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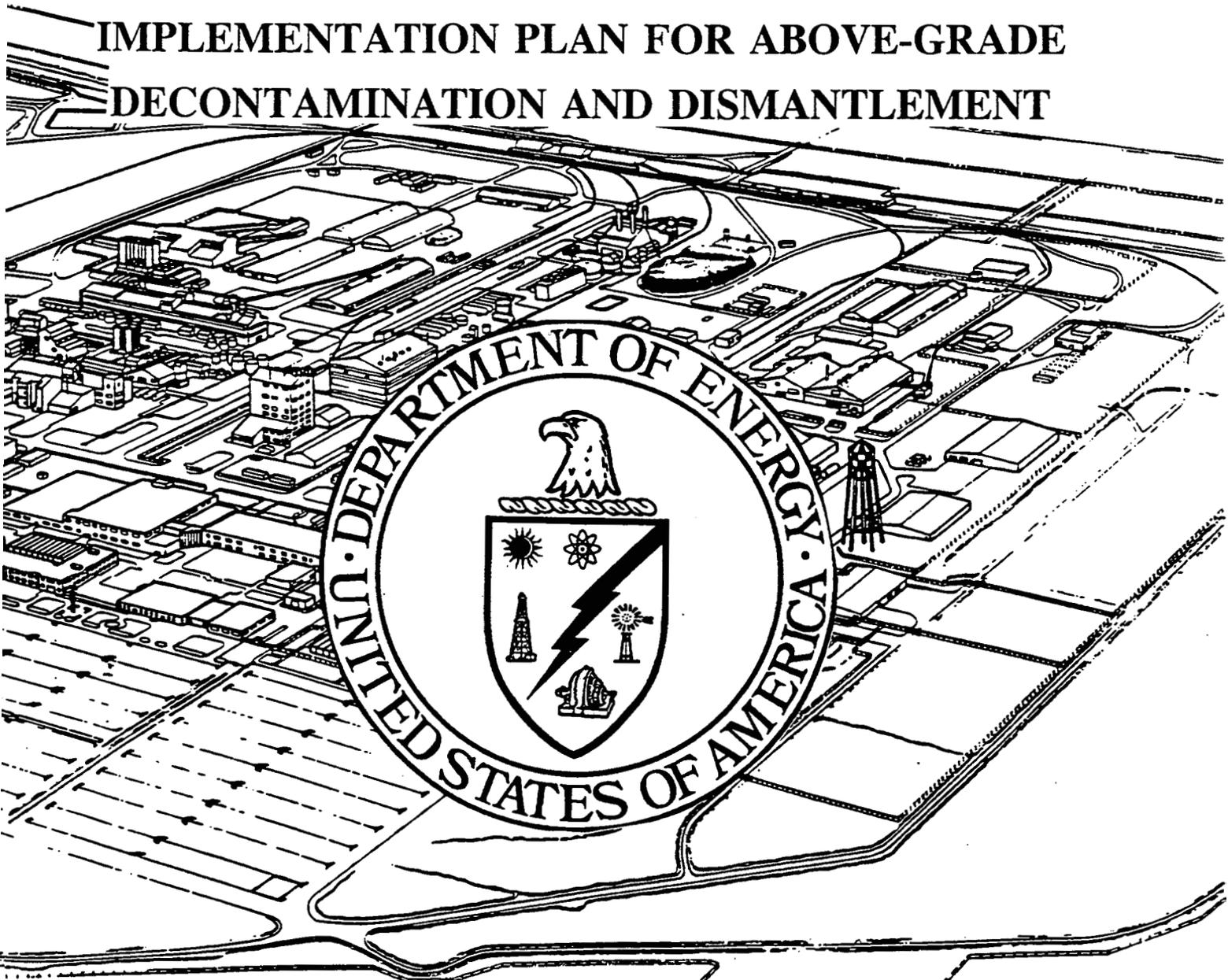
**OPERABLE UNIT 3 BOILER PLANT/WATER PLANT COMPLEX
IMPLEMENTATION PLAN FOR ABOVE-GRADE DECONTAMINATION AND
DISMANTLEMENT - DECEMBER 1996 - DRAFT FINAL (REV B)**

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DOE-FEMP
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REPORT

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**BOILER PLANT/WATER PLANT COMPLEX
IMPLEMENTATION PLAN FOR ABOVE-GRADE
DECONTAMINATION AND DISMANTLEMENT**



DECEMBER 1996

**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO**

**U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE**

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DRAFT FINAL

DOCUMENT CONTROL NO. 2503-WP-0025 (Rev. B)

**OPERABLE UNIT 3
INTERIM REMEDIAL ACTION**

**BOILER PLANT/WATER PLANT COMPLEX
IMPLEMENTATION PLAN FOR ABOVE-GRADE
DECONTAMINATION AND DISMANTLEMENT**



DECEMBER 1996

DRAFT FINAL

**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO**

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NOTATION

Abbreviations, Acronyms, and Initials

ACM	asbestos-containing material(s)
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMU	concrete masonry unit
DOE	United States Department of Energy
D&D	decontamination and dismantlement
FEMP	Fernald Environmental Management Project
HEPA	high-efficiency particulate air [filter]
IROD	Record of Decision for Interim Remedial Action
MSCC	Material Segregation and Containerization Criteria
N/A	not applicable
NESHAPs	National Emissions Standards for Hazardous Air Pollutants
NPDES	National Pollutant Discharge Elimination System
NTS	Nevada Test Site
OEPA	Ohio Environmental Protection Agency
OSDF	On-Site Disposal Facility
OU3	Operable Unit 3
PPE	personal protective equipment
PSR	Prioritization and Sequencing Report
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
SOW	statement of work
SWIFTS	Sitewide Waste Information, Forecasting, and Tracking System
TCLP	Toxicity Characteristic Leachate Procedure
U.S. EPA	United States Environmental Protection Agency

Units of Measure

ft	foot (feet)
ft ²	square foot (feet)
ft ³	cubic foot (feet)
mrem/yr	millirem per year
pCi/m ³	picoCurie per cubic meter

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GLOSSARY

Amended water -

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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).

Boiler Plant/Water Plant Complex -

A group of Operable Unit 3 (OU3) components that were included in one remedial design effort for remediation; and includes the following components: Boiler Plant (10A); Boiler Plant Maintenance Building (10B); Wet Salt Storage Bin (10C); Utilities Heavy Equipment Building (10E); Water Plant (20B); Cooling Towers (20C); Railroad Scale House (24A); Railroad Tracks (G-001); Process Trailers (G-006); and Pipe Bridges (G-008).

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 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.

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 container -

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 (ft³) and a burial volume of 1,280 ft³. 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.

Hold-up material -

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. This term is predominantly used when referring to radiological material within 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.

Material -

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

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.

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 ft³.

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, using 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.

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 ft³ and a burial volume of 105 ft³. 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 *Boiler Plant/Water Plant (BP/WP) Complex*¹ project-specific design and field activities planned for decontamination and dismantlement (D&D) of the above-grade portions of ten *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 summarizes the *remedial design* through the pre-final stage and is being submitted to the U.S. Environmental Protection Agency (U.S. EPA) 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 1995a) and the OU3 Remedial Design Prioritization and Sequencing Report (PSR) (DOE 1995b). 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 project-specific D&D activities for the above-grade portions of the BP/WP Complex. The components included in the Complex include:

- Building 10A - Boiler Plant;
- Building 10B - Boiler Plant Maintenance Building;
- Component 10C - Wet Salt Storage Bin;
- Building 10E - Utilities Heavy Equipment Building;
- Building 20B - Water Plant Building;

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

- Component 20C - Cooling Towers;
- Component 24A - Railroad Scale House;
- Component G-001 - Railroad Tracks (related portions);
- Component G-006 - Process Trailers (related portions); and
- Component G-008 - Pipe Bridges.

This implementation plan does not address all of the components within the BP/WP Complex as identified by the OU3 PSR. The OU3 PSR defined the BP/WP Complex as also including the Pump Station and Power Center (Building 20A), the Process Water Storage Tank (Component 20H), and the Coal Pile (Component P-005). The Pump Station and Power Center Building is currently providing power to the Maintenance Building, the Cooling Towers, the Tank Farm, and several office trailers. Building 20A has also been identified as the *remediation subcontractor's* point source for electrical power during dismantlement. Component 20H is currently needed to store water as a backup to the city water source. Therefore, remediation of Components 20A and 20H have been included only as options in the BP/WP remediation subcontractor bid package. If either of the components can be removed from service in time to warrant inclusion into the BP/WP subcontract, an amendment to this implementation plan will be submitted for Agency approval. In the event the options are not exercised, these components will be included in the Maintenance Complex remediation project.

The majority of the Coal Pile was consumed during the last year that the Boiler Plant was in service. The small amount of remaining coal is currently being sold to an off-site vendor and will be removed prior to the initiation of remediation subcontractor field activities. Any residual coal fines will be considered at-grade and will be remediated by the Soil Characterization and Excavation Project.

The PSR defined the Miscellaneous Complex as including components that would be dismantled throughout the OU3 *remedial action* on an available basis. The Process Trailers (G-006), Pipe Bridges (G-008), and Railroad Tracks (G-001), which are in close proximity to the BP/WP Complex and are unoccupied and/or disconnected and available for dismantlement, have been included in this design package.

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 submittal for the Soil Characterization and Excavation Project.

The key elements of the BP/WP D&D project that are addressed in this implementation plan include:

- asbestos abatement/removal;
- above-grade component dismantlement;
- *material* management;
- environmental monitoring;
- proposed sampling;
- project schedule; and
- project management responsibilities.

In accordance with the OU3 Record of Decision for Interim Remedial Action (IROD) (DOE 1994), remediation activities have been planned using a performance-based methodology. The BP/WP 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, included in Appendix B 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. This implementation plan has incorporated into text various key performance requirements stipulated by the specifications using references to specific sections that pertain to a particular remedial activity.

The use of performance specifications in the remedial design requires that the remediation subcontractor 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 an alternate sequence and/or methods be proposed and approved by DOE. Substantive changes in the scope or intent of this plan will require U.S. EPA 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 project completion report prepared following completion of this D&D project.

1.3 Plan Organization

This implementation plan is comprised of five sections and four appendices. Section 1 contains the remedial action project statement, scope of work, an overview of this implementation plan, and a brief description of the BP/WP Complex. Section 2 describes the overall approach to the BP/WP Complex 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, task approach for implementing above-grade remediation. Section 3 presents specific aspects of the remedial tasks for each component contained in the BP/WP Complex. Section 4 presents the schedule for implementing the D&D project. Section 5 describes the project management approach beyond what was described in the OU3 RD/RA Work Plan.

Appendix A contains a summary 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 contains the generic performance specifications developed for OU3 D&D, as applied to the BP/WP Complex D&D project. Appendix C provides drawings that show floor plans and building elevations. Appendix D contains photographs of notable features of, within, or around the buildings to provide an overall perspective of the buildings, associated equipment, and appurtenances.

1.4 Location of the Boiler Plant/Water Plant Complex

Most of the BP/WP Complex is located between 2nd and 3rd Streets, in the north central portion of the former production area, as shown (shaded) in Figure 1-1. Building 24A is depicted in Figure 1-2 due to its remote location from the rest of the complex. Building 24A is located northwest of the complex, directly north of the Third Street Dirt Pile and directly west of the Quonset Huts.

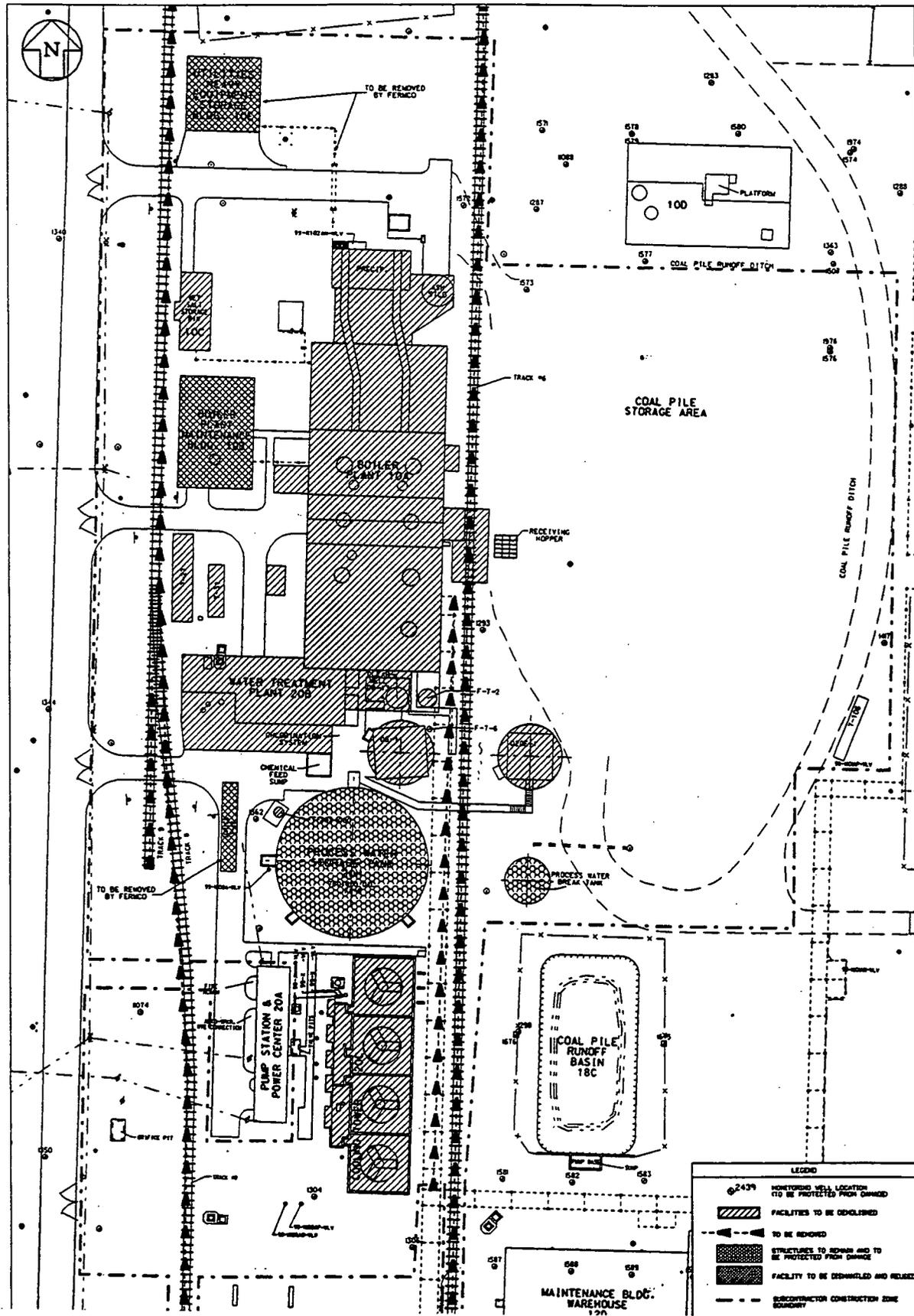


FIGURE 1-1 BP/WP Complex and Construction Area

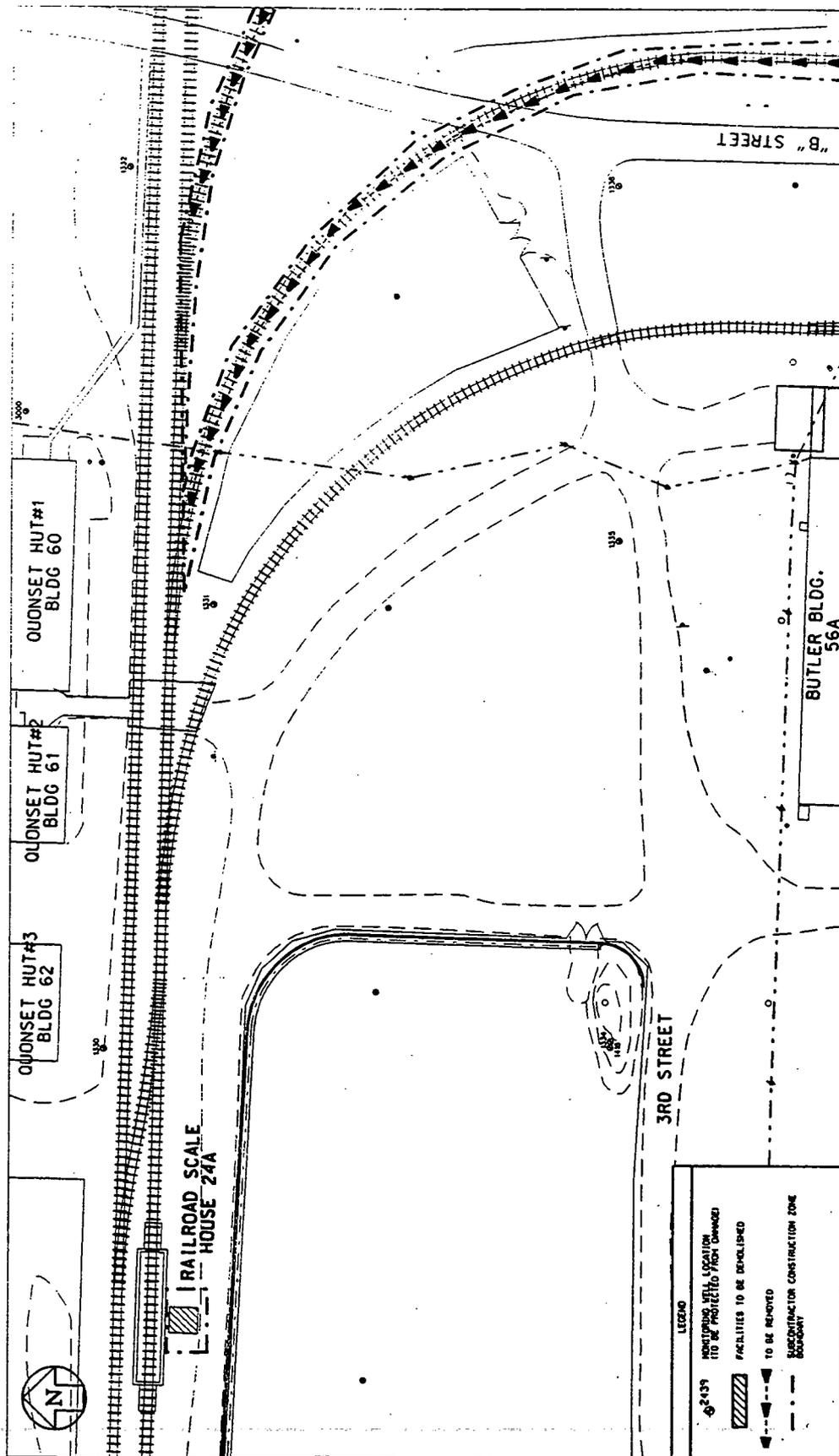


FIGURE 1-2 Building 24A and Construction Area

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2.0 GENERAL PROJECT REMEDIATION APPROACH

The overall approach to the D&D of the BP/WP Complex 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 that determine the sequence for the remediation of components in the BP/WP Complex are the proximity of surrounding structures, physical constraints of the site, and availability of the components. 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.

Since Buildings 10A and 20B are physically connected to one another, are the largest buildings, and are centrally located within the complex, the D&D of these two buildings will likely be initiated first and as one unit. The remaining BP/WP Complex components will be dismantled separately, but likely concurrent with, the Building 10A and 20B activities. It is anticipated that these latter components will be dismantled in the following order: 1) Utilities Heavy Equipment Building (10E); 2) Railroad Scale House (24A); 3) Wet Salt Storage Bin (10C); 4) Trailers (G-006), Pipe Bridges (G-008) and Railroad Tracks (G-001); 5) Cooling Towers (20C); and 6) Boiler Plant Maintenance Building (10B). Also, as discussed in Section 1.2, the Pump Station and Power Center (20A) and/or the Process Water Storage Tank (20H) may be added to the remediation subcontract. The final sequence of remediation will be proposed by the remediation subcontractor, subject to approval by DOE.

2.2 Characterization of the BP/WP Complex

The processes and operations within the BP/WP Complex included the production of steam and water treatment. Section 3 of this plan describes relevant process information to provide a context for component remediation.

Sections 2.2 and 2.3 of the OU3 Remedial Investigation and Feasibility Study (RI/FS) Report (DOE 1996a) details the sampling approach taken for each major medium for each process

area within a component. Based on field radiological and chemical screening and other criteria, not all components within the BP/WP Complex met the requirement for intrusive sampling and therefore, were not sampled. Attachment A.IV of the OU3 RI/FS Report summarizes the contamination found within each component sampled during the OU3 characterization effort.

The components within the BP/WP Complex have some localized low-level radiological contamination. The components show radiological results very near the baseline levels listed in Attachment A.I of the OU3 RI/FS Report. After the results of the initial radiological surveys did not exceed the intrusive sampling criteria, Components 10C, 10E, and 20B were not sampled. Any system that has cooling water or condensate supplied to it will be treated as potentially contaminated based on the surveys.

Radiological contamination surveys of the boilers, condensate system, and cooling water systems in Building 10A were performed to verify contamination levels in these systems. Surveys showed significant levels of fixed radiological contamination within the boilers and deaerator tank. Fixed contamination was found in all of the systems surveyed. Removable contamination was found only in the Building 10A and was predominantly contained within equipment and other closed systems.

In addition to localized radiological contamination, inorganic contamination was found in some components. The highest levels of contamination found in concrete and masonry media was chromium. Two concrete samples from the Boiler Plant exceeded 20 times the Toxicity Characteristic Leachate Procedure (TCLP) level for chromium. However, the leachate rate of chromium in a concrete matrix was demonstrated to be less than four percent (refer to Table A.II-4 in the OU3 RI/FS Report). These characterization samples were collected during the remedial investigation phase of the OU3 final remediation. As noted in the OU3 RI/FS Report, these samples were taken from "hot spots" and were not representative of the actual waste stream, but rather offered a worst case scenario for decision-making purposes. Based on the very conservative nature of the sampling program and the low leach rate of chromium from concrete, the waste stream would be well below the standards to qualify as a RCRA material. Therefore, this concrete will not be handled as a RCRA material.

Based on the information from the OU3 RI/FS Report, paint from painted surfaces within the components of the BP/WP Complex was screened for lead using a portable X-ray fluorescence analyzer. Fifty-five samples were taken from surfaces in the Boiler Plant (10A) and 12 samples were taken from surfaces in the Water Plant (20B). The results of the XRF survey indicate that the majority of the equipment and structures in these two buildings have been painted with lead-based paint. As a result, all painted surfaces will be dismantled and handled as lead-based to aid in controlling worker lead exposures. For example, in order to minimize airborne lead exposure to workers, the D&D performance specifications require that at least an 8-inch wide band of paint must be removed prior to torch cutting. Although lead-based paint has associated health concerns, equipment and steel with lead-base paint do not exhibit the toxicity characteristic under RCRA. Therefore, these painted materials are not considered to be RCRA materials (refer to Section 2.6.2 of Attachment A.III, Appendix A of the OU3 RI/FS Report).

Vendor literature indicates asbestos-containing materials (ACM) are present inside the boilers. Therefore, samples were collected from the refractory materials inside the boiler to verify the presence of asbestos. Although this data indicated that the materials sampled were not ACM, not all types of insulating material (i.e., felt blanket, shiptile, and block insulation) within the boilers could be sampled due to limited access. Due to the physical proximity of the vendor-identified ACM to the sampled material, all insulating media within the boilers will be managed as ACM unless demonstrated otherwise.

The above-referenced radiological survey data provide alpha removable, beta-gamma removable, and total beta-gamma radiological information. These data have been used in support of the following BP/WP Complex D&D 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 remediation subcontractor's understanding of expected contamination levels; 1
- determining personnel monitoring requirements; 2
- determining the need for project-specific radiological ambient air monitors; 4
- identifying radiological contamination areas to determine if decontamination and/or removal prior to the subcontractor activities is required; and 6
- determining disposition options for various primary and secondary material streams generated by the project activities. 9

2.3 Materials Management 11

The material management strategies developed for this project are outlined in this section. 12
These management strategies are based on Section 3.4 of the OU3 RD/RA Work Plan. 13

The BP/WP Complex was not involved with the processing or storage of radioactive materials. 14
It is anticipated that project-specific radiological surveys and air monitoring will verify that the 15
structures contain insignificant levels of radiological contamination and, therefore, would not 16
warrant washing of the interior building surfaces and equipment. 17

Remediation subcontractor requirements for managing material are specified in Section 01120 18
(Debris/Waste Handling Criteria) of the performance specifications and in the project-specific 19
Waste Management Plan. The Waste Management Plan which gives the remediation 20
subcontractor a general overview of waste handling criteria applicable to this project. This 21
plan addresses waste minimization through a number of requirements and references to 22
provisions of the D&D performance specifications. For example, the plan stipulates that the 23
remediation subcontractor will, whenever possible, dismantle lead flashing in a manner that 24
will facilitate recycling (i.e., maximize straight lengths and minimize inaccessible surfaces). 25

Based on the requirements specified in 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 into the construction zone (Section 01120). The remediation subcontractor will also be directed (Section 05126) to maximize straight lengths and minimize inaccessible surfaces of structural steel during dismantling activities, and to segregate the dismantled steel accordingly. This requirement will enhance the feasibility of unrestricted release recycling of the steel members or make eventual placement of the steel in the On-Site Disposal Facility (OSDF) more efficient.

2.3.1 Primary Materials Management

Primary materials, including dismantlement debris and other bulk waste materials from the BP/WP Complex components, will be managed in accordance with decisions made in the OU3 IROD, OU3 RD/RA Work Plan, Removal Action 17 Work Plan (DOE 1996b), the Waste Management Plan, and the requirements specified in Section 01120 of the performance specifications. Upon approval of implementation strategies for actions authorized under the OU3 Record of Decision (ROD) for Final Remedial Action (DOE 1996c), material management (i.e., treatment, storage, and disposal) provisions contained in the OU3 Integrated RD/RA Work Plan documentation will supersede those referenced here. Sections 2.3.3 and 2.3.4 below describe key aspects of the current material management strategy.

Existing *process knowledge*, radiological survey data, data from the OU3 RI/FS, and supplemental field surveying data are the main sources of information used to determine the primary material management requirements. Where data are insufficient, additional sampling may be performed to characterize materials to establish or to verify if materials meet the requirements for interim storage or anticipated disposition. Appendix A of this implementation plan summarizes proposed 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 wastewaters. In the event wastewater is generated at the project site (e.g., dust suppression), water will be collected in the Coal Tunnel Sump located in the basement of Building 10A, then transferred to the Coal Pile Runoff Basin and managed through the FEMP Waste Water Treatment System, in accordance with the FEMP National Pollutant Discharge Elimination System (NPDES) permit.

2.3.3 Estimates of Material Volumes

Volume and weight estimates associated with this project were initially provided in multiple OU3 documents (e.g., OU3 PSR, OU3 RI/FS Report, RvA 17 Work Plan, etc.). These initial estimates of the BP/WP Complex have been refined based on comprehensive field inspections during project planning and data obtained during previous and on-going D&D projects. These refined volume and weight estimates are presented in Tables 2-1 and 2-2, respectively.

Materials to be generated during this project have been categorized according to the same classification system identified in Table 4-2 of the OU3 ROD for Final Remedial Action. Container types were identified for D&D materials according to current OU3 RI/FS and RvA 17 strategies. RvA 17 updated the material segregation and containerization criteria (MSCC) document that was presented in Appendix A of the OU3 RD/RA Work Plan. The requirements of the updated MSCC, as it pertains to this project, have been applied to Table 2-1. 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 regulated ACM or miscellaneous materials, depending on the activity undertaken when these materials will be generated.

Although both unbulked and bulked volume estimates are listed in Table 2-1, 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

TABLE 2-1 Unbulked and Bulked Material Volume Estimates (ft³)

Component	Accessible Metals	Inaccessible Metals	Process-Related Metals	Painted Light-Gauge Metals	Concrete	Non-Regulated ACM	Regulated ACM ⁽¹⁾	Misc. Materials ⁽²⁾	Component/Complex Totals
Unbulked Volumes:									
10A	1,800	42,564	0	148	4,886	4,847	14,192	2,759	71,196
10B	41	114	0	20	580	0	0	109	864
10C	7	20	0	0	598	0	9	74	708
10E	12	66	0	13	0	0	0	232	323
20B	224	4,856	0	23	328	164	236	1,214	7,045
20C	23	1,823	0	268	0	434	80	4,925	7,553
24A	0	2	0	0	360	0	1	60	423
Misc. ⁽³⁾	200	750	0	10	20	0	0	2,350	3,330
Unbulked Total	2,307	50,195	0	482	6,772	5,445	14,518	11,723	91,442
Bulked Volumes:									
10A	30,059	85,128	0	296	6,351	5,817	34,032	5,519	167,202
10B	687	228	0	40	754	0	0	219	1,988
10C	120	40	0	0	778	0	36	148	1,122
10E	204	132	0	26	0	0	0	464	826
20B	3,378	9,712	0	46	426	187	944	2,428	17,131
20C	380	3,646	0	537	0	521	320	9,850	15,254
24A	0	4	0	0	468	0	4	120	596
Misc. ⁽³⁾	600	1,500	0	20	26	0	0	4,700	6,846
Bulked Total	35,428	100,450	0	965	8,803	6,535	35,336	23,448	210,965

Container/Quantity ⁽⁴⁾	None	Stockpile	On-Property	On-Property	None	Stockpile	On-Property	On-Property	ISO ⁽⁵⁾ /36	ISO	ROB ⁽⁶⁾ /29
Interim Storage Configuration ⁽⁷⁾	None	Stockpile	On-Property	On-Property	None	Stockpile	On-Property	On-Property	ISO	ISO	ROB
Disposition	None	Stockpile	On-Property	On-Property	None	Stockpile	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.
 (3) Miscellaneous includes above-grade utilities, trailers, railroad tracks, and other related structures/facilities.
 (4) ISO: (or End-Loading Container) 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.
 (5) Container is volume restricted.
 (6) Transite will be handled separately from other Non-Regulated ACM. Transite will be band-wrapped, stacked on pallets, and stored in a stockpile configuration.
 (7) Currently, the preferred location for interim storage of containerized and stockpiled materials is the Plant 1 Storage Pad.

TABLE 2-2 Material Weight Estimates (tons)

Component	Accessible Metals	Inaccessible Metals	Process-Related Metals	Painted Light-Gauge Metals	Concrete	Non-Regulated ACM	Regulated ACM	Misc. Materials	Component/Complex Totals
10A	440	672	0	10	255	301	16.6	45	1,739
10B	10	8	0	3	16	0	0	1	39
10C	2	1	0	0	45	0	0.1	0.2	48
10E	3	3	0	2	0	0	0	1	9
20B	55	222	0	4	25	9	1.3	17	332
20C	5	28	0	5.3	0	24	0.5	73	136
24A	0	1	0	0	10	0	0.1	1	12
Miscellaneous ⁽¹⁾	74	87	0	1.5	1	0	0	16	180
Complex Total	589	1,022	0	25.8	352	335	18.6	154	2,496

(1) Miscellaneous includes above-grade utilities, trailers, railroad tracks, and other related structures/facilities.

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stockpiles that can be expected. Note that Buildings 10B and 10E are planned for relocation and reuse; therefore, their respective material volumes are not anticipated to affect container or storage needs for this project. Each type of material listed in Table 2-1 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), Building 4A D&D, and from construction 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 RI/FS Categories and other refinements.

The estimates for material tonnage in Table 2-2 were calculated by multiplying material densities (available from construction standards) with unbulked volume estimates. 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 ROD for Final Remedial Action and RvA 17 Work Plan. Material/container combinations, being either weight or volume restricted, are used to calculate the number of containers required. The refined material volume and weight estimates are also contained in 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 are applied.

2.3.4 Material Handling and Staging

Pursuant to Section 01120 of the performance specifications, material generated from the D&D of the BP/WP Complex will be size-reduced, segregated, and containerized (if necessary). It is anticipated that some larger pieces of debris (e.g., vessels, compressors, generators, etc.) may require special handling to accommodate potential disposition options and/or health and safety issues. Filled containers will 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 ROD for Final Remedial Action.

Pursuant to 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.

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 waste acceptance criteria.

In addition, all generated, removed hazardous waste will be taken once a day either to a satellite accumulation area or a 90-day RCRA storage area. 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 shipment (e.g., recycling/reuse) will be delivered to an on-property packaging/*staging area* for sampling (if necessary), container inspection, and sealing. Material destined for on-site temporary storage will be delivered directly to the designated *interim storage area*.

2.3.5 Interim Storage and Disposition

The RvA 17 Work Plan has identified the Plant 1 Storage Pad, other existing storage pads, and/or slabs of dismantled buildings as allowable interim storage locations until such time as the OSDF is functional and begins accepting OU3 debris. Currently, the Plant 1 Storage Pad is the preferred location for interim storage, for both stockpiling and container storage, of all materials from the BP/WP Complex D&D project that have been designated for on-site disposal; however, other comparable storage locations with appropriate *engineering controls* may be used. The Plant 1 Storage Pad is identified in a plate map contained in Volume 1 of the OU3 RD/RA Work Plan as three distinct but connected areas occupied by component identifier 74T. Since the BP/WP Complex is located inside the radiologically controlled area, all of the material is considered to be radiologically contaminated until proven otherwise using

DOE Order 5400.5 free-release standards. The FEMP will take the necessary measures to track and segregate this material to facilitate any potential for free release, recycling, or reuse. For example, Accessible Metals (structural steel) from the BP/WP Complex will not be commingled with metals from other D&D projects while in interim storage in case the decision to recycle or reuse the metal ultimately results from implementing the OU3 final remedial action in accordance with the OU3 Integrated RD/RA Work Plan, once approved.

Upon implementation of the OU3 final remedial action, disposition of materials would occur according to requirements specified in the OU3 Integrated RD/RA Work Plan, once approved. 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 addresses groundwater and surface water monitoring (Sections 3.7.1 and 3.7.2, respectively) that will be performed in support of the BP/WP Complex remediation project. Environmental air quality monitoring during the BP/WP Complex D&D project will rely on the current site-wide monitoring program as discussed in Section 3.7.3 of the OU3 RD/RA Work Plan. Figure 2-1 illustrates the locations of these monitors.

Based on the factors listed in Section 3.7.3 of the OU3 RD/RA Work Plan, air emission computer modeling was performed to determine the potential dose impact from atmospheric emissions that could occur during remediation. The results of that modeling effort indicate levels of radiological emission will not exceed the 0.1 mrem per year threshold at the project boundary and, therefore, would not require continuous emission monitoring. As a point of reference, Subpart H of the National Emissions Standards for Hazardous Air Pollutants (NESHAPs) identifies an allowable off-site maximum exposure from radiological emissions at 10 mrem/year.

Supplemental radiological monitoring for air emissions will not be required for the D&D of this complex based on:

- current radiological survey data, which indicate that the only measurable concentrations of removable contamination within the BP/WP Complex

AMS Locations

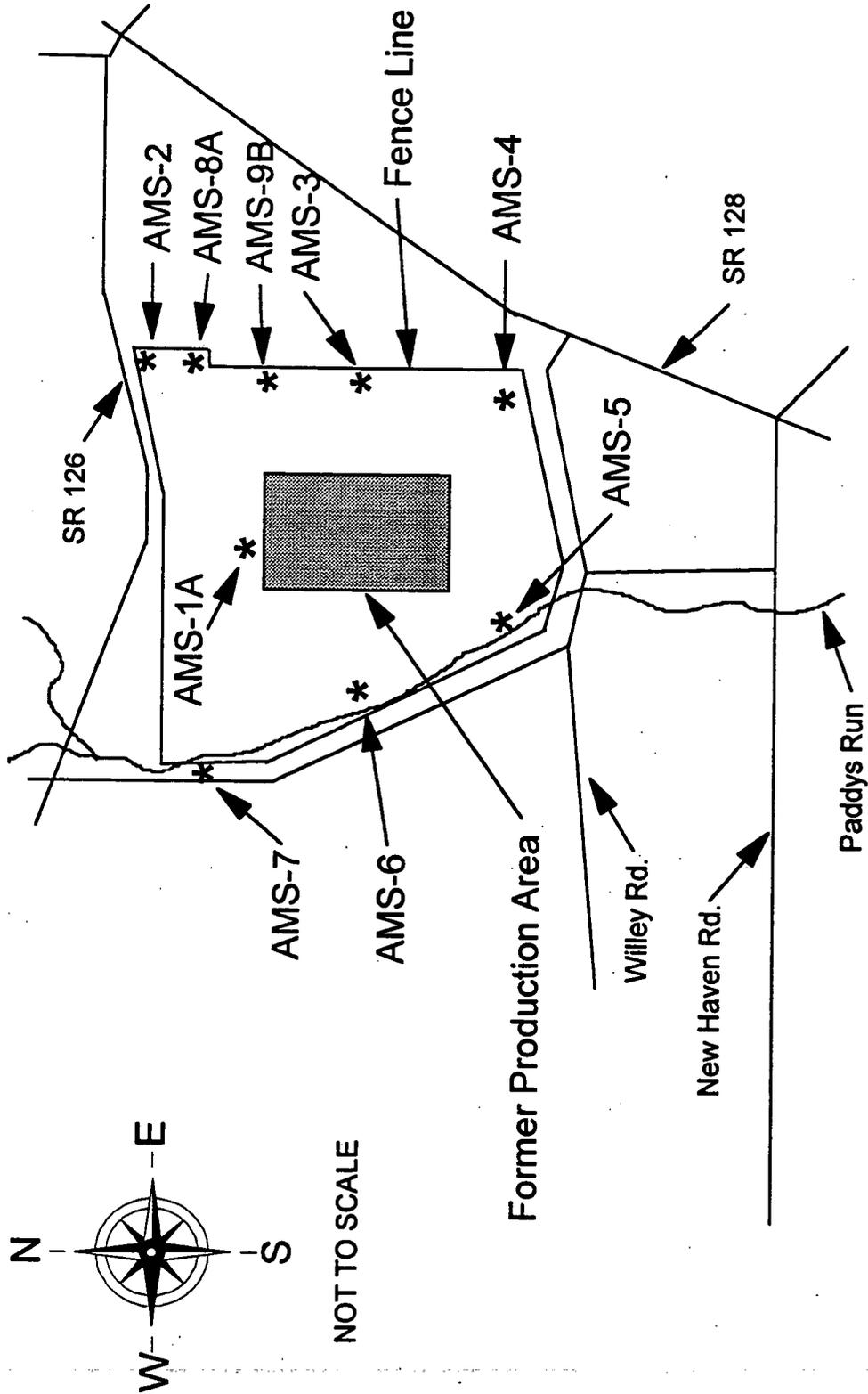


FIGURE 2-1 Fenceline Air Monitoring Locations at the FEMP

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is found within the Boiler Plant (10A) and is generally contained within closed equipment and systems;

- Radiological Environmental Monitoring engineering calculations and process knowledge, which indicate that natural uranium is trapped or fixed inside very few of the BP/WP Complex systems; and
- the U.S. EPA CAP88 computer modeling indicates that the emissions from the D&D of the Boiler Plant would be 0.002 mrem/year, significantly less than the 0.1 mrem/year monitoring and notification criteria for the D&D of the BP/WP Complex.

Given the low dose magnitudes, a project-specific air monitoring network is not necessary. Results for airborne uranium contamination during those projects have been approximately five percent of the DOE maximum off-site guidelines of 0.1 pCi/m³. 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/m³ of natural 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. Mitigative measures that might be employed in the event of exceedance of the set criterion would include an increase in engineering and administrative controls during a particular task that has been identified as the cause or probable cause of the elevated radiological levels. Such controls could include negative pressure within an enclosed work area using additional high-efficiency particulate air (HEPA) filtration units or additional surface cleaning (wash) steps before removing material from the model.

2.5 Remediation Activities

A general approach to the above-grade D&D of the BP/WP Complex is described in the following subsections. Section 3 elaborates on this discussion by identifying component-specific interests concerning the remedial tasks. The tasks are as follows:

- Task I - Preparatory Action - Inventory Removal;
- Task II - Preparatory Action - Facility Shutdown;

- Task III - Hazardous Waste Management Units; 1
- Task IV - Asbestos Removal; 2
- Task V - *Surface Decontamination*; and 3
- Task VI - Above-Grade Dismantlement. 4

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. In addition, some of the tasks may not be applicable to one or more of the components.

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. The remediation subcontractor will mobilize in preparation for the D&D activities by establishing a break room, clean room, shower facilities, material handling and containerization area, access and egress roadways to and from the job site, and the construction zone boundaries. The proposed construction zone boundaries that were delineated in the project design are depicted in Figures 1-1 and 1-2. The remediation subcontractor will also deliver equipment, materials, and office and storage trailers to the site as necessary to perform remediation activities. 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 (required by Section 01515). Other plans are required for controlling fugitive emissions (performance specifications 03315 and 15067) and storm water run-off protection and erosion control (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)

Since none of the structures within the BP/WP Complex were used to store radioactive materials, no product inventories are present in the BP/WP Complex components. Therefore, future references and discussions of Task I are omitted in this implementation plan.

2.5.2 Preparatory Action: Facility Shutdown (Task II)

Facility shutdown activities are currently being performed for components contained within the BP/WP Complex by FEMP personnel. Facility shutdown consists of:

- utility reduction/alterations;
- dismantling and relocating salvageable and reusable equipment;
- removing contents of equipment, tanks, and sumps;
- general housekeeping; and
- relocating personnel.

Since the BP/WP Complex was not directly involved with the uranium processing and the complex was not used as a warehouse to store radioactive materials, no process hold-up materials are to be removed during facility shutdown. Non-process residuals are to be removed by FEMP Facilities Shutdown personnel or the remediation subcontractor.

The BP/WP Complex is subject to a general facility review 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 will be inspected to ensure any previously undetected material is located, quantified, and removed. Inspection techniques included visual inspection or non-destructive analysis.

A general cleaning operation will be performed to remove dust and loose debris from easily accessible building surfaces, walls, and floors. The purpose of this activity will be to remove loose chemical contamination held within the dust, thereby reducing the potential personnel exposure during aggressive remediation activities.

All steam, potable water, electrical, fire protection systems, compressed air, communication systems, and radiation detection alarms will be 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 will be re-routed and activated as required. In addition, residuals and sludges from tanks and sumps will be removed by Facilities Shutdown personnel prior to turnover to the remediation subcontractor.

2.5.3 Hazardous Waste Management Units (Task III)

No hazardous waste management units were located within the BP/WP Complex. Therefore, future references and discussions of Task III are omitted.

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 on pipes and equipment. The requirements for ACM removal are based on RvA 26 procedures and are specified in Section 01516 of the performance specifications and are summarized in this section.

The FEMP preferred method for removing ACM on smaller 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 or releasing internal radiological contamination. The preferred method for cutting the pipe includes using reciprocating saws, portable band saws, or mechanical shears. This method may require the use of secondary containment and the use of air cleaning units.

By erecting 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)

The practice of washing down all of the equipment and the structure, prior to removing equipment from the building and prior to opening of the structure to the environment was required in previous D&D activities. This was required to reduce the surface radiological contamination to a level that would: 1) prevent the maximum exposed individual at the site boundary from exceeding any exposure limit; 2) protect worker safety from radiological contamination; and 3) prevent environmental releases during D&D and interim storage of debris. Radiological contamination surveys taken of the BP/WP Complex have shown that contamination exists inside the boiler water/steam piping and tanks, condensate and feed piping, and in the air systems. The majority of this contamination is fixed radiological contamination on the interior of the piping and equipment. At this time, no removable contamination found has been on the exterior surfaces of structural materials or equipment.

Contamination surveys will be ongoing during the D&D activities within the BP/WP Complex. If warranted, washing of components may be implemented as needed. In addition, based on existing radiological contamination surveys and/or RI data, it is anticipated that the following buildings do not contain radiological contamination: Boiler Plant Maintenance Building (10B); Wet Salt Storage Bin (10C); Utilities Heavy Equipment Building (10E); and Process Trailers (G-006). Future references and discussions of Task V are omitted in this implementation plan.

2.5.6 Above-Grade Dismantlement (Task VI)

Above-grade dismantlement of the BP/WP Complex will generally follow the order of subtasks listed below:

- 1) bulk removal operations, including radiologically contaminated piping and equipment (Section 15066 of performance specifications);
- 2) removal of non-contaminated interior and exterior equipment (Section 15065), although some equipment may remain until removal in conjunction with #5 below;
- 3) interior transite panel removal (Section 07415);

4) exterior transite removal (Section 07415);

5) structural steel removal (Section 05126); and

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

Other activities that support this remedial task include lifting and rigging (Section 14955), and ventilation and containment (Section 15067).

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. Depending on their size, all piping, valves, electrical components, conduit, wire, cable trays, *construction debris*, and heating, ventilation, and air conditioning systems may remain in place during demolition or removed and reduced in size.

Methods such as reciprocating saws, portable band saws, and mechanical shears are the preferred methods for bulk removal. Methods that might volatilize paint and contaminants can be used, provided that additional safety and health requirements for worker protection are met, such as abrasive sanding or scaling of paint (minimum of 8" wide) prior to torch cutting to reduce volatilization of paint. 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. Note that removable contamination has only been detected in the Boiler Plant (10A) and is predominantly contained within equipment.

Equipment Removal

Equipment within the BP/WP Complex has been identified and classified based on 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 Section 15065). 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.

Interior 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 removed. Prior to any fixation, Section 07415 of the performance specifications requires the remediation subcontractor to demonstrate the proposed method to be utilized. After the screw is removed, 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.

Batt insulation found between interior and exterior layers of transite will be removed and bagged. As the insulation is removed, a radiological survey will be performed on the newly exposed surfaces, as appropriate. 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.

Exterior Transite Panel Removal

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. Prior to removing the transite panels, 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 removed. As with interior transite, prior to applying fixative, 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.

Exterior Metal Panel Removal

Screw guns are the preferred method for removing metal panels. Optional methods of drilling out the fastener or prying the fastener out may 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, as appropriate. 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 (e.g., windows and frames, gutters, down spouts, etc.) will be removed.

Lead-based paint will be removed using abrasive sanding or scaling of paint in an area sufficiently wide prior to torch cutting to reduce volatilization of the paint.

Tripping techniques utilizing mechanical or explosive methods 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. Contamination surveys taken of the BP/WP Complex have shown that contamination exists on the water/steam side of the boiler, condensate and feed piping, and in the air systems. The majority of this contamination is fixed contamination on the interior of the piping and equipment. Also, removable contamination has only been detected in the Boiler Plant and has predominantly been contained within equipment and other closed systems.

The remediation subcontractor will be required, pursuant to 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 BP/WP Complex are currently specified in the performance specifications under Section 01120 and Section 05126. Although a recycling contract does not yet exist for the materials to be generated from this project, potentially recyclable materials will be handled in a manner compatible with recycling until final disposition decisions can be made for these materials. It should be emphasized that recycling of materials may still be employed at a later phase in the project. In the event that recycling is identified as the preferred disposition alternative for BP/WP accessible metals, material dismantlement and sizing requirements within the subcontract would be modified accordingly to ensure that materials are properly prepared for recycling.

If controlled explosive methods are used, 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; 1
- methods and materials to control fugitive emissions; 4
- contingency plan for detonation failure; and 5
- evidence of previous work experience using controlled explosives to take down multi-story structures near other structures within the last five years. 6

If controlled explosive methods are used, Section 03315 of the performance specification requires that the remediation subcontractor take several precautions to control fugitive emissions, including, but not limited to, the following: 9

- 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 12
- 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. 16

Section 05126 provides direction to the remediation subcontractor in several other ways relative to the dismantlement of structural steel. The subcontractor's responsibility for avoiding damage to adjacent structures, material, and equipment during dismantlement activities is emphasized. Lead-based paint chips and debris, released during structural steel dismantlement, shall be collected and managed in accordance with Section 01120. 21

CMU Secondary Containment and Pier Removal

Concrete Masonry Unit (CMU) walls shall be removed using non-explosive methods. 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 foundations of the structures will remain in place until dismantled and excavated by the Soil Characterization and Excavation Project. Section 01515 of the performance specification addresses requirements relative to the preparation of the base slab during demobilization. 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.

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3.0 COMPONENT-SPECIFIC REMEDIATION

This section describes component-specific remediation tasks identified for the BP/WP Complex D&D project. Background information on components presented in this section was obtained primarily from the OU3 RI/FS Work Plan Addendum (DOE 1993) and the OU3 RI/FS Report. Information regarding the remediation approach was obtained from the remediation subcontract Statement of Work (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.

As stated in Section 2.5, Inventory Removal (Task I), Hazardous Waste Management Units (Task III), and Surface Decontamination (Task V) were reviewed and determined not to be relevant to this D&D project.

3.1 Building 10A - Boiler Plant

Background

Building 10A is an open area structure constructed with a structural steel frame, transite panels, and a concrete floor, with dimensions of 72 feet by 163 feet and stands five stories high. Building 10A is located directly west of the railroad tracks next to the former Coal Pile location. A railroad car shaker shed, electrostatic precipitators, and fly ash silo are among the ancillary facilities attached to the building. The basement is irregularly shaped 72 feet by 97 feet, and 15 feet deep.

This building provided steam service to the entire FEMP site for heating using four coal-fired boilers, two electrostatic precipitators, and related feed conveyors. Building 10A received water from three sources, including the Water Plant (Component 20B listed below), condensate return to the system (which may present a pipe internal radiological contamination issue), and process water.

Facility Shutdown (Task II)

Building 10A Facility Shutdown activities will consist of utility reduction/alterations, dismantling and relocating salvageable and reusable equipment, removing contents of equipment, tanks, and sumps, general housekeeping, and relocating personnel. The oil will

be drained out of all locked and tagged equipment. Mercury switches and boiler feed chemicals will be removed and dispositioned in accordance with applicable RCRA regulations.

Asbestos Waste Removal (Task IV)

Asbestos work areas will be established within the Boiler Plant (and other components) as appropriate. Most of the ACM is in good condition and has not caused any building areas to be designated as asbestos areas due to the concern for friable asbestos. Establishing asbestos work areas will minimize the amount of area required to be released from asbestos concerns after asbestos removal activities are completed. 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 be removed. Most internally radiologically contaminated piping will be removed during Task IV, since this method requires work to be performed using a glove bag which will minimize the potential for any airborne radiological contamination release.

Above-Grade Dismantlement (Task VI)

Building 10A dismantlement will consist of removing the building contents and structure that are described in the preceding background discussion down to the basement foundation. Some of the larger pieces of equipment may remain in the building through dynamic deconstruction. However, all interior debris and equipment located in the basement and sub-basement will be removed as part of the remediation subcontract and the below-grade concrete (basement) will remain. After the building is down and the debris removed, the basement will be fenced to prevent falls.

