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TRANSMITTAL OF THE FINAL VERSION OF THE PLANT 1 COMPLEX - PHASE I IMPLEMENTATION PLAN FOR INTERIM REMEDIAL ACTION

03/20/96

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Department of Energy

Ohio Field Office
Fernald Area Office
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MAR 2 0 1996

DOE-0639-96

Mr. James A. Saric, Remedial Project Director
U.S. Environmental Protection Agency
Region V - SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF THE FINAL \ COMPLEX - PHASE I
IMPLEMENTATION PLAN FOR I

Reference: Letter, J.A. Saric al Approval of the Plant 1
Complex - Phase d February 28, 1996.

Letter, T.A. Schn oval of the Plant 1
Complex - Phase ed February 9, 1996.

The purpose of this letter is to mental Protection Agency
(U.S. EPA) and Ohio Environm PA) the enclosed final version of
the Plant 1 Complex - Phase I ve-Grade Decontamination and
Dismantlement (D&D) for final a 3.5 diskette as per requested
by the OEPA.

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The final version of the Plant entation Plan has been revised to address the comments made by U.S. EPA in a letter dated February 28, 1996, regarding changes that had been unilaterally made to the Material Management Section. The comments originate from DOE responses to U.S. EPA Original Specific Comment Number 3 to the draft version of the document and address two subject areas in the draft final document. The DOE responses to U.S. EPA comments are provided in the enclosure to this letter. The only other change made to the implementation plan is the deletion of the Summary Schedule for Deliverables (formerly Figure 4-1), which had been used to track document development and approval until final publication.

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Recycled and Recyclable

If you or your staff have any questions, please contact Anand Shah at (513) 648-3146.

Sincerely,

Johnny Reising

FN:Shah

Johnny W. Reising
Fernald Remedial Action
Project Manager

Enclosure: As Stated

cc w/enc:

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ENCLOSURE

RESPONSE TO U.S. EPA COMMENTS TO THE DRAFT FINAL VERSION OF THE PLANT 1 COMPLEX - PHASE I IMPLEMENTATION PLAN

The U.S EPA provided DOE with two comments that address revisions which had been made to the draft version of the Plant 1 Complex - Phase I Implementation Plan. The comments, which fall under Original Specific Comment Number 3, are restated below in italics and are immediately followed by DOE responses.

Commenting Organization: U.S. EPA
Section #: 2.3.3, Tables 2-4 and 2-5
Original Specific Comment #: 3

Commentor: Saric
Page #: 15
Line #: Not Applicable

Comment: *The original specific comment states that Table 2-4 should be revised to include the material volume estimates by building. Table 2-4 has been revised to include the "bulked" material volume estimates by building rather than the "unbulked" material volume estimates provided earlier. The text should be revised to state why the "bulked" material volume estimates are more appropriate for inclusion into the table. Also, the text should be revised to present both the unbulked and bulked material volume estimates. Furthermore, the text should be revised to reference the methodology used to calculate the bulked material volume estimates based on the unbulked material volume estimates as well as the documents presenting these calculations.*

Response: The justification for using bulked volume estimates has been explained in the final version of the implementation plan beginning in the last paragraph on Page 10 and continues on Page 13. That paragraph also includes a description of the methodology used to calculate bulked material volume estimates as well as the references used to obtain those calculations. Both bulked and unbulked material volume estimates have been included in Table 2-4.

Comment: *In addition, review of Table 2-4 reveals arithmetic errors associated with the component total volume for 1B, total volume for miscellaneous materials, and total volume for component/complex totals. Review of Table 2-5 reveals arithmetic errors associated with the total weight for miscellaneous materials and total weight for component/complex totals. DOE should correct these errors.*

Response: Values in Tables 2-4 and 2-5 were recomputed and correctly listed.

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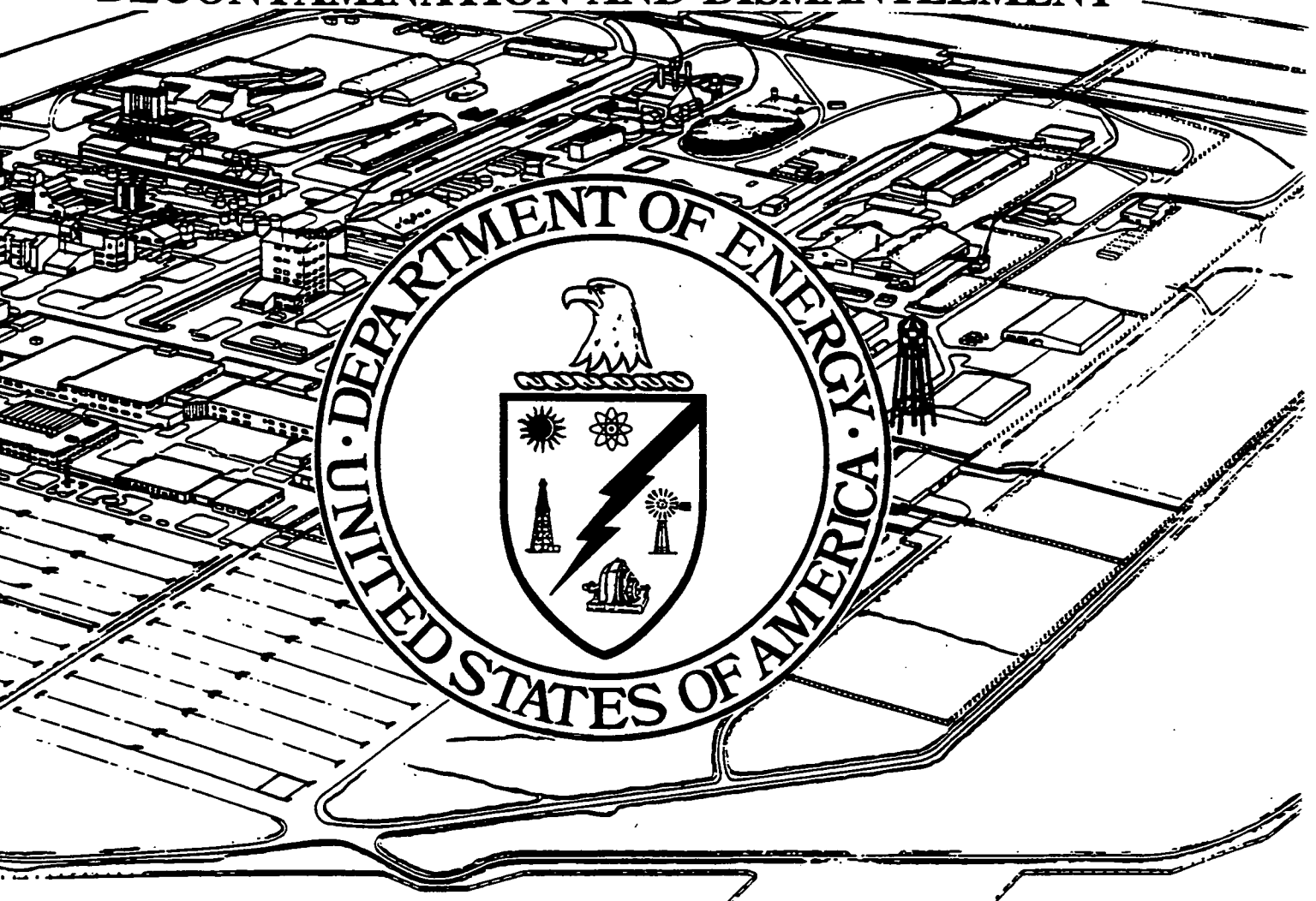
OPERABLE UNIT 3

PLANT 1 COMPLEX - PHASE I IMPLEMENTATION PLAN FOR ABOVE-GRADE DECONTAMINATION AND DISMANTLEMENT



MARCH 1996

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

000004 FINAL

DOCUMENT CONTROL NO. 2503-WP-0003 (REV.3)

OPERABLE UNIT 3
INTERIM REMEDIAL ACTION

PLANT 1 COMPLEX - PHASE I
IMPLEMENTATION PLAN FOR ABOVE-GRADE DECONTAMINATION AND DISMANTLEMENT

MARCH 1996

FINAL

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

U. S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

FEMP DOCUMENT CONTROL NO. 2503-WP-0003 (REV. 3)

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NOTATION

Abbreviations, Acronyms, and Initials

ACM	asbestos-containing material(s)
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMU	concrete masonry unit
COC	Constituents of Concern
CPID	Closure Plan Information and Data package
DF&O	Directors Findings and Orders
DOE	United States Department of Energy
D&D	decontamination and dismantlement
EL	End-loading [box]
FEMP	Fernald Environmental Management Project
HEPA	high-efficiency particulate air [filter]
HVAC	heating, ventilating, and air conditioning
HWMU	Hazardous Waste Management Unit
IROD	Operable Unit 3 Record of Decision for Interim Remedial Action
N/A	not applicable
NESHAPs	National Emissions Standards for Hazardous Air Pollutants
NTS	Nevada Test Site
OEPA	Ohio Environmental Protection Agency
OU3	Operable Unit 3
OU3 RI/FS WPA	OU3 RI/FS Work Plan Addendum
PCB(s)	polychlorinated biphenyl(s)
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
RD/RA	remedial design/remedial action
RI	remedial investigation
ROB	roll-off box
ROD	Record of Decision
RvA	Removal Action
SAP	Sampling and Analysis Plan
SCQ	FEMP Sitewide CERCLA Quality Assurance Project Plan
SOW	Statement of Work

Abbreviations, Acronyms, and Initials (Cont'd.)

SWIFTS	Sitewide Waste Information, Forecasting, and Tracking System
TL	top-loading [box]
TCLP	Toxicity Characteristic Leachate Procedure
TSI	thermal system insulation
USEPA	United States Environmental Protection Agency
WMB	white metal boxes (small)

Units of Measure

cm.	centimeter(s)
cm^2	square centimeter(s)
dpm	disintegration(s) per minute
ft.	foot (feet)
ft^2	square foot (feet)
ft^3	cubic foot (feet)
gal.	gallon(s)
in.	inch
mg/L	milligrams per liter
mrem/yr.	milli-REM per year
pCi/g	picoCuries per gram
μg/g	microgram per gram

Chemical Symbols

Al	aluminum
As	arsenic
Ba	barium
Cd	cadmium
Cr	chromium
Elem. U	elemental uranium
HF	hydrofluoric acid
K	potassium
MgF_2	magnesium fluoride
NaOH	sodium hydroxide
Pb	lead
Ra	radium
Se	selenium
Tc-99	technetium-99
Th-228	thorium-228
U	uranium
U-238	uranium-238

Chemical Symbols (Cont'd.)

U_3O_8	uranium oxide
UF_4	uranium tetrafluoride
UNH	uranyl nitrate hexahydrate
UO_2	uranium dioxide
UO_3	uranium trioxide
V	vanadium
Zn	zinc

GLOSSARY

Amended water -
Water that contains an additive (e.g., surfactant) which changes the polarity of water from polar to non-polar. Such water has an increased ability to penetrate material, thus allowing for better particle-holding properties (e.g., asbestos fibers).

Complex -
A set of components grouped for inclusion into a design package by location, scope of work required, availability for remediation, and cost of dismantlement to be remediated under one or more project(s).

Component -
The smallest physically distinct unit of Operable Unit (OU3) that is considered separately in the development and implementation of a remediation project including, but not limited to, buildings, pads, roads, piping/utilities, and ponds/basins.

Construction debris -
A category of bulk material to be removed from structures during dismantlement, consisting of non-structural construction material such as interior walls, interior framing, suspended ceilings, floor tile, and doors.

Containment structures -
A barrier constructed to prevent or minimize the spread of contamination during decontamination and dismantlement activities.

Decontamination residues -
Residues, hold-up material, or sludges that may be encountered in equipment or process lines during dismantlement activities, or generated as a result of decontamination activities (e.g., wash down of building interior).

Dynamic dismantlement -
A group of dismantlement techniques that incorporate the free fall of a structure. These techniques may include shape charges, tripping the structure, and pulling the structure over.

End-loading boxes -
An end-loading metal box measuring approximately 8′ x 8′ x 20′ with a gross weight capacity of 42,000 lbs. These containers have a volume capacity of 971 cubic feet (ft^3) and a burial volume of 1,280 ft^3. Also known as ISO or SEA/LAND containers.

Engineering controls -
Eliminate hazards by mechanical means or by process design; apparatus and/or mechanisms which physically prevent entry, minimize hazards, or create some kind of barrier.

Enriched uranium -
Material that contains greater than 0.71 percent uranium-235.

Hold-up material -
Includes material (both liquid and solid) within any process equipment or reservoir other than residuals which remains affixed to the interior surfaces of various pumps, piping, vessels, or other surfaces of equipment.

Interim remedial action -
Course of action that may be pursued in the short term, before a final Record of Decision, to reduce existing risks at a Superfund site. Also refers to the OU3 interim remedial action to dismantle all OU3 structures.

Interim storage area -
On-site area for temporary storage of material or debris generated during the OU3 interim remedial action.

Interval Period -
The period between the issuance of the OU3 Record of Decision for Interim Remedial Action and the issuance of the OU3 Record of Decision for Final Remedial Action.

Material -
Solids and liquids generated from decontamination and dismantlement operations; includes non-recoverable/non-recyclable material (waste) and recoverable/recyclable material.

Plant 1 Complex -
A group of OU3 components that were included in one remedial design effort for remediation; includes components: Preparation Building (1A), Plant 1 Storage Shelter (1B), Chemical Warehouse (30A), Drum Storage Warehouse (30B), CP Storage Warehouse (56A), Storage Shed - West (56B), Storage Shed - East (56C), Drum Reconditioning Building (66), Plant 1 Thorium Warehouse (67), General In-Process Warehouse (71), Drum Storage Building (72), and Tension Support Structures (TSS) 004-006.

Plant 1 Complex - Phase I -
A group of Plant 1 Complex components that were included in a specific bid package for remediation that includes: Preparation Building (1A), the southern one-eighth of the Plant 1 Storage Shelter (1B), Drum Storage Warehouse (30B), Storage Shed - West (56B), Storage Shed - East (56C), Drum Reconditioning Building (66), Plant 1 Thorium Warehouse (67), and the Drum Storage Building (72). Shelter 1B will only be partially remediated during Phase I to support the decontamination and decommissioning of Building 1A.

Plant 1 Complex - Phase II -
A second group of Plant 1 Complex components that will be included in a future bid package for remediation that includes the remainder of the Plant 1 Storage Shelter (1B), Chemical Warehouse (30A), CP Storage Warehouse (56A), Quonset Hut #1 (60), Quonset Hut #2 (61), Quonset Hut #3 (62), KC-

2 Warehouse (63), General In-Process Warehouse (71), and the Tension Support Structures 004-006.

Primary material -
Material generated as a result of dismantlement activities of a specific project, including the structure, associated equipment, and contents of the building.

Process knowledge -
Information available about a specific process, based on documentation of past operations or on information obtained from individuals who participated in the operation. This information includes, but is not limited to, process chemistry, history of accidents/spills, maintenance chemicals/materials, and other uses of the process vessels or work space.

Queuing area -
An area established within the construction boundaries that is used for placement of full containers to await relocation by Fernald Environmental Management Project (FEMP) waste management for interim storage or disposition.

Remedial action -
An action that is consistent with the final remedy following a formal examination of the nature and extent of the release, or threat of release of contaminants into the environment, assessment of the risk, and selection of the final remedy based on an evaluation of possible alternatives.

Remedial design -
The technical analysis and procedures that follow the selection of a site remedy, resulting in a detailed set of plans and specifications for implementation of the remedial action.

Remediation subcontractor -
The group, or groups, subcontracted to the FEMP environmental restoration management contractor, who will be responsible for implementation of the remedial action.

Removal action -
Any action necessary to abate an immediate or imminent threat to health and the environment, including actions necessary to monitor, assess, or evaluate the threat.

Roll-off box -
A reinforced top-loading metal box measuring approximately 7′ x 5.5′ x 22′ with the gross weight capacity of 16.95 tons. These containers have a volume capacity of 810 ft^3.

Safe Shutdown -
Program designated as Removal No. 12 at the FEMP which provides planning, engineering, and program control for the proper disposition of all known uranium product and in-process hold-up materials, excess supplies, chemicals,

and associated process equipment. The program also is intended to ensure the proper characterization, emptying, and isolation of utilities for the majority of existing previously-operated, production-related equipment.

Secondary waste -
Waste other than primary material associated with a remedial action, generated as a result of occupying a job site, conducting decontamination and dismantlement activities, utilizing personal protective equipment, and demobilization activities.

Sequence -
The logical order, developed during the remedial design, in which components within complexes are scheduled for remediation.

Staging area -
A temporary holding area established outside of the construction boundary for empty containers prior to use.

Surface decontamination -
The reduction of existing surface contamination levels, thereby reducing direct exposure potential, as well as reducing available sources for wind-borne or water-borne contamination.

Top-loading metal box -
A top-loading metal box measuring approximately 8′ x 8′ x 20′, with a gross weight capacity of 18 tons. These containers have a volume capacity of 971 ft^3 and a burial volume of 1,280 ft^3.

Transite -
Common construction material used as sheeting for walls and roofs for many OU3 components. It consists of a mixture of asbestos and cement.

White metal box -
A top-loading metal box measuring approximately 3′ x 4′ x 6,′ with a gross weight capacity of 3.4 tons. These containers have a volume capacity of 82 ft^3 and a burial volume of 105 ft^3. Also known as B-25s.

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1.0 INTRODUCTION

1.1 Project Statement

The purpose of this implementation plan is to summarize the *Plant 1 Complex - Phase I*[1] project-specific design and field activities planned for decontamination and dismantlement of the above-grade portions of eight *components* located in Operable Unit 3 (OU3) at the U.S. Department of Energy's (DOE) Fernald Environmental Management Project (FEMP) in Fernald, Ohio. At- and below-grade remediation is not included within the scope of this project. This implementation plan was developed in a manner that summarizes the remedial design through the pre-final stage and is being submitted to the U.S. Environmental Protection Agency (USEPA) and the Ohio Environmental Protection Agency (OEPA) as a deliverable as specified in the OU3 Remedial Design/Remedial Action (RD/RA) Work Plan for Interim Remedial Action (DOE 1995) and the OU3 Remedial Design Prioritization and Sequencing Report (PSR) (DOE 1995). In so doing, this implementation plan replaces the submittal of multiple design and construction documents that were described in Sections 4.5 and 4.6 of the OU3 RD/RA Work Plan.

The contents of this implementation plan were prepared based primarily on program-specific information presented in the OU3 RD/RA Work Plan, project-specific strategies developed for the remediation subcontract Statement of Work (SOW)(Part 6 of the bid document), and performance specifications (Part 7 of the bid document).

1.2 Scope of Work

This implementation plan includes the following project-specific decontamination and dismantlement activities for the above-grade portions of the Plant 1 Complex - Phase I. The components included in the Plant 1 Complex - Phase I include:

- Building 1A - Preparation Plant;
- Building 1B - Plant 1 Storage Shelter (partial);
- Building 30B - Drum Storage Warehouse;
- Building 56B - Storage Shed (West);
- Building 56C - Storage Shed (East);
- Building 66 - Drum Reconditioning;
- Building 67 - Plant 1 Thorium Warehouse; and
- Building 72 - Drum Storage Building.

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[1] *Words that have been italicized are defined in the glossary.*

The key elements of this project that are addressed in this implementation plan include:

- Hazardous Waste Management Unit closure;
- asbestos abatement/removal;
- *surface decontamination*;
- above-grade component dismantlement;
- *material* management;
- environmental monitoring;
- proposed sampling;
- project schedule; and
- project management responsibilities.

This implementation plan does not address all of the components within the *Plant 1 Complex* as identified by the OU3 PSR. Due to the accelerated remediation planning schedule (described in a letter submitted to the USEPA and OEPA on October 23, 1995), the Plant 1 Complex has been divided into two phases. This implementation plan addresses only Plant 1 Complex - Phase I, as described above. *Plant 1 Complex - Phase II*, which includes the decontamination and dismantlement of the remainder of Plant 1 Storage Shelter (1B), Chemical Warehouse (30A), CP Storage Warehouse (56A), Quonset Hut #1 (60), Quonset Hut #2 (61), Quonset Hut #3 (62), KC-2 Warehouse (63), General In-Process Warehouse (71), and the Tension Support Structures (TSS-004 through TSS-006), will be remediated pursuant to the schedule provided in the letter referenced above. A separate implementation plan will be prepared for the Plant 1 Complex - Phase II decontamination and dismantlement project.

The sequence, schedule, and component-specific requirements for remediation of at- and below-grade dismantlement, as discussed in the OU3 PSR, is contingent on RD/RA scheduling for soil remediation within the former Production Area and will be addressed in the appropriate RD/RA submittals for the Soil Remediation Project. This plan also discusses two preparatory actions that have been completed prior to initiation of decontamination and dismantlement: the removal of existing product and waste inventories, and *safe shutdown*.

In accordance with the Record of Decision for Interim Remedial Action (IROD) for OU3 (DOE 1994), remediation activities have been planned utilizing a performance-based methodology. The Plant 1 Complex *remedial design* has been prepared using performance-based specifications as described in Section 4.5 of the OU3 RD/RA Work Plan. These performance specifications, which are listed in Appendix C of this implementation plan, meet the remedial objectives stated in the IROD and were used as the basis for developing the remediation approach presented in this document. The performance specifications developed for Plant 1 are identical to the performance specifications included in Appendix C of the OU3 RD/RA Work Plan, except for several design changes, regarding contamination release levels for materials, made recently as a result of the development of the OU3 feasibility study and the

Removal Action 17 (RvA 17) Work Plan (DOE 1995). The affected design specifications are discussed in Sections 2.3.4 and 2.5.5. This implementation plan has incorporated into text various key performance requirements stipulated by the specifications using references to specific sections or parts that pertain to a particular remedial activity. Since Section 04225 of the performance specifications (Masonry Removal) applies to this project, but was not included in Appendix C of the OU3 RD/RA Work Plan, it has been included in Appendix C of this document.

The use of performance specifications in the remedial design requires the *remediation subcontractor* to develop work plans, subject to DOE approval, that will specify remediation methods necessary to meet project objectives. The *sequence* of remedial activities and methods defined in the remediation subcontractor's work plans may differ from that presented in this implementation plan, should a better alternate sequence be proposed and approved by DOE. Substantive changes in the scope or intent of this plan will require USEPA and OEPA notification/approval prior to implementation of the activities. Nonsubstantive but otherwise significant deviations to specific methods or techniques proposed in this plan will be reported in the final remedial action report prepared following completion of this decontamination and dismantlement project.

1.3 Plan Organization

This implementation plan is comprised of five sections and five appendices. Section 1 contains the *remedial action* project statement, scope of work, an overview of this implementation plan, and a brief description of the Plant 1 Complex - Phase I. Section 2 describes the overall approach to the Plant 1 Complex - Phase I remediation project as developed during remedial design. That approach includes a sequence of action, a plan for materials management, environmental monitoring activities, and a generalized, six-task approach for implementing above-grade remediation. Section 3 presents specific aspects of the six remedial tasks for each component contained in the Plant 1 Complex - Phase I. Section 4 presents the schedule for implementation of the decontamination and dismantlement project. Section 5 describes the project management approach beyond that which has been described in the OU3 RD/RA Work Plan.

Appendix A contains summary tables of environmental and occupational sampling based on the assumptions in the Sampling and Analysis Plan (SAP) for the OU3 interim remedial action and on the remediation requirements presented in this plan. Appendix B summarizes potential contaminants for the Plant 1 Complex - Phase I. Appendix C lists the performance specifications that were developed for the OU3 interim remedial action, as applied to the Plant 1 Complex - Phase I decontamination and dismantlement project. Appendix D provides copies of drawings made available during design that show floor plans and elevations of buildings. Appendix E contains selected photographs of notable features of, within, or around the buildings so as to provide the reader with an overall perspective of the buildings, associated equipment, and appurtenances.

1.4 Location of the Plant 1 Complex - Phase I

The Plant 1 Complex - Phase I is located between 2nd and 3rd Streets, in the northwest portion of the former production area, as shown (shaded) in Figure 1-1.

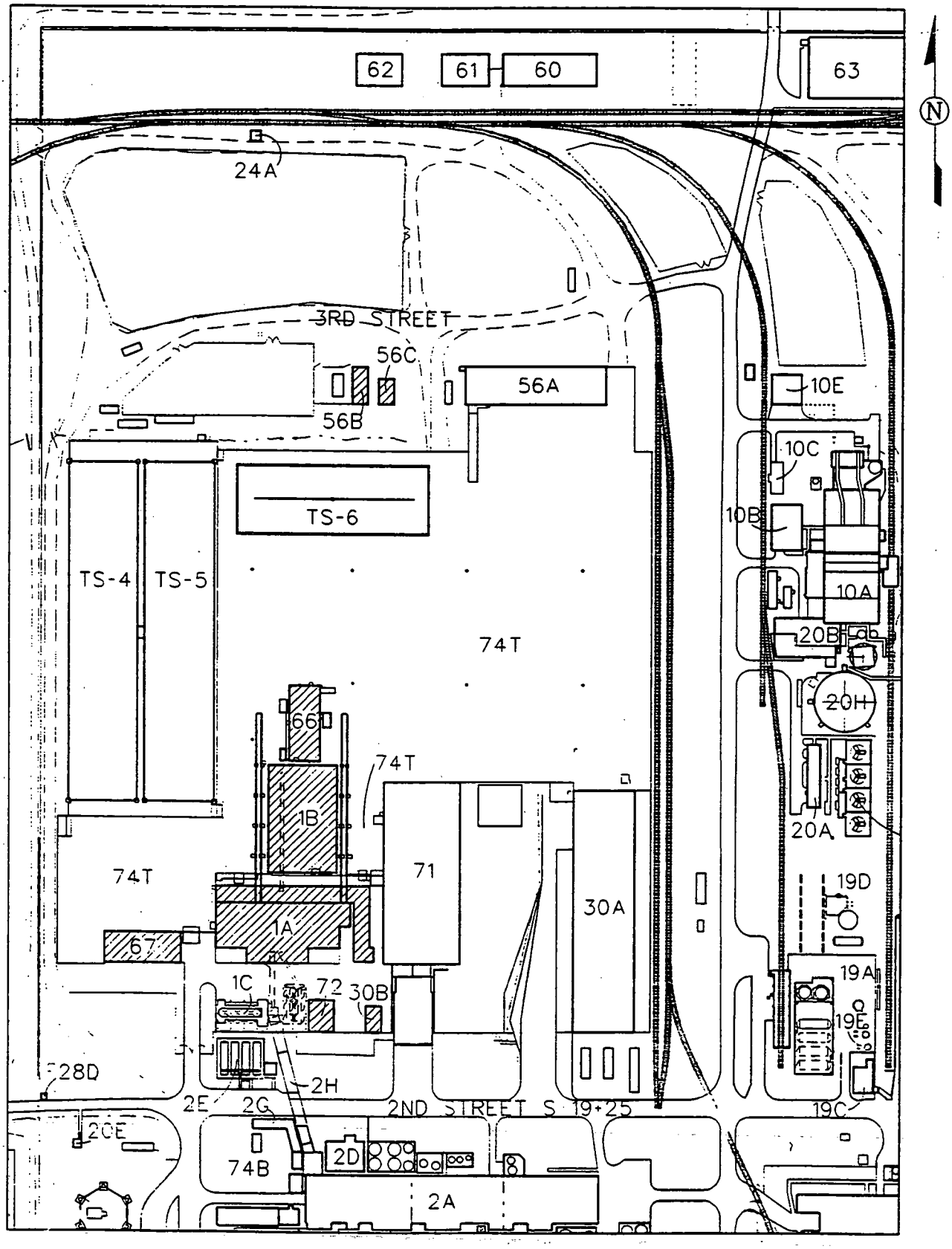

FIGURE 1-1 Plant 1 Complex - Phase I

2.0 GENERAL PROJECT REMEDIATION APPROACH

The overall approach to the decontamination and dismantlement of Plant 1 Complex - Phase I incorporates the applicable programmatic elements and tasks that were described in Section 3 of the OU3 RD/RA Work Plan. This section describes key aspects of the project-specific approach.

2.1 Sequencing of Remediation

The primary factors which determine the sequence for the remediation of components in the Plant 1 Complex - Phase I are proximity of surrounding structures, physical constraints of the site, completion of inventory removal and safe shutdown activities, and closure of one hazardous waste management unit (HWMU) under the Comprehensive Environmental Response, Compensation, and Liability Act/Resource Conservation and Recovery Act (CERCLA/RCRA) integrated process. Such constraints have impacts on determining and coordinating the use of material handling areas and subcontractor staging and storage areas, and the provision of adequate space for dismantlement operations that require extensive space.

Since the proximity of Building 67 is a physical constraint to decontamination and dismantlement of Building 1A, it will be decontaminated and dismantled first to create work space required for the dismantlement of Building 1A. The southern bay (approximately one-eighth) of Storage Shelter 1B, which adjoins Building 1A will also be removed to prior to the Building 1A remediation. The southern bay removal will provide clearance for heavy machinery to be utilized during Building 1A decontamination and dismantlement.

The remaining Plant 1 Complex - Phase I components will be decontaminated and dismantled in a manner which is separate but concurrent with the Building 67, Building 1B, and Building 1A activities. The order in which these latter components are to be decontaminated and dismantled is currently anticipated to be in the following order: 1) Building 30B; 2) Building 72; 3) Building 56B; 4) Building 56C; and, 5) Building 66.

2.2 Characterization of the Plant 1 Complex - Phase I

The processes and operations within the Plant 1 Complex - Phase I included the preparation of uranium and thorium ore stock for on-site processing, reconditioning of used storage drums, and waste storage. These primary and secondary operations utilized both radioactive and chemical constituents. Section 3 of this plan describes relevant process information to provide a context for component remediation. During operations, material handling procedures resulted in chemical and radiological contamination within Building 1A. Applicable portions of Table A.3 of the OU3 Remedial Investigation/Feasibility Study (RI/FS) Work Plan Addendum (WPA) were included in Appendix B of this implementation plan since that information was one of the primary sources of environmental characterization used to identify potential contaminants during remedial design. Table A.3 from the OU3 WPA was developed from *process knowledge*, and historical information such as quantities of material used, spill logs, incident reports, data from RvA No. 1 - Contaminated Water Beneath FEMP Buildings, RCRA drummed waste determinations, RCRA reports, etc.

Radiological survey data were generated during the OU3 remedial investigation from surfaces of structural steel (OU3 FS Category A), and concrete, masonry, and asphalt (OU3 FS Category E) to screen for intrusive "hot spot" sampling locations. These RI radiological survey data have been summarized in Table 2-1. Although the radiological survey data were not intended to characterize OU3 during the RI, or within this document, they were used for various reasons during the Plant 1 Complex - Phase I remedial design and pre-construction phase, including the identification of general contamination levels that workers would be exposed to during the course of decontamination and dismantlement activities. A list of uses of the radiological survey data follows Table 2-1. The OU3 RI/FS Report (DOE, 1996) should be consulted for greater detail regarding characterization of OU3 components since intrusive sampling results presented in the OU3 RI/FS Report represent conservative worst case conditions needed to qualify materials for disposition. Surface contamination, which is represented by radiological surveys, would not be useful following surface decontamination of materials since most of the loose contamination will be removed during that process.

TABLE 2-1 Summary of Radiological Data

Component No.	Alpha Removable (dpm/100 sq. cm)			Beta-Gamma Removable (dpm/100 sq. cm)			Beta-Gamma Total (dpm/100 sq. cm)		
	Avg Value	Max Value	Sample Size	Avg Value	Max Value	Sample Size	Avg Value	Max Value	Sample Size
1A	185	3,650	44	397	5,331	44	28,267	350,000	138
1B	40	54	18	56	138	10	1,875	2,000	16
30B	61	172	64	160	500	85	8,761	62,500	21
56B	N/A	N/A	N/A	105	400	30	2,067	10,000	30
56C	N/A	N/A	N/A	156	1,000	29	1,965	10,000	29
66	109	368	15	438	1,533	15	28,146	130,000	41
67	7,429	98,922	44	9,977	114,218	44	965,000	4,500,000	10
72	118	462	10	197	840	10	4,933	12,000	15

N/A = Not Available

The above-referenced summary of radiological survey data provides alpha removable, beta-gamma removable, and total beta-gamma radiological information. It has been utilized in support of the following Plant 1 Complex - Phase I decontamination and dismantlement planning and design efforts including, but not limited to:

- developing the safety assessment documentation to support the proposed activities;
- enhancing the project-specific health and safety plan and determining potential concerns for worker protection based on the suggested decontamination and dismantlement techniques;
- enhancing the subcontractor's understanding of expected contamination levels;

- determining personnel monitoring requirements;
- determining the number and location of project-specific radiological ambient air monitors;
- identifying potential gross radiological contamination that may require decontamination prior to the subcontractor activities; and,
- determining disposition options for various primary and secondary material streams generated by the project activities.

Subsequent to completion of remedial design, the OU3 RI/FS Report was published. The outcome of the OU3 RI/FS process will result in a decision regarding the treatment and disposal of materials from OU3 components. Table 2-2 has been provided to summarize intrusive characterization data that was highlighted in the component summaries (Appendix A) of the OU3 RI/FS Report. Section 2.3.2 of the OU3 RI/FS Report states that a single sample of each major medium, if present, was collected from each process area within a component designated for sampling based on field radiological and chemical screening and other criteria. As a result of this sampling strategy, the OU3 RI effort in Plant 1 Complex - Phase I components resulted in sampling only the three major media types that are shown in Table 2-2. Although OU3 RI sampling was not performed for each OU3 FS material category designation, the use of media classifications for sampling was a streamlined approach that allowed for representative sampling of all OU3 FS material categories, with the exception of friable asbestos. For example, the major media of steel coatings represents sampling of OU3 FS material categories A, B, C, and D. To identify sampling results from particular material types that fall within a certain media type, the extensive database provided with the OU3 RI/FS Report should be consulted.

It is emphasized that Table 2-2 lists a summary of data that is significant to either the remedial alternative selection process presented in the OU3 RI/FS Report (e.g., material disposition determinations based on potential hazardous waste classifications or Technetium-99 results) or what might otherwise be useful to the implementation of decontamination and dismantlement. The significance for the latter case is described below.

