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Revision 0
Volume 1 of 2

UC-630, 721

Hanford Central Waste Complex — Radioactive Mixed Waste Storage Facility Dangerous Waste Permit Application

Date Published
October 1991

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United States
Department of Energy
P.O. Box 550
Richland, Washington 99352

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HANFORD CENTRAL WASTE COMPLEX-
RADIOACTIVE MIXED WASTE STORAGE FACILITY
DANGEROUS WASTE PERMIT APPLICATION

FOREWORD

The Hanford Site is owned by the U.S. Government and operated by the U.S. Department of Energy Field Office, Richland. The Hanford Site manages and produces dangerous waste and mixed waste (containing both radioactive and dangerous components). The dangerous waste is regulated in accordance with the *Resource Conservation and Recovery Act of 1976* and the *State of Washington Hazardous Waste Management Act of 1976* [as administered through the Washington State Department of Ecology *Dangerous Waste Regulations*, Washington Administrative Code 173-303]. The radioactive component of mixed waste is interpreted by the U.S. Department of Energy to be regulated under the *Atomic Energy Act of 1954*; the nonradioactive dangerous component of mixed waste is interpreted to be regulated under the *Resource Conservation and Recovery Act of 1976* and Washington Administrative Code 173-303.

For purposes of the *Resource Conservation and Recovery Act* and the Washington State Department of Ecology *Dangerous Waste Regulations*, the Hanford Site is considered to be a single facility. The single dangerous waste permit identification number issued to the Hanford Site by the U.S. Environmental Protection Agency and the Washington State Department of Ecology is U.S. Environmental Protection Agency/State Identification Number WA7890008967. This identification number encompasses over 60 treatment, storage, and/or disposal units within the Hanford Site, hereinafter referred to as the Hanford Facility when cited in the context of the *Resource Conservation and Recovery Act* and the Washington State Department of Ecology *Dangerous Waste Regulations*. All waste management activities carried out under the assigned identification number are considered to be 'onsite'.

Westinghouse Hanford Company is a major contractor to the U.S. Department of Energy Field Office, Richland and serves as co-operator of the Hanford Central Waste Complex. The Hanford Central Waste Complex is an existing and planned series of treatment, storage, and/or disposal units that will centralize the management of solid waste operations at a single location on the Hanford Facility. The Hanford Central Waste Complex units include the Radioactive Mixed Waste Storage Facility, the unit addressed by this permit application, and the Waste Receiving and Processing Facility. The Waste Receiving and Processing Facility is covered in a separate permit application submittal.

Westinghouse Hanford Company is identified in the permit application as a "co-operator" and signs in that capacity. Any identification of Westinghouse Hanford Company as an 'operator' elsewhere in this application is not meant to conflict with Westinghouse Hanford Company's designation as a co-operator but rather is based on Westinghouse Hanford Company's contractual status (i.e., as an operations and engineering contractor) for the U.S. Department of Energy.

This *Hanford Central Waste Complex-Radioactive Mixed Waste Storage Facility Dangerous Waste Permit Application* (Revision 0) consists of both a Part A and Part B permit application. An explanation of the Part A revisions associated with this unit, including the Part A revision currently in effect, is provided at the beginning of the Part A Section.

The Part B consists of 15 chapters addressing the organization and content of the Part B checklist prepared by the Washington State Department of Ecology (Ecology 1987). For ease of reference, the checklist section numbers, in brackets, follow chapter headings and subheadings.

The *Hanford Central Waste Complex-Radioactive Mixed Waste Storage Facility Dangerous Waste Permit Application* contains information current as of September 15, 1991.

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ACRONYMS

ALARA	as low as reasonably achievable
AWG	American wire gage
CAM	continuous air monitor
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
DOE-RL	U.S. Department of Energy Field Office, Richland
Ecology	Washington State Department of Ecology
EOL	end of line
EPA	U.S. Environmental Protection Agency
ERMWS	Enhanced Radioactive and/or Mixed Waste Storage
FAX	facsimile
FFTF	Fast Flux Test Facility
HCWC	Hanford Central Waste Complex
HEPA	high-efficiency particulate air
LLBG	Low-Level Burial Grounds
LLW	low-level waste
MASF	Maintenance and Storage Facility
MW	mixed waste
N/A (NA)	not applicable
PIV	post indicator valve
PNL	Pacific Northwest Laboratory
Pu/PCB	plutonium/polychlorinated biphenyl
PUREX	plutonium-uranium extraction (Plant)
RCRA	*Resource Conservation and Recovery Act of 1976*
RMW	radioactive mixed waste
RMW Storage Facility	Radioactive Mixed Waste Storage Facility
SPC	special protective coating
SW	solid waste
TRU	transuranic (waste)
TRUPACT	transuranic package transporter
TSD	treatment, storage, and/or disposal
WAC	Washington Administrative Code
WIPP	Waste Isolation Pilot Plant
WRAP	Waste Receiving and Processing (Facility)

911007.1358

ABBREVIATIONS

BTu/h	British thermal units per hour
cm	centimeter
cm^2	square centimeter
cm^3	cubic centimeter
°C	degrees Celsius
°F	degrees Fahrenheit
dia	diameter
ft	feet
ft^2	square feet
ft^3	cubic feet
g	gram
gal	gallons
in.	inch
kg	kilogram
km	kilometer
L	liter
lb	pound
m	meter
m^2	square meter
m^3	cubic meter
mi/h	miles per hour
t	ton
typ	typical
yr	year

PART A

The Part A, Form 1, included in this permit application was submitted to the Washington State Department of Ecology on May 19, 1988. The Part A, Form 1, consists of three pages.

The Part A, Form 3, covers the entire Hanford Central Waste Complex of which the Radioactive Mixed Waste Storage Facility is a part. The original Part A (Revision 0) was submitted May 19, 1988. The revised Part A, Form 3, (Revision 1) was submitted October 22, 1990. Revision 1, included in this permit application, was prepared to ensure agreement between annual waste quantities as identified in the Part A, Form 3 (Revision 0), and the Hanford Site Annual Dangerous Waste Report submitted in March 1990 to the Washington State Department of Ecology. Two waste codes (D012 and D016) and 26 new dangerous waste codes, based on the U.S. Environmental Protection Agency *Final Rule Change*, "Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristics Revisions" (55 FR 61), were added.

The Part A, Revision 1 consists of 42 pages of Form 3, 1 figure, and 6 photographs.

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FORM 1

State of Washington Department of Ecology

WASHINGTON STATE

DANGEROUS WASTE PERMIT GENERAL INFORMATION

(Read "Form 1 Instructions" before starting)

I. EPA/STATE I.D. NUMBER: WA789000896 7

II. NAME OF FACILITY
U.S. DEPARTMENT OF ENERGY-HANFORD SITE

III. FACILITY CONTACT

A. NAME & TITLE (last, first, & title)	B. PHONE (area code & no.)
LAWRENCE, MICHAEL J., MANAGER	509 376 7395

IV. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX	B. CITY OR TOWN	C. STATE	D. ZIP CODE
P.O. BOX 550	RICHLAND	WA	99352

V. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER	B. COUNTY NAME	C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE (if known)
HANFORD SITE	BENTON	RICHLAND	WA	99352	005

VI. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND	C. THIRD	D. FOURTH
9711 (specify) NATIONAL SECURITY	8922 (specify) NUCLEAR NONCOMMERCIAL DEVELOPMENT AND EDUCATION	9611 (specify) ADMINISTRATION AND GENERAL ECONOMICS PROGRAM	4911 (specify) STEAM-ELECTRIC GENERATION

VII. OPERATOR INFORMATION

A. NAME (DOE-RL)
DEPARTMENT OF ENERGY-RICHLAND OPERATIONS
WESTINGHOUSE HANFORD COMPANY (WHC)

B. Is the name listed in Item VII-A also the owner? ☒ YES ☐ NO **

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL; S = STATE; P = PRIVATE; M = PUBLIC (other than federal or state); O = OTHER (specify)
F (specify)

D. PHONE (area code & no.): 509 376 7395

E. STREET OR P.O. BOX: PO BOX 550/PO BOX 1970

509 376 7803

F. CITY OR TOWN	G. STATE	H. ZIP CODE
RICHLAND	WA	99352

VIII. INDIAN LAND
Is the facility located on Indian lands? ☐ YES ☒ NO

**DOE-RL: OWNER/CO-OPERATOR; WHC: CO-OPERATOR FOR CERTAIN UNITS ON THE HANFORD SITE.

COMPLETE BACK PAGE

ECY 030-31

SCL4 -271-

IX. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

X. NATURE OF BUSINESS *(provide a brief description)*

- NATIONAL DEFENSE NUCLEAR MATERIAL PRODUCTION
- ENERGY RESEARCH AND TECHNOLOGY DEVELOPMENT
- DEFENSE NUCLEAR WASTE MANAGEMENT
- BYPRODUCT STEAM, SOLD FOR ELECTRIC POWER GENERATION

AND SIC 15: BUILDING CONSTRUCTION - GENERAL CONTRACTORS AND OPERATIVE BUILDERS

XI. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
SEE ATTACHMENT		

WA7890008967

FORM 1

DANGEROUS WASTE PERMIT GENERAL INFORMATION

XI. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Michael J. Lawrence — 5-19-88
Michael J. Lawrence
Manager, Richland Operations
United States Department of Energy
Date

W. M. Jacobi — 5/13/88
William M. Jacobi
President
Westinghouse Hanford Company
Co-operator
Date

9 2 1 2 1 5 0 5 7 6

Please print or type in the unshaded areas only
(All unshaded areas are spaced for elite type, i.e., 12 characters/inch)

FORM 3

DANGEROUS WASTE PERMIT APPLICATION

I. EPA/STATE I.D. NUMBER: W A 7 8 9 0 0 0 8 9 6 7

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (mo., day, & yr.)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

MO 0 8 | DAY | YR 8 8

FOR EXISTING FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the dates to the left)*

☐ 2. NEW FACILITY *(Complete item below.)*

MO | DAY | YR

FOR NEW FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Section I above)*

☒ 1. FACILITY HAS AN INTERIM STATUS PERMIT

☐ 2. FACILITY HAS A FINAL PERMIT

III. PROCESSES — CODES AND DESIGN CAPACITIES

A. PROCESS CODE — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the *(Section III-C)*.

B. PROCESS DESIGN CAPACITY — *For each code entered in column A enter the capacity of the process.*
1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — *For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.*

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D80	GALLONS OR LITERS
LANDFILL	D81	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D82	*ACRES OR HECTARES*
OCEAN DISPOSAL	D83	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D84	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	O
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING SECTION III *(shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons.* The facility also has an incinerator that can burn up to 20 gallons per hour.

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 1	22,710,000	L		7				
2	T 0 4	45,420	V		8				
3					9				
4					10				

CONTINUE ON REVERSE

Continued from the front

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

S01,T04

The Hanford Central Waste Complex will consist of a consolidated Waste Receiving and Processing (WRAP) unit and storage units for mixed waste. The WRAP unit will provide central and mobile treatment units capable of treating up to 16,578,300 liters per year of mixed waste in accordance with applicable codes and regulations. Mixed wastes which will be managed include low-level waste (LLW) and transuranic waste (TRU). There is mixed waste stored temporarily on the Mixed Waste Storage Pad awaiting transfer when storage capacity becomes available in the Mixed Waste Storage units. The mixed waste accepted for storage is managed in Mixed Waste Storage units comprised of temporary compliant prefabricated Butler-type buildings and then permanent storage buildings. Waste that has less than 100°F flash point (ignitable) will be stored in the Low Flash Point Storage units. The storage design capacity for all the mixed waste storage units is 22,710,000 liters. The treatment design capacity for WRAP is estimated to be 45,420 liters per day of mixed waste.

IV. DESCRIPTION OF DANGEROUS WASTES

A. DANGEROUS WASTE NUMBER — Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non—listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non—listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non—listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER — Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

EXAMPLE FOR COMPLETING SECTION IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K054	900	P	T03 D80	
X-2	D002	400	P	T03 D80	
X-3	D001	100	P	T03 D80	
X-4	D002			T03 D80	included with above

CONTINUE ON PAGE 3

Continued from page 2

NOTE: Continue on the page below if additional space is needed (Part 2B wastes only)

I.D. NUMBER (enter from page 1)	
W A 7 8 9 0 0 0 8 9 0 7	The following "Description of Dangerous Wastes" section (Pages 3 through 17 of 42) is for the HCWC mixed waste storage units.

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO.	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D. PROCESSES 1. PROCESS CODES				2. PROCESS DESCRIPTION
1	D001	4,600	K	S01	T04			Storage/Treatment
2	D002	300						
3	D003							
4	D004							
5	D005							
6	D006							
7	D007							
8	D008	45,400						
9	D009	300						
10	D010							
11	D011							
12	D012	300	K	S01				Storage
13	D016							
14	D018							
15	D019							
16	D020							
17	D021							
18	D022							
19	D023							
20	D024							
21	D025							
22	D026							
23								
24								
25								
26								

CONTINUE ON REVERSE

9 2 1 2 3 6 0 5 7 9

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890009987

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (if a code is not entered in D.1)
1	D027	300	K	S01				Storage
2	D028							
3	D029							
4	D030							
5	D031							
6	D032							
7	D033							
8	D034							
9	D035							
10	D036							
11	D037							
12	D038							
13	D039							
14	D040							
15	D041							
16	D042							
17	D043							
18	W101	363,200	K	S01	104			Storage/Treatment
19	W102	36,400						
20	WP01	3,700						
21	WP02							
22	WP03							
23	WC01							
24	WC02							
25	W001	10,000						
26								

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Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008987

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F001	3,700	K	S01	T04			Storage/Treatment
2	F002							
3	F003							
4	F004							
5	F005							
6	F020	300						
7	F021							
8	F022							
9	F023							
10	F026							
11	F027							
12	F028							
13	U001		K	S01	T04			Storage/Treatment
14	U002							
15	U003							
16	U004							
17	U005							
18	U006							
19	U007							
20	U008							
21	U009							
22	U010							
23	U011							
24	U012							
25	U013							
26	U014							

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Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008987

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	U015	300	K	S01 T04	Storage/Treatment
2	U016				
3	U017				
4	U018				
5	U019				
6	U020				
7	U021				
8	U022				
9	U023				
10	U024				
11	U025				
12	U026				
13	U027				
14	U028				
15	U029				
16	U030				
17	U031				
18	U032				
19	U033				
20	U034				
21	U035				
22	U036				
23	U037				
24	U038				
25	U039				
26	U041				

Continued from page 7

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008904

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U042	300	K	S01 U04	Storage/Treatment
2	U043				
3	U044				
4	U045				
5	U046				
6	U047				
7	U048				
8	U049				
9	U050				
10	U051				
11	U052				
12	U053				
13	U055				
14	U056				
15	U057				
16	U058				
17	U059				
18	U060				
19	U061				
20	U062				
21	U063				
22	U064				
23	U066				
24	U067				
25	U068				
26	U069				

9212583

Continued from page 7

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008904

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1)
1	U070	300	K	S01 T04	Storage/Treatment
2	U071				
3	U072				
4	U073				
5	U074				
6	U075				
7	U076				
8	U077				
9	U078				
10	U079				
11	U080				
12	U081				
13	U082				
14	U083				
15	U084				
16	U085				
17	U086				
18	U087				
19	U088				
20	U089				
21	U090				
22	U091				
23	U092				
24	U093				
25	U094				
26	U095				

92123659584

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008907

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES: 1. PROCESS CODES (enter)	D. PROCESSES: 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	U096	300	K	S01 T04	Storage/Treatment
2	U097				
3	U098				
4	U101				
5	U102				
6	U107				
7	U108				
8	U112				
9	U113				
10	U116				
11	U117				
12	U118				
13	U119				
14	U120				
15	U123				
16	U124				
17	U134				
18	U136				
19	U137				
20	U139				
21	U140				
22	U145				
23	U146				
24	U148				
25	U149				
26	U150				

9212305895

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): W A 7 8 9 0 0 0 8 9 0 4

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	U 1 5 1	300	K	S 0 1	T 0 4			Storage/Treatment
2	U 1 5 2							
3	U 1 5 3							
4	U 1 5 4							
5	U 1 5 5							
6	U 1 5 6							
7	U 1 5 7							
8	U 1 5 8							
9	U 1 5 9							
10	U 1 6 0							
11	U 1 6 1							
12	U 1 6 2							
13	U 1 6 3							
14	U 1 6 4							
15	U 1 6 5							
16	U 1 6 6							
17	U 1 6 7							
18	U 1 6 8							
19	U 1 6 9							
20	U 1 7 0							
21	U 1 7 1							
22	U 1 7 2							
23	U 1 7 3							
24	U 1 7 4							
25	U 1 7 5							
26	U 1 7 6							

9 2 1 2 7 6 2 0 5 8 6

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): W A 7 8 9 0 0 0 8 9 0 7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	U177	300	K	S01	T04			Storage/Treatment
2	U178							
3	U179							
4	U180							
5	U181							
6	U182							
7	U183							
8	U184							
9	U185							
10	U186							
11	U187							
12	U188							
13	U189							
14	U190							
15	U191							
16	U192							
17	U193							
18	U194							
19	U196							
20	U197							
21	U200							
22	U201							
23	U202							
24	U203							
25	U204							
26	U205							

9212560987

Continued from page 7

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008967

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	U206	300	K	S01 T04	Storage/Treatment
2	U207				
3	U208				
4	U209				
5	U210				
6	U211				
7	U212				
8	U213				
9	U214				
10	U215				
11	U216				
12	U217				
13	U218				
14	U219				
15	U220				
16	U221				
17	U222				
18	U223				
19	U225				
20	U226				
21	U227				
22	U228				
23	U230				
24	U231				
25	U232				
26	U233				

(enter "A", "B", "C" etc. behind the "3" to identify additional pages)

9212538

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008987

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter codes)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter codes)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U234	300	K	S01 U04	Storage/Treatment
2	U235				
3	U236				
4	U237				
5	U238				
6	U239				
7	U240				
8	U241				
9	U242				
10	U243				
11	U244				
12	U245				
13	U246				
14	U247				
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

(enter "1" "2" "3" or "4" to identify page number)

92142360589

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008907

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	P001	300	K	S01 T04	Storage/Treatment
2	P002				
3	P003				
4	P004				
5	P005				
6	P006				
7	P007				
8	P008				
9	P009				
10	P010				
11	P011				
12	P012				
13	P013				
14	P014				
15	P015				
16	P016				
17	P017				
18	P018				
19	P020				
20	P021				
21	P022				
22	P023				
23	P024				
24	P025				
25	P026				
26	P027				

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008907

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	P028	300	K	S01 T04	Storage/Treatment
2	P029				
3	P030				
4	P031				
5	P033				
6	P034				
7	P035				
8	P036				
9	P037				
10	P038				
11	P039				
12	P040				
13	P041				
14	P042				
15	P043				
16	P044				
17	P045				
18	P046				
19	P047				
20	P048				
21	P049				
22	P050				
23	P051				
24	P054				
25	P056				
26					

92126205691

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list

ID NUMBER (enter from page 1): WA7890008967

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1)
1	P052	300	K	S01 T07	Storage/Treatment
2	P058				
3	P059				
4	P060				
5	P062				
6	P063				
7	P064				
8	P065				
9	P066				
10	P067				
11	P068				
12	P069				
13	P070				
14	P071				
15	P072				
16	P073				
17	P074				
18	P075				
19	P076				
20	P077				
21	P078				
22	P079				
23	P081				
24	P082				
25	P084				
26	P085				

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008987

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	P087	300	K	S01 T04	Storage/Treatment
2	P088				
3	P089				
4	P092				
5	P093				
6	P094				
7	P095				
8	P096				
9	P097				
10	P098				
11	P099				
12	P101				
13	P102				
14	P103				
15	P104				
16	P105				
17	P106				
18	P107				
19	P108				
20	P109				
21	P110				
22	P111				
23	P112				
24	P113				
25	P114				
26	P115				

9212230593

(Continued from page 2)

NOTE: Number this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): W A 7 8 9 0 0 0 8 9 0 7

The following "Description of Dangerous Wastes" section (Pages 18 through 33 of 42) is for the HCWC WRAP unit.

IV. DESCRIPTION OF DANGEROUS WASTES (Continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1)
1	D001	20,000	K	T04	Treatment
2	D002	15,000			
3	D003	500			
4	D004	50			
5	D005	400			
6	D006	117			
7	D007	400			
8	D008	400			
9	D009	800			
10	D010	10			
11	D011	20			
12	WT01	16,000			
13	WT02	22,000			
14	WP01	12,000			
15	WP02	3,000			
16	WP03	2,000			
17	WC01	5,000			
18	WC02	2,000			
19					
20					
21					
22					
23					
24					
25					
26					

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008907

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	F001	4,000	K	T04	Treatment
2	F002	4,500			
3	F003	6,500			
4	F004	570			
5	F005	6,000			
6	F027	500			
7	U001	500			
8	U002	1,000			
9	U003	1,000			
10	U004	500			
11	U005				
12	U006				
13	U007				
14	U008				
15	U009				
16	U010				
17	U011				
18	U012				
19	U014				
20	U015				
21	U016				
22	U017				
23	U018				
24	U019				
25	U020				
26	U021				

(Continued from page 2)

NOTE: Number this page before completing if you have more than 26 wastes to list.

I.D. NUMBER (enter from page 1): WA7890008967

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	2. PROCESS DESCRIPTION (if a code is not entered in D.1)
1	U022	500	K	T04	Treatment
2	U023				
3	U024				
4	U025				
5	U026				
6	U027				
7	U028				
8	U029				
9	U030				
10	U031				
11	U032	1,000			
12	U033	500			
13	U034				
14	U035				
15	U036				
16	U037				
17	U038				
18	U039				
19	U041				
20	U042				
21	U043				
22	U044	1,000			
23	U045	500			
24	U046				
25	U047				
26	U048				

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008267

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1)
1	U049	500	K	104	Treatment
2	U050	↓			↓
3	U051	2,000			
4	U052	500			
5	U053				
6	U055				
7	U056				
8	U057				
9	U058				
10	U059				
11	U060				
12	U061				
13	U062				
14	U063				
15	U064				
16	U066				
17	U067				
18	U068				
19	U069				
20	U070				
21	U071				
22	U072				
23	U073				
24	U074				
25	U075				
26	U076	↓	↓	↓	↓

9212705597

Continued from page 2

NOTE: Number this page before completing if you have more than 26 wastes in list

ID NUMBER (Enter from page 1): WA7890090567

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO.	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D. PROCESSES 1. PROCESS CODES	D. PROCESSES 2. PROCESS DESCRIPTION
1	U077	500	K	T04	Treatment
2	U078				
3	U079				
4	U080				
5	U081				
6	U082				
7	U083				
8	U084				
9	U085				
10	U086				
11	U087				
12	U088				
13	U089				
14	U090				
15	U091				
16	U092				
17	U093				
18	U094				
19	U095				
20	U096				
21	U097				
22	U098				
23	U099				
24	U101				
25	U102				
26	U103				

9213250998

Continued from page 2

NOTE: Complete only this page before completing if you have more than 26 wastes to list

ID NUMBER (Enter from page 1)

W A 7 8 9 0 0 0 9 9 0 7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1)
1	U 1 0 5	500	K	T 0 4	Treatment
2	U 1 0 6				
3	U 1 0 7				
4	U 1 0 8				
5	U 1 0 9				
6	U 1 1 0				
7	U 1 1 1				
8	U 1 1 2				
9	U 1 1 3				
10	U 1 1 4				
11	U 1 1 5				
12	U 1 1 6				
13	U 1 1 7				
14	U 1 1 8				
15	U 1 1 9				
16	U 1 2 0				
17	U 1 2 1				
18	U 1 2 2				
19	U 1 2 3				
20	U 1 2 4				
21	U 1 2 5				
22	U 1 2 6				
23	U 1 2 7				
24	U 1 2 8				
25	U 1 2 9				
26	U 1 3 0				

9 2 1 2 3 5 0 5 9 9

(Continued from page 3)

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890000979

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO.	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D. PROCESSES 1. PROCESS CODES	D. PROCESSES 2. PROCESS DESCRIPTION
1	U131	500	K	T04	Treatment
2	U132	↓	↓	↓	↓
3	U133	5,000			
4	U134	1,000			
5	U135	500			
6	U136	↓			
7	U137				
8	U138				
9	U139				
10	U140				
11	U141				
12	U142				
13	U143				
14	U144	↓			
15	U145	1,000			
16	U146	500			
17	U147	↓			
18	U148				
19	U149				
20	U150	↓			
21	U151	5,000			
22	U152	500			
23	U153	↓			
24	U154	1,000			
25					
26					

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): W A 7 8 9 0 0 0 8 9 0 7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	U155	500	K	T04	Treatment
2	U156				
3	U157				
4	U158				
5	U159				
6	U160				
7	U161				
8	U162				
9	U163				
10	U164				
11	U165				
12	U166				
13	U167				
14	U168				
15	U169				
16	U170				
17	U171				
18	U172				
19	U173				
20	U174				
21	U175				
22	U176				
23	U177				
24	U178				
25	U179				
26	U180				

(Continued from page 2)

NOTE: Indicate this page before completing if you have more than 26 wastes to list

ID NUMBER (enter from page 1)

W A 7 8 9 0 0 0 2 9 8 7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO.	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D. PROCESSES 1. PROCESS CODES	D. PROCESSES 2. PROCESS DESCRIPTION
1	U181	500	K	T04	Treatment
2	U182				
3	U183				
4	U184				
5	U185				
6	U190				
7	U191				
8	U192				
9	U193				
10	U194				
11	U196				
12	U197				
13	U200				
14	U201				
15	U202				
16	U203				
17	U204				
18	U205				
19	U206				
20	U207				
21	U208				
22	U209				
23	U210	1,500			
24	U211	5,000			
25					
26					

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): WA7890008907

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO.	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D. PROCESSES 1. PROCESS CODES	D. PROCESSES 2. PROCESS DESCRIPTION
1	U212	500	K	104	Treatment
2	U213	↓	↓	↓	↓
3	U214	↓	↓	↓	↓
4	U215	↓	↓	↓	↓
5	U216	↓	↓	↓	↓
6	U217	↓	↓	↓	↓
7	U218	↓	↓	↓	↓
8	U219	↓	↓	↓	↓
9	U220	1,500	↓	↓	↓
10	U221	500	↓	↓	↓
11	U222	↓	↓	↓	↓
12	U223	1,500	↓	↓	↓
13	U225	↓	↓	↓	↓
14	U226	5,000	↓	↓	↓
15	U227	500	↓	↓	↓
16	U228	1,000	↓	↓	↓
17	U230	↓	↓	↓	↓
18	U231	↓	↓	↓	↓
19	U232	↓	↓	↓	↓
20	U233	↓	↓	↓	↓
21	U234	500	↓	↓	↓
22	U235	1,000	↓	↓	↓
23	U236	↓	↓	↓	↓
24	U237	↓	↓	↓	↓
25	U238	500	↓	↓	↓
26					

Continued from page 2

NOTE: If more than 26 wastes in list, attach this page before completing if you have more than 26 wastes in list.

ID NUMBER (enter from page 1): W A 7 8 9 0 0 0 0 2 2 0 7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1)
1	U 2 3 9	1,000	K	T 0 4	Treatment
2	U 2 4 2	↓	↓	↓	↓
3	U 2 4 3	↓	↓	↓	↓
4	U 2 4 4	1,000	↓	↓	↓
5					
6					
7					
8					
9					
10					
11					
12					
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14					
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25					
26					

Continued from page 2

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1): W A 7 8 9 0 0 0 8 9 0 7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1)
1	P001	500	K	T04	Treatment
2	P002				
3	P003				
4	P004				
5	P005				
6	P006				
7	P007				
8	P008				
9	P009				
10	P010				
11	P011				
12	P012				
13	P013				
14	P014				
15	P015				
16	P016				
17	P017				
18	P018				
19	P020				
20	P021				
21	P022				
22	P023				
23	P024				
24	P025				
25	P026				
26	P027				

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NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

ID NUMBER (enter from page 1)

WA7890008967

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO.	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D. PROCESSES 1. PROCESS CODES	D. PROCESSES 2. PROCESS DESCRIPTION
1	P028	500	K	T04	Treatment
2	P029				
3	P030				
4	P031				
5	P033				
6	P034				
7	P035				
8	P036				
9	P037				
10	P038				
11	P039				
12	P040				
13	P041				
14	P042				
15	P043				
16	P044				
17	P045				
18	P046				
19	P047				
20	P048				
21	P049				
22	P050				
23	P051				
24	P054				
25	P056				
26					

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ID NUMBER (enter from page 1): WA7890008307

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	P052	500	K	T04	Treatment
2	P058				
3	P059				
4	P060				
5	P062				
6	P063				
7	P064				
8	P065				
9	P066				
10	P067				
11	P068				
12	P069				
13	P070				
14	P071				
15	P072				
16	P073				
17	P074				
18	P075				
19	P076				
20	P077				
21	P078				
22	P079				
23	P081				
24	P082				
25	P084				
26	P085				

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ID NUMBER (enter from page 1): WA7890008967

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	P087	500	K	T04	Treatment
2	P088				
3	P089				
4	P092				
5	P093				
6	P094				
7	P095				
8	P096				
9	P097				
10	P098				
11	P099				
12	P101				
13	P102				
14	P103				
15	P104				
16	P105				
17	P106				
18	P107				
19	P108				
20	P109				
21	P110				
22	P111				
23	P112				
24	P113				
25	P114				
26	P115				

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NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I.D. NUMBER (enter from page 1): WA7890008967

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	P116	500	K	T04				Treatment
2	P118							
3	P119							
4	P120							
5	P121							
6	P122							
7	P123							
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IV. DESCRIPTION OF DANGEROUS WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

The mixed wastes to be managed at the Hanford Central Waste Complex will include mixed wastes generated from various operations both on and off the Hanford Site. These wastes will consist of listed waste, waste from nonspecific sources, characteristic waste and state-only waste (extremely hazardous and dangerous wastes).

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility (see instructions for more detail).

VI. PHOTOGRAPHS

All existing facilities must include photographs (aerial or ground—level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

VII. FACILITY GEOGRAPHIC LOCATION This information is provided on the attached drawings and photos

LATITUDE (degrees, minutes, & seconds)	LONGITUDE (degrees, minutes, & seconds)

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. (area code & no.)

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME (print or type)	SIGNATURE	DATE SIGNED
John D. Wagoner Manager, Richland Operations United States Department of Energy	John D. Wagoner	10/22/90

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME (print or type)	SIGNATURE	DATE SIGNED
SEE ATTACHMENT		

CONTINUE ON PAGE 5

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

John D. Wagoner — 10/22/90

Owner/Operator
John D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

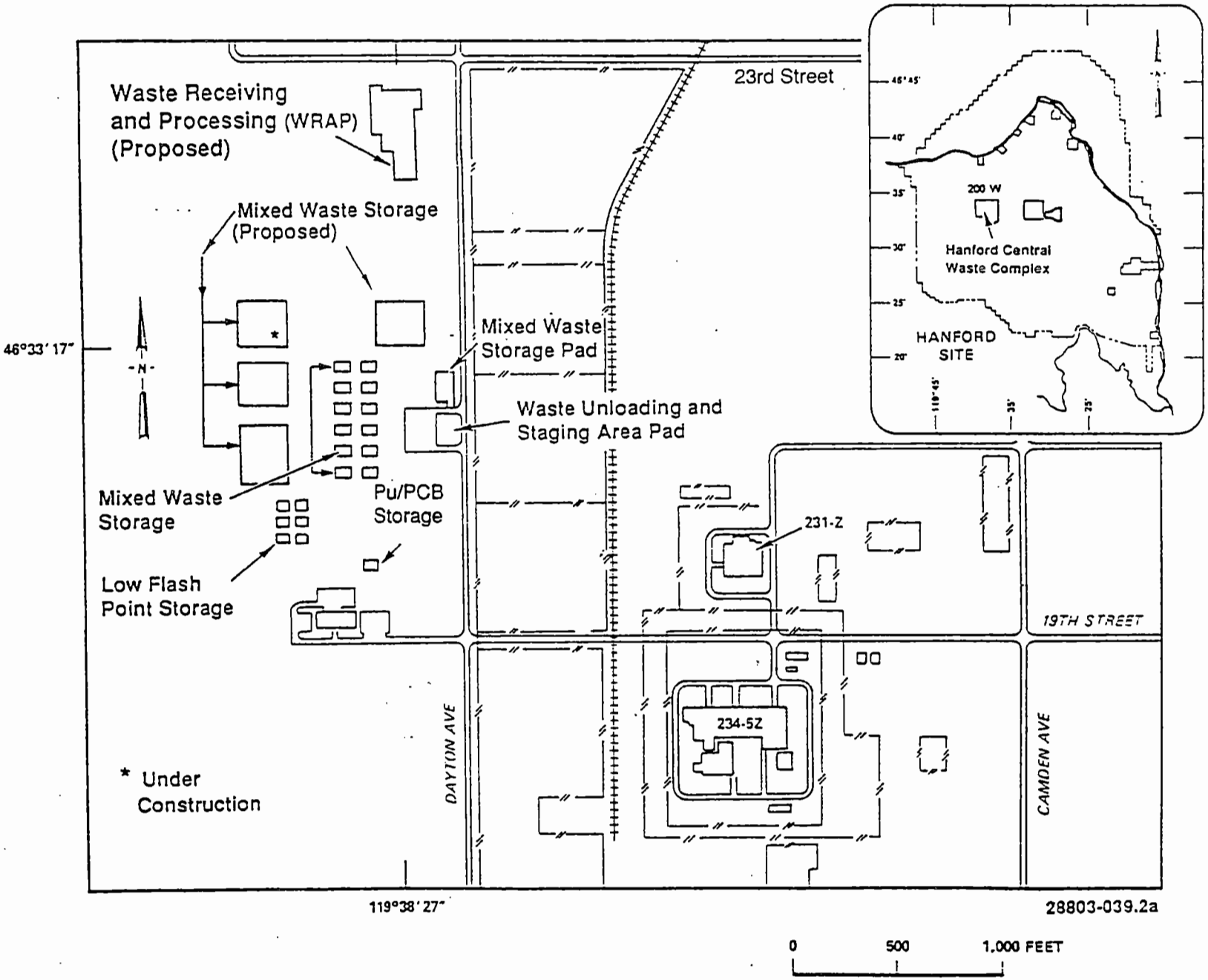
Date

Roger Nichols — Oct 11, 1990

Co-operator
Roger C. Nichols, President
Westinghouse Hanford Company

Date

Hanford Central Waste Complex
SITE PLAN



HANFORD CENTRAL WASTE COMPLEX AERIAL VIEW

46°33'17"
119°38'27"

90041241- 5CN
(PHOTO TAKEN 1990)

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HANFORD CENTRAL WASTE COMPLEX AERIAL VIEW - WASTE UNLOADING AND STAGING AREA PAD AND MIXED WASTE STORAGE PAD

46°33'17"
119°38'27"

90060807-89CN
(PHOTO TAKEN 1990)

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HANFORD CENTRAL WASTE COMPLEX AERIAL VIEW - LOW FLASH POINT STORAGE BUILDINGS

46°33'17"
119°38'27"

90060807-91CN
(PHOTO TAKEN 1990)

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HANFORD CENTRAL WASTE COMPLEX MIXED WASTE STORAGE BUILDING - TYPICAL

46°33'17"
119°38'27"

90061110-26CN
(PHOTO TAKEN 1990)

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HANFORD CENTRAL WASTE COMPLEX
Pu/PCB STORAGE BUILDINGS

46°33'17"
119°38'27"

90061110-44CN
(PHOTO TAKEN 1990)

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HANFORD CENTRAL WASTE COMPLEX WASTE RECEIVING AND PROCESSING FACILITY (WRAP) - PROPOSED VIEW

46°33'17"
119°38'27"

90061110-53CN
(PHOTO TAKEN 1990)

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PART B

This Part B permit application for the Hanford Central Waste Complex-Radioactive Mixed Waste Storage Facility consists of 15 chapters and 8 appendices.

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1.0 INTRODUCTION

This chapter briefly describes the permitting approach for the Hanford Central Waste Complex-Radioactive Mixed Waste Storage Facility (hereinafter referred to as the RMW Storage Facility) and provides an overview of the contents of the RMW Storage Facility Part B permit application.

1.1 RADIOACTIVE MIXED WASTE STORAGE FACILITY PERMITTING

The Hanford Central Waste Complex is an existing and planned series of treatment, storage, and/or disposal (TSD) units that will centralize the management of solid waste operations at a single location on the Hanford Facility. The Hanford Central Waste Complex TSD units include the RMW Storage Facility and the Waste Receiving and Processing (WRAP) Facility (DOE-RL 1991). This Part B permit application addresses the RMW Storage Facility. A separate Part B permit application addresses the WRAP Facility (DOE-RL 1991).

The RMW Storage Facility began operations in 1988. This storage unit, classified as container storage, will be permitted under Washington State Department of Ecology (Ecology) *Dangerous Waste Regulations*, Washington Administrative Code (WAC) 173-303-806.

The RMW Storage Facility consists of multiple storage structures that store radioactive and/or mixed waste before the waste has been certified at the WRAP Facility for final disposal (Chapter 2.0, Section 2.1.3). The RMW Storage Facility provides the capacity to store both onsite and offsite waste. The current radioactive and/or mixed waste production rate is estimated at 8,000 drums per year. A phased construction schedule will be used and will accommodate any changes in the radioactive and/or mixed waste production rate. Such changes could occur as a result of future changes in regulatory standards, waste minimization techniques, and the amount of radioactive and/or mixed waste received from onsite and/or offsite sources. In 1996, the WRAP Facility will begin accepting radioactive and/or mixed waste from the RMW Storage Facility for testing, treating (if necessary), repackaging, and certification for final disposal.

On final completion, the RMW Storage Facility is estimated to have the capacity to store 88,136 55-gallon (208-liter) drums and to have approximately 300,000 square feet (27,870 square meters) of storage space (Chapter 2.0, Section 2.1.3). Currently, drums are stored in preengineered post and beam metal buildings or on a storage pad. The drums are placed on wooden pallets that can be handled by a forklift truck. A maximum of four drums can be stored on each pallet, and stacking of pallets allows for a maximum of 12 drums per stack, three drums in height. Heavier drums are rotated to the bottom of the stack to ensure a stable center of gravity for each stack. The concrete floors of the storage buildings and storage pads have provisions for secondary containment. In addition, the entire floor areas of these structures are covered with an epoxy-based coating to aid in spill cleanup and to prevent the penetration of any radioactive and/or mixed waste to the

ground. Each building will contain a sprinkler system designed in accordance with the National Fire Protection Association codes (NFPA 1989).

The RMW Storage Facility design conforms to the basic requirements as contained in WAC 173-303, Sections 340, 395, and 630. The design also conforms to applicable federal regulations contained in 40 CFR 264.

Although the storage of radioactive waste is not within the scope of this permit application, the information is provided for general knowledge where appropriate.

1.2 RADIOACTIVE MIXED WASTE STORAGE FACILITY PART B PERMIT APPLICATION CONTENTS

The RMW Storage Facility Part B permit application consists of 15 chapters:

- Introduction (Chapter 1.0)
- Facility Description and General Provisions (Chapter 2.0)
- Waste Characteristics (Chapter 3.0)
- Process Information (Chapter 4.0)
- Groundwater Monitoring (Chapter 5.0)
- Procedures to Prevent Hazards (Chapter 6.0)
- Contingency Plan (Chapter 7.0)
- Personnel Training (Chapter 8.0)
- Exposure Information Report (Chapter 9.0)
- Waste Minimization Plan (Chapter 10.0)
- Closure and Postclosure Requirements (Chapter 11.0)
- Reporting and Recordkeeping (Chapter 12.0)
- Other Relevant Laws (Chapter 13.0)
- Certification (Chapter 14.0)
- References (Chapter 15.0).

A brief description of each chapter is provided in the following sections.

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1.2.1 Facility Description and General Provisions (Chapter 2.0)

This chapter provides a general description of the RMW Storage Facility. A brief description of the Hanford Site and the Hanford Facility also are provided.

1.2.2 Waste Characteristics (Chapter 3.0)

This chapter describes the physical, chemical, and biological characteristics of the dangerous waste stored at the RMW Storage Facility. A waste analysis plan is included that provides the methodology for determining waste types. Although radionuclide components are not within the scope of this permit application, the information is provided for general knowledge where appropriate.

1.2.3 Process Information (Chapter 4.0)

This chapter provides a detailed discussion of the processes and equipment of the RMW Storage Facility.

1.2.4 Groundwater Monitoring (Chapter 5.0)

This chapter explains that the RMW Storage Facility will not be operated as a dangerous waste surface impoundment, waste pile, land treatment unit, or landfill. Therefore, groundwater monitoring is not required.

1.2.5 Procedures to Prevent Hazards (Chapter 6.0)

This chapter discusses hazard prevention and emergency preparedness equipment, structures, and procedures.

1.2.6 Contingency Plan (Chapter 7.0)

This chapter provides information on contingency planning to ensure that the RMW Storage Facility has measures in place to lessen the potential impact on the public health and the environment in the event of an emergency.

1.2.7 Personnel Training (Chapter 8.0)

This chapter outlines the training program developed and implemented for RMW Storage Facility employees whose primary duties are identified as being associated with dangerous waste management.

1.2.8 Exposure Information Report (Chapter 9.0)

This chapter explains that the RMW Storage Facility does not store, treat, or dispose of dangerous waste in a surface impoundment or a landfill. Therefore, exposure information is not required.

1.2.9 Waste Minimization Plan (Chapter 10.0)

This chapter discusses the program to minimize the volume or quantity and toxicity of waste generated at the RMW Storage Facility. The regulatory basis for, and objectives of, the waste minimization program are discussed. Waste generation is described, and specific procedures for minimizing waste are discussed.

1.2.10 Closure and Postclosure Requirements (Chapter 11.0)

This chapter describes the planned activities for closing the RMW Storage Facility. The RMW Storage Facility is to be clean closed; therefore, no postclosure plan is included.

1.2.11 Reporting and Recordkeeping (Chapter 12.0)

This chapter summarizes commitments for reporting and recordkeeping that are applicable to the RMW Storage Facility.

1.2.12 Other Relevant Laws (Chapter 13.0)

This chapter discusses federal and state laws that govern the operation of the RMW Storage Facility, other than the *Resource Conservation and Recovery Act of 1976* (RCRA), as amended, and the *State of Washington Hazardous Waste Management Act of 1976*, as amended.

1.2.13 Certification (Chapter 14.0)

This chapter contains the required certification signed by officials of the U.S. Department of Energy (DOE) Field Office, Richland (RL) and Westinghouse Hanford Company, indicating that the information provided is true, accurate, and complete.

1.2.14 References (Chapter 15.0)

References used throughout this Part B permit application are listed in this chapter. All references listed here, which generally are not available

from other sources, will be made available for review, upon request, to any regulatory agency or public commentor. References can be obtained by contacting the following:

Administrative Records Specialist
Public Access Room H4-22
Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352.

1.3 ACRONYMS AND ABBREVIATIONS

Acronyms and abbreviations used throughout this Part B permit application are located at the beginning of the document between the Foreword and the Part A permit application.

1.4 DEFINITIONS

Definitions specific to this permit application are provided in this section. These definitions supplement those provided in WAC 173-303-040.

Contractor--Firm under contract to the U.S. Department of Energy to provide Hanford Site services. Currently, there are the following four onsite, prime contractors:

- An Operations and Engineering Contractor
- A Research and Development Contractor
- An Engineer and Constructor Contractor
- A Medical Health Services Contractor.

Throughout the remainder of this permit application, the term contractor, except where specified, is used to refer to the operations and engineering contractor.

Dangerous or hazardous waste--In addition to the definition in WAC 173-303-040, means the nonradioactive dangerous component of waste commonly called mixed waste (i.e., waste that is both dangerous and radioactive). Dangerous waste commonly is used to refer to hazardous, dangerous, or extremely hazardous waste within this permit application.

Facility--Dependent on context, the term 'facility', as used in this permit application, could refer to:

- The Hanford Facility (refer to definition)
- A facility as defined in WAC 173-303-040

- Building nomenclature commonly used at the Hanford Facility. In this context, the term 'facility' remains as part of the title for various treatment, storage, and/or disposal (TSD) units (e.g., 616 Nonradioactive Dangerous Waste Storage Facility, Grout Treatment Facility).

Generating unit--Term inferred to have the same meaning as 'generator' as defined in WAC 173-303-040. For purposes of RCRA and the *Dangerous Waste Regulations*, the Hanford Facility is considered to be a single generator consisting of a number of generating units.

Hanford Facility--A single RCRA facility identified by the EPA/State Identification Number WA7890008967 that consists of over 60 TSD units conducting dangerous waste management activities. These TSD units are included in the *Hanford Facility Dangerous Waste Part A Permit Application* (DOE-RL 1988b). Also, the contiguous portion of the Hanford Site that contains these TSD units and, for the purposes of the RCRA, is owned and operated by the U.S. Department of Energy (excluding lands north and east of the Columbia River, river islands, state owned or leased lands, lands owned by the Bonneville Power Administration, lands leased to the Washington Public Power Supply System, and the Ashe Substation). The Hanford Facility is a single site for purposes of provisions regulating 'offsite' or 'onsite' waste handling.

Hanford Site--The approximately 560 square miles (1,450 square kilometers) in southeastern Washington State owned by the United States Government and commonly known as the Hanford Reservation.

Offsite shipments--Shipments not considered to be onsite.

Onsite shipments--Shipments (1) from waste generating units to TSD units operated by the DOE-RL or (2) between TSD units operated by the DOE-RL.

Treatment, storage, and/or disposal (TSD) unit--A unit used for treatment, storage, and/or disposal of dangerous waste that is required to be permitted and/or closed pursuant to RCRA requirements as determined in the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) Action Plan (Ecology et al. 1990). Also refers to a grouping of TSD units for the purpose of preparing and submitting a permit application pursuant to the requirements under RCRA, as determined in the Tri-Party Agreement Action Plan.

Tri-Party Agreement--The term Tri-Party Agreement means the *Hanford Federal Facility Agreement and Consent Order*, dated May 1989, as amended, and as it may be amended from time to time, including the Action Plan incorporated in the Tri-Party Agreement.

Waste Management Unit--Term inferred to have the same meaning as 'dangerous waste management unit' as defined in WAC 173-303-040. Also inferred to have the same meaning as TSD unit.

1.5 PERMIT MODIFICATIONS

All modifications to the RMW Storage Facility Dangerous Waste Permit will be made in accordance with the requirements identified in WAC 173-303-830, with the following exception. The notifications required by WAC 173-303-830(4)(a)(i)(A) and (B) for Class 1 changes will be submitted on an annual basis to the required regulatory agencies, appropriate units of state and local government, and individuals on the facility mailing list maintained by Ecology. These notifications will be submitted by March 1 of each year.

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2.0 FACILITY DESCRIPTION AND GENERAL PROVISIONS [B]

This chapter briefly describes the Hanford Site and Hanford Facility. In addition, this chapter describes the RMW Storage Facility location and operational information including the following:

- General Description
- Topography
- Location information
- Traffic information
- Performance standards
- Buffer monitoring zones
- Spills and discharges
- Manifest system.

2.1 GENERAL DESCRIPTION [B-1]

This section discusses the general Hanford Facility operating areas and provides an introduction to the RMW Storage Facility. A brief description of the Hanford Facility also is provided. A more detailed discussion of the waste types and known characteristics of the waste that the RMW Storage Facility stores, and the identification of the methods of storage, are provided in Chapters 3.0 and 4.0, respectively. Although the storage of radioactive waste is not within the scope of this permit application, the information is provided for general knowledge.

2.1.1 Hanford Site

The Hanford Site covers approximately 560 square miles (1,450 square kilometers) of semiarid land that is owned by the U.S. Government and managed by the DOE-RL. The Hanford Site is located northwest of the city of Richland, Washington (Figure 2-1). The city of Richland adjoins the southeasternmost portion of the Hanford Site boundary and is the nearest population center. In early 1943, the U.S. Army Corps of Engineers selected the Hanford Site as the location for reactor, chemical separation, and related activities for the production and purification of special nuclear materials and other nuclear activities. The mission of the Hanford Site recently has focused on environmental remediation and restoration.

Activities on the Hanford Site are centralized in numerically designated areas (Drawing H-6-958 in Appendix 2A). The reactors are located along the Columbia River in the 100 Areas. The reactor fuel reprocessing units are in

the 200 Areas, which are on a plateau approximately 7 miles (11 kilometers) from the Columbia River. The 300 Area, located adjacent to and north of Richland, contains the reactor fuel manufacturing plants and the research and development laboratories. The 400 Area, 5 miles (8 kilometers) northwest of the 300 Area, contains the Fast Flux Test Facility used for testing liquid metal reactor systems. The 600 Area covers all locations not specifically given an area designation. Adjacent to and north of Richland, the 1100 Area contains offices associated with administration, maintenance, transportation, and materials procurement and distribution. The 3000 Area, between the 1100 Area and 300 Area, contains engineering offices and administrative offices. Administrative offices also are located in the 700 Area, which is in downtown Richland.

Drawing H-6-958 in Appendix 2A provides a general overview of the Hanford Site and contiguous area. The drawing illustrates the following:

- Legal boundary
- Contours [at 20-foot (6.1-meter) intervals] sufficient to show surface water flow
- Fire control services
- Access roads, internal roads, railroads, perimeter gates, and barricades
- Longitudes and latitudes.

2.1.2 The Hanford Facility

The Hanford Facility is defined as a single RCRA facility, identified by the EPA/State Identification Number WA7890008967, that consists of over 60 TSD units conducting dangerous waste management activities. These TSD units are included in the *Hanford Facility Dangerous Waste Part A Permit Application* (DOE-RL 1988b). The Hanford Facility consists of the contiguous portion of the Hanford Site that contains these TSD units and, for the purposes of the RCRA, is owned and operated by the U.S. Department of Energy (excluding lands north and east of the Columbia River, river islands, state owned or leased lands, lands owned by the Bonneville Power Administration, lands leased to the Washington Public Power Supply System, and the Ashe Substation). The Hanford Facility is a single site for purposes of provisions regulating 'offsite' or 'onsite' waste handling.

2.1.3 Description of the Radioactive Mixed Waste Storage Facility

The RMW Storage Facility, located in the 200 West Area, provides waste receipt and storage for radioactive and/or mixed waste that is generated, stored, and received at the Hanford Facility.

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Radioactive waste on the Hanford Facility is classified and segregated in accordance with U.S. Department of Energy Order 5820.2A. The categories include low-level waste, contact-handled and remote-handled transuranic waste, high-level waste, spent nuclear fuel, and mixed waste. The classifications of waste that the RMW Storage Facility receives and stores, as defined by U.S. Department of Energy Order 5820.2A, include the following:

- "Low-level waste--Waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel or 11e(2) by product material as defined in this order. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of transuranic is less than 100 nanocuries per gram."

- "Contact handled--Packaged transuranic waste whose external surface dose rate does not exceed 200 mrem per hour."

- "Remote handled--Packaged transuranic waste whose external surface dose rate exceeds 200 mrem per hour. Test specimens of fissionable material irradiated for research and development purposes only and not for the production of power or plutonium may be classified as remote-handled transuranic waste."

- "Transuranic waste--Without regard to source or form, waste that is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years and concentrations greater than 100 nanocuries per gram at the time of assay. Heads of field documents can determine that other alpha contaminated wastes peculiar to a specific site, must be managed as transuranic waste." At the Hanford Facility, transuranic waste also includes uranium-233 and radium-226.

- "Mixed waste--Waste containing both radioactive and hazardous/dangerous components as defined by the Atomic Energy Act and Resource Conservation and Recovery Act, respectively." (Refer to Chapter 1.0, Section 1.4.)

Two additional terms are used throughout this permit application in reference to waste processed by the WRAP Facility: 'retrieved waste' and 'newly generated waste'. 'Retrieved waste' is defined as waste that has unknown or suspect contents and has been retrieved from the Hanford Facility (e.g., Low-Level Burial Grounds or from other retrievable storage areas). 'Newly generated waste' is defined as waste that as been certified as to content by an onsite generating unit or an offsite generator.

The radioactive component of mixed waste stored at the RMW Storage Facility is, or will be, either low-level waste, contact-handled transuranic waste (including transuranic plutonium/polychlorinated biphenyl waste), or contact-handled suspect transuranic waste.

Mixed waste, low-level waste, and transuranic waste are received at the Waste Receiving and Staging Area or other approved receiving areas (Section 2.1.3.4). From the staging area, the waste packages are distributed either to the Low-Level Burial Grounds (a disposal unit within the 200 West Area), the RMW Storage Facility, the Transuranic Waste Storage and Assay Facility (a storage unit within the 200 West Area), or (when operational) to the WRAP Facility.

Ultimately, mixed low-level waste stored at the RMW Storage Facility will be buried in disposal units on the Hanford Facility; transuranic, transuranic mixed waste, and suspect transuranic waste will be shipped in TRUPACT (transuranic package transporter)-II Type B shipping containers to the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico, or another transuranic waste disposal site.

The RMW Storage Facility currently consists of the following:

- Plutonium/Polychlorinated Biphenyl Mixed Waste Storage Building
- Low-Flash-Point Mixed Waste Storage Modules
- Radioactive and/or Mixed Waste Storage Buildings
- Mixed Waste Storage Pad
- Phase I-IV--Radioactive and/or Mixed Waste Storage Buildings
- Phase V--Enhanced Radioactive and Mixed Waste Storage Building
- Waste Receiving and Staging Area.

These storage buildings and the Mixed Waste Storage Pad provide, or will provide, storage space for approximately 88,136 55-gallon (208-liter) (or equivalent) waste containers. Storage buildings with physical features that provide for segregated storage areas are operated to maintain appropriate separation between arrays of incompatible waste [incompatibility is defined in WAC 173-303-395, and specific incompatible waste combinations are listed in WHC (1988a)]. The Waste Receiving and Storage Area only handles radioactive waste and is discussed in this permit application for purposes of completeness. Descriptions of the RMW Storage Facility structures are provided in the following sections.

2.1.3.1 Plutonium/Polychlorinated Biphenyl Mixed Waste Storage Building. The Plutonium/Polychlorinated Biphenyl Mixed Waste Storage Building (2401-W Storage Building) was designed to meet all the requirements for storage of polychlorinated biphenyls (Chapter 13.0, Section 13.8) and radioactive and/or mixed waste. The 2401-W Storage Building currently stores combustible waste; however, other compatible waste also could be stored within the structure.

The 2401-W Storage Building is a preengineered steel structure, 50 feet by 80 feet by 20 feet (15.2 meters by 24.4 meters by 6.1 meters), with a clear

span in the 50-foot (15.2-meter) direction. The 26-gage metal structure has two 12-foot by 16-foot-high (3.6-meter by 4.9-meter) rollup truck doors and two personnel doors. The foundation is integrated into a perimeter concrete curb 6 inches (15.2 centimeters) abovegrade. The 2401-W Storage Building is level and at grade. The floor accommodates a 2,000-pound (908-kilogram) forklift and an approximate 1,000 drum equivalent load, depending on waste management criteria (WHC 1988b). The floor loading is limited to 450 pounds per square foot (0.22 kilogram per square centimeter). Portable ramps are placed across the curb during loading and unloading operations.

Utilities and services for the 2401-W Storage Building include sanitary water at 40 pounds per square inch (2.8 kilograms per square centimeter), which is required to serve the fire suppression system. A 100-ampere service panel (230 volts) is provided for fire suppression, heaters, lighting, and the electronic fire alarm system. The civil, architectural, and structural plans, elevations, and details for the 2401-W Storage Building are presented in Figures 2-3 and 2-4.

2.1.3.2 Low-Flash-Point Mixed Waste Storage Modules. The Low-Flash-Point Mixed Waste Storage Modules (1 through 8) are designed to meet all the storage requirements for low-flash-point mixed waste of this type. Most of the Low-Flash-Point Mixed Waste Storage Modules currently store low-level radioactively contaminated flammable waste. Only compatible waste occupies any one storage module at any one time. Two of the Low-Flash-Point Mixed Waste Storage Modules were modified for transuranic flammable waste. The remaining Low-Flash-Point Mixed Waste Storage Modules, and any future Low-Flash-Point Mixed Waste Storage Modules, also could be modified for a specific use depending on storage needs.

The Low-Flash-Point Mixed Waste Storage Modules are preengineered buildings with exterior dimensions of approximately 22.5 feet by 9.5 feet by 8.5 feet (6.9 meters by 2.9 meters by 2.6 meters). The Low-Flash-Point Mixed Waste Storage Modules have a floor space of approximately 176 square feet (16.4 square meters), and each Low-Flash-Point Mixed Waste Storage Module weighs approximately 20,000 pounds (9,084 kilograms); however, the size and weight of the storage modules vary among manufacturers. As a result, there is no set 'standard' module. The floor support system is designed for loads up to 250 pounds per square foot (0.12 kilogram per square centimeter).

The front, back, and side walls of all the Low-Flash-Point Mixed Waste Storage Modules are constructed of 10-gage steel and are coated inside with chemical-resistant epoxy paint or have a corrosion-resistant covering. All roofs are constructed of 12-gage steel. Low-Flash-Point Mixed Waste Storage Modules 1, 2, and 3 have fire-retardant plywood floors and ceilings within the metal skin. Low-Flash-Point Mixed Waste Storage Modules 4 through 8 are constructed of metal. All modules have a 4-inch-(10.2-centimeter-) deep vented catch sump under the storage floor. This provides spill containment, as well as precluding spills from affecting other containers by keeping the storage deck clean. Each sump has a capacity of 366 to 750 gallons (1,387 to 2,843 liters) depending on the manufacturer. For the two Low-Flash-Point Mixed Waste Storage Modules handling transuranic-flammable waste, draft ventilation and electrical service are provided. The other Low-Flash-Point

Mixed Waste Storage Modules similarly will be supplied if necessary. Water supply presently is not provided but could also be made available if necessary.

2.1.3.3 Radioactive and/or Mixed Waste Storage Buildings. The 2402-W and 2402-WB through 2402-WL Radioactive and/or Mixed Waste Storage Buildings consist of 12 identical storage structures. Adjacent to these storage buildings are two open-air pads: the Waste Receiving and Staging Area (Section 2.1.3.7) and the Mixed Waste Storage Pad (Section 2.1.3.4).

The Radioactive and/or Mixed Waste Storage Buildings were designed to meet the requirements for radioactive and/or mixed waste. Any combination of compatible radioactive and/or mixed waste could be placed in these storage buildings, according to the storage building loading schedules. Proper precautions are taken to isolate any noncompatible waste.

The storage buildings are 4,000-square-foot (372-square-meter) metal structures, approximately 50 feet wide by 80 feet long (15.2 meters by 24.4 meters), with a minimum clear span of 40 feet (12.2 meters) and an eave height of approximately 20 feet (6.1 meters). The allowable floor loading is 700 pounds per square foot (0.34 kilogram per square centimeter) and 2,000 pounds per square foot (0.98 kilogram per square centimeter). Each storage building has a concrete floor, ventilation, lighting, and a fire protection system. Inclined ramps are placed across the curbs during loading and unloading operations. Figure 2-5 contains construction details of the storage buildings.

2.1.3.4 Mixed Waste Storage Pad. The 7- to 8-inch- (17.8- to 20.3-centimeters-) thick concrete Mixed Waste Storage Pad is designed to support loading up to 1,150 pounds per square foot (0.56 kilogram per square centimeter) (Figure 2-6). The Mixed Waste Storage Pad is curbed with 6 inches (15.24 centimeters) of concrete. The Mixed Waste Storage Pad is provided with an access ramp and a rainwater collection and removal system. Monitoring and/or sampling for contaminated rainwater are performed in accordance with applicable guidelines (Chapter 4.0, Sections 4.1.1.7 and 4.1.1.8).

2.1.3.5 Phase I-IV Radioactive and/or Mixed Waste Storage Buildings. Phase I, the only phase completed (Figures 2-7 and 2-8), consists of one building (2403-WA Storage Building) that is 170 feet (51.8 meters) wide and 200 feet (61 meters) long for a total of 34,000 square feet (3,159 square meters). The 2403-WA Storage Building accommodates approximately 9,000 55-gallon (208-liter) drums of radioactive and/or mixed waste. Phases III and IV might use the same design as Phase I for future storage buildings. Phase II will provide a larger storage building that is 170 feet (51.8 meters) wide and 325 feet (99 meters) long, for a total of 55,250 square feet (5,133 square meters). This larger storage building will accommodate approximately 19,300 55-gallon (208-liter) drums of radioactive and/or mixed waste. The combined total storage area of all the Phase I through IV storage buildings will be 157,250 square feet (14,609 square meters).

The 2403-WA Storage Building is a steel-supported, sheet-metal-covered structure with an eave height of 20 feet (6.1 meters) and a roof slope ratio of 1 in 12 feet (0.3 to 3.7 meters). The structural system chosen is modular beam and column with a rigid frame. Each rigid frame [25 feet (7.6 meters) on center] is supported by two interior columns, spaced at a distance of one third of the overall width of the storage building [58 feet 8 inches (17.6 meters) on center]. The roof and wall panels are 26-gage steel sheets with exterior finish. Exterior rolling service doors are 12 feet (3.7 meters) wide and 18 feet (5.5 meters) high with uninsulated steel slats, which have bottom weather seals and weatherstripping. The service doors have a manual or electrical chain-hoist operation. The doors also have slide bolt locks suitable for the insertion of a padlock. Personnel doors are manufacturers' standard reinforced-steel doors 3 feet (0.91 meter) wide and 7 feet (2.1 meters) high by 1.75 inches (4.4 centimeters) thick. The personnel doors have lockset hinges, door-bottom weatherstripping, and threshold hardware. All personnel doors have exterior concrete pads. The structures are functional warehouses within which drums, boxes, and other approved packages of radioactive and/or mixed waste can be stored.

The 2403-WA Storage Building is uninsulated with the exception of the heated sprinkler riser that is contained within an enclosure inside the structure. The enclosure is insulated thermally to R-11 in the walls and R-19 in the ceilings. The enclosure is 6 feet by 8 feet by 7 feet (1.8 meters by 2.4 meters by 2.1 meters) high with metal stud framing and is finished in gypsum board. The purpose of the enclosure is to provide a heated space within which the sprinkler system riser can be housed and kept from freezing. The personnel door into the enclosure is insulated and sized as noted for exterior doors having latchset, hinge, threshold, door-bottom, perimeter seal, and doorstop hardware.

All steel columns and rigid frames rest on reinforced concrete pier footing designed to receive the primary building loads. The perimeter has a reinforced concrete foundation carried to a depth of 34 inches (97 centimeters) below the 0-foot 0-inch elevation of the floor. This accommodates a floor loading of 2,000 pounds per square foot (0.98 kilogram per square centimeter).

The allowable soil-bearing pressure at this location is 3,000 pounds per square foot (1.5 kilograms per square centimeter). Floor areas are divided into quadrants by 5-inch- (12.7-centimeter-) high concrete curbs and are sealed with an impervious epoxy resin floor surfacing system that is compatible with the stored waste. A 12-foot (3.7-meter) aisle is provided through the center of the 2403-WA Storage Building to accommodate loading and unloading operations. Curbs are arranged so that the curbs do not interfere with forklift travel, and ramps are provided over curbs. Access and maneuverability areas around the 2403-WA Storage Building are stabilized with asphalt or gravel. Areas adjacent to the 2403-WA Storage Building are stabilized and are graded to slope away from the 2403-WA Storage Building to preclude water collection.

The interior of the 2403-WA Storage Building, with the exception of the floor and the sprinkler riser enclosure, remains unfinished. All exposed steel is primed. Wall and roof panels are coated on the interior surface with manufacturers' standard finish.

The conceptual civil and electrical site plan is shown in Figure 2-9. Power and telephone lines are extended from the aerial lines through underground concrete-encased conduits to a centrally located distribution point. The central distribution point contains a pad-mounted transformer and service equipment for electrical power and a pedestal terminal box for telephones. Power and telephone lines branch out from the centrally located distribution point through underground conduits to the 2403-WA Storage Building.

Electrical power is supplied to the 2403-WA Storage Building by an aerial 13.3-kilovolt power line located along the west side of Dayton Avenue (Figure 2-2). Power to the 2403-WA Storage Building is supplied at 3-phase, 120/208 volts. The 2403-WA Storage Building has 125-ampere service. Power (3-phase, 208-volt) is supplied to wall exhausters, while low-voltage circuits (single-phase, 120 volt) provide power for all lighting, fire sprinkler equipment, and convenience receptacles.

Only sanitary water is used in the 2403-WA Storage Building. The sanitary water is routed to the 2403-WA Storage Building from two sources to provide a looped supply system in accordance with the U.S. Department of Energy Order 6430.1A. One water source is supply lines from the south near the 272-WA Building (Tank Farm Support), which is approximately 1,500 feet (457 meters) away; the other water source is a fire hydrant 65 feet (19.8 meters) away from the nearest Radioactive and/or Mixed Waste Storage Building (2402-W).

The 2403-WA Storage Building is maintained at atmospheric pressure; heating and cooling are not required for the 2403-WA Storage Building operations. Ventilation complies with the Uniform Building Code occupancy requirements (ICBO 1988). The ventilation system for the 2403-WA Storage Building consists of four wall exhausters, each rated at 35,000 cubic feet (990.5 cubic meters) per minute and the exhausters provide approximately four air changes per hour.

The 2403-WA Storage Building was planned for managing various waste categories at the same time and is designed with four separate containment quadrants. The 2403-WA Storage Building was designed to meet all of the requirements for radioactive and/or mixed waste. Compatible combinations of radioactive and/or mixed waste can be placed in any one containment quadrant according to the 2403-WA Storage Building loading schedules. However, polychlorinated biphenyls are not allowed because of limitations in the 2403-WA Storage Building design. Only compatible waste will occupy any one quadrant at any one time.

2.1.3.6 Phase V--Enhanced Radioactive and Mixed Waste Storage Building. The Enhanced Radioactive and Mixed Waste Storage Phase V is planned for future construction and will be part of the RMW Storage Facility. A more detailed description of the Enhanced Radioactive and Mixed Waste Storage Building is included in Appendix 2B.

2.1.3.7 Waste Receiving and Staging Area. The Waste Receiving and Staging Area is an asphalt pad approximately 200 feet (61 meters) long and 150 feet (45.7 meters) wide [30,000 square feet (2,787 square meters)]. The allowable floor loading is 1,150 pounds per square foot (0.56 kilogram per square centimeter). The Waste Receiving and Staging Area is used for the container handling and staging of radioactively contaminated waste only (not mixed waste) destined for the various storage buildings. Components of the Waste Receiving and Staging Area include access for loading and unloading operations.

2.2 TOPOGRAPHIC MAP [B-2]

A topographic map, showing a distance of at least 1,000 feet (305 meters) around the RMW Storage Facility, is located in Appendix 2A (Drawing H-13-000003). The map is at a scale of 1 centimeter equals 20 meters (1:2000). The contour interval clearly shows the pattern of surface water flow in the vicinity of the RMW Storage Facility. The map contains the following information:

- Map scale
- Date
- Prevailing wind speed and direction
- A north arrow
- Surrounding land use
- Access road locations
- Access control.

A legal description of the RMW Storage Facility is provided in Appendix 2A.

2.3 LOCATION INFORMATION [B-3]

This section describes the location of the RMW Storage Facility in relation to seismic, floodplain, and shoreline considerations.

2.3.1 Seismic Considerations [B-3a]

The RMW Storage Facility was, and will be, designed for seismic considerations in accordance with the *Hanford Plant Standards*, Standard Design Criteria - 4.1 (DOE-RL 1988a). This Plant Standard provides seismic load criteria specific for the Hanford Site.

2.3.2 Floodplain Standard [B-3b]

Three sources of potential flooding were considered: (1) the Columbia River, (2) the Yakima River, and (3) storm-induced run-off in ephemeral streams draining the Hanford Facility. No perennial streams occur in the central part of the Hanford Facility.

The Federal Emergency Management Agency has not prepared floodplain maps for the Columbia River through the Hanford Site. The flow of the Columbia River largely is controlled by several upstream dams that are designed to reduce major flood flows. Based on a U.S. Army Corps of Engineers study of the flooding potential of the Columbia River that considered historic data and water storage capacity of the dams on the Columbia River (COE 1969), the U.S. Department of Energy (ERDA 1976) has estimated the probable maximum flood (Figure 2-10). The estimated probable maximum flood would have a larger floodplain than either the 100- or 500-year flood. The RMW Storage Facility is well above the elevation of the Columbia River probable maximum flood and therefore is not within the 100- or 500-year floodplain.

The 100-year floodplain for the Yakima River, as determined by the Federal Emergency Management Agency (FEMA 1980), is shown in Figure 2-11. The RMW Storage Facility is not within this floodplain.

The only other potential source of flooding of the RMW Storage Facility is run-off from a large precipitation event in the Cold Creek watershed. This event could result in flooding of the ephemeral Cold Creek. Skaggs and Walters (1981) have estimated the probable maximum flood using conservative values of precipitation, infiltration, surface roughness, and topographic features. The resulting Cold Creek flood area (Figure 2-12) would not affect the RMW Storage Facility. The 100-year flood would be less than the probable maximum flood.

2.3.2.1 Demonstration of Compliance [B-3b(1)]. The RMW Storage Facility is not located within a 100-year floodplain. Therefore, no demonstration of compliance is required.

2.3.2.1.1 Flood Proofing and Flood Protection Measures [B-3b(1)(a)]. The RMW Storage Facility is not located within a 100-year floodplain. Therefore, no demonstration of compliance is required.

2.3.2.1.2 Flood Plain [B-3b(1)(b)]. The RMW Storage Facility is not located within a 100-year floodplain. Therefore, no demonstration of compliance is required.

2.3.2.2 Plan for Future Compliance with Floodplain Standard [B-3b(2)]. The RMW Storage Facility is not located within a 100-year floodplain. Therefore, no demonstration of compliance is required.

2.3.3 Shoreline Standard [B-3c]

The RMW Storage Facility is not located within regulated 'shorelines of the state' or 'wetlands' as defined in the *Shoreline Management Act of 1971*. The RMW Storage Facility is located on the Hanford Site, which is owned by the U.S. Government and operated by the DOE-RL. The Hanford Site is not classified as natural, conservancy, rural, or residential.

2.3.4 Sole Source Aquifer Criteria [B-3d]

The RMW Storage Facility is not located over a 'sole source' aquifer as defined in Section 1424(e) of the *Safe Drinking Water Act of 1974*. Therefore, no demonstration of compliance is required.

2.4 TRAFFIC INFORMATION [B-4]

The regional public highway network traversing the Hanford Site (Washington State Highways 24 and 240 and Route 10, and that portion of Route 4S south of the Wye Barricade) and the restricted access roadways are shown in Figure 2-1.

Roadways on the Hanford Site north of the Wye Barricade and within the 300 and 400 Areas are restricted to authorized personnel. The RMW Storage Facility is located approximately 3 miles (4.8 kilometers) from the nearest roadway (Washington State Highway 240) that has unrestricted public access. Estimated traffic volumes, in vehicles per day, are shown in Figure 2-13. The majority of traffic is passenger vehicles used for commuting and conducting company business. Approximately 10 percent of the traffic volume is trucks, and these trucks are mainly delivery, construction, and maintenance vehicles.

2.4.1 Hanford Site Roadways

Drawing H-6-958 in Appendix 2A and Figures 2-1 and 2-13 show the major roads through the Hanford Site. These roads are classified as either primary or secondary routes. The primary routes include Routes 4N, 4S, 10, 2N, 3, 6, and 11A, as well as various avenues within each area. The primary routes are constructed of bituminous asphalt [usually 2 inches (5.08 centimeters) thick, but the thickness of the asphalt layer will vary with each road] with an underlying aggregate base in accordance with U.S. Department of Transportation requirements. The secondary routes are constructed of layers of an oil and rock mixture with an underlying aggregate base. The aggregate base consists of various types and sizes of rock found onsite. Currently, no load-bearing capacities of these roads are available; however, loads as large as 140 pounds per square inch (9.87 kilograms per square centimeter) have been transported

for the American Association of State Highway and Transportation Officials HS-20-44 load rating (AASHTO 1983). An HS-20-44 loading represents a two-axle tractor [front axle loading of 8,000 pounds (3,633 kilograms) and rear axle loading of 32,000 pounds (14,535 kilograms)] plus a single-axle trailer with a 32,000-pound (14,535-kilogram) axle loading.

2.4.2 The Radioactive Mixed Waste Storage Facility Roadways

Waste is shipped to the RMW Storage Facility in trucks that generally range in size from 3/4-ton (681-kilogram) pickup trucks to 60-foot- (18.3-meter-) long tractor trailer rigs, depending on the size of the load.

Trucks going to the RMW Storage Facility enter the 200 West Area through Gate 611 or Gate 609 from Route 3, shown on Figure 2-14. The paved roads provide adequate all-weather access to the RMW Storage Facility. Paved parking areas for RMW Storage Facility personnel also are provided. Existing paved roads provide satisfactory all-weather access during operation.

2.4.3 Traffic Control Signs, Signals, and Procedures

Standard traffic control signs are used throughout the Hanford Site (e.g., hexagonal stop signs, triangular yield signs). Speed limits are posted throughout the Hanford Site, and the maximum posted speed is 55 miles (88 kilometers) per hour on major thoroughfares. Inside the 200 East and 200 West Areas, posted speeds are reduced to a maximum of 35 miles (56 kilometers) per hour and held to speeds as low as 15 miles (24 kilometers) per hour.

2.5 PERFORMANCE STANDARDS [B-5]

The RMW Storage Facility is designed to minimize the exposure of personnel to radioactive and/or mixed waste and to prevent waste from reaching the environment. In addition, measures are taken to ensure that the RMW Storage Facility is maintained and operated in a manner that prevents the following:

- Degradation of groundwater quality
- Degradation of air quality by open burning or other activities
- Degradation of surface water quality
- Destruction or impairment of flora or fauna outside of the RMW Storage Facility
- Excessive noise
- Negative aesthetic impacts

- Unstable hillsides or soils

- Use of processes that do not treat, detoxify, recycle, reclaim, and recover waste material to the extent economically feasible

- Endangerment to the health of employees or the public near the RMW Storage Facility.

The measures taken to prevent each of these negative effects from occurring are described in the following sections.

2.5.1 Measures to Prevent Degradation of Groundwater Quality

Degradation of groundwater quality is prevented by storing waste containers inside enclosed steel buildings. In addition, the RMW Storage Facility accepts only those waste packages meeting appropriate U.S. Department of Transportation requirements. Containers are opened only in areas with spill containment. The RMW Storage Facility design and administrative controls significantly reduce the possibility of loss of waste to the ground and/or contamination of the groundwater (Section 2.1.3). In the vicinity of the RMW Storage Facility, the water table ranges from about 180 to 280 feet (54.9 to 85.3 meters) below the surface.

The Mixed Waste Storage Pad trench drain plug is kept closed and locked when not in use. The RMW Storage Facility supervisor [Solid Waste Facility Operations supervisor (Chapter 8.0, Section 8.1.1.4)] controls the trench key. When water from a known source (e.g., mopping, rainwater, snowmelt) has accumulated in the Mixed Waste Storage Pad trench, it is released to the ground via the french drain (Drawing H-2-80580 in Appendix 4B). Before the liquid is released, the following is performed.

1. Liquid is inspected visually for signs of contamination.

2. Daily inspection reports and the RMW Storage Facility logbook are reviewed to identify any spills on the Mixed Waste Storage Pad.

3. Cleanup reports are reviewed to verify that the Mixed Waste Storage Pad is clean (Section 2.7.2.1).

4. The RMW Storage Facility Solid Waste Operations Unit Supervisor contacts the Solid Waste Engineering organization and reviews steps 1 through 3 above. Solid Waste Engineering gives concurrence.

5. The RMW Storage Facility supervisor signs the logbook, indicating that the above steps have been completed and that the Mixed Waste Storage Pad is clean (Section 2.7.2.1).

6. The RMW Storage Facility supervisor unlocks the drain plug.

7. After the trench has completely drained, the RMW Storage Facility supervisor locks the drain plug closed.

8. The RMW Storage Facility supervisor signs the logbook, indicating that the trench was drained and the drain plug is closed and locked.

Water that has accumulated in the Mixed Waste Storage Pad trenches that cannot be verified to be free of contamination is containerized and stored in an area of the RMW Storage Facility that is equipped with secondary containment (Chapter 4.0, Section 4.1.1.8). The containerized water is handled in accordance with the provisions of the waste analysis plan described in Chapter 3.0, Section 3.2.

2.5.2 Measures to Prevent Degradation of Air Quality by Open Burning or Other Activities

No open burning occurs at the RMW Storage Facility. Vegetation around the storage buildings has been reduced, and the soil is compacted, thereby reducing the risk of a fire or wind erosion near the RMW Storage Facility.

2.5.3 Measures to Prevent Degradation of Surface Water Quality

The measures taken to prevent degradation of surface water quality by spills or releases of radioactive and/or mixed waste are the same as the measures taken to prevent degradation of groundwater quality (Section 2.5.1). The preventive measures consist of a series of structural barriers and operational procedures. Sanitary waste is discharged to a dedicated septic system.

The potential for degradation of surface water is extremely low because there is no natural surface water near the RMW Storage Facility. The Columbia River is approximately 10 miles (16.1 kilometers) from the RMW Storage Facility and Cold Creek (ephemeral) runs across the southwest corner of the 200 West Area about 0.6 mile (1 kilometer) away. Rainwater soaks into the sandy soil rather than flowing on the soil surface. Small pools can be observed after rapid snowmelt, but these usually dissipate within 72 hours.

2.5.4 Measures to Prevent Destruction or Impairment of Flora or Fauna Outside of the Unit

The existing areas used for radioactive and/or mixed waste storage at the Hanford Facility already have undergone some environmental modification, and the additional impact on plants and wildlife from RMW Storage Facility operations is minimal (DOE 1987). Plant and animal communities will undergo temporary disruption during construction phases, but operation of the RMW Storage Facility does not result in any significant impact to the plant and wildlife communities or to their habitats.

The security fences in the 200 Areas serve as a barrier to large land animals and, therefore, limit these animals from accessing the RMW Storage Facility operations.

2.5.5 Measures to Prevent Excessive Noise

The daily operation of the RMW Storage Facility does not result in excessive noise levels. Maintenance activities could result in increased noise levels, depending on the nature of the activity. However, the noise level would be higher only during the maintenance activity. The RMW Storage Facility is sufficiently removed from residential and offsite industrial areas (Figure 2-1 and Drawing H-6-958 in Appendix 2A) to preclude excessive noise impacts.