3.2 Building 10B - Boiler Plant Maintenance Building

Background

Building 10B is constructed with a poured concrete floor, a structural steel frame and corrugated steel siding and roofing. This building is 40 feet by 60 feet, single level, and 16 feet high. Building 10B is adjacent to the west side of the Boiler Plant. This building was used to provide maintenance for the boiler plant equipment and stored equipment and tools and had a vented basin for solvent cleaning of equipment. This structure was built in 1994 and may be dismantled for reuse at the FEMP or at another DOE facility.

Facility Shutdown (Task II)

Tools and spare parts will be removed to a radiologically-clean lay down area, surveyed, inventoried, and redistributed for reuse at the FEMP.

Asbestos Removal (Task IV)

There is no asbestos identified in this component.

Above-Grade Dismantlement (Task VI)

Building 10B dismantlement will consist of removing the building contents and structure that are described in the preceding background discussion. This building may be systematically dismantled to allow for it to be reused by another remediation project at the FEMP or at another DOE facility. It is anticipated that this building could be used as an asbestos change-out area/office-break area by the remediation subcontractor.

3.3 Component 10C - Wet Salt Storage Bin

Background

The Wet Salt Storage Bin (10C) consists of a 17 feet by 42 feet rectangular concrete tank. Component 10C is located directly north of the Boiler Plant Maintenance Building. The bin was used to store salt solution for regenerating the zeolite water softeners. Sodium chloride was received by truck, dumped into the bin, and dissolved in water.

Facility Shutdown (Task II)

Facility Shutdown activities include the removal of any residual salt solution in the bin.

Asbestos Removal (Task IV)

Asbestos work areas will be established within Component 10C, as appropriate. Most of the ACM is in good condition and has not caused any areas to be designated as friable asbestos areas. The ACM will be removed from areas that have the potential to be disturbed during bulk removal and equipment removal operations. If damaged ACM is encountered during removal activities, then appropriate air sampling will be performed. 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.

Above-Grade Dismantlement (Task VI)

Component 10C dismantlement will consist of removing all equipment and piping associated with the bin. The concrete tank structure will be left in place for removal by the Soil Characterization and Excavation Project.

3.4 Building 10E - Utilities Heavy Equipment Building

Background

The Utilities Heavy Equipment Building (10E) is a single level building constructed of a poured concrete base and floor, a structural steel frame, and corrugated steel siding and roofing, and has dimensions of 40 feet by 40 feet, 16 feet high. Building 10E is located northwest of the Boiler Plant and is used to store equipment for the Boiler Plant. This structure was built in 1994 and will be systemically disassembled for reuse at another FEMP location.

Facility Shutdown (Task II)

Drums of oil left over from maintenance activities will be removed from Building 10E and dispositioned according to FEMP procedures.

Asbestos Removal (Task IV)

There is no asbestos identified in this component.

Above-Grade Dismantlement (Task VI)

Building 10E dismantlement will consist of removing the building contents and structure that are described in the preceding background discussion. This building will be dismantled and reassembled in the vicinity of the AWWT for reuse to support the AWWT operation.

3.5 Building 20B - Water Plant

Background

The Water Plant has a structural steel frame, metal and transite panels, and a concrete floor. The building is a two floor structure with dimensions of 50 feet x 78 feet x 19 feet high. This component includes the clearwell building attached to the east end of the building and the two above-ground lime reactivator tanks. This building treated water extracted from site three using alum and lime to supply the FEMP with drinking and process water. Included in the

building are nine pressurized sand filters, two lime feeders, two alum feeders, and related pumps.

Facility Shutdown (Task II)

Building 20B Facility Shutdown activities will consist of utility reduction/alterations, dismantling and relocating salvageable and reusable equipment, removing contents of equipment, tanks, and sumps, general housekeeping, and relocating personnel. The oil will be drained out of all locked and tagged equipment. Mercury switches and boiler feed chemicals will be removed and dispositioned in accordance with applicable RCRA regulations. A water bypass lines will be installed to close water off from the entire building to prevent the pipes from freezing in the winter.

Asbestos Removal (Task IV)

Most of the asbestos insulation has been removed from Building 20B. For the asbestos that is remaining, asbestos work areas will be established within Building 20B - Water Plant Building, as appropriate. Most of the ACM is in good condition and has not caused any building areas to be designated as friable asbestos areas. Asbestos piping removal will be conducted in a manner to control both the asbestos and loose radiological contamination inside the piping.

Above-Grade Dismantlement (Task VI)

Building 20B dismantlement will consist of removing the building contents and structure that are described in the preceding background discussion.

3.6 Component 20C - Cooling Towers

Background

The Cooling Towers (20C) consist of a 31 feet x 96 feet wooden structure, measuring 42 feet high. The towers provide air cooling of site cooling water using four induced-draft cooling tower assemblies and five electric-driven pumps, one of which is equipped with a steam turbine backup. Deconstruction of this component is not expected until mid FY98, when the new cooling tower unit will be online in the Administrative Area of the facility.

Facility Shutdown (Task II)

Water service to the cooling towers will be shut off and the basin drained. Electrical utilities to the towers will be disconnected.

Asbestos Removal (Task IV)

Asbestos work areas for the piping will be established within the Cooling Towers, as appropriate. Most of the ACM is in good condition and has not caused any surrounding areas to be designated as friable asbestos areas.

Above-Grade Dismantlement (Task VI)

In addition to removing the wooden structure, dismantlement will include removing the four axial flow fans that are described in the preceding background discussion.

3.7 Component 24A - Railroad Scale House

Background

The Railroad Scale House (24A) is a single level building constructed of wood framing, cement block and concrete floors, with dimensions of 13 feet x 14 feet x 9 feet high. Building 24A is located south of the main railroad tracks, which run east/west through the northern part of the site. The Railroad Scale House was used to weigh incoming and outgoing railcars.

Facility Shutdown (Task II)

No facility shutdown is necessary since the Railroad Scale House has not been used since the use of railroad cars for shipments was ended.

Asbestos Removal (Task IV)

There is no asbestos identified in this component.

Above-Grade Dismantlement (Task VI)

Building 24A dismantlement will consist of removing the structure that is described in the preceding background discussion.

3.8 Component G-001 - Railroad Tracks

Background

Within the FEMP boundaries across the central and north central production area are approximately three miles of railroad track and associated hardware. Rail service was provided to the majority of the process area via a connection with CSX Railroad in the northwest quadrant of the FEMP site. The boundary of the D&D railroad track removal includes the two tracks immediately adjacent to the east and west sides of the BP/WP Complex, extending from the southern edge of Building 12A north to the corresponding rail spur at the main tracks coming into the site.

Facility Shutdown (Task II)

This component has no inventory or storage areas.

Asbestos Removal (Task IV)

There is no asbestos identified in this component.

Above-Grade Dismantlement (Task VI)

The steel rails will be removed and managed under the BP/WP Complex Waste Management Plan. The wooden railroad ties will be left in place to be removed with other at- and below-grade materials by the Soil Characterization and Excavation Project.

3.9 Component G-006 - Process Trailers

Background

There are three trailers associated with this complex. All are mobile office trailers approximately 40 feet long. The IONICS trailer is considered salvageable equipment and will be removed from the area by FEMP personnel prior to D&D. The other two trailers are in poor condition and will be dismantled as scrap by the remediation subcontractor during the D&D project.

Facility Shutdown (Task II)

Facility Shutdown activities for the trailers will consist of utility reduction/alterations, dismantling and relocating salvageable and reusable equipment, general housekeeping, and

relocating personnel. The contents of the IONICS trailer will be placed in a safe configuration for movement and reuse to another location. The contents of the other two trailers will be inventoried and dispositioned by FEMP personnel.

Asbestos Removal (Task IV)

There is no asbestos identified in the trailers.

Above-Grade Dismantlement (Task VI)

The IONICS trailer will be removed as salvageable equipment from the area by FEMP personnel. The other two trailers are in poor condition and will be dismantled as scrap by the remediation subcontractor during the D&D project.

3.10 Component G-008 - Pipe Bridges

Background

Pipe Bridges (G-008) are structural steel bridges for support of FEMP steam service and related piping. The pipe bridges associated with this project are located on the east side of Buildings 10A and 20C and run in a north/south direction from Building 10A to the south side of the Main Maintenance Building (12A).

Facility Shutdown (Task II)

This component has no inventory or storage areas.

Asbestos Removal (Task IV)

Asbestos work areas for the piping will be established around the affected areas of the Pipe Bridges, as appropriate. Most of the ACM is in good condition and has not caused any surrounding areas to be designated as asbestos areas due to the concern for friable asbestos.

Above-Grade Dismantlement (Task VI)

After all piping is verified as out of service and after the insulation around all piping remaining on the pipe bridges is verified to be non-ACM, the pipe bridges and associated piping will be dismantled.

4.0 SCHEDULE

This section presents the implementation schedule for the BP/WP Complex remedial action project. Figure 4-1 presents a schedule for implementation of field activities for the BP/WP Complex remediation project. Figure 4-1 displays the primary milestones for this project. Adequate funding of this project is a critical factor in maintaining this schedule.

Although interim reporting will not be provided specifically for this D&D project, DOE will keep the community informed of remedial action schedules and any new findings or significant developments within OUS 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.

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5.0 MANAGEMENT

The implementation of the BP/WP Complex remedial 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 has been highlighted for BP/WP Complex 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 Facility 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., material handling), ensuring that the performance specifications are 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.

The subcontracting strategy calls for a multi-disciplined subcontract team, each with specific remediation tasks. One remediation subcontract will include decontamination and dismantlement of the components included within the BP/WP Complex 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 for re-routing alarm and communication systems.

REFERENCES

	1
U.S. Department of Energy, 1993, <i>Operable Unit 3 Remedial Investigation and Feasibility Study Work Plan Addendum</i> , Final, prepared by Fernald Environmental Restoration Management Corporation, Cincinnati, Ohio.	2 3 4
U.S. Department of Energy, 1994, <i>Operable Unit 3 Record of Decision for Interim Remedial Action</i> , Final, prepared by Fernald Environmental Restoration Management Corporation, Cincinnati, Ohio.	5 6 7
U.S. Department of Energy, 1995a, <i>Operable Unit 3 Remedial Design/Remedial Action Work Plan for Interim Remedial Action</i> , Final, prepared by Fernald Environmental Restoration Management Corporation, Cincinnati, Ohio.	8 9 10
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U.S. Department of Energy, 1996b, <i>Removal Action 17 Work Plan</i> , Final (Revision), prepared by Fernald Environmental Restoration Management Corporation, Cincinnati, Ohio.	17 18
U.S. Department of Energy, 1996c, <i>Operable Unit 3 Record of Decision for Final Remedial Action</i> , Final, prepared by Fernald Environmental Restoration Management Corporation, Cincinnati, Ohio.	19 20 21

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APPENDIX A
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PROPOSED SAMPLING

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APPENDIX A
PROPOSED SAMPLING

The following methodologies were developed based on the data needs identified in the Sampling and Analysis Plan for the OU3 RD/RA Work Plan for the final remedial action. A project-specific summary of the sample types are included in this implementation plan and are based on assumptions outlined below.

Characterization Screening

Screening has been conducted using X-ray Fluorescence (XRF) screening of media for lead-based paint. Screening has been conducted for fixed and removable radioactive contamination using Geiger-Mueller radiological contamination meters.

Asbestos

This category represents samples which were collected to verify the presence of ACM in media and whether the ACM is regulated or non-regulated.

Secondary Waste (Decontamination Water)

Due to the low levels of radionuclide contaminants in the Boiler Plant/Water Plant Complex, sampling of the secondary waste will not be necessary. Sufficient process knowledge exists to allow any secondary waste to be contained and sent to the on-site waste water treatment plant for treatment prior to discharge to the Great Miami River.

Nevada Test Site (NTS) Confirmatory

Since no Category C debris is anticipated to be generated, waste originating from the Boiler Plant/Water Plant Complex will be placed in the OSDF and will not be sent to NTS. Confirmatory sampling will not be required.

Envirocare of Utah

Mixed waste, such as radiologically contaminated lead flashing, originating from the Boiler Plant/Water Plant Complex may be disposed of at an off-site mixed waste disposal facility. If this is necessary, confirmatory sampling will be required to verify whether or not the debris meets the Envirocare waste acceptance criteria.

Asbestos Air Monitoring

Asbestos air sampling will occur over the duration of the asbestos removal activity. Interior and exterior containment perimeter monitoring will be conducted during asbestos removal activities to detect any releases of friable asbestos to protect worker health. Occupational breathing zone air monitor samples will also be utilized during asbestos removal within enclosed areas.

Radiological Air Monitoring

Existing fence line environmental air monitoring stations located around the perimeter of the BP/WP Complex will be sampled weekly by FERMCO personnel during dismantlement operations. Occupational air samplers will be worn by at least twenty-five percent (25%) of the workers in each work group/crew (minimum of 1 worker) when entering a radiological area controlled for contamination or airborne radioactivity. More specific information on radiological worker protection can be found in the Radiation Requirements Plan of the IFB.

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APPENDIX B

PERFORMANCE SPECIFICATIONS

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APPENDIX B
PERFORMANCE SPECIFICATIONS

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This appendix contains the latest version (Rev. 1) of the generic performance specifications for OU3 D&D, amended for specific application to the BP/WP Complex. The specific provisions of the generic performance specifications that do not apply to the Boiler Plant/Water Plant Complex have been marked as redlined text. Section 01518 (Surface Removal of Concrete) is the only generic specification that is not applicable to this project and, therefore, has not been included in this appendix.

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**GENERIC DECONTAMINATION AND DISMANTLEMENT
ENGINEERING PERFORMANCE SPECIFICATIONS**

EFFECTIVE DATE: NOVEMBER 1, 1996

REVISION 1

2503-3076-TS-0002



FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

**FLUOR DANIEL FERNALD
P. O. BOX 538704
CINCINNATI, OH 45253-8704**

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PERFORMANCE SPECIFICATIONS

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SECTION 01010**GENERAL REQUIREMENTS****PART I GENERAL****1.1 SCOPE**

These general requirements form a part of any technical specifications submitted to subcontractor for Decontamination and Dismantling (D&D) services at the Fernald Environmental Management Project (FEMP).

In all cases where the terms "Vendor" or "Seller" or "Manufacturer" or similar terms appear in these specifications or in the appendices to these specifications, they shall be understood to refer to an individual or firm(s) providing materials, equipment or services, as noted, under a contract to Fluor Daniel Fernald.

In all cases where the term "subcontractor" appears in these specifications, it shall be understood to refer to the Construction Contractor or Subcontractor who is performing the D&D services at the FEMP.

In all cases where the words "Owner's Agent" or "Construction Manager" appear, they shall be understood to refer to Fluor Daniel Fernald.

The Subcontractor shall provide written procedures for Fluor Daniel Fernald's review and approval of all tests to be performed as identified in the drawings and specifications. These procedures shall provide the detailed step-by-step operations with sign-off columns and date columns and shall be submitted and approved prior to testing.

The Subcontractor shall not deviate from construction acceptance tests as reviewed and approved by Fluor Daniel Fernald.

All field test instruments shall have been calibrated within 12 months prior to use on this contract or at intervals as recommended by vendor, by a calibration laboratory whose calibration equipment and instruments are fully traceable to National Institute of Standards and Technology (NIST) standards. The Subcontractor shall provide individual certification of calibration and NIST standards traceability for all field test instruments used on this contract.

All work shall be accomplished in accordance with the following code requirements:

- A. Ohio Basic Building Code (OBBC) 1994.
- B. Uniform Building Code (UBC) 1994.
- C. Life Safety Code 101 - 1994.
- D. All other National Fire Protection Association (NFPA) Codes - All inclusive, including 1995 revisions.
- E. 29 CFR 1910 - Occupational Safety and Health Administration - Department of Labor.
- F. 29 CFR 1926 - Occupational Safety and Health Administration (OSHA).

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- G. 40 CFR - United States Environmental Protection Agency (US EPA).
- H. DOE O 441.1 - Radiation Protection for the Public and the Environment, and 10 CFR 835 - Occupational Radiation Protection.

References to specific codes, regulations, standards, or other criteria documents in these specifications are indicated as the latest edition of revision of each document, as of the date when these specifications were prepared. Unless stated otherwise in contract documents, any subsequent editions or revisions of these documents, which may exist at the time these specifications are used by a specific project, shall take precedence over the editions or revisions indicated.

1.2 SITE AND SCOPE

The intent of these specifications is to provide technical direction for work required and necessary to support the Decontamination and Dismantling (D&D) efforts at the FEMP.

The Subcontractor shall provide all labor, services, materials, and equipment and shall do all work necessary to accomplish these tasks within the limits of work as defined in the accepted bid and/or contract.

1.3 SUBMITTALS - SHOP DRAWINGS, SAMPLES AND OTHER DATA

- A. Refer to Part 6, Statement of Work, "Submittals," in the Invitation for Bid/Request for Proposal (IFB/RFP) for submittal requirements. Any submittals not in conformance with these requirements will be returned without review for correction and resubmittal:
 - 1. Submittals for unrelated items shall not be included in the same transmittal, and each separate submittal shall be coordinated and shall include all drawings and data required for these items or system covered.
 - 2. Submittals shall indicate project name; identification by specification division, section, subsection and article under which equipment or material is described; and by name, number and intended use as designated by contract drawings and specifications.
 - 3. When more than one item of equipment is included on a single drawing or catalog cut, each project equipment item must be separately identified thereon, with clear delineation as to which model or catalog number, or performance data applies to each project item.
 - 4. Assemble and submit, in logically arranged folders, all instruction bulletins, diagrams, parts lists, and pamphlets for equipment and apparatus furnished, including vendor's or manufacturer's recommended procedure for lifting, handling, and installing equipment.
 - 5. Submittals for equipment to include manufacturer's model number or catalog number, ratings, size and performance curves and data. Indicate operating point on curves and tabular data for each piece of equipment that curves or data represent.
 - 6. Submit wiring diagrams or connection diagrams for equipment items, accompanied by adequately defined symbols list. Schematic and wiring diagrams must be prepared in accordance with ANSI/IEEE Publication Y32E, "Electrical and Electronics Graphics Symbols"

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and Reference Designations." Individual 8-1/2 by 11-inch elementary and wiring drawings are not acceptable.

7. Indicate all performance data, construction material finishes, and modifications to manufacturer's standard design specified.
 8. Locate termination points for all required external wiring.
 9. Indicate roughing-in, foundation and support point dimensions.
 10. Fluor Daniel Fernald's review of such submittals shall not relieve the Subcontractor from any responsibility for deviations from contract drawings or specifications, unless Fluor Daniel Fernald has in writing called the Subcontractor's attention to such deviations at the time of submission, nor shall it relieve the Subcontractor from responsibility for errors of any sort in the submittals nor from responsibility for the proper fitting and construction of the work.
 11. Submittals will be reviewed with respect to such factors as quality of draftsmanship, legibility, and evidence that the Subcontractor is aware of the necessity and importance of adequately detailing and illustrating special features and conditions relating to the work. If Fluor Daniel Fernald determines that the data submitted, in part or in whole, is not within the purview of the contract, such submittal, or part thereof, will be returned to the Subcontractor unchecked. Compliance with the specifications, adequacy, interferences, etc., will be performed on a spot check basis to establish that the Subcontractor has given such factors careful attention.
 12. Any changes marked on submittals during review will be for the purpose of indicating the requirements of the contract document, and no change in the contract amount is authorized by such markings.
 13. When submittals are found to be satisfactory with respect to the above factors and within the scope of the review outlined above, they will be returned by Fluor Daniel Fernald to the Subcontractor bearing certificate attachment permitting the Subcontractor to employ them in the furtherance of the Subcontractor's work under the contract. This will be done only with the express understanding that such permission shall not relieve the Subcontractor of the Subcontractor's responsibilities for the full performance of the work required under the contract in conformance with the contract documents governing such performance, nor for any other deficiencies in the submittals such as inaccuracies, discrepancies, omissions, interferences in the work in itself, or with the work of other contractors, whether or not such deficiencies were observed or needed in the course of the review of the shop drawings.
 14. The Subcontractor shall verify all field dimensions required for shop drawings.
- B. Submittal Requirements: Submittals required include drawings and/or data for all items listed below; refer to Attachment 1 of this specification section:
1. "AA" designates that shop drawings and pertinent performance data and curves are required.
 2. "BB" designates that catalog data and pertinent performance data and curves are required.

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3. "CC" designates that these items are to be included on a listing giving the manufacturer and a brief type description for each item. Such listing shall be submitted after notice to proceed, unless noted otherwise by Fluor Daniel Fernald. Note that shop drawings or catalogs may also be required for items included on this list.
4. "DD" designates that samples of finishes are required with full range of color choices and/or patterns submitted.
5. "EE" designates that physical samples of materials are required.
6. "FF" designates that individual certifications for conformity to qualifications and standards specified are required. Equipment items, this indicates that certified equipment drawings are to be submitted.
7. "GG" designates that the technical specifications contain specific submittal requirements.
8. "HH" designates that engineering calculations are required.
9. "II" designates that spare parts list is required.
10. "JJ" designates that an installation, operation, and maintenance manual is required.
11. "KK" indicates that manufacturer's material safety data sheets are required.
12. "LL" indicates that test reports are required for tests noted in the technical specifications.
13. "MM" indicates that wiring diagrams for power, signal, and control wiring are required.
14. "NN" indicates that schematic piping diagrams, with sizes and components shown, are required.

1.4 OPERATING MANUALS AND SPARE PARTS LISTS

- A. If required, provide twelve (12) copies of a recommended spare parts list which shall be submitted at least sixty (60) days prior to the shipment of any item of equipment.
- B. An Installation, Operation, and Maintenance (IOM) Manual shall be prepared so as to provide optimum operation and maintenance of the equipment and systems being furnished.
- C. The cover of the IOM Manual shall include the following information:
 1. Project Title - _____
 2. Subcontractor.
 3. Construction Manager - Fluor Daniel Fernald.
 4. Subcontractor (name of subcontractor, if any).

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- D. The IOM Manuals shall be bound into one or more volumes for ease of handling, and shall have an index. The manual shall include descriptive literature, drawings, performance curves and rating data, test reports, and spare parts lists. The maintenance section shall divide maintenance procedures into two categories, "Preventive Maintenance" and "Corrective Maintenance," and a subsection for "Safety Precaution." Preventive maintenance shall include cleaning and adjustment instructions. Corrective maintenance shall include instructions and data arranged in the normal sequence of corrective maintenance (i.e., troubleshooting, logical effect to cause), then repair and replacement of parts, then the parts list. Safety Precautions shall comprise a list of safety precautions and instructions to be followed before, during, and after making repairs, adjustments, or routine maintenance.
- E. If required, provide twelve (12) copies of complete sets of final, approved manuals at least sixty (60) days prior to the shipment of the equipment or system.

1.5 SPECIFICATION EXPLANATION

- A. General: The technical specifications are of the abbreviated, simplified, or streamlined type and include incomplete sentences. Omissions of words or phrases such as "the contractor shall," "in conformity therewith," "shall be," "as noted on the drawings," "according to the plans," "a," "the," and "all" are intentional. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the drawings.

The Subcontractor shall provide all items, articles, materials, operations, or methods listed, mentioned, or scheduled either on the drawings or specified herein, or both, including all labor, material, equipment, and incidentals necessary and required for their completion and installation.

For convenience of reference and to facilitate the letting of contracts, the specifications may be separated into titled divisions. The following defines the separations referred to in the specifications:

- | | | |
|----|-----------|---|
| 1. | Division: | Separate numbered division of specifications (e.g., Div. 16) |
| 2. | Section: | Separate numbered section of a division (e.g., Sec. 16020) |
| 3. | Article: | Separate numbered article of a subsection (e.g., Article 2.1) |

- B. Definitions: Certain terms and words as used throughout the specifications shall be defined as follows, unless otherwise particularly specified:

- | | | |
|----|--|---|
| 1. | "Provide": | Furnish and install, complete, in place. |
| 2. | "Indicated": | As shown on the drawings and/or specified. |
| 3. | "Directed,"
"Authorized,"
"Permitted": | Shall be as directed, authorized, or permitted by Fluor Daniel Fernald. |
| 4. | "Selected": | Shall be as selected by the Subcontractor or Fluor Daniel Fernald. |
| 5. | "Satisfactory," | |

SECTION 01010

"Acceptable": Satisfactory or acceptable to Fluor Daniel Fernald.

6. "Necessary,"
"Required,"
"Suitable": As necessary, required, or suitable for the intended purpose as determined by Fluor Daniel Fernald.
7. "Submit": Submit to Fluor Daniel Fernald unless otherwise specified.

In all cases where the words "or equal" appear in these specifications, they shall be understood it to mean "or approved equal."

1.6 ABBREVIATIONS FOR REFERENCED STANDARDS AND SPECIFICATIONS

- A. The following list denotes abbreviations used in the technical portions of these specifications:
- B. Invoking all or any part of these standards are to be accomplished in accordance with normal industry practices.
- C. Standards listed in this section can be used in their entirety or applicable sections depending on their application to the services being rendered by the Subcontractor.

<u>Abbreviation</u>	<u>Authority</u>
AASHTO	American Association of State Highway Transportation Officials
ACGIH	American Conference of Governmental Industrial Hygienists
ACI	American Concrete Institute
ACRI	Air Conditioning and Refrigeration Institute
ADC	Air Diffusion Council
AGC	Associated General Contractors of America
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMCAAir	Movement and Control Association
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute

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<u>Abbreviation</u>	<u>Authority</u>
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CFR	Code for Federal Regulations
DHI	Door and Hardware Institute
ERDA	Energy Research and Development Administration
FGMA	Flat Glass Marketing Association
FM	Factory Mutual System
GA	Gypsum Association
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronics Engineers
IFB	Invitation to Bid
IMIAC	International Masonry Industry All-Weather Council
MBMA	Metal Building Manufacturers Association
NAAMM	National Association of Architectural Metal Manufacturers Association
NCMA	National Concrete Masonry Association
NEC	National Electric Cod
NEMA	National Electrical Manufacturers Association
NETA	National Electrical Testing Association

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<u>Abbreviation</u>	<u>Authority</u>
NFPA	National Fire Protection Association
NIST	National Institute of Standards and Technology
ODOH	Ohio Department of Health
ODOT	Ohio Department of Transportation Occupational Safety and Health Administration
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PS	United States Department of Commerce, Voluntary Products Standards
RFP	Request for Proposal
SDI	Steel Door Institute
SIGMA	Sealed Insulating Glass Manufacturers Association
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SSPC	Steel Structures Painting Council
UL	Underwriters Laboratories, Inc.

SECTION 01010**1.7 QUALITY ASSURANCE**

- A. Fluor Daniel Fernald will retain all quality assurance and other oversight activities during the life of the project. In those instance where Fluor Daniel Fernald wants the Subcontractor to perform these activities it will be stated in the "General Terms and Conditions" of the IFB/RFP.

1.8 QUALITY CONTROL

- A. The Subcontractor is to perform or witness inspections and test of procured material, equipment and items, work in progress, and completed items within the bounds of the contract.
- B. Fluor Daniel Fernald will conduct audits and surveillances of these activities at request of project leader, but no less than one time during life of contract, unless duration is thirty days or less, and annually thereafter.
- C. The FEMP site Quality Control function will perform oversight of these activities as requested by Project Leader.

1.9 CLEANING UP

- A. Article A.72 FAR 52.236-12 of Fluor Daniel Fernald's "General Terms and Conditions" shall be supplemented by the following:
1. The Subcontractor shall, upon completion and acceptance of the work, turn over to Fluor Daniel Fernald all permanent work furnished and performed under this contract in a thoroughly cleaned and workmanlike condition, free from any dirt, grit, oil, paint, and other forms of soilage, and ready in every respect for Fluor Daniel Fernald's use.

1.10 WARRANTIES

- A. Execute and assemble documents from subcontractors, suppliers, and manufacturers.
- B. Refer to Fluor Daniel Fernald's "General Terms and Conditions," in the IFB/RFP.

END OF SECTION

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**Attachment 1 to Section 01010 of Specifications
Submittal Listing
Division 1**

Material/Equipment/Item/Description	Shop Dwgs. AA	Cal/ Curves BB	List Only CC	Fin Smpl DD	Phys Smpl EE	Mat/Per Certif FF	Tech Specs GG	Eng'g Calcs HH	Parts List II	IOM Minls JJ	M.S. D.S. KK	Test Rept LL	Wiring Diagram MM	Piping Diagram NN
Section 01120														
Waste Handling Plan							XX							
Scales		XX				XX	XX							
Section 01515														
Work Area Barriers and Fencing							XX							
Roadway Access Layout							XX							
Water Control Plans							XX							
Water Area Plan							XX							
Debris Chutes	XX						XX	XX						
Temporary Power Plan							XX							
Erosion Control Plan							XX							
Patching Grout						XX								
Building Shoring Plan							XX							
Fugitive Emissions Control Plan							XX							
Concrete Sealant			XX											



Attachment 1 to Section 01010 of Specifications (Continued)
Submittal Listing
Division 1

Material/Equipment/Item/Description	Shop Dwg. AA	Cat/Curves BB	List Only CC	Fin Smpl DD	Phys Smpl EE	Mat/Per Certif FF	Tech Specs GG	Eng'g Calcs HH	Parts List II	IOM Mnls JJ	M.S. D.S. KK	Test Rept LL	Wiring Diagram MM	Piping Diagram NN
Liquid Migration Control Plan							XX							
Utilities Isolation Acceptance							XX							
Section 01516														
Asbestos Abatement Plan							XX							
Asbestos Certification and Documentation							XX							
Asbestos Removal Notification							XX							
Proposed Abatement Material							XX							
Section 01517														
Contamination Work Plan							XX							
Filter System							XX							
Liquid Storage Tanks							XX							
Stabilizer Coatings							XX							
Non-Strippable Coatings							XX							
Section 03315														
Concrete Removal Work Plan							XX							Y

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Attachment 1 to Section 01010 of Specifications (Continued)
Submittal Listing
Division 1



Material/Equipment/Item/Description	Shop Dwgs. AA	Cat/ Curves BB	List Only CC	Fin Smpl DD	Phys Smpl EE	Mat/Per Certif FF	Tech Specs GG	Eng'g Calcs HH	Parts List II	IOM Mnls JJ	M.S. D.S. KK	Test Rept LL	Wiring Diagram MM	Piping Diagram NN
Section 04225														
Masonry Removal Work Plan							XX							
Section 05126														
Steel Removal Work Plan	XX						XX	XX						
Section 07415														
Transite Removal Work Plan							XX							
Asbestos Certification and Documentation							XX							
Asbestos Removal Notification							XX							
Proposed Abatement Material							XX							
Section 14955														
Cranes														
Critical Lifts							XX							
Section 15065							XX							

Attachment 1 to Section 01010 of Specifications (Continued)
Submittal Listing
Division 1



Material/Equipment/Item/Description	Shop Dwg. AA	Cal/ Curves BB	List Only CC	Fin Smpl DD	Phys Smpl EE	Mat/Per Certif FF	Tech Specs GG	Eng'g Calcs HH	Parts List II	IOM Mnls JJ	M.S. D.S. KK	Test Rept LL	Wiring Diagram MM	Piping Diagram NN
Removal Work Plan		XX					XX							
Removal Equipment		XX					XX							
Section 15066														
Interior Removal Work Plan		XX					XX							
Removal Equipment		XX					XX							
Section 15067														
Ventilation and Containment Work Plan	XX					XX	XX	XX						

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SECTION 01120**DEBRIS/WASTE HANDLING CRITERIA****PART I GENERAL****1.1 SCOPE**

- A. This section provides the requirements for handling and containerization of debris/waste generated during the dismantlement of processing and support facilities. Debris/waste will be segregated into established categories and containerized accordingly. This includes, but is not limited to, the following:
1. Segregation of debris/waste.
 2. Containerization of debris/waste.
 3. Movement of containers within the construction zone.
 4. Weighing and tagging containers.

1.2 RELATED SECTIONS

- A. Section 01515 - Mobilization and Demobilization.
- B. Section 01516 - Asbestos Abatement.
- C. Section 01517 - Removing/Fixing Radiological Contamination.
- D. Section 03315 - Concrete Removal.
- E. Section 04225 - Masonry Removal.
- F. Section 05126 - Structural Steel Dismantlement.
- G. Section 07415 - Transite Removal.
- H. Section 14955 - Lifting and Rigging.
- I. Section 15065 - Equipment Dismantlement.
- J. Section 15066 - Interior Dismantlement.
- K. Section 15067 - Ventilation and Containment.

1.3 REFERENCE MATERIALS

- A. See Invitation for Bid/Request for Proposal (IFB/RFP) for the following:
1. Index of Drawings.
 2. Photographs.
 3. Existing Drawings.

SECTION 01120**4. Subcontractor Work Plan Format Requirements.****B. See IFB/RFP for the following:**

1. Waste Management Plan, which includes the Material Segregation and Containerization Criteria (MSCC).

1.4 REFERENCES, CODES AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

A. United States Department of Energy

1. DOE Order 460.1 Packaging and Transportation Safety.
2. 10 CFR 835 Occupational Radiation Protection

1.5 SUBMITTALS**A. The Subcontractor shall submit the following for approval by the Fluor Daniel Fernald Construction Manager.**

1. Prior to mobilization, the Subcontractor shall submit a detailed debris/waste handling work plan in accordance with IFB/RFP, Subcontractor Work Plan Format Requirements, for approval by the Fluor Daniel Fernald Construction Manager. The work plan shall include equipment for loading and handling containers, and verifying that the weight capacity of container is not exceeded.
2. Information on method for weighing containers, including:
 - a. Catalog cut sheets or drawings.
 - b. Calibration and maintenance schedule.
3. The work plan shall include the Subcontractor's:
 - a. method for control of wash water runoff.
 - b. method for loading containers.
 - c. location of the satellite accumulation area (SAA).

1.6 PROJECT CONDITIONS

- A. Facility dismantlement will produce categories of debris/waste as indicated in Part 6 of the IFB/RFP, Waste Management Plan, "Material Segregation and Containerization Criteria (MSCC)."
- B. Generation of additional debris/waste shall be minimized by unpacking equipment and material prior to entering the Controlled Area whenever possible. The minimum number of tools and equipment needed to complete the job should be brought into the Controlled Area. See Special Conditions in the IFB/RFP for details on use of equipment. The Subcontractor shall not bring any hazardous material

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to the construction zone unless prior approval is received from the Fluor Daniel Fernald Construction Manager. Alternatives to hazardous materials shall be used whenever possible.

PART II PRODUCTS

2.1 EQUIPMENT

- A. Subcontractor shall supply all equipment required to move containers, except ISO containers, between and within the container queuing area and construction zone, as well as all equipment to load containers.

2.2 MATERIALS

- A. The Fluor Daniel Fernald Construction Manager will provide appropriate containers, except as specified in the IFB/RFP, for debris/waste categories as identified on the Material Segregation and Containerization Criteria (MSCC), except liquid storage tanks as noted in Section 01517 of this specification package. These containers include, but are not limited to, the following:

Container Designation	Nominal Exterior Dimensions (HxWxL)	Maximum Gross Weight (lbs)
Large white metal box (LMB) (top load)	8'x8'x20'	42,000
ISO Container (top load)	8'x8'x20'	42,000
ISO container (end load)	8'x8'x20'	42,000
Small metal box	3'x4'x6'	8,000
55-gallon drum with lid	—	882
Roll-off boxes (ROB)	6'x8'x22'	42,000

- B. The Subcontractor shall supply fiber-reinforced polyethylene or polyester sheeting approved for outdoor storage: color, yellow; minimum thickness of 6-mils; ultraviolet resistant; as manufactured by Griffolyn, Herculite or equal.
- C. Fluor Daniel Fernald will deliver empty prepared containers, pallets (possibly radiologically contaminated), and miscellaneous materials, as required, to the container queuing area.
- D. The Subcontractor shall furnish the weatherproof removable tags.
- E. Fluor Daniel Fernald will furnish the pallets and dunnage as required in Section 3.2.C for movement of equipment or material. The Subcontractor shall furnish the fiber-reinforced sheeting.

SECTION 01120**PART III EXECUTION****3.1 PREPARATION**

- A. The Subcontractor shall establish a container queuing area in the location indicated on reference site drawings and provide a physical boundary to define this area. The queuing area shall be used as a temporary storage area for empty and full debris/waste containers.
- B. The Subcontractor shall identify a satellite accumulation area. Areas shall be secured to prevent unauthorized entry. Size and location of the accumulation and storage areas shall be coordinated with the Fluor Daniel Fernald Construction Manager.
- C. The Subcontractor shall provide labor and equipment required to handle small metal boxes, roll-off boxes, and large metal boxes as follows:
 - 1. Remove lid or tarp and place in designated location to prevent damage.
 - 2. Remove any freestanding water.
 - 3. Replace lid or tarp on the box and secure with clamping devices, pins, or other Fluor Daniel Fernald approved method.
- D. Request for containers shall be made, at least 24 hours in advance of need, to the Construction Manager.
- E. Refer to the Waste Management Plan in the IFB/RFP, to clarify waste handling roles and responsibilities of both the D&D Subcontractor and Fluor Daniel Fernald.

3.2 APPLICATION

- A. The Subcontractor shall be responsible for retrieving empty containers from the construction zone queuing area, except ISO containers, for containerization; segregating debris/waste; loading, weighing, inspecting, and sealing containers; tagging for on-site movement; and moving containers back to the construction zone queuing area. The Subcontractor will use the MSCC as the basis of all containerizing activities and will be responsible for minimizing debris/waste generation by limiting the amount of material brought on site.
- B. ~~Equipment identified or deemed as containing "Enriched, Restricted" material and contaminated equipment shall be loaded into containers as indicated in the MSCC.~~
- C. Equipment or material requiring movement outside the enclosed building to be containerized or palletized, as identified in the IFB/RFP, must meet the requirements of Section 01517 of this specification package. If the requirements cannot be attained, the material may be encapsulated or wrapped in fiber-reinforced sheeting and sealed prior to movement to prevent the migration of radioactive contamination during movement.

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Pallets shall be managed by the Subcontractor as follows:

1. Place fiber-reinforced sheeting over pallet, position material on pallet, and wrap the sheeting over material.
2. Secure fiber-reinforced sheeting over material to prevent migration of contamination.
3. Secure material to pallet with vinyl or metal bonding material.
4. Steel will be stored in place on the slab, unless otherwise indicated in Part 6 of the IFB/RFP Package.

3.3 LOADING OF CONTAINERS

A. The Subcontractor shall:

1. Provide a debris/waste handling supervisor to supervise all containerization operations.
2. Ensure that personnel handle debris/waste for containerization in accordance with this specification and the Waste Management Plan as found in the IFB/RFP.
3. Segregate and containerize all debris/waste according to the categories defined in the MSCC.
4. Select appropriate container for debris/waste stream based on information on the MSCC. This form identifies all anticipated debris/waste streams that will be encountered. Should a debris/waste stream be discovered that is not on the MSCC, then work on the handling of this debris/waste will stop. Contact the Fluor Daniel Fernald Construction Manager for direction on how to containerize the debris/waste while characterization is completed.
5. After movement of appropriate containers to the loading area, remove the container lid and place in a designated location to prevent damage. Maintain and verify that each container is properly prepared for loading, to include removal of freestanding water and replacement of pallets, absorbent material, and liners as required.
6. Fill containers, boxes, and drums such that the interior volume is as efficiently and compactly loaded as practical up to the maximum gross weight limit of the container or until full. Any container exceeding maximum allowable gross weight shall have contents removed, as required, to lower the weight to an acceptable range. Containers shall be prepared for containerization so as to minimize load shifting or damage during movement.
7. Ensure that debris/waste to be containerized is not on the following "Prohibited Materials List." This list shall be displayed in the containerization area or on each container. Notify the Fluor Daniel Fernald Construction Manager if any of the prohibited materials are identified.

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PROHIBITED MATERIALS LIST

1. Compressed gases (e.g., unpunctured aerosol cans).
2. Explosives.
3. Free liquids.
4. Fine particulates (respirable fines).
5. Hazardous waste.
6. Corrosive materials.
7. Etiologic agents.
8. Notify the Fluor Daniel Fernald Construction Manager at least 24 hours in advance of loading containers.
9. Visually check debris/waste for free liquid prior to loading. If free liquid is present, notify the Fluor Daniel Fernald Construction Manager. The Subcontractor will be required to take appropriate action to remove or absorb free liquid.
10. The Subcontractor shall provide and install weatherproof removable tags on each debris/waste container prior to moving to the queuing area. Tags shall identify container contents by debris/waste category specified in the MSCC and the debris/waste's building of origin.
11. The Subcontractor shall provide the equipment necessary to load full containers from the construction zone and transport them to the queuing area.
12. ~~Thorium contaminated waste shall be containerized separately from other wastes generated from the complex.~~

3.4 SECURITY AND MOVEMENT OF CONTAINERS

A. The Subcontractor shall:

1. Move containers to the specific task location from the queuing area.
2. Ensure that the lid, doors, or tarps on unfilled debris/waste containers are secured when no containerization is in progress to prevent addition of unknown materials and release of container contents. Containers must be weather protected when lid is not secured, to prevent entry of snow and rain and release of container contents.

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3. Secure full containers.
 - a. End-loading ISO containers will be secured as follows using Fluor Daniel Fernald-supplied material:
 - 1) Close and latch doors, ensuring that all latching mechanisms are engaged.
 - b. Drums will be secured as follows:
 - 1) Place lid on drum, ensuring that gasket is seated to maintain a tight seal.
 - 2) Install bolt-type lock ring on lid and torque to 45 ± 5 foot-pounds.
 - 3) Drums shall be secured to pallets.
 - c. Top-Loading Metal boxes (large and small) will be secured as follows:
 - 1) Inspect gasket for damage and repair, if required.
 - 2) Place gasket and lid on the box and secure with clamping device or pins.
 - d. Ensure that containers have not been damaged during loading.
 - e. Return full, secured containers (except ISO containers) to the queuing area.
 4. Secure full ACM containers as follows:
 - a. Label all containers that have ACM within them prior to on-site movement. These labels shall identify that ACM is present and the labels shall be placed as specified by the Fluor Daniel Fernald Construction Manager.
 - b. Inspect all containers, double bagged materials, drums, boxes, or double wrapped components for exterior contamination and damage before removing them from the work area.
 - c. Prior to securing lid or doors on ACM containers, fold fiber-reinforced sheeting over ACM and seal with tape.
 - d. Return full, secured container to the queuing area.
- B. Fluor Daniel Fernald will perform the final securing and disposition of full containers placed in the queuing area by the Subcontractor.
- C. Movement of containers within the construction zone shall be by the Subcontractor (except ISO containers).

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- D. The Subcontractor shall decontaminate waste containers, equipment, tools etc. prior to exiting the construction zone or queuing area. A swipe test or survey shall be performed by Fluor Daniel Fernald to ensure containers are clean prior to exit.
- E. **Multi-Level Floor Demolition Debris Movement:** If the Subcontractor chooses to stage any demolished material on a floor other than the ground floor of a multi-floored structure or an equipment platform, an engineering analysis shall be required. It shall be the Subcontractor's responsibility to perform the analysis to verify the loading capacity of said floor and submit the analysis to Fluor Daniel Fernald signed and stamped by a professional engineer (PE) to ensure that the load capacity is not exceeded.

3.5 BULK STAGING OF DEBRIS/WASTE

- A. Some debris will be bulk-staged to permit the most effective handling of these media. In cases where bulk staging is desired, the debris will be managed to assure minimization of airborne emissions, and staging will occur to assure control of runoff. Refer to Specification Sections 01515 and 03315 for control of run-off. This debris will be staged in a manner to minimize double handling, minimize costs by optimizing container use, and minimize labor associated with maintenance. Debris categories considered for bulk staging within the work zone include Category A, accessible metals.

3.6 FIELD QUALITY ASSURANCE

- A. The Subcontractor shall inspect filled containers upon their return to the queuing area to verify that no damage has occurred during the filling of the container. Repair or replace damaged containers as directed by the Fluor Daniel Fernald Construction Manager.

END OF SECTION

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SECTION 01515**MOBILIZATION, DEMOBILIZATION AND****GENERAL SITE REQUIREMENTS****PART I GENERAL****1.1 SCOPE**

- A. This section consists of the work related to Subcontractor mobilization and demobilization. The principal items included in this section are:

1. Site access.
2. Patching building slab.
3. Construction utilities.
4. Signs and barriers.
5. Potential use of existing overhead bridge cranes.
6. Gravel pads for access and queuing areas.
7. Establishing lay down, cutting, storage and queuing areas.
8. Protecting adjacent facilities and components.
9. Debris chutes.
10. Remediation equipment.
11. Ventilation and containment.

1.2 RELATED SECTIONS

- A. Section 01120 - Waste Handling Criteria.
- B. Section 03315 - Concrete Removal.
- C. Section 05126 - Structural Steel Dismantlement.
- D. Section 07415 - Transite Removal.
- E. Section 14955 - Lifting and Rigging.
- F. Section 15065 - Equipment Dismantlement.
- G. Section 15066 - Interior Dismantlement.
- H. Section 15067 - Ventilation and Containment.

SECTION 01515**1.3 REFERENCE MATERIALS**

A. See Part 7 of the Invitation for Bid Package/Request for Proposal (IFB/RFP) for the following:

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

1.4 REFERENCES, CODES AND STANDARDS

The entire work under this section shall be in compliance with the provisions of the following:

A. American Society of Testing and Materials (ASTM):

1. ASTM A36/A36M-94 Standard Specification for Carbon Structural Steel.
2. ASTM C109-93 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
3. ASTM C136-93 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates (AASHTO T27).
4. ASTM D698-91 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbs/ft.).
5. ASTM C1042-91 Standard Test Method for Bond Strength of Latex Systems Used with Concrete by Slant Shear.
6. ASTM D2487-93 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

B. National Fire Protection Association (NFPA)

1. NFPA 70 National Electrical Code, 1996 Edition.
2. NFPA 101-94 Code for Life from Fire in Buildings and Structures.

C. American National Standards Institute (ANSI)

1. ANSI C2-93 National Electrical Safety Code.
2. ANSI C135.1-79 Galvanized Steel Bolts and Nuts for Overhead Line Construction.
3. ANSI 05.1-92 Wood Poles Specifications and Dimensions.

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D. American Wood-Preservers Association (AWPA)

- 1. AWPA C4-95 Poles, Pressure Treatment

E. National Electrical Manufacturers Association (NEMA)

- 1. NEMA LA 1-92 Surge Arresters.
- 2. NEMA WC 7088 Cross-Linked-Thermosetting Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

F. Underwriters Laboratories (UL)

- 1. UL 96-94 UL Standard for Safety Lightning Protection Components.
- 2. UL Electrical Directories, 1995 Construction Materials.

G. United States Department of Agriculture, Soil Conservation Service

- 1. Water Management and Sediment Control in Urbanizing Areas.

H. Code of Federal Regulations (CFR)

- 1. 29 CFR 1926 Occupational Safety and Health Administration, Dept. of Labor (as applicable).
- 2. 29 CFR 1910 Occupational Safety and Health Administration, Dept. of Labor (as applicable).

1.5 SUBMITTALS

A. The Subcontractor shall submit the following for approval by the Fluor Daniel Fernald Facility Closure and Demolition Projects Division:

- 1. Drawings and Data
 - a. Provide detail and layout drawings showing locations of any additional barriers and/or fencing the Subcontractor will use for construction zone and radiological control boundaries as well as for protection of adjacent structures.
 - b. Layout of temporary access and roadways required during mobilization of major equipment components (i.e., cranes, field offices, tool and equipment storage, lay down areas, chutes within the stated limits of the construction zone).
 - c. Layout, details and applicable equipment, or plans the Subcontractor will employ to control storm water runoff, migration of wash water, and erosion control.

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- d. Provide detail and layout drawings that show lay down areas, building vestibule sizes and locations, cutting areas, and container queuing areas.
- e. Provide shop drawings for all debris chutes to be used.
 1. Provide manufacturer's data or calculations to verify that the chute, its support system and the existing structure (if the debris chute is attached) can withstand all dynamic impact loads they will be subjected to during dismantlement operations.
 2. Debris Chute drawings and calculations submitted must bear the stamp of a Registered Professional Engineer.
2. Submit a plan for providing temporary utilities (such as; water, steam, electric power) from the point source location identified on the reference site drawings in Part 7 of the IFB/RFP.
3. Comply with the Soil Conservation Service standards and submit a plan for providing for erosion control and soil stabilization in ditches, fill slopes, embankments, and denuded areas, and for restoration of areas disturbed by the project to original conditions.
4. Submit verification that the patching grout compressive and bond strengths are in accordance with ASTM C109 and ASTM C1042, respectively.
5. Submittal of the results of the Engineering Survey per 29 CFR 1926.850 is mandatory. If any building or if part of a building to be dismantled is identified in the Subcontractor's engineering survey as being structurally deficient, the Subcontractor shall submit a plan to shore the structure so that safety of the workers is maintained.
6. Methods and materials to be utilized for control of fugitive emissions.
7. Means of controlling migration of liquids, if used.
8. Statement of acceptability of utilities isolation.
9. Submittals shall include temporary structures, office building, trailers, size reduction facilities and interior/exterior contamination zones. See Part 6 of the IFB/RFP for traffic flow for deliveries and access to the building within the construction boundary by Fluor Daniel Fernald.

1.6 DELIVERY, STORAGE AND HANDLING

- A. The Subcontractor shall minimize and control the spread of contamination during mobilization and demobilization operations.

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PART II PRODUCTS

2.1 MATERIALS

- A. Patching Grout: Non-shrink type, premixed compound consisting of non-metallic aggregate; cement; water reducing and plasticizing agent; capable of developing minimum compressive strength of 5,000 psi in 28 days; capable of developing a bond strength of 1,200 psi in 28 days; conforming to ASTM C 109 and ASTM C827.
1. Acceptable products and suppliers (or equal):
 - a. Masterflow 713, by Masters Builders.
 - b. SikaGrout 212, by Sika Corp.
 - c. Sealtight 588, by W. R. Meadows.
 2. The "or equal" products will be approved by Fluor Daniel Fernald's Design Engineering prior to use on the FEMP.
- B. Construction Zone Fencing: Shall be red or orange plastic construction fencing. Gates shall be plastic yellow chain fixed to stanchions. Stanchions shall be located on grade.
- C. Ensure that clean granular fill is used to fill large openings in the base slab, including pits, large sumps, etc. This material will be supplied by the Subcontractor. Use of fine aggregate shall be natural river sand, bank sand or sand manufactured from stone or air-cooled blast furnace slag; washed; free of silt, clay, loam, friable or soluble materials, and organic matter; within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
No. 4	100
No. 50	10 - 40
No. 200	0 - 5

- D. Wood Poles
1. Use 45' Class 2 wood poles.
 2. ANSI 05.1; treated southern pine poles.
 3. Select poles for straightness, minimum sweeps and short crooks.
 4. Preservative: ANSI 05.1 and AWPA C4, Pentachlorophenol.
 5. Apply preservative to AWPA C4 with minimum net retention of 12 lbs/ft³ (285 kg/m³). Obtain complete sapwood penetration.