Relevant to the decontamination, dismantlement, material management, and potential sampling aspects of this project, the data presented in Table 2-2 are relevant to the following issues:

- Concrete: Lead (Pb), reported to have a concentration of 135 mg/kg in the ½ - 1 inch depth interval of a concrete core sample in Process Area 5 - Solvent Reclamation of Building 1A, exceeded a 20 times TCLP limit (greater than 100 mg/kg). Per Appendix A, Attachment A.II.7 of the OU3 RI/FS Report, the maximum percentage of lead leached from concrete using the TCLP method was 0.2 percent. Conservatively assuming a maximum leach rate of one percent, the leachate result is

TABLE 2-2 Summary of OU3 RI Data

Component No.	Significant Contamination by Media			
	Concrete Chips	Concrete Cores	Steel Coatings	Transite
1A	Tc-99: 100x base.[1] Ba: 16x base.	(A)[2] U-238: 120x base. Pb: 18x base. (B)[3] Tc-99: 18x base. Pb: >20x TCLP[5] (C)[4] Tc-99: 26x base. Se: 7x base.	Al: 5x base. As, Cd, Cr, Pb: >20x TCLP[6]	Data not signif.
1B	(7)	(7)	(7)	(7)
30B	(8)	(8)	(8)	(8)
56B	(7)	(7)	(7)	(7)
56C	(7)	(7)	(7)	(7)
66	Elem. U: 69x base. Pb: 6x base.	(A) Elem. U: 57x base. Zn: 7x base (B) Th-228: 23x base. V: 4x base. (C) Tc-99: 3x base. V: 3x base.	K: 4x base. Ba, Cr, Pb: >20x TCLP[6]	Not sampled
67	Ra-228: 50,000x base. As, Zn: <2x base.	Not sampled	Not sampled	Not sampled
72	Elem. U: 6x base. Pb: <6x base.	Not sampled	Cd, Cr, Pb: >20x TCLP[6]	Not sampled

Footnotes:

(1) base. = baseline concentration (published in Table A-8 of Appendix A.4 in the OU3 RI/FS Report); listed in Table 2-2 are only those analytes that exceeded baseline by the greatest margin. Concrete baselines: Tc-99 = 0.44 picoCuries per gram (pCi/g); U-238 = 6.50 pCi/g; Elem. U. = 12.55 μg/g; Ra-228 = 0.30 pCi/g; Ba = 50.40 mg/kg; Pb = 3.42 mg/kg; As = 3.96 mg/kg; Zn = 27.50 mg/kg; Se = 0.47 mg/kg; and V = 13.20 mg/kg. Paint (steel coatings) baselines: Al = 14,371 mg/kg; As = 25.95 mg/kg; Cd = 66.52 mg/kg; Cr = 4,540 mg/kg; Pb = 239,000 mg/kg; and Ba = 3,279 mg/kg. Chemical symbols are identified in a separate listing under Notation on page *iv*.

(2) A = core depth of top ½ inch

(3) B = core depth of ½ - 1 inch

(4) C = core depth of greater than 1 inch

(5) TCLP = Toxicity Characteristic Leachate Procedure; "20x TCLP" identifies possible hazardous wastes for solids.

(6) See second bullet in data relevance discussion below.

(7) Radiological surveys taken during the RI did not reveal levels that exceeded sampling criteria, therefore no intrusive samples were taken; baseline concentrations shall be used for characterization.

(8) Although average radiological surveys for beta-gamma total exceeded the RI sampling threshold, this component was considered inaccessible due to Herculite covering on the concrete floor.

estimated to be 0.068 milligrams per liter (mg/L). This estimated result is well below the TCLP limit of 5.0 mg/L. Therefore, the concrete core sample reveals that the concrete slab in that process area is not a hazardous waste.

- Steel Coatings: Steel coatings in Buildings 1A, 66, and 72 were reported to have concentrations of metals in excess of their respective 20 times TCLP limits; however, as noted in Attachment II.2.6.2 to the OU3 RI/FS Report, steel coatings are not considered characteristic hazardous wastes unless they are removed from the material.

- Maximum Baseline Exceedances (Radionuclide/Inorganic Analytes): This data has been highlighted to provide further characterization of materials in components beyond the radiological survey data listed in Table 2-1. The data may be used to enhance the project-specific health and safety monitoring, radiological monitoring, and preliminary hydro-cleaning effluent evaluation (i.e., identification of constituents of concern).

2.3 Materials Management

The material management strategies developed for this project, based on Section 3.4 of the OU3 RD/RA Work Plan, are outlined in this section.

Section 01120 of the performance specifications (Waste Handling Criteria) specifies remediation subcontractor requirements for managing material resulting from all project tasks. Based on the requirements specified in Part 1.5.A of Section 01120, a mobilization work plan that details waste handling methods and procedures will be prepared by the remediation subcontractor. Waste minimization will be accomplished, in part, by: unpacking equipment and material prior to entering the radiologically controlled area whenever possible, limiting the number of tools and equipment that could become contaminated, and not bringing any hazardous material to the construction zone (Part 1.6.B of Section 01120).

2.3.1 Primary Materials Management

Primary materials, including dismantlement debris and other bulk waste materials from the Plant 1 Complex - Phase I components will be managed in accordance with current OU3 FS strategies and RvA 17 (Improved Storage of Soils and Debris) and the performance requirements specified in Section 01120 of the performance specifications, as amended. Sections 2.3.3 and 2.3.4 describe key aspects of the current material management strategy.

Existing process knowledge, radiological survey data, and data from the OU3 RI are the main sources of information used to determine the primary material management requirements. Where data are insufficient, additional sampling will be performed to characterize materials to establish or verify whether or not materials meet the requirements for interim storage or waste acceptance criteria (WAC) for disposition. Appendix A of this implementation plan summarizes anticipated sampling and analysis to determine acceptance of material for all disposition options considered for this project.

2.3.2 Secondary Waste Management

Management of *secondary wastes* includes handling, potential sampling, storage, and disposition of waste materials generated during remediation. Such waste includes vacuumed dust, filters, filter cake, personal protective equipment (PPE), spent consumables, and washwaters. If hydro-cleaning of component surfaces is used, washwaters generated will be controlled by the remediation subcontractor by minimizing its generation, providing proper containment, etc. (see Part 3.2 of Section 01517). Material volume estimates listed in Section 2.3.3 account for hydro-cleaning effluent volumes. If washwaters are generated, the

floor will be sealed using a non-strippable coating to contain effluent to the building interior. The collection sumps located in Buildings 1A and 66 may be used for collection of washwaters generated in those facilities. Once collected, washwaters will be pumped through appropriate filters into temporary storage tanks (U.S. Department of Transportation - approved) and sampled for constituents of concern when the containers are full (Sampling described by the SAP - Volume 2 of the OU3 RD/RA Work Plan). Results of sampling will be forwarded to managers for the Aquifer Restoration Project for review to determine acceptance of washwaters directly to the Advanced Wastewater Treatment Facility. Samples of washwaters will be collected for only those batches that have been determined (through a review of available process information and existing data) to have potentially elevated levels of contaminants of concern, such as volatile organic compounds, heavy metals, and uranium. Depending on contaminant concentration levels, pre-treatment may be required. These materials will be managed in accordance with the strategies presented in the OU3 RD/RA Work Plan (Section 3.4 and Appendix A).

2.3.3 Estimates of Material Volumes

Materials to be generated during this project have been categorized according to the same classification system that was developed for the OU3 FS and, to ensure consistency with that document, they have been identified in Table 2-3 and their volumes and weights estimated in Tables 2-4 and 2-5, respectively. It should be noted that Table 2-3 is provided only as reference to identify the types of materials that fall within each of the OU3 FS material categories that are listed in Tables 2-4 and 2-5. Since materials in each category will be handled similarly, materials expected to be generated during decontamination and dismantlement for each category have been summarized and their estimated bulked and unbulked volumes presented in Table 2-4. Materials were assigned to a specific container according to current OU3 FS and RvA 17 strategies and pursuant to interim guidance for material management issued specifically for this project. The interim guidance updates the material segregation and containerization criteria (MSCC) document that was incorporated as Appendix A to Section 01120 of the performance specifications. The requirements of the updated MSCC, as it pertains to this project, have been applied to Tables 2-3 and 2-4. The volume estimates associated with each material segregation category are listed according to general material type, volume, and weight, and the type and number of containers needed. Estimates for spent PPE and consumables are included as either non-regulated ACM or miscellaneous materials, depending on the activity undertaken when these materials were generated. Estimates for wash water volumes are not included in either Table 2-4 or Table 2-5; the estimate for wash water is approximately 50,000 gallons and is planned to be held in 6,500 gallon batch containers to enable controlled sampling and discharge.

The bulked and unbulked volume and weight estimates in Tables 2-4 and 2-5, respectively were developed by reviewing engineering drawings and performing field inspections to identify and quantify materials. Although both bulked and unbulked volume estimates are listed in Table 2-4, the primary interest for material management is with the bulked estimates. Bulked estimates are necessary for estimating the number of containers needed for the project and the size of stockpiles that can be expected. Each type of material listed in Table 2-4 has been assigned a bulking factor based on compaction data obtained from size reduction and containerization of such materials during RvA 19 - Plant 7 Dismantling and from construction

TABLE 2-3 Material Categories

A - Accessible Metals
Structural Steel
Floor Decking
Metal Angle

B - Inaccessible Metals
Metal Vent Stacks
Stairs & Ladders
Handrail
Bar Joists
Grating
Light Fixtures
Lab Cabinets
Cable Trays
Metal Fume Hoods
Non-process Piping, Valves, Fittings
Junction Boxes
Conduit & Wire
Instrumentation
Panels (Electric)
Motors (Electric)
Conveyors
Dust Collectors
Condensers
Tanks
Autoclaves
Fans
Air Dryer
Scales
Agitators
Exhaust Fans
Gear Reducers
Depress. Stor. Cylinders
Compressors
Filters (Metal)
Separators
Scrubbers
Cooling Coils
Carbon Traps
Preheaters
Drying Oven
Packaging Stations
Chillers
Plasma Sprayer
Heat Exchangers
Controllers
Hoists
Vibrators
Roll-up Doors
Heaters
Control Centers
Drinking Fountains
Settling Tank
Bucket Elevator
Water/Air Tanks

B- Inaccessible Metals (Cont'd)
Platforms
Pulverizers
Drum Dumper/Filler
Augers
Feed/Weigh Hoppers
Reducers
Filter Units
Blowers
Crusher Mills
Burners
Blenders
Cyclones
Chutes
Mixing Boxes
Drum Lifts/Handler
Drum Crusher
Surge Hoppers
Air Handling Units
Misc. Non-Process Equip.
Bridge Crane
Substation
Metal Wall Studs
Exterior Doors
Aerosol Cans (Punctured)
Transformers (Wet type, PCB concern)

C - Process-Related Metals
Vacuum Systems
Ductwork
Process Valves & Fittings
Process Piping
Refrigeration Units
Furnaces w/o refractory
Furnaces w/ refractory
Process Pumps
Reactors
Absorber
Filters (Gas)
Product Mills
Dissociators

D - Painted Light-Gauge Metals
Metal Louvers
Downspouts
Metal Roof Panels
Lead Fasteners
Lead Flashing
Lead Gutters
Lead Downspout Joints

E Concrete
Asphalt Dust
Concrete Dust
Vaults
Concrete
Masonry Units
Cinderblock Walls

G - Non-Regulated ACM
Floor Tile & Mastic
Refractory
Feeder Cable
Transite Panels (Interior)
Transite Panels (Exterior)

H - Regulated ACM
Gutter Cleanout
Pipe Insulation (Including piping)
Equipment Insulation
PPE (Asbestos)
HEPA Filters (Asbestos)
Water filters (Asbestos)

I - Miscellaneous Materials
Cardboard, Paper
Plastic
Wood
Strapping
Refractory (Non-Asbestos)
Plumbing Fixtures
Eye & Safety Showers
FLEX Connections
PVC Piping
Acoustic Ceiling
Gypsum Material
Partitions
Bulbs (Incandescent)
Tires
Columns (Pyrex)
Interior Doors
Batt Insulation
Window Panes/Glass
Built-up roofing
Polyethylene
PPE - (Non-Asbestos)
Pre-filter HEPA (Non-Asbestos)
Empty Material Containers
Water filters (Non-Asbestos)
Other Misc. Similar Materials

J - Products, Residues, and Special Materials,
Soil
Lead Paint Chips
Paint Remover
HWMU Debris
Fluorescent Bulbs
Hydraulic Fluid/Oil/Grease
Washwater
Sludge
Floor Debris
Sludge Filters
Ballasts (Electric)

Table 2-4 Bulked and Unbulked Material Volume Estimates (ft^3)

Component / Vol. Type		Accessible Metals	Inaccessible Metals	Process-Related Metals	Painted Light-Guage Metals	Concrete	Non-Regulated ACM	Regulated ACM[1]	Misc. Materials[2]	Component/ Complex Totals
1A	Bulked	27,497	135,910	14,795	679	6,524	3,375	4,583	12,500	205,863
	(Unbulked)	(1,647)	(40,300)	(4,325)	(339)	(5,019)	(2,757)	(1,290)	(9,924)	(65,601)
1B	Bulked	260	17	0	8	0	0	6	63	354
	(Unbulked)	(16)	(9)	(0)	(4)	(0)	(0)	(5)	(42)	(76)
30B	Bulked	136	173	0	9	0	0	28	174	520
	(Unbulked)	(8)	(80)	(0)	(5)	(0)	(0)	(21)	(129)	(243)
56B	Bulked	0	33	0	8	0	0	37	476	554
	(Unbulked)	(0)	(17)	(0)	(4)	(0)	(0)	(31)	(303)	(355)
56C	Bulked	0	33	0	13	0	0	28	548	622
	(Unbulked)	(0)	(17)	(0)	(6)	(0)	(0)	(24)	(323)	(370)
66	Bulked	849	18,429	1,994	49	0	34	286	845	22,486
	(Unbulked)	(51)	(5,463)	(580)	(24)	(0)	(21)	(127)	(619)	(6,885)
67	Bulked	1,953	314	0	47	0	0	62	605	2,981
	(Unbulked)	(117)	(157)	(0)	(24)	(0)	(0)	(52)	(411)	(761)
72	Bulked	855	131	0	0	0	136	60	362	1,544
	(Unbulked)	(51)	(64)	(0)	(0)	(0)	(113)	(48)	(280)	(556)
Total	Bulked	31,550	155,040	16,789	813	6,524	3,545	5,090	15,573	234,924
	(Unbulked)	(1,890)	(46,107)	(4,905)	(406)	(5,019)	(2,891)	(1,598)	(12,031)	(74,847)
Container/Quantity[3]		None	None	TL[5]/18	None	None	ROB[5]/5	ISO[5]/6	ROB[5]/20	
Interim Storage Configuration[4]		Stockpile	Stockpile	TL	Stockpile	Stockpile	ROB	ISO	ROB	
Disposition		On-Property	On-Property	Offsite: NTS	On-Property	On-Property	On-Property	On-Property	On-Property	

(1) Excludes gutter cleanout which will be placed in drums (volume estimated at less than one drum).
(2) Excludes compactibles which will be placed in a dumpster as refuse for compaction. Miscellaneous materials can be containerized with Non-Regulated ACM.
(3) TL: *Top-Loading* (also referred to a Large Metal Box) holds 970 cubic feet and/or 18.0 tons of material; ISO: *End-Loading Container*/Sea-Land boxes) holds up to 971 cubic feet and/or 42,000 lbs. of material; ROB: *Roll-Off Box* holds 810 cubic feet and/or 16.95 tons of material.
(4) Currently, the preferred location for interim storage of containerized and stockpiled materials is the Plant 1 Storage Pad.
(5) Container is volume restricted.

Table 2-5 Material Weight Estimates (tons)

Component Designation	Accessible Metals	Inaccessible Metals	Process-Related Metals	Painted Light-Guage Metals	Concrete	Non-Regulated ACM	Regulated ACM[1]	Misc. Materials[2]	Component/ Complex Totals
1A	403	433	43	88	368	150	3	32	1,520
1B	4	1	0	1	0	0	0	1	7
30B	2	2	0	1	0	0	0	1	6
56B	0	0	0	1	0	0	0	2	3
56C	0	0	0	2	0	0	0	3	5
66	12	54	4	6	0	1	0	3	80
67	29	4	0	5	0	0	0	3	41
72	13	2	0	0	0	6	0	1	22
Complex Total	463	496	47	104	368	157	3	46	1,684

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industry standards. These bulking factors were originally identified and published in Table A.3-1 of the OU3 PSR but have been updated to reflect OU3 FS Categories and other refinements. The bulked volume estimates in Table 2-4 are calculated by multiplying the media-specific bulking factors by the unbulked volume estimates. Accordingly, the updated bulking factors themselves can be found by dividing the bulked values by unbulked values for each material category. The estimates for material tonnage in Table 2-5 were calculated by multiplying material densities (available from construction standards) with unbulked volume estimates. As referenced in the OU3 PSR, these material volume and weight estimates have been taken from the FEMP Sitewide Waste Information, Forecasting, and Tracking System (SWIFTS) database, which is the official FEMP database for materials and is updated as project-specific data is applied.

Container types and storage configuration are based on the category of material, characteristics of the material, and anticipated disposition based on the current strategies presented in the OU3 RI/FS Report and RvA 17 Work Plan. Material/container combinations, being either weight or volume restricted, are used to calculate the number of containers required. The two primary assumptions that should be noted regarding Tables 2-4 and 2-5 are that all materials are assumed to be radiologically contaminated, and mixed/hazardous wastes and PCB-contaminated wastes are to be containerized separately.
Disposition of material listed in Tables 2-4 and 2-5 is provided for under the OU3 Record of Decision for Interim Remedial Action and is also consistent with the "Preferred Alternative" that is described in the draft OU3 Proposed Plan for the OU3 Final Remedial Action (DOE, 1995).

2.3.4 Material Handling, Staging, Interim Storage, and Disposition

Material Handling/Staging
Pursuant to Section 01120 of the performance specifications, materials generated from the decontamination and dismantlement of Plant 1 Complex - Phase I will be reduced in size, segregated, and containerized. Containers will then be weighed, inspected, sealed, and tagged for on-site movement. The MSCC will be used as the basis for all containerizing activities. However, as noted in Section 2.3.3, the MSCC, which was originally presented in Appendix A of the OU3 RD/RA Work Plan, has been updated to be consistent with RvA 17 and the OU3 RI/FS Report.

Pursuant to Part 3.1 of Section 01120 of the performance specifications, the remediation subcontractor will establish a *queuing area* having a controlled boundary within the construction site. Empty containers and container preparation materials will be delivered to this area for use by the remediation subcontractor.

Containerization done within a local containment structure or building enclosure will not necessitate decontamination of materials to the extent originally required per Section 01517 of the performance specifications (Removal/Fixing Radiological Contamination). Pursuant to Section 01120, Part 3.2.H of the performance specifications, waste materials that require movement outside to be containerized will be required to meet the decontamination requirements of Section 01517 of the performance specifications. If that requirement cannot be attained, the material may be wrapped in 6-mil polyethylene sheeting and sealed prior to movement to prevent migration of contaminants. Compressed gases, explosives, free-liquids, fine particulates, hazardous wastes, corrosive materials and etiological agents will not be

allowed in containers that hold debris. Sampling of waste containers designated for off-site shipments will be performed by FEMP waste management personnel in accordance with the OU3 RD/RA SAP and WAC of those facilities.

Pursuant to Part 3.1 of Section 01120, a satellite accumulation area and a 90-day storage area will be established where all generated, removed hazardous waste will be taken once a day. These areas, which will be controlled by FEMP personnel, will be established in locations which will ensure minimal disruption of construction activities. Containers used for ACM will require additional preparation, including the use of polyethylene sheeting as secondary containment.

Full containers destined for off-site disposal or recycling/reuse will be delivered to an on-property packaging/staging area for sampling (if necessary), container inspection, and sealing. Materials destined for on-property temporary storage will be delivered directly to the designated *interim storage facility*.

Interim Storage/Disposition

Materials not identified for immediate off-site disposition will be placed in the queuing area by the remediation subcontractor to allow FEMP waste management to inspect them prior to their relocation to the designated interim storage facility. The RvA 17 Work Plan has identified the Plant 1 Storage Pad, other existing storage pads, and/or foundations of dismantled buildings as allowable interim storage locations until such time as the on-property disposal facility is functional. Currently, the Plant 1 Storage Pad is the preferred location for interim storage, for both stockpiling and container storage, of all materials from the Plant 1 Complex - Phase I decontamination and dismantlement project that have been designated for on-property disposal; however, other comparable storage locations with *engineering controls* may be used. The Plant 1 Storage Pad is identified in Figure 1-1 as three distinct but connected areas occupied by component identifier 74T. Such materials will be managed in accordance with the requirements of RvA 17 and will remain in interim storage until FEMP Waste Management can dispose of them under existing arrangements or until final disposition is determined by the Record of Decision (ROD) for the OU3 final remedial action. If at any time leading up to or during the generation of dismantlement debris that recycling is determined to be an acceptable alternative, interim storage requirements for those materials will be modified to ensure that appropriate segregation occurs.

The project-specific disposition strategy for materials generated during this project is consistent with the strategy presented in the OU3 RD/RA Work Plan (Section 3.4 and Appendix A) as updated by the interim guidance for material management referenced in Section 2.3.3. The updated strategy, assuming project implementation during the *interval period*, consists of the disposition of materials using one of the following options:

- DOE - Nevada Test Site (NTS) for disposal of process related metals and enriched equipment;
- Envirocare of Utah, Inc. for hazardous/mixed wastes; and
- on-property temporary storage for materials until treatment and/or disposition determinations are made by the OU3 Record of Decision (includes recycling or reuse of specific materials such as specialty metals, lead flashing, restricted or unrestricted use metals).

Upon implementation of the OU3 final remedial action, disposition of materials would occur according to requirements specified in a remedial action work plan. The material acceptance criteria referenced in Section 3.4 and Appendix A of the OU3 RD/RA Work Plan also apply to the disposition strategy for this project.

2.4 Environmental Monitoring

The OU3 RD/RA Work Plan sufficiently addresses groundwater and surface water monitoring (Sections 3.7.1 and 3.7.2, respectively) that will be performed in support of the Plant 1 Complex - Phase I remediation project. Environmental air quality monitoring during the Plant 1 Complex - Phase I decontamination and dismantlement project will consist of two programs: the current site-wide monitoring program as discussed in Section 3.7.3 of the OU3 RD/RA Work Plan and the supplemental radiological air monitoring program specifically designed for this decontamination and dismantlement project. The only aspect of environmental monitoring that requires elaboration beyond the discussion in the OU3 RD/RA Work Plan is the supplemental radiological air monitoring program developed for this project.

Based on the factors listed in Section 3.7.3 of the OU3 RD/RA Work Plan, air emissions computer modeling was performed to determine the potential emissions from remediation. The results of that modeling effort indicate levels of radiological emission will not exceed the 1.0×10^{-1} millirem (0.1 mrem)/year threshold at the project boundary that would require continuous emissions monitoring. As a point of reference for this threshold value, pursuant to Subpart H of the National Emissions Standards for Hazardous Air Pollutants (NESHAPs), the allowable off-site maximum for radiological emissions is 10 mrem/year. However, as a conservative measure to ensure protection of human health and the environment, four continuous air monitors will be employed to supplement current site-wide air monitoring on a continual basis surrounding the project boundaries during remediation. The monitoring locations for the Plant 1 Complex - Phase I are identified in Figure 2-1.

The air emissions computer modeling method used was the CAP88PC model which is the personal computer version of the U.S. EPA model CAP88 that is used for predicting emissions of radionuclides under the NESHAPs regulations. The modeling methodology used was prescribed by the U.S. EPA reference manual: U.S. EPA User's Guide for CAP88, Version 1.0, 402-B-92-001. Computer modeling of potential emissions from the Plant 1 Complex - Phase I project area was performed in October 1995 using contaminant source terms identified in Appendix B, Attachment B.I of the OU3 RI/FS Report. The methodology assumed no controls on emissions release, such as high efficiency particulate air (HEPA) filters on containment ventilation systems, and potential emissions sources were treated as being in gaseous states. The results of the computer modeling indicated that the maximally exposed individual would theoretically be located 1,000 meters north-northeast of the project area and would potentially receive a maximum Effective Dose Equivalent of 2.5×10^{-4} mrem/year from the D&D activities. As noted above, the DOE project boundary threshold is 1.0×10^{-1} mrem/year.

Given the low dose magnitudes, an extensive air monitoring network (i.e., more than four air monitors) is not necessary. Further justification for selecting only four monitors comes from analysis of data from Plant 7 and Plant 4 decontamination and dismantlement projects, which to date have shown that dismantlement activities resulted in negligible airborne radiological contaminant emissions. Results for airborne uranium contamination during those projects

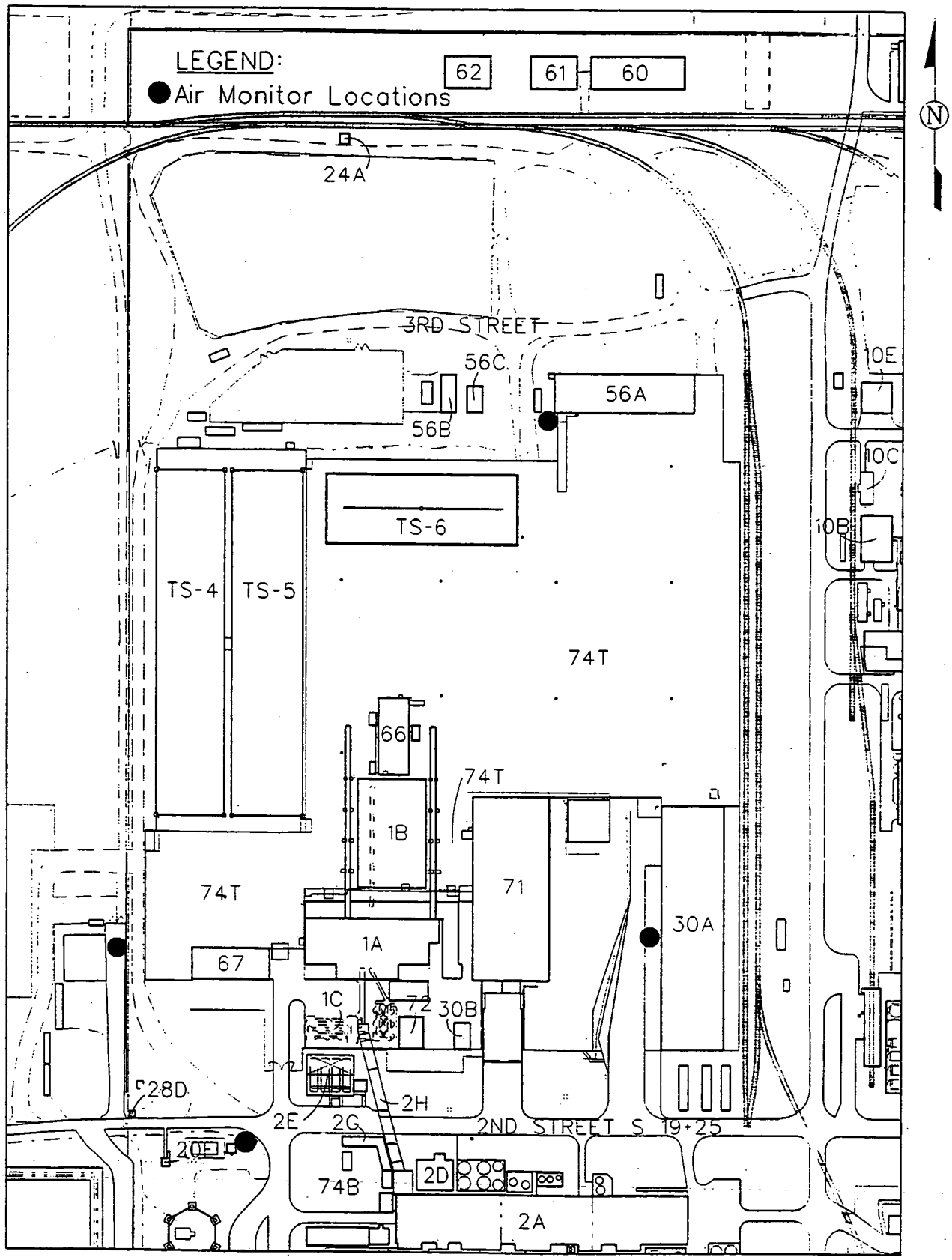

FIGURE 2-1 Proposed Air Monitoring Locations for Plant 1 Complex - Phase I

have been approximately 95 percent below the DOE maximum off-site guidelines of 0.1 pCi/m^3. The relationship between pCi/year and mrem/year may be understood by the conversion factor used to equate the two terms at the FEMP: if inhaled continuously (24 hours/day, 365 days/year) 0.1 pCi/m^3 of uranium in air will result in a dose of 100 mrem/yr. It should be noted that various assumptions have been incorporated into this conversion factor.

The supplemental air monitors will be set up and operated continuously (24 hours/day, 7 days/week) prior to the dismantlement activities described in Section 2.5.6 of this implementation plan. This representative period has been determined to be sufficient for establishing a representative background, based in part on an evaluation of preliminary radiological air monitoring for other decontamination and dismantlement projects (Plant 7 and Plant 4). Samples for preliminary background monitoring and dismantlement monitoring will be collected once a week.

For air monitoring to be useful in the evaluation of engineering controls, results from air monitoring will be reported as expeditiously as possible. In consideration of requisite decay periods for samples and time needed to perform analytical and reporting tasks, it is anticipated that the preliminary results of sampling would be delivered to the FEMP Construction Manager in no less than seven calendar days from the date that the sample is taken. Preliminary results will provide the data, albeit unvalidated at that point, needed to evaluate project concentrations against the baseline concentration. If radiological levels from four consecutive weeks of air monitoring are at least twice as high as baseline levels, decontamination and dismantlement activities will be reviewed to determine the effectiveness of engineering controls during remediation and to identify any need for additional mitigative measures. Validated data will be compiled, reported monthly, and used to trend sample results and to further evaluate the effectiveness of engineering controls and any need for mitigative measures.

Additional mitigative measures that might be employed in the event of exceedance of the criterion stated above would include an increase in engineering and administrative controls during a particular operation that has been identified as the cause or probable cause of the elevated radiological levels. Such controls could include an increase in negative pressure within the enclosed work area using additional HEPA filtration units or additional surface cleaning (wash) steps before removing material from the containment.

2.5 Remediation Activities

A general approach to the above-grade decontamination and dismantlement of the Plant 1 Complex - Phase I is described in the following subsections. Section 3 elaborates on this discussion by identifying component-specific interests concerning the six remedial tasks. The six tasks are as follows:

- Task I - Preparatory Action - Inventory Removal;
- Task II - Preparatory Action - Safe Shutdown;
- Task III - Hazardous Waste Management Unit;

- Task IV - Asbestos Removal;
- Task V - Surface Decontamination; and
- Task VI - Above-Grade Dismantlement.

Although the six remedial tasks are generally described in the order in which they will be performed, the actual order for performing these activities may differ from the sequence presented in this plan as a result of evaluation and selection of alternate methods by the remediation subcontractor as approved by DOE.

As required by Section 01515 of the performance specifications (Mobilization), the following activities will take place prior to the implementation of remediation activities discussed in Section 3. FEMP Construction Management will establish a break room, clean room, and shower facilities. The remediation subcontractor will mobilize in preparation for the decontamination and dismantlement activities by establishing a material handling and containerization area, access and egress roadways to and from the job site, and the construction zone boundary. The proposed construction zone boundary that was delineated in the project design is depicted in Figure 2-2. The remediation subcontractor will also deliver equipment, materials, and office and storage trailers to the site as necessary to perform remediation activities. All equipment will be inspected by FEMP Construction Management and surveyed by radiological control technicians to ensure that no contamination or items prohibited by the FEMP are brought on-site. A sign-in station will be established at the entrance to the job site for posting of permits and health and safety plans. Additional radiological control boundaries will be established prior to starting remediation activities in order to locate contaminated material staging areas as well as access and egress points to and from contaminated areas.

Additionally, the remediation subcontractor is required to develop and submit work plans covering various aspects of the project. One such plan provides details relative to how the remediation subcontractor will protect adjacent facilities (e.g., Part 3.2.A.2 of Section 01515). Other plans are required for controlling fugitive emissions (e.g., Part 1.5.A.2 of Section 03315), storm water run-off protection (Part 1.5.A.1.c of Section 01515), and controlling erosion (Part 1.5.A.3 of Section 01515). Throughout the remediation activities, the remediation subcontractor will be responsible for notifying DOE of conditions in the field that require environmental response. All conditions that necessitate a response will be dealt with immediately.

2.5.1 Preparatory Action: Inventory Removal (Task I)

Existing waste/product inventories from components have been removed by FEMP personnel prior to decontamination and dismantlement operations and have been transported to interim storage facilities or disposal facilities under Removal No. 9 as determined by the FEMP waste management organization. Section 3 provides volume estimates of containerized materials that were removed during Removal No. 9.

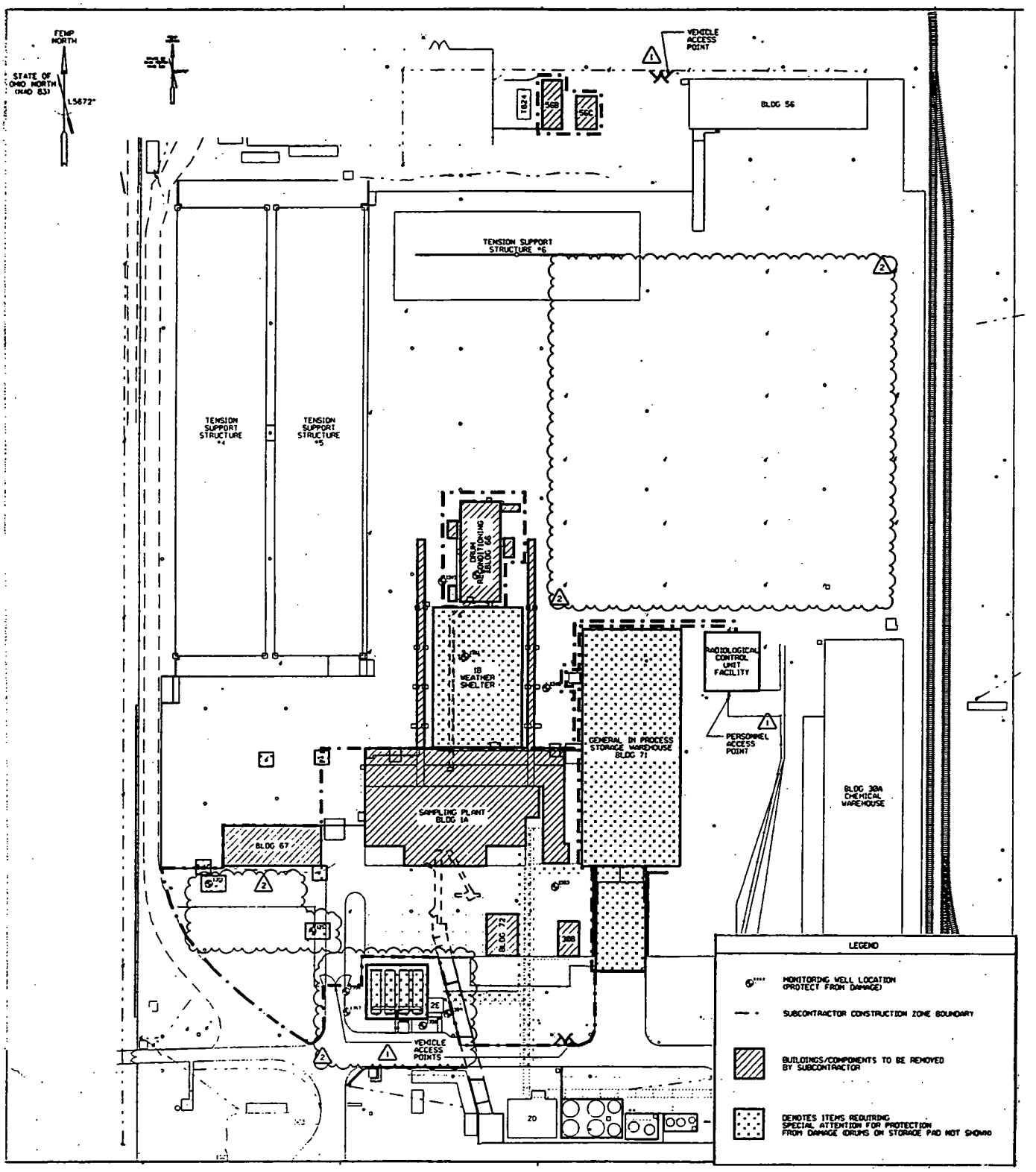

FIGURE 2-2 Construction Zone

2.5.2 Preparatory Action: Safe Shutdown (Task II)

Safe shutdown activities were completed on August 24, 1995 for components contained within the Plant 1 Complex - Phase I project. This activity was performed by FEMP personnel under Removal No. 12. Safe shutdown consisted of:

- removal of all salvageable equipment;
- removal of loose, gross contamination;
- removal of *hold-up material*;
- general clean-up; and
- disconnection of all utilities.