2.5.6 Measures to Prevent Negative Aesthetic Impacts

The RMW Storage Facility does not injure or destroy the surrounding flora and fauna. The RMW Storage Facility stores waste in U.S. Department of Transportation-approved containers mostly within the confines of storage buildings. The storage buildings are relatively new with exterior finishes that complement the surrounding terrain. The RMW Storage Facility is not visible from offsite or is visible only from a great distance. For these reasons, the RMW Storage Facility presents no negative aesthetic impacts.

2.5.7 Measures to Prevent Unstable Hillsides or Soils

There are no naturally unstable hillsides or soils near the RMW Storage Facility. The land within the vicinity of the RMW Storage Facility is sloped at less than 2 percent. The soil beneath and around the RMW Storage Facility was, or will be, compacted with a mechanical tamper before construction activities were initiated. After each pass, a sample was taken and analyzed for depth of lift, percent moisture, pounds per cubic foot (dry), maximum density, and percent compaction. When the percent compaction reached or exceeded 95 percent, the soil compaction was accepted. Details of the soil compaction process are included in the construction specification provided in Appendix 4A.

The climate is arid to semiarid as a result of being in the rain shadow of the Cascade mountain range. The site is blanketed by a thin veneer of wind-blown sediments. Vegetation on the site consists of sagebrush and other common central Washington desert plant species. The soil is classified as sandy gravel with excellent drainage characteristics. Water erosion on the plateau is minor because of the minimal precipitation, high soil porosity, and relatively flat topography.

2.5.8 Measures to Prevent the Use of Processes That Do Not Treat, Detoxify, Recycle, Reclaim, and Recover Waste Material to the Extent Economically Feasible

The RMW Storage Facility is for storage only. Under normal operating conditions, no waste is treated, detoxified, recycled, reclaimed, or recovered in any manner at this storage unit. Therefore, this requirement is not applicable to the RMW Storage Facility.

2.5.9 Measures to Prevent Endangerment to the Health of Employees or the Public Near the Unit

The RMW Storage Facility is isolated from the general public [approximately 30 miles (48.3 kilometers) from the nearest population center, Richland, Washington]. Employee and public protection is enhanced further by administrative controls over the designation, packaging, loading, transporting, and storing of radioactive and/or mixed waste. Each offsite generator and onsite generating unit must receive written approval for the type, quantity, and packaging of the waste before the waste is stored at the RMW Storage Facility.

Employees are trained to handle and store waste packages. The training includes radiation worker training, dangerous waste awareness, emergency response, and health physics safety (Chapter 8.0). Protective equipment, safety data, and hazardous materials information are supplied by operations management and are readily available for employee use.

A contingency plan, consisting of a building emergency plan and emergency response actions, is in place and is implemented for spill prevention, containment, and countermeasures to reduce safety and health hazards to employees, the environment, and the public (Appendix 7A).

During future construction periods, contractors will be required to take all reasonable precautions in the performance of their work to protect the health and safety of their employees, subcontractors, operating contractor, and U.S. Department of Energy personnel. The construction area will be made accessible to emergency vehicles at all times, and emergency evacuation of personnel will not be obstructed.

The overall goal is to limit radiation and chemical exposure to levels as low as reasonably achievable (ALARA). A combination of features is used in the design and operation of the RMW Storage Facility to ensure stringent confinement of radioactive and dangerous materials, protection against radiation and chemical exposure of personnel, process safety, and adequate protection of operating personnel and the general public. The principal preventive measures include using shielding, maximizing the distance from radiation sources, restricting the time of occupancy in radiation zones, and using protective clothing.

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Specific RMW Storage Facility design features providing for confinement of, and protection from, radioactive materials are as follows:

- Collection of potentially radioactive liquids in drain catch basins and transfer of waste to nonradioactive systems only after analysis demonstrates acceptability
- Effluent monitoring of all gaseous- and liquid-effluent release paths
- Radiation and contamination monitoring for personnel exposure
- Location of offices for support personnel, control rooms, and nonradiological operations in buildings remote from radiation sources.

Specific provisions are made in the design for the safe storage and handling of radioactive and/or mixed waste, so that releases of this waste to the environment and exposure of onsite personnel and the public to such substances are less than established limits.

2.6 BUFFER MONITORING ZONES [B-6]

Requirements for buffer monitoring zones have been deleted from WAC 173-303-440. Therefore, no discussion of the checklist items under buffer monitoring zones [B6] will be included in this permit application.

2.7 SPILLS AND DISCHARGES INTO THE ENVIRONMENT [B-7]

The actions that are followed to ensure immediate response to a nonpermitted spill or discharge of radioactive and/or mixed waste from the RMW Storage Facility to the environment are detailed in the building emergency plan (Appendix 7A).

2.7.1 Notification [B-7a]

The following are details of notification of the DOE-RL, Ecology, and the National Response Center.

- The building emergency director or line management documents all emergencies on an occurrence report (Figure 2-15), which must be completed within 24 hours. The occurrence report is used to provide management with facts about an unplanned event and to disseminate information to those responsible for preventing recurrence of similar events. The DOE-RL is notified either by line management or the assigned overview organization, depending on the consequences of the event. Copies of the occurrence reports will be retained at the Hanford Central Waste Complex.

- All detectable spills to the environment and/or the atmosphere will be reported immediately to the Occurrence Notification Center. The Occurrence Notification Center notifies Ecology of the release of dangerous waste.

- Upon detection, immediate notification will be made to Ecology at (206) 438-7016 of all spills as required under applicable regulations.

- In addition, if a spill exceeds the reportable quantities established under the *Comprehensive Environmental Response, Compensation and Liability Act of 1980* (CERCLA), according to 40 CFR 302, the Occurrence Notification Center will notify the National Response Center at 800-424-8802.

- The report to Ecology and the National Response Center will contain the following information:

  - Name and telephone number of reporter
  - Name and address of the TSD unit or zone
  - Time and type of incident
  - Name and quantity of material(s) involved to the extent known
  - Extent of injuries if any
  - Possible hazards to human health and the environment outside the Hanford Facility boundary.

- All detectable releases of dangerous waste, including those that do not exceed a CERCLA limit, are reported to the Hanford Fire Department and the contractor's environmental protection organization. The contractor's environmental protection organization compiles a report for submittal to the DOE-RL. The reports are kept on file at the Hanford Central Waste Complex and are available for review by the appropriate regulatory agencies. The DOE-RL submits the report to the following address:

  Washington State Department of Ecology
  7601 West Clearwater, Suite 102
  Kennewick, WA 99336
  Phone: (509) 546-2990.

- All detectable spills or releases that occur during transportation will be reported by the transporter to the Occurrence Notification Center. In addition, a written report will be submitted to the following address:

  Director, Office of Hazardous Material Regulations
  Materials Transport Bureau
  Department of Transportation
  Washington, D.C. 20990.

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2.7.2 Mitigation and Control [B-7b]

Actions taken to protect human health and the environment in the event of a nonpermitted spill or discharge are detailed in the building emergency plan (Appendix 7A).

2.7.2.1 Cleanup of Released Wastes or Substances [B-7b(1)]. Actions taken to clean up all released hazardous/dangerous waste or hazardous substances and the criteria used to determine the extent of removal are addressed in contingency plan documents noted in Chapter 7.0

2.7.2.2 Management of Contaminated Soil, Waters, or Other Materials [B-7b(2)]. Actions taken to demonstrate that all soil, waters, or other materials contaminated by a spill or discharge are treated, stored, or disposed of in accordance with WAC 173-303 are addressed in contingency plan documents noted in Chapter 7.0.

2.7.2.3 Restoration of Impacted Area [B-7b(3)]. Because of the remote location of the RMW Storage Facility [near the center of the Hanford Site (Figure 2-1)], spills or discharges occurring on property that is not owned by the U.S. Government are unlikely. A description of the actions to be taken to restore the impacted area and to replenish resources is not required.

2.8 MANIFEST SYSTEM [B-8]

The Hanford Facility handles dangerous waste from onsite sources and mixed waste from both onsite and offsite sources. This section briefly discusses the system that is in place to track waste shipments.

2.8.1 Onsite Waste Shipments

The Hanford Site has one EPA/State identification number as required by WAC 173-303-060, and all TSD units on the Hanford Facility are part of a single dangerous waste facility. Therefore, onsite shipments of dangerous or mixed waste are not subject to the manifesting requirements specified in WAC 173-303-370 and -180. However, all onsite waste shipments are conducted in a manner to ensure protection of onsite workers, the environment, and the public. Four onsite waste tracking systems, similar to a manifest system, are voluntarily used for transporting waste on the Hanford Facility. The following four systems are used to track the transfer of waste:

- Liquid mixed waste via underground pipelines
- Liquid mixed waste via railroad tank car or tank truck or via barrels transported by truck
- Containerized mixed waste (e.g., rags, failed equipment, contaminated soil) via trucks and railroad cars

- Containerized nonradioactive dangerous waste via truck before being shipped offsite for treatment, storage, and/or disposal at a permitted facility.

Onsite waste transfer records for the RMW Storage Facility are maintained for the life of the RMW Storage Facility.

2.8.2 Offsite Waste Shipments

Offsite shipments of dangerous waste to and from the Hanford Facility are subject to the manifesting requirements specified in WAC 173-303-370 and -180, respectively. The EPA Uniform Hazardous Waste Manifest is used for transporting dangerous waste from the Hanford Facility to a permitted TSD facility. Transuranic, transuranic mixed, or suspect transuranic waste could be shipped offsite in the future to the WIPP or to another transuranic waste disposal site when these sites become operational. Offsite waste transfer records for the RMW Storage Facility are maintained on file for the life of the RMW Storage Facility (Chapter 12.0).

The following sections provide information on receiving radioactive and/or mixed waste shipments, response to manifesting discrepancies, and provisions for nonacceptance of radioactive and/or mixed waste shipments to the RMW Storage Facility.

The acceptance criteria document (WHC 1988a) establishes the requirements for offsite waste generators and onsite generating units to manifest radioactive and/or mixed waste shipments to the RMW Storage Facility. This document ensures that the identification, packaging, labeling, and documentation of radioactive and/or mixed waste shipped to the RMW Storage Facility is in conformance with regulations in WAC 173-303. Because radioactive waste is not subject to regulation under WAC 173-303, a description of the process for determining radioactive waste types is not included in this permit application.

2.8.3 Procedures for Receiving Shipments [B-8a]

All shipments to the RMW Storage Facility are approved in writing by the Solid Waste Engineering organization before shipment. To receive approval to ship radioactive and/or mixed waste, the onsite generating units and the offsite generators must provide waste storage and disposal information. Offsite generators are required to formally request approval from the DOE-RL to store all radioactive and/or mixed waste. The disposal requests are forwarded to the Hanford Facility operations and engineering contractor for implementation.

The following steps are performed to obtain approval for a shipment of radioactive and/or mixed waste to the RMW Storage Facility.

- The offsite generators submit an initial disposal request to the DOE-RL for review. Onsite generating units submit a request directly to the Solid Waste Engineering organization.

- The request must include information on the waste, including chemical, physical, and radiological characteristics; packaging and containers; and compliance with applicable waste acceptance criteria (WHC 1988a).

- The offsite generators and the onsite generating units, with support from the Solid Waste Engineering organization identify the appropriate dangerous waste designation.

- If the waste package is determined to be acceptable, the Solid Waste Engineering organization prepares and issues to the offsite generator or onsite generating unit a storage and disposal approval record, which is used as formal technical approval for storage of radioactive and/or mixed waste. This record lists the packaging and labeling requirements, together with the necessary documentation submittal requirements.

After approval has been granted for shipping the radioactive and/or mixed waste to the RMW Storage Facility, the following steps are performed.

- The offsite generators and onsite generating units prepare a waste storage and disposal request for each type of waste in the shipment.

- The offsite generators and onsite generating units schedule the waste shipment and comply with the requirements of the waste acceptance criteria (WHC 1988a).

- The offsite generators complete a Uniform Hazardous Waste Manifest and the onsite generating units complete an onsite waste tracking form to accompany the shipment.

- The transporter receives the waste and dates and signs the Uniform Hazardous Waste Manifest or the onsite waste tracking form. The offsite generators and the onsite generating units date and sign and retain a copy of the manifest or the onsite waste tracking form.

- The waste is transported to the RMW Storage Facility using operations transportation personnel (for onsite shipments) or private carrier (for offsite shipments). Offsite transporters of mixed waste must have an EPA/State identification number.

The provisions of the waste acceptance criteria (WHC 1988a) allow the previous requirements to be waived through the use of an engineering change notice if sufficient justification for a waiver is given.

Offsite waste arriving at the Hanford Site is received at the 1100 Area where the waste containers and documentation are inspected. An offsite radioactive shipment record is issued to the transporter after the inspection has been completed. The offsite radioactive shipment record ensures that onsite transportation of radioactive material is performed in accordance with Hanford Site requirements. This shipment record is required at all Hanford Facility gates before a radioactive shipment from either an onsite generating unit or an offsite generator can pass through the gates.

The RMW Storage Facility operations personnel ensure the following:

- Waste containers have been received (number shipped = number received)
- Waste containers are in good condition and properly labeled
- Radiological and other surveys have been completed
- Documentation is accurate (by cross-checking the waste containers received and the applicable documentation)
- The Uniform Hazardous Waste Manifest or the onsite waste tracking form is properly signed and dated.

The appropriate RMW Storage Facility operations personnel indicate acceptance of the shipment by placing dates and signatures on the appropriate spaces on the Uniform Hazardous Waste Manifest or the onsite waste tracking form. Following acceptance of the waste, the RMW Storage Facility operations personnel ensure the following.

- Significant discrepancies are noted on the Uniform Hazardous Waste Manifest or an onsite waste tracking form.
- The transporter is given a signed and dated copy of the Uniform Hazardous Waste Manifest or the onsite waste tracking form.
- A copy of the Uniform Hazardous Waste Manifest and other waste tracking forms are forwarded to the Solid Waste Engineering organization for distribution within 30 days to the offsite generator and/or the onsite generating unit.

The Uniform Hazardous Waste Manifests, onsite waste tracking forms, engineering change notices, and all waste characterization information are maintained on file for 5 years or until closure of the RMW Storage Facility (Chapter 12.0).

2.8.4 Response to Significant Discrepancies [B-8b]

In the event that the waste package is determined not to be in compliance with the waste acceptance criteria (WHC 1988a), the applicable waste records, and/or WAC 173-303, the noncompliant condition could be resolved through the

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use of more than one of the following alternatives, depending on the seriousness of the condition as determined by the Solid Waste Engineering organization.

- Incorrect or incomplete entries on the Uniform Hazardous Waste Manifest or the waste tracking forms could be corrected or completed with concurrence of the offsite generator or onsite generating unit and Solid Waste Operations supervision. Corrections are made by drawing a single line through the incorrect entry. Corrected entries are initialed and dated by the individual making the correction.

- The waste packages could be held and the offsite waste generator or onsite generating unit could be requested to provide written instructions for use in correcting the condition before the waste is accepted or the waste packages could be returned as unacceptable.

- The RMW Storage Facility operations personnel could correct the condition.

- The offsite waste generator or onsite generating unit could be requested to correct the condition at the Hanford Facility before the waste is accepted.

- If a noncompliant mixed waste package is received from an offsite waste generator, and the waste package is nonreturnable because of condition, packaging, etc., the issue will be referred to the DOE-RL and Ecology for resolution as described in the waste acceptance document (WHC 1988a) if an agreement cannot be reached among the involved parties. Ecology will be notified if a discrepancy is not resolved within 15 days after receiving a noncompliant shipment.

- Serious or repeated instances of noncompliant conditions could result in a suspension of storage privileges.

2.8.5 Provisions for Nonacceptance of Shipment [B-8c]

Provisions for nonacceptance of shipments are discussed in the following sections.

2.8.5.1 Nonacceptance of Undamaged Shipment [B-8c(1)]. Radioactive and/or mixed waste shipped to the RMW Storage Facility will be approved before shipment. This ensures that only waste that can be stored is accepted by the RMW Storage Facility.

Discrepancies in the Uniform Hazardous Waste Manifest or waste tracking forms are handled in the manner prescribed in Section 2.8.2. If a discrepancy exists that cannot be resolved, as described in Section 2.8.2, the waste could be returned to the offsite generator or the onsite generating unit if the waste package is deemed safe for further transportation.

2.8.5.2 Activation of Contingency Plan for Damaged Shipment [B-8c(2)]. If a shipment arrives at the RMW Storage Facility in a condition that could present a hazard to public health or the environment, the building emergency plan is implemented as described in Appendix 7A.

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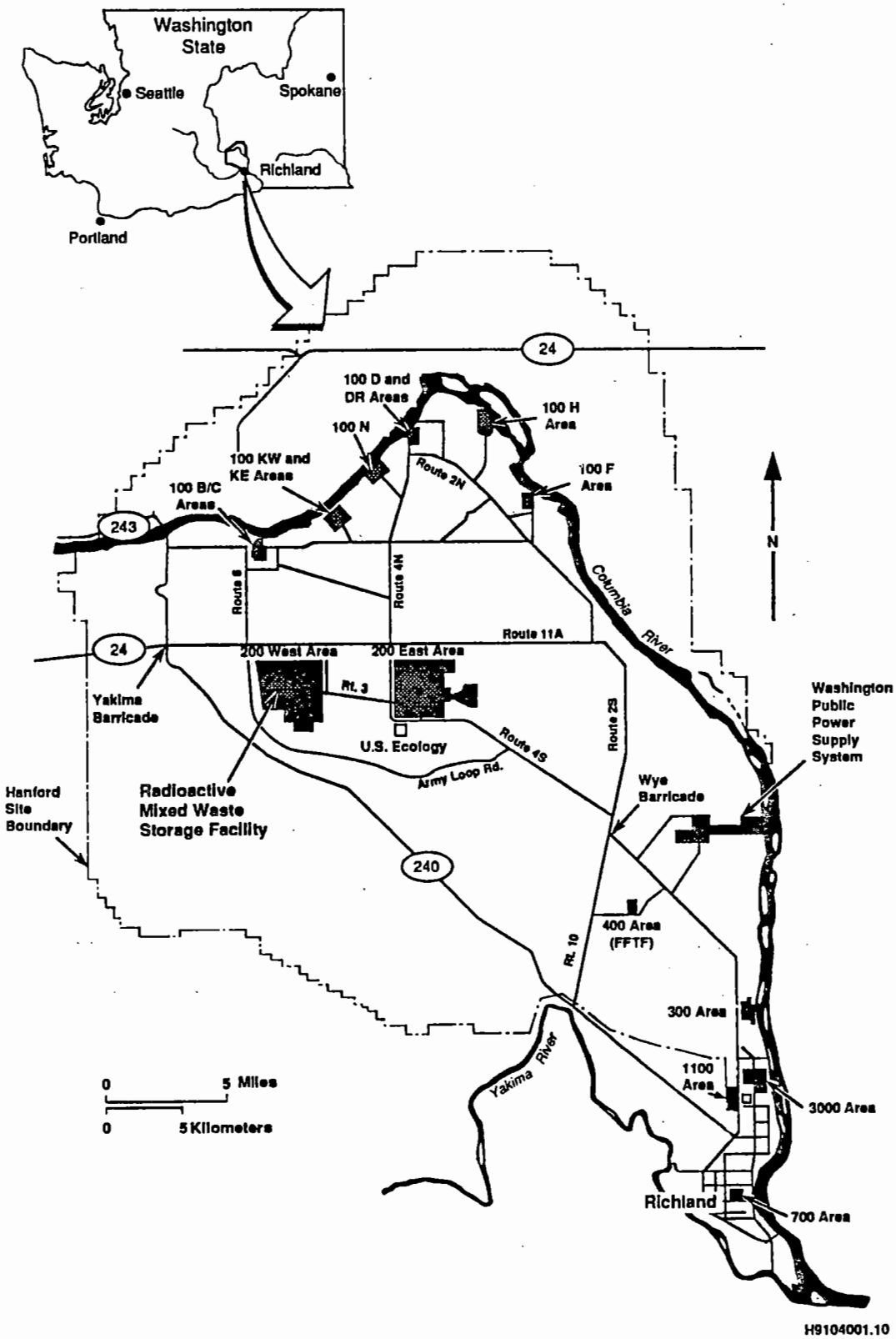


Figure 2-1. Hanford Site Location.

911022.2037

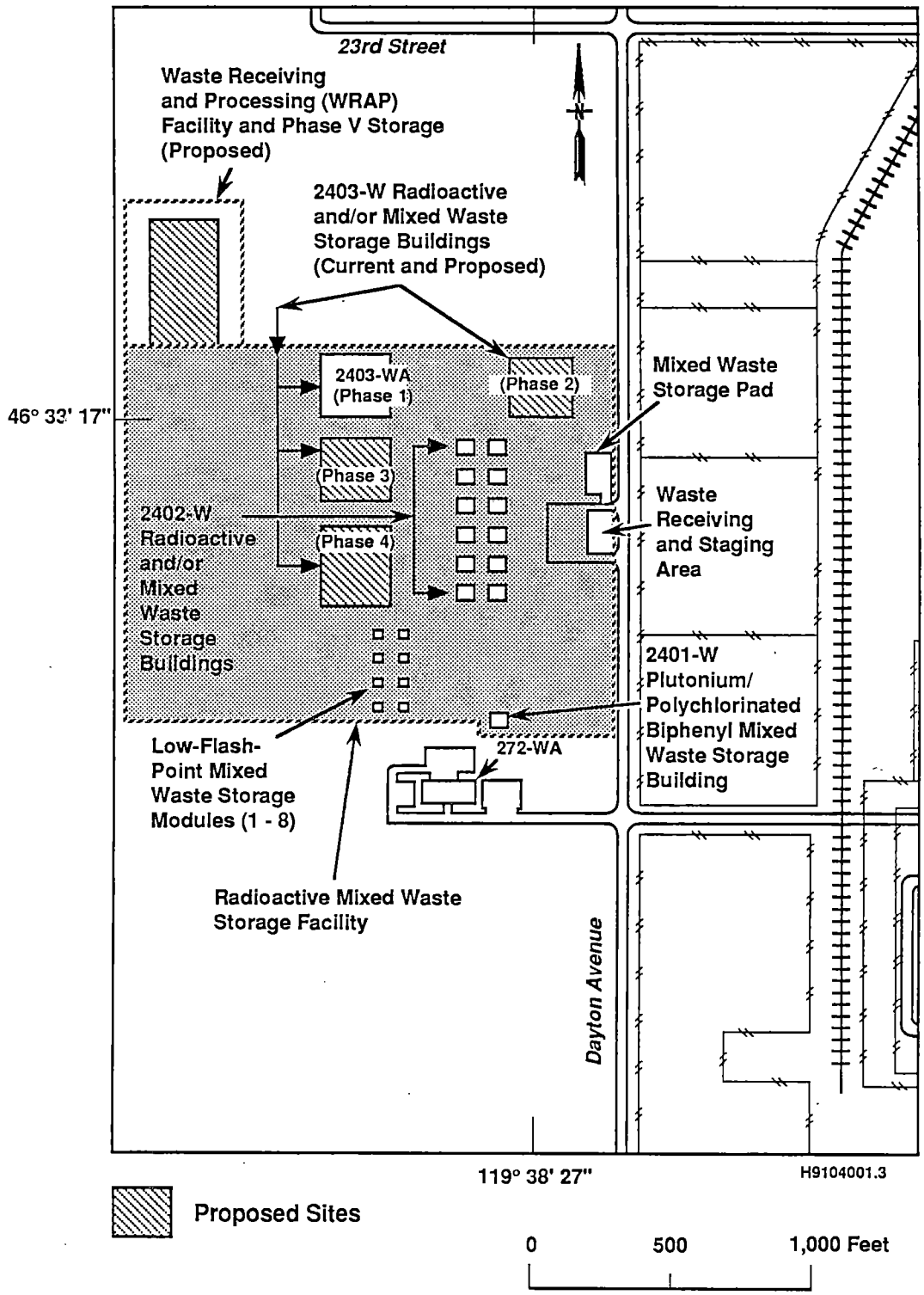


Figure 2-2. Radioactive Mixed Waste Storage Facility--Site Plan.

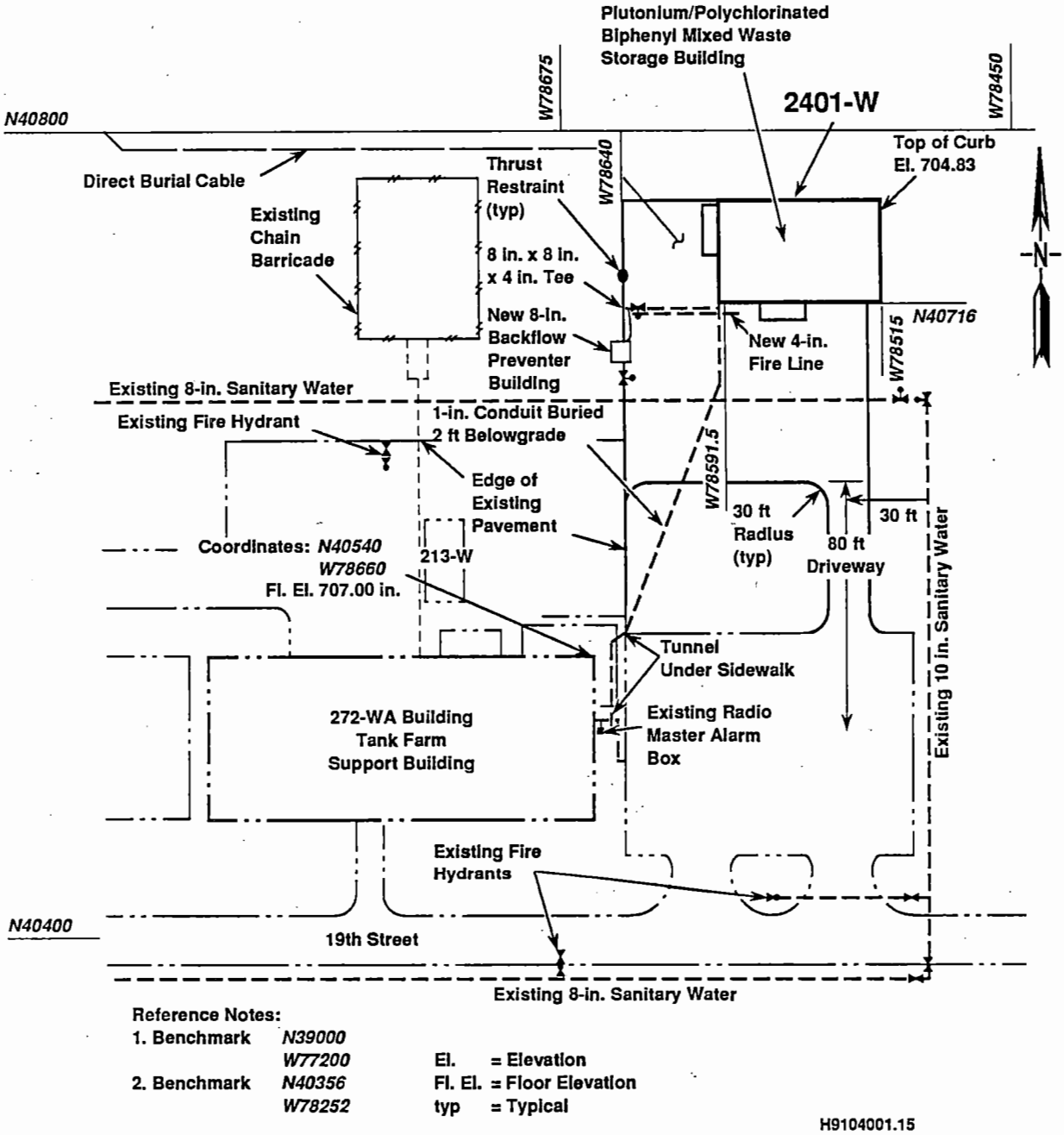


Figure 2-3. Plutonium/Polychlorinated Biphenyl Mixed Waste Storage Building (2401-W)--Site Plot Plan.

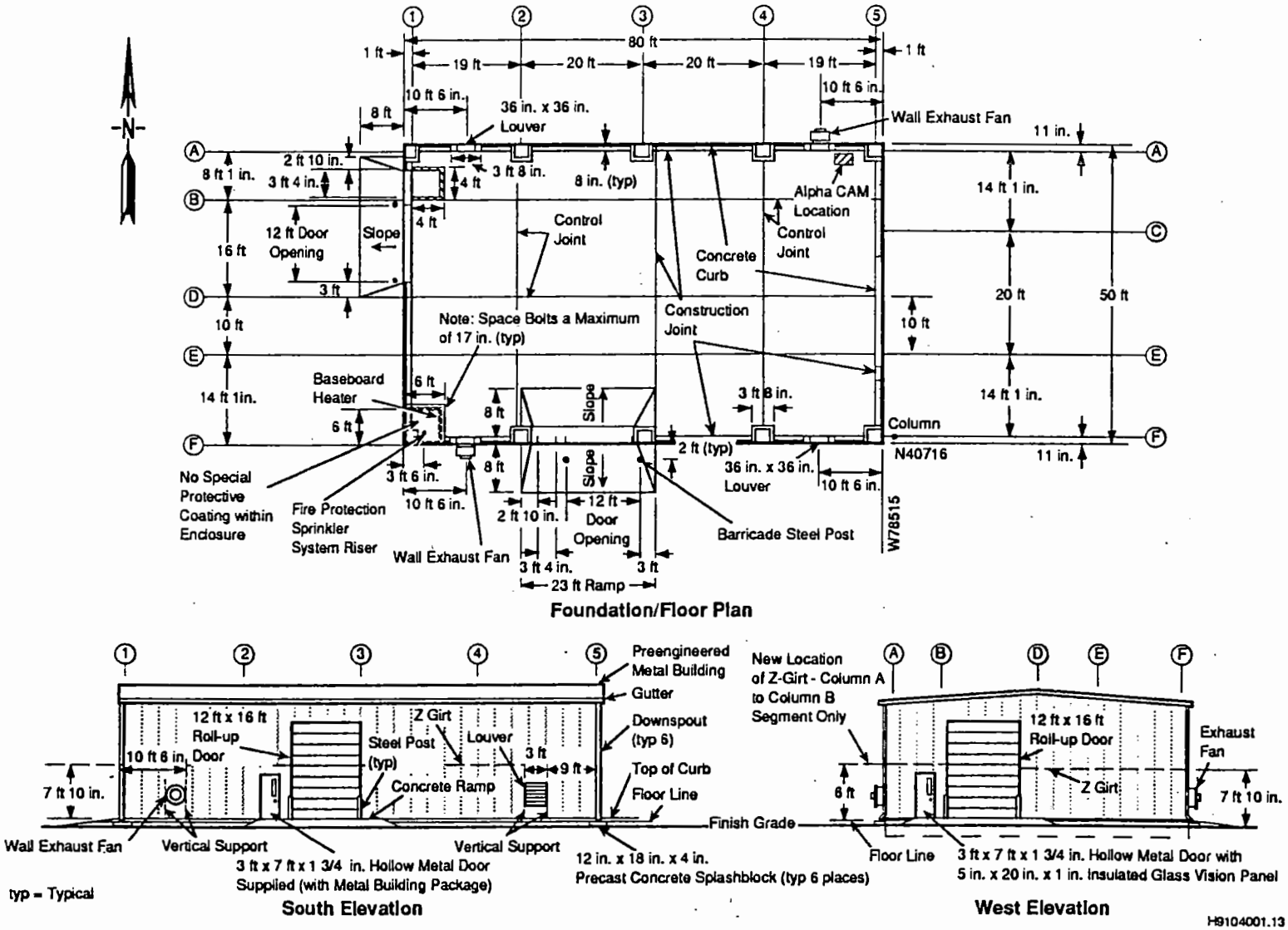


Figure 2-4. Plutonium/Polychlorinated Biphenyl Mixed Waste Storage Building (2401-W)--Plan and Elevations.

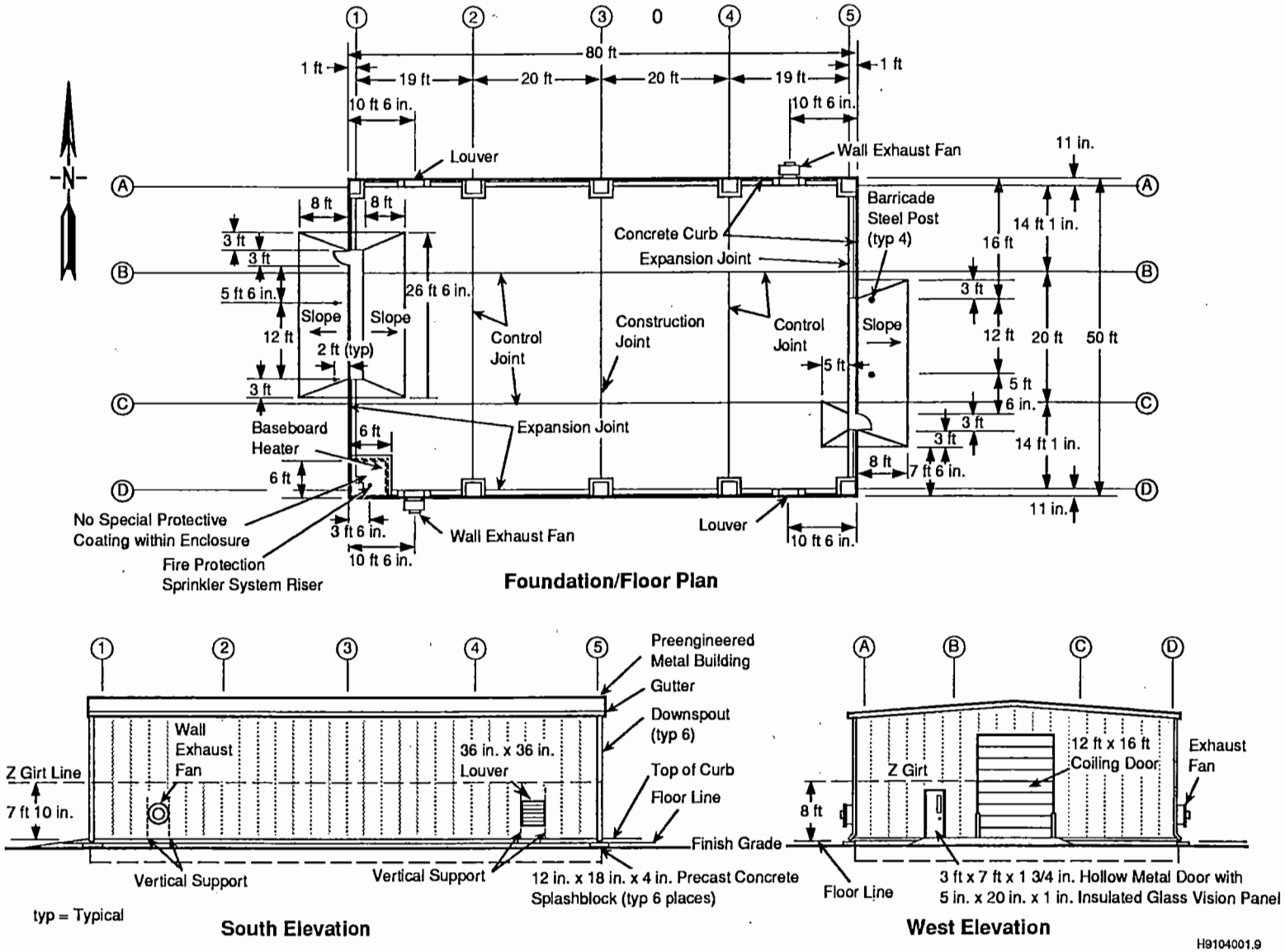


Figure 2-5. Radioactive and/or Mixed Waste Storage Buildings (2402-W and 2402-WB through 2402-WL)--Plan and Elevations.

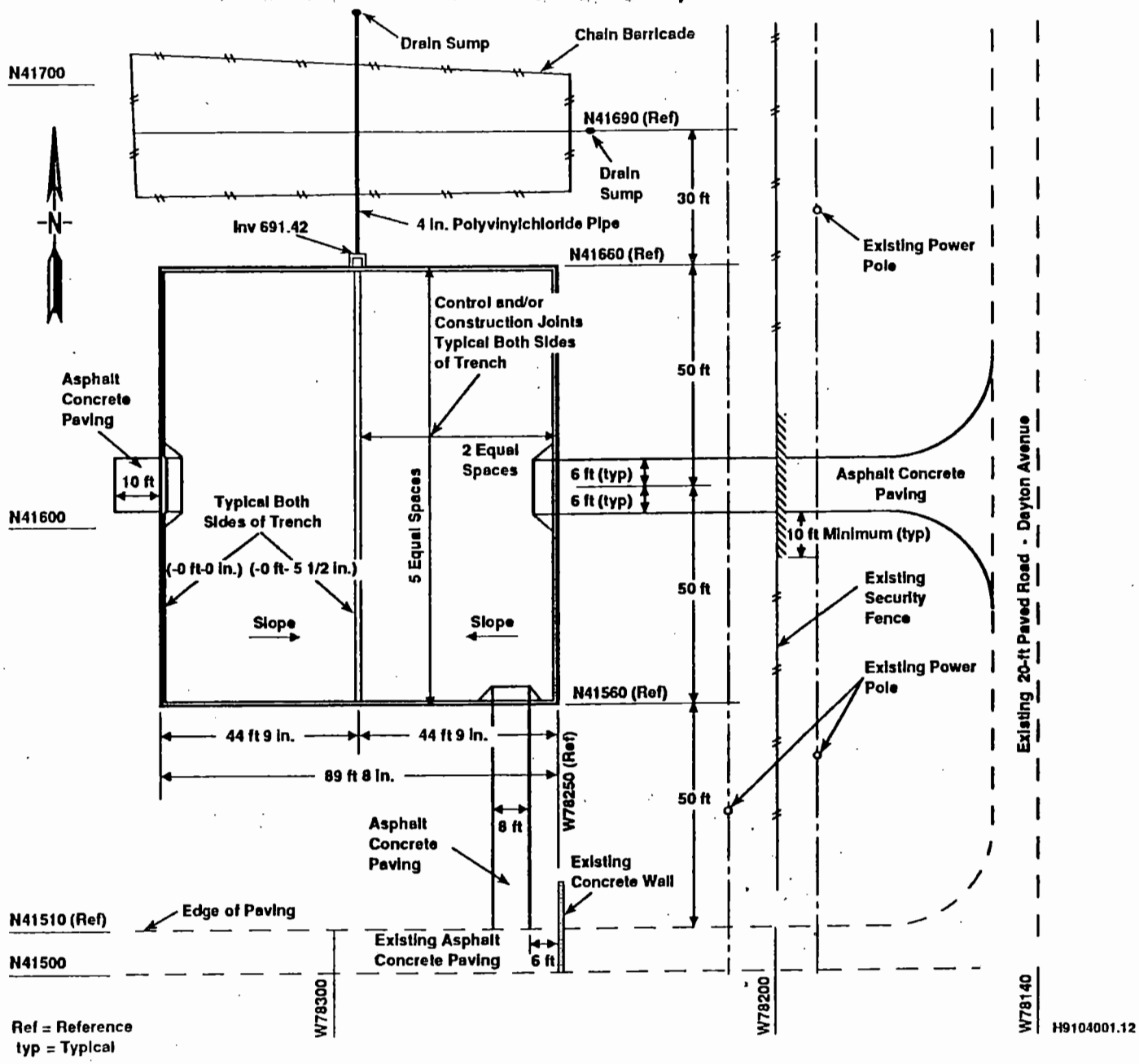


Figure 2-6. Mixed Waste Storage Pad--Civil Plan.

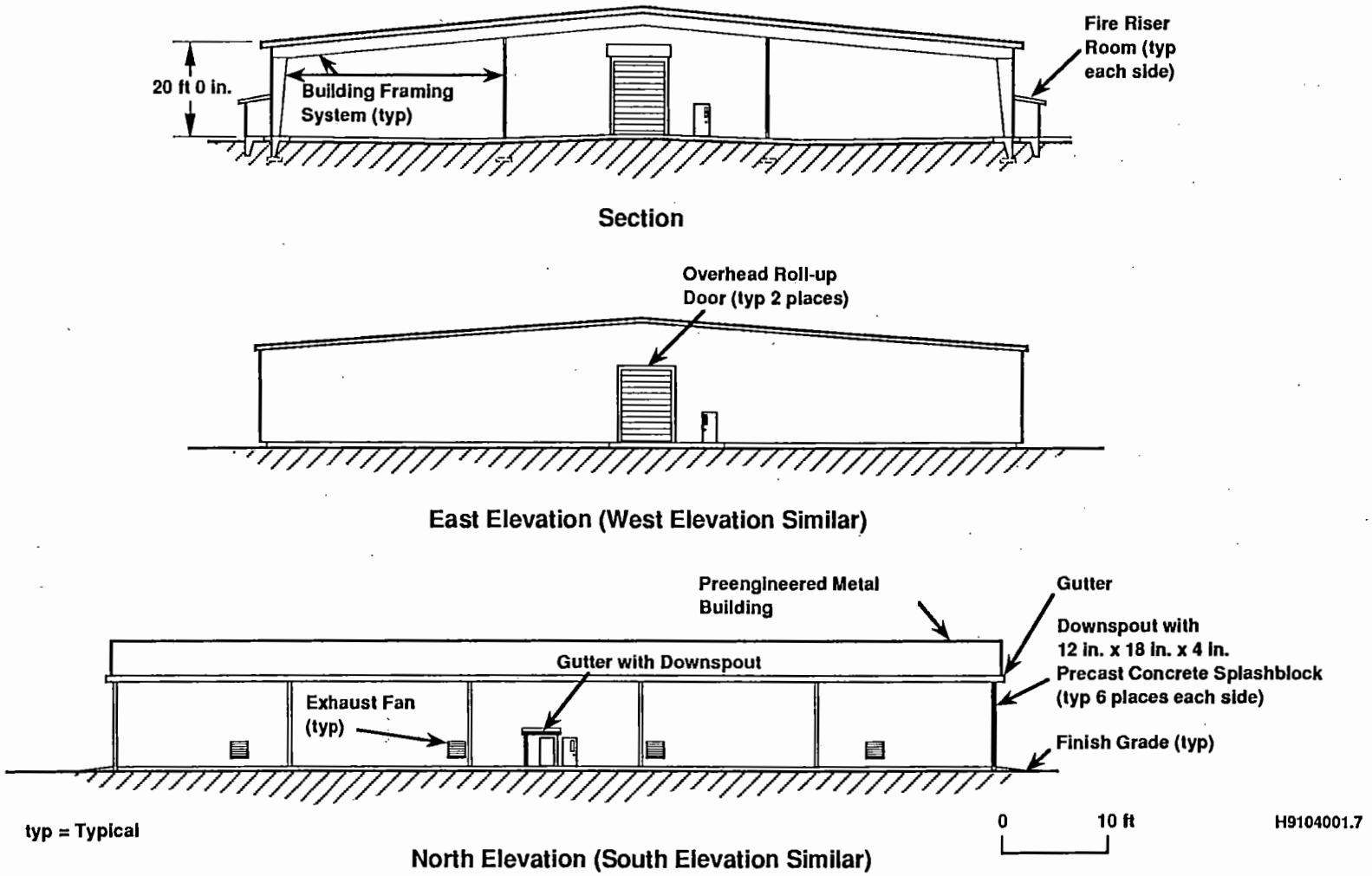


Figure 2-7. Radioactive and/or Mixed Waste Storage Building (2403-WA)--Elevations (Phase I).

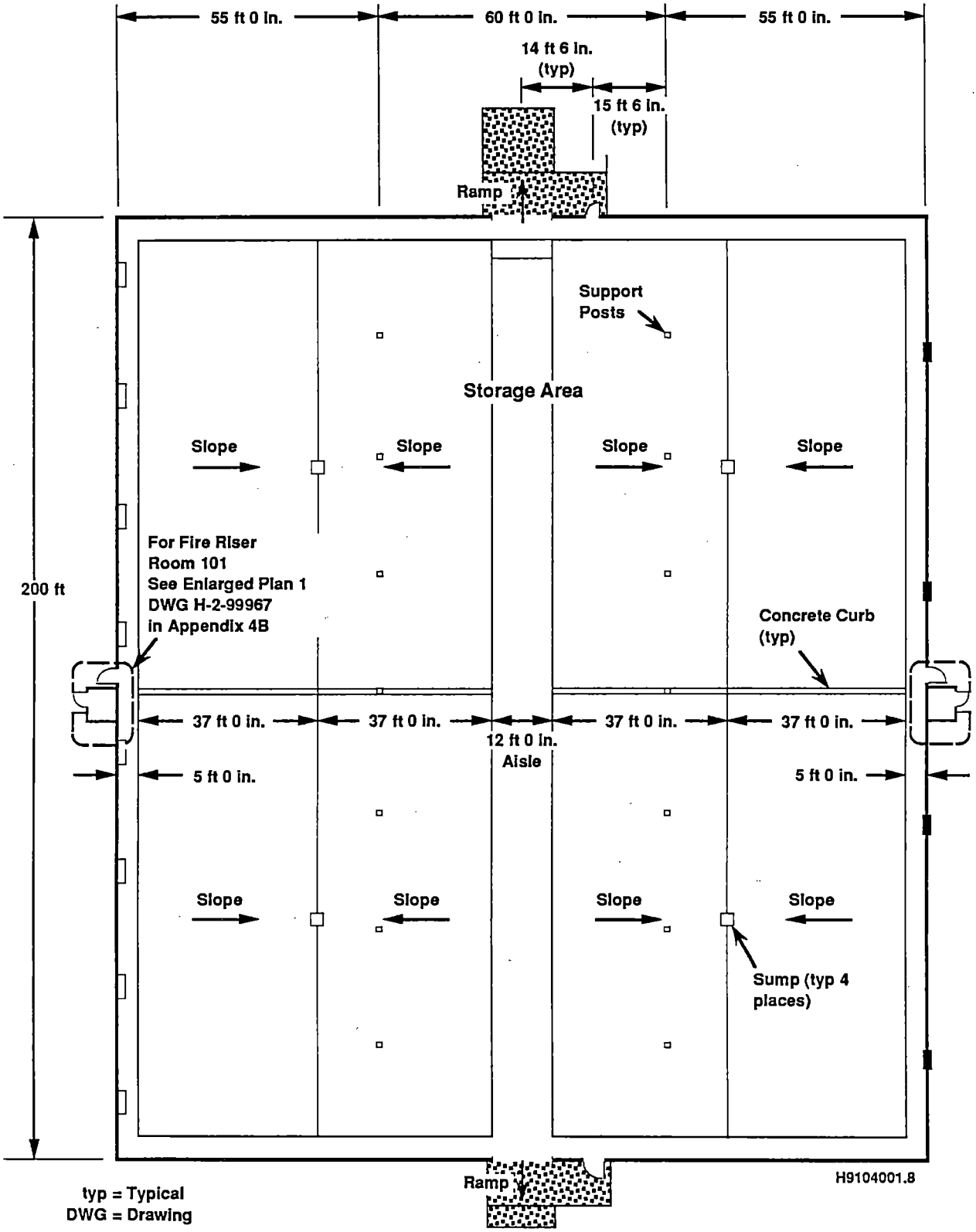


Figure 2-8. Radioactive and/or Mixed Waste Storage Building (2403-WA)--Plan (Phase I).

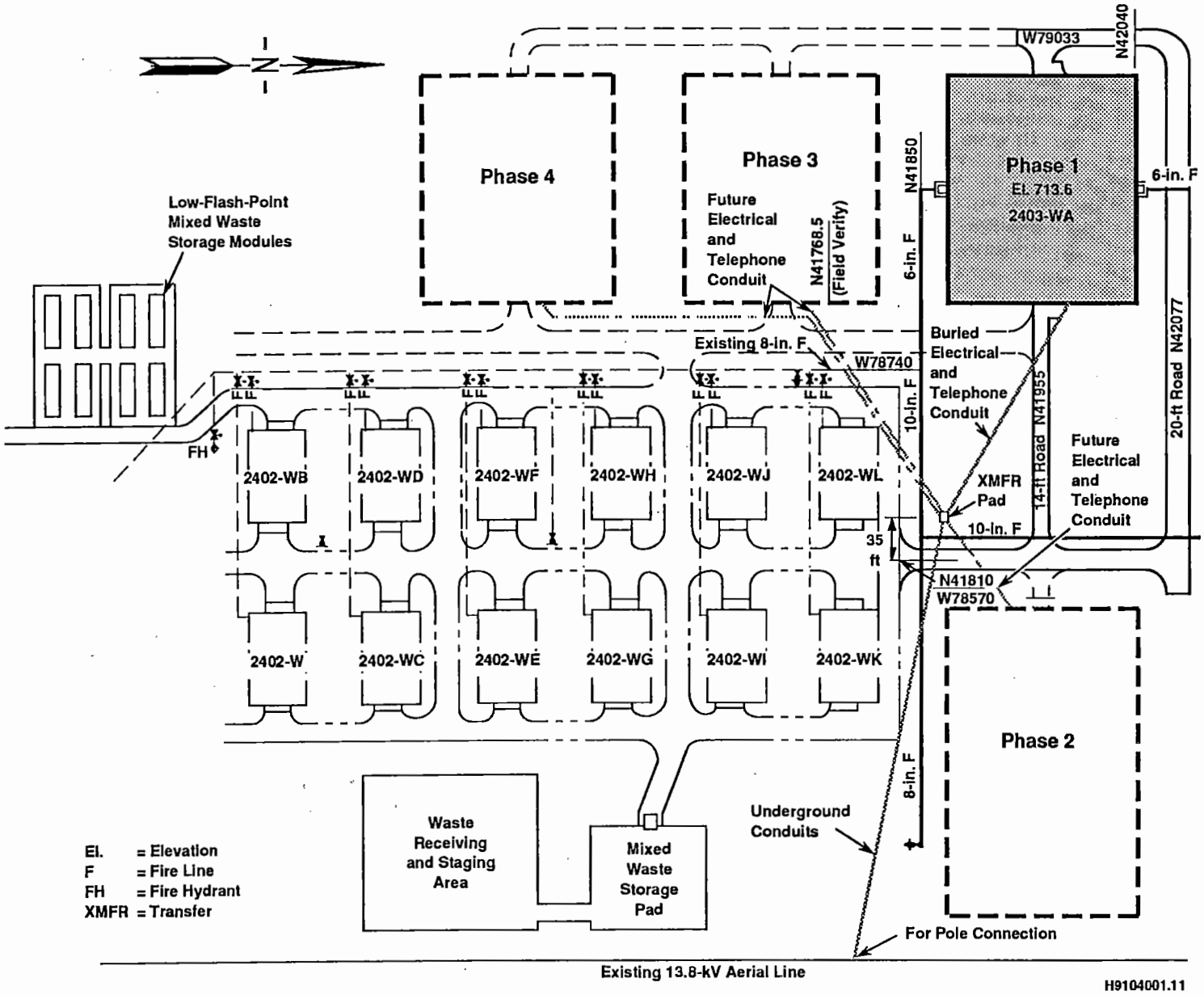


Figure 2-9. Radioactive and/or Mixed Waste Storage Building (2403-WA)--Civil and Electrical Plan (Phase I).

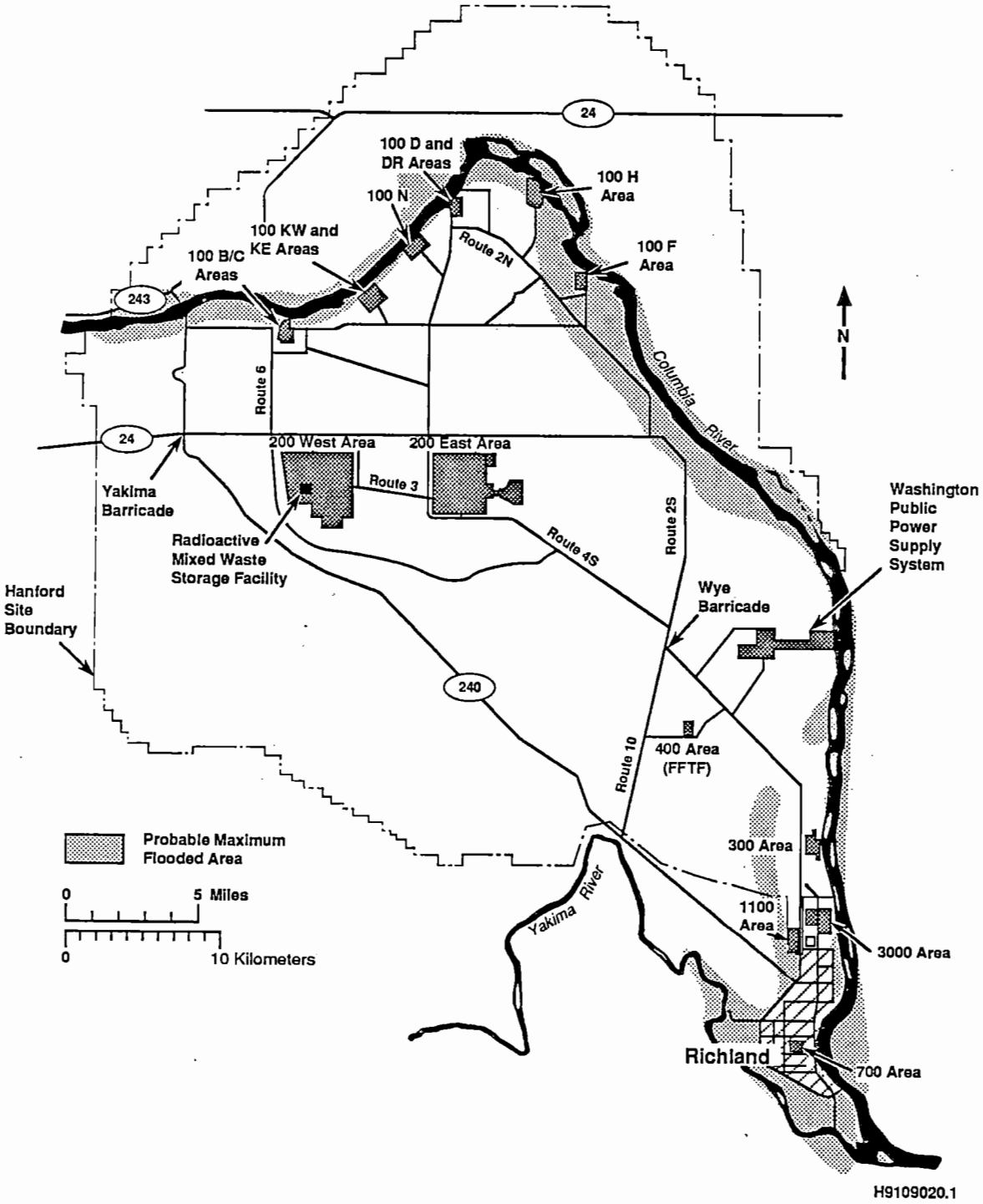
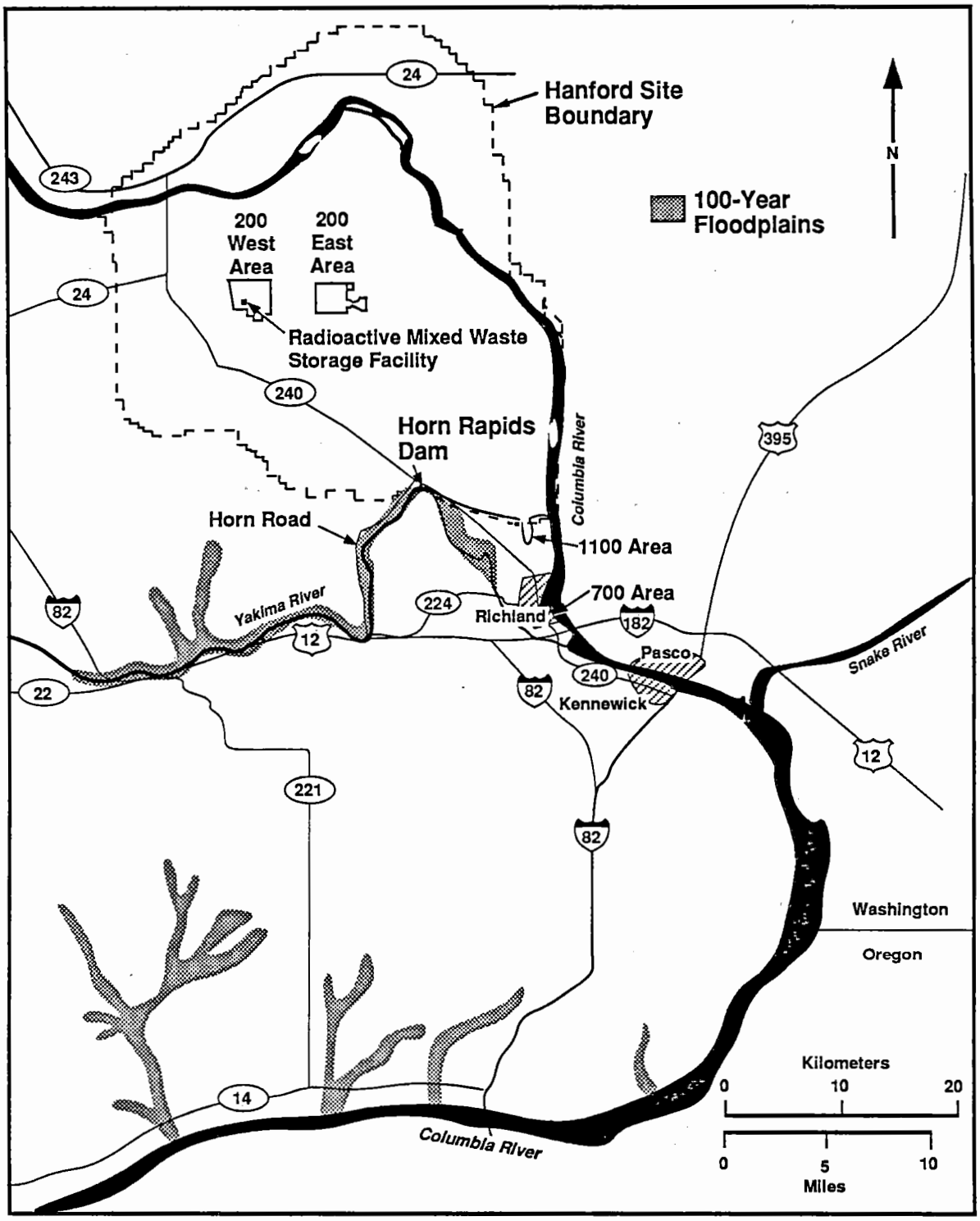


Figure 2-10. Columbia River Floodplain (probable maximum flood).



H9109020.2

Figure 2-11. Yakima River Floodplain.

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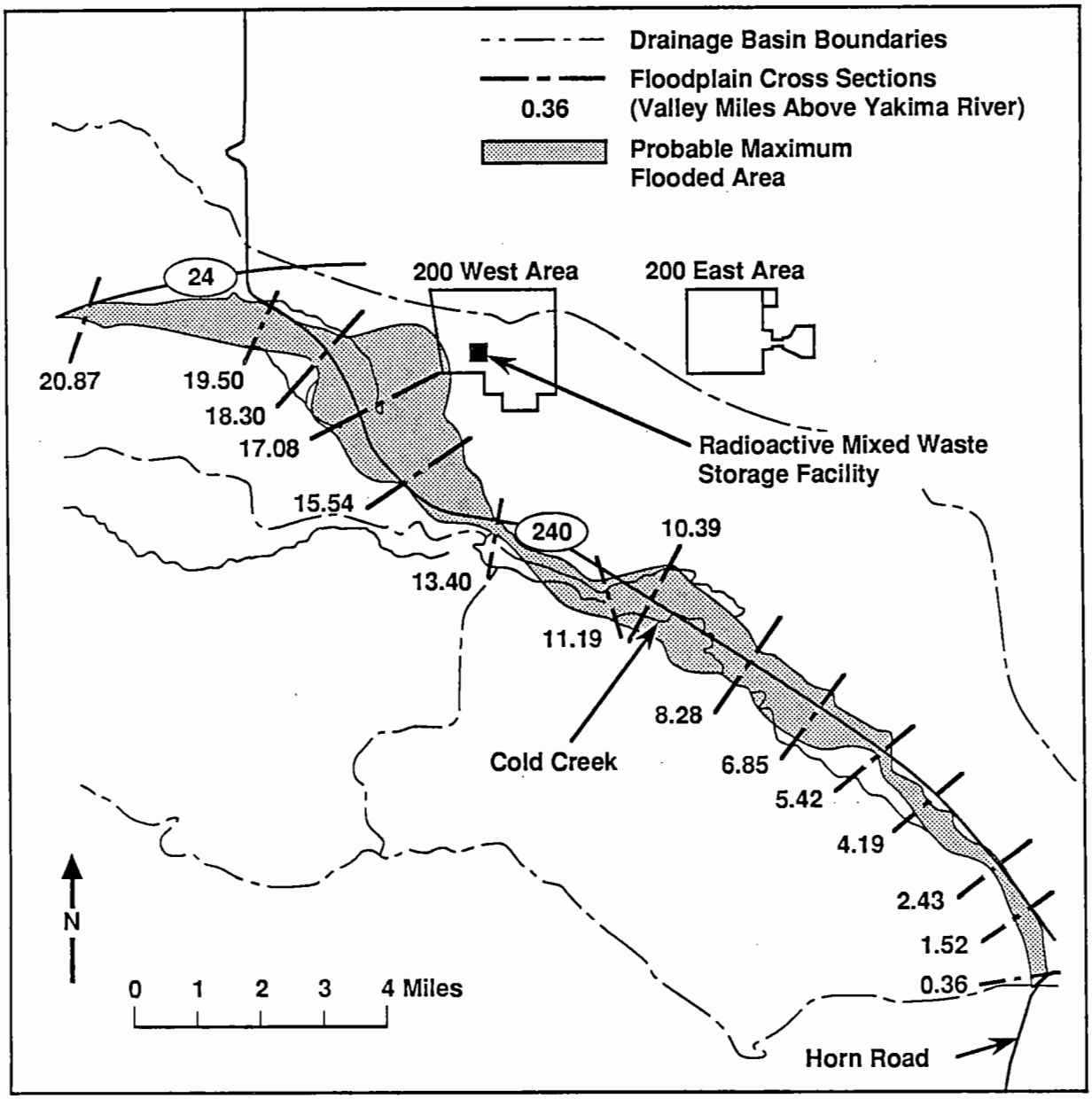

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Figure 2-12. Cold Creek Watershed Floodplain (probable maximum flood).

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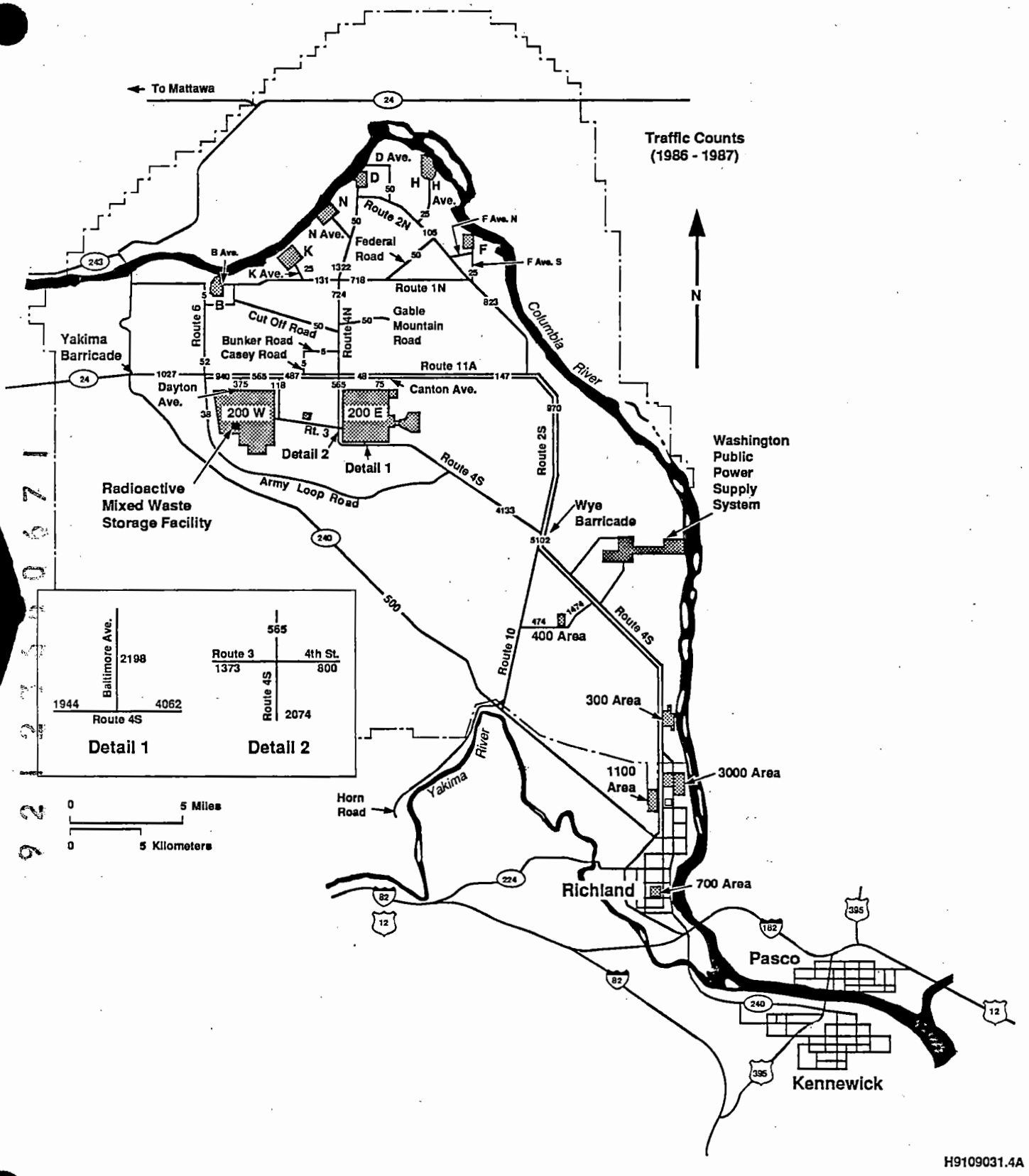

Figure 2-13. Estimated Traffic Volumes (vehicles per day).

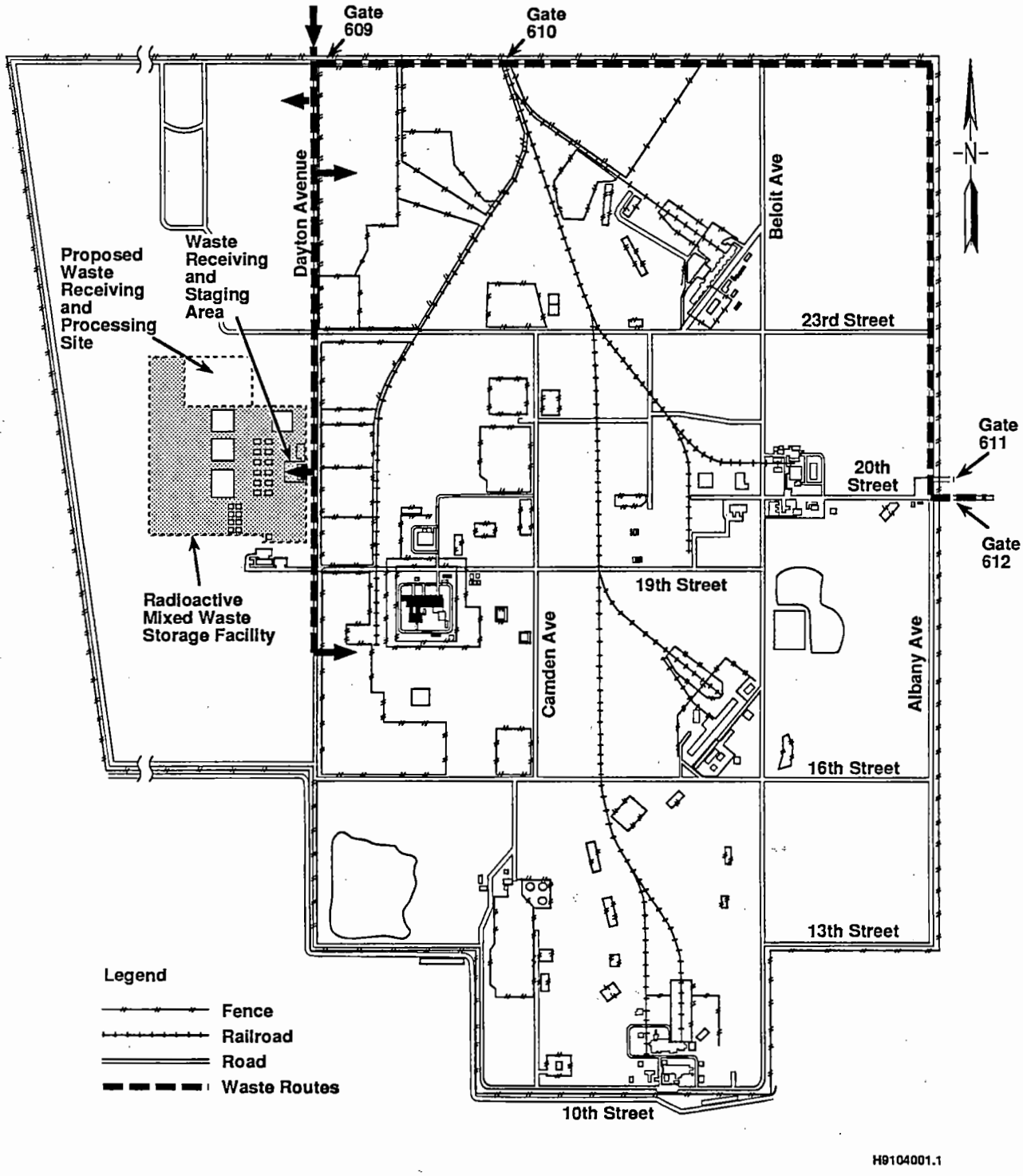

Figure 2-14. Waste Routes in the 200 West Area.

OCCURRENCE REPORT

Facility/Personnel Information

1. **OCCURRENCE REPORT NUMBER:**

2. **REPORT TYPE AND DATE:** **DATE** **TIME**

   [] Notification Report
   [] 10-Day Report
   [] Latest 10 Day Update
   [] Final

(Name of Facility)

Balance of Plant
(Facility Function Involved)

(Name of Laboratory Site or Organization)

(Facility Manager/Designee) (Org. Code)

(Job Title) (Phone No.)

(Originator) (Title)

(Organization) (Phone No.)

3. **OCCURRENCE CATEGORY:** []

4. **CONTRACTOR DIVISION OR PROJECT:** []

5. **DOE PROGRAM OFFICE:** []

6. **SYSTEM, BLDG., OR EQUIPMENT:** 7. **UNCI:**8. **PLANT AREA**

Figure 2-15. Typical Occurrence Report. (sheet 1 of 4)

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9. DATE AND TIME DISCOVERED:

10. DATE AND TIME CATEGORIZED:

DATE	TIME	PERSON NOTIFIED	ORG.

11. DOE-HQ NOTIFICATIONS:

12. OTHER NOTIFICATIONS:

13. SUBJECT OR TITLE OF OCCURRENCE:

14. NATURE OF OCCURRENCE: []

15. DESCRIPTION OF OCCURRENCE:

16. OPERATING CONDITIONS OF FACILITY AT TIME OF OCCURRENCE:

17. ACTIVITY CATEGORY: []

18. IMMEDIATE ACTIONS TAKEN AND RESULTS:

END OF NOTIFICATION REPORT

19. DIRECT CAUSE: []
20. CONTRIBUTING CAUSE(S): []
21. ROOT CAUSE: []

22. DESCRIPTION OF CAUSE:

23. EVALUATION: (By Facility Manager/Designee)

Figure 2-15. Typical Occurrence Report. (sheet 2 of 4)

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24. IS FURTHER EVALUATION REQUIRED? [] Yes [] No
IF YES, BEFORE FURTHER OPERATION? [] Yes [] No
BY WHOM:
BY WHEN:

25. CORRECTIVE ACTIONS:

TARGET COMPLETION DATE: COMPLETION DATE:

26. IMPACT ON ENVIRONMENT, SAFETY AND HEALTH:

27. PROGRAMMATIC IMPACT:

28. IMPACT UPON CODES AND STANDARDS:

29. FINAL EVALUATIONS AND LESSONS LEARNED:

30. SIMILAR OCCURRENCE REPORT NUMBERS:

31. DOE FACILITY REPRESENTATIVE INPUT:

32. DOE FACILITY REPRESENTATIVE NAME AND POSITION:

APPROVED BY: _____

Balance of Plant Facility Manager Signature Approval required for all 10-Day and 10-Day Update Reports.

Figure 2-15. Typical Occurrence Report. (sheet 3 of 4)

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OCCURRENCE REPORT NUMBER:

OCCURRENCE REPORT TYPE:

OCCURRENCE REPORT DATE:

33. QUEST SUBJECT CODE:

34. QUEST CONTRIBUTING FACTOR CODE:

35. QUEST ROOT CAUSE CODE:

36. PRIORITY/SEVERITY CATEGORY:

37. FACILITY MANAGERS ORGANIZATION CODE:

38. SIGNATURES:

Approved by: _____ Date: _____
Facility Manager

Reviewed by: _____ Date: _____
Impacted Oversight Organization

Reviewed by: _____ Date: _____
Impacted Oversight Organization

Reviewed by: _____ Date: _____
Impacted Oversight Organization

Reviewed by: _____ Date: _____
ADC/UCNI

Figure 2-15. Typical Occurrence Report. (sheet 4 of 4)

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3.0 WASTE CHARACTERISTICS [C]

This chapter provides information on the chemical, biological, and physical characteristics of the waste stored at the RMW Storage Facility. A waste analysis plan is included to describe the methodology for determining waste types. Although the storage of radioactive waste is not within the scope of this permit application, the information is provided for general knowledge where appropriate.

The discussion of RMW Storage Facility waste characteristics contained in Section 3.1 is based on an evaluation of offsite generators and onsite generating unit records. The offsite generators and the onsite generating units are responsible for identifying and providing waste designations in accordance with WAC 173-303. The offsite generators and onsite generating units are assisted by the Solid Waste Engineering organization as described in Section 3.2.

3.1 CHEMICAL, BIOLOGICAL, AND PHYSICAL ANALYSIS [C-1]

Hanford Facility waste generating activities are conducted under a common EPA/State identification number (Chapter 2.0, Section 2.1). All waste management activities carried out under the assigned identification number are considered to be 'onsite' as defined in WAC 173-303.

Any waste listed in WAC 173-303-9903, or any dangerous waste mixture (WAC 173-303-084), or any characteristic waste (WAC 173-303-090) can be generated on the Hanford Facility and received by the RMW Storage Facility if such waste is mixed. Table 3-1 lists the waste codes of material stored at the RMW Storage Facility. Waste normally can be characterized into Ecology waste code designations 'U', 'P', 'F', 'D', 'WP', 'WC', or 'WT' by the use of manufacturers' product information, material safety data sheets, laboratory analysis, and such references as 40 CFR 302.4, *Dangerous Properties of Industrial Materials* (Sax 1984), *Hawley's Condensed Chemical Dictionary* (Sax and Lewis 1987), and *Registry of Toxic Effects of Chemical Substances* (NIOSH 1990). Waste also is characterized in accordance with the requirements of 40 CFR 261. Because of the nature of the waste managed at the RMW Storage Facility, no biological characterization is necessary.

Some waste regulated under the *Toxic Substances Control Act of 1976* (e.g., polychlorinated biphenyls) also can be received and stored at the RMW Storage Facility.

It is the responsibility of the offsite generators and onsite generating units to completely and correctly identify the dangerous constituents of their waste (Table 3-1). Based on waste identification information provided by the offsite generator and onsite generating units, the Solid Waste Engineering organization designates the waste in accordance with WAC 173-303-070. The Solid Waste Engineering organization maintains copies of the following records for each waste stored at the RMW Storage Facility, as applicable:

- All records providing a description of the waste
- Documentation identifying the dangerous characteristics of the waste
- The basis for waste designation
- Laboratory reports with chemical and physical analysis of samples
- Manifests or onsite waste tracking forms.

The offsite generators, onsite generating units, and the Hanford Central Waste Complex maintain copies of the manifests, onsite waste tracking forms, and associated documentation (e.g., chemical waste disposal analysis letters) identifying the waste characteristics and assigned waste designations.

Radioactive and/or mixed waste stored at the RMW Storage Facility is packaged in a system of multiple barriers selected and specifically engineered to isolate the waste content from humans and the environment. The waste is confined in package systems that can include several plastic, metal, and glass containers and other materials to provide additional barriers to the environment or to make the waste more compatible with other barrier materials. Specific package barrier information is provided in Chapter 4.0.

As noted previously, waste characteristics information is based on records developed by the offsite generator or onsite generating units, not by laboratory analysis of samples obtained from the RMW Storage Facility. Representative sampling would be difficult to achieve at the RMW Storage Facility. In addition, the risk of exposing sampling personnel to radioactivity would violate objectives to keep such exposure ALARA. The waste analysis plan contained in Section 3.2 describes recent controls established to ensure that waste descriptions from the offsite generator and onsite generating units are accurate and verifiable.

In general, each package is unique, and containers continuously are being accepted for storage. The RMW Storage Facility accepts waste having the waste codes identified in Table 3-2, excluding explosive, shock-sensitive (Chapter 4.0, Section 4.1.4.1), and class IV oxidizer waste [in waste volumes greater than 10 pounds (22 kilograms)].

Some radioactive and/or mixed waste placed in the Low-Level Burial Grounds will be retrieved and stored at the RMW Storage Facility or processed when the WRAP Facility becomes operational. This waste, accepted at the Low-Level Burial Grounds before November 23, 1987, generally falls into one of the following categories:

- Low-level beryllium alloy
- Low-level perchloroethylene
- Low-level mercury
- Lead containment shields and lead from decommissioned systems

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- Low-level, miscellaneous labpack chemicals
- Radioactive scintillation liquid
- Radioactive liquid waste
- Primary and secondary quench salt bath sludge.

Further discussion of these categories is continued in the Low-Level Burial Grounds Part B permit application (DOE-RL 1989).

3.1.1 Containerized Waste [C-1a]

Under current operating conditions, radioactive and/or mixed waste stored at the RMW Storage Facility is packaged in double containment or otherwise packaged to ensure isolation from the environment. Chapter 4.0, Section 4.1.1, provides details of the container system.

