auxiliary Locks & Associated Products
BHMA ANSI/BHMA A156.6	(1994) Architectural Door Trim
BHMA ANSI/BHMA A156.7	(1988) Template Hinge Dimensions
BHMA ANSI/BHMA A156.8	(1994) Door Controls - Overhead Stops and Holders
BHMA ANSI/BHMA A156.13	(1994) Mortise Locks & Latches
BHMA ANSI/BHMA A156.15	(1995) Closer Holder Release Devices
BHMA ANSI/BHMA A156.16	(1989) Auxiliary Hardware

BHMA ANSI/BHMA A156.17	(1993) Self Closing Hinges & Pivots
BHMA ANSI/BHMA A156.18	(1993) Materials and Finishes
BHMA ANSI/BHMA A156.19	(1990) Power Assist and Low Energy Power Operated Doors
BHMA ANSI/BHMA A156.20	(1989) Strap and Tee Hinges and Hasps
BHMA ANSI/BHMA A156.21	(1989) Thresholds
BHMA ANSI/BHMA A156.23	(1992) Electromagnetic Locks
BHMA ANSI/BHMA A156.24	(1992) Delayed Egress Locks

DOOR AND HARDWARE INSTITUTE (DHI)

DHI-03	(1989) Keying Systems and Nomenclature
DHI-04	(1976) Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames
DHI-05	(1990) Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames
DHI-A115.IG	(1994) Installation Guide for Doors and Hardware
DHI A115-W	(Varies) Wood Door Hardware Standards (Incl All5-W1 thru A115-W9)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 80	(1995) Fire Doors and Windows
NFPA 101	(1997) Safety to Life from Fire in Buildings and Structures
NFPA 105	(1993) Installation of Smoke-Control Door Assemblies

1.2 SUBMITTALS

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

SD-01 Data

Hardware and Accessories; FIO.

Manufacturer's descriptive data, technical literature, catalog cuts, and installation instructions. Spare parts data for locksets, exit devices, closers, electric locks, electric strikes, electro-magnetic closer holder release devices, and electric exit devices, after approval of the detail drawings, and not later than 3 month(s) prior to the date of beneficial

occupancy. The data shall include a complete list of parts and supplies, with current unit prices and source of supply.

SD-07 Schedules

Hardware Schedule; GA.

Hardware schedule listing all items to be furnished. The schedule shall include for each item: the quantities; manufacturer's name and catalog numbers; the ANSI number specified, sizes; detail information or catalog cuts; finishes; door and frame size and materials; location and hardware set identification cross-references to drawings; corresponding reference standard type number or function number from manufacturer's catalog if not covered by ANSI or BHMA; and list of abbreviations and template numbers.

Keying Schedule; GA.

Keying schedule developed in accordance with DHI-03, after the keying meeting with the user.

SD-13 Certificates

Hardware and Accessories; FIO.

The hardware manufacturer's certificates of compliance stating that the supplied material or hardware item meets specified requirements. Each certificate shall be signed by an official authorized to certify in behalf of the product manufacturer and shall identify quantity and date or dates of shipment or delivery to which the certificates apply. A statement that the proposed hardware items appear in BHMA-01, BHMA-02 and BHMA-03 directories of certified products may be submitted in lieu of certificates.

1.3 PREDELIVERY CONFERENCE

Upon approval of the Hardware Schedule, the construction Contractor shall arrange a conference with the hardware supplier, Contracting Officer and the using agency to determine keying system requirements. Location of the key control storage system, set-up and key identification labeling will also be determined.

1.4 DELIVERY, STORAGE, AND HANDLING

Hardware shall be delivered to the project site in the manufacturer's original packages. Each article of hardware shall be individually packaged in the manufacturer's standard commercial carton or container, and shall be properly marked or labeled to be readily identifiable with the approved hardware schedule. Each change key shall be tagged or otherwise identified with the door for which its cylinder is intended. Where double cylinder functions are used or where it is not obvious which is the key side of a door, appropriate instructions shall be included with the lock and on the hardware schedule. Manufacturer's printed installation instructions, fasteners, and special tools shall be included in each package.

1.5 SPECIAL TOOLS

Special tools, such as those supplied by the manufacturer, unique wrenches, and dogging keys, shall be provided as required to adjust hardware items.

1.6 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a one year period shall be provided.

1.7 OPERATION AND MAINTENANCE MANUALS

Six complete copies of maintenance instructions listing routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides shall be provided. The instructions for electric locks, electric strikes, electro-magnetic closer holder release devices, and electric exit devices shall include simplified diagrams as installed.

PART 2 PRODUCTS

2.1 GENERAL HARDWARE REQUIREMENTS

Hardware shall conform to the requirements specified herein and the HARDWARE SETS listing at the end of this section. Hardware set numbers correspond to the set numbers shown on the drawings.

2.2 TEMPLATES

Requirements for hardware to be mounted on metal doors or metal frames shall be coordinated between hardware manufacturer and door or frame manufacturer by use of templates and other information to establish location, reinforcement required, size of holes, and similar details. Templates of hinges shall conform to BHMA ANSI/BHMA A156.7.

2.3 HINGES

Hinges shall conform to BHMA ANSI/BHMA A156.1. Hinges used on metal doors and frames shall also conform to BHMA ANSI/BHMA A156.7. Except as otherwise specified, hinge sizes shall conform to the hinge manufacturer's printed recommendations.

2.3.1 Hinges for Reverse Bevel Doors with Locks

Hinges for reverse bevel doors with locks shall have pins that are made nonremovable by means such as a set screw in the barrel, or safety stud, when the door is in the closed position.

2.3.2 Contractor's Option

Hinges with antifriction bearings may be furnished in lieu of ball bearing hinges, except where prohibited for fire doors by the requirements of NFPA 80.

2.3.3 Pivot Hinges

Pivot hinges shall conform to BHMA ANSI/BHMA A156.4.

2.4 LOCKS AND LATCHES

To the maximum extent possible, locksets, latchsets and deadlocks shall be the products of a single manufacturer. Lock fronts for double-acting doors shall be rounded. Strikes for wood frames and pairs of wood doors shall be furnished with wrought boxes.

2.4.1 Mortise Lock and Latchsets

Mortise lock, latchsets, and strikes shall be series 1000 and shall conform to BHMA ANSI/BHMA A156.13, operational Grade 1. Strikes for security doors shall be rectangular without curved lip. Mortise type 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. Mortise locks shall have armored fronts.

2.4.2 Lock Cylinders (Mortise, Rim and Bored)

Lock cylinders shall comply with BHMA ANSI/BHMA A156.5. Lock cylinder shall have not less than seven pins. Cylinders shall have key removable type cores. An extension of the existing keying system shall be provided. Construction interchangeable cores shall be provided. Disassembly of knob or lockset shall not be required to remove core from lockset. All locksets, lockable exit devices, and padlocks shall accept same interchangeable cores.

2.4.3 Padlocks

Padlocks shall conform to ASTM F 883. Straps, tee hinges, and hasps shall conform to BHMA ANSI/BHMA A156.20.

2.4.4 Lock Trim

Lock trim shall be cast, forged, or heavy wrought construction of commercial plain design. In addition to meeting the test requirement of BHMA ANSI/BHMA A156.2 or BHMA ANSI/BHMA A156.13, knobs, lever handles, roses, and escutcheons shall be 0.050 inch thick, if unreinforced. If reinforced, the outer shell shall be 0.035 inch thick and the combined thickness shall be 0.070 inch except that knob shanks shall be 0.060 inch thick. Knob diameter shall be 2-1/8 to 2-1/4 inches. Lever handles shall be of plain design with ends returned to no more than 1/2 inch from the door face.

2.5 EXIT DEVICES AND EXIT DEVICE ACCESSORIES

Exit devices and exit device accessories shall conform to BHMA ANSI/BHMA A156.3, Grade 1.

2.5.1 Exit Devices and Auxiliary Items

Trim shall be of wrought construction and commercial plain design with straight, beveled, or smoothly rounded sides, corners, and edges. Adjustable strikes shall be provided for rim type and vertical rod devices. Open back strikes shall be provided for pairs of doors with mortise and vertical rod devices; except open back strikes shall be used on labeled doors only where specifically provided for in the published listings. Touch bars shall be provided in lieu of conventional crossbars and arms. Escutcheons shall be provided not less than 7 by 2-1/4 inches. Escutcheons shall be cut to suit cylinders and operating trim.

2.6 KEYING

Locks shall be keyed to the existing keying system in sets or subsets in accordance with the approved schedule. Locks shall be furnished with the manufacturer's standard construction key system. Change keys for locks shall be stamped with change number and the inscription "U.S. Property - Do Not Duplicate." Keys shall be supplied as follows:

Locks:	3 change keys each lock.
Master keyed sets:	2 keys each set.
Grand master keys:	12 total.
Control keys:	2 total.
Construction keys:	2 total.
Blank keys:	24 total.

The keys shall be furnished to the Contracting Officer arranged for key control system storage in sets or subsets as scheduled.

2.7 DOOR CLOSING DEVICES

Door closing devices shall conform to BHMA ANSI/BHMA A156.4, Grade 1. Closing devices shall be products of one manufacturer for each type specified. The opening resistance of closing devices shall not exceed 15 1bf applied at the latch stile or exceed 5 1bf where low opening resistance is scheduled.

2.7.1 Surface Type Closers

Surface type closers shall be Grade 1, Series C02000 Full Cover with options PT-4H, Size 1 or 2 through Size 6, and PT-4D with back check position valve. Except as otherwise specified, sizes shall conform to the manufacturer's published recommendations. Closers for outswinging exterior doors shall have parallel arms or shall be top jamb mounted. Closers for doors close to a wall shall be of narrow projection so as not to strike the wall at the 90-degree open position.

2.8 DOOR CONTROLS - OVERHEAD HOLDERS

Door controls - overhead holders shall conform to BHMA ANSI/BHMA A156.8.

2.9 ARCHITECTURAL DOOR TRIM

Architectural door trim shall conform to BHMA ANSI/BHMA A156.6.

2.9.1 Door Protection Plates

2.9.1.1 Armor Plates

Armor plates shall be Type stainless steel, 36 inches in height, and 2 inches less in width than the width of the door for single doors and 1 inch less for pairs of doors. Edges of metal plates shall be beveled. Where the door has a louver panel, the armor plate shall be omitted if top of louver frame is more than 20 inches above the bottom of the door.

2.9.1.2 Kick Plates

Kick plates shall be Type stainless steel. Width of plates shall be 2 inches less than door width for single doors and 1 inch less for pairs of doors. Height shall be 16 inches, except where the bottom rail is less than 16 inches the plate shall extend to within 1/2 inch of the panel mold or glass bead. Edges of metal plates shall be beveled.

2.9.1.3 Mop Plates

Mop plates shall be Type stainless steel. Width of plates shall be 2 inches less than door width for single doors and 1 inch less for pairs of doors.

The height shall be 4 inches. Edges of metal plates shall be beveled.

2.9.2 Push Plates

2.9.2.1 Combination Push-Pull Plates

Combination push-pull plates shall be Type J303, 0.050 inch thick minimum stainless steel beveled four edges.

2.9.2.2 Flat Plates

Flat plates shall be Type J301 0.50 inch thick stainless steel, size as indicated on schedule. Edges of metal plates shall be beveled.

2.9.3 Door Pulls and Push/Pull Units

2.9.4 Push and Pull Bars

Push and pull bars shall be Category J500, stainless steel. Edges of mounting plates shall be beveled.

2.10 MISCELLANEOUS

2.10.1 Automatic Door Bottoms

Automatic door bottoms shall be mortised type with aluminum housing cover, anodized clear finish. Door bottom shall have a wool, felt, rubber, vinyl, or neoprene seal and shall be actuated by the opening and closing of the door. The door bottom shall exclude light when the door is in the closed position and shall inhibit the flow of air through the unit.

2.10.2 Metal Thresholds

Thresholds shall conform to BHMA ANSI/BHMA A156.21. Thresholds for exterior doors shall be extruded aluminum of the type indicated and shall provide proper clearance and an effective seal with specified weather stripping. Latching thresholds shall conform to BHMA ANSI/BHMA A156.3, Type 26, and of such height that the bottom of the door shall be 1/8-inch over the tread of the threshold and 1/8-inch below the top of the stop. Where required, thresholds shall be modified to receive projecting bolts of exit devices. Thresholds for doors accessible to the handicapped (all doors) shall be beveled with slopes not exceeding 1:2 and with heights not exceeding 1/2-inch. Air leakage rate of weatherstripping shall not exceed 0.5 cubic feet per minute per lineal foot of crack when tested in accordance with ASTM E 283 at standard test conditions.

2.10.3 Rain Drips

Extruded aluminum, not less than 0.07 inch thick, bronze anodized, painted. Door sill rain drips shall be 1-1/2 inches to 1-3/4 inches high by5/8 inch projection. Overhead rain drips shall be approximately 1-1/2 inches high by 2-1/2 inches projection and shall extend 2 inches on either side of the door opening width.