Various types and quantities of hold-up materials were removed from Buildings 1A and 66 during safe shutdown and have been summarized in Sections 3.1 and 3.5, respectively under the subheading of Safe Shutdown. The purpose of hold-up material removal was to reduce potential hazards from the work environment for the remediation subcontractor; to provide FEMP Health and Safety and Waste Management organizations with known starting conditions that are needed to develop the Safety Analysis, work permits, and Health and Safety Plan for remediation activities; and to aid in determining disposition options for the remediation materials. All systems were inspected to ensure such material was removed and any previously undetected material is located, quantified, and removed. Inspection techniques included visual inspection or non-destructive analysis.

A general cleaning operation was performed to remove visible dust and loose debris (including pigeon debris) from building surfaces, walls, and floors. The purpose of this activity was to remove loose radiological contamination held within the dust as well as other hazards (e.g., biological and chemical), thereby reducing the potential personnel exposure during aggressive remediation activities. Building penetrations that allow animal access have been sealed to ensure no further intrusion from animals and to minimize the potential migration of loose contamination to the environment.

All steam, potable water, electrical power, fire protection systems, compressed air, communication systems, and radiation detection alarms have been de-energized and terminated at the equipment or at the building exterior to establish the known condition of each energy source within the remediation area. The fire alarm and radiation detection alarm systems have been re-routed and activated.

2.5.3 Hazardous Waste Management Units (Task III)

As of the *remedial design,* five HWMUs were located within the Plant 1 Complex - Phase I structures. The identification of each of those HWMUs are listed in Table 2-6. Of the five previously identified HWMUs, only one - the Plant 1 Thorium Warehouse (HWMU No. 25) - will be closed under the CERCLA/RCRA integrated process which was described in Section 3.6.3.4 of the OU3 RD/RA Work Plan.

The Wheelabrator Dust Collector (HWMU No. 13), located immediately east of Building 66, removed dust generated from the Wheelabrator Shot Blaster process. HWMU No. 13 included the Wheelabrator Dust Collector and the Hoffman Dust Collector. The following RCRA closure field activities were completed on the Wheelabrator Dust Collector in August 1995:

- removed and rinsed ductwork associated with this closure;
- removed (by vacuum) residual waste (dust and paint chips) from the hoppers and baghouses of both the Wheelabrator Dust Collector and the Hoffman Dust Collector (auxiliary vacuum);
- removed and rinsed metal grate flooring in the baghouse to gain better access to the Wheelabrator Dust Collector hoppers;

TABLE 2-6 HWMU Closure Status

HWMU No.	HWMU Identification	Component No.	Closure Documentation Submittal
	INACTIVE UNITS TO BE CLOSED UNDER RCRA		
26	Detrex Still	1A	02-Mar-94(1)(2)
53	Safe Geometry Sump	1A	31-Jul-94(1)(2)
13	Wheelabrator Dust Collector	66	15-Jul-94(1)(2)
	INACTIVE UNITS TO BE COMPLETED UNDER RCRA/CERCLA INTEGRATED PROCESS		
12	Wheelabrator Shotblaster	66	Reclassified to Solid Waste Management Unit
25	Plant 1 Thorium Warehouse	67	(3)

Footnotes
(1) Dates for submittal of closure plans for these HWMUs are those that were agreed upon in the Stipulated Amendment to the Consent Decree.
(2) Activities related to closure have been completed.
(3) The schedule for closure of this HWMU under the CERCLA/RCRA process coincides with the remediation schedule that is presented in Section 4 of this implementation plan.

- removed the dust tubes in both dust collectors (240 dust tubes in the Wheelabrator Dust Collector and 18 dust tubes in the Hoffman Dust Collector);
- wiped down the baghouse of the unit with damp muslin;
- removed and rinsed the squirrel cage blower and two rotary valves;
- rinsed the inside of both dust collectors; and
- sampled dust tubes muslin rags, and rinse waters at various times throughout this closure.

HWMU No 26 was clean closed under RCRA prior to implementation of Plant 1 Complex - Phase I remediation. This HWMU has been closed in accordance with Closure Plan Information and Data package (CPID) submitted to OEPA and USEPA. Approval of this document has been received from OEPA and a certification document forwarded to OEPA. The FEMP notified OEPA that closure of the HWMU has been completed in accordance with the CPID.

HWMU No. 53 was closed in accordance with a HWMU Closure Information Letter that was submitted by the FEMP to the USEPA and OEPA on August 24, 1994. The closure of HWMU No. 53 was completed after OEPA approval of the information letter. The FEMP notified OEPA that closure of HWMU No. 53 was completed in accordance with the information letter on February 13, 1995. On March 2, 1995, OEPA gave verbal approval of this closure and stated that no further documentation was needed.

HWMU No. 12 has been reclassified to a Solid Waste Management Unit. HWMU No. 25 will be closed within the CERCLA/RCRA integrated process as discussed in Section 3.6 of the OU3 RD/RA Work Plan. Requirements for proper closure of HWMU No. 25 are specified in Section 3.7 of this implementation plan. The closure outline provided in Section 3.7 provides the following information in summary form:

- HWMU description;
- waste characterization;
- sampling and analytical plans and procedures;
- health and safety issues;
- waste storage and disposition plans.

Certification of the performance of those actions will be provided in the remedial action report(s) identified in Section 4.0 of this implementation plan.

2.5.4 Asbestos Removal (Task IV)

The removal of ACM from components will be conducted by a remediation subcontractor qualified to conduct asbestos abatement operations. This activity will involve removing all friable types of asbestos, typically consisting of thermal system insulation (TSI) on pipes and equipment. The requirements for ACM removal are specified in Section 01516 of the performance specifications and are summarized in this section.

The preferred method for removing ACM on piping is to remove the pipe and ACM as a single unit. A glove bag will be placed around the pipe cut location and the ACM will be removed to allow for a pipe cut without disturbing adjacent ACM. The preferred method for cutting the pipe includes using reciprocating saws, portable band saws, or mechanical shears. This method requires the use of secondary containment and the use of air cleaning units.

The standard procedure to be followed for non-pipe insulation, or where the glove-bag method is not practical for pipe insulation, is as follows:

1) isolate the work area;

2) install a containment barrier, which includes covering the walls, ceiling, and floor with polyethylene sheeting;

3) install an air cleaning units in the containment area;

4) wet the ACM with an *amended water* solution;

5) remove the ACM by cutting it into manageable sections;

6) after completing all removal work, surfaces from which ACM have been removed shall be wet brushed or cleaned by an equivalent method to remove all visible ACM residue;

7) wet-clean all work area surfaces to remove all visible ACM;

8) wet clean all work area surfaces a second time twenty-four hours after the wet cleaning operation to remove any remaining visible ACM;

9) apply encapsulant to all surfaces in work area;

10) perform asbestos clearance testing to release the area; and

11) perform additional wipe-downs or apply a second application of encapsulant if the fiber count is elevated.

By erecting individual asbestos abatement *containment structures*, the area that could potentially be affected by asbestos contamination will be minimized. Removal of non-friable ACM (e.g., floor tile, transite siding, roof materials) will be performed, as described in Section 2.5.6 of this plan, in a manner that does not release asbestos fibers to the environment.

2.5.5 Surface Decontamination (Task V)

Interior surface decontamination will be performed prior to removal of the exterior structure to prepare the component for exposure to the environment and structural dismantlement. The surface decontamination requirements summarized in this section are specified in Section 01517 of the performance specifications prepared for this project. However, the provision for adherence to radiological standards specified under Part 1.8 (Project Conditions) has been superseded (amended) by interim guidance for material handling as a result of revisions to RvA 17 and development of the draft OU3 FS, which developed through modeling performed to support disposition alternatives being considered in the OU3 RI/FS Report. Based on the modeling, it was determined that field measurements to determine compliance with total and removable radiological contamination levels (specified in Appendix A of Section

01517) were not necessary to make disposition decisions. Rather, the interim guidance requires that certain materials and all building surfaces be free of visible process material. Visible process material is defined as: "residues (green salt, yellow cake, etc., on the interior or exterior surfaces of materials that is obvious to the eye and that if rubbed, would be easily removed. Stains, rust, corrosion, and flaking do not qualify as visible process material. The material is still considered to be radiologically contaminated." The interim guidance requires that specific materials, listed below with cross-references to category designations shown in Table 2-3, be cleaned to the visible process material standard prior to material removal from local containment or enclosure.

- Process Related Metals - (Category C) — cut to size; seal ends; clean outside surface; containerize.
- Non-Process Pipe - (Category B or D) — cut to size; visually inspect to confirm absence of process material; seal ends; clean outside surface; containerize.
- Non-Enriched Equipment - (Category B or D) — cut to size; clean surfaces; containerize.
- Transite - (Category G) — clean while in situ; stack; wrap in bundle.
- ACM - (Category H) — no cleaning; directly packaged in double bags; stack on pallets.
- Construction Debris - (Category I) — no cleaning; containerize.
- Structural Steel - (Category A) — clean surfaces before dismantlement.
- Other (Special Materials) - (Category J) — no cleaning; directly containerize for disposal into drums, etc.

Material that does not fall within the types listed above (e.g., concrete masonry units, acid brick) will require cleaning to meet the visible process material standard. Cleaning specifications required under Section 01517, Part 3.1.B remains in effect for the materials listed above (see bullets). This provision requires that the subcontractor remove visible contamination, oil, scale, rust, and dirt, and manage [materials] in accordance with Section 01120 of the performance specifications before fixing remaining contamination.

Abrasive blasting and high-pressure steam and water sprays are proven techniques that may be used to reduce contamination levels in these components. Technique-specific engineering and administrative controls will be applied to reduce the spread of contamination, including the use of air cleaning units for abrasive blasting, grinding, and planing operations, and the use of dikes and sumps to collect washwaters. Administrative controls include limiting access to the area and use of work permits.

If contamination is still visible on materials following surface cleaning, the contamination can be fixed using an encapsulant. Part 1.6.A of Section 01517 of the performance specifications requires that the effectiveness of the method be demonstrated prior to commencement of work.

Sampling during this remedial task is described in the OU3 RD/RA SAP for the interim remedial action and will include sampling of contact wastes and decontamination waters. Routine radiological engineering surveys and industrial hygiene surveys will be conducted to ensure that worker protection.

2.5.6 Above-Grade Dismantlement (Phase VI)

Above-grade dismantlement of the Plant 1 Complex - Phase I will generally follow the order of subtasks listed below:

1) bulk removal operations, including electrical, piping, construction debris, and heating, ventilation and air conditioning (HVAC) systems (Section 15066 of performance specifications);

2) interior and exterior equipment removal (Section 15065 of performance specifications);

3) interior transite panel removal (Section 07415 of performance specifications);

4) exterior transite removal (Section 07415 of performance specifications);

5) structural steel removal (Section 05126 of performance specifications); and

6) Concrete Masonry Unit (CMU) secondary containment and pier removal (Section 03315 of performance specifications).

Other activities that support this remedial task include lifting and rigging (Section 14955 of performance specifications), and ventilation and containment (Section 15066 of performance specifications).

A general discussion of above-grade dismantlement tasks are described below. The building-specific above-grade dismantlement tasks are discussed in Section 3.

Bulk Removal

Prior to breaching any system, the remediation subcontractor and FEMP Construction Management will verify that all the systems are de-energized.

All piping, valves, electrical components, conduit, wire, cable trays, construction debris, and HVAC systems will be removed and reduced in size for loading into containers. During removal of piping, pumps, and HVAC ductwork, internal surfaces will be visually inspected to ensure the absence of free liquids or solid materials. If free liquids or solid materials are found, an evaluation will be initiated by the FEMP Construction Manager to determine the requirements for material handling and removal (see Part 1.6.A of Section 15066 of the

performance specifications). The evaluation will identify the contents and requirements for containerizing, storage, and disposal. Openings of non-process piping shall be sealed following the verification inspection and removed from the immediate area. If the item fails inspection, it shall be considered to be "process piping" and disposed appropriately.

Methods such as reciprocating saws, portable band saws, and shears are the preferred methods for bulk removal. Methods that volatilize the paint and contamination can be used, provided that additional safety and health requirements for worker protection are met. These methods include the use of respiratory protection and portable air cleaning units. Periodic radiological surveys will be performed to ensure that the potential for airborne radioactivity is minimized and to reduce the potential for cross-contamination. Surface wiping or vacuuming may be required to minimize transferrable contamination.

Equipment Removal

Equipment within the Plant 1 Complex - Phase I has been identified and classified based on size and disposition requirements. As equipment is removed, the internal building surfaces and floor area previously covered by the equipment will be visually inspected to ensure the absence of free liquids or solids. If these materials are found, an evaluation will be initiated by FEMP Construction Management to determine the appropriate removal and handling requirements for the material (see Part 1.6.A of Section 15065 of the performance specifications).

Based on the equipment to be removed and the requirements for removal as specified by Section 15065 of the performance specifications, the subcontractor is required to submit for approval a detailed work plan including the sequence, methods of removal and dismantlement, equipment required, catalog cut sheets, drawings and method and materials to control possible generation of airborne contaminants from cutting operations, etc. (Part 1.4.A.1 of Section 15065).

The building-specific equipment removal estimates are presented in Section 3. Staging of removed equipment and size reduction will occur within the southern portion of the construction area. Certain equipment may be classified as more than one type due to variances in size or weight. The equipment have been classified into the following five categories listed below.

Type RA Equipment: Type RA equipment is bulk equipment that is small enough to be handled by one or two individuals (without lifting devices) as it is loaded into a container or onto a skid. Removal of this type of equipment involves the use of hand tools, both manual and powered, or an oxy-acetylene torch to disconnect or cut equipment from its location and hand-carry it to a container or skid.

Type RB Equipment: This equipment is small enough to fit in a container but requires a fork-lift or other mechanical means to handle. The objective of this removal is to disconnect the equipment and remove it intact to the extent practicable. This equipment will be disconnected from mounts by the use of hand tools or an oxy-acetylene torch.

Type RC Equipment: This equipment should be disassembled for placement into a container. The objective of this removal is to dismantle large, bulky equipment in manageable sections that can be handled and contained safely. This equipment will be disconnected from its

mounts by the use of hand tools or an oxy-acetylene torch. The equipment will be further sized when required using oxy-acetylene torches, shears, and mechanical cutting or disassembling at assembly joints.

Type RD Equipment: This equipment will be removed from the building in one piece. This equipment will be removed by unbolting, cutting, or any other means necessary. This equipment will be disconnected from mountings by use of hand tools, both manual and powered, or by use of mechanical cutting or shearing. This activity will take place when convenient and if the equipment can be proven to be stable and secure. If the equipment cannot remain stable and secure after removal from its mountings, then it shall be disconnected when prepared for removal from the building.

Type RE Equipment: Identified RE equipment will be removed for salvage or beneficial re-use. The equipment will be removed by safe shutdown labor forces and transported intact or in sub-assembles and turned over to FEMP construction management. Type RE equipment will be specifically identified for staging in a separate turnover location.

The steps required for removal of RE equipment, which must take place prior to opening the building (containment) include:

1. Remove all process piping, ducts, conduit and any other appurtenances from the equipment;

2. Disassemble equipment in place to the extent necessary so that it will fit into a container when removed from the building; and

3. Perform visual inspection for contamination before removal of exterior equipment. The presence of visual contamination will require further decontamination and/or the use of encapsulant, enclosures and/or air cleaning units to control potential airborne emissions.

When the building is opened, the equipment will be placed into a container inside the building, if possible, or removed from the building and placed into a container for off-site transport. Depending on the size and configuration of the equipment, a rigging plan may be necessary prior to removal.

Interior Panel Removal

Transite Panel Removal: Prior to removing the transite panels, a coating of amended water will be applied to lock down any loose fibers. A screw gun is the preferred method for removing the panels. If the fasteners cannot be removed with a screw gun, then the area around the fastener will be sprayed with a fixative allowing the fastener to be pried out. Prior to any fixation, Part 1.6 of Section 07415 of the performance specifications requires the remediation subcontractor to demonstrate the proposed method to be utilized. After the screw is pried out, the fixative will be reapplied. If a broken panel is encountered, then the area around the break will be sprayed with amended water and the fragmented pieces will be encapsulated with the fixative. HEPA vacuums will be available to collect any loose material. The batt insulation will be removed and bagged. As the insulation is removed, a visual inspection and a radiological survey will be performed on the newly exposed surfaces. Indications of friable asbestos will require gathering the loose material and locking the

remaining fibers in place. If radiological survey results indicate the need to perform decontamination or lock down of the areas to levels consistent with surrounding building surfaces, then these activities will be performed. Fasteners and molding that hold the panels and insulation in place will also be removed as part of this operation.

Metal Panel Removal: Screw guns are the preferred method for removing the metal panels. Optional methods of drilling or prying the fastener out may also be used to remove the panels. As the panels are removed, a radiological survey will be performed on the newly exposed surfaces to ensure contamination levels are within the established guidelines. Surface decontamination may be performed to reduce contamination levels as required.

Exterior Panel Removal

Transite Panel Removal: Part 3.1 of Section 07415 of the performance specifications specifies that the subcontractor shall maintain the integrity of the exterior of the building until the transite and insulation has been removed and encapsulant, lock-down, or surfactant has been applied to the interior surface of exterior panels. Prior to removing the transite panels a coating of amended water will be applied to lock down any loose fibers. A screw gun is the preferred method for removing the panels. If the fasteners cannot be removed with a screw gun, the area around the fastener will be sprayed with a fixative, thus allowing the fastener to be pried out. As with interior transite, prior to any fixation, Part 1.6 of Section 07415 of the performance specifications requires the remediation subcontractor to demonstrate the proposed method to be utilized. After the screw is pried out, the fixative will be reapplied. If a broken panel is encountered, the area surrounding the break will be sprayed with amended water and the fragmented pieces will be encapsulated with a fixative. HEPA vacuums will be available to collect any loose material.

A wall climbing device is the preferred method for removing the wall panels thus allowing the panels to be removed and stacked on the wall climber for transport to the ground level.

Metal Panel Removal: Screw guns are the preferred method for removing the metal panels. Optional methods of drilling out the fastener or prying the fastener out may also be used to remove the panels. As the panels are removed, a radiological survey will be performed on the newly exposed surfaces to ensure contamination levels are with the established guidelines. Louvers, gutters, downspouts, and flashing will be removed as they are encountered.

Structural Steel Removal

In order to prepare the component for structural steel removal, all remaining items, such as non-load bearing steel members, windows and frames, doors, gutters and down spouts, will be removed using hand tools and oxy-acetylene torches. As these items are removed, the exposed component surfaces have the potential of holding debris and contamination. These areas will be visually inspected to determine if these surfaces meet the decontamination requirements by Section 01517 of the performance specifications. Additional decontamination such as encapsulation of surfaces may be performed as discussed in Section 2.5.5.

Use of shape charges and tripping technique are the preferred *dynamic dismantlement* techniques for components included in this project. Hydraulic shears or oxy-acetylene torches will be used to reduce the size of the structural steel frame. The component-specific dismantlement techniques are presented in Section 3. Prior to and during dismantlement, the

area surrounding the structure will be sprayed with amended water to reduce fugitive dust emissions.

The remediation subcontractor will be required, pursuant to Part 1.5.A of Section 05126 of the performance specifications, to specify in a structural steel removal work plan the following methods:

- detailed sequence of dismantlement, including equipment;
- methods for contamination control, including fugitive emissions during size reduction;
- methods for size reduction;
- collection of lead paint chips in lay-down and size reduction areas;
- methods and materials to be used for cutting lead painted steel; and
- calculations to verify structural integrity of partially dismantled structure, as applicable.

Provisions that identify material size reduction requirements for the Plant 1 Complex - Phase I project are currently specified in the performance specifications under Appendix A to Section 01120, and Section 05126, Parts 1.5.A.4 and 3.2.G. If the method of cutting material proposed by the D&D subcontractor is not compatible with requirements specified by a recycling subcontract, provided that this option for material disposition is chosen, appropriate modifications will be made to the subcontractor's work plan. It should be emphasized that recycling of materials will be evaluated on a project-specific basis and that material dismantlement and sizing requirements will have to be modified accordingly to ensure that materials are properly prepared for recycling, if that option is selected. In the event that recycling is found to be an acceptable disposition option during project implementation, the subcontract would be revised through appropriate change documents to ensure recyclability.

If controlled explosive methods are used, Part 1.5.A.3 of Section 05126 further states that a detailed work plan will need to satisfy the following key requirements:

- methods and materials to be used;
- means to protect adjacent structures and equipment, material, and underground utilities from damage, including protection from projectiles;
- methods and materials to control fugitive emissions;
- contingency plan for detonation failure; and
- evidence of previous work experience using controlled explosives to take down multi-story structures near other structures within the last five years.

If controlled explosive methods are used, Part 3.1.B. of Section 03315 of the performance specification requires that the subcontractor take several precautions to control fugitive emissions, including, but not limited to, the following:

- wet dust suppression by using amended water sprayed in a finely atomized manner so as to provide a hydraulic mist envelope over the entire structure and footprint of the fall area of the structure during the entire felling operation; and

- use of a wetted non-woven geotextile fabric, placed on the grade slab and extended beyond the perimeter of the building at a distance equal to the building height to prevent exterior debris from becoming airborne due to air pressure developed during the felling operation.

Section 05126 provides direction to the subcontractor in several other ways relative to the removal of structural steel. Part 3.2.D reemphasizes the subcontractor's responsibility for avoiding damage to adjacent structures, material, and equipment during dismantlement activities. Part 3.2.I specifies that lead-based paint chips and debris, released during structural steel dismantlement, shall be collected and managed in accordance with Section 01120.

CMU Secondary Containment and Pier Removal

CMU secondary containments and above-grade concrete platforms (piers) will be removed down to the elevation of the base slabs. Part 1.5.A of Section 03315 of the performance specification requires the remediation subcontractor to develop a concrete removal work plan containing information quite similar to that of the structural steel removal work plan discussed above. Pursuant to Part 3.2.J of Specification 03315, interior concrete/CMU walls shall be removed using non-explosive methods prior to opening the shell of the structure. The CMU secondary containments and piers will be radiologically surveyed prior to removal to determine the need for engineering controls, such as an enclosure with ventilation or water sprays to minimize fugitive dust, during removal operations. The remaining CMU will be leveled to within one inch of the remaining slab to minimize the chance for water accumulation and potential personnel hazards.

The base slabs of the structures will remain in place as part of this remedial action. Part 3.2 of Section 01515 of the performance specification addresses requirements relative to the preparation of the base slab during demobilization. Specifically, all openings in the slab will be filled with granular material and grout to provide a flat uniform surface thus minimizing the chance for water accumulation and migration, and potential personnel hazards. All wire and cable will be cut away at grade from the conduit embedded in the concrete. Conduit and other slab obstructions will be cut away to grade level, plugged, and covered with grout to grade level. In accordance with Section 01515, Part 3.3.H, a FEMP-approved sealant shall be applied to the slab surface after all debris have been removed and openings filled in.

3.0 COMPONENT-SPECIFIC REMEDIATION

This section presents component-specific remediation tasks identified for the Plant 1 Complex - Phase I decontamination and dismantlement project. Background information provided in this section was obtained primarily from the OU3 RI/FS WPA and remediation subcontract SOW, including figures showing notable features of the building. Information regarding the remediation approach was obtained from the remediation subcontract SOW, performance specifications, the OU3 RD/RA Work Plan, and project-specific strategies developed by FEMP organizations for managing certain activities that do not fall within the scope of work for the remediation subcontractor.

3.1 Building 1A - Preparation Plant

Background

Building 1A - Preparation Plant is a four-story building located north of 2nd Street and east of A Street. It is an irregularly shaped building measuring approximately 82 ft. x 202 ft. x 60 ft., consisting of a structural steel frame, transite walls (interior and exterior with batt insulation in between) and roof, poured concrete floor with CMU secondary containments and walls. The building consists of four floors as shown in Appendix D floor plan drawings in Figures D-3 through D-6, respectively, and profiled in a 1952 as-built elevation drawing in Figure D-7. Figures E-1 through E-8 are copies of photographs that show several ground-level views of Building 1A and process area equipment.

All enriched uranium materials to be processed at the FEMP were received in Building 1A. Ore concentrates and recycled materials were weighed, sampled, and milled in this plant for distribution to other processes. Uranyl nitrate hexahydrate (UNH) solution was also prepared in Building 1A for use in the Ore Refinery Plant (Building 2A). Several other supporting operations were performed in the plant, including drum sampling and washing, solvent recovery, repackaging, and waste water treatment.

Building 1A has a total of seven process areas: drum sampling, crushing/milling, enriched materials reclamation, drum washing, solvent reclamation, waste water handling, and repackaging. Each process is discussed below.

Process Area 1 - Drum Sampling. Sampling of materials contained in 55- and 30-gallon drums occurred at the sampling station located in the northwestern corner of Building 1A (see Figure D-3 in Appendix D). The automatic sampling facilities consisted of a "U"-shaped roller drum conveyor, two drum pushers, a set of in-line scales, an automatic closed auger sampling station, a dust enclosure and collector, an air-capping device, and a drum roller/mixer.

Process Area 2 - Crushing/Milling. Building 1A housed several milling operations, contained within the areas marked as Process Area 2 in Figures D-3 through D-6 in Appendix D, to size-reduce enriched uranium, magnesium fluoride (MgF_2), and orange oxide (UO_3) stocks prior to processing. The Thor Mill was used to prepare spent uranium oxide UO_2 for recovery. The UO_2 dioxide arrived as spent fuel pellets, encased in tubes, that originated from other nuclear facilities. The tubes were run through the Pincutter, which divided the tubes into manageable sections. The sections were then processed through the Thor Mill, and the spent uranium pellets were removed. The Sly Dust Collector controlled dust generated during this process.

The Williams-Titan Mill processed MgF_2 slag leach from the Metals Production Plant (Building 5A). Other materials that contained uranium enrichments of 2.1 percent or less were also periodically processed. The mill utilized several pieces of equipment, including a pulverizer, a hopper, and a cyclone system.

Three smaller mills were also associated with Building 1A. The Zenith Mill, located on the second floor, was used to process UO_3. The Jaw Crusher and Hammer Mill, both located on the third floor and shown in Figures E-11 and E- 14, respectively, were used to process ore materials.

Process Area 3 - Enriched Materials Reclamation. Process Area 3 is situated in an area delineated in Figures D-4 and D-5 in Appendix D. The Safe Geometry Digestion unit (see Figure E-12 in Appendix E) was used in Building 1A to digest uranium enriched up to 20 percent. Uranyl nitrate was produced by adding nitric acid to uranium compounds such as UO_2, UO_3, and uranium oxide (U_3O_8). The system was designed with thick steel walls to protect personnel working in the area. A sump was operated within the system. The Safe Geometry digestion system (HWMU No. 53) was closed in accordance with the HWMU Closure Information Letter.

Process Area 4 - Drum Washing. Boundaries of Process Area 4 are shown in Figure D-6 in Appendix D. Drum washers were used to clean ore concentrate drums for reuse. The emptied drums were lifted to the fourth floor, where a series of rinsers and washers were located. The waste water generated during the process was transferred to the waste water treatment system on the first floor.

Process Area 5 - Solvent Reclamation. Process Area 5 includes area shown in Figure D-3 in Appendix D. Solvents were reclaimed in the Detrex Still (see Figure E-4 in Appendix E) located on the first floor of Building 1A. Spent dry-cleaning solvents were entered into the still to be purified for reuse in other processing plants. The Detrex Still has been declared a HWMU (No. 26) and will be clean closed in accordance with the CPID prior to initiating this implementation plan.

Process Area 6 - Waste water Handling. Process Area 6 is located on the first floor of Building 1A as shown in Figure D-3 in Appendix D. It consisted of two liquid waste treatment facilities that served Building 1A. The systems were identical except for their sources of influent: one system collected wastes from the eastern half of the building, and the other from the western half. Liquid wastes were collected in sumps and transferred by pumps to the settling tanks until the tanks became full.

Process Area 7 - Repackaging. Process Area 7 is located on the first floor of Building 1A as shown in Figure D-3 in Appendix D. Repackaging of Building 1A and Plant 1 Storage Pad drummed materials was performed along the east wall of the building. The materials requiring repackaging included materials milled in Building 1A and materials received from off-site vendors. The materials associated with the Plant 1 Storage Pad that required repackaging were leaking drums found on the pad. These drums were overpacked in this area with a barrel-turning truck.

During plant operation, additional processes in Building 1A included the Sample Preparation Lab ("hot lab"), which analyzed incoming ore-stocks and performed lab-scale digestion of 30

percent enriched uranium; and a metal storage array ("rabbit hutches") that, until recently, stored 20 percent enriched uranium materials.

Building 1A has undergone or will undergo each of the remedial tasks discussed in Section 2.5 except for Task III - Hazardous Waste Management Unit since there are none in this component. Significant activities that were already performed for the preparatory actions have been detailed below. Task V - Surface Decontamination will be performed concurrent with and following material removal but is not discussed in this section since there are no component-specific details beyond what is already provided in Section 2.5.5.

Preparatory Action: Inventory Removal (Task I)
Table 3-1 shows the storage quantities of containerized material that were removed from Building 1A as part of the inventory removal activity.

TABLE 3-1 Building 1A Inventory Removal

No. of Drums	Description of Material
62	Dust Collector Residues - High Fluoride
51	Scrap U_3O_8 or thorium dioxide (ThO_2), Low Fluoride
48	UO_2 or thorium di-fluoride (ThF_2) Pellets - Refinery Feed
32	Scrap UO_2
19	UO_2 (or ThF_2) Powder - Refinery Feed
18	Sludges, Clean-out, Non-Oily, For Roasting
15	Samples, Non-Metallic, Miscellaneous
13	Material Held for Historical Purposes
10	Clad Metal for Acid Dissolution - Not for Zirnlo Processing
1	ThO_2 Produced from Unpurified Hanford Thorium Nitrate via Thoria Gel Process

Preparatory Action: Safe Shutdown (Task II)
Safe shutdown activities include the removal of all hold-up material within the equipment, piping and ductwork systems. Table 3-2 lists the quantities of hold-up material removed from Plant 1A during Safe Shutdown. All systems have been inspected to ensure that these quantities were removed.

Hold-up material removed from Building 1A was containerized and placed in temporary storage in either of four locations depending on material storage requirements and storage availability: Plant 1 Storage Pad (74T), KC-2 Warehouse (63), Plant 4 Warehouse (4B), or Plant 8 Warehouse (80). These storage locations may be located on the Plate Map provided with the OU3 RD/RA Work Plan. The other components included in this project did not contain hold-up materials.

Asbestos Removal (Task IV)
Individual asbestos work areas will be established within Building 1A. Most of the ACM is in good condition and has not caused any building areas to be designated as asbestos areas

TABLE 3-2 Hold-Up Material Removed from Building 1A (lbs.)

Material	Material Type Code	Enriched (Product)	Enriched (Waste)	Normal (Waste)	Depleted (Waste)
MgF_2	088	0	7,416	0	0
	034	0	298	0	0
UO_2	102	100	0	693	0
Salts	066	0	129	0	0
U_3O_8	101	50	0	0	0
UO_3	157	0	0	0	304
Oil	015	0	0	0	2,664
Other	-	0	64	55	0
Trash	003	0	1,409	0	664
	027	0	68	22	0
Totals (Excludes Trash)		150	9,384	770	3,632

Notes:
1) The hold-up quantities listed in Table 3-2 are not included in Tables 2-4 or 2-5 since they were removed during safe shutdown.
2) Sludges from the Detrex Still have been removed and managed as RCRA mixed waste in accordance with the CPID submitted to Ohio EPA.
3) Residues from the Safe Geometry Sump have been removed and managed as RCRA mixed waste in accordance with the HWMU Closure Information Letter submitted to Ohio EPA.

because of the concern for friable asbestos. The individual work areas will minimize the amount of area required to be released from asbestos concerns.

The ACM from the equipment, the interior walls, and from areas that have the potential to be disturbed during bulk removal and equipment removal operations will also be removed. If damaged ACM is encountered during removal activities, then an aggressive air sampling test will be performed to confirm the absence of asbestos fibers. If the asbestos fiber count is elevated, then a sealant will be applied to the surfaces to lock down the loose fibers. An additional air sampling test will then be performed to verify the lock down effectiveness.

A final asbestos removal effort will take place subsequent to the completion of the bulk removal and equipment removal operations. The equipment removal will allow for unobstructed movement around the building, simplifying the remaining asbestos removal activities. Approximately 9,261 lineal ft. of pipe insulation will be removed as part of the asbestos removal activity. Approximately 1,118 ft^2 of asbestos-containing floor tile and associated mastic will be removed.