3.1.2 Waste in Tank Systems [C-1b]

Operation of the RMW Storage Facility does not involve the storage of dangerous waste in tank systems. Therefore, the requirements of WAC 173-303-640 are not applicable to the RMW Storage Facility.

3.1.3 Waste in Piles [C-1c]

Operation of the RMW Storage Facility does not involve the placement of dangerous waste in piles. Therefore, the requirements of WAC 173-303-660 are not applicable to the RMW Storage Facility.

3.1.4 Landfilled Waste [C-1d]

Operation of the RMW Storage Facility does not involve placement of dangerous waste in landfills. Therefore, the requirements of WAC 173-303-665 are not applicable to the RMW Storage Facility.

3.1.5 Waste Incinerated and Waste Used in Performance Tests [C-1e]

Operation of the RMW Storage Facility does not involve the incineration of dangerous waste or the use of waste in performance tests. Therefore, the requirements of WAC 173-303-670 are not applicable to the RMW Storage Facility.

3.1.6 Waste to be Land Treated [C-1f]

Operation of the RMW Storage Facility does not involve the land treatment of dangerous waste. Therefore, the requirements of WAC 173-303-655 are not applicable to the RMW Storage Facility.

3.2 WASTE ANALYSIS PLAN [C-2]

The purpose of the waste analysis plan is to provide a description of how waste destined for the RMW Storage Facility is identified by the offsite generator or onsite generating unit to ensure proper handling and disposal.

Radioactive and/or mixed waste (and transuranic waste containing dangerous constituents) generated on the Hanford Facility and at other U.S. Department of Defense and U.S. Department of Energy sites can be transported to the RMW Storage Facility for storage and to the WRAP Facility for subsequent treatment. Radioactive and/or mixed waste normally is received in U.S. Department of Transportation-approved 55-gallon (208-liter) steel drums but also can be received in other containers approved by the Solid Waste Engineering organization. No radioactive and/or mixed waste is shipped to the RMW Storage Facility in unpackaged truckload quantities (bulk loads).

All offsite generators or onsite generating units wanting to store radioactive and/or mixed waste at the RMW Storage Facility are required to submit written requests describing the waste for evaluation. These requests must be accompanied by a physical, radiological, and chemical description of the waste. If the Solid Waste Engineering organization determines that the waste contains potentially dangerous constituents, the waste must be completely and accurately characterized in accordance with Ecology regulations before approval for storage is granted. The information required to complete this characterization, as described in Section 3.2.5, is provided by the offsite generator or onsite generating units based on product or process knowledge or on sampling and analytical testing as described in Sections 3.2.6 and 3.2.7, respectively.

After the Solid Waste Engineering organization reviews all required information submitted by the offsite generator or onsite generating unit and determines the Ecology designation code(s) for the dangerous constituents present, the offsite generator or onsite generating unit receives written notification of (1) approval to store the waste at the RMW Storage Facility; (2) waste treatment, packaging, and labeling requirements; and (3) a storage approval number. This notification simultaneously is transmitted to the offsite generator or onsite generating unit and the RMW Storage Facility personnel. Waste is not accepted for storage without prior notification of approval from the Solid Waste Engineering organization.

Until the WRAP Facility is operational, the contents of selected radioactive and/or mixed waste packages will not be opened and sampled because of the radiological hazards and radiation exposure that would be incurred by personnel. This is consistent with "Federal Radiation Protection Guidance for Occupational Exposure" (52 FR 17), which states that "there should not be any

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occupational exposure of workers to ionizing radiation without the expectation of an overall benefit from the activity causing the exposure." The administrative controls discussed in this section are considered to be sufficient to ensure adequate protection of human health and the environment. An overall benefit is not expected from the opening and sampling of radioactive and/or mixed waste packages. Therefore, it is the responsibility of the offsite generator or onsite generating unit to accurately characterize their own radioactive and/or mixed waste to meet regulatory requirements.

Characterization of a waste stream involves quantifying the level of radioactivity and the physical and chemical properties of the waste stream. Determining the level of radioactivity of a waste stream is important for safety, for determining the packaging methods, and for the ultimate destination of the waste. Physical and chemical analysis of generated waste is required whenever the identification of potential waste constituents is not sufficient for waste characterization.

Incomplete knowledge of materials and processes that produce the waste results in the waste stream being rejected for storage by the Solid Waste Engineering organization. Offsite generator or onsite generating units are required to certify the composition of radioactive and/or mixed waste on shipping manifest records. Certifying the composition requires laboratory analysis if other documentation is inadequate.

The offsite generator or onsite generating unit are required to identify radioactive and/or mixed waste in accordance with waste acceptance criteria (WHC 1988a). The approach for identifying all dangerous constituents in low-level waste and for analyzing this information is described in the following sections.

3.2.1 Information Source

Offsite generators or onsite generating units wanting to store radioactive and/or mixed waste at the RMW Storage Facility solely are responsible for correctly and completely identifying the dangerous constituents of their waste and for disclosing this information to the Solid Waste Engineering organization to ensure proper waste disposition. Generally, information pertaining to the dangerous constituents in waste is readily available to, and well documented by, the offsite generator or onsite generating unit.

The nature, component, and dangerous constituents of the waste generally are known through process knowledge. In cases where information pertaining to the dangerous constituents in the mixed waste is not well known or documented, the offsite generator or onsite generating unit, as required by the Solid Waste Engineering organization, is responsible for performing sampling and analysis to obtain the information required to characterize the waste (as described in Sections 3.2.6 and 3.2.7).

3.2.2 Waste Disposal Analysis

The Solid Waste Engineering organization reviews the information supplied by the offsite generator or onsite generating unit. If the information is complete, accurate, and a proper hazard code(s) designation is made, the Solid Waste Engineering organization provides (1) written packaging instructions to the offsite generator or onsite generating unit based on waste packaging, storage, and disposal requirements for waste management; (2) written approval to the offsite generator or onsite generating unit to store properly packaged waste at the RMW Storage Facility; and (3) storage and handling information to the RMW Storage Facility operations personnel.

If the information provided by the offsite generator or onsite generating unit is incomplete and/or inaccurate, the Solid Waste Engineering organization prescribes sampling and analytical testing methods, as described in Sections 3.2.6 and 3.2.7, to properly characterize the dangerous constituents in the waste before approving the storage of the waste at the RMW Storage Facility.

3.2.3 Waste Shipment and Inspection

On receipt at the RMW Storage Facility, waste packages are visually and radiologically inspected (exterior only), and the accompanying documentation is reviewed. Any discrepancies found are either (1) corrected by the RMW Storage Facility operations personnel before acceptance of the waste, (2) held for correction by the offsite generator or onsite generating unit before acceptance of the waste, or (3) returned to the offsite generator or onsite generating unit for correction (Chapter 2.0, Section 2.8). Waste packages are not opened, because personnel could incur exposure to radiological hazards and radiation, thereby violating ALARA.

3.2.4 Oversight and Certification

The Solid Waste Engineering organization performs assessments of offsite generators or onsite generating units to certify that the offsite generator or onsite generating unit adequately have characterized and quantified the waste being shipped to the RMW Storage Facility, that the waste is being packaged properly for storage, and that the waste has a manifest or an onsite waste tracking form before shipment. Assessments currently are scheduled to be performed annually, and the schedule could be increased or decreased according to waste shipment frequency.

The assessment program for an offsite generator or onsite generating unit consists of initial assessments and scheduled follow-up assessments of all radioactive and/or mixed waste offsite generator or onsite generating units using the RMW Storage Facility. An initial assessment is conducted to certify that new offsite generators or onsite generating units meet the waste acceptance requirements at the RMW Storage Facility. The initial assessment also is conducted to certify that new offsite generators or onsite generating units meet the Hanford Facility waste acceptance criteria (WHC 1988a). The

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assessment program will evaluate the accuracy of the waste determinations made by the offsite waste generator or onsite generating unit. The Solid Waste Engineering organization can require verification of the waste determination if deemed necessary. Verification can be by chemical and physical analysis or by other methods approved by the Solid Waste Engineering organization. Successful completion of the initial assessment is documented by letter to offsite generators or onsite generating units. Offsite generators or onsite generating units must notify the Solid Waste Engineering organization if major changes are made to their generating processes or waste packaging procedures so that the need for supplemental assessments can be determined.

Follow-up assessments are conducted to ensure that the offsite generator or onsite generating unit is continuing to meet the waste acceptance criteria (WHC 1988a). An annual schedule for follow-up assessments is developed. More frequent assessments could be scheduled for individual offsite generator or onsite generating units, depending on the number of noncompliant waste packages received or based on the complexity of waste packaging.

A team selected by the Solid Waste Engineering organization conducts the assessments. Selection of the assessment team members is based on qualifications, familiarity with the waste stream being assessed, experience in solid waste management, and training and abilities in specific areas pertinent to the offsite generator or onsite generating unit being assessed. The background and experience of the assessment team are matched to the individual offsite generator or onsite generating unit, to the extent practical. In general, the assessment team consists of individuals who have experience and knowledge of the Hanford Facility radioactive solid waste requirements and practices. The assessment team members must have hazardous material coordinator training, must have the position title of advanced engineer/scientist or higher, and must be within the Solid Waste Engineering organization.

An agenda and a checklist are developed by interaction with the offsite generator or onsite generating unit during the planning phases.

The assessment team determines whether additional documentation is required for performance of the assessment at the offsite generator or onsite generating unit. Support documents are provided, as necessary, to assist the offsite generator or onsite generating unit in meeting the requirements. Overall planning efforts are directed toward minimizing impacts to offsite generator or onsite generating unit operations.

The assessment team schedules an introductory meeting and meets with the offsite generator or onsite generating unit personnel that have responsibility for radioactive and/or mixed waste management. Following an introductory meeting, the assessment team performs an inspection of the waste handling practices of the offsite generator or onsite generating unit. This inspection includes all areas where low-level mixed waste is handled. The assessment team examines the work areas to determine if the waste is being handled in accordance with waste acceptance criteria (WHC 1988a). This includes inspections of waste containers; specific waste forms; packaging, marking, and labeling; and interviews with operators, as appropriate. If safe to do so,

individual waste packages are inspected to ensure that the waste form is packaged properly and in accordance with other applicable Hanford Facility procedures.

The assessment team completes a checklist with the cooperation of the key offsite generator or onsite generating unit personnel. To complete a checklist, the assessment team reviews the controls and procedures that are used by the offsite generator or onsite generating unit to comply with Hanford Facility waste acceptance criteria and the degree of personnel compliance to operating procedures. The records are examined to determine whether all required information about a given waste stream is recorded and maintained by the offsite generator or onsite generating unit. Personnel training records are examined to determine whether the personnel responsible for identifying and designating the waste are properly qualified. The assessment team establishes whether administrative controls are in place to ensure compliant operation of the offsite generator or onsite generating unit with applicable requirements. All records are examined for completeness and accuracy.

While completing a checklist, the assessment team enters 'N/A' for items not applicable to the offsite generator or onsite generating unit operations. An explanation is given for each 'NO' answer on a checklist. Any information to support the answers on a checklist is recorded as necessary. Discussions are held with the key personnel during completion of a checklist to ensure that recorded answers are accurate.

Following inspection of the offsite generator or onsite generating unit and completion of a checklist, a meeting is held with the offsite generator or onsite generating unit personnel to discuss the results of the inspection and checklist items. If disagreement exists on the answer to any checklist items, the contentious item(s) are resolved during the meeting and answers recorded on the checklist are modified as necessary.

The assessment team discusses with key personnel any items found to be deficient during the inspections or on completion of a checklist. The underlying cause of the deficiency is identified by the offsite generator or onsite generating unit and discussed. To the extent possible, deficiencies that can be corrected immediately are corrected during the concluding meeting. Plans to correct any remaining deficiencies are made by agreement of both parties. The assessment team provides assistance and documentation to aid the offsite waste generator or onsite waste generating unit in correcting deficiencies. Agreements and schedules for completion of corrective actions are documented by the assessment team to ensure rapid certification of corrective actions.

At the concluding meeting, the assessment team provides any necessary guidance to aid the offsite generator or onsite generating unit in the approval and acceptance of the waste. Unusual or special requirements relating to the packaging or marking of waste are discussed. In addition, the offsite generator or onsite generating unit provides a preliminary estimate of the annual volume of waste to be transported to the RMW Storage Facility.

A letter of approval is issued to the offsite waste generator or onsite waste generating unit following successful completion of the assessment. If the assessment conducted was an initial assessment of a new offsite generator or onsite generating unit, the Solid Waste Engineering organization recommends to the DOE-RL that a radioactive material number be issued. The approval letter discusses any deficiencies not corrected during the assessment and documents the agreement made for correcting deficiencies. The offsite generator or onsite generating unit is required to provide follow-up documentation on the completion of corrective actions for any deficiencies. Verification of corrective actions is performed in accordance with an agreed-to schedule. If the assessment team determines that the management practices of the offsite generator or onsite generating unit are not acceptable, the waste is not accepted at the Hanford Facility until the deficiencies are corrected (Section 3.2.9).

Records generated through the assessment program include the following, as applicable:

- Assessment schedule
- Letter of intent
- Agenda
- Assessment checklist
- Letters of approval
- Corrective action documentation.

Copies of these documents will be maintained until closure of the RMW Storage Facility (Chapter 12.0).

3.2.5 Parameters and Rationale [C-2a]

If the offsite generator or onsite generating unit demonstrates to the satisfaction of Solid Waste Engineering that the waste is radioactive only, and contains no dangerous constituents, no further chemical hazards analysis is required. Examples are metal tools and scrap with induced radioactivity and radioactively contaminated paper, cloth, plastic, and dirt.

If the waste potentially contains dangerous constituents, the offsite generator or onsite generating unit is required to provide waste characterization information. The minimum waste characterization parameters that must be provided and the rationale for their selection are presented in Table 3-2.

Waste characterization information is required to ensure that the proper and complete designation of the dangerous constituents has been made in accordance with WAC 173-303-070. This information also is required to ensure that all hazards associated with the waste have been identified so that safe

handling techniques and proper waste disposition methods can be determined. Dangerous waste toxic mixtures (WT01 and WT02) of known chemical content are designated in accordance with toxicity calculations defined in WAC 173-303-084(5), which uses the National Institute for Occupational Safety and Health (NIOSH 1990) registry as well as other technical references.

3.2.6 Test Methods [C-2b]

Analytical testing by the offsite generator or onsite generating unit could be required by the Solid Waste Engineering organization if product or process information is unavailable or is inadequate to completely and correctly characterize the dangerous constituents in the waste.

Verification testing of solid waste received at the RMW Storage Facility is not performed because of the resulting radiation exposure to personnel. Process knowledge provides the basis for most waste designations.

Table 3-3 provides a list of analytical methods that could be used by the offsite generator or onsite generating unit and specified by the Solid Waste Engineering organization. The specific test method is referenced by the procedure number found in the appropriate testing method document. Equivalent approved analytical methods can be used in accordance with EPA guidelines.

3.2.7 Sampling Methods [C-2c]

Representative sampling could be required by Solid Waste Engineering if product or process information is unavailable or inadequate to completely and correctly characterize the dangerous constituents of the low-level mixed waste. All representative sampling required by Solid Waste Engineering is performed by the offsite generator or onsite generating unit. Sampling methods in all instances conform to those referenced in *Chemical Testing Methods for Complying with the State of Washington Dangerous Waste Regulation* (Ecology 1982), *Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods*, SW-846 (EPA 1986), and the *American Society for Testing and Materials Annual Standards* (ASTM 1988). The specific sampling methods and equipment vary with the chemical and physical nature of the waste material and the sampling circumstances.

All sampling equipment and sample containers are intended to be handled so that analytical interference with the chemical composition of the waste is precluded. For example, plastic materials other than Teflon* are not used for organic waste sampling. Appropriate preservation techniques and those specified in SW-846 are used. Chain-of-custody requirements for radioactive materials transportation at the RMW Storage Facility are used (e.g., signed radioactive shipment records).

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*Teflon is a trademark of E.I. duPont De Nemours and Company, Incorporated.

Sampling methods and equipment used for sampling different materials are presented in Table 3-4. For solid waste, either tubing or a scoop can be used, depending on the nature of the waste. For bulk solids, such as contaminated soils, representative samples are obtained with a trier or auger. Composite sampling is performed by obtaining samples in random locations. Should a maximum chemical contamination level be required, the location of the highest likely chemical contamination is chosen for sampling purposes.

3.2.8 Frequency of Analysis [C-2d]

All of the waste that contains chemical constituents stored at the RMW Storage Facility falls into one of two categories. These two categories, the frequency of analysis, and the rationale for choosing this frequency, are as follows:

- Category 1--Waste that is generated continuously for which the dangerous constituents are readily known and completely characterized. After the dangerous constituents have been characterized, the waste will not be analyzed again by the offsite generator or onsite generating unit unless the process, raw materials, or treatment procedures change. This decision is based on the amount of radiation exposure to personnel that is incurred during each analysis. Examples of waste in this category are lead shielding, zirconium/beryllium machinings, perchloroethylene, primary and secondary quench bath salt sludge, mercury, and scintillation liquids. Waste designation is based on process knowledge.

- Category 2--Waste that is not generated continuously. Requests to store this waste are considered unique and normally are a one-time-only situation. The need for sampling and analysis of waste in this category will be identified when the waste is generated or when the waste storage request is received by the Solid Waste Engineering organization. Examples of waste in this category are organic liquids and miscellaneous labpack chemicals. Waste designation also is based on process knowledge.

3.2.9 Additional Requirements for Waste Generated Offsite [C-2e]

Waste management control practices, used to ensure proper characterization and storage of mixed waste, are the same for waste generated onsite and offsite.

Each shipment of radioactive and/or mixed waste received at the RMW Storage Facility must be accompanied by accurate and complete waste storage documentation (Chapter 2.0) if the package contains dangerous constituents. The offsite generator is required to complete appropriate forms and to identify and quantify all dangerous constituents present. The offsite generator also enters the disposal approval number on the forms.

On receipt of the radioactive and/or mixed waste, the RMW Storage Facility operations personnel perform a radiological and visual inspection (exterior only) of the waste package(s) and review the accompanying waste storage forms and related shipping documentation. If the waste package(s) and accompanying documentation are determined to be acceptable, the Solid Waste Engineering organization stores the waste in accordance with the waste storage forms.

Waste packages are not opened because of the radiological hazards and radiation exposure associated with such an operation. If the visual inspection of the waste package(s) and accompanying documentation reveals any discrepancies, these discrepancies are resolved by the RMW Storage Facility operations personnel, the Solid Waste Engineering organization, and the offsite generator before the waste is accepted for storage.

3.2.10 Additional Requirements for Ignitable, Reactive, or Incompatible Waste [C-2f]

Based on the hazard characteristics identified by the offsite waste generator, assistance in specific packaging, labeling, and marking instructions is provided by the Solid Waste Engineering organization in the waste storage forms.

Solid waste containing reactive constituents can be accepted for storage at the RMW Storage Facility. Pyrophoric metals are locked in a matrix and stored at the RMW Storage Facility. Because pyrophoric metals are locked in a matrix, the amount of contamination is negligible from a safety standpoint. Solid waste containing constituents that can be corrosive is treated or processed to remove or neutralize the corrosive properties or is packaged in a manner that ensures container integrity. Flammable and combustible mixed waste is packaged in nonleaking inner containers and is surrounded with no less than twice the amount of nonbiodegradable absorbent material needed to absorb the liquid contents within a lined steel drum.

Incompatible mixed waste cannot be packaged within the same container or stored together unless sufficient barriers are used to separate the packages. Various references are used to determine potential incompatibilities. Figure 3-1 is a compatibility chart used in conjunction with associated texts for this determination. The compatibility chart is used by determining which group a waste belongs to and scanning across the chart to the group to be checked for compatibility. A letter designation indicates incompatibility, and the wastes will not be packaged together. No letter designation in the square means that the wastes are compatible.

3.3 LAND DISPOSAL RESTRICTIONS

The RCRA hazardous waste component of the mixed waste stored in the RMW Storage Facility is subject to land disposal restrictions (40 CFR 268). Under the regulations, some waste is prohibited from land disposal. Other waste can be land disposed of, if the waste can meet certain treatment

standards specified in 40 CFR 268, Subpart D. The technologies also are contained in the regulations for some waste in lieu of meeting a specific concentration requirement. Provisions in the *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1990) allow for storage of land disposal restricted waste beyond the 1-year period allowed in 40 CFR 268.50.

Regulations promulgated by the EPA specify the best demonstrated available technologies for some mixed waste (55 FR 106). The regulations could apply to some of the waste contained in the RMW Storage Facility.

Offsite generator or onsite generating units will perform waste analysis (Section 3.2) to determine if land disposal restrictions apply to the waste. If the restricted waste does not meet the applicable treatment standards, the offsite generator or onsite generating unit will, with each shipment of waste, provide written notification stating so. If the waste is prohibited and meets the standards, the offsite generator or onsite generating unit must send a certification or notification that the waste meets the treatment standards. Offsite generator or onsite generating units retain copies of these records and all waste analysis data for 5 years from the date the waste was accepted by the initial transporter [WAC 173-303-210(1)].

Should it become necessary to seek an exemption from a disposal prohibition pursuant to 40 CFR 268.6, an extension to the effective date of any land disposal restriction pursuant to 40 CFR 268.5, a variance from a treatment standard pursuant to 40 CFR 268.44, or an exemption pursuant to WAC 173-303-140(6), the records documenting the quantities and date each waste was placed under such exemption, extension, or variance will be maintained as required by 40 CFR 264.73(10).

Required manifests will be completed for waste shipped to an offsite TSD facility. The records documenting that the waste shipped from the RMW Storage Facility to an offsite TSD facility meets the standards required by 40 CFR 268, Subpart D, will be prepared by the generating unit and maintained as required by 40 CFR 264.73. All demonstration and certification records required for exempting waste from land disposal prohibitions, for extension of an effective date, or variance from a treatment standard will be maintained. The notifications required by 40 CFR 268.7(a)(1) for a treatment facility and by 40 CFR 268.7(a)(2) for a disposal facility will be prepared to accompany the offsite waste shipments. Copies of the notifications will be maintained in the operating records as required by 40 CFR 264.73.

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Reactivity Grouping	Reactivity Group Name	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	101.	102.	103.	104.	105.	106.	107.
1.	Acids, Mineral, Nonoxidizing	1.																																								
2.	Acids, Mineral, Oxidizing		2.																																							
3.	Acids, Organic		G H	3.																																						
4.	Alcohols and Glycols	H	H F	H P	4.																																					
5.	Aldehydes	H P	H F	H P		5.																																				
6.	Amides	H	H GT				6.																																			
7.	Amines, Aliphatic, and Aromatic	H	H GT	H		H		7.																																		
8.	Azo Compounds, Diazo Compounds, and Hydrazines	H G	H GT	H G	H G	H			8.																																	
9.	Carbonates	H G	H GT						G H	9.																																
10.	Caustics	H	H	H		H				H G	10.																															
11.	Cyanides	GT GF	GT GF	GT GF					G			11.																														
12.	Dithiocarbamates	GF H F	GF H F	GF H GT		GF GT		U	H G				12.																													
13.	Esters	H	H F						H G		H			13.																												
14.	Ethers	H	H F												14.																											
15.	Fluorides, Inorganics	GT	GT	GT												15.																										
16.	Hydrocarbons, Aromatic		H F														16.																									
17.	Halogenated Organics	GT H	GT H F					GT H	H G		GF H	H						17.																								
18.	Isocyanates	H G	GT H F	H G	H P			H P	H G		P H G	H G	U						18.																							
19.	Ketones	H	H F						H G		H	H								19.																						
20.	Merkaptans and Other Organic Sulfides	GT GF	GT H F						H G									H	H	H	20.																					
21.	Metals, Alkali and Alkaline Earth, Elemental	GF H F	GF H F	GF H F	GF H F	GF H F	GF H	GF H	GF H	GF H	GF H	GF H	GF H GT	GF H				H E	GF H	GF H	GF H	21.																				
22.	Metals, Other Elemental and Alloys as Powders, Vapors, or Sponges	GF H F	GF H F						GF H F	U	GF H							H E	GF H		GF H		22.																			
23.	Metals, Other Elemental and Alloys as Sheets, Rods, Drops, Moldings, Etc.	GF H F	GF H F						GF H F									H E						23.																		
24.	Metals and Metal Compounds, Toxic	S	S	S			S	S			S							H F							24.																	
25.	Nitrides	GF H F	E H F		GF H E	GF H			U	GF H	GF H	GF H						GF H	U	GF H	GF H	E				25.																
26.	Nitriles	GT H GF	GT H F	H							U												H P		S	GF H	26.															
27.	Nitro Compounds, Organic		HT H F			H					H E											GF H E				GF H E		27.														
28.	Hydrocarbons, Aliphatic, Unsaturated	H	H F			H																	H E						28.													
29.	Hydrocarbons, Aliphatic, Saturated		H F																											29.												
30.	Peroxides and Hydroperoxides, Organic	H G	H E		H P	H G		GT H	E H F	GT H E		GT H E	GT H F					H E	H	E	GT H F	H E	P G		H G	GF H E	GT H P		H P		30.											
31.	Phenols and Cresols		H F																													31.										
32.	Organophosphates, Phosphothidates, and Phosphodithoates	GT H	GT H						U		H E											H									U		32.									
33.	Sulfides, Inorganic	GT GF	GT H F	GT		H			E											H											GT H			33.								
34.	Epoxides	H P	H P	H P	H P	U		H P	H P		H P	H P	U							H P	H P	H P		H P	H P	H P					H P	H P	U	H P	34.							
101.	Combustible and Flammable Materials, Miscellaneous	H G	GT H F																			G H F				G H F					GT H F					101.						
102.	Explosives	H E	H E	H E					H E		H E			H F								H E	H E	H E	H E	E					H E	H E		H E	H E	H E	102.					
103.	Polymerizable Compounds	P H	P H	P H																		P H	P H	P H	P H						P H	P H		P H			H E	103.				
104.	Oxidizing Agents, Strong	GT H		GT H					P H		P H	P H	U									E H F	E H F	H F		E H F	GT H F	H F	H F	H G	H G	H F	GT H F	GT H F	G M F	G H F	H E	GT H F	104.			
105.	Reducing Agents, Strong	GF H	GT H F	GF H	GF H F	GF H F	GF H	H GF	H G				GT H	H F				H E	GF H	GF H	GF H						GF H	H E			H E	H E	GF H	GF H GT	H	GF H	H E	GF H P	H F P	105.		
106.	Water and Mixtures Containing Water	H	H						G										HG				GF H	GF H	S	GF H								GT GF						GF GT	106.	
107.	Water Reacting Substances	← Extremely Reactive!																Do Not Mix with Any Chemical or Waste Material!													Extremely Reactive! →											107.

H	Heat Generation
F	Fire
G	Innocuous and Nonflammable Gas Generation
GT	Toxic Gas Generation
GF	Flammable Gas Generation
E	Explosives
P	Violent Polymerization
S	Solubilization of Toxic Substances
U	May Be Hazardous, But Unknown

Example

GT H F	Heat Generation, Fire, and Toxic Gas Generation

H9107006.22

Figure 3-1. Compatibility Chart. (USCG 1985)

Table 3-1. Waste Codes of Materials Stored at the Radioactive Mixed Waste Storage Facility.

Waste code	Reference
U and P numbers	WAC-173-303-9903
F numbers	WAC-173-303-9904
W001	WAC-173-303-9904
D001	WAC 173-303-090(5)
D002	WAC 173-303-090(6)
D003	WAC 173-303-090(7)
D004 through D043	WAC 173-303-090(8)
WT01 and WT02	WAC-173-303-101 and 104
WP01 and WP02 and WP03	WAC-173-303-102 and 104
WC01 and WC02	WAC-173-303-103 and 104

Table 3-2. Parameters and Rationale for Waste Designation. (sheet 1 of 2)

Analytical Parameter	Rationale for Selection
1. Radioactive screen	All waste suspected of being radioactively contaminated or located within a radioactive zone is screened for radioactivity before being released to nonradioactive areas for the purpose of safe handling and proper management of the hazard characteristic.
2. pH	To indicate the degree of corrosivity of the waste for safe handling and to establish a relatively simple indicator parameter for the purpose of verification.
3. Flash point	To determine conditions for ignitability of waste content for safe handling. Organic waste that is determined to be ignitable will be directed to incineration or to reuse or recycle options if possible. This test also will determine if waste is an Ecology-and/or U.S. Department of Transportation-regulated ignitable, flammable, or combustible substance.
4. Water reactivity	To determine whether the waste has a potential to violently react with water to form gases or generate heat for the purpose of safe handling and proper disposition. The need for waste treatment may be determined, should waste be considered water reactive.
5. Reactive cyanide/ reactive sulfide content	To determine if waste produces hydrogen cyanide or hydrogen sulfide on acidification below pH 2. A positive cyanide or sulfide screen would direct the waste to a treatment or incineration facility. This waste would not be landfilled. This information would not be required for waste with pH less than 6.
6. Chemical compatibility	An analysis of dangerous reaction potential with other waste types will be performed for the purpose of segregating waste types.
7. Physical description	To determine the general physical characteristics of the waste (e.g., viscosity, color, texture, odor-free liquids) for comparison between generator or generating unit-supplied information and verification by the Solid Waste Engineering staff.
8. Specific gravity	To establish a measurement for a parameter that effectively compares liquid waste characteristics against generator or generating unit-supplied information.
9. PCB screen	To determine PCB content in oil-bearing waste for the purpose of managing this waste in accordance with regulations prescribed in the *Toxic Substance Control Act of 1976*.

Table 3-2. Parameters and Rationale for Waste Designation. (sheet 2 of 2)

Analytical Parameter	Rationale for Selection
10. TCLP	A method used to determine whether a waste is a regulated toxic waste due to its toxicity characteristics.
11. Toxicity	To determine whether a waste is Ecology-regulated dangerous waste or extremely hazardous waste due to its toxic constituents as determined by the NIOSH Registry of Toxic Effects of Chemical Substances.
12. Halogenated hydrocarbons	To determine whether a waste is Ecology-regulated dangerous waste or extremely hazardous waste due to its halogenated hydrocarbon content.
13. Polycyclic aromatic hydrocarbons	To determine whether a waste is Ecology-regulated dangerous waste or extremely hazardous waste due to its polycyclic aromatic hydrocarbon content.
14. Carcinogenicity	To determine whether a waste is Ecology-regulated dangerous waste or extremely hazardous waste due to its carcinogenic chemical constituents as determined by the International Agency for Research on Cancer.
15. Biological testing	To determine whether a waste is Ecology-regulated dangerous waste or extremely hazardous waste due to its toxic constituents as determined by tests on biological systems.

Ecology = Washington State Department of Ecology
NIOSH = National Institute for Occupational Safety and Health
PCB = Polychlorinated biphenyl
TCLP = toxicity characteristics leaching procedure

Table 3-3. Analytical Methodology Specified for Generator Waste.
(sheet 1 of 3)

Parameter and method		Reference (EPA 1986 unless otherwise specified)
CHARACTERISTICS:		
Flash point	Pensky-Martens closed-cup method	1010
Flash point	Setaflash[a] closed-cup method	1020
Corrosivity	pH meter or pH paper	9040 and 9041
Heavy metals	Toxicity characteristic leaching procedure	1311
INORGANIC TECHNIQUES:		
Acid digestion procedure for flame atomic absorption spectroscopy		3010
Acid digestion procedure for furnace atomic absorption spectroscopy		3020
Acid digestion of oils, greases, or waxes		3040
Acid digestion of sludge		3050
Alkaline digestion		3060
ORGANIC TECHNIQUES:		
Separation funnel liquid, liquid extraction		3510
Continuous liquid, liquid extraction		3520
Acid-base cleanup extraction		3530
Soxhlet extraction		3540
Sonication extraction		3550
INORGANIC ANALYTICAL METHODS:		
Antimony		
Atomic absorption, direct aspiration method		7040
Atomic absorption, graphite hydride method		7041
Arsenic		
Atomic absorption, furnace method		7060
Atomic absorption, gaseous hydride method		7061
Barium		
Atomic absorption, direct aspiration method		7080
Atomic absorption, furnace method		7081
Beryllium (reserved)		
Atomic absorption, direct aspiration method		7090
Atomic absorption, furnace method		7091
Cadmium (8.54)		
Atomic absorption, direct aspiration method		7130
Atomic absorption, furnace method		7131

Table 3-3. Analytical Methodology Specified for Generator Waste.
(sheet 2 of 3)

Parameter and method	Reference (EPA 1986 unless otherwise specified)
Chromium	
Atomic absorption, direct aspiration method	7190
Atomic absorption, furnace method	7191
Hexavalent chromium, co-precipitation	7195
Hexavalent chromium, calorimetric	7196
Hexavalent chromium, chelation-extraction	7197
Hexavalent chromium, differential pulse polargraphy	7198
Copper	
Atomic absorption, direct aspiration method	7210
Atomic absorption, furnace method	7211
Lead	
Atomic absorption, direct aspiration method	7420
Atomic absorption, furnace method	7421
Mercury	
In liquid waste (manual cold vapor technique)	7470
In solid or semisolid waste (manual cold vapor technique)	7471
Nickel	
Atomic absorption, direct aspiration method	7520
Atomic absorption, furnace method	7521
Osmium	
Atomic absorption, direct aspiration method	7550
Atomic absorption, furnace method	7551
Selenium	
Atomic absorption, direct aspiration method	7740
Atomic absorption, furnace method	4441
Silver	
Atomic absorption, direct aspiration method	7760
Atomic absorption, furnace method	7761
Thallium	
Atomic absorption, direct aspiration method	7840
Atomic absorption, furnace method	7841
Vanadium	
Atomic absorption, direct aspiration method	7910
Atomic absorption, furnace method	7911
Zinc	
Atomic absorption, direct aspiration method	7950
Atomic absorption, furnace method	7951

Table 3-3. Analytical Methodology Specified for Generator Waste.
(sheet 3 of 3)

Parameter and Method	Reference (EPA 1986 unless otherwise specified)
ORGANIC ANALYTICAL METHODS:	
Gas chromatographic methods	
Halogenated volatile organics	8010
Nonhalogenated volatile organics	8150
Aromatic volatile organics	8020
Acrolein, acrylonitrile, and acetonitrile	8030
Phenols	8040
Phthalate esters	8060
Organochloride pesticides and polychlorinated biphenyls	8080
Nitroaromatics and cyclic ketones	8090
Polynucleararomatic hydrocarbons	8100
Chlorinated hydrocarbons	8120
Organophosphate pesticides	8140
Chlorinated herbicides	8150
Gas chromatographic/mass spectroscopy (GC/MS) methods	
GC/MS method for volatile organics	8240
GC/MS method for semivolatile organics packed column technique	8270
GC/MS method for semivolatile organics: capillary column technique	8250
MISCELLANEOUS ANALYTICAL METHODS:	
Total and amenable cyanide	9010
Total organic halides	9020
Sulfides	9030
Fish toxicity, static acute fish toxicity text	Ecology 80-12 Part A[b]
Rat toxicity, acute oral rat toxicity test	Ecology 80-12 Part B[b]
Halogenated hydrocarbons	Ecology 83-13[c]
Polycyclic aromatic hydrocarbons	Ecology 83-13[c]

[a]Setaflash is a trademark of ERDCO Engineering Corporation.
[b]Ecology (1980).
[c]Ecology (1982).

Table 3-4. Sampling Methods and Equipment.

Material	Sampling method	Sampling equipment
Containerized liquids	SW-846	COLIWASA* or tubing
Extremely viscous liquid	ASTM D140-70	Tubing or trier
Crushed or powdered material	ASTM D364-75	Tubing, trier, auger, scoop, or shovel
Soil or rock-like material	ASTM D420-69	Tubing, trier, auger, scoop, or shovel
Soil-like material	ASTM D1452-65	Tubing, trier, auger, scoop, or shovel
Fly ash-like material	ASTM D2234-76	Tubing, trier, auger, scoop, or shovel
Containment systems	Wipe sampling (OSHA 1977)	Filter paper and cleaning solution

*COLIWASA = composite liquid waste sampler.

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APPENDICES

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4-1. The Radioactive Mixed Waste Storage Facility Storage Volume for Each Storage Building T4-1

9 2 1 2 7 1 5 6 0 7 0 2

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4.0 PROCESS INFORMATION [D]

This chapter discusses the processes used to store waste at the RMW Storage Facility. A discussion of run-off and run-on control systems also is presented. Construction specifications and design drawings are provided in Appendix 4A and 4B, respectively. Although the storage of radioactive waste is not within the scope of this permit application, the information is provided for general knowledge where appropriate.

4.1 CONTAINERS [D-1]

All newly generated radioactive and/or mixed waste accepted for storage at the RMW Storage Facility will be packaged in U.S. Department of Transportation-specified 17C or 17H (radioactive and/or mixed waste only) galvanized or aluminized 55-gallon (208-liter) steel drums unless alternate packages are dictated by the size, shape, or form of waste (49 CFR 173). Alternate packages must be approved by the Solid Waste Engineering organization.

Exterior surfaces of 55-gallon (208-liter) metal drums either will be painted or galvanized in accordance with specifications. Protective coatings for waste packages other than 55-gallon (208-liter) drums will be specified in the waste tracking forms for individual waste streams.

4.1.1 Containers with Free Liquids [D-1a]

Containers with free liquids are discussed in the following sections.

4.1.1.1 Description of Containers [D-1a(1)]. Waste contained in the RMW Storage Facility is packaged in U.S. Department of Transportation-specified 17C or 17H galvanized or aluminized 55-gallon (208-liter) steel drums in a double-packaging system. The inner containment can be either a 4-millimeter or heavier plastic liner or a 90-millimeter polyethylene drum liner.

Liquids accepted for storage are (1) bound by absorption (e.g., CONWED pads) or (2) sealed in one to three leak-resistant containers, each container having a capacity of not more than 5 gallons (18.9 liters) and surrounded by absorbent material in a 55-gallon (208-liter) drum. The inner container is packaged with a combustible absorbent sufficient to absorb at least twice the maximum amount of liquid potentially present. Combustible absorbent is used so that waste can be incinerated when treatment becomes available. Liquid inorganic waste is packaged with inert absorbent material such as diatomaceous earth.

Radioactive and/or mixed waste containers are labeled and marked to indicate the radioactive and dangerous characteristics of the waste. The U.S. Department of Transportation hazard labels are affixed as required to the

sides of the containers, and each mixed waste container has a hazardous waste identification sticker attached in accordance with Ecology and EPA requirements.

All waste containers received at the RMW Storage Facility are marked and labeled in accordance with the requirements specified under U.S. Department of Transportation regulations (49 CFR Part 172). The Solid Waste Engineering organization specifies marking and labeling requirements on the waste records (Chapter 3.0, Section 3.2). In addition to the U.S. Department of Transportation marking and labeling requirements, beginning January 1, 1992, all waste containers will be marked as follows:

- 'PERSISTENT' - If a WP01, WP02, or WP03 waste code is applicable
- 'TOXIC' - If a WT01 or WT02 waste code is applicable
- 'CARCINOGENIC' - If a WC01 or WC02 waste code is applicable.

Containers currently in storage will remain as labeled, unless moved to another Hanford Facility TSD unit.

4.1.1.2 Container Management Practices [D-1a(2)]. Before receipt at the RMW Storage Facility, all 55-gallon (208-liter) drums are closed by the offsite generator or onsite generating unit by means of a neoprene gasket, steel lid, locking ring, locking ring bolt, and a lock nut torqued tight or by other available methods that provide a reliable seal. On receipt, each drum is inspected by RMW Storage Facility operations personnel for damage, proper closure, marking, and proper accompanying documentation before acceptance.

Each drum is handled individually using either a hand-truck drum dolly, a fork-lift truck with 'barrel grabber', or a crane with a 'barrel tong', all specifically designed for handling 55-gallon (208-liter) drums. The drums are placed on wooden pallets that can be handled by a forklift truck. A maximum of four drums can be stored on each pallet, and stacking of pallets and drums allows for a maximum of 12 drums per stack, three drums in height. Heavier drums are rotated to the bottom of the stack to ensure a stable center of gravity for each stack. Aisle space requirements are provided in Chapter 6.0, Section 6.3.2. In the Low-Flash-Point Mixed Waste Storage Modules, maximum storage capacity is 17 55-gallon (208-liter) drum equivalents.

The container packaging, module construction, and container handling for the RMW Storage Facility was, and will be, designed to maintain containment of the waste and retrieval capability of damage-free and contamination-free drums and to limit storage intrusion and human exposure. Selected areas will be designated within the RMW Storage Facility for incomplete or partially labeled, containerized waste retrieved from the Low-Level Burial Grounds. Some older retrieved containers without appropriate labeling, as stated previously, are placed in areas marked for this type of containerized waste.

4.1.1.3 Secondary Containment System Design and Operation [D-1a(3)]. The design of the secondary containment system is shown in Chapter 2.0, Figures 2-4, 2-5, 2-6, and 2-8, and Section 2.1.3, and Appendices 4A and 4B.

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9 2 1 2 3 6 0 7 0 4

Secondary containment consists of 6-inch (15.24-centimeter) curbs around the mixed waste storage pad and in all of the buildings (except for the 2403-WA Storage Building, which has a sloping floor and sump). Calculations performed to verify containment capacity are detailed in Appendix 4C. The Mixed Waste Storage Pad has a collection removal system for spill containment and the collection of liquid (e.g., rain, snowmelt). The Low-Flash-Point Mixed Waste Storage Modules have self-contained catch basins to catch spills (Appendix 4A-6, 4A-9, and 4A-10). The Waste Receiving and Staging Area serves only as a receipt and staging area for radioactive waste; therefore, no secondary containment is provided for this area.

4.1.1.4 Requirement for Base or Liner to Contain Liquids [D-1a(3)(a)]. The floors of the various storage buildings were constructed from reinforced concrete that has been sealed with a polyurethane enamel epoxy resin. When cured, this sealant has properties similar to glass. Polyurethane sealant is chemically resistant and inert with respect to acids, bases, oxidizers, combustibles, and flammables. Information on the sealant properties is included in Appendix 4D. The base design of all the storage buildings in the RMW Storage Facility, except for the 2403-WA Storage Building, consists of concrete slabs with 6-inch (15.24-centimeter) curbs to contain and collect liquids. All piping penetrations and construction joints are grouted or caulked shut and sealed. The 2403-WA Storage Building has a sloped floor design. The curbs and sloped floors serve as extra containment, should a spill occur.

If a crack is found in a floor or curb that compromises the integrity of the containment system, the crack is regrouted and sealed. The crack is prepared and grouted in accordance with manufacturer's instructions. The appropriate sealer is applied (per manufacturer's instructions) to the grouted area. After completion, the RMW Storage Facility supervisor and a Solid Waste Engineering organization representative inspect the repair to ensure that the repair is acceptable. These individuals sign the logbook to indicate their acceptance of the repair.

Concrete is essentially an inert material with respect to caustic, oxidizing, combustible, and flammable materials, and the concrete has been sealed to prevent seepage of liquid into the concrete. Therefore, there are no compatibility problems with the base and the waste stored at the RMW Storage Facility (Appendix 4D).

4.1.1.5 Containment System Drainage [D-1a(3)(b)]. Each storage building floor consists of a concrete slab sloped and/or curbed to contain liquids (Sections 4.1.1.2 and 4.1.1.4).

4.1.1.6 Containment System Capacity [D-1a(3)(c)]. Each storage building floor is designed to contain over 10 percent of the total volume of all containers that can be stored or 100 percent of the largest container, whichever is greater. The Mixed Waste Storage Pad and each of the storage buildings (except for the 2403-WA Storage Building, which has a sloping floor and sump) is designed with 6-inch (15.24-centimeter) curbing that serves as a liquid catch basin (Appendix 4B). Table 4-1 lists the total containment volume and maximum container storage volume for each storage building and the

Mixed Waste Storage Pad. The Waste Receiving and Staging Area only handles radioactive waste, and therefore, is not subject to Ecology *Dangerous Waste Regulations*.

4.1.1.7 Control of Run-On [D-1a(3)(d)]. The only major run-on or run-off foreseen would be an event such as a flood, fire sprinkler activation, or pipe break. All RMW Storage Facility buildings are roofed structures (except for the Waste Receiving and Staging Area and the Mixed Waste Storage Pad); therefore, run-on is prevented. Containment systems in the RMW Storage Facility are capable of holding various amounts of liquid, as the width of the storage buildings varies. Collected or contained liquid can be removed by hand pumps for large quantities and by adsorbents for smaller quantities. All waste stored in the RMW Storage Facility structures is in sealed containers that limit the detrimental impact of a run-on or run-off situation.

In the event that contaminated water is released from any RMW Storage Facility structure resulting from flooding of a containment system by fire sprinkler activation or a pipe break (Section 4.1.1.8), the incident will be treated as a spill.

Water that has accumulated in the Mixed Waste Storage Pad trenches will be managed as discussed in Chapter 2.0, Section 2.5.1.

Actions to be taken in response to a spill or discharge are detailed in the building emergency plan provided in Appendix 7A.

4.1.1.8 Removal of Liquids from Containment System [D-1a(3)(e)]. In the event of a spill or release within the RMW Storage Facility that results in the collection of liquid waste material in the containment system, the following is performed.

1. Containers in the RMW Storage Facility structures affected by the spill are inspected for signs of leakage. Leaking containers are repackaged and identified in the RMW Storage Facility operating logbook.

2. Inspection reports and the RMW Storage Facility operating logbook are reviewed to identify any waste releases in the waste storage areas for which remedial actions have not been completed.

3. The waste is removed from the containment system. The equipment used for removal of large quantities of liquid normally is a hand-held pump or vacuum system. Absorbents are used for removal of small amounts of liquid. The waste material is placed in the appropriate U.S. Department of Transportation-specified container.

4. The containerized waste is handled as follows:

   - If the waste has been altered during stabilization and cleanup actions (absorbed, mixed, diluted, etc.), the containerized waste is placed in storage and managed in accordance with the provisions of the waste analysis plan described in Chapter 3.0, Section 3.2.

A waste storage request is submitted to the Solid Waste Engineering organization for waste designation. The Solid Waste Engineering organization issues a waste analysis letter describing the regulatory status and proper packaging, labeling, and marking requirements for the waste (Chapter 3.0, Section 3.2).

The RMW Storage Facility inventory is updated to reflect the changes in waste description, volume, and storage locations.

- If the waste was not altered during stabilization and cleanup activities, the containerized waste is placed in the appropriate storage area, and the RMW Storage Facility inventory is altered to reflect any changes.

5. Wipe samples are taken and analyzed to verify cleanup adequacy (Chapter 3.0, Table 3-4).

6. When wipe sampling techniques have verified cleanup, the RMW Storage Facility supervisor signs the operating logbook, indicating that the waste was removed from the containment system and cleanup activities are completed. A Solid Waste Engineering organization representative signs the operating logbook indicating approval of actions taken.

Specific actions to be taken in response to a spill or discharge are detailed in the Building Emergency Plan provided in Appendix 7A.

In the event of a fire sprinkler activation or pipe break within the RMW Storage Facility structures that results in collection of water in the containment system, the following is performed.

1. Water in the containment system is inspected visually for signs of contamination.

2. Containers in the storage building(s) affected by sprinkler activation or pipe break are inspected for signs of leakage.

3. Inspection reports and the RMW Storage Facility operating logbook are reviewed to identify any waste releases in the waste storage structure(s) for which remedial actions have not been completed.

4. The RMW Storage Facility supervisor signs the operating logbook indicating that the previous steps have been completed and that the storage structure(s) are clean.

   Water that has accumulated in the containment system that cannot be verified to be free of contamination is handled in accordance with Steps 5 through 6 for removal of liquid waste material from the containment system.

5. The water is removed from the containment system. The equipment used for removal of large quantities of liquid normally is a hand-held pump or vacuum system. Absorbents are used for removal of small amounts of liquid.

   Water that has been accumulated in the containment system that can be verified to be free of contamination is released to the ground. A Solid Waste Engineering organization representative signs the RMW Storage Facility operating logbook approving the discharge to the ground.

6. The RMW Storage Facility supervisor signs the operating logbook indicating that the water was removed from the containment system.

4.1.2 Containers Without Free Liquids That Do Not Exhibit Ignitability or Reactivity [D-1b]

Containers without free liquids that do not exhibit ignitability or reactivity are discussed in the following sections.

4.1.2.1 Test For Free Liquids [D-1b(1)]. A test for free liquids is not performed unless specific instructions are received because testing would increase the radiation exposure of personnel.

4.1.2.2 Description of Containers [D-1b(2)]. The description of containers is the same as is described in Section 4.1.1.1.

4.1.2.3 Container Management Practices [D-1b(3)]. Container management practices are the same as are described in Section 4.1.1.2.

4.1.2.4 Container Storage Area Drainage [D-1b(4)]. The description of the storage area drainage is the same as is described in Section 4.1.1.3. Areas inside the storage buildings and surrounding the storage buildings are sloped so that water runs away, presenting no danger of flooding.

4.1.3 Protection of Extremely Hazardous Waste in Containers [D-1c]

Extremely hazardous waste stored in containers is packaged and managed in the manner described in Section 4.1.1 for containers with free liquids.

4.1.4 Prevention of Reaction of Ignitable, Reactive, and Incompatible Waste in Containers [D-1d]

The following sections provide information on reactive waste containers.

4.1.4.1 Management of Reactive Waste in Containers [D-1d(1)]. The RMW Storage Facility stores waste exhibiting the characteristics of reactivity as specified in WAC 173-303-090 (Chapter 3.0, Section 3.2.10). Proper precautions are taken to prevent any offnormal situations from occurring (Chapter 6.0, Section 6.5).

4.1.4.2 Management of Ignitable and Reactive Waste in Containers [D-1d(2)]. The following precaution is used for storing ignitable mixed waste in the RMW Storage Facility. All drums containing mixed waste with flash-points of less than 140 °F (60 °C) are placed in the Low-Flash-Point Mixed Waste Storage Modules (Appendix 4A-6, 4A-9, and 4A-10). These storage modules are physically separated by specified distances in accordance with the Uniform Fire Code (NFPA 1989). Such waste also will be stored in the Enhanced Radioactive and Mixed Waste Storage Building (Phase V) on completion of construction.

4.1.4.3 Management of Incompatible Wastes in Containers [D-1d(3)]. Packages containing incompatible waste are not permitted in the same container. Incompatible mixtures include those that would be liable to cause a dangerous evolution of heat or gas or produce corrosive materials (49 CFR 173.21).

The offsite generator or onsite generating unit and the Solid Waste Engineering organization are responsible for determining the regulatory status of each waste and for determining the incompatible compounds of the waste (Chapter 3.0, Figure 3-1). Status information is passed on in a waste analysis letter to the offsite generator or onsite generating unit, who packages the waste as instructed. Afterwards, offsite generator or onsite generating unit transportation personnel inspect the container for proper packaging, labeling, marking, and for the completed waste manifest or the onsite waste tracking form before transport to the RMW Storage Facility. The container is inspected again at the RMW Storage Facility to ensure that the waste is properly packaged, marked, labeled, and has the appropriate manifest or waste tracking form (Chapter 3.0, Section 3.2).

Each storage area contains one compatibility group that is segregated either by walls, trenches, or curbs.

4.2 TANK SYSTEMS [D-2]

Operation of the RMW Storage Facility does not involve the storage of dangerous waste in tank systems. Therefore, the requirements of WAC 173-303-640 are not applicable to the RMW Storage Facility.

4.3 WASTE PILES [D-3]

Operation of the RMW Storage Facility does not involve the placement of dangerous waste in piles. Therefore, the requirements of WAC 173-303-660 are not applicable to the RMW Storage Facility.

4.4 SURFACE IMPOUNDMENTS [D-4]

Operation of the RMW Storage Facility does not involve the placement of dangerous waste in surface impoundments. Therefore, the requirements of WAC 173-303-650 are not applicable to the RMW Storage Facility.

4.5 INCINERATORS [D-5]

Operation of the RMW Storage Facility does not involve the incineration of dangerous waste. Therefore, the requirements of WAC 173-303-670 are not applicable to the RMW Storage Facility.

4.6 LANDFILLS [D-6]

Operation of the RMW Storage Facility does not involve the placement of dangerous waste in landfills. Therefore, the requirements of WAC 173-303-665 are not applicable to the RMW Storage Facility.

4.7 LAND TREATMENT [D-7]

Operation of the RMW Storage Facility does not involve the land treatment of dangerous waste. Therefore, the requirements of WAC 173-303-655 are not applicable to the RMW Storage Facility.

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Table 4-1. The Radioactive Mixed Waste Storage Facility Storage Volume for Each Storage Building. (sheet 1 of 2)

Building	Maximum number of 55-gallon drums	Maximum total volume (gallons)	Maximum total volume (liters)	Maximum containment capacity (gallons)	Maximum containment capacity (liters)
2401-W	1,000	55,000	208,450	14,960	56,698
2402-W	1,000	55,000	208,450	14,960	56,698
2402-WB	1,000	55,000	208,450	14,960	56,698
2402-WC	1,000	55,000	208,450	14,960	56,698
2402-WD	1,000	55,000	208,450	14,960	56,698
2402-WE	1,000	55,000	208,450	14,960	56,698
2402-WF	1,000	55,000	208,450	14,960	56,698
2402-WG	1,000	55,000	208,450	14,960	56,698
2402-WH	1,000	55,000	208,450	14,960	56,698
2402-WI	1,000	55,000	208,450	14,960	56,698
2402-WJ	1,000	55,000	208,450	14,960	56,698
2402-WK	1,000	55,000	208,450	14,960	56,698
2402-WL	1,000	55,000	208,450	14,960	56,698
Low-Flash-Point Mixed Waste Storage Module 1	17	935	3,544	366	1,387
Low-Flash-Point Mixed Waste Storage Module 2	17	935	3,544	366	1,387
Low-Flash-Point Mixed Waste Storage Module 3	17	935	3,544	366	1,387
Low-Flash-Point Mixed Waste Storage Module 4	17	935	3,544	750	2,843
Low-Flash-Point Mixed Waste Storage Module 5	17	935	3,544	750	2,843
Low-Flash-Point Mixed Waste Storage Module 6	17	935	3,544	750	2,843
Low-Flash-Point Mixed Waste Storage Module 7	17	935	3,544	570	2,160
Low-Flash-Point Mixed Waste Storage Module 8	17	935	3,544	570	2,160

Table 4-1. The Radioactive Mixed Waste Storage Facility Storage Volume for Each Storage Building. (sheet 2 of 2)

Building	Maximum number of 55-gallon drums	Maximum total volume		Maximum containment capacity	
		(gallons)	(liters)	(gallons)	(liters)
2403-WA	9,000	495,000	1,876,050	49,542	187,537
Mixed Waste Storage Pad	1,700	93,500	354,365	16,006	60,589

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5.0 GROUNDWATER MONITORING [E]

The RMW Storage Facility is not operated as a dangerous waste surface impoundment, waste pile, land treatment unit, or landfill as defined in WAC 173-303-645(1)(a). Therefore, groundwater monitoring is not required.

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6.0 PROCEDURES TO PREVENT HAZARDS [F]

This chapter discusses security, inspection schedules, preparedness and prevention requirements, preventive procedures, structures, equipment, and prevention of reaction of ignitable, reactive and incompatible waste stored in the RMW Storage Facility.

The RMW Storage Facility is designed and operated to minimize exposure of the general public and operating personnel to radioactive and/or mixed waste. Shielding, contamination control, control of toxic or dangerous material, safety and security procedures, and structures are used to keep exposure ALARA. In addition, the RMW Storage Facility is designed to withstand accidents without undue risk to the health and safety of the general public and operating personnel. The procedures and structures to prevent hazards are discussed in this chapter.

6.1 SECURITY [F-1]

The following sections describe the security measures, equipment, and warning signs used to control entry to the RMW Storage Facility.

6.1.1 Security Procedures and Equipment [F-1a]

The following sections describe the 24-hour surveillance system, barrier, and warning signs used to provide security and control access to the RMW Storage Facility.

6.1.1.1 24-Hour Surveillance System [F-1a(1)]. The entire Hanford Facility is a controlled access area and is expected to remain so for the foreseeable future. The Hanford Facility maintains around-the-clock surveillance for protection of government property, classified information, and special nuclear material. The Hanford Patrol maintains a continuous presence of armed guards to provide Hanford Facility security.

6.1.1.2 Barrier and Means to Control Entry [F-1a(2),(2a),(2b)]. Manned barricades are maintained around the clock at checkpoints on vehicular access roads leading to the operational areas of the Hanford Facility. All personnel accessing these areas must have a U.S. Department of Energy-issued security identification badge indicating the appropriate authorization. Personnel also might be subject to a search of items carried into or out of these areas.

Within the Hanford Facility are operational areas to which access is further restricted. The RMW Storage Facility is located in one such operational area, the 200 West Area. Access to the 200 West Area is gained through one of two manned barricades. All personnel entering or leaving the 200 West Area must display a U.S. Department of Energy-issued security identification badge indicating authorization to enter the area and must submit to a search of vehicles and personal items carried into and out of the area.

The RMW Storage Facility is protected by fences and building structures to enhance physical security (Drawing H-13-000003 in Appendix 2A). Security lighting is provided. Entrances to the RMW Storage Facility from within the 200 West Area are open during normal day shift operations. However, visitors are required to check in at the operations office before entering areas of the RMW Storage Facility where they might be exposed to radioactive and/or mixed waste. Gates and doors are secured during off-shift hours with access provided on an as-needed basis only.

6.1.1.3 Warning Signs [F-1a(3)]. The individual storage buildings of the RMW Storage Facility are posted with radiation signs that are visible from all angles of approach and are visible from a distance of at least 25 feet (7.6 meters). Each storage building used for radioactive and/or mixed waste storage is posted with a sign, printed in English, near the entrance reading "DANGER-UNAUTHORIZED PERSONNEL KEEP OUT," or an equivalent legend, in black and red letters on a white background. In addition to these signs, the fences around the 200 West Area are posted with signs warning against unauthorized entry. The signs also are visible from all angles of approach.

6.1.2 Waiver [F-1b,b(1),b(2)]

Waiver of the security procedures and equipment requirements for the RMW Storage Facility will not be requested. Therefore, the requirements of WAC 173-303-310 (1)(a) and (b) are not applicable to the RMW Storage Facility.

6.2 INSPECTION SCHEDULE [F-2]

This section describes the method and schedule for inspection of the RMW Storage Facility. The purpose of inspections at the RMW Storage Facility is to identify leaking containers, improperly stored containers, and degradation of containment and safety equipment and/or systems. These inspections help to ensure that situations do not exist that might cause or lead to the release of radioactive and/or mixed waste to the environment or that might pose a threat to human health. Abnormal conditions identified by inspections must be corrected on a schedule that prevents hazards to workers, the public, and the environment as determined by a Solid Waste Operations supervisor.

6.2.1 General Inspection Requirements [F-2a]

The content and frequency of inspections are described in this section. The inspections are documented on inspection data sheets and log sheets. The schedule and inspection records are kept at the Hanford Central Waste Complex in the inspection logbooks. Inspection records are retained for a minimum of 5 years.

6.2.1.1 Types of Problems [F-2a(1)]. Each week a nuclear operator performs an inspection. The inspector (nuclear operator) carries an inspection

checksheet (Figure 6-1) and checks off items as the inspection takes place. Discrepancies are noted in the additional information section of the checksheet.

When completed, the inspector prints, signs, and dates the inspection checksheet, and sends a copy to the Solid Waste Engineering organization. The inspection checksheet is placed in the Hanford Central Waste Complex inspection logbook and kept on file for a minimum of 5 years.

The fire systems at the RMW Storage Facility are inspected annually by representatives of the Hanford Fire Department. Their inspection includes the following:

- Fire protection system inspection and testing
  - Fire alarm pull box inspection and testing
  - Manual and automatic fire door inspection and testing

- Dry-pipe sprinkler system inspection and testing
  - System visual inspection
  - System internal inspection
  - Pressure of incoming water supply inspection
  - Condition of gages by visual inspection
  - Flow alarm device testing
  - Zone indicated on fire alarm control panel by visual inspection

- Ignitable or reactive waste storage area inspection.

The RMW Storage Facility supervisor conducts a monthly inspection and test of the communication and alarm systems. This inspection and test includes the following:

- RMW Storage Facility evacuation alarms

- RMW Storage Facility take-cover alarms

- Public address system

- Portable radios and base stations

- Crash alarm.

6.2.1.2 Frequency of Inspections [F-2a(2)]. The RMW Storage Facility storage buildings can be occupied from 7:30 a.m. to 4:00 p.m., Monday through Friday. To ensure safety, the storage building (if occupied) and waste inventory are inspected daily by the RMW Storage Facility personnel. The Solid Waste Engineering organization performs a weekly audit inspection of the RMW Storage Facility storage building and the waste inventory (regardless of occupation) to ensure compliance with applicable federal and state regulations.

Fire protection equipment, storage building alarms, and communication equipment are tested and inspected as identified in Section 6.2.1.1.

As required by WAC 173-303-395(1)(d), an annual inspection of the RMW Storage Facility areas where ignitable or reactive waste is stored is performed by a professional knowledgeable of the Uniform Fire Code (NFPA 1989). The following information is entered into the RMW Storage Facility logbook as a result of this inspection:

- The date and time of the inspection
- The name of the person who performed the inspection
- A notation of the observations made
- Any remedial actions that were taken as a result of this inspection.

6.2.2 Specific Process Inspection Requirements [F-2b]

The following sections detail the inspections to be performed at the RMW Storage Facility.

6.2.2.1 Container Inspection [F-2b(1)]. Specific items and/or problems to be noted during weekly container inspection include the following:

- Condition of concrete floor, curbing, and walls
- Lights and fixtures
- Appropriate safety and packaging equipment
- Container structural integrity
- Containers closed
- Corrosion of containers
- Evidence of spills or leaks
- Container labels and markings in place, legible, and unobscured.

Records of inspection are maintained at the Hanford Central Waste Complex as detailed in Section 6.2.1.

6.2.2.2 Tank Inspection [F-2b(2),(2)a-(2)f]. Operation of the RMW Storage Facility does not involve the placement of dangerous waste in tanks. Therefore, the inspection requirements of WAC 173-303-640 are not applicable to the RMW Storage Facility.

6.2.2.3 Waste Pile Inspection [F-2b(3),(3)a-(3)d]. Operation of the RMW Storage Facility does not involve the placement of dangerous waste in piles. Therefore, the inspection requirements of WAC 173-303-660 are not applicable to the RMW Storage Facility.

6.2.2.4 Surface Impoundment Inspection [F-2b(4),(4)a-(4)b]. Operation of the RMW Storage Facility does not involve the placement of dangerous waste in surface impoundments. Therefore, the inspection requirements of WAC 173-303-650 are not applicable to the RMW Storage Facility.

6.2.2.5 Incinerator Inspection [F-2b(5),(5)a-(5)b]. Operation of the RMW Storage Facility does not involve the incineration of dangerous waste. Therefore, the inspection requirements of WAC 173-303-670 are not applicable to the RMW Storage Facility.

6.2.2.6 Landfill Inspection [F-2b(6),(6)a-(6)d]. Operation of the RMW Storage Facility does not involve the placement of dangerous waste in landfills. Therefore, the inspection requirements of WAC 173-303-665 are not applicable to the RMW Storage Facility.

6.2.2.7 Land Treatment Facility Inspection [F-2b(7),(7)a-(7)b]. Operation of the RMW Storage Facility does not involve the land treatment of dangerous waste. Therefore, the inspection requirements of WAC 173-303-655 are not applicable to the RMW Storage Facility.

6.3 WAIVER OR DOCUMENTATION OF PREPAREDNESS AND PREVENTION REQUIREMENTS [F-3]

The following sections document the preparedness and prevention measures taken at the RMW Storage Facility.

6.3.1 Equipment Requirements [F-3a]

The following sections describe the internal and external communications systems and the emergency equipment required.

6.3.1.1 Internal Communications [F-3a(1)]. The RMW Storage Facility storage buildings are equipped with an internal communication system to provide immediate emergency instruction to the RMW Storage Facility personnel. The onsite communication system at the RMW Storage Facility includes a telephone located at the southeast corner of the Waste Receiving and Staging Area. The telephone system provides internal and external communication. Telephones also are available in the operations office at the south end of the RMW Storage Facility (the location of internal communication equipment and the primary staging area is identified in the building emergency plan provided in Appendix 7A). Immediate emergency instruction to personnel working in the RMW Storage Facility storage buildings is provided by two-way radios. Alarm systems exist at the RMW Storage Facility to allow personnel to appropriately respond to various emergencies, including the following emergency situations: building evacuations, take-cover events, continuous air monitor alarms, and fire and/or explosion (Appendix 7A).

6.3.1.2 External Communications [F-3a(2)]. The RMW Storage Facility is equipped with devices for summoning emergency assistance from the Hanford Fire

Department and/or emergency response teams, as necessary. External communication is made via a telephone communication system, a two-way radio base station, and two-way portable radios.

A telephone is available in the operations office and on a telephone pole at the southeast corner of the Waste Receiving and Staging Area. Also, an additional telephone is located between the Waste Receiving and Staging Area and the alternate staging area. The locations of external communication equipment and the primary staging area are identified in the building emergency plan provided in Appendix 7A. In addition, the following external communication systems are available for notifying persons assigned to emergency response organizations.

In the 2403-WA Storage Building, two telephones are provided for communications. A public address system is provided with speakers audible throughout the RMW Storage Facility. The microphone and amplifier are located outside the 2403-WA Storage Building in a protected enclosure. In addition, the following external communication systems are available for notifying personnel assigned to emergency response organizations:

- Fire alarm pull boxes and fire sprinkler flow-monitoring devices--connected to a system monitored around the clock by the Hanford Fire Department

- Telephone number 811--contact point for the Hanford Site; on notification, the Hanford Patrol Operations Center notifies and/or dispatches required emergency responders

- Telephone number 3-3800--single point of contact for the emergency duty officer; this number can be dialed from any Hanford Site telephone

- Crash-alarm telephone system--consists of selected telephones that are disassociated from the regular system and are connected automatically to control stations

- Two-way radio system--the system accesses the Hanford Site emergency network and can summon the Hanford Fire Department, Hanford Patrol, and/or any other assistance requested to handle emergencies.

6.3.1.3 Emergency Equipment [F-3a(3)]. A detailed list of equipment is included in the building emergency plan provided in Appendix 7A. The Hanford Fire Department is capable of providing rapid response (less than 10 minutes) to fires within the 200 West Area. Portable fire extinguishers are provided on motorized equipment and vehicles, and in or near all RMW Storage Facility storage buildings. Personnel are trained in the use of emergency equipment (Chapter 8.0).

6.3.1.4 Water for Fire Control [F-3a(4)]. The RMW Storage Facility has a potable water main installed for fire control. The available water pressure has a static pressure of 79 pounds per square inch, with a residual pressure

of 39 pounds per square inch when flowing at 910 gallons (3,449 liters) a minute. In the event that water pressure is lost, the Hanford Fire Department normally has a truck equipped with a hydraulically operated aerial ladder, and one backup fire engine without a boom that is used if the aerial ladder is inoperable. Fire engines have a pumping capacity of at least 1,500 gallons (5,605 liters) of water per minute.

6.3.2 Aisle Space Requirement [F-3b]

Aisle spacing for the RMW Storage Facility structures is sufficient to allow the movement of personnel and fire protection equipment in and around the containers. This aisle spacing meets the requirements of the National Fire Protection Association and the Life Safety Code (NFPA 1989) for the protection of personnel and the environment. The following are specific requirements for individual structures in the RMW Storage Facility.

- 2401-W, 2402-W, 2402-WB through 2402-WL, and 2403-WA Storage Buildings: Inspection aisle space must be 3 feet (0.9 meter) or greater.

- Low-Flash-Point Mixed Waste Storage Modules: Inspection aisle space must be 30 inches (0.76 meter) or greater.

- Mixed Waste Storage Pad: Inspection aisle space must be 3 feet (0.9 meter) or greater. Separation between oxidizers, combustibles, and other waste categories must be greater than 6 feet (1.83 meters).

Rows of drums will be placed no more than two drums wide in accordance with WAC 173-303-630(5)(c). The drums are loaded and unloaded through the rollup doors located at the ends of each storage building.

6.4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT [F-4]

The following sections describe preventive procedures, structures, and equipment.

6.4.1 Unloading Operations [F-4a]

The loading and unloading area of the RMW Storage Facility is described in Chapter 2.0, Section 2.1.3. Nuclear operators ensure that the following inspections are carried out before waste is unloaded at the RMW Storage Facility.

- Containers are inspected for damage before being unloaded for storage.

- Waste is not unloaded without the approval of Solid Waste Operations supervision during inclement weather [i.e., winds in excess of 10 miles (16.1 kilometers) per hour].

- Path from loading traffic area to appropriate storage area is clear of obstructions.

- The truck is placed so that container movement occurs over an appropriate waste unloading area.

After a shipment has been accepted for storage (Chapter 2.0, Section 2.8), the transporter is requested to unload the truck. From an approved waste unloading area, multiple waste containers are placed on pallets for movement into the RMW Storage Facility storage buildings or the Mixed Waste Storage Pad using pallet jacks or a forklift. The containers are placed in the storage building(s) or the Mixed Waste Storage Pad as assigned on the associated waste storage letter. When the storage of containers is completed, all storage building doors are closed.

6.4.2 Run-Off [F-4b]

Chapter 4.0, Section 4.1.1.7, contains information on run-off and run-on of liquid at the RMW Storage Facility.

6.4.3 Water Supplies [F-4c]

Water is supplied to the RMW Storage Facility from the Columbia River via the Hanford Site potable water system. All hose connections to the potable water line have a one-way check valve installed to prevent backflow. These check valves prevent contamination from entering the water supply lines from within the RMW Storage Facility.

The water supply system (potable and fire sprinkler supply) for the RMW Storage Facility is routed from two sources to provide a looped supply system per U.S. Department of Energy Order 6430.1A: one from the south near the 272-WA Building, which is approximately 1,500 feet (457 meters) away, and the second from the east near T Plant, which is approximately 5,000 feet (1,524 meters) away.

6.4.4 Equipment and Power Failure [F-4d]

The RMW Storage Facility and all storage buildings are, and will be, designed and constructed according to the National Electrical Code NFPA-70 (NFPA 1989).

Rechargeable battery-powered lighting units provide emergency illumination. Self-powered lights are located near all exits.

Loss of electrical power does not constitute an emergency situation. However, loss of power could result in deactivation of the continuous air monitor alarm, fire alarms, and exhaust fans. Therefore, the storage buildings should not be occupied during power outages without adequate alternate substitutes for those systems.

As described in Section 6.3.1.2, emergency communication equipment is available to summon emergency assistance in the event of a power loss.

6.4.5 Personnel Protection Equipment [F-4e]

Normally the RMW Storage Facility does not require personal protective equipment because none of the containers are opened in the structures.

If a leak is discovered, the following protection could be required: radiation protection coveralls, cloth shoe covers plus rubber boots, gloves, and a cloth cap. In addition, various types of respiratory devices are available if required. Personnel are directed to use a particular type of respiratory device, depending on the specific respiratory hazard that exists. Available respiratory protection equipment includes the following:

- Airpacks
- Filter masks with a graphite filter. This type of mask is for removing particulates from the respiratory stream
- Face masks with cartridges that react with various chemical fumes. These masks are used in special circumstances
- Full-face masks, with hoses attached to an air compressor some distance away, also are available when needed.

Personnel are required to be trained in using the various respiratory devices and must be checked routinely for mask fit.

6.5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTES [F-5]

The following section describes prevention of reaction of ignitable, reactive, and incompatible waste.

6.5.1 Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Waste [F-5a]

All waste, including reactive waste, at the RMW Storage Facility is stored in sealed U.S. Department of Transportation-approved, or other types of U.S. Department of Transportation-approved packages. The use of non-sparking tools is not required at the RMW Storage Facility except at the Low-Flash-Point Mixed Waste Storage Modules.

Smoking is prohibited in the RMW Storage Facility. "NO SMOKING" signs are posted as reminders to occupants.

6.5.2 General Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste [F-5b]

Based on the radioactive and/or mixed waste characteristics identified by the offsite generator or onsite generating unit, specific packaging instructions are provided by the Solid Waste Engineering organization. General guidance is provided to the offsite generator or onsite generating unit concerning radioactive and/or mixed waste packaging and storage requirements. Stored liquids are packaged in nonleaking inner containers and surrounded by nonbiodegradable absorbent material within polyethylene liners inside steel drums (Chapter 4.0, Section 4.1.1). Liquids are stored in the RMW Storage Facility until treatment is available. Incompatible waste is not packaged within the same container.

6.5.2.1 Plutonium/Polychlorinated Biphenyl Mixed Waste Storage Building. The 2401-W Plutonium/Polychlorinated Biphenyl Mixed Waste Storage Building currently stores combustible radioactively contaminated polychlorinated biphenyl waste and other mixed combustible waste. However, other compatible waste can be stored in the same array.

6.5.2.2 Low-Flash-Point Mixed Waste Storage Modules. The Low-Flash-Point Mixed Waste Storage Modules (1 through 8) are designed to meet all the storage requirements for mixed waste. In the storage modules handling transuranic-flammable waste, draft ventilation and electrical service are provided.

6.5.2.3 Radioactive and/or Mixed Waste Storage Buildings. The radioactive and/or mixed waste storage buildings consist of 12 identical storage buildings (2402-W and 2402-WB through 2402-WL). The storage buildings were designed to meet the requirements for radioactive and/or mixed waste. All types of waste including toxic, oxidizers, acid, caustics, combustible, low-level, transuranic, polychlorinated biphenyls, or any combination of compatible radioactive and/or mixed waste can be placed in these storage buildings according to the storage building loading schedules. In any case, only compatible waste will occupy any one storage building at any one time unless proper precautions are taken to isolate the noncompatible packages from each other.

6.5.2.4 Phase I--Radioactive and/or Mixed Waste Storage Building. The 2403-WA Radioactive and/or Mixed Waste Storage Building was designed to meet all of the requirements for radioactive and/or mixed waste. Compatible types of waste that can be placed in any one containment quadrant include the following waste types: toxic, oxidizers, acid, caustic, low-level, transuranic, or any combination of compatible radioactive and/or mixed waste according to the storage building loading schedule. However, polychlorinated biphenyls are not allowed because of limitations in the storage building design. In any case, only compatible waste will occupy any one containment quadrant at any one time.

INSPECTION CHECKSHEET
SOLID MIXED WASTE STORAGE/DISPOSAL FACILITIES

Facility _____ Complete per instructions in SW-040-005 Date _____ Time _____

	YES	NO	
1.	____	____	Areas in and around facility are free of combustibles such as tumbleweeds, paper, rags, trash, etc.
2.	____	____	Fire lanes are clear and unobstructed. Fire fighting vehicles have free and easy access to facility.
3.	____	____	Roads into trenches, trench sidewalls and bottoms, spoil piles, and paving (asphalt, concrete or gravel) are intact and in good repair (where applicable).
4.	____	____	PCB label at facility entrance is intact, unobscured, legible and in good condition (where applicable).
5.	____	____	Facility lighting is adequate for inspection (where applicable).
6.	____	____	Containment curbing and flooring is free of cracks or gaps and is sufficiently impervious to contain leaks, spills, and accumulated rainfall (where applicable).
7.	____	____	Backfilled storage/disposal units are free of depressions, cave-ins, cracks, signs of animals burrowing into trenches, standing water, or erosion (where applicable).
8.	____	____	Marker-barricades (chain barricades, chain-link fences, marker posts, etc.) around facility are intact and in good condition. Facility postings are intact, unobscured, legible, and in good condition.
9.	____	____	Facility is generally dry. There is no standing water or excessive snow accumulation in or around facility.
10.	____	____	Containers are free of punctures, dents, penetrating scratches, loose lids, corrosion, or other damage/deterioration (where possible to inspect).
11.	____	____	Containers are closed and show no evidence of spillage or leakage, such as moisture on the sides or underneath (where possible to inspect).
12.	____	____	Containers are stored in a manner which will not rupture the containers or cause them to leak (where possible to inspect).
13.	____	____	Container marking/labeling is intact, unobscured, legible, and in good condition (where possible to inspect).

Additional Information _____

Inspector _____ (Sign) _____ (Print) _____ (Date)

Corrective Actions _____

Supervisor Reviewing Corrective Action _____

Distribution: White - WM Engineering Yellow - SWO Record Book
Pink - WM Engineering (Corrective Action Complete)

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Figure 6-1. Typical Inspection Checksheet.

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APPENDIX

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7.0 CONTINGENCY PLAN [G]

The WAC 173-303 requirements for contingency plans are satisfied in the following documents: the DOE-RL emergency plan and procedures manual, the *Emergency Plan* (WHC 1989), and the *Building Emergency Plan Hanford Central Waste Complex* (WHC 1990a). The DOE-RL emergency plan and procedures manual and the *Emergency Plan* are available for review upon request. The *Building Emergency Plan Hanford Central Waste Complex* is provided as Appendix 7A.

The cited contingency plan documents also serve to satisfy a broad range of other requirements [e.g., Occupational Safety and Health Administration standards (29 CFR 1910) and U.S. Department of Energy orders]. Therefore, revisions made to portions of the contingency plan documents that are not governed by the requirements of WAC 173-303 will not be considered as a modification subject to review or approval by Ecology.

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8.0 PERSONNEL TRAINING [H]

This chapter outlines the training program developed and implemented for the employees whose duties are identified as being associated with dangerous waste management.

The Solid Waste Management training program uses existing courses. The program was designed to ensure that the RMW Storage Facility is operated and maintained in accordance with requirements of the EPA, Ecology, the Occupational Safety and Health Administration, and the U.S. Department of Energy.

8.1 OUTLINE OF THE TRAINING PROGRAM [H-1]

The Solid Waste Management training program is designed to prepare employees to operate and maintain the RMW Storage Facility in a safe, efficient, and environmentally sound manner. In addition to preparing employees to operate and maintain the RMW Storage Facility under normal conditions, the program ensures that employees are prepared to respond in a prompt and effective manner should abnormal or emergency conditions occur. Emergency response training is consistent with emergency responses outlined in the contingency plan (Appendix 7A).

The Solid Waste Management training program includes training courses that cover training requirements for nuclear operators, operations supervisors, and operations managers who operate the RMW Storage Facility. Solid Waste Management, in cooperation with Technical Training; Occupational Health and Safety; Solid Waste Engineering Services; Fleet Operations, Transportation, and Maintenance Services; Processing and Analytical Laboratories; and other applicable organizations, is responsible for the development and administration of the training program for employees assigned to, or involved with, Solid Waste Management. Solid Waste Management is responsible for identifying training requirements for Solid Waste personnel and for ensuring that personnel complete appropriate training. The responsibilities of the various organizations are discussed in Section 8.1.3.