2.10.4 Aluminum Housed Type Weatherseals

Weatherseals of the type indicated shall consist of extruded aluminum retainers not less than 0.07 inch wall thickness with vinyl, neoprene, silicone rubber, polyurethane or vinyl brush inserts. Aluminum shall be

bronze anodized. Weatherseal material shall be of an industrial/commercial grade. Seals shall remain functional through all weather and temperature conditions. Air leakage rate of weatherstripping shall not exceed 0.5 cubic feet per minute per lineal foot of crack when tested in accordance with ASTM E 283 at standard test conditions.

2.10.5 Gasketing

Gasketing shall be a compression type seal, silicon based, self-adhesive product for use on steel door frames with steel doors for 20-minute. Color shall be bronze. Air leakage rate of weatherstripping shall not exceed 0.5 cubic feet per minute per lineal foot of crack when tested in accordance with ASTM E 283 at standard test conditions.

2.10.6 Key Control Storage System

Key control storage system shall conform to BHMA ANSI/BHMA A156.5, wall mounted, capacity 50, required only at Buildings 23686, 23700, and 24050 and shall be properly labeled for key identification. Set up, identification labeling and location of the key control storage shall be as directed at the Predelivery Conference.

2.11 FASTENINGS

Fastenings of proper type, size, quantity, and finish shall be supplied with each article of hardware. Machine screws and expansion shields shall be used for attaching hardware to concrete or masonry. Fastenings exposed to the weather in the finished work shall be of brass, bronze, or stainless steel. Sex bolts, through bolts, or machine screws and grommet nuts, where used on reverse-bevel exterior doors equipped with half-surface or full-surface hinges, shall employ one-way screws or other approved tamperproof screws. Screws for the jamb leaf of half-mortise and full-surface hinges attached to structural steel frames shall be one-way or other approved tamperproof type.

2.12 FINISHES

Unless otherwise specified, finishes shall conform to those identified in BHMA ANSI/BHMA A156.18. Where painting of primed surfaces is required, painting is specified in Section 09900 PAINTING, GENERAL.

2.13 HARDWARE FOR FIRE DOORS

Hardware for fire doors shall conform to the requirements of NFPA 80 and NFPA 101.

PART 3 EXECUTION

3.1 APPLICATION

Hardware shall be located in accordance with DHI-04 and DHI-05, except that deadlocks shall be mounted 48 inches above finish floor. When approved, slight variations in locations or dimensions will be permitted. Application shall be in accordance with DHI-A115.IG or DHI A115-W. Door control devices for exterior doors such as closers and holders, shall be attached to doors with thru bolts and nuts or sex bolts. Alternate fastening methods may be approved by the Contracting Officer when manufacturers' documentation is submitted to verify that the fastening devices and door reinforcements are adequate to resist wind induced

stresses. Electric hardware items and access control devices shall be installed in accordance with manufacturer's printed installation procedures.

3.1.1 Door-Closing Devices

Door-closing devices shall be installed and adjusted in accordance with the templates and printed instructions supplied by the manufacturer of the devices. Insofar as practicable, doors opening to or from halls and corridors shall have the closer mounted on the room side of the door.

3.1.2 Key Control Storage Systems

Key control storage system shall be installed where directed.

3.1.3 Kick Plates and Mop Plates

Kick plates shall be installed on the push side of single-acting doors and on both sides of double-acting doors. Mop plates shall be installed on the pull side of the single acting doors.

3.1.4 Thresholds

Thresholds shall be secured with a minimum of three fasteners per single door width and six fasteners per double door width with a maximum spacing of 12 inches. Exterior thresholds shall be installed in a bed of sealant with expansion anchors and stainless steel screws, except that bronze or anodized bronze thresholds shall be installed with expansion anchors with brass screws. Minimum screw size shall be No. 10 length, dependent on job conditions, with a minimum of 3/4 inch thread engagement into the floor or anchoring device used.

3.1.5 Rain Drips

Door sill rain drips shall align with the bottom edge of the door. Overhead rain drips shall align with bottom edge of door frame rabbet. Drips shall be set in sealant and fastened with stainless steel screws.

3.1.6 Weatherseals

Weatherseals shall be located as indicated, snug to door face and fastened in place with color matched metal screws after door and frames have been finish painted. Screw spacing shall be as recommended by manufacturer.

3.1.7 Gasketing

Gasketing shall be installed at the inside edge of the hinge and head and latch sides of door frame. Frames shall be toleranced for a 1/8-inch clearance between door and frame. Frames shall be treated with tape primer prior to installation.

3.2 OPERATIONAL TESTS

Prior to acceptance of any electrical hardware system, an operational test shall be performed to determine if devices are operating as intended by the specifications. Wiring shall be tested for correct voltage, current carrying capacity, and proper grounding. Stray voltages in lock wiring shall be eliminated to prevent locking devices from releasing in critical situations.

3.3 SCHEDULE

WHITE SANDS MISSILE RANGE
LAUNCH COMPLEX REVITALIZATION - PROD/NEW
CARTER BURGESS

7/21/98

BLDG 20813

HW-1 ALUMINUM 100

1 EA.	EXIT DEVICE	CD3547NL
1 EA.	EXIT DEVICE	CD3547TP
2 EA.	MORT. CYLINDER	AS REQUIRED
1 EA.	RIM CYLINDER	AS REQUIRED
2 EA.	CLOSER	C75021 PT8F x ST2714
2 EA.	OH STOP	C51541 x ST9401
1 EA.	THRESHOLD	8139BR
1 SET	WEATHERSEAL	BY DOOR MANUFACTURER
2 EA.	SWEEP	C627DKB

NOTE: FINISH SHALL MATCH STOREFRONT

HW-2 ALUMINUM 100A

EACH OPENING TO RECEIVE:

6 EA.	HINGES	A8112 4.5x4.5
2 SET	PUSH PULLS	350 x 333DT
2 EA.	CLOSER	C75031 PT8B/8

NOTE: FINISH SHALL MATCH STOREFRONT

HW-3 103 104

EACH OPENING TO RECEIVE:

3 EA.	HINGES	A8112 4.5x4.5	652
1 EA.	PASSAGE SET	F01	630
1 EA.	CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA.	MOP PLATE	J102 4" FH-CSK	630
1 SET	SEALS	2525	

HW-4 102

EACH OPENING TO RECEIVE:

3 EA.	HINGES	A8112 4.5x4.5	652
1 EA.	OFFICE LOCK	F13	630
1 EA.	CLOSER	C72061 PT4C/D/G x 1.5" BORE	689
1 EA.	KICK PLATE	J102 8" FH-CSK	630
1 SET	SEALS	107SA	ALUM
1 EA.	DOOR BOTTOM	4447	

HW-5 102A

WHITE SANDS MISSILE RANGE
LAUNCH COMPLEX REVITALIZATION - PROD/NEW
CARTER BURGESS
EACH OPENING TO RECEIVE:

6 EA. HINGES	A8112 4.5x4.5	652
1 PR. FLUSHBOLT	L14081	626
1 EA. OFFICE LOCK	F13	630
1 EA. ASTRAGAL	158A	ALUM
1 SET SEALS	107SA	ALUM
1 EA. DOOR BOTTOM	4447	

HW-6 105

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. STOREROOM LOCK	F07	630
[AM#1]_____		
[AM#1]_____		
[AM#1]		
1 EA. CLOSER	C72011 PT4C/Dx1.5" BORE	689
1 SET SEALS	2505	

HW-7 101

EACH OPENING TO RECEIVE:

3 EA. HINGES	A5112 4.5x4.5 NRP	630
1 EA. EXIT DEVICE	TYPE 1 x 01	628
1 EA. CLOSER	C72021 PT4C/D/G x 1.5" BORE	689
1 EA. THRESHOLD	950	ALUM
1 SET WEATHERSEAL	130SA	ALUM
1 EA. SWEEP	C627A	ALUM
1 EA. RAIN DRIP	16A	ALUM

BLDG 23686

HW-8 ALUMINUM 100

EACH OPENING TO RECEIVE:

2 SETSPIVOTS	7200 SERIES
1 EA. EXIT DEVICE	CD3547NL
1 EA. EXIT DEVICE	CD3547TP
2 EA. MORT. CYLINDER	AS REQUIRED
1 EA. RIM CYLINDER	AS REQUIRED
2 EA. CLOSER	C75021 PT8F x ST2714
2 EA. OH STOP	C51541 x ST9401
1 EA. THRESHOLD	8139BR
1 SET WEATHERSEAL	BY DOOR MANUFACTURER
2 EA. SWEEP	C627DKB

NOTE: FINISH SHALL MATCH STOREFRONT

HW-9 ALUMINUM 100A

EACH OPENING TO RECEIVE:

2 SETSPIVOTS	7200 SERIES	626
2 SETSPUSH PULLS	350 x 333DT	628

WHITE SANDS MISSILE RANGE
LAUNCH COMPLEX REVITALIZATION - PROD/NEW
CARTER BURGESS

2 EA. CLOSER	C75041 PT8 D/F	689

NOTE: FINISH SHALL MATCH STOREFRONT

HW-10 102 103

EACH OPENING TO RECEIVE:

3 EA. HINGES	A5112 4.5x4.5 NRP	630
1 EA. EXIT DEVICE	TYPE 1 x 08 (994L)	628
1 EA. RIM CYLINDER	AS REQUIRED	626
1 EA. CLOSER	C72021 PT4C/D/G x 1.5" BORE	689
1 EA. THRESHOLD	950	ALUM
1 SET WEATHERSEAL	130SA	ALUM
1 EA. SWEEP	C627A	ALUM
1 EA. RAIN DRIP	16A	ALUM

HW-11 105 106 107 108 109 110 112 113 114 115 116 117 118
119
120 121 123 123A 124

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. OFFICE LOCK	F13	630
1 EA. WALL STOP	L12101 - CAST	626
3 EA. SILENCERS	L03011	GREY

HW-12 111 125 [AM#1]_____

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. CLASSROOM LOCK	F05	630
1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA. WALL STOP	L12101 - CAST	626
3 EA. SILENCERS	L03011	GREY

HW-13 126 129 130

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. PASSAGE SET	F01	630
1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. MOP PLATE	J102 4" FH-CSK	630
1 EA. WALL STOP	L12101 - CAST	626
3 EA. SILENCERS	L03011	GREY

HW-14 122

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. STOREROOM LOCK	F07	630

WHITE SANDS MISSILE RANGE
LAUNCH COMPLEX REVITALIZATION - PROD/NEW
CARTER BURGESS

1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. WALL STOP	L12101 - CAST	626

[AM#1]_____
[AM#1]

1 SET SEALS	2505	

[AM#1]
HW-37 128

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. STOREROOM LOCK	F07	630
1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA. WALL STOP	L12101 - CAST	626
1 SET SEALS	2505	

BLDG 2370

HW-15 ALUMINUM 100

EACH OPENING TO RECEIVE:

2 SETSPIVOTS	7200 SERIES
1 EA. EXIT DEVICE	CD3547NL
1 EA. EXIT DEVICE	CD3547TP
2 EA. MORT. CYLINDER	AS REQUIRED
1 EA. RIM CYLINDER	AS REQUIRED
2 EA. CLOSER	C75021 PT8F x ST2714
2 EA. OH STOP	C51541 x ST9401
1 EA. THRESHOLD	8139BR
1 SET WEATHERSEAL	BY DOOR MANUFACTURER
2 EA. SWEEP	C627DKB

NOTE: FINISH SHALL MATCH STOREFRONT

HW-16 ALUMINUM 100A

EACH OPENING TO RECEIVE:

2 SETSPIVOTS	7200 SERIES	626
2 SETSPUSH PULLS	350 x 333DT	628
2 EA. CLOSER	C75041 PT8 D/F	689

HW-17 104 105 107 108 109 110 111 112 113 114 115 116 117 118 119 120

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. OFFICE LOCK	F13	630
1 EA. WALL STOP	L12101 - CAST	626
3 EA. SILENCERS	L03011	GREY

WHITE SANDS MISSILE RANGE
LAUNCH COMPLEX REVITALIZATION - PROD/NEW
CARTER BURGESS
HW-18 101 128 128A 130 130A [AM#1]_____ 139

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. CLASSROOM LOCK	F05	630
1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. WALL STOP	L12101 - CAST	626
3 EA. SILENCERS	L03011	GREY

HW-19 121 122

EACH OPENING TO RECEIVE:

3 EA. HINGES	A5112 4.5x4.5 NRP	630
1 EA. EXIT DEVICE	TYPE 1 x 01	628
1 EA. CLOSER	C72021 PT4C/D/G x 1.5" BORE	689
1 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. THRESHOLD	950	ALUM
1 SET WEATHERSEAL	130SA	ALUM
1 EA. SWEEP	C627A	ALUM
1 EA. RAIN DRIP	16A	ALUM

HW-20 126A 140 140A 141 141A 141B

EACH OPENING TO RECEIVE:

6 EA. HINGES	A5111 5x4.5 NRP	630
1 EA. KEYED MULLION	KR4954	600
1 EA. MORT. CYLINDER	AS REQUIRED	626
2 EA. EXIT DEVICE	TYPE 1 x 08 (994L)	628
2 EA. RIM CYLINDER	AS REQUIRED	626
2 EA. CLOSER	C72061 PT4C/D/G-SPRING x 1.5" BORE	689
2 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. THRESHOLD	950	ALUM
1 SET WEATHERSEAL	130SA	ALUM
1 EA. SWEEP	C627A	ALUM
1 EA. RAIN DRIP	16A	ALUM