SECTION 01515**E. Pole Hardware**

1. **Miscellaneous Pole Hardware:** Hot dipped galvanized after fabrication.
2. **Bolts and Nuts:** ANSI C135.1.
3. **Butt Plate:** Copper.
4. **Guy Strand:** High strength, seven strand steel cable galvanized to ASTM A475, Class A or B.
5. **Guy Termination:** Three-bolt clamp type.
6. **Guy Guards:** 8 foot (2 m) long plastic, colored yellow.
7. **Ground Wire:** Soft drawn copper conductors, 6 AWG minimum size.
8. **Air Terminal:** UL 96; 18 inch copper air terminal.
9. **Guy Adapter:** Twin Eye.

F. Line Conductors

1. **Secondary Conductors:** Copper, triplex (three) cable with 600 volt cross-linked polyethylene insulation for phase conductors. Use bars, extra high strength copper messenger for ground.

G. Arresters

1. **Surge Arresters:** NEMA LA 1; valve type, arranged for pole mounting, and rated 3 kv.
2. **Mechanical Connectors:** Bronze.
3. **Wire:** Stranded copper.
 - a. **Grounding Conductor:** Size to meet NFPA 70 requirements.

H. Anchors

1. **Helical Screw Anchors:** Galvanized steel, ASTM A36/36M.

I. Gravel Pads for Access and Queuing Areas

1. **The aggregate shall be crushed carbonate stone, crushed gravel, crushed air-cooled slag, granulated slag, a mixture of crushed and granulated slags.**

SECTION 01515**PART III EXECUTION****3.1 EXAMINATION**

- A. The Subcontractor shall perform an Engineering Survey in accordance with the requirements of OSHA 29 CFR 1926.850, approved by Fluor Daniel Fernald prior to the Subcontractor proceeding with any work activities beyond mobilization.

3.2 PREPARATION**A. Site Access**

1. Vehicle, equipment and pedestrian access/egress shall be directed through the designated radiological control points.
2. Have provisions in place for emergency vehicles to enter the construction zone at all times.

B. Patching Building Slab**1. Patching Grout:**

- a. To ensure proper bond to concrete, all grease, oil, dirt and other deleterious materials shall be completely removed and handled in accordance with Section 01120 of this specification package.
 - b. Roughen the surfaces to assure bond to the existing concrete. Loose or broken concrete shall be removed and handled in accordance with Section 01120 of this specification package.
2. Remove all slab penetrations to grade level. Conduit and piping shall then be plugged and covered with grout to grade level.
 3. Follow all manufacturer's recommendations for the application of patching grout.
 - a. Fill in damaged areas of base slab and small openings including drains, chases, small sumps, etc., with a patching grout to create a surface level with surrounding slab. Maximum allowable depression not requiring repair is 1 inch in depth.
 4. Ensure that large openings in the base slab including pits, large sumps, etc. are free of water and loose debris prior to filling with granular fill material to within 2 inches of grade and topped off with grout.

C. Construction Utilities

1. Utilities: All electric, gas, water, steam, sewer, and/or other service lines to the building have been disconnected and/or capped. Prior to performing any D&D work, the Subcontractor shall conduct a survey to verify that all utilities are capped and/or controlled

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to the Subcontractor's satisfaction, and notify the Fluor Daniel Fernald FC and DP Division in writing of the acceptability of the utilities isolation.

2. The Subcontractor shall determine whether utilities provided by Fluor Daniel Fernald are adequate. If not adequate, the Subcontractor shall supply any additional needed utilities.
3. Fluor Daniel Fernald will provide electrical power and water to the control point; locations indicated on reference site drawing listed in Part 7 of the IFB/RFP. Capacities for water and power provisions are listed in Part 6 of the IFB/RFP. All penetrations made through transite for temporary power lines shall be accomplished in accordance with Section 07415 of this specification package.
4. The Subcontractor shall remove all grounding conductors to grade level.
5. The Subcontractor shall extend the power from the point source location or provide portable generators.
6. All electrical appurtenances required for temporary power shall be in accordance with the National Electric Code.
7. Temporary heating or cooling, if needed, shall be conducted in strict accordance with applicable section of RM 0021 Safety Performance Manual. The Subcontractor shall provide all temporary heat and/or heating equipment required for his use. Continuous running of gas fired heating systems require 24 hour coverage by the Subcontractor.

D. Signs and Barriers

1. Protect the railroad tracks, manholes, catch basins, valve pits, underground utilities, post indicator valves, pipe racks and drains, adjacent structures, and groundwater monitoring wells from damage during the work.
2. Survey monuments: Protect all existing exterior benchmarks during the course of the work. If displaced or lost, the Subcontractor shall reinstall at no additional cost to Fluor Daniel Fernald.
3. Remove all existing chain link fencing as noted on the reference drawings and install construction zone fencing outlining construction boundary.
4. Supply construction safety signs, such as "Hard Hat Area" and "Danger-Demolition Ongoing," and barriers as necessary to protect the operations and adjacent structures. The Fluor Daniel Fernald Construction Manager shall supply signs, barriers, and tape indicating radiological control zones.

E. Potential Use of Existing Overhead Bridge Cranes

- a. Use of permanent facilities shall be in accordance with the requirements of Temporary Facilities and Utilities of Part 6 of the IFB/RFP.

SECTION 01515**F. Gravel Pads for Access and Queuing Areas**

- a. Grading of site shall prevent ponding of water. Use a minimum slope of 1 percent. All grading will direct water toward the site's storm drainage system.

G. Establishing Lay down, Cutting, Storage and Queuing Areas

- a. The job-site location and access to the job-site is as shown on the Reference Drawings.

H. Protecting Adjacent Facilities and Components

- a. The Subcontractor is responsible for avoiding damage to adjacent structures, material and equipment including underground utilities during decontamination and dismantlement activities.

I. Debris Chutes

1. The Subcontractor shall ensure that catch platforms, chutes and other means of handling debris are properly isolated by gates or barriers designed and constructed to eliminate impact hazards and to control the flow of material to its final destination.
2. Debris chutes shall meet the following criteria:
 - a. If located outside the exterior walls of the structure, the debris chute shall be effectively protected.
 - b. The debris chute shall be less than or equal to 48 inches in height measured along the wall of the chute.
 - c. Openings shall be less than or equal to 48 inches in height measured along the wall of the chute.
 - d. Provide a substantial gate at or near the discharge end.
 - e. Chute openings shall have substantial guardrail 42 inches above the floor or surface that workers stand on to dump material.
 - f. Any openings between chute and edge of openings must be solidly covered.
 - g. Provide a toeboard or bumper around chute opening with a minimum size of 4 inches thick by 6 inches high.
 - h. Debris chutes shall be designed and constructed of such strength to eliminate failure due to impact of materials or debris loaded therein.
 - i. Debris chutes shall be fully enclosed, dust-tight and ventilated.

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3. Fluor Daniel Fernald Radiological Controls may prohibit the use of a debris chute if the radiological contamination levels do not meet those established in Fluor Daniel Fernald Radiological Control Manual.

J. Remediation Equipment

1. Identify any special requirements for storing material or equipment.
2. To minimize the generation of waste products by the Subcontractor, all equipment requiring periodic oil and filter changes shall have this maintenance performed just prior to arrival on site.
3. Additional requirements for mobilization and demobilization of remediation equipment are listed in the IFB/RFP in Part 8 of the IFB/RFP.

K. Ventilation and Containment

1. Install a vestibule on the entry/exit building access to accommodate cutting, containerization, and decontamination. If a vestibule is used, its material of construction and performance characteristics shall be in compliance with Section 15067 of this specification package.
2. Ensure that all holes, gaps, openings are sealed with duct tape, fiber-reinforced sheeting, plywood or foam material (including where doors or windows are missing) is in accordance with Specification Section 15067.

- 3.4 Prior to final project site acceptance all requirements of Engineering Specification 01010, Section 1.9 and 1.10 will be completed.

3.5 FINAL PROJECT SITE ACCEPTANCE

- A. Final project site acceptance shall be conducted by the Fluor Daniel Fernald FC & DP Division and will consist of verification of the following: All work activities relating to the work scope have been inspected and signed off by the Fluor Daniel Fernald FC & DP Division.

END OF SECTION

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SECTION 01516**ASBESTOS ABATEMENT****PART I GENERAL****1.1 SCOPE**

This section specifies the requirements for an asbestos hygiene program, and methods to be used for removal, movement and disposition of asbestos-containing material (ACM) and other materials contaminated with asbestos. This section does not cover transite.

1.2 RELATED SECTIONS

- A. Section 01120 - Waste Handling Criteria.
- B. Section 01517 - Removing/Fixing Radiological Contamination.
- C. Section 15067 - Ventilation and Containment.
- D. Section 07415 - Transite Removal.

1.3 REFERENCE MATERIALS

- A. See the Invitation for Bid/Request for Proposal (IFB/RFP) Package for the following:
 - 1. Index of Drawings.
 - 2. Photographs.
 - 3. Existing Drawings.
 - 4. Air Cleaning Device (ACD) Procurement Specification.
 - 5. Air Cleaning Device Filter Procurement Specification.
 - 6. Subcontractor Work Plan Format Requirements.
 - 7. HEPA Vacuum Cleaner Requirement.
 - 8. HEPA Air Filtration Device Requirement.
- B. For ACM information on the project, refer additional information on ACM in Part 6 of the IFB/RFP Package.

1.4 REFERENCES, CODES AND STANDARDS

All work shall be accomplished in accordance with the following reference, code and standard requirements:

- A. 29 CFR 1910 Occupational Safety and Health Administration - Department of Labor (as applicable).
- 29 CFR 1926 Occupational Safety and Health Administration - Department of Labor (as applicable).

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- B. Ohio Department of Health Asbestos Hazards Abatement Rules Chapter 3701 - 34 OAC (Ohio Department of Health).
- C. Ohio Environmental Protection Agency Chapter 3745-20, OAC.
- D. United States Environmental Protection Agency (US EPA) 40 CFR 61 Subpart M (NESHAPS).

1.5 SUBMITTALS

- A. The Subcontractor shall submit the following for approval:
 - 1. An asbestos abatement plan with the following information:
 - a. A physical description of the work area.
 - b. A description of the method(s) to be used to isolate the work area.
 - c. Any employee exposure assessment completed for similar asbestos activities, which will be used to assign protective clothing for asbestos work.
 - d. A description of procedures which will be used in the event of an emergency situation (e.g., medical emergency, breach of containment).
 - e. A description of the approximate amount of material to be removed.
 - f. Personnel hygiene procedures. Include sufficient room on the dirty side of the hygiene facility to accommodate a full-body personal contamination monitor (PCM) for radiological monitoring (PCM to be supplied by Fluor Daniel Fernald).
 - g. Labeling procedures.
 - h. A description of personal protective equipment and clothing to be worn by employees.
 - i. A description of the local exhaust ventilation systems to be used.
 - j. A description of work practices to be observed by employees.
 - k. A description of the methods to be used to remove the asbestos-containing material.
 - l. The wetting agent to be used.
 - m. A description of the sealant to be used at the end of the project.
 - n. An air monitoring plan.
 - o. A description of the method to be used to remove floor tile.

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2. Prior to initiation of the work, the Subcontractor shall submit the following items to the Fluor Daniel Fernald Construction Manager:
 - a. Ohio Department of Health/OSHA-required documentation for Asbestos Removal Contractors:
 - 1) Documentation of training.
 - 2) Medical surveillances.
 - 3) Respirator fit-test.
 - 4) Employee exposure assessments.
 - b. State of Ohio certificates and licenses for the Subcontractor
 - c. State of Ohio certification for all personnel as required by law
3. Prior to submittal of notification to government agencies, the Subcontractor shall provide a copy to the Fluor Daniel Fernald Construction Manager for concurrence.
4. Product Data: The Subcontractor shall submit manufacturer's technical information including application instructions for each material proposed for use.

1.6 DELIVERY, STORAGE, AND HANDLING**A. The Subcontractor shall:**

1. Take precautions to prevent creation of friable ACM during handling.
2. Materials shall be in original, new, and unopened containers bearing manufacturer's name, label, and the following information:
 - a. Name or title of material.
 - b. Manufacturer's stock number and date of manufacture.
 - c. Manufacturer's name.
 - d. Thinning instructions.
 - e. Application instructions.

PART II PRODUCTS**2.1 EQUIPMENT**

- A. Polyethylene sheeting shall be a minimum of 6 mils thick as manufactured by Blueridge Films Inc. or equal.
 1. Fire retardant polyethylene shall be used where sparks, slag, or open flame is likely.
 2. All outside containments shall be constructed of reinforced polyethylene.

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- B. Surfactants (wetting agents), encapsulants, and lockdowns shall be mixed in a proportion specified by the manufacturer.**
1. **Surfactants:**
 - a. Childers CP-225 CHIL-SORB.
 - b. Certech.
 - c. Expert Environmental Products.
 - d. International Protective Coatings Corp.
 2. **Encapsulants:**
 - a. Certane 2050 Certified Technologies.
 - b. Expert Environmental Products - Eppco #1.
 - c. International Protection Coatings Corp. - Serpiloc.
 3. **Lockdowns:**
 - a. 1050 - Clearcoat by Certane.
 - b. Fiber-Seal by Eppert.
 - c. International Protection Coatings Corp. - Serpiloc.
 4. **Equivalent or better products may be acceptable and shall be approved by Fluor Daniel Fernald Construction Manager.**

2.2 MATERIAL

- A. **Negative pressure Air Filtration Device (AFD) equipped with HEPA filtration and operated in accordance with the requirements of 29 CFR 1926.1101. See Section 15067 of this Specification package.**
- B. **All ventilation inside containments used for asbestos abatement operations shall be capable of maintaining a minimum of 0.02 inches water gauge (w.g.) of negative pressure within the containment, as recorded by manometric measurements. The ventilation system for this type of operation shall provide a minimum of four air changes per hour.**
- C. **For mini-enclosures and glovebags, a HEPA filtered vacuum system may be substituted to provide negative air pressure. Ensure that the HEPA filtered vacuum system meets the four air changes per hour capacity required for mini-containments. See Section 15067 of this Specification package for requirements for HEPA vacuum systems acceptable to Fluor Daniel Fernald.**
- D. **HEPA filtered vacuum system used for asbestos abatement cleanup.**
- E. **The Subcontractor shall supply a Temporary Asbestos Decontamination Facility. The size of this facility shall be large enough to handle the asbestos workers during peak manpower periods. The facility shall meet the requirements for a hygiene facility specified by OSHA 29 CFR 1926.1101, DOE and site radiological control requirements. Radiological control requirements do not allow workers to enter a shower until all radiological contamination has been removed due to the possibility**

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of spreading radiological contamination to other parts of the worker's body. The requirements of the hygiene facility to ensure compliance with radiological control requirements, are as follows:

1. The asbestos hygiene facility shall be located adjacent to, but outside the radiological contamination area. The size of this facility is based on the number of employees that will be using the facility; this determines the number of showers required. The minimum number of showers required (based on number of workers) is located in 29 CFR 1910.141 Sanitation. It is recommended that the Subcontractor provide more showers than are legally required so the workers can exit the work area in a timely manner.
 2. The doffing room (dirty change area) of the asbestos hygiene facility shall be maintained under negative pressure in relation to the rest of the hygiene facility. The air in the dirty change area shall be exhausted through a HEPA filtered air filtration device to assist in cleaning the air in the change area. The air change requirement in the dirty change area is 4 changes/air per hour at a minimum of -0.02 of water pressure differential, relative to outside pressure. The dirty change area shall be large enough to accommodate four containers for segregation of asbestos contaminated waste and personal protective equipment, and an Air Filtering Device. The dirty change area should have hooks or shelves for storage of hardhats and toolbelts.
 3. A buffer area must be placed between the doffing room and the shower area (with room for a PCM) by dividing the doffing area into two areas using fire-retardant material. The first area of the doffing room will be considered a radiologically contaminated area (this area will be maintained under negative pressure to the rest of the trailer). A step-off pad will be established in the airlock/doorway separating the radiologically contaminated area from the radiologically controlled area creating a boundary for control of asbestos contaminated items and radiological contamination. The second area in the doffing room (buffer area) will be a radiologically controlled area which should be maintained free of any asbestos or radiological contamination. The Subcontractor shall ensure that an electrical outlet exists for the PCM. The minimum power requirements for the PCM are 120 volts AC and 1 amp. The PCM minimally requires an area of 5-1/2 feet by 4 feet. The buffer area shall also contain a sink for the rinsing of respirators prior to removal.
 4. The clean room shall contain benches, lockers for storage of workers' personal clothing, and shelves for storage of personal protective equipment.
- F. ACM Survey: Asbestos Containing Materials (ACM) containing asbestos fibers in percentages of greater than one percent (> 1%) can be found in various forms through-out the Complex. ACM can be found in both Friable and Non-Friable forms. ACM can be found in pipe fitting insulation, pipe run insulation, storage tank and equipment insulation, doors, wall panels and office partitions. Both Chrysotile and Amosite (siding, floor tile, roofing, furnaces, etc.) asbestos is known to have been used. In all cases it is the Subcontractor's responsibility to identify the types and quantities of asbestos, and abate all ACM with the aid of the information given by Part 6 of the IFB/RFP.

SECTION 01516**PART III EXECUTION****3.1 PREPARATION**

- A. Fluor Daniel Fernald shall notify EPA and all other applicable governmental agencies before start of work. The Subcontractor shall also notify the Ohio Department of Health (ODOH) and all other applicable governmental agencies.
- B. The Subcontractor shall be responsible for:
 - 1. Adherence to and compliance with work practices and procedures set forth in all applicable Federal, State, and local codes, regulations, and standards.
 - 2. Obtaining certifications and licenses.
- C. To prepare work for removal:
 - 1. Isolate the work area.
 - 2. Establish hygiene facility/equipment room.
 - 3. Install primary containment barriers.
 - 4. Cover the floor with two layers of 6 mil polyethylene sheeting.
 - 5. Size plastic to minimize seams.
 - 6. Cover walls in any contained work area with 6 mil polyethylene sheeting.
 - 7. Provide load out facility and emergency exits.
 - 8. Post the required asbestos hazard warning signs.

3.2 APPLICATION

- A. Use the following removal procedures:
 - 1. Wet all ACM to be removed from the component with an amended water solution.
 - 2. Saturated ACM shall be removed in manageable sections and maintained wet until placed into disposal containers or sealed in plastic.
 - 3. Material removed from building structures or components shall not be dropped or thrown to the floor or into disposal containers.
 - 4. Large components may be removed intact in accordance with the Waste Management Plan located in Part 6 of the IFB/RFP and may be wrapped in two layers of 6-mil polyethylene sheeting, secured with tape and properly labeled.
 - 5. Asbestos-containing material with sharp-edged components (e.g., nails, screws, metal lath, tin sheeting) which will tear the polyethylene bags and sheeting shall be placed into Subcontractor-supplied, properly labeled containers and subsequently bagged for disposal.

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6. After completion of all stripping work, surfaces from which ACM has been removed shall be wetbrushed and sponged or cleaned by some equivalent method to remove all visible ACM residue.
- B. Use the following cleanup procedures:**
1. Remove and containerize all visible accumulations of ACM and asbestos-contaminated material.
 2. Wet clean all surfaces in the work area.
 3. After cleaning the work area, wait at least 24 hours to allow fibers to settle, and HEPA vacuum and wet clean objects and surfaces in the work area again.
 4. Inspect the work area for visible residue.
 5. The work area shall be cleaned until visual inspection reveals no evidence of any ACM as determined by Fluor Daniel Fernald Construction Manager.
 6. Apply lockdown to all surfaces in the work area.
 7. Aggressive clearance testing shall be performed by Fluor Daniel Fernald and the acceptable limit is <0.01 f/cc by PCM.
 8. Upon successful completion of aggressive clearance testing by Fluor Daniel Fernald, the Subcontractor shall remove containment and dispose of it as ACM waste per Contractual Agreement.
- C. ACM Insulated Piping:**
1. All piping insulated with ACM may be removed with ACM in place. Wrap the piping with 6 mil polyethylene sheeting. Remove ACM from area of cut utilizing glovebags as containment. Exposed ACM ends shall be capped and the pipe shall be wrapped in 6-mil polyethylene sheeting. Containerize according to Contractual Agreement.
- D. Asbestos Removal:**
1. Wet methods and state of the art engineering controls/containment shall be utilized throughout abatement activities to prevent employee exposure as well as the release of visible asbestos emissions to the environment.
 2. The Subcontractor shall remove non-friable asbestos such as floor tile, mastic and gaskets intact in accordance with government, state, and local asbestos abatement regulations.

END OF SECTION

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REMOVING/FIXING RADIOLOGICAL CONTAMINATION

PART I GENERAL

1.1 SCOPE

- A. Decontamination of equipment or structural material to a level that permits removal of the equipment from a local containment, enclosure or permits opening the building to the environment. This section includes, but is not limited to:

1. Decontaminating low-level uranium and thorium contaminated equipment, materials, structural members, and/or buildings.
2. ~~Decontaminating enriched uranium contaminated equipment and materials.~~
3. ~~Decontaminating RCRA contaminated equipment and materials.~~
4. Controlling and moving effluent produced during the removal and/or fixing of contamination.
5. Fixing of contamination.

1.1.1 Project Conditions

The Subcontractor shall establish an inspection area to allow the Fluor Daniel Fernald Construction Engineer/Construction Coordinator (CE/CC) for material inspection and for radiological surveying. Only those items which meet the category requirements for leaving the building should enter the inspection area. The requirements for equipment to leave local containment or a building enclosure are given in Section 3.2.C of this specification.

~~In the event that hold-up material is found in a system or piece of equipment the Subcontractor will discontinue work on that system or piece of equipment and contact the Fluor Daniel Fernald CE/CC. The hold-up material will be removed Fluor Daniel Fernald personnel.~~

The most recent contamination and radiation survey data is provided in Part 6 of the IFB/RFP.

1.2 RELATED SECTIONS

All work shall be accomplished in accordance with the following code requirements:

- A. Section 01120 - Waste Handling Criteria.
- B. Section 03315 - Concrete Removal
- C. Section 04225 - Masonry Removal.

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- D. Section 05126 - Structural Steel Dismantlement.
- E. Section 07415 - Transite Removal.
- F. Section 15065 - Equipment Dismantlement.
- G. Section 15066 - Interior Dismantlement.
- H. Section 15067 - Ventilation and Containment.
- I. In addition to the above-reference specifications, see Section 01010 Paragraphs 1.1 A through H.

1.3 REFERENCE MATERIALS

- A. See Part 7 of the IFB/RFP Package for the following:
 - 1. Index of Drawings.
 - 2. Photographs.
 - 3. Existing Drawings.

1.4 REFERENCES, CODES, AND STANDARDS

- A. United States Department of Energy (DOE):
 - 1. DOE Order 5400.5 Radiation Protection of the Public and the Environment.
 - 2. ODE/EH-0256T Radiological Control Manual, April 1994.
 - 3. DOE/EM-0142P Decommissioning Handbook, Chapter. 9, Mar. 1994.
- B. 10CFR835 Occupation Radiation Protection

1.5 SUBMITTALS

- A. Before start of decontamination work, the Subcontractor shall submit for approval a work plan in accordance with IFB/RFP, Part 7, Subcontractor Work Plan Format Requirements, describing the system design for removing and/or fixing contamination, including the methods and equipment for: removing contamination; fixing contamination; and controlling, filtering, and transporting effluent produced during removal and/or fixing activities.
- B. Product Data: The Subcontractor shall submit manufacturer's technical information including the material to be used, its intended use, and its application instructions.

PART 2 PRODUCTS

2.1 SUBCONTRACTOR'S EQUIPMENT

- A. The Subcontractor shall supply all equipment required to remove and/or fix contamination.

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- B. The Subcontractor shall collect all waste and effluent generated while removing and/or fixing contamination. Effluent and sludge shall be containerized in accordance with the requirements listed in Sections 3.2.E and 3.2.F of this specification. The Subcontractor shall supply all equipment required to control, filter, and move effluent produced during removal and/or fixation of contaminants.
1. The filter system shall consist of a 20 micron pre-filter and a 5 micron filter to remove entrained particulate prior to effluent discharge to tankage.
 2. The Subcontractor shall supply all effluent containment vessels and associated secondary containment systems as specified in Sections 3.2.E and 3.2.F of this specification.
 3. The Subcontractor shall supply a drum scale for determining compliance with limits for drum contents. The drumming requirements are listed in Section 3.2.F.
 4. The Subcontractor shall provide acceptable conveyance of effluents to a designated wastewater system entry point.

2.2 MATERIALS

- A. If stabilizer coatings are employed, they shall be Carboline D3358 or approved equal. Vendors may include, but are not limited to: Tnemec Series 6 - Tnemec-Cryl, Sherwin-Williams, or International Protective Coatings.
- B. If non-strippable coatings are employed, they may include, but are not limited to: Polymeric Barrier System (Bartlett), or an approved equal.

PART 3 EXECUTION**3.1 PREPARATION**

- A. The Subcontractor shall maintain the integrity of the local containment or building enclosure until contamination has been removed and/or fixed within the levels identified in this Specification Section and Part 8 of the IFB/RFP.
- B. The Subcontractor shall remove visible contamination, oil and dirt from equipment, debris, or structural materials and manage them in accordance with Section 01120 of the specification package and Part 6 of the IFB/RFP.

3.2 APPLICATION

- A. The Subcontractor shall remove and/or fix contamination on equipment, debris, or structural materials in accordance with this specification.
- B. Requirements common to both Equipment Decontamination and Structure Decontamination:

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1. Acceptable methods for removing contamination include, but are not limited to: Hydro-blasting or steam-cleaning with a minimum of 1,000 psi and HEPA vacuuming.
 2. Fixing of contaminants is required, if contamination levels have not been met and decontamination has been attempted at least once. Acceptable methods for fixing contamination which is not readily removed by the above identified methods include, but are not limited to: Stabilizer coatings and Non-strippable coatings.
 3. If stabilizer or non-strippable coatings are used as fixatives, they will meet the requirements of this specification (see Section 2.2).
 4. The Subcontractor shall take precautions to prevent the breaching of stabilizer coatings applied to equipment or structure. If a stabilizer coating is breached after application, during activities leading up but not including structural demolition, the Subcontractor must take action to reseal the breached areas.
 5. Porous materials such as concrete and fiber insulation will be decontaminated to the level specified in Part 8 IFB/RFP for porous materials. This limit will take into account internal contaminations within a porous material.
- C. Requirements specific to equipment decontamination and removal from a building enclosure or local containment:
1. The Subcontractor shall remove contamination on equipment, materials, or debris in accordance with this Specification Section and Part 8 of the IFB/RFP.
 2. ~~Thorium-contaminated items cannot be released from thorium contamination areas unless surveyed for thorium-specific release limits (as referenced in Part 8 of the IFB/RFP). Items taken from these areas shall be either decontaminated, wrapped and brought directly to containers labeled as containing thorium-contaminated items (not for re-packaging), or containerized prior to removal from the thorium contamination area as determined by the Subcontractor.~~
 3. ~~Hazardous Waste Management Unit (HWMU) equipment shall be rinsed or otherwise decontaminated to clean, as determined by visual inspection as defined in Section 3.2.C.5 of this specification.~~
 4. ~~Equipment identified by Fluor Daniel Fernald as being contaminated with uranium with an enrichment over 2 percent will be removed and containerized by the Subcontractor for disposition as contaminated material without decontamination.~~
 5. Equipment will be moved to an inspection area for inspection and surveying. The equipment removed will meet the following criteria:
 1. To remove equipment or debris out of a local containment or enclosure or prior to loading into containers, or to containerize outside of an enclosure, or prior to moving to the inspection area, surfaces shall be free of visible process residues and dry as determined by a Fluor Daniel Fernald CE/CC. The definition of visible process

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residues (green salt, yellow cake, etc.) is material on the interior or exterior surfaces of debris that is obvious and that if rubbed, would be easily removed. Stains, rust, corrosion, and flaking do NOT qualify as visible process material. If an item fails visual inspection the items shall be deemed a Category C (Process-Related Metals) item and shall either be encapsulated or wrapped in accordance with Section 01120 of this specification package. Rust, corrosion, and flaking will be considered for contamination control purposes. All equipment, material, and debris are still considered to be radiologically contaminated.

D. Requirements specific to Structure Decontamination:

1. The Subcontractor shall remove and/or fix radiological contamination on all surfaces within the structure until the detected radioactivity levels are below the criteria as referenced in the Radiological Requirements (located in Part 8 of the IFB/RFP) prior to removing exterior siding from a structure and prior to demolishing a structure (where the exterior is not initially removed).
- ~~2. Down posting of thorium contaminated areas requires that contamination levels meet the thorium specific release.~~
3. If hydro-blasting or steam cleaning is employed, the Subcontractor shall:
 - a. Seal floor cracks/seams and building cracks using sealants to protect the environment from migration of contaminants through slabs.
 - b. Contain effluents to the building interior and subsequently to collection systems.
4. The Subcontractor may utilize any existing building floor sumps for effluent collection, as long as system capacity for sludge and/or liquid does not exceed limitations determined from enrichment levels.
5. Once contamination has been removed from an area, the Subcontractor shall take precautions to prevent the spread of contamination from other more-contaminated areas of the facility.
- ~~6. For Hazardous Waste Management Units (HWMUs), the slab surface of the HWMU shall be rinsed with a water spray, or other approved gross decontamination methods, at least one time.~~
7. Prior to removing the exterior siding of a structure and prior to demolishing a structure where the exterior siding is not removed, all non-porous surfaces (such as steel decking or columns) within the structure that are contaminated with uranium and/or thorium shall be below limits referenced in the Radiological Requirements, located in Section 8 of the IFB/RFP.

E. Rinseate/Effluent Handling:

1. All effluent and sludges shall be collected in separate containers from other effluents and sludges until after sampling and analysis. Fluor Daniel Fernald will perform all effluent and sludge sampling and analysis. Approval to commingle the effluents and sludges must be

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provided by the Fluor Daniel Fernald CCM. The collection containers will meet the following requirement.

2. For the washing of equipment/material or a structure containing uranium and/or thorium contamination, the Subcontractor shall supply effluent storage tanks with a minimum storage capacity to allow 15 calendar days storage without impacting operations. Effluent tanks require secondary containment with a minimum of 10 percent of the overall effluent tank capacity housed and not less than the volume of one full tank, whichever is greater.

In addition to effluent tanks, the washing of enriched equipment/material, as listed in Part 6 of the IFB/RFP, requires the use of smaller tanks to permit safe mass to be maintained (to prevent nuclear criticality). There are no mass restrictions for rinsewaters or sludges with U-235 enrichment less than 1 percent.

- a. For enrichments greater than 1 percent and less than or equal to 1.25 percent, the Subcontractor shall supply effluent storage tanks of no greater than 175 gallon capacity, in numbers sufficient to permit 15 calendar days storage without impact to Subcontractor operations.
- b. For enrichments greater than 1.25 percent and less than or equal to 2 percent (no equipment/material over 2 percent enrichment is to be decontaminated, see Section 3.2.C.4), the Subcontractor shall supply effluent storage tanks no greater than 30 gallon capacity, in numbers sufficient to permit 15 calendar days storage without impact to Subcontractor operations.
- c. The Subcontractor shall store sludge, resulting from enriched equipment/material washing, in 55 gallon drums (supplied by Fluor Daniel Fernald). Filled drums may be stored no closer than 2 feet apart. A storage area will be designated by Fluor Daniel Fernald.
- d. Equipment/material washing operations and effluents shall be maintained separate, based on enrichment and type, by the following: uranium less than or equal to 1 percent enrichment, uranium greater to 1 percent enrichment but less than or equal to 1.25 percent enrichment, uranium greater than 1.25 percent enrichment but less than or equal to 2 percent enrichment, and thorium. Wash systems can be maintained separate by campaign or by physically separate systems.
- e. Approval to transfer effluents to large effluent tanks is required from Fluor Daniel Fernald.

3. Approval from the Fluor Daniel Fernald CCM to release effluent streams to the Fluor Daniel Fernald waste water treatment system is also required.

F. Sludge Drumming

Sludge limits for individual drums from enriched washing operations are restricted to the weights listed below. These weight will be based on the sample results for uranium concentration and isotopic

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analysis performed by Fluor Daniel Fernald. (Note: This mass may be further limited by the maximum allowable weight of the drum.)

1. 1,300 pounds of uranium for sludges up to and including 1.25 percent enrichment.
2. 252 pounds of uranium for sludges up to and including 2 percent enrichment.

3.3 QUALITY ASSURANCE

- A. Fluor Daniel Fernald will perform quality assurance and other oversight activities during the life of project to ensure contract specification are met. All QA activities to be provided by the Subcontractor will be stated in the "General Terms and Conditions" of the IFB/RFP.

3.3 QUALITY CONTROL

- A. The Subcontractor is to perform or witness inspections and test of procured material, equipment and items, work in progress and completed items within the bounds of the contract.

3.4 DELIVERY, STORAGE, AND HANDLING

- A. The Subcontractor shall deliver materials in original, new and unopened containers bearing the manufacturer's name, label, and the following information:
1. Name or title of material.
 2. Manufacturer's stock number and date of manufacture.
 3. Manufacturer's Name.
 4. Application instructions.
- B. All possible shipping and packing materials will be removed upon receipt at the site prior to entering the controlled area to minimize contaminated waste generation.

END OF SECTION

SECTION 03315**CONCRETE REMOVAL****PART I GENERAL****1.1 SCOPE**

- A. Dismantling of all above- and at-grade concrete, including:
 - 1. Elevated floor and roof slabs.
 - 2. Cast-in-place walls.
 - 3. Precast concrete components.
 - 4. Foundations, piers, and selected curbs projecting above grade.
 - 5. Concrete encasement (e.g., fireproofing).
 - 6. All other miscellaneous above-grade concrete.
 - 7. Built-up roofing, gypsum roof panels, and insulation.
 - 8. Control of fugitive emissions.
 - 9. Windows, doors, roof louvers and lead.

1.2 RELATED SECTIONS

- A. Section 01120 - Waste Handling Criteria.
- B. Section 01515 - Mobilization and Demobilization.
- C. Section 01517 - Removing/Fixing Radiological Contamination.
- E. Section 05126 - Structural Steel Dismantlement.
- F. Section 14955 - Lifting and Rigging.
- G. Section 15067 - Ventilation and Containment.

1.3 REFERENCE MATERIALS

- A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) Package for the following:
 - 1. Index of Drawings.
 - 2. Photographs.
 - 3. Existing Drawings.
 - 4. Subcontractor Work Plan Format Requirements.

1.4 REFERENCES, CODES, AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

- A. American National Standards Institute (ANSI):

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1. ANSI A10.6-90 Safety Requirements for Demolition Operations.
 2. ANSI A10.8-88 Construction and Demolition Operations - Scaffolding - Safety Requirements.
 3. ANSI A10.9-83 Construction and Demolition Operations - Concrete and Masonry Work - Safety Requirements.
- B. National Fire Protection Association (NFPA):
1. NFPA 101-94 Code for Safety to Life from Fire in Buildings and Structures.
 2. NFPA 241-93 Standard for Safeguarding Construction, Alteration, and Demolition Operations.
- C. United States Department of Energy (DOE):
1. DOE N441.1 Radiation Protection of the Public and the Environment.
 2. 10 CFR 835 Occupational Radiation Protection.
- D. Ohio Administrative Code (OAC):
1. 3745-17-08 Restriction of Emission of Fugitive Dust.

1.5 SUBMITTALS

- A. The Subcontractor shall submit for approval a concrete removal work plan in accordance with IFB/RFP, Part 7, Subcontractor Work Plan Format Requirements, that contains the following information:
1. Detailed method and sequence of dismantlement, including equipment to be used.
 2. Methods for control of contaminants, including control of fugitive emissions during cutting activities to control visible dust emissions.
 3. Controlled explosive methods may be used on building structures that are constructed of precast columns and roof beams. A detailed work plan containing the following information shall be prepared:
 - a. Methods and materials to be used.
 - b. Means to protect adjacent structures, equipment, material, and underground utilities from damage, including protection from projectiles.
 - c. Methods and materials to control fugitive emissions.
 - d. Contingency plan for detonation failure.

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- e. Proof of permit, issued by the Bureau of Alcohol, Tobacco and Firearms, to use explosives.
 - f. Methods and materials to store explosives according to the requirements of 29 CFR 55 Subpart K.
 - g. Evidence of previous work experience using controlled explosives to take down multi-story structures near other structures within the last 5 years. Provide project locations and contacts for verification.
- 4. Methods of cutting, including equipment to be used.
 - 5. Calculations to verify structural adequacy of partially dismantled structure, as applicable.
 - 6. 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.

1.6 QUALITY ASSURANCE

- A. Calculations to verify the structural integrity of the partially dismantled structure must bear the stamp of a Registered Professional Engineer.

PART II PRODUCTS**2.1 MATERIALS**

- A. Non-woven Geotextile Fabric:
 - 1. Trevira Spunbond 1120 by Hoechst Celanese Corp.
 - 2. Mirafi 160N by Mirafi, Inc.
 - 3. ADS 600 by Advanced Drainage Systems, Inc.
 - 4. Equal products manufactured by others will be acceptable.
- B. Surfactant used in amended water.
 - 1. Childers CP-225 CHIL-SORB.
 - 2. Certech.
 - 3. Expert Environmental Products.
 - 4. International Protective Coatings Corp.

PART III EXECUTION**3.1 PREPARATION**

- A. The Subcontractor shall ensure that adequate lay down space has been cleared and barriers have been established.

SECTION 03315

- B. The Subcontractor shall take the following precautions to control fugitive emissions. A wet dust suppression system shall be used. This system will utilize the following:
- a. Amended water (with surfactant).
 - b. Finely atomized water spray.

3.2 APPLICATION

- A. Concrete shall have contamination fixed or removed prior to leaving local containment or building enclosure, in accordance with Section 01517 of this specification package.
- B. All bituminous roofs felled through the use of explosives are to be dropped in a single unit and impact the ground in a horizontal plane.
- C. All dismantlement activities shall be performed in accordance with the references listed in Article 1.4 of this section.
1. Activities to fell concrete structures outside their own footprint require prior approval.
- D. Controls shall be maintained at all times during this removal work to minimize fugitive emissions.
- E. The Subcontractor shall prevent damages to adjacent structures, materials, and equipment including underground utilities, during dismantlement activities.
- F. All lifting and rigging required shall be in accordance with Section 14955 of this specification package.
- G. Removal of Above-Grade Concrete Projections
1. Inside the footprint of a building, above-grade concrete equipment, column, and other miscellaneous foundation piers, walls, and curbs are to be sealed and may remain intact until structural dismantlement.
 2. Prior to structural dismantlement, a water spray shall be used to minimize fugitive emissions.
 3. After structural dismantlement, the concrete is to be segregated and containerized per Section 01120 of this package and Part 6 of the IFB/RFP.
- H. Removal of At-Grade Concrete
1. At-grade concrete equipment, column, and other miscellaneous foundation piers, walls, and curbs will be sealed and may remain intact during and after structural dismantlement.
- I. Cutting
1. All material shall be cut as required for containerization in accordance with Section 01120 of this specification package.

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2. Embedded steel reinforcing is considered part of concrete.
 3. Because of contamination levels, some concrete may require local containment for cutting activities in accordance with Section 15067 of this specification package. These areas are identified in Part 6 of the IFB/RFP.
- J. Interior concrete/Concrete Masonry Unit (CMU) walls shall be removed using non-explosive methods prior to opening the shell of the structure. A water spray shall be used to minimize fugitive emissions.

3.3 SPECIAL INSTRUCTIONS

- A. The following items are also included (where applicable) in the sequence of concrete 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 them in appropriate containers.
 3. Wall and Roof Louvers
 - a. The Subcontractor shall ensure that louvers and roof vents are removed during exterior concrete 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**000116**

Section 04225

MASONRY REMOVAL**PART I GENERAL****1.1 SCOPE**

- 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/Request for Proposal (IFB/RFP) Package for the following:
1. Index of Drawings.
 2. Photographs.
 3. Existing Drawings.
 4. Subcontractor Work Plan Format Requirements.

1.4 REFERENCES, CODES, AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

- A. American National Standards Institute (ANSI):
1. ANSI A10.6-90 Safety Requirements for Demolition Operations.

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2. ANSI A10.8-88 Construction and Demolition Operations - Scaffolding - Safety Requirements.
 3. ANSI A10.9-83 Construction and Demolition Operations - Concrete and Masonry Work - Safety Requirements.
- B. National Fire Protection Association (NFPA):
1. NFPA 241-93 Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.5 SUBMITTALS

- A. The Subcontractor shall submit to the Fluor Daniel Fernald Construction Manager for approval a masonry removal work plan in accordance with IFB/RFP, Part 7, Subcontractor Work Plan Format Requirements, 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.

1.6 PROJECT CONDITIONS

- A. Conduct dismantlement to avoid damaging adjacent structures.

PART II PRODUCTS

Not used.

PART III EXECUTION**3.1 PREPARATION**

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

SECTION 04225**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 IFB/RFP 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.
- F. The Subcontractor shall take the following precautions to control fugitive emissions or visible dust emissions. A wet dust suppression system shall be used. This system will utilize the following:
 - a. Amended water (with surfactant).
 - b. Finely atomized water spray.

3.3 SPECIAL INSTRUCTIONS

- A. The following items are also included (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

SECTION 05125

NEW STRUCTURAL STEEL

PART I GENERAL

1.1 SCOPE

- A. Design, fabrication, and erection of miscellaneous metal items for protective barriers, lifting assemblies, rigging, and temporary bracing and supports.

1.2 RELATED SECTIONS

- A. Section 01120 - Waste Handling Criteria.
- B. Section 03900 - Foundations.
- C. Section 05126 - Structural Steel Dismantlement.
- D. Section 14955 - Lifting and Rigging.

1.3 REFERENCE MATERIALS

- A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) for the following:
 - 1. Index of Drawings.
 - 2. Photographs.
 - 3. Existing Drawings.

1.4 REFERENCES, CODES, AND STANDARDS

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM A36/A36M-94 Standard Specification for Carbon Structural Steel.
 - 2. ASTM A307-94 Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 - 3. ASTM A325M-94 Standard Specification for Bolts, Structural Steel, Heat Treated, 120/105 KSL Minimum Tensile Strength.
- B. American Welding Society (AWS):
 - 1. AWS A2.4-93 Standard Symbols for Welding, Brazing, and Nondestructive Examination.
 - 2. AWS D1.1-94 Structural Welding Code Steel.

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SECTION 05125**C. American Institute of Steel Construction (AISC):**

1. AISC Steel Construction Manual - Allowable Stress Design (ASD), 9th Edition.

D. American National Standards Institute (ANSI):

1. ANSI A10.13-89 Construction and Demolition Operations - Steel Erection - Safety Requirements.

1.5 SUBMITTALS**A. The Subcontractor shall submit the following for approval by the Fluor Daniel Fernald Construction Manager.**

1. **Calculations:** Indicate design loads, member forces, moments and stresses, and connection forces.
2. **Shop Drawings:** Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
3. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths. Submit copies of welder's certifications with shop drawings.
4. Plan for conducting and documenting field quality testing and inspection including test methods and reports required under Field Quality Assurance.

B. For additional submittal requirements see Part 6 of the Invitation for Bid/Request for Proposal (IFB/RFP).**1.6 QUALITY ASSURANCE****A. Calculations and shop drawings must bear the stamp of a Registered Professional Engineer.****1.7 DELIVERY, STORAGE, AND HANDLING.****A. ASTM A325 high strength bolts shall be delivered to the site in the original labeled containers and once on site shall not be transferred into unlabeled containers. The label information shall include the type of bolt, purchase order number, and the name of the supplier.**

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PART II PRODUCTS

2.1 MATERIALS

- A. Steel Sections: ASTM A36.
- B. Threaded Fasteners: Heavy hexagon bolts, nuts, and hardened washer shall be ASTM A325 or ASTM A307.
 - 1. Bolts connecting primary members shall be A325.
- C. Expansion Anchors: Expansion bolts used for securing steel to concrete shall be one of the following:
 - 1. "Parabolt" as manufactured by Molly Fastener Group of Emhard, Temple, PA 19560.
 - 2. "Wedge Anchors" as manufactured by ITT Phillips Drill Division, Michigan City, IN 46360.
 - 3. "Kwik Bolt" as manufactured by Hilti, Inc., Stamford, CT 06405.
- D. Welding Materials: AWS D1.1 - Structural Welding Code.

2.2 FABRICATION

- A. For delivery to site, fit and ship assemble in largest practical sections.
- B. Supply components required for anchorage of fabricated structural assemblies.
- C. All welding procedures, welder's certification, and visual acceptance criteria must be in accordance with AWS D1.1, Chapter 5.
- D. Clean surfaces of rust, scale, grease, and foreign matter prior to applying shop primer.
- E. Shop prime with one coat of rust-resistant red oxide primer.
- F. Do not prime surfaces in direct contact with concrete or where field welding shall be required.
- G. All coatings shall be lead and chromium free.

PART III EXECUTION

3.1 PREPARATION

- A. Prior to fabrication, the Subcontractor shall verify field dimensions.

SECTION 05125**3.2 INSTALLATION - GENERAL**

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Allow for erection loads and provide temporary bracing to maintain true alignment until completion of erection.
- C. Field weld components as indicated on the approved drawings. Field welding shall be in accordance with AWS D1.1, Chapter 3.
- D. Fasteners shall be tightened to manufacturer's specifications or applicable design requirements.
- E. Field modifications to load bearing structures shall require prior approval from the Fluor Daniel Fernald Construction Manager.
- F. After erection, prime field welds and abrasions. Any steel embedded in concrete is an exception.
- G. All steel shall be fabricated and erected in accordance with the codes and standards referenced in Article 1.4 of this section.
- H. After use, all steel shall be dismantled and cut for containerization in accordance with Section 01120 and Section 05126 of this specification package.
- I. All coatings shall be lead and chromium free.

3.3 FIELD QUALITY ASSURANCE

- A. The Subcontractor shall inspect high-strength bolted connections for all shop-fabricated steel, perform tests and prepare test reports in accordance with the AISC specifications. All test results shall be submitted to the Fluor Daniel Fernald Construction Manager.
- B. The Subcontractor shall conduct and interpret tests, shall state in each report whether test specimens comply with requirements, and shall specifically state any deviations. Deviations must be approved in writing by the Fluor Daniel Fernald Construction Manager.
- C. Shop and Field Welding: The Subcontractor shall:
 - 1. Inspect and test, during fabrication and erection of structural steel assemblies in accordance with AWS Structural Welding Code and as follows:
 - a. Conduct inspections and tests as required. Record types and locations of all defects found in the work. Record work required and performed to correct deficiencies. All test results to be submitted to the Fluor Daniel Fernald Construction Manager.
 - b. Perform visual inspection of all welds.
 - c. Perform nondestructive tests of welds per Subcontractor submitted plan.

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- d. All welds that fail shall be repaired per approved Subcontractor repair plan.
 - e. Reworked areas shall be retested in accordance with the original design requirements.
2. Welded connections on structural steel rigging frame utilized for critical lifts, as defined in Section 14955, shall be 100 percent radiograph tested by an independent certified testing lab. Results shall be submitted to the Fluor Daniel Fernald Construction Manager for approval.
- a. All welds that fail shall be repaired per approved Subcontractor repair plan.
 - b. Reworked areas shall be retested in accordance with the original design requirements.
- D. Correction of Substandard Work:
- 1. The Subcontractor shall correct deficiencies in structural steel work which inspections and laboratory test reports have indicated to be not in compliance with requirements.

END OF SECTION

SECTION 05126**STRUCTURAL STEEL DISMANTLEMENT****PART I GENERAL****1.1 SCOPE**

- A. Dismantling and containerization of structural steel, miscellaneous steel, and metal siding/roofing:
 - 1. Structural steel.
 - 2. Bar joists.
 - 3. Floor plate/decking.
 - 4. Grating.
 - 5. Stairs, ladders, and handrail.
 - 6. Metal siding and roofing, including doors, louvers, and windows.
 - 7. All other miscellaneous steel.
 - 8. Control of fugitive emissions.

1.2 RELATED SECTIONS

- A. Section 01120 - Waste Handling Criteria.
- B. Section 01517 - Removing/Fixing Radiological Contamination.
- C. Section 03315 - Concrete Removal.
- D. Section 07415 - Transite Removal.
- E. Section 14955 - Lifting and Rigging.

1.3 REFERENCE MATERIALS

- A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) Package for the following:
 - 1. Index of Drawings.
 - 2. Photographs.
 - 3. Existing Drawings.

SECTION 05126**4. Subcontractor Work Plan Format Requirements.****1.4 REFERENCES, CODES, AND STANDARDS**

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

A. American National Standards Institute (ANSI):

1. ANSI A10.6-90 Safety Requirements for Demolition Operations.
2. ANSI A10.8-88 Construction and Demolition Operations - Scaffolding - Safety Requirements.
3. ANSI A10.13-89 Construction and Demolition Operations - Steel Erection.

B. National Fire Protection Association (NFPA):

1. NFPA 241-93 Standard for Safeguarding Construction, Alteration, and Demolition Operations.

C. United States Occupational Safety and Health Administration:

1. 29 CFR 1926.858 Removal of Steel Construction

1.5 SUBMITTALS

A. The Subcontractor shall submit to the Fluor Daniel Fernald (FDF) for approval a structural steel removal work plan in accordance with IFB/RFP, Part 7, Subcontractor Work Plan Format Requirements, that contains the following information:

1. Detailed sequence of dismantlement, including equipment to be used.
2. Methods for contaminant control, including fugitive emissions during cutting.
3. If controlled explosive methods are used for structural steel dismantlement, a detailed work plan containing the following information shall be prepared:
 - a. Methods and materials to be used.
 - b. Means to protect adjacent structures, equipment, material, and underground utilities from damage, including protection from projectiles.
 - c. Methods and materials to control fugitive emissions.
 - d. Contingency plan for detonation failure.
 - e. Proof of permit, issued by the Bureau of Alcohol, Tobacco and Firearms, to use explosives.