An initial job analysis process was completed that resulted in identifying the required training to operate the RMW Storage Facility in a safe and effective manner. A job analysis process will be used to guide reevaluations of the Solid Waste Management training program to ensure that operational and dangerous waste training requirements continue to be met. These reevaluations could result in modifying or adding new material to the current training program.

8.1.1 Job Titles and Descriptions [H-1a]

Each employee is assigned a job title (from the salaried nonexempt or bargaining unit classifications) or position (from the exempt classifications). Job titles and positions for employees who are associated

with managing dangerous waste at the TSD units managed by Solid Waste are listed in the following sections with brief descriptions of associated responsibilities.

8.1.1.1 Solid Waste Management Manager. Responsibilities of the Solid Waste manager include the following:

- Operating and maintaining the TSD units managed by Solid Waste Management in compliance with U.S. Department of Energy directives and applicable policies and procedures

- Complying with all hazardous and dangerous waste policies, procedures, and regulations

- Recruiting and developing a trained cadre of managers, professionals, nonexempt, and bargaining unit employees

- Ensuring safe and disciplined operations by trained personnel who implement policies and procedures

- Ensuring that Solid Waste Management organization documents related to the safe operation and maintenance of the TSD units managed by Solid Waste Management are accurate and up to date

- Ensuring the proper allocation of resources required to support the operation, maintenance, modification, and installation of new equipment required for safety and to meet production schedules

- Providing operational requirements for support organizations to plan and provide services and resources when needed

- Promoting safe operations of TSD units managed by Solid Waste Management

- Responding to abnormal and/or emergency conditions according to established procedures.

8.1.1.2 Operations Manager. Responsibilities of the Operations manager include the following:

- Planning, organizing, and coordinating the operation activities for RMW Storage Facility

- Coordinating and directing the activities of the Solid Waste Facility Operations managers

- Promoting safe operations of the TSD units managed by Solid Waste Management

- Enforcing safety, housekeeping, and general operating rules

- Conducting operations according to established procedures

- Meeting quality assurance requirements

- Determining the status of and resolving action items arising from audits, inspections, and unusual occurrences

- Supervising emergency response and recovery actions

- Maintaining administrative controls

- Supervising procedure compliance

- Minimizing injuries and/or equipment damage

- Ensuring compliance with operating limits and specifications

- Ensuring that staff levels and training are adequate for safe and effective operations

- Directing, controlling, and coordinating the receipt, transfer, and processing of mixed waste

- Coordinating the recovery and reestablishing control of unplanned releases to the environment and other emergency conditions

- Responding to and providing remedial guidance and decisions for operations anomalies, offnormal conditions, and equipment malfunctions

- Notifying Solid Waste Management of any unplanned releases to the environment

- Ensuring that radiation exposure and dangerous waste exposure are maintained ALARA

- Responding to abnormal and/or emergency conditions according to established procedures

- Assuming charge during emergencies until properly relieved by upper management or the building emergency director.

8.1.1.3 Solid Waste Facility Operations Manager. Responsibilities of the Solid Waste Facility Operations manager include the following:

- Supervising, coordinating, and directing the activities of Solid Waste Facility Operations supervisors

- Promoting safe operations of the TSD units managed by Solid Waste Management

- Enforcing safety, housekeeping, and general operating rules

- Maintaining control over Solid Waste Management operations in accordance with established operating procedures and policies, U.S. Department of Energy Orders, and federal and state regulations

- Recognizing offnormal conditions and taking appropriate action

- Conducting operations according to established procedures

- Meeting quality assurance requirements

- Determining the status of and resolving action items arising from audits, inspections, and unusual occurrences

- Training and/or arranging training for personnel

- Supervising emergency response and recovery actions

- Maintaining administrative controls

- Maintaining essential records

- Supervising procedure compliance

- Minimizing injuries and/or equipment damage

- Ensuring compliance with operating limits and specifications

- Directing, controlling, and coordinating the receipt, transfer, and processing of mixed-waste

- Conducting pre-job safety and planning meetings with personnel involved with the Solid Waste Management operations

- Ensuring that supervisors and nuclear operators are trained

- Ensuring that radiation exposure and dangerous waste exposure are maintained ALARA

- Notifying Solid Waste Management of any unplanned releases to the environment

- Responding to and providing remedial guidance and decisions for operations anomalies, offnormal conditions, and equipment malfunctions

- Coordinating the recovery from, and measuring and reestablishing control of, unplanned releases to the environment and other emergency conditions

- Responding to abnormal and/or emergency conditions according to established procedures

- Performing the duties of the building emergency director during emergencies.

8.1.1.4 Solid Waste Facility Operations Supervisor. Responsibilities of the Solid Waste Facility Operations supervisors include the following:

- Supervising, coordinating, and directing the activities of the nuclear operators
- Promoting safe operation of TSD units managed by Solid Waste Management
- Enforcing safety, housekeeping, and general operating rules
- Conducting operations according to established procedures
- Maintaining control over Solid Waste Management operations in accordance with established operating procedures and policies, U.S. Department of Energy Orders, and federal and state regulations
- Recognizing nonstandard conditions and taking appropriate action
- Training and/or arranging training for personnel
- Ensuring that nuclear operators are trained
- Maintaining essential records
- Supervising emergency response and recovery actions
- Maintaining administrative controls
- Supervising procedure compliance
- Conducting pre-job safety and planning meetings with personnel involved with solid waste operations
- Notifying Solid Waste Management of any unplanned releases to the environment
- Minimizing injuries and/or equipment damage
- Ensuring compliance with operating limits and specifications
- Ensuring that radiation exposure and dangerous waste exposure are maintained ALARA
- Serving as designated alternates to the building emergency director and the staging area manager
- Responding to abnormal and/or emergency conditions according to established procedures

- Assuming charge during emergencies until properly relieved by higher management or the building emergency director.

8.1.1.5 Nuclear Operator. Responsibilities of the nuclear operators include the following:

- Performing Solid Waste Management operations work activities in accordance with current operating procedures
- Attending Solid Waste Management operations work plan and pre-job safety meetings
- Escorting supporting craftsmen and visitors entering Solid Waste Management operations TSD units
- Conducting routine inspections
- Operating processes and equipment
- Packaging and labeling radioactive and/or mixed waste for shipment
- Handling radioactive and/or mixed waste for shipment
- Performing sampling as required by procedure
- Providing surveillance for abnormal conditions
- Responding to abnormal and/or emergency conditions according to established procedures
- Responding to leaks or spills of radioactive and/or mixed waste
- Responding to alarms at Solid Waste Management operations TSD units.

8.1.1.6 Health Physics Supervisor. Responsibilities of the Health Physics supervisor include the following:

- Providing health physics support for Solid Waste Management operations
- Providing current radiation work permits for all personnel working in the TSD units managed by Solid Waste Management
- Overseeing on-the-job training for health physics technicians
- Providing direction and guidance to Solid Waste Management concerning radiological conditions
- Providing immediate health physics support in an emergency
- Responding to abnormal and/or emergency conditions according to established procedures.

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8.1.1.7 Health Physics Technician. Health physics technicians include health physics technician-trainees, health physics technicians, and senior health physics technicians. Responsibilities of the health physics technicians include the following:

- Operating radiation and contamination sampling systems
- Issuing supplemental dosimeters
- Providing dose rate monitoring support
- Surveying personnel as personnel leave radiation areas
- Maintaining all radiation equipment records
- Prescribing protective clothing necessary to perform work in radiation and contamination areas
- Responding to all radiation alarms
- Collecting air samples
- Locating radiation and contamination boundary perimeters for nuclear operators when fences and barriers are being erected
- Performing routine surveillance
- Documenting all support provided for personnel at the TSD units managed by Solid Waste Management
- Overseeing work activities to ensure that radiation and dangerous waste exposure are maintained ALARA
- Responding to abnormal and/or emergency conditions according to established procedures.

8.1.1.8 Solid Waste Management Operations Engineering Manager. Responsibilities of the Solid Waste Management Operations Engineering managers include the following:

- Developing, revising, and reviewing all operating procedures
- Performing self-audits and appraisals of operations
- Issuing, tracking, and closing out all occurrence reports
- Reviewing all new and future projects planned for Solid Waste Management operations
- Supporting tours, audits, and readiness reviews of Solid Waste Management operations TSD units.

8.1.1.9 Solid Waste Management Engineering Services Manager and Cognizant/Process Engineer. Responsibilities of the Solid Waste Management Engineering Services manager and cognizant/process engineers include the following:

- Providing the operating organizations with equipment and buildings that can be operated safely and productively

- Ensuring that the staff is knowledgeable of procedures, equipment, buildings, and processes such that the staff can identify problem areas and provide remedial action in a timely fashion to keep TSD units operating safely and productively

- Planning and integrating all resources required to meet design objectives, schedules, and milestones identified on cost account plans and master schedules

- Negotiating and integrating supporting work from organizations

- Conducting regular self-monitoring and appraisal of group performance and taking appropriate action when deemed necessary to improve group performance

- Preparing and/or approving engineering design documents and drawings that are in compliance with applicable policies, procedures, and instructions and are in accordance with recognized national standards and codes

- Preparing all engineering change notices as specified

- Maintaining and updating design engineering drawing files

- Preparing and approving equipment and material specifications for new design and equipment purchase requisitions including quality statements and impact levels

- Performing business information data reviews on new designs, equipment, and materials, and approving vendor business information data systems qualifications

- Acting as the point of contact for resolution and disposition of nonconformance material and equipment via the Material Review Board

- Preparing design criteria, performing and approving design analysis, and assigning impact levels on design

- Preparing and approving excavation permits and tie-in permits

- Overseeing and directing the activities of the cognizant/process engineering staff such that the Solid Waste Management process can be operated in a safe, efficient, and technically sound manner

9 2 1 2 1 1 6 0 7 4 3

- Ensuring that solid waste process equipment, procedures, designs, etc., comply with U.S. Department of Energy Orders, federal and state regulations, national standards, and applicable engineering procedures and management standards

- Issuing and maintaining or providing oversight and review of Solid Waste Management operating documentation, operating procedures, flowsheets, sample schedules, specifications, process test plans and procedures, operational safety requirements, and other documents necessary to operate the TSD units managed by Solid Waste Management

- Performing routine and comprehensive evaluations of the Solid Waste Management processes to ensure compliance with process control requirements, procedure compliance, and equipment performance, assessing problem areas, and implementing timely corrective actions

- Providing support for process control engineers in troubleshooting process upsets

- Recruiting, training, certifying, appraising, and developing a highly competent and professional engineering staff to carry out the group's responsibilities

- Preparing, issuing, and ensuring technical correctness of Solid Waste operating procedures, and preparing and issuing procedure departure authorizations that are correct and that support process changes

- Performing daily, routine, and comprehensive evaluations of Solid Waste Management process parameters to ensure compliance with procedures

- Maintaining Solid Waste Management instrument and equipment flow diagrams that are technically correct and that reflect the current configuration of the process system

- Reviewing and approving engineering change notices for applicable process equipment changes

- Preparing and approving Solid Waste Management process memos, process test plans, and work plans

- Reviewing and approving Solid Waste Management work authorizations and assigning impact levels

- Providing technical direction for spill responses

- Providing input to environmental permit applications

- Responding to abnormal and/or emergency conditions according to established procedures.

8.1.1.10 Environmental Engineering/Safety Analysis Reports Manager and Environmental Control Officer. Responsibilities of the Environmental Engineering/Safety Analysis Reports manager and environmental control officer include the following:

- Overviewing solid waste environmental issues
- Reviewing and approving waste handling procedures
- Assessing environmental waste handling problem areas and implementing timely actions
- Ensuring that Solid Waste Management is in compliance with environmental regulations
- Reviewing and approving environmental data for Solid Waste Management
- Ensuring adherence to the EPA and Ecology reporting requirements
- Reviewing and approving new or revised permits
- Serving as the single point of contact for environmentally related matters
- Managing solid waste environmental program corrective actions status to achieve compliance with hazardous material and dangerous waste permits
- Coordinating the review and submittal of environmental data for the following:
  - Annual dangerous waste report
  - Waste minimization report
  - Waste volume projections (solid and liquid)
  - The *Superfund Amendments and Reauthorization Act of 1986* (SARA) 312 inventory
  - The SARA 313 releases
  - EPA surveys
- Preparing and providing input to reporting of the following:
  - Spill information
  - Interim status compliance
  - Ecology and EPA reporting requirements
- Ensuring the development and review of new or revised permits including the following:
  - Part A notifications
  - Part B permits
  - Closure plans
  - Clean air permits
  - National Pollution Discharge Elimination System permits and well registrations

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- Ensuring implementation of permitting requirements and conducting periodic surveillances of compliance assessment with permits. Ensuring the maintenance of active permits in an up-to-date condition

- Resolving regulatory interpretations required to operate TSD units through interfacing with the applicable environmental organization, DOE-RL, Ecology, EPA, and applicable Department of Health organization

- Preparing, issuing, and approving environmental waste handling procedures

- Determining and issuing environmental waste handling, packaging, and shipping requirements

- Assessing environmental waste handling problem areas and implementing corrective action

- Approving waste container control

- Maintaining electronic tracking of environmental waste.

8.1.1.11 Quality Assurance Manager and Quality Assurance Engineer. Responsibilities of the Quality Assurance manager and Quality Assurance engineers include the following:

- Providing quality planning to ensure that requisite quality is attained and ensuring compliance with technical requirements, including all U.S. Department of Energy-approved requirements and applicable codes and standards

- Investigating, analyzing, and evaluating (in concert with applicable environmental organizations and engineering organizations) all reported nonconformances from approved technical requirements and approving disposition actions defined by nonconformance reports for all nonconforming items

- Reviewing supplier and contractor status reports, audit reports, inspection reports, nonconformance reports, and unusual occurrence reports to determine existing or potential problems

- Establishing inspection procedures and controls that provide the data necessary to resolve disposition of nonconformance or other quality problems. Obtaining commitments from supplier, contractor, or management to take corrective action to solve root causes of problems and following up to ensure the effectiveness of actions taken

- Reviewing and approving engineering drawings, specifications, and other technical documents specifying design and fabrication requirements, and changes thereto, to ensure adequacy of definition of quality provisions

- Planning and performing quality assurance surveillance of contractors and individual organizations to assess compliance with quality requirements, issuing reports of findings, and following up as required to effect timely implementation of necessary corrective actions

- Performing quality engineering tasks and activities as related to design, procurement, program and project planning, procedures, occurrence reporting, readiness reviews, surveillance and assessments, audits, trend analysis, corrective actions, and documentation

- Assisting in studies, development, testing, and analysis of designs, processes, and procedures

- Collecting and compiling technical information for review and assisting in the preparation of technical specifications, reports, procedures, and other quality related documents

- Performing cognizant quality engineering duties within the scope of the incumbents' abilities and the technical complexity of the system.

8.1.1.12 Quality Control Manager and Quality Control Inspector. Responsibilities of the Quality Control manager and Quality Control inspectors include the following:

- Managing and directing the conduct of compliance and conformance verification activities by quality control personnel

- Selecting and assigning qualified personnel to implement the quality assurance and quality control procedures, management of information, and Solid Waste Management quality plans

- Establishing standards and goals for Quality Control personnel and implementing procedures and instructions for their accomplishment

- Implementing a quality control surveillance program to monitor and ensure that all critical characteristics are reviewed for strict compliance with policies and procedures

- Developing and implementing systems to identify, control, and monitor nonconforming conditions and activities and providing investigative and verification support to include sound recommendations leading to prompt corrective actions

- Performing scheduled and unscheduled surveillances and inspections and documenting results for follow-up actions

- Participating in the planning and performance of complex surveillances and inspections of maintenance, fabrication, and operation activities and verifying compliance with engineering and quality assurance parameters

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- Performing source inspection and acceptance of procured equipment, materials, or assemblies

- Assisting quality engineers in tabulating, charting, and analyzing quality assurance data

- Researching and compiling information to evaluate quality performance trends.

8.1.1.13 Occupational Health and Safety Manager and Engineer. Responsibilities of the Occupational Health and Safety manager and engineers include the following:

- Supporting operations and activities through the provision of industrial hygiene, industrial safety, fire protection, and radiation safety expertise, assistance, and services

- Providing guidance for consistent, effective implementation of occupational health and safety requirements

- Assisting the line organizations in developing cost-effective occupational health and safety plans, systems, controls, procedures and training

- Assisting the line organizations in preparing designs, specifications, work packages, incident and occurrence reports, corrective action plans, procurement documents and specifications; in conducting hazard evaluations, risk analyses and self-assessments; and in determining and resolving unreviewed safety questions

- Supplying or assisting in the procurement of services for health and safety engineering, dosimetry, radiological and chemical monitoring, respiratory protection, safety training resources, and medical scheduling

- Administering programs to control and minimize radiological, chemical, and industrial hazard exposures, and promoting improved occupational health and safety performance throughout operations

- Administering work permitting systems and approving hazardous and radiation work permits; excavation permits; coredrill permits; and welding, cutting, and braising permits

- Directing, advising, and assisting in the investigation and resolution of health and safety related complaints, employee concerns, accidents, occurrences, and conditions

- Assisting in the identification and application of lessons learned

- Conducting or assisting in inspections and walkthroughs, pre-occupancy inspections, etc., and administering the Safety Observer Program

- Maintaining and coordinating active ALARA and safety awareness programs to minimize hazard exposures, increasing health and safety awareness, alerting personnel to known hazards, and recognizing positive safety performance

- Providing expertise and administrative support to the President's Safety Council, Accident Prevention Council, and similar TSD unit or organization-specific activities

- Monitoring health and safety experience, providing performance and trend reports, and maintaining employee health and safety records

- Representing management in interfaces with DOE-RL and other contractors regarding occupational health and safety programs, experience, and records

- Preparing and issuing health and safety performance measures, indicators, and trend analyses

- Preparing and submitting health and safety experience reports as required by the U.S. Department of Energy and other governmental agencies

- Developing and submitting to Pacific Northwest Laboratory the Hanford Environmental Health Foundation employee radiation and chemical exposure records

- Maintaining occupational health and safety records as required by the U.S. Department of Energy and applicable management.

8.1.1.14 **Health and Safety Assurance Manager and Engineer.** Responsibilities of the Health and Safety Assurance managers and engineers include the following:

- Supporting management activities and programs through the performance and conduct of independent safety review and surveillance to ensure compliance with the letter and intent of applicable health, safety, and fire protection regulations, standards, directives, and recognized good practices

- Developing and interpreting policy, standards, and programs to assist in achieving and maintaining full compliance with occupational health and safety requirements

- Reviewing external standards, public laws, and U.S. Department of Energy Orders and directives

- Incorporating the appropriate requirements into policy, standards, and programs for health, safety, and fire protection

- Reviewing TSD unit documents, operations, and programs to ensure compliance

- Maintaining an organization staffed and qualified to interpret and apply the U.S. Department of Energy Orders and other mandated requirements or recommended practices relative to fire protection, industrial hygiene, occupational safety, radiation protection, and nuclear safety

- Establishing and interpreting safety policies, standards, and limits, and originating Level 2 safety manuals to be used in operations, activities, and TSD units

- Providing and conducting independent audits, appraisals, assessments and surveillances in the technical safety areas for the purpose of determining compliance with U.S. Department of Energy Orders, other agency standards, and other applicable requirements, as appropriate

- Identifying deficiencies that require corrective action and following up corrective actions taken

- Conducting multidisciplinary safety design and document review for the purpose of verifying compliance with mandated statutory safety requirements, standards, and recommended practices

- Administering and coordinating contract 'work for others' relative to health and safety support requests

- Representing management in interfaces with the U.S. Department of Energy, other contractors, federal, state, and local agencies relative to health and safety regulation and compliance

- Eliciting and facilitating program improvements

- Directing that work be stopped or TSD units be shut down to protect personnel or property from imminent danger

- Interfacing with management, the U.S. Department of Energy, and other organizations and personnel in the conduct of assigned responsibilities.

8.1.1.15 Solid/Liquid Waste Maintenance Manager and Maintenance Engineer. Responsibilities of the Solid/Liquid Waste Maintenance manager and maintenance engineers include the following:

- Ensuring compliance with requirements, applicable policies, programs, regulations, and U.S. Department of Energy directives to ensure personnel safety, environmental compliance, and public safety

- Assisting in detailed planning of schedules and budgets to ensure that work is performed in accordance with established schedules and within budget

- Evaluating and modifying maintenance procedures and work plans, and ensuring that procedures are current and accurate

- Providing assistance to equipment and system efforts through direct support to maintenance and providing person-in-charge services for complex maintenance and/or installation activities

- Performing root-cause analyses as required to determine equipment-, system-, or personnel-induced failures of maintenance systems or equipment, performing failure history analyses, and recommending changes as appropriate

- Ensuring that requirements are identified for each assigned TSD unit, giving particular attention to items supporting safety systems

- Identifying preventive maintenance requirements and deficiencies

- Conducting equipment and TSD unit walkdowns and providing recommendations for reliability improvements

- Providing for continued input and development of the equipment history file in support of trend analysis reviews and specific problem resolution

- Conducting critical equipment failure analysis with the cognizant system engineer

- Providing direct technical guidance support to the maintenance performance group in conjunction with the cognizant system engineer

- Supervising, coordinating, and directing the activities of the Solid Waste Management Maintenance supervisors

- Promoting safe maintenance practices at the TSD units managed by Solid Waste Management

- Enforcing safety, housekeeping, and general rules

- Conducting maintenance activities according to established procedures

- Identifying offnormal conditions and taking appropriate action

- Ensuring that supervisors and crafts are trained

- Arranging training for personnel

- Supervising emergency response and recovery actions

- Maintaining administrative controls

- Conducting pre-job safety and planning meetings with personnel involved with the TSD units managed by Solid Waste Management

- Ensuring that radiation exposure and dangerous waste exposure are maintained ALARA

- Responding to abnormal and/or emergency conditions according to established procedures

- Assuming charge during emergencies until properly relieved by higher management or the building emergency director.

8.1.1.16 **Solid Waste Management Maintenance Supervisor.** Responsibilities of the Solid Waste Management Maintenance supervisors include the following:

- Supervising, coordinating, and directing the activities of maintenance crafts

- Promoting safe maintenance practices at the TSD units managed by Solid Waste Management

- Enforcing safety, housekeeping, and general rules

- Conducting maintenance activities according to established procedures

- Identifying offnormal conditions and taking appropriate action

- Training and/or arranging training for personnel

- Ensuring that maintenance crafts are trained

- Maintaining essential records

- Supervising emergency response and recovery actions

- Maintaining administrative controls

- Conducting pre-job safety and planning meetings with personnel involved with TSD units managed by Solid Waste Management

- Minimizing injuries and/or equipment damage

- Ensuring that radiation exposure and dangerous waste exposure are maintained ALARA

- Responding to abnormal and/or emergency conditions according to established procedures

- Assuming charge during emergencies until properly relieved by upper management or the building emergency director.

8.1.1.17 **Maintenance Crafts.** Crafts include electricians, instrument technicians, iron workers and riggers, millwrights, pipefitters, and welders. Responsibilities of the maintenance crafts include the following:

- Providing routine schedule and emergency maintenance services

- Responding to abnormal and/or emergency conditions according to established procedures.

8.1.1.18 Road, Delivery, and Equipment Operations Manager. Responsibilities of the Road, Delivery, and Equipment Operations managers include the following:

- Supervising and coordinating the activities of Road, Delivery, and Equipment Operations supervisors and other employees

- Promoting safe operations of heavy-duty trucks and equipment

- Ensuring that operations are conducted according to established procedures

- Determining the status of and resolving action items arising from audits, inspections, and unusual occurrences

- Supervising emergency response and recovery actions

- Maintaining administration controls

- Enforcing safety and general rules

- Ensuring proper response to radioactive and/or mixed waste spills from trucks

- Implementing training requirements for supervisors and heavy-duty truck drivers

- Ensuring that essential training and qualification records are maintained

- Ensuring that radiation exposure and dangerous waste exposure are maintained ALARA.

8.1.1.19 Road, Delivery, and Equipment Operations Supervisor. Responsibilities of the Road, Delivery, and Equipment Operations supervisors include the following:

- Supervising, coordinating, and directing the activities of heavy-duty truck drivers and other employees

- Maintaining control over heavy-duty truck operations (including the transport of radioactive and/or mixed-waste) in accordance with established operating procedures, policies, U.S. Department of Energy Orders, and federal and state regulations

- Recognizing offnormal conditions and taking appropriate action

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- Training and/or arranging training for personnel
- Maintaining essential records
- Supervising emergency response and recovery actions
- Ensuring procedure compliance
- Conducting safety and planning meetings with personnel involved with radioactive and/or mixed waste transport and loading/unloading operations
- Ensuring that the heavy-duty truck drivers are trained and qualified to operate heavy-duty trucks and to transport hazardous materials or dangerous waste
- Enforcing safety and general rules
- Ensuring compliance with operating limits and government regulations for operating trucks and transporting hazardous material or dangerous waste
- Ensuring that radioactive exposure and dangerous waste exposure are maintained ALARA
- Reviewing completed truck pre-trip inspection form before hazardous material or dangerous waste is transported
- Ensuring that transport of radioactive and/or mixed waste is in accordance with the schedule list provided by Solid Waste Management operations
- Reviewing and distributing hazardous material transport manifest and daily log
- Ensuring proper response to radioactive and/or mixed waste spills
- Ensuring that Road, Delivery, and Equipment Operations management is notified of radioactive and/or mixed waste spills.

8.1.1.20 Road, Delivery, and Equipment Operations Heavy-Duty Truck Driver. Responsibilities of Road, Delivery, and Equipment Operations heavy-duty truck drivers include the following:

- Performing work activities in accordance with current operation procedures
- Attending Road, Delivery, and Equipment Operations pre-job safety meetings
- Observing all safety precautions related to transport operations

- Responding to a spill or emergency in accordance with current procedures

- Notifying Road, Delivery, and Equipment Operations management in the event of a spill or emergency

- Ensuring that transport of radioactive and/or mixed waste is in accordance with the schedule list provided by Solid Waste Operations

- Completing pre-inspection of trucks at the beginning of a shift or whenever drivers are changed

- Reviewing radioactive and/or mixed waste shipping forms

- Inspecting radioactive and/or mixed waste drums for proper labeling

- Inspecting integrity of radioactive and/or mixed waste drums

- Signing the radioactive and/or mixed waste shipping forms

- Loading the truck

- Transporting radioactive and/or mixed waste drums

- Observing standard safe driving practices for truck operations

- Unloading truck at TSD units managed by Solid Waste Management

- Providing a copy of the shipping forms to Solid Waste Management Operations

- Completing the daily log sheet

- Providing copies of radioactive and/or mixed onsite or offsite waste shipping forms and daily log to Road, Delivery, and Equipment Operations supervisor.

8.1.1.21 **Processing and Analytical Laboratories Manager.** Responsibilities of the Processing and Analytical Laboratories managers include the following:

- Managing, coordinating, and directing the activities of assigned personnel to attain safe and efficient operation of analytical laboratories

- Providing quality analytical results in a timely manner to all processing TSD units and to environmental monitoring personnel required to make process, safety, and security decisions

- Ensuring that all process control and nuclear accountability standards are analyzed and reported to the laboratory measurement control system

- Ensuring that all personnel are trained and qualified for the tasks being performed

- Managing overall laboratories operation

- Supervising chemical technologists and chemists/scientists who provide process and dangerous waste analysis support for Solid Waste Management

- Authorizing (or delegating authority to authorize) the release of analytical data

- Responding to abnormal and/or emergency conditions according to established procedures.

8.1.1.22 **Chemist/Scientist.** Responsibilities of the chemists/scientists include the following:

- Setting up, testing, and monitoring performance of analytical methods and instruments

- Providing dangerous waste analysis support and analysis oversight, and supervising first-line laboratory management, which includes training chemical technologists to laboratory procedures

- Developing routine and nonroutine sample characterization procedures as well as modifying or updating procedures as necessary

- Verifying and checking reported analytical data

- Responding to abnormal and/or emergency conditions according to established procedures

- Directing activities outside routine procedures during abnormal operating conditions.

8.1.1.23 **Chemical Technologist.** Responsibilities of the chemical technologists include the following:

- Providing radiological and dangerous waste sampling and analysis support for Solid Waste Management personnel (physical property determinations, chemical composition determinations, and routine laboratory operations)

- Setting up and testing analytical instrumentation under the direction of a chemist

- Performing repetitive and nonroutine analyses for characterization of methodology, equipment, or samples

- Training other technicians, scientists, and less experienced personnel in radiation practices and methodology

- Reporting analytical data

- Responding to abnormal and/or emergency conditions according to established procedures.

8.1.1.24 Hanford Fire Department. Responsibilities of the Hanford Fire Department personnel include the following:

- Responding to emergencies

- Providing fire suppression for fires and explosions

- Assisting in the control and containment of radioactive and/or mixed waste and hazardous material accidents or incidents when applicable

- Providing emergency medical attention for injured personnel.

8.1.2 Training Content, Frequency, and Techniques [H-1b]

This section provides an overview of job-specific training provided to personnel in job positions discussed in the previous sections. In addition to normal operating conditions, personnel with these job positions are instructed on communications and alarm systems and on the proper response to abnormal conditions and emergencies such as fire, radiological incidents, dangerous waste incidents, and shutdown of operations.

8.1.2.1 Overview of Training for Specific Positions. All Solid Waste Management personnel receive applicable general, unit-specific, and job-specific training. The courses are given in classroom settings, on-the-job training, self-study units, and computer-based training. Tables 8-1 through 8-5 consist of matrices that relate job position to the individual training courses. Table 8-6 provides employee work categories definitions. The following sections provide an overview of job-specific training.

8.1.2.1.1 Solid Waste Manager Training. The Solid Waste manager completes specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of Solid Waste Management contingency plans and use of emergency and monitoring equipment.

8.1.2.1.2 Operations Manager Training. The Operations manager completes specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of Solid Waste contingency plans and use of emergency and

monitoring equipment. The Solid Waste Operations manager is required to be qualified for the assigned job through a systematic process as determined by management.

8.1.2.1.3 Solid Waste Facility Operations Manager Training. The Solid Waste Facility Operations manager completes specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of Solid Waste contingency plans and use of emergency and monitoring equipment. The Solid Waste Facility Operations manager is required to be qualified for the assigned job through a systematic process as determined by management.

8.1.2.1.4 Solid Waste Facility Operations Supervisor Training. The Solid Waste Facility Operations supervisors complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of Solid Waste contingency plans and use of emergency and monitoring equipment. The Solid Waste Facility Operations supervisors are required to be qualified for the assigned jobs through a systematic process as determined by management.

8.1.2.1.5 Nuclear Operator Training. Nuclear operators complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include implementation of Solid Waste contingency plans, routine inspections, and use of emergency and monitoring equipment.

Nuclear operators are required to be certified for assigned jobs. Those who are certified complete appropriate dangerous waste training. Operators recertify for assigned jobs at least biennially. Operators must complete the progression tests (general radio-chemical operator and plant-specific courses) at least annually. Once a nuclear operator reaches the nuclear process operator level, the progression tests are referred to as requalification tests and are a biennial requirement supplemented by an intervening biennial emergency procedures and abnormal plant conditions test. The combination of requalification tests and the emergency procedures and abnormal plant conditions tests ensures that nuclear process operators continue to comply with the annual emergency training requirement.

8.1.2.1.6 Health Physics Supervisor Training. The health physics supervisor completes specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of Solid Waste contingency plans and use of emergency and monitoring equipment.

8.1.2.1.7 Health Physics Technician Training. The health physics technicians complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of Solid Waste contingency plans and use of emergency and monitoring equipment.

The health physics technicians are required to be certified for assigned jobs. The health physics technicians must certify for the level at which they are assigned work (i.e., health physics technician or senior health physics technician). They must complete their next-level certification tests between 15 and 18 months after they arrive at the current level. Once health physics technicians reach the senior health physics technician level, they must recertify at least biennially thereafter. The health physics technicians also must complete corresponding general and specific on-the-job training for each level.

The health physics technicians must complete the appropriate on-the-job training at least every 4 years thereafter. All health physics technicians must comply with the emergency procedures and abnormal plant conditions requirements and must complete the hazardous worker training refresher course at least annually. Compliance is accomplished by health physics technicians completing the requirement with a written test or an on-the-job training checklist in alternating years.

8.1.2.1.8 Solid Waste Operations Engineering Manager Training. The Solid Waste Operations Engineering manager completes specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of Solid Waste contingency plans and use of emergency and monitoring equipment.

8.1.2.1.9 Solid Waste Engineering Services Manager and Cognizant/Process Engineer Training. The Solid Waste Engineering Services manager and cognizant/process engineers complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of Solid Waste Management contingency plans and use, inspection, repair, and replacement of emergency and monitoring equipment. Process engineers are required to be qualified for assigned jobs through a systematic process as determined by management.

8.1.2.1.10 Environmental Engineering/Safety Analysis Reports Manager and Environmental Control Officer Training. The Environmental Engineering/Safety Analysis Reports manager and the environmental control officer complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable

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policies, and federal and state regulations. The courses include the implementation of Solid Waste contingency plans and use of emergency and monitoring equipment.

8.1.2.1.11 Quality Assurance Manager and Quality Assurance Engineer Training. The Quality Assurance manager and Quality Assurance engineers complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of applicable contingency plans and use of emergency and monitoring equipment.

8.1.2.1.12 Quality Control Manager and Quality Control Inspector Training. The Quality Control manager and Quality Control inspectors complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of applicable contingency plans and use of emergency and monitoring equipment.

8.1.2.1.13 Occupational Health and Safety Manager and Engineer Training. The Occupational Health and Safety manager and engineers complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of applicable contingency plans and use of emergency and monitoring equipment.

8.1.2.1.14 Health and Safety Assurance Manager and Engineer Training. The Health and Safety Assurance manager and engineers complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address waste management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of applicable contingency plans and use of emergency and monitoring equipment.

8.1.2.1.15 Solid/Liquid Waste Maintenance Manager and Maintenance Engineer Training. The Solid/Liquid Waste Maintenance manager and maintenance engineers complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of Solid Waste contingency plans and use, inspection, repair, and replacement of emergency and monitoring equipment.

8.1.2.1.16 Solid Waste Maintenance Supervisor Training. The Solid Waste Maintenance supervisors complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and

state regulations. The courses include the implementation of Solid Waste Management contingency plans and use, inspection, repair, and replacement of emergency and monitoring equipment.

8.1.2.1.17 Maintenance Crafts Training. Maintenance crafts complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of Solid Waste contingency plans and use, inspection, repair, and replacement of emergency and monitoring equipment.

8.1.2.1.18 Road, Delivery, and Equipment Operations Manager Training. The Road, Delivery, and Equipment Operations manager completes specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Fleet Operations, Transportation, and Maintenance Services waste management procedures (including implementation of applicable contingency plans), and use of emergency and monitoring equipment.

8.1.2.1.19 Road, Delivery, and Equipment Operations Supervisor Training. The Road, Delivery, and Equipment Operations supervisors complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Fleet Operations, Transportation, and Maintenance Services waste management procedures (including implementation of applicable contingency plans), and use of emergency and monitoring equipment.

8.1.2.1.20 Road, Delivery, and Equipment Operations Heavy-Duty Truck Driver Training. The Road, Delivery, and Equipment Operations heavy-duty truck drivers complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Fleet Operations, Transportation, and Maintenance Services waste management procedures (including implementation of applicable contingency plans), and routine inspections and use of emergency and monitoring equipment.

The Road, Delivery, and Equipment Operations heavy-duty truck drivers are required to be qualified for assigned jobs (e.g., hazardous material carrier/driver and valid Washington State commercial drivers license, Class A, with hazardous material endorsement). Those who are qualified complete appropriate dangerous waste training. Drivers must requalify for their assigned jobs at least biennially. Drivers must renew their commercial drivers licenses every 4 years, complete a U.S. Department of Transportation physical, be medically certified biennially, and complete the Washington State hazardous material endorsement test annually. The combination of requalification courses and renewing the Washington State commercial drivers license, Class A, with hazardous material endorsement, ensures that drivers continue to comply with the annual emergency training requirements.

8.1.2.1.21 Processing and Analytical Laboratories Manager Training. The Processing and Analytical Laboratories manager completes specific courses in

preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of applicable contingency plans and use of emergency and monitoring equipment.

8.1.2.1.22 Chemist/Scientist Training. The chemists/scientists complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of applicable contingency plans and use of emergency and monitoring equipment.

8.1.2.1.23 Chemical Technologist Training. The chemical technologists complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of applicable contingency plans and use of emergency and monitoring equipment. Chemical technologists are required to be qualified for assigned jobs through a systematic process of procedure qualification based on assigned work.

Chemical technologists are required to be qualified for assigned jobs. Those who are qualified complete appropriate hazardous and dangerous waste training annually. Chemical technologists requalify for assigned jobs at least biennially and for emergency procedures and abnormal plant conditions training annually.

Chemical technologist is the entry level for laboratory technologists who perform basic laboratory analysis following approved laboratory procedures. Senior chemical technologist is the advanced level for laboratory technologists who perform more complex laboratory analyses requiring full knowledge of laboratory techniques and procedures. Advancement from chemical technologist to senior chemical technologist is based on seniority within the bargaining unit and the availability of senior chemical technologist position vacancies.

The combination of requalification tests and/or performance checklists, emergency procedures and abnormal plant conditions tests, and hazardous and dangerous waste tests and/or performance checklists ensures that chemical technologists continue to comply with the annual emergency training requirement.

8.1.2.1.24 Hanford Fire Department Training. The Hanford Fire Department personnel complete specific courses in preparation for work assignments, including hazardous material and dangerous waste training courses. The courses address Solid Waste Management procedures, U.S. Department of Energy directives, applicable policies, and federal and state regulations. The courses include the implementation of applicable contingency plans and use of emergency and monitoring equipment.

Hanford Fire Department firefighters meet the requirements of the National Firefighters Protection Association [NFPA 472 and 1001 (NFPA 1989)], 29 CFR 1910.1200 and 1910.120 (paragraph Q), and the Washington State requirements for emergency medical personnel response.

8.1.2.1.25 Nonessential Personnel Training. Employees not identified as essential personnel and other U.S. Department of Energy-contractor personnel who must enter the TSD units managed by Solid Waste Management are required to complete "Solid Waste Facility Orientation" or must be escorted. Non-U.S. Department of Energy-contractor personnel must complete a security and safety orientation before working in or around the RMW Storage Facility.

8.1.2.2 Training Matrix: Job Positions and Training. The Solid Waste Management training program encompasses general, unit-specific, and job-specific training courses. Tables 8-1 through 8-5 consist of matrices that relate job title to the individual training courses applicable to the RMW Storage Facility. The matrices indicate if the courses are introductory or continuing and also if the course is part of a certification program required for specific personnel or required only for new employees.

Some courses are introductory and must be completed one time only (often referred to as orientation) and other introductory courses are the first course in a program. Continuing courses are those that must be repeated according to a specified frequency.

8.1.2.3 Training Course Descriptions. Appendix 8A contains brief descriptions of selected courses, including course description, the target audience, instructional delivery, evaluation method, length of course, and frequency of retraining.

8.1.3 Training Director [H-1c]

There is no one individual designated as training director. This responsibility is shared among Solid Waste Management, Technical Training, Solid Waste Process Engineering, Occupational Health and Safety, Fleet Operations, Transportation, Maintenance Services, and Processing and Analytical Laboratories. This distribution of training responsibilities is provided in Figure 8-1. Using the system noted in Figure 8-1, the RMW Storage Facility management can access training resources and experts in many different areas of hazardous material, dangerous waste, and industrial safety, rather than relying on the knowledge of one person or a small number of individuals. General responsibilities for training are discussed in the following sections.

8.1.3.1 Solid Waste Management Responsibilities. Solid Waste Management has the following responsibilities related to training:

- Establishing operations training requirements
- Requesting and/or conducting training

- Maintaining field training records and certifications

- Tracking retraining.

8.1.3.2 Solid Waste Process Engineering Responsibilities. Solid Waste Process Engineering has the following responsibilities related to training:

- Establishing engineering training requirements

- Developing and conducting engineering training

- Maintaining field training records and certifications

- Tracking retraining.

8.1.3.3 Technical Training Responsibilities. Section groups with technical training responsibilities are listed in the following sections.

8.1.3.3.1 Training Support and Accreditation. Training Support and Accreditation is responsible for the following:

- Conducting job analysis

- Designing training programs

- Developing training programs

- Providing training program accreditation assistance.

8.1.3.3.2 Safety and Quality Technical Training. Safety and Quality Technical Training is responsible for the following:

- Developing and implementing general training courses to comply with federal and state regulations

- Conducting safety training courses

- Developing and providing health physics technician classroom certification training

- Conducting radiation safety training courses

- Conducting respiratory protection classes.

8.1.3.3.3 Environmental Training. Environmental training is responsible for the following:

- Developing and implementing general training courses to comply with U.S. Department of Energy directives and federal and state regulations

- Conducting hazardous and dangerous waste-handling and management courses.

8.1.3.3.4 Training Records. Training Records is responsible for the following:

- Operating and maintaining central training record files
- Notifying management of retraining requirements for employees

8.1.3.3.5 Health Physics Technical Training. Health Physics Technical Training is responsible for the following:

- Establishing health physics personnel training requirements
- Developing and conducting health physics on-the-job training
- Maintaining health physics technician field training records and certifications
- Tracking health physics technician retraining.

8.1.3.3.6 Fundamentals Training. Fundamentals Training is responsible for the following:

- Developing training courses/programs for processing and analytical laboratories employees
- Developing and providing study material and examinations
- Tracking retraining
- Preparing and administering examinations
- Conducting laboratory fundamentals training for new hires
- Coordinating classes and other training requirements to complete and maintain certifications or qualifications
- Conducting laboratory on-the-job training
- Developing and maintaining on-the-job training requirements
- Providing instructors for selected courses.

8.1.3.3.7 Environmental Restoration and Remediation Training. Environmental Restoration and Remediation Training is responsible for the following:

- Developing training courses/program for Solid Waste Management employees
- Developing and providing study material and examinations
- Preparing and administering examinations

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- Coordinating classes and other training requirements to complete and maintain certifications

- Developing and maintaining on-the-job training requirements.

8.1.3.3.8 Maintenance Training. Maintenance training is responsible for developing training materials and providing instruction for maintenance personnel.

8.1.3.4 Occupational Health and Safety Responsibilities. Training responsibilities for this organization include the following:

- Maintaining current knowledge of Occupational Safety and Health Administration regulations

- Ensuring compliance with Occupational Safety and Health Administration regulations through audits, design and procedure reviews, and surveillances

- Providing instructions for selected classes

- Consulting with Technical Training and Solid Waste Management in the development and reevaluation of current training programs.

8.1.3.5 Fleet Operations, Transportation, and Maintenance Services Responsibilities. Training responsibilities for Fleet Operations, Transportation, and Maintenance Services include the following:

- Maintaining current knowledge of Washington State commercial drivers license requirements and U.S. Department of Transportation regulations for transporting hazardous material or dangerous waste

- Ensuring drivers compliance with Washington State commercial drivers license requirements and U.S. Department of Transportation regulations

- Establishing drivers training requirements

- Providing qualified instructors to administer driver proficiency tests for drivers with less than 2 years of driving experience and a clean driving record

- Issuing a commercial drivers license certification for waiver of skill examination for drivers with 2 or more years of driving experience and a clean driving record

- Requesting and/or conducting training

- Maintaining field training, physical, and certification records

- Tracking retraining.

8.1.3.6 Processing and Analytical Laboratories Training Responsibilities. Training responsibilities for this organization include the following:

- Establishing laboratory personnel training requirements
- Reviewing and approving training materials
- Requesting and/or conducting laboratory on-the-job training
- Maintaining field training records and certifications
- Tracking retraining
- Providing instructors for selected classes
- Consulting with Technical Training and other organizations in the developing and reevaluation of current training programs.

8.1.4 Relevance of Training to Job Position [H-1d]

The training program for Solid Waste Management was developed after an initial job analysis was completed. Tasks performed by the responsible organizations were identified and evaluated to determine training requirements. In addition, training needs are assessed in relation to current federal and state regulations on a continual basis. These evaluations could result in modifying or adding new material to the current training program.

Qualification is required for the Operations manager, Solid Waste Facility Operations manager, Solid Waste Facility Operations supervisors, and nuclear operators. To become qualified, an employee must successfully complete classroom training and on-the-job training. Classroom instruction is designed to provide employees with fundamental knowledge required to perform work safely at TSD units managed by Solid Waste Management.

On-the-job training requires personnel to gain experience with what is contained in the operating procedures. All work that involves hazardous material and dangerous waste is performed according to approved operating procedures; therefore, an understanding of procedures is crucial to ensure the proper and safe operation of TSD units managed by Solid Waste Management. Understanding is accomplished by having individuals perform, simulate, and/or describe a particular task as specified by the appropriate operating procedure. The individual demonstrating the required skills and knowledge is observed by another certified nuclear operator and the Solid Waste Facility Operations manager or Solid Waste Facility Operations supervisor before being qualified.

Additionally, management must complete their own certification requirements, which include self-study and on-the-job training.

8.1.5 Training to Emergency Response [H-1e]

Effective response to emergencies, and familiarity with emergency equipment and emergency systems, are covered under the classroom and on-the-job training requirements as outlined in Tables 8-1 through 8-5 and Appendix 8A.

Federal and state regulations require that personnel be able to respond effectively to emergencies and that personnel be familiar with emergency procedures, emergency equipment, and emergency systems. Specific topics addressed include the following:

- Building emergency director's training
- Building emergency plan checklist training
- Solid waste unit-specific training
- Solid waste operations orientation
- Solid waste operations nuclear operator emergency procedures and abnormal plant conditions training
- Solid waste operations supervisor emergency procedures and abnormal plant conditions training
- Solid Waste Operations health physics technicians (all emergency procedures and abnormal plant conditions training).

8.2 IMPLEMENTATION OF TRAINING PROGRAM [H-2]

The Solid Waste Management training program is in place and has been fully implemented. Qualification for Solid Waste Management activities is required before working without supervision. Qualification requires personnel to successfully complete identified classroom and on-the-job training requirements. Qualification requires management to successfully complete self-study, classroom, and on-the-job training requirements. Training content is reviewed and updated as appropriate.

General training of new employees is to be completed within the first 6 months of assignment to the TSD units managed by Solid Waste Management. After the initial training, employees are required to requalify annually or biannually as applicable. Unqualified employees are not permitted to work at the RMW Storage Facility without the supervision of a certified employee. The Solid Waste Facility Operations manager is responsible for ensuring that new employees are trained and that certifications are maintained.

Official training record files for Solid Waste Management employees are stored in the Training Records Information System. This database is managed by the Technical Training Records organization. Technical Training Records inputs the completed training records into a computer file. The computer file

is accessible on a local area network to allow remote accessing of employee training records via a computer terminal. A tickler file is available from the database to inform the RMW Storage Facility operations manager when training is within 90 days of expiration. A computerized copy of completed training and qualifications for employees is available at the Hanford Central Waste Complex. Training records for supporting organizations also are stored in the Training Records Information System, and copies of completed training and qualifications are available at their respective organization's locations. Training records on former employees will be kept for 3 years from the date the employee last worked at the RMW Storage Facility.

Specific employee training records are available, at reasonable times, to the regulators on a demonstrated need-to-know basis. Copies of these records will be marked *Sensitive Information* and are expected to be handled in accordance with the *Privacy Act of 1974*.

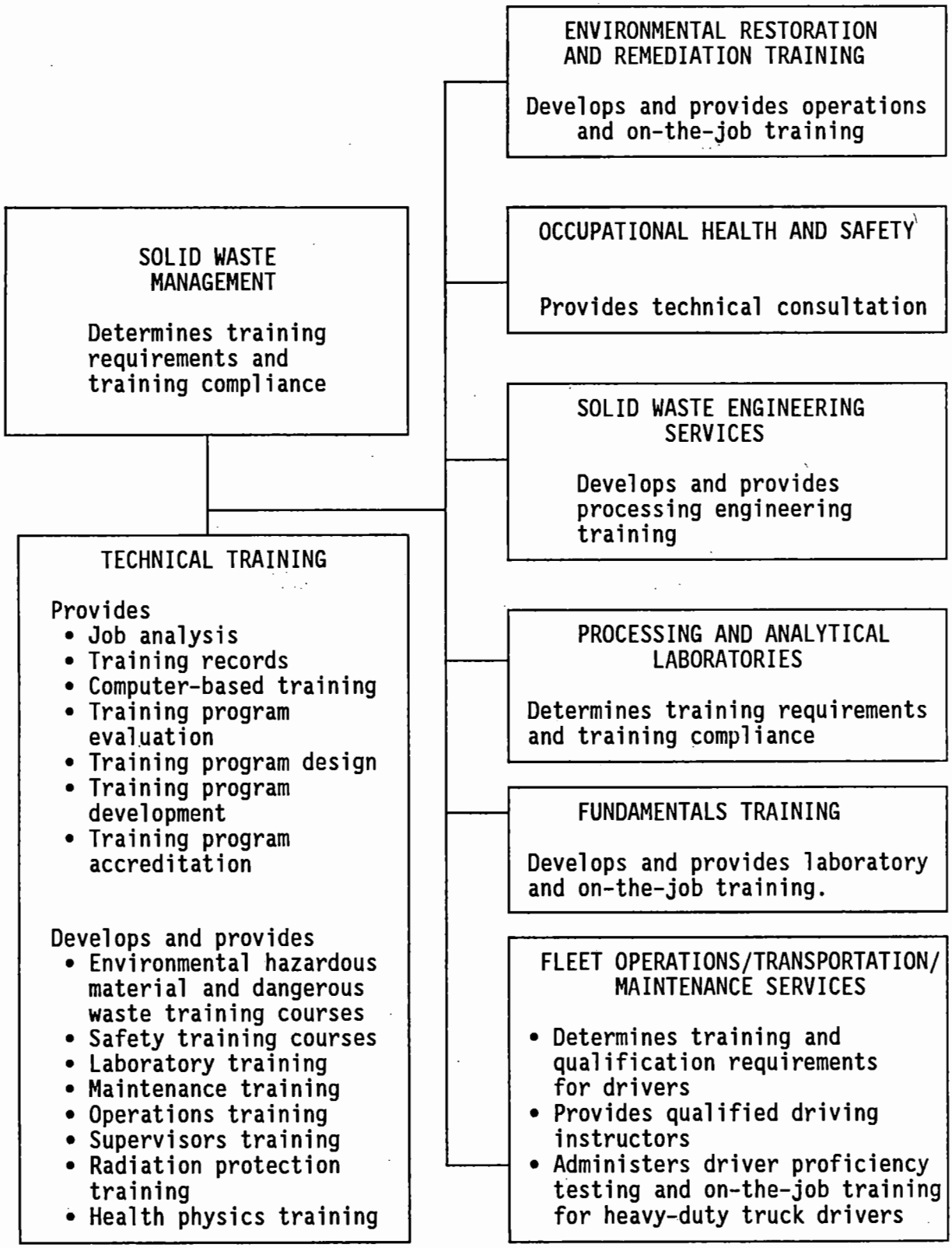

Figure 8-1. Distribution of Training Responsibility for Solid Waste Management.

Table 8-1. General Training Matrix. (sheet 1 of 2)

Course	Type	Target audience																		
		PM	PO	OM	NO	MM	CM	PE	PC	HP	HPT	LM	CT	QA	QC	SF	HZ	FD	RD	HD
Radiation safety training	I	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Radiation safety requalification	C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
General employee training	C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
New employee safety training	I	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
On-the-job training instructor training	I	-	-	3	3	3	3	-	3	3	3	3	3	-	3	-	-	-	3	3
Environmental and hazardous material safety training requirements (Tables 8-4, 8-5)	I,C	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Building emergency director training	C	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Light duty hoist training	C	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Orientation to DOE Order 5000.3A occurrence reporting	I	X	X	X	X	X	-	X	X	X	-	X	-	X	X	X	X	-	X	-
Managers and first-line managers conduct of operations, DOE Order 5480.19	I	X	X	X	-	X	-	X	X	X	-	X	-	X	X	X	X	-	X	-
Basic crane and rigging training	C	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Fork truck operator training	I	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fork truck operator requalification	C	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Target audience abbreviations				Legend	
PM	Solid Waste Management manager	HPT	Health physics technicians	I	Introductory course
PO	Operations manager	LM	Process and Analytical Laboratories managers and chemists/scientists	C	Continuing course
OM	Solid Waste "Unit" Operations managers and supervisors	CT	Chemical technologists	X	Required course
NO	Nuclear operators	QA	Quality Assurance manager and engineers	-	Not applicable

Table 8-1. General Training Matrix. (sheet 2 of 2)

Target audience abbreviations				Legend	
MM	Solid/Liquid Waste Maintenance manager, Maintenance Engineers, and Solid Waste Maintenance supervisors	QC	Quality Control manager and inspectors	1	Not applicable
CM	Maintenance craft	SF	Occupational Health and Safety manager and engineers, Health and Safety Assurance manager and engineers	2	Required only for new employees
PE	Solid Waste Operations Engineering manager	HZ	Environmental Engineering/Safety Analysis Reports manager and Environmental Control officer	3	Required as determined by management for designated personnel
PC	Engineering Services manager and cognizant/process engineers	FD	Hanford Fire Department		
HP	Health physics supervisor	RD	Fleet Operations/Transportation/ Maintenance Services (Road, Delivery, and Equipment Operations) manager and supervisor		
		HD	Road, Delivery, and Equipment Operations heavy-duty truck drivers		

Table 8-2. Unit-Specific Training Matrix.

Course	Type	Target audience																		
		PM	PO	OM	NO	MM	CM	PE	PC	HP	HPT	LM	CT	QA	QC	SF	HZ	FD	RD	HD
Solid Waste Operations orientation*	I	X	X	X	X	X	X	X	X	X	X	-	-	X	X	X	X	X	X	X
Building emergency plan checklist	C	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

Target audience abbreviations				Legend	
PM	Solid Waste Management manager	HPT	Health physics technician	I	Introductory course
PO	Operations manager	LM	Processing and Analytical Laboratories managers and chemists/scientists	C	Continuing course
OM	Solid Waste Unit Operations manager and supervisor	CT	Chemical technologists	X	Required course
NO	Nuclear operators	QA	Quality Assurance manager and engineers	-	Not applicable
MM	Solid/Liquid Waste Maintenance manager, Maintenance engineers, and Solid Waste Maintenance supervisors	QC	Quality Control manager and inspectors	4	Required only for personnel assigned to unit
CM	Maintenance craft	SF	Occupational Health and Safety manager and engineers, Health and Safety Assurance manager and engineers	*	All other applicable contractor personnel in a supporting capacity, other than visitors, must complete this course
PE	Solid Waste Operations Engineering manager	HZ	Environmental Engineering/Safety Analysis Reports manager and Environmental Control officer		
PC	Engineering Services manager and cognizant/ process engineers	FD	Hanford Fire Department		
HP	Health physics supervisor	RD	Fleet Operations/Transportation/ Maintenance Services (Road, Delivery, and Equipment Operations) manager and supervisor		
		HD	Road, Delivery, and Equipment Operations heavy-duty truck drivers		

Table 8-3. Job-Specific Training Matrix. (sheet 1 of 3)

Course	Type	Target audience																		
		PM	PO	OM	NO	MM	CM	PE	PC	HP	HPT	LM	CT	QA	QC	SF	HZ	FD	RD	HD
General radio-chemical operator training	C	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Waste Unit-specific training	C	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear operator certifications	C	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Waste operator certification-mixed waste management	C	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Waste Operations nuclear operator emergency procedures and abnormal plant conditions training	C	-	-	-	X[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Waste Operations supervisor certification	C	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Waste Operations supervisor emergency procedures and abnormal plant conditions training	C	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase II process engineering certification (unit-specific training)	C	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-
Hazardous material-carrier/driver course	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X
Washington State commercial drivers license-Class A with hazardous materials endorsement	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
Chemical technologist qualification	C	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-
Health physics technician trainee certification	I	-	-	-	-	-	-	-	-	-	X[b]	-	-	-	-	-	-	-	-	-
Health physics technician trainee general on-the-job training	C	-	-	-	-	-	-	-	-	-	X[c]	-	-	-	-	-	-	-	-	-

Table 8-3. Job-Specific Training Matrix. (sheet 2 of 3)

Course	Type	Target audience																		
		PM	PO	OM	NO	MM	CM	PE	PC	HP	HPT	LM	CT	QA	QC	SF	HZ	FD	RD	HD
Health physics technician trainee Solid Waste Operations on-the-job training	C	-	-	-	-	-	-	-	-	-	x[c]	-	-	-	-	-	-	-	-	-
Health physics technician certification	C	-	-	-	-	-	-	-	-	-	x[d]	-	-	-	-	-	-	-	-	-
Health physics technician general on-the-job training	C	-	-	-	-	-	-	-	-	-	x[e]	-	-	-	-	-	-	-	-	-
Health physics technician Solid Waste Operations on-the-job training	C	-	-	-	-	-	-	-	-	-	x[e]	-	-	-	-	-	-	-	-	-
Senior health physics technician certification	C	-	-	-	-	-	-	-	-	-	x[f]	-	-	-	-	-	-	-	-	-
Senior health physics technician general on-the-job training	C	-	-	-	-	-	-	-	-	-	x[f]	-	-	-	-	-	-	-	-	-
Senior health physics technician Solid Waste Operations on-the-job training	C	-	-	-	-	-	-	-	-	-	x[f]	-	-	-	-	-	-	-	-	-
Solid Waste Operations health physics technicians (all) emergency procedures and abnormal plant conditions training	C	-	-	-	-	-	-	-	-	-	x[g]	-	-	-	-	-	-	-	-	-

Table 8-3. Job-Specific Training Matrix. (sheet 3 of 3)

Target audience abbreviations				Legend	
PM	Solid Waste Management manager	HPT	Health physics technician	I	Introductory course
PO	Operations manager	LM	Processing and Analytical Laboratories managers and chemists/scientists	C	Continuing course
OM	Solid Waste "Unit" Operations manager and supervisor	CT	Chemical technologists	X	Required course
				-	Not applicable
NO	Nuclear operators	QA	Quality Assurance manager and engineers		
MM	Maintenance manager, Engineering Services manager, Craft Management manager, Tank Farm Craft Maintenance East manager, supervisors, and engineers	QC	Quality Control manager and inspectors	X[a]	Nuclear process operators must complete this course in alternating years in conjunction with the general radio-chemical operator
CM	Maintenance craft	SF	Occupational Health and Safety manager and engineers, Health and Safety Assurance manager and engineers	X[b]	Required only for those health physics technicians hired at the junior health physics technician level
PE	Solid Waste Operations Engineering manager	HZ	Environmental Engineering/Safety Analysis Reports manager and Environmental Control officer	X[c]	Required for junior health physics technicians, health physics technicians, and senior health physics technicians
PC	Engineering Services manager and cognizant/process engineers	FD	Hanford Fire Department	X[d]	Required only for health physics technicians hired at the health physics technician level or who progress from the junior health physics technician level
HP	Health physics supervisor	RD	Fleet Operations/Transportation/ Maintenance Services (Road, Delivery, and Equipment Operations) manager and supervisor	X[e]	Required for health physics technicians and senior health physics technicians
		HD	Road, Delivery, and Equipment Operations heavy-duty truck drivers	X[f]	Required for senior health physics technicians only
				X[g]	Required for health physics technician-trainees, health physics technicians, and senior health physics technicians

Table 8-4. Environmental and Hazardous Material Safety Initial Training Matrix.

Employee category [a]	Course title														Total hours
	Hazardous Communication and Waste Orientation (1 hour)	Generator Hazards Safety Training (4 hours)	Hazardous Materials Waste Job-Specific Training [b]	Radiation Worker Training (8 hours)	Waste Site-Basic (16 hours)	Scott SKA-PAK [c] Training (2 hours)	Cardiopulmonary Resuscitation (4 hours)	Fire Extinguisher Safety (1 hour)	Waste Site Advanced (24 hours)	Waste Site Field Experience (24 hours)	Hazardous Waste Shipment Certification (24 hours)	Certification of Hazardous Material Shipments (8 hours)	Hazardous Waste Site Supervisor/Manager (8 hours)	Compliance Category [d]	
1. All Employees	X														1
2. General Worker		X	X											1	5 + unit-specific training
3. General Supervisor/ Manager		X	X											1	5 + unit-specific training
4. General Nonradiological Shipper		X	X								X			1,2	29 + unit-specific training
5. General Hazardous Material Shipper		X	X									X		1,2	13 + unit-specific training
6a. Hazardous Waste Worker (known hazards)		X	X	X	X									1,3	28 + unit-specific training + field experience
6b. Hazardous Waste Worker (unknown hazards)		X	X	X		X	X	X	X	X				1,4	44 + unit-specific training + field experience
7. Hazardous Waste Supervisor/Manager		X	X	X		X	X	X	X	X			X	1,5	52 + unit-specific training + field experience
8. Hazardous Waste Shipper		X	X	X		X	X	X	X	X	X	X		1,2,4	76 + unit-specific training + field experience

[a] Category definitions are in Table 8-6.
[b] Length varies for each TSD unit.
[c] Scott SKA-PAK is a trademark of Figgie International, Incorporated.
[d] Compliance categories:

1 WAC 173-303, 29 CFR 1910.1200
2 49 CFR 173
3 29 CFR 1910.120 (24-hour requirement)
4 29 CFR 1910.120 (40-hour requirement)
5 29 CFR 1910.120 (40-hour plus 8-hour requirement)

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Table 8-5. Environmental and Hazardous Material Safety Retraining Matrix.

Employee category[a]	Course title (length/frequency)				
	Generator Hazards Safety Training (4 hours/2 years)	Hazardous Materials Waste Job-Specific Training (1 year)[b]	Hazardous Waste Site Retraining (8 hours/1 year)	Hazardous Waste Shipment Certification (24 hours/1 year)	Certification of Hazardous Material Shipments (8 hours/2 years)
1. All Employees		Not required			
2. General Worker	X	X			
3. General Supervisor/Manager	X	X			
4. General Nonradiological Shipper	X	X		X	
5. General Hazardous Material Shipper	X	X			X
6a. Hazardous Waste Worker (known hazards)	X	X	X		
6b. Hazardous Waste Worker (unknown hazards)	X	X	X		
7. Hazardous Waste Supervisor/Manager	X	X	X		
8. Hazardous Waste Shipper	X	X	X	X	X

[a] Category definitions are in Table 8-6.
[b] Length varies for each TSD unit.

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Table 8-6. Employee Work Categories Definitions. (sheet 1 of 2)

Employee category		Definition
1.	All employees	All employees and unescorted contract personnel.
2.	General worker	Any employee who is or has the potential to be exposed to hazardous chemicals in the work place. Also, any employee who generates, packages, stores, or ships hazardous waste or who directly affects the management of hazardous chemicals or hazardous waste.
3.	General Supervisor or Manager	Supervisor or manager who qualifies under the definition of General Worker (No. 2) or who has subordinates who qualify as general workers.
4.	General Nonradiological Dangerous Waste Shippers	Employees who are responsible for preparing and signing the Uniform Hazardous Waste Manifests.
5.	General Hazardous Material (Radiological) Shippers	Employees who certify the compliance of radioactive Hanford Site hazardous material shipments.
Categories 6 through 8 as defined in OSHA 29 CFR 1910.120 *Hazardous Waste Operations and Emergency Response*, are as follows:		
6a.	Hazardous Waste Site Worker - hazards known	Employees who work within or require entry into RCRA-permitted portions of hazardous waste TSD facilities. Examples at the Hanford Site: PUREX aqueous makeup; PUREX sampling gallery; PUREX operating and pipe gallery.
6b.	Hazardous Waste Site Worker - hazards unknown	Employees who work within or require entry into CERCLA/RCRA remediation sites or TSD units where cleanup work could present unknown hazards or where there is potential for conditions to change and present unknown hazards.

Table 8-6. Employee Work Categories Definitions. (sheet 2 of 2)

	Employee category	Definition
1		Examples at the Hanford Site: decontamination and decommissioning work/operations; tank farms; Grout Treatment Facility; crib/ditch/pond work including, but not limited to, the following; characterization, monitoring, sampling, and maintenance.
2	7. Hazardous Waste Site Supervisor or Manager	Supervisors or managers who oversee work of employees who qualify as Hazardous Waste Site Workers (6a and 6b).
3	8. Hazardous Waste Site Shipper	Employees who are responsible for certifying shipments of nonradioactive hazardous waste, hazardous and radioactive material, and/or mixed waste.
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9.0 EXPOSURE INFORMATION REPORT

The RMW Storage Facility does not store, treat, or dispose of hazardous waste in a surface impoundment or a landfill as defined in 40 CFR 270.10 and RCRA, Section 3019. Therefore, exposure information is not required.

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10.0 WASTE MINIMIZATION PLAN

This chapter discusses the program to minimize the volume or quantity and toxicity of waste generated at the RMW Storage Facility. The regulatory basis for, and objectives of, the waste minimization program are discussed. Waste generators are described and procedures for minimizing waste are discussed.

10.1 REGULATORY BASIS

The *Hazardous and Solid Waste Amendments of 1984* to RCRA require that, whenever feasible, the generation of hazardous waste be reduced or eliminated as expeditiously as possible. Section 3002(b) of RCRA requires certification of the following.

- The generator of the hazardous waste has in place a program to reduce the volume or quantity and toxicity of such waste to the degree determined by the generator to be economically practicable.

- The proposed method of treatment, storage, and/or disposal is that practicable method currently available to the generator that minimizes the present and future threat to human health and the environment.

This chapter provides the means to certify that a waste minimization program is in place for the RMW Storage Facility.

10.2 THE RADIOACTIVE MIXED WASTE STORAGE FACILITY WASTE MINIMIZATION OBJECTIVES

The RMW Storage Facility waste minimization program is tied to the overall waste minimization program for the Hanford Facility. The RMW Storage Facility waste minimization program includes all practices that reduce, avoid, or eliminate dangerous waste generation.

The following are the RMW Storage Facility waste minimization program objectives.

- Minimize the volume of waste generated.

- Generate nondangerous or less dangerous forms of waste if practical.

- Segregate dangerous waste from nondangerous waste if practicable.

Annually a certification, as required by 40 CFR 264.73(b)(9), is placed in the RMW Storage Facility operating record stating that a waste minimization program is in place. In addition, a Hanford Facility biennial report is submitted to Ecology that contains a description of efforts made to minimize waste and a certification that a waste minimization program is in place. The report includes information on the RMW Storage Facility waste minimization program.

10.3 WASTE GENERATION

The RMW Storage Facility waste minimization program is designed to avoid or reduce the amount of dangerous waste generated. Waste generated at the RMW Storage Facility is managed aggressively to achieve the following:

- Minimize the quantities of waste to be disposed of
- Minimize the quantities of waste generated during storage.

10.3.1 Waste Generated at Other Locations

The RMW Storage Facility stores radioactive and/or mixed waste that is generated on or off the Hanford Facility. The characteristics of the waste to be stored are discussed in Chapter 3.0. The RMW Storage Facility does not control the quantity or toxicity of waste generated at other locations.

10.3.2 Waste Generated at the Radioactive Mixed Waste Storage Facility

Waste generated at the RMW Storage Facility is managed to minimize the total volume. The following types of waste are generated at the RMW Storage Facility:

- Decontamination waste
- Maintenance waste
- Miscellaneous waste.

Section 10.4 describes the procedures used to minimize this waste.

10.4 SPECIFIC WASTE MINIMIZATION PROCEDURES

Procedures for minimizing waste at the WRAP Facility are discussed in this section. The methods of minimizing the volumes of waste for the Hanford Facility generating units are discussed, and the procedures for minimizing waste generated at the WRAP Facility are detailed in the following sections.

10.4.1 Procedures for Other Hanford Facility Waste

As stated previously, the RMW Storage Facility is used for storing radioactive and/or mixed waste that is generated on or off the Hanford Facility until the waste can be transported to a permitted treatment, storage, and/or disposal facility. The RMW Storage Facility does exercise direct control over the quantities accepted for storage.

Waste generated at the RMW Storage Facility, while minimal, is managed to ensure that the quantity and toxicity are minimized.

The RMW Storage Facility operating procedures that are in place to address the storage of unit-generated waste are described in Chapter 2.0, Sections 2.5.1 and 2.7, and Chapter 4.0, Section 4.1.1.8. These procedures include the proper responses for cleanup after radioactive and/or mixed waste spills and the disposal of water that accumulates in the containment systems (Chapter 2.0, Figures 2-4, 2-5, 2-6, and 2-8). The response to radioactive and/or mixed waste spills is aimed at minimizing liquid and material used during spill cleanup.

Water that accumulates in the containment systems is verified to be free of contamination (Chapter 2.0, Section 2.5.1) so that the liquid can be disposed of. If the liquid contains dangerous constituents, the material is packaged and shipped as a dangerous waste. In either case, liquid in the containment systems is removed in a rapid and proper manner to minimize the potential mixing of nondangerous waste with dangerous waste, thereby reducing the total volume.

The RMW Storage Facility is cleaned in a manner that minimizes the potential for dangerous waste generation. The floors in the operating areas of the storage buildings are cleaned using only dry sweeping compounds and/or damp mops. The use of free liquid or running water is not permitted without permission of the RMW Storage Facility supervisor.

Waste such as office refuse is segregated from the radioactive and/or mixed waste stored at the RMW Storage Facility and disposed of in an onsite solid waste landfill located on the Hanford Facility. This segregation procedure reduces the volume of dangerous waste.

10.4.2 Minimization of Radioactive Mixed Waste Storage Facility Waste

Waste generated at the RMW Storage Facility, including decontamination waste, maintenance waste, miscellaneous waste, and failed equipment waste is managed to ensure that the quantity and toxicity are minimized.

10.4.2.1 Decontamination Waste. The RMW Storage Facility decontamination waste includes decontamination solids, nonrepairable contaminated equipment, and solid solution-absorbing waste. The processes to minimize this waste are discussed in the following paragraphs.

The repair or removal of failed equipment requires that radioactive material trapped or deposited within the equipment be removed by rinsing, washing, or wiping with decontamination solutions. The minimum quantity of decontamination solution needed to achieve the required level of decontamination is used. The decontamination effort is to first use the least toxic decontamination solution (such as water) moving on to the more toxic solutions (such as soap and selected cleansers) only if necessary.

In addition, efforts are being made to establish a purchasing procedure that allows less toxic alternative products to be used on a trial basis to evaluate their applicability to the particular decontamination process.

Small amounts of liquid decontamination solutions spilled or remaining on decontaminated equipment normally are removed using adsorbents (such as paper, rags, and/or other solids). These solid adsorbents, containing both radioactive and chemical contaminants, are analyzed, if required, and characterized to determine the correct disposal process. Also, waste that analyses show is not dangerous is segregated from dangerous waste and disposed of in a solid waste landfill located on the Hanford Facility. The waste that is determined to be radioactive and/or mixed waste is stored at the RMW Storage Facility.

10.4.2.2 Maintenance Waste. Maintenance waste includes lubricating oil, antifreeze, oil absorbent, and solvent. Oil changes are scheduled at maximum intervals, consistent with the requirements to protect equipment and to reduce the quantities of used oil that are generated. Antifreeze is analyzed to determine if it is performing as required. If a specific property is found to be outside the operating specifications, the property is altered, if possible, by using an additive to bring it within specifications. The use of maintenance materials such as solvents undergoes a review to determine if a less toxic product can be used. This process reduces both volumes of dangerous materials employed in the maintenance process and the inventories of maintenance materials required.

Waste generated in the maintenance process is segregated where possible. Procedures to ensure that antifreeze and oil are not mixed are implemented, thus making refinement of the waste oil less costly and making it more attractive to recyclers.

10.4.2.3 Miscellaneous Waste. Miscellaneous waste results from oils contaminated with waste constituents or from offnormal events such as spills or equipment failures. If an offnormal event occurs, part of the assessment process entails determining the best methods for cleaning up the incident. The less toxic cleanup materials, such as absorbents, are selected first. The more toxic materials are used only if cleanup cannot be achieved with the less-toxic materials.

10.4.2.4 Failed Equipment. Failed equipment is evaluated at an appropriate Hanford Facility location to determine the feasibility of repair. If possible, equipment is repaired and returned to service, thus reducing the quantity of equipment to be disposed of that is contaminated with dangerous waste constituents. If repair is not feasible, the equipment is packaged and disposed of in accordance with solid waste disposal procedural requirements.

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11.0 CLOSURE AND POSTCLOSURE REQUIREMENTS [I]

This chapter presents the closure plan for the RMW Storage Facility. This closure plan complies with WAC 173-303-610 regulations for the closure of TSD units. As a controlled storage unit, the RMW Storage Facility is not anticipated to become extensively contaminated (the use of the word contaminated refers to contamination by dangerous waste regulated by Ecology).

The RMW Storage Facility is a clean, well-maintained storage unit. Detailed records are maintained of the materials stored at the RMW Storage Facility. Spills and other unusual occurrences are handled promptly and are well documented. The RMW Storage Facility is a storage unit for radioactive and/or mixed waste; the closure approach will be clean closure. Consistent with the criteria that must be met to clean close a TSD unit, no postclosure activities will be necessary. This chapter describes the performance standards that will be met and closure activities that will be conducted to achieve clean closure.

11.1 CLOSURE PLAN [I-1]

Closure of the RMW Storage Facility will ensure that the storage buildings, storage pads, and associated equipment are not contaminated. Remediation will take place if contamination is detected above background or regulatory thresholds and will continue until contamination is equal to or below background or regulatory thresholds. Closure will entail random sampling of the soil surrounding the storage and loading areas to verify that no contaminants above background or regulatory thresholds are present at the time of closure. Additionally, authoritative samples will be taken as necessary based on information available at the time of closure.

The following sections address closure performance standards, waste removal, and decontamination standards.

11.1.1 Closure Performance Standard [I-1a]

These sections describe the performance and removal or decontamination standards to be applied to the RMW Storage Facility.

11.1.1.1 Performance Standard [I-1a(1)]. This plan has been developed to close the RMW Storage Facility in a manner that meets the following closure performance standards of WAC 173-303-610(2)(a):

- Minimize the need for further maintenance

- Control, minimize, or eliminate to the extent necessary to protect human health and the environment, postclosure escape of dangerous waste, dangerous waste constituents, leachate, contaminated run-off, or dangerous waste decomposition products to the ground, surface water, groundwater, or the atmosphere

- Return the land to the appearance and use of surrounding land areas to the degree possible, given the nature of the previous dangerous waste activity.

In general, these standards can be achieved by removing, to background levels or regulatory thresholds, dangerous waste from the RMW Storage Facility and by decontaminating and removing all equipment, structures, soils, or other materials containing or contaminated with dangerous waste or waste residue.

11.1.1.2 Removal or Decontamination Standard [I-1a(2)]. Clean closure of the RMW Storage Facility requires removal and disposal of all dangerous waste present in the storage unit, removal and disposal of all contaminated equipment and structural components, decontamination of all storage building surfaces, and remediation of any contaminated soil attributable to the RMW Storage Facility within the storage unit boundary and restoration of the area. Any materials, equipment, or structures removed from the RMW Storage Facility will be designated and disposed of accordingly. The RMW Storage Facility will be considered clean when the sampling of the structures and the surrounding soil shows that the concentrations for all constituents of interest are present at concentrations at or below the appropriate background or regulatory thresholds. Soil background levels will be based on established and accepted Hanford Site soil background information (WHC 1991a) or established by soil sampling per SW-846 (EPA 1986).

Should decontamination be necessary, as determined by sampling the RMW Storage Facility structures, clean closure will require removal and disposal of all dangerous waste, contaminated equipment, and rinsates to standards specified in WAC 173-303-610(2)(b).

11.1.2 Partial Closure Activities [I-1b]

No partial closure activity is anticipated for the RMW Storage Facility.

11.1.3 Maximum Waste Inventory [I-1c]

An estimated maximum waste inventory for each storage building and the Mixed Waste Storage Pad, existing and presently planned, is identified in Table 11-1. The volumes are given as 55-gallon (208-liter) drum equivalents. The volume within each drum consists of waste and all necessary packing material.

Based on the information provided in Table 11-1, the total maximum waste volume of the RMW Storage Facility is approximately 88,136 55-gallon (208-liter) drums.

11.1.4 Inventory Removal, Disposal or Decontamination of Equipment, Structures, and Soils [I-1d]

The RMW Storage Facility is used for storage of radioactive and/or mixed waste. The RMW Storage Facility provides storage capacity for both onsite and offsite waste generated before final disposal. At the time of closure, no waste will remain at the RMW Storage Facility.

Closure activities could entail sampling, decontamination, removal, and disposal of the structure, equipment and soil. These activities will consist of the following steps, as necessary, to determine what dangerous waste, if any, has contaminated the storage buildings, the associated equipment, the loading and storage areas, and the surrounding soils.

1. Perform visual inspection and radiation survey.

2. Decontaminate and remove storage building equipment for reuse and/or disposal.

3. Decontaminate storage building structures including floors and walls.

4. Decontaminate storage areas.

5. Perform verification sampling of the storage building structures and storage areas.

6. Remediate and verify, as necessary, or dispose of contaminated sections of each component.

7. Excavate and dispose of any contaminated soil.

8. Perform verification sampling and repeat excavation until all contaminated soil has been removed.

9. Dispose of all contaminated materials and rinsates generated during the closure activities.

10. Decontaminate equipment used in performing closure activities.

11. Restore the area after closure activities are complete.

12. Certify that closure activities were completed in accordance with the approved plan.

A sampling flow path for the RMW Storage Facility is shown in Figure 11-1.

11.1.4.1 Decontamination and Removal of Building Equipment. Most of the equipment at the RMW Storage Facility is used for drum handling and storage. This equipment could become contaminated in the event of a leaking or ruptured drum.

The equipment will be removed from the area and managed and/or handled by one of the following methods: (1) decontamination and recycle or reuse, (2) disposal as dangerous waste, or (3) disposal as mixed waste. The method to be used will be determined based on the specific piece of equipment, the level of contamination, and the estimated quantity of waste to be generated during decontamination. Final disposal will be determined using the most appropriate techniques available at the time of closure.

11.1.4.2 Decontamination of Storage Buildings. Building decontamination will begin with a visual inspection and, where necessary, a radiation survey. In areas where surveys show measurable radioactivity, the samples and residues collected also will be surveyed for radiation. Any waste deposits found during the visual inspection will be removed and disposed of.

The floors, trenches, sumps, and interior walls of each storage building will be washed down. One possible method for this washdown is a high-pressure, low-volume detergent wash to target both organic and inorganic constituents. Decontamination procedures will address minimization of liquid used and how the wash will be conducted. The decontamination liquids will be collected in the trenches and sumps and pumped into containers such as bung-type 55-gallon (208-liter) containers. The pump will be rinsed three times and the rinsate stored in containers, as detailed previously. Decontamination waste will be designated and the appropriate method of disposal determined.