HW-21 131

EACH OPENING TO RECEIVE:

3 EA. HINGES	A5112 4.5x4.5 NRP	630
1 EA. STOREROOM LOCK	F07	630
1 EA. CLOSER	C72021 PT4C/D/G x 1.5" BORE	689
1 EA. THRESHOLD	950	ALUM
1 SET WEATHERSEAL	130SA	ALUM
1 EA. SWEEP	C627A	ALUM

HW-22 123 124 125 133 134

EACH OPENING TO RECEIVE:

3 EA. HINGES	A5112 4.5x4.5 NRP	630
1 EA. PASSAGE SET	F01	630

WHITE SANDS MISSILE RANGE
LAUNCH COMPLEX REVITALIZATION - PROD/NEW
CARTER BURGESS

1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. WALL STOP	L12101 - CAST	626
3 EA. SILENCERS	L03011	GREY

HW-23 137 137A

EACH OPENING TO RECEIVE:

3 EA. HINGES	A5112 4.5x4.5 NRP	630
1 EA. MECH. PB LOCK	L1000	626
[AM#1]		
1 EA. COMBINATION DEADBOLT	SNG 8470 LSF	
1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA. KICK PLATE	J102 8" FH-CSK	630
[AM#1]		
1 EA. WALL STOP	L12101 - CAST	626
1 SET SEALS	2525	
1 EA. DOOR BOTTOM	4447	

HW-24 126 127 127A 129 135 138

EACH OPENING TO RECEIVE:

3 EA. HINGES	A5112 4.5x4.5 NRP	630
1 EA. CLASSROOM LOCK	F05	630
1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. WALL STOP	L12101 - CAST	626
1 EA. THRESHOLD	411	ALUM
1 SET SEALS	2525	
1 EA. DOOR BOTTOM	4447	

HW-25 142

EACH OPENING TO RECEIVE:

6 EA. HINGES	A8112 4.5x4.5	652
2 EA. EXIT DEVICE	9827L-LBR	628
2 EA. RIM CYLINDER	AS REQUIRED	626
2 EA. CLOSER	C72021 PT4C/D/G x 1.5" BORE	689
2 EA. KICK PLATE	J102 8" FH-CSK	630
1 SET SEALS	2525	

[AM#1]
HW-38 132

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. CLASSROOM LOCK	F05	630
1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. WALL STOP	L12101 - CAST	626
1 SET SEALS	2525	

WHITE SANDS MISSILE RANGE
LAUNCH COMPLEX REVITALIZATION - PROD/NEW
CARTER BURGESS

BLDG 24050

HW-26 ALUMINUM 100

EACH OPENING TO RECEIVE:

2 SETSPIVOTS	7200 SERIES	
1 EA. EXIT DEVICE	CD3547NL	
1 EA. EXIT DEVICE	CD3547TP	
2 EA. MORT. CYLINDER	AS REQUIRED	
1 EA. RIM CYLINDER	AS REQUIRED	
2 EA. CLOSER	C75021 PT8F x ST2714	
2 EA. OH STOP	C51541 x ST9401	
1 EA. THRESHOLD	8139BR	
1 SET WEATHERSEAL	BY DOOR MANUFACTURER	
2 EA. SWEEP	C627DKB	

NOTE: FINISH SHALL MATCH STOREFRONT

HW-27 ALUMINUM 100A

EACH OPENING TO RECEIVE:

2 SETSPIVOTS	7200 SERIES	626
2 SETSPUSH PULLS	350 x 333DT	628
2 EA. CLOSER	C75041 PT8 D/F	689

NOTE: FINISH SHALL MATCH STOREFRONT

HW-28 138

EACH OPENING TO RECEIVE:

6 EA. HINGES	A5111 5x4.5 NRP	630
1 EA. MULLION	4954	600
2 EA. EXIT DEVICE	TYPE 1 x 08 (994L)	628
2 EA. RIM CYLINDER	AS REQUIRED	626
2 EA. CLOSER	C72021 PT4C/D/G x 1.5" BORE	689
2 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. THRESHOLD	950	ALUM
1 SET WEATHERSEAL	130SA	ALUM
2 EA. SWEEP	C627A	ALUM

HW-29 136B

EACH OPENING TO RECEIVE:

1 EA. PADLOCK	AS REQUIRED

HW-30 136A 136C 141

EACH OPENING TO RECEIVE:

3 EA. HINGES	A5111 5x4.5 NRP	630
1 EA. EXIT DEVICE	TYPE 1 x 08 (994L)	628
1 EA. RIM CYLINDER	AS REQUIRED	626

WHITE SANDS MISSILE RANGE
LAUNCH COMPLEX REVITALIZATION - PROD/NEW
CARTER BURGESS

1 EA. CLOSER	C72061 PT4C/D/G-SPRING x 1.5" BORE	689
1 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. THRESHOLD	950	ALUM
1 SET WEATHERSEAL	130SA	ALUM
1 EA. SWEEP	C627A	ALUM
1 EA. RAIN DRIP	16A	ALUM

HW-31 102 102A 108 109 110 111 112 113 114 115 116 134
135 101 101A 103 104 105 106 107 [AM#1] _____
124 125 126

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. OFFICE LOCK	F13	630
1 EA. WALL STOP	L12101 - CAST	626
3 EA. SILENCERS	L03011	GREY

HW-32 120 130 133

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. PASSAGE SET	F01	630
1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. MOP PLATE	J102 4" FH-CSK	630
1 EA. WALL STOP	L12101 - CAST	626
1 SET SEALS	2525	

HW-33 117 118 119 119A 121 122 127 128 129 129A 131 136

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. CLASSROOM LOCK	F05	630
1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA. WALL STOP	L12101 - CAST	626
1 SET SEALS	2525	

HW-34 132

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. STOREROOM LOCK	F07	630
1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. WALL STOP	L12101 - CAST	626
1 SET SEALS	2525	

HW-35 136D

EACH OPENING TO RECEIVE:

6 EA. HINGES	A8112 4.5x4.5	652
1 EA. COORDINATOR	4.1.1 TYPE 21	628

WHITE SANDS MISSILE RANGE
LAUNCH COMPLEX REVITALIZATION - PROD/NEW
CARTER BURGESS

1 EA. FLUSHBOLT	FB42	630
1 EA. CLASSROOM LOCK	F05	630
2 EA. CLOSER	C72011 PT4C/D/F x 1.5" BORE	689
2 EA. KICK PLATE	J102 8" FH-CSK	630
1 EA. ASTRAGAL	BY DOOR MANUFACTURER	
1 SET SEALS	2525	

[AM#1]
HW-36 123

EACH OPENING TO RECEIVE:

3 EA. HINGES	A8112 4.5x4.5	652
1 EA. OFFICE LOCK	F13	630
1 EA. WALL STOP	L12101 - CAST	626
1 EA. CLOSER	C72011 PT4C/D x 1.5" BORE	689
1 SET SEALS	2525	

-- End of Section --

SECTION 10100

MISCELLANEOUS ITEMS
4/93

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.

THE ALUMINUM ASSOCIATION (AA)

AA-03	(Sep. 1980, 7th Ed.) Designation System for Aluminum Finishes

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 543	(1981) Slate Blackboards
ASTM E 814	(1983) Fire Tests of Through-Penetration Fire Stops

PORCELAIN ENAMEL INSTITUTE (PEI)

PEI S 100	(1965) Architectural Porcelain Enamel on Steel for Exterior Use.

1.2 SUBMITTALS

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

SD-01 Data

Manufacturer's Catalog Data; FIO.

SD-04 Drawings

Fabrication/Erection/Installation Drawings; FIO.

Drawings shall be submitted for each product listed in PART 2 - PRODUCTS. Drawings shall show sizes, details of construction, method of construction, method of assembling, hardware materials, colors, method of mounting, location of each item, specifications for surface preparation and installation of items, and all other details pertinent to installation. For each product, drawings shall identify all parts by name and material. Materials fabricated or delivered to the job site before approval of the drawings shall be subject to rejection.

SD-06 Instructions

Fire Extinguisher Cabinets; FIO.

Submit special criteria and wall opening coordination requirements.

SD-13 Certifiates

Fire Extinguishers; FIO.

Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

SD-14 Samples

Marker Boards; FIO.

Unless otherwise indicated, samples shall be full size, taken from manufacturer's stock, and be complete as required for installation. After approval, samples may be installed in the work provided each sample is clearly identified and its location recorded. Provide one sample(s) of each product listed in PART 2 - PRODUCTS unless otherwise indicated below:

Writing surface, 6 inches square.

Full-size wall clips or anchoring devices.

Each type of frame, 8 inches long.

Each type of trim and chalk trough, 8 inches long.

Each accessory, full size.

SD-19 Operation and Maintenance Manuals

Fire Extinguishers; FIO.

Ooperation and Maintenance Data: Submit test, refill or recharge schedules and re-certifiation requirements.

1.3 DELIVERY AND STORAGE

Materials and products shall be delivered to the site in the manufacturer's original unopened containers with brand name and type clearly marked. Materials and products shall be carefully handled and stored in dry, watertight enclosures.

1.4 FIELD MEASUREMENTS

Field measurements shall be taken prior to the preparation of drawings and fabrication to ensure proper fits.

PART 2 PRODUCTS

2.1 GENERAL

Supplementary parts necessary to complete each product item shall be included even though such work is not definitely shown or specified. The Contractor shall furnish to the proper trades all anchors, sockets, or

fastenings required for securing items to other construction. Details and specifications of items for which standard products are available are representative guides of requirements for such items. Standard products, generally meeting such requirements, will be accepted, if details of construction and installation are approved by the Contracting Officer.

2.1.1 Metal Thickness

Gages of sheet iron and steel specified are U. S. Standard for sheet and plate. Extruded sections shall be at least 1/8-inch thick, unless otherwise specified or shown on the drawings.

2.1.2 Aluminum Frames

Aluminum frames, trim, and accessories shall be fabricated of 6063-T5 or T6 extruded aluminum alloy. Corners and connections shall be hairline miter or butt joints. Exposed aluminum surfaces shall have a clear satin finish. Satin finish shall be chemically etched medium matte anodic coating, Class II Architectural, 0.4 mil thick, in accordance with AA-03.

2.2 MARKER BOARDS

2.2.1 Porcelain Enamel

Writing surface shall be factory laminated assembly consisting of a face sheet of (24 gage) 24 gag sheet steel with porcelain enamel finish, a 3/8-inch to 1/2-inch thick plywood, particleboard, or hardboard core, and a 0.005-inch thick aluminum backing sheet. The porcelain enamel surface shall be fused to the steel at not less than 1,400 degrees F in accordance with PEI S 100. Writing surface shall be finished semi-gloss. Color shall be white. A supply of one dozen liquid chalk markers in assorted colors, and a felt eraser, shall be furnished with each chalkboard.

2.2.2 Display (Map) Rail

Display rail shall be snap-on type, 1-inch wide and 1/4-inch thick cork insert in an extruded aluminum frame, and shall be mounted along the top of the chalkboard. Color of cork shall be a natural cork color.

2.2.3 Accessories

Accessories shall be fabricated from aluminum with snap-on holders of spring steel. Design shall be snap-on type for mounting on the display rail. Accessories shall include:

Map hooks, two per 4-foot section of display rail.

2.3 FIRE EXTINGUISHER CABINETS

Metal fire extinguisher cabinets shall be furnished and installed where shown on the drawings or specified. Cabinets to be located in fire-rated walls shall be fire-rated type, fabricated in accordance with ASTM E 814, and shall be listed by an approved testing agency for 1- and 2-hour combustible and non-combustible wall systems. The testing agency's seal shall be affixed to each fire-rated cabinet. Cabinets shall be of the recessed type suitable for 10 pound extinguishers. Box and trim shall be of heavy gage rolled steel. Door shall be a rigid frame with full length piano type hinge and double strength (DSA) glass panel. Door and box shall have the manufacturer's standard white baked enamel finish inside and out.

2.4 FIRE EXTINGUISHERS

Fire extinguisher shall be dry chemical type, stainless steel tank, with pressure gage, Class B:C, Size 10; classified and labeled by UL for the purpose specified and indicated; red enamel finish.

2.5 PROJECTION SCREENS

2.5.1 Front Projection

Heavy duty, hanging, electric motor operated), ceiling-[AM#1]recessed type, with glass bead reflecting surface. Size shall be 72 by 96 inches as indicated on the drawings with the following dimensional requirements:

Minimum case thickness:	0.0299 inch
Minimum end cap thickness:	0.0359 inch
Minimum length overall:	101 inches
Maximum roller diameter:	1-3/8 inches

Screen shall be mounted as [AM#1] _____ indicated on the drawings in accordance with the manufacturer's instructions.

PART 3 EXECUTION

3.1 PREPARATION AND INSTALLATION

Mounting surface preparation and product installation shall be in accordance with the product manufacturer's written recommendations.

3.2 BULLETIN BOARDS

Bulletin boards shall be mounted with the top edge not higher than 6'-6" above the floor.