Above-Grade Dismantlement (Task VI)

Building 1A dismantlement will consist of removing the building contents and structure that are described in the preceding background discussion. Specific material quantity estimates for Building 1A are included in Tables 2-4 and 2-5 by OU3 FS material category but have been further broken down by material type below, along with a cross reference to the appropriate OU3 FS material category:

- Approximately 59,416 lineal ft. of piping and conduit (OU3 FS Categories B and C);
- Approximately 63,542 ft^2 of HVAC ductwork and 6,354 ft^2 of ductwork insulation (OU3 FS Categories C and H);
- Approximately 40,970 ft^3 of equipment (Table 3-3 identifies the various types of equipment contained in Building 1A)(OU3 FS Categories B and C);
- Approximately 403 tons of structural and miscellaneous steel (OU3 FS Category A);
- Approximately 250 ft^2 of CMU block (OU3 FS Category E);
- Approximately 180 yd^3 of above-grade concrete (OU3 FS Category E);
- Approximately 9,620 ft^2 of roofing material (OU3 FS Category I);
- Approximately 2,726 ft^2 of doors and windows (OU3 FS Category I); and
- Approximately 42,980 ft^2 of interior transite paneling, 29,600 ft^2 of exterior transite (both OU3 FS Category G), and 48,600 ft^2 of batting insulation (OU3 FS Category I).

TABLE 3-3 Building 1A Equipment Removal

Type RA Equipment	Type RB Equipment	Type RC Equipment	Type RD Equipment	Type RE Equipment*
Small Pumps	Control Panels	Dust Collectors	Jaw Crusher	Allen Brady Control Panel
Drum Station	Scales	Settling Tanks	Grizzly Feeder	Kruz Instrument Panel
Small Motors	Pumps	Vaults	Hammer Mill	Dust Collector
	Scrubbers	Bucket Elevators		MEPA/HEPA Filter Control Panel
	Heaters	Water/Air Tanks		New Vacuum Pump
	Drum Conveyors	Platforms		Primary Vacuum Separator Tank
	Drinking Fountains	Pulverizers		Secondary Vacuum Separator Tank
	Hoists	Pulsate Collectors		MEPA/HEPA Units
	Small Tanks	Drum Dumper		Flanders Filters
	Vibrators	Drum Station		
	Roll-up Doors	Fitzmill		
	Vacuum Systems	Augers		
	Separators	Feed Hoppers		
	Agitators	Filter Units		
	Compressors	Exhaust Fans		
		Blowers		
		Crusher Mill		
		Blenders		
		Cyclone		

*. This equipment has been identified as potentially salvageable. The associated equipment volumes and weights are included in Tables 2-4 and 2-5, respectively if a buyer has not already been identified.

3.2 Building 1B - Plant 1 Storage Shelter

Background

Building 1B - Plant 1 Storage Shelter is a structural steel shelter with a metal panel roof that covers a portion of the Plant 1 Storage Pad. Building 1B is located immediately north of the Preparation Plant (Building 1A). The roof is situated at a height of 18 ft. and provides 12,780 ft^2 of covered storage for drums.

Section 2.1 of this plan stated that approximately one-eighth of Building 1B will be decontaminated and dismantled during the Plant 1 Complex - Phase I activities to provide clearance for heavy machinery to be utilized during the Building 1A decontamination and dismantlement. Figure E-9 in Appendix E shows the southern interior wall and the one-eighth portion of Building 1B that will be removed. The volume of Building 1B materials to be removed during Phase I reflect this partial dismantlement.

The remaining Building 1B structure will continue to provide shelter for the Plant 1 Storage Pad activities. The remaining structure will be decontaminated and dismantled during the Plant 1 Complex - Phase II activities.

Since only one-eighth of Building 1B will dismantled during the Plant 1 Complex - Phase I project, the remaining seven-eighths may be used for continued storage of waste materials. As a result, only two of the remedial tasks discussed in Section 2.5 apply to the partial dismantlement of this structure. Partial dismantlement is necessary to allow for maneuvering by heavy machinery during the dismantlement of Building 1A. Task V - Surface Decontamination will be performed as described in Section 2.5.5; no component-specific details are available.

Above-Grade Dismantlement (Task VI)

Building 1B is constructed of metal panel partial walls and metal panel roofing on a poured reinforced concrete base. The supporting frame is constructed of structural steel. Specific material quantity estimates for Building 1B are included in Tables 2-4 and 2-5 by OU3 FS material category but have been further broken down by material type below, along with a cross reference to the appropriate OU3 FS material category:

- Approximately 133 lineal ft. of conduit (OU3 FS Category B);
- Approximately 119 ft^2 of metal partial wall panels and 1,688 ft^2 of metal roofing panels (OU3 FS Category D); and
- Approximately 3 tons of structural and miscellaneous steel (OU3 FS Category A).

3.3 Building 30B - Drum Storage Warehouse

Background

Building 30B - Drum Storage Warehouse is a single-level structure located south of the General In-Process Warehouse (Building 71) as shown in Figure 1-1 and Figure D-2 in Appendix D. Building 30B is a rectangular building consisting of metal walls on a poured reinforced concrete floor with a metal roof and steel frame. The overall dimensions of the building are approximately 20 ft.x 33 ft. x 12 ft.

Building 30B was formerly used for a truck dock office and scale house. The building was also used for sampling and staging of drummed RCRA waste materials. Building 30B is currently utilized as a radiological control point for the Plant 1 Ore Silos Removal Action.

Building 30B has undergone or will undergo each of the remedial tasks discussed in Section 2.5 except for Task II - Safe Shutdown, due to the absence of hold-up materials and salvageable equipment, and Task III - Hazardous Waste Management Unit, since there are none in this component. Task I - Preparatory Action (Inventory Removal) was not necessary since all waste materials previously stored in this component were relocated under routine waste management operations at the FEMP. Task V - Surface Decontamination will be performed concurrent with and following material removal but is not discussed in this section since there are no component-specific details beyond what is already provided in Section 2.5.5.

Above-Grade Dismantlement (Task VI)

Above-grade dismantlement of Building 30B will consist of removal of the metal walls, metal roof, steel frame, and other material. Specific material quantity estimates for Building 30B are included in Tables 2-4 and 2-5 by OU3 FS material category but have been further broken down by material type below, along with a cross reference to the appropriate OU3 FS material category:

- Approximately 347 lineal ft. of piping and conduit OU3 FS Category B and C);
- Approximately 9 ft^3 of equipment (Table 3-4 identifies the types of equipment associated with Building 30B) (OU3 FS Category B and C);
- Approximately 2,070 ft^2 of exterior wall panels and roofing panels (OU3 FS Category D);
- Approximately 440 ft^2 of doors and windows (OU3 FS Category I);
- Approximately 2 tons of structural and miscellaneous steel (OU3 FS Category A); and
- Approximately 50 ft^2 of transite awning (OU3 FS Category G).

TABLE 3-4 Building 30B Equipment Removal

Type RA Equipment	Type RB Equipment
Electrical Equipment	HVAC Equipment

3.4 Building 56B - Storage Shed (West)

Background

Building 56B - Storage Shed (West) is a single-level, rectangular structure consisting of a wooden frame with metal walls, metal roof, and poured reinforced concrete floor, with overall

dimensions of approximately 24 ft. x 63 ft. x 14 ft. Building 56B has been used for the storage of tools and miscellaneous equipment for on-site construction activities and is located north of the Plant 1 Storage Pad as shown in Figure D-2 in Appendix D. Figure E-20 in Appendix E provides a north exterior view of Building 56B.

Building 56B has undergone or will undergo each of the remedial tasks discussed in Section 2.5 except for Task II - Safe Shutdown, due to the absence of hold-up materials and salvageable equipment, and Task III - Hazardous Waste Management Unit, since there are none in this component. Task I - Preparatory Action (Inventory Removal) was not necessary since all waste materials previously stored in this component were relocated under routine waste management operations at the FEMP. Task V - Surface Decontamination will be performed concurrent with and following material removal but is not discussed in this section since there are no component-specific details beyond what is already provided in Section 2.5.5.

Above-Grade Dismantlement (Task VI)
Specific material quantity estimates for Building 56B are included in Tables 2-4 and 2-5 by OU3 FS material category but have been further broken down by material type below, along with a cross reference to the appropriate OU3 FS material category:

- Approximately 1,000 ft^2 of exterior wall panels and 873 ft^2 of roofing panels (OU3 FS Category D); and
- 100 ft^2 of wooden doors (OU3 FS Category I).

3.5 Building 56C - Storage Shed (East)

Background
Building 56C - Storage Shed (East) is a single-level structure located north of the Plant 1 Storage Pad. Building 56C is rectangular structure consisting of a steel and wooden frame, metal and wood sheeting on the sides and roof, and poured concrete floor, and has dimensions of approximately 30 ft. x 50 ft. x 14 ft. The proximity of Building 56C in relation to other structures is shown in Figure D-2 in Appendix D. A picture of the north exterior of Building 56C is provided in Figure E-20 in Appendix E.

Building 56C has been used for the storage of tools and miscellaneous equipment for on-site construction activities and as a result does not require performance of preparatory actions prior to dismantlement due to the absence of waste, inventories, hold-up materials, and salvageable equipment. Task III - Hazardous Waste Management Unit is not applicable since there are none in this component. Task V - Surface Decontamination will be performed concurrent with and following material removal but is not discussed in this section since there are no component-specific details beyond what is already provided in Section 2.5.5.

Above-Grade Dismantlement (Task VI)
Specific material quantity estimates for Building 56C are included in Tables 2-4 and 2-5 by OU3 FS material category but have been further broken down by material type below, along with a cross reference to the appropriate OU3 FS material category. Dismantlement of Building 56C will consist of the removal of the following material:

- Approximately 1,400 ft^2 of exterior wall panels and 1,484 ft^2 of roofing panels (OU3 FS Category D); and

- Approximately 100 ft^2 of wooden doors (OU3 FS Category I).

3.6 Building 66 - Drum Reconditioning Building

Background

Building 66 - Drum Reconditioning Building is a single-level structure, constructed of a structural steel frame with metal walls and roof on a poured reinforced concrete floor and has dimensions of approximately 38 ft. x 100 ft. x 13 ft. Building 66 is located directly north of Building 1B as shown in Figure D-2 in Appendix D. Several pictorial views of Building 66 are shown in Figures E-21 and E-22 in Appendix E.

Building 66 was designed to perform four drum reconditioning processes, all of which have been described as distinct processes. These processes comprised of removing old paint from 30 and 55 gallon drums, which were then repainted, dried, and reused. Those drums that were not reusable were crushed, packaged, and disposed of as waste. The processes are defined per process area described below:

Process Area 1 - Shot Blasting. Shot blasting was performed by a Wheelabrator Shotblaster (shown in Figure E-23 in Appendix E). The Wheelabrator bombarded the drums with a steel abrasive to remove paint and any drum contents that were not previously removed by other processes. The Wheelabrator collected material blasted off the drums in a containment bin. A Wheelabrator dust collector, located immediately east of Building 66, removed dust generated from this process.

Process Area 2 - Painting. This process included the repainting of drums that were reconditioned in a paint spray booth and paint oven (shown in Figure E-24 of Appendix E).

Process Area 3 - Drum Baling. This process included the crushing and baling of drums that were deemed not reusable.

Process Area 4 - Solvent Storage. The solvent storage area, which was separate from the other process areas, was located on the west side of Building 66. This area, which was used to store paints, solvents, and scrap paint, was removed during Removal No. 7 (Plant 1 Pad Continuing Release).

Building 66 has undergone or will undergo each of the remedial tasks discussed in Section 2.5 except for Task III - Hazardous Waste Management Unit, since there are none in this component. Task V - Surface Decontamination will be performed concurrent with and following material removal but is not discussed in this section since there are no component-specific details beyond what is already provided in Section 2.5.5.

Preparatory Action: Inventory Removal (Task I)

Table 3-5 shows the quantity of containerized material that will be removed from Building 66 as part of the inventory removal activity.

TABLE 3-5 Building 66 Inventory Removal

No. of Drums	Description of Material
62	Dust Collector Residues - High Fluoride
51	Scrap U_3O_8 or ThO_2, Low Fluoride
48	UO_2 (or ThF_2) Pellets - Refinery Feed
32	Scrap UO_2
19	UO_2 (or ThF_2) Powder - Refinery Feed
18	Sludges, Clean-out, Non-Oily, For Roasting
15	Samples, Non-Metallic, Miscellaneous
13	Material Held for Historical Purposes
10	Clad Metal for Acid Dissolution - Not for Zirnlo Processing
1	ThO_2 Produced from Unpurified Hanford Thorium Nitrate via Thoria Gel Process

Preparatory Action: Safe Shutdown (Task II)

Safe shutdown activities include the removal of all hold-up material within the equipment, piping and ductwork systems. Table 3-6 identifies quantities of hold-up material removed from Building 66. These materials were containerized and placed into interim storage locations previously identified for Building 1A Safe Shutdown. All systems were inspected to ensure that all visible hold-up material was removed.

TABLE 3-6 Hold-Up Material Removed from Building 66 (lbs.)

Material	Material Type Code	Enriched (Product)	Enriched (Waste)	Normal (Waste)	Depleted (Waste)
Dust Collector Bags	029	440	1,261	409	325
Dust Collector Residue	062	383	1,209	220	0
Filters	025	0	17	0	299
Bldg. 66 Residue	021	0	0	0	8,133
Totals (1)(2)		823	2,487	629	8,757

Note:
1) "Trash" and "Other" wastes removed from Building 66 were commingled with Building 1A wastes and are accounted for in the total previously presented for Building 1A (Table 3-2).
2) The estimated hold-up volumes listed in Table 3-6 are not included in Tables 2-4 or 2-5 since this material was removed during safe shutdown.

Asbestos Removal (Task IV)

Individual asbestos work areas will be established within Building 66. Most of the ACM is in good condition and has not caused any building areas to be designated as asbestos areas because of concern for friable asbestos. Individual work areas will minimize the amount of area required to be released from asbestos concerns.

The ACM from the equipment and from areas that have the potential to be disturbed during bulk removal and equipment removal operations will also be removed. An aggressive air sampling test will be performed to determine the absence of asbestos fibers. If the asbestos fiber count is elevated, then a sealant will be applied to the surfaces to lock down the loose fibers. An additional air sampling test will then be performed to verify the lock down effectiveness. A final asbestos removal effort will take place subsequent to the completion of the bulk removal and equipment removal operations. The equipment removal will allow for unobstructed movement around the building, simplifying the remaining asbestos removal activities. Approximately 400 lineal ft. of pipe insulation will be removed as part of the asbestos removal activity. Approximately 450 ft^2 will also be removed as part of the asbestos removal activity.

Above-Grade Dismantlement (Task VI)

Specific material quantity estimates for Building 66 are included in Tables 2-4 and 2-5 by OU3 FS material category but have been further broken down by material type below, along with a cross reference to the appropriate OU3 FS material category:

- Approximately 6,242 lineal ft. of piping, conduit/wire (OU3 FS Categories B and C);
- Approximately 1,275 ft^2 of ductwork (OU3 FS Categories);
- Approximately 5,558 ft^3 of equipment (Table 3-7 identifies the types of equipment associated with Building 66) (OU3 FS Categories B and C);
- Approximately 4,200 ft^2 of exterior wall panels and 3,840 ft^2 of roofing panels (OU3 FS Category D);
- Approximately 417 ft^2 of doors and windows (OU3 FS Category I); and
- Approximately 13 tons of structural and miscellaneous steel (OU3 FS Category A).

TABLE 3-7 Building 66 Equipment Removal

Type RA Equipment	Type RB Equipment	Type RC Equipment	
Small Motors	Control Panels	Conveyors	Exhaust Fan Units
Small Pumps	Heaters	Drum Dumper	Vacuum Systems
	Transformers/ Capacitors	Filter Units	Air Handlers
	Roll-up Doors	Drum Crusher	
	Systems Controllers	Compressors	

3.7 Building 67 - Plant 1 Thorium Warehouse

Background

Building 67 (Plant 1 Thorium Warehouse) is a single-level rectangular structure consisting of a structural steel frame, metal walls and roof on a poured reinforced concrete floor (without raised concrete footer berms) with overall dimensions of approximately 40 ft. X 100 ft. x 22 ft. Building 67 is located immediately west of Building 1A and northwest of the A Street and 2nd Street intersection as shown in Figure D-2 in Appendix D. Building 67 was historically utilized as a thorium waste storage building. Figure D-11 in Appendix D shows the floor plan of this building and Figures E-25 and E-26 in Appendix E show exterior views.

Building 67 has undergone or will undergo each of the remedial tasks discussed in Section 2.5 except for Task II - Safe Shutdown, since no hold-up or salvageable equipment is present. Task I - Inventory Removal has already been completed by relocating 35 drums of RCRA wastes to another RCRA storage facility on-site, however specific RCRA waste classifications for each of those drums were not obtained for this document. Activities to be performed under Task V - Surface Decontamination are accounted for under Task III - Hazardous Waste Management Unit.

HWMU Closure (Task III)

Purpose. This outline establishes RCRA\CERCLA integration requirements to accomplish closure for HWMU No. 25, according to the DF&O substantive closure requirements.

Background/Scope. The thorium storage area in Building 67, which encompasses the entire floor area, measures approximately 40 ft. x 100 ft. Figure 3-1 illustrates the boundaries of HWMU No. 25. The building was used to store thorium material from 1972 through 1991. Thirty-five of the containers were designated as RCRA waste containing EPA identification codes: D001, D002, D007, and D008. HWMU No. 25 was declared a HWMU due to storage of the 35 drums of RCRA hazardous wastes in excess of the 90 day storage limitation for hazardous waste per OAC 3766-51-04(e) and 40 CFR 262.34(b). The thirty-five drums have subsequently been removed from Building 67 and placed into an appropriate RCRA storage facility on-site.

To avoid risk to human health and the environment, the thorium material was overpacked due to poor container integrity and the containers were moved into another RCRA storage facility on-site. Currently the RCRA waste containers are being stored in Building 81, the Plant 9 Warehouse. Furthermore, access to the building has been limited; outside periodic inspections are performed. Based on available spills and release records, no known spills or releases have been identified within the boundary of this HWMU. Also, the analytical data used to evaluate soil contamination in the area does not indicate the existing contamination is associated with the hazardous wastes that was managed in this HWMU.

In accordance with the DF&O requirements for substantive closure, HWMU No. 25 will be closed through the following actions:

- removing all RCRA waste drums from the unit (completed through Task I - Inventory Removal);

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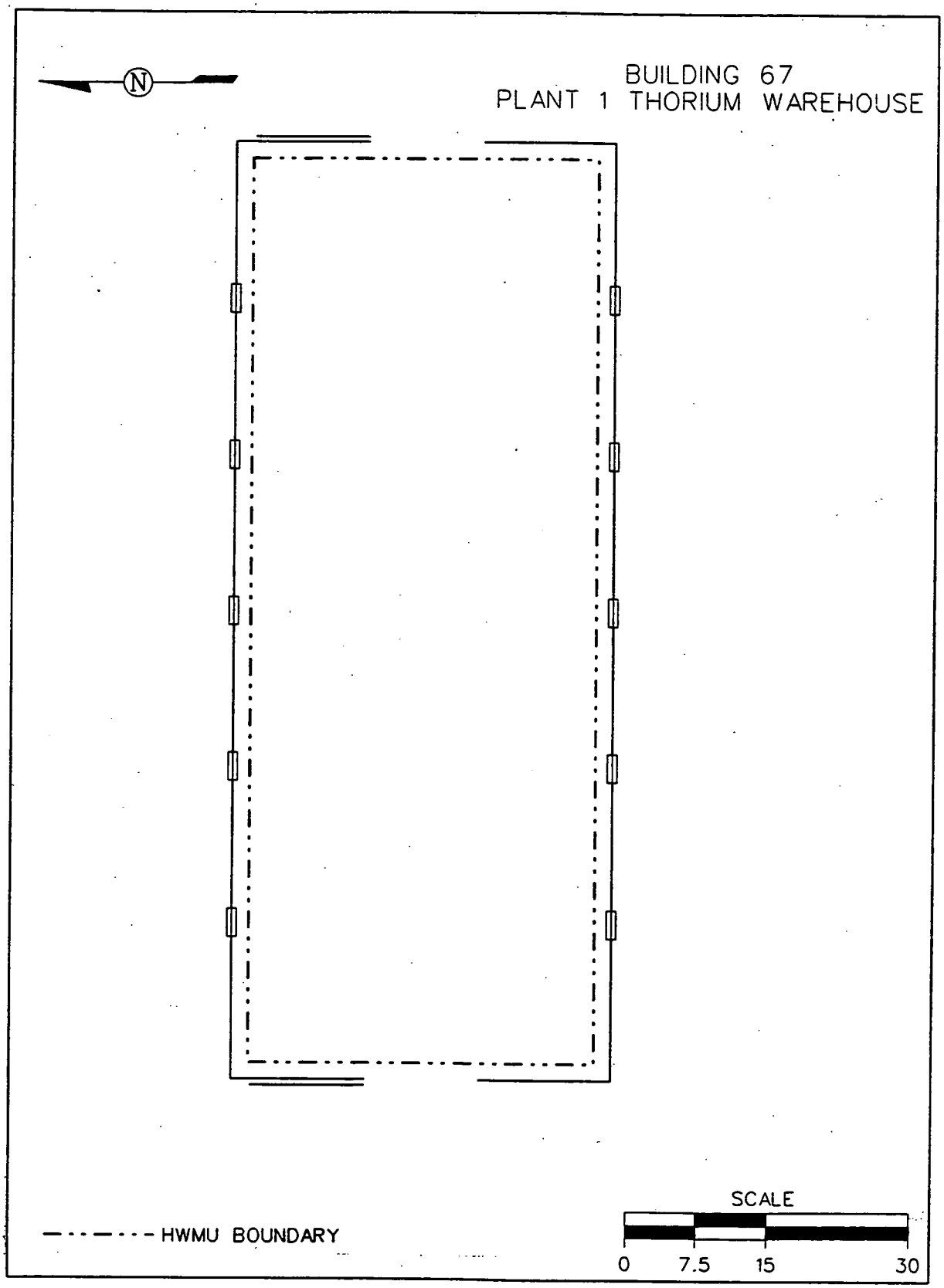


FIGURE 3-1 HWMU No. 25 Boundaries

- using hydro-cleaning or vacuuming to remove any loose contamination on the floor during decontamination activities to be performed as described in this implementation plan;

- excavation and disposal of the concrete slab during at- and below-grade remediation (this activity will be addressed further in the implementation plan for at- and below-grade remediation for the area); and

- verification that the remediation requirements have been accomplished in accordance with the approved Remedial Action Work Plan for the Soil Remediation Project (to be completed after at- and below-grade remediation).

Since all waste drums have been removed from Building 67, only surface decontamination of the concrete slab remains to be performed to ensure that all loose contamination is removed and that all remaining, fixed contamination is encapsulated in or on the concrete until slab removal during at- and below-grade remediation. The implementation plan to be submitted for the at- and below-grade remedial action will address how the slab will be removed along with other below-grade structures, contaminated soils, and other debris. The closure of this unit will be certified through the documentation required to verify that any remaining contamination has been reduced to the levels established in the ROD for OU5.

Hydro-cleaning and/or vacuuming will be used to clean the building interior to remove loose hazardous waste and radiological contamination, in accordance with Section 01517 of the performance specifications. If hydro-cleaning is used, all floor cracks and seams and building cracks will be sealed using a non-strippable coating to protect the environment from hydro-cleaning effluent. Consistent with the Section 01517, Part 3.2.E, hydro-cleaning effluent will be contained within the building interior and secondary containment will be provided outside the building. Hydro-cleaning effluent will be collected via the floor sump (if present) or through another means of collection and containerized and managed in accordance with Section 01120 of the performance specifications. Hydro-cleaning of the entire building is expected to generate approximately 1,200 gallons of water effluent.

After hydro-cleaning the interior of the building, the interior surfaces will be visually inspected in accordance with Section 01517 of the performance specifications (as amended) to determine if building surfaces are free of visible surface process material (see description of this requirement in Section 2.5.5 of this implementation plan). Hydro-cleaning effluent will be sampled consistent with hydro-cleaning effluent from other Plant 1 Complex structures to facilitate on-site treatment and disposal. In accordance with Section 01515, Part 3.3.H of the performance specifications, the concrete slab that remains after structural dismantlement will be coated with a FEMP-approved concrete sealant.

No additional actions are required to prevent environmental releases of hazardous waste constituents from the floor pending excavation and removal. The RCRA wastes stored in the unit were containerized and the available data indicates there were no reported releases. Since sealant will be applied to the concrete slab following hydro-cleaning, any remaining contamination would not be allowed to migrate while in situ.

Waste to be generated by the dismantlement of HWMU No. 25 are identified in Tables 2-4 and 2-5. All wastes generated during closure of this HWMU will be evaluated in accordance with the approved FEMP Waste Analysis and Waste Determination Plans. Wastes generated during closure will be placed in appropriate containers, properly labeled, and managed as follows:

- Wastes that are awaiting characterization, or are determined to be RCRA hazardous wastes will be stored on-site in an approved RCRA storage location until an acceptable treatment or disposal option is identified;

- Low-level radioactive non-hazardous wastes will be managed in accordance with applicable DOE orders, and material management provisions provided in the OU3 RD/RA Work Plan; and

- Hydro-cleaning effluent that is determined to have a pH greater than or equal to 2 and less than or equal to 12.5 and concentrations of chromium and lead less than the RCRA TCLP limit, will not be RCRA hazardous wastes, pursuant to OAC 3745-51-03(A)(2)(f) and 40 CFR 261.3(a)(2)(iv), and will be discharged in the FEMP waste water treatment system, if also consistent with applicable radiological limits for the waste waters.

Above-Grade Dismantlement (Task VI)

Due to the classification of Building 67 as a HWMU, component-specific dismantlement requirements are included in the description for HWMU closure requirements (Task V). Specific material quantity estimates for Building 67 are included in Tables 2-4 and 2-5 by OU3 FS material category but have been further broken down by material type below, along with a cross reference to the appropriate OU3 FS material category:

- Approximately 335 lineal ft. of conduit (OU3 FS Category B);

- Approximately 4,253 ft^2 of exterior wall panels and 4,000 ft^2 roofing panels (OU3 FS Category D);

- Approximately 570 ft^2 of doors and windows (OU3 FS Category I); and

- Approximately 29 tons of structural and miscellaneous steel (OU3 FS Category A).

3.8 Building 72 - Drum Storage Building

Background

Building 72 (Drum Storage Building) is a single-story steel-framed building consisting of transite walls, transite panel roof, poured reinforced concrete floor, and has dimensions of 31 ft. x 41 ft. x 11 ft. Building 72 is located south of Building 1A and directly east of Building 30B. Figure D-12 in Appendix D provides an elevation and floor plan drawing of

Building 72. Figures E-27 and E-28 show exterior and interior views of this building, respectively.

Building 72 was originally utilized for storage of low-level radioactive material. It was then emptied and cleaned, and is currently used as a dress-out control point for RvA No. 13 (Plant 1 Ore Silos).

Building 72 will undergo only two of the remedial tasks discussed in Section 2.5: Task V - Surface Decontamination and Task VI - Above-Grade Dismantlement. Task I - Inventory Removal and Task II - Safe Shutdown are not necessary since any material previously stored in this component has long since been removed. Task III - Hazardous Waste Management Unit is not applicable since one does not exist in this component. Task V - Surface Decontamination will be performed concurrent with and following material removal but is not discussed in this section since there are no component-specific details beyond what is already provided in Section 2.5.5.

Above-Grade Dismantlement (Task VI)

Specific material quantity estimates for Building 72 are included in Tables 2-4 and 2-5 by OU3 FS material category but have been further broken down by material type below, along with a cross reference to the appropriate OU3 FS material category:

- Approximately 752 lineal ft. of piping and conduit (OU3 FS Categories B and C) ;
- Approximately 2 ft^3 of equipment will be removed (Table 3-8 identifies the types of equipment associated with Building 72) (OU3 FS Categories B and C) ;
- Approximately 1,677 ft^2 of exterior transite wall panelling (OU3 FS Category G);
- Approximately 1,428 ft^2 of transite roofing panels (OU3 FS Category G);
- Approximately 324 ft^2 of doors and windows (OU3 FS Category I); and
- Approximately 13 tons of structural and miscellaneous steel (OU3 FS Category A).

TABLE 3-8 Building 72 Equipment Removal

Type RB Equipment	Type RC Equipment
Heaters	Drum Packing Station

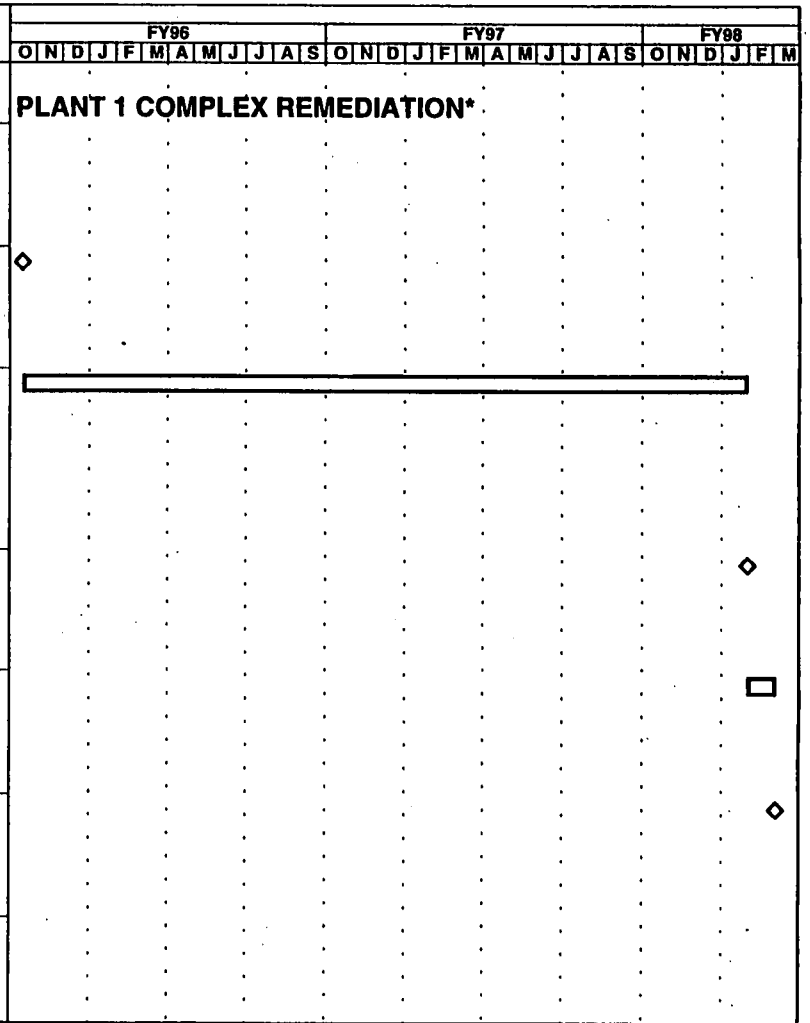
4.0 SCHEDULE

This section presents the implementation schedule for the Plant 1 Complex - Phase I remedial action project. Figure 4-1 presents a schedule for implementation of field activities for the Plant 1 Complex - Phase I remediation project. Since inventory removal and safe shutdown activities are preparatory actions and not part of remedial action, and considering that they were completed as of August 24, 1995, they are not specifically represented in the schedule. Within Figure 4-1, the primary milestones of the project are presented, including contract award, initiation and duration of remediation field activities, project completion ("Certification of Construction Completion"), and the preparation and submittal of the remedial action report to USEPA and OEPA.

Although interim reporting will not be provided specifically for this decontamination and dismantlement project, DOE will keep the community informed of remedial action schedules and any new findings or significant developments within OU3 through the Fernald Report. The Fernald Report is a monthly report that summarizes clean-up progress and remedial plans and activities to over 1,100 stakeholders, including U.S.EPA and Ohio EPA. DOE also intends to continue its community outreach activities by keeping in close contact with community organizations by maintaining open two-way communication throughout the project. Additionally, DOE and other site personnel anticipate regularly attending local citizen and government meetings to provide verbal progress reports and answer questions on key site issues.

ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH	ORIG DUR
AWARD PLANT 1 D&D SUBCONTRACT	1DEC94A		0
NOTICE TO PROCEED	16OCT95		0
DISMANTLEMENT OF PLANT 1 COMPLEX - PHASE I (INCLUDES SUBCONTRACTOR WP's, MOBILIZATION AND DEMOBILIZATION)	16OCT95	30JAN98	838
CERTIFICATION OF CONSTRUCTION COMPLETION		30JAN98	0
PREPARE RA REPORT	31JAN98	4MAR98	33
SUBMIT RA REPORT TO US/OEPA		4MAR98	0

*DURATIONS BASED ON CALENDAR DAYS



Plot Date 25OCT95
Data Date 23JUL95
1JAN90

(c) Primavera Systems, Inc.

Activity Bar/Early Dates
Critical Activity
Progress Bar
Milestone/Flag Activity

PLT1

Sheet 1 of 1

CERCLA/RCRA UNIT 3
CRU3 D&D ACTIVITIES
REMEDIATION SCHEDULE FOR PLANT 1

PROJECT SCHEDULE			
Date	Revision	Checked	Approved

FIGURE 4-1 Remediation Schedule

5.0 MANAGEMENT

The implementation of Plant 1 Complex - Phase I remediation action will be performed through a coordinated effort by the remediation subcontractors, FEMP organizations, remedial design subcontractor, and DOE project management. Section 7 of the OU3 RD/RA Work Plan provides the overall management structure applied to this remediation project. A description of project-specific management responsibilities have been highlighted for Plant 1 Complex - Phase I in this section.

DOE will provide direct project oversight in two ways, both of which become a concerted effort that ensures performance of remedial activities in adherence to project specifications and requirements. The DOE Office of Safety Assessment will assign a Facility Representative to the Fernald Area Office whose responsibilities will be to perform independent field oversight of all remedial activities performed under this project. This individual will be experienced/knowledgeable in the areas of engineering, construction, quality assurance/quality control, and health and safety; and will be responsible for daily inspections of all field activities and necessary reporting to the DOE Program Manager at the Fernald Field Office. The Facilities Representative will have the authority to stop work if conditions warrant such action. DOE Fernald Area Office will also conduct field oversight through technical leads responsible for construction, engineering, quality assurance and quality control, and health and safety. The DOE Facilities Representative and technical leads will immediately notify the DOE Program Manager of any issues or problems that arise in an effort to seek prompt resolution.

The DOE Program Manager and the environmental management contractor will oversee the remedial action through its Design-Engineering-Construction (DEC) team review and approval process and by performing the following functions:

- ensuring that the selection of qualified subcontractor(s) is based on meeting prequalification criteria, demonstrate a good safety record, possess similar work experience, and rank high on a detailed technical proposal assessment;

- assuring that the apparent low bidder is responsive and responsible;

- reviewing, commenting, and approving of remediation subcontractor work plans;

- prior to commencing some of the activities (e.g., decontamination), ensuring that the performance specifications going to be met by requiring the remediation subcontractor to demonstrate to the FEMP the ability of its proposed methods to meet the performance specifications;

- conducting an alignment meeting, pre-construction meetings, and weekly coordination meetings with the remediation subcontractor to address all concerns, schedule status, planning, progress, deviations;

- performing quality assurance and quality audits of all remediation tasks to determine adherence to performance specifications by conducting inspections of the remedial activities performed by the remediation

subcontractor and those performed by FEMP work forces/labor support contractors in support of the remedial action;

- verifying work is performed in compliance with approved health and safety plans; and

- performing pre-final and final inspections.