11.1.4.3 Decontamination of the Mixed Waste Storage Pad. Decontamination will begin with a visual inspection and, where necessary, a radiation survey. The results of these two activities will be treated as described in Section 11.1.4.2. The storage pad will undergo a decontamination wash similar to that described for the building floors (Section 11.1.4.2).

11.1.4.4 Verification Sampling of Storage Buildings and Storage Areas. A storage area is defined as a building, pad, or section of a building that is isolated from other storage areas. For sections of buildings, the storage areas could be separated from each other by walls, curbs, slopes, ramps or other methods. Verification of the storage buildings will involve sampling of the walls and floors. Verification of the storage areas will involve sampling the concrete. The Waste Receiving and Staging Area could be excavated, containerized, and disposed of as low-level radioactive waste as determined by radiation survey.

11.1.4.4.1 Verification Sampling of the Walls, Metal Surfaces, and Low-Flash-Point Mixed Waste Modules. Sampling for verification of no contamination on the walls and metal surfaces will entail comparative analyses of the wash water used during decontamination. The wash water will be analyzed before use. The walls will be washed down with a high-pressure, low-volume wash or equivalent, and the collected rinsate will be analyzed and compared with the results of the initial analyses. If no statistically significant differences are detected, no further action will be taken on the walls. If differences are detected, the decontamination procedure will be

repeated until the metal surfaces are demonstrated to be clean. The samples will be analyzed for constituents suspected of having been discharged based on the constituents stored in the particular storage area.

In addition, to ensure complete decontamination of the metal surfaces, authoritative wipe sampling will be performed on any area that appears stained, rusted, or discolored. If the walls or metal surfaces are determined to be contaminated, the decontamination procedure will be repeated until no contamination is found, or until the decontamination is no longer effective. If it is not possible to decontaminate the area fully, additional samples will be taken to determine the extent of contamination. The contaminated sections will be removed, placed in a containment module, and disposed of based on the results of the sample designation.

11.1.4.4.2 Verification Sampling of the Concrete Floors and the Mixed Waste Storage Pad. As described in Chapter 2.0, the floors of the storage buildings are poured concrete covered with a sealant. The Mixed Waste Storage Pad also is concrete. Both random and authoritative sampling will be performed. After the initial radiation survey, visual inspection, and decontamination wash (Sections 11.1.4.2 and 11.1.4.3), random and authoritative sampling will be performed.

The trenches and sumps are assumed to be the areas of the floor potentially subjected to the highest level of contamination. Any waste entering the trenches and sumps is in a liquid state and is assumed to be relatively homogeneous. Each trench will be sampled. Methods of sampling might include core sampling, chip sampling, or rinsate sampling. Samples will be taken according to technologies available at the time of closure. Two samples will be taken in each trench, one random and one in the deepest part of the trench. One sample also will be taken in the center of each sump.

Additional random and authoritative sampling of the floors, Mixed Waste Storage Pad, and concrete ramps will be performed. The areas will be divided into 5-foot by 5-foot (1.5-meter by 1.5-meter) grids. Five percent of the grids generated will be sampled on a random basis. Authoritative samples will be taken from any areas noted as discolored or stained during the visual inspection and suspected of having potential contamination. Figures 11-2 and 11-3 demonstrate the method to be used to determine sampling locations. Random numbers will be generated by an appropriate method such as a random number table. Such methods will be applied to each individual unit at the time of closure.

The core samples will be taken according to technologies available at the time of closure, and the sampling device will be of sufficient size to allow sampling of the soil underneath, should such action become necessary. Once the core is cut, it will be withdrawn and protected from cross contamination. A laboratory will perform analyses on the core per SW-846 (EPA 1986) or other approved protocol. Analyses of the samples will determine whether or not regulated constituents have penetrated the sealant. The cores will be analyzed for constituents suspected of having been discharged, based on the constituents stored in the storage building areas or the Mixed Waste Storage Pad.

In the event that contaminants are determined to have penetrated the sealant, additional sampling will be performed as necessary to determine the extent of contamination. In addition, the core holes will be advanced through the soil to take a soil sample at the surface, at a 1 foot (0.3 meter) depth and at a 2 foot (0.61 meter) depth. The soil samples will be analyzed for the constituents identified in the core samples. The analyses will follow the protocol outlined in SW-846 (EPA 1986). Soil will be excavated to the determined depth of contamination. This approach assumes a decreasing concentration with depth, characteristic of surface spills or leaks such as those from the trenches and sumps. A verification sample will be taken after soil removal is complete. Further removal will be performed at 1-foot (0.3-meter) depth increments until verification samples demonstrate that contamination above background or regulatory levels has been removed.

Metal gratings over the trenches and sumps will be cleaned using a method determined at the time of closure. The decision will be based on knowledge of the possible contaminants and technology available at the time of closure. A possible method is low-volume, high-pressure steam in conjunction with a detergent wash. For disposal purposes, the rinsate from the steam cleaning will be collected and analyzed for the mixed waste stored in that particular storage area of the RMW Storage Facility. The metal grates will be wipe sampled or rinsate sampled to verify that decontamination is adequate.

If the analyses of samples indicate that contamination is present, the decontamination procedure will be repeated until no contamination is found, or until the decontamination is no longer effective. If it is not possible to decontaminate an area fully, additional samples will be taken to determine the extent of contamination. The contaminated sections of the floors or the Mixed Waste Storage Pad will be removed, placed in a containment module, and disposed of based on the results of the designating sample.

11.1.4.5 Soil Decontamination. Soil contamination assessment efforts will focus on possible contamination resulting from RMW Storage Facility operations. The main sources of soil contamination would be an accidental spill or leak. Such spills or leaks would be detected during operation. Operational practices require cleanup as soon as possible, given the nature of the spill or leak. The soil sampling program designed to detect the presence of contamination will include both random and authoritative sampling. If contamination is detected, the sampling effort will be extended to determine the extent of contamination, and the contaminated soils will be removed and disposed of appropriately. At a minimum, soil samples will be collected in areas with documented or potential soil contamination.

At the time of closure, the soil immediately surrounding the loading ramps and storage areas will be sampled to verify that the environment has not been affected by the RMW Storage Facility operations. The soil will be analyzed for contaminants that could have contacted that particular storage area. Should contaminants be detected above background or regulatory thresholds, the soil will be excavated until the level of chemical constituents around the areas is equal to or below that of background soil samples or regulatory thresholds.

To determine the extent of any soil contamination from the RMW Storage Facility operations, the soil sampling analysis will be compared to the established Hanford Site-wide background, or an environmental baseline soil sampling program will be conducted for the RMW Storage Facility. If necessary, this baseline sampling will be performed at the time of closure. Samples will be taken from areas that are near the storage buildings that have been determined to be unimpacted by RMW Storage Facility operations. This information will be used in conjunction with any other relevant information available at the time of closure on background or regulatory thresholds for the suspected contaminants.

11.1.4.6 Decontamination of Equipment Used for Closure. Extreme care is necessary in sampling to ensure that there is no cross-contamination of samples by the sampling equipment. To prevent this source of contamination, freshly cleaned or disposable sampling tools will be used.

The equipment used for closure will be decontaminated in the same manner as the equipment in the storage buildings (Section 11.1.4.1). Any contaminated equipment will be decontaminated with an appropriate decontaminate solution, such as high-pressure, low-volume steam cleaning coupled with detergent washes. The decontamination rinsate will be containerized, sample designated, and disposed of appropriately.

11.1.4.7 Sampling Quality Control. The required quality control procedures will be followed to the extent necessary to adequately control sampling activities. The various quality control methods are described in the following sections.

11.1.4.7.1 Data Quality. To ensure quality data, all of the sampling procedures will be conducted in conformance with applicable procedures described in the *Hanford Facility Dangerous Waste Permit Application* (DOE-RL 1991b). All laboratory analyses will be performed in accordance with standard EPA methods described in the most recent edition of SW-846 (EPA 1986). The analytical laboratory will submit all analytical and quality assurance/quality control procedures to the contractor for approval before samples are analyzed. The EPA guidelines for reporting accuracy, precision, and practical quantification limit specified in the analytical methods will be met.

Quality control of sampling will be ensured through the use of field duplicates, equipment blanks, and field blanks. Quality control of records and documentation will be accomplished by following applicable procedures described in the *Hanford Facility Dangerous Waste Permit Application* (DOE-RL 1991b).

Sampling records to be kept on file will include field notes, daily memoranda, records of meetings and activities concerning the sampling program, and chain-of-custody records. In addition, quality control will be implemented through the recording of field memoranda and field notes. Before sampling begins, a quality assurance project plan for sampling and analysis at the RMW Storage Facility will be completed.

11.1.4.7.2 Field Quality Control. Field quality control will be accomplished through the use of various sampling duplicates and blanks, as described in the following paragraphs.

Field duplicate samples will be taken for concrete chips and underlying soils. Duplicate samples are two separate samples collected from the same sampling point and placed into separate containers. The duplicate samples will be used as an indication of the repeatability of the analytical data.

Equipment blanks will serve as a check on sampling device cleanliness. An equipment blank will consist of distilled water, which is transported to the site, opened in the field, poured over or through the sample collection device, collected in a sample container, and returned to the laboratory for analysis. These samples will be collected daily.

Wipe sample blanks will consist of filter paper that has been laboratory prepared with the appropriate solution and the wipe sample blanks will be placed in a sample container in the field. Blanks will be collected with the wipe samples to determine if contaminants were introduced by the paper, preparation solution, or sampling environment.

Trip blanks will be used to identify any possible contamination originating from container preparation methods, shipment, handling, storage, or site conditions. Trip blanks will consist of pure deionized, distilled water in a clean sample container, which will accompany each batch of containers shipped to the field. Trip blanks will be returned unopened to the laboratory for analysis.

Field blanks will consist of pure deionized, distilled water that is transferred to a sample container at the site and preserved with the reagent specified for the analyses of interest. Field blanks will be used to check for possible contamination originating with the reagent or the sampling environment and will be collected daily.

11.1.4.7.3 Laboratory Quality Control. The contractor laboratory will ensure the integrity and validity of test results through implementation of an internal quality control program. The program will meet the quality control criteria of SW-846 (EPA 1986). A system of reviewing and analyzing the results of these samples will be maintained to detect problems caused by contamination, inadequate calibrations, miscalculations, improper procedures, or other factors. Standard methods will be used, and alternative methods that are developed or adapted will be tested and documented. All methods and method changes will be approved by a contractor contract representative.

The quality control procedures for hazardous chemical analyses will include [as appropriate to each analysis and as specified in Section 1.2 of SW-846 (EPA 1986)] evaluation of blanks, random matrix spikes (for 10 percent of the samples), internal standards, surrogates, and standard calibration curves. Spikes will be added in amounts comparable to the amount of analyte present in the sample. The quality control procedures specific to individual methods will be detailed in the laboratory's documented analytical procedures and will be included with each batch of samples analyzed.

11.1.4.8 Closure of Containers [I-1d(1)]. At closure, all containers will be removed from the RMW Storage Facility. All mixed waste residue will be removed from the containment system components. Contaminated equipment, floors, walls, loading areas, and soil will be decontaminated or removed. All decontamination equipment and contained rinsate will be tested and disposed of as dangerous waste if contaminated. Sampling and testing will be conducted to ensure that no contamination remains on, in, or around the storage area and containment system.

11.1.4.9 Closure of Tanks [I-1d(2)]. Operation of the RMW Storage Facility does not involve the storage of dangerous waste in tanks. Therefore, the requirements of WAC 173-303-640 are not applicable to the RMW Storage Facility.

11.1.4.10 Closure of Waste Piles [I-1d(3)]. Operation of the RMW Storage Facility does not involve the placement of dangerous waste in piles. Therefore, the requirements of WAC 173-303-660 are not applicable to the RMW Storage Facility.

11.1.4.11 Closure of Surface Impoundments [I-1d(4)]. Operation of the RMW Storage Facility does not involve the placement of dangerous waste in surface impoundments. Therefore, the requirements of WAC 173-303-650 are not applicable to the RMW Storage Facility.

11.1.4.12 Closure of Incinerators [I-1d(5)]. Operation of the RMW Storage Facility does not involve the incineration of dangerous waste. Therefore, the requirements of WAC 173-303-670 are not applicable to the RMW Storage Facility.

11.1.4.13 Closure of Land Treatment Facilities [I-1d(6)]. Operation of the RMW Storage Facility does not involve the land treatment of dangerous waste. Therefore, the requirements of WAC 173-303-655 are not applicable to the RMW Storage Facility.

11.1.5 Closure of Disposal Units [I-1e through I-1e(8)]

The RMW Storage Facility does not contain any waste piles, landfills, or surface impoundments. In addition, the waste or contaminated materials will not remain at the RMW Storage Facility closure site. Therefore, this section is not applicable to the RMW Storage Facility.

11.1.6 Schedule for Closure [I-1f]

The RMW Storage Facility will store radioactive and/or mixed waste until the waste has been certified at the WRAP Facility for final disposal. Therefore, it is necessary that the RMW Storage Facility remain operational until the last of the waste is processed through the WRAP Facility. A schedule of the closure activities is presented in Figure 11-4. Closure will be completed 180 days after the last container of waste is removed from the RMW Storage Facility. The activities that will require the greatest

portion of time will be the sampling and decontamination iterations of the floor, loading areas, and storage pads. At this time, 90 days is estimated for these tasks. This estimate assumes a rapid turnaround time of 10 working days or less for laboratory analyses. However, it is unknown how many iterations of decontamination will be required.

11.1.7 Extension for Closure Time [I-1g]

A petition for extension of closure time must be filed with Ecology if final closure activities at the RMW Storage Facility are expected to exceed the 180 days noted in Section 11.1.6 [WAC 173-303-610(4)(b)]. It is expected that the final closure of the RMW Storage Facility will be completed within the 180-day period, allowed by regulations, after receipt of the last shipment of waste by the RMW Storage Facility. Factors such as the number of sampling iterations can impact the closure schedule and might necessitate an extension beyond the 180-day period. In this case, an extension will be requested.

11.1.8 Amendments to Closure Plan

Should changes be required to the approved closure plan, an amended plan will be prepared and submitted to Ecology for approval in accordance with 40 CFR 264.112(c) and WAC 173-303-610(3)(a).

11.1.9 Certification of Closure and Survey Plat

Within 60 days of final closure, the DOE-RL will submit to Ecology a certification of closure. This certification will be signed by both the DOE-RL and an independent professional engineer registered in the state of Washington, stating that the RMW Storage Facility has been closed in accordance with the approved closure plan. The certification will be submitted by registered mail or an equivalent delivery service. Documentation supporting the independent professional engineer's certification will be retained and furnished to Ecology upon request. This documentation will be maintained by the DOE-RL contact (or the successor) identified in Section 11.9 of this closure plan.

11.1.9.1 Closure Certification. The DOE-RL and the independent professional engineer registered in the state of Washington will certify that closure is complete with a document similar to Figure 11-5.

11.1.9.2 Survey Plat. The RMW Storage Facility is planned to be clean closed. Because radioactive and/or mixed waste will not be left in place following the operational period, the requirement for producing a survey plat is not applicable to the RMW Storage Facility.

11.1.10 Notice to Local Land Authority

The RMW Storage Facility is planned to be clean closed. Because radioactive and/or mixed waste will not be left in place following the operational period, the requirement for a notification to the local land authority is not applicable to the RMW Storage Facility.

11.2 POSTCLOSURE PLAN [I-2]

The RMW Storage Facility is planned to be clean closed. Because radioactive and/or mixed waste will not be left in place following the operational period, the requirement for postclosure activities is not applicable to the RMW Storage Facility.

11.3 NOTICE IN DEED [I-3]

The RMW Storage Facility is planned to be clean closed. Because radioactive and/or mixed waste will not be left in place following the operational period, the requirement for a notice in deed is not applicable to the RMW Storage Facility.

11.4 CLOSURE COST ESTIMATE [I-4]

In accordance with 40 CFR 264.140(c) and WAC 173-303-620(1)(c), this estimate is not required for federal facilities. The Hanford Facility is a federally owned facility for which the federal government is the operator, and this estimate is therefore not applicable to the RMW Storage Facility.

An annual report updating projections of anticipated closure and postclosure costs for the Hanford Facility TSD units having final status will be submitted to Ecology in accordance with WAC 173-303-390 by October 30 (beginning in 1992).

11.5 FINANCIAL ASSURANCE MECHANISM FOR CLOSURE [I-5]

In accordance with 40 CFR 264.140(c) and WAC 173-303-620(1)(c), this section is not required for federal facilities. The Hanford Facility is a federally owned facility for which the federal government is the operator, and this section is therefore not applicable to the RMW Storage Facility.

11.6 POSTCLOSURE COST ESTIMATE [I-6]

In accordance with 40 CFR 264.140(c) and WAC 173-303-620(1)(c), this estimate is not required for federal facilities. The Hanford Facility is a federally owned facility for which the federal government is the operator, and this section is therefore not applicable to the RMW Storage Facility.

An annual report updating projections of anticipated closure and postclosure costs for the Hanford Facility TSD units having final status will be submitted to Ecology in accordance with WAC 173-303-390 by October 30 (beginning in 1992).

11.7 FINANCIAL ASSURANCE MECHANISM FOR POSTCLOSURE CARE [I-7]

In accordance with 40 CFR 264.140(c) and WAC 173-303-620(1)(c), this section is not required for federal facilities. The Hanford Facility is a federally owned facility for which the federal government is the operator and this section is therefore not applicable to the RMW Storage Facility.

11.8 LIABILITY REQUIREMENTS [I-8]

In accordance with 40 CFR 264.140(c) and WAC 173-303-620(1)(c), this section is not required for federal facilities. The Hanford Facility is a federally owned facility for which the federal government is the operator, and this section is therefore not applicable to the RMW Storage Facility.

11.9 CLOSURE CONTACTS

The following office (or its successor) is the official contact for the RMW Storage Facility:

Environmental Restoration Division
U.S. Department of Energy
Field Office, Richland
P.O. Box 550
Richland, Washington 99352
(509) 376-7277

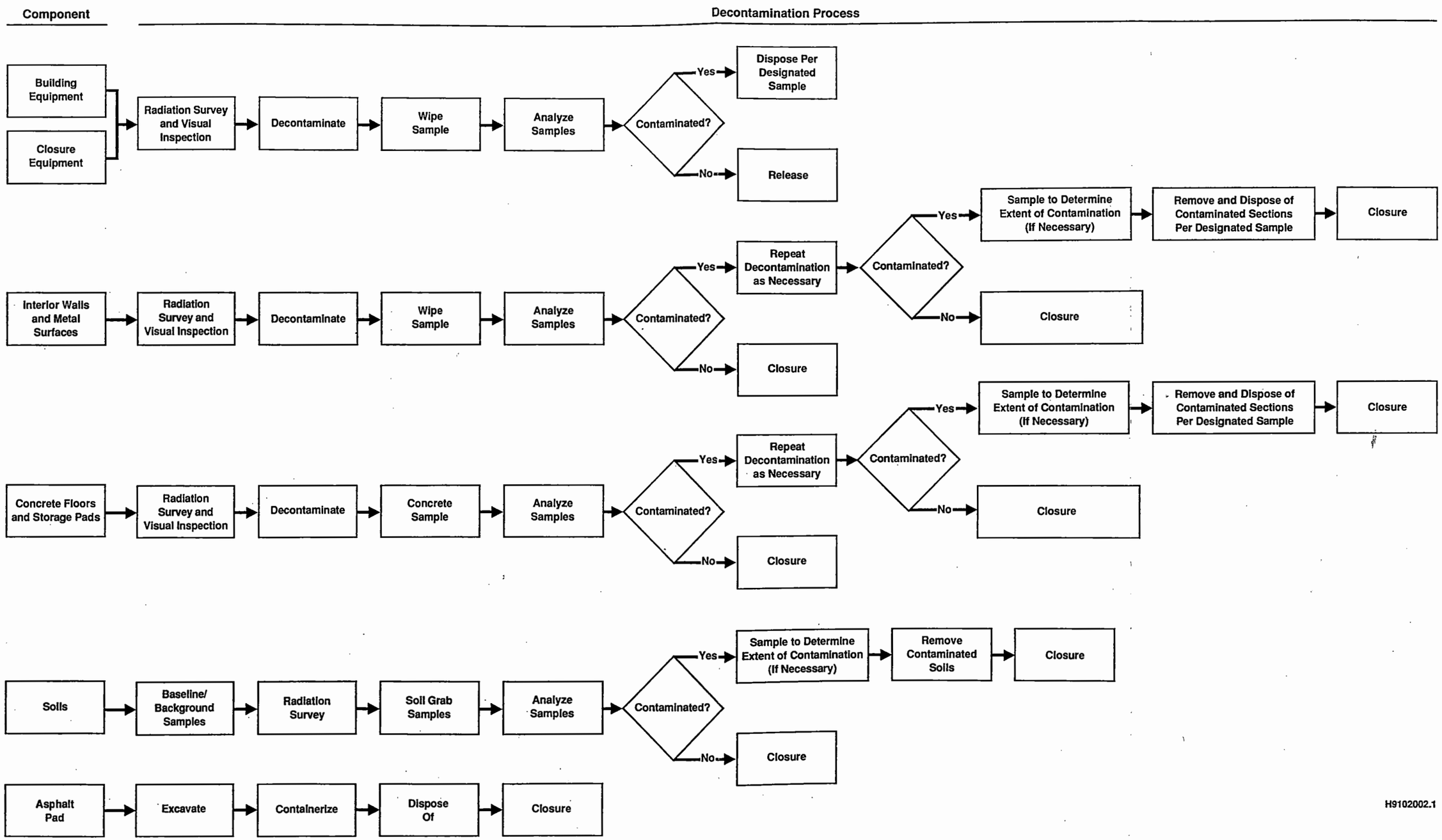

Figure 11-1. Sampling Flow Path.

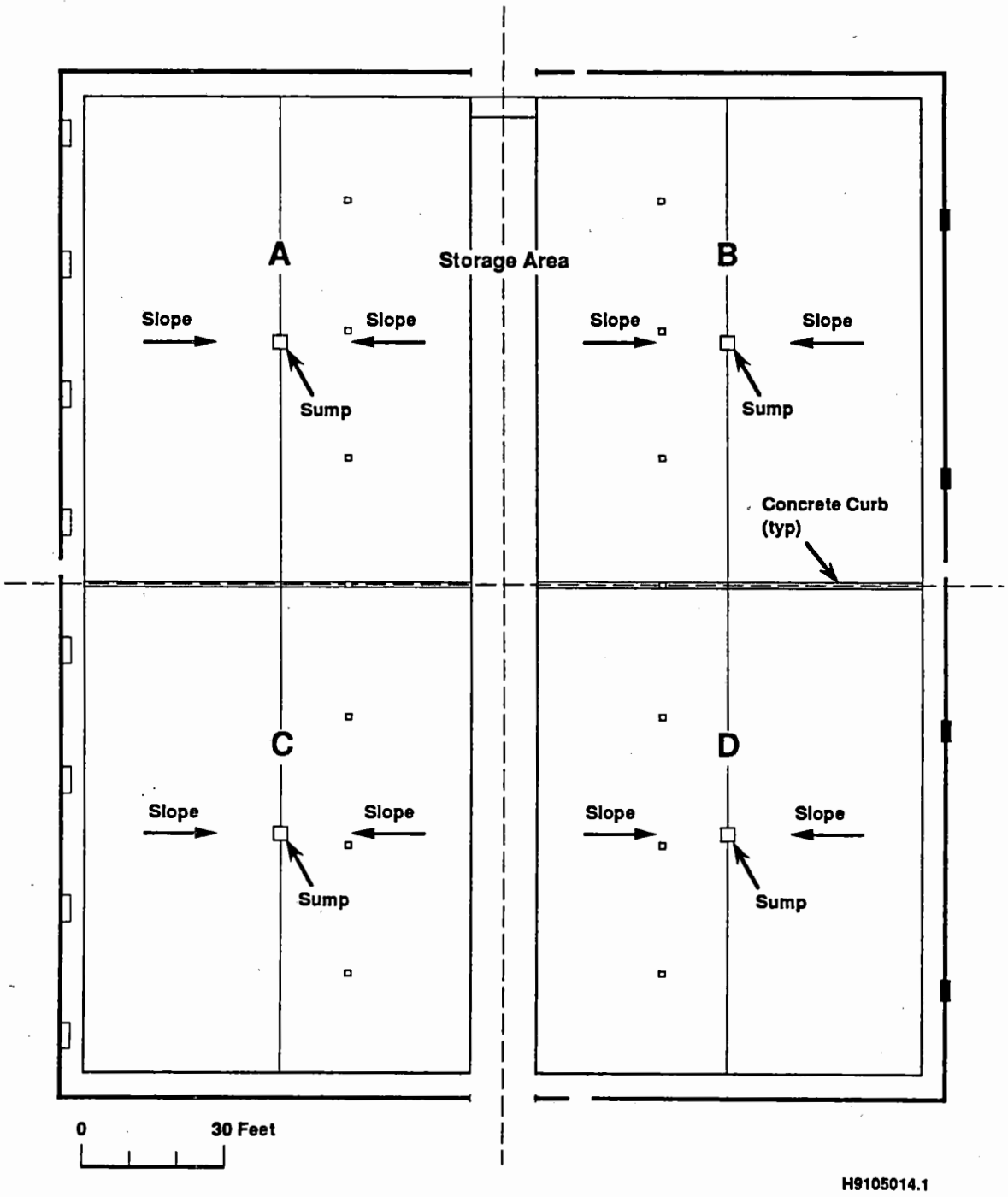

Figure 11-2. Sampling Strategy Example--2403-WA Storage Building. The 2403-WA Storage Building is divided into four sections (A,B,C,D). Sample locations for each section will be determined separately (Figure 11-3).

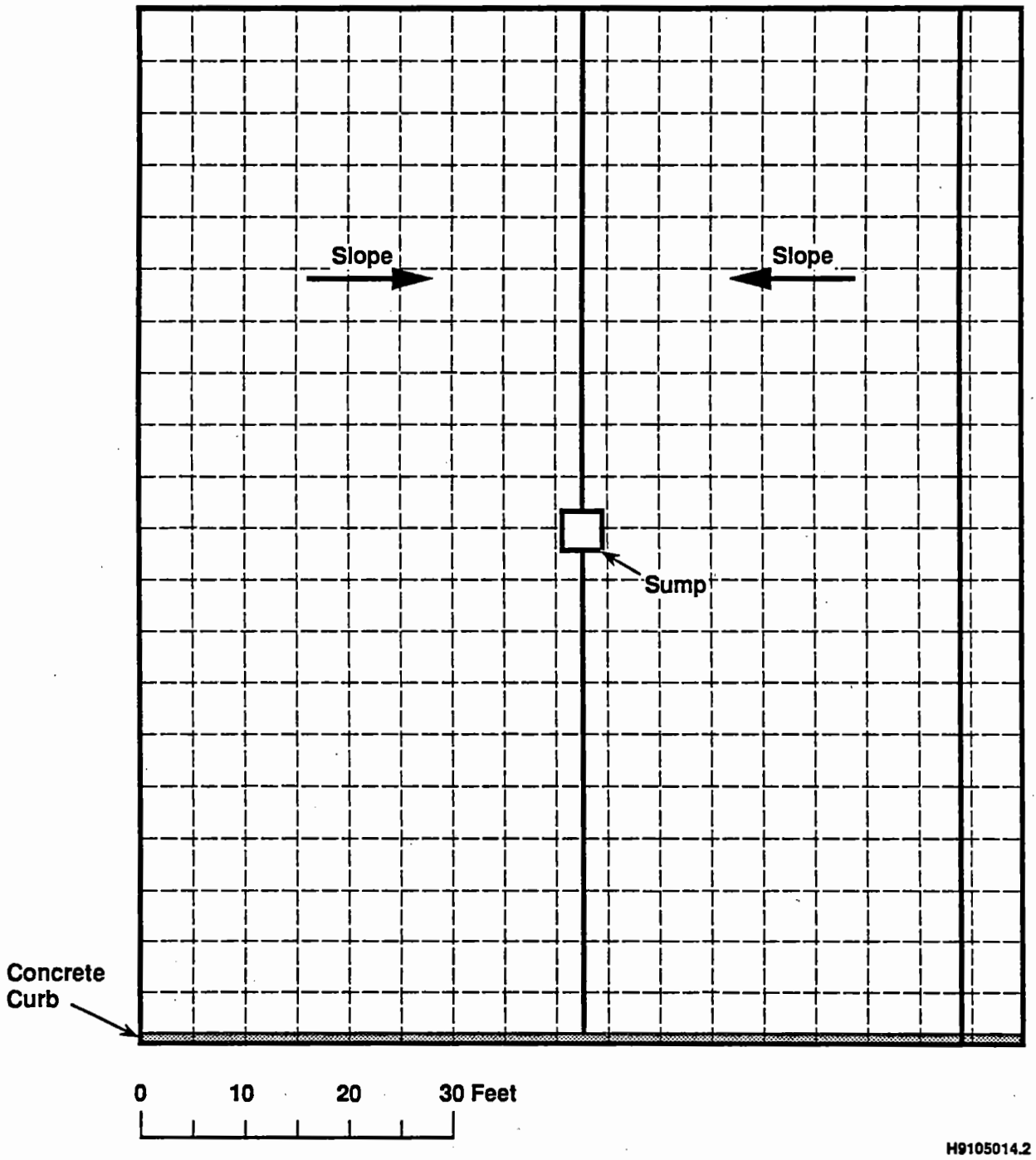

Figure 11-3. Sampling Locations Example--2403-WA Storage Building, Section A. Sampling grid is 5 foot by 5 foot (1.5 meter by 1.5 meter). Sump will be sampled and 5 percent of the grids chosen in a random manner.

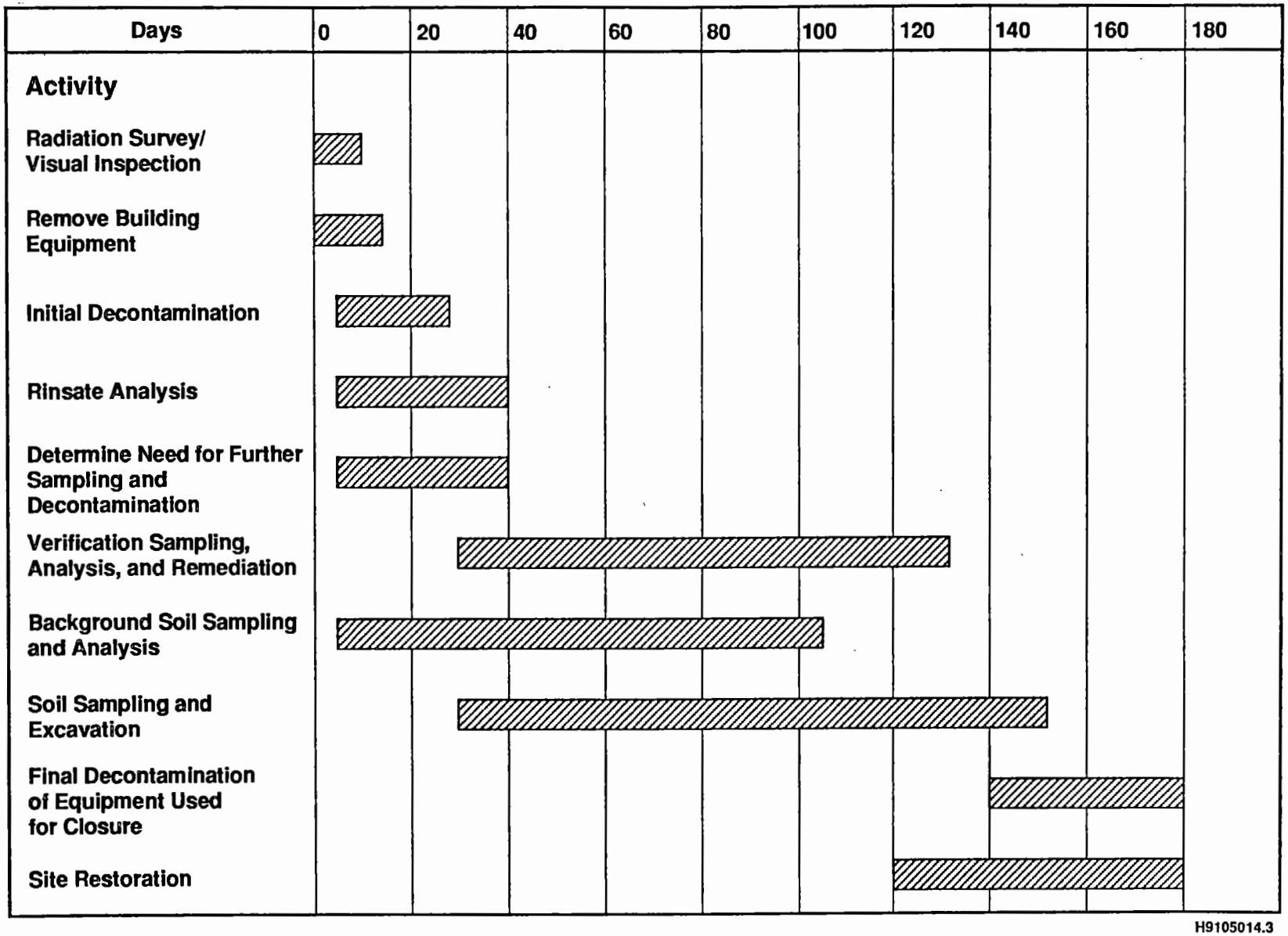

Figure 11-4. Schedule of Closure Activities.

CLOSURE CERTIFICATION
FOR

_____

Hanford Site Facility
U.S. Department of Energy Field Office, Richland

We, the undersigned, hereby certify that all _____ _____ closure activities were performed in accordance with the specifications in the approved closure plan.

_____
Owner/Operator Signature DOE-RL Representative Date
(Typed Name)

_____ P.E.# _____
Signature Independent Registered Professional Engineer Date
(Typed Name and Washington State Professional Engineer license number)

Figure 11-5. Typical Closure Certification Document.

Table 11-1. Estimated Maximum Waste Inventory.

Storage building	Number of storage structures	Maximum waste inventory per storage structure	Total waste inventory per storage structure
Low-Flash-Point Mixed Waste Storage Modules	8	17 drums	136 drums
Mixed Waste Storage Buildings	12	1,000 drums	12,000 drums
Plutonium/Polychlorinated Biphenyl	1	1,000 drums	1,000 drums
Mixed Waste Storage Pad	1	1,700 drums	1,700 drums
Phase I	1	9,000 drums	9,000 drums
Phase II	1	19,300 drums	19,300 drums
Phases III and IV*	2	9,000 drums	18,000 drums
Phase V**			27,000 drums
Total			88,136 drums

*Phases III and IV are planned as identical buildings to Phase I.
**Phase V (Enhanced Radioactive and Mixed Waste Storage).

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12.0 REPORTING AND RECORDKEEPING

This chapter summarizes the RMW Storage Facility reporting and recordkeeping requirements. The reports are submitted to Ecology and/or the EPA as required by applicable regulations, and required records are maintained by the Hanford Central Waste Complex or other Hanford Facility organizations as appropriate. Required reports and records will be accessible through a centralized Hanford Facility Regulatory File index, currently under development. This index, once fully developed, can be used to provide regulatory agency access to the Hanford Central Waste Complex regulatory compliance records required by WAC 173-303.

The Regulatory File is maintained by the Environmental Data Management Center. Each TSD unit will undergo a periodic review by an Environmental Data Management Center Regulatory File Custodian to ensure standardized collection and maintenance of unit-specific reports and records (operating records) (DOE-RL 1991b). A general reporting requirement applicable to all dangerous waste treatment, storage, and/or disposal units (notification) is described, as well as reporting and recordkeeping requirements for generators, transporters, and treatment, storage, and/or disposal facilities. Reports and records applicable to the RMW Storage Facility are summarized in Table 12-1.

12.1 NOTIFICATION OF DANGEROUS WASTE ACTIVITIES

Regulations require that facilities involved in the generation or transportation of dangerous waste, or the owner or operator of a TSD facility, have a current EPA/state identification number. The Hanford Facility is a single RCRA facility operating under EPA/State Identification Number WA7890008967. The RMW Storage Facility, a storage unit within the Hanford Facility, operates under this same EPA/state identification number.

12.2 GENERATOR REQUIREMENTS

The Hanford Facility complies with the generator reporting and recordkeeping regulations. Hanford Facility waste generation records and required reports (e.g., annual reports) are compiled and issued as single records or reports for the entire Hanford Facility. Information on waste generated by the RMW Storage Facility is compiled and provided together with other Hanford Facility generator records and reports. The regulations governing recordkeeping and reporting are discussed in the following sections.

12.2.1 Recordkeeping

Generator records maintained by the Hanford Facility include the following:

- Records of waste generated onsite
- Records of waste packaged to be shipped offsite
- A copy of each annual report
- Land disposal restriction records.

Waste generation records are retained as required by 40 CFR 262.40 and WAC 173-303-210.

12.2.2 Reporting

Generator reports required by 40 CFR 262, Subpart D, and WAC 173-303-220 that are submitted by the Hanford Facility include the annual report, exception reports, and required additional reports.

The Hanford Facility submits an annual report of waste generation activities to Ecology. The annual report is submitted on the "Generator Annual Dangerous Waste Report--Form 4."

If a copy of the Hazardous Uniform Waste manifest is not returned within 45 days with the signature of the owner/operator of a permitted facility designated to receive waste shipped offsite, the Solid Waste Management organization prepares and submits an exception report to Ecology. The report includes the following:

- A legible copy of the manifest for which delivery was not confirmed
- A cover letter explaining the efforts to locate the waste and the results of those efforts.

Copies of waste analysis reports or other documentation relating to the composition of waste in the RMW Storage Facility are retained at the Hanford Central Waste Complex. Documents relating to land disposal restrictions are discussed in Section 12.4.2.2.7.

Any additional reports deemed necessary by Ecology or the EPA will be furnished by the Hanford Facility on request.

12.3 TRANSPORTER REQUIREMENTS

The Hanford Facility does not transport dangerous waste offsite. Transporters having their own EPA/State identification numbers are used to transport dangerous waste from the Hanford Facility to a permitted offsite

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TSD facility. Waste transfers onsite, including waste transfers to and from the RMW Storage Facility, are recorded and tracked in accordance with Hanford Facility procedures described in Chapter 2.0, Section 2.8. Therefore, transporter records required by 40 CFR 263.22 and WAC 173-303-260 are not maintained by either the RMW Storage Facility or the Hanford Facility. Reports such as discharge reports required by 40 CFR 263.30 and WAC 173-303-270 are not applicable.

12.4 TREATMENT, STORAGE, AND/OR DISPOSAL REQUIREMENTS

The reporting and recordkeeping procedures for TSD units are discussed in this section. The TSD reports are described, the operating record and miscellaneous support records contents are described, and plans submitted with this permit application and maintained at the Hanford Central Waste Complex are described.

12.4.1 Reports

This section discusses the reporting requirements of WAC 173-303 and applicable parts of Title 40, Code of Federal Regulations, relating to aspects of dangerous waste. The following are included in the reporting requirements:

- Waste manifest reports
- Annual reports
- Biennial reports
- Groundwater monitoring reports
- Contingency plan incident notifications
- Spills, discharges, and leaks reports
- Closure reports
- Postclosure reports.

Additional details of these reports are provided in the following sections. Copies of these reports are maintained by the Hanford Central Waste Complex or other Hanford Site organizations as appropriate.

12.4.1.1 Waste Manifest Reports. The waste manifest is the source of two possible reports, the manifest discrepancy report and the unmanifested waste report. The RMW Storage Facility has methods in place for tracking offsite waste shipments. The RMW Storage Facility waste tracking system and methods of dealing with manifesting discrepancies are described in Chapter 2.0, Section 2.8. Records documenting waste transfers offsite are retained by the Hanford Central Waste Complex.

12.4.1.2 Annual Reports. The state of Washington, pursuant to WAC 173-303-390, requires an overall annual report for each facility that holds an active EPA/State identification number. The report for the Hanford Facility is due to Ecology on March 1 of each year. The report contents for the RMW Storage Facility include the following:

- EPA/State identification number
- Name and address of the Hanford Facility
- Calendar year covered by the report
- Sources of the waste stored in the RMW Storage Facility
- Description and quantity of the waste stored in the RMW Storage Facility
- TSD methods
- Certification statement signed by an authorized representative.

The report forms and instructions in the "Treatment, Storage, or Disposal Facility Annual Dangerous Waste Report--Forms 4 and 5" are used for this report.

A report updating projections of anticipated closure and postclosure costs for the Hanford Facility TSD units having final status is due to Ecology by October 30 (beginning in 1992).

12.4.1.3 Biennial Reports. The EPA requires, pursuant to 40 CFR 264.75, that an overall report describing each dangerous waste facility activity be submitted on March 1 of each even-numbered year. Ecology has been extended administrative responsibilities for biennial reporting as required by 40 CFR 264.75. A specific biennial report is not prepared and submitted because reporting requirements are satisfied by submittal of the annual report to Ecology.

12.4.1.4 Groundwater Monitoring Reports. The RMW Storage Facility is not operated as a dangerous waste surface impoundment, waste pile, land treatment unit, or landfill as defined in WAC 173-303-645(1)(a). Therefore, no groundwater monitoring or reporting is required for the RMW Storage Facility.

12.4.1.5 Contingency Plan Incident Notifications. The building emergency director, RMW Storage Facility line management, and the contractor's environmental protection organization are responsible for making the appropriate notifications (Chapter 2.0, Section 2.7.1 and Appendix 7A). Notifications of all emergency situations requiring contingency plan implementation are made as required by 40 CFR 264.56, WAC 173-303-360, and U.S. Department of Energy Order 5000.3A.

In the event of a fire or an explosion, the building emergency director or the Hanford Central Waste Complex line management immediately must notify the Patrol Operations Center by telephone at 811. All emergency incident calls to the emergency number (811) are reported by the Patrol Operations Center to the Hanford Fire Department and the Occurrence Notification Center. In the event of an unplanned release of hazardous or dangerous waste or material, the building emergency director immediately notifies the contractor's environmental protection organization who notifies the DOE-RL and the Occurrence Notification Center. The DOE-RL must be notified by telephone as soon as possible on the day of the incident. The building emergency director or the Hanford Central Waste Complex line management must document the incident on an Occurrence Report to the DOE-RL within 24 hours of categorization of the incident. A copy of the occurrence reports is retained at the Hanford Central Waste Complex as part of the operating record.

If the RMW Storage Facility stops operations in response to a fire, an explosion, or a release that could present a hazard to human health or the environment, the building emergency director notifies DOE-RL, via line management, that the RMW Storage Facility is operational and emergency cleanup is complete.

The DOE-RL is responsible for three types of notifications: an immediate notification, the incident assessment report, and the TSD unit restart notification. Details of these notifications are provided in the following sections.

12.4.1.5.1 Immediate Notification. The Occurrence Notification Center (376-2900) immediately will notify affected county emergency management, Ecology, and the individual designated as the on-scene coordinator for the southeastern Washington area of the National Response Center (800-424-8802) if the RMW Storage Facility has had a fire, an explosion, or a release that could threaten human health or the environment outside the Hanford Facility.

The report will contain the following information:

- Name and telephone number of reporter
- Name and address of the TSD unit
- Time and type of incident
- Name and quantity of material(s) involved to the extent known
- Extent of injuries if any
- Possible hazards to human health or the environment outside the TSD unit
- Actions already taken to mitigate the situation.

12.4.1.5.2 Incident Assessment Report. The DOE-RL will provide a written report to Ecology within 15 days of any incident that requires implementation of the contingency plan. The report includes the following information:

- Name, address, and telephone number of the owner or operator
- Name, address, and telephone number of the TSD unit
- Date, time, and type of incident
- Name and quantity of material(s) involved
- Extent of injuries if any
- Assessment of actual or potential hazards to human health or the environment where this is applicable
- Estimated quantity and disposition of recovered material that resulted from the incident
- Cause of incident
- Description of corrective action taken to prevent recurrence of the incident.

12.4.1.5.3 Unit Restart Notification. If the RMW Storage Facility stops operations in response to a fire, an explosion, or a release that could present a hazard to human health or the environment, the DOE-RL will notify Ecology and the appropriate local authorities before operations are resumed in the affected area(s). The notification will indicate that cleanup procedures are complete and that emergency equipment is clean and fit for its intended use.

12.4.1.6 Spills, Discharges, and Leaks Reports. This section discusses the reports prepared as a result of unpermitted spills and discharges to the environment.

In the event of an unplanned release of dangerous materials, the building emergency director immediately will notify the contractor's environmental protection organization. The building emergency director will document the incident on an occurrence report. A copy of the occurrence report is retained by the Hanford Central Waste Complex. The contractor's environmental protection organization immediately will notify the Occurrence Notification Center. The following information is transmitted to the Occurrence Notification Center:

- Name and telephone number of the reporter
- Name and address of the TSD unit
- Time and type of incident

- Name and quantities of material(s) involved to the extent known
- Extent of injuries, if any
- Possible hazards to human health or the environment outside the TSD unit.

The Occurrence Notification Center immediately will notify Ecology of all reportable spills to the environment or atmosphere in accordance with the requirements of WAC 173-303-145.

12.4.1.7 Closure Reports. Reports regarding the closure of the RMW Storage Facility will be made in accordance with the requirements of 40 CFR 264.115 and .116 and WAC 173-303-610(6) and (9). These reports include notification of beginning of closure and certification of closure.

12.4.1.7.1 Notification of Closure. Ecology will be notified in writing at least 45 days before the date on which closure of the RMW Storage Facility is expected to begin.

12.4.1.7.2 Certification of Closure. Within 60 days of completion of closure of the RMW Storage Facility, a certification signed by the DOE-RL and an independent registered professional engineer will be submitted to the regulatory authority. The certification will be sent by registered mail or an equivalent delivery service. The certification will state that the RMW Storage Facility was closed in accordance with the approved closure plan. Documentation supporting the independent registered engineer's certification will be supplied upon request of the regulatory authority.

12.4.1.7.3 Survey Plat. The RMW Storage Facility is not a disposal unit. This determination eliminates the requirement for producing a survey plat.

12.4.1.8 Postclosure Reports. Postclosure reports required by 40 CFR 264.119 and .120, and WAC 173-303-610(9), (10), and (11) will not be required, because the RMW Storage Facility is not a disposal facility.

12.4.2 Recordkeeping Requirements

Records retained at the Hanford Central Waste Complex include plans described in other portions of this permit application, operating records, miscellaneous support records, and records of reports made to the regulatory authority. These records are described in the following sections. Copies of these records are accessible by contacting the Environmental Data Management Center Regulatory File Custodian (509-376-2530).

12.4.2.1 Permit Application Plans. Plans described in other portions of this permit application and retained at the Hanford Central Waste Complex include the following:

- Waste analysis plan
- Contingency plan and amendments
- Training plans
- Closure plans
- Inspection plans.

Copies of these plans are maintained for the life of the RMW Storage Facility, with the exception of inspection plans, which are maintained for 5 years. Modifications or amendments required as a result of changing regulatory or operational requirements will be submitted to the regulatory authority and added to the plans maintained at the Hanford Central Waste Complex as required.

12.4.2.2 Operating Records. Operating records maintained by the Hanford Central Waste Complex include the following:

- Description and quantity of the dangerous waste stored and the method(s) and date(s) of storage as required by 40 CFR 264, Appendix I and WAC 173-303-380
- Location of each dangerous waste stored within the RMW Storage Facility and the quantity at each location
- Waste analysis results
- Contingency plan incident notifications
- Inspection records
- Waste minimization certification
- Land disposal restriction records.

12.4.2.2.1 Waste Description and Quantity. A description and quantity of dangerous waste stored in the RMW Storage Facility is maintained in the Hanford Central Waste Complex records. Waste manifest records and onsite waste tracking forms describing the types and quantities of waste are maintained as part of the operating record.

12.4.2.2.2 Waste Location. The location of each dangerous waste stored in the RMW Storage Facility is documented and maintained. This record provides a cross-reference to associated manifest and onsite waste tracking form numbers.

12.4.2.2.3 Waste Analysis Data. Waste analysis records maintained by the Hanford Central Waste Complex are generated only when waste resulting from a spill or leak cannot be identified. All other waste analysis is performed by, and records are maintained by, offsite generator and onsite generating units (Chapter 3.0). Records of all the information necessary for treating or disposing of the waste are maintained. Analyses are repeated, as necessary, to ensure accuracy and validity.

12.4.2.2.4 Contingency Plan Incident Report. Records documenting the details of any incidents requiring the implementation of the contingency plan, as described in Section 12.4.1.5, are maintained as part of the RMW Storage Facility operating record as required by 40 CFR 264.73 and WAC 173-303-380. In addition to these records, occurrence reports are generated to document incidents. The occurrence reports describe all incidents, including those that are judged too minor to require the implementation of the contingency plan but that are identified as offnormal events, unusual occurrences, or emergencies.

12.4.2.2.5 Inspection Records. Records of the RMW Storage Facility general inspections are maintained by the RMW Storage Facility for a period of at least 5 years from the inspection date. The records include the following:

- Date and time of inspection
- Inspector's printed name and handwritten signature
- Notations of observations
- Date and nature of any repairs or other remedial actions.

12.4.2.2.6 Waste Minimization Certification. Annual certification by the DOE-RL that the Hanford Facility is in compliance with waste minimization requirements is inserted into the Hanford Facility operating record as required by 40 CFR 264.73(b)(9).

12.4.2.2.7 Land Disposal Restriction Records. Records related to the generation or treatment and disposal of waste subject to land disposal prohibitions are maintained by the Hanford Facility as required by 40 CFR 264.73(b)(10) and (16). Possible records include the following:

- Waste placed in land disposal units under an extension to the effective date of any land disposal restriction granted pursuant to 40 CFR 268.5
- Waste placed in land disposal units under a petition granted pursuant to 40 CFR 268.6
- The applicable notice and certification required by 40 CFR 268.7(a) or 40 CFR 268.7(b).

Additional discussion of land disposal records is provided in the following sections.

12.4.2.2.7.1 Date Extension. The DOE-RL will apply for an extension to the effective date of a land disposal restriction, if required. If such an extension is approved by the regulatory authority, a copy of the approval indicating the waste subject to the extension is placed in the Hanford Facility files. The RMW Storage Facility tracks and documents the quantities of waste subject to the extension that are stored. The identification of the waste and the quantities transferred are documented and provided to subsequent TSD units/facilities managing the waste. Waste identification, quantity, and date(s) of storage and transfer are recorded in the RMW Storage Facility files maintained by the Hanford Central Waste Complex.

12.4.2.2.7.2 Petition. The DOE-RL and/or the contractor will petition the regulatory authority for a variance to allow disposal of a restricted or prohibited waste, if required. If such a petition is approved by the regulatory authority, a copy of the approval indicating the waste subject to the petition is placed in the Hanford Facility files. The RMW Storage Facility tracks and documents the quantities of waste subject to the petition that are stored. The identification of the waste and the quantities transferred are documented and provided to subsequent TSD units/facilities managing the waste. Waste identification, quantity, and date(s) of storage and shipment are recorded in the RMW Storage Facility files maintained by the Hanford Central Waste Complex.

12.4.2.2.7.3 Notice. This section discusses the means of developing and recording the notice of land disposal restriction or certification. The development and content of the land disposal restriction notice or certification are discussed in this section.

12.4.2.2.7.3.1 Development of the Land Disposal Restriction Notice or Certification. The land disposal restriction notice and certification are developed by the generating unit for newly generated waste and by the RMW Storage Facility for stored waste. The RMW Storage Facility supplies the notice or certification to a TSD unit/facility subsequently managing the waste.

12.4.2.2.7.3.2 Content of the Land Disposal Restriction Notice or Certification. The land disposal restriction notice or certification includes the results of the waste analysis data, the determination on whether the treatment residues comply with the land disposal restriction, and the appropriate certification required by 40 CFR 268.7(b). Copies of notices with the appropriate certification received from the generating unit and/or provided to the subsequent TSD unit are maintained for the following cases:

- Waste does not meet the applicable treatment standards
- Waste meets the applicable treatment standards
- Waste is subject to exemption from a prohibition.

The appropriate certification is signed by an authorized representative.

Waste Does Not Meet the Applicable Treatment Standards--If the waste does not meet the applicable treatment standards or exceeds an applicable prohibition level set forth in 40 CFR 268.32 or Section 3004(d) of the RCRA, a notice is provided stating that the waste does not meet the applicable treatment standard. The notice contains the following information:

- EPA hazardous waste code(s)
- Applicable treatment standard(s)
- Waste analysis data, where applicable, or a statement of the basis of the determination with supporting data.

Waste Meets the Applicable Treatment Standards--If the waste meets the applicable treatment standards and can be land disposed without further treatment, a certification identical to that designated in 40 CFR 268.7(a)(2) is provided. The notice contains the following information:

- EPA hazardous waste code(s)
- Applicable treatment standard(s)
- Waste analysis data, where applicable, or a statement of the basis of the determination with supporting data.

The appropriate certification is signed by an authorized representative.

Waste Is Subject to an Exemption from a Prohibition--If the waste is subject to an exemption from a land disposal prohibition, such as a case-by-case exemption, and exemption granted as a result of a petition or a nationwide capacity variance, a notice is provided stating that the waste is subject to an exemption from a land disposal prohibition. The notice contains the following information:

- EPA hazardous waste code(s)
- Applicable treatment standard(s)
- Waste analysis data, where applicable, or a statement of the basis of the determination with supporting data
- Date the waste is subject to the prohibitions.

12.4.2.3 Miscellaneous Support Records. Miscellaneous support records include the following:

- Training documentation
- Liability coverage documentation

- Closure and postclosure cost estimates

- Report records.

12.4.2.3.1 Training Documentation. The name of each employee and the waste management position held are maintained by the Hanford Central Waste Complex. Training records document that employees have received the training or have the job experience required for that position. Training records on current employees are kept until closure of the unit. Training records on former employees are kept for 3 years from the date the employee last worked at the Hanford Central Waste Complex. Auditable copies of these records are maintained by the contractor's training organizations. Specific employee training records are available on a demonstrated need-to-know basis. Copies of these records will be marked *Sensitive Information* and are expected to be handled in accordance with the *Privacy Act* (Chapter 8.0, Section 8.2).

12.4.2.3.2 Liability Coverage Documentation. In accordance with 40 CFR 264.140(c) and WAC 173-303, this documentation is not required for federal facilities. The Hanford Facility is a federally owned facility for which the federal government is the operator, and this documentation is therefore not applicable to the RMW Storage Facility.

12.4.2.3.3 Closure and Postclosure Cost Estimates. In accordance with 40 CFR 264.140(c) and WAC 173-303, these estimates are not required for federal facilities. The Hanford Facility is a federally owned facility for which the federal government is the operator. Therefore, these estimates are not applicable to the RMW Storage Facility.

An annual report updating projections of anticipated closure and postclosure costs for Hanford Facility TSD units having final status will be submitted in accordance with WAC 173-303-390 to Ecology by October 30 (beginning in 1992).

12.4.2.3.4 Report Records. The reports described in Sections 12.1 and 12.4.1 are contained in records maintained either by the Hanford Central Waste Complex or by other Hanford Facility organizations as noted in Table 12-1. Copies of the reports will be made available upon request of Ecology or the EPA.

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Table 12-1. Reports and Records. (sheet 1 of 4)

Item	Storage	
	Retention time	Location[a]
Notification of dangerous waste activities	Life of RMW Storage Facility	Hanford Facility
GENERATOR REPORTS AND RECORDS:		
Annual report	Life of RMW Storage Facility	Hanford Facility
Exception report	Life of RMW Storage Facility	Hanford Facility
Additional reports and records as required (e.g., inspection logs)	Life of RMW Storage Facility	Hanford Facility
Test and Waste Analysis Results:		
Waste generated onsite	Life of RMW Storage Facility	Hanford Central Waste Complex*
Waste packaged for offsite shipment	Life of RMW Storage Facility	Hanford Central Waste Complex
Waste Manifest Reports and Records:		
Manifests	Life of RMW Storage Facility	Hanford Central Waste Complex
Manifest discrepancy	Life of RMW Storage Facility	Hanford Central Waste Complex
Unmanifested waste	Not required	NA[b]
Land Disposal Restriction Records:		
Extension to an effective date	Life of RMW Storage Facility	Hanford Facility
Petition for a variance	Life of RMW Storage Facility	Hanford Facility
Notice and certification of treatment standards	Life of RMW Storage Facility	Hanford Central Waste Complex

Table 12-1. Reports and Records. (sheet 2 of 4)

	Item	Storage	
		Retention time	Location[a]
1 2 3 4	Demonstration and certification for a temporary extension to the effective date	Life of RMW Storage Facility	Hanford Facility
5 6	**TRANSPORTER REPORTS AND RECORDS:**		
7	None required	NA	NA
8 9	**TREATMENT, STORAGE, AND/OR DISPOSAL REPORTS AND RECORDS:**		
10	Permit Application Plans:		
11	Waste analysis plan	Life of RMW Storage Facility	Hanford Central Waste Complex
12 13	Contingency plan and amendments	Life of RMW Storage Facility	RMW Storage Facility
14	Training plan	Life of RMW Storage Facility	Hanford Central Waste Complex
15	Closure Plan	Life of RMW Storage Facility	Hanford Central Waste Complex
16	Inspection plans	Varies from 5 years from inspection date to life of RMW Storage Facility	RMW Storage Facility
17	Operating Reports and Records:		
18	Waste description and quality	Life of RMW Storage Facility	Hanford Central Waste Complex
19	Waste location	Until closure	Hanford Central Waste Complex
20	Waste analysis data	Life of RMW Storage Facility	Hanford Central Waste Complex
21	Inspection records	Varies from 5 years from inspection date to life of RMW Storage Facility	Hanford Central Waste Complex

Table 12-1. Reports and Records. (sheet 3 of 4)

	Item	Storage	
		Retention time	Location[a]
1 2	Certification of waste minimization efforts	Life of RMW Storage Facility	Hanford Central Waste Complex
3 4	<u>Land Disposal Restriction Records</u>:		
5	Extension to an effective date	Life of RMW Storage Facility	Hanford Facility
6	Petition for a variance	Life of RMW Storage Facility	Hanford Facility
7 8	Notice and verification of treatment standards	Life of RMW Storage Facility	Hanford Facility
9 10 11 12	Demonstration and certification for a temporary extension to the effective date	Life of RMW Storage Facility	Hanford Facility
13 14	<u>Waste Manifest Reports and Records</u>:		
15	Manifests	Until closure	Hanford Central Waste Complex
16	Manifest discrepancy	Until closure	Hanford Central Waste Complex
17	Unmanifested waste	Until closure	Hanford Central Waste Complex
18 19	<u>Groundwater Monitoring Reports and Records</u>:		
20	None required	NA	NA
21 22	<u>Contingency Plan Incident Reports and Records</u>:		
23 24	Immediate notification--Occurrence Report	Life of RMW Storage Facility	Hanford Central Waste Complex
25	Assessment report	Life of RMW Storage Facility	Hanford Central Waste Complex
26 27	RMW Facility restart notification	Life of RMW Storage Facility	Hanford Central Waste Complex

Table 12-1. Reports and Records. (sheet 4 of 4)

Item	Storage	
	Retention time	Location[a]
Spills, Discharges, and Leaks Reports:		
Immediate notification	Life of RMW Storage Facility	Hanford Central Waste Complex
Closure Reports and Records:		
Certification of closure	Life of RMW Storage Facility	Hanford Central Waste Complex
Survey plat	Life of RMW Storage Facility	Hanford Central Waste Complex
Closure cost estimates	October 1, following inclusion of unit in Hanford Facility Permit	Hanford Facility
Postclosure Reports and Records:		
None required	NA	NA
Miscellaneous Support/Reports and Records:		
Annual report	Life of RMW Storage Facility	Hanford Central Waste Complex
Biennial report	Not required	NA
Training documentation	Life of RMW Storage Facility	Hanford Central Waste Complex
Liability coverage documentation	Not required	NA

[a]Located at the Hanford Central Waste Complex for 5 years from the date of origination, then transferred to a Hanford Facility central retention area for the remainder of the retention period. At the time of closure, all RMW Storage Facility environmental records will be transferred to a Hanford Facility retention area.

[b]NA = not applicable.

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13.4 ENDANGERED SPECIES ACT OF 1973 13-2

13.5 FISH AND WILDLIFE COORDINATION ACT OF 1934 13-3

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13.7 TOXIC SUBSTANCES CONTROL ACT OF 1976 13-3

13.8 WILD AND SCENIC RIVERS ACT OF 1968 13-3

13.9 OTHER REQUIREMENTS 13-4

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13.0 OTHER RELEVANT LAWS [J]

The RMW Storage Facility was constructed and is operated in compliance with applicable laws and regulations. Relevant environmental laws and regulations have been reviewed, necessary notifications have been made, and approvals or permits have been obtained. No additional approvals or permits for the RMW Storage Facility that would require action by either Ecology or the EPA have been identified.

This chapter provides a summary of the regulatory review performed to assist Ecology in determining that the RMW Storage Facility has met its obligations with respect to other federal or state laws. The environmental laws evaluated include the following, all as amended:

- *Atomic Energy Act of 1954*
- *Clean Air Act of 1977*
- *Clean Water Act of 1977*
- *Endangered Species Act of 1973*
- *Fish and Wildlife Coordination Act of 1934*
- *National Historic Preservation Act of 1966*
- *Toxic Substances Control Act of 1976*
- *Wild and Scenic Rivers Act of 1968.*

In addition, a summary of other requirements that might apply is provided. Full references for each of these acts are included in Chapter 15.0.

13.1 ATOMIC ENERGY ACT OF 1954

The *Atomic Energy Act* provides that the U.S. Atomic Energy Commission (succeeded by the U.S. Department of Energy for conducting nuclear defense and research and development activities at the Hanford Site) is authorized to develop and implement regulations to govern activities related to the design, location, and operation of U.S. Department of Energy sites, to protect health, and minimize danger to life or property. The radioactive component of mixed waste is interpreted by the U.S. Department of Energy to be regulated under the *Atomic Energy Act*; the nonradioactive dangerous component of mixed waste is interpreted to be regulated under the RCRA and WAC 173-303.

The U.S. Department of Energy has issued orders to govern the activities of its sites and to manage the health protection aspects of mixed waste. These orders provide for a consistent approach to managing waste that results from U.S. Department of Energy activities. The orders set radiation exposure

limits and concentration guides to minimize exposure to radiation and detail standards and procedures for managing mixed waste. The RMW Storage Facility operations will be carried out in accordance with these orders.

13.2 CLEAN AIR ACT OF 1977

The *Clean Air Act* establishes national ambient air quality standards and sets standards for abating air pollution and preventing further deterioration of air quality. Air standards are implemented and enforced primarily by state and local authorities. The RMW Storage Facility will comply with the applicable federal, state, and local requirements to control and abate air pollution, including the following:

- *National Emission Standards for Hazardous Air Pollutants* (40 CFR 61) and *National Emission Standards for Radionuclide Emissions from U.S. Department of Energy Facilities* (40 CFR 61, Subpart H)

- Air pollution control regulations (WAC 173-400 through 495) issued under the authority of the *Washington Clean Air Act of 1967*

- *Radiation Protection-Air Emissions* (WAC 246-247), which promulgates the policies set forth in Chapter 70.98 of the *Revised Code of Washington, Nuclear Energy and Radiation*, issued under the authority of the *Washington Clean Air Act*.

- Benton-Franklin-Walla Walla Counties Air Pollution Control Authority general regulation 80-7 (1980).

The RMW Storage Facility complies with pollution control standards established by General Regulation 80-7 of the Benton-Franklin-Walla Walla Counties Air Pollution Control Authority (1980).

13.3 CLEAN WATER ACT OF 1977

Operation of the RMW Storage Facility does not result in the discharge of any liquid effluents that would require a National Pollutant Discharge Elimination System permit; therefore, no permits or reviews pursuant to the *Clean Water Act* are applicable.

13.4 ENDANGERED SPECIES ACT OF 1973

The RMW Storage Facility is located in the 200 West Area of the Hanford Site (Chapter 2.0 provides location information). The 200 West Area has been developed extensively during past construction activities and during nuclear fuel and chemical reprocessing activities. The site of the RMW Storage Facility cannot be considered an undisturbed area or a major habitat for native plant and animal species. Also, this area is a very small fraction of the Hanford Site and hence would not play a significant role in the ecology of

the Hanford Site. No listed or proposed endangered or threatened species or their habitats are expected to be affected by activities related to the RMW Storage Facility.

13.5 FISH AND WILDLIFE COORDINATION ACT OF 1934

Activities associated with the RMW Storage Facility will not involve the impoundment, diversion, or other control or modification of any body of water. Therefore, no permits or reviews pursuant to this statute are applicable.

13.6 NATIONAL HISTORIC PRESERVATION ACT OF 1966

Activities associated with the RMW Storage Facility affect no areas that are eligible for nomination to the National Register of Historic Places. In addition, the area was reviewed for cultural resources.

Sites used as material 'borrow areas' for construction, replacement, and/or disposal of RMW Storage Facility equipment will be reviewed for the presence of archaeological resources in accordance with regulations issued pursuant to, or other requirements of, the *American Antiquities Preservation Act of 1906*; the *American Indian Religious Freedom Act of 1978*; the *Historic Sites, Buildings and Antiquities Act of 1935*; the *Archaeological and Historic Preservation Act of 1960*; and the *Archaeological Resources Protection Act of 1979*. No known cultural resource impacts have occurred from the RMW Storage Facility activities.

13.7 TOXIC SUBSTANCES CONTROL ACT OF 1976

The *Toxic Substances Control Act* was enacted to protect human health and the environment by requiring that specific chemicals be tested and that regulations restricting their processing and use be implemented. The objectives of the act include the development of adequate data to determine the human health and environmental effects of chemicals and to control any chemicals that present an unreasonable risk of injury. The section of the act most relevant to the RMW Storage Facility involves the storage and handling of chemical substances or mixtures that could present an unreasonable risk of injury to human health or the environment, specifically polychlorinated biphenyls. The regulation promulgated to prescribe the *Toxic Substances Control Act* methods for storage and handling of polychlorinated biphenyls is 40 CFR 761. The RMW Storage Facility will meet all the requirements as determined applicable by the EPA.

13.8 WILD AND SCENIC RIVERS ACT OF 1968

The RMW Storage Facility does not affect any rivers presently designated under the *Wild and Scenic Rivers Act*.

13.9 OTHER REQUIREMENTS

The application of insecticides and herbicides on or in the immediate vicinity of the RMW Storage Facility will be conducted in compliance with the *Federal Insecticide, Fungicide, and Rodenticide Act of 1975*, the *Toxic Substances Control Act*, and the applicable provisions of the Washington State water quality standards, WAC 173-201.

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14.0 PART B CERTIFICATION [K] 14-1

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14.0 PART B CERTIFICATION [K]

The following certification, required by WAC 173-303-810(13), for all applications and reports submitted to Ecology is hereby included:

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

John D. Wagoner — 10/30/91

Owner/Operator
John D. Wagoner, Manager
U.S. Department of Energy
Field Office, Richland

Date

Thomas M. Anderson — 10/10/91

Co-operator
Thomas M. Anderson, President
Westinghouse Hanford Company

Date

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15.5 THE U.S. DEPARTMENT OF ENERGY ORDERS 15-6

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15.0 REFERENCES

15.1 DOCUMENTS

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40 CFR 61, *National Emission Standards for Hazardous Air Pollutants*, Title 40, Code of Federal Regulations, Part 61, U.S. Environmental Protection Agency, Washington, D.C.

40 CFR 261, *Identification and Listing of Hazardous Waste*, Title 40, Code of Federal Regulations, Part 261, U.S. Environmental Protection Agency, Washington, D.C.

40 CFR 262, *Standards Applicable to Generators of Hazardous Waste*, Title 40, Code of Federal Regulations, Part 262, U.S. Environmental Protection Agency, Washington, D.C.

40 CFR 263, *Standards Applicable to Transporters of Hazardous Waste*, Title 40, Code of Federal Regulations, Part 263, U.S. Environmental Protection Agency, Washington, D.C.

40 CFR 264, *Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities*, Title 40, Code of Federal Regulations, Part 264, U.S. Environmental Protection Agency, Washington, D.C.

40 CFR 268, *Land Disposal Restrictions*, Title 40, Code of Federal Regulations, Part 268, U.S. Environmental Protection Agency, Washington, D.C.

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49 CFR 172, *Hazardous Materials Tables and Hazardous Materials Communications Regulations*, Title 49, Code of Federal Regulations, Part 172, U.S. Department of Transportation, Washington, D.C.

49 CFR 173, *Shippers-General Requirements for Shipments and Packagings*, Title 49, Code of Federal Regulations, Part 173, U.S. Department of Transportation, Washington, D.C.

52 FR 17, "Radiation Protection Guidance to Federal Agencies for Occupational Exposure," *Federal Register*, Vol. 52, No. 17, p. 2822, January 27, 1987, U.S. Environmental Protection Agency, Washington, D.C.

55 FR 61, "U.S. EPA Final Rule," Code of Federal Regulations, *Federal Register*, Vol. 55, No. 61, pp. 11799-11877, March 29, 1990, U.S. Environmental Protection Agency, Washington, D.C.

55 FR 106, *Land Disposal Restrictions for Third Third Scheduled Wastes; Final Rule*, Federal Register, Vol. 55, No. 106, Sec. III.A.8.c.(2), p. 22627, June 1, 1990, U.S. Environmental Protection Agency, Washington, D.C.

15.3 FEDERAL AND STATE ACTS

American Antiquities Preservation Act of 1906, 16 USC 432.

American Indian Religious Freedom Act of 1978, 42 USC 1996.

Archaeological and Historic Preservation Act of 1960, 16 USC 469.

Archaeological Resources Protection Act of 1979, 16 USC 470aa.

Atomic Energy Act of 1954, 42 USC 2011 et seq.

Clean Air Act of 1977, 42 USC 7401 et seq.

Clean Water Act of 1977, 33 USC 1251 et seq.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 USC 9601 et seq.

Endangered Species Act of 1973, 16 USC 1531 et seq.

Federal Insecticide, Fungicide, and Rodenticide Act of 1975, 7 USC 136 et seq.

Fish and Wildlife Coordination Act of 1934, 16 USC 661 et seq.

Hazardous and Solid Waste Amendments of 1984, 42 USC 6912(a), 6921, 6922, 6924, 6925, 6926, 6930, 6935, 6937, 6939, 6991, and 6993.

Historic Sites, Buildings and Antiquities Act of 1935, 16 USC 461-467.

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Safe Drinking Water Act of 1974, 42 USC 300f et seq.

Shoreline Management Act of 1971, Revised Code of Washington, Chapter 90.58.010 et seq., Olympia, Washington.

State of Washington Hazardous Waste Management Act of 1976, Revised Code of Washington, Chapter 70.105 et seq., Olympia, Washington.

Superfund Amendments and Reauthorization Act of 1986, 42 USC 11001 et seq.

Toxic Substances Control Act of 1976, 15 USC 2601 et seq.

Washington Clean Air Act of 1967, Revised Code of Washington, Chapter 70.94 et seq., Olympia, Washington.

Wild and Scenic Rivers Act of 1968, 16 USC 1271 et seq.

15.4 WASHINGTON ADMINISTRATIVE CODE

WAC 173-201, *Water Quality Standards for Surface Waters of the State of Washington*, Washington State Department of Ecology, Olympia, Washington.

WAC 173-303, *Dangerous Waste Regulations*, Washington State Department of Ecology, Olympia, Washington.

WAC 173-400 through 495, *General Regulations for Air Pollution Sources*, Washington State Department of Ecology, Olympia, Washington.

WAC 246-247, *Radiation Protection - Air Emissions*, Washington State Department of Health, Olympia, Washington.

15.5 THE U.S. DEPARTMENT OF ENERGY ORDERS

5000.3A, *Occurrence Reporting and Processing of Operations Information.*

5480.19, *Conduct of Operations Requirements for DOE Facilities.*

5820.2A, *Radioactive Waste Management.*

6430.1A, *General Design Criteria.*

9 2 1 2 3 5 6 0 9 4 6

APPENDICES

		VOLUME
2A	HANFORD SITE MAPS	1
2B	DRAFT FUNCTIONAL DESIGN CRITERIA FOR ENHANCED RADIOACTIVE AND MIXED WASTE STORAGE PHASE V PROJECT W-112	1
4A	CONSTRUCTION SPECIFICATIONS INDEX	1
4B	DESIGN DRAWINGS	1
4C	SECONDARY CONTAINMENT CALCULATIONS	1
4D	SEALANT PROPERTIES	1
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8A	TRAINING COURSE DESCRIPTIONS	1
4A	CONSTRUCTION SPECIFICATIONS	2

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APPENDIX 2A

HANFORD SITE MAPS

9 2 1 2 7 6 0 0 8 4 9

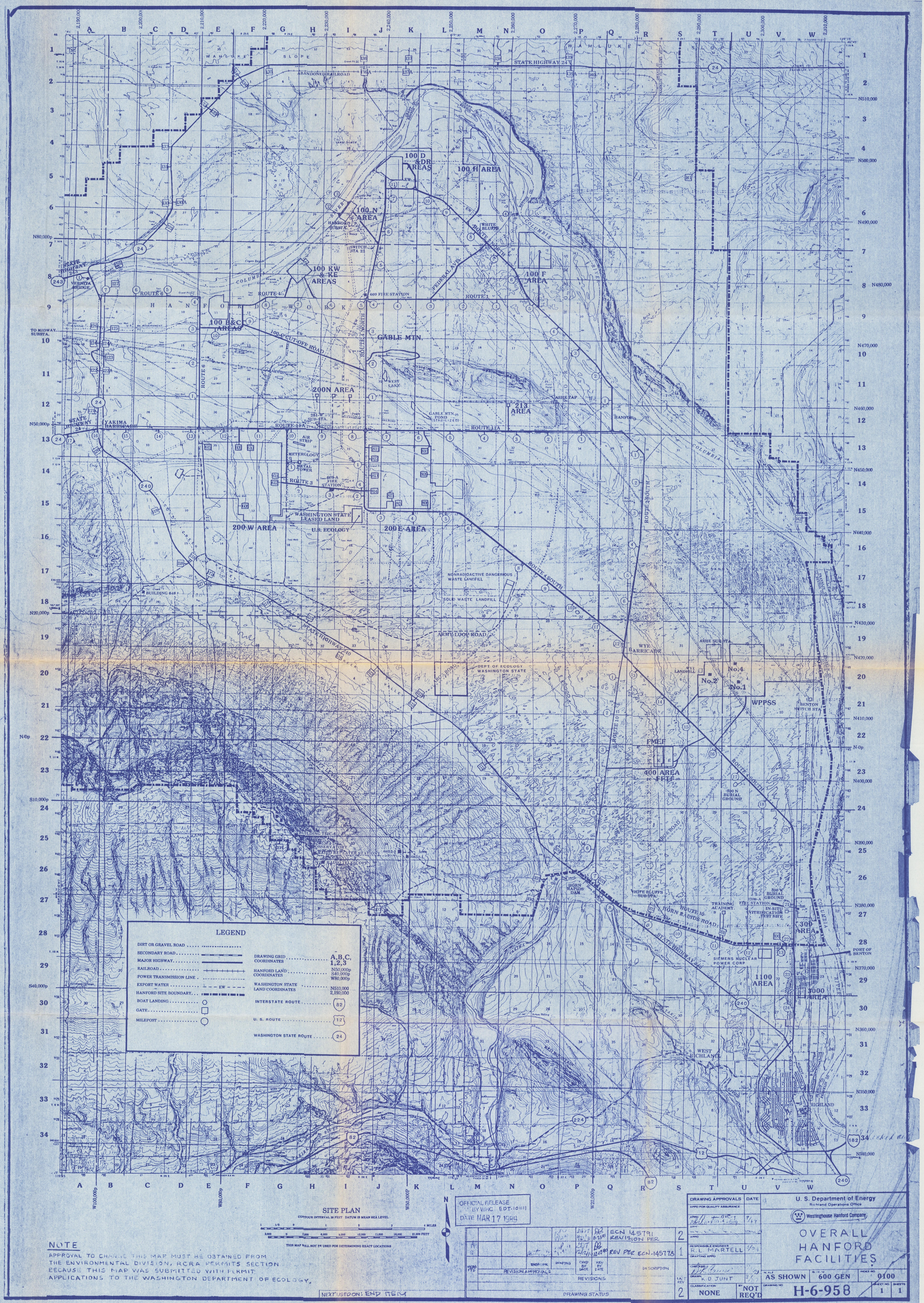
APPENDIX 2A

CONTENTS

H-6-958	OVERALL HANFORD FACILITIES
H-13-000003	RMW STORAGE FACILITY TOPOGRAPHIC MAP
*	Legal Description

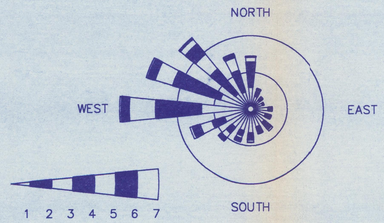
*In preparation. Not available for this submittal.