3.3 CLEANING

Following installation, dirty or discolored surfaces of the products shall be cleaned, with the products left free of defects. Products that are damaged or improperly installed shall be removed and reinstalled or replaced with new products as directed.

-- End of Section --

SECTION 10270

RAISED FLOOR SYSTEM
01/97

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 NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A208.1	(1993) Particleboard

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 84	(1996a) Surface Burning Characteristics of Building Materials
ASTM E 648	(1997) Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source

CEILINGS AND INTERIOR SYSTEMS CONTRACTORS ASSOCIATION (CISCA)

CISCA-01	(1987) Recommended Test Procedures for Access Floors

DEPARTMENT OF COMMERCE (DOC)

DOC PS 1	(1996) Voluntary Product Standard - Construction and Industrial Plywood

FEDERAL SPECIFICATIONS (FS)

FS SS-T-312	(Rev B; Int Am 1; Notice 1) Tile, Floor: Asphalt, Rubber, Vinyl, and Vinyl Composition

INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS (ICBO)

ICBO-01	(1994) Uniform Building Code (3 Vol.)

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA LD 3	(1995) High-Pressure Decorative Laminates

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 75	(1995) Protection of Electronic Computer/Data Processing Equipment
NFPA 99	(1996; Errata) Health Care Facilities

UNDERWRITERS LABORATORIES (UL)

UL 779 (1995) Electrically Conductive Floorings

1.2 SYSTEM DESCRIPTION

Raised flooring shall be installed at the location and elevation and in the arrangement shown on the drawings. The floor system shall be of the stringer type, complete with all supplemental items, and shall be the standard product of a manufacturer specializing in the manufacture of raised floor systems.

1.2.1 Floor Panels

Floor panel testing shall be conducted in accordance with CISCA-01. When tested as specified, all deflection and deformation measurements shall be made at the point of load application on the top surface of the panel. Floor panels shall be capable of supporting 1,000 pounds concentrated load without deflecting more than 0.080 inch and without permanent deformation in excess of 0.010 inch in any of the specified tests. Floor panels shall be capable of supporting 250 pounds per square foot uniform live load without deflection more than 0.040 inch. Floor panels shall be capable of supporting 600 pounds rolling load without deflecting more than 0.040 inch and without permanent deformation in excess of 0.020 inch. In accordance with CISCA-01, the permanent deformation limit under rolling load shall be satisfied in all of the specified tests. In the specified tests, the permanent deformation shall be measured after 10 passes with Wheel 1 and after 10,000 passes with Wheel 2.

1.2.2 Stringers

Stringers shall be capable of supporting a 250 pound concentrated load at midspan without permanent deformation in excess of 0.010 inch.

1.2.3 Pedestals

Pedestals shall be capable of supporting a 5,000 pound axial load without permanent deformation.

1.2.4 Pedestal Adhesive

Adhesive shall be capable of securing a pedestal in place with sufficient bonding strength to resist an overturning force of 1,000 inch pounds.

1.2.5 Bond Strength of Factory Installed Floor Covering

Bond strength of floor covering shall be sufficient to permit handling of the panels by use of the panel lifting device, and to withstand moving caster loads up to 1,000 pounds, without separation of the covering from the panel.

1.2.6 Leakage

When the space below the finished floor is to be an air plenum, air leakage through the joints between panels and around the perimeter of the floor system shall not exceed 0.1 cubic foot of air per minute per linear foot of joint subjected to 0.1 inch, water gauge, positive pressure in the plenum.

1.2.7 Grounding

The raised floor system shall be grounded for safety hazard and static suppression.

1.3 SUBMITTALS

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

SD-01 Data

Raised Floor System; GA.

Manufacturer's descriptive data, catalog cuts, and installation instructions. The data shall include information about any design and production techniques, procedures and policies used to conserve energy, reduce material, improve waste management or incorporate green building/recycled products into the manufacturer of their components or products. Cleaning and maintenance instructions shall be included. Design calculations which demonstrate that the proposed floor system meets requirements for seismic loading, prepared in accordance with ICBO-01. Certified copies of test reports may be submitted in lieu of calculations.

SD-04 Drawings

Raised Floor System; GA.

Drawings showing layout of the work, sizes and details of components, details at floor perimeter, bracing to resist seismic or other lateral loads, typical cutout details including size and shape limitation, method of grounding, description of shop coating, and installation height above structural floor.

SD-09 Reports

Tests; FIO. Testing of Electrical Resistance; FIO.

Certified copies of test reports from an approved testing laboratory, attesting that the proposed floor system components meet the performance requirements specified.

SD-13 Certificates

Raised Floor System; FIO.

Certificate of compliance attesting that the raised floor system meets specification requirements.

SD-14 Samples; GA.

One sample of each panel type and suspension system proposed for use.

1.4 DELIVERY, STORAGE, AND HANDLING

Materials shall be stored in original protective packaging in a safe, dry,

and clean location and shall be handled in a manner to prevent damage. Panels shall be stored at temperatures between 40 and 90 degrees F, and between 20 percent and 70 percent humidity.

1.5 EXTRA MATERIALS

Spare floor panels, spare complete pedestal assemblies, and spare stringers shall be furnished at the rate of one space for each 100 or fraction thereof required.

1.6 OPERATION AND MAINTENANCE MANUALS

Provide maintenance instructions for proper care of the floor panel surface. When conductive flooring is specified, require submittal of maintenance instructions to identify special cleaning and maintenance requirements to maintain "conductivity" properties of the panel finish.

PART 2 PRODUCTS

2.1 FLOOR PANELS

2.1.1 Panel Construction

Except for edge panels, panel size shall be 24 by 24 inches. Finished panels shall be within a 0.010 inch tolerance of the nominal size, and shall be square within a tolerance of 0.015 inch measured corner-to-corner. The top surface of panels shall be flat within a 0.020 inch tolerance measured corner-to-corner. Panels shall be permanently marked to indicate load rating and model number.

2.1.1.1 Hollow Formed Steel Panels

Steel panels shall be of die-formed construction, consisting of a flat steel top sheet welded to one or more formed steel stiffener sheets. Panels shall be chemically cleaned, bonderized, and painted with the manufacturer's standard finish.

2.1.2 Floor Covering

Floor panels shall be surfaced with materials firmly bonded in place with waterproof adhesive. The electrical resistance shall remain stable over the life expectancy of the floor covering. Any antistatic agent used in the manufacturing process shall be an integral part of the material, and shall not be surface applied. Bolt heads or similar attachments shall not rise above the traffic surface.

2.1.2.1 High Pressure Laminate

High pressure laminate surfacing shall conform to NEMA LD 3, Grade HW 62. Total system electrical resistivity from the wearing surface of the floor to the ground connection shall be between 150,000 ohms and 20,000,000,000 ohms.

2.1.3 Edge Strip

Panels shall be edged with extruded vinyl edge strips secured in place with mechanical interlock or adhesive bond, or shall be of a replaceable type. Top of strip shall be approximately 1/8-inch wide, and shall be flush with the floor surfacing.

2.1.4 Accessories

Registers, grilles, perforated panels, and plenum dividers shall be provided where indicated, and shall be the manufacturer's standard type. Registers, grilles, and perforated panels shall be designed to support the same static loads as floor panels without structural failure, and shall be capable of delivering the air volumes indicated. Registers and perforated panels shall be 25 percent open area and shall be equipped with adjustable dampers.

2.1.5 Resilient Base

Base shall be manufacturers standard rubber coved style (installed with resilient flooring). Base shall be 4 inches high and a minimum 1/8-inch thick. Performed outside corners shall be furnished.

2.1.6 Lifting Device

Each individual room shall be provided with one floor panel lifting device standard with the floor manufacturer. A minimum of two devices shall be furnished.

2.2 PANEL SUPPORT SYSTEM

2.2.1 Pedestals

Pedestals shall be of steel [AM#1]_____. Ferrous materials shall have a factory-applied corrosion-resistant finish. Pedestal base plates shall provide a minimum of 16 square inches of bearing surface and shall be a minimum of 1/8-inch thick. Pedestal shafts shall be threaded to permit height adjustment within a range of approximately 2 inches, to permit overall floor adjustment within plus or minus 0.10 inch of the required elevation, and to permit leveling of the finished floor surface within 0.062 inch in 10 feet in all directions. Locking devices shall be provided to positively lock the final pedestal vertical adjustments in place. Pedestal caps shall interlock with stringers to preclude tilting or rocking of the panels.

2.2.2 Stringers

Stringers shall be of rolled steel [AM#1]_____, and shall interlock with the pedestal heads to prevent lateral movement.

2.2.3 Underfloor Bracing

Special bracing to resist the effects of seismic or other forces shall be as shown on the approved detail drawings.

2.3 TESTS

Raised flooring shall be factory tested by an independent laboratory at the same position and maximum design elevation and in the same arrangement as shown on the drawings for installation so as to duplicate service conditions as much as possible.

2.3.1 Load Tests

Floor panel, stringer, and pedestal testing shall be conducted in

accordance with CISCA-01.

2.4 Test for Bond Strength of Factory Installed Floor Covering

The test panel shall be supported on pedestals and stringers as specified for the installed floor. The supports shall be braced as necessary to prevent sideways movement during the test. A test load of 1,000 pounds shall be imposed on the test assembly through a hard plastic caster 3 inches in diameter and 1 inch wide. The caster shall be rolled completely across the center of the panel. The panel shall withstand 20 passes of the caster with no delamination or separation of the covering.

2.5 COLOR

Color shall be [AM#1]Nevamor ST-2-2 Beige Starlite or Formica Beige Tone.

PART 3 EXECUTION

3.1 INSTALLATION

The floor system shall be installed in accordance with the manufacturer's instructions and with the approved detail drawings. Open ends of the floor, where the floor system does not abut wall or other construction, shall have positive anchorage and rigid support. Areas to receive raised flooring shall be maintained between 60 and 90 degrees F, and between 20 percent and 70 percent humidity for 24 hours prior to and during installation.

3.1.1 Preparation for Installation

The area in which the floor system is to be installed shall be cleared of all debris. Structural floor surfaces shall be thoroughly cleaned and all dust shall be removed. Floor coatings required for dust or vapor control shall be installed prior to installation of pedestals only if the pedestal adhesive will not damage the coating. If the coating and adhesive are not compatible, the coating shall be applied after the pedestals have been installed and the adhesive has cured.

3.1.2 Pedestals

Pedestals shall be accurately spaced, and shall be set plumb and in true alignment. Base plates shall be in full and firm contact with the structural floor, and shall be secured to the structural floor with steel expansion anchors.

3.1.3 Stringers

Stringers shall be interlocked with the pedestal caps to preclude lateral movement, and shall be spaced uniformly in parallel lines at the indicated elevation.

3.1.4 Auxiliary Framing

Auxiliary framing or pedestals shall be provided around columns and other permanent construction, at sides of ramps, at open ends of the floor, and beneath panels that are substantially cut to accommodate utility systems. Special framing for additional lateral support shall be as shown on the approved detail drawings.

3.1.5 Panels

The panels shall be interlocked with supports in a manner that will preclude lateral movement. Perimeter panels, cutout panels, and panels adjoining columns, stairs, and ramps must be fastened to the supporting components to form a rigid boundary for the interior panels. Floors shall be level within 1/16-inch measured with a 10 foot straightedge in all directions. Cut edges of steel and wood-core panels shall be painted as recommended by the panel manufacturer. Cut edges of composite panels shall be coated with a silicone rubber sealant or with an adhesive recommended by the panel manufacturer. Extruded vinyl edging shall be secured in place at all cut edges of all panel cut-outs to prevent abrasion of cables. Where the space below the floor is a plenum, cutouts for conduit and similar penetrations shall be closed using self-extinguishing sponge rubber.

3.1.6 Resilient Base

Base shall be provided at vertical wall intersections. Cracks and voids in walls and other vertical surfaces to receive base shall be filled with an approved filler. The base shall be applied after the floor system has been completely installed. Base shall be applied with adhesive in accordance with the manufacturer's recommendations.

3.1.7 Repair of Zinc Coating

Zinc coating that has been damaged, and cut edges of zinc-coated components and accessories, shall be repaired by the application of a galvanizing repair paint. Areas to be repaired shall be thoroughly cleaned prior to application of the paint.

3.2 TESTING OF ELECTRICAL RESISTANCE

Testing of electrical resistance in the completed installation shall be conducted in the presence of the Contracting Officer. Testing shall be in accordance with NFPA 99 modified by placing one electrode on the center of the panel surface and connecting the other electrode to the metal flooring support. Measurements shall be made at five or more locations. Each measurement shall be the average of five readings of 15 seconds duration at each location. During the tests, relative humidity shall be 45 to 55 percent and temperature shall be 69 to 75 degrees F. The panels used in the testing will be selected at random and will include two panels most distant from the ground connection. Electrical resistance shall be measured with instruments that are accurate within 2 percent and that have been calibrated within 60 days prior to the performance of the resistance tests. The metal-to-metal resistance from panel to supporting pedestal shall not exceed 10 ohms. The resistance between the wearing surface of the floor covering and the ground connection, as measured on the completed installation, shall be in accordance with paragraph FLOOR COVERING.