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- f. Evidence of previous work experience using controlled explosives to take down multi-story structures within the last 5 years. This experience may be shown through the sub-tier contract. Provide project locations and contacts for verification.
 - g. If interior concrete/concrete masonry unit (CMU) walls and slabs are removed, refer to concrete removal method in Sections 03315 and 04225 of this specification package for methods.
- 4. Methods of cutting, including equipment to be used.
 - 5. Detailed plan for protecting lay down and cutting areas from contamination by lead paint chips and for controlling airborne radioactivity.
 - 6. Methods and materials used for cutting lead-painted steel.
 - 7. Calculations to verify structural integrity of partially dismantled structure, as applicable.
 - 8. 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.
 - 9. These calculations shall be stamped by a Registered Professional Engineer. In addition, the Subcontractor shall submit a detailed work plan that describes plans for personnel tie offs, use of pick boards and walking on or near roof purlins/girders.

PART II PRODUCTS**2.1 MATERIALS**

- A. Non-woven Geotextile Fabric:
 - 1. Trevira Spunbond 1120 by Hoechst Celanese Corp.
 - 2. Mirafi 160N by Mirafi Inc.
 - 3. ADS 600 by Advanced Drainage Systems, Inc.
 - 4. Equal products manufactured by others will be acceptable.
- B. Surfactants:
 - 1. Childers CP-225 CHIL-SORB.
 - 2. Certech.
 - 3. Expert Environmental Products.
 - 4. International Protective Coatings Corp.

PART III EXECUTION**3.1 PREPARATION**

- A. The Subcontractor shall ensure that adequate lay down space has been cleared and barriers have been established.

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- B. Steel and siding shall have contamination removed or removed and fixed prior to exposing steel and siding to the environment in accordance with Section 01517 of this specification package.
- C. If controlled explosive methods are used, the Subcontractor shall take precautions to control fugitive emissions by saturating the explosion footprint with water 2 to 4 hours prior to the implosion.

3.2 APPLICATION

- A. All dismantlement activities shall be performed in accordance with the standards listed in Article 1.4 of this section.
- B. Control of fugitive emissions shall be maintained at all times during this removal work to minimize visible dust.
- C. Do not remove main steel members before all equipment and miscellaneous steel have been removed.
 - 1. If structural steel is removed in sections, verify the structural adequacy of the remaining structure.
- D. Prior to torch-cutting any steel or siding that has a lead based coating, an 8 inch strip of paint shall be removed at the area of the cut.
- E. The Subcontractor is responsible for avoiding damage to adjacent structures, material, and equipment, including underground utilities during dismantlement activities.
- F. All lifting and rigging required shall be in accordance with Section 14955 of this specification package.
- G. All temporary bracing and rigging frames required shall be in accordance with Section 05125 of this specification package.
- H. All steel columns, anchors, and other projections shall be removed flush with the floor slab or existing grade.
- I. Lead-based paint chips and debris, released during structural steel dismantlement, shall be collected and managed in accordance with Section 01120 of this specification package.
- J. Structural steel is any building support steel, stairways, equipment platforms, equipment mezzanine, floor plate steel, pre-engineered metal buildings, metal wall panels, metal roof panels, metal floor decking and associated concrete floors, built-up roofing (gypsum decking and urethane foam) and associated concrete decking and all miscellaneous metal.
 - 1. For the purposes of the contract, the Subcontractor shall apply mechanical means of cutting and removing the structural steel to the largest extent possible.
 - 2. The roof deck and roofing material, panels and concrete floor deck shall also be tripped with the structure wherever possible. Roofing material containing ACM shall not be tripped with structural steel.

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3. The D&D Subcontractor shall shear and dismantle the structural steel (beams, joists, purlins, etc.) as close as practical to the joints (cross members, plates, decking, etc.) to minimize inaccessible surfaces and to maximize straight lengths. Size criteria are as indicated in Part 6 of the IFB/RFP.

NOTE: Some bending of the structural steel may occur during shearing activities.

Straight pieces may be difficult to obtain where main structural members are connected to plates, deck, grates, or cross members.

4. The D&D Subcontractor shall minimize bending, twisting, and smashing of the structural members during bulk storage. Straight pieces should be segregated to the extent practical.

3.3 SPECIAL INSTRUCTIONS

A. The following items are also included (where applicable) in the sequence of structural steel dismantlement:

1. Doors, Windows, and Frames:
 - a. The Subcontractor shall remove all windows.
 - b. The Subcontractor shall remove all doors and frames (wood and/or steel).
2. Lead Materials:
 - a. The Subcontractor shall segregate all lead materials (i.e., flashings, vent stacks, etc.).
 - b. The Subcontractor shall (whenever possible) dismantle lead flashing in a manner that will facilitate recycling. This will include minimizing inaccessible surfaces and maximizing straight lengths. This will also include avoiding the use of fixatives on the lead flashing that would require an abrasive method of removal.
3. Gutters, and Wall and Roof Louvers:
 - a. The Subcontractor shall ensure that louvers, gutters (see Section 07415, Article 3.3, Paragraph A, Subparagraph 1.a for gutters), and roof vents are removed during structural steel dismantlement.
4. Metal Siding and Roofing:
 - a. The Subcontractor shall remove metal siding and roofing in full sheets in tact without cutting or bending the sheets.

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- B. All material shall be cut and managed in accordance with Part 6 of the IFB/RFP.

END OF SECTION

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SECTION 07415**TRANSITE REMOVAL****PART I GENERAL****1.1 SCOPE**

- A. The work includes:
1. Removal of all interior and exterior transite panels (ACM).
 2. Use of an encapsulant and/or surfactant on the transite panels before removal to reduce of airborne asbestos fibers.

1.2 RELATED SECTIONS

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

1.3 REFERENCE MATERIALS

- A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) for the following:
1. Index of Drawings.
 2. Photographs.
 3. Existing Drawings.
 4. Subcontractor Work Plan Format Requirements.

1.4 REFERENCES, CODES, AND STANDARDS

- A. 29 CFR 1910.1001 Asbestos (General Industry).
29 CFR 1926.1101 Asbestos (Construction Industry).
29 CFR 1910.134 Use of Respirators.
- B. Ohio Department of Health Asbestos Hazards Abatement Rules Chapter 3701-34, OAC (Ohio Department of Health).
- C. Ohio Environmental Protection Agency Chapter 3745-20, OAC.

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- D. United States Environmental Protection Agency (US EPA) 40 CFR 61 Subpart M (NESHAPS).

1.5 SUBMITTALS

- A. The Subcontractor shall submit to the Fluor Daniel Fernald Construction Manager for approval a detailed work plan in accordance with IFB/RFP, Part 7, Subcontractor Work Plan Format Requirements, including the procedures proposed for use in complying with the requirements of this specification.

1. Include in the plan:
 - a. The location and layout of storage and queuing areas.
 - b. The method of applying encapsulant and/or lockdown.
 - c. The methods and sequencing of interior and exterior panel removal.
 - d. The interface of trades involved in the performance of work.
 - e. A detailed description of the methods to be employed to prohibit visible emissions in the work area.
 - f. A detailed description of the methods for moving transite panels from the location to storage to containerization.
2. Describe the use of a portable HEPA ventilation system, the containerization of removed asbestos debris, the method of treating broken and/or damaged panels, and the method of protecting adjacent structures.
3. The plan must be approved by Fluor Daniel Fernald Construction Manager prior to commencement of work.
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.
5. The Subcontractor shall submit a detailed work plan that describes plans for personnel tie off, use of pick boards and walking on or near roof purlins/girders.

- B. Prior to initiation of the work, the Subcontractor shall submit the following items to the Fluor Daniel Fernald Construction Manager:

1. Ohio Department of Health/OSHA-required documentation for Asbestos Removal Contractors.
 - a. Documentation of training.
 - b. Medical surveillances.
 - c. Respirator fit-test.

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- d. Employee exposure assessments.
 2. State of Ohio certificates and licenses for the Subcontractor.
 3. State of Ohio certification for all personnel as required by law.
- C. Prior to submittal of notification to government agencies, the Subcontractor shall provide a copy to the Fluor Daniel Fernald Construction Manager for concurrence.
- D. Product Data: The Subcontractor shall submit for approval manufacturer's technical information, including application instructions for each material proposed for use.

1.6 QUALITY ASSURANCE

- A. Prior to commencement of work, the Subcontractor shall provide for approval a Fluor Daniel Fernald-selected sample area of transite for approval, 10 feet by 10 feet in size, to demonstrate lockdown, encapsulant, and surfactant methods. The approved mock-up shall serve as a standard for the balance of the work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. The Subcontractor shall:
1. Take precautions to prevent breakage of transite panels during handling.
 2. Deliver materials in original, new, and unopened containers bearing manufacturer's name, label, and the following information:
 - a. Name or title of material.
 - b. Manufacturer's stock number and date of manufacture.
 - c. Manufacturer's name.
 - d. Thinning and application instructions.

1.8 PROJECT CONDITIONS

- A. The Subcontractor shall provide protection to prevent transite panels from falling or hitting other buildings and surrounding utilities and structures.
- B. Subcontractor shall apply encapsulants, lockdown, or surfactants according to the product manufacturer's specifications for application conditions (e.g., temperature).

SECTION 07415**PART II PRODUCTS****2.1 MATERIALS****A. Encapsulants:**

1. Certane 2050 Certified Technologies.
2. Expert Environmental Products - Eppco #1.
3. International Protective Coatings Corp. - Serpiloc.

B. Surfactants:

1. Childers CP-225 CHIL-SORB.
2. Certech.
3. Expert Environmental Products.
4. International Protective Coatings Corp.

C. Lockdowns:

1. 1050-Clearcoat by Certane.
2. Fiber-Seal by Eppert.
3. International Protective Coatings Corp. - Serpiloc.

D. Fiber-reinforced polyethylene or polyester sheeting approved for outdoor storage: color, yellow; minimum thickness of 6 mils; ultraviolet resistant, as manufactured by Griffolyn or Herculite.**E. Or equal.****F. Use of water-based products is prohibited.****PART III EXECUTION****3.1 PREPARATION****A. In addition to Subcontractor notification, Fluor Daniel Fernald will notify governmental EPA agencies before the start of work.****B. The Subcontractor shall be responsible for:**

1. Adherence to and compliance with work practices and procedures set forth in the most current and applicable Federal, State, and local codes, regulations, and standards.
2. Obtaining certifications and licenses.

C. Subcontractor shall maintain the integrity of the exterior of the building until the interior transite and insulation has been removed and encapsulant, lockdown, or surfactant has been applied to the interior surface of exterior panels.

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3.2 APPLICATION

- A. For exterior transite, the Subcontractor shall:
 - 1. Apply the encapsulant or lockdown to the interior surface of the exterior panels prior to removal. Encapsulant or lockdown shall be applied to provide visible coverage.
 - 2. Wherever practical, the Subcontractor shall use a scan climber as the preferred method to remove transite from the roof and from the building siding.
- B. Apply surfactant to areas around fasteners of transite panels before removal of fasteners. If cut, fasteners shall be cut in a manner which minimizes abrading the transite panel. A flat, sharp instrument shall be used to cut the fasteners. If original application becomes dried out before or during removal or handling, apply a second application.
- C. Unwrapped transite panels shall be lowered to the ground, or placed in an impervious waste bag, or wrapped in 6 mil fiber-reinforced sheeting and lowered to the ground no later than the end of the work shift. Removed transite panels shall be wrapped in 6 mil fiber-reinforced sheeting and sealed by the end of the work shift.
- D. In the event a transite panel is broken, the Subcontractor shall encapsulate the broken edges.
- E. Removal of transite roof panels:
 - 1. Removal of transite roof panels shall be sequenced to minimize exposed surfaces.
 - 2. Bodily contact with the transite roof panels, as practical, shall be avoided.
 - 3. When dust is observed, collect the dust with a HEPA-filtered vacuum.
 - 4. Apply the encapsulant or lockdown to the interior surface of the two layers of panels prior to removal. Encapsulant or lockdown shall be applied to provide visible coverage.
 - 5. Load the panel into a skip box.

3.3 SPECIAL INSTRUCTIONS

- A. The following items are also included (where applicable) in the sequence of transite removal:
 - 1. Gutters:
 - a. The Subcontractor shall remove and collect all ACM from gutters, apply an encapsulant or lockdown to the gutters before their removal.
 - 2. Insulation:
 - a. The Subcontractor shall remove the mineral wool insulation between the transite panels and/or other materials.

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- B. The Subcontractor shall use dust control techniques (minimum of applying amended water) to minimize airborne contaminants generated during insulation removal.
3. Doors, Windows, and Frames:
- a. The Subcontractor shall remove all windows in one piece.
 - b. The Subcontractor shall remove all doors (wood and/or steel).
4. Lead Materials:
- a. The Subcontractor shall segregate all lead materials (i.e., flashings, transite fasteners, vent stacks, etc.).
5. Wall and Roof Louvers:
- a. The Subcontractor shall ensure that louvers and roof vents are removed during exterior transite removal.
- C. All material shall be dispositioned in accordance with Part 6 of IFB/RFP.

END OF SECTION

SECTION 14955**LIFTING AND RIGGING****PART I GENERAL****1.1 SCOPE**

- A. Lifting and rigging requirements for all hoisting and lifting equipment.
- B. Use of existing structure for lift support.

1.2 RELATED SECTIONS

- A. Section 01515 - Mobilization and Demobilization.
- B. Section 03315 - Concrete Removal.
- C. Section 05126 - Structural Steel Dismantlement.
- D. Section 07415 - Transite Removal.
- E. Section 15065 - Equipment Dismantlement.
- F. Section 15066 - Interior Dismantlement.

1.3 REFERENCE MATERIALS

- A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) Package for the following:
 - 1. Index of Drawings.
 - 2. Photographs.
 - 3. Existing Drawings.

1.4 REFERENCES, CODES, AND STANDARDS

- A. American National Standards Institute (ANSI):
 - 1. ANSI A10.11-89 Construction and Demolition Operations - Personnel and Debris Nets.
 - 2. ANSI A10.4-90 Safety Requirements for Personnel Hoists and Employee Elevators.
 - 3. ANSI A10.6-90 Safety Requirements for Demolition Operations.

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4. ANSI A10.14-91 Requirements for Safety Belts, Harnesses, Lanyards, Lifelines, and Droplines for Construction and Demolition Use.
5. ANSI A10.18-83 Construction and Demolition Operations - Temporary Floor and Wall Openings, Flat Roofs, Stairs, Railings, and Toe Boards - Safety Requirements.
6. ANSI B30.2-90 Overhead and Gantry Cranes.
7. ANSI B30.5-94 Mobile and Locomotive Cranes.
8. ANSI B30.9-90 Slings.
9. ANSI B30.10-93 Hooks - Special Notice and Interpretation.
10. ANSI B30.16-93 Overhead Hoists (Under Hung).

B. United States Department of Energy (DOE):

1. DOE/ID-10500-93, Hoisting and Rigging Manual.
2. The FEMP Supplement to the DOE Hoisting and Rigging Manual, RM-0030

1.5 SUBMITTALS

- A. The Subcontractor shall submit the following for approval by the Fluor Daniel Fernald Construction Manager.
 1. For each crane to be used:
 - a. Certification that each operator is qualified by education and experience for the type of crane he/she will be operating in accordance with Section 11 of the FEMP Supplement to the DOE Hoisting and Rigging Manual. See Part 8 of the IFB/RFP.
 - b. Design lifting capacities at all critical boom lengths and angles, and safety factor used.
 - c. Crane log, maintenance, and inspection records.
 - d. General arrangement drawings which clearly show proposed crane type, outrigger locations and loads, cribbing/foundation design, length of boom, load radius, and clearances.

2. For all lifts designated as "critical lifts" in Part 6 of the IFB/RFP or by the Fluor Daniel Fernald Construction Manager, submit a pre-job plan or procedure in accordance with the requirements of Section 11 of the FEMP Supplement to the DOE Hoisting and Rigging Manual. See Part 8 of the IFB/RFP.

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3. For all ordinary lifts, the Subcontractor shall comply with all applicable sections of the DOE Hoisting and Rigging Manual and Section 11 of the FEMP Supplement to the DOE Hoisting and Rigging Manual. See Part 8 of the IFB/RFP.

1.6 QUALITY ASSURANCE

- A. All personnel must be certified by the Subcontractor in accordance with the requirements of the DOE Hoisting and Rigging Manual prior to performing the work.
- B. All equipment must meet the requirements of the DOE Hoisting and Rigging Manual.
- C. All drawings and calculations submitted for critical lifts and structural integrity must bear the stamp of a Registered Professional Engineer.

1.7 PROJECT CONDITIONS

- A. Subcontractor shall ensure that roads into and around the job site are not blocked at any time, unless authorized via proper site permits.
- B. Subcontractor shall ensure that utilities which serve areas outside the job site are not interrupted at any time.

PART II PRODUCTS**2.1 MATERIALS**

- A. All wire rope, slings, and other rigging accessories must meet the requirements of Sections 8 and 11 of the FEMP Supplement to the DOE Hoisting and Rigging Manual. See Part 8 of the IFB/RFP.

PART III EXECUTION**3.1 PREPARATION**

- A. The Subcontractor shall ensure that adequate lay down space has been provided, areas to be lifted or lowered over are clear of personnel and hazardous substances, and barriers have been established.
 1. Loads shall not be lifted or lowered over permanent occupied structures or items noted to be protected as identified on referenced drawings.
 2. Temporary structures may be lifted or lowered over only after all personnel have been evacuated.
- B. The Subcontractor shall ensure that all cranes to be used are placed on solid ground, avoiding damage to underground utilities identified in the referenced drawings.
 1. If the crane cribbing/foundation will require a bearing pressure greater than 1,500 psf, the Fluor Daniel Fernald Construction Manager shall be notified a minimum of 2 weeks in advance of lift.

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3.2 APPLICATION

- A. All work must be performed in accordance with the references listed in Article 1.4 of this specification.
- B. Subcontractor shall ensure that all loose materials are removed from or secured to any item to be lifted.
- C. Subcontractor shall ensure that the existing structure is not subjected to excess loading during lifting operations.
 - 1. Loads may be supported from structural steel or concrete beams only.
 - 2. If more than 1,000 pounds is supported from a beam, calculations must be performed to verify the structural adequacy of the beam.

END OF SECTION

SECTION 15065**EQUIPMENT DISMANTLEMENT****PART 1 GENERAL****1.1 SCOPE**

- A. This section includes the Subcontractor's responsibility for removal or dismantlement of equipment within the facility and support systems within or outside the facility, segregation of equipment and components into various waste streams, and preparation for containerizing.

1.2 RELATED SECTIONS

- A. Section 01120 - Waste Handling Criteria.
- B. Section 01515 - Mobilization and Demobilization.
- C. Section 01517 - Removing/Fixing Radiological Contamination.
- D. Section 14955 - Lifting and Rigging.
- E. Section 15067 - Ventilation and Containment.

1.3 REFERENCE MATERIAL

- A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) for the following:
1. Index of Drawings.
 2. Photographs.
 3. Existing Drawings.
 4. HEPA Vacuum Cleaner Requirements.
 5. HEPA Air Filtration Device Requirements.
 6. Air Cleaning Device (ACD) Procurement Specification.
 7. Air Cleaning Device Filter Procurement Specification.
 8. Subcontractor Work Plan Format Requirements.

1.4 REFERENCES, CODES, AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

- a. 29 CFR 1926.301 Hand Tools.
- b. 29 CFR 1926.302 Power Operated Hand Tools.

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1.5 SUBMITTALS

The Subcontractor shall submit the following for approval:

1. Detailed removal work plan in accordance with IFB/RFP Part 7, Subcontractor Work Plan Format Requirements, including sequence, methods of removal and dismantlement, equipment required, catalog cut sheets, drawings and method and materials to control possible generation of fugitive emissions from cutting operations, methods to seal equipment openings for each equipment type and location of interim storage areas and allowable floor loads.
2. Catalog cuts, proposed location, and method of installation of all hoisting equipment, and specialized construction equipment submitted for approval by the Fluor Daniel Fernald Construction Manager with work plan.

1.6 QUALITY ASSURANCE

- A. Calculations submitted on maximum allowable floor loading must bear the stamp of a Registered Professional Engineer.

1.7 PROJECT CONDITIONS

- A. All RCRA-listed and characteristic hazardous waste/debris has been removed from equipment to the maximum extent practical. Should any unidentified material be found or spilled, stop work in this area and contact the Fluor Daniel Fernald Construction Manager and radiological control technicians for further instructions.
- B. If material is found to contain less than 1 quart of holdup residual material, the D&D Subcontractor will be responsible for removing and drumming the holdup material in accordance with the Waste Management Plan, Part 6 of the IFB/RFP. If by visual inspection the material found (solid or liquid) is estimated to be greater than 1 quart by volume, D&D activities will cease on that piece. The Construction Manager will be notified.

PART II PRODUCTS

2.1 EQUIPMENT

- A. The Subcontractor shall supply all tools, and equipment required for equipment dismantlement, removal, and movement.
- B. All lifting and hoisting equipment required shall be in compliance with Section 14955 of this specification package.
- C. The method of collection of the unidentified residual material will be specified by the Construction Manager.
- D. The Subcontractor shall supply duct tape, 6 mil fiber-reinforced sheeting, 1/2 inch plywood and an approved foam that is not ultraviolet degradable as sealing materials.

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- E. The Subcontractor shall use mechanical means of cutting whenever possible.
- F. Prior to torch-cutting any material that has a lead-based coating, an 8 inch strip of paint shall be removed at the area of the cut.

2.2 MATERIALS

- A. The Subcontractor shall supply all materials required to seal equipment openings per requirements of this section.
- B. Fiber-reinforced polyethylene or polyester material approved for outdoor storage: color, yellow; minimum thickness of 6 mils; ultraviolet resistant; as manufactured by Griffolyn, Herculite, or equal.

PART III EXECUTION**3.1 APPLICATION**

- A. Equipment Dismantlement/Removal:

See Part 6 of the IFB/RFP for a listing of equipment that falls within the general equipment type categories.

1. **Type RA Equipment:** Equipment or equipment debris which is small enough to be handled by one or two individuals.
 - a. This work consists of those pieces that one or two individuals can safely handle without lifting devices.
 - b. All equipment and piping shall be dismantled, cut, and segregated per the requirement of Section 01120 of specification package and Part 6 of the IFB/RFP.
 - c. If methods used for dismantlement generate loose contamination, or if upon dismantlement, loose contamination is discovered, the openings on the equipment shall be sealed. Sealing material shall be sufficiently durable to maintain its integrity during handling, containerization, and exposure to weather. The Subcontractor shall seal openings after cleaning and after verification inspection by a Fluor Daniel Fernald representative as defined in Section 01517.
2. **Type RB Equipment:** Small equipment requiring a forklift, bobcat or crane to handle.
 - a. The Subcontractor shall erect or use other necessary lifting equipment as required to remove type RB equipment.
 - b. All equipment and piping shall be dismantled, cut, and segregated per the requirements of Section 01120 of this specification package and Part 6 of IFB/RFP.
 - c. If methods used for dismantlement generate loose contamination or if upon dismantlement, loose contamination is discovered, the openings on the equipment

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shall be sealed. Sealing material shall be sufficiently durable to maintain its integrity during handling, containerization, and exposure to weather. The Subcontractor shall seal openings after cleaning and after verification inspection by a Fluor Daniel Fernald representative as defined in Section 1517.

3. **Type RC Equipment:** Equipment which must be significantly disassembled.
 - a. The Subcontractor shall remove the various process and related support equipment which lends itself to disassembly into manageable parts for material handling and disposition movements.
 - b. All equipment and piping shall be dismantled, cut, and segregated per the requirements of Section 01120 of this specification package and Part 6 of IFB/RFP.
 - c. If methods used for dismantlement generate loose contamination or if upon dismantlement, loose contamination is discovered the openings on the equipment shall be sealed. Sealing material shall be sufficiently durable to maintain its integrity during handling, containerization, and exposure to weather. The Subcontractor shall seal openings after cleaning and after verification inspection by a Fluor Daniel Fernald representative as defined in Section 01517.
 - d. In some cases this equipment is elevated from the ground by the means of a structural platform. In these cases the equipment will be cut away or disconnected from the platform and lowered to the ground. The dismantlement of this equipment shall be accomplished by shearing and cutting whenever possible. If this is not possible, the equipment shall be dismantled at convenient assembly joints.
 - e. Lined pipes and tanks shall be cut and removed by mechanical means only.
4. **Type RD Equipment:** Equipment which must be removed in one piece during dismantlement of the building.
 - a. **Prior to cleaning the building:**
 1. If methods used for dismantlement generate loose contamination or if upon dismantlement, loose contamination is discovered, the openings on the equipment shall be sealed. All openings on the equipment shall be sealed weather tight. Sealing material shall be sufficiently durable to maintain its integrity during handling and containerizing.
 2. Where necessary, the equipment will have to be prepared as described in Section 01517. An alternative would be to double wrap the equipment with 6 mil polyethylene, tape, and seal prior to opening the building.
 - b. If necessary, the equipment shall be rigged in accordance with Section 14955 segregated and containerized in accordance with the Waste Management Plan in Part 6 of the IFB/RFP.

SECTION 15065**3.2 INTERIM MATERIAL STORAGE**

- A. Where removed materials are staged or stored within the facility, they shall be stored in designated floor storage areas. Floor loading shall not exceed 75 percent of the design loads as indicated on existing drawings. Where floor loads are not shown on these existing drawings, calculations shall be performed to determine maximum allowable floor loads and submitted to the Fluor Daniel Fernald Construction Manager for approval.
- B. Damaged areas within facilities identified by the Subcontractor's Engineering Survey shall not be used for interim material storage.

END OF SECTION

SECTION 15066**INTERIOR DISMANTLEMENT****PART I GENERAL****1.1 SCOPE**

- A. This section includes the Subcontractor's responsibility for the removal of demolition debris materials within the facility and support items within or outside the facility. Segregation of demolition debris into various waste streams and preparation for containerizing shall include, but not be limited to, the following:

1. Conduit.
2. Wire.
3. Electrical boxes (junction, switch).
4. Contactors.
5. Lighting fixtures.
6. Motor operated valves.
7. Lighting station.
8. Raceway and troughs.
9. Cable trays.
10. Piping.
11. Assorted valves, fittings, elbows, gauges, spool pieces, etc.
12. Ductwork, plenums, branches, etc.
13. Miscellaneous similar items.

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 15067 - Ventilation and Containment.

1.3 REFERENCE MATERIAL

- A. See Invitation for Bid/Request for Proposal (IFB/RFP) for the following:
1. Index of Drawings.
 2. Photographs.
 3. Existing Drawings.

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4. Subcontractor Work Plan Format Requirements.
5. Air Cleaning Device (ACD) Procurement Specification.
6. Air Cleaning Device Filter Procurement Specification.

1.4 REFERENCES, CODES, AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

- | | |
|-----------------|----------------------------|
| 29 CFR 1926.301 | Hand Tools. |
| 29 CFR 1926.302 | Power Operated Hand Tools. |

1.5 SUBMITTALS

A. The Subcontractor shall submit the following for approval:

1. Detailed removal work plan, in accordance with IFB/RFP Part 7, Subcontractor Work Plan Format Requirements, including sequence, methods of removal and dismantlement; equipment required, catalog cut sheets; drawings; methods and materials to control possible generation of fugitive emissions from cutting operations; and locations of interim storage areas and allowable floor loadings.
2. Catalog cuts, proposed location, method of installation of all hoisting equipment, and specialized construction equipment submitted for approval by the Fluor Daniel Fernald Construction Manager with work plan.

1.6 QUALITY ASSURANCE

A. Calculations submitted on maximum allowable floor loading must bear the stamp of a Registered Professional Engineer.

1.7 PROJECT CONDITIONS

A. All RCRA listed and characteristic hazardous waste/debris has been removed from the demolition debris to the maximum extent practical. Should any unidentified material be found or spilled, stop work in this area and contact the Fluor Daniel Fernald Construction Manager and radiation technicians for further instructions.

PART II PRODUCTS**2.1 EQUIPMENT**

- A. Subcontractor shall supply all tools and equipment required for demolition debris material removal.
- B. All lifting and hoisting equipment required shall be in compliance with Section 14955 of this specification package.
- C. The method for collection of the unidentified/residual material will be specified by the Construction Manager.

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2.2 MATERIALS

- A. The Subcontractor shall supply all materials required to seal openings per requirements of this section.
- B. The Subcontractor shall supply duct tape, 6-mil fiber-reinforced sheeting, 1/2 inch plywood and an approved foam that is ultraviolet degradable as sealing materials.
- C. A fiber-reinforced polyethylene or polyester sheeting approved for outdoor storage: color, yellow; minimum thickness of 6 mils; ultraviolet resistant; as manufactured by Griffolyn, Herculite or equal.

PART III EXECUTION

3.1 APPLICATION

- A. Prior to removal of ductwork and piping, the Subcontractor shall take the necessary actions to preclude spillage of residual material, if encountered. If methods used for dismantlement generate loose contamination, or if upon dismantlement, loose contamination is discovered, the openings of the ductwork and piping shall be sealed. Sealing is not a requirement for conduit. All demolition debris shall be cut and segregated per the requirements of Section 01120 of this specification package and Part 6 of the IFB/RFP.
- B. After beginning disassembly, if by visual inspection, residual material is found (solid or liquid), the following shall occur:
 - 1. If the estimated quantity of residual material found is greater than 1 quart by volume, D&D activities will cease. The Construction Manager will be notified immediately.
 - 2. If the estimate quantity of residual material found is less than 1 quart by volume, the D&D Subcontractor will be responsible for removing and drumming the material in accordance with the Waste Management Plan located in Part 6 of the IFB/RFP.
- C. The Subcontractor shall utilize mechanical dismantlement means using best available technology, such as mechanical shears whenever possible.
- D. Uncontrolled dropping of materials is not allowed.
- E. Piping insulated with asbestos may be removed in its entirety per the requirements of Section 01516 of this specification package.
- F. Prior to cutting into tanks or piping where the potential for flammable lining exists, it shall be the Subcontractor's responsibility to verify that no lining exists. Should the Subcontractor find lined pipes or tanks, the tanks shall be cut and removed by mechanical means and shall not be torch-cut.
- G. ~~All hanging light fixtures shall be wrapped in plastic to prevent the spread of contamination prior to being cut down.~~
- H. For disposition of debris and waste refer to Section 01120 of this specification package and the Waste Management Plan in Part 6 of the IFB/RFP.

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- I. Prior to torch-cutting any material that has a lead based coating, an 8 inch strip of paint shall be removed at the area of the cut.

3.2 INTERIM MATERIAL STORAGE

- A. When removed materials are staged or stored within the facility, they shall be placed in areas designated as storage areas. Floor loading shall not exceed 75 percent of the design loads as indicated on existing drawings. Where floor loads are not shown on existing drawings, calculations shall be performed to determine maximum allowable floor loads and submitted to the Fluor Daniel Fernald Construction Manager for approval.
- B. Damaged areas within facilities identified by the Subcontractor's Engineering Survey shall not be used for interim material storage.

END OF SECTION

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SECTION 15067**VENTILATION AND CONTAINMENT****PART I GENERAL****1.1 SCOPE**

A. This section consists of the work related to the Subcontractor-supplied ventilation and local containment that is required for radiologically contaminated work activities. The principal items included in this section are:

1. Local containment and vestibule design requirements.
2. Ventilation requirements.
3. Types of ventilation/local containment design.
4. Guidance on type of ventilation/local containment applicability.
5. Exterior items; such as, dust collectors.

B. Definitions:

1. Local Containment - is an enclosure that is designed to maintain 0.1 inch water gauge negative pressure within its structure to prevent fugitive emissions from escaping to the outside environment.
2. Vestibule - is an enclosed entrance, a passage, or space that is between the outer door and the interior of the building. The space within the vestibule does not have to be under a negative pressure.
3. Enclosure - is the exterior wall of a sealed building.

1.2 RELATED SECTIONS

- A. Section 01120 - Waste Handling Criteria.
- B. Section 01515 - Mobilization and Demobilization.
- C. Section 01517 - Removing/Fixing Radiological Contamination.
- D. Section 03315 - Concrete Removal.
- E. Section 04225 - Masonry Removal.
- F. Section 05126 - Structural Steel Dismantlement.
- G. Section 07415 - Transite Removal.
- H. Section 15065 - Equipment Dismantlement.

SECTION 15067**I. Section 15066 - Interior Dismantlement.****1.3 REFERENCE MATERIALS****A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) Package for the following:**

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.
4. Air Cleaning Device Procurement Specification.
5. Air Cleaning Device Filter Procurement Specification.

1.4 REFERENCES, CODES, AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

A. The entire work under this section shall be in compliance with the provisions of the following:

1. United States Department of Energy (DOE):
 - a. DOE 6430.1A General Design Criteria Division 15.
 - b. DOE 5400.5 Radiation Protection of the Public and the Environment.
 - c. DOE/EH 0256T Radiological Control Manual, April 1994.
2. Energy Research and Development Administration (ERDA):
 - a. ERDA 76-21-79 Nuclear Air Cleaning Handbook.
3. American Conference of Governmental Industrial Hygienists (ACGIH):
 - a. ACGIH Industrial Ventilation (latest edition).
4. American Society of Civil Engineers (ASCE):
 - a. ASCE 7-95 Minimum Design Loads for Buildings and Other Structures.

1.5 SUBMITTALS

- A. The Subcontractor shall submit a work plan in accordance with IFB/RFP, Part 7, Subcontractor Work Plan Format Requirements, with the following information to the Fluor Daniel Fernald Construction Manager for approval.**

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1. **Drawings and Data:**
 - a. Indicate materials of construction, sizes, locations, entrances, and egresses that do not allow for breach of the local containment or vestibule, and all other details of local containments and vestibules to be erected.
 - b. Provide calculations and air flow diagrams for local containment and vestibule ventilation.
 - c. Submit calculations indicating that a minimum negative pressure of 0.1 inch water gauge is maintained in all local containments when the ventilation system is in operation.
 - d. All drawings and calculations shall bear the stamp of a Registered Professional Engineer.
 - e. If any part of this affects or involves asbestos activities, the Ohio Department of Health/OSHA Asbestos Hazard Abatement Project Designer certification shall be part of the documentation submitted with the work plan.
2. **Equipment:**
 - a. Submit vendor information on all accessory ventilation equipment that will be used.
3. Provide building-specific work plans on the use of portable HEPA units including replacement of HEPA filters and prefilters.

PART II PRODUCTS**2.1 MATERIALS**

- A. The Subcontractor shall provide air cleaning devices, HEPA, and prefilter elements, and all other ventilation accessory equipment for the completion of this project in accordance with Part 7 of the IFB/RFP.
- B. Polyethylene sheeting as manufactured by Blueridge Films Inc., or equal.

PART III EXECUTION**3.1 EXAMINATION**

- A. All vestibules, equipment, and/or structure containment material shall be noncombustible, or fire resistant and corrosion resistant.

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- B.** Local containment structures shall be designed to be leak-tight and capable of maintaining a negative pressure of at least 0.1 inches water gauge. Typical design features on various local containments should include the following standardized features, where applicable:
1. Windows and mountings.
 2. Glove ports.
 3. Ease of cleaning.
 4. Adequate interior illumination.
 5. Connections for services lines, conduits, instrument leads, and ductwork.
 6. 6 mil polyethylene sheeting.
 7. Pressure differential readouts.
 8. Attachments for interconnection of local containments.
- C.** Where practical, and without penetrating the local containment, all equipment components not functionally required to operate directly in the presence of radioactive materials shall be located outside the local containment. All HEPA and associated equipment that must be located within the local containment shall be designed to allow for in-place maintenance and/or replacement.
- D.** The local containment or vestibule structure external to the building shall be designed to withstand the effects of normal operating conditions and the environment.
1. Ground snow load is 25 pounds per square foot.

3.2 PREPARATION

- A.** The Subcontractor shall ensure that all building exterior holes, gaps, or openings are adequately sealed to prevent exhaust of airborne radioactive particulates.
- B.** The Subcontractor shall ensure that all ductwork used is free of dust or dirt before installing it in the ventilation system to prevent premature impingement loading of the prefilters and HEPA filters.
- C.** The Subcontractor shall ensure that all vestibules are large enough to support appropriate storage containers, material handling and dismantling equipment, and debris containerizing operations.

3.3 ERECTION/INSTALLATION/APPLICATION

- A.** The Subcontractor shall block, tie-down, or wheel lock all portable HEPA units.
- B.** The Subcontractor shall ensure HEPA filter and prefilter element replacements occur as indicated in Part 7 of the IFB/RFP Package. All HEPA filter and prefilter element replacements shall be provided by the Subcontractor.
- C.** The following guidelines for localized ventilation and in-place cutting control measures shall be adhered to by the Subcontractor. The exhaust volume rate shall be at least 10 percent of the actual containment air volume per minute. Ventilation provided must be HEPA filtered. When containments are out-of-doors or border the outdoors, are to be used for torch-cutting, or designed to be the cutting areas, 6 air changes per hour and a water gauge negative pressure of 0.1 inch within its structure is required. Containments must have an airlock for the passage of equipment, personnel,

SECTION 15067

and materials, so the main body of the containment is never directly open to the atmosphere. Other containments must be maintained such that there are no undesigned holes in the containment and the entrance/exit-way closes sufficiently to meet the air exchange/negative pressure requirements. The following criteria shall be met by the Subcontractor:

1. The Subcontractor shall ensure that ventilation air is provided in the quantities required to maintain OSHA air quality limits, all Permissible Exposure Limits (PELs), and all ACGIH Threshold Limit Values (TLVs).
2. For activities outside of enclosures, HEPA filters with a flexible ventilation duct shall be used as follows:
 - a. Negative pressure shall be either 0.1 inch or .02 inches, as indicated above, water gauge between the cutting area in which the HEPA filters with a flexible ventilation duct is installed and the corridor from which the cutting space is entered.
 - b. Exhaust rate of the HEPA filters with a flexible ventilation duct shall maintain sufficient airflow capture velocity to prevent entry of fumes into the room. A face velocity of 150 fpm is recommended for cutting operations.
 - c. Each HEPA filters with a flexible ventilation duct in the cutting area should be capable of being isolated by means of control dampers to prevent backflow through a hood when it is not in service.
 - d. Each HEPA filter with a flexible ventilation duct used for handling radioactive airborne particulates shall have a HEPA filter in its exhaust duct, located close to the duct entrance.
 - e. The HEPA filters with a flexible ventilation duct shall operate on a once-through mode with no recirculation to the room.
 - f. Where the use of HEPA filters with a flexible ventilation duct is impractical, the use of localized ventilation should be used to practice as low as reasonably achievable (ALARA) principles.
- D. The Subcontractor shall ensure that all local containments can maintain negative pressures.
- E. The Subcontractor shall comply with all other requirements for HEPA air filtration devices indicated.
- F. Within an enclosure, the Subcontractor shall use local ventilation to maintain exposures ALARA.

3.4 FIELD QUALITY ASSURANCE

- A. Final acceptance of local containments and vestibule structures shall be obtained from the Fluor Daniel Fernald Construction Manager.

END OF SECTION

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APPENDIX C
A
DESIGN DRAWINGS

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APPENDIX C
DESIGN DRAWINGS

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The following drawings are copies of the blueprint drawings that were reviewed during the remedial design for the BP/WP Complex. Figures C-1 to C-9 are the 3 floor plans of the Boiler Plant (Building 10A) including the boilers. Figure C-10 shows the Boiler Plant Maintenance Building (Building 10B) floor plan. Figure C-11 shows the Wet Salt Storage Bin (Component 10C) electrical power system. Figure C-12 is a floor plan for the Utilities Heavy Equipment Storage (Building 10E) plan and details. Figures C-14 through C-18 are different views of the Water Plant (Building 20B): piping, structural, and mechanical drawings. Figures C-18 and C-19 are drawings of the Reactivator tank and cover (part of the Water Plant - 20B). Figure C-20 is the Cooling Tower (part of the Water Plant - 20B) section and elevation drawings. Figure C-21 and C-22 are the Railcar Scale House (Component 24A): Plans, elevation and sections and floor plan, respectively. The key features shown in these drawings (Process Areas and related equipment) are discussed in Section 3 of this implementation plan.

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FIGURES

FIGURE C-1: Boiler House east and west views #3007-C-1002-A Rev.3

FIGURE C-2: Boiler House elevations of outside coal handling equipment #3007-H-77-A Rev.1

FIGURE C-3: Boiler Plant floor plan basement #10X-5500-A-00609 Rev.2

FIGURE C-4: Boiler Plant floor plan first floor #10X-5500-A-00610 Rev.3

FIGURE C-5: Boiler Plant floor plan at elevation #10X-5500-A-00611 Rev.4

FIGURE C-6: Boiler Plant floor plan at elevation #10X-5500-A-00612 Rev.1

FIGURE C-7: Boiler Plant floor plan at elevation #10X-5500-A-00613 Rev.1

FIGURE C-8: Boiler Plant Condensate Storage Tank #3007-F-03-B Rev. 3

FIGURE C-9: Boiler Plant - Revision of Ash Conveyor System #10-4006 Rev.0

FIGURE C-10: Boiler Plant Maintenance Building floor plan #10E-5500-A-00629 Rev.2

FIGURE C-11: Wet Salt Storage Bin electrical power system #3008-C-3017-A Rev.0

FIGURE C-12: Utilities Heavy Equipment storage plans, sections, and elevations
#10F-4445-A-00633 Rev.2

FIGURE C-13: Water Plant piping sections and details #20X-3900-P-00287 Rev.1

FIGURE C-14: Water Plant mechanical Dust collector #20X-3900-M-00296 Rev.0

FIGURE C-15: Water Treatment Plant floor plan #20X-5500-A-00399 Rev.2

FIGURE C-16: Water Treatment Plant plans, elevations, and sections #5250-20A-5021
Rev.1

FIGURE C-17: Water Treatment Plant (South Area) #3008-C-3011-A Rev.0

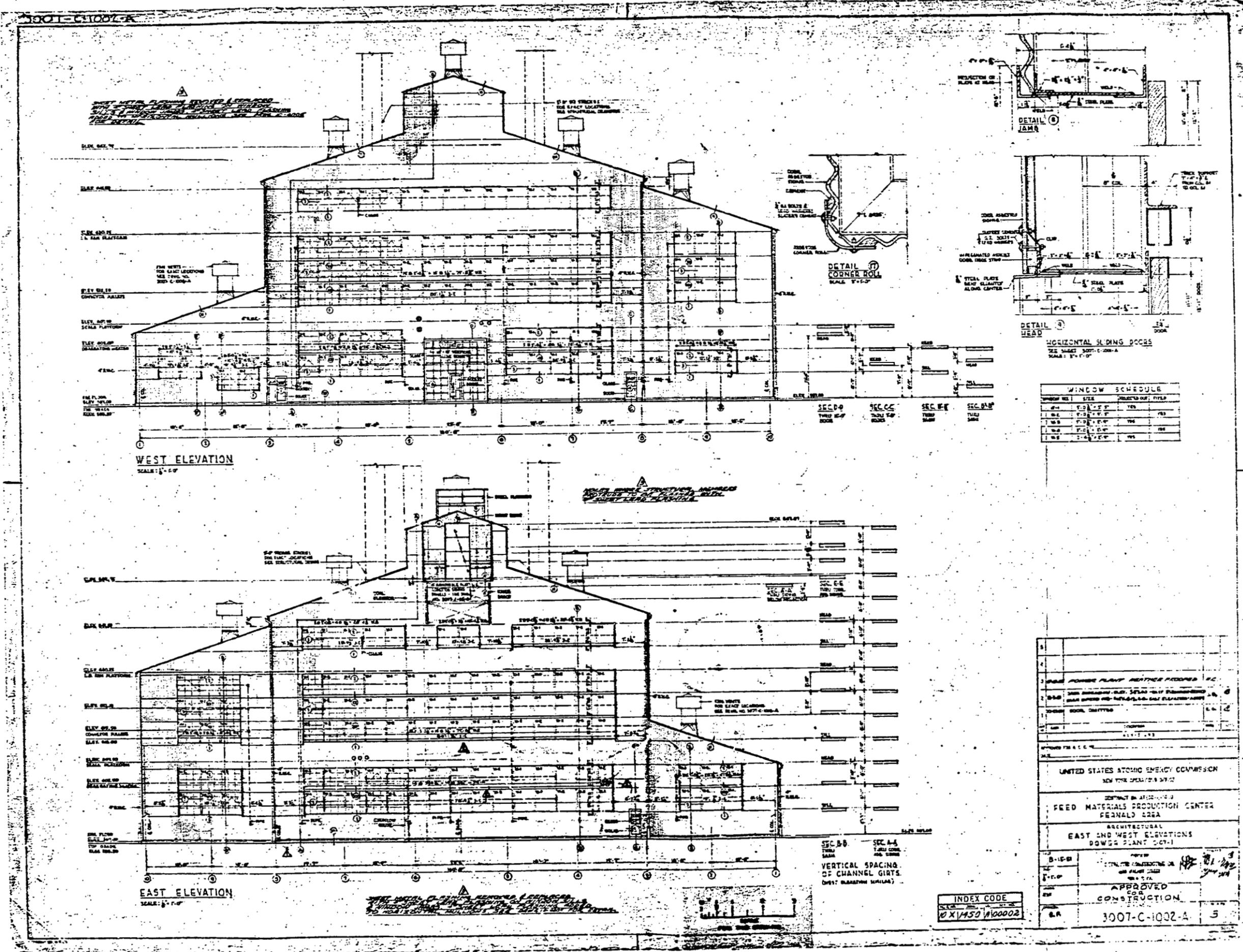
FIGURE C-18: Water Treatment Plant Reactivation Tank cover arrangement and details
#20-4004 Rev.0

FIGURE C-19: Water Treatment Plant Reactivation Tank proposed cover (3-19-54)
#20-4006 Rev.0

FIGURE C-20: Cooling Tower section and electrical #20C-5500-A-00354 Rev.0

FIGURE C-21: Railcar Scale House, plans, elevation, and sections #3024-C-2001-A Rev.0

FIGURE C-22: Railcar Scale House floor plan #24B-5500-A-00097 Rev.0



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FIGURE C-1

INFORMATION ONLY

CARD 11/1/68

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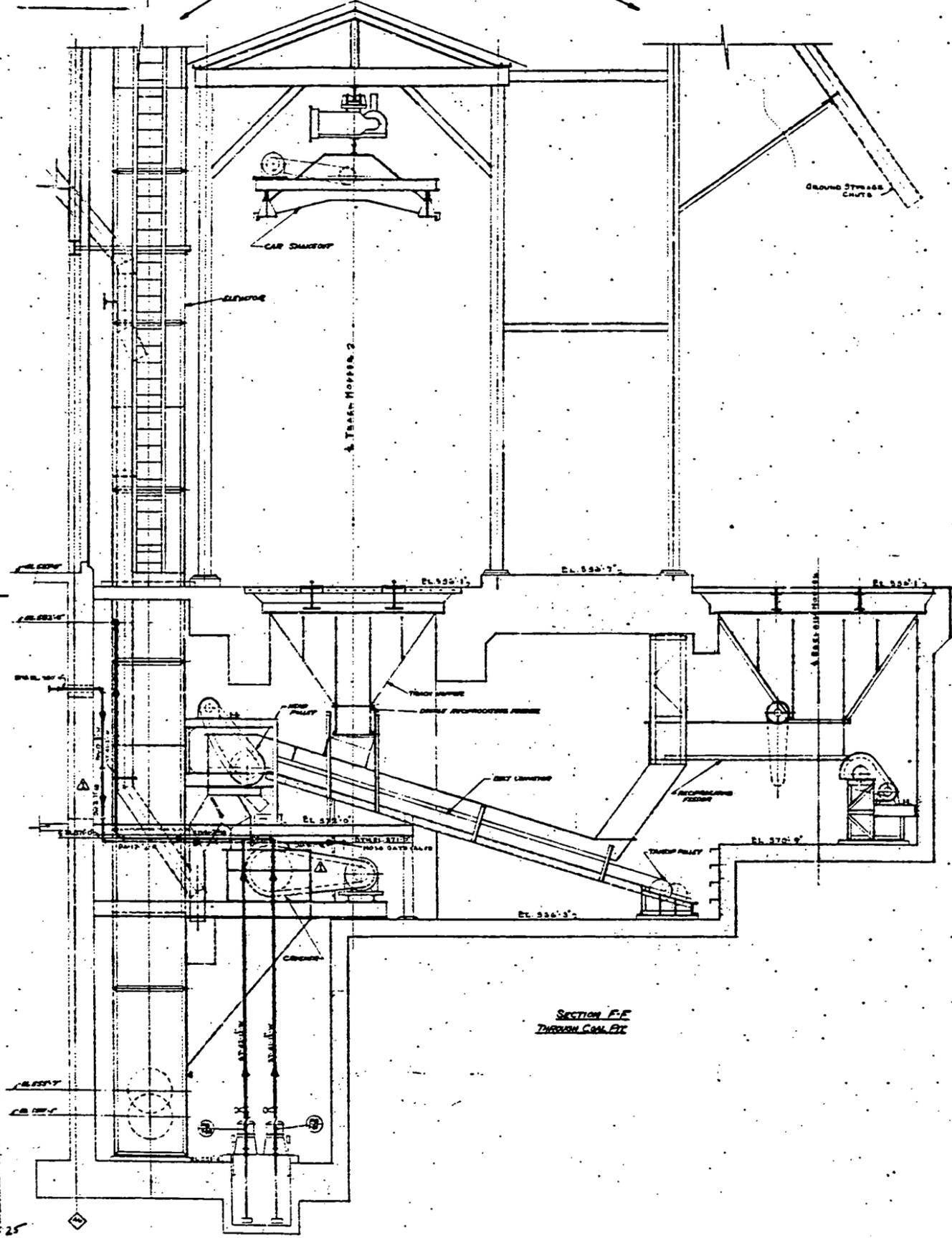
000180