9 2 1 2 7 3 6 6 0 8 5 0


100 D &DR AREAS
100 H AREA
100 N AREA
100 KW & KE AREAS
100 F AREA
100 B&C AREAS
GABLE MTN.
200N AREA
213 AREA
200 W AREA
200 E AREA
WASHINGTON STATE LEASED LAND
U.S. ECOLOGY
NONRADIOACTIVE DANGERIOUS WASTE LANDFILL
SOLID WASTE LANDFILL
ARMY LOOP ROAD
DEPT OF ECOLOGY WASHINGTON STATE
WPPSS
FMEF
400 AREA FFTF
300 AREA
1100 AREA
3000 AREA
WEST RICHLAND
RICHLAND
LEGEND
DIRT OR GRAVEL ROAD
SECONDARY ROAD
MAJOR HIGHWAY
RAILROAD
POWER TRANSMISSION LINE
EXPORT WATER
HANFORD SITE BOUNDARY
BOAT LANDING
GATE
MILEPOST
DRAWING GRID COORDINATES A,B,C, 1,2,3
HANFORD LAND COORDINATES N50,000p S40,000p W80,000p
WASHINGTON STATE LAND COORDINATES N510,000 2,190,000
INTERSTATE ROUTE
U. S. ROUTE
WASHINGTON STATE ROUTE
SITE PLAN
CONTOUR INTERVAL 20 FEET DATUM IS MEAN SEA LEVEL
THIS MAP WILL NOT BE USED FOR DETERMINING EXACT LOCATIONS
NOTE
APPROVAL TO CHANGE THIS MAP MUST BE OBTAINED FROM THE ENVIRONMENTAL DIVISION, RCRA PERMITS SECTION BECAUSE THIS MAP WAS SUBMITTED WITH PERMIT APPLICATIONS TO THE WASHINGTON DEPARTMENT OF ECOLOGY.
OFFICIAL RELEASE BY WHC EDT-10111 DATE MAR 17 1989
NEXT USED ON: END ITEM
REVISION APPROVALS
REVISIONS
DRAWING STATUS
ECN 145791 REVISION PER
REV PER ECN-145778
DRAWING APPROVALS
DATE
APPD FOR QUALITY ASSURANCE
RESPONSIBLE ENGINEER R.L. MARTELL
DRAFTING APPD
CHECKED
DRAWN K.D. JUNT
CLASSIFICATION NONE
BY NOT REQ'D
U. S. Department of Energy
Richland Operations Office
Westinghouse Hanford Company
OVERALL HANFORD FACILITIES
SCALE AS SHOWN
600 GEN
INDEX NO. 0100
DRAWING NO H-6-958
SHEET NO. 1
SHEETS 1

WIND ROSE FOR: 200E AREA
% CALM WINDS = .9

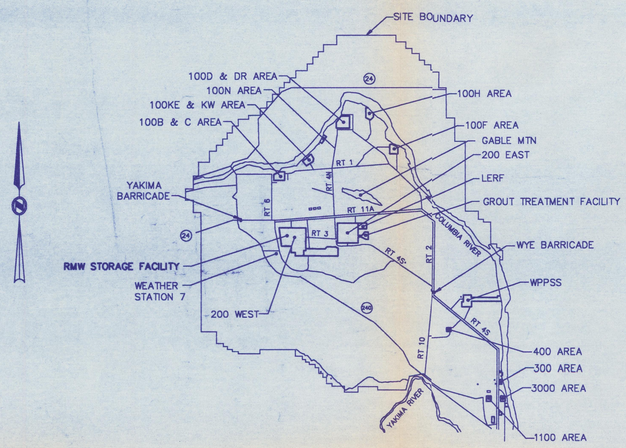
PERIOD COVERED
12/01/85 – 12/31/87
STATION NO.7



PADDLES INDICATE DIRECTION WIND IS COMING FROM.
RADIAL GRIDS REPRESENT 5.0% AND 10.0% OCCURRENCE.

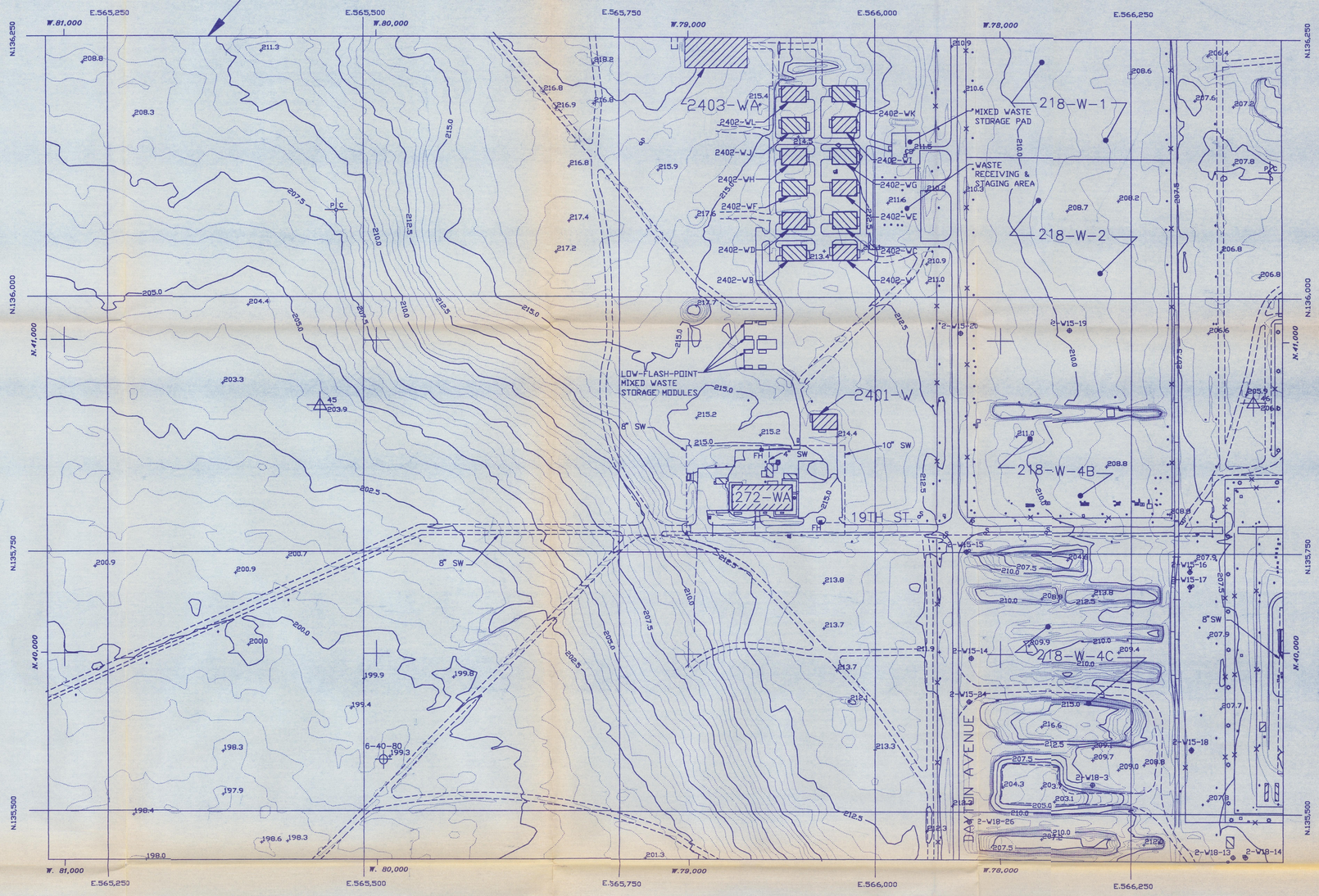
WIND CLASS	MILES/HOUR
1--------	>1.0 – 3.0
2--------	4.0 – 7.0
3--------	8.0 – 12.0
4--------	13.0 – 18.0
5--------	19.0 – 24.0
6--------	25.0 – 31.0
7--------	32.0 +

WIND ROSE



KEY PLAN
SCALE: NONE

MATCH LINE SEE DRAWING H-13-000003 SH-2



LEGEND

W.47,000 N.43,000	HANFORD PLANT COORDINATES (FEET)
E.576,250 N.136,000	WASHINGTON STATE COORDINATES (METERS)
α 233.2	FIELD CONTROL (METERS)
	INTERMEDIATE CONTOUR
215.0	INDEX CONTOUR (METERS)
	EDGE OF PAVEMENT
	FENCE
	POST & CHAIN FENCE
	PERIMETER FENCE
	DIRT ROAD OR TRAIL
	PAVED ROAD
	UNIMPROVED PAVED ROAD
	BUILDINGS
	TANKS
	CONCRETE LINE/ SIDEWALK
	RAILROAD
24	STATE HIGHWAY
ROUTE 3	HANFORD HIGHWAY
216-A-42	CRIB
218-E-10	BURIAL GROUND
242-A	BUILDING
2-E-25-25	WELL 200-E-25-25
	SIGNS
MH	MANHOLE
CB	CATCH BASIN
	POWER/ UTILITY POLE
	MISCELLANEOUS POST
	TREES
	LIGHT POLE
	PIPELINE
	STEAMLINE
V455	WASTE TRANSFER LINE
24" EW	EXPORT WATER LINE
4" RW	RAW WATER LINE
4" SW	SANITARY WATER LINE

GENERAL NOTES

1. THIS MAP IS BASED ON AERIAL PHOTOGRAPHY FLOWN ON 6-24-89. THE TOPOGRAPHIC MAP WAS PREPARED BY MERRICK & COMPANY AND CERTIFIED TO MEET NATIONAL MAP ACCURACY STANDARDS. OFFICIAL COPIES OF THE MERRICK MAPS THAT SHOW THE CERTIFICATE ARE LOCATED IN THE WESTINGHOUSE HANFORD ENGINEERING FILES AS DRAWING NUMBERS H-2-79476 SHEET 1 AND H-2-79477 SHEET 1 THRU 37. THE NAMES OF PHYSICAL FEATURES AND THE TITLE BLOCK OF THE H-6-10101 THROUGH H-6-10137 MAPS WERE ADDED BY WESTINGHOUSE HANFORD COMPANY.

2. WASHINGTON COORDINATE SYSTEM: THE OFFICIAL STATE PLANE COORDINATE SYSTEM AS DEFINED BY THE REVISED CODE OF WASHINGTON (RCW). THE HANFORD SITE LIES WITHIN THE WASHINGTON COORDINATE SYSTEM, SOUTH ZONE. THIS GRID COVERS THE ENTIRE SITE AND USES X (EASTINGS) AND Y (NORTHINGS) COORDINATES.

   HORIZONTAL DATUM: NAD-83 LAMBERT PROJECTIONS

   VERTICAL DATUM: NATIONAL GEODETIC SURVEY DATUM AS PROVIDED BY KAISER ENGINEERS – HANFORD.

   COORDINATES ARE SHOWN AS METERS.
   CONTOURS ARE SHOWN AS 1/2 METERS.

3. HANFORD PLANT GRID: A LOCAL GRID SYSTEM WITH ITS INITIAL POINT NORTHEAST OF THE 400 AREA. IT COVERS 200-EAST AND 200-WEST AS WELL AS GENERAL SITE WORK SUCH AS WELLS AND BURIAL GROUNDS. COORDINATES ARE SHOWN AS FEET.

SITE PLAN
SCALE: 1:2000

0 20 40 80 120 160 METERS

1 cm = 20 meters
PHOTO DATE: 6-24-89
CONTOUR INTERVAL: 0.5 meter

DWG NO	TITLE

DRAWING TRACEABLILITY LIST

REF NUMBER	TITLE
H-6-10118	TOP-MAP 200E/200W MAP

REFERENCES

NEXT USED ON H-13-000001

REV NO	DESCRIPTION	REV BY DATE	CHK BY DATE	DFTG APVD DATE	COG ENGR	OTHER	OTHER

REVISIONS

CADFILE N000003A CADCODE 1X:IBM:ACD2:10.0:N

		DATE
DRAWN	BR KAMPPI	4-25-91
CHECKED	D. D. Talley	9-18-91
DFTG APVD		9-18-91
COG ENGR	B. M. Barnes	9-18-91
QA		
OTHER	D. Barnes	9-18-91
OTHER		
OTHER		
APVD FOR IMPLEMENTATION BY: FOR:		DATE

OFFICIAL RELEASE BY WHC DATE SEP 19 1991

EDT 124619

U.S. DEPARTMENT OF ENERGY
Richland Operations Office
Westinghouse Hanford Company

RMW STORAGE FACILITY TOPOGRAPHIC MAP

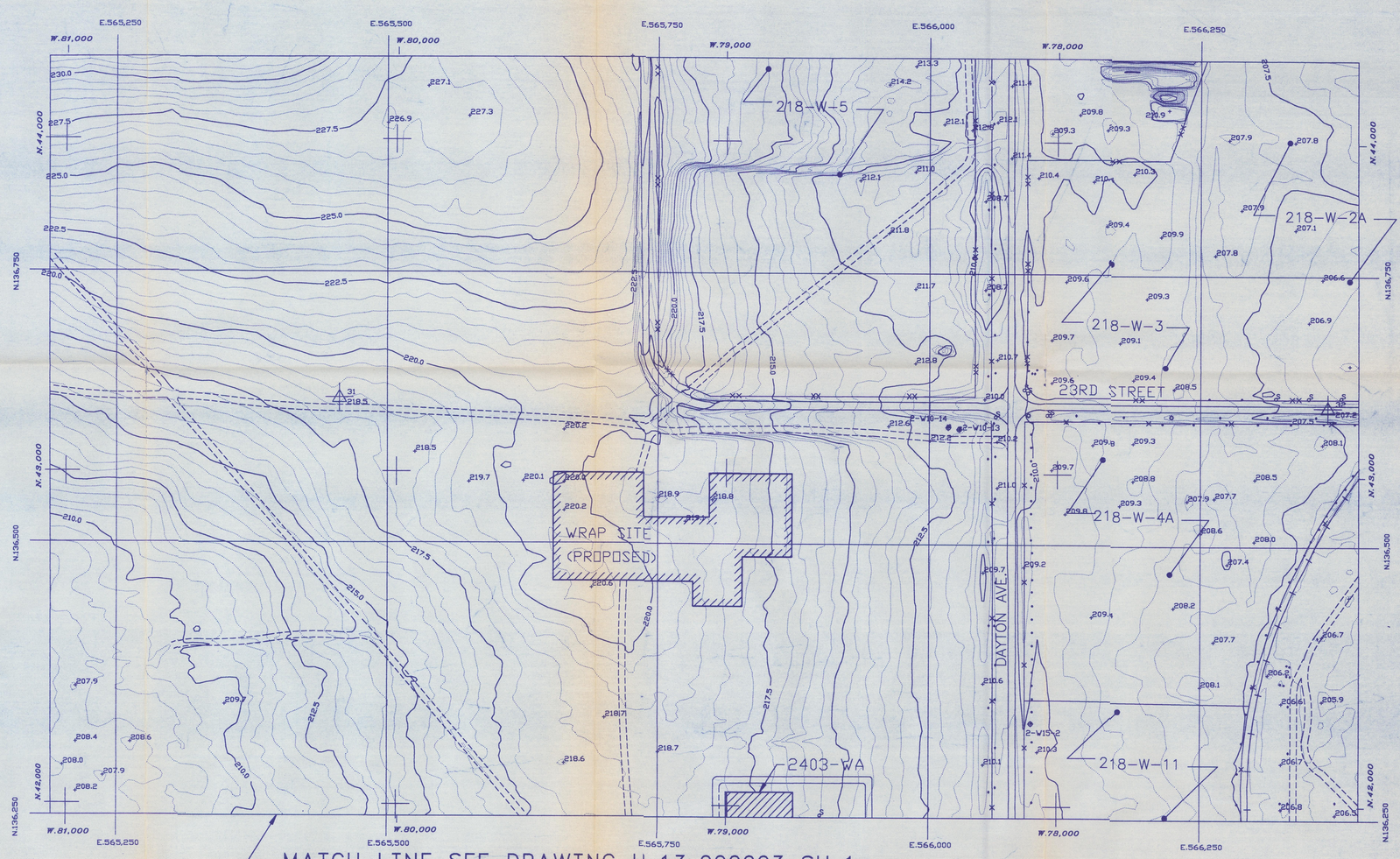
SIZE	BLDG NO	INDEX NO	DWG NO	REV
F	2403-WA	0110	H-13-000003	0

SCALE 1:2000 SHEET 1 OF 2

CHK PRINT DATE COMMENT PRINT DATE 9-17-91

DWG NO H-13-000003 SH 1 OF 2 REV 0

54-6000-027(5/89)



MATCH LINE SEE DRAWING H-13-000003 SH-1

SITE PLAN

SCALE: 1:2000

0 20 40 80 120 160 METERS

1 cm = 20 meters
PHOTO DATE: 6-24-89
CONTOUR INTERVAL: 0.5 meter

SEE H-13-000003 SH-1 FOR LEGEND
GENERAL NOTES & WIND ROSE

DWG NO	TITLE
DRAWING TRACEABLILITY LIST	

REF NUMBER	TITLE
H-6-10110	TOP-MAP 200E/200W AREA
REFERENCES	
NEXT USED ON	H-13-000003 SH-1

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REVISIONS					APPROVALS BY/DATE		

CADFILE N000003B CADCODE 1X:IBM:ACD2:10.0:N

		DATE
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CHECKED	D.G. Tilley	9-18-91
DFTG APVD		9-18-91
COG ENGR	R.M. Bonner	9-18-91
QA		
OTHER		9-18-91
OTHER		
OTHER		
APVD FOR IMPLEMENTATION		
BY		
FOR		DATE

CHK PRINT ☐ DATE

COMMENT PRINT ☐ DATE 9-18-91

EDT 124619

U.S. DEPARTMENT OF ENERGY
Richland Operations Office
Westinghouse Hanford Company

RMW STORAGE FACILITY TOPOGRAPHIC MAP

SIZE	BLDG NO	INDEX NO	DWG NO	REV
F	2403-WA	0110	H-13-000003	0
SCALE 1:2000			SHEET 2 OF 2	

DWG NO H-13-000003 SH 2 OF 2 REV 0

OFFICIAL RELEASE
DATE SEP 19 1991

54-6000-027(5/89)

APPENDIX 2B

DRAFT FUNCTIONAL DESIGN CRITERIA FOR ENHANCED RADIOACTIVE AND MIXED WASTE STORAGE PHASE V PROJECT W-112

9 2 1 2 3 5 0 0 8 5 4

The *Functional Design Criteria for Enhanced Radioactive and Mixed Waste Storage Phase V Project W-112* will be provided when it becomes available.

9 2 1 2 7 5 6 0 9 5 5

APPENDIX 4A

CONSTRUCTION SPECIFICATIONS INDEX

9 2 1 2 7 5 0 8 5 6

APPENDIX 4A

CONSTRUCTION SPECIFICATIONS INDEX

The following construction specifications are contained in Volume 2.

4A-1 Construction Specification W-033-C2/V-W033C2-001, As-Built Rev. 1, for Radioactive Mixed Waste Storage Facilities

4A-2 Construction Specification V-W033C1-001, As-Built Rev. 1, for Radioactive Mixed Waste Storage Facility

4A-3 Construction Specification W-016H-C1, As-Built Rev. 1, For Radioactive Mixed Waste Storage Facilities

4A-4 Construction Specification ER1372-C1, As-Built Rev. 0a, for Radioactive Mixed Waste Storage Pads

4A-5 Construction Specification W-032-C1, As-Built Rev. 1, for Radioactive Mixed Waste Storage Building

4A-6 Hazardous Material Storage Vendor Brochure, Justrite Manufacturing Company, Des Plaines, Illinois

4A-7 Construction Specification ER1372-C1 for Radioactive Mixed Waste Storage Pads

4A-8 Construction Specification ER-1372-C2 for RMW Storage Pads/Special Protective Coating

4A-9 Specification for Three Each Flammable Storage Modules 4, 5, and 6 (WFJ-XVV-638457 CHEM-STOR, Inc., Mfgr.)

4A-10 Specification for Two Each Flammable Storage Modules 7 and 8 (RDV-EXV-552432 Safety Storage Inc., Mfgr.)

4A-11 Specification for Electrical Storage Modules 7 and 8 (H-2-81296, sheet 3 of 3)

4A-12 Specification for Civil Asphalt Storage Pad (200-W Area, H-2-90264)

4A-13 Construction Specification W-016H-C3, Rev. 2, for Radioactive Mixed Waste Storage Facilities

APPENDIX 4B

DESIGN DRAWINGS

9 2 1 2 7 5 0 6 5 8

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APPENDIX 4B

DESIGN DRAWINGS

This appendix contains the following design drawings:

Drawing number	Revision number	Description
H-2-80543	2	CIVIL/ARCH/STRL/HVAC PLANS, EL, SECT & DETAILS
H-2-80544	2	ELEC/FIRE ALARM PLAN, DETAILS & SCHEDULE
H-2-80545.1	2	ARCH/STRL ELEVATIONS & DETAILS (SHEET 1 OF 2)
H-2-80545.2	1	ARCH/STRL ELEVATIONS & DETAILS (SHEET 2 OF 2)
H-2-80579	1	CIVIL UNLOADING PAD PLAN, SECT & DET
H-2-80580.1	3	CIVIL STORAGE PAD PLAN, SECT & DET (SHEET 1 OF 2)
H-2-80580.2	3	CIVIL STORAGE PAD SECT & DET (SHEET 2 OF 2)
H-2-80604	2	DRAWING LIST/CIVIL SITE PLAN
H-2-80605	2	ARCH/STRL PLAN, EL, SECTIONS & DETAILS
H-2-80606.1	1	ARCH/STRL SECTIONS & DETAILS (SHEET 1 OF 2)
H-2-80606.2	0	ARCH/STRL SECTIONS & DETAILS (SHEET 2 OF 2)
H-2-80607	1	ELECTRICAL PLAN, SECTION, DETAILS
H-2-80608	1	FIRE PROTECTION FIRE ALARM PLANS, EL, DET & DIAG
H-2-80609	2	ELECTRICAL SITE PLAN AND POLE LINE DETAILS
H-2-80737	1	DWG LIST/CIVIL SITE PLAN RMW GRADING & ROADWAYS
H-2-80739	1	ARCH/STRL PLAN, ELEVATIONS, SECTIONS & DET
H-2-80740.1	1	FIRE PROTECTION FIRE ALARM SYS PLANS & SECT (SHEET 1 OF 2)
H-2-80740.2	1	FIRE PROTECTION ALARM SYSTEM PLANS, SECT, DET (SHEET 2 OF 2)
H-2-80741.1	1	FIRE PROTECTON FIRE ALARM SYS WIRING DIAGRAM (SHEET 1 OF 2)
H-2-80741.2	1	FIRE PROTECTON ALARM SYS WIRING DIAGRAM (SHEET 2 OF 2)
H-2-80742	1	ELECTRICAL SITE PLAN, SYMBOL LIST & SCHEDULE
H-2-80743	1	ELECTRICAL PLANS, DIAGRAM AND DETAILS

	Drawing number	Revision number	Description
1	H-2-80744	2	CIVIL SECTIONS & DETAILS RMW GRADING & ROADWAYS
2	H-2-80894	1	DRAWING LIST
3	H-2-80895.1	1	CIVIL SITE PLAN & DET (SHEET 1 OF 3)
4	H-2-80895.2	0	CIVIL SITE PLAN & DETAIL 12" SW PLAN AND PROFILE (SHEET 2 OF 3)
5	H-2-80895.3	0	CIVIL SITE PLAN & DETAIL 12" SW PLAN, PROFILE & DET (SHEET 3 OF 3)
6	H-2-80896	1	CIVIL ENLARGED SITE PLAN & DET
7	H-2-80897	1	ARCHITECTURAL FLOOR PLAN & SCHED
8	H-2-80898	1	ARCHITECTURAL PLAN, SECT, EL & SCHED
9	H-2-80899	0	ARCHITECTURAL ELEVATIONS & SECT
10	H-2-80900	1	ARCHITECTURAL PLAN, SECT & DETAILS
11	H-2-80901.1	0	STRL FOUNDATION PLAN & DETAILS (SHEET 1 OF 2)
12	H-2-80901.2	0	STRL FOUNDATION PLAN & DETAILS (SHEET 2 OF 2)
13	H-2-80902.1	1	FIRE PROTECTION ALARM SYSTEM PLAN, SECTIONS & DETAILS (SHEET 1 OF 3)
14	H-2-80902.2	1	FIRE PROTECTION ALARM SYSTEM PLAN, SECTIONS & DETAILS (SHEET 2 OF 3)
15	H-2-80902.3	1	FIRE PROTECTION ALARM SYSTEM PLAN, SECTIONS & DETAILS (SHEET 3 OF 3)
16	H-2-80903.1	1	FIRE PROTECTION ALARM SYSTEM WIRING DIAGRAM (SHEET 1 OF 3)
17	H-2-80903.2	1	FIRE PROTECTION ALARM SYSTEM WIRING DIAGRAM (SHEET 2 OF 3)
18	H-2-80903.3	1	FIRE PROTECTION ALARM SYSTEM WIRING DIAGRAM (SHEET 3 OF 3)
19	H-2-80904.1	1	HVAC PLAN, SECT & DETAILS (SHEET 1 OF 3)
20	H-2-80904.2	1	HVAC PLAN, SECT & DETAILS (SHEET 2 OF 3)
21	H-2-80904.3	1	HVAC PLAN, SECT & DETAILS (SHEET 3 OF 3)
22	H-2-80917	0	ELECTRICAL PLAN
23	H-2-80918	0	ELECTRICAL PLAN
24	H-2-80919	0	ELECTRICAL PLAN

9 2 1 2 7 5 0 9 6 1

	Drawing number	Revision number	Description
1	H-2-80920	1	ELECTRICAL ELEVATIONS & DETAILS
2	H-2-80921	1	ELECTRICAL ELEVATIONS & DETAILS
3	H-2-80922	1	ELECTRICAL ELEVATIONS & DETAILS
4	H-2-80923	1	ELECTRICAL DIAG - PNLBD SCHED
5	H-2-80924	1	ELECTRICAL DIAG - PNLBD SCHED
6	H-2-80925	1	ELECTRICAL DIAG - PNLBD SCHED
7	H-2-81296.1	1	ELECTRICAL STORAGE MODULES 7 & 8 PLANS & DETAILS (SHEET 1 OF 3)
8	H-2-81296.2	1	ELECTRICAL STORAGE MODULES 7 & 8 DETAILS & DIAGRAMS (SHEET 2 OF 3)
9	H-2-81296.3	1	ELECTRICAL STORAGE MODULES 7 & 8 SPECIFICATIONS (SHEET 3 OF 3)
10	H-2-99963	1	DWG LIST/CIVIL SITE PLAN
11	H-2-99964	1	CIVIL ENLARGED SITE PLAN
12	H-2-99965.1	1	CIVIL PLAN & PROFILE - 12" SW (SHEET 1 OF 3)
13	H-2-99965.2	1	CIVIL PLAN & PROFILE - 12" SW (SHEET 2 OF 3)
14	H-2-99965.3	1	CIVIL PLAN & PROFILE - 12" SW (SHEET 3 OF 3)
15	H-2-99966	1	ARCHITECTURAL PLAN, SECT, EL & DET
16	H-2-99967	1	ARCHITECTURAL PLAN, SECT & DETAILS
17	H-2-131541.1	1	STRL FOUNDATION PLAN & DETAILS (SHEET 1 OF 2)
18	H-2-131541.2	0	STRL FOUNDATION PLAN & DETAILS (SHEET 2 OF 2)
19	H-2-131542	1	FIRE PROTECTION PLAN, SECT & DETAILS
20	H-2-131543	1	FIRE PROTECTION ALARM SYSTEM WIRING DIAGRAM
21	H-2-131544	1	HVAC PLAN, SECT & DETAILS
22	H-2-131547.1	1	ELECTRICAL PLAN AND DIAGRAMS (SHEET 1 OF 2)
23	H-2-131547.2	0	ELECTRICAL PLAN AND DIAGRAMS (SHEET 2 OF 2)
24	H-2-131548.1	1	ELECTRICAL ELEVATIONS & DETAILS (SHEET 1 OF 2)
25	H-2-131548.2	0	ELECTRICAL ELEV & DETAILS (SHEET 2 OF 2)
26			

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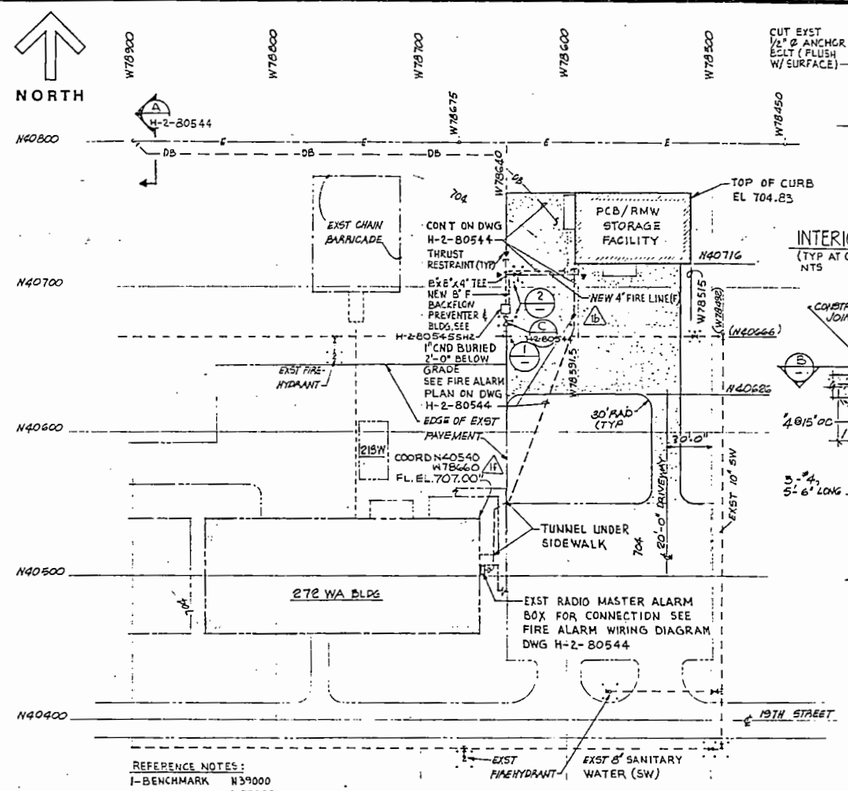
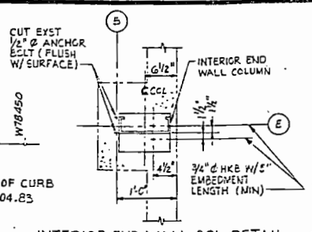
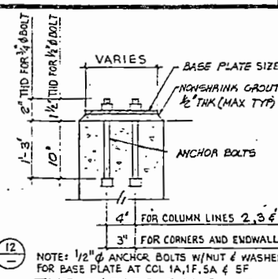
9212160563



SITE PLAN
SCALE 1" = 40'

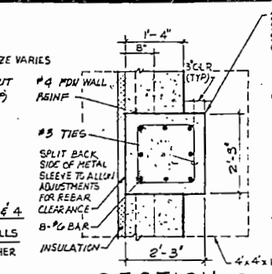


INTERIOR END WALL COL DETAIL (12)
(TYP AT COLS 1-B, 1-D, 1-E, 5-C & 5-E)
NTS

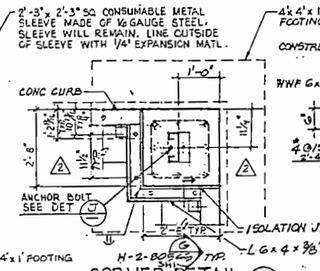


NOTE: 1/2" Ø ANCHOR BOLTS W/NUT & WASHER FOR BASE PLATE AT COL 1A, 1F, 5A & 5F

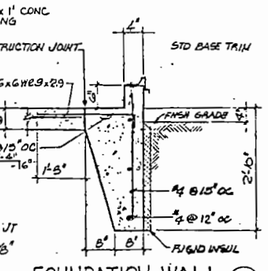
TYP ANCHOR BOLT (J)



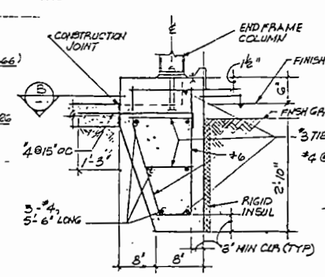
SECTION (F)
NTS



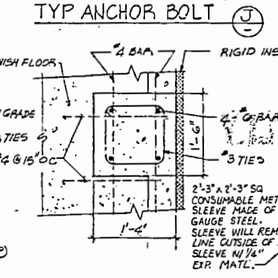
CORNER DETAIL (4)
SCALE 3/4" = 1'-0"



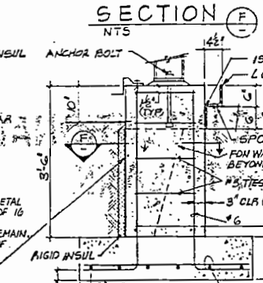
FOUNDATION WALL (G)
SCALE 3/4" = 1'-0"



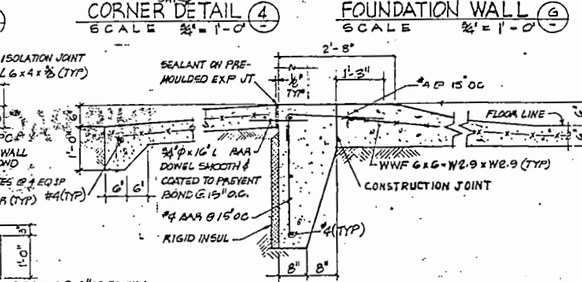
SECTION (A)
NTS



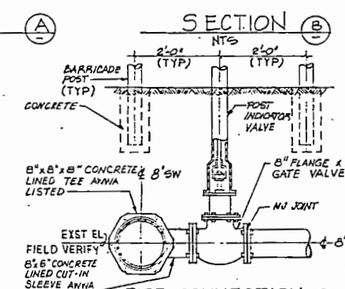
SECTION (B)
NTS



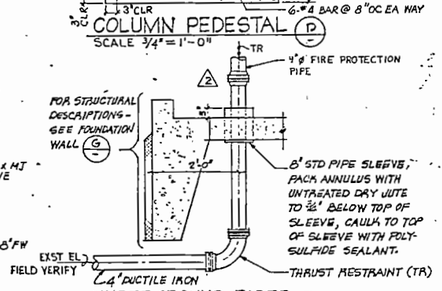
COLUMN PEDESTAL (D)
SCALE 3/4" = 1'-0"



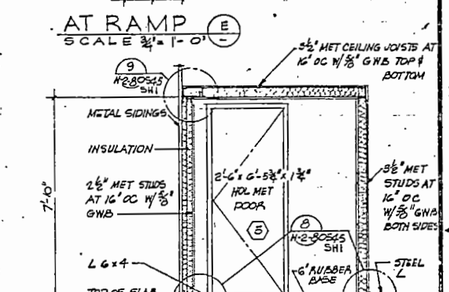
AT RAMP (E)
SCALE 3/4" = 1'-0"



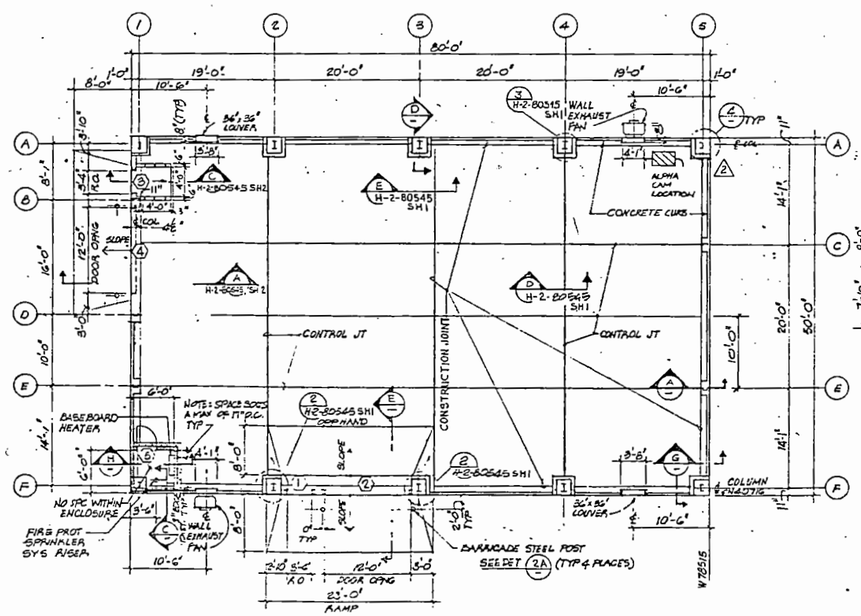
PIPE CONNECTION (1)
NTS



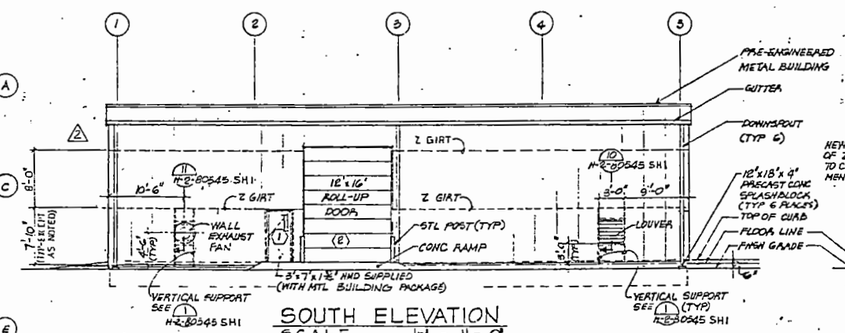
UNDERGROUND RISER (C)
SCALE 3/4" = 1'-0"



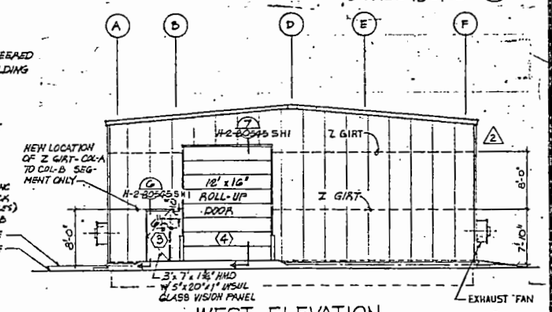
ENCLOSURE (H)
SCALE 1/8" = 1'-0"



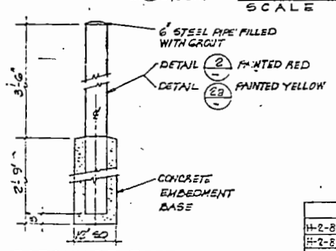
FOUNDATION/FLOOR PLAN
SCALE 1/8" = 1'-0"



SOUTH ELEVATION
SCALE 1/8" = 1'-0"



WEST ELEVATION
SCALE 1/8" = 1'-0"



BARRICADE POST (2) (2A)
NTS

ESSENTIAL DRAWING

NOTE: FOR GENERAL NOTES SEE H-2-80544

CONFIDENCE LEVEL A: CRITICAL DIMENSIONS ARE VERIFIED WITHIN SPECIFIED DRAWING TOLERANCES. CONCEALED PIPING OR WIRING IS VERIFIED AS TO FLOW PATH, BUT ACTUAL ROUTING IS NOT VERIFIED.

CVI = 22002	
H-2-80545	ARCH/STRL EL & DETAILS
H-2-80544	ELEC/FIRE ALARM PLAN DET & SCHED
	DRAWING LIST
NUMBER	TITLE
	REFERENCES
NEXT USED ON	

REV	BY	DATE	DESCRIPTION
2		6/2/76	REVISED PER ECN 153841 FV-BLDG 2401W ONLY
1	JBF	6-26-1978	AS-BUILT FOR PROJ. W-01B A) ECN-103820, 2 EQ B) ECN-W01B-13 2 GEN REV C) DFC W01B-2, 2A6, B5, F1, 6 D) DFC W01B-1, 2D1, F2, 3, E6, 7 E) DFC W01B-4, 2E4, F2, 3 F) DFC W01E-5, 2 E, F5, F4 G) ECN W01B-9, 2C, D5, D4 H) DFC W01E-3, 2B, C6, C4, E3, E, F5-7 I) ECN W01E-12, 2C6

APPROVAL	BY-DATE	APPROVAL	BY-DATE
WHC		KEH	

REVISIONS

COMMENT REVIEW

MICROFILMED

		DATE
WHC APPROVAL		1/27/76
PROJ ENGR		1/26/76
DES ENGR		1/26/76
APPROVED		1/26/76
SAFETY		1/26/76
APPROVED		1/26/76
CHECKED AS BUILT		1/26/76
DRAWN		1/7/87
DESIGNED		1/7/87
CLASSIFICATION	BY	DATE
NONE	NOT REQD	

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

CIVIL/ARCH/STRL/HVAC PLANS, EL, SECT & DETAILS

PROJECT TITLE: PCB/RMW STORAGE FACILITY

PROJ W-01B | WO CR0585 | JOB 242260

SCALE SHOWN | BLDG 2401 W/272-WA | MODEL 0110, 0800, 0901, 8900

DRAWING NUMBER H-2-80543 | SHEET 1 | OF 1 | REV 2

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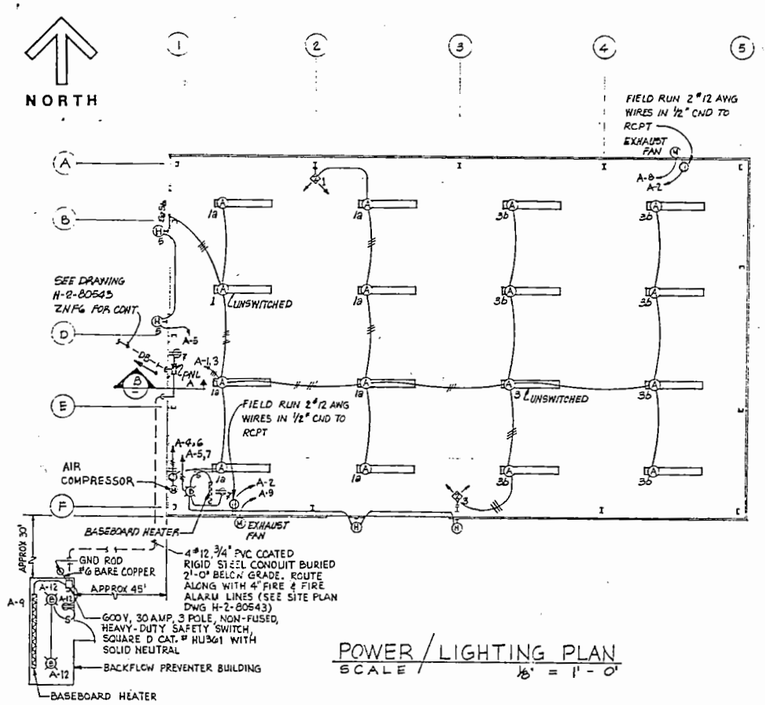
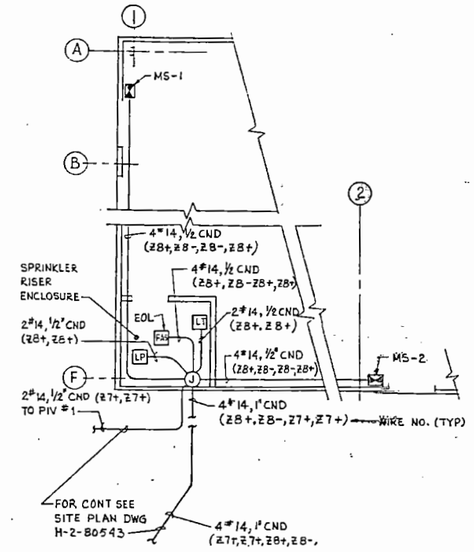
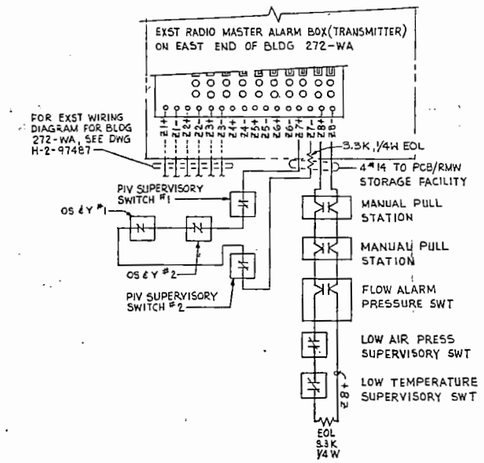


POWER / LIGHTING PLAN
SCALE 1/8" = 1'-0"



FIRE ALARM PLAN
SCALE: 1/4" = 1'-0"



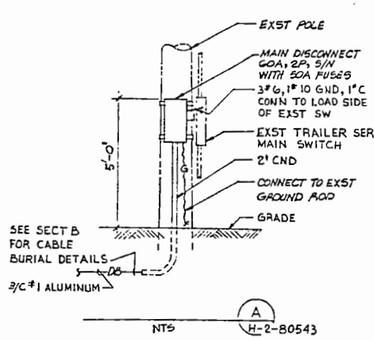
FIRE ALARM WIRING DIAGRAM

ELECTRICAL SYMBOL LIST

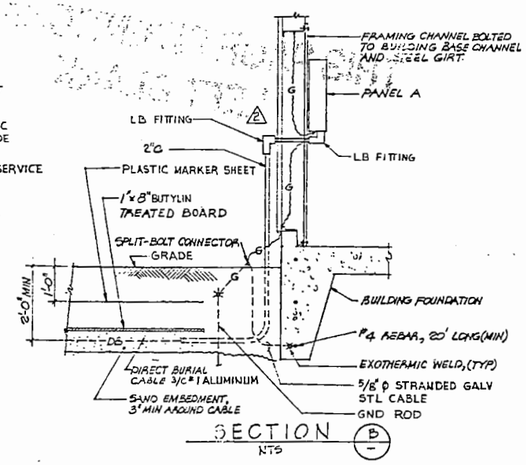
SYMBOL	DESCRIPTION (SEE NOTE 1)
	EXPOSED CONDUIT, HATCH MARKS INDICATE QUANTITY OF #12 AWG CONDUCTORS IN 1/2" CONDUIT. CONDUITS UNMARKED ARE 1/2" WITH 2 #12
	EXISTING CONDUIT (OR OUTLINE OF EXISTING STRUCTURE OR EQUIPMENT)
A-1,3,5	HOMERUN CONDUIT (CIRCUITS 1, 3, AND 5 TO PANEL "A" INDICATED)
G	GROUND CONDUCTOR NO. 6 BARE SOLID COPPER
DB	DIRECT BURIAL CABLE
J	JUNCTION BOX
4	DUPLEX RECEPTACLE, MOUNT AT 48" (CIRCUIT 4 INDICATED)
S a	SINGLE POLE TOGGLE SWITCH, MOUNT AT 4'-6". LOWER CASE LETTER INDICATES CONTROLLED EQUIPMENT.
2,a (A)	LIGHTING FIXTURE, LETTER DENOTES FIXTURE TYPE (CIRCUIT 2, SWITCH a INDICATED), MOUNT AT 18'-0"
(B)	INCANDESCENT LIGHTING FIXTURE, LETTER DENOTES FIXTURE TYPE
(H)	HID LIGHTING FIXTURE, LETTER DENOTES FIXTURE TYPE
(E)	EMERGENCY LIGHTING FIXTURE, BATTERY POWERED (2 LAMPS INDICATED) ARROWS INDICATE BEAM DIRECTION, MOUNT AT 8'-0"
(M)	MOTOR
MS	FIRE ALARM MANUAL STATION, MOUNT AT 5'-0"
	LIGHTING AND POWER PANELBOARD
FAS	FLOW ALARM PRESSURE SWITCH
TS	SUPERVISORY SWITCH (TAMPERPROOF)
LP	LOW AIR PRESSURE SUPERVISORY SWITCH
LT	LOW TEMPERATURE SUPERVISORY SWITCH
EOL	END-OF-LINE DEVICE
	BURIED CABLE MARKER, SEE DETAIL E

NOTES

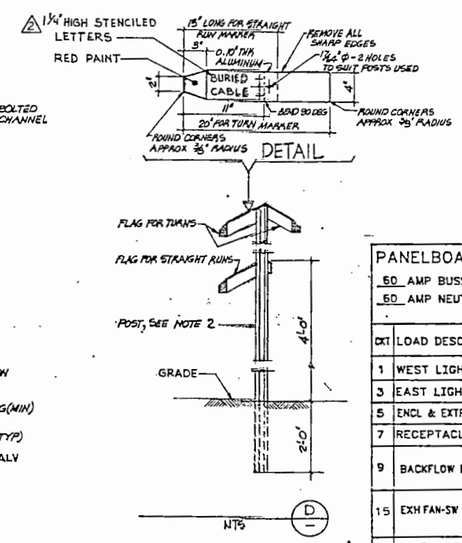
1. SEE CONSTRUCTION SPECIFICATION CR03B5-C1 FOR MATERIAL DESCRIPTION AND INSTALLATION INSTRUCTIONS.
2. POST SHALL BE COMMERCIAL STEEL FENCE POST. PAINT FLAG AND POST HIGH-VISIBILITY YELLOW.
3. SEE CONSTRUCTION SPECIFICATION CR03B5-C1 FOR SPECIAL PROTECTIVE COATING (SPC) APPLICATION INSTRUCTIONS.



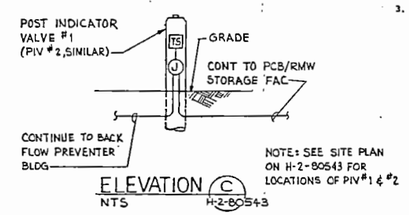
NTS (A) H-2-80543



SECTION (B)
NTS



NTS (D)



ELEVATION (C)
NTS H-2-80543

NOTE: SEE SITE PLAN ON H-2-80543 FOR LOCATIONS OF PIV #1 & #2

PANELBOARD A VOLTS 120/240, 1PH,3W LOCATION WEST WALL
60 AMP BUSSING ☒ MAIN BRKR 50 AMP ☒ SURFACE MOUNTED ☐ TOP FEED
60 AMP NEUTRAL ☐ MAIN LUGS ONLY ☐ FLUSH MOUNTED ☒ BOT FEED

CKT	LOAD DESCRIPTION	VA	BRKR		BRKR	VA	LOAD DESCRIPTION	CKT
1	WEST LIGHTS	1440	20		20	360	RECEPTACLES	2
3	EAST LIGHTS	1440	20		20	750	BASEBOARD HEATER	4
5	ENCL & EXTR LIGHTS	340	15		20	500	AIR COMPRESSOR	6
7	RECEPTACLES	360	20		20	830	EXHAUST FAN NE CORNER	8
9	BACKFLOW BLDG HTR	2000	20		20	480	BACKFLOW BLDG LTG & RCPT	12
15	EXH FAN-SW CORNER	830	20				SPARE	14
							SPARE	16
17	SPARE						SPARE	18
19	SPARE						SPARE	20

TOTAL CONNECTED LOAD = 8970 WATTS
HOT NO. 1 = 4110 VA
HOT NO. 2 = 4860 VA
REMARKS

CONFIDENCE LEVEL A: CRITICAL DIMENSIONS ARE VERIFIED WITHIN SPECIFIED DRAWING TOLERANCES. CONCEALED PIPING OR WIRING IS VERIFIED AS TO FLOW PATH, BUT ACTUAL ROUTING IS NOT VERIFIED.

2 ESSENTIAL DRAWING

H-2-80545	ARCH/STRL ELEVATION & DETAILS
H-2-80543	CIVIL/ARCH/STRL/HVAC PLANS, EL, SECT & DETAILS
H-2-97487	ELEC RADIO FIRE ALARM PLAN & DIAG
—	DRAWING LIST
NUMBER	TITLE
REFERENCES	
NEXT USED ON	

REV	DESCRIPTION	BY	DATE
2	REVISED PER ECN 157752 FV-BLDG. 2401W ONLY	AC	3-10-91
1	AS-BUILT FOR PROJ W018 f) ECN W018-13 ZC2,3 e) ECN W018-2, ZD,ZB,FG,B2 d) DFC W018-3,ZB,C3B2,D,ZB D7 c) DFC W018-6,7 D,E3-5,B2-4 b) ECN W018-7, ZE1 a) ECN W018-10, ZC7	ALE	9-12-1988

MICROFILMED: RS, 3-28-89; WHC APPROVAL BY-DATE; KEH APPROVAL BY-DATE; COMMENT REVIEW

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

ELEC / FIRE ALARM PLAN, DETAILS & SCHEDULE

PROJECT TITLE: PCB/RMW STORAGE FACILITY
PROJ: W-018 WO: GR0385 JOB: 242260
SCALE: SHOWN BLDG: 2401W / 272-WA INDEX: 7301, 7302
DRAWING NUMBER: H-2-80544 SHEET 1 OF 1 REV 2
CLASSIFICATION: NONE NOT REQD

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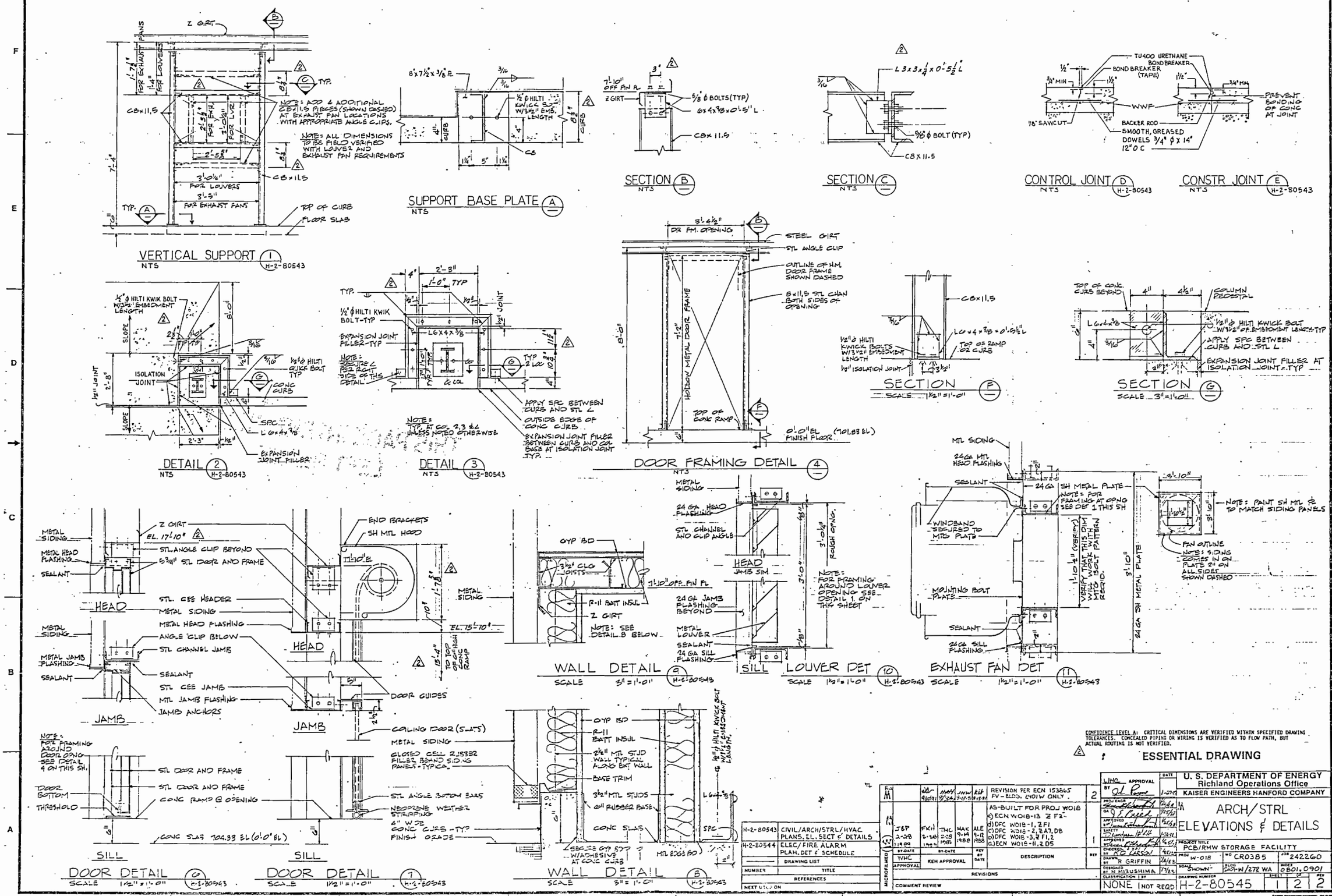
VERTICAL SUPPORT 1 NTS H-2-80543
SUPPORT BASE PLATE A NTS
SECTION B NTS
SECTION C NTS
CONTROL JOINT D NTS H-2-80543
CONSTR JOINT E NTS H-2-80543
DETAIL 2 NTS H-2-80543
DETAIL 3 NTS H-2-80543
DOOR FRAMING DETAIL 4 NTS
SECTION F SCALE 1½" = 1'-0"
SECTION G SCALE 3" = 1'-0"
DOOR DETAIL 6 SCALE 1½" = 1'-0" H-2-80543
DOOR DETAIL 7 SCALE 1½" = 1'-0" H-2-80543
WALL DETAIL 8 SCALE 3" = 1'-0" H-2-80543
WALL DETAIL 9 SCALE 3" = 1'-0" H-2-80543
SILL LOUVER DET 10 SCALE 1½" = 1'-0" H-2-80543
EXHAUST FAN DET 11 SCALE 1½" = 1'-0" H-2-80543
HEAD
JAMB
SILL
DOOR GUIDES
COILING DOOR (SLATS)
CONC SLAB 704.33 EL (0'-0" EL)
0'-0" EL (701.83 EL)
TOP OF CONC RAMP
STEEL GIRT
STL ANGLE CLIP
HOLLOW METAL DOOR FRAME
MTL SIDING
24 GA HEAD FLASHING
STL CHANNEL AND CLIP ANGLES
24 GA JAMB FLASHING BEYOND
METAL LOUVER
SEALANT
24 GA SILL FLASHING
24 GA SH METAL PLATE
WINDBAND SECURED TO MTG PLATE
MOUNTING BOLT PLATE
FAN OUTLINE
NOTE: PAINT SH MTL TO MATCH SIDING PANELS
NOTE: FOR FRAMING AROUND LOUVER OPENING SEE DETAIL 1 ON THIS SHEET
NOTE: FOR FRAMING AROUND DOOR OPNG SEE DETAIL 4 ON THIS SH.
NOTE: ALL DIMENSIONS TO BE FIELD VERIFIED WITH LOUVER AND EXHAUST FAN REQUIREMENTS
NOTE: ADD 6 ADDITIONAL CB×11.5 PIECES (SHOWN DASHED) AT EXHAUST FAN LOCATIONS WITH APPROPRIATE ANGLE CLIPS.
NOTE: SEE DETAIL B BELOW
NOTE: PAINT SH MTL TO MATCH SIDING PANELS
NOTE: SIDING COMES IN ON PLATE 2" ON ALL SIDES SHOWN DASHED
NOTE: TYP AT COL. 2,3 & L UNLESS NOTED OTHERWISE
TU400 URETHANE BOND BREAKER
BOND BREAKER (TAPE)
WWF
BACKER ROD
SMOOTH, GREASED DOWELS 3/4" ϕ × 14" 12" O.C.
PREVENT BONDING OF CONC AT JOINT
APPLY SPC BETWEEN CURB AND STL L
OUTSIDE EDGE OF CONC CURB
EXPANSION JOINT FILLER BETWEEN CURB AND COL BASE AT ISOLATION JOINT TYP.
EXPANSION JOINT FILLER AT ISOLATION JOINT TYP
OUTLINE OF H.M. DOOR FRAME SHOWN DASHED
8×11.5 STL CHAN BOTH SIDES OF OPENING
COLUMN PEDESTAL
TOP OF CONC CURB BEYOND
½" ϕ HILTI KWIK BOLT W/3½" EMBEDMENT LENGTH
½" ϕ HILTI KWIK BOLT TYP
EXPANSION JOINT FILLER-TYP
ISOLATION JOINT
CONC CURB
SPC
L 6×4×⅜
OYP BD
R-11 BATT INSUL
2½" MTL STUD WALL TYPICAL ALONG EXT WALL
BASE TRIM
3½" MTL STUDS
6" RUBBER BASE
CONC SLAB
CLOSED CELL 2.5332 FILLER BEHIND SIDING PANELS - TYPICAL
STL ANGLE BOTTOM 3225
NEOPRENE WEATHER STRIPPING
4" WIDE CONC CURB - TYP
FINISH GRADE
SEALANT
STL DOOR AND FRAME
CONC RAMP @ OPENING
DOOR BOTTOM
THRESHOLD
CONFIDENCE LEVEL A: CRITICAL DIMENSIONS ARE VERIFIED WITHIN SPECIFIED DRAWING TOLERANCES. CONCEALED PIPING OR WIRING IS VERIFIED AS TO FLOW PATH, BUT ACTUAL ROUTING IS NOT VERIFIED.
ESSENTIAL DRAWING
U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY
ARCH/STRL ELEVATIONS & DETAILS
PROJECT TITLE PCB/RMW STORAGE FACILITY
W-018
CR0385
242260
SCALE SHOWN
BLDG 2101-W/272 WA
INDEX 0801, 0901
DRAWING NUMBER H-2-80545
SHEET 1 OF 2 REV 2
REVISION PER ECN 153865 FV - BLDG. 2101W ONLY.
AS-BUILT FOR PROJ W018
ECN W018-13 & F2
DFC W018-1, 2F1
DFC W018-2, 2A7, D8
DFC W018-3, 2F1, 2
ECN W018-11, 2D5
DESCRIPTION
REVISIONS
H-2-80543 CIVIL/ARCH/STRL/HVAC PLANS, EL. SECT & DETAILS
H-2-80544 ELEC/FIRE ALARM PLAN, DET & SCHEDULE
DRAWING LIST
NUMBER
TITLE
REFERENCES
NEXT U.I.C. ON
COMMENT REVIEW
NONE (NOT REQD)

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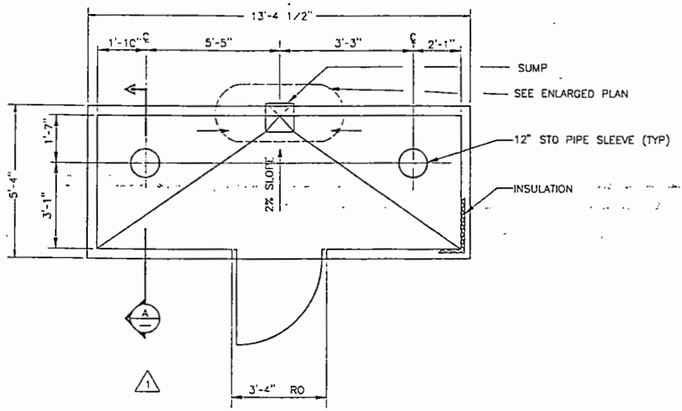
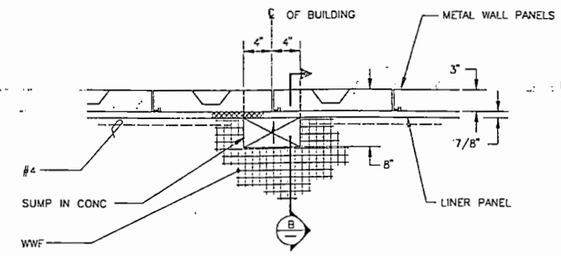


NORTH

FLOOR PLAN

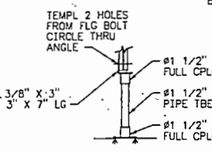
SCALE: 1/2" = 1'-0"



NOTE: CUT OUT WWF AND ADJUST REBAR TO CLEAR SUMP

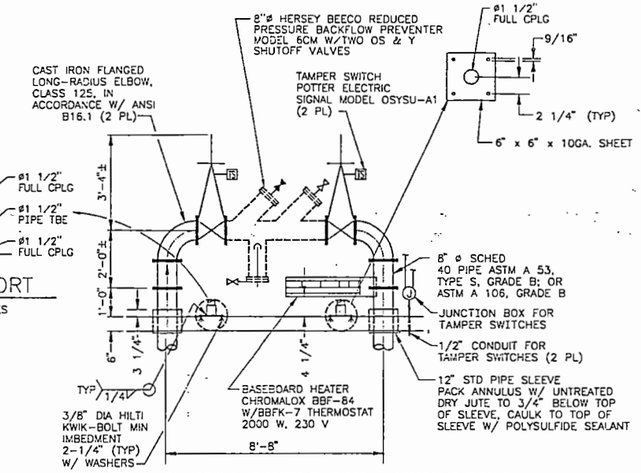
ENLARGED PLAN

SCALE: NONE



SUPPORT

2 PLACES

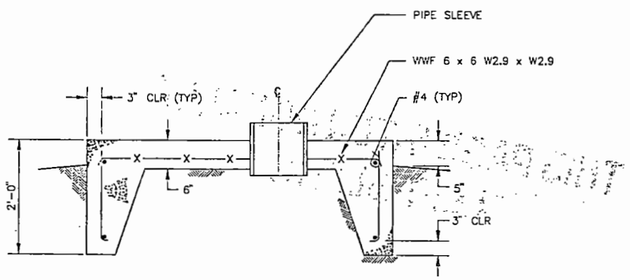


NOTES: 1. PROVIDE THRUST RESTRAINT AT BOTH UNDERGROUND ELBOWS.

2. FLANGES CLASS 150, ASTM A 105; BOLTING, ASTM A 307, GRADE B; AND HEAVY HEX NUTS, ASTM A 563, GRADE A; GASKETS, GARLOCK BLUE-GARD, STYLE 3000.

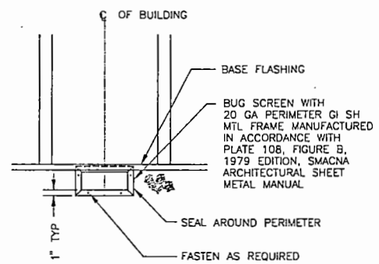
SECTION D

SCALE: NONE



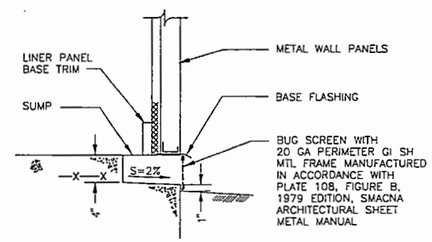
SECTION A

SCALE: 1"=1'-0"



EXTERIOR EL

SCALE: NONE

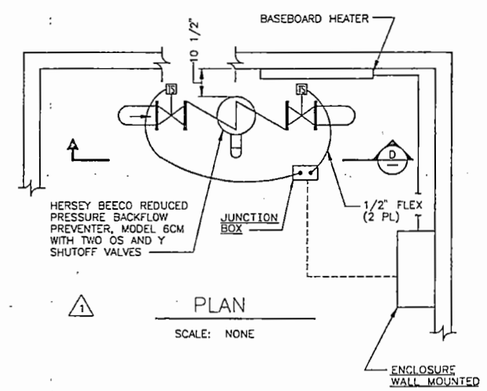


SECTION B

SCALE: NONE

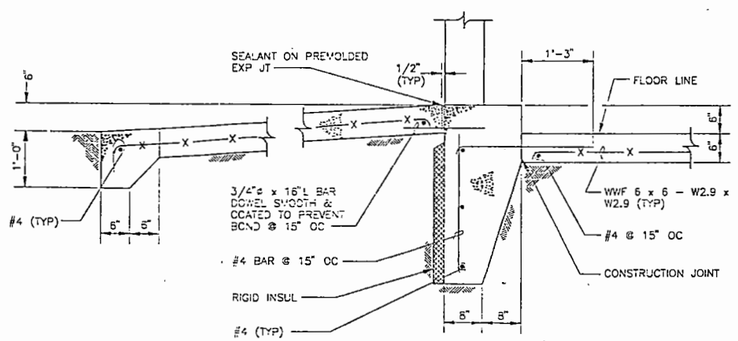
SECTION

SCALE: NONE



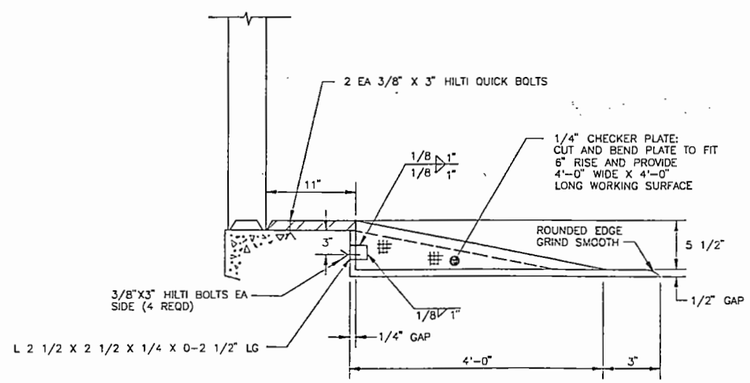
PLAN

SCALE: NONE



WEST ENTRANCE A H-2-80543

SCALE: NONE



RAMP @ WEST PERSONNEL DOOR

SECTION C H-2-80543

SCALE: NONE

NEW DRAWING ADDED TO REFLECT AS-BUILT CONDITIONS PER DFC W-018-03, ECN W-018-12 & W-018-13

1 CONFIDENCE LEVEL "A": CRITICAL DIMENSIONS ARE VERIFIED WITHIN SPECIFIED DRAWING TOLERANCES. CONCEALED PIPING OR WIRING IS VERIFIED AS TO FLOW PATH, BUT ACTUAL ROUTING IS NOT VERIFIED.

NUMBER	TITLE	NUMBER	TITLE

DRAWING TRACEABILITY LIST — REFERENCES — NEXT USED ON

MF	REV NO.	DESCRIPTION	DY DATE	APPROVALS
M	1	ECN 153791 FIELD VERIFIED PER	CLS 6-22-94	

REVISIONS

CAD FILE80805458 | CAD CODE 2J:DEC.ACDX:9.0:NN

DRAWN A.L. EDWARDS
CHECKED D.G. WINTER 10/7/88
LEAD ENGR
DISC MGR
SAFETY
ENVIR
QA
KEH-MGR C.K. HANCOCK
APPROVED FOR IMPLEMENTATION BY
FOR
DATE 2-28-89

IMPACT LEVEL | EDT

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ARCH/STRL
ELEVATIONS & DETAILS

PROJECT W-018 PCB/RMW STORAGE FACILITY

SIZE	DWG NO.	INDEX NO.	DWG NO.	REV NO.
F	2J-4704 /S-1	0501,0901	H-2-80545	1
SCALE SHOWN		JOB NO. 242260	SHEET 2 OF 2	

KEHCAD

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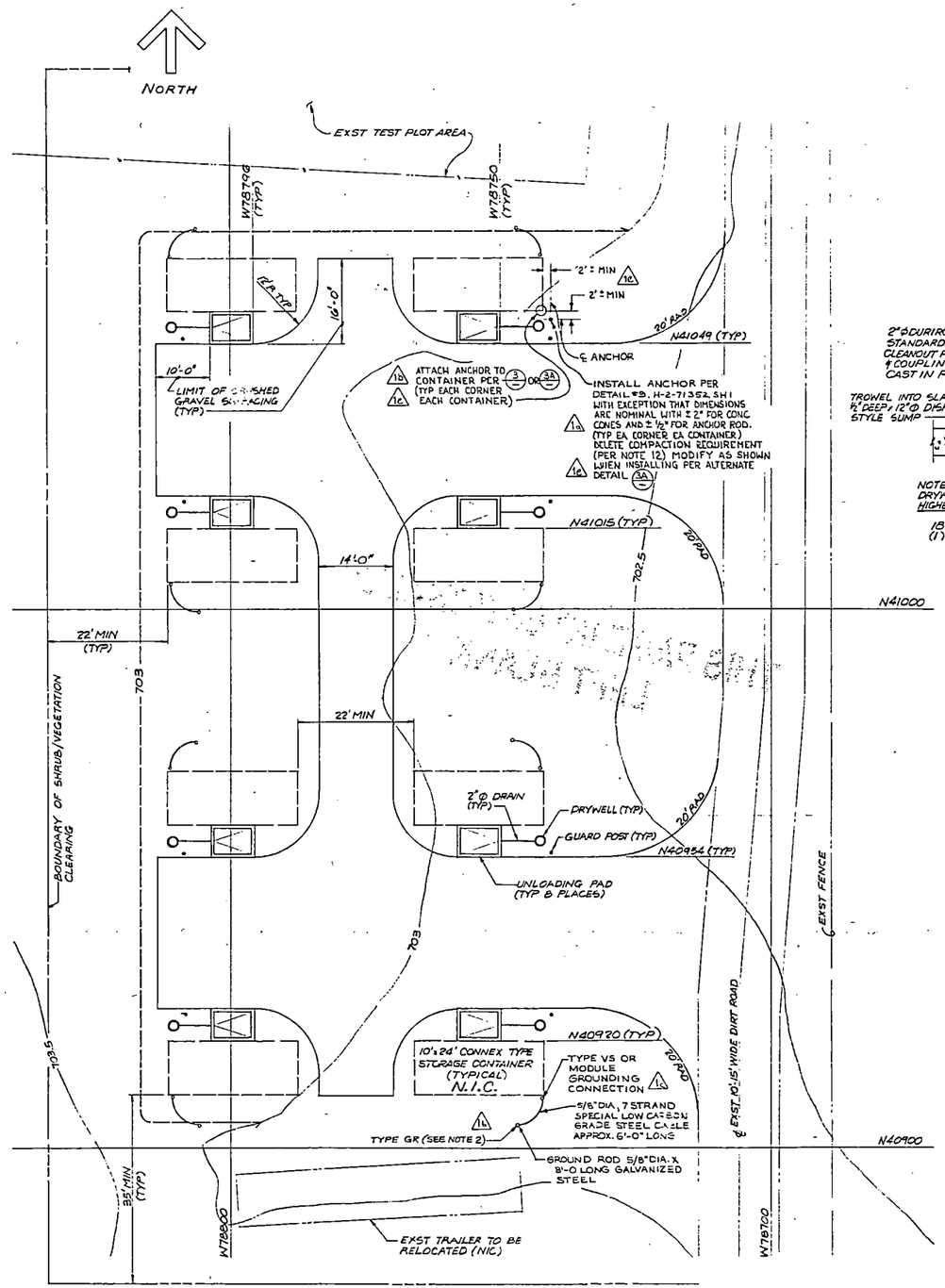
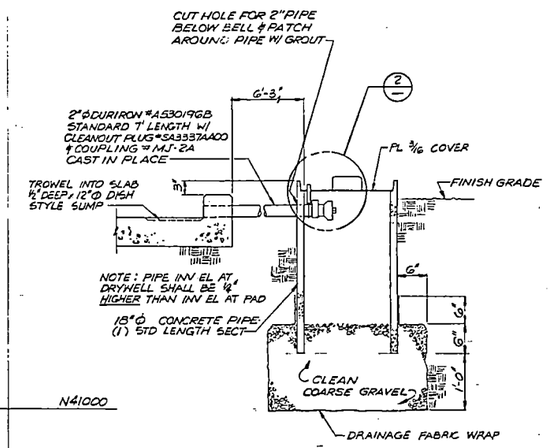


ENLARGED PLAN OF UNLOADING PADS

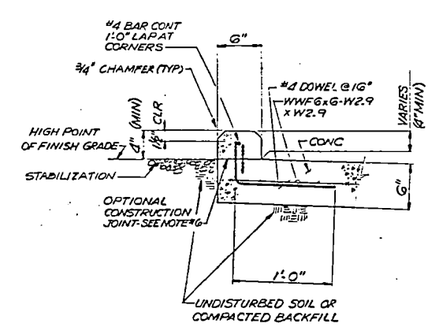
SCALE: 1" = 10'-0"

NOTES
1. REFER TO H-5-881 SH16 & 17 FOR STANDARD GROUNDING DETAILS.
2. ORIENT EACH TYPICAL CONTAINER WITH GROUND AS REQUIRED.



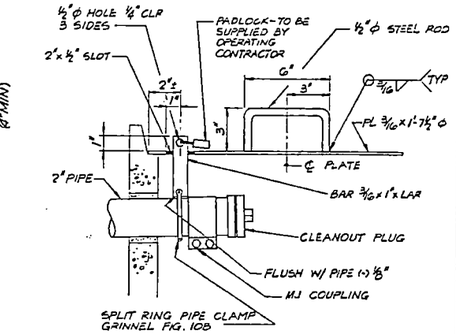
SECTION B

SCALE: 1" = 1'-0"



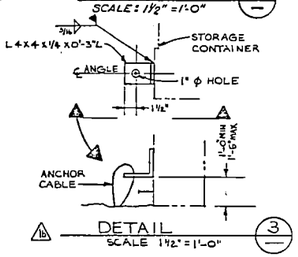
SECTION A

SCALE: 1½" = 1'-0"



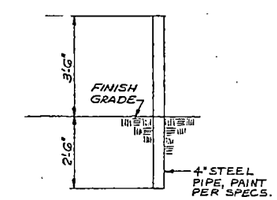
DETAIL 2

SCALE: 3" = 1'-0"



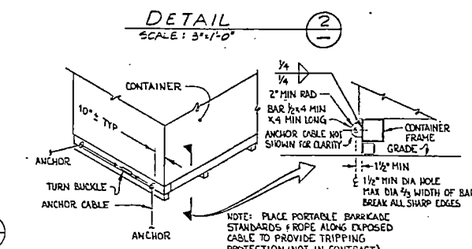
DETAIL 3

SCALE 1½" = 1'-0"



DETAIL 1

SCALE: ½" = 1'-0"



NOTE: PLACE PORTABLE BARRICADE STANDARDS & ROPE ALONG EXPOSED CABLE TO PROVIDE TRIPPING PROTECTION (NOT IN CONTRACT)

DETAIL 3A

NTS

GENERAL NOTES

1. DESIGN LIVE LOADS FOR STORAGE SLAB

   UNIFORM LOAD - 1151 PSF [EIGHT 2302 LB. DRUMS ON A 4'x 4' PALLET]

   AXLE LOAD - 17439 LB. [CATERPILLAR MODEL M80B TYPE E. AXLE LOAD = 0.90 (MACHINE WT + LIFT CAPACITY) = 0.90 (11377 + 8000)]

2. DESIGN STRESSES

   CONCRETE f'_c = 4000 PSI AT 28 DAYS.

   MODULUS OF SUBGRADE REACTION k = 200 PCI

3. WATERSTOPS SHALL BE SYMMETRICAL IN SHAPE, NOMINAL 4 INCHES IN WIDTH, BY 3/16 INCH THICK, AND A MINIMUM OF FOUR RIBS ON EACH SIDE OF CENTERLINE. MATERIAL SHALL BE POLYVINYL CHLORIDE (PVC). GREENSTREAK STYLE 781. STYLE 721 OPTIONAL AT FORMED CONSTRUCTION JOINTS.

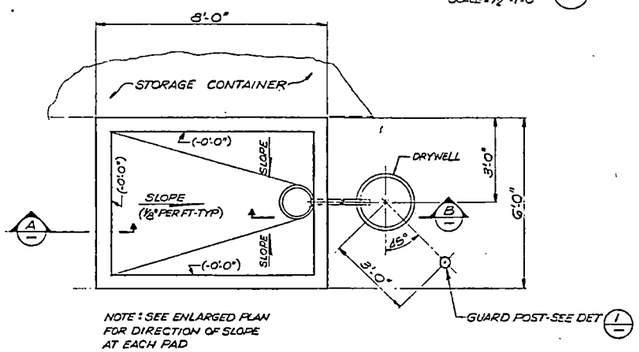
4. SPECIAL PROTECTIVE COATING SHALL BE APPLIED TO ALL SURFACES WITHIN THE SLAB PERIMETER EXCLUDING THE TOP OF THE CURBING.