In addition to the isolation of utilities and removal of hold-up material, personnel within the FEMP safe shutdown program will perform gross cleaning during preparatory actions. Personnel within the FEMP waste management program will be responsible for removal of stored materials (non-holdup) not associated with the project during Task I (Inventory Removal) activities. FEMP waste management personnel will also remove containerized material from the queuing area for certification, packaging, and disposition.

The subcontracting strategy calls for several subcontractors, each with specific remediation tasks. One remediation subcontract will include decontamination and dismantlement of the components included within the Plant 1 Complex - Phase I project, which includes the responsibility for material segregation and loading, container weighing, tagging and movement of containers to and from queuing area. Another subcontract will be used to provide temporary power for use by the remediation subcontractors and for re-routing alarm and communication systems.

REFERENCES

U.S. Department of Energy, 1990, *Radiation Protection of the Public and the Environment,* DOE Order 5400.5, Office of Environment, Safety and Health, Washington, D.C.

U.S. Department of Energy, 1993, *Operable Unit 3 Remedial Investigation and Feasibility Study Work Plan Addendum*, Final, prepared by Fernald Environmental Restoration Management Corporation, Cincinnati, Ohio.

U.S. Department of Energy, 1994, *Operable Unit 3 Record of Decision for Interim Remedial Action,* Final, prepared by Fernald Environmental Restoration Management Corporation, Cincinnati, Ohio.

U.S. Department of Energy, 1996, *Operable Unit 3 Remedial Investigation and Feasibility Study Report*, Final, prepared by Fernald Environmental Restoration Management Corporation, Cincinnati, Ohio.

U.S. Department of Energy, 1995, *Operable Unit 3 Remedial Design/Remedial Action Work Plan for Interim Remedial Action*, Final, prepared by Fernald Environmental Restoration Management Corporation, Cincinnati, Ohio.

U.S. Department of Energy, 1995, *Operable Unit 3 Remedial Design Prioritization and Sequencing Report*, Final, prepared by Fernald Environmental Restoration Management Corporation, Cincinnati, Ohio.

U.S. Department of Energy, 1996, *Proposed Plan for the Operable Unit 3 Final Remedial Action*, Final, prepared by Fernald Environmental Restoration Management Corporation, Cincinnati, Ohio.

U.S. Department of Energy, 1996, *Removal Action 17 Work Plan*, Final (Pending), prepared by Fernald Environmental Restoration Management Corporation, Cincinnati, Ohio.

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APPENDIX A

PROPOSED SAMPLING

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APPENDIX A

PROPOSED SAMPLING

With the exception of sample numbers required to support disposal of waste at Envirocare of Utah, Table A-1 summarizes the various types of sampling anticipated during the remediation activities identified within this implementation plan. Envirocare of Utah sampling is addressed under the appropriate subject heading that follows. The sample types and numbers included in Table A-1 were developed based on the data needs identified in the Sampling and Analysis Plan for the OU3 RD/RA Work Plan for the interim remedial action. A project-specific summary of the sample types and numbers are included in this implementation plan and are based on the assumptions outlined below.

Characterization Screening
The estimates provided are based on the assumption that the OU3 RI characterization data and process knowledge will be sufficient for the characterization of media within the components. The only components which will be characterized are those that were not characterized during the OU3 RI. Sample numbers represent one intrusive sample at both the radioactive and chemical "hot spots" with these hot spots located by screening techniques. The need for a PCB sample is also indicated where existing data, process knowledge, etc., reflect the need for such sampling. The sample represents a confirmatory intrusive sample based on PCB surveying.

Asbestos
This category represents samples needed to verify whether a certain material is considered ACM and whether the ACM is regulated or non-regulated.

Secondary Waste (Decon)
The sample numbers listed in Table A-1 are based on the assumption that one sample of washwater will be taken per component. The total number of samples in this category may change based on the need to segregate areas within a component (the number would increase), or based on the need to combine washwater for components with similar characteristics (thus, the number would decrease).

HWMUs
Since HWMU No. 25 will not undergo a "clean closure" as part of the above-grade decontamination and dismantlement under the CERCLA/RCRA integrated process. Samples for HWMU closure will be limited to one sample of slab rinse water to verify that levels of surface contamination are below the regulatory limits for exposing the slab to the environment. At- and below-grade decontamination and dismantlement will require closure verification sampling. Sampling of any hydro-cleaning effluent will also be performed for treatment and/or disposition determination following surface decontamination of Building 67 (see Section 3.7 for further details).

Nevada Test Site (NTS) Confirmatory
Sampling requirements for shipment of materials to the NTS require that one percent of each material waste stream be sampled, three samples for each container. Based on volume and container estimates contained in Table 2-4 for material projected to be disposed of at NTS, a total of three samples will be required for qualifying the shipment of an estimated 16,789

ft^3 of bulked process related metals (total of 18 Top Loading containers) from the Plant 1 Complex - Phase I project. The sample estimate is based on sampling one Top Loading container (i.e., one percent of the 18 containers).

Envirocare of Utah

Envirocare of Utah, Inc. has been identified as the off-site disposal facility for materials that can not be dispositioned at NTS. Currently, these materials include hazardous/mixed wastes. The current strategy for sampling and analysis of debris proposed to be dispositioned at the Envirocare facility will be performed, as necessary, to satisfy the applicable WAC for that facility. Existing process knowledge and OU3 RI data are expected to fulfill the information/data requirements. The WAC for Envirocare has been outlined in Appendix F of the OU3 RI/FS Report. Any further sampling and analysis needed to determine waste acceptance by Envirocare of Utah, Inc. will be performed in accordance with the Data Quality Objective (DQO) SD/SW-004, Rev. 1 which became effective on November 4, 1994. Quantities of hazardous wastes that may be generated during this project will not be known until washwaters and floor sweepings are sampled from the surface decontamination of Building 67.

Asbestos Air Monitoring

Environmental sample numbers represent the number of samples to be taken per period of time over the duration of the asbestos removal activity, with the interior decontamination and dismantlement (Interior D&D) samples representing perimeter monitoring during asbestos removal activities within a containment, and exterior decontamination and dismantlement (Exterior D&D) samples representing perimeter monitoring during asbestos removal activities that are performed outside of a containment. Occupational sample numbers represent breathing zone samples taken during asbestos removal within enclosed components. There may be situations where asbestos removal is required that was not originally accounted for in these assumptions. Therefore, some components may require asbestos air monitoring sampling, but were not so designated in Table A-1. Refer to Section 3.4.1 of the SAP for the OU3 interim remedial action.

Radiological Air Monitoring

Environmental sample numbers for Exterior D&D represent samples from the air monitoring stations (shown in Figure 2-1) located around the construction zone during the representative (baseline) period and during dismantlement operations. Occupational sample numbers for the Interior D&D represent samples to be taken from general air samplers operated within the components during remediation (i.e., in an enclosed environment). The numbers may increase if activities are performed within distinct areas of a component (e.g., on multiple floors). The occupational air monitoring represents the need for monitoring 30% of the work force per day and is based on experience from the Plant 7 Dismantling project. Refer to Section 3.4.1 of the SAP for the OU3 RD/RA Work Plan for further information on radiological air monitoring.

TABLE A-1 Sampling Summary

Component Number	Characterization Screening			Asbestos	Secondary Waste (Decon)	HWMUs		NTS	Envirocare	Asbestos Air Monitoring			Rad Air Monitoring		
										Environmental		Occupational	Environmental	Occupational	
	Rad	Chem	PCB			Active	Inactive			Interior D&D	Exterior D&D	Breathing Zone	Exterior D&D	Interior D&D	Breathing Zone
1A	-0-	-0-	-0-	-0-	1	N/A	N/A			4/wk	7/day	6-10/day		1/day	4/day
1B	-0-	-0-	-0-	-0-	1	N/A	N/A			N/A	N/A	N/A		1/day	4/day
30B	-0-	-0-	-0-	-0-	1	N/A	N/A			4/wk	7/day	6-10/day		1/day	4/day
56B	1	1	-0-	-0-	1	N/A	N/A			N/A	N/A	N/A		1/day	4/day
56C	1	1	-0-	-0-	1	N/A	N/A			N/A	N/A	N/A		1/day	4/day
66	-0-	-0-	-0-	-0-	1	N/A	N/A			N/A	N/A	N/A		1/day	4/day
67	-0-	-0-	-0-	-0-	1	N/A	1			N/A	N/A	N/A		1/day	4/day
72	-0-	-0-	-0-	-0-	1	N/A	N/A			N/A	N/A	N/A		1/day	4/day
Totals	2	2	-0-	-0-	8	0	1	3	TBD	(*)	(*)	(*)	4/wk	(*)	(*)

Footnotes:
N/A = Not Applicable
TBD = To be determined
* = Since decontamination and dismantlement activities will not be concurrent for all components, totals for daily or weekly sampling are not applicable.

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APPENDIX B

SUMMARY OF POTENTIAL CONTAMINANTS

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APPENDIX B

SUMMARY OF POTENTIAL CONTAMINANTS

Table B-1 identifies potential contaminants for each component in the Plant 1 Complex - Phase I. Where applicable, potential contaminants are listed for each process that was performed within a component. For each component or process, the table lists the historical information sources that indicate the possible presence of the contaminants. Historical information sources are process knowledge, significant quantities of use, spill logs, history of the FEMP, incident reports, data from the perched water removal action, RCRA drummed waste determinations, RCRA reports, and material distribution information. For every component, potential contaminants of concern include uranium, asbestos, lead (in paints and building structure, PCBs, and mercury. These contaminants are in addition to any other potential contaminants listed in Table B-1. Related by-products, decay products, or breakdown products may also exist for many of the listed potential contaminants. The listing in Table B-1 is presented as a supplement to data recently made available through the publication of the OU3 RI/FS Report. The OU3 RI/FS Work Plan Addendum is the source of the information provided in Table B-1.

The following legend applies to Table B-1:

Uranium	=	U-235/236, U-234, U-238, + daughters (where it is known, the maximum enrichment is given in parenthesis as %E). This designation refers to purified process material.
Ore	=	Pitchblende, Q11, or other unrefined uranium-bearing ores.
Ore concentrates	=	Uranium ore material which was refined somewhat at the mine site (i.e., Kerr McGee, Australian, Colorado, Canadian ore feed materials).
Ore raffinate	=	Material stripped from uranium ores by the FEMP refinery extraction process (including but not limited to: radium, thorium, protactinium, and a variety of other radionuclides and metals).
Thorium or thorium compounds	=	Material which originated as thorium 232. May include metal or any or all of the following compounds: thorium tetrafluoride, thorium hydroxide, thorium oxalate, thorium oxide, or thorium nitrate.
Uranium compounds	=	Any or all of the following compounds; U_3O_8, UO_3, UF_4, UO_2, UNH (where possible, the specific compound is identified).
Solvent residues	=	The residual material from solvents used at the FEMP (primarily 1,1,1 trichloroethane, trichloroethylene, and perchloroethylene).
Sump cake	=	Precipitants from the filtration of uranium or thorium solutions.

High grade residues	=	UF_4, U_3O_8, UO_3, UO_2, uranyl ammonium phosphate (UAP), ammonium diuranate (ADU).
Low grade residues	=	Residual material from magnesium fluoride (MgF_2), sump cakes, heat treating salts.
Prill	=	Metallic beads and blobs of uranium, and magnesium from FEMP reduction process.
Metals	=	Aluminum, arsenic, barium, cadmium, calcium, chromium, cobalt, copper, cyanide, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, silver, sodium, thallium, vanadium, zinc.
—	=	No contaminants other than those common to all components.

TABLE B-1 Potential Contaminants

Structure/Facility	Associated Process	Potential Contaminants	Reference Source/Comments
Preparation Plant (1A)	Drum Sampling	Uranium (up to 20% E), UO_3, UF_4, U_3O_8, thorium, thorium oxalate, ore concentrates, MgF_2, HF	Process knowledge/significant quantities, history of FEMP, RCRA reports, spill log
	Crushing/milling	Halon 1301, MgF_2, ore, ore concentrates	Incident reports, history of FEMP, process knowledge/significant quantities
	Enriched materials reclamation	Uranium (U-235 up to 20% Enriched), ammonia, cesium-137, radium-226, americium-241, arsenic, cadmium, chromium, lead, uranyl nitrate, nitric acid	RCRA reports, process knowledge/significant quantities
	Drum washing	NaOH, solvent residues, ore, ore concentrates	History of FEMP, process knowledge/significant quantities
	Solvent reclamation	Still bottoms, 1,1,1-trichloroethane, trichloroethylene, perchloroethylene, carbon tetrachloride, chlordane, chloroform, 1,2-dichloroethane, 1,1-dichloroethylene, vinyl chloride	Process knowledge/significant quantities, RCRA reports, RCRA drummed waste determinations
	Waste water handling	Nitric acid, sump cakes	Process knowledge/significant quantities
	Repackaging	Nitric acid, sump cakes	Process knowledge/significant quantities
Plant 1 Storage Shelter (1B)	Covered storage	Ores, ore concentrates, 1,1,1-trichloroethane, trichloroethylene, perchloroethylene, copper	Process knowledge/significant quantities
	Overpacking operations in Plant 1	Uncharacterized low-level radioactive and RCRA drummed wastes	Process knowledge, RCRA reports, spill logs, RCRA drummed waste determinations
	Copper shredding	Copper, asbestos	Process knowledge/significant quantities
	Drum straightening	Sump cake	Process knowledge/significant quantities
Drum Storage Warehouse (30B)	Drum storage	—	
Storage Shed West (56B)	Construction tool storage	—	
Storage Shed East (56C)	Construction tool storage	—	
Drum Reconditioning Building (66)	Drum reconditioning	Cadmium, xylene	Process knowledge/significant quantities, RCRA reports; paint was also stored in this facility
Plant 1 Thorium Warehouse (67)	Storage	Uranium compounds, thorium oxides, silver, chromium, lead	Process knowledge/significant quantities, RCRA reports
Drum Storage Building (72)	Storage	Uranium (up to 1.25% E)	Process knowledge/significant quantities

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APPENDIX C

PERFORMANCE SPECIFICATIONS

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APPENDIX C

PERFORMANCE SPECIFICATIONS

The performance specifications listed on the following page identifies Revision 3 to the specifications that were prepared during the remedial design for Plant 1 Complex - Phase I. These specifications (Revision 3) were included in Appendix C of the OU3 RD/RA Work Plan. Additionally, since the performance specification for the removal of masonry (Section 04225) was not included in the OU3 RD/RA Work Plan, it is being provided in this appendix. Since *enriched uranium* was processed in equipment located in Building 1A and Building 66, further restrictions are placed on this equipment than that detailed in performance specification for equipment dismantlement (Section 15065). These restrictions prohibit the use of water to decontaminate this equipment and provide for containerization limitations because of criticality restrictions. Other design changes made pursuant to interim guidance on decontamination criteria (see "visible process material" criteria) have been detailed in Sections 2.3.4 and 2.5.5 of this implementation plan.

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SECTION	TITLE	REV.	DATE
DIVISION 1 - GENERAL REQUIREMENTS			
01120	WASTE HANDLING CRITERIA	3	11/30/94
01515	MOBILIZATION AND DEMOBILIZATION	3	11/30/94
01516	ASBESTOS ABATEMENT	3	11/30/94
01517	REMOVING/FIXING RADIOLOGICAL CONTAMINATION	3	11/30/94
DIVISION 2 (NOT USED)			
DIVISION 3 - CONCRETE			
03315	CONCRETE REMOVAL	3	11/30/94
03900	FOUNDATIONS	3	11/30/94
DIVISION 4 - MASONRY			
04225	MASONRY REMOVAL	3	11/30/94
DIVISION 5 - METALS			
05125	NEW STRUCTURAL STEEL	3	11/30/94
05126	STRUCTURAL STEEL DISMANTLEMENT	3	11/30/94
DIVISION 6 (NOT USED)			
DIVISION 7 - THERMAL AND MOISTURE PROTECTION			
07415	TRANSITE REMOVAL	3	11/30/94
DIVISION 8 - 13 (NOT USED)			
DIVISION 14 - CONVEYING SYSTEMS			
14955	LIFTING AND RIGGING	3	11/30/94
DIVISION 15 - MECHANICAL			
15065	EQUIPMENT DISMANTLEMENT	3	11/30/94
15066	INTERIOR DISMANTLEMENT	3	11/30/94
15067	VENTILATION AND CONTAINMENT	3	11/30/94
DIVISION 16 (NOT USED)			

SECTION 04225
MASONRY REMOVAL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. The work includes:

1. Removal of all interior and exterior masonry according to the requirements of the following sections.
2. Removal of acid brick where required.

1.2 RELATED SECTIONS

A. Section 01120 - Waste Handling Criteria.
B. Section 01515 - Mobilization and Demobilization.
C. Section 01516 - Asbestos Abatement.
D. Section 01517 - Removing/Fixing Radiological Contamination.
E. Section 14955 - Lifting and Rigging.
F. Section 15066 - Interior Dismantlement.
G. Section 15067 - Ventilation and Containment.

1.3 REFERENCE MATERIALS

A. See Part 7 of the Invitation for Bid Package for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.
4. Videos.

1.4 REFERENCES, CODES, AND STANDARDS

A. American National Standards Institute (ANSI):

1. ANSI A10.6-90 Demolition Operations - Safety Requirements.
2. ANSI A10.8-88 Scaffolding.
3. ANSI A10.9-83 Construction and Demolition Operations - Concrete and Masonry Work.

B. National Fire Protection Association (NFPA):

1. NFPA 241-89 Safeguarding Construction, Alteration, and Dismantlement Operations.

1.5 SUBMITTALS

A. The Subcontractor shall submit to the FERMCO Constructing Manager for approval a masonry removal work plan that contains the following information:

1. Detailed method and sequence of dismantlement, including equipment to be used.
2. Methods of dust control.
3. Methods of cutting, including equipment to be used.
4. If dismantlement method requires personnel on the roof, the subcontractor shall provide calculations verifying the structural adequacy of the roof to support personnel and equipment. These calculations shall be stamped by a Registered Professional Engineer.

B. See Part 6 of the IFB for additional submittal requirements.

1.6 PROJECT CONDITIONS

A. Conduct dismantlement to avoid damaging adjacent structures.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PREPARATION

A. Provide and erect temporary barriers and bracing, in accordance with Sections 15067 and 05125 of this specification package.

B. Clean and fix contamination on interior surface of exterior masonry walls in accordance with Section 01517 of this specification package prior to dismantlement.

3.2 APPLICATION

A. Dismantle masonry walls, using controlled means. Some masonry walls or acid brick may require local containment in accordance with Section 15067 of this specification package. See Part 6 of the Invitation for Bid for identification of any areas with this requirement.

B. Follow procedures in ANSI A10.6, A10.8, and A10.9, and in NFPA 241.

C. Cut all reinforcing and anchors (if applicable) flush with base slab. Fill in damaged areas of base slab with patching grout as described in Section 01515 of this specification package.

D. Remove all acid brick down to supporting concrete slab.

E. Place materials in containers as required by Section 01120 of this specification package.

3.3 SPECIAL INSTRUCTIONS

A. The following items are also include (where applicable) in the sequence of masonry removal:

1. Doors, Windows, and Frames:
   a. The subcontractor shall remove all windows in one piece and place them in appropriate containers.
   b. The subcontractor shall remove all doors (wood and/or steel) and place them in appropriate containers.
2. Lead Materials:
   a. The subcontractor shall segregate all lead materials (i.e., flashings, vent stacks, etc.) and place in appropriate containers.
3. Wall and Roof Louvers:
   a. The subcontractor shall ensure that louvers and roof vents are removed during exterior masonry removal and placed in appropriate containers.

B. All material will be placed in containers as per the requirements of Section 01120 of this specification package.

END OF SECTION

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APPENDIX D

DESIGN DRAWINGS

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APPENDIX D

DESIGN DRAWINGS

The following drawings are copies of the blueprint drawings that were prepared during the remedial design for the Plant 1 Complex - Phase I project. Figures D-1 and D-2 show areal views of the site and project area, respectively. Figures D-3 through D-6 are floor plans for the four main floors of Building 1A, showing the seven Process Areas, related equipment, and other significant features. Figure D-7 is the elevation drawing for Building 1A. Figure D-8 is the elevation and floor plan drawing for Building 30B. Figures D-9 and D-10 are the floor plan and original elevation drawings for Building 66, respectively. Figure D-11 is the floor plan of Building 67. Figure D-12 is the elevation and floor plan drawing for Building 72. The key features shown in these drawings (Process Areas and related equipment) are discussed in Section 3 of this implementation plan.

FIGURES

FIGURE D-1 Production Area Site Map - Plant 1 Complex - Phase I

FIGURE D-2 Demolition Area Plan - Plant 1 Complex - Phase I

FIGURE D-3 Floor Plan of Building 1A - First Floor

FIGURE D-4 Floor Plan of Building 1A - Second Floor

FIGURE D-5 Floor Plan of Building 1A - Third Floor

FIGURE D-6 Floor Plan of Building 1A - Fourth Floor

FIGURE D-7 Elevation Drawing - Building 1A

FIGURE D-8 Elevation and Floor Plan Drawing - Building 30B

FIGURE D-9 Floor Plan of Building 66

FIGURE D-10 Original Elevation Drawing - Building 66

FIGURE D-11 Floor Plan of Building 67

FIGURE D-12 Elevation and Floor Plan Drawing - Building 72

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R93gt0116 28(7998.ws317) po121@ws317. Wed Jan 4 15:06:45 EST 1995

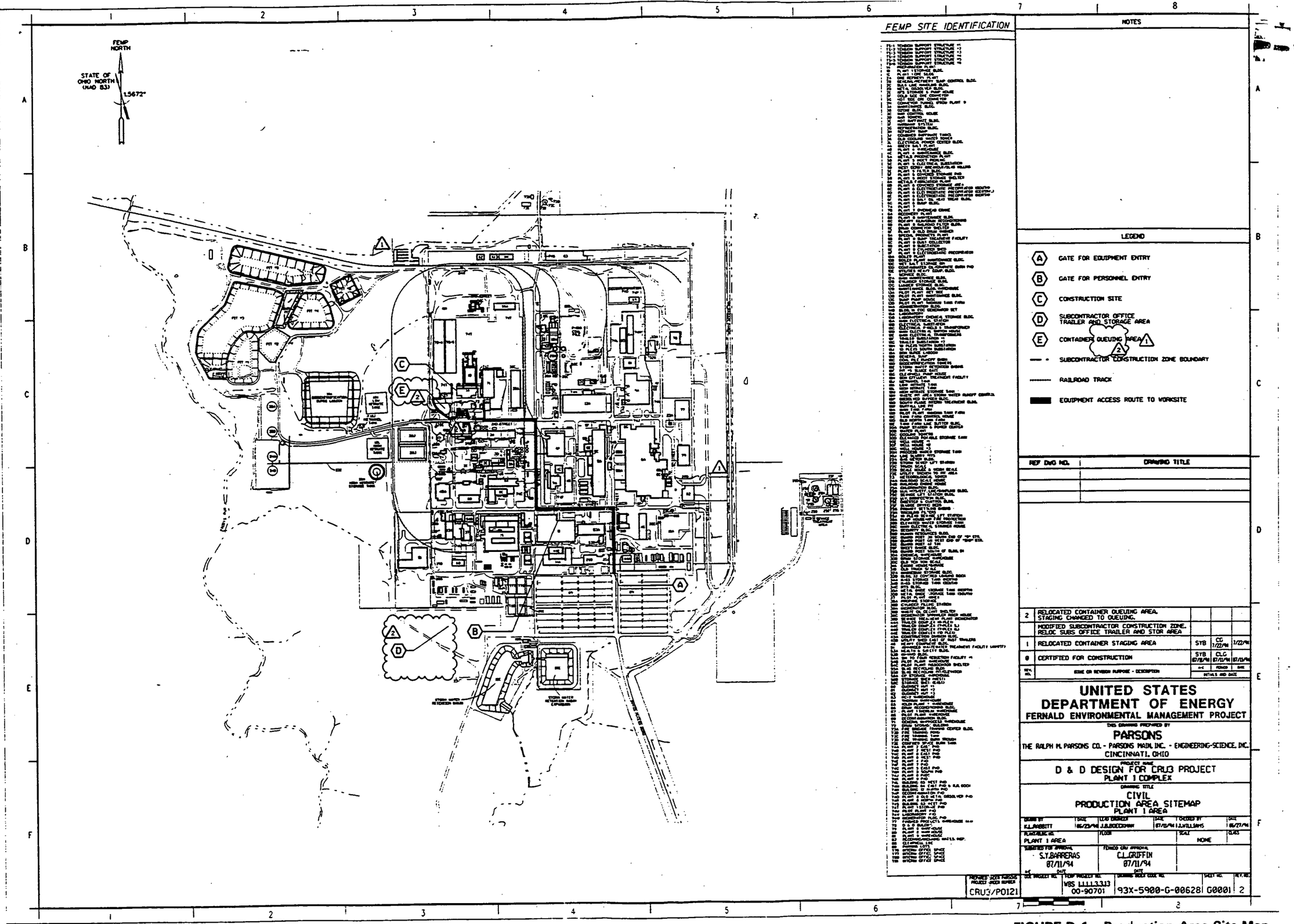
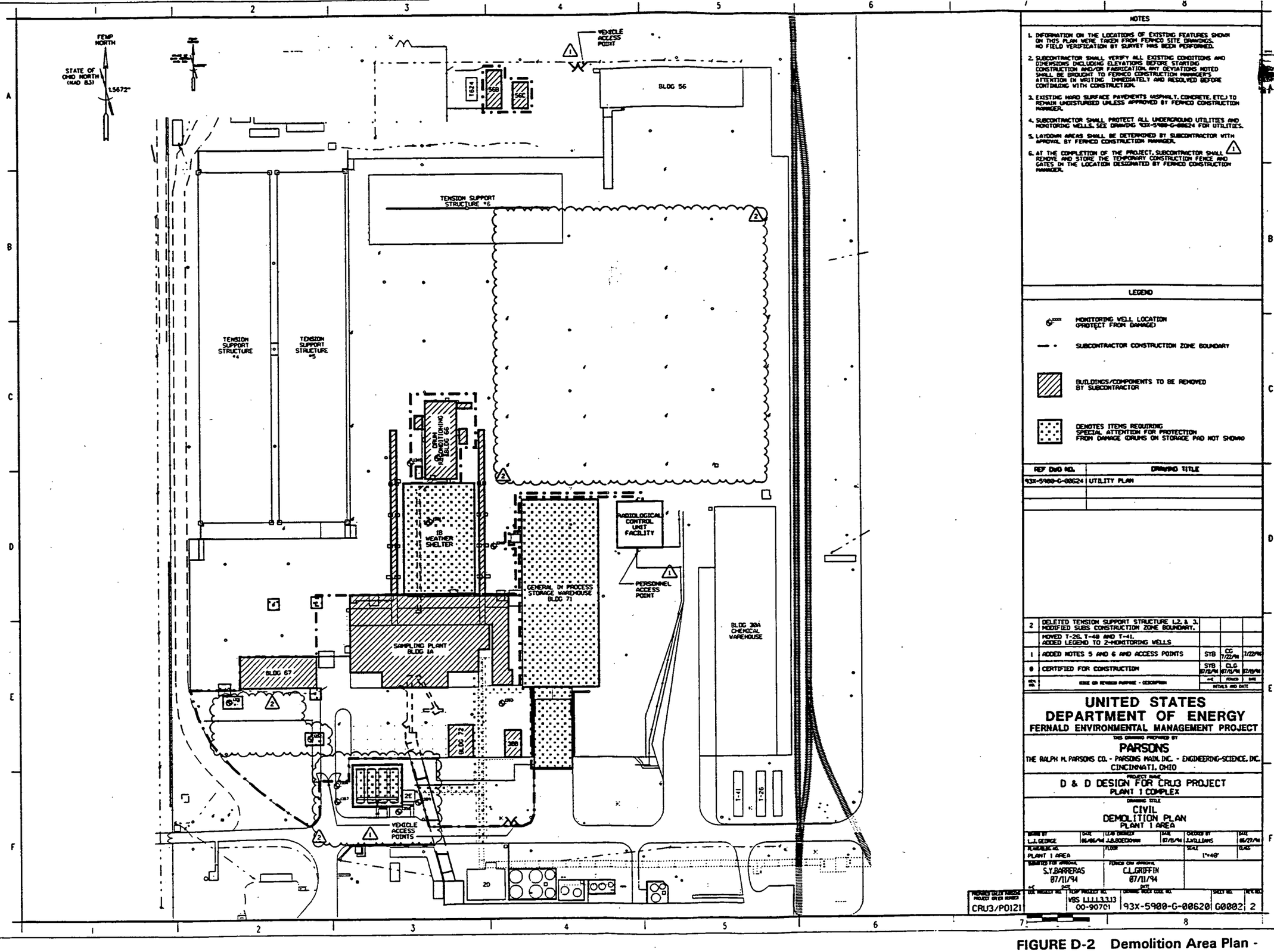


FIGURE D-1 Production Area Site Map - Plant 1 Complex - Phase I

R93g00620(7999.ws317) po121@ws317. Wed Jan 4 15:08:46 EST 1995



NOTES

1. INFORMATION ON THE LOCATIONS OF EXISTING FEATURES SHOWN ON THIS PLAN WERE TAKEN FROM FERNCO SITE DRAWINGS. NO FIELD VERIFICATION BY SURVEY HAS BEEN PERFORMED.
2. SUBCONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS INCLUDING ELEVATIONS BEFORE STARTING CONSTRUCTION AND/OR FABRICATION. ANY DEVIATIONS NOTED SHALL BE BROUGHT TO FERNCO CONSTRUCTION MANAGER'S ATTENTION IN WRITING IMMEDIATELY AND RESOLVED BEFORE CONTINUING WITH CONSTRUCTION.
3. EXISTING HARD SURFACE PAVEMENTS (ASPHALT, CONCRETE, ETC.) TO REMAIN UNDISTURBED UNLESS APPROVED BY FERNCO CONSTRUCTION MANAGER.
4. SUBCONTRACTOR SHALL PROTECT ALL UNDERGROUND UTILITIES AND MONITORING WELLS. SEE DRAWING 93X-5900-G-00624 FOR UTILITIES.
5. LAYDOWN AREAS SHALL BE DETERMINED BY SUBCONTRACTOR WITH APPROVAL BY FERNCO CONSTRUCTION MANAGER.
6. AT THE COMPLETION OF THE PROJECT, SUBCONTRACTOR SHALL REMOVE AND STORE THE TEMPORARY CONSTRUCTION FENCE AND GATES IN THE LOCATION DESIGNATED BY FERNCO CONSTRUCTION MANAGER.