FIGURE C-2

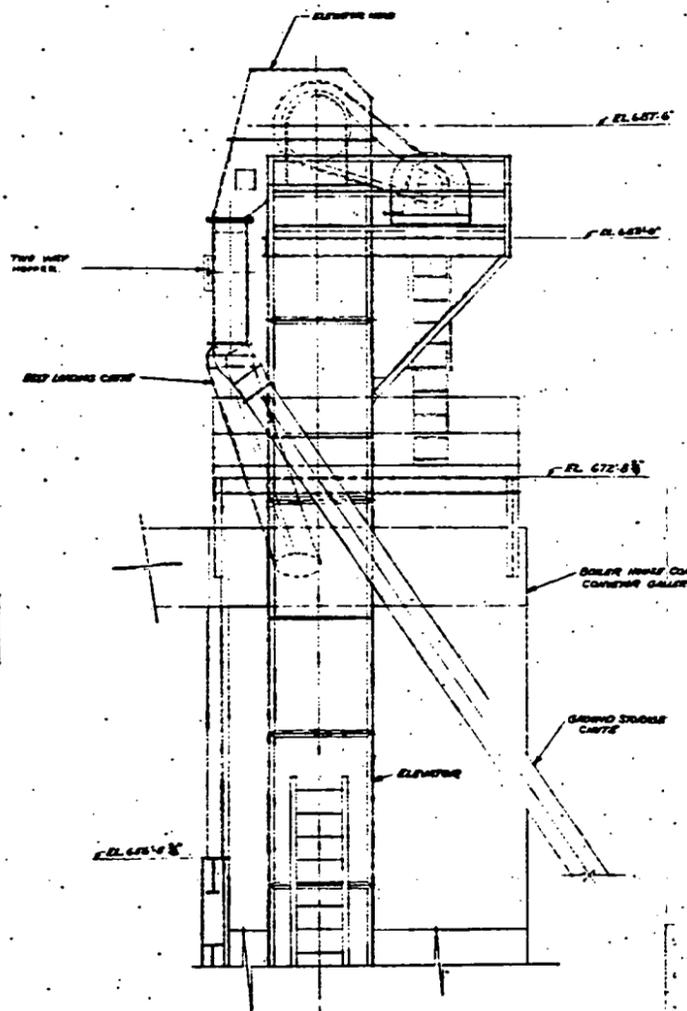
NOTE:
FOR LIST OF REFERENCE DRAWINGS
& GENERAL NOTES SEE DWG. 3007-H-67A

3007-H-77-A

FOR CONTINUATION SEE "VIEW OF ELEVATOR TOP"



SECTION F-F
Through Coal Pit



SECTION P-P
View of Elevator Top

NOTE:
FOR PLAN - SEE DWG.
3007-H-75-A

INDEX CODE
10 X. 150 P 00167

PRINT RECORD			
NO.	DATE	BY	CHKD.
1	10/1/51		
2	10/1/51		
3	10/1/51		
4	10/1/51		
5	10/1/51		
6	10/1/51		
7	10/1/51		
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20	10/1/51		



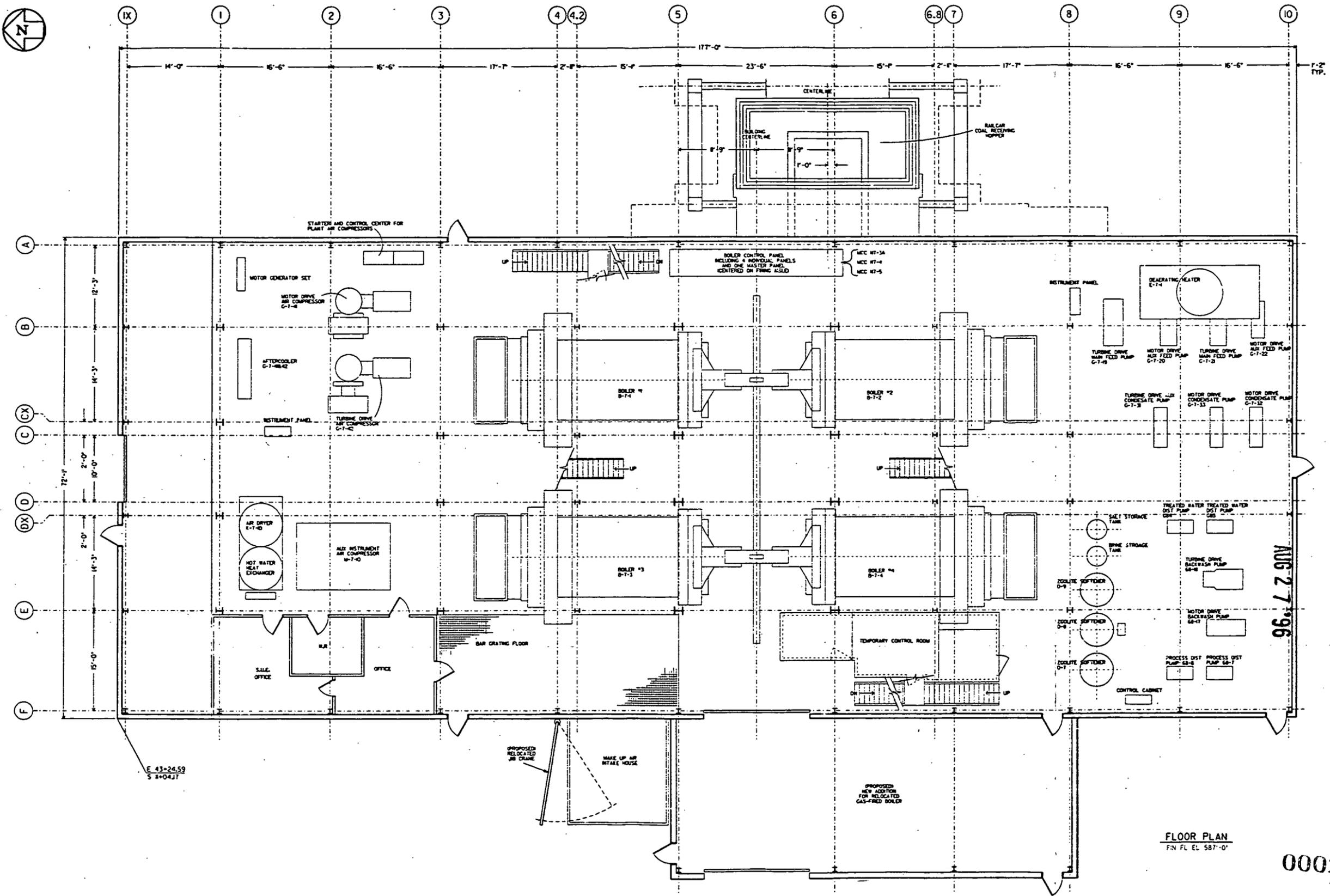
THE LINE SPECS. & DIMENSIONS, UNLESS NOTED

FEED MATERIALS PRODUCTION CENTER
PERNELL AREA

BOILER HOUSE - ELEVATIONS OF OUTSIDE
COAL HANDLING EQUIPMENT

APPROVED FOR CONSTRUCTION

3007-H-77-A



FLOOR PLAN
FIN FL EL 587'-0"

000162

FIGURE C-4

INFORMATION ONLY

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DO NOT SCALE REDUCED DRAWINGS

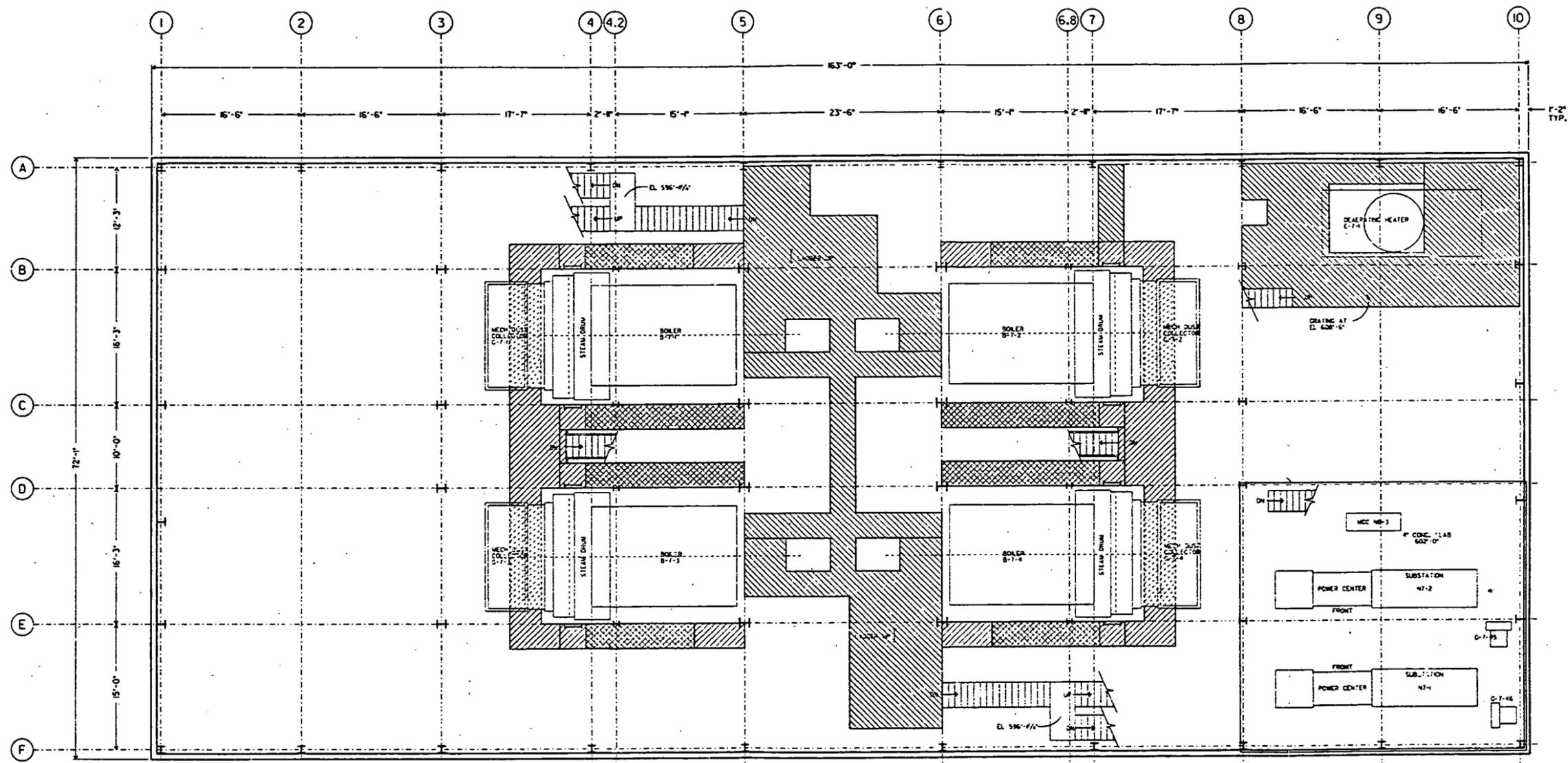
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3	UPDATED (MCC's N7-3A, 4, & 5)		DBB	J.W.P.	G.E.P.								
2	UPDATED		ZUN	S.J.S.	G.E.P.								
1	REDRAWN ON CAD		ZUN	J.J.S.	G.E.P.								
0	DRAWN BY PDT+CO ARCHITECTS/PLANNERS												

NOTES
WEMCO C.A.D.
DRAWING NOT
TO BE REVISED
MANUALLY

APPROVALS	
CIVIL & STR. ENGINEER	SAFETY ENG. MAINTENANCE
ELECTRICAL ENGINEER	G.A.
INSTRUMENT MECHANICAL	FIRE PROTECT. WASTE MANAGE.
CHECKED BY	DATE
APPROVED BY	DATE

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

PLANT ID#	FIRST FLOOR
BOILER PLANT FLOOR PLAN	
3/8" = 1'-0"	
10X-5500-A-00610	3



GRATING AT EL. 602'-0" TYPICAL UNLESS NOTED OTHERWISE
 GRATING AT EL. 608'-6" TYPICAL UNLESS NOTED OTHERWISE

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AUG 27 '96

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FIGURE C-5

DO NOT SCALE REDUCED DRAWING

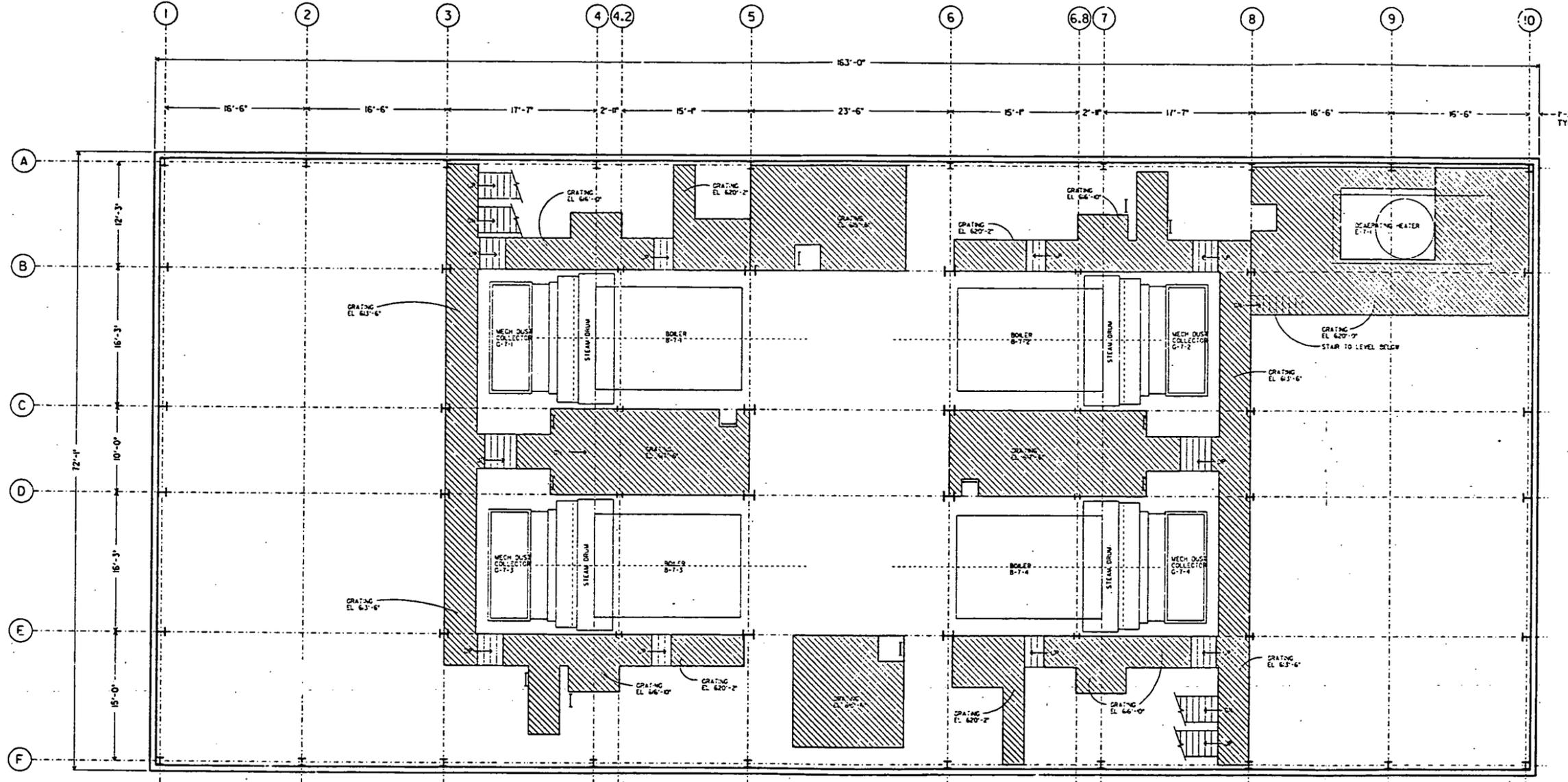
NO.	REVISIONS	DATE	OWN.	BY	APPRO.	NO.	REVISIONS	DATE	OWN.	BY	APPRO.	NO.	REF. DWG. NO.
4	ADDED MCC NB-3												
3	UPDATED												
2	ADDED CONCRETE SLAB AT 602'-0"												
1	REDRAWN ON CAD												
0	DRAWN BY PDT+CO ARCHITECTS/PLANNERS												10X-1450-5-0021a

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

DESIGN APPROVALS		APPROVALS	
CIVIL & STR.		SAFETY ENG.	
ELECTRICAL		MAINTENANCE	
ENGINEER		O.A.	
INSTRUMENT		FIRE PROTECT.	
MECHANICAL		WASTE MNGT.	
CHECKED		SECURITY	
APPROVED			

WESTINGHOUSE ENVIRONMENTAL
 MANAGEMENT CO. OF OHIO
 FERNALD, OHIO
 ENVIRONMENTAL MANAGEMENT PROJECT
 U.S. DEPARTMENT OF ENERGY

PLANT 10A	EL. 602'-0" THRU 608'-6"
BOILER PLANT FLOOR PLAN	
3/16" = 1'-0"	
NO. 10A	10X-5500-A-00611
DATE 12-28-90	4
DRAWN L.J.	



FOR INFORMATION ONLY

AUG 27 '96

000164

FLOOR PLAN

DO NOT SCALE REDUCED DRAWING

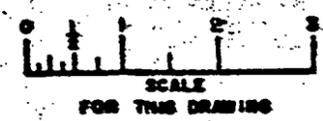
FIGURE C-6

NO. REVISIONS DATE DWN. BY APPD. NO.				REVISIONS DATE DWN. BY APPD. NO.				REF. Dwg. NO.				NOTES: WEMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY	APPROVALS SAFETY ENG. _____ MAINTENANCE _____ CIVIL & STR. _____ ELECTRICAL _____ ENGINEER _____ INSTRUMENT _____ MECHANICAL _____ FIRE PROTECT. _____ WASTE MANAGE _____ O&E _____ SECURITY _____	WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO FERNALD, OHIO FERNALD ENVIRONMENTAL MANAGEMENT PROJECT U.S. DEPARTMENT OF ENERGY	PLANT 00A EL 613'-6" THRU 620'-0" BOILER PLANT FLOOR PLAN 3/8" = 1'-0" DATE 02-28-90 DRAWN LJS	10X-5500-A-00612 1
1 REDRAWN ON CAD JBR S.J.S. MJP 0 DRAWN BY PDT+CO ARCHITECTS/PLANNERS																

3007-F-03-B

105

REQD ONE
 REQ NO. 3007-F-2
 PUR. ORD. NO. 3000-1182



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GENERAL NOTES

VESSEL TO BE ALL WELDED CONSTRUCTION IN ACCORDANCE WITH LATEST REVISION OF AMERICAN WELDING SOCIETY PROCEDURE.

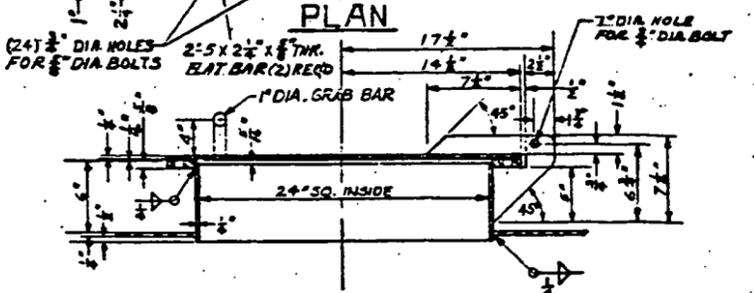
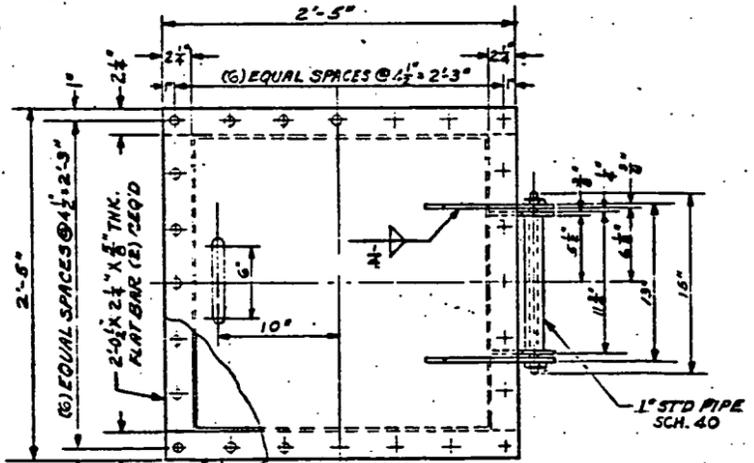
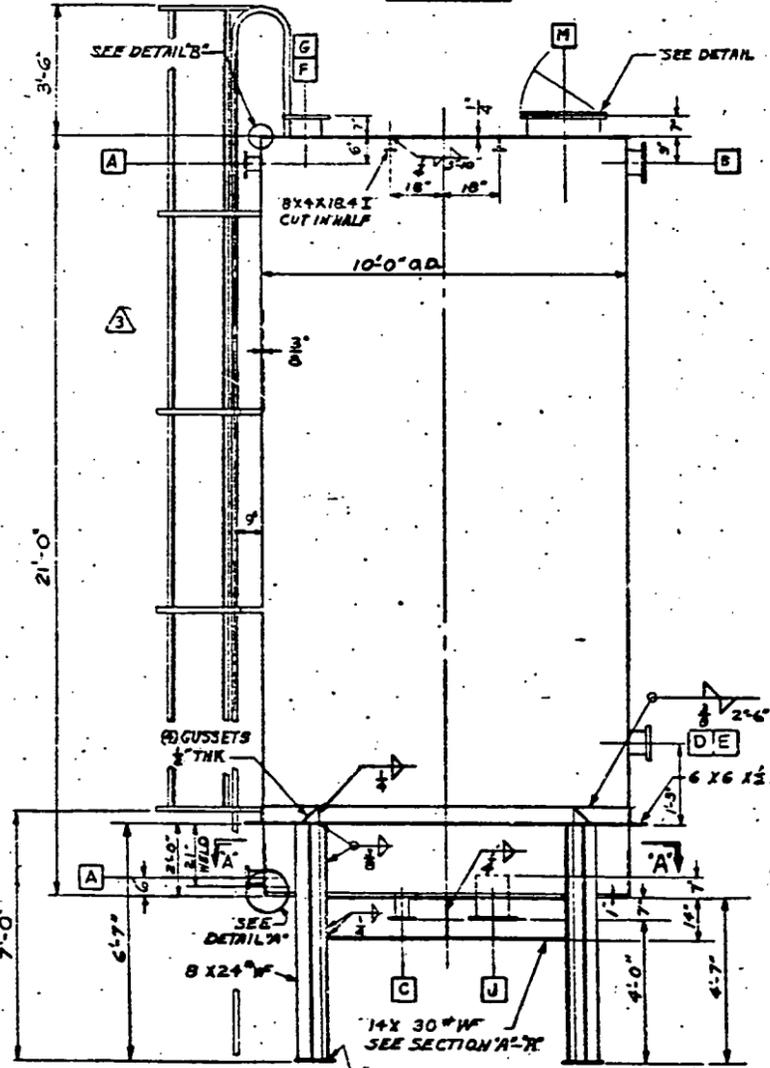
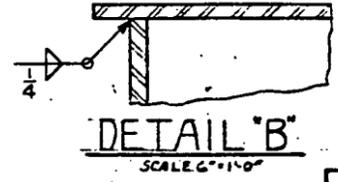
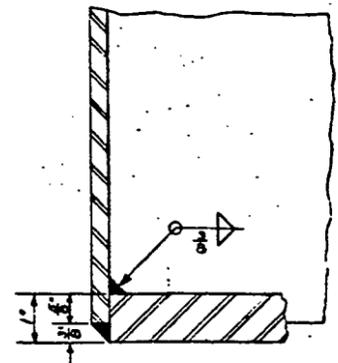
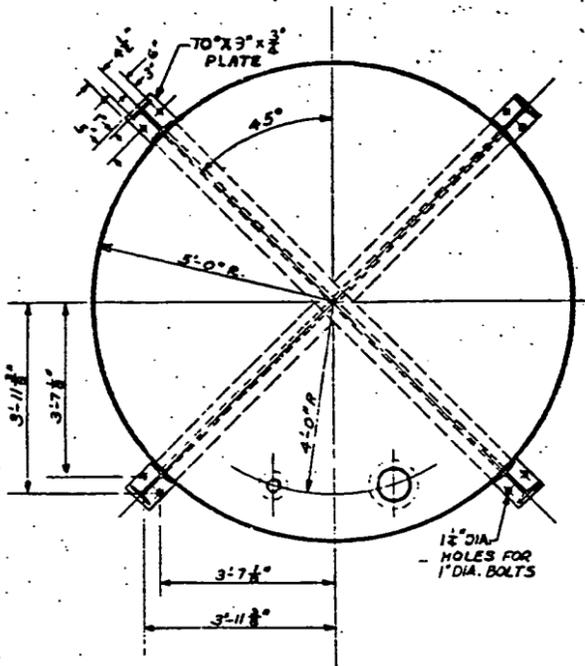
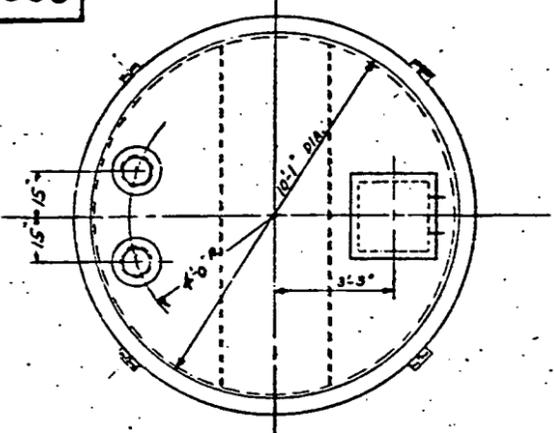
SHELL & HEADS A.S.T.M. A-285 GR. C. FLANGE GRADE
 SUPPORTS: ----- A.S.T.M. A-7 OR EQUAL
 FLANGES ----- A.S.T.M. A-181, GR. 1
 COUPLINGS ----- A.S.T.M. A-181, GR. 1
 GASKETS ----- 1/4" THK. COMP. ASBESTOS MELRATH #125
 PIPE: ----- A.S.T.M. A-53, GR. A

REMOVE ALL RUST, GREASE, MILL SCALE ETC.
 ALL EXTERNAL CARBON STEEL MEMBERS SHALL BE PAINTED WITH ONE SHOP COAT OF RED LEAD.

NORTH ARROW AND ITEM NO. TO BE PAINTED ON VESSEL.

TEST:
 TANK TO BE WATER TIGHT (STATIC HEAD)
 SHIPPING WEIGHT ----- 18,000 LB.
 OPERATING WEIGHT ----- 120,000 LB.
 TEST WEIGHT ----- 120,000 LB.
 CAPACITY ----- 12,300 GAL.

REFERENCE:
 VESSEL TO BE FABRICATED TO C.C.CO. SPECS. FOR ATMOS.
 TANKS & HOPPERS INDEX PART IX SEC. 1A.
 REFERENCE DWG.
 LADDER DETAILS - C.C.CO. DWGS. DSJ-503 & DSJ-504.
 THIS DWG. SUPERSEDES DR. 3007-F-03-B DATED AUG. 7, 1951



NO.	DATE	REVISIONS	BY	APP'D
5	10/27/51	ADDED LADDER TO VESSEL & NOZZLE ORIENT	W.C. CO.	
4	9/29/51	REDESIGNED & REDRAWN	K.P.A.	
3	7/19/51			
2	7/19/51			
1				

NO.	REQD.	SIZE	RATING & FACING	PROJECTION FROM FACE OF VESSEL	SERVICE	REMARKS
M	1	24"			MAN HOLE	SEE DETAIL
J	1	10"	150 W.F.S. PLAT FACE		SUCTION	
G	1	10"			EMERGENCY MAKE UP	
F	1	10"			VENT TO ATMOSPHERE	
E	1	8"		5'-6"	OVERFLOW	
D	1	6"		5'-6"	RETURN	
C	1	4"			DRAIN	
B	1	6"	150 W.F.S. PLAT FACE	5'-6"	OVER-FLOW	
A	2	2"	150 W.F.S. PLAT FACE	5'-6"	LEVEL CONTROL	

APPROVED FOR A. E. C. BY _____
 DATE _____

UNITED STATES ATOMIC ENERGY COMMISSION
 NEW YORK OPERATIONS OFFICE

CONTRACT NO. AT(10)-10-1050
 FEED MATERIAL PRODUCTION CENTER
 FERNALD AREA

CONDENSATE STORAGE TANK
 ITEM - F7-2

DATE 9-28-51
 SCALE 1/2" = 1'-0" UNLESS OTHERWISE NOTED
 DRAWN W. A. K.
 CHECKED K. P. A.
 10/3/51

OFFICE OF CATALYTIC CONSTRUCTION CO.
 525 WALSH STREET
 PHILA. 2, PA.

APPROVED FOR CONSTRUCTION

DRAWING NO. 3007-F-03-B
 SHEET NO. 3

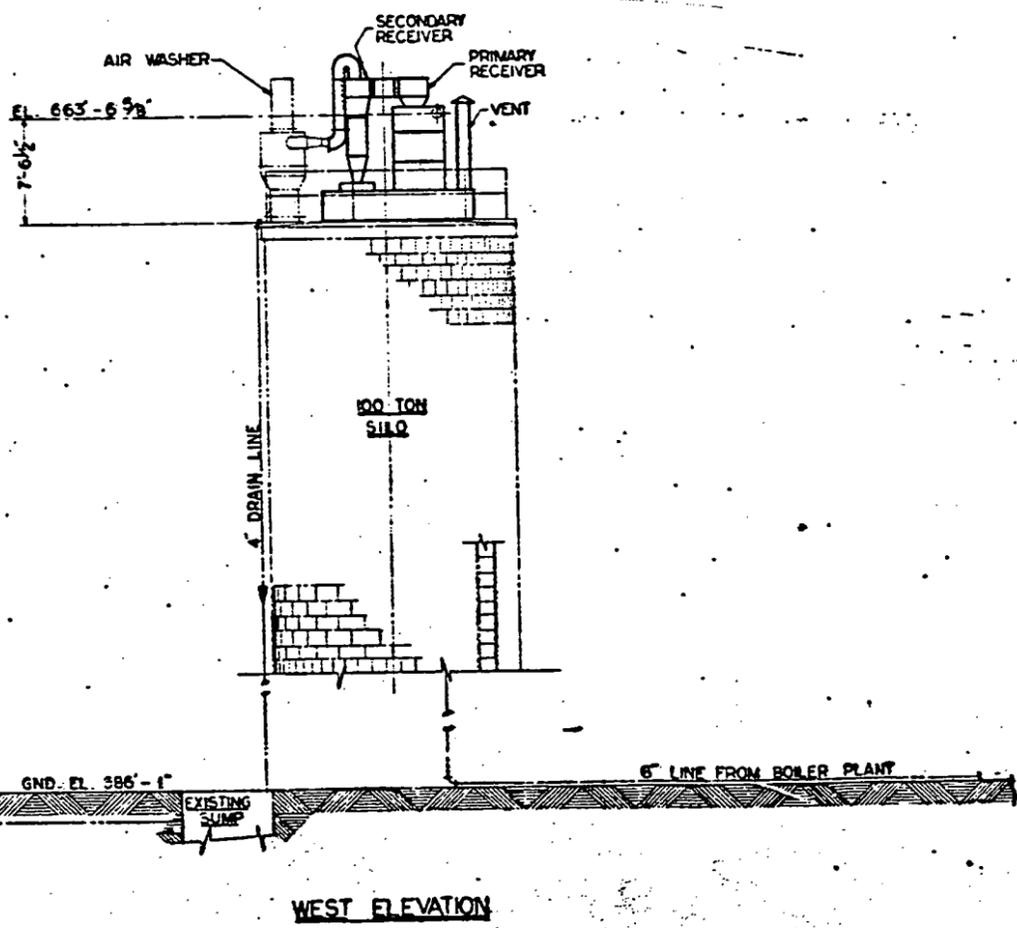
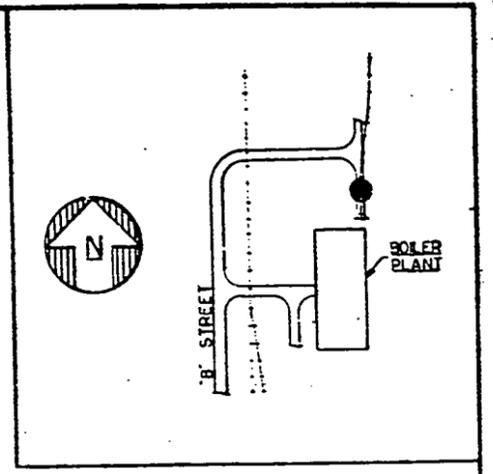
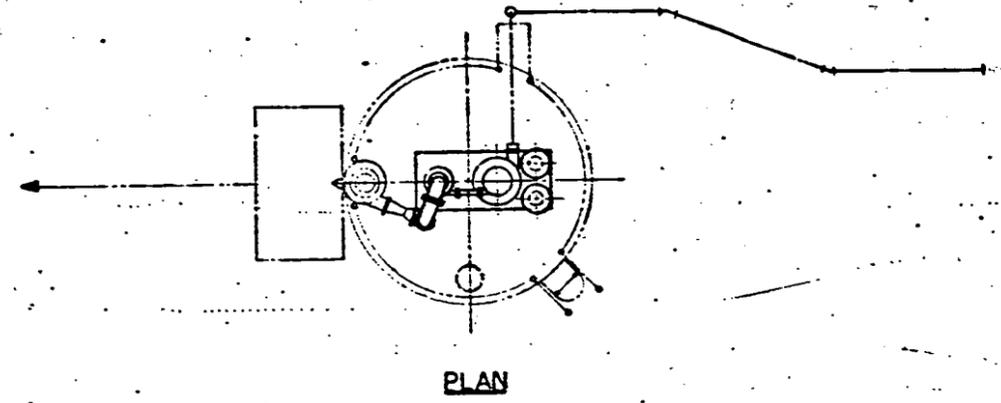
INDEX CODE
 PL. BAR. CRG. CE. SER. NO.
 10 X 1950 11000072

INFORMATION ONLY
 CADD SERVICES

000166

FIGURE C-8

10-4006
11-9-56
6-7-56
5-9-56



GENERAL NOTES
1-HEAVY LINES INDICATE EQUIPMENT TO BE REVISED.
2-REFER TO UNITED CONVEYOR CORP. PRINTS HELD BY E. RESTENBERG.



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CADD SERVICES



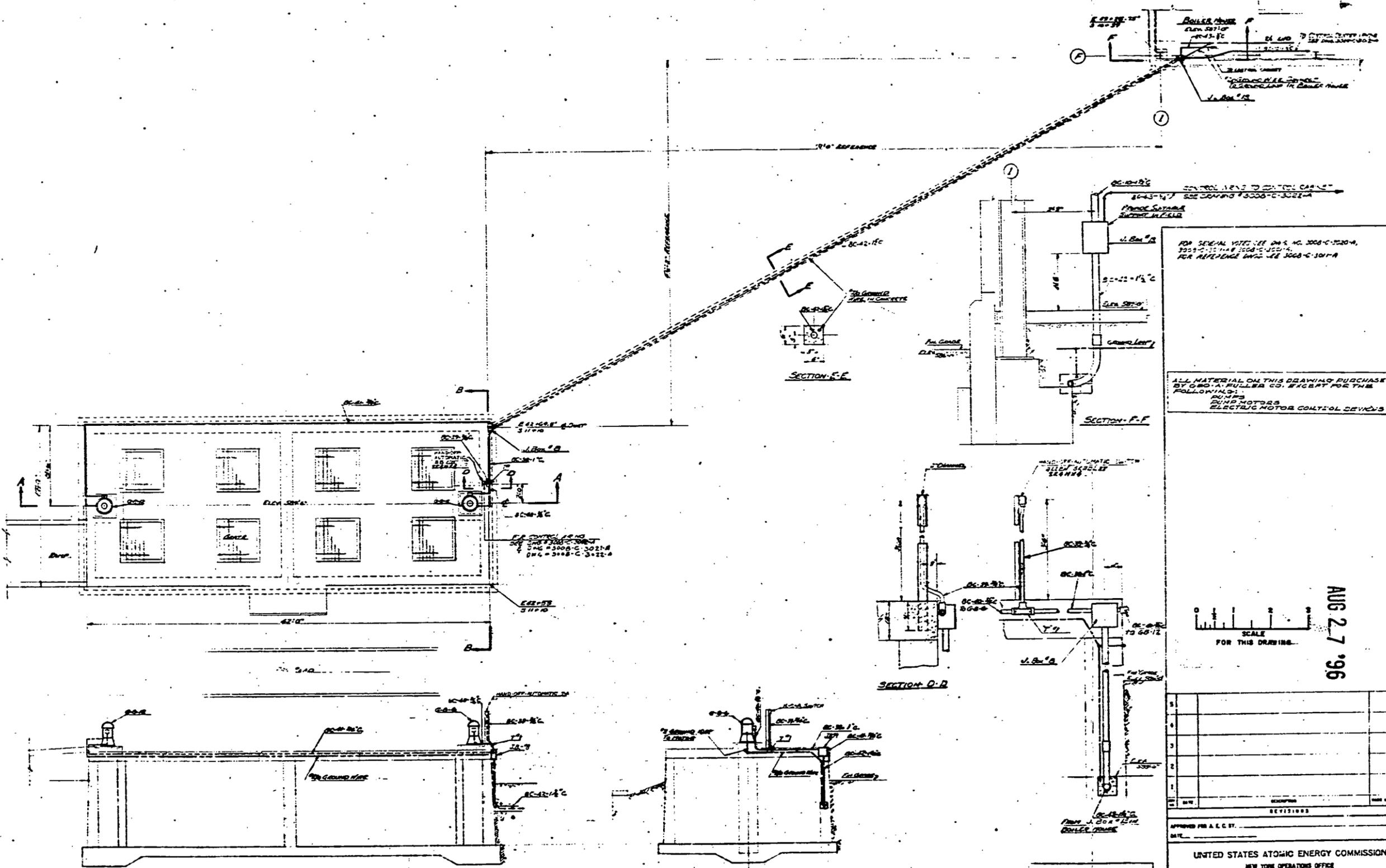
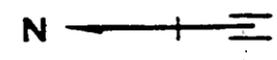
ARCH & CIV.	
Mechanical	
Electrical	
Chemical	
Final Check	
NATIONAL LEAD COMPANY OF OHIO FEED MATERIALS PRODUCTION CENTER FERNALD, OHIO	
U.S. ATOMIC ENERGY COMMISSION BOILER PLANT	

INDEX CODE
10 X 3500100084

REVISION OF ASH CONVEYOR SYSTEM
PLAN & ELEVATION

PROJECT NO. 10-9	CP-F-56-36
DATE 8-24-56	DWG. NO. 10-4006
DATE 11-01	

REF. DWG. NO.	REF. DWG. TITLE	NO.	REVISIONS	DATE BY



FOR GENERAL NOTES SEE DWG. NO. 3008-C-3017-A,
3008-C-3017-B, 3008-C-3017-C,
FOR REFERENCE DWG. SEE 3008-C-3017-A

ALL MATERIAL ON THIS DRAWING PURCHASED
BY U.S. ATOMIC ENERGY COMMISSION FOR THE
FOLLOWING:
PUMPS
PUMP MOTORS
ELECTRIC MOTOR CONTROL DEVICES

AUG 27 '96

0 1 2 3
SCALE
FOR THIS DRAWING

NO.	DATE	REVISIONS	BY	CHKD.

APPROVED FOR A.E.C.T. _____
DATE _____

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE

CONTRACT NO. AT(30-9)-1040

FEED MATERIALS PRODUCTION CENTER
FERNALD AREA

ELECTRICAL POWER SYSTEM
CONDUIT AND GROUNDING LAYOUT PLAN
WET SALT STORAGE BIN - WATER TREATMENT PLANT

DATE: 8-9-96
SCALE: AS SHOWN
DRAWN BY: C.A. [Signature]
CHECKED BY: [Signature]

APPROVED FOR CONSTRUCTION: [Signature]

DATE: 8-27-96
SCALE: AS SHOWN
DRAWN BY: J.W.
CHECKED BY: [Signature]

NO.	DATE	REVISIONS	BY	CHKD.

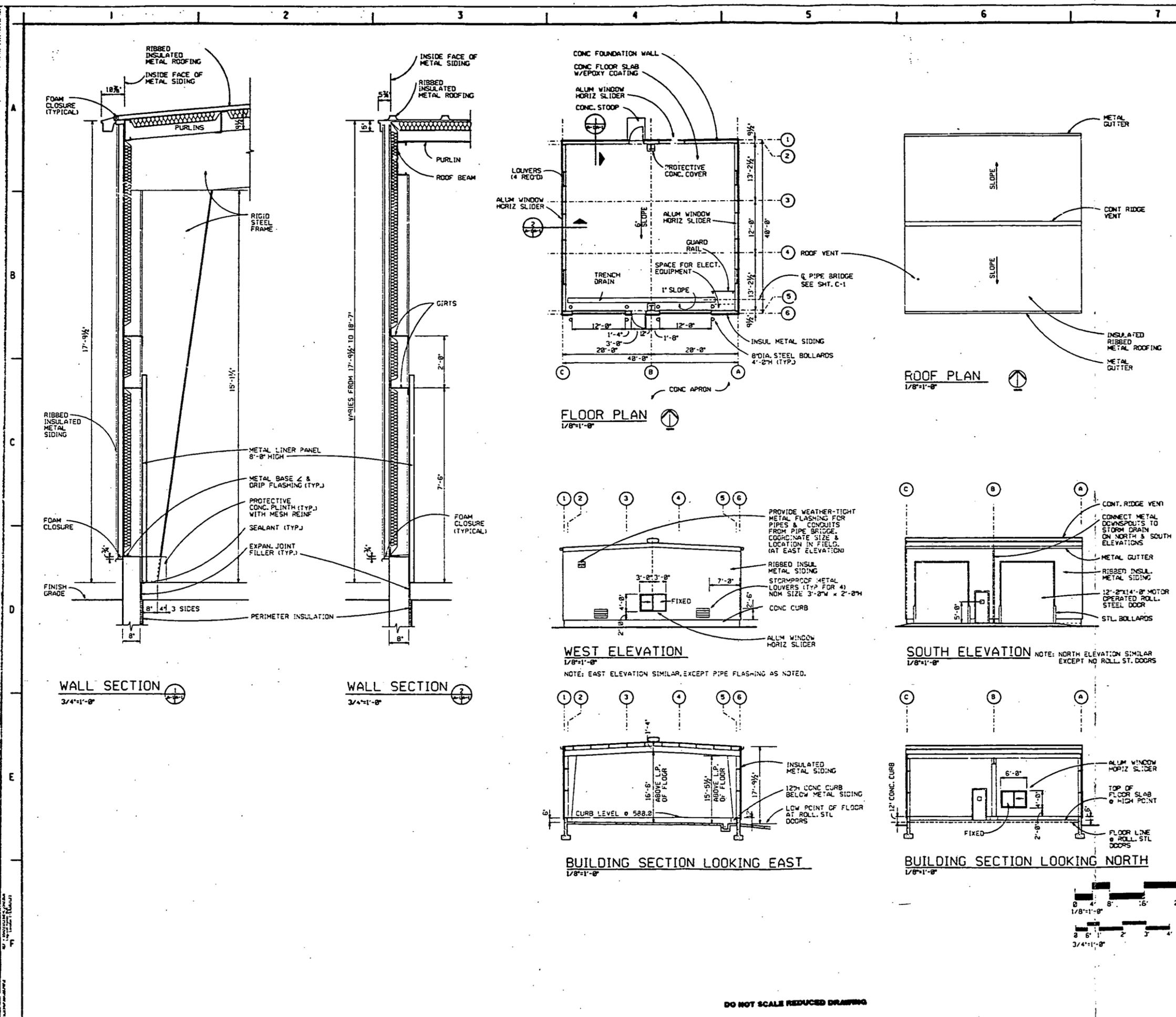
INDEX CODE
20B1450 E.00022

INFORMATION ONLY

CADD SERVICES

000169

FIGURE C-11



GENERAL NOTES

1. PRE-ENGINEERED BUILDING DESIGN, AS SHOWN. COLUMN LINES, OVERALL BUILDING DIMENSIONS, MAY VARY FROM THOSE SHOWN FOR OTHER ACCEPTABLE PRE-ENGINEERED BUILDING SYSTEMS, SUBJECT TO WEMCO APPROVAL.
2. STEEL FRAMING FOR ALL DOOR AND LOUVER OPENINGS TO BE PROVIDED BY MFR OF PRE-ENGINEERED BUILDING.
3. LOUVERS TO BE ALUMINUM STORMPROOF & ADJUSTABLE WITH ALUM. BIRD SCREENS.
4. CONTINUOUS RIDGE VENT, PROVIDED BY MFR OF PRE-ENGINEERED BUILDING, TO BE ADJUSTABLE BY PULL CORD.
5. HOLLOW METAL SWING DOORS TO BE 3'-0" x 7'-0", 1 1/2" THICK, FRAMES TO BE 2" x 5" HOLLOW METAL, 18"x18" VISION PNL. W/ 1/4" WIRE GLASS.
6. METAL ROOFING AND SIDING TO BE INSULATED, U-VALUES .064 (SIDING), .045 (ROOF).
7. ROOF VENT FLASHING, PROVIDED BY MFR OF PRE-ENGINEERED BUILDING.

AUG 27 '96

2	GENERAL REV. FOR FEMP SYSTEM	5/8	2/28/94	ED
1	RECORD DRAWING	JHE	2-2-94	
0	CFC	DC	8/25/93	

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CONSULTING ENGINEERS
A. M. KINNEY, INC. 000170
CINCINNATI, OHIO

PROJECT NAME: ENVIRONMENTAL, HEALTH & SAFETY IMPROVEMENTS
DRAWING TITLE: UTILITIES HEAVY EQUIPMENT STORAGE PLANS, SECTIONS & ELEVATIONS

DESIGNED BY	ENZ	2-90	ENZ	6-92
CHECKED BY	AS NOTED			
DATE	10			
BY	JOHN H.K. TUM	J.F. CONNERTON	J.R. HUGHES	
NO.	87-D-159	0087502	10F-4443-A-68633	A-1 2

INFORMATION ONLY
 CADD SERVICES

REFERENCE DRAWING	
DRAWING NO.	TITLE
00X-P-0918	REFERENCES, SYMBOLS & NOTES
P-00285	PLAN DET. GRADE & EL 597'-2 3/4"
P-00286	PLAN ABOVE GRADE EL 597'-2 3/4"
S-00324	UNDERGROUND PIPING PLAN
20X-N-00290	P.I.D.

- NOTES:**
- FOR ACTUAL DUST COLLECTOR & PAV LOCATIONS REFER TO MECHANICAL DWG NOS. M-00294, 00295 & 00296.
 - FIELD TO VERIFY PIPING DIMENSIONS, ELEVATIONS AND LOCATIONS PRIOR TO FABRICATION.
 - 4 & VERIFY WITH VENDOR DRAWING.
 - 4 * SUPPLIED BY EQUIPMENT VENDOR.
 - 1 1/2" IS 3" BLIND FLG. R.F.D. TAPPED FOR 3/8" PIPE.

DIMENSIONS SHOWN ON THE DESIGN DRAWING INCLUDE THE BEST AVAILABLE DATA FROM OPERATOR CONTRACTOR'S RECORD FILES AND DATA TAKEN FROM CONTRACT MANUFACTURER'S DATA SHEETS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF EXISTING CONDITIONS AND FOR ANY DIMENSIONAL ADJUSTMENTS REQUIRED TO MATCH ACTUAL EQUIPMENT AND MATERIAL SELECTIONS.

ANY CHANGES REQUIRED BY THE CONTRACTOR TO MATCH EXISTING EQUIPMENT OR MATERIALS SHALL BE SHOWN IN HIS SITE CONSTRUCTION DRAWING AND SIGNED BY THE RESPONSIBLE A/E TITLE III REPRESENTATIVE BEFORE PROCEEDING WITH THE CHANGE.