3.3 CLEANING AND PROTECTION

3.3.1 Cleaning

The space below the completed floor shall be free of all debris. Before any traffic or other work on the completed raised floor is started, the completed floor shall be cleaned in accordance with the floor covering manufacturer's instructions.

3.3.2 Protection

Traffic areas of raised floor systems shall be protected with a covering of building paper, fiberboard, or other suitable material to prevent damage to the surface. Cutouts shall be covered with material of sufficient strength to support the loads to be encountered. Plywood or similar material shall be placed on the floor to serve as runways for installation of heavy equipment. Protection shall be maintained until the raised floor system is accepted.

3.4 FIRE SAFETY

An automatic detection system shall be installed below the raised floor meeting the requirements of NFPA 75 paragraph 5-2.1 and shall sound an audible and visual alarm. Air space below the raised floor shall be subdivided into areas not exceeding 10,000 square feet by tight, noncombustible bulkheads. All penetrations for piping and cables shall be sealed to maintain bulkhead properties.

-- End of Section --

SECTION 15250
THERMAL INSULATION FOR MECHANICAL SYSTEMS
11/96

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. At the discretion of the government, the manufacturer of any material supplied will be required to furnish test reports pertaining to any of the tests necessary to assure compliance with the standard or standards referenced in this specification.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 167	(1996) Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
ASTM A 580	(1995a) Stainless and Heat-Resisting Steel Wire
ASTM B 209	(1996) Aluminum and Aluminum-Alloy Sheet and Plate
ASTM C 195	(1990) Mineral Fiber Thermal Insulating Cement
ASTM C 449	(1995) Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement
ASTM C 533	(1985; R 1990) Calcium Silicate Block and Pipe Thermal Insulation
ASTM C 534	(1994) Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form
ASTM C 547	(1995) Mineral Fiber Pipe Insulation
ASTM C 552	(1991) Cellular Glass Thermal Insulation
ASTM C 553	(1992) Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
ASTM C 612	(1993) Mineral Fiber Block and Board Thermal Insulation
ASTM C 647	(1995) Properties and Tests of Mastics and Coating Finishes for Thermal Insulation
ASTM C 795	(1992) Thermal Insulation for Use in Contact With Austenitic Stainless Steel

ASTM C 871	(1995) Test Methods for Chemical Analysis of Thermal Insulation Materials for Leachable Chloride, Fluoride, Silicate, and Sodium Ions
ASTM C 916	(1985; Rev 1990) Adhesives for Duct Thermal Insulation
ASTM C 920	(1994) Elastomeric Joint Sealants
ASTM C 921	(1989 R; 1996) Determining the Properties of Jacketing Materials for Thermal Insulation
ASTM C 1126	(1989; R 1994) Specification for faced or Unfaced Rigid Cellular Phenolic Thermal Insulation
ASTM D 3278	(1989) Test Methods for Flash Point of Liquids by Setaflash Closed-Cup Apparatus
ASTM E 84	(1996a) Surface Burning Characteristics of Building Materials
ASTM E 96	(1995) Water Vapor Transmission of Materials

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-69	(1996) Pipe Hangers and Supports - Selection and Application

MIDWEST INSULATION CONTRACTORS ASSOCIATION (MICA)

MICA-01	(1993) National Commercial & Industrial Insulation Standards

1.2 SYSTEM DESCRIPTION

Field-applied insulation and accessories on mechanical systems shall be as specified herein; factory-applied insulation is specified under the piping, duct or equipment to be insulated. Field applied insulation materials required for use on Government-furnished items as listed in the SPECIAL CONTRACT REQUIREMENTS shall be furnished and installed by the Contractor.

1.3 GENERAL QUALITY CONTROL

1.3.1 Standard Products

Materials shall be the standard products of manufacturers regularly engaged in the manufacture of such products and shall essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening.

1.3.2 Installer's Qualifications

Qualified installers shall have successfully completed three or more

similar type jobs within the last 5 years.

1.3.3 Surface Burning Characteristics

Unless otherwise specified, insulation not covered with a jacket shall have a flame spread rating no higher than 75 and a smoke developed rating no higher than 150. The outside surface of insulation systems which are located in air plenums, in ceiling spaces, and in attic spaces shall have a flame spread rating no higher than 25 and a smoke developed rating no higher than 50. Insulation materials located exterior to the building perimeter are not required to be fire-rated. Flame spread and smoke developed ratings shall be determined by ASTM E 84. Insulation shall be tested in the same density and installed thickness as the material that shall be used in the actual construction. Jackets shall comply with the flame spread and smoke developed ratings of 25/50 as determined by ASTM E 84.

1.3.4 Identification of Materials

Packages or standard containers of insulation, jacket material, cements, adhesives, and coatings delivered for use, and samples required for approval shall have manufacturer's stamp or label attached giving the name of the manufacturer and brand, and a description of the material.

1.4 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTAL PROCEDURES:

SD-14 Samples

Thermal Insulation Materials; GA.

A complete list of materials, including manufacturer's descriptive technical literature, performance data, catalog cuts, and installation instructions. The product number, k-value, thickness and furnished accessories for each mechanical system requiring insulation shall be included. Materials furnished under this section of the specification shall be submitted at one time.

After approval of materials and prior to applying insulation a booklet shall be prepared and submitted for approval. The booklet shall contain marked-up MICA-01 plates (or detail drawings showing the insulation material and insulating system) for each pipe, duct, or piece of equipment which is/are required to be insulated per this specification. The MICA plates shall be marked-up showing the materials to be installed in accordance with the requirements of this specification for the specific insulation application. The Contractor shall submit all MICA Plates required to show the entire insulating system, including Plates required to show insulation penetrations, vessel bottom and top heads, legs, and skirt insulation as applicable. If the Contractor elects to submit detailed drawings instead of marked-up MICA Plates, the detail drawings shall show cut-away, section views, and details indicating each component of the insulation system and showing provisions for insulating jacketing, and sealing portions of the equipment. For each type of insulation installation on the drawings, provide a label which identifies each component in the installation (i.e., the duct, insulation, adhesive, vapor retarder, jacketing, tape, mechanical fasteners, etc.) Indicate insulation

by type and manufacturer. Three copies of the booklet shall be submitted at the jobsite to the Contracting Officer. One copy of the approved booklet shall remain with the insulation Contractor's display sample and two copies shall be provided for Government use.

After approval of materials actual sections of installed systems properly insulated in accordance with the specification requirements shall be displayed. Such actual sections must remain accessible to inspection throughout the job and will be reviewed from time to time for controlling the quality of the work throughout the construction site. Each material used shall be identified, by indicating on an attached sheet the specification requirement for the material and the material by each manufacturer intended to meet the requirement. Display sample sections will be inspected at the jobsite by the Contracting Officer. Approved display sample sections shall remain on display at the jobsite during the construction period. Upon completion of construction, the display sample sections will be closed and sealed.

Pipe Insulation Display Sections: Display sample sections shall include as a minimum an elbow or tee, a valve, dielectric unions and flanges, a hanger with protection shield and insulation insert, or dowel as required, at support point, method of fastening and sealing insulation at longitudinal lap, circumferential lap, butt joints at fittings and on pipe runs, and terminating points for each type of pipe insulation used on the job, and for hot pipelines and cold pipelines, both interior and exterior, even when the same type of insulation is used for these services.

Duct Insulation Display Sections: Display sample sections for rigid and flexible duct insulation used on the job. A display section for duct insulation exposed to weather shall be protected by enclosing with a temporary covering.

1.5 STORAGE

Materials shall be delivered in the manufacturer's unopened containers. Materials delivered and placed in storage shall be provided with protection from weather, humidity, dirt, dust and other contaminants by the Contractor. Insulation material and supplies that become dirty, dusty, wet, or otherwise contaminated may be rejected by the Contracting Officer.

PART 2 PRODUCTS

2.1 GENERAL MATERIALS

Materials shall be compatible and shall not contribute to corrosion, soften, or otherwise attack surfaces to which applied in either the wet or dry state. Materials to be used on stainless steel surfaces shall meet ASTM C 795 requirements. Materials shall be asbestos free and conform to the following:

2.1.1 Adhesives

2.1.1.1 Acoustical Lining Insulation Adhesive

Insulation shall be applied in cut-to-size pieces attached to the interior of the duct with a nonflammable, fire-resistant adhesive conforming to ASTM C 916, Type I. Exposed edges of the liner at the duct ends and at other joints where the lining will be subject to erosion shall be coated with a heavy brush coat of the nonflammable, fire-resistant adhesive to prevent

delamination of glass fibers.

2.1.1.2 Mineral Fiber Insulation Cement

Cement shall be in accordance with ASTM C 195.

2.1.1.3 Lagging Adhesive

Lagging adhesives shall be nonflammable and fire-resistant and shall have flame spread and smoke developed ratings of 25/50 when measured in accordance with ASTM E 84. Adhesives shall be either the Class 1 or Class 2 type as defined here. Class 1 adhesive shall be pigmented white and be suitable for bonding fibrous glass cloth to faced and unfaced fibrous glass insulation board; for bonding cotton brattice cloth to faced and unfaced fibrous glass insulation board; for sealing edges of and bounding fibrous glass tape to joints of fibrous glass board; or for bonding lagging cloth to thermal insulation. Class 2 adhesive shall be pigmented white and be suitable for attaching fibrous glass insulation to metal surfaces. Lagging adhesives shall be applied in strict accordance with the manufacturer's recommendations.

2.1.2 Contact Adhesive

Adhesive may be dispersed in a nonhalogenated organic solvent with a low flash point (flash point less than minus 25 degrees F when tested in accordance with ASTM D 3278) or, dispersed in a nonflammable organic solvent which shall not have a fire point below 200 degrees F. The adhesive shall not adversely affect, initially or in service, the insulation to which it is applied, nor shall it cause any corrosive effect on metal to which it is applied. Any solvent dispersing medium or volatile component of the adhesive shall have no objectionable odor and shall not contain any benzene or carbon tetrachloride. The dried adhesive shall not omit nauseous, irritating, or toxic volatile matters or aerosols when the adhesive is heated to any temperature up to 212 degrees F. The adhesive shall be nonflammable and fire resistant.

2.1.3 Caulking

ASTM C 920, Type S, Grade NS, Class 25, Use A.

2.1.4 Corner Angles

Nominal 0.016 inch aluminum 1 x 1 inch with factory applied kraft backing. Aluminum shall be ASTM B 209, Alloy 3003, 3105, or 5005.

2.1.5 Finishing Cement

Mineral fiber hydraulic-setting thermal insulating cement ASTM C 449.

2.1.6 Fibrous Glass Cloth and Glass Tape

Fibrous glass cloth and glass tape shall have flame spread and smoke developed ratings of no greater than 25/50 when measured in accordance with ASTM E 84. Fibrous glass cloth and tape; 20 x 20 maximum size mesh. Tape shall be 4 inch wide rolls. Class 3 tape shall be 4.5 ounces per square yard.

2.1.7 Staples

Outward clinching type ASTM A 167, Type 304 or 316 stainless steel.

2.1.8 Jackets

ASTM C 921, Type I, maximum moisture vapor transmission 0.02 perms, minimum puncture resistance 50 Beach units on all surfaces except concealed ductwork, where a minimum puncture resistance of 25 Beach units is acceptable. Minimum tensile strength, 35 pound/inch width. ASTM C 921, Type II, minimum puncture resistance 25 Beach units, tensile strength minimum 20 pound/inch width. Jackets used on insulation exposed in finished areas shall have white finish suitable for painting without sizing.

2.1.8.1 White Vapor Retarder ASJ (All Service Jacket)

For use on hot/cold pipes, ducts, or equipment. Vapor retarder jackets used on insulation exposed in finished areas shall have white finish suitable for painting without sizing.

2.1.8.2 Polyvinyl Chloride (PVC) Jackets

Polyvinyl chloride (PVC) jacket and fitting covers shall have high impact strength, UV resistant rating or treatment and moderate chemical resistance with minimum thickness 0.030 inch. Insulation under PVC jacket shall meet jacket manufacturer's written recommendations.

2.1.9 Vapor Retarder Coating

The vapor retarder coating shall be fire and water resistant and appropriately selected for either outdoor or indoor service. Color shall be white. The water vapor permeance of the compound shall not exceed 0.05 perm and shall be determined according to procedure B of ASTM E 96 utilizing apparatus described in ASTM E 96. The coating shall be a nonflammable, fire resistant type. The flash point of the compound shall not be less than 80 degrees F and shall be determined in accordance with ASTM D 3278. All other application and service properties shall be in accordance with ASTM C 647.

2.1.10 Wire

Soft annealed ASTM A 580 Type 302, 304 or 316 stainless steel, 16 or 18 gauge.

2.2 PIPE INSULATION MATERIALS

Pipe insulation materials shall be as follows:

2.2.1 [AM#1]Aboveground Cold Pipeline

Insulation for minus 29 degrees F to plus 61 degrees F shall be as follows:

2.2.1.1 Cellular Glass

ASTM C 552, Type II, and Type III.

2.2.1.2 Flexible Cellular Insulation

ASTM C 534, Type I or II. Type II shall have vapor retarder skin on both sides of the insulation.