LEGEND

- MONITORING WELL LOCATION (PROTECT FROM DAMAGE)
- SUBCONTRACTOR CONSTRUCTION ZONE BOUNDARY
- BUILDINGS/COMPONENTS TO BE REMOVED BY SUBCONTRACTOR
- DENOTES ITEMS REQUIRING SPECIAL ATTENTION FOR PROTECTION FROM DAMAGE (DRUMS ON STORAGE PAD NOT SHOWN)

REF DWG NO.	DRAWING TITLE
93X-5900-G-00624	UTILITY PLAN

REV. NO.	REASON FOR REVISION PURPOSE - DESCRIPTION	INITIALS AND DATE		
2	DELETED TENSION SUPPORT STRUCTURE 1,2, & 3. MODIFIED SUBS CONSTRUCTION ZONE BOUNDARY. MOVED T-26, T-40 AND T-41. ADDED LEGEND TO 2-MONITORING WELLS			
1	ADDED NOTES 5 AND 6 AND ACCESS POINTS	STB	CC 7/22/94	7/22/94
0	CERTIFIED FOR CONSTRUCTION	STB 07/15/94	CLG 07/15/94	07/15/94

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MADI, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
D & D DESIGN FOR CRU3 PROJECT
PLANT 1 COMPLEX

DRAWING TITLE
CIVIL
DEMOLITION PLAN
PLANT 1 AREA

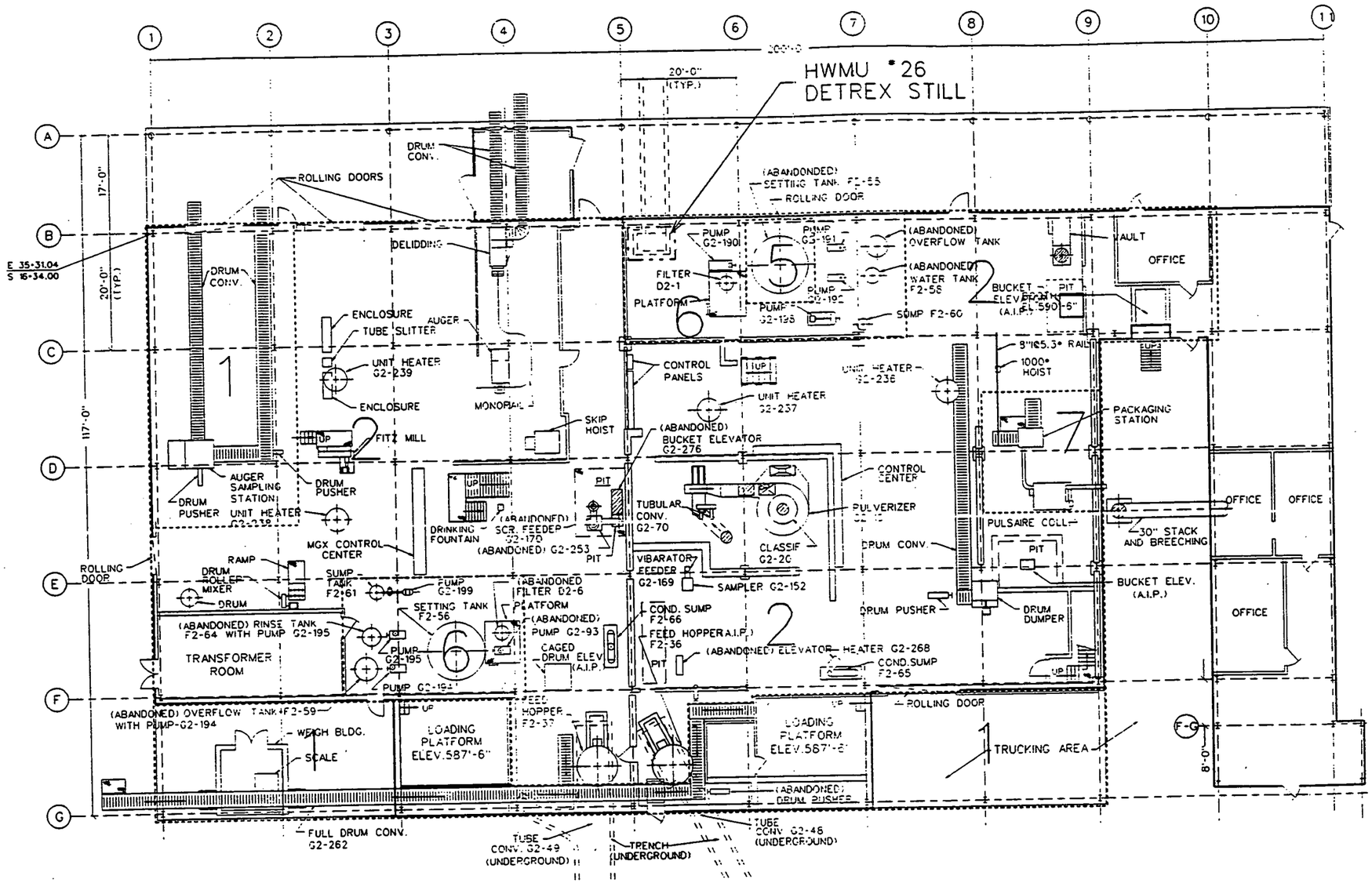
DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
L.J. GEORGE	05/05/94	J.B.BOECKMAN	07/15/94	J.J.WILLIAMS	05/27/94

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
PLANT 1 AREA		1"=40'	

SUBMITTED FOR APPROVAL	FERNCO CM APPROVAL
S.Y.BARRERAS 07/11/94	C.L.GRIFFIN 07/11/94

PROJECT ORDER NUMBER	FERNCO PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
CRU3/P0121		WBS 1.1.1.1.3.3.1.3 00-90701	93X-5900-G-00620	G0002	2

FIGURE D-2 Demolition Area Plan - Plant 1 Complex - Phase I



LEGEND

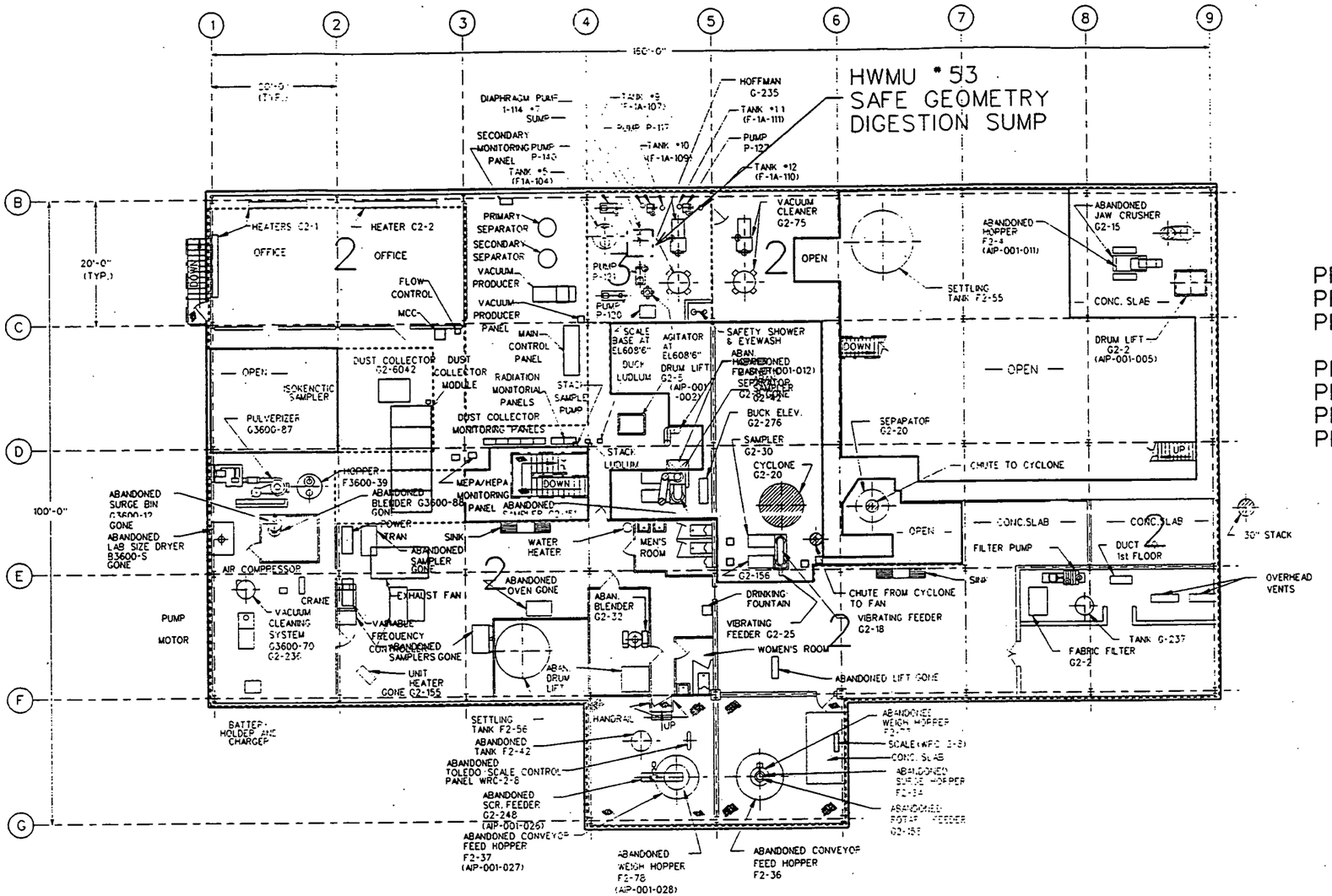
PROCESS 1 - DRUM SAMPLING
PROCESS 2 - CRUSHING/MILLING
PROCESS 3 - ENRICHED MATERIALS RECLAMTION
PROCESS 4 - DRUM WASHING
PROCESS 5 - SOLVENT RECLAMATION
PROCESS 6 - WASTE WATER HANDLING
PROCESS 7 - REPACKAGING

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FERMCO
Fernald Environmental Management Project
U.S. DEPARTMENT OF ENERGY

PLANT 1 EL. 585' - 6"
PREPARATION PLANT
PROCESS AREA
1" = 20'

DATE 1-9-94
DRAWN WILLIAMS
CRU3-0059

FIGURE D-3 Floor Plan of Building 1A - First Floor



LEGEND

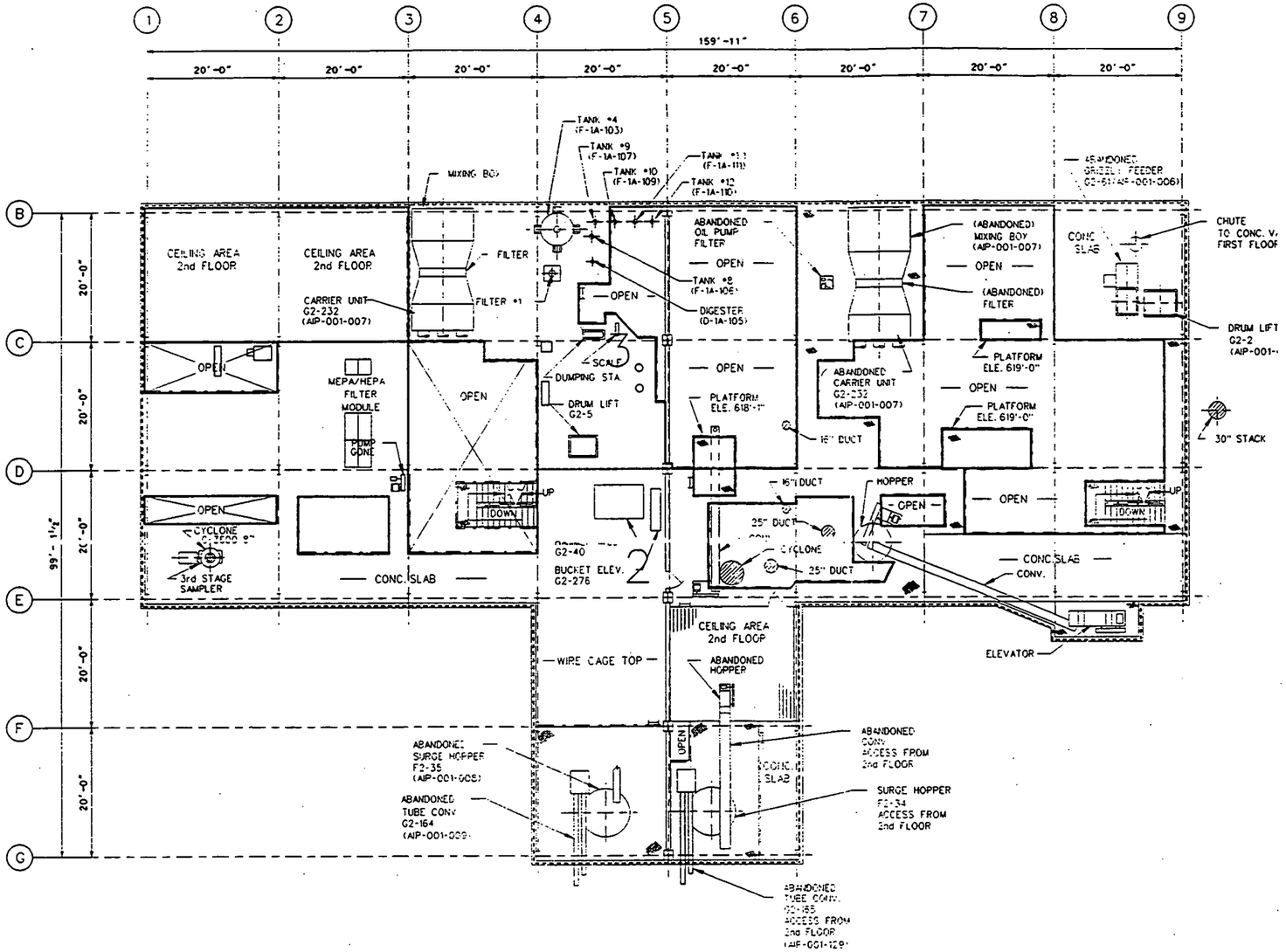
PROCESS 1 - DRUM SAMPLING
PROCESS 2 - CRUSHING/MILLING
PROCESS 3 - ENRICHED MATERIALS RECLAMTION
PROCESS 4 - DRUM WASHING
PROCESS 5 - SOLVENT RECLAMATION
PROCESS 6 - WASTE WATER HANDLING
PROCESS 7 - REPACKAGING

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FERMCO
Fernald Environmental Management Project
U.S. DEPARTMENT OF ENERGY

PLANT 1 EL. 598' - 0"
PREPARATION PLANT
PROCESS AREA
1" = 20'

DATE 1-9-94
DRAWN WILLIAMS
CRU3-0060

FIGURE D-4 Floor Plan of Building 1A - Second Floor



LEGEND

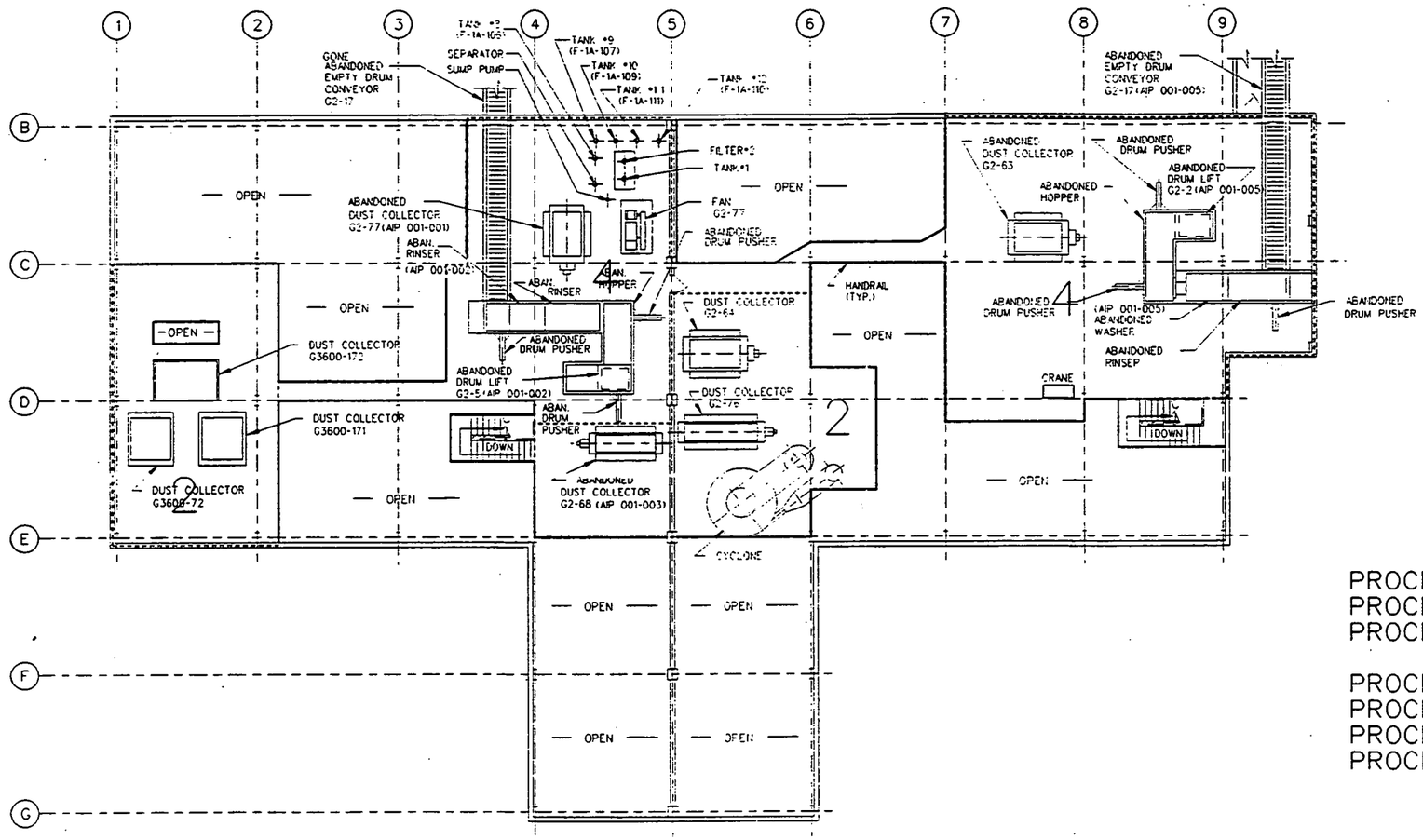
PROCESS 1 - DRUM SAMPLING
PROCESS 2 - CRUSHING/MILLING
PROCESS 3 - ENRICHED MATERIALS RECLAMTION
PROCESS 4 - DRUM WASHING
PROCESS 5 - SOLVENT RECLAMATION
PROCESS 6 - WASTE WATER HANDLING
PROCESS 7 - REPACKAGING

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FERMCO
Fernald Environmental Management Project
U.S. DEPARTMENT OF ENERGY

PLANT 1 EL. 610' - 6"
PREPARATION PLANT
PROCESS AREA
1" = 20'

DATE 1-9-94
DRAWN WILLIAMS
CRU3-0061

FIGURE D-5 Floor Plan of Building 1A - Third Floor



LEGEND

PROCESS 1 - DRUM SAMPLING
PROCESS 2 - CRUSHING/MILLING
PROCESS 3 - ENRICHED MATERIALS RECLAMTION
PROCESS 4 - DRUM WASHING
PROCESS 5 - SOLVENT RECLAMATION
PROCESS 6 - WASTE WATER HANDLING
PROCESS 7 - REPACKAGING

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FERMCO
Fernald Environmental Management Project
U.S. DEPARTMENT OF ENERGY

PLANT 1 EL. 624' - 6"
PREPARATION PLANT
PROCESS AREA
1" = 20'

DATE 1-9-94
DRAWN WILLIAMS
CRU3-0062

FIGURE D-6 Floor Plan of Building 1A - Fourth Floor

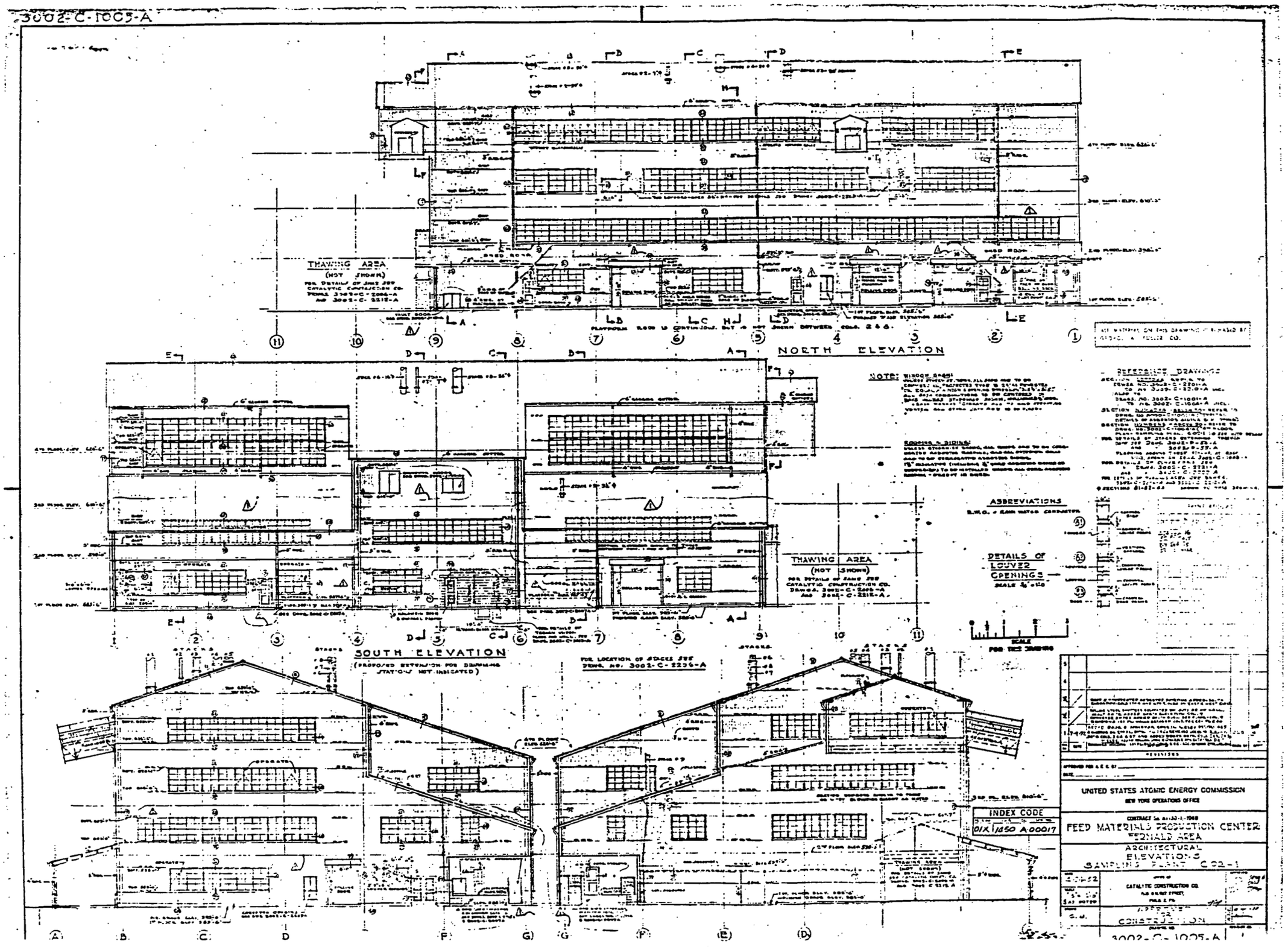


FIGURE D-7 Elevation Drawing - Building 1A

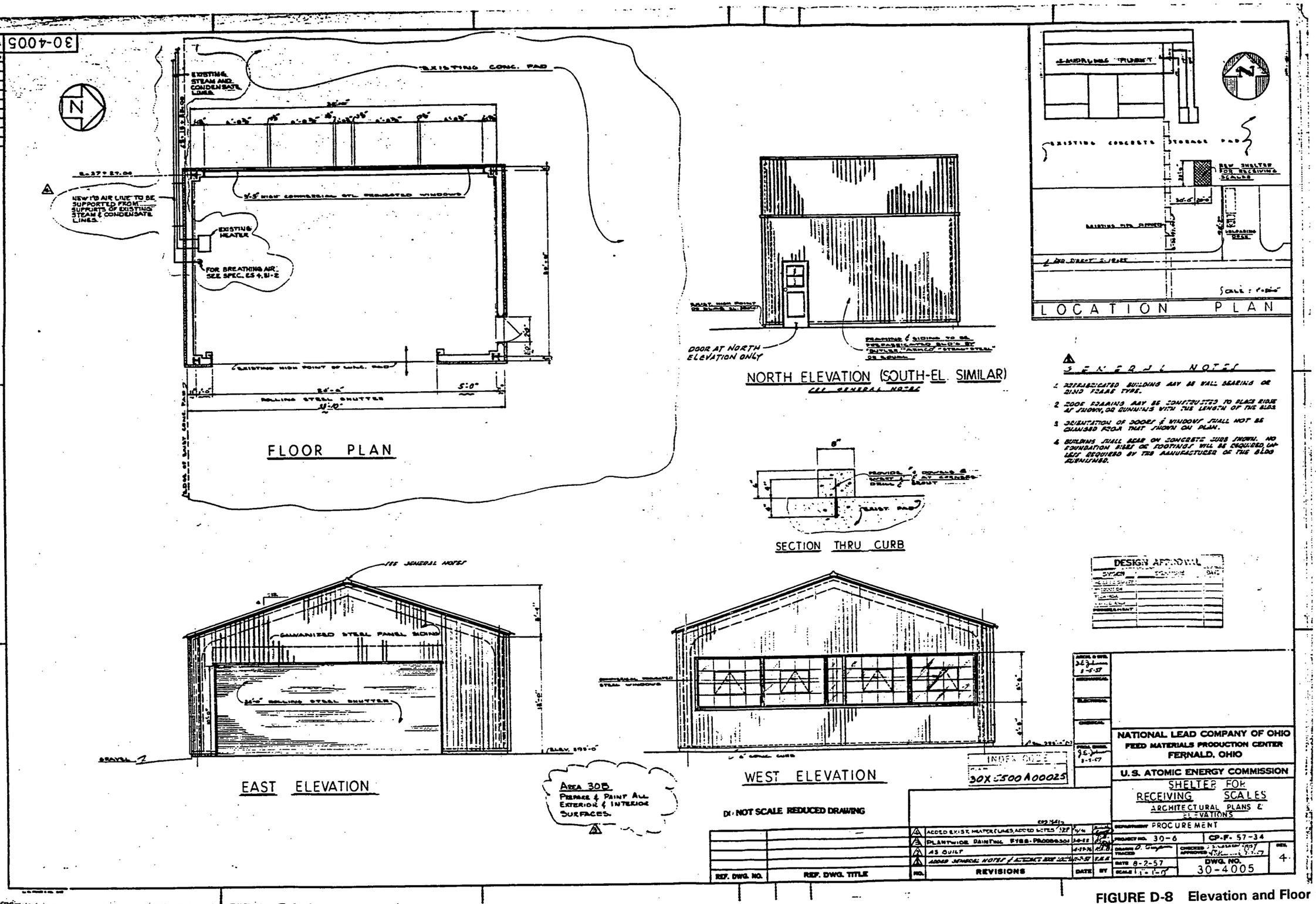


FIGURE D-8 Elevation and Floor Plan Drawing - Building 30B

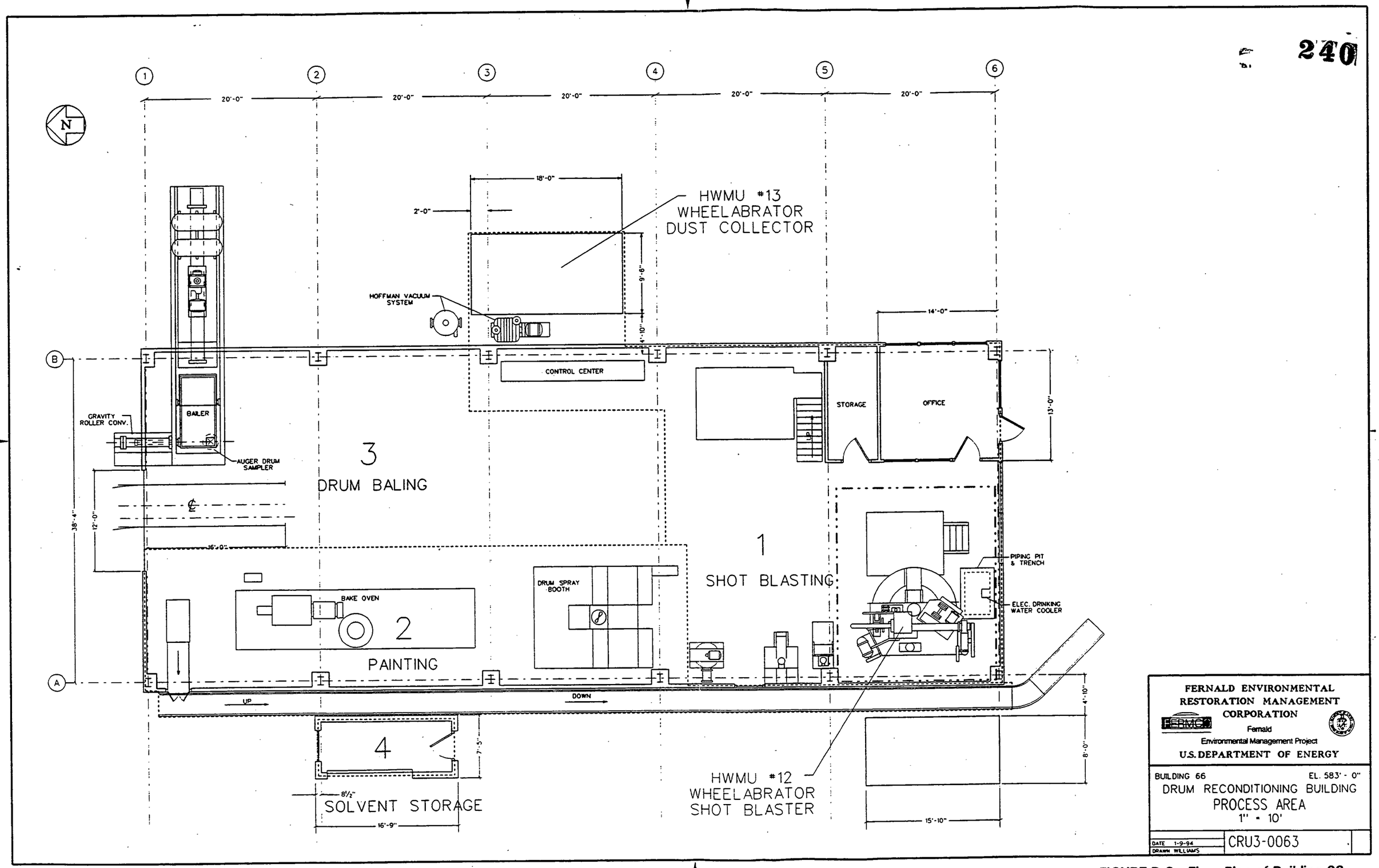
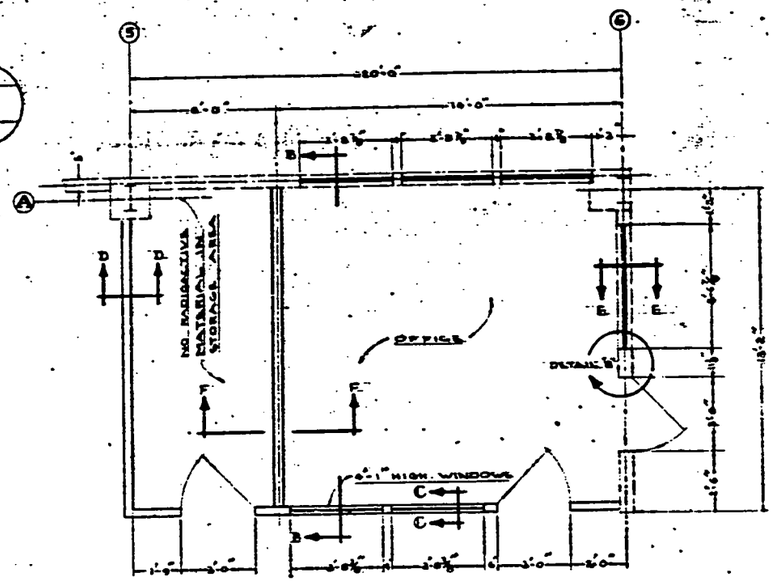
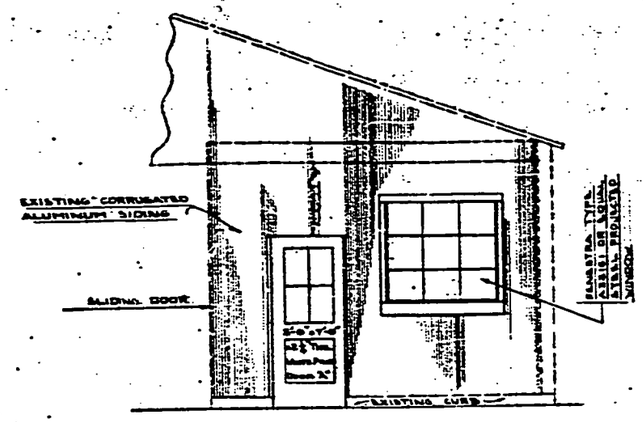


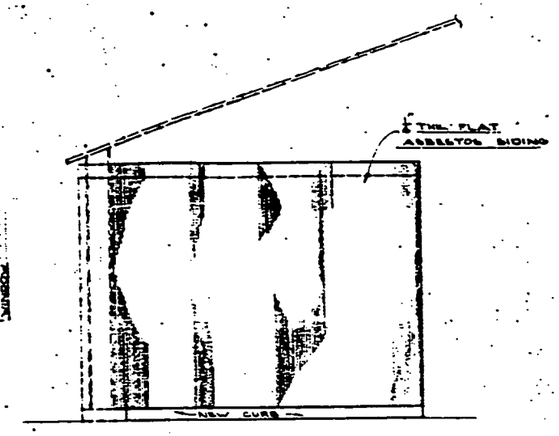
FIGURE D-9 Floor Plan of Building 66



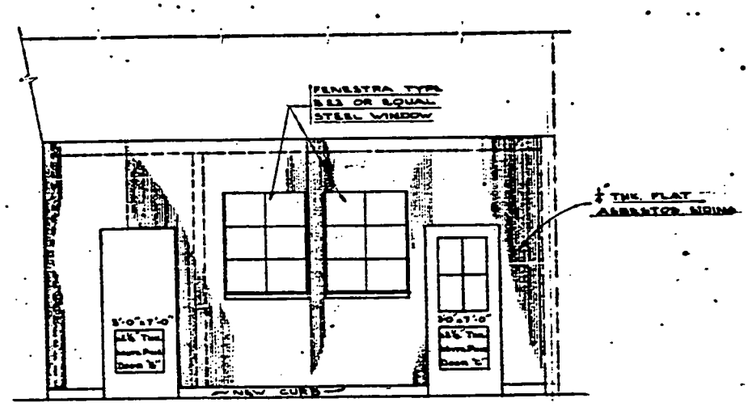
PLAN



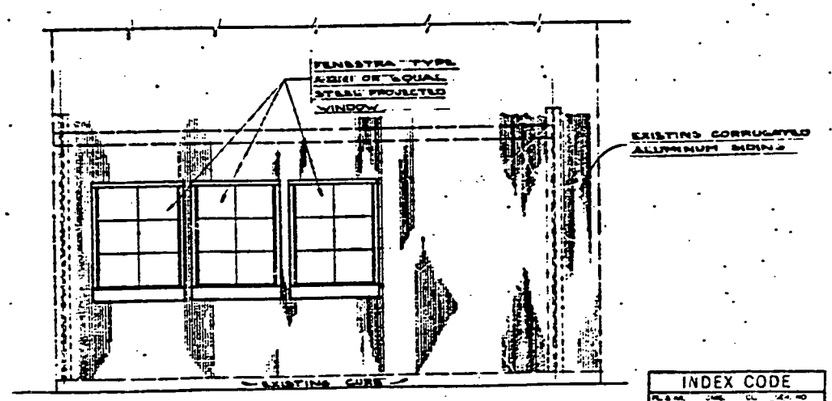
SOUTH ELEVATION



NORTH ELEVATION



WEST ELEVATION



EAST ELEVATION

DESIGN APPROVAL
W C Hill 2/28

INDEX CODE
01D5500A00744

NATIONAL LEAD COMPANY OF OHIO
FEED MATERIALS PRODUCTION CENTER
FERNALD, OHIO

U.S. ATOMIC ENERGY COMMISSION

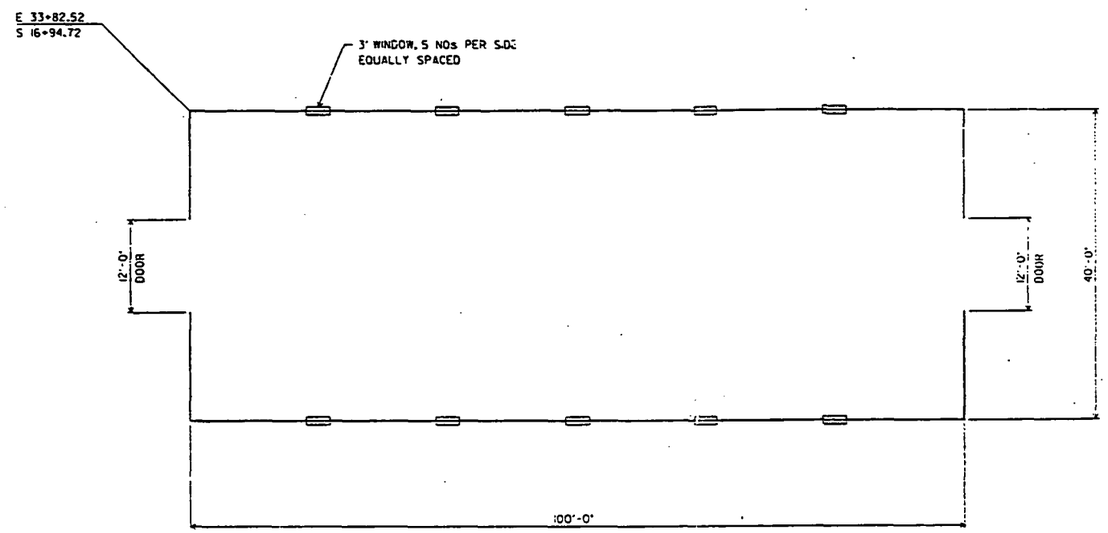
PL 1 DRUM RECOND. BLDG.
OFFICE
ARCHITECTURAL