AUG 27 '96
DO NOT SCALE REDUCED DRAWING

1	REVISED PER R.E.S. 8162	9/1/96	WYK
0	CERTIFIED FOR CONSTRUCTION	8/21/96	WYK
REV NO.	REASON FOR REVISION - DESCRIPTION	DATE	BY

UNITED STATES DEPARTMENT OF ENERGY

JACOBS ENGINEERING GROUP INC.
PASADENA, CALIFORNIA

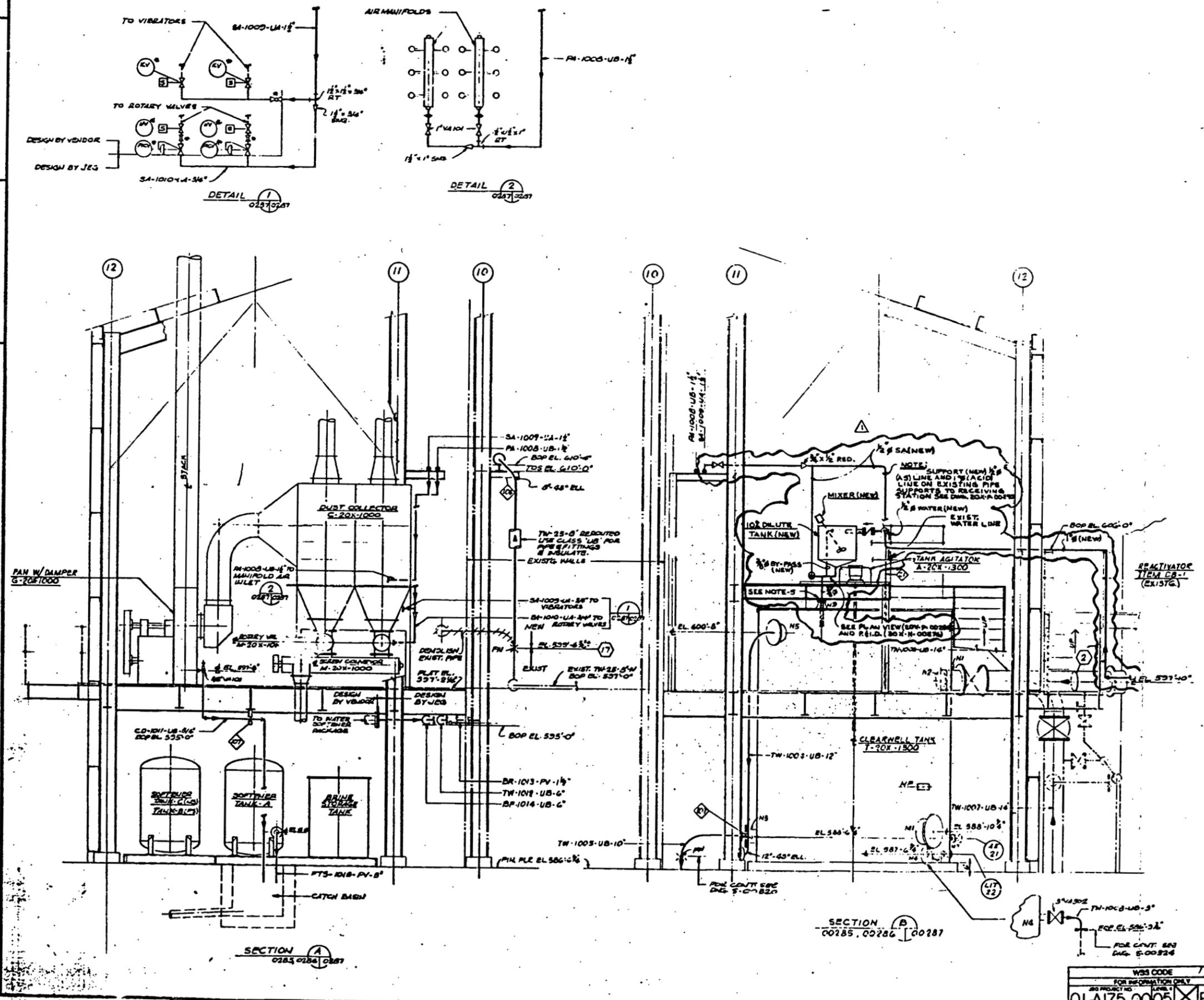
CONTRACT NO. N-77208 PROJECT NAME: 3900
PRODUCTIVITY RETENTION

DRAWING TITLE: WATER TREATMENT PIPING SECTIONS & DETAILS

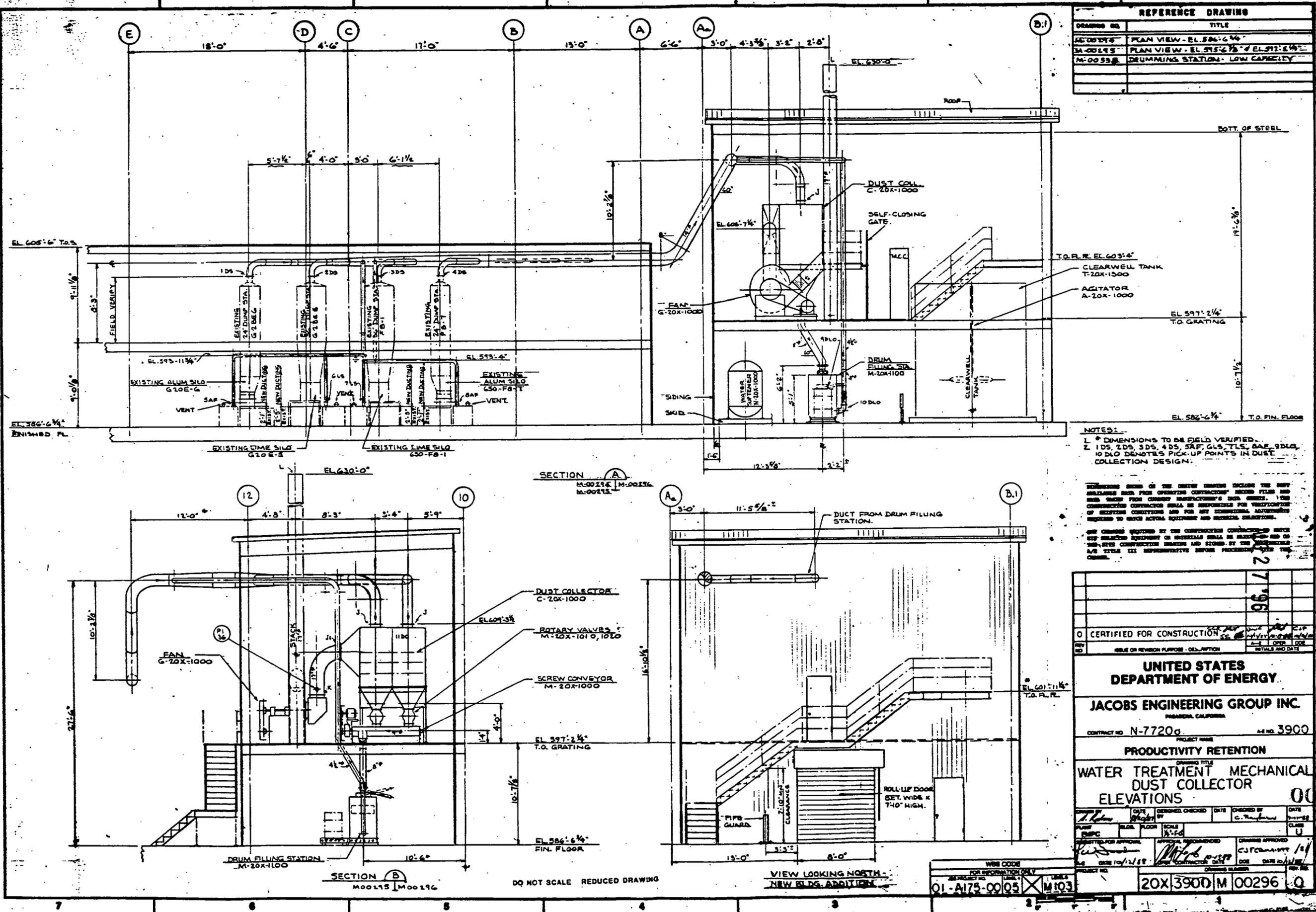
DRAWN BY L. BURANDAY	DATE 9/6/96	DESIGNED CHECKED BY R.P. CASTRO	DATE 8/20/96	CHECKED BY WYK	DATE 7/1/96
PLANT FMPC	BUILDING 20	FLOOR 20	SCALE 1/4"=1'-0"	CLASS	
APPROVAL RECOMMENDED	DRAWING APPROVED				
DATE 10/12/96	DATE 11/1/96	DATE 11/1/96	DATE 11/1/96	DATE 11/1/96	DATE 11/1/96

WSS CODE: 01-A175-0005 P103

PROJECT NO: 20X 3900 P 00287



FOR INFORMATION ONLY
CADD SERVICES



REFERENCE DRAWING	
DRAWING NO.	TITLE
M-00194	PLAN VIEW - EL. 586'-6 1/4"
M-00195	PLAN VIEW - EL. 575'-6 1/4" - EL. 571'-6 1/4"
M-00196	DRUMMING STATION - LOW CAPACITY

NOTES:
 1. * DIMENSIONS TO BE FIELD VERIFIED.
 2. 1DS, 2DS, 3DS, 4DS, 5AF, GLS, TLS, 8AF, 9DLO, 10 DLO DENOTES PICK-UP POINTS IN DUST COLLECTION DESIGN.

CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS FOR ALL EQUIPMENT AND MATERIALS TO BE USED IN THE CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS FOR ALL EQUIPMENT AND MATERIALS TO BE USED IN THE CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS FOR ALL EQUIPMENT AND MATERIALS TO BE USED IN THE CONSTRUCTION OF THIS PROJECT.

DATE	DESIGNED	CHECKED	DATE	CHECKED BY	DATE
1/1/88	J. R. ...	C. ...	1/1/88	C. ...	1/1/88

UNITED STATES DEPARTMENT OF ENERGY

JACOBS ENGINEERING GROUP INC.
PASADENA, CALIFORNIA

CONTRACT NO. N-7720a A.E. NO. 3900

PROJECT NAME: **PRODUCTIVITY RETENTION**

DRAWING TITLE: **WATER TREATMENT MECHANICAL DUST COLLECTOR ELEVATIONS**

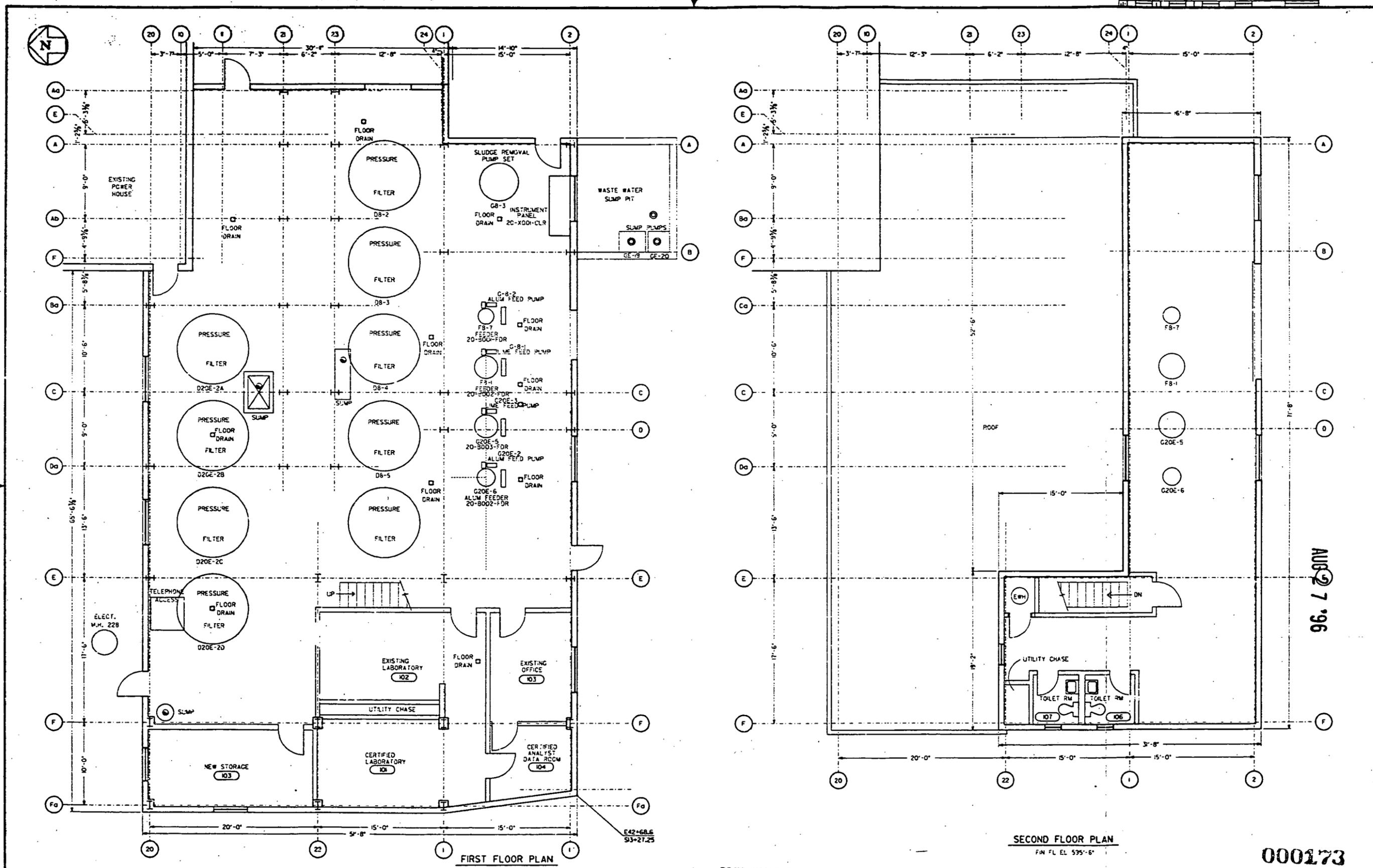
DRAWING NO. **000272**

DATE: 10/12/88

PROJECT NO. **20X3900M 00296**

INFORMATION ONLY
 CADD SERVICES

FIGURE C-14



AUG 7 1996

FIRST FLOOR PLAN
FIN FL EL 586'-6.75'

SECOND FLOOR PLAN
FIN FL EL 595'-6"

000173

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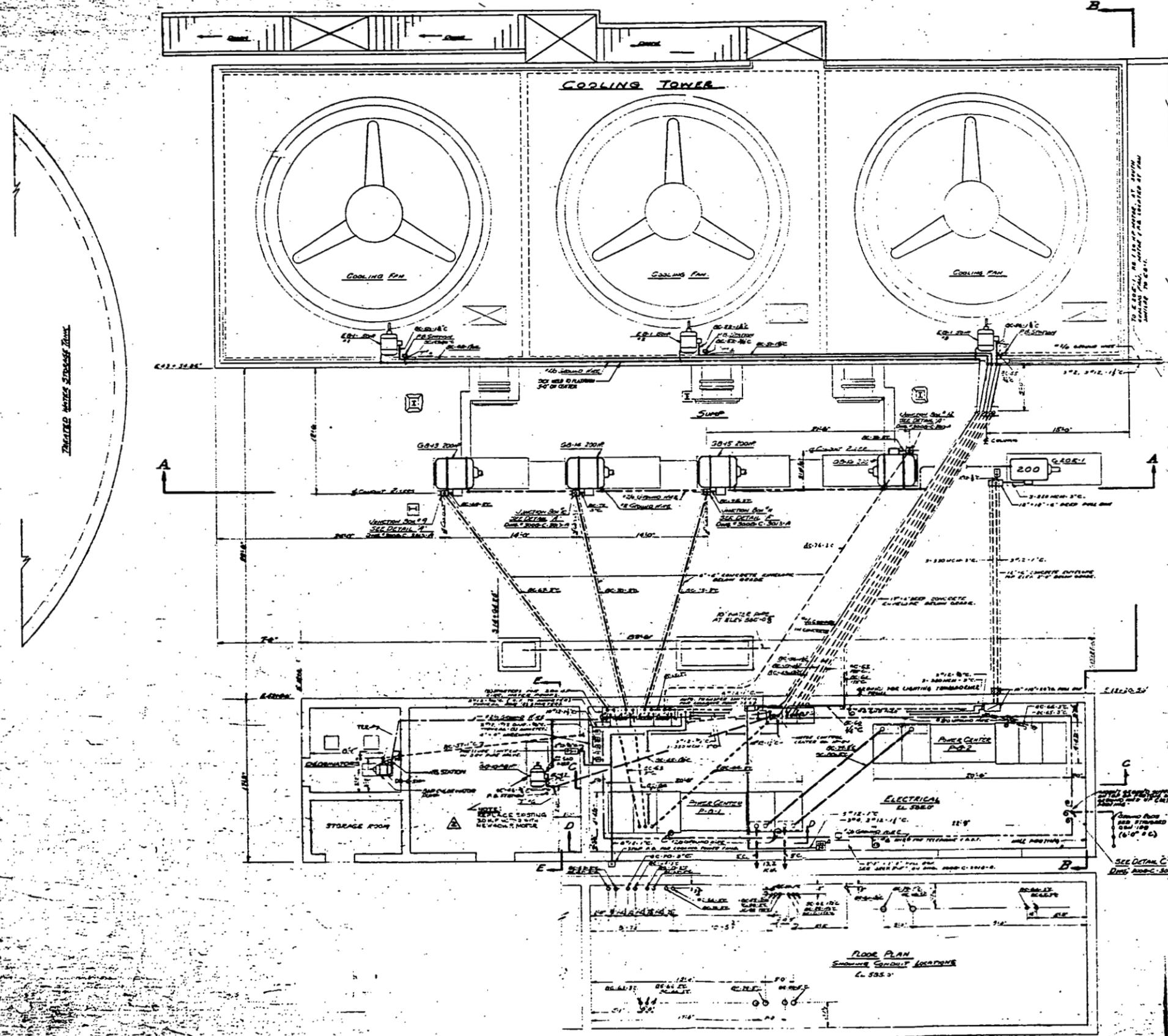
<p>NOTE: WEMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY</p>		<p>APPROVALS</p> <table border="1"> <tr> <td>CHEMICAL</td> <td>J.P.S. & T.</td> </tr> <tr> <td>CIVIL & STR.</td> <td>MAINTENANCE</td> </tr> <tr> <td>ELECTRICAL</td> <td>INSTRUMENTATION</td> </tr> <tr> <td>ENGINEER</td> <td>QA</td> </tr> <tr> <td>INSTRUMENTATION</td> <td>PRODUCTION</td> </tr> <tr> <td>MECHANICAL</td> <td>FIRE & SAFETY</td> </tr> <tr> <td></td> <td>WASTE MGMT.</td> </tr> <tr> <td>CHECKED BY</td> <td>DATE</td> </tr> <tr> <td>APPROVED BY</td> <td>DATE</td> </tr> </table>		CHEMICAL	J.P.S. & T.	CIVIL & STR.	MAINTENANCE	ELECTRICAL	INSTRUMENTATION	ENGINEER	QA	INSTRUMENTATION	PRODUCTION	MECHANICAL	FIRE & SAFETY		WASTE MGMT.	CHECKED BY	DATE	APPROVED BY	DATE	<p>WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO PERNOLD, OHIO ENVIRONMENTAL MANAGEMENT PROJECT U.S. DEPARTMENT OF ENERGY</p>		<p>BUILDING 206 1ST AND 2ND FLRS. WATER TREATMENT PLANT FLOOR PLAN 1/4" = 1'-0"</p>	
CHEMICAL	J.P.S. & T.																								
CIVIL & STR.	MAINTENANCE																								
ELECTRICAL	INSTRUMENTATION																								
ENGINEER	QA																								
INSTRUMENTATION	PRODUCTION																								
MECHANICAL	FIRE & SAFETY																								
	WASTE MGMT.																								
CHECKED BY	DATE																								
APPROVED BY	DATE																								
<p>2 UPDATED</p>		<p>1 REDRAWN ON CAD</p>		<p>0 DRAWN BY PDT+CO ARCHITECTS/PLANNERS</p>																					
NO.	REVISIONS	DATE	OWN. BY	APPRO. NO.	REF. DWG. NO.																				

INFORMATION ONLY
CADD SERVICES

7/11/96 (10:00 AM) V7736(Rev) Mod 1 on R 16-18-14 (RST 1007

INFORMATION ONLY

CADD SERVICES



- GENERAL NOTES**
1. ——— REPRESENTS GROUND WIRE.
 2. — 9 ——— REPRESENTS THE POINT WHERE GROUND WIRE LEAVES THE CONCRETE.
 3. EXTEND GROUND WIRE APPROX. 4" ABOVE CONCRETE FLOOR OR GRADE, EXCEPT WHERE NOTED OTHERWISE. CON. IS PROVIDED FOR PROTECTION OF WIRE DURING CONSTRUCTION.
 4. ——— REPRESENTS CONDUIT UNDER FLOOR SLAB OR CONDUIT UNDERGROUND.
 5. ——— REPRESENTS EXPOSED CONDUIT.
 6. ALL UNDERGROUND CONDUIT ENTRIES SHOULD BE PROTECTED BY 2" DIA. CONDUIT UP TO THE HEIGHT OF OUTSIDE 24.00 WALL.
 7. ALL GROUND WIRE CONNECTIONS TO BE INSTALLED IN ACCORDANCE WITH THE N.E.C. & CATALOGIC SPEC. SEE DWG. NO. 3005-C-3020-A / 3005-C-3001-A FOR OTHER GENERAL NOTES.

PRINT RECORD

NO.	DATE	BY	CHKD.
1	7/1/77	J.M.	J.M.
2			
3			
4			
5			
6			
7			
8			
9			
10			

- REFERENCE DRAWINGS**
- 3005-C-3001-A SINGLE LINE DIAGRAM
 - 3005-C-3001-B ELECTRICAL AND PIPING DIAGRAM
 - 3005-C-3001-C ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-D ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-E ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-F ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-G ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-H ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-I ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-J ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-K ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-L ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-M ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-N ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-O ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-P ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-Q ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-R ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-S ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-T ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-U ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-V ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-W ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-X ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-Y ELECTRICAL POWER SYSTEM - CONTROL CENTER
 - 3005-C-3001-Z ELECTRICAL POWER SYSTEM - CONTROL CENTER

DO NOT SCALE REDUCED DRAWING

INDEX CODE
 201450 E00010

NO.	REVISION	DATE
1	ADDED NOTE PER R.L.S. 1177	7/1/77
2	REVISED PER 318 PLANT EXPANSION	7/1/77
3		
4		
5		

UNITED STATES ATOMIC ENERGY COMMISSION
 RESEARCH REACTOR DIVISION

CONTRACT NO. AT(40-1)-1040
 FEED MATERIALS PRODUCTION CENTER
 FERNALD AREA

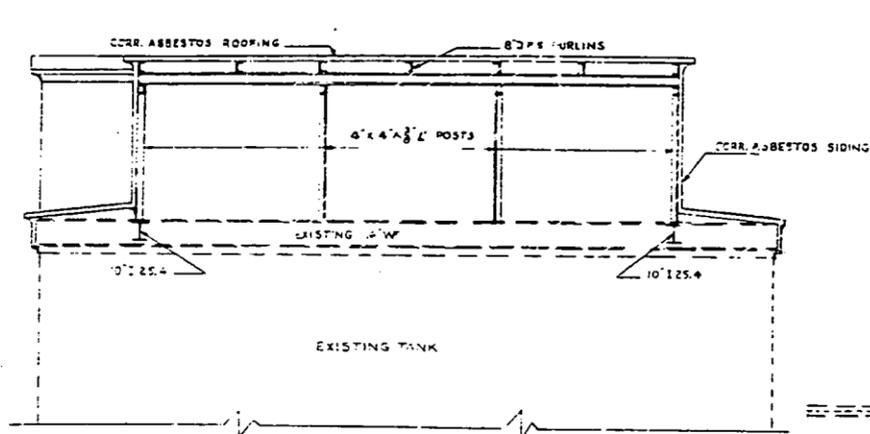
ELECTRICAL POWER SYSTEM
 CONDUIT AND GROUNDING LAYOUT PLAN
 SOUTH AREA WATER TREATMENT PLANT

DATE: 7-21-77
 DRAWN BY: J.M.
 CHECKED BY: J.M.
 APPROVED FOR CONSTRUCTION: [Signature]

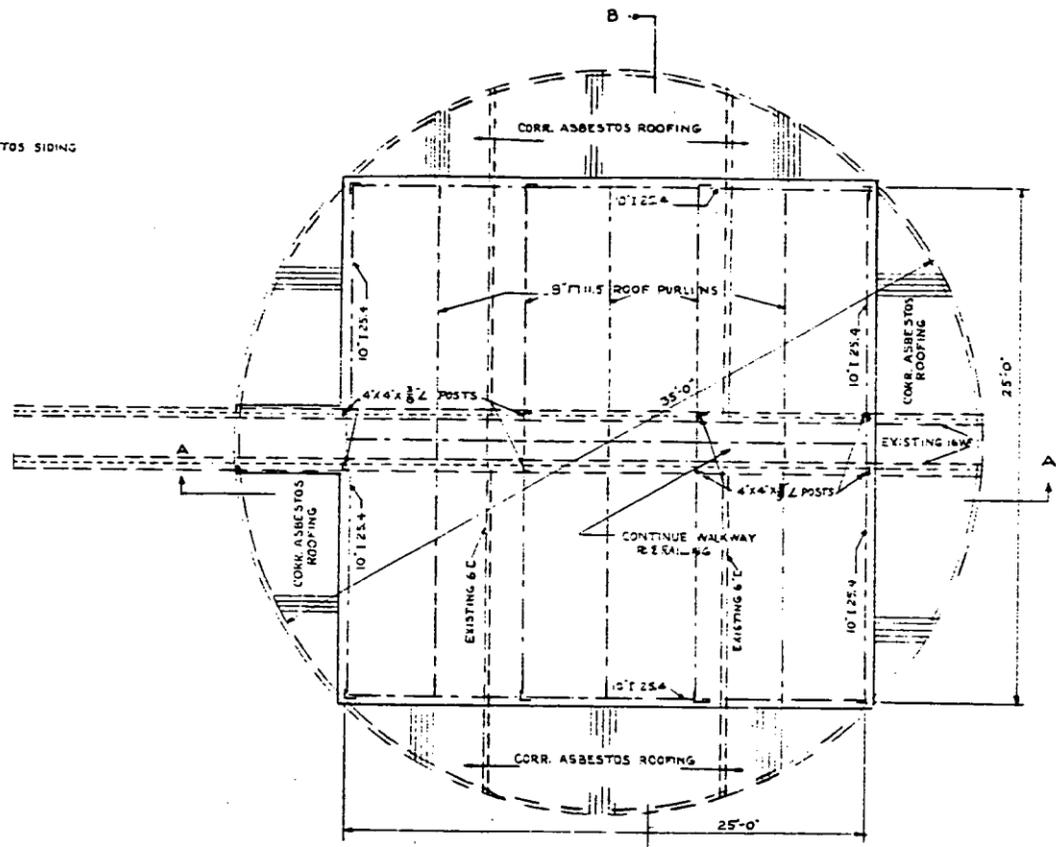
3005-C-3011-A

000175

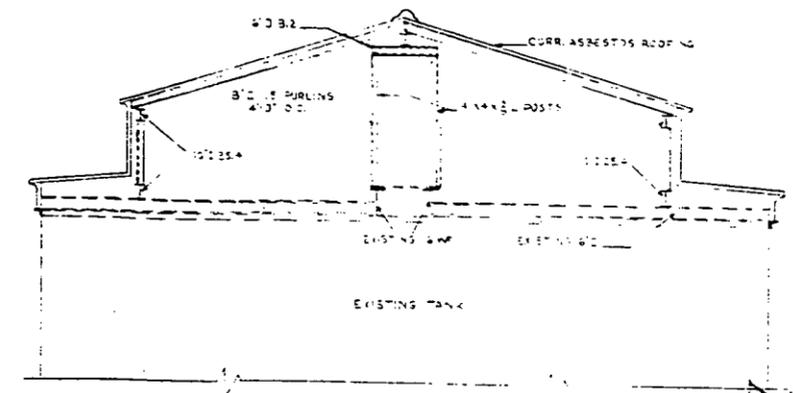
FIGURE C-17



SECTION "AA"

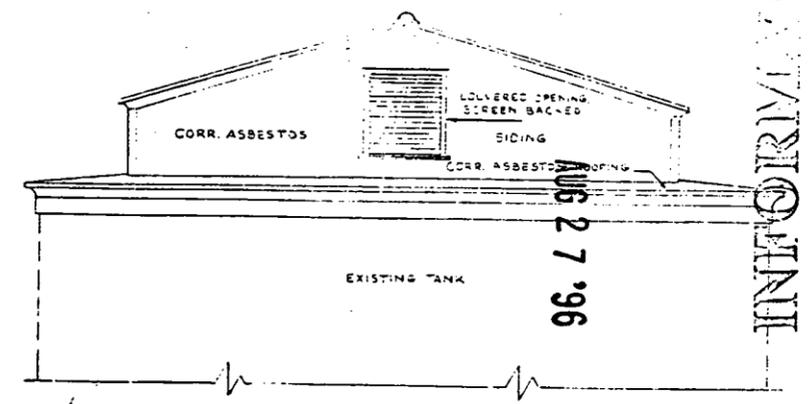


PLAN

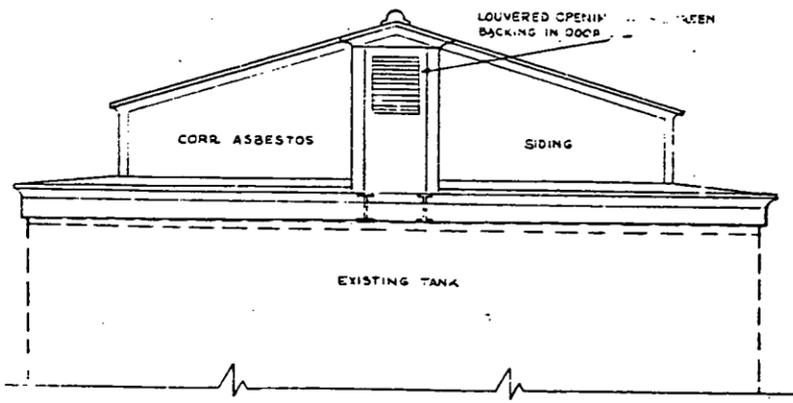


SECTION "BB"

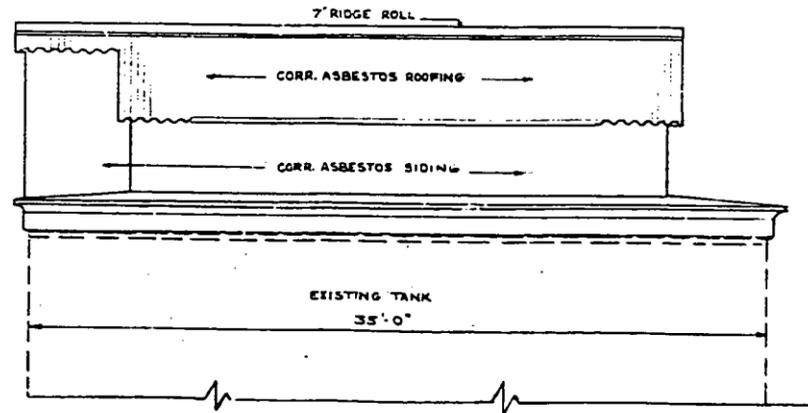
NOTES:
PAINT ALL STEEL INTERIOR MEMBERS WITH ALUMINUM PAINT



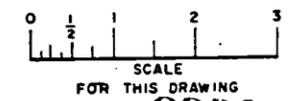
SOUTH ELEVATION



NORTH ELEVATION



WEST ELEVATION



000176

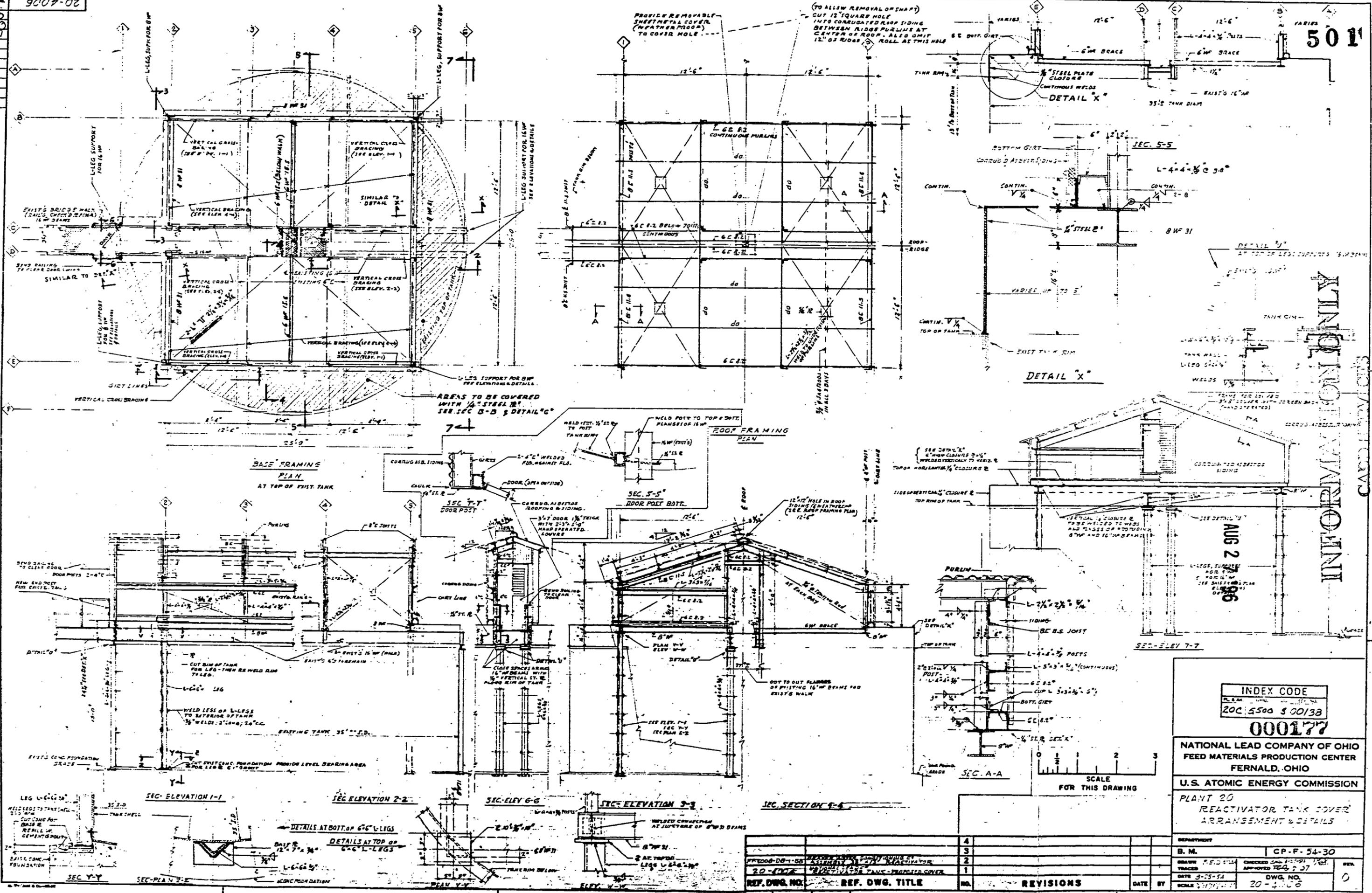
NATIONAL LEAD COMPANY OF OHIO
FEED MATERIALS PRODUCTION CENTER
FERNALD, OHIO
U.S. ATOMIC ENERGY COMMISSION
PLANT 20
REACTIVATOR TANK
PROPOSED COVER

INDEX CODE
20R 5500 A 00135

REF. DWG. NO.	REF. DWG. TITLE	NO.	REVISIONS	DATE	BY
		4			
		3			
		2			
		1			
FD300B-C02-A	PROPOSED COVER FOR REACTIVATOR				

INFORMATION ONLY

CALCULATED



INFORMATION ONLY
 AUG 2 1966

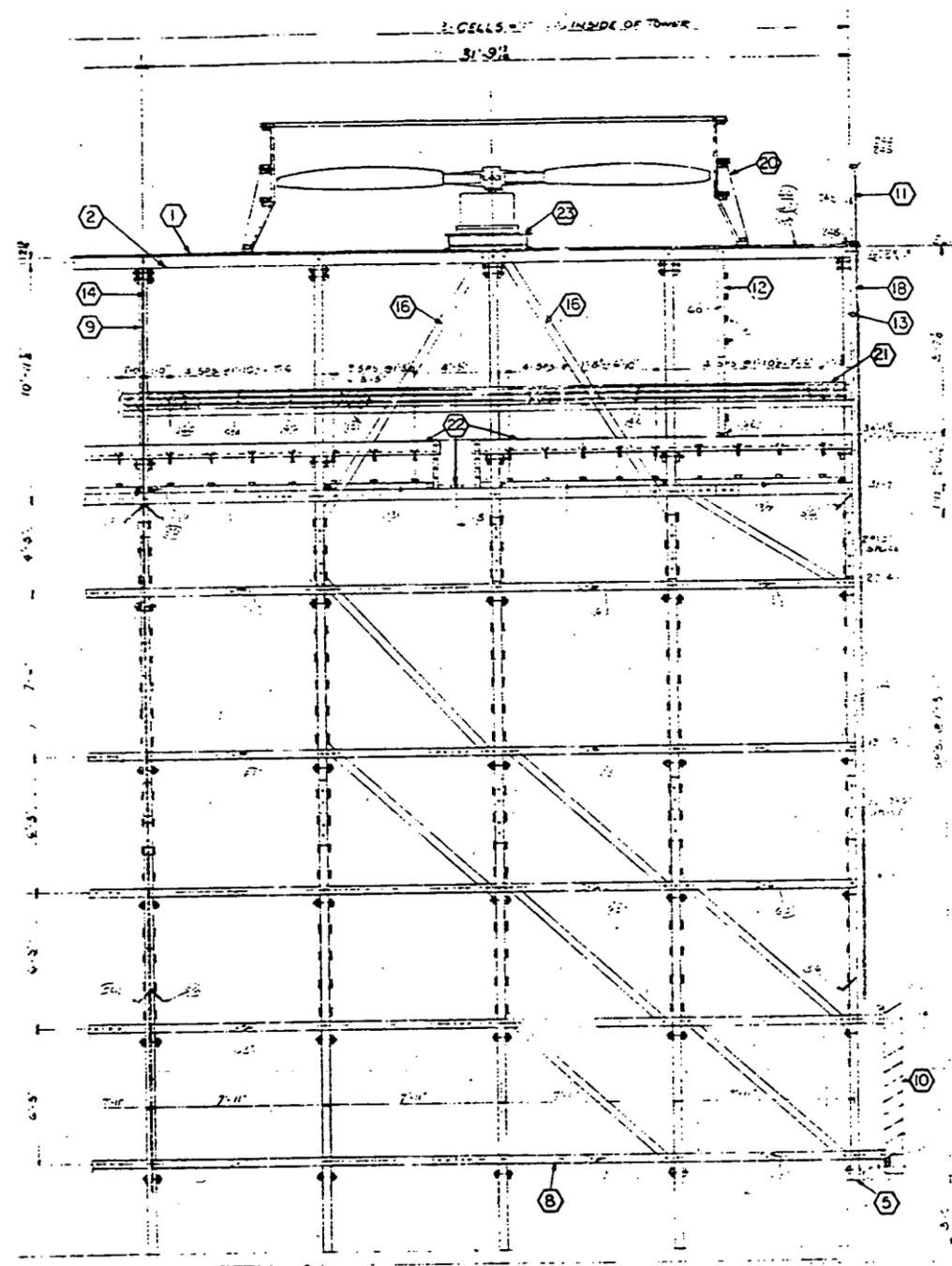
INDEX CODE
 20C 5500 3 00138
 000177

NATIONAL LEAD COMPANY OF OHIO
 FEED MATERIALS PRODUCTION CENTER
 FERNALD, OHIO
 U.S. ATOMIC ENERGY COMMISSION
 PLANT 20
 REACTOR TANK COVER
 ARRANGEMENT & DETAILS

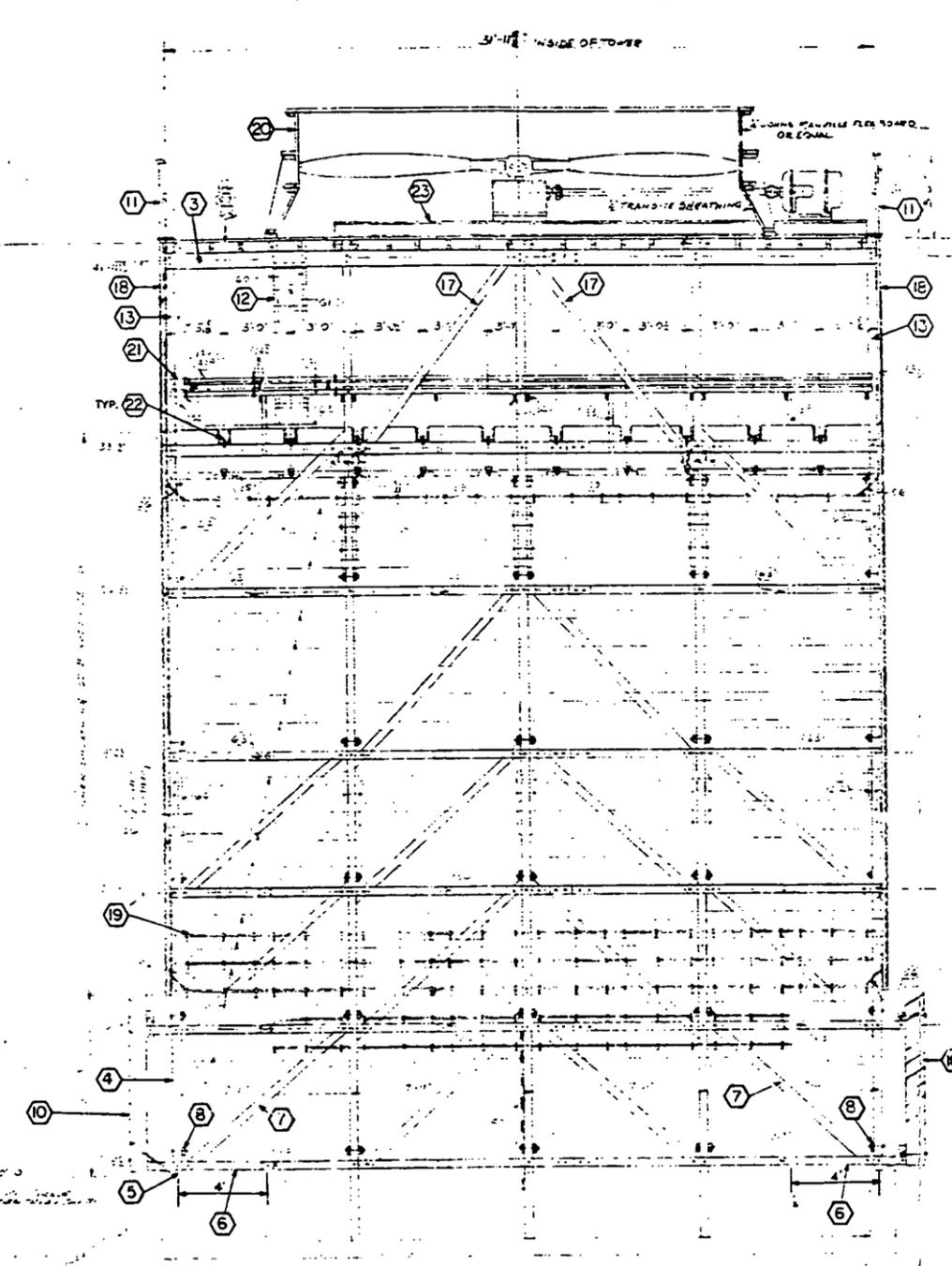
NO.	DATE	BY	REVISIONS
4			
3			
2			
1			

REF. DWG. NO.	REF. DWG. TITLE	NO.	DATE	BY
20-4006	REACTOR TANK COVER	1	3-25-64	

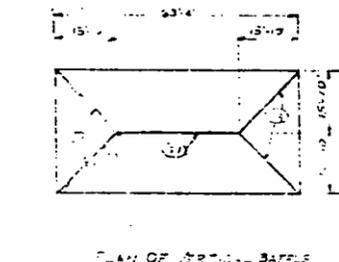
FIGURE C-19



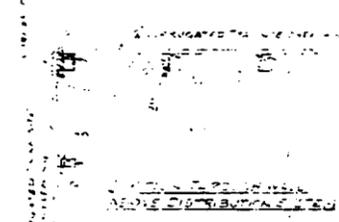
LONGITUDINAL ELEVATION



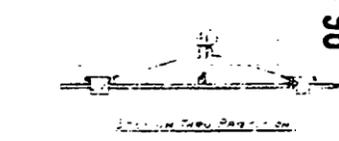
CROSS SECTIONAL ELEVATION



PLAN OF SPILL BATTLE



SECTION THROUGH WALL BELOW DISTRIBUTION SYSTEM



SECTION THROUGH WALL

AUG 27 '96

CERTIFIED FOR CONSTRUCTION
 SIGNATURE *[Signature]* DATE 8-1-96

NO.	DATE	REVISION
COOLING TOWER SECT. ELEVATION		
2 CELLS 32'-0" x 31'-0" x 4'-0" HIGH		
20' O' FANS 2 BOWDES		
INDUCED DRAFT 1/2" WINDS		
THE STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER LICENSE NO. 20754-A		

INDEX CODE			
PL. NO.	SCALE	CL.	REV.
2.0C	5500	A	00354 0

DO NOT SCALE
REDUCED DRAWING

INFORMATION ONLY

CABLE CONTACTS

000178

GENERAL NOTES

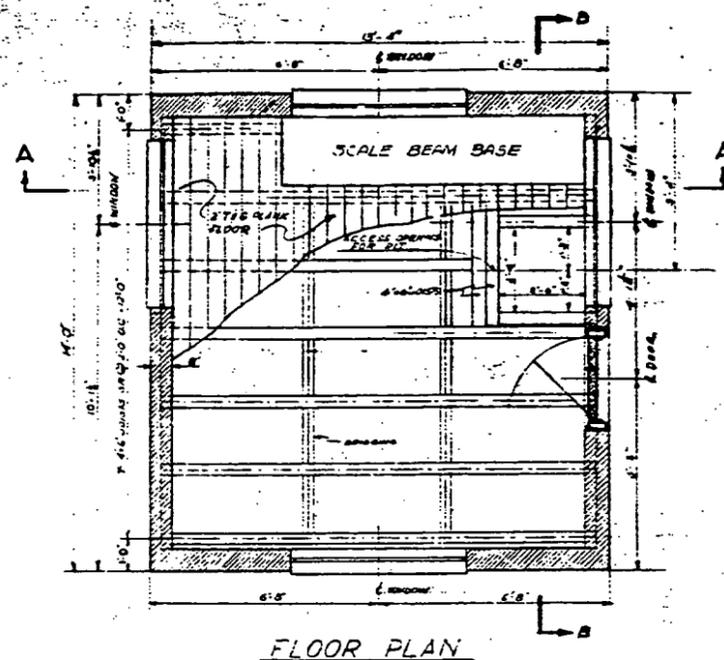
CONCRETE BLOCKS, CAST STONE LINTELS, SILL, MORTAR, MASONRY
 To be in accordance with specifications for Job No. 3014, approved 7/1/51, previously submitted & revised.

LUMBER
 All lumber to be No. 1 common Douglas Fir or Southern Yellow Pine 54S & sized as shown on drawing. Finish sizes shall conform to yard size standard of American Lumber Standards.

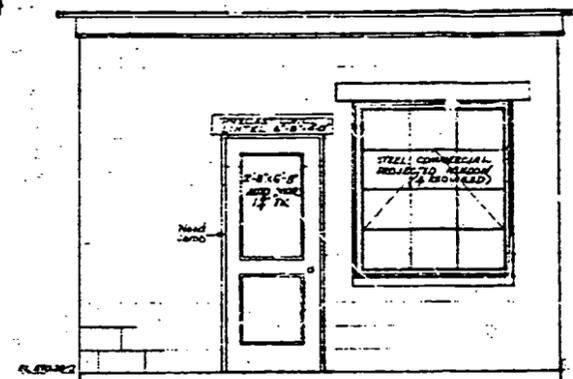
Door
 Door to be a standard wood door made to size & design as shown on drawing, or approved equal.

STEEL SASH, BRACKETS, SLICING, HARDWARE, FINISHING.
 To be in accordance with specifications for Job No. 3014, approved 7/1/51, previously submitted & revised.

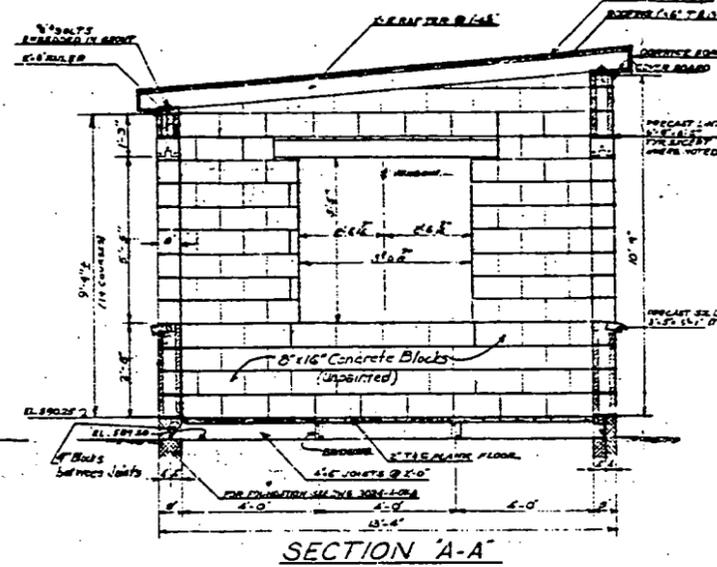
ELECTRIC LIGHTING, POWER WIRING, ETC.
 To be detailed on a later plan.



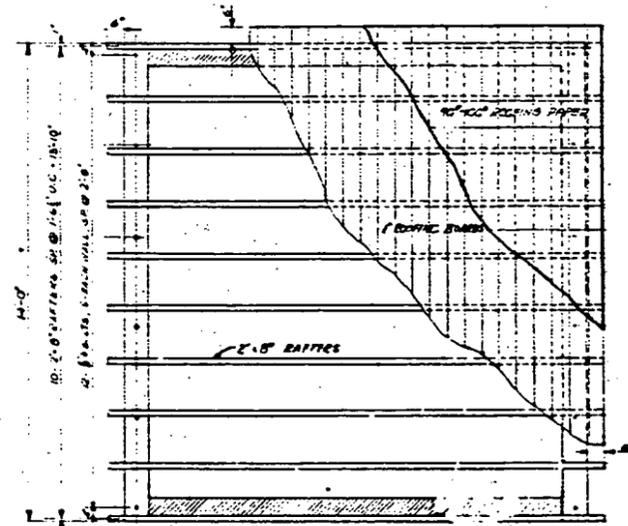
FLOOR PLAN



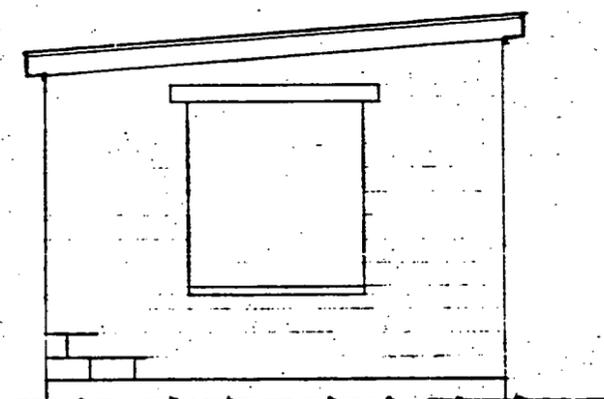
EAST ELEVATION



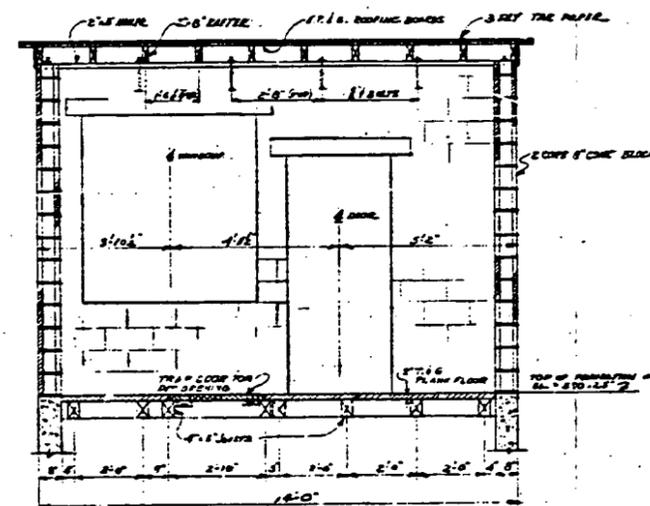
SECTION A-A



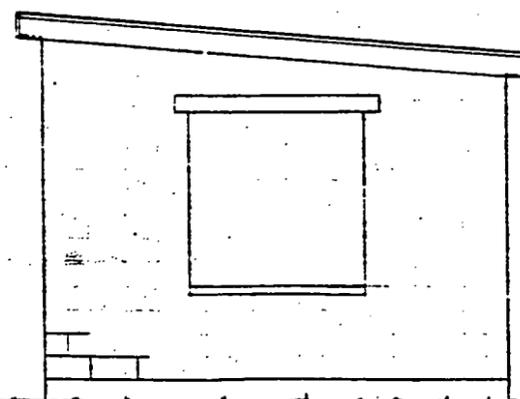
ROOF PLAN



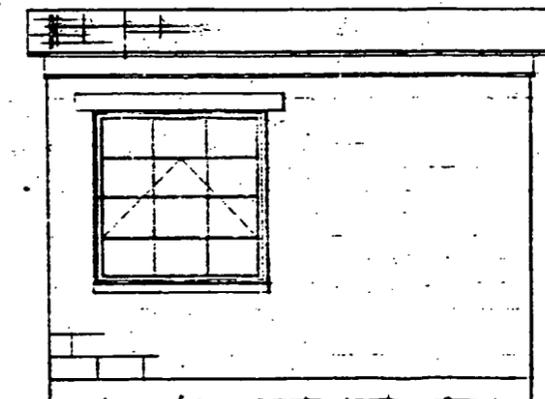
SOUTH ELEVATION



SECTION B-B



NORTH ELEVATION



WEST ELEVATION

REFERENCE DRAWINGS	
TITLE	DRAWING NO.
PLAN OF RAILROADS & R.R. SCALE FOUNDATION	3024-S-10-A
RAILROAD SYSTEM	3024-A-01-A
PLOT PLAN	3020-44-01-A

AUG 27 '96

NO.	DATE	REVISIONS	BY	APP'D.