5. STABILIZE ALL AREAS DISTURBED BY THIS WORK WITH GRAVEL AS NOTED IN THE SPECIFICATION AND ON THE DRAWINGS.

6. AT OPTIONAL CONSTRUCTION JOINTS ROUGHEN CONCRETE AND INSTALL PVC WATERSTOP.

7. FOR CONSTRUCTION SPECIFICATION, SEE ER1372-C1.

8. COAT IRREGULAR CONCRETE SURFACES WITH UNIFLEX SEALER 100 AT SPECIFIED RATE OF 250 SQUARE FEET PER GALLON. FILL VOIDS IN CONCRETE WITH "FIXALL" CONCRETE FILLER AND APPLY A SECOND COAT OF UNIFLEX SEALER 100.



NOTE: SEE ENLARGED PLAN FOR DIRECTION OF SLOPE AT EACH PAD

TYPICAL UNLOADING PAD

SCALE: ½" = 1'-0"

DATUM (0'-0") = MSL EL 702.5

OFFICIAL RELEASE BY WHC DATE MAR 24 1993

EDT 102835

REV	BY-DATE	BY-DATE	REV BY DATE	DESCRIPTION	REV
1	4-19-90	4-19-90 / 4/19/90	MAK 11 25 1990	AS-BUILT FOR PROJ ER1372 a) ECN ER1372-19 Z E4, E7, D-E1-2 b) ECN ER-1372-7 Z C1, 2 c) ECN ER-1372-10 Z B6. A7, D E3, d) ECN-ER-1372-8 Z E6-7, e) ECN-ER1372-11 Z E6	1

REVISIONS

WHC APPROVAL — KEM APPROVAL

COMMENT REVIEW

MICROFILMED

NUMBER	TITLE
H-2-80578	DRAWING LIST

DRAWING TRACEABILITY LIST — NEXT USED ON H-2-80578

NUMBER	TITLE
H-2-80578	DRAWING LIST

REFERENCES

WHC APPROVAL BY — DATE 5/24/93

PROJ ENGR — DATE 5/24/93

CA — 3-19-93

APPROVED BY — 5/24/93

SAFETY — 5-24-93

APPROVED BY — 5/24/93

CHECKED BY — 5-24-93

DRAWN BY WA HOLSTEIN — 2-24-93

DESIGNED BY RD KETCHUM — 2-24-93

U.S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

CIVIL
UNLOADING PAD
PLAN, SECT & DET

PROJECT TITLE: RADIOACTIVE MIXED WASTES STORAGE PADS

PROJ — WO ER1372 — JOB 245080

SCALE SHOWN — BLDG 200 W — INDEX CIIC 0900 0 0 0

DRAWING NUMBER H-2-80579 — SHEET 1 — OF 1 — REV 1

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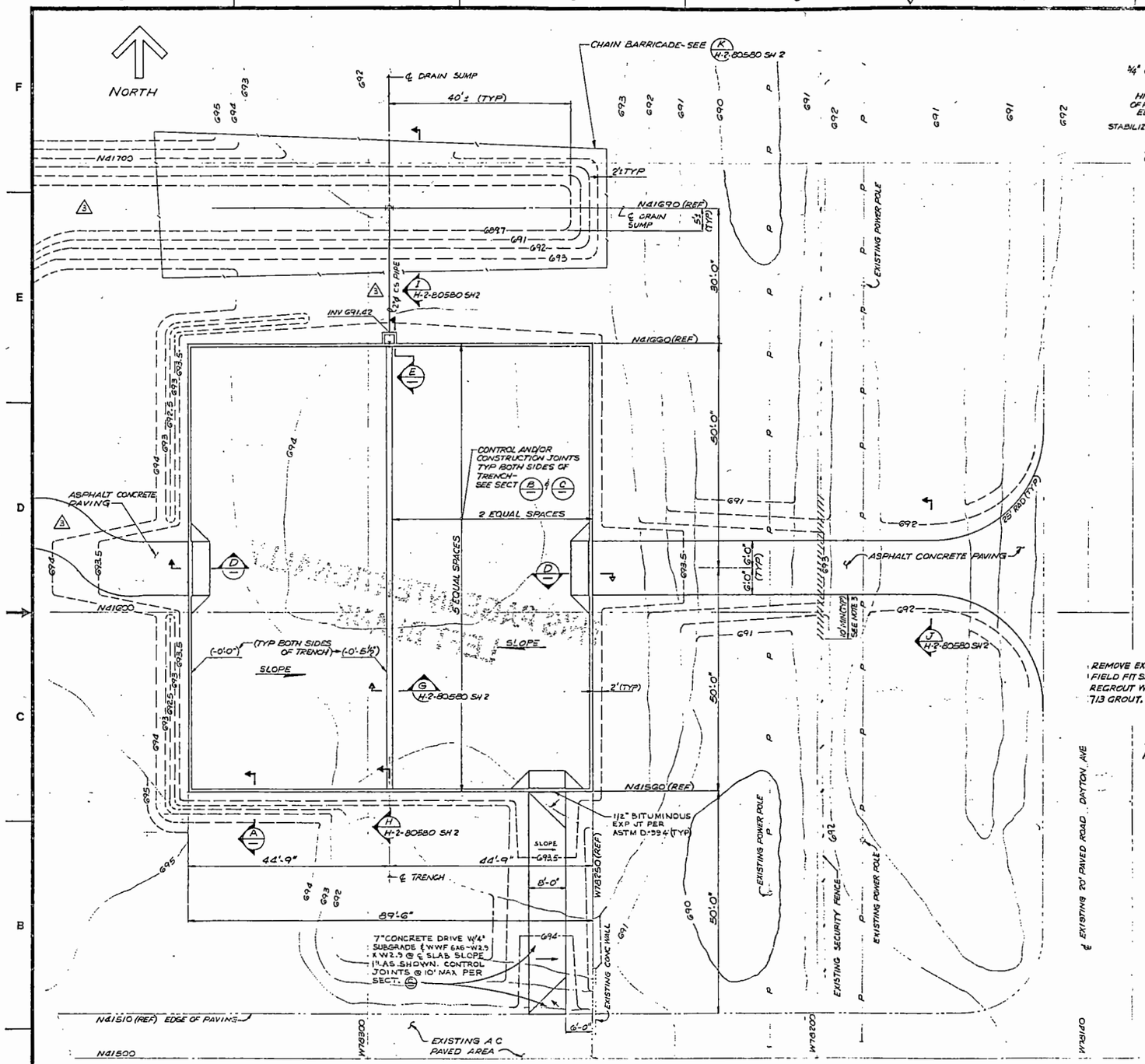
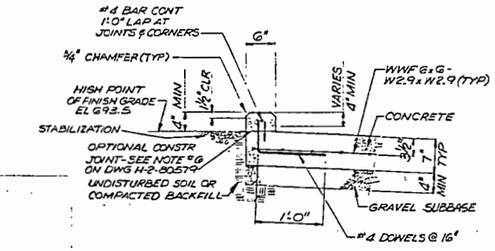
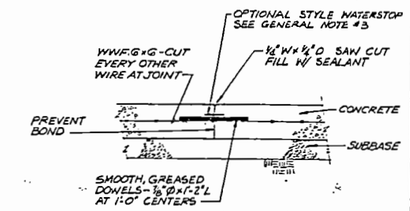


ENLARGED PLAN OF STORAGE PAD

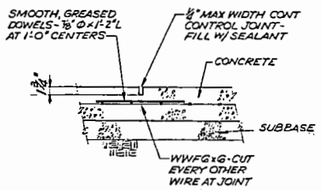
SCALE: 1" = 10'-0"
DATUM (0'-0") = MSL EL 693.5



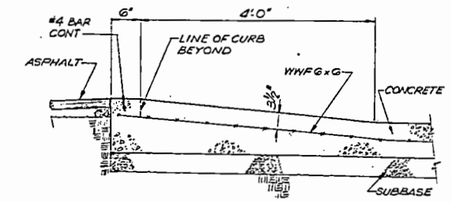
SECTION A
SCALE: 1" = 1'-0"



SECTION B
SCALE: 1" = 1'-0"
TYPICAL CONSTRUCTION JOINT



SECTION C
SCALE: 1" = 1'-0"
TYPICAL CONTROL JOINT



SECTION D
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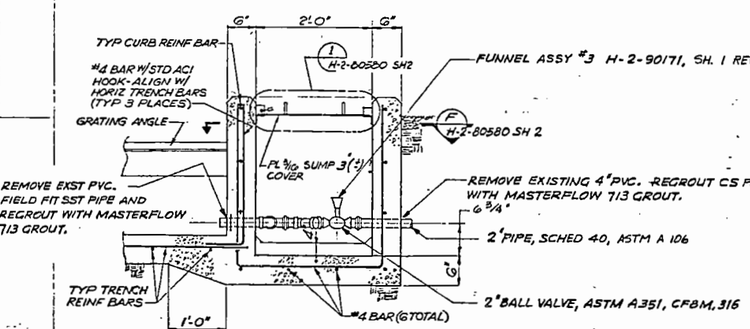

SECTION E
SCALE: 1" = 1'-0"

NOTES:
1. FOR GENERAL NOTES, SEE DWG H-2-80579
2. SEQUENCE OF CONCRETE POURS SHALL BE THE CONTRACTORS OPTION. CONSTRUCTION AND/OR CONTROL JOINTS SHALL BE USED WITH MAXIMUM SPACING AS SHOWN.
3. REMOVE EXISTING FENCE FOR 10 FT MIN EACH SIDE OF ROAD OR TO FIRST POST.

△3 CONFIDENCE LEVEL A: CRITICAL DIMENSIONS ARE VERIFIED WITHIN SPECIFIED DRAWING TOLERANCES. CONCEALED PIPING OR WIRING IS VERIFIED AS TO FLOW PATH, BUT ACTUAL ROUTING IS NOT VERIFIED.

ESSENTIAL DRAWING

OFFICIAL RELEASE BY WHC
DATE MAR 24 1988

EDT 100535

REV	BY	DATE	DESCRIPTION	REV
3	RC	3/24/88	INCORPORATED ECN 153800-FV	3
2			ECN 145667 INCORP ECN 121289 &	2
1			AS-BUILT FOR PROJ ER1372 a) ECN ER-1372-3 b) Z D1 c) ECN ER-1372-6 Z B6-7	1

MICROFILMED: BY-DATE WHC APPROVAL; BY DATE KEH APPROVAL; REVISIONS; COMMENT REVIEW

NUMBER	TITLE	REFERENCES
H-2-80578	DRAWING LIST	
DRAWING TRACEABILITY LIST		NEXT USED ON H-2-80578

WHC — DATE 3/24/88

U.S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

CIVIL
STORAGE PAD
PLAN, SECT & DET

PROJECT TITLE: RADIOACTIVE MIXED WASTES STORAGE PADS

PROJ —	WO ER1372	JOB 245080	
SCALE SHOWN	BLDG 200 W	INDEX 01100900/0901	
DRAWN BY W.A. HOLSTEIN 2-25-88	DRAWING NUMBER H-2-80580	SHEET 1	OF 2	REV 3
DESIGNED BY R.D. KETCHUM 2-26-88			

6 9 6 0

9 2 1 2 3 6 0

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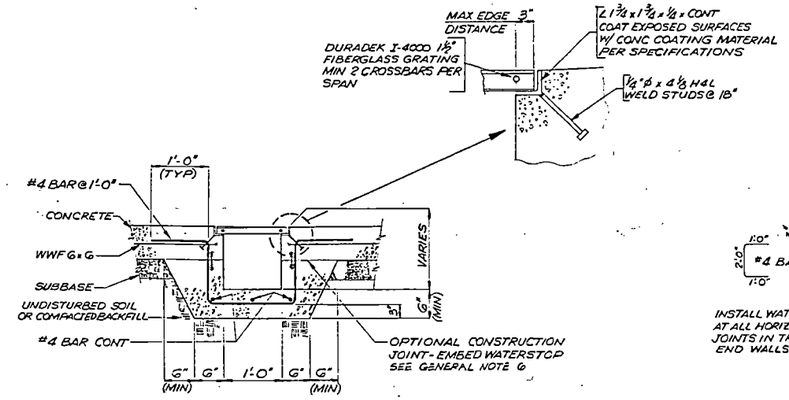
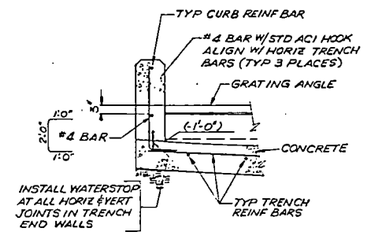
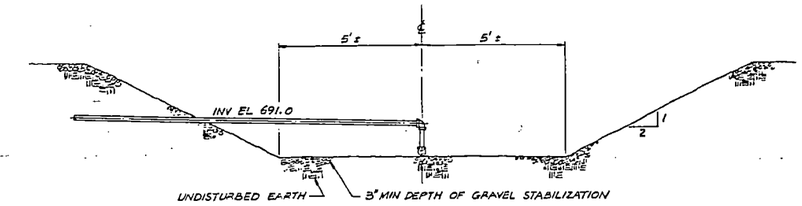


SECTION G
SCALE: 1" = 1'-0"
H-2-80580 SH 1

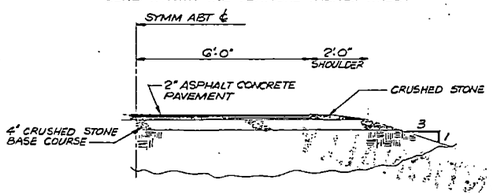
NOTE:
OPTIONAL CONSTRUCTION JOINT MAY BE LOCATED ANYWHERE BETWEEN THE TRENCH FLOOR AND THE BOTTOM OF THE MAIN SLAB WITHIN THE VERTICAL TRENCH WALL.



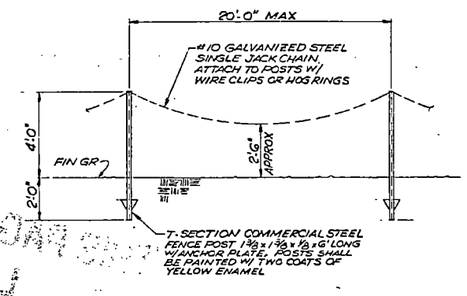
SECTION H
SCALE: 1" = 1'-0"
H-2-80580 SH 1



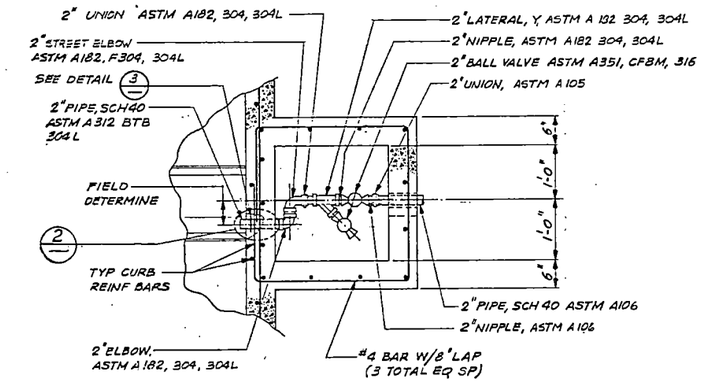
SECTION I
SCALE: ½" = 1'-0"
H-2-80580 SH 1



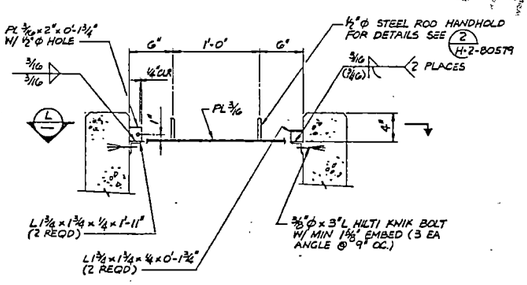
SECTION J
SCALE: ½" = 1'-0"
H-2-80580 SH 1



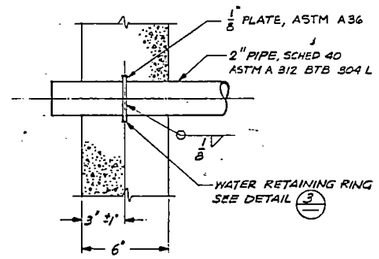
SECTION K
SCALE: NONE
H-2-80580 SH 1



SECTION F
SCALE: 1" = 1'-0"
H-2-80580, REV 2, SHT 1



DETAIL 1
SCALE: 1½" = 1'-0"
H-2-80580 SH 1



DETAIL 2
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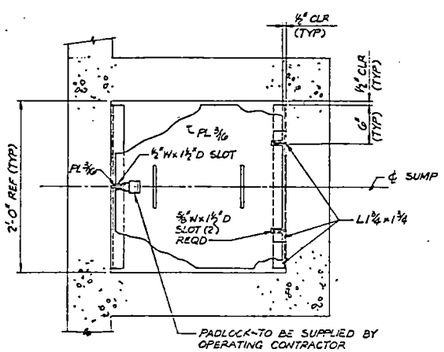

SECTION L
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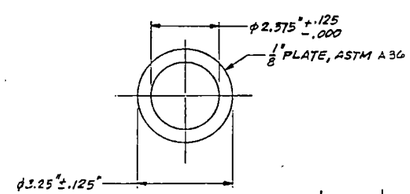

DETAIL 3
SCALE: ½" = 1"

NOTES:
1. FOR GENERAL NOTES, SEE DWG H-2-80579

CONFIDENCE LEVEL A: CRITICAL DIMENSIONS ARE VERIFIED WITHIN SPECIFIED DRAWING TOLERANCES. CONCEALED PIPING OR WIRING IS VERIFIED AS TO FLOW PATH, BUT ACTUAL ROUTING IS NOT VERIFIED.

OFFICIAL RELEASE BY WHC
DATE MAR 24 1988

ESSENTIAL DRAWING

NUMBER	TITLE
DRAWING TRACEABILITY LIST	

NUMBER	TITLE
H-2-80578	DRAWING LIST
REFERENCES	
NOT USED ON H-2-80578	

REV	DESCRIPTION	REV BY DATE
3	REVISED PER ECN 153636-FV	AC 9-12-91
2	ECN 145667 INCORP ECN 121289 &	LDS 11/19/91
1	AS-BUILT FOR PROJ ER1372 & ECN ER1372-2 2 & 7, 8	LDS 11/19/91

MICROFILMED: BY-DATE / APPROVAL — KEM APPROVAL
REVISIONS — COMMENT REVIEW

WHC APPROVAL BY — DATE 3/24/88

U.S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

CIVIL
STORAGE PAD
SECT & DET

PROJECT TITLE: RADIOACTIVE MIXED WASTES STORAGE PADS
PROJ — WO ER1372 JOB 245080
CHECKED BY D.L. FORT 9/5/88
DRAWN BY W.A. HOLSTEIN 2-26-88
DESIGNED BY R.D. KETCHUM 2-26-88
SCALE SHOWN BLDG 200W INDEX 0901
DRAWING NUMBER H-2-80580 SHEET 2 OF 2 REV 3

NOT 100535

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NORTH

CENTERLINE DAYTON AVE W78140

EXST 13.8KV AERIAL LINE

EXST 8' WOOD/WIRE FENCE

EXST 2.4KV AERIAL LINE

EXST CONC SLAB

EXST STORAGE AREA

EXST 2.4KV AERIAL LINE

FOR ELEC AERIAL LINE AND SERVICE EQUIP SEE DWG H-2-80609

STABLIZED AREA

EXTENT OF FUTURE STABLIZED AREA

BLDG 2401W FL EL 700.0

30'(TYP) CLEAR & GRUB

REMOVE EXST THRUST RESTRAINT & PLUG THEN CONNECT TO EXST 8" FW LINE (APPROX LOCATION SHOWN)

EXST 10" SW W78492

INSTALL BARRICADE POST PER 2/H-2-80606

PAVED ACCESS BY OTHERS SEE H-2-80651

4" FW

EXST DIRECT BURIED CABLE

8" F W78640

EL 702.58

EXST TEE 8 x 8 x 4

8" SW (DI)

213W

272WA

GRADING, STABILIZING AND PAVING IS SHOWN ON DWG H-2-80651, SH 2

FUTURE BLDG (TYP 11 PL)

EXST AND FUTURE CONC UNLOADING PADS

BARRIER TEST FACILITY (TYP)

INSTALL PLUG TO PERMIT FUTURE EXTENSION OF 8" FW LINE, INSTALL PIPE CLAMP AND TIE ROD TYPE THRUST RESTRAINT

CL ROAD

CENTERLINE 19TH STREET N40400

EXST 12" SW N40380

EXST 8" SW N40686

EXST 8" SW N40380

EXST WHITE BLUFFS TRAIL

TYP ROAD SECT

SCALE: 1/2" = 25'-0"

3'-0" MIN

3'-0"

EXST GRADE

4" CRUSHED SURFACING

LEGEND

SYMBOL	DESCRIPTION
	PIPE INDICATOR VALVE
	FIRE HYDRANT
F	FIRE WATER
SW	SANITARY WATER
699	EXST CONTOURS
	NEW CONTOURS
	NEW UNDERGROUND LINES

DRAWING LIST

NUMBER	INDEX NO	TITLE
H-2-80604	0000, 0110	DRAWING LIST, CIVIL SITE PLAN
H-2-80605	0800, 0900	ARCH/STRL PLAN, EL, SECTIONS & DETAILS
H-2-80606, SH.1 & 2	0801, 0901	ARCH/STRL SECTIONS & DETAILS
H-2-80607	7301	ELECTRICAL PLAN, SECTION, DETAILS
H-2-80608	7701, 7702	FIRE PROT FIRE ALARM PLANS, EL, DET & DIAG
H-2-80609	8201	ELECTRICAL SITE PLAN AND POLE LINE DETAILS
W-032-C1		CONSTRUCTION SPECIFICATION
CVI *	2201C	

NUMBER	TITLE
DRAWING TRACEABILITY LIST	

NUMBER	TITLE
DRAWING LIST	

REFERENCES
NEXT USED ON

REV	DESCRIPTION	BY	DATE
2	AS-BUILT FOR PROJ. W-032 (a) ECN W-032-25 Z B7,A1,7,8 (a) ECN W-032-3[illegible]-ES	RB	[illegible]
1	REVISED FOR PROJ WE-02 (a) ECN ER1[illegible]/2-12 Z C-E5-6,B4-5	M	4/90

REVISIONS

COMMENT REVIEW

WHC APPROVAL

BY JB PAYNE 7-18-88

BY FK HAMADA 7-18-88

BY JE BREED 7-18-88

BY RR HAZELBAKER 7-18-88

BY D LINDGREN 7-18-88

BY V HAD 7-18-88

BY S McCUE 7-18-88

BY S McCUE 7-18-88

ES 100917 IMPACT LEVEL 3

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE

KAISER ENGINEERS HANFORD COMPANY

DRAWING LIST/CIVIL SITE PLAN

RVW STORAGE BUILDING

PROJ	BY	DRN	BY
W-032	CR5509	247530	

SCALE	BLDG	INDEX
1" = 50'	2401W	0000,0110

DRAWING NUMBER B285604A

H-2-80604 SHEET 1 OF 1 REV 2

KEH2002CAD

9212176A0

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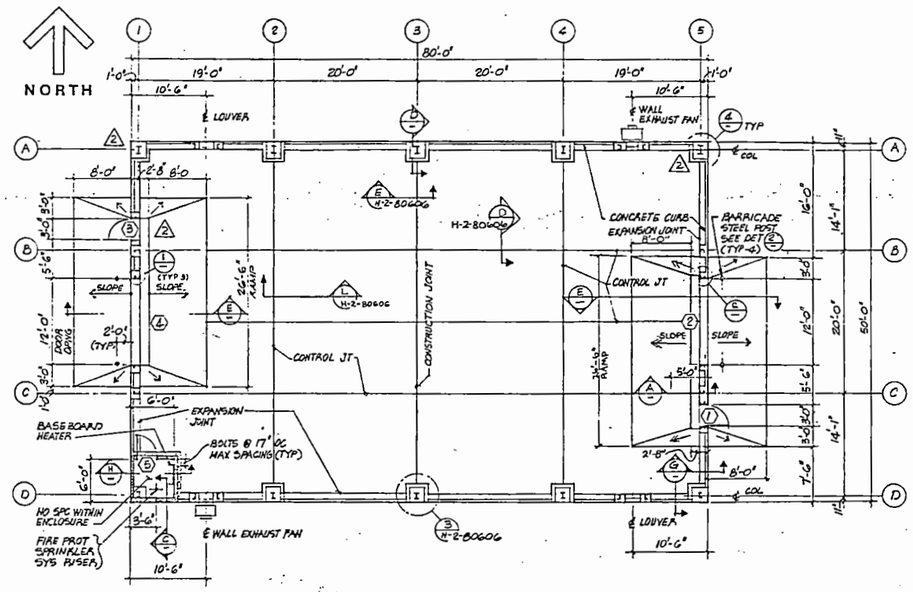
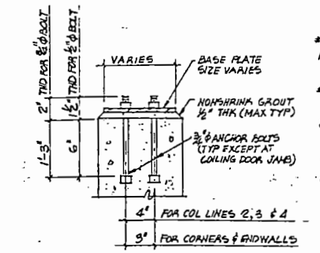
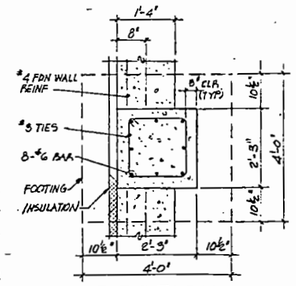


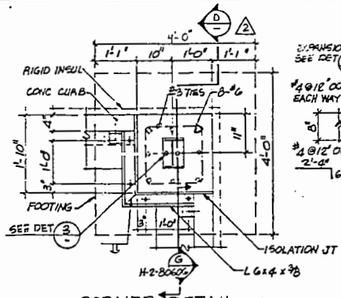
FOUNDATION/FLOOR PLAN (FL EL 0'-0")
SCALE 1/8" = 1'-0"



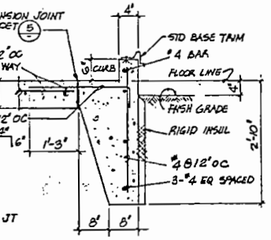
TYP ANCHOR BOLT (3)
NTS



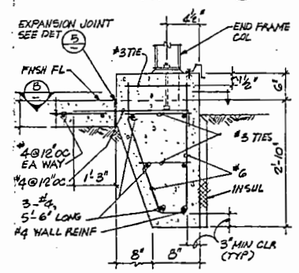
SECTION (F)
NTS



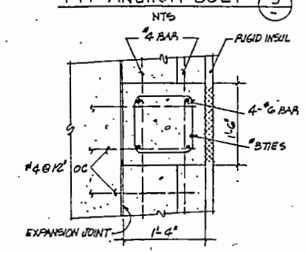
CORNER DETAIL (4)
SCALE 3/4" = 1'-0"



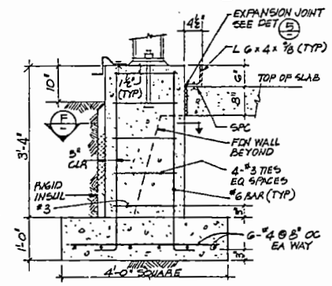
FOUNDATION WALL (G)
SCALE 3/4" = 1'-0"



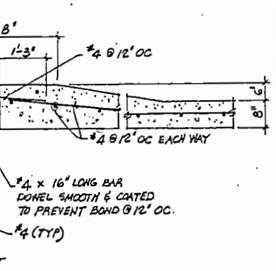
SECTION (A)
NTS



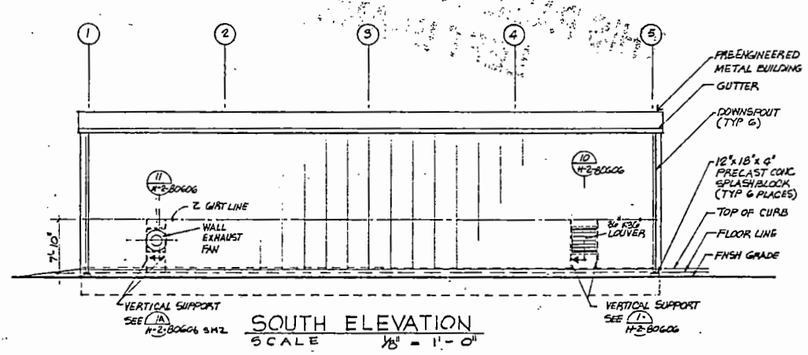
SECTION (B)
NTS



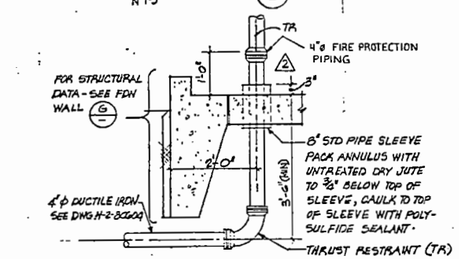
COLUMN PEDESTAL (D)
NTS



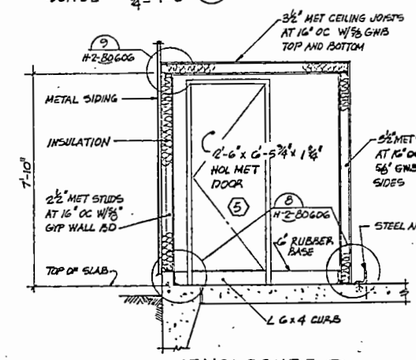
RAMP (E)
SCALE 3/4" = 1'-0"



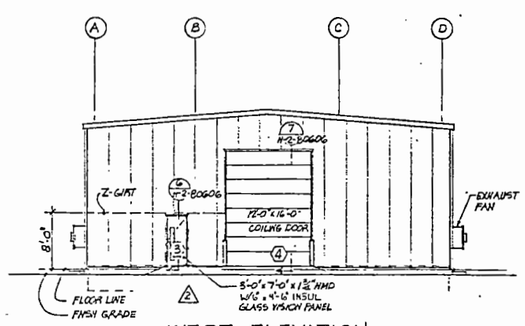
SOUTH ELEVATION
SCALE 1/8" = 1'-0"



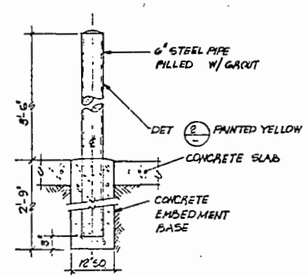
UNDERGROUND RISER (C)
SCALE 3/4" = 1'-0"



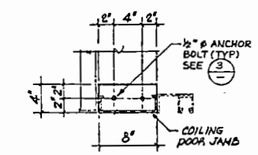
ENCLOSURE (H)
SCALE 1/2" = 1'-0"



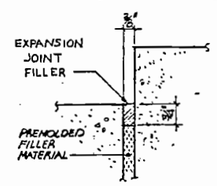
WEST ELEVATION
SCALE 1/8" = 1'-0"



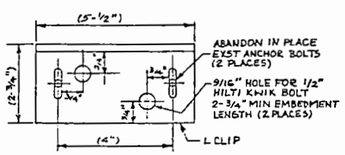
BARRICADE POST (2)
NTS



TYP BASE DETAIL (1)
(FOR COILING DOOR JAMB)
NTS



TYP EXPANSION JOINT (5)
NTS



BASE DETAIL (6)
(FOR COILING DOOR JAMB)
NTS

CONFIDENCE LEVEL A: CRITICAL DIMENSIONS ARE VERIFIED WITHIN SPECIFIED DRAWING TOLERANCES. CONCEALED PIPING OR WIRING IS VERIFIED AS TO FLOW PATH, BUT ACTUAL ROUTING IS NOT VERIFIED.

ESSENTIAL DRAWING

OFFICIAL RELEASE WHC DATE MAY 31 1988

REV	DESCRIPTION	BY-DATE	REV BY DATE
2	REVISED PER ECN 153240-FV	AC 5-24-88	
1	AS-BUILT FOR PROJ W-032 Ea 1) ECN W-032-25 Z: G,7,A,B4,5,E&7 2) ECN-W-032-24 Z: A-1 3) ECN-W-032-21 Z: D-4 4) ECN-W-032-16 Z: C-7 5) ECN-W-032-14 Z: B-7 6) ECN-W-032-12 Z: E-7 7) ECN-W-032-7 Z: F-2 8) ECN-W-032-4 Z: E,F-6	LDS 5-6-87 BLG 11-4-87	

MICROFILMED: BY-DATE WHC APPROVAL; BY-DATE KEH APPROVAL

COMMENT REVIEW: NONE NOT REQD

H-2-80606 DRAWING LIST
NUMBER | TITLE
REFERENCES
NEXT USED ON

WHC APPROVAL DATE 5/31/88

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

M ARCH/STRL
PLAN, EL, SECTIONS & DETAILS

PROJECT TITLE: RMW STORAGE BUILDING
PROJ W-032 WO CR0509 JOB 247530
SCALE 3/4"=1'-0" BLDG 2402 W PROJ 0500
DRAWING NUMBER H-2-80605 SHEET 1 OF 1 REV 2

E DT 471010

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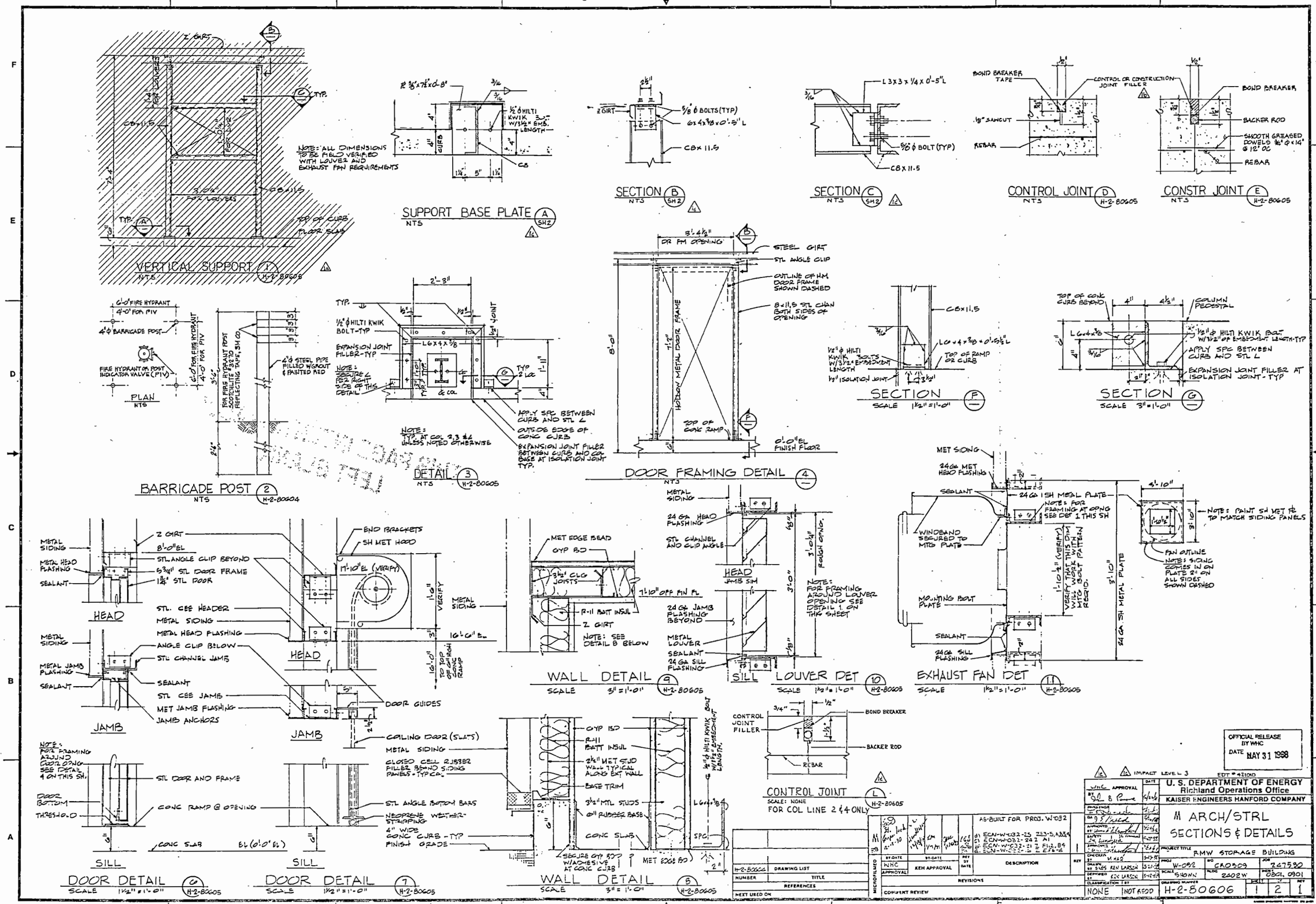
VERTICAL SUPPORT (1) H-2-80605
SUPPORT BASE PLATE (A) SH2
SECTION (B) SH2
SECTION (C) SH2
CONTROL JOINT (D) H-2-80605
CONSTR JOINT (E) H-2-80605
BARRICADE POST (2) H-2-80604
DETAIL (3) H-2-80605
DOOR FRAMING DETAIL (4)
SECTION (F)
SECTION (G)
DOOR DETAIL (6) H-2-80605
DOOR DETAIL (7) H-2-80605
WALL DETAIL (8) H-2-80605
WALL DETAIL (9) H-2-80605
LOUVER DET (10) H-2-80605
EXHAUST FAN DET (11) H-2-80605
CONTROL JOINT (L) H-2-80605
FOR COL LINE 2 & 4 ONLY
NOTE: ALL DIMENSIONS TO BE FIELD VERIFIED WITH LOUVER AND EXHAUST FAN REQUIREMENTS
NOTE: SECURE ∠ FOR RIGHT SIDE OF THIS DETAIL
NOTE: TYP AT COL 2,3 & 4 UNLESS NOTED OTHERWISE
NOTE: FOR FRAMING AROUND LOUVER OPNG SEE DETAIL 1 ON THIS SHEET
NOTE: FOR FRAMING AROUND DOOR OPNG SEE DETAIL 4 ON THIS SH.
NOTE: PAINT SH MET PL TO MATCH SIDING PANELS
NOTE: SIDING COMES IN ON PLATE 24 ON ALL SIDES SHOWN DASHED
NOTE: SEE DETAIL B BELOW
OFFICIAL RELEASE BY WHC
DATE MAY 31 1998
IMPACT LEVEL 3
EDT # 421100
U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY
M ARCH/STRL
SECTIONS & DETAILS
RMW STORAGE BUILDING
AS-BUILT FOR PROJ. W-032
W-092
240509
247590
2202W
0801, 0901
NONE
NOT REQD
H-2-80606
1 2 1

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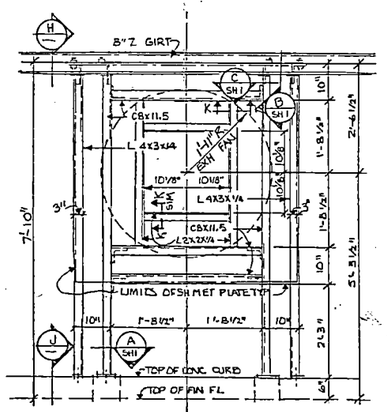
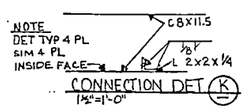
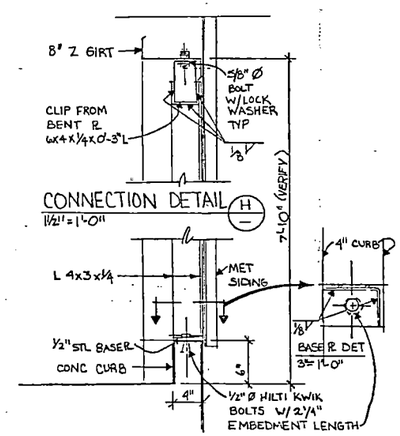


EXH FAN/MET SIDING - SUPPORT FRAMING DET (1A)
3/4" = 1'-0"
H-2-80605



CONNECTION DET (K)
1 1/2" = 1'-0"



CONNECTION DETAIL (H)
1 1/2" = 1'-0"

CONNECTION DETAIL (J)
1 1/2" = 1'-0"

THIS SHEET ADDED TO REFLECT AS-BUILT CONDITIONS PER ECN W-032-16,25

OFFICIAL RELEASE BY WHC
DATE FEB 20 1991
ECN-W032-025

IMPACT LEVEL 3

WHC APPROVAL BY	DATE 1/26/90	U.S. DEPARTMENT OF ENERGY Richland Operations Office
PROJ ENGR	11/9/89	KAISER ENGINEERS HANFORD COMPANY
QA NA		# ARCH/STRL SECTIONS & DETAILS
APPROVED BY	1/19/90	
SAFETY NA		PROJECT TITLE RMW STORAGE BUILDING
APPROVED BY	1/19/90	PROJ W-032 WO CR0509 JOB 247530
CHECKED BY	11-13-1989	
DRAWN BY B.L. GINN	11-09-1989	SCALE SHOWN BLDG 2402.W INDEX 0801, 0901
DESIGNED BY KD LARSON	8-26-1988	DRAWING NUMBER H-2-80606 SHEET 2 OF 2 REV 0

BY-DATE	BY-DATE	REV BY DATE	DESCRIPTION	REV
APPROVAL	KEH APPROVAL		REVISIONS	
COMMENT REVIEW				

MICROFILMED

NUMBER	TITLE
DRAWING TRACEABILITY LIST	

NUMBER	TITLE
DRAWING LIST	
REFERENCES	
NEXT USED ON	

9212356 0874

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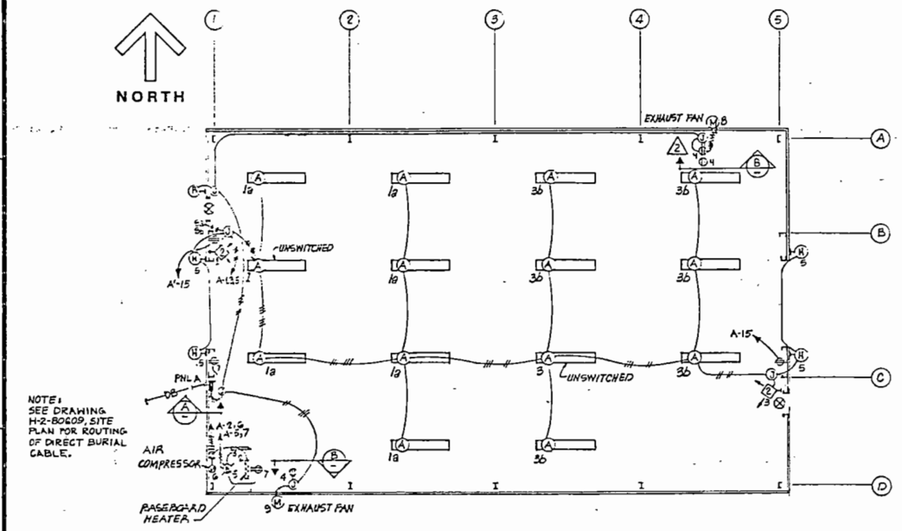
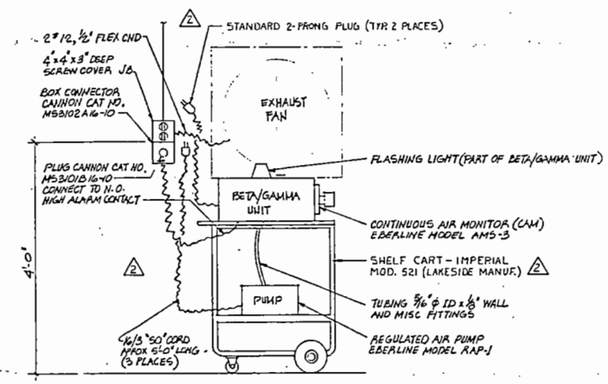


POWER/LIGHTING PLAN
SCALE 1/8" = 1'-0"



BETA/GAMMA CAM ASSY (B)
NTS

ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION (SEE NOTE 1)
	EXPOSED CONDUIT, MATCH MARKS INDICATE QUANTITY OF #12 AWG CONDUCTORS IN 1/2" CONDUIT. CONDUITS UNMARKED ARE 1/2" WITH 2 #12
A-1,3,5	HOMERUN CONDUIT (CIRCUITS 1, 3, AND 5 TO PANEL "A" INDICATED)
G	GROUND CONDUCTOR NO. 6 BARE SOLID COPPER
DB	DIRECT BURIAL CABLE
J	JUNCTION BOX
	DUPLEX RECEPTACLE, MOUNT AT 48", UNLESS NOTED OTHERWISE, (CIRCUIT 4 INDICATED)
Sa	SINGLE POLE TOGGLE SWITCH, MOUNT AT 4'-6" ON EXTERIOR OF BUILDING. LOWER CASE LETTER INDICATES CONTROLLED EQUIPMENT
2a A	LIGHTING FIXTURE, LETTER DENOTES FIXTURE TYPE (CIRCUIT 2, SWITCH a INDICATED), MOUNT AT 18'-0"
	INCANDESCENT LIGHTING FIXTURE, LETTER DENOTES FIXTURE TYPE
H	LPS LIGHTING FIXTURE, MOUNT AT 8'-0"
R	REMOTE CAM ALARM LIGHT, MOUNT AT 10'-0"
E	EMERGENCY LIGHTING FIXTURE, BATTERY POWERED (2 LAMPS INDICATED) ARROWS INDICATE BEAM DIRECTION, MOUNT AT 14'-0"
M	MOTOR
	LIGHTING AND POWER PANELBOARD
	EXIT SIGNS

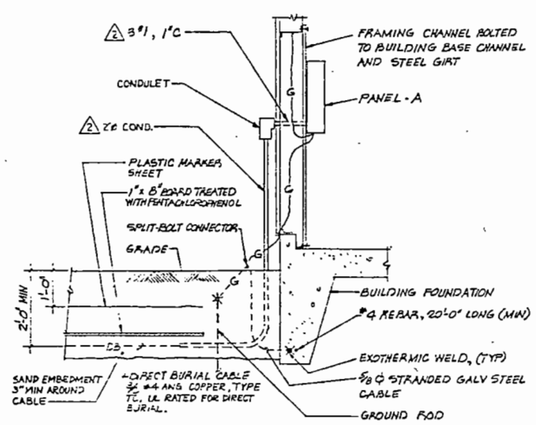
PANELBOARD A VOLTS 120/240, 1PH,3W LOCATION WEST WALL

60 AMP BUSSING ☒ MAIN BRKR 50 AMP ☒ SURFACE MOUNTED ☐ TOP FEED
60 AMP NEUTRAL ☐ MAIN LUGS ONLY ☐ FLUSH MOUNTED ☒ BOT FEED

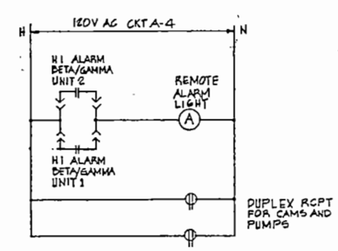
CKT	LOAD DESCRIPTION	VA	BRKR		BRKR	VA	LOAD DESCRIPTION	CKT
1	WEST LIGHTS	1770	20		20	750	BASEBOARD HEATER	2
3	EAST LIGHTS	1770	20		20	1880	CAM RECEPTACLES	4
5	ENCL & EXTR LIGHTS	450	20		20	500	AIR COMPRESSOR	6
7	RECEPTACLES	360	20		20	830	EXHAUST FAN NE CORNER	8
9	EXHAUST FAN SW CORNER	830	20		—	—	SPACE	12
13	FIRE ALARM	300	20		—	—	SPACE	14
15	RECEPTACLES	360	20		—	—	SPACE	16

TOTAL CONNECTED LOAD = 3630 VA
HOT NO. 1 = 4630 VA
HOT NO. 2 = 5000 VA

REMARKS
• PAINT HANDLE RED, INSTALL LOCK-ON DEVICE.



SECTION (A)
NTS



CAM WIRING DIAGRAM REMOTE ALARM

NOTES:
1. SEE CONSTRUCTION SPECIFICATION W-032-C1 FOR MATERIAL DESCRIPTION AND INSTALLATION INSTRUCTIONS.
2. POST SHALL BE COMMERCIAL STEEL FENCE POST. PAINT FLAG AND POST HIGH VISIBILITY YELLOW.

2 CONFIDENCE LEVEL A: CRITICAL DIMENSIONS ARE VERIFIED WITHIN SPECIFIED DRAWING TOLERANCES. CONCEALED PIPING OR WIRING IS VERIFIED AS TO FLOW PATH, BUT ACTUAL ROUTING IS NOT VERIFIED.

ESSENTIAL DRAWING

OFFICIAL RELEASE BY WHC
DATE MAY 31 1988

EDT # 42,1010

REV	BY	DATE	DESCRIPTION
2	AC	5-12-88	REVISION PER ECN 153842-FV
1	LDS / FA	11-90 / 12-7-90	AS-BUILT FOR PROJ W-032 1) ECN W-032-24, Z A1 2) ECN W-032-20, Z D-E6-8,C2 3) ECN W-032-15, Z C-D2, E6,B 4) ECN W-032-9, Z E8 5) ECN W-032-7, Z B-7 6) ECN W-032-6, Z E-C7-8 7) ECN W-032-1, Z B-C5-7, D1-2, E8

MICROFILMED: BY-DATE / KEN APPROVAL / REV BY DATE
COMMENT REVIEW

DRAWING LIST	
NUMBER	TITLE
H-2-80526	

NUMBER	TITLE	REFERENCES
	DRAWING TRACEABILITY LIST	NEXT USED ON

WHC APPROVAL BY J. B. Parsons DATE 5/4/88
PROJ ENGR C. S. Lane Jr. 4/28/88
DES ENGR J. S. Brand 5/4/88
APPROVED BY 5/4/88
SAFETY 5-25-88
APPROVED BY 5/4/88
CHECKED BY R. SAVARD 5-24-88
DRAWN BY SNES 5-12-88
DESIGNED BY R. R. HAZEL BAKER 5-12-88

U.S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL
PLAN, SECTION, DETAILS

PROJECT TITLE RMW STORAGE BUILDING
PROJ W032 WO CR0509 JOB 247530
SCALE S-CNN BLDG 2402W INDEX 7301
DRAWING NUMBER H-2-80607 SHEET 1 OF 1 REV 1

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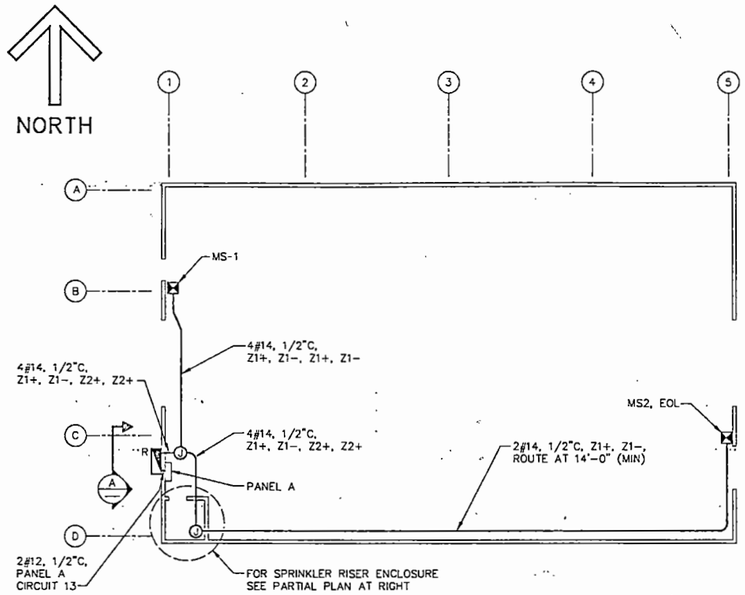
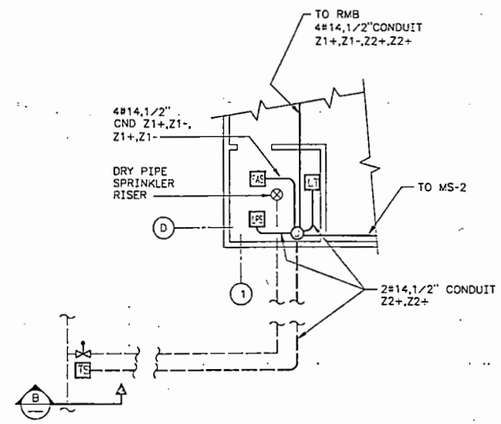


PLAN

SCALE: 1/8"=1'-0"



PARTIAL PLAN

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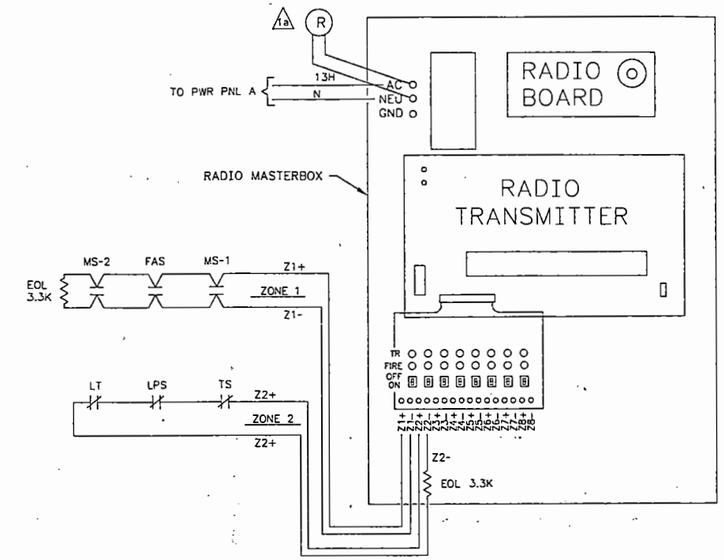
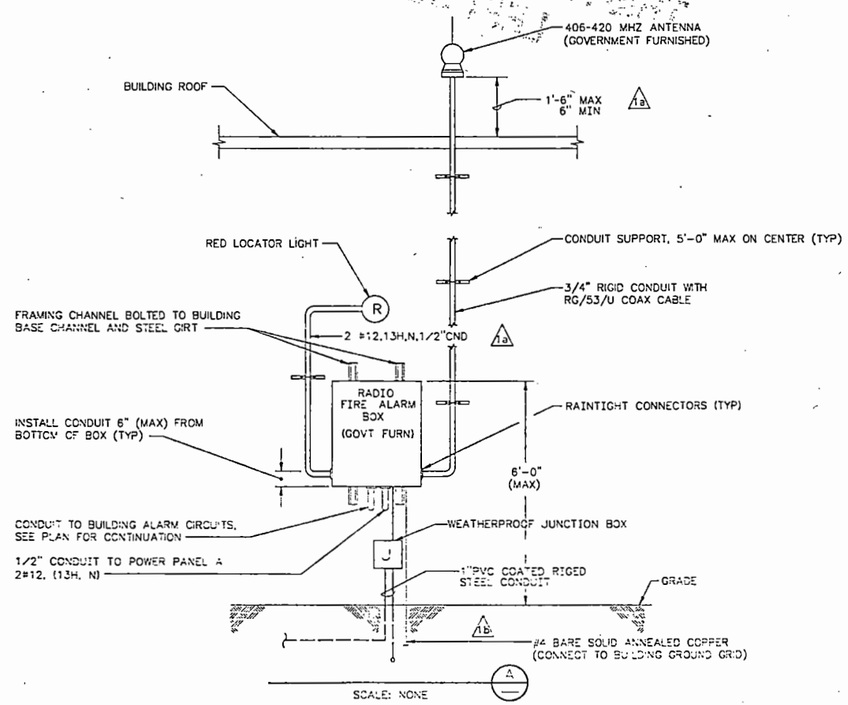


FIRE ALARM WIRING DIAGRAM



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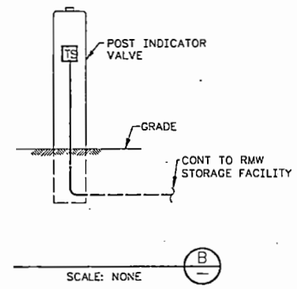

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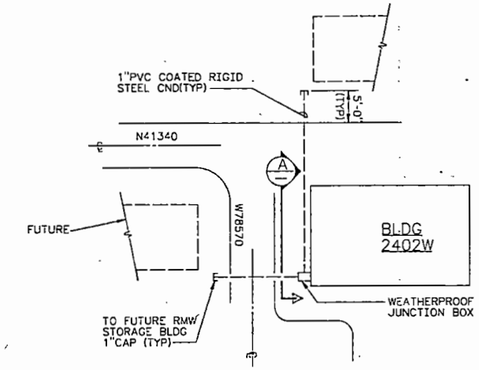

SITE PLAN

SCALE: NONE

LEGEND

SYMBOL	DESCRIPTION
	NEW CONDUIT WIRE OR DEVICE
	UNDERGROUND CONDUIT
	UNDERGROUND PIPING OR DEVICE
R	RADIO BOX (RMB)
J	JUNCTION BOX
PS	LOW PRESSURE SWITCH
TS	TAMPER SWITCH
LT	LOW TEMPERATURE SWITCH
FAS	FLOW ALARM SWITCH
	MANUAL PULL STATION
	SPRINKLER RISER
-W- EOL	END OF LINE RESISTOR

IMPACT LEVEL 3

WHC APPROVAL	DATE	U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE
BY J B PAYNE	5-26-1988	KAISER ENGINEERS HANFORD COMPANY
PROJECT ENGR F K HAMADA	5-26-1988	FIRE PROTECTION FIRE ALARM PLANS, EL, DET & DIAG
DR J E BREED	5-26-1988	
DESIGNED BY S KORAYKOWICH	5-26-1988	
SAFETY J K MARSHALL	5-26-1988	
CONSTRUCTION J K MARSHALL	5-26-1988	
APPROVED BY A L SMITH	5-26-1988	PRODUCT TYPE RMW STORAGE BUILDING
CONSTR A G MINISTERI	5-26-1988	
DRAWN C.MCDOUGH	5-26-1988	PROJ W-032 / CR0509 / 247530
DESIGNED C.MCDOUGH	5-26-1988	SCALE S-OWN / BLDG 2402W / SHEET 7701,7702
REF FILE R0808A		DRAWING NUMBER H-2-80608 / SHEET 1 / OF 1 / REV 1
CADD FILE H2-80608		KEYCAD

REV	DESCRIPTION	REV BY DATE
1	AS-BUILT FOR PROJ. W-032 ECN W-032-24, ZA1-2 ECN W-032-11, ZA7,B-D2-3 ECN W-032-2, ZC-B6-7,F2	11-6-1990

W-10 PROJECT APPROVAL — REVISIONS — COMMENT REVIEW

NUMBER	TITLE
	DRAWING TRACEABILITY LIST

DRAWING LIST

NUMBER	TITLE	NEXT USED ON
	REFERENCES	

9212136080876

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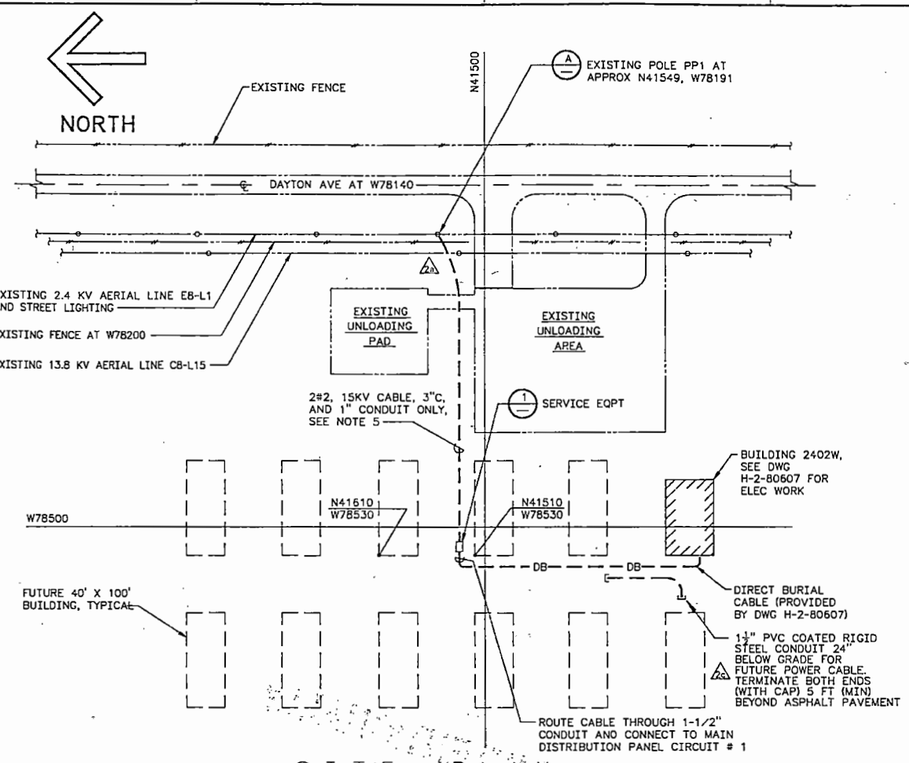


SITE PLAN

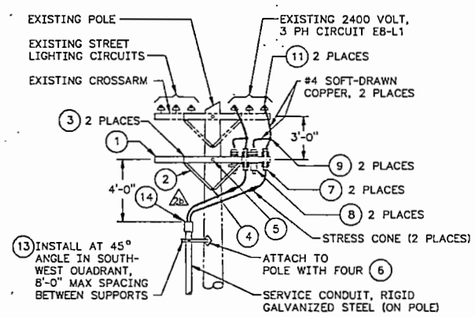
SCALE: 1" = 60'-0"

POLE LINE MATERIALS

ITEM NO	DESCRIPTION (SEE NOTE 1)
1	CROSSARM, 8'-0" LONG X 4-3/4" HIGH X 3-3/4" WIDE, ROUNDED ON TOP TO 4-5/8" RADIUS, SEE NOTE 2
2	CROSSARM BRACE, 48" SPAN, DOUGLAS FIR TREATED WITH PENTACHLOROPHENOL, WITH GALVANIZED STEEL END FITTINGS THAT USE A VERTICAL MOUNTING BOLT THROUGH THE CROSSARM
3	MACHINE BOLT, 1/2" DIA X 6" LONG, WITH WASHERS, NUT AND LOCKNUT
4	MACHINE BOLT, 5/8" DIA X LENGTH AS REQD, WITH WASHERS, NUT & LOCKNUT
5	MACHINE BOLT, 3/4" DIA X LENGTH AS REQD, WITH WASHERS, NUT & LOCKNUT
6	LAG BOLT, 1/2" DIA X 2-1/2" LONG, WITH WASHER
7	OPEN TYPE CUTOUT, 100 AMP, 15 KV, WITH CROSSARM MOUNTING BRACKET AND 65T FUSE
8	LIGHTNING ARRESTER, 3 KV, WITH CROSSARM MOUNTING BRACKET
9	SQUEEZE-ON (CRIMP-TYPE) COMPRESSION CONNECTOR, SQUARE D CLASS 3310, STYLE VACC
10	CONNECTOR, SPLIT BOLT, TINNED
11	ALUMINUM BALE CLAMP, CHANCE 820 OR 850 SERIES AS REQD AND CHANCE S1520 SERIES TAP CLAMP
12	PLASTIC MOULDING FOR GROUND WIRE, ATTACH TO POLE WITH GALVANIZED STAPLES, 3" X 1-1/16" X 1/4" AT 24" INTERVALS
13	15 INCH STANDOFF FOR CONDUIT SUPPORT, GALVANIZED, MORFAB 15SOSM
14	DUCT SEALING KIT, SCOTCHCAST BRAND 4416

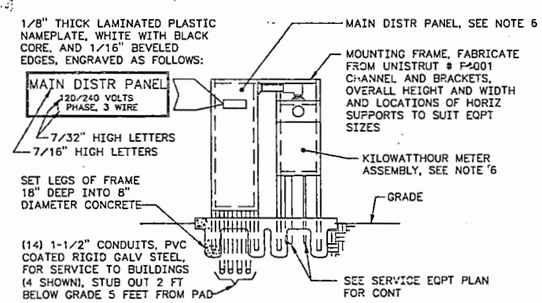
NOTES

1. UNLESS OTHERWISE NOTED ALL POLE LINE HARDWARE SHALL BE GALVANIZED AND SHALL CONFORM TO THE AMERICAN NATIONAL STANDARD INSTITUTE.
2. CROSSARMS SHALL BE IN ACCORDANCE WITH EDISON ELECTRIC INSTITUTE (EEI) SPEC TD-90, DOUGLAS FIR TREATED WITH PENTACHLOROPHENOL TO 8 LB PER CUBIC FT MINIMUM RETENTION.
3. INSTALL GROUND RODS 10 FEET APART ON OPPOSITE SIDES OF THE POLE WITH TOP OF RODS 12 INCHES BELOW GRADE. INSTALL A #4 BARE COPPER WIRE 12 INCHES BELOW GRADE, FORMING A GROUND RING LOCATED 5 FEET FROM THE POLE, INTERCONNECTING THE TWO GROUND RODS. INSTALL TWO GROUND RODS AND RING AT POLE PP1.
4. TWO COMPLETELY SEPARATE GROUNDING CONDUCTORS, BARE, SOLID, ANNEALED COPPER, SHALL BE PROVIDED ON THE POLE AND INTERCONNECTED ONLY AT THE GROUND RODS.
5. THE TWO CONDUITS SHALL BE ROUTED 30 INCHES BELOW GRADE AND BE ENCASED IN CONCRETE. CONCRETE SHALL EXTEND A MINIMUM OF 3 INCHES ALL AROUND CONDUITS. CONDUITS ENCASED IN CONCRETE SHALL BE TYPE 4D HEAVY WALL PVC PLASTIC EXCEPT THAT ALL BENDS SHALL BE GALVANIZED RIGID STEEL. INSTALL CONDUIT DRAINS AT LOW POINTS IN CONDUIT RUNS AND NEAR EACH END. INSTALL PLASTIC SHEET MARKER IN BACKFILL IN ACCORDANCE WITH SPEC SECTION 02200. CONDUITS ON POLE SHALL BE GALVANIZED RIGID STEEL. TERMINATE THE 1" CONDUIT (FOR FUTURE METER PULSE GENERATOR SIGNAL) AT THE LOWEST STANDOFF ON POLE.
6. THE 15KV CABLE, PAD MOUNTED TRANSFORMER, MAIN DISTRIBUTION PANEL, AND MAJOR COMPONENTS OF KILOWATTHOUR METER ASSEMBLY WILL BE FURNISHED BY THE GOVERNMENT AND SHALL BE ASSEMBLED AND INSTALLED BY THE CONTRACTOR. THE NEMA TYPE 3R PANEL HAS A 400 AMP MAIN BREAKER, SIX 60 AMP 2-POLE BREAKERS, CIRCUITS 1 THROUGH 6, SIX 100 AMP FRAME 2-POLE SPACES, AND FOUR 100 AMP 1-POLE SPACES (MIN). SEE APPENDIX A OF SPEC SECTION 16300 FOR ASSEMBLY OF KILOWATTHOUR METER COMPONENTS. METER ASSEMBLY COMPONENTS PROVIDED ARE LISTED AS PART NUMBERS 1 THROUGH 4 IN APPENDIX A.
7. TERMINATE PRIMARY CABLES USING 15 KV TERMINATION KITS, RAYCHEM TYPE HVT-150 OR EQUAL.



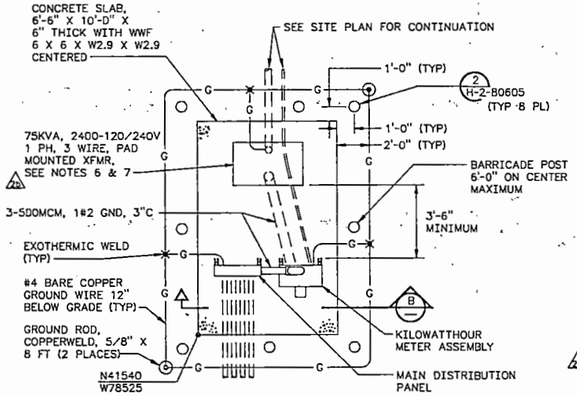
ELEVATION - POLE PP1 (A)

LOOKING NORTH
SCALE: NONE



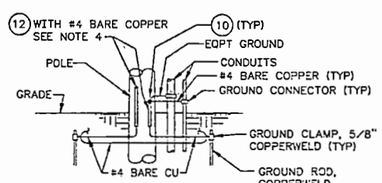
ELEVATION (B)

SCALE: 3/8" = 1'-0"

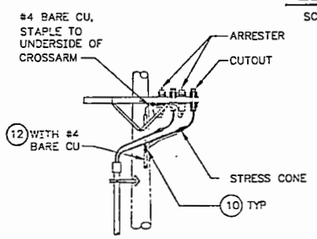


PLAN-SERVICE EQPT (1)

SCALE: 3/8" = 1'-0"



CONDUIT AND GND ROD CONNECTIONS



ARRESTER AND SHIELD GROUNDING

POLE GROUNDING DETAILS

SCALE: NONE

NUMBER	TITLE

DRAWING TRACEABILITY LIST

NUMBER	TITLE
H-2-80604	DRAWING LIST

REFERENCES

NEXT USED ON

REV	DESCRIPTION	REV BY DATE
2	AS-BUILT FOR PROJ W-032 & W-033 c) ECN W-032-19 Z D5-6 b) ECN W-033-3 Z D7,C4,B1-2,E1-2 a) ECN W-033-1 Z E7	LDS 4-10-90 3-23-90 a)
1	GENERAL REVISION ECN # 101898	RCS 7-29 1992

REVISIONS

WHC APPROVAL KEH APPROVAL

COMMENT REVIEW

IMPACT LEVEL 3

EDT # 100382

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

WHC APPROVAL BY JB PAYNE 7-8 1988

PROJ ENGR FK HAVADA 7-7 1988
DR JE BREED 7-7 1988
APPROVED BY SR ZDRAVKOVICH 7-7 1988
DRAFTY D LUNDGREN 7-7 1988
APPROVED BY RR HAZELBAKER 7-7 1988
CHECKED BY RR HAZELBAKER 7-7 1988
DRAWN BY RC SAVARD 6-14 1988
DESIGNED BY RC SAVARD 6-1 1988
CAD FILE B080609A
CAD DWG 2J:IBM:ACD2:10.0:NN

M ELECTRICAL SITE PLAN AND POLE LINE DETAILS

PROJECT TITLE: RMW STORAGE BUILDING

PROJ W-033 WO CR0510 JOB

SCALE SHOWN BLDG 2402W INDEX 8001

DRAWING NUMBER H-2-80609 SHEET 1 OF 1 REV 2

KEHCAD 1 3001E

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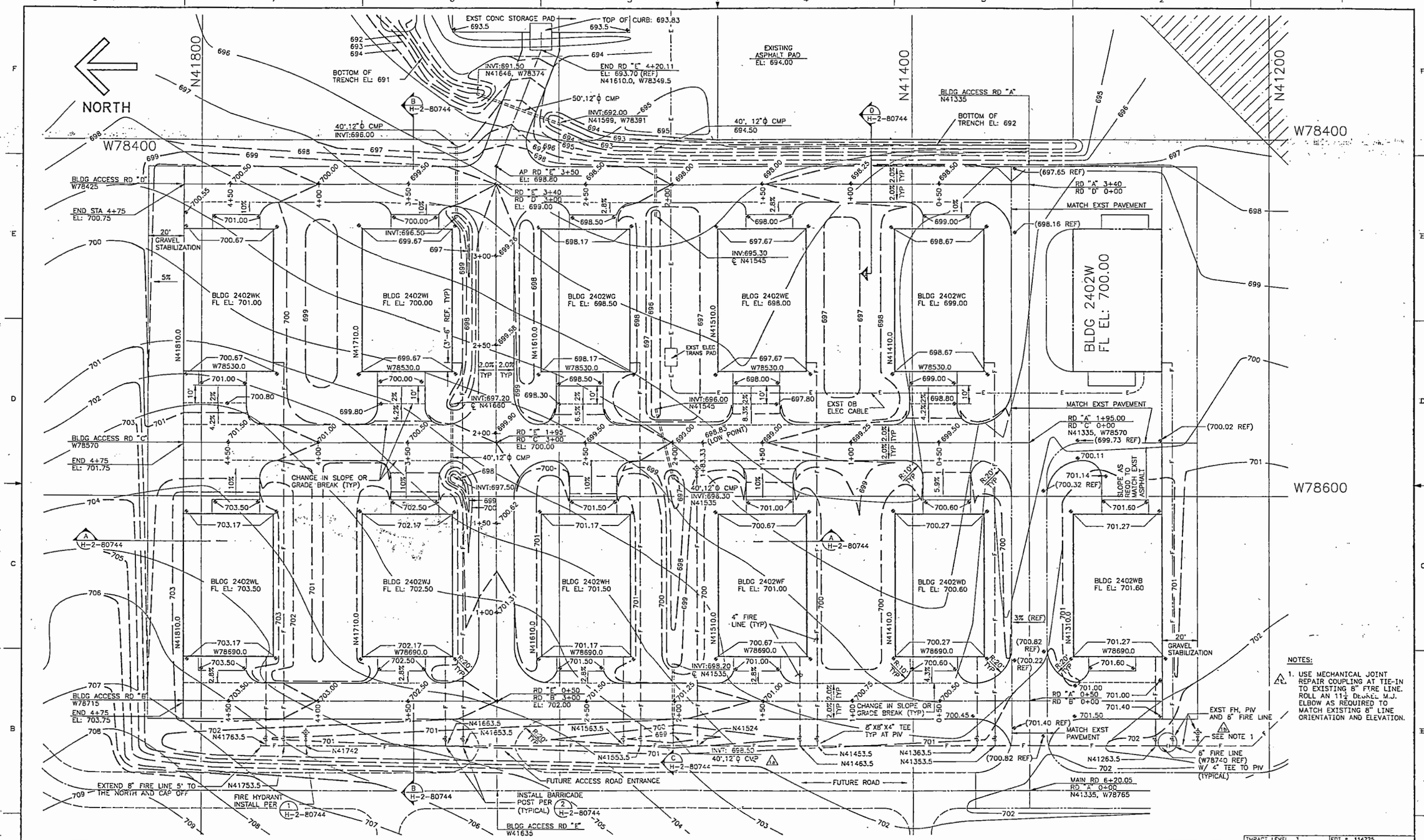

NOTES:

1. USE MECHANICAL JOINT REPAIR COUPLING AT TIE-IN TO EXISTING 8" FIRE LINE. ROLL AN 11¼ DEGREE M.J. ELBOW AS REQUIRED TO MATCH EXISTING 8" LINE ORIENTATION AND ELEVATION.