Proj. No. 1-27 | CP-F-55-12 B
DWG. NO. 1-4111 | REV. 0

REF. DWG. NO.	REF. DWG. TITLE
1-4081	DWG. LIST
1-4108	OFFICE ELEV & SECTION
1-4109	OFFICE DETAIL & SECTION
1-4110	OFFICE DETAILS
1-4083	EQUIP. ARRANGEMENT

NO.	REVISIONS	DATE	BY
4			
3			
2			
1			

FIGURE D-10 Original Elevation Drawing - Building 66



FLOOR PLAN
EL. 385.50

DO NOT SCALE REDUCED DRAWING

NO.	REVISIONS	DATE	DWN.	BY	APPD.	NO.	REVISIONS	DATE	DWN.	BY	APPD.	REF. DWG. NO.
												67X-5100-A-00004

NOTE:
WMCO C.A.D.
DRAWING NOT
TO BE REVISED
MANUALLY

APPROVALS

CHEMICAL		H.R.S. & P.C.	
CIVIL & STR.		MAINTENANCE	
ELECTRICAL		IND. SAFETY	
ENGINEER		Q.A.	
INSTRUMENT		PRODUCTION	
MECHANICAL		FIRE & SAFETY	
		WASTE MANAGE	
CHECKED		D.O.E.	
APPROVED			

WESTINGHOUSE MAT'LS. CO. OF OHIO
FERNALD, OHIO
FERNALD SITE OFFICE
U.S. DEPARTMENT OF ENERGY

BUILDING 67 FIRST FLOOR
OLD PLANT THORIUM WAREHOUSE
FLOOR PLAN
1/8" = 1'-0"

67X-5100-A-00004 0

CAD CAM INC. FILE NAME: /USR/FLOYD/WRAMA00004.DGN

FIGURE D-11 Floor Plan of Building 67

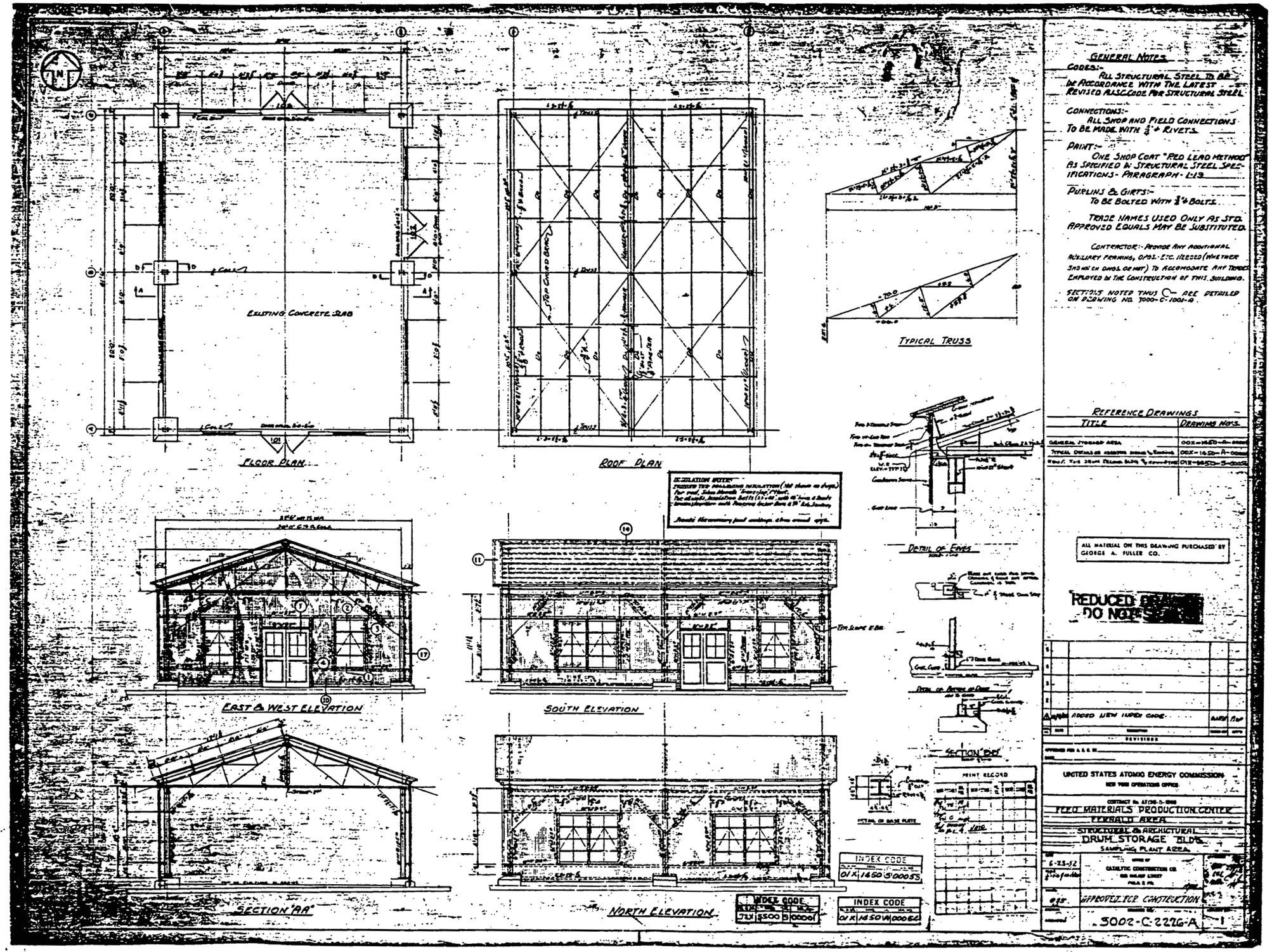


FIGURE D-12 Elevation and Floor Plan Drawing - Building 72

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APPENDIX E

PHOTOGRAPHS

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APPENDIX E

PHOTOGRAPHS

FIGURE E-1	Ground-Level View of Building 1A from NW
FIGURE E-2	Ground-Level View of Building 1A from NE
FIGURE E-3	Ground-Level View of Building 1A from South
FIGURE E-4	Detrex Still Located along the North Wall of Building 1A (ELEV. 585′-6″)
FIGURE E-5	Settling Tank and Water Tank Located along the North Wall of Building 1A (ELEV. 585′ -6″)
FIGURE E-6	Pulverizer Control Located in Central Area of the First Floor of Building 1A (ELEV. 585′ - 6″)
FIGURE E-7	Feed Hopper Located along South Wall on the First Floor of Building 1A (ELEV. 585′ - 6″)
FIGURE E-8	Drum Sampler and Drum Conveyor Located in the NW Corner on First Floor of Building 1A (ELEV. 585′ - 6″)
FIGURE E-9	Building 1B South Interior Wall
FIGURE E-10	View Looking West from Second Level of Building 1A (ELEV. 598′ - 0″)
FIGURE E-11	Jaw Crusher Located in NE Corner on Second Level of Building 1A (ELEV. 598′ - 0″)
FIGURE E-12	Digester Area along the North Wall on Second Level of Building 1A (ELEV. 598′ - 0″)
FIGURE E-13	Salvageable Dust Collector Modules Located in SW Section on Second Level of Building 1A (ELEV. 598′ - 0″)
FIGURE E-14	Hammer Mill Located in Central Portion of Third Level of Building 1A (ELEV. 610′ - 6″)
FIGURE E-15	Cyclone Located near the South Wall on the Third Level of Building 1A (Photo Taken from ELEV.610′ - 6″)
FIGURE E-16	Grizzly Feeder Located in NE Corner on Third Level of Building 1A (ELEV. 610′ - 6″)

FIGURE E-17	**View Looking West from Fourth Level of Building 1A (ELEV. 624′ - 6″)**
FIGURE E-18	**East Exterior View of Building 30B**
FIGURE E-19	**Interior View of Building 30B**
FIGURE E-20	**North Exterior View of Building 56B and 56C**
FIGURE E-21	**North Exterior View of Building 66**
FIGURE E-22	**NE Exterior View of Building 66 Showing Extension of Crusher**
FIGURE E-23	**Wheelabrator Platform Located on West Wall of Building 66**
FIGURE E-24	**Bake Oven Located along SW Corner of Building 66**
FIGURE E-25	**West Exterior View of Building 67**
FIGURE E-26	**East Interior View of Building 67**
FIGURE E-27	**South Exterior View of Building 72**
FIGURE E-28	**South Interior View of Building 72**