APPROVED FOR CONSTRUCTION

UNITED STATES ATOMIC ENERGY COMMISSION
 NEW YORK OPERATIONS OFFICE

CONTRACT NO. AT(30-1)-1080
 FEED MATERIALS PRODUCTION CENTER
 FERNALD AREA

ARCHITECTURAL
 SCALE HOUSE
 PLANS, ELEVATIONS & SECTIONS

10-3-51
 1/2" = 1'-0"
 CATALYTIC CONSTRUCTION CO.
 100 WALL STREET
 PHILA. 5, PA.

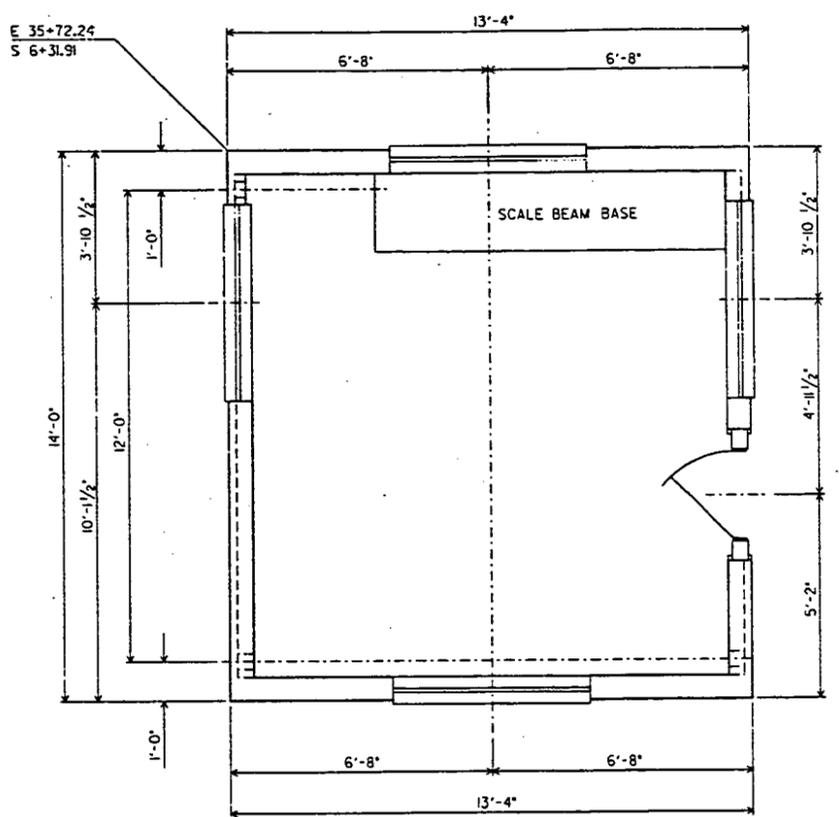
APPROVED FOR CONSTRUCTION

3024-C-2001-A

INDEX CODE
 248.1450/100005

INFORMATION ONLY
 CAD SERVICES

000179



FLOOR PLAN

INFORMATION ONLY
 CADDED REVISIONS

AUG 27 '96

000180

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				NOTE: WMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY				WESTINGHOUSE MAT'LS. CO. OF OHIO. BUILDING 24A RAILROAD SCALE HOUSE FLOOR PLAN 1/2" = 1'-0"			
				APPROVALS CHEMICAL CIVIL & STR. ELECTRICAL ENGINEER INSTRUMENT MECHANICAL CHECKED APPROVED				I.R.S. & T. MAINTENANCE NU. SAFETY O.S. PRODUCTION FIRE & SAFETY WASTE MANAGE D.O.E. SECURITY			
				FERNALD, OHIO FERNALD SITE OFFICE U.S. DEPARTMENT OF ENERGY				FIRST FLOOR 24B-5500-A-00097 0			
NO.	REVISIONS	DATE DWN. BY	APPD. NO.	REVISIONS	DATE DWN. BY	APPD. NO.	REF. DWG. NO.				

D

R

APPENDIX D
A
PHOTOGRAPHS

F

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D

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APPENDIX D
PHOTOGRAPHS

- FIGURE D-1 Aerial view of Boiler Plant/Water Plant Complex looking from NW
- FIGURE D-2 Ground-Level View of Boiler Plant Building (10A) Including Electrostatic Precipitator and Wet Salt Storage looking from NW
- FIGURE D-3 Ground-Level View of Electrostatic Precipitators and Ash Silo from N
- FIGURE D-4 Railcar Shaker Shed and Coal Handling Equipment from SSE
- FIGURE D-5 Coal Reclaim Hopper, Grate & Car Shaker from E
- FIGURE D-6 Ground-Level View of Boiler Plant Maintenance Building (10B) from NW
- FIGURE D-7 Interior of Boiler Plant Maintenance Building (10B) from N
- FIGURE D-8 Ground-Level View of Utilities Heavy Equipment Building (10E) and Associated Pipe Bridge (G-008) from SE
- FIGURE D-9 Interior of Utilities Heavy Equipment Building (10E) from NE
- FIGURE D-10 South End of Building 10A, Zeolite Water Softening Equipment from SE (ELEV. 587-0")
- FIGURE D-11 South End of Building 10A, Condensate & Treated Water Pumps and Piping from NE (ELEV. 587-0")
- FIGURE D-12 North End of Building 10A, Air Compressor No. 5 and Air Drying Equipment from NE (ELEV. 587-0")
- FIGURE D-13 East Side of Building 10A, Boiler Control Panel from SW (ELEV. 587-0")
- FIGURE D-14 East Side of Building 10A, Boiler No. 1 and Support Steel from NE (ELEV. 587-0")
- FIGURE D-15 East Side of Building 10A, Bottom of Reclaim Coal Bunkers and Associated Coal Handling Equipment from W (ELEV. 572-0")
- FIGURE D-16 West Side of Building 10A, Basement Sumps and Blowdown Flash Tank from N (ELEV. 572-0")
- FIGURE D-17 Building 10A, Boiler No. 4 Steam Drum and Piping from NE (ELEV. 617-6")
- FIGURE D-18 South Side of Building 10A, Deareator Heater and equipment from NW (ELEV. 608-6" and 620-0")

- FIGURE D-19 West Side of Building 10A, Substations N7-1 and N7-2 from NW (ELEV. 602-0")
- FIGURE D-20 East Side of Building 10A, Boiler No. 1 Mechanical Dust Collector Hoppers and Vacuum Piping from SE (ELEV. 602-0")
- FIGURE D-21 Building 10A, Boiler No. 3 Ash Hopper from SE (ELEV. 572-0")
- FIGURE D-22 Building 10A, Boilers Nos. 2 and 4 and Associated Piping Between from N (ELEV. 608-6")
- FIGURE D-23 West Side of Building 10A, Tripper Car and Conveyor Equipment from N (ELEV. 656-6")
- FIGURE D-24 South End of Building 10A, Steam Drum Piping for Boilers 2 & 4 from S (ELEV. 617-6")
- FIGURE D-25 West Side of Building 10A, No. 2 I.D. Fan, No. 2 & 4 I.D. Fan Drives from NW (ELEV. 630-0")
- FIGURE D-26 East Side of Building 10A, No. 1 I.D. Fan and Stack from NE (ELEV. 630-0")
- FIGURE D-27 Ground-Level View of Water Plant (20B) From SW
- FIGURE D-28 Interior SW Corner of Building 20B from SW
- FIGURE D-29 Interior West Side of Building 20B, Water Treatment Equipment and Piping from W
- FIGURE D-30 Second Floor Building 20B, Clearwell Building from SW
- FIGURE D-31 Second Floor Building 20B, Clearwell Building, Dust Collector from E
- FIGURE D-32 Cooling Towers (20C) and Pipe Bridges from SE

000184

Figure D-1
Aerial view of Boiler
Plant/Water Plant Complex
looking from northwest
#6407-118

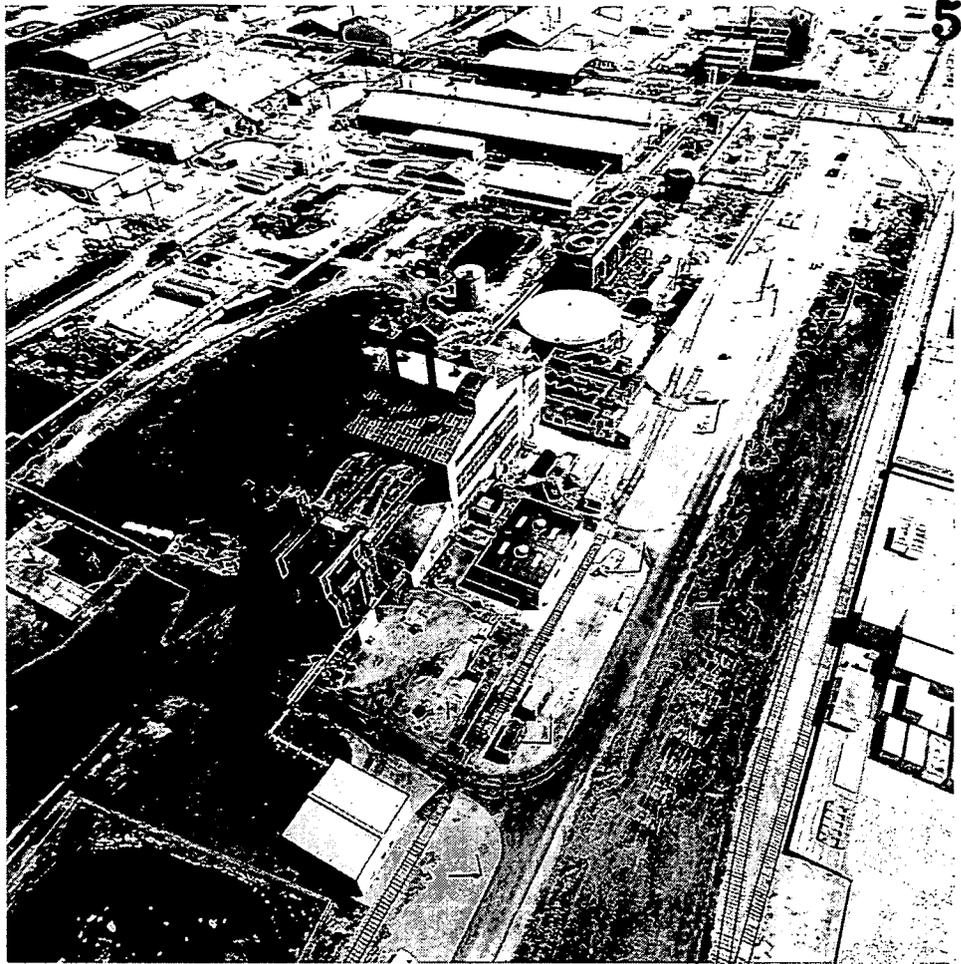


Figure D-2
Ground-level view of
Electrostatic Precipitator
and Wet Salt Storage
looking from northwest
#6407-56

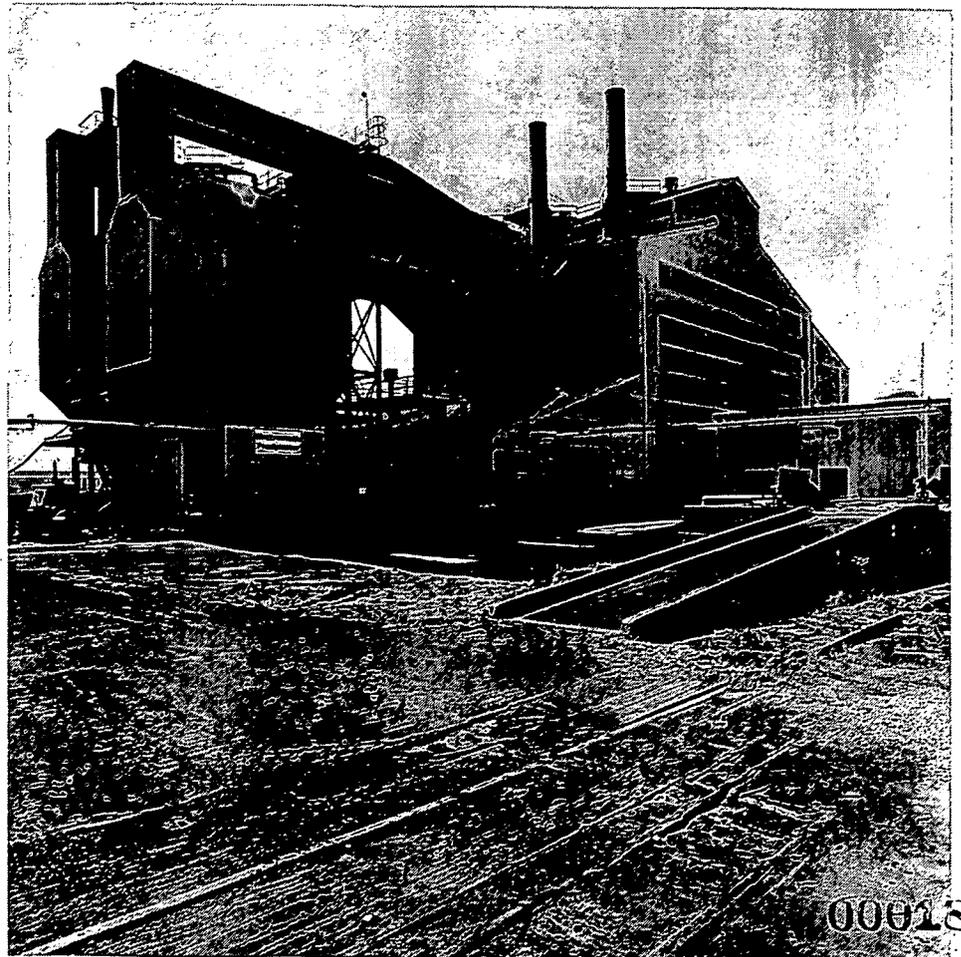


Figure D-3
Ground-level view of
Electrostatic Precipitator
and Ash silo from north
#6407-53

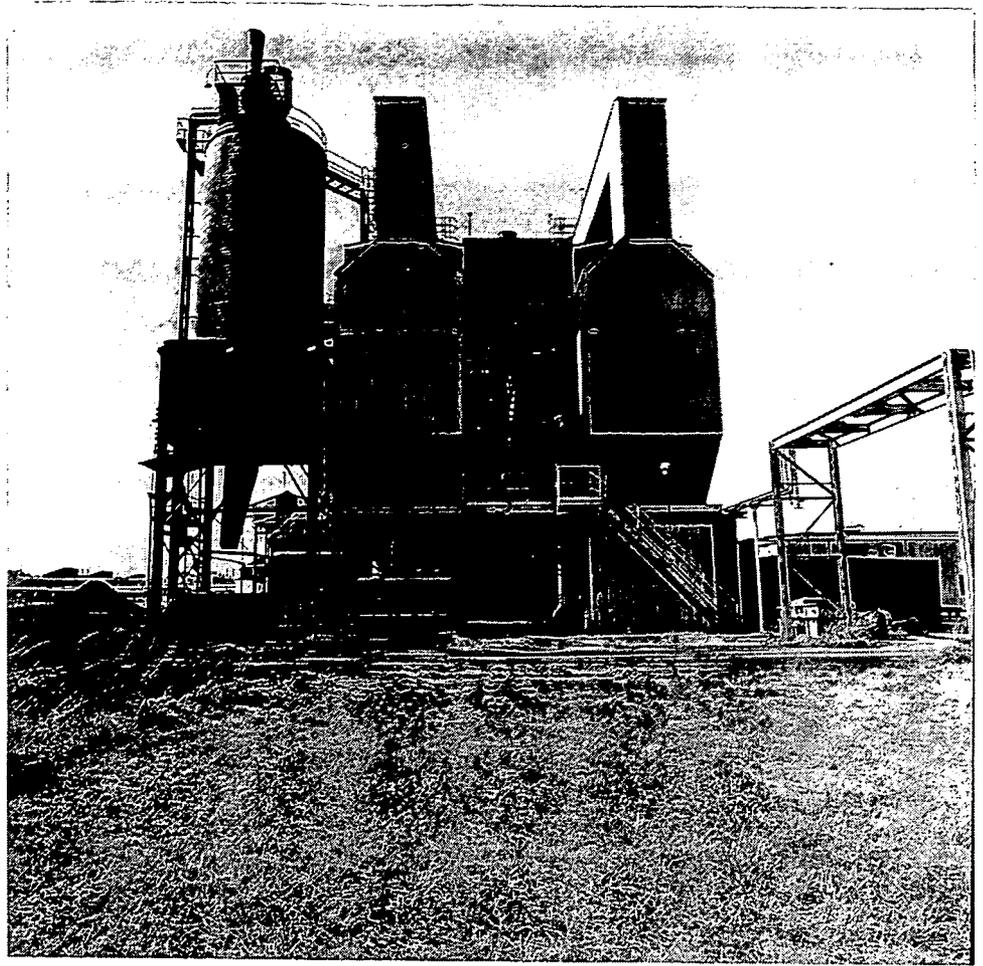
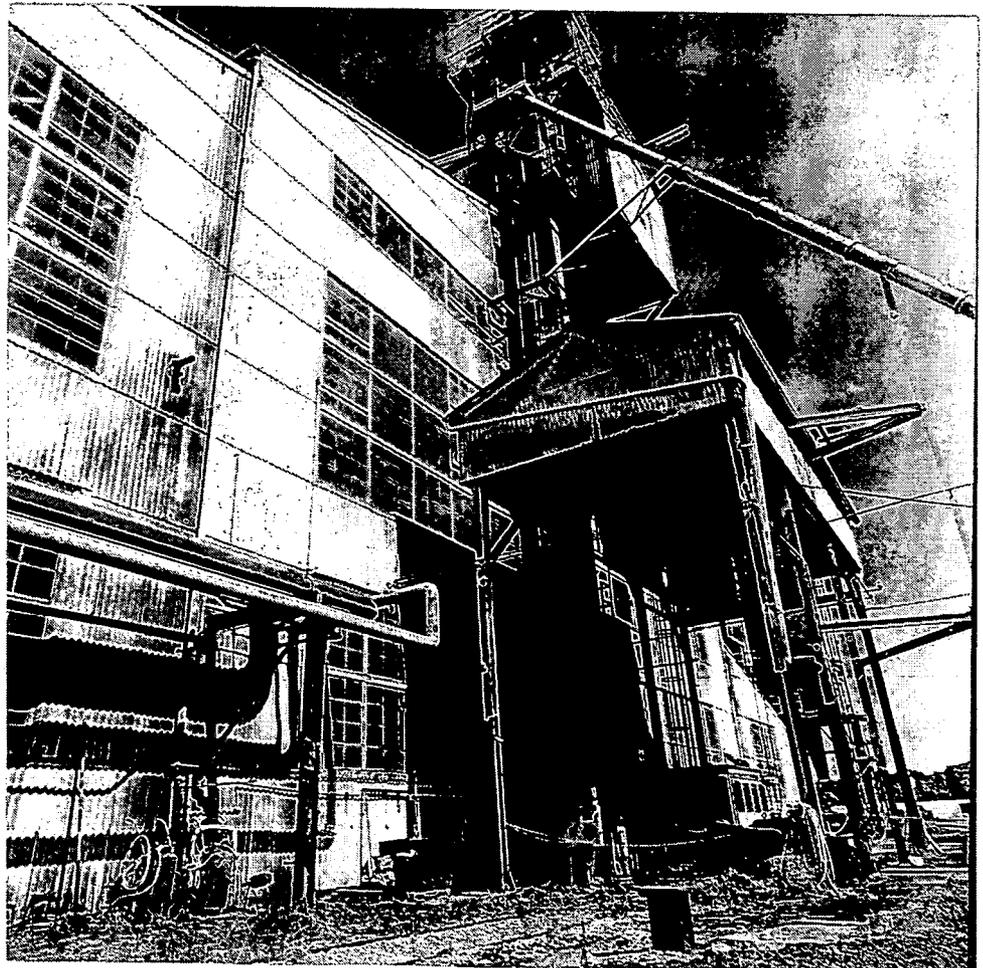


Figure D-4
Railcar shaker shed and coal
handling equipment from
south/southeast #6407-84



000186

Figure D-5
Coal reclaim hopper, grate &
car shaker from east
#6407-84

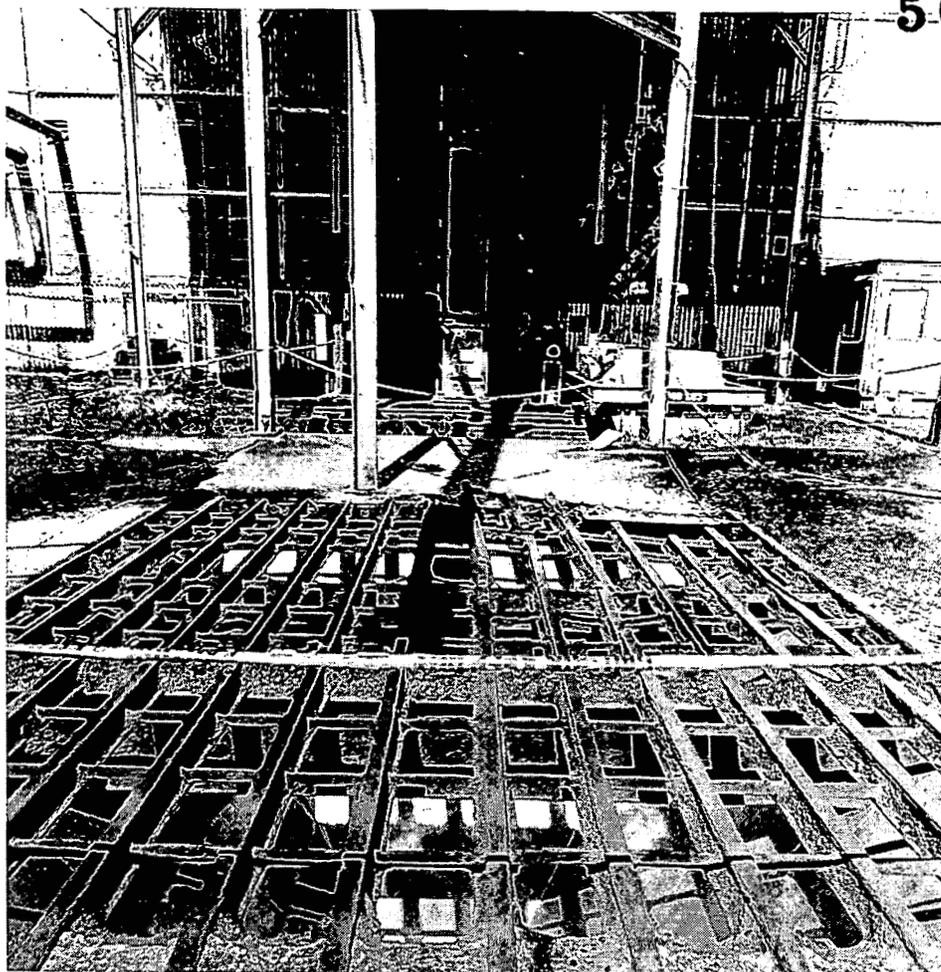


Figure D-6
Ground-level view of Boiler
Plant Maintenance Building
(10B) from northwest
#6407-60

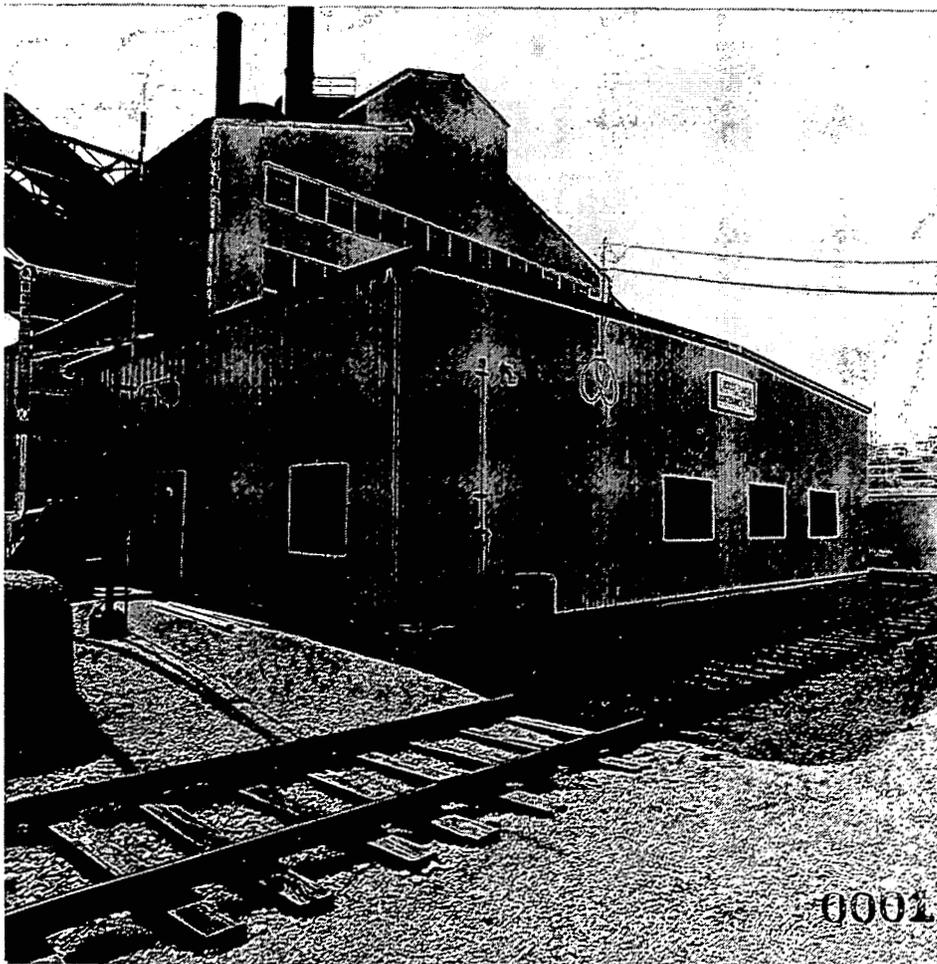


Figure D-7
Interior of Boiler Plant
Maintenance Building (10B)
from north #6407-62

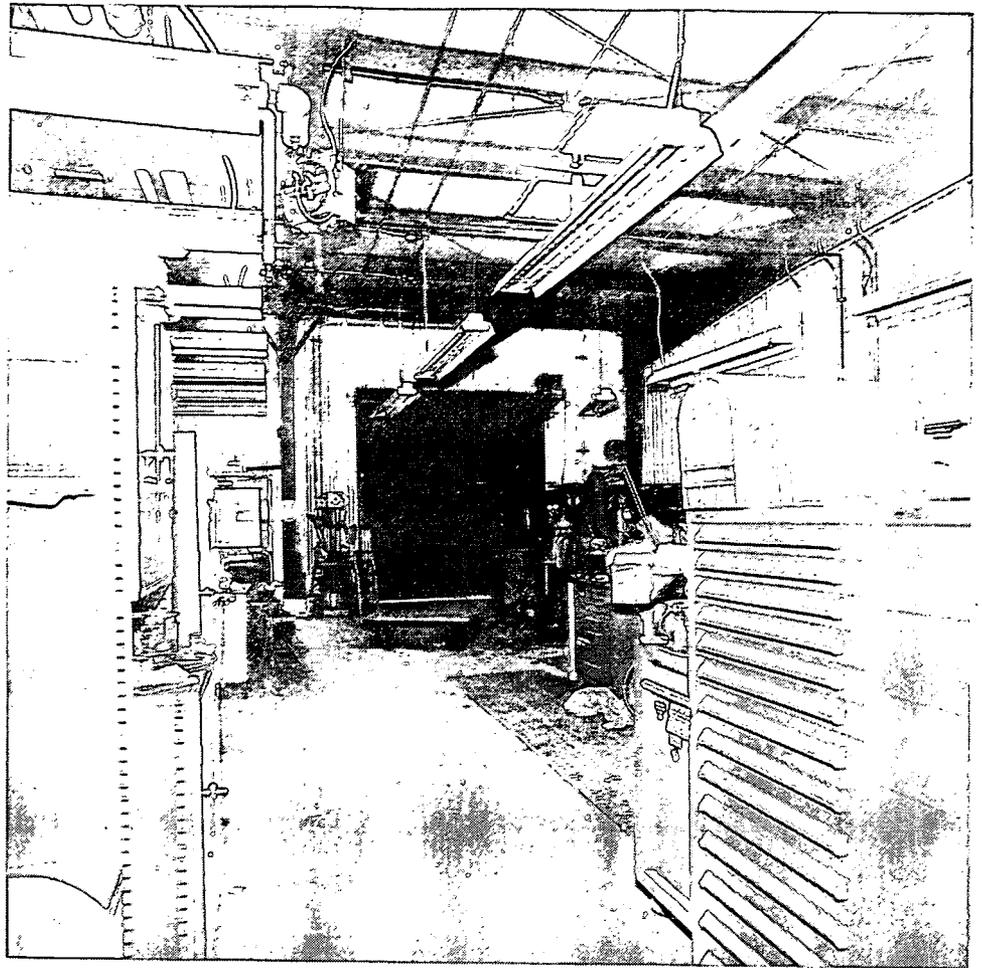
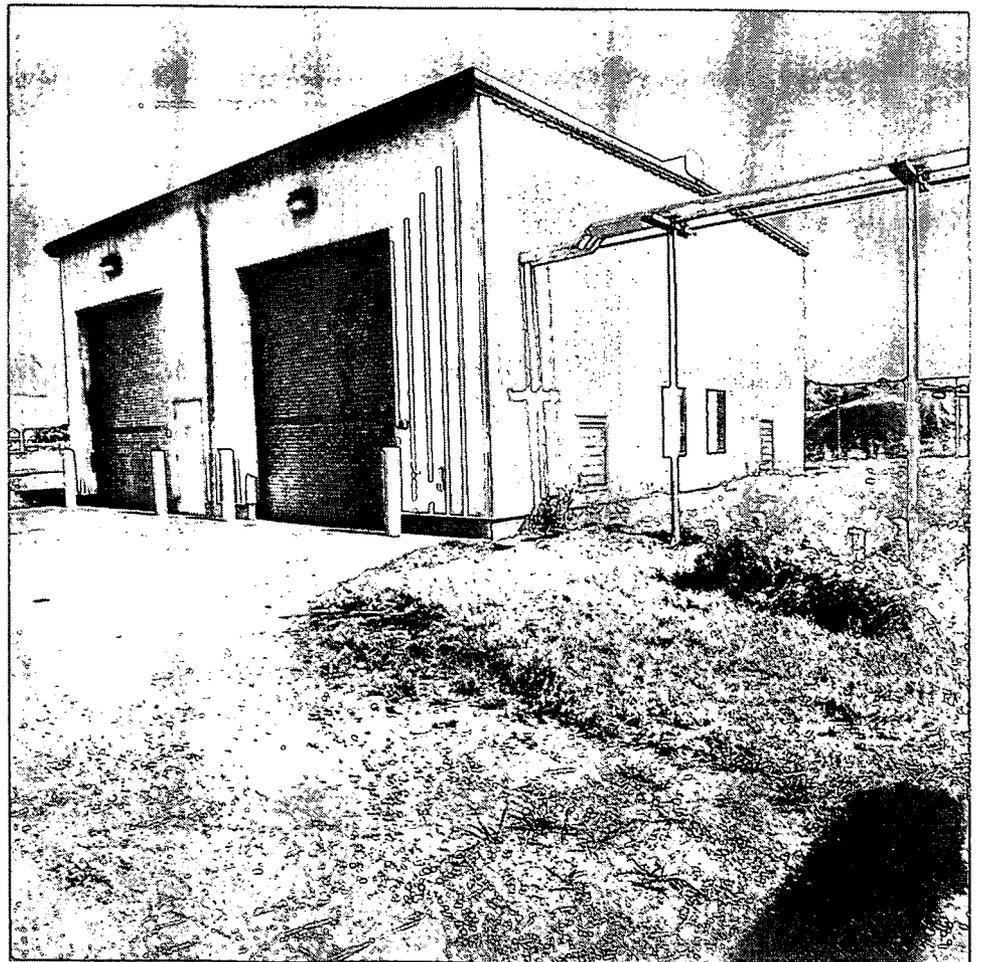


Figure D-8
Ground-level view of
Utilities Heavy Equipment
Building (10E) from
northeast #6407-54



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Figure D-9
Interior of Utilities Heavy
Equipment (10E) from
northeast #6407-59

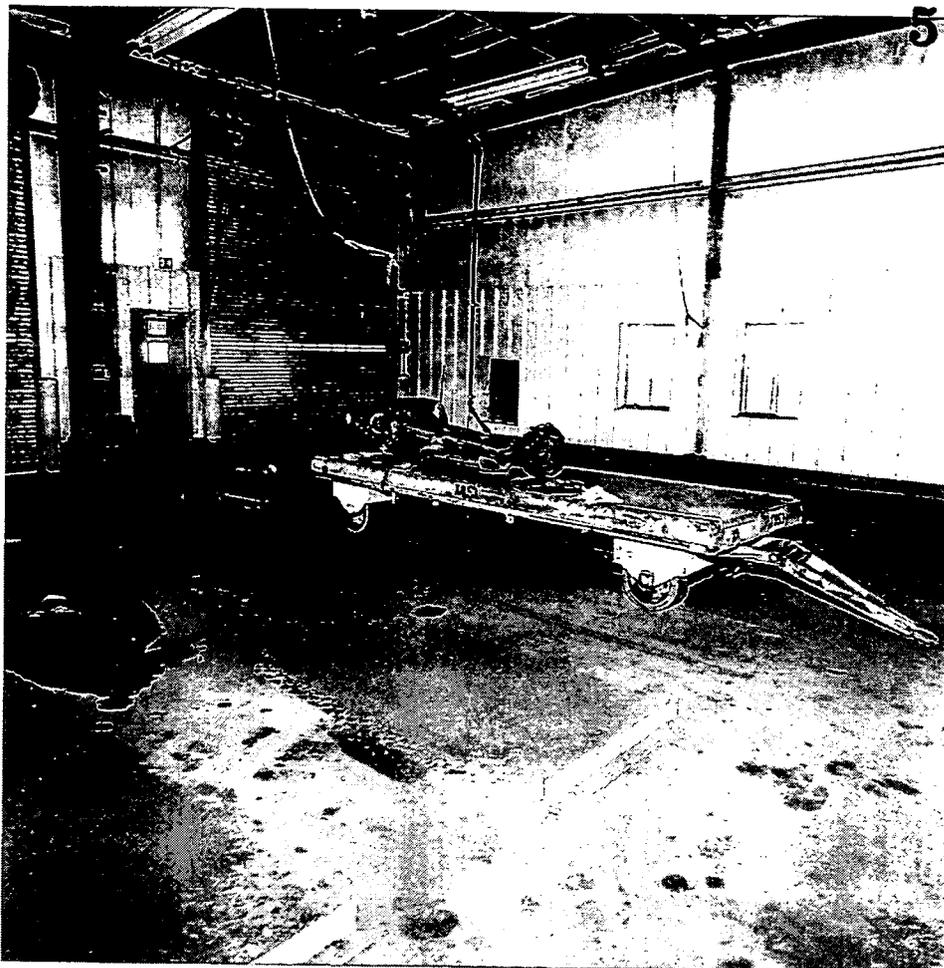


Figure D-10
South end of Building 10A,
Zeolite water softening
equipment from southeast
(elev.587-0") #6407-42

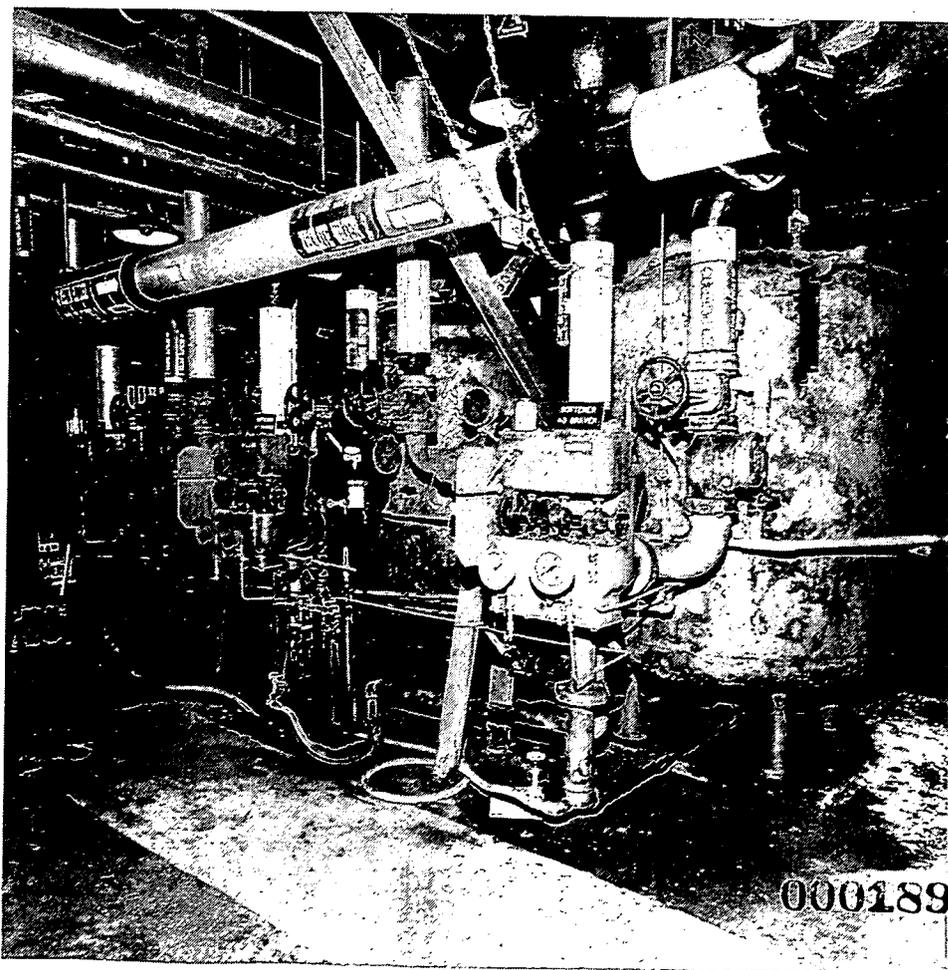


Figure D-11
South end of building 10A,
condensate and treated
water pumps and piping
from northeast
(elev. 587-0") #6407-41

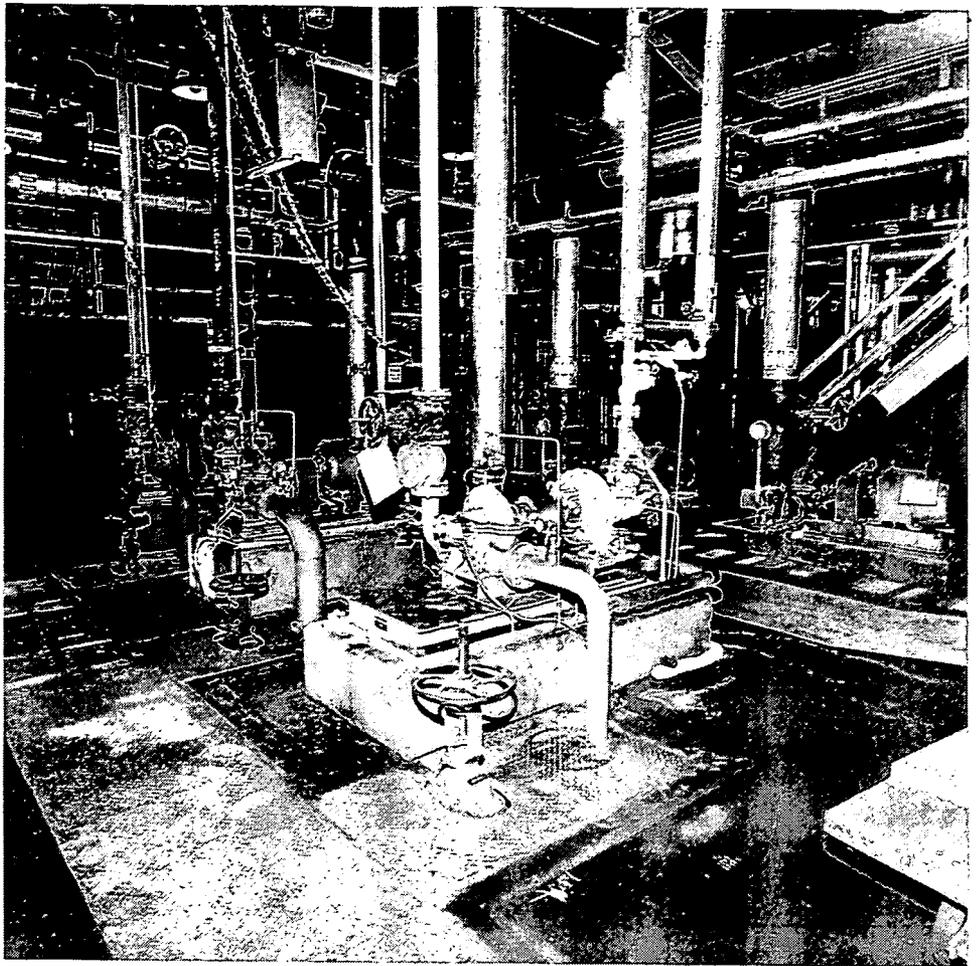
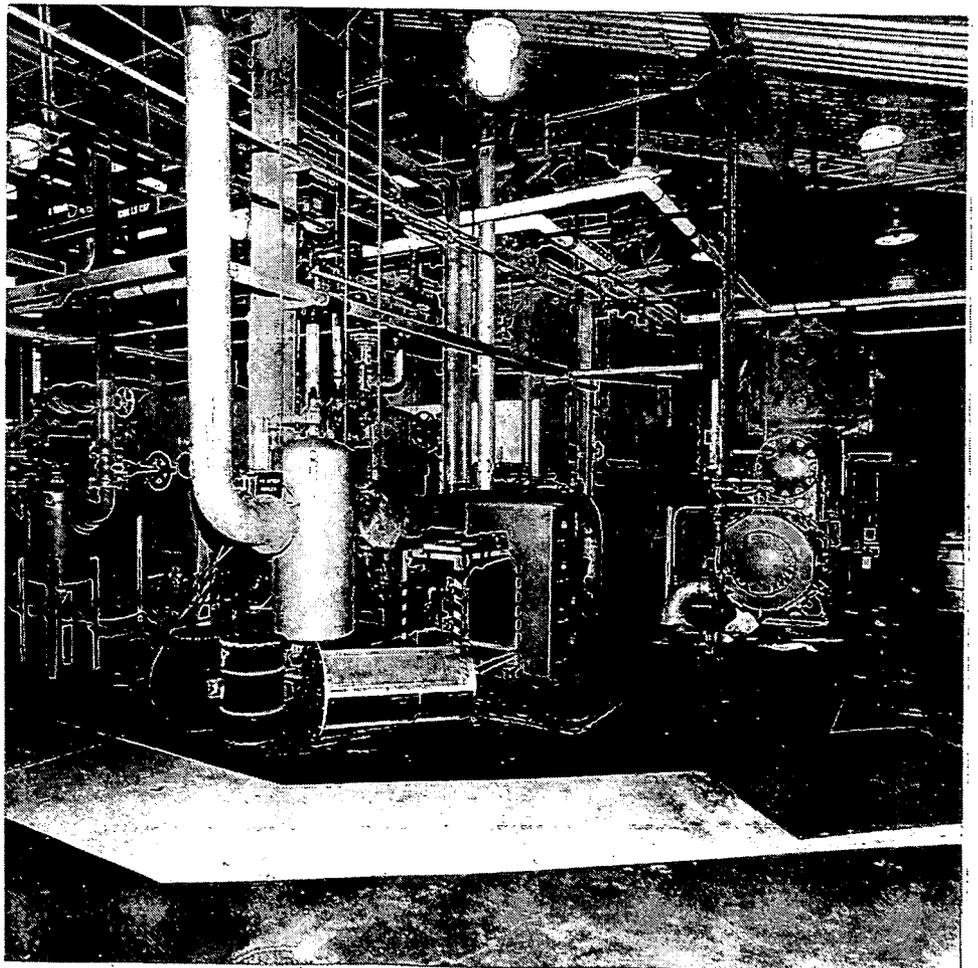


Figure D-12
North end of Building 10A,
air compressor No. 5 and air
drying equipment from
northeast #6407-45



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Figure D-13
East side of building 10A,
Boiler Control Panel from
southwest (elev. 587-0")
#6407-37

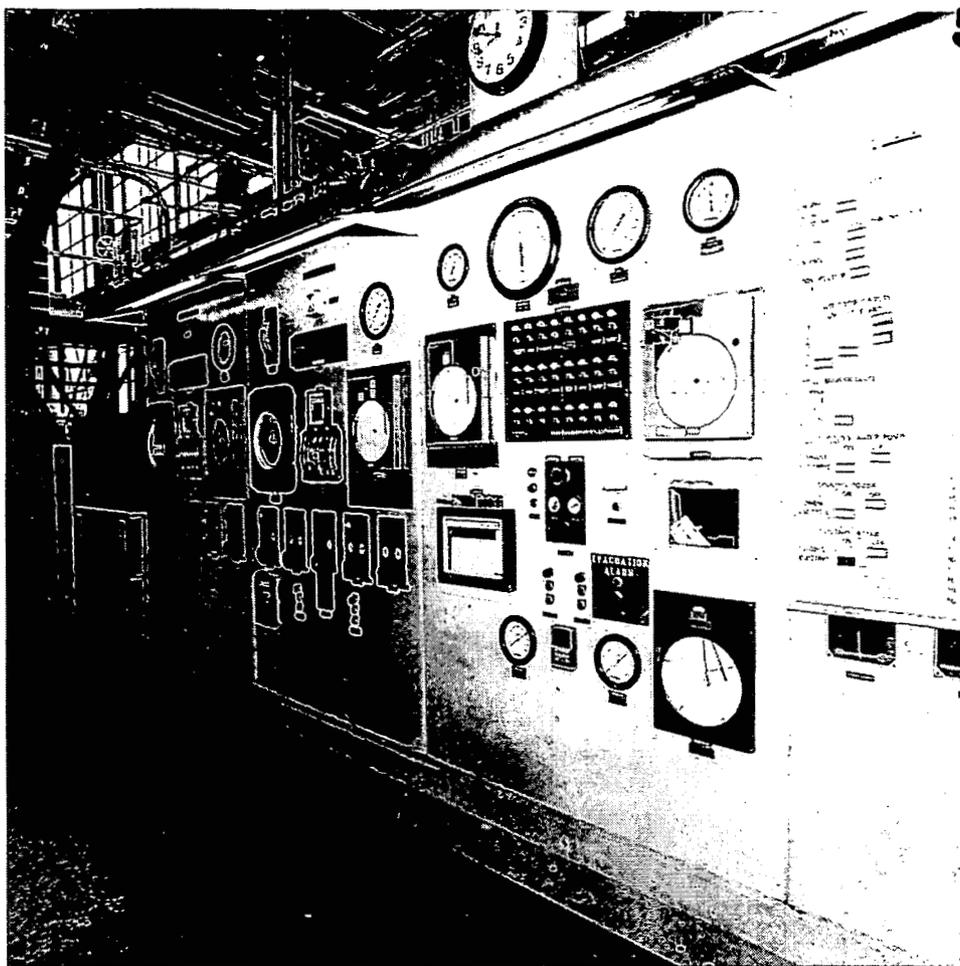


Figure D-14
East side of Building 10A,
boiler No. 1 and support
steel from northeast
(elev. 587-0") #6407-33