DRAWING LIST

H-2-80737	0110/0200/0104	DWG LIST CIVIL, SITE PLAN RMW GRADING & ROADWAYS
H-2-80738	0900	STRL/ANCHOR BOLT PLANS, SECTIONS & DETAILS
H-2-80739	0800/1000	ARCH/STRL PLAN, ELEVATIONS, SECTIONS & DET
H-2-80740 (SH 1&2)	7701	FIRE PROTECTION FIRE ALARM SYS PLANS & SECT
H-2-80741 (SH 1&2)	7702	FIRE PROTECTION FIRE ALARM SYS WIRING DIAGRAM
H-2-80742	8001	ELECTRICAL SITE PLAN, SYMBOL LIST & SCHEDULE
H-2-80743	7301	ELECTRICAL PLANS, DIAGRAMS AND DETAILS
H-2-80744	0200	CIVIL SECTIONS & DETAILS RMW GRADING & ROADWAYS

LEGEND

- EXISTING
- EXSTING UNDERGROUND UTILITY
- F — UNDERGROUND FIRE LINE
- 701 — EXISTING GROUND CONTOUR
- 701 — FINISH GROUND CONTOURS
- POST INDICATOR VALVE (PIV)
- FIRE HYDRANT W/ GATE VALVE
- SPOT GRADE ELEVATION

RMW SITE PLAN

20 10 0 20 40

SCALE: 1"=20'-0"

NUMBER	TITLE	REFERENCES
DRAWING TRACEABILITY LIST		NEXT USED ON

NUMBER	TITLE
DRAWING LIST	

REV	DESCRIPTION	REVISIONS
1	AS-BUILT FOR PROJ W-033 b) ECN W-033-18 Z B1-2 d) ECN W-033-14 Z B4	

WHC APPROVAL BY-DATE | KEH APPROVAL BY-DATE | COMMENT REVIEW

TYPACT LEVEL 3	EDT # 114725	
WHC APPROVAL BY RL MOXIN	DATE 5-24-1989	U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE
		KAISER ENGINEERS HANFORD COMPANY
PROJ ENGR FK HAMADA	5-24-1989	M DWG LIST, CIVIL SITE PLAN RMW GRADING & ROADWAYS
QA JE BREEDLOVE	4-27-1989	
APPROVED BY HP RAY	4-27-1989	
SAFETY AG MINISTER	4-27-1989	
APPROVED BY LE ROBBINS	4-27-1989	PROJECT TITLE RADIOACTIVE MIXED WASTE STORAGE FACILITIES
SUPERVISED DL FORT	4-27-1989	
DRAWN P. EHRLICH	12-15-88	CROSTO THRU CRO514
REFERENCES L. GADDIS		SCALE 1"=20'-0" BLDG 2402W INDEX 0110/0200/0104
CAD FILE B280737A		DRAWING NUMBER H-2-80737 SHEET 1 OF 1 REV 1
CAD SYS 2J:HSV:ACD2:10.0:NN1		KEHCAD 1 30001E

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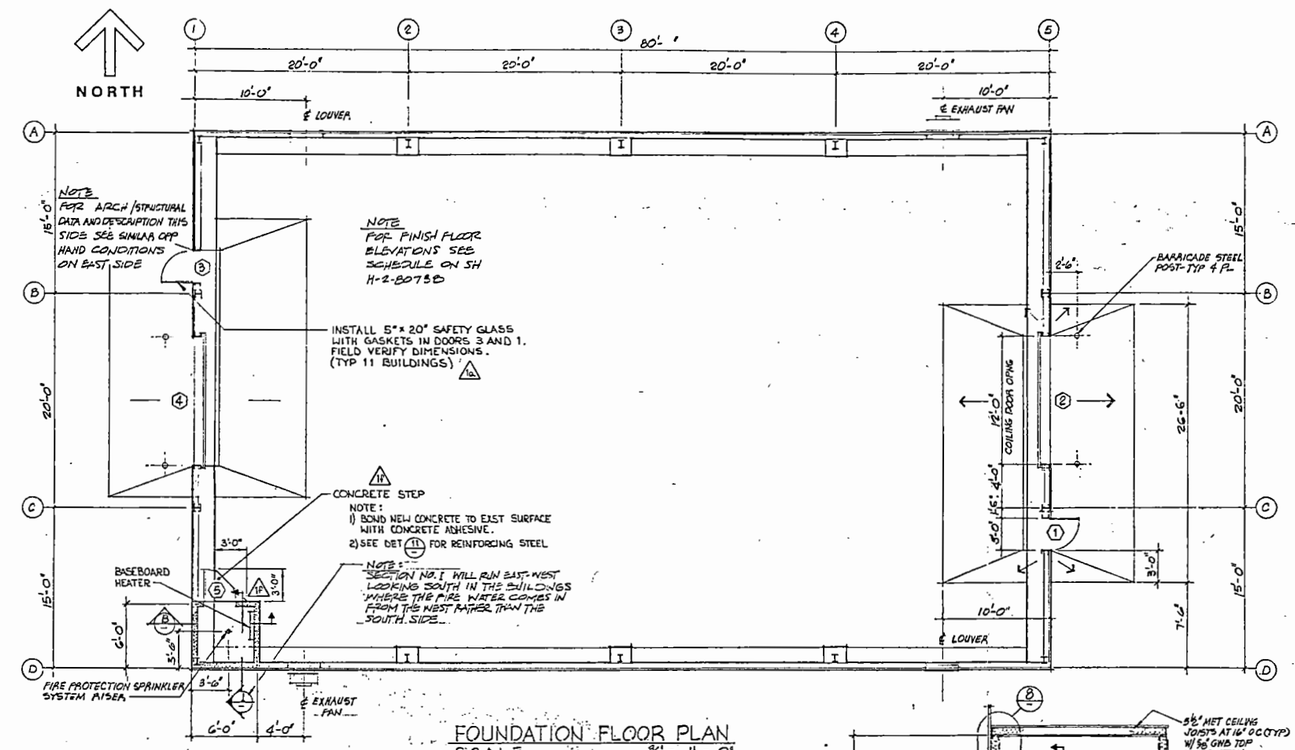
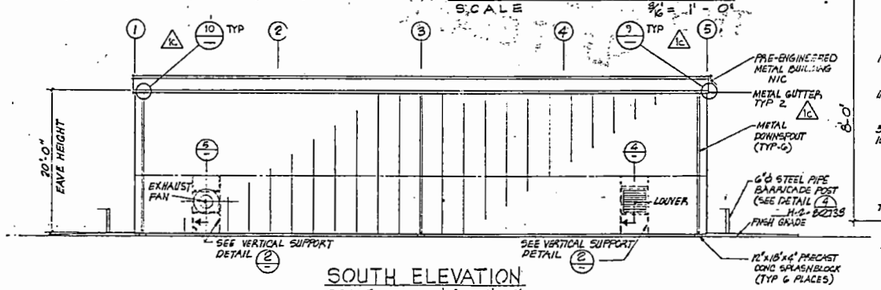
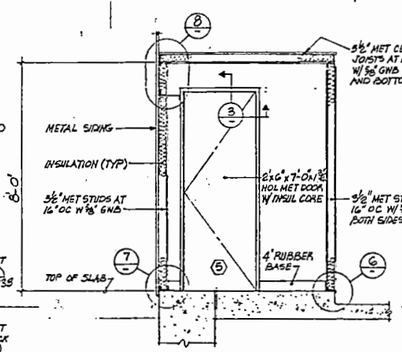


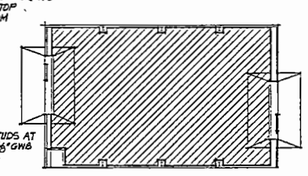
FOUNDATION FLOOR PLAN
SCALE 3/16" = 1'-0"



SOUTH ELEVATION
SCALE 1/8" = 1'-0"

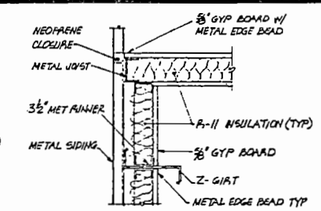


ENCLOSURE
SCALE 1/8" = 1'-0"

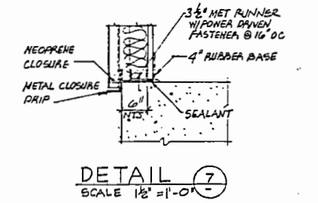


NOTE:
ALL SLASHED AREAS AND VERTICAL SURFACES ALONG PERIMETER CURBS, DENOTED BY HEAVY LINES, SHALL RECEIVE SPECIAL PROTECTIVE COATING (SPC).

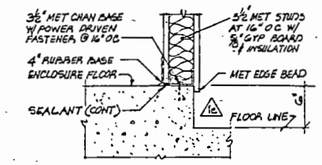
KEY PLAN
SCALE 1" = 20'-0"



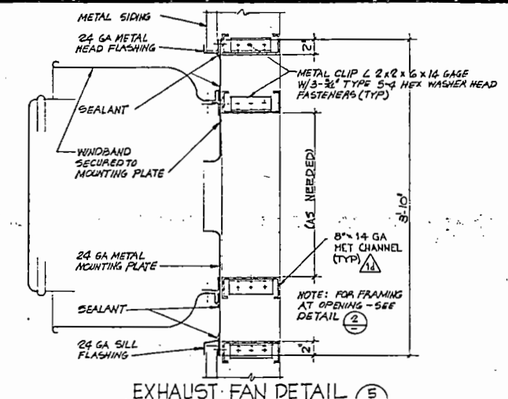
DETAIL 8
SCALE 1½" = 1'-0"



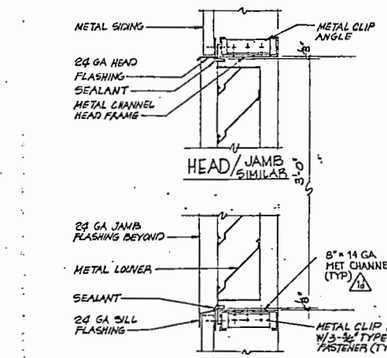
DETAIL 7
SCALE 1½" = 1'-0"



DETAIL 6
SCALE 1½" = 1'-0"



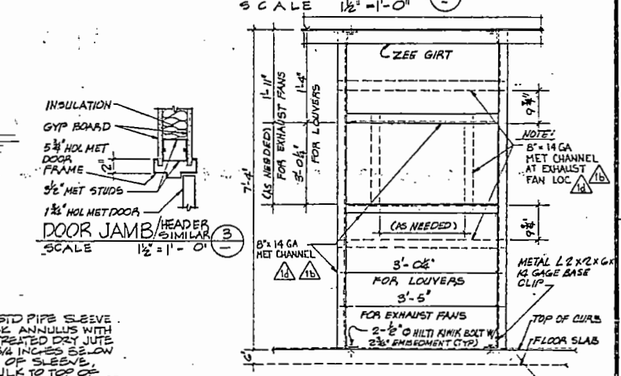
EXHAUST FAN DETAIL 5
SCALE 1½" = 1'-0"



HEAD/JAMB SIMILAR

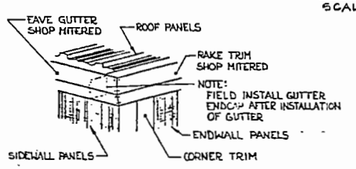
SILL

LOUVER DETAIL 4
SCALE 1½" = 1'-0"



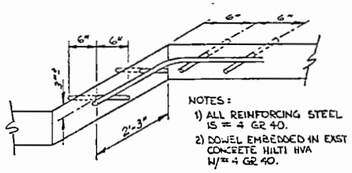
VERTICAL SUPPORT 2
NTS

NOTE: ALL DIMENSIONS TO BE FIELD VERIFIED WITH LOUVER AND EXHAUST FAN REQUIREMENTS



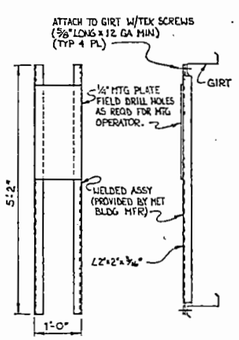
NOTE: REMOVE RAKE TRIM. FIELD RIVET EAVE GUTTER SECTION TO MITERED RAKE TRIM. REINSTALL RAKE TRIM.

DETAIL 9
SCALE: NONE

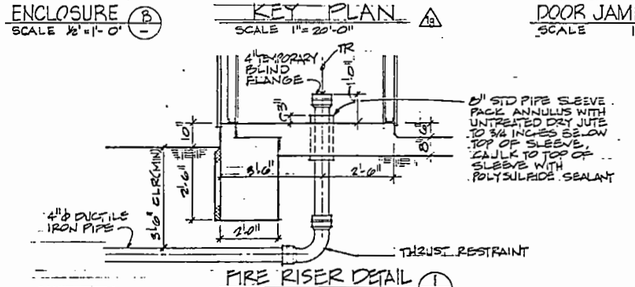


NOTES:
1) ALL REINFORCING STEEL IS # 4 GR 40.
2) DOWEL EMBEDDED IN EXIST CONCRETE HILTI HVA W/ # 4 GR 40.

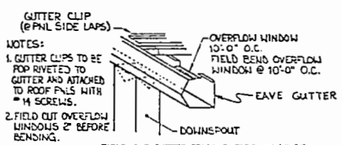
DETAIL 11
SCALE: NONE



DETAIL 12
SCALE: NONE



FIRE RISER DETAIL 1
SCALE 1/2" = 1'-0"



NOTES:
1. GUTTER CLIPS TO BE POP RIVETED TO GUTTER AND ATTACHED TO ROOF PNLS WITH #14 SCREWS.
2. FIELD CUT OVERFLOW WINDOWS 2' BEFORE BENDING.

FIELD CUT GUTTER FOLDING TABS INSIDE OF DOWNSPOUT AND RIVET (3 RIVETS @ EA TAB). LOCATE DOWNSPOUT ON ℄ OF HIGH RIB.

DETAIL 10
SCALE: NONE

NUMBER	TITLE	REFERENCES
	DRAWING TRACEABILITY LIST	NEXT USED ON
H-2-80738	DRAWING LIST	

REV	DESCRIPTION	BY-DATE	BY-DATE	REV BY DATE
1	AS-BUILT FOR PROJ W-033 a) EEN W-033-30 Z B3, A5 f) EEN W-033-27 Z D6-7, e) EEN W-033-23 Z D3 d) EEN W-033-15 Z C1, B2, E1, D1, A6-5 A7-8 c) EEN W-033-12 Z C5, C6, C7-8, B7-8, b) EEN W-033-11 Z C1, B2 a) EEN W-033-10 Z E6-7	WHC APPROVAL	KEH APPROVAL	

REVISIONS

MICROFILMED

COMMENT REVIEW

OFFICIAL RECORDS BY WHC DATE JUN 08 1989

IMPACT LEVEL 3

EDT# 114725

U.S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

ARCH/STRL
PLAN, ELEVATIONS, SECTIONS & DET

PROJECT TITLE: RADIOACTIVE MIXED WASTE STORAGE FACILITIES
PROJ: W-033 THRU W-037 | WO: 0600-10 TO 0600-14
SCALE: SHOWN | BLDG: 2402W | INDEX: 0600/1000
DRAWING NUMBER: H-2-80739 | SHEET 1 OF 1 | REV 1

9212336 0679

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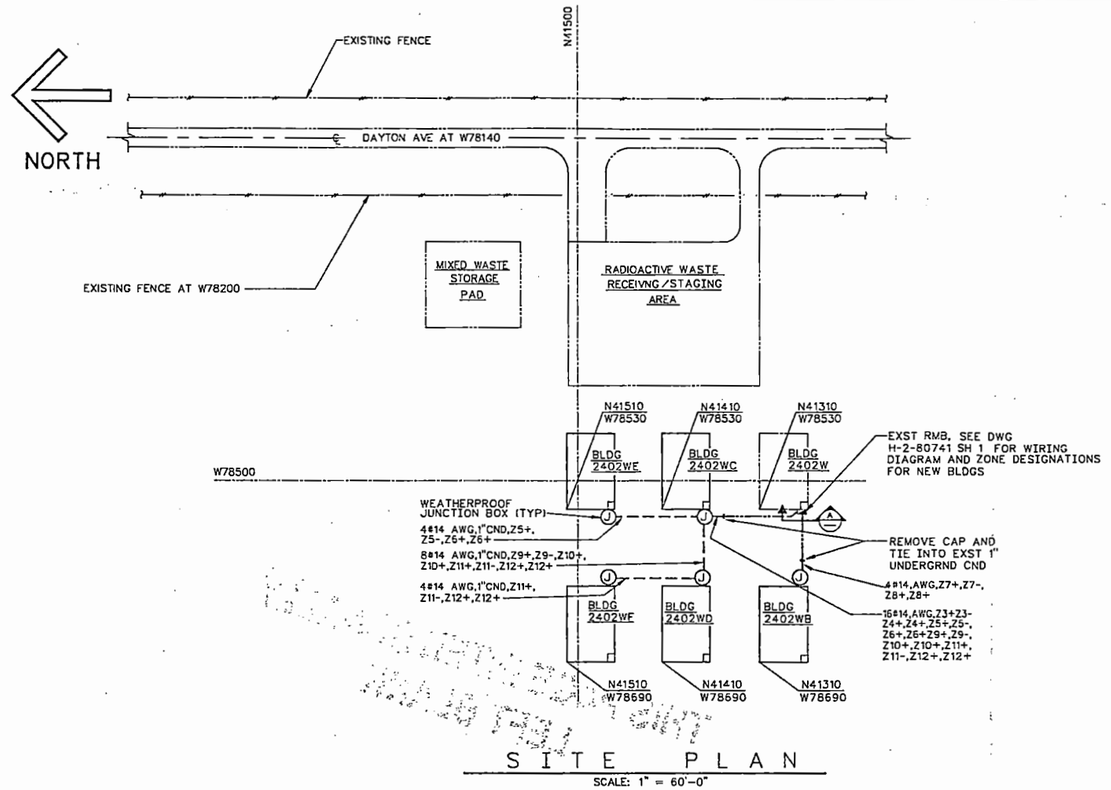
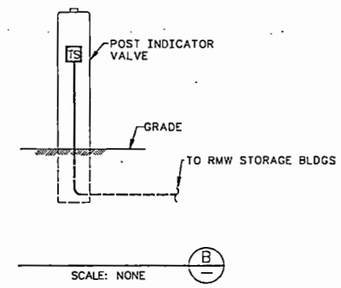


SITE PLAN

SCALE: 1" = 60'-0"



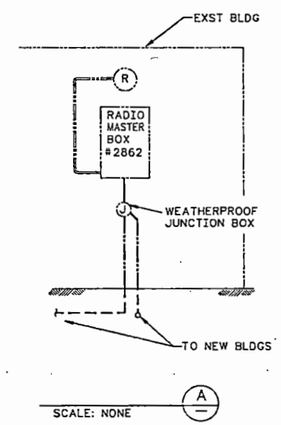
SCALE: NONE

LEGEND

SYMBOL	DESCRIPTION
	NEW CONDUIT
	NEW
	EXST CND
	EXST
	UNDERGROUND FIRE WATER LINE
	UNDERGROUND CONDUIT
R	RADIO MASTER BOX (RMB)
J	JUNCTION BOX
PS	LOW PRESSURE SWITCH
TS	SUPERVISORY TAMPER SWITCH
LT	LOW TEMPERATURE SWITCH
FAS	FLOW ALARM SWITCH
	MANUAL PULL STATION
	SPRINKLER RISER
-W- EOL	END OF LINE RESISTOR

NOTES

1. FOR WIRE DESIGNATIONS TO DEVICES IN EACH BLDG, SEE DWG H-2-80741 SH 1, & SH 2
2. FIELD ROUTE CONDUIT



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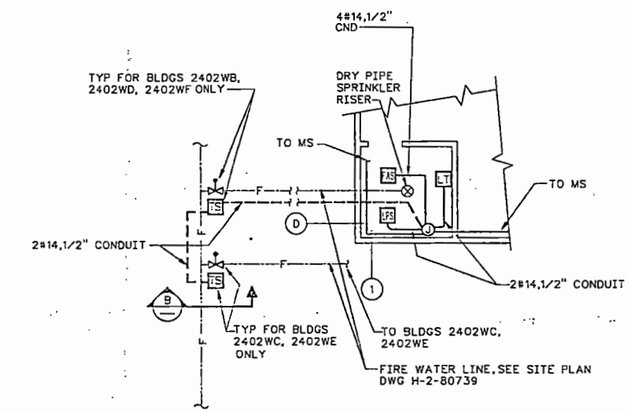
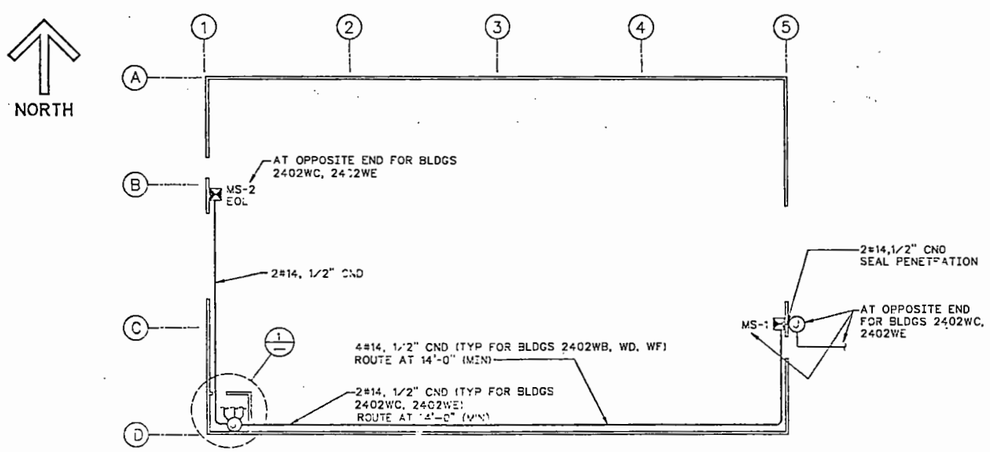


SPRINKLER RISER ENCLOSURE DETAIL

SEE RMW SITE PLAN, H-2-80737 FOR SPRINKLER RISER ENTRANCE LOCATIONS FOR EACH BUILDING



PLAN-TYPICAL FOR NEW BLDGS

SCALE: 1/8" = 1'-0"

NUMBER	TITLE
H-2-80737	DRAWING LIST

DRAWING TRACEABILITY LIST — REFERENCES — NEXT USED ON

REV NO.	DESCRIPTION	BY	DATE
RS 1	AS-BUILT FOR PROJ W-033	LDS	10-9-97

REVISIONS — APPROVALS

CAD FILE B080740A CAD CODE 2JHSV:ACD2:10.0:NN

IMPACT LEVEL 3 EDT # 114725

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

M FIRE PROTECTION
FIRE ALARM SYS
PLANS & SECT

PROJECT: RADIOACTIVE MIXED WASTE STORAGE FACILITIES

F 2402W 7701 H-2-80740 1

SCALE SHOWN JOB NO. C80510.11.12.13.14 SHEET 1 OF 2

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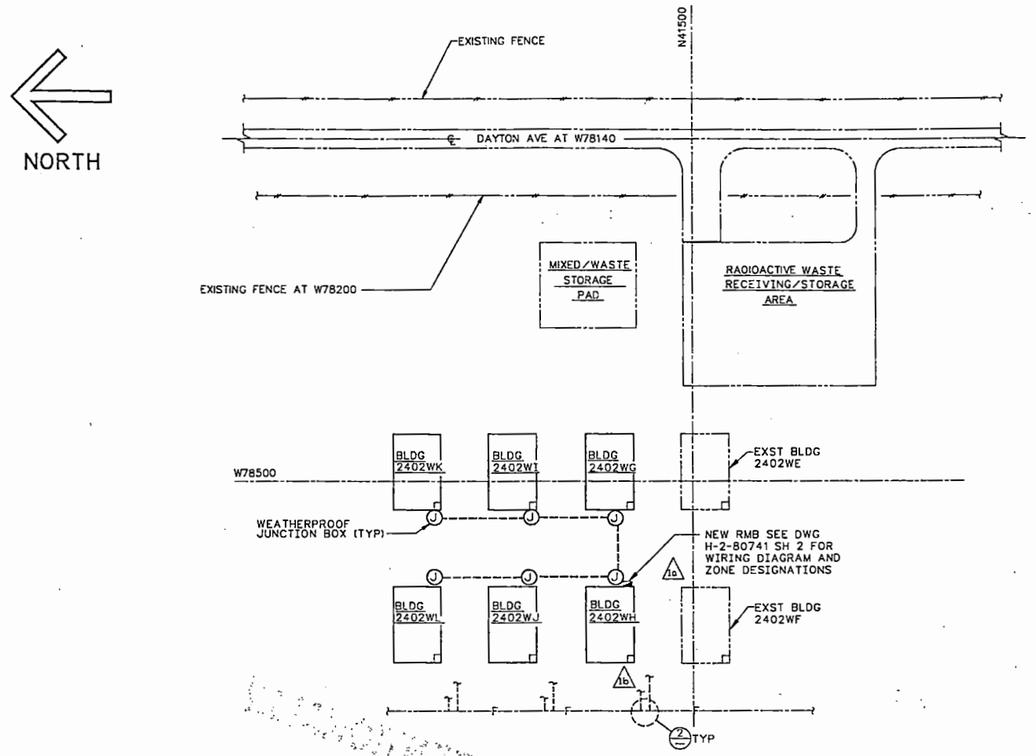
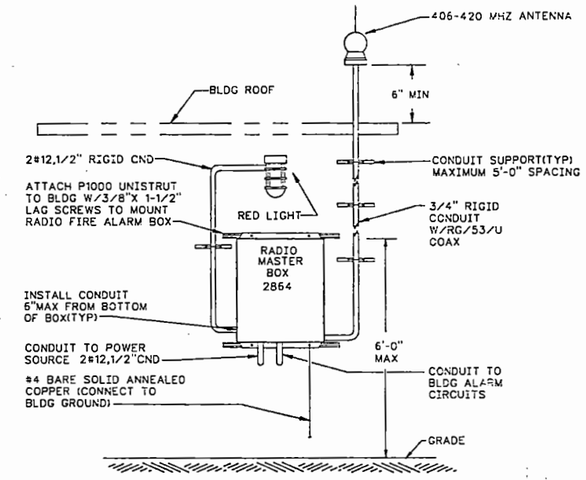
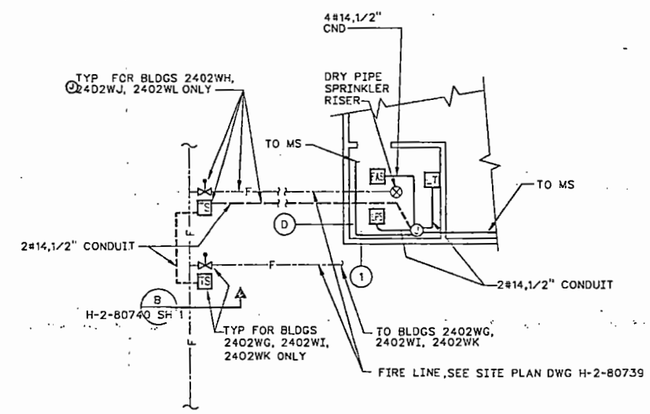


SITE PLAN
SCALE: 1" = 60'-0"



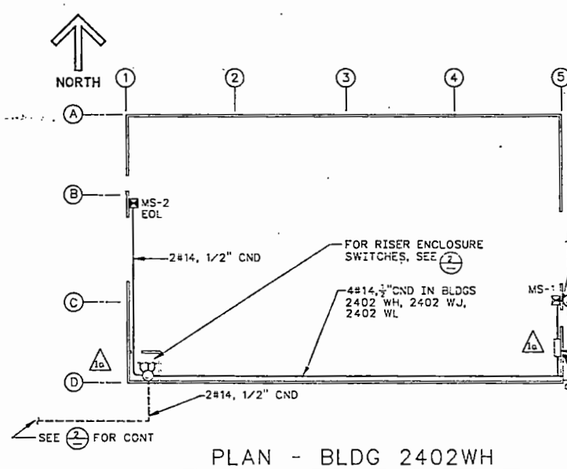
DETAIL C
NO SCALE

FOR NOTES AND LEGEND SEE DWG H-2-80740 SH 1

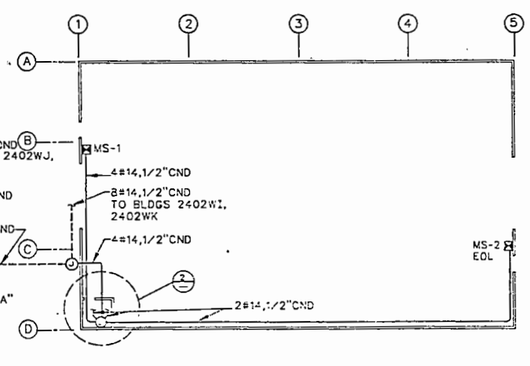


SPRINKLER RISER ENCLOSURE DETAIL

SEE RWM SITE PLAN, H-2-80737 FOR SPRINKLER RISER ENTRANCE LOCATIONS FOR EACH BUILDING



PLAN - BLDG 2402WH
TYPICAL FOR BLDGS 2402WJ, 2402WL
SCALE: NONE



PLAN - BLDG 2402WG
TYPICAL FOR BLDGS 2402WI, 2402WK
SCALE: NONE

NUMBER	TITLE
H-2-80737	DRAWING LIST

DRAWING TRACEABILITY LIST

NUMBER	TITLE
	REFERENCES

NEXT USED ON

REV NO.	DESCRIPTION	BY	DATE
1	AS-BUILT FOR PROJ W-033		
RS 1	(3) ECN W-033-30 Z 86.06	GA	5/12/93
	(4) ECN W-033-24 Z 86-S.C-06		2-15-96

REVISIONS

CAD FILE 80807409 CAD TYPE 2.0:IBM:ACD2:10.0:NN

APPROVALS

DRAWN	D. MCGOUGH	
CHKD	AG MINISTER	4/29/94
LEAD ENGR	AG MINISTER	4/29/94
DESIG MGR		
SAFETY	LE SMITH	4/27/94
ENVIR	HP RAY	4/27/94
QA	JE BREED	4/27/94
REMEDIAT	PK HAWADA	5/2/94
APPROVED FOR IMPLEMENTATION BY	DL MOAK	
RCM	W. HITT	5-24-94

IMPACT LEVEL 3 | EDT #114725

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

M FIRE PROTECTION ALARM SYSTEM PLANS, SECT, DET

PROJECT RADIOACTIVE MIXED WASTE STORAGE FACILITIES

SIZE F | FSCM NO 2402W | ISSUE NO 7701 | DWG NO H-2-80740 | REV NO 1

SCALE SHOWN | LAST NOTICE 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17 | SHEET 2 OF 2

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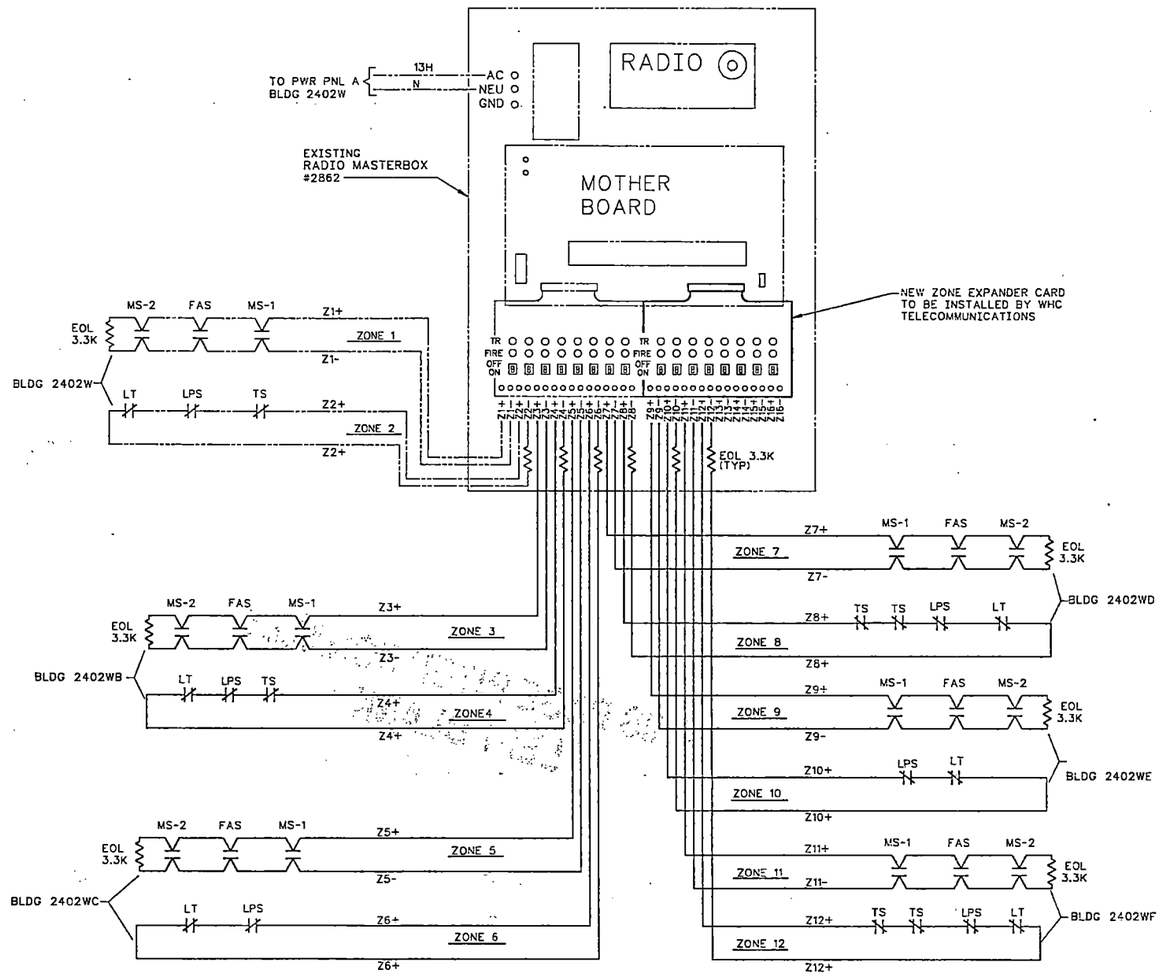

FOR NOTES AND LEGEND, SEE DWG H-2-80740 SH 1

FIRE ALARM WIRING DIAGRAM

NUMBER	TITLE
H-2-80737A	DRAWING LIST

DRAWING TRACEABILITY LIST

NUMBER	TITLE
	REFERENCES

NEXT USED ON

REV. NO.	DESCRIPTION	BY	DATE	APPROVALS
1	AS-BUILT FOR PROJ W-033	LDS	8/5/00	KCA 8/5/00

REVISIONS

CAD FILE B0E0741A CAD CODE 2JJIBMACD2:10.0:NN

IMPACT LEVEL 3 ECT # 114725

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

DRAWN	C.MCGOUGH	4-29-85
CHECKED	AG MINISTER	4-29-85
LEAD DWG	AG MINISTER	4-29-85
SIZE WGR		
SAFETY	LE SMITH	4-29-85
ENGR	HP RAY	4-29-85
DR	JE BREED	4-29-85
REVIEW	FK HAMADA	5-2-85
APPROVED FOR IMPLEMENTATION BY	RL WOYTA	
FOR	W-C	DATE 5-24-85

M FIRE PROTECTION FIRE ALARM SYS WIRING DIAGRAM

PROJECT RADIOACTIVE MIXED WASTE STOR FAC

SIZE	BLDG NO.	INDEX NO.	DWG NO.	REV NO.
F	124C2W	7702	H-2-80741	1

SCALE NONE LAYOUT NO. CROSS:11,12,13,14 SHEET 1 of 2

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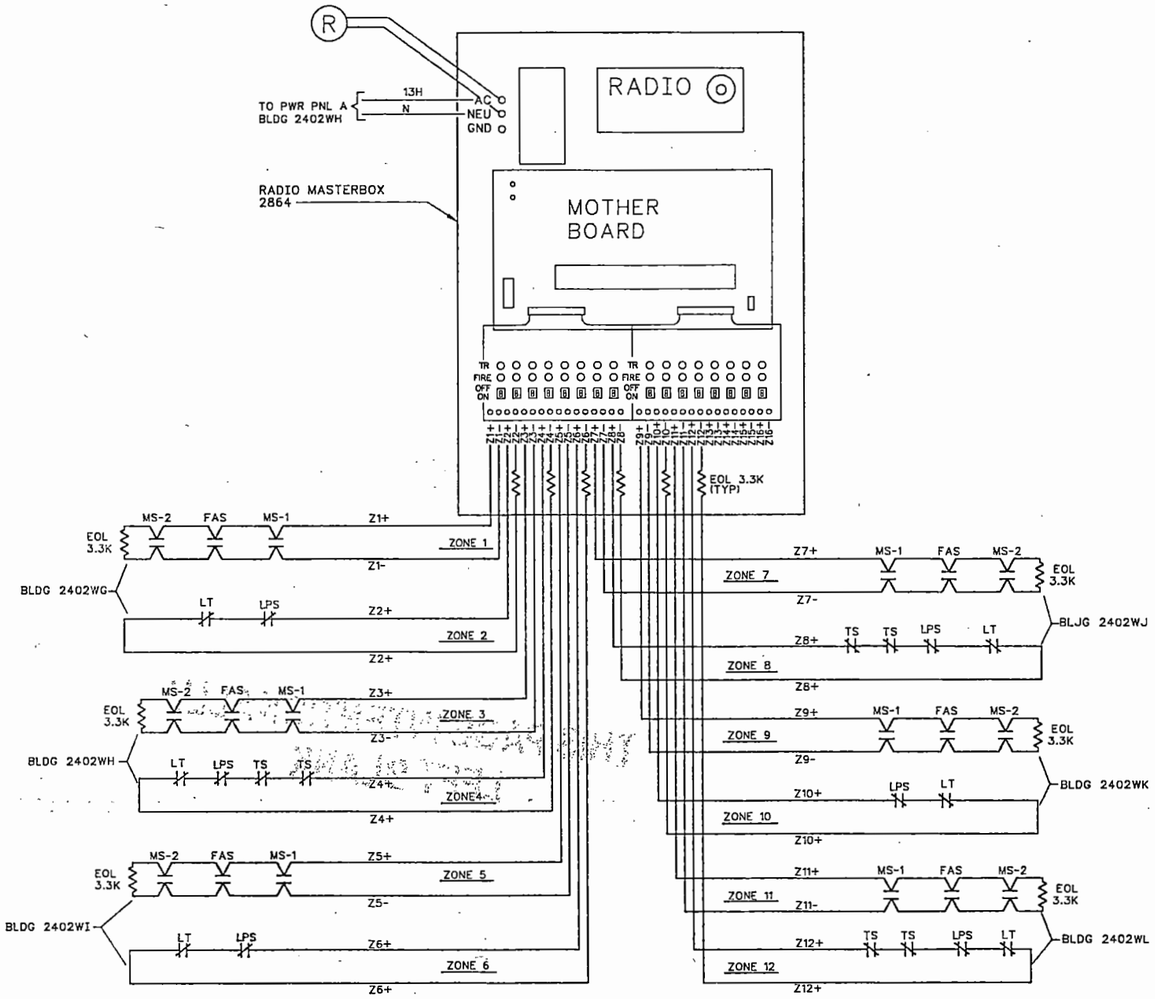

FOR NOTES AND LEGEND, SEE DWG H-2-80740 SH 1

FIRE ALARM WIRING DIAGRAM

NUMBER	TITLE	REFERENCES
DRAWING TRACEABILITY LIST		NEXT USED ON
H-2-80737	DRAWING LIST	

REV NO.	DESCRIPTION	BY	DATE	APPROVALS
1	AS-BUILT FOR PROJ W-033	LDS	5-30-93	

REVISIONS

CAD FILE 80807418 CAD CODE 2J:IBM:ACD2:10.0:NN

IMPACT LEVEL 3 EDT # 114725

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

DRAWN C. MCGOUGH
CHECKED AG MINISTER
LEAD ENGR AG MINISTER
SAFETY LE SMITH
ENVIR HP RAY
DA JE BREED
RD-MECH FK HAMADA
APPROVED FOR IMPLEMENTATION BY R. MOXLEY FOR WHC DATE 5-24-89

M FIRE PROTECTION ALARM SYS WIRING DIAGRAM

PROJECT RADIOACTIVE MIXED WASTE STORAGE FACILITIES

SIZE	BLDG NO.	SHEET NO.	DWG NO.	REV NO.
F	2402W	7702	H-2-80741	1

SCALE SHOWN SHEET 2 OF 2

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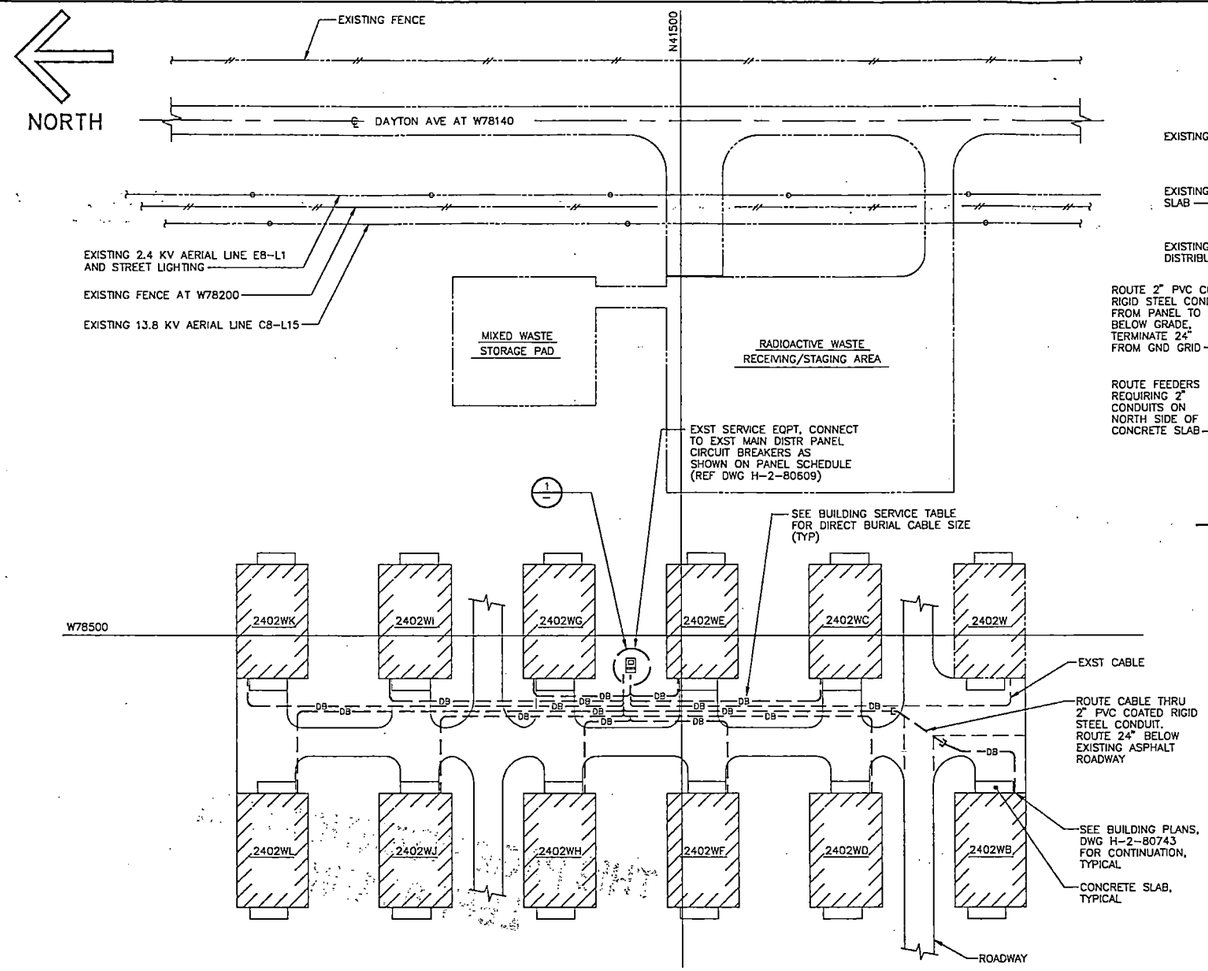
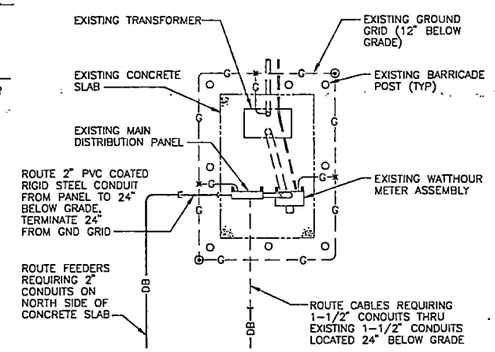


SITE PLAN

SCALE: 1" = 40'-0"



PLAN-SERVICE EQPT (1)

SCALE: 1/4" = 1'-0"

ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION
	EXISTING CONDUIT, STRUCTURE OR EQUIPMENT
	EXPOSED CONDUIT, HATCH MARKS INDICATE QUANTITY OF NUMBER 12 AWG CONDUCTORS IN 1/2" CONDUIT. CONDUITS UNMARKED ARE 1/2" WITH 2#12 CONDUCTORS
	FLEXIBLE METAL CONDUIT
—G—	GROUND CONDUCTOR
—DB—	DIRECT BURIAL CABLE
A-2,4,6	CONDUIT HOMERUN TO PANEL AND CIRCUITS AS SHOWN
3#10,3/4"C	CONDUCTOR/CONDUIT DESIGNATION, 3#10, 3/4" CONDUIT SHOWN
12	DUPLEX RECEPTACLE, 120 VOLT, 15 AMP, 2P, 3W, NEMA TYPE 5-15R. NUMBER DENOTES CIRCUIT. SURFACE MOUNT AT 4'-0" UNLESS NOTED OTHERWISE
7	DUPLEX GFI RECEPTACLE, 120 VOLT, 15 AMP, 2P, 3W, NEMA TYPE 5-15R. NUMBER DENOTES CIRCUIT. SURFACE MOUNT AT 4'-0" UNLESS NOTED OTHERWISE
	RECEPTACLE FOR CONNECTION OF CONTINUOUS AIR MONITOR TO RADIATION ALARM LIGHT
J	JUNCTION BOX
T	THERMOSTAT BACKBOX, SURFACE MOUNT AT 5'-0"
Sa	SINGLE POLE TOGGLE SWITCH, 277 VOLT, 20 AMP, LOWER CASE LETTER DENOTES CONTROLLED EQUIPMENT. SURFACE MOUNT AT 4'-6" ON EXTERIOR OF BUILDING
41 A e	FLUORESCENT LIGHTING FIXTURE, LETTER INDICATES TYPE, TYPE A, CIRCUIT 41, SWITCH e SHOWN, MOUNT AT 18'-0"
	INCANDESCENT LIGHTING FIXTURE, LETTER INDICATES TYPE, SURFACE MOUNT ON CEILING
H	LOW PRESSURE SODIUM LIGHTING FIXTURE, MOUNT AT 8'-0"
R	RADIATION ALARM LIGHT, MOUNT AT 10'-0"
	EMERGENCY LIGHTING FIXTURE, NUMBER INDICATES QUANTITY OF LAMPS, ARROWS INDICATE BEAM DIRECTION. MOUNT AT 14'-0"
	EXIT LIGHTING FIXTURE, MOUNT ABOVE DOOR
	LIGHTING PANEL
M	MOTOR
	DISCONNECT SWITCH, MOUNT AT 5'-0"
	PUSHBUTTON CONTROL STATION, MOUNT AT 5'-0"

GENERAL NOTES

1. SEE CONSTRUCTION SPECIFICATION W-033-C2 FOR MATERIAL DESCRIPTION AND INSTALLATION INSTRUCTIONS.
2. DIRECT BURIAL CABLES SHALL BE ROUTED 24"(MIN) BELOW GRADE AND HAVE SAND ENCASEMENT, WOOD PROTECTIVE COVER AND PLASTIC MARKER SHEET PER SECTION A, DWG H-2-80743 AND THE SPECIFICATIONS.
3. UPDATE THE MAIN DISTRIBUTION PANEL DIRECTORY INDICATING THE BUILDING NUMBERS SHOWN IN PANEL SCHEDULE.

PANELBOARD MAIN DISTR PANEL

VOLTS 120/240 VOLTS, 1PH, 3W

400 AMP MAIN BREAKER
400 AMP BUSSING

NEMA TYPE 3R ENCLOSURE

CKT	LOAD DESCRIPTION	VA	BRKR	BRKR	VA	LOAD DESCRIPTION	CKT
1	BUILDING 2402W	4630	50/2	100/2	7566	BUILDING 2402WB	2
3		5000			7712		4
5	BUILDING 2402WC	7712	100/2	100/2	7712	BUILDING 2402WD	6
7		7566			7566		8
9	BUILDING 2402WE	7566	100/2	100/2	7566	BUILDING 2402WF	10
11		7712			7712		12
13	BUILDING 2402WG	7712	100/2	100/2	7862	BUILDING 2402WH	14
15		7566			7566		16
17	BUILDING 2402WI	7566	100/2	100/2	7566	BUILDING 2402WJ	18
19		7712			7712		20
21	BUILDING 2402WK	7712	100/2	100/2	7712	BUILDING 2402WL	22
23		7566			7566		24
25	SPACE	—	—	—	—	SPACE	26
27	SPACE	—	—	—	—	SPACE	28
29	SPACE	—	—	—	—	SPACE	30

TOTAL CONNECTED LOAD = 177,838 VA
HOT NO. 1 = 88,882 VA
HOT NO. 2 = 88,956 VA

REMARKS

NOTE: REPLACE 60 AMP, 2 POLE CIRCUIT BREAKERS IN CIRCUITS 2-4, 5-7, 6-8, 9-11 AND 10-12 WITH CIRCUIT BREAKERS AS SHOWN. ADD CIRCUIT BREAKERS FOR CIRCUITS 13-15, 14-16, 17-19, 18-20, 21-23 AND 22-24 AS SHOWN. INTERCHANGE HOT NO. 1 AND HOT NO. 2 SERVICE CONDUCTORS FOR BUILDINGS 2402WC, 2402WD, 2402WG, 2402WH, 2402WK AND 2402WL AS SHOWN ABOVE TO MORE EVENLY BALANCE THE LOADS ON THE MAIN DISTRIBUTION PANEL.

BUILDING SERVICE TABLE

BUILDING NUMBER	CONDUCTOR SIZE	CONDUIT SIZE (MIN)	REMARKS
2402WB	3/C #2/0	2"	
2402WC	3/C #2	1-1/2"	
2402WD	3/C #1	2"	
2402WE	3/C #4	1-1/2"	
2402WF	3/C #2	1-1/2"	
2402WG	3/C #4	1-1/2"	
2402WH	3/C #4	1-1/2"	
2402WI	3/C #1	2"	
2402WJ	3/C #1	2"	
2402WK	3/C #1/0	2"	
2402WL	3/C #1/0	2"	

NUMBER	TITLE	NUMBER	TITLE	REFERENCES
		H-2-80737	DRAWING LIST	

DRAWING TRACEABILITY LIST | NEXT USED ON

REV	BY-DATE	BY-DATE	REV BY DATE	DESCRIPTION
R1			LDS 6-18	AS-BUILT FOR PROJ W-033
	WHC APPROVAL	KEH APPROVAL		

REVISIONS

COMMENT REVIEW

TUPACT LEVEL 3 | EDT # 114725

WHC APPROVAL — BY RL VOXIN — DATE 5-24-90

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

PROJ ENGR FK HAYADA 1-25-89
LEA JE BREED 1-25-89
APPROVED BY HP RAY 1-25-89
SAFETY AG MINSTER 1-25-89
APPROVED BY LE ROBBINS 1-25-89
CHECKED BY RR HAZELBAKER 1-25-89
DRAWN BY R. C. SAVARD 11-13-1958
DESIGNED BY R. C. SAVARD 11-13-1958

M ELECTRICAL SITE PLAN, SYMBOL LIST & SCHEDULE

PROJECT TITLE: RADIOACTIVE MIXED WASTE STORAGE FACILITIES

AREA W-033,34,35,36,37 | WO C82510 THRU C82514 | JOB ——

W-067,68,69,70,71,72 | SCALE SHOWN | BLDG 2402W | INDEX 8001

CAD FILE B080742A | DRAWING NUMBER H-2-80742 | SHEET 1 | OF 1 | REV 1

CAD PROG AUTOCAD 2.18 DOS

KEHCAD 1 30001E

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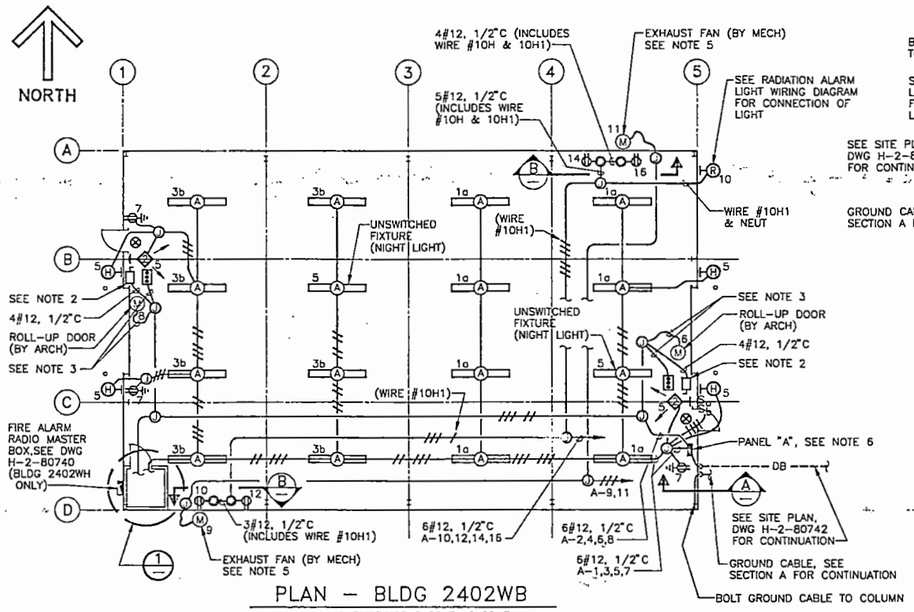
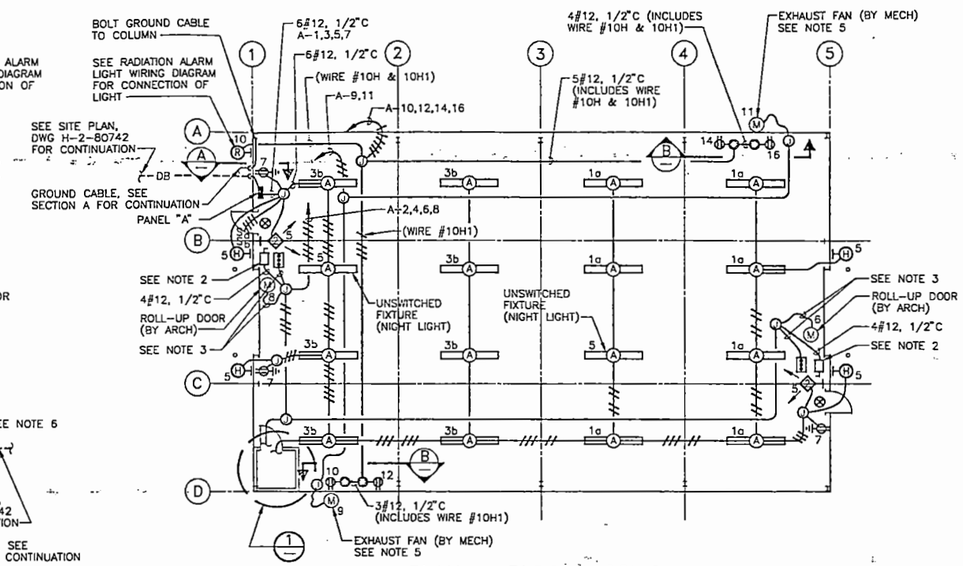


PLAN – BLDG 2402WB

TYPICAL FOR BUILDINGS 2402WD, 2402WF, 2402WH, 2402WJ AND 2402WL

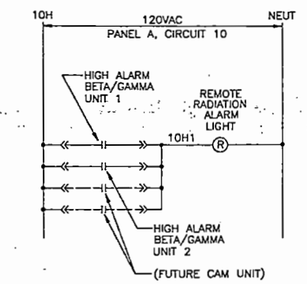
SCALE: 1/8" = 1'-0"



PLAN – BLDG 2402WC

TYPICAL FOR BUILDINGS 2402WE, 2402WG, 2402WI AND 2402WK

SCALE: 1/8" = 1'-0"



RADIATION ALARM LIGHT WIRING DIAGRAM

NOTES

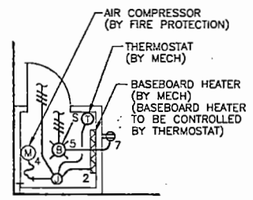
1. SEE DRAWING H-2-80742 FOR ELECTRICAL SYMBOL LIST AND GENERAL NOTES.
2. MOUNT NAMEPLATE ON DISC SWITCH ENGRAVED "ROLL-UP DOOR", 1/4" HIGH CHARACTERS. INSTALL 15 AMP FUSE IN DISCONNECT SWITCH.
3. PROVIDE QUANTITY OF CONDUCTORS AND CONNECT CIRCUITRY IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS. ROLL-UP DOORS ARE PROVIDED WITH A 24 VOLT, 3 BUTTON PUSHBUTTON CONTROL STATION AND A THERMALLY PROTECTED MOTOR (BUILT-IN OVERLOAD PROTECTION).
4. MOUNT NAMEPLATE ON PANEL COVER ENGRAVED ON TWO LINES; FIRST LINE: "PANEL A", 7/16" HIGH CHARACTERS, SECOND LINE: "120/240 VOLT, 1PHASE, 3 WIRE", 1/4" HIGH CHARACTERS.
5. EXHAUST FANS ARE PROVIDED WITH BUILT-IN THERMAL OVERLOAD AND DISCONNECT SWITCH.
6. PANEL "A" IS TYPICAL FOR BUILDINGS 2402WB, 2402WC, 2402WD, 2402WE, 2402WF, 2402WG, 2402WI, 2402WJ, 2402WK AND 2402WL. BUILDING 2402WH IS IDENTICAL EXCEPT THAT CIRCUIT NUMBER 19 IS A 20 AMP, 1 POLE BREAKER FOR THE FIRE ALARM SYSTEM MASTER BOX AND ITS LOCATOR LIGHT (SEE DRAWING H-2-80740). LOADS FOR THE 2402WH BUILDING POWER PANEL CHANGE AS FOLLOWS: CIRCUIT NUMBER 19 LOAD CHANGES FROM 0 VA TO 150 VA. HOT NUMBER 1 LOAD REMAINS AT 7566 VA. HOT NUMBER 2 LOAD CHANGES FROM 7712 VA TO 7862 VA. THE TOTAL CONNECTED LOAD CHANGES FROM 15,278 VA TO 15,428 VA.

PANELBOARD A — VOLTS 120/240V, 1PH, 3W — LOCATION

100 AMP BUSSING — ☒ MAIN BRKR 90 AMP — ☒ SURFACE MOUNTED — ☐ TOP FEED
100 AMP NEUTRAL — ☐ MAIN LUGS ONLY — ☐ FLUSH MOUNTED — ☒ BOT FEED

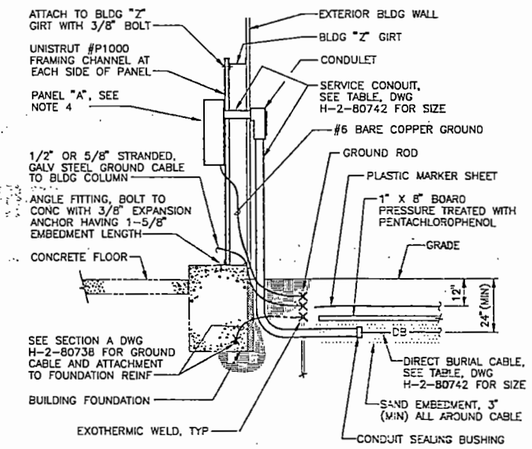
CKT	LOAD DESCRIPTION	VA	BRKR		BRKR	VA	LOAD DESCRIPTION	CKT
1	EAST LIGHTS	1770	20/1		20/1	750	BASEBOARD HTR	2
3	WEST LIGHTS	1770	20/1		20/1	1127	AIR COMPR, 1/2 HP	4
5	ENCL, EXT & NIGHT LTG	876	20/1		20/1	1127	EAST ROLL-UP DOOR, 1/2 HP	6
7	RECEPTACLES	720	20/1		20/1	1127	WEST ROLL-UP DOOR, 1/2 HP	8
9	SW EXH FAN- 1/3HP	828	20/1		20/1	1145	SW CAM RCPT & ALM LT	10
11	NE EXH FAN- 1/3HP	828	20/1		20/1	1070	SW CAM RECEPTACLE	12
13	SPARE	0	20/1		20/1	1070	SE CAM RECEPTACLE	14
15	SPARE	0	20/1		20/1	1070	SE CAM RECEPTACLE	16
17	SPACE	—	—		—	—	SPACE	18
19	SPACE	—	—		—	—	SPACE	20

TOTAL CONNECTED LOAD = 15278 VA — REMARKS SEE NOTE 6
HOT NO. 1 = 7566 VA
HOT NO. 2 = 7712 VA

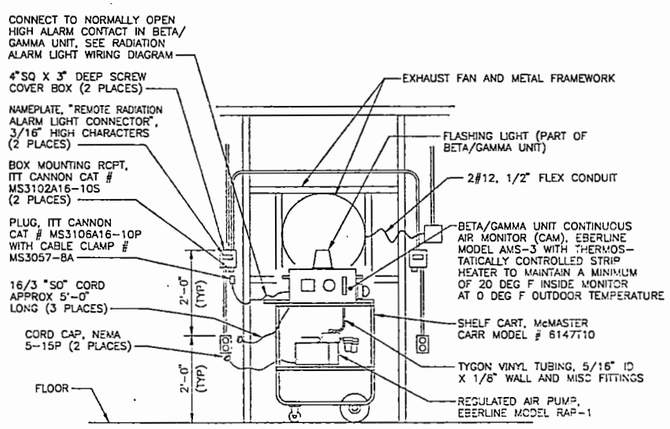


DETAIL

SCALE: 1/4" = 1'-0"



SCALE: 1/2"=1'-0"



BETA/GAMMA CAM ASSEMBLY

SCALE: NONE

NUMBER	TITLE
H-2-80737A	DRAWING LIST

DRAWING TRACEABILITY LIST — REFERENCES — NEXT USED ON

REV	DATE	BY	DESCRIPTION
1	6-29-90		AS-BUILT FOR PROJ W-033

REVISIONS — COMMENT REVIEW — WHC APPROVAL — KEW APPROVAL

IMPACT LEVEL 3 — EDT # 114725

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE

KAISER ENGINEERS HANFORD COMPANY

M ELECTRICAL PLANS, DIAGRAM AND DETAILS

PROJECT TITLE: RADIOACTIVE MIXED WASTE STORAGE FACILITIES

CRD510 THRU CRD514 — SCALE SHOWN — BLDG 2402W — INDEX 7301

DRAWING NUMBER H-2-80743 — SHEET 1 — OF 1 — REV 1

KEHCAD 1 30001E

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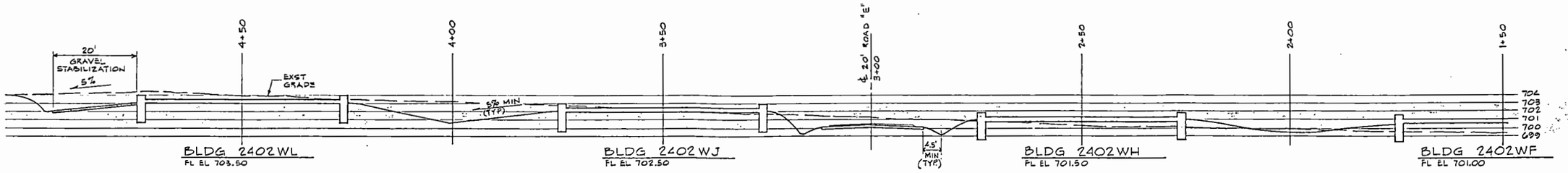

SECTION (A) H-2-80737
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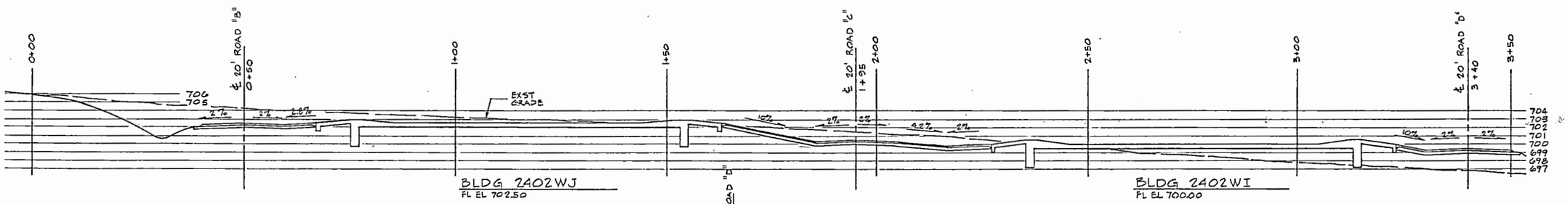

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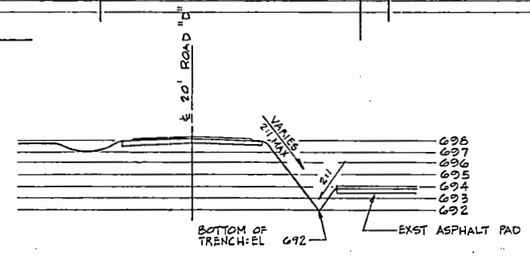

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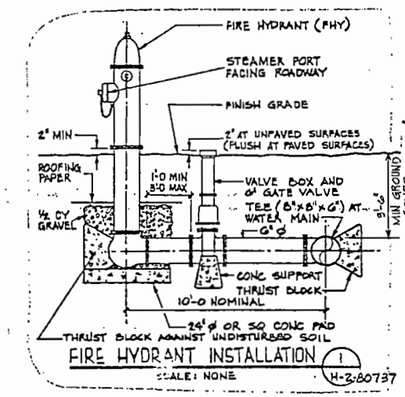

FIRE HYDRANT INSTALLATION (1) H-2-80737
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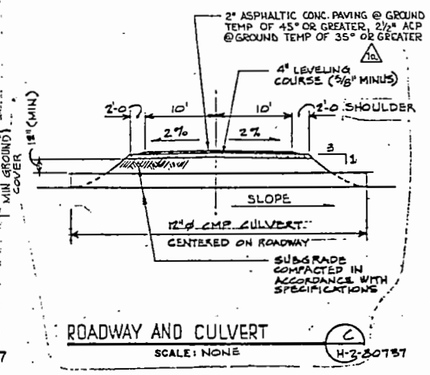

ROADWAY AND CULVERT (C) H-2-80737
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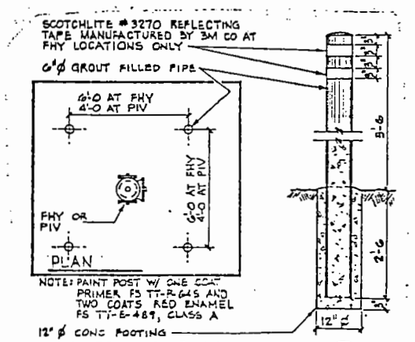

NOTE: PAINT POST W/ ONE COAT PRIMER FS TT-R-645 AND TWO COATS RED ENAMEL FS TT-E-489, CLASS A
12" ϕ CONC FOOTING

BARRICADE POST (2) H-2-80737
SCALE: NONE

CONFIDENCE LEVEL B:
CRITICAL DIMENSIONS ARE VERIFIED WITHIN SPECIFIED DRAWING TOLERANCES. CONCEALED PIPING AND/OR WIRING IS NOT VERIFIED, BUT THERE IS REASON TO BELIEVE THE DRAWING TO BE CORRECT.

OFFICIAL RELEASE BY WHC DATE JUN 06 1989

NUMBER	TITLE
DRAWING TRACEABILITY LIST	

DRAWING LIST NUMBER	TITLE
H-2-80737	REFERENCES
NEXT USED ON	

REV	DESCRIPTION
2	REV. PER ECN 153776, F.V.
1	AS-BUILT FOR PROJ H-033 ECN H-033-26 Z D1

REVISIONS

BY-DATE	KY-DATE	REV BY DATE
WHC APPROVAL	KEH APPROVAL	

COMMENT REVIEW

MICROFILMED

EDT# 119725

		DATE
WHC APPROVAL	BY D E Marvin	5/21/89
PROJ ENGR		5/21/89
CIVIL	BY J E Breed	5/21/89
APPROVED BY		5/21/89
SAFETY	BY	5/21/89
APPROVED BY		5/21/89
CHECKED BY		5/21/89
DRAWN BY	R E Erlich	12-17-88
DESIGNED BY	L GADDIS	

U.S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

CIVIL
SECTIONS & DETAILS
RMW GRADING & ROADWAYS

PROJECT TITLE: RADIOACTIVE MIXED WASTE STORAGE FACILITIES

PROJ W-033 THRU W-037, W-067-72 | WO CA0340 THRU CA0344 | JOB NA

SCALE: NOTED | BLDG: 2402W | INDEX: 0200

DRAWING NUMBER: H-2-80744 | SHEET 1 OF 1 | REV 2

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PROJECT TITLE:

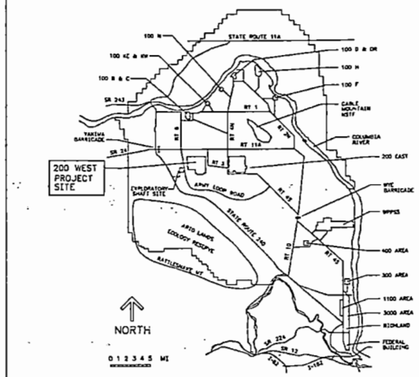
W-016H RMW STORAGE FACILITY PHASES 2, 3, & 4

FOR:

WESTINGHOUSE HANFORD COMPANY

BY:

KAISER ENGINEERS HANFORD



HANFORD AREA MAP

DRAWING LIST

DRAWING LIST

DRAWING NO.	INDEX NO.	BLDG NO.	TITLE
H-2-80894	0000	2403-WB-WC-WD	DRAWING LIST

CIVIL

DRAWING NO.	INDEX NO.	BLDG NO.	TITLE
H-2-80895 SH 1	0110	2403-WB-WC-WD	CIVIL SITE PLAN & DET
H-2-80895 SH 2	0301	200W	CIVIL SITE PLAN & DET 12" SW PLAN & PROFILE
H-2-80895 SH 3	0301	200W	CIVIL SITE PLAN & DET 12" SW PLAN PROFILE & DET
H-2-80896	0110	2403-WB-WC-WD	CIVIL ENLARGED SITE PLAN & DET

ARCHITECTURAL

DRAWING NO.	INDEX NO.	BLDG NO.	TITLE
H-2-80897	0800	2403-WO	ARCHITECTURAL FLOOR PLAN & SCHED
H-2-80898	0800	2403-WB-WC	ARCHITECTURAL PLAN, SECT, EL & SCHED
H-2-80899	0800	2403-WD	ARCHITECTURAL ELEVATIONS & SECT
H-2-80900	0800	2403-WB-WC-WD	ARCHITECTURAL PLAN, SECT & DETAILS

STRUCTURAL

DRAWING NO.	INDEX NO.	BLDG NO.	TITLE
H-2-80901 SH1	0900	2403-WB-WC-WD	STRL FOUNDATION PLAN & DETAILS
H-2-80901 SH2	0900	2403-WD	STRL FOUNDATION PLAN & DETAILS

FIRE PROTECTION

DRAWING NO.	INDEX NO.	BLDG NO.	TITLE
H-2-80902 SH1	7701	2403-WB	FIRE PROTECTION ALARM SYSTEM PLAN, SECTIONS & DETAILS
H-2-80902 SH2	7701	2403-WC	FIRE PROTECTION ALARM SYSTEM PLAN, SECTIONS & DETAILS
H-2-80902 SH3	7701	2403-WD	FIRE PROTECTION ALARM SYSTEM PLAN, SECTIONS & DETAILS
H-2-80903 SH1	7702	2403-WB	FIRE PROTECTION ALARM SYSTEM WIRING DIAGRAM
H-2-80903 SH2	7702	2403-WC	FIRE PROTECTION ALARM SYSTEM WIRING DIAGRAM
H-2-80903 SH3	7702	2403-WD	FIRE PROTECTION ALARM SYSTEM WIRING DIAGRAM

HEATING, VENTILATION AND AIR CONDITIONING

DRAWING NO.	INDEX NO.	BLDG NO.	TITLE
H-2-80904 SH1	8900	2403-WD	HVAC PLAN, SECT & DETAILS
H-2-80904 SH2	8900	2403-WC	HVAC PLAN, SECT & DETAILS
H-2-80904 SH3	8900	2403-WB	HVAC PLAN, SECT & DETAILS

INSTRUMENTATION

DRAWING NO.	INDEX NO.	BLDG NO.	TITLE
H-2-80905 SH1	5901	2403-WD	INSTRUMENTATION CAM ENCLOSURE
H-2-80905 SH2	5901	2403-WD	INSTRUMENTATION CAM ENCLOSURE
H-2-80906 SH1	5901/5903	2403-WD	INSTRUMENTATION CAM ALARM, INTCON DIAG & INSTR ENCL
H-2-80906 SH2	5903	2403-WD	INSTRUMENTATION CAM ALARM ELEMENTARY DIAGRAM
H-2-80907 SH1	5901	2403-WC	INSTRUMENTATION CAM ENCLOSURE
H-2-80907 SH2	5901	2403-WC	INSTRUMENTATION CAM ENCLOSURE
H-2-80908 SH1	5901/5903	2403-WC	INSTRUMENTATION CAM ALARM, INTCON DIAG & INSTR ENCL
H-2-80908 SH2	5903	2403-WC	INSTRUMENTATION CAM ALARM ELEMENTARY DIAGRAM
H-2-80909 SH1	5901	2403-WB	INSTRUMENTATION CAM ENCLOSURE
H-2-80909 SH2	5901	2403-WB	INSTRUMENTATION CAM ENCLOSURE
H-2-80910 SH1	5901/5903	2403-WB	INSTRUMENTATION CAM ALARM, INTCON DIAG & INSTR ENCL
H-2-80910 SH2	5903	2403-WB	INSTRUMENTATION CAM ALARM ELEMENTARY DIAGRAM

ELECTRICAL

DRAWING NO.	INDEX NO.	BLDG NO.	TITLE
H-2-80917	7301/7401	2403-WD	ELECTRICAL PLAN
H-2-80918	7301/7401	2403-WB	ELECTRICAL PLAN
H-2-80919	7301/7401	2403-WC	ELECTRICAL PLAN
H-2-80920	7301	2403-WD	ELECTRICAL ELEVATIONS & DETAILS
H-2-80921	7301	2403-WB	ELECTRICAL ELEVATIONS & DETAILS
H-2-80922	7301	2403-WC	ELECTRICAL ELEVATIONS & DETAILS
H-2-80923	7201/7304	2403-WD	ELECTRICAL DIAG-PNLBD SCHEDULE
H-2-80924	7201/7304	2403-WB	ELECTRICAL DIAG-PNLBD SCHEDULE
H-2-80925	7201/7304	2403-WC	ELECTRICAL DIAG-PNLBD SCHEDULE

SPECIFICATIONS

W-016H-C3 CONSTRUCTION SPECIFICATION

ACCEPTANCE TEST PROCEDURES

ATP 4780	CAM ALARM SYSTEM PHASE 2
ATP 4781	CAM ALARM SYSTEM PHASE 3
ATP 4782	CAM ALARM SYSTEM PHASE 4
ATP 4783	FIRE ALARM SYSTEM PHASE 2
ATP 4784	FIRE ALARM SYSTEM PHASE 3
ATP 4785	FIRE ALARM SYSTEM PHASE 4

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

E.A. VICKERY
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8-16-90
Date

NUMBER	TITLE	NUMBER	TITLE
DRAWING TRACEABILITY LIST		REFERENCES	

NEXT USED ON

REVISIONS

REV	DESCRIPTION
1	ECN W016-56 Z DS-8

CAD FILE B0B0894A CAD CODE C:\BMA\CD2\TC.DWN

KEH APPROVALS

PHASE 2, 3 & 4

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

DRAWING LIST

W016H RMW STORAGE FACILITY

SIZE F | CODE 0000 | DWG NO. H-2-80894 | REV NO. 1

SCALE NONE | JOB NO. 09265 | SHEET 1 OF 1

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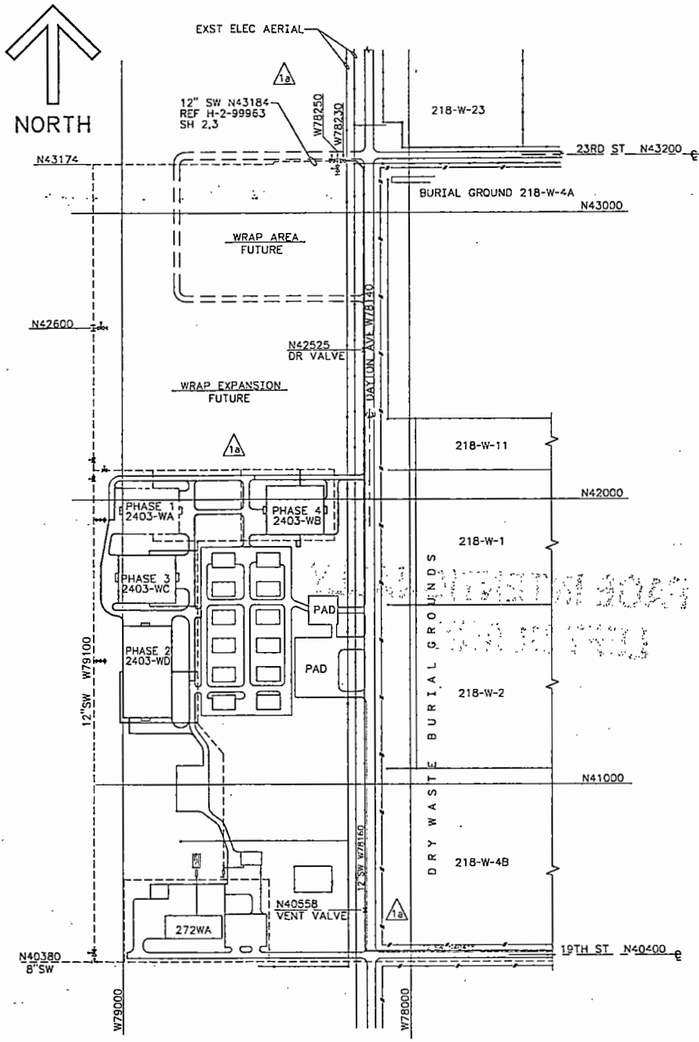
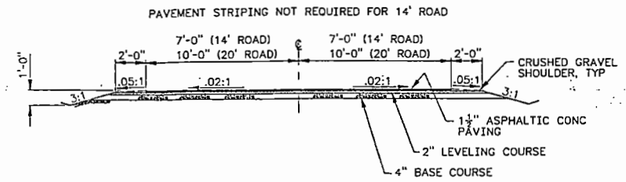


SITE PLAN

SCALE: 1" = 200'



TYP ROAD SECT (A) H-2-80896
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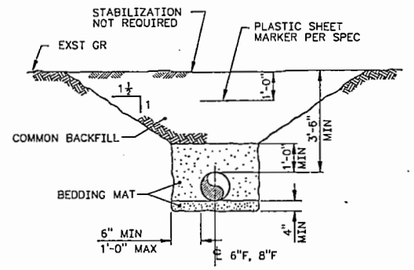

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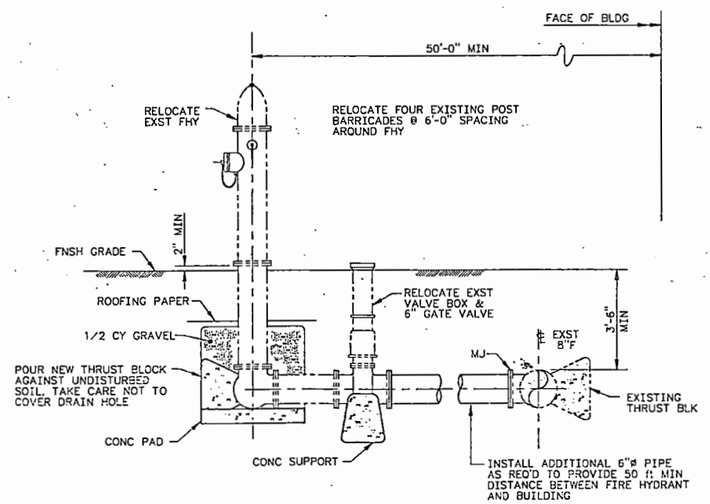

FIRE HYDRANT RELOC (C) H-2-80896
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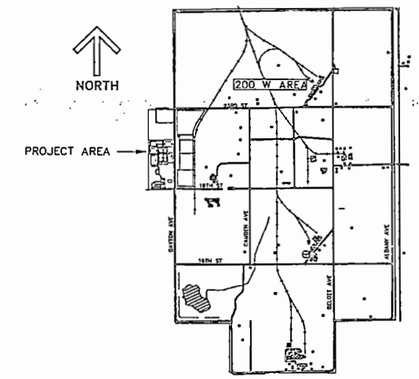

KEY MAP

LEGEND

— — — —	FUTURE WORK	—⊠—	GATE VALVE W/CI BOX
═══	EXISTING ABOVE GROUND WORK	—⊠—	POST INDICATOR VALVE
— — — —	NEW BUILDINGS & UTILITIES	MJ	MECHANICAL JOINT
- - - - - - - -	EXISTING UNDERGROUND UTILITIES	TR →	THRUST RESTRAINT
~~	EXISTING CONTOURS	F	FIRE WATER
— —710— —	NEW CONTOURS	—⊕—	FIRE HYDRANT
RW	RAW WATER	CI	CAST IRON
SW	SANITARY WATER		
E	ELECTRICAL		
FA	FIRE ALARM		

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

REVIEWING OFFICIAL/ADC: E.A. VICHERY

DATE: 8-16-90

PHASE 2, 3, & 4

IMPACT LEVEL 3 | EDT 125