2.2.1.3 Phenolic Insulation

ASTM C 1126, Type III. A maximum allowable leachable chloride content shall comply with ASTM C 795 when tested in accordance with ASTM C 871.

2.2.2 Aboveground Hot Pipeline

For aboveground hot pipeline above 61 degrees F insulation the following requirements shall be met:

2.2.2.1 Mineral Fiber

ASTM C 547, Class 1 or Class 2 as required for the operating temperature range.

2.2.2.2 Calcium Silicate

ASTM C 533, Type I indoor only, or outdoors above 250 degrees F pipe temperature.

2.2.2.3 Cellular Glass

ASTM C 552, Type II and Type III.

2.2.2.4 Flexible Cellular Insulation

ASTM C 534, Type I or II to 200 degrees F service.

2.2.2.5 Phenolic Insulation

ASTM C 1126, Type III to 250 degrees F service. A maximum allowable leachable chloride content shall comply with ASTM C 795 when tested in accordance with ASTM C 871.

PART 3 EXECUTION

3.1 APPLICATION - GENERAL

3.1.1 Installation

Except as otherwise specified, material shall be installed in accordance with the manufacturer's written instructions. Insulation materials shall not be applied until tests specified in other sections of this specification are completed. Material such as rust, scale, dirt and moisture shall be removed from surfaces to receive insulation. Insulation shall be kept clean and dry. Insulation shall not be removed from its shipping containers until the day it is ready to use and shall be returned to like containers or equally protected from dirt and moisture at the end of each workday. Insulation that becomes dirty shall be thoroughly cleaned prior to use. If insulation becomes wet or if aforementioned cleaning does not restore the surfaces to like new condition, the insulation will be rejected, and shall be immediately removed from the jobsite. Joints shall be staggered on multi layer insulation. Mineral fiber thermal insulating cement shall be mixed with demineralized water when used on stainless steel surfaces. Insulation, jacketing and accessories shall be installed in accordance with MICA-01 standard plates except where modified herein or on the drawings.

3.1.2 Fire stopping

Where pipes and ducts pass through fire walls, fire partitions, above grade floors, and fire rated chase walls, the penetration shall be sealed with Fire stopping materials as specified in Section 07270 FIRE STOPPING.

3.1.3 Painting and Finishing

Painting shall be as specified in Section 09900 PAINTING, GENERAL.

3.1.4 Flexible Cellular Insulation

Flexible cellular insulation shall be installed with seams and joints sealed with a contact adhesive. Flexible cellular insulation shall not be used on surfaces greater than 200 degrees F. Seams shall be staggered when applying multiple layers of insulation. Insulation exposed to weather and not shown to have jacketing shall be protected with two coats of UV resistant finish as recommended by the manufacturer after the adhesive is dry.

3.1.5 Welding

No welding shall be done on piping, duct or equipment without written approval of the Contracting Officer. The capacitor discharge welding process may be used for securing metal fasteners to duct.

3.1.6 Pipes/Ducts/Equipment which Require Insulation

Insulation is required, unless stated otherwise, on all pipes, ducts, or equipment, which operate at or below 60 degrees F and at or above 80 degrees F.

3.2 DUCT INSULATION INSTALLATION

Corner angles shall be installed on external corners of insulation on ductwork in exposed finished spaces before covering with jacket.

3.2.1 Duct Insulation Thickness

Duct insulation thickness shall be in accordance with Table III.

Table III - Minimum Duct Insulation (inch)

Cold Air Ducts	2
Fresh Air Intake Ducts	1-1/2

3.2.2 Insulation and Vapor Retarder for Cold Air Duct

Insulation and vapor retarder for cold air duct below 60 degrees F: Ducts and associated equipment shall be insulated to a thickness which is in accordance with Table III. The following shall be insulated:

a. Supply ducts.

b. Return air ducts.

c. Flexible runouts (field-insulated).

d. Plenums.

Insulation for rectangular ducts shall be flexible type where concealed, minimum density 3/4-pcf and rigid type where exposed, minimum density 3 pcf. Insulation for round/oval ducts shall be flexible type, minimum density 3/4-pcf with a factory Type I jacket; or, a semi rigid board, minimum density 3 pcf, formed or fabricated to a tight fit, edges beveled and joints tightly butted and staggered, with a factory applied Type I all service jacket. Insulation for exposed ducts shall be provided with either a white, paintable, factory-applied Type I jacket or a vapor retarder jacket coating finish as specified. Fibrous and cellular glass insulation on concealed duct shall be provided with a factory-applied Type I vapor retarder jacket. The total dry film thickness shall be approximately 1/16-inch. Duct insulation shall be continuous through sleeves and prepared openings except fire wall penetrations. Duct insulation terminating at fire dampers, shall be continuous over the damper collar and retaining angle of fire dampers, which are exposed to unconditioned air and which may be prone to condensate formation. Duct insulation and vapor retarder shall cover the collar, neck, and any uninsulated surfaces of diffusers, registers and grills. Vapor retarder materials shall be applied to form a complete unbroken vapor seal over the insulation.

3.2.2.1 Installation on Concealed Duct

a. For rectangular, oval or round ducts, insulation shall be attached by applying Class 2 adhesive around the entire perimeter of the duct in 6 inch wide strips on 12 inch centers.

b. For rectangular and oval ducts, 24 inches and larger insulation shall be additionally secured to bottom of ducts by the use of mechanical fasteners. Fasteners shall be spaced on 18 inch centers and not more than 18 inches from duct corners.

c. For rectangular, oval and round ducts, mechanical fasteners shall be provided on sides of duct risers for all duct sizes. Fasteners shall be spaced on 18 inch centers and not more than 18 inches from duct corners.

d. Insulation shall be impaled on the mechanical fasteners where used and shall be pressed thoroughly into the adhesive. Care shall be taken to ensure vapor retarder jacket joints overlap 2 inches. The insulation shall not be compressed to a thickness less than that specified. Insulation shall be carried over standing seams and trapeze-type duct hangers.

e. Self-locking washers shall be installed where mechanical fasteners are used. The pin shall be trimmed back and bent over.

f. Jacket overlaps shall be secured under the overlap with Class 2 adhesive and stapled on 4 inch centers. Staples and seams shall be coated with a brush coat of vapor retarder coating.

g. Breaks in the jacket material shall be covered with patches of the same material as the vapor retarder. The patches shall extend not less than 2 inches beyond the break or penetration in all directions and shall be secured with Class 2 adhesive and staples. Staples and joints shall be sealed with a brush coat of vapor retarder coating.

h. At jacket penetrations such as hangers thermometers and damper operating rods, voids in the insulation shall be filled and the penetration sealed with a brush coat of vapor retarder coating.

i. Insulation terminations and pin punctures shall be sealed and flashed with a reinforced vapor retarder coating finish. The coating shall overlap the adjoining insulation and uninsulated surface 2 inches. Pin puncture coatings shall extend 2 inches from the puncture in all directions.

j. Where insulation standoff brackets occur, insulation shall be extended under the bracket and the jacket terminated at the bracket.

[AD#1]Insulation thickness for cold pipelines shall be determined using Table IV.

Table IV - Cold Piping Insulation Thickness

Type of Service 0 degrees F	Material	Runouts up to 2"	1" & Less	1-1/2" - 2"	2-1/2" - 4"	5" - 6"	8" & larger
Refrigerant	CG		1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
suction	FC		1"	1"	1"	1"	1"
piping	PF		1"	1"	1"	1"	1"
Cold domestic	CG	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
water, above	FC	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
and below	PF	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
ceilings							
Exposed	FC	1/2"	1/2"	1/2"	1/2"	3/4"	3/4"
lavatory	MF	1/2"	1"	1"	1-1/2"	1-1/2"	1-1/2"
drains exposed domestic water piping & drains to areas for handicap personnel							

PF - Phenolic Foam
CG - Cellular Glass
CS - Calcium Silicate
MF - Mineral Fiber
FC - Flexible Cellular

3.2.2.2 Installation on Exposed Duct Work

a. For rectangular ducts, rigid insulation shall be secured to the duct by mechanical fasteners on all four sides of the duct, spaced not more than 12 inches apart and not more than 3 inches from the edges of the insulation joints. A minimum of two rows of fasteners shall be provided for each side of duct 12 inches and larger. One row shall be provided for each side of duct less than 12 inches.

b. Duct insulation shall be formed with minimum jacket seams. Each piece of rigid insulation shall be fastened to the duct using mechanical fasteners. When the height of projections is less than the insulation thickness, insulation shall be brought up to standing seams, reinforcing, and other vertical projections and shall not be carried over. Vapor retarder jacket shall be continuous across seams, reinforcing, and projections. When height of projections is greater than the insulation thickness, insulation and jacket shall be carried over.

c. Insulation shall be impaled on the fasteners; self-locking washers shall be installed and the pin trimmed and bent over.

d. Joints in the insulation jacket shall be sealed with a 4 inch wide strip of the same material as the vapor retarder jacket. The strip shall be secured with Class 2 adhesive and stapled. Staples and seams shall be sealed with a brush coat of vapor retarder coating.

e. Breaks and ribs or standing seam penetrations in the jacket material shall be covered with a patch of the same material as the jacket. Patches shall extend not less than 2 inches beyond the break or penetration and shall be secured with Class 2 adhesive and stapled. Staples and joints shall be sealed with a brush coat of vapor retarder coating.

f. At jacket penetrations such as hangers, thermometers, and damper operating rods, the voids in the insulation shall be filled and the penetrations sealed with a brush coat of vapor retarder coating.

g. Insulation terminations and pin punctures shall be sealed and flashed with a reinforced vapor retarder coating finish. The coating shall overlap the adjoining insulation and uninsulated surface 2 inches. Pin puncture coatings shall extend 2 inches from the puncture in all directions.

h. Oval and round ducts, flexible type, shall be insulated with factory Type I jacket insulation with minimum density of 3/4 pcf attached by applying Class 2 adhesive around the entire perimeter of the duct in 6 inch wide stripe on 12 inch centers.

3.2.3 Duct Test Holes

After duct systems have been tested, adjusted, and balanced, breaks in the insulation and jacket shall be repaired in accordance with the applicable section of this specification for the type of duct insulation to be repaired.

-- End of Section --

SECTION 16721

FIRE DETECTION AND ALARM SYSTEM
11/91

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 NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C135.30	(1988) Zinc-Coated Ferrous Ground Rods for Overhead or Underground Line Construction

FACTORY MUTUAL ENGINEERING AND RESEARCH (FM)

FM P7825	(1994; Supple 1) Approval Guide

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C62.41	(1991) Surge Voltages in Low-Voltage AC Power Circuits

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	[AM#1](1996) National Electrical Code
NFPA 72	[AM#1](1996) National Fire Alarm Code
NFPA 90A	[AM#1](1996) Installation of Air Conditioning and Ventilating Systems

UNDERWRITERS LABORATORIES (UL)

UL-04	(1994) Fire Protection Equipment Directory
UL 6	(1993) Rigid Metal Conduit
UL 38	(1994; Rev Jan 1994) Manually Actuated Signaling Boxes for Use with Fire-Protective Signaling Systems
UL 228	(1993) Door Closers-Holders, with or without Integral Smoke Detectors
UL 268	(1989; Rev May 1989) Smoke Detectors for Fire Protective Signaling Systems
UL 464	(1990) Audible Signal Appliances
UL 467	(1993) Grounding and Bonding Equipment
UL 521	(1993) Heat Detectors for Fire Protective

	Signaling Systems
UL 797	(1993) Electrical Metallic Tubing
UL 864	(1991; Rev thru May 1994) Control Units for Fire-Protective Signaling Systems
UL 1242	(1983; Rev thru Jul 1993) Intermediate Metal Conduit

1.2 GENERAL REQUIREMENTS

1.2.1 Standard Products

Material and equipment shall be the standard products of a manufacturer regularly engaged in the manufacture of the products and shall be items that have been in satisfactory use for at least 2 years prior to bid opening. Equipment shall be supported by a service organization that can provide service within 24 hours.

1.2.2 Nameplates

Major components of equipment shall have the manufacturer's name, address, type or style, voltage and current rating, and catalog number on a noncorrosive and nonheat-sensitive plate which is securely attached to the equipment.

1.2.3 Keys and Locks

Locks shall be keyed alike.

1.2.4 Tags

Tags with stamped identification number shall be furnished for keys and locks.

1.2.5 Verification of Dimensions

The Contractor shall become familiar with all details of the work, verify all dimensions in the field, and shall advise the Contracting Officer of any discrepancy before performing the work.

1.2.6 Compliance

The fire detection and internal alarm system and the central reporting system shall be configured in accordance with NFPA 72. The equipment furnished shall be compatible and be UL listed or FM approved or approved or listed by a nationally recognized testing laboratory in accordance with the applicable NFPA standards. Where a preaction sprinkler system is provided, equipment shall also be listed/approved for releasing service and shall function in accordance with control equipment identified in Section 15332.

1.2.7 Manufacturer's Services

Services of a manufacturer's representative who is experienced in the installation, adjustment, testing, and operation of the equipment specified shall be provided. The representative shall supervise the installation, adjustment, and testing of the equipment.