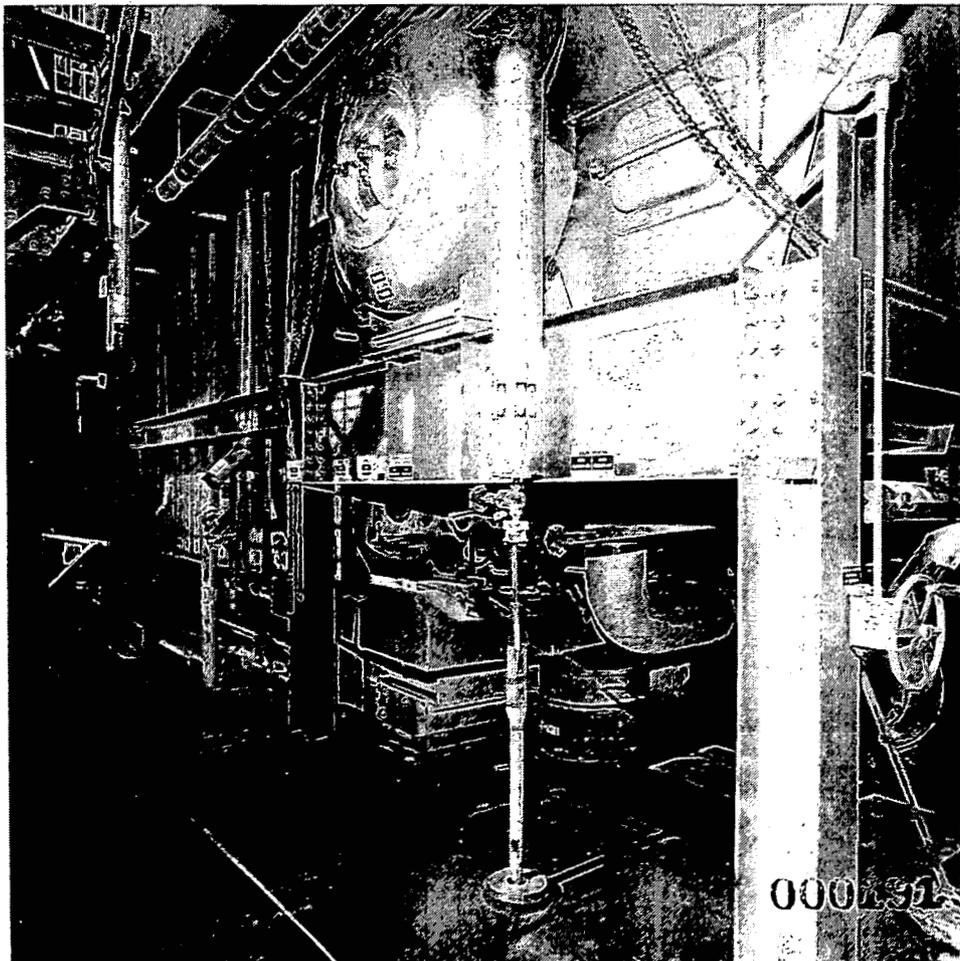
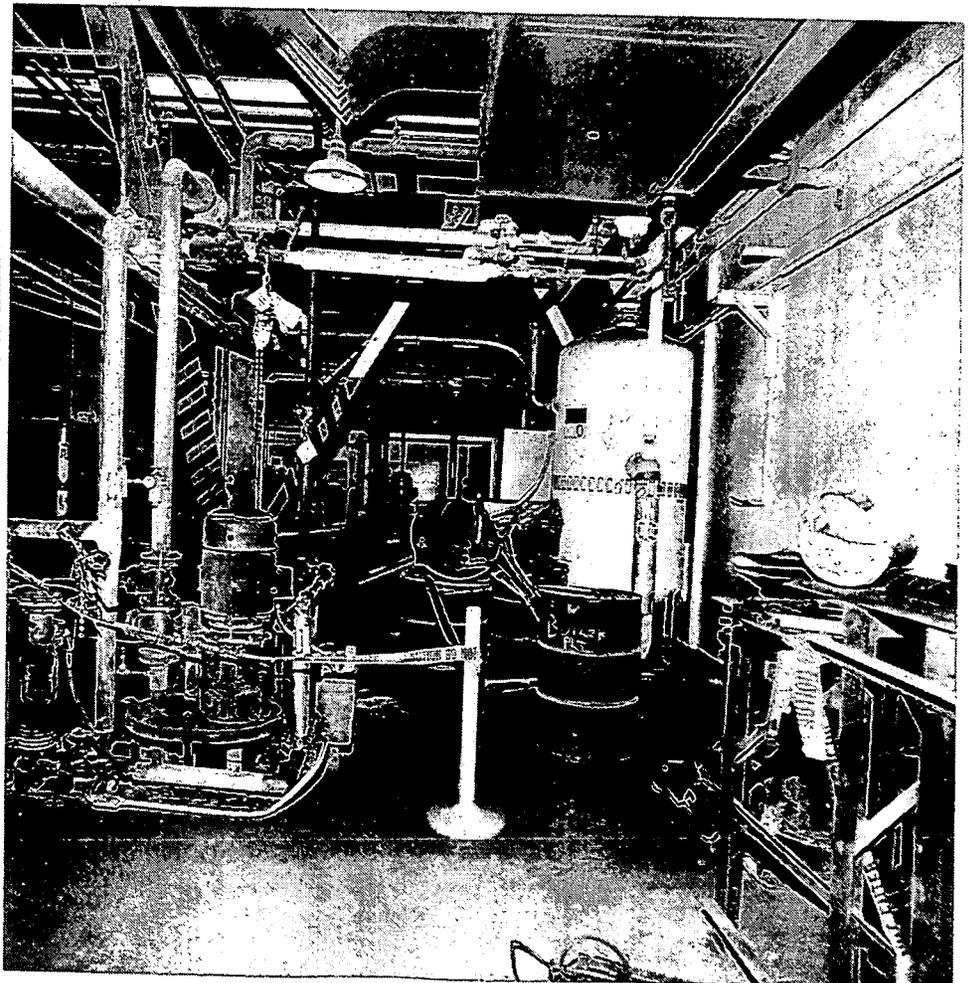


Figure D-15
East side of Building 10A,
bottom of Reclaim Coal
Bunkers and associated coal
handling equipment from
west (elev. 572-0")
#6407-47



Figure D-16
West side of Building 10A,
Basement Sumps and
Blowdown Flash Tank from
north (elev. 572-0")
#6407-49



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Figure D-17
Building 10A, Boiler No. 4
Steam Drum and Piping from
northeast (elev. 617-6")
#6407-18

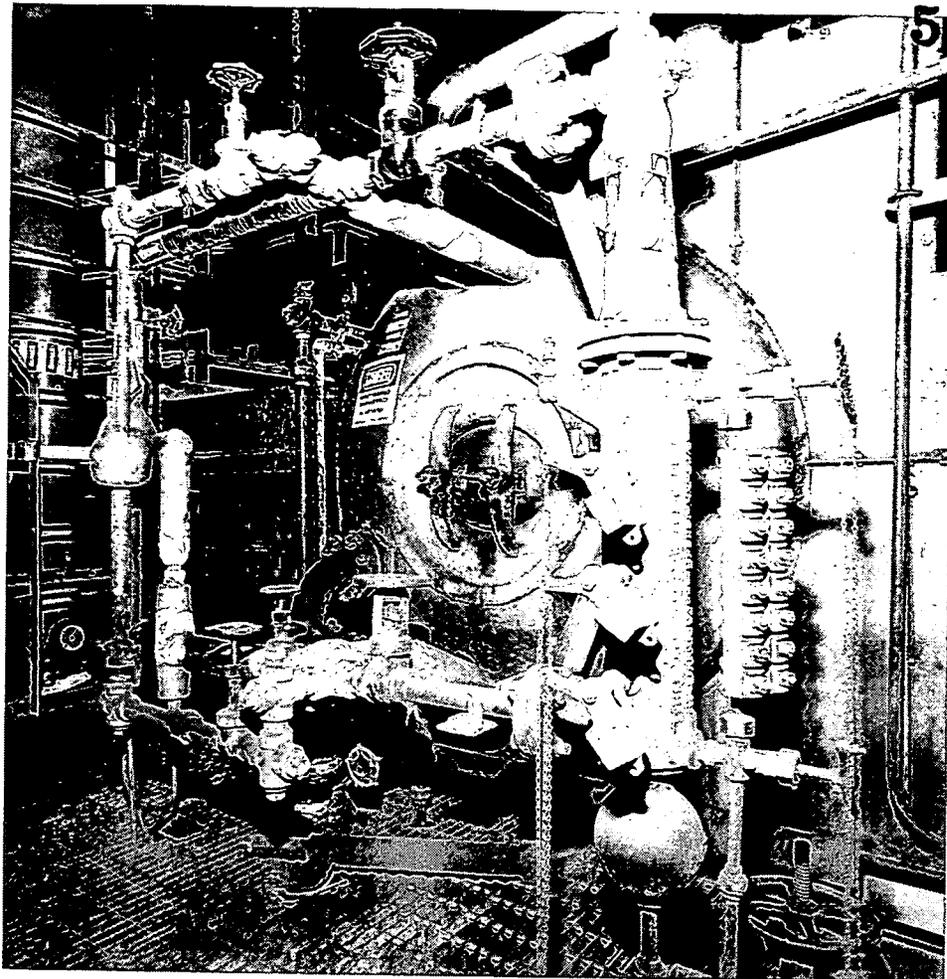


Figure D-18
South side of Building 10A,
Deareator Heater and
equipment from northeast
(elev. 608-6" and 620-0")
#6407-13

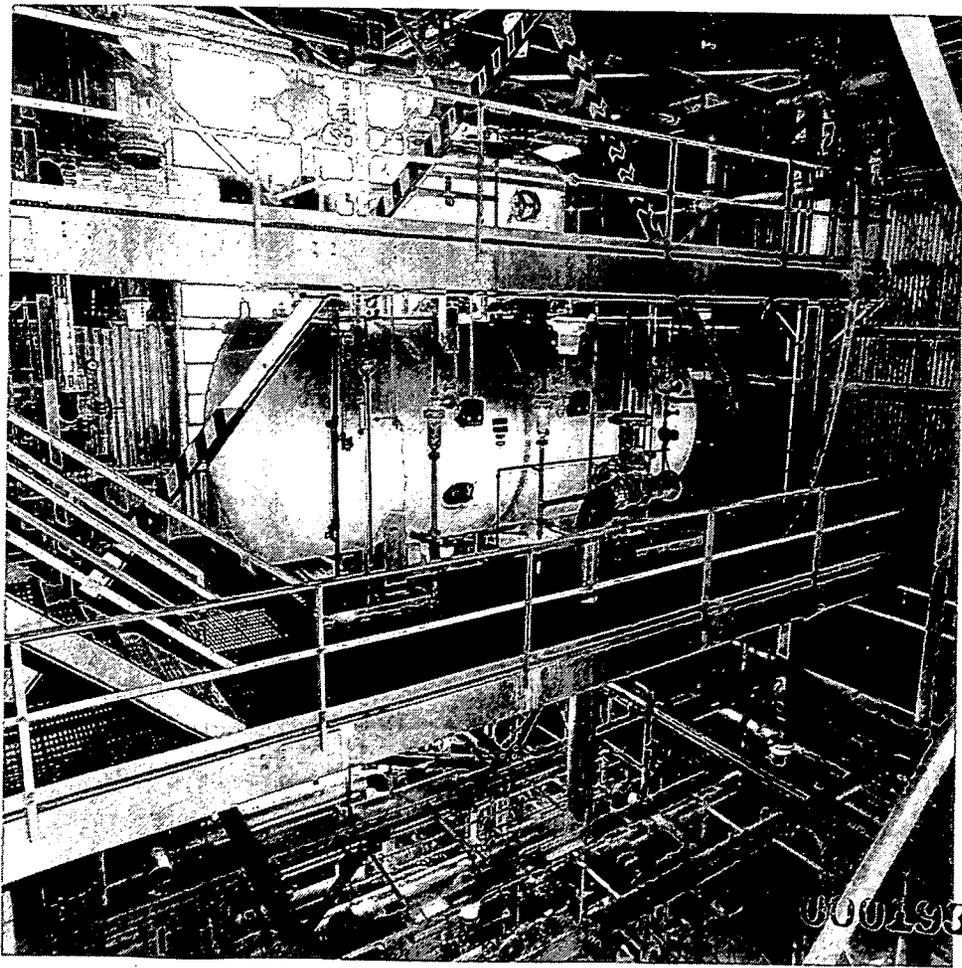


Figure D-19
West side of Building 10A,
substations N7-1 and N7-2
from northwest
(elev. 602-0") #6407-11

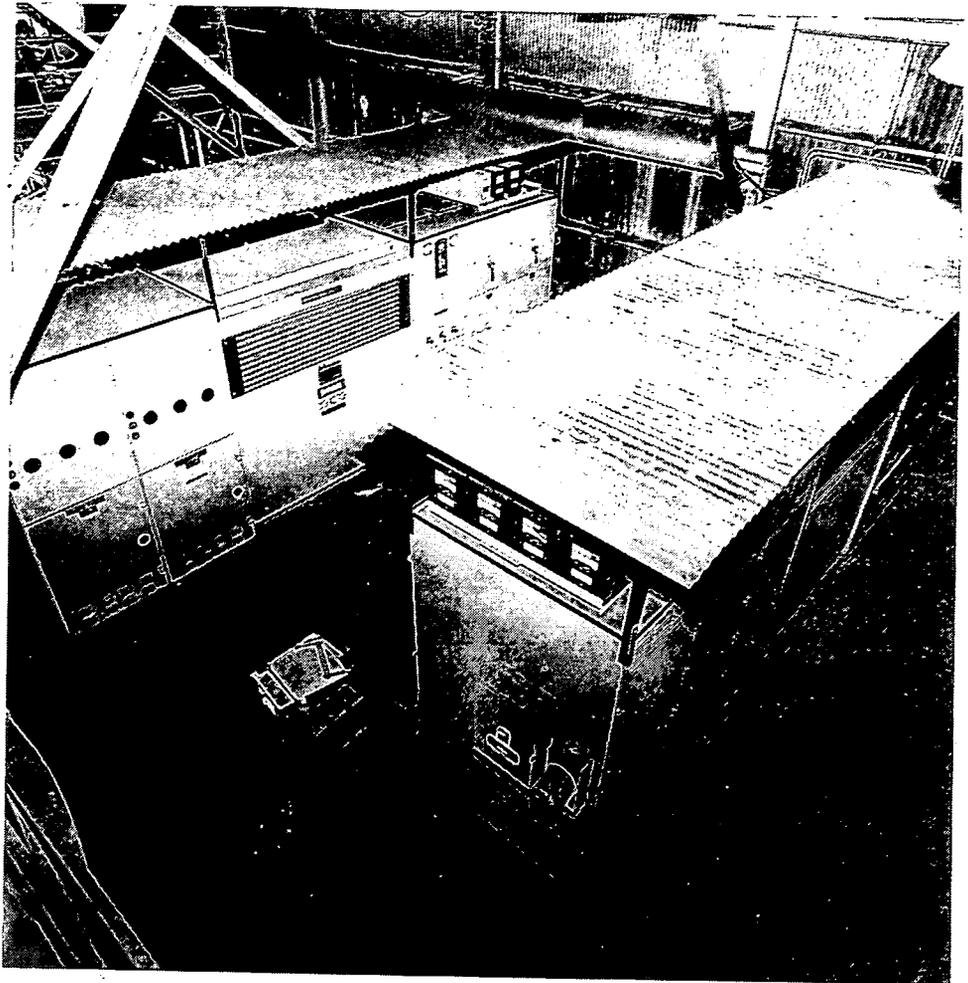
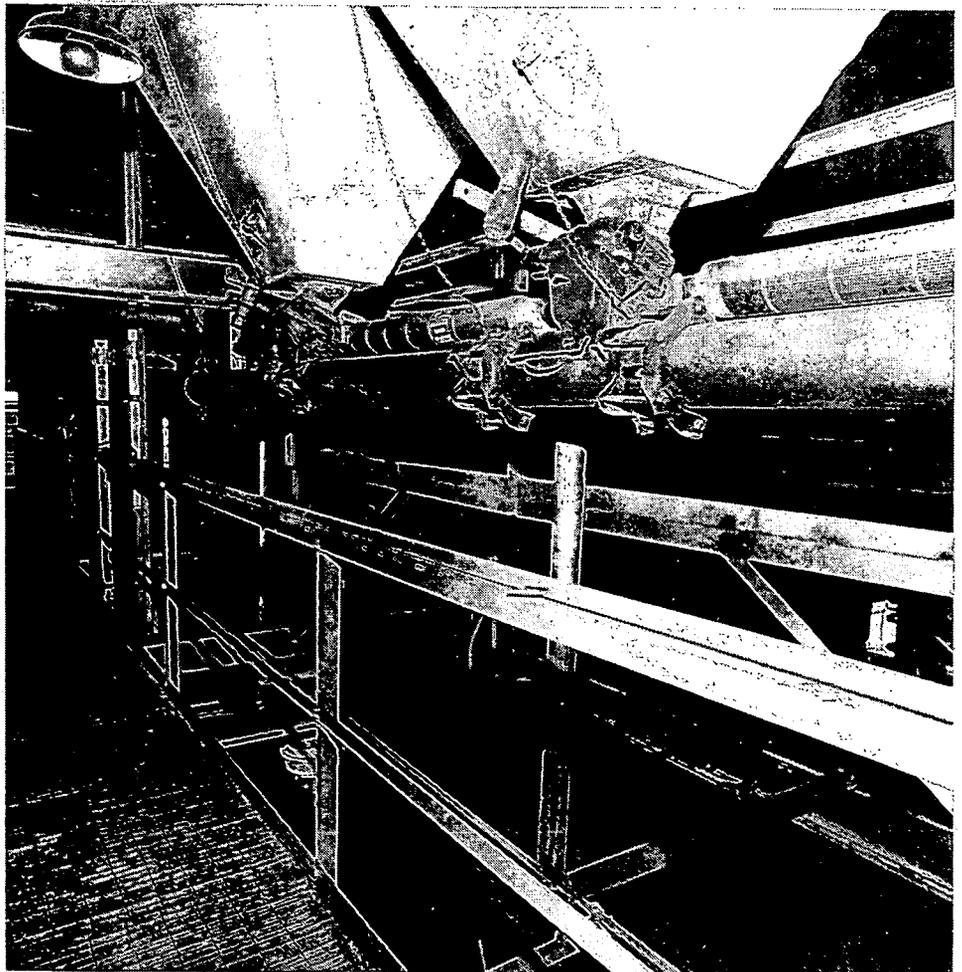


Figure D-20
East side of Building 10A,
boiler No. 1 mechanical
dust collector hoppers and
vacuum piping from
southeast (elev. 602-0")
#6407-31



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Figure D-21
Building 10A, boiler No. 3
Ash hopper from southeast
(elev. 572-0") #6407-48

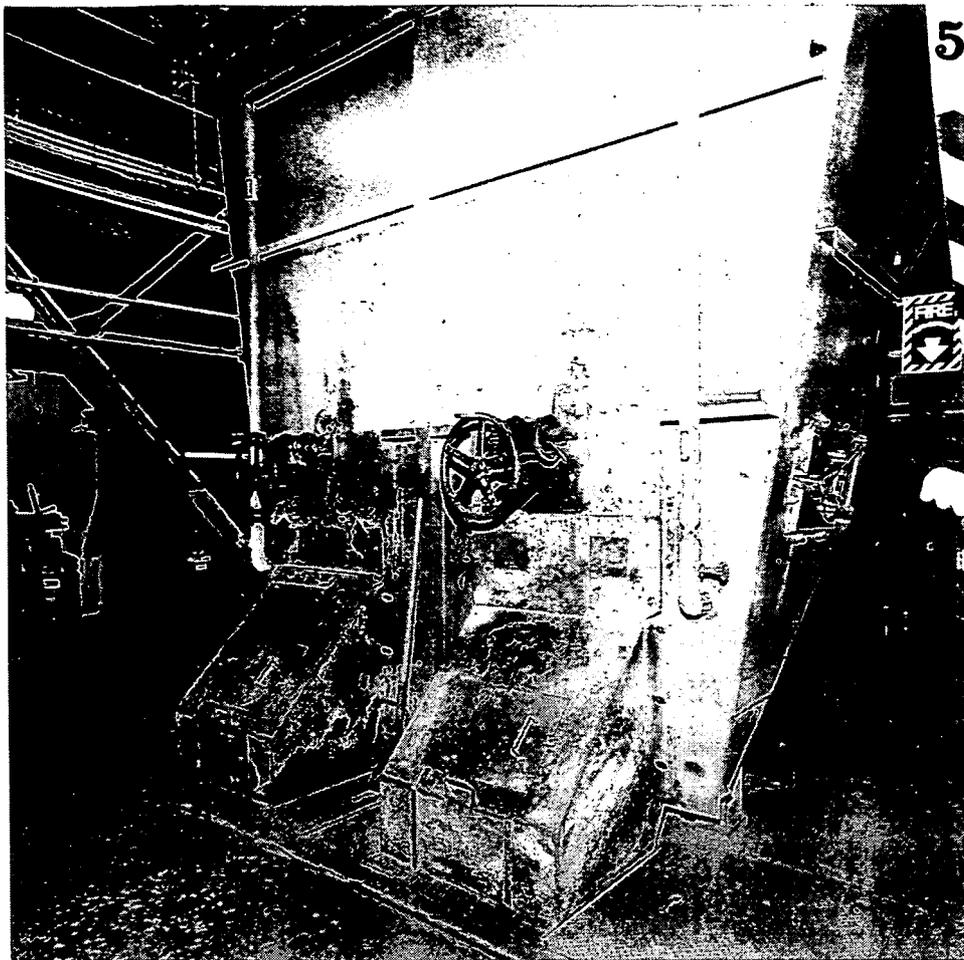


Figure D-22
Building 10A, boilers No. 2
and 4 and associated piping
from north (elev. 656-6")
#6407-28

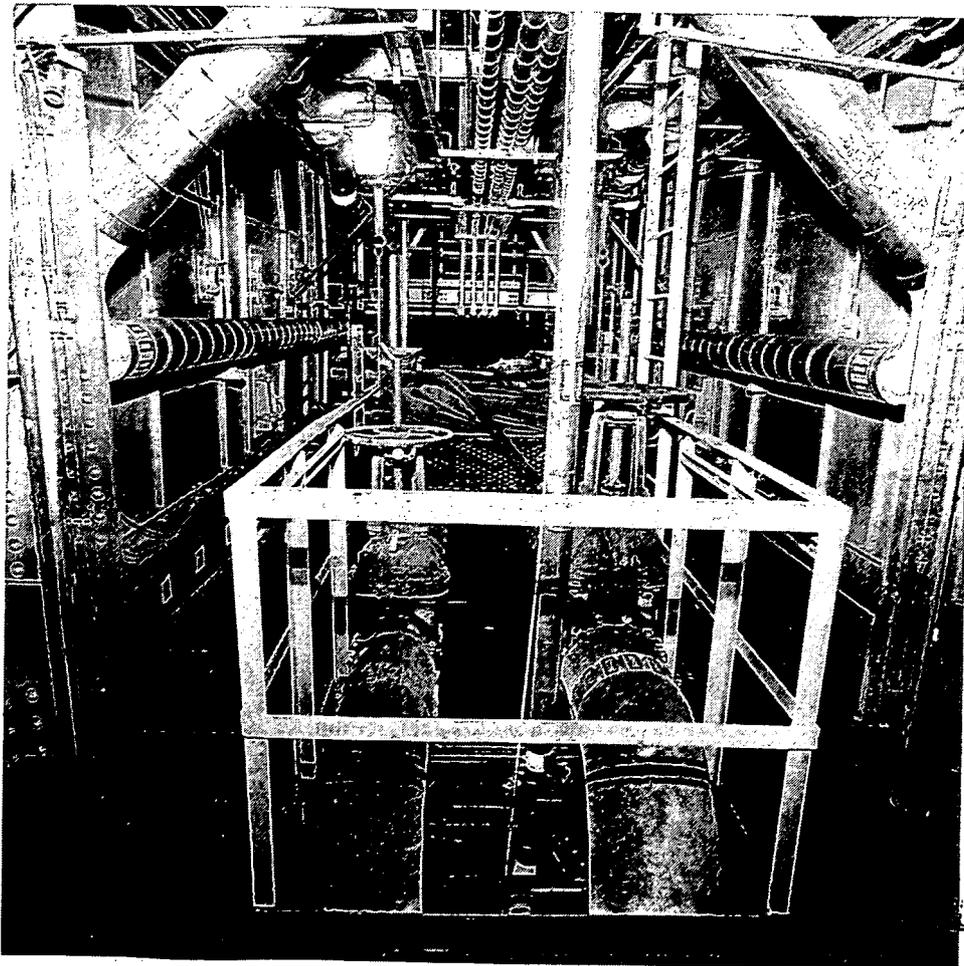


Figure D-23
West side of Building 10A,
tripper car and conveyor
equipment from north
(elev. 656-6") #6407-1

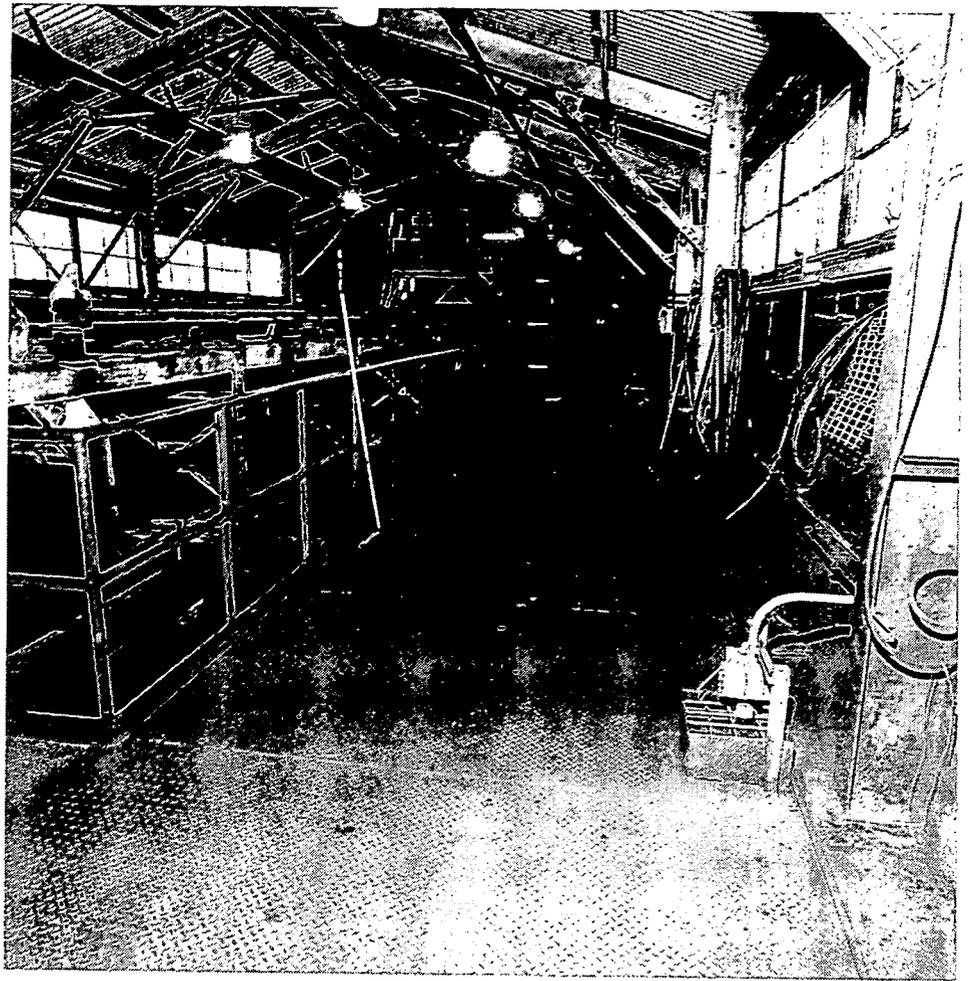
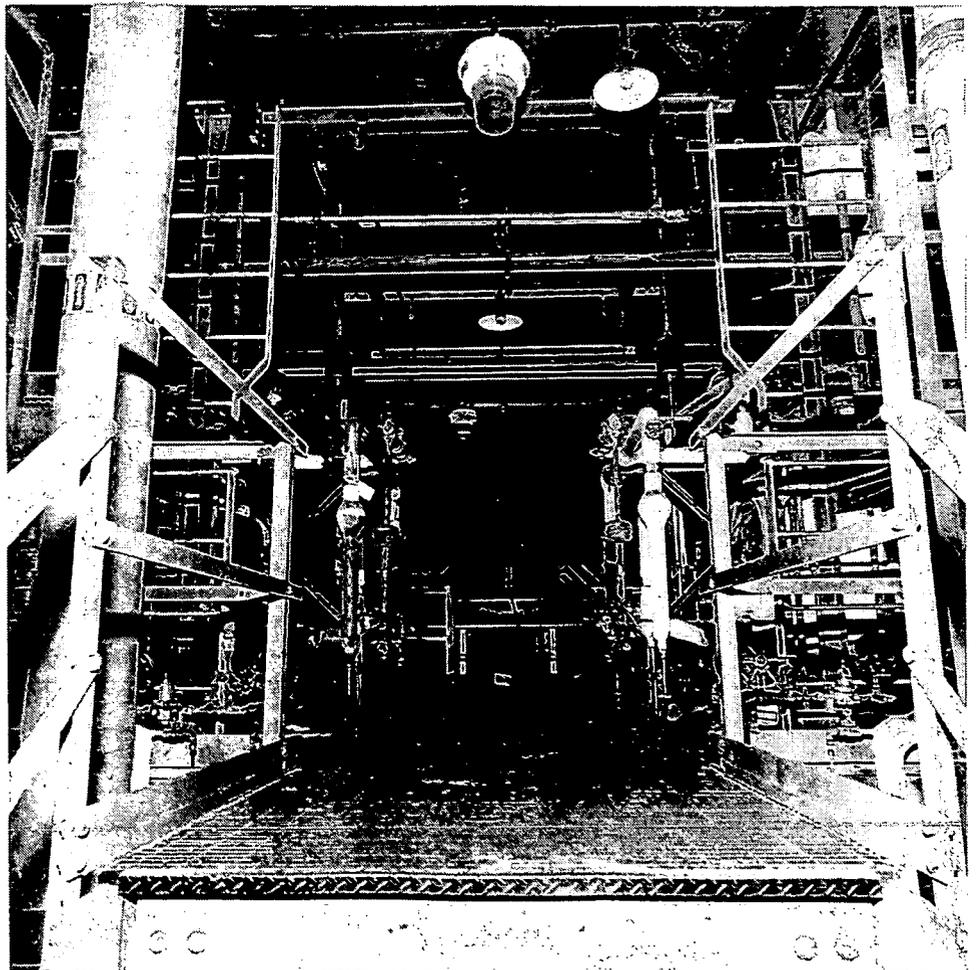


Figure D-24
South end of Building 10A,
steam drum piping for
boilers No. 2 and 4 from
south
(elev. 617-6") #6407-16



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Figure D-25
West side of Building 10A
No. 2 I.D. fan and Nos. 2
and 4 I.D. fan drives from
northwest (elev. 630-0")
#6407-10

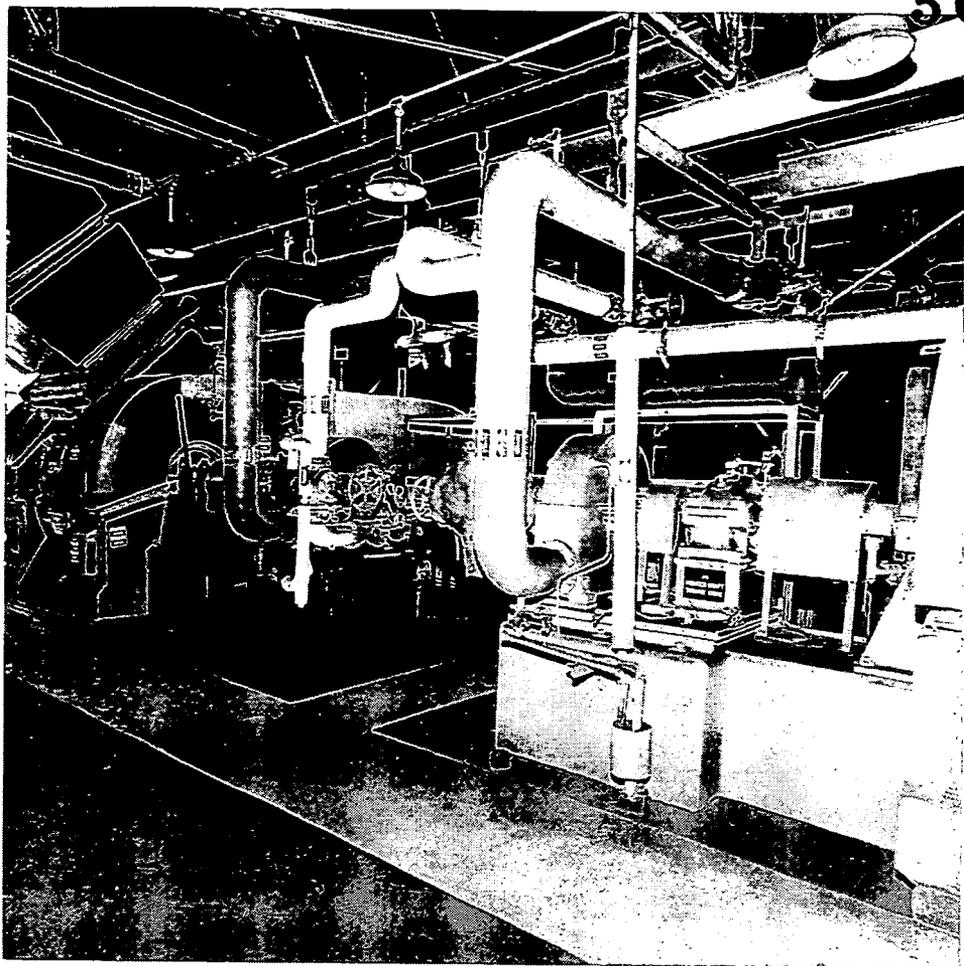
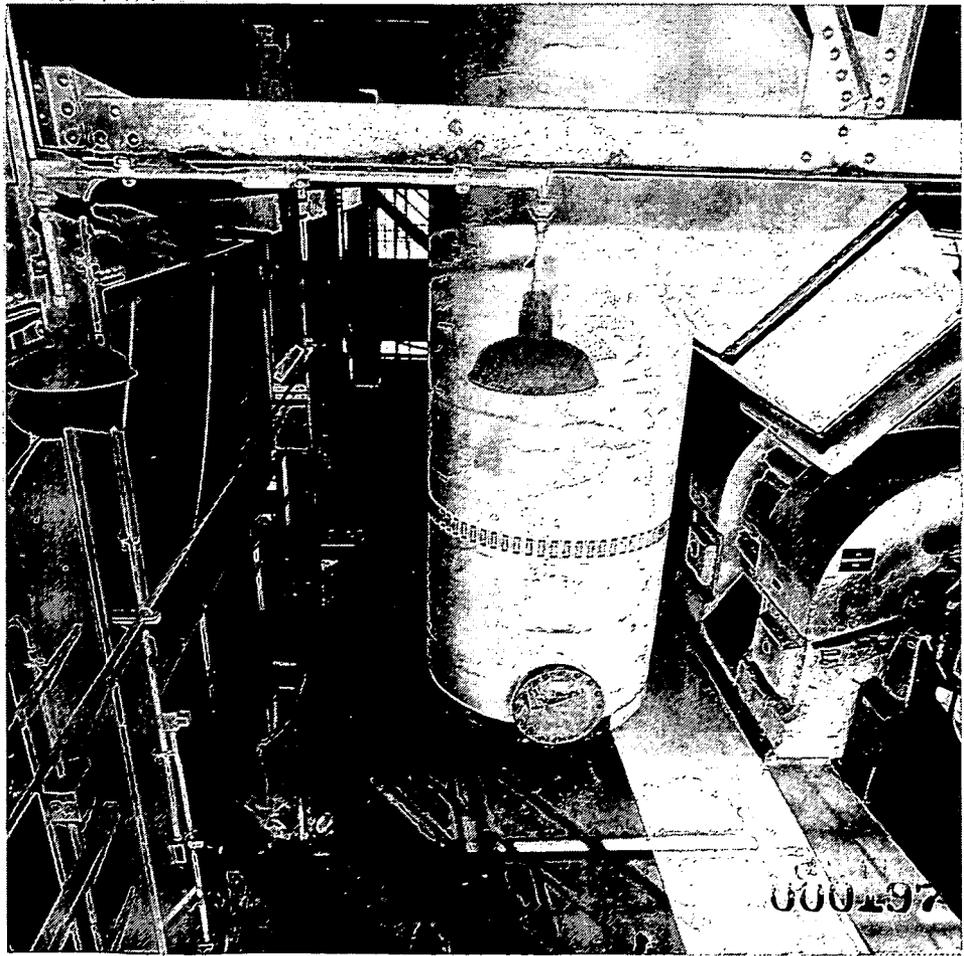


Figure D-26
East side of Building 10A,
No. 1 I.D. fan and stack
from northeast
(elev. 630-0") #6407-4



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Figure D-27
Ground-level view of Water
Plant (20B) from southwest
#6407-65

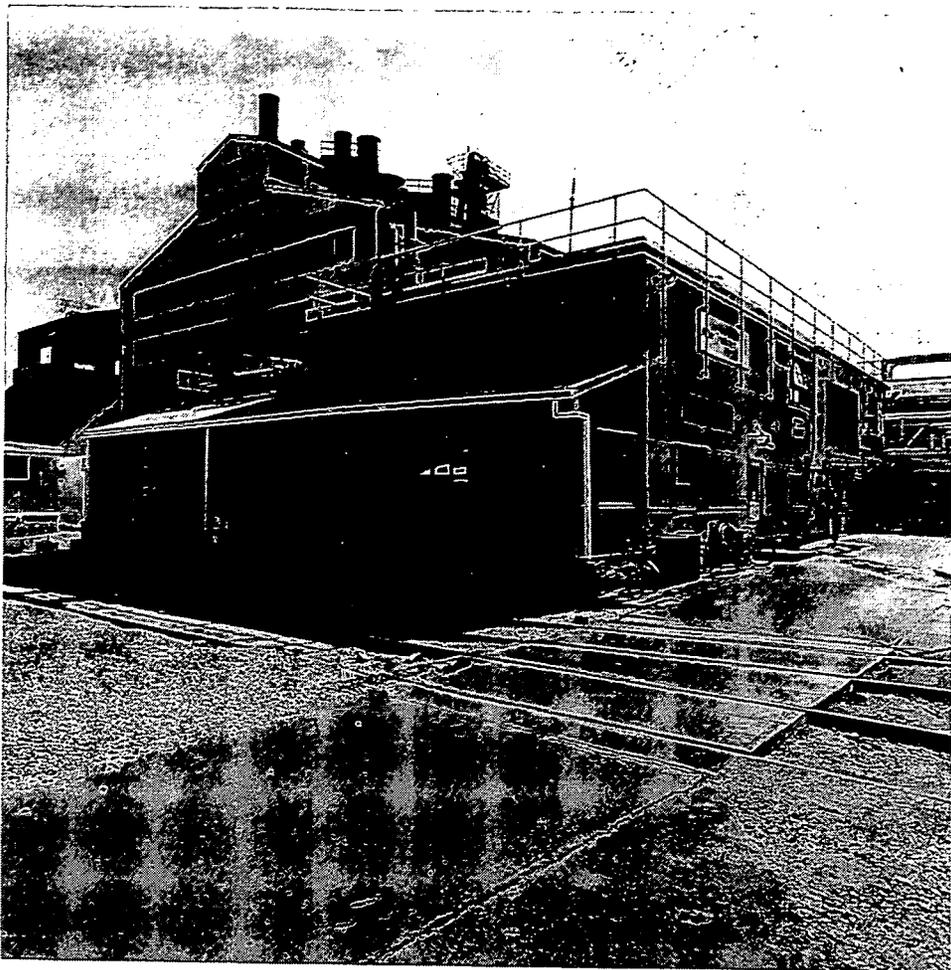


Figure D-28
Interior southwest corner of
Building 20B from
southwest #6407-75



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Figure D-29
Interior west side of Building
20B, water treatment
equipment and piping from
west #6407-76

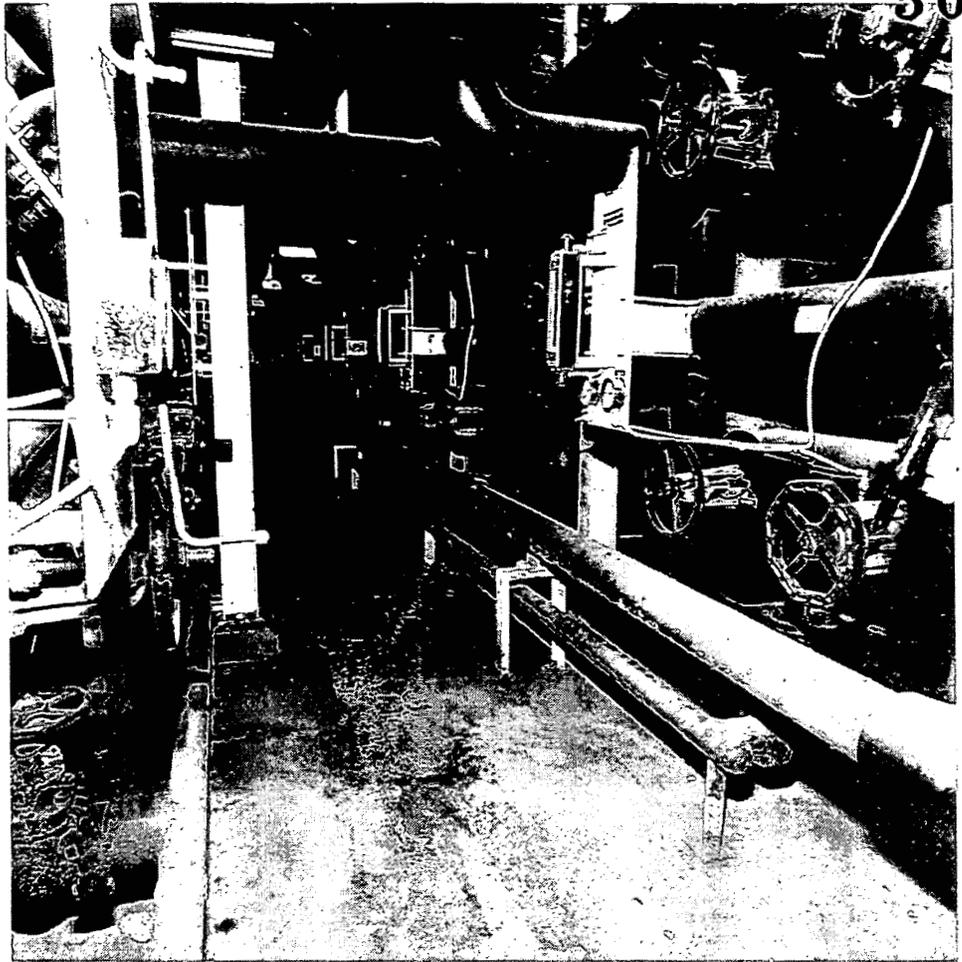


Figure D-30
Second floor Building 20B,
Clearwell Building from
southwest #6407-77

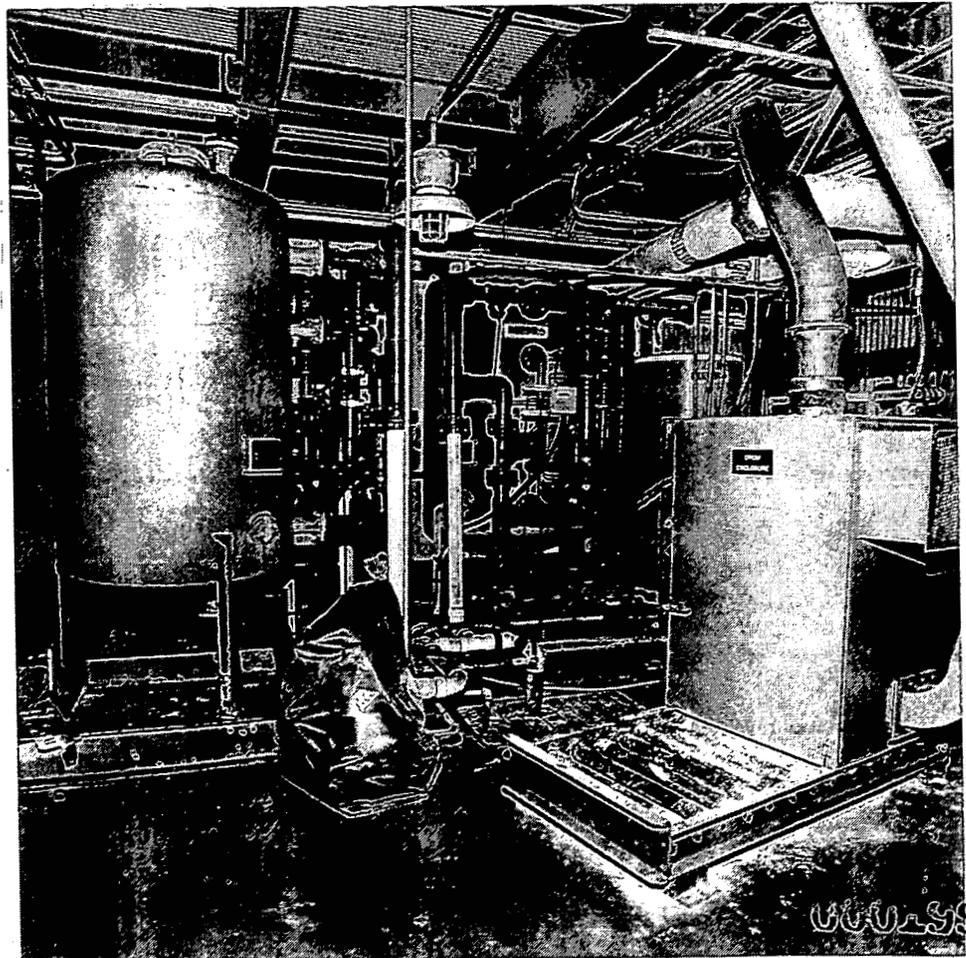


Figure D-31
Second floor Building 20B,
Clearwell Building, dust
collector from east
#6407-82

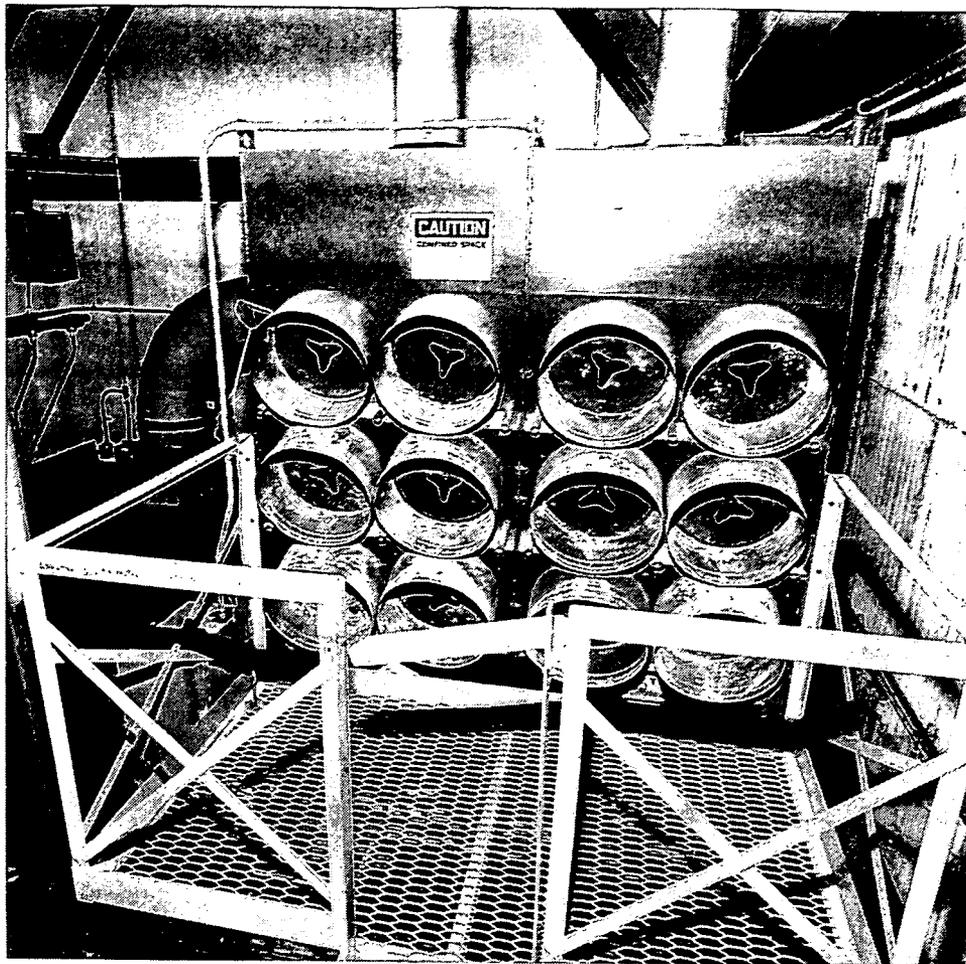
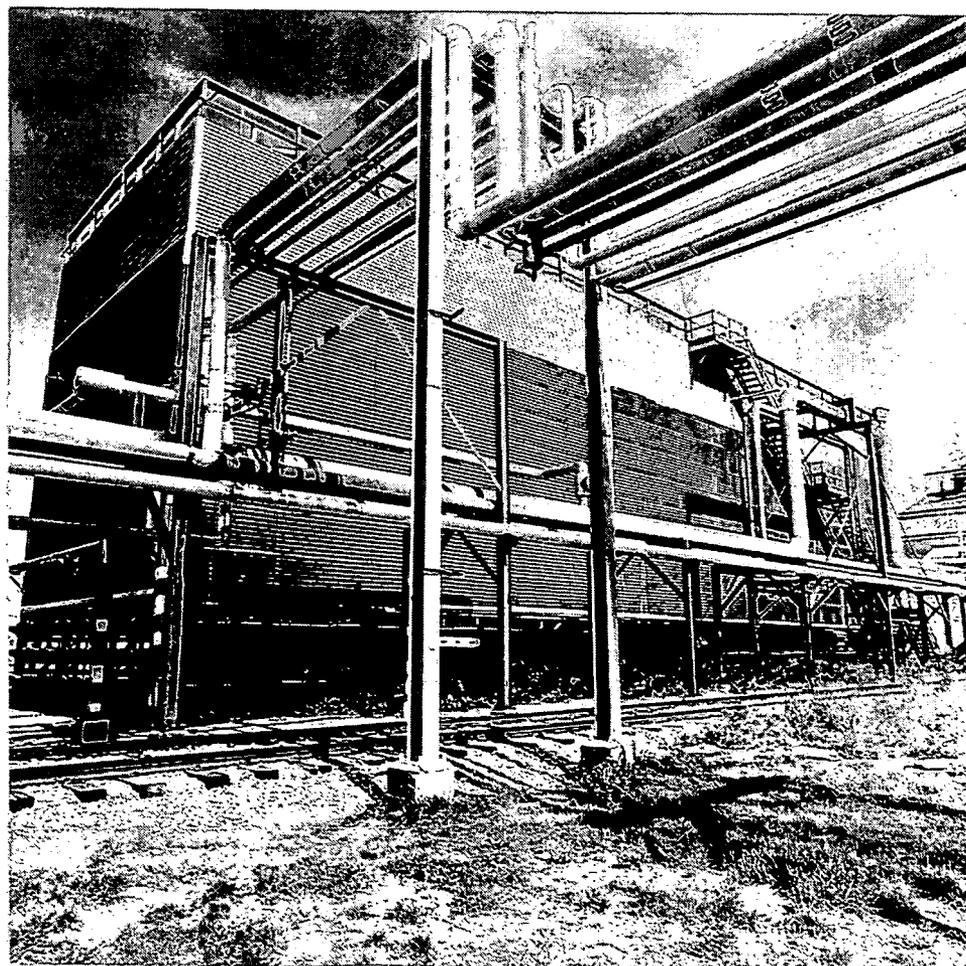


Figure D-32
Cooling Towers (20C) and
pipe bridges from southeast
#6407-72



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