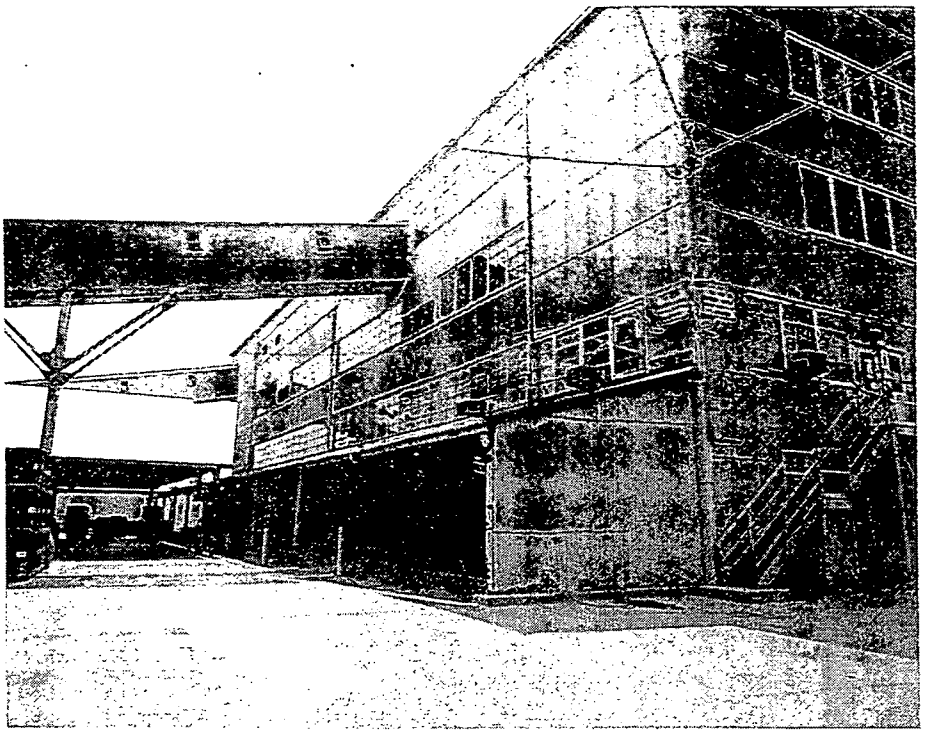

FIGURE E-1 Ground View of Building 1A from NW

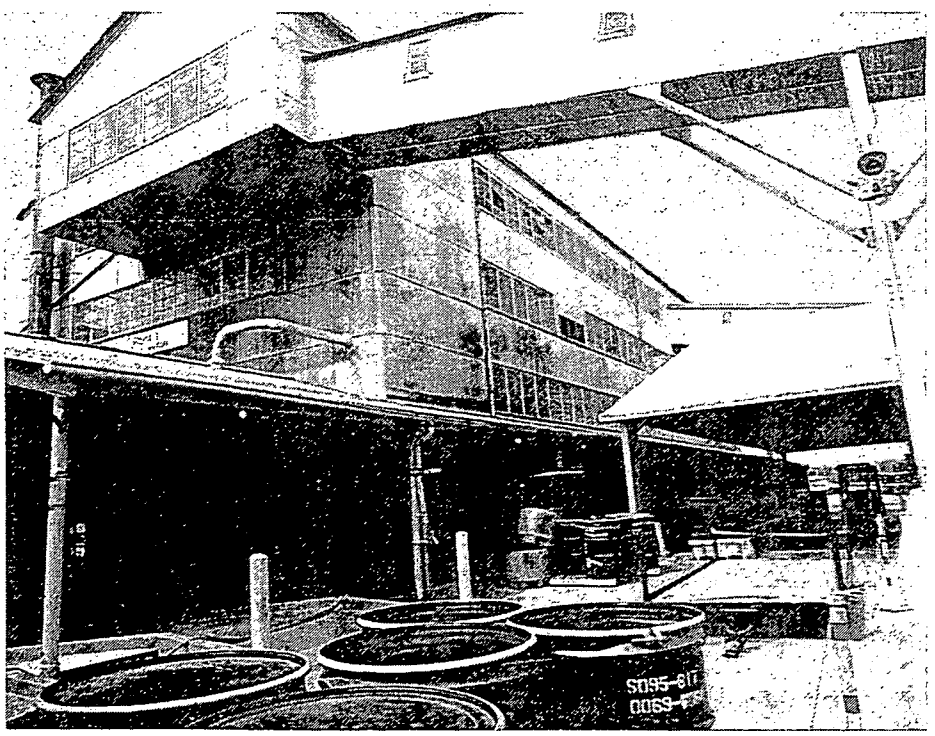

FIGURE E-2 Ground-Level View of Building 1A from NE Corner

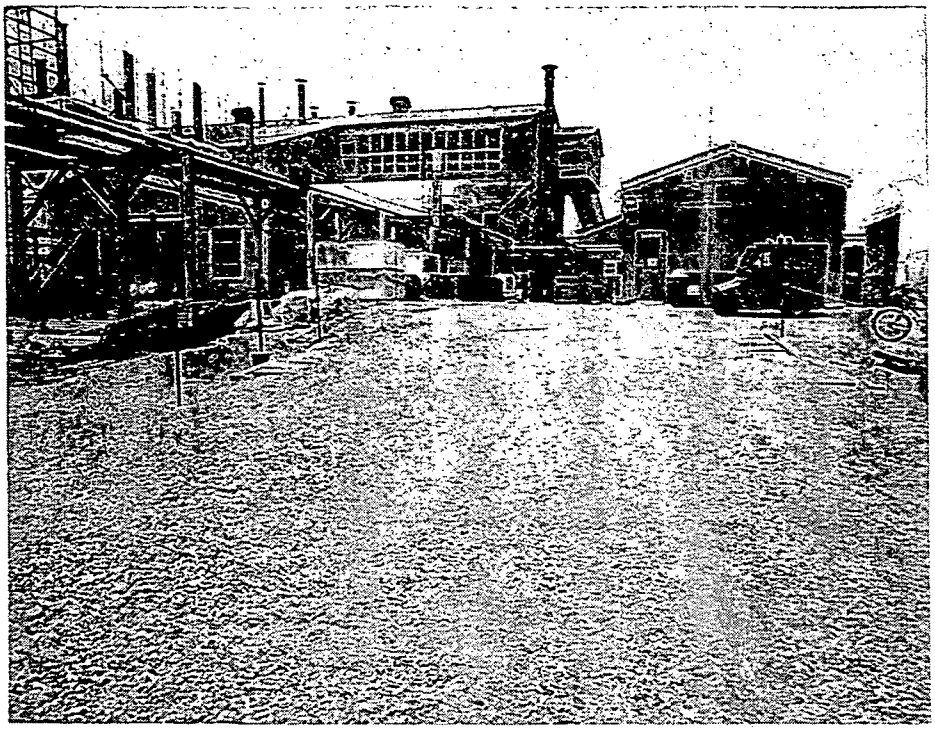

FIGURE E-3 Ground-Level View of Building 1A from South

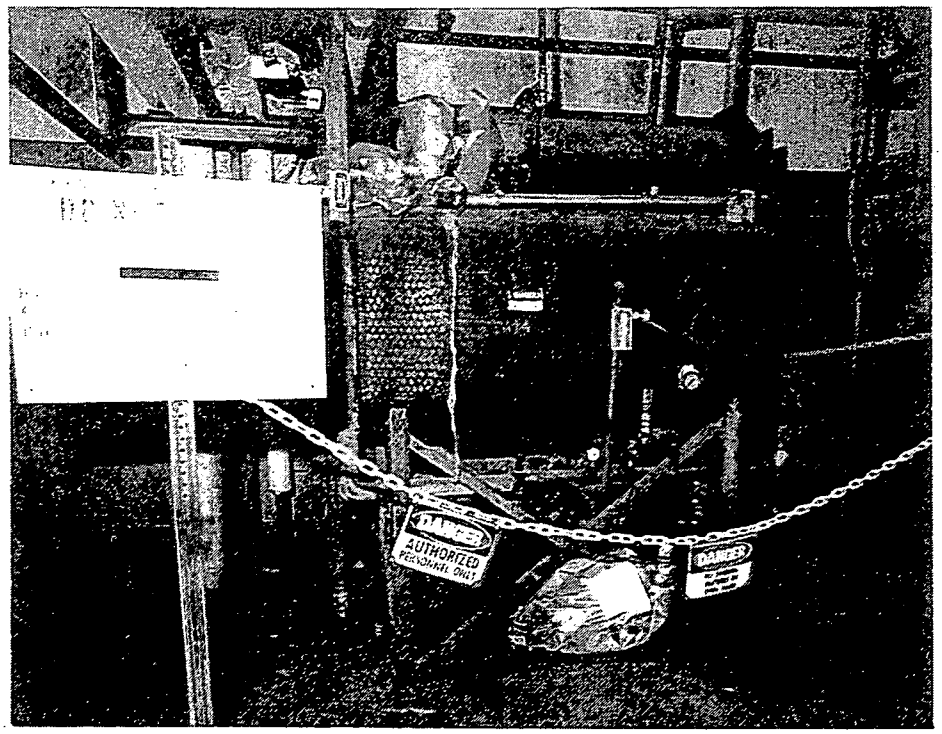

FIGURE E-4 Building 1A - Detrex Still, North Wall

FIGURE E-5 Building 1A - Settling Tank and Water Tank, North Wall

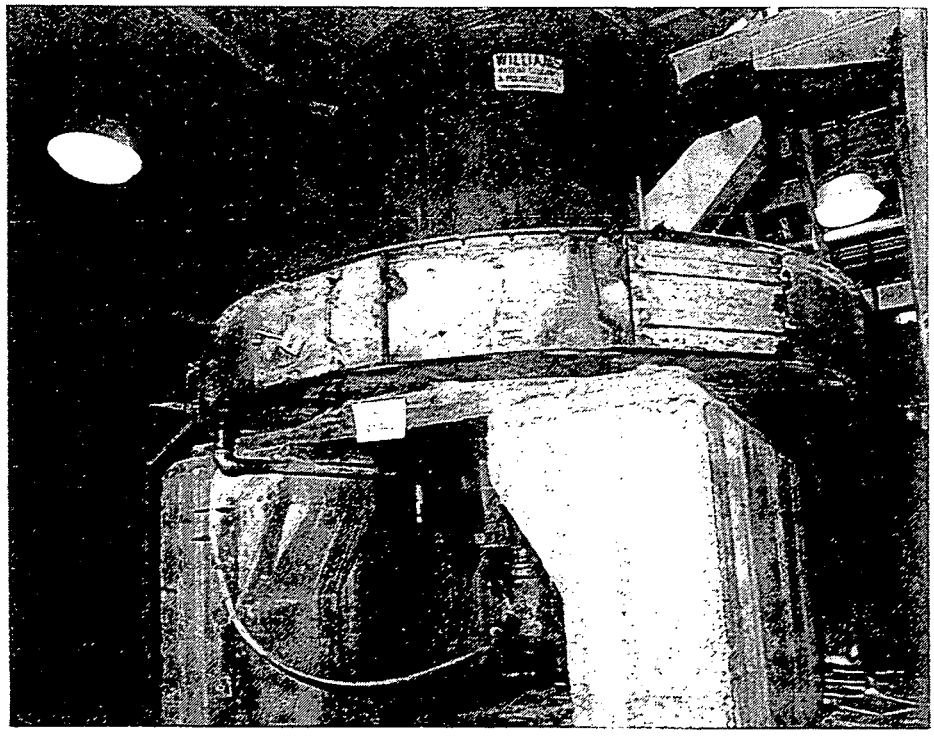

FIGURE E-6 Building 1A - Pulverizer Control, Central Area

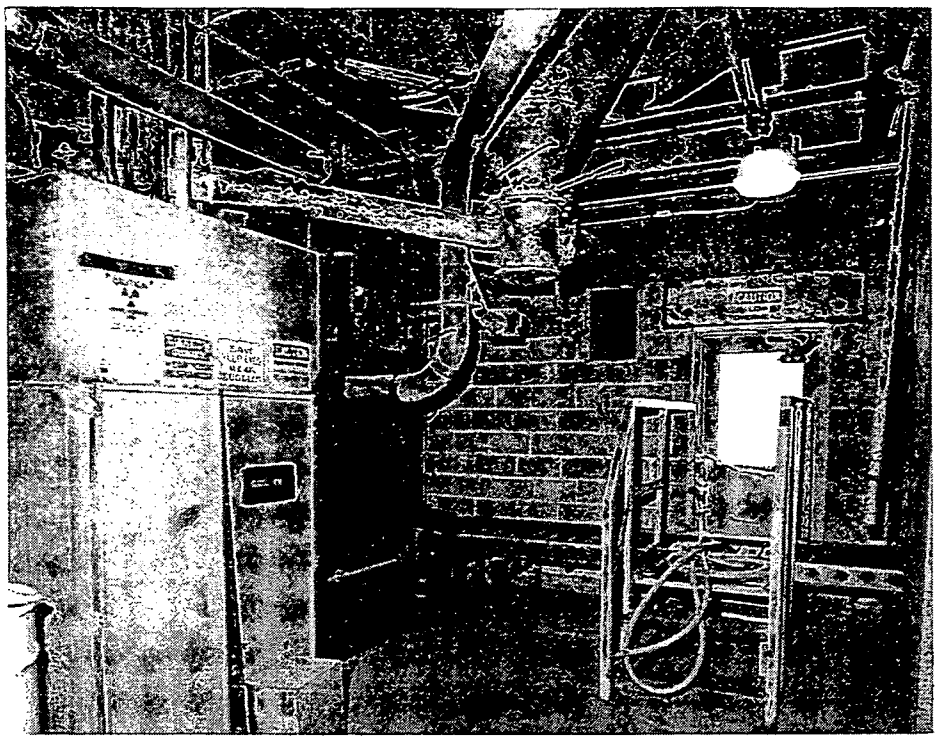

FIGURE E-7 Building 1A - Feed Hopper, South Wall

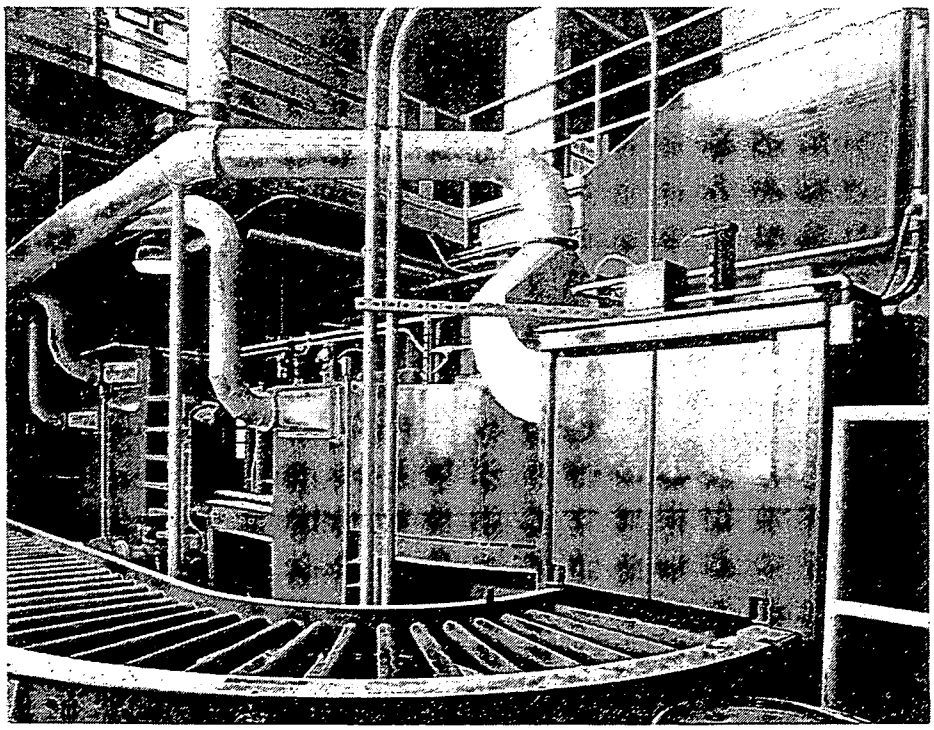

FIGURE E-8 Building 1A - Drum Sampler and Drum Conveyor, NW Corner

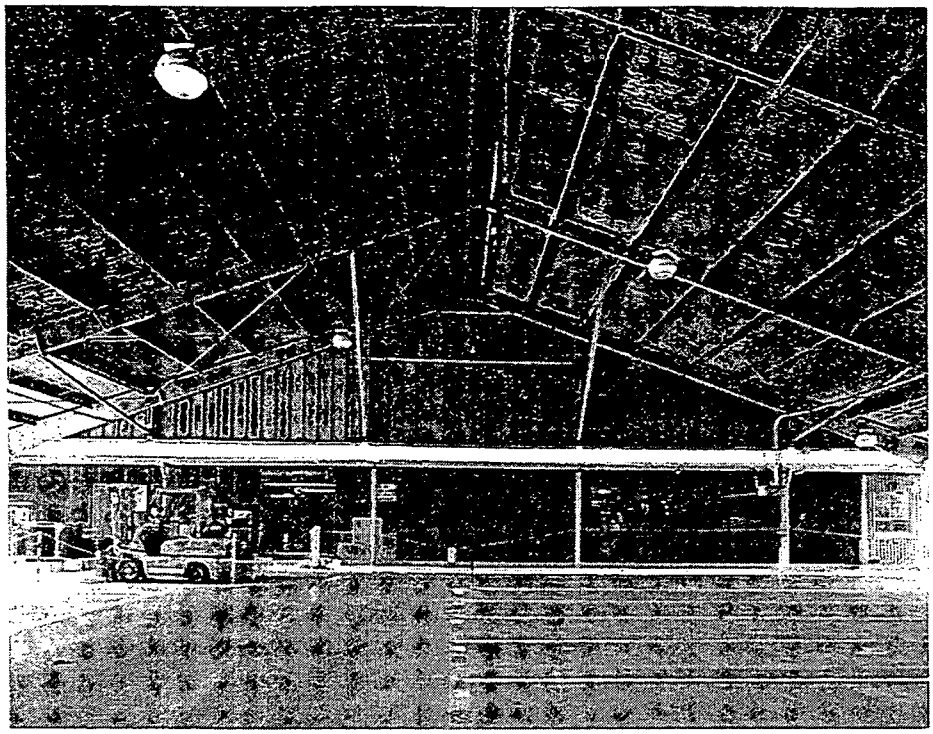

FIGURE E-9 Building 1B - South Interior Wall

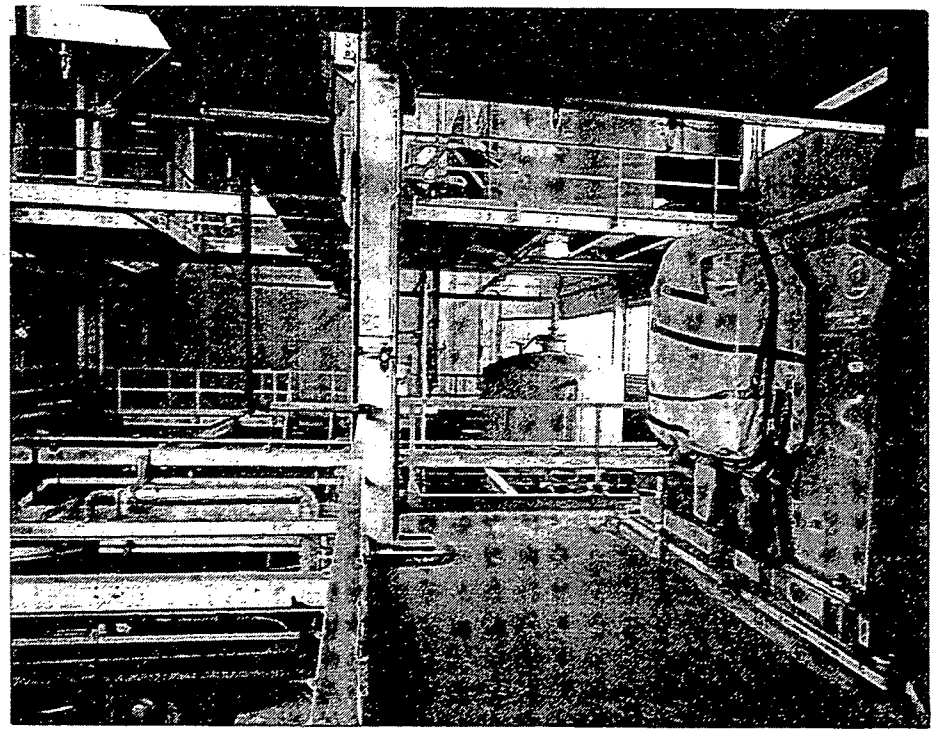

FIGURE E-10 Building 1A - Second Floor, Facing West

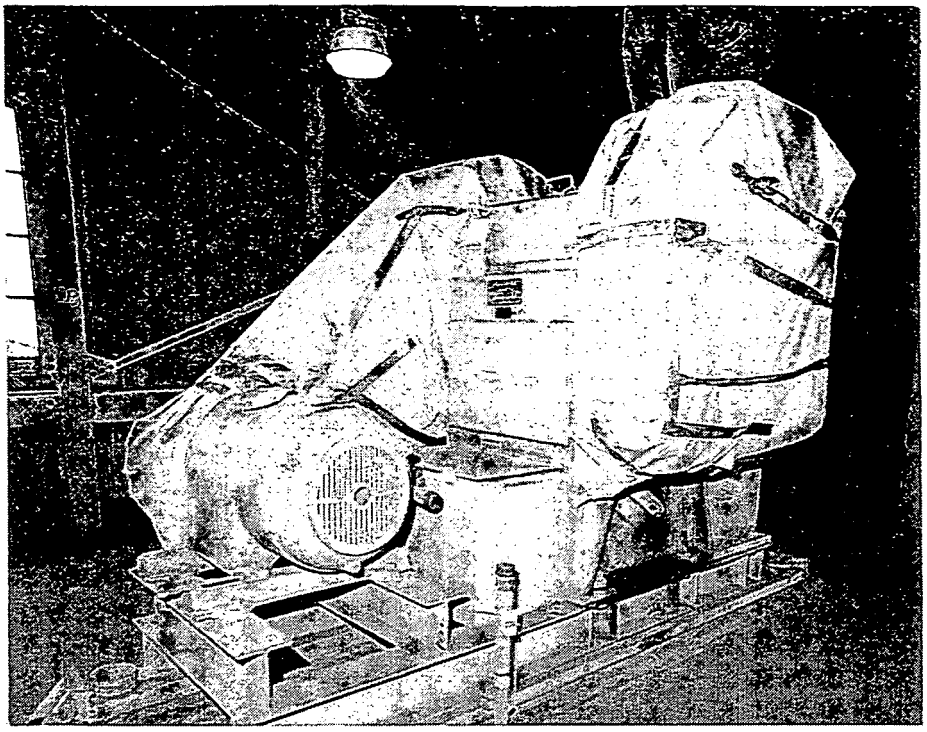

FIGURE E-11 Building 1A - Jaw Crusher, NE Corner, Second Floor

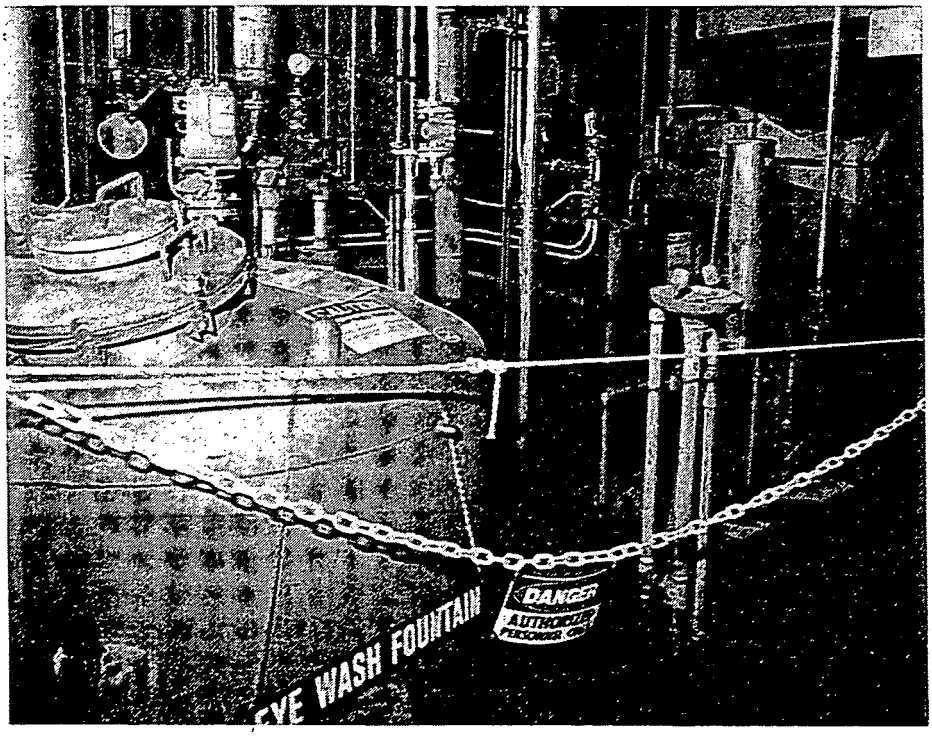

FIGURE E-12 Building 1A - Digester Area, North Wall, Second Floor

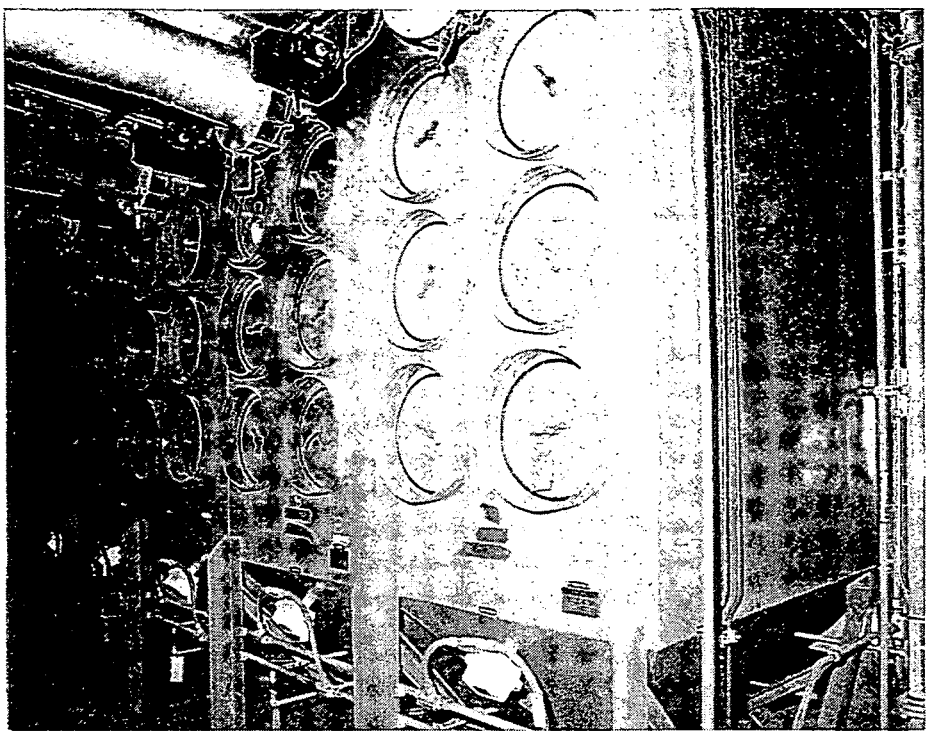

FIGURE E-13 Building 1A - Salvageable Dust Collector Modules, Second Floor

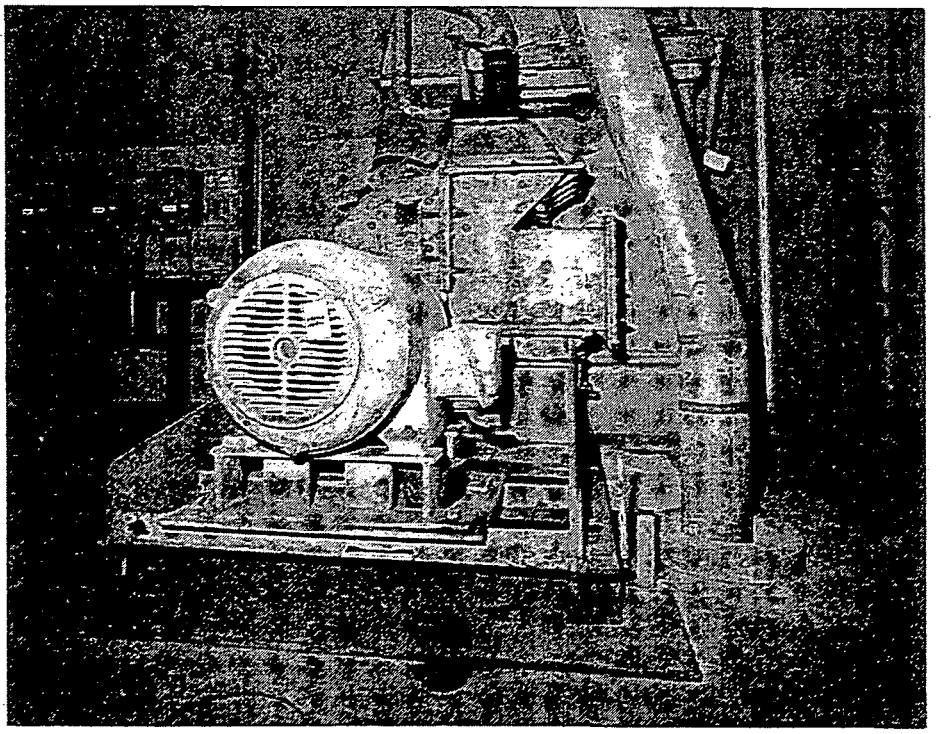

FIGURE E-14 Building 1A - Hammer Mill, Central Area, Third Floor

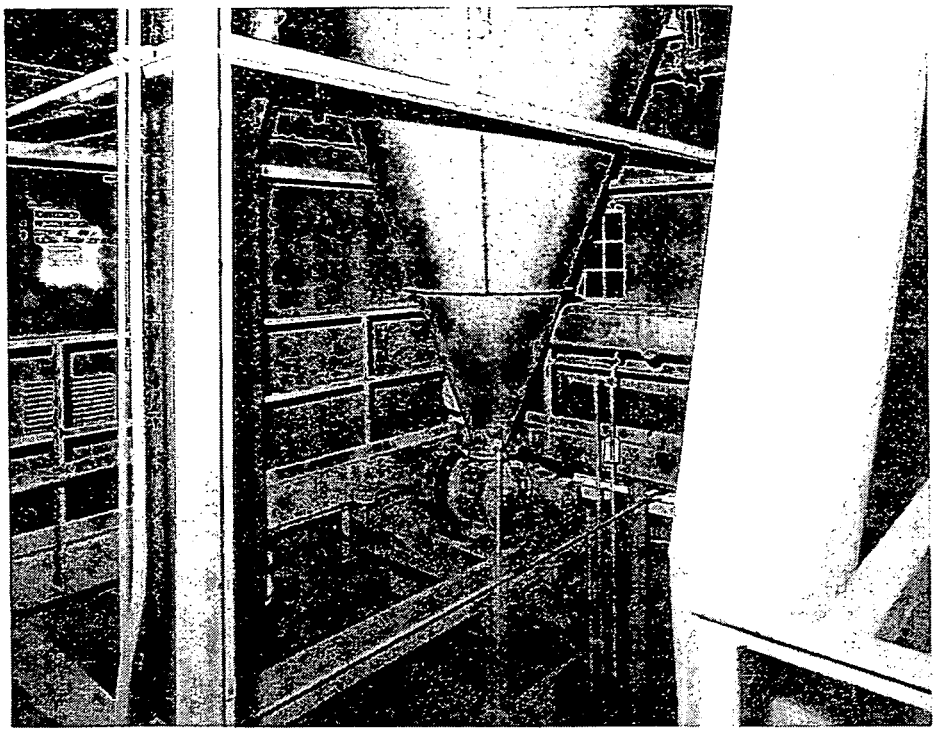

FIGURE E-15 Building 1A - Cyclone, South Wall, Third Floor

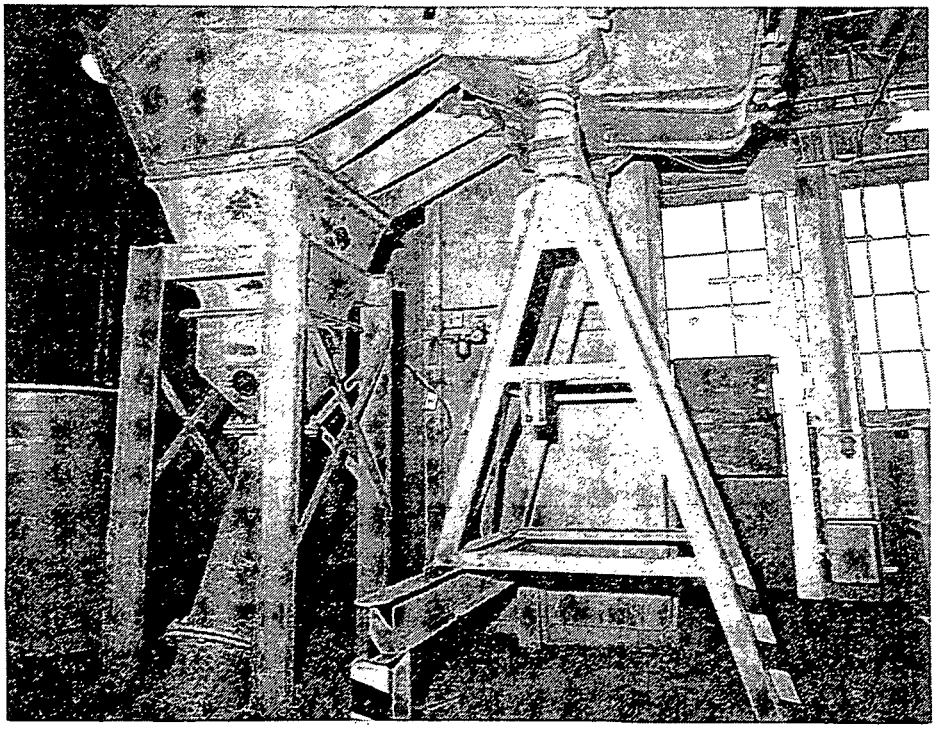

FIGURE E-16 Building 1A - Grizzly Feeder, NE Corner, Third Floor

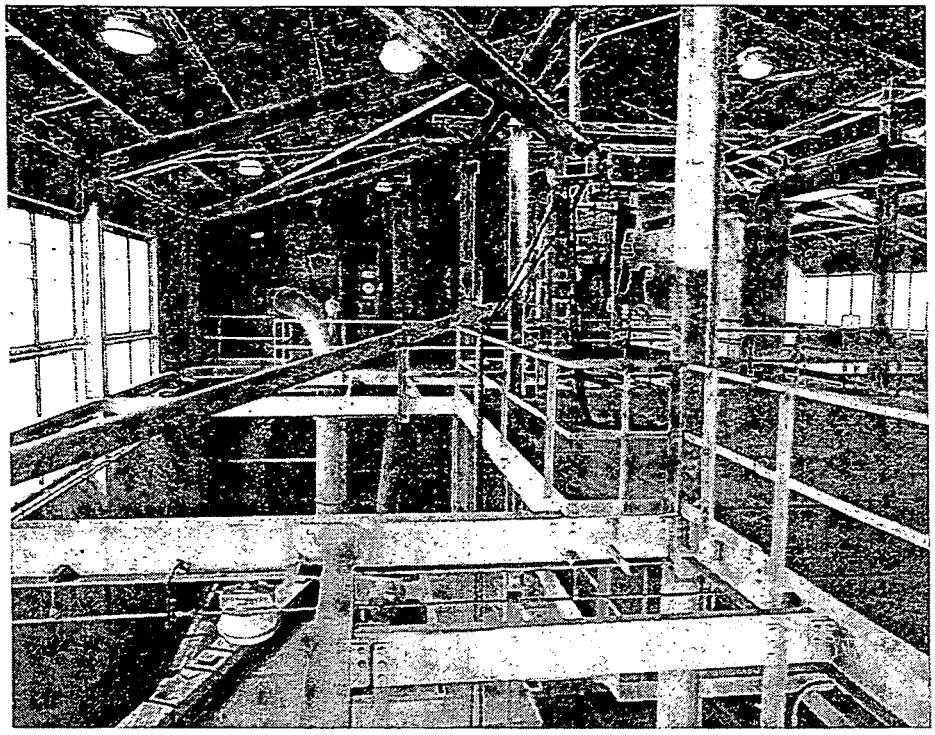

FIGURE E-17 Building 1A - Facing West, Fourth Floor

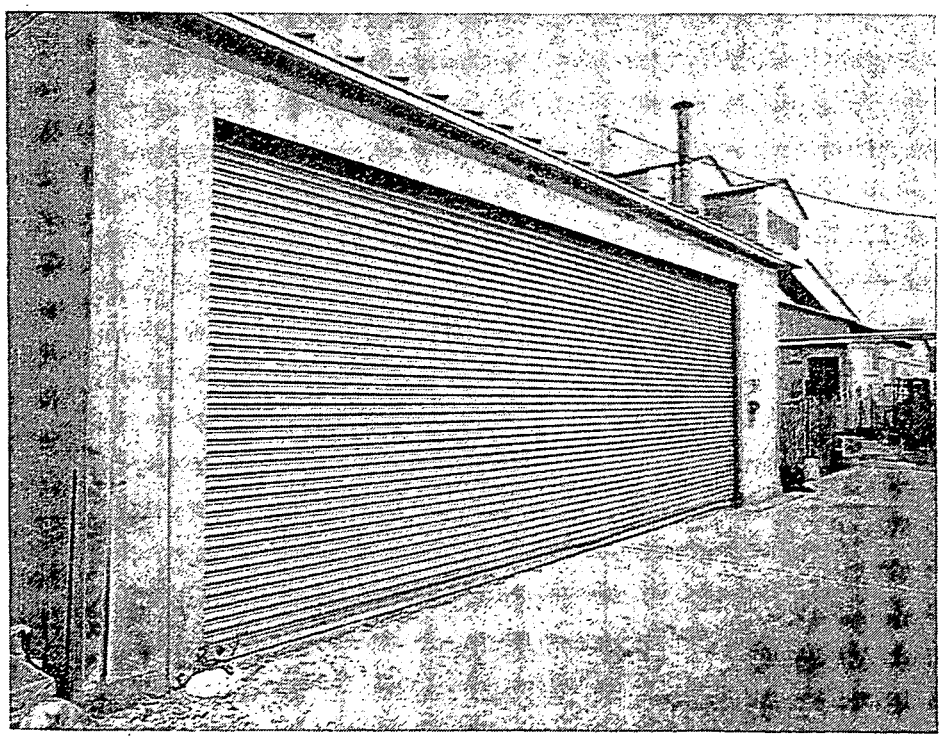

FIGURE E-18 East Exterior View of Building 30B

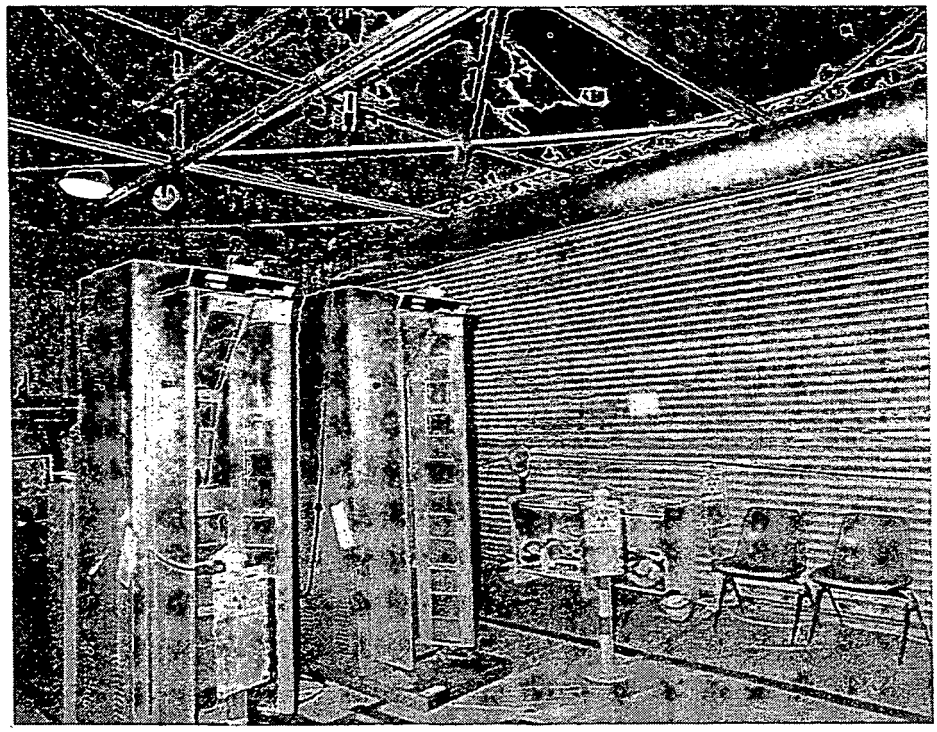

FIGURE E-19 Building 30B - Interior, NE Corner

FIGURE E-20 North Exterior View of Buildings 56B and 56C

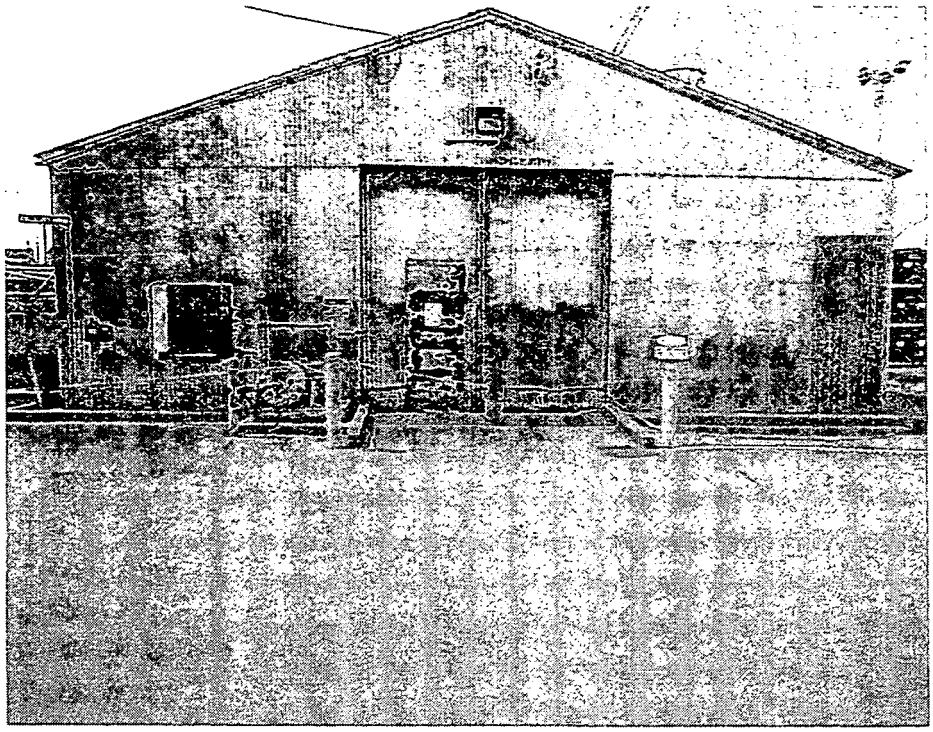

FIGURE E-21 North Exterior View of Building 66

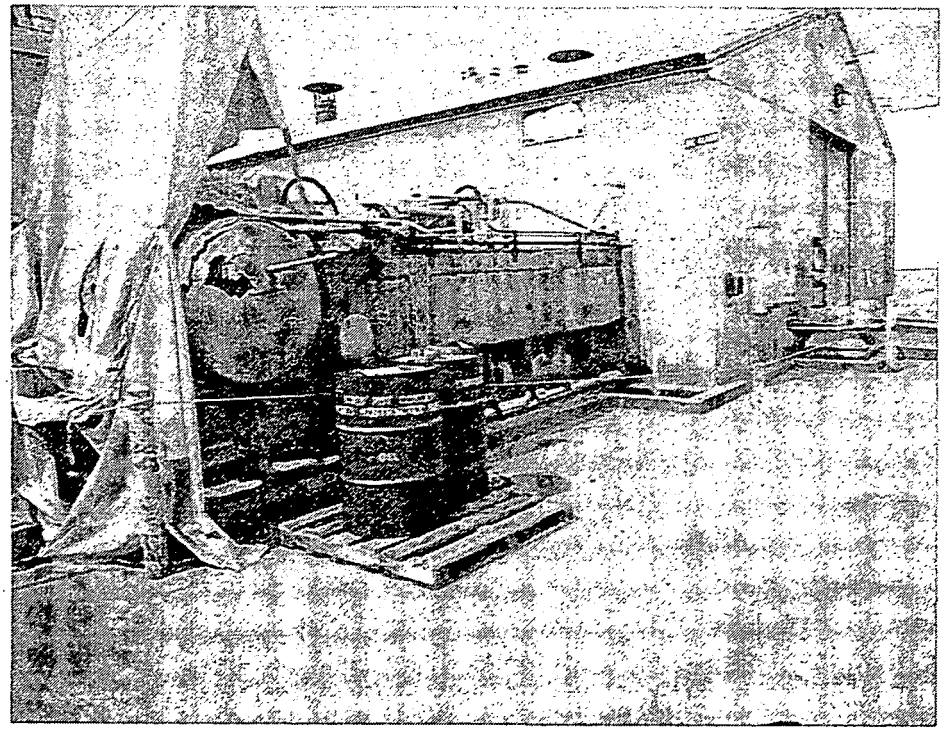

FIGURE E-22 NE Exterior View of Building 66 with Drum Bailer

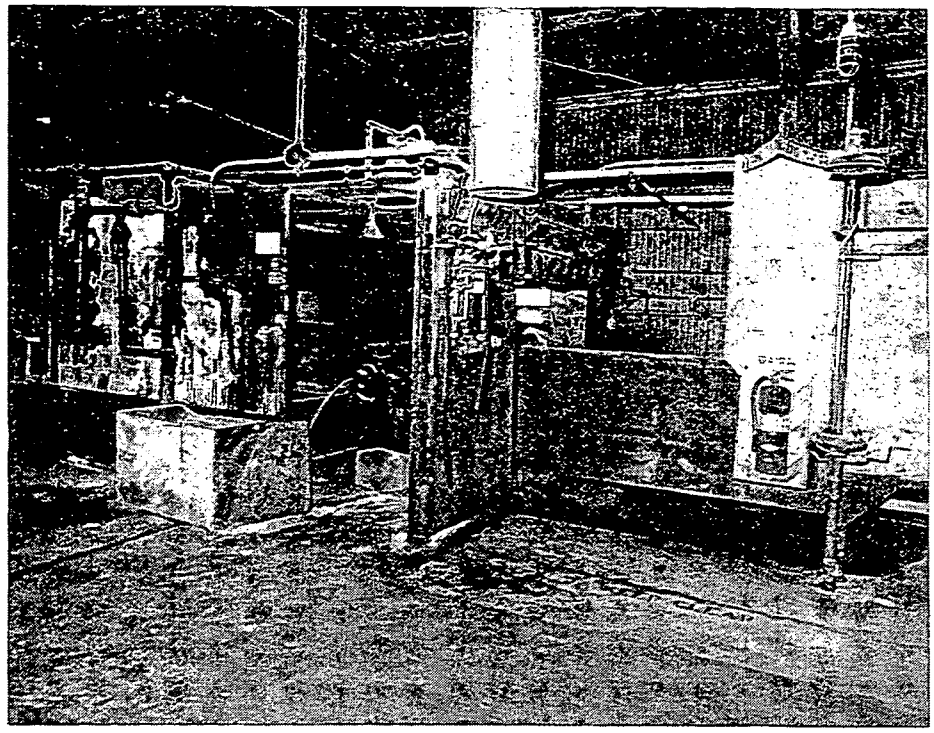

FIGURE E-23 Building 66 - Wheelabrator Platform, West Wall

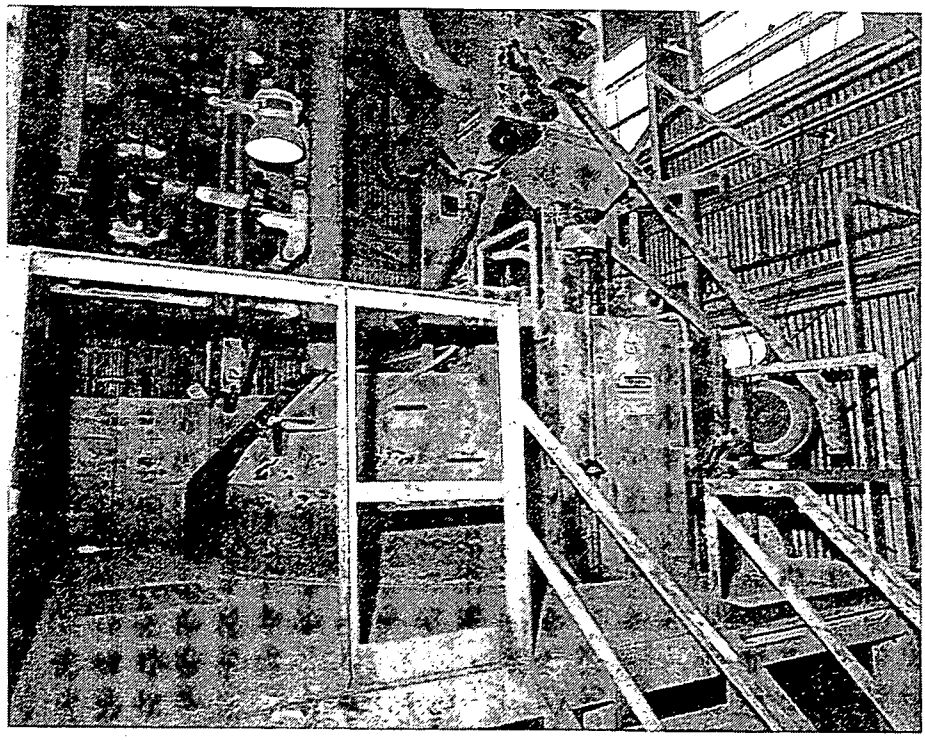

FIGURE E-24 Building 66 - Bake Oven, SW Corner

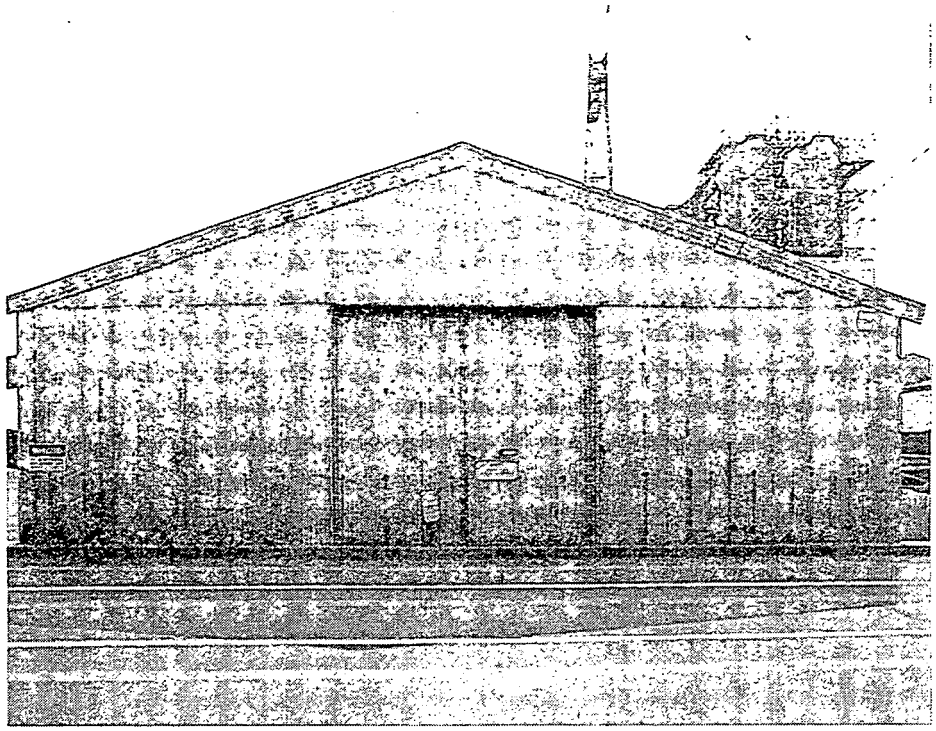

FIGURE E-25 West Exterior View of Building 67

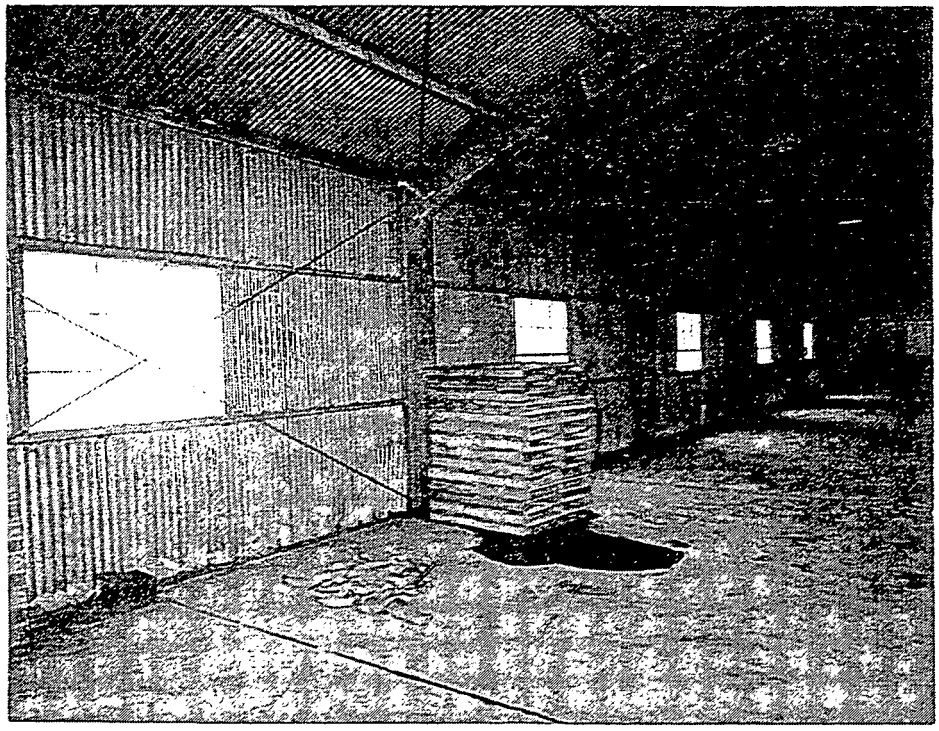

FIGURE E-26 Building 67 - Interior, Facing East

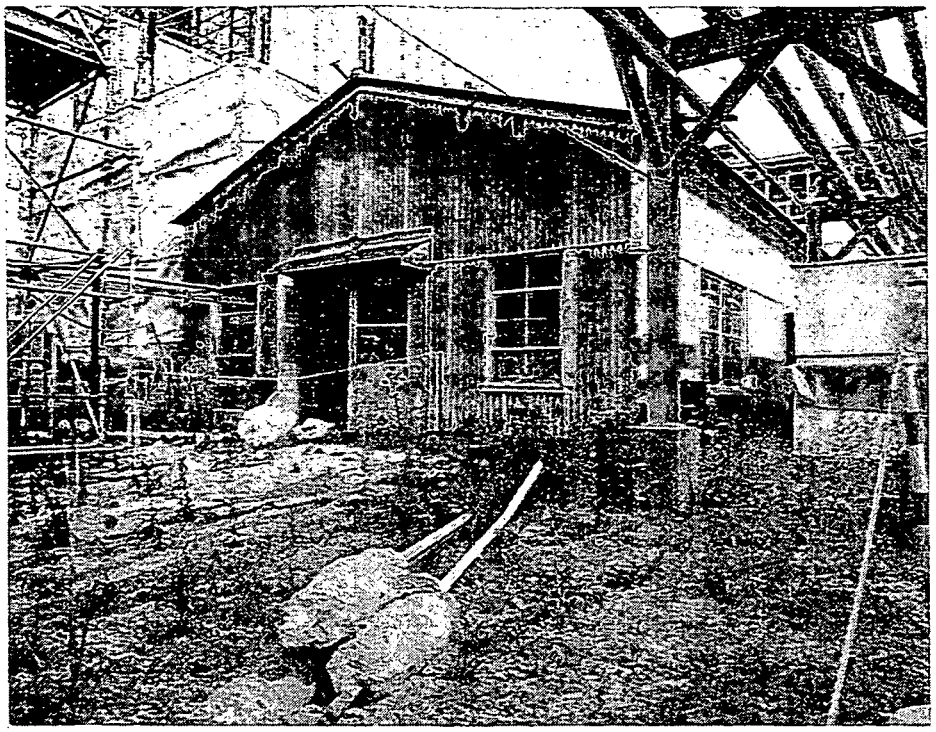

FIGURE E-27 South Exterior View of Building 72
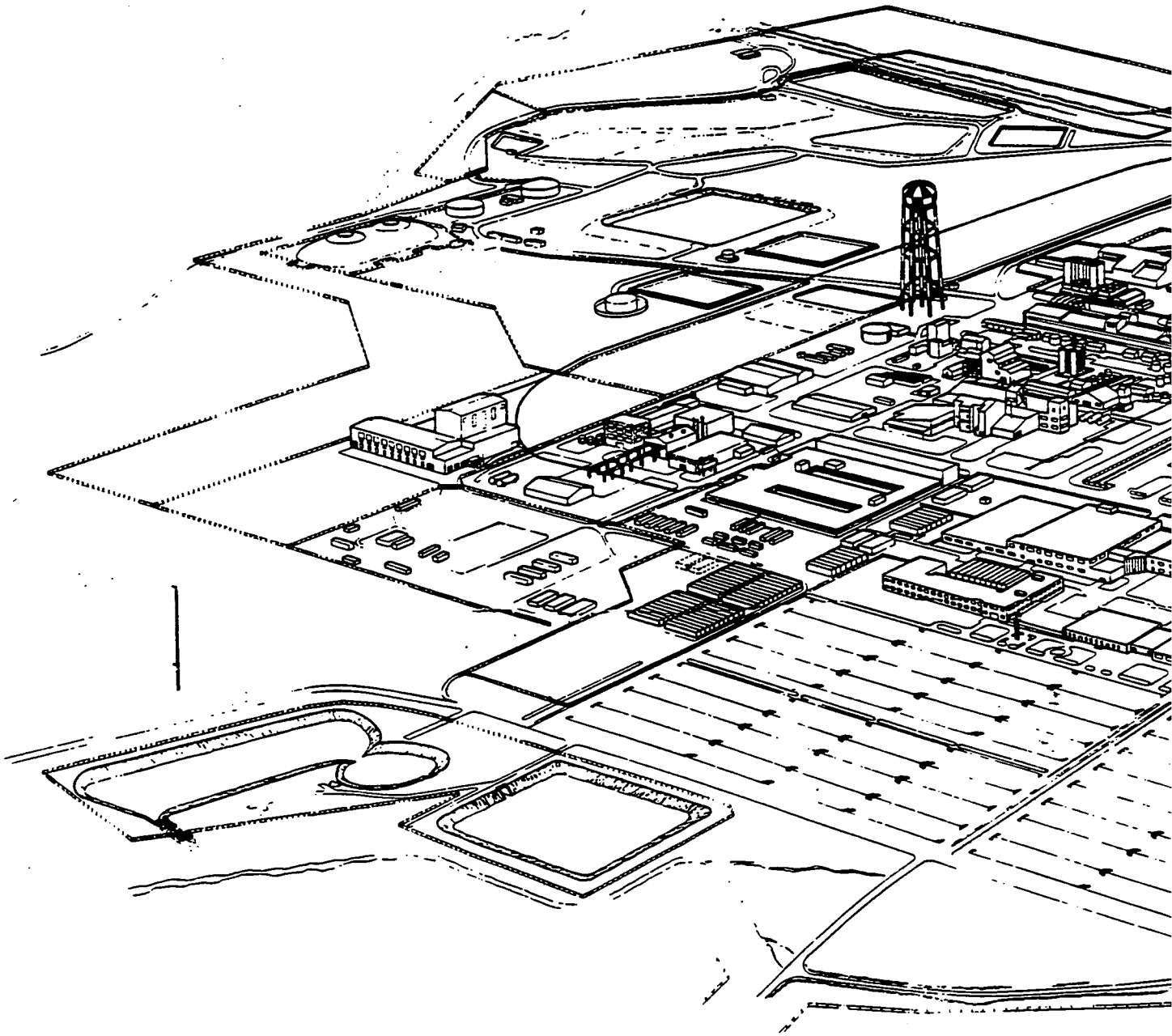
FIGURE E-28 Building 72 - Interior, Facing South