1.3 SYSTEM DESIGN

1.3.1 Operation

The fire alarm and detection system shall be a complete, supervised fire alarm system. The system shall be activated into the alarm mode by actuation of any alarm initiating device. The system shall remain in the alarm mode until initiating device is reset and the fire alarm control panel is reset and restored to normal. Alarm initiating devices shall be connected to initiating device circuits (IDC), Style D, or to signal line circuits (SLC), Style 6, in accordance with NFPA 72. Alarm indicating appliances shall be connected to notification appliance circuits (NAC), Style X in accordance with NFPA 72. A two-loop conduit system shall be provided so that if any one conduit and all conductors contained in that conduit are severed all IDC or SLC on that circuit shall remain functional. A two-loop system is not applicable to the notification applicance circuits or the central fire alarm communication center from the local panels. All textual, audible, and visual appliances and systems shall comply with NFPA 72.

Addressable system shall be microcomputer (microprocessor or microcontroller) based with a minimum word size of eight bits.

a. Sufficient memory shall be provided to perform as specified and as shown for addressable system.

b. Individual identity of each addressable device shall be provided for the following conditions:

   alarm
   trouble
   open
   short
   appliances missing/failed
   remote detector - sensitivity adjustment from the panel for smoke detectors

c. All addressable devices shall have the capability of individually being disabled or enabled from the panel.

1.3.2 Operational Features

The system shall have the following operating features:

a. Electrical supervision of alarm IDC, SLC, and NAC. Smoke detectors shall have combined alarm initiating and power circuits.

b. Electrical supervision of the primary power (ac) supply, battery voltage, placement of alarm zone module (card, PC board) within the control panel, and transmitter tripping circuit integrity.

c. Trouble buzzer and trouble lamp (light emitting diode or neon light) to activate upon a single break, open, or ground fault condition which prevents the required normal operation of the system. The trouble signal shall also operate upon loss of primary power (ac) supply, low battery voltage, removal of alarm zone module (card, PC board), and disconnection of the circuit used for transmitting alarm signals off-premises. A trouble alarm

silence switch shall be provided which will silence the trouble buzzer, but will not extinguish the trouble indicator lamp. After the system returns to normal operating conditions, the trouble buzzer shall again sound until the silencing switch returns to normal position, unless automatic trouble reset is provided.

d. Transmitter disconnect switch to allow testing and maintenance of the system without activating the transmitter but shall provide a trouble signal when disconnected and a restoration signal when reconnected. One person test mode - Activating an initiating device in this mode will activate an alarm for a short period of time, then automatically reset the alarm, without activating the transmitter during the entire process.

e. Evacuation alarm silencing switch or switches which, when activated, will silence alarm devices, but will not affect the zone indicating lamp nor the operation of the transmitter. This switch shall be over-ridden upon activation of a subsequent alarm from an unalarmed zone and the alarm devices will be activated.

f. Electrical supervision of circuits used for supervisory signal services. Supervision shall detect any open, short, or ground.

g. Confirmation or verification modules used on smoke detection initiating circuits. The modules shall interrupt the transmission of an alarm signal to the system control panel for a factory set period. This interruption period shall be adjustable from 1 to 60 seconds and be set at 20 seconds. Immediately following the interruption period, a confirmation period shall be in effect during which time an alarm signal if present will be sent immediately to the control panel. All fire alarm devices other than smoke detectors shall be prohibited on circuits controlled by confirmation or verification modules.

h. Zones for alarm IDC and SLC shall be arranged as indicated on the contract drawings.

i. Electrical operation of deluge valve on preaction sprinkler system, if drawings depict this arrangement.

1.3.3 Alarm Functions

An alarm condition on a circuit shall automatically initiate the following functions:

a. Transmission of signals over the station radio fire reporting system.

b. Visual indications of the alarmed devices on the fire alarm control panel annunciator and on the remote annunciator.

c. Continuous sounding of alarm notification appliances throughout the building.

d. Closure of doors held open by electromagnetic devices, if provided.

e. Deactivation of the air handling units in the alarmed zone in accordance with NFPA 90A.

f. Shutdown of power to the data processing equipment in the alarmed zones.

1.3.4 Primary Power

Operating power shall be provided as required by paragraph Power Supply for the System. Transfer from normal to emergency power or restoration from emergency to normal power shall be fully automatic and not cause transmission of a false alarm. Loss of ac power shall not prevent transmission of a signal via the fire reporting system upon operation of any initiating circuit.

1.3.5 Battery Backup Power

Battery backup power shall be through use of rechargeable, sealed-type storage batteries and battery charger.

1.4 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FI0" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Battery; GA.

Substantiating battery calculations for supervisory and alarm power requirements. Ampere-hour requirements for each system component and each panel component, and the battery recharging period shall be included.

Voltage Drop; GA.

Voltage drop calculations for signaling appliance circuits to indicate that sufficient voltage is available for proper appliance operation.

Spare Parts; FIO.

Spare parts data for each different item of material and equipment specified, not later than 2 months prior to the date of beneficial occupancy. Data shall include a complete list of parts and supplies with the current unit prices and source of supply and a list of the parts recommended by the manufacturer to be replaced after 1 year of service.

Qualifications; GA.

Qualifications, with verification of experience and license number, of a Registered Professional Engineer with at least 4 years of current experience in the design of the fire protection and detection systems. This engineer must perform the various specification items required by this section to be performed by a registered Professional Engineer.

SD-04 Drawings

Fire Alarm Reporting System; GA.

Detail drawings, signed by the Registered Professional Engineer, consisting of a complete list of equipment and material, including manufacturer's

descriptive and technical literature, catalog cuts, and installation instructions. Note that the contract drawings show layouts based on typical detectors. The contractor shall check the layout based on the actual detectors to be installed and make any necessary revisions in the detail drawings. The detail drawings shall also contain complete wiring and schematic diagrams for the equipment furnished, equipment layout, and any other details required to demonstrate that the system has been coordinated and will properly function as a unit.

Detailed point-to-point wiring diagram, signed by the Registered Professional Engineer, showing all points of connection. Diagram shall include connections between system devices, appliances, control panels, supervised devices, and all equipment that is activated or controlled by the panel.

SD-06 Instructions

Fire Alarm Reporting System; GA.

Six copies of operating instructions outlining step-by-step procedures required for system startup, operation, and shutdown. The instructions shall include the manufacturer's name, model number, service manual, parts list, and brief description of all equipment and their basic operating features. Six copies of maintenance instructions listing routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guide. The instructions shall include conduit layout, equipment layout and simplified wiring, and control diagrams of the system as installed. Instructions shall be approved prior to training.

Training; FIO.

Lesson plans and training data, in manual format, for the training courses.

SD-08 Statements

Test Procedures; GA.

Detailed test procedures, signed by the Registered Professional Engineer, for the fire detection and alarm system 60 days prior to performing system tests.

SD-09 Reports

Testing; GA.

Test reports in booklet form showing all field tests performed to prove compliance with the specified performance criteria, upon completion and testing of the installed system. Each test report shall document all readings, test results and indicate the final position of controls.

SD-13 Certificates

Equipment; FIO.

Certified copies of current approvals or listings issued by UL, FM or other nationally recognized testing laboratory, showing compliance with specified NFPA standards.

Installer; GA.

The Contractor shall provide documentation demonstrating that its fire detection and alarm system installer has been regularly engaged in the installation of fire detection and alarm systems meeting NFPA standards for a minimum of three years immediately preceding commencement of this contract. Such documentation shall specifically include proof of satisfactory performance on at least three projects similar to that required by these specifications, including the names and telephone numbers of using agency points of contact for each of these projects. Documentation shall indicate the type of each system installed and include a written certificate that each system has performed satisfactorily in the manner specified for a period of not less than 12 months following completion. All such data shall be submitted 30 days prior to commencement of installation for approval of the Contracting Officer. Listing of the installer under "Protective Signaling Services - Local, Auxiliary, Remote Station Proprietary (UUJS)" of UL-04 shall be accepted as equivalent proof of compliance with the foregoing experience requirements.

1.5 DELIVERY AND STORAGE

All equipment delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variation, dirt and dust, and any other contaminants.

PART 2 PRODUCTS

2.1 CONTROL PANEL

Control Panel shall comply with all the applicable requirements of UL 864. Panel shall be modular, installed in a semi-flush mounted steel cabinet with hinged door and cylinder lock. Control panel shall be a clean, uncluttered, and orderly assembled panel containing all components and equipment required to provide the specified operating and supervisory functions of the system. The panel shall have prominent rigid plastic, phenolic or metal identification plates for all lamps, zones, controls, meters, fuses, and switches. Nameplates for fuses shall also include ampere rating. Separate alarm and trouble lamp shall be provided for each zone alarm located on exterior of cabinet door or be visible through the cabinet door. Control panel switches shall be within the locked cabinet. A suitable means shall be provided for testing the control panel visual indicating devices (meters or lamps). Meters and lamps shall be plainly visible when the cabinet door is closed. Signals shall be provided to indicate by zone any alarm, supervisory or trouble condition on the system. Each SLC initiating circuit shall be powered and supervised so that a signal on one zone does not prevent the receipt of signals from other zones. Loss of power, including any or all batteries, shall not require the reloading of a program. Upon restoration of power, startup shall be automatic, and shall not require any manual operation. The loss of primary power or the sequence of applying primary or emergency power shall not affect the transmission of alarm, supervisory or trouble signals.

2.1.1 Visual Annunciators

Visual annunciators shall be provided for each active zone and spare zone. Six spare zones shall be provided. Each lamp shall provide specific identification of the zone by means of a permanently attached rigid plastic, phenolic or metal sign with either raised or engraved letters. Zone identification shall consist of word description of the zone. An addressable system with annunciators providing an unambiguous and legible

description of the alarm event and location shall be satisfactory.

2.1.2 Cabinets

Cabinets shall be provided with ample gutter space to allow proper clearance between the cabinet and live parts of the panel equipment. If more than one modular unit is required to form a control panel, the units shall be installed in a single cabinet large enough to accommodate all units. Cabinets shall be painted red.

2.1.3 Circuit Connections

Circuit conductors entering or leaving the panel shall be connected to screw-type terminals with each terminal marked for identification.

2.2 STORAGE BATTERIES

Storage Batteries shall be provided and shall be the sealed, lead-acid type requiring no additional water. The batteries shall have ample capacity, with primary power disconnected, to operate the fire alarm system for a period of 48 hours. Following this period of operation via batteries, the batteries shall have ample capacity to operate all components of the system, including all alarm signaling devices in the total alarm mode for a minimum period of 15 minutes. Batteries shall be sized to deliver 50 percent more ampere/hours based on a 48 hour discharged rate than required for the calculated capacities. Battery cabinet shall be a separate cabinet. Battery shall be provided with overcurrent protection in accordance with NFPA 72.

2.3 BATTERY CHARGER

Battery charger shall be completely automatic, with high/low charging rate, capable of restoring the batteries from full discharge to full charge within 12 hours. A separate ammeter shall be provided for indicating rate of charge. A separate voltmeter shall be provided to indicate the state of the battery charge. A pilot light indicating when batteries are manually placed on a high rate of charge shall be provided as part of the unit assembly if a high rate switch is provided. Charger shall be located in control panel or battery cabinet.

2.4 MANUAL FIRE ALARM STATIONS

Manual fire alarm stations shall conform to the applicable requirements of UL 38. Manual stations shall be connected into alarm-initiating circuits. Stations shall be installed on semi-flush mounted outlet boxes. Stations shall be double action type. Stations shall be finished in red, with raised letter operating instructions of contrasting color. Stations requiring the breaking of glass or plastic panels for operation are not acceptable. Stations employing glass rods are not acceptable. The use of a key or wrench shall be required to reset the station. Gravity or mercury switches are not acceptable. Switches and contacts shall be rated for the voltage and current upon which they operate. Stations shall have a separate screw terminal for each conductor. Surface mounted boxes shall be painted the same color as the fire alarm manual stations. Addressable pull stations shall be capable of being field programmed, shall latch upon operation and remain latched until manually reset.

2.5 FIRE DETECTING DEVICES

Fire detecting devices shall comply with the applicable requirements of NFPA 72, NFPA 90A, UL 268, and UL 521. The detectors shall be provided as indicated. Detector base shall have screw terminals for making connections. No solder connections will be allowed. Detectors shall be connected into alarm initiating circuits. Detectors located in concealed locations (above ceiling, etc.) shall have a remote visible indicator lamp. Installed devices shall conform to the classification of the area. Addressable fire detecting devices except flame detectors shall be dynamically supervised and uniquely identified in the control panel.

2.5.1 Heat Detectors

Heat detectors shall be designed for detection of fire by combination fixed temperature and rate-of-rise principle, rate-compensating principle. Heat detectors shall be rated for a minimum of 50 foot spacing (smooth-ceiling rated) in accordance with UL 521. Detectors located in areas subject to moisture, exterior atmospheric conditions or hazardous locations as defined by NFPA 70, shall be types approved for such locations. Heat detectors located in attic spaces or similar concealed spaces below the roof shall be intermediate temperature rated.

2.5.1.1 Combination Fixed-Temperature and Rate-of-Rise Detectors

Detectors shall be designed for semi-flush outlet box mounting and supported independently of wiring connections in finished spaces. Contacts shall be self-resetting after response to rate-of-rise principle. Under fixed temperature actuation, the detector shall have a permanent external indication which is readily visible. Detector units located in boiler rooms, showers, or other areas subject to abnormal temperature changes shall operate on fixed temperature principle only. Rating for fixed temperature portion shall be 135 degrees F in temperature conditioned spaces.

2.5.2 Smoke Detectors

Detectors shall be designed for detection of abnormal smoke densities. Smoke detectors shall be photoelectric type. Detectors shall contain a visible indicator lamp that shows when the unit is in alarm condition. Detectors shall not be adversely affected by vibration or pressure. Detectors shall be the plug-in type in which the detector base contains terminals for making all wiring connections. Detectors that are in concealed (above false ceilings, etc.) locations shall have a remote visible indicator lamp.

2.5.2.1 Photoelectric Detectors

Detectors shall operate on a light scattering concept using an LED light source. Failure of the LED shall not cause an alarm condition. Detectors shall be factory set for sensitivity and shall require no field adjustments of any kind. Detectors shall have an obscuration rating between 1.9 and 2.4 percent per foot when tested in accordance with UL 268.

2.5.2.2 Duct Detectors

Duct detectors are provided under Section 15950 Heating, Ventilation, and Air Conditioning HVAC Control Systems.

2.6 NOTIFICATION APPLIANCES

Audible appliances shall be heavy duty and conform to the applicable requirements of UL 464. Devices shall be connected into alarm indicating circuits and shall have a separate screw terminal for each conductor. Devices shall have manufacturer's standard finish and color.

2.6.1 Alarm Bells

Bells shall be surface mounted with the matching mounting back box surface mounted. Bells shall be suitable for use in an electrically supervised circuit. Bells shall be the underdome type producing a minimum output rating of 85 dBA at 10 feet. Bells used in exterior locations shall be specifically listed or approved for outdoor use and be provided with metal housing and protective grilles. Single stroke, electrically operated, supervised, solenoid bells shall be used for coded applications.

2.6.2 Alarm Horns

Horns shall be surface mounted, with the matching mounting back box recessed in finishd spaces with grill and vibrating type suitable for use in an electrically supervised circuit. Horns shall produce a minimum sound rating of at least 85 dBA at 10 feet. Horns used in exterior locations shall be specifically listed or approved for outdoor use and be provided with metal housing and protective grills.

2.6.3 Visual Notification Appliances

Visual notification appliances shall have high intensity optic lens and flash tubes. Strobes shall flash at approximately 1 flash per second and a minimum of 75 candela. Strobe shall be semi-flush mounted in finished spaces.

2.6.4 Combination Audible/Visual Notification Appliances

Combination audible/visual notification appliances shall provide the same requirements as individual units except they shall mount as a unit in standard backboxes. All units shall be factory assembled. Any other audible indicating appliance employed in the fire alarm systems shall be approved by the authority having jurisdiction.

2.7 REMOTE ANNUNCIATION EQUIPMENT

2.7.1 Remote Annunciator

Annunciator shall have relampable indicator lamps. The lamp (LED) for the proper zone shall light upon any alarm, supervisory or trouble condition on the fire alarm system. Annunciator lamps shall be extinguished only by operating the alarm reset switch on the control panel. Annunciator shall contain a lamp test switch, an audible trouble signal and a trouble silence switch to silence the audible alarm, but not extinguish the trouble lamp. Switches shall be located within a locked panel, and easily visible through a glass or plastic viewing plate. Panel door shall have a keyed lock identical to the lock on the control panel. Zone identification shall be by silk-screened or engraved labels and shall consist of word description of the zone. An addressable system employing a text annunciator providing an unambiguous and legible description of the alarm event and location shall be satisfactory. Annunciator shall be semi-flush mounted.

2.8 FIRE DETECTION AND ALARM SYSTEM PERIPHERAL EQUIPMENT

2.8.1 Ground Rods

Ground rods shall be of copper clad steel conforming to UL 467 not less than 5/8-inch in diameter by 8 feet in length.

2.8.2 Electromagnetic Door Hold-Open Devices

Devices shall be attached to the walls unless otherwise indicated. Devices shall comply with the appropriate requirements of UL 228. Devices shall operate on power from facility power supply. Compatible magnetic component shall be attached to the door. Under normal conditions, the magnets shall attract and hold the doors open. When magnets are de-energized, they shall release the doors. Magnets shall have a holding force of approximately 25 pounds. Devices shall be UL or FM approved. Housing for device shall be brushed aluminum. Operation shall be fail safe with no moving parts.

2.8.3 Conduit

Conduit and fittings shall comply with UL 6, UL 1242 and UL 797.

2.8.4 Wiring

Wiring for 120V ac power shall be No. 12 AWG minimum. Wiring for low voltage dc circuits shall be No. 16 AWG minimum. Power wiring (over 28 volts) and control wiring shall be isolated. All wiring shall conform to NFPA 70. System field wiring shall be solid copper and installed in metallic conduit or electrical metallic tubing, except rigid plastic conduit may be used under slab-on-grade. All conductors shall be color coded. Conductors used for the same functions shall be similarly color coded. Wiring code color shall remain uniform throughout the circuit. Pigtail or T-tap connections to alarm initiating, supervisory circuits, and alarm indicating circuits are prohibited. T-tapping using screw terminal blocks is allowed for addressable systems.

2.8.5 Special Tools and Spare Parts

Special tools necessary for the maintenance of the equipment shall be furnished. Two spare fuses of each type and size required and five spare lamps and LED's of each type shall be furnished. Two percent of the total number of each different type of detector, but no less than two each, shall be furnished. Fuses and lamps shall be mounted in the fire alarm panel.

2.9 FIRE ALARM TRANSMITTER

Transmitter shall be compatible with the existing base fire alarm receiving system. The existing system is a Motorola INTRAC 2000 Modular Remote Terminal Unit Plus. System shall consist of a Model F6574 base unit with a Model V115 status expansion module. System shall include a Model FUE 1842AA transceiver operating between 403 MHz and 430 MHz at 25w. Power supply shall be Model FPN5522A with a Model V328 battery expansion providing 10 amp hours of ampacity. Selection and assembly of components shall be coordinated with the installation fire department and electronic alarm systems and maintenance division.

2.9.1 Antenna System

[AM#1]The antenna system shall utilize an omnidirectional mobile antenna (General Electric 19B209568-P1, or equal) consisting of a quarter wave whip antenna (6.5 feet nominal length), ferrule, set screw, base nut, chassis

o-ring, stud mount, coaxial cable and Standard Male UHF connector.

All electrical components shall be removed from the MRTU chassis and a 3/8-inch hole shall be fabricated into the top of the enclosure, 1-1/2 inch from the back and one-half the distance along the width. The antenna assembly shall be mounted directly to the top of the transmitter enclosure in accordance with the manufacturer's instructions provided with the mobile antenna. Trim the whip antenna to the length corresponding to the frequency assigned by the installation electronic alarm system maintenance division:

Frequency	Length
400 MHz	6.5 inch
405 MHz	6.25 inch
410 MHz	6.183 inch
415 MHz	6.125 inch
420 MHz	6.0 inch
425 MHz	6.0 inch
430 MHz	5.875 inch

The UHF antenna connector on the INTRAC 2000 MRTU Plus transmitter shall be removed. A male mini-UHF to standard female UHF adapter (RF Connectors Model RFU-621, or equal) shall be used to connect the antenna coaxial cable connector to the transmitter mini-male UHF connector.

2.9.1.1 Grounding Conductors

[AM#1]No special grounding is required for indoor installations.

2.9.1.2 Communication Links

[AM#1]Transmission line between the transmitter/receiver and the antenna shall utilize the cable specified by the manufacturer's installation instructions provided with the mobile antenna package.

PART 3 EXECUTION

3.1 INSTALLATION

All work shall be installed as shown and in accordance with the manufacturer's diagrams and recommendations, unless otherwise specified. Smoke detectors shall not be installed until the building has been thoroughly cleaned.

3.1.1 Power Supply for the System

A single dedicated circuit connection for supplying power to each building fire alarm system shall be provided. The primary power shall be supplied as shown on the drawings. The power supply shall be equipped with a locking mechanism and marked "FIRE ALARM CIRCUIT CONTROL".

A single dedicated circuit connection for supplying power to each fire alarm system transmitter shall be provided. The primary power for the transmitter shall be as shown on the Drawings. The power supply shall be equipped with a locking mechanism and marked "FIRE ALARM TRANSMITTER CONTROL".

3.1.2 Wiring

Conduit size for wiring shall be in accordance with NFPA 70. Wiring for the fire alarm system shall not be installed in conduits, junction boxes, or outlet boxes with conductors of lighting and power systems. No more than one conductor shall be installed under any screw terminal. All circuit conductors entering or leaving any mounting box, outlet box enclosure or cabinet shall be connected to screw terminals with each terminal marked in accordance with the wiring diagram. Connections and splices shall be made using screw terminal blocks. The use of wire nut type connectors are prohibited in the system. Wiring within any control equipment shall be readily accessible without removing any component parts. The fire alarm equipment manufacturer's representative shall be present for the connection of wiring to the control panel.

3.1.3 Control Panel

The control panel and its assorted components shall be mounted so that no part of the enclosing cabinet is less than 12 inches nor more than 78 inches above the finished floor. All manually operable controls shall be between 36 inches to 42 inches above the finished floor. Panel shall be installed to comply with the requirements of UL 864.

3.1.4 Detectors

Detectors shall be installed in accordance with NFPA 72. Detectors shall be at least 12 inches from any part of any lighting fixture. Detectors shall be located at least 3 feet from diffusers of air handling systems. Each detector shall be provided with appropriate mounting hardware as required by its mounting location. Detectors which mount in free space shall be mounted directly to the end of the stubbed down rigid conduit drop. Conduit drops shall be firmly secured to minimize detector sway. Where length of conduit drop from ceiling or wall surface exceeds 3 feet, sway bracing shall be provided.

3.1.4.1 Locations

Smoke or heat detectors shall be installed in all occupiable areas of the premises including all rooms, halls, storage areas, basements, attics, lofts, clostes, elevator shafts, enclosed stairways, dumbwaiter shafts, chutes, crawl spaces, underneath open loading docks or platforms and their covers, and other subdivisions and accessible spaces. Detectors shall not be installed in areas which are inaccessible and contain noncombustible materials only.

3.1.5 Notification Appliances

Notification appliances shall be mounted a minimum of 80 inches above the finished floor unless limited by ceiling height or otherwise indicated.

3.1.6 Annunciator Equipment

Annunciator equipment provided shall be mounted where indicated.

3.1.7 Manual Fire Alarm Stations

Manual fire alarm station shall be mounted where the operable part is not less than 3-1/2-feet and not more than 4 feet above floor level.

3.2 OVERVOLTAGE AND SURGE PROTECTION

All equipment connected to alternating current circuits shall be protected from surges per IEEE C62.41 and NFPA 70. All cables and conductors which serve as communications links, except fiber optics, shall have surge protection circuits installed at each end. Fuses shall not be used for surge protection.

3.3 GROUNDING

Grounding shall be provided to building ground or ground rods shall be driven. Maximum impedance to ground shall be 25 ohms. Ground rods shall not protrude more than 6 inches above grade.

3.4 TESTING

The Contractor shall notify the Contracting Officer 30 days before the preliminary and acceptance tests are to be conducted. The tests shall be performed in accordance with the approved test procedures in the presence of the Contracting Officer. The control panel manufacturer's representative shall be present to supervise all tests. The Contractor shall furnish all instruments and personnel required for the tests.

3.4.1 Preliminary Tests

Upon completion of the installation, the system shall be subjected to functional and operational performance tests including tests of each installed initiating and notification appliance. Tests shall include the meggering of all system conductors to determine that the system is free from grounded, shorted, or open circuits. The megger test shall be conducted prior to the installation of fire alarm equipment. If deficiencies are found, corrections shall be made and the system shall be retested to assure that it is functional.

3.4.2 Acceptance Test

Testing shall be in accordance with NFPA 72. The recommended tests in NFPA 72 shall be considered mandatory and shall verify that all previous deficiencies have been corrected. The test shall include the following:

a. Test of each function of the control panel.

b. Test of each circuit in both trouble and normal modes.

c. Tests of alarm initiating devices in both normal and trouble conditions.

d. Tests of each control circuit and device.

e. Tests of each alarm notification appliance.

f. Tests of the battery charger and batteries.

g. Complete operational tests under emergency power supply.

h. Visual inspection of all wiring connections.

i. Opening the circuit at each alarm initiating device and

notification appliance to test the wiring supervisory feature.

j. Ground fault

k. Short circuit faults

l. Stray voltage

m. Loop resistance

3.5 TRAINING

Training course shall be provided for the operations and maintenance staff. The course shall be conducted in the building where the system is installed or as designated by the Contracting Officer. The training period shall consist of 3 training days (8 hours per day) and shall start after the system is functionally completed but prior to final acceptance tests. The instructions shall cover all of the items contained in the operating and maintenance instructions.

-- End of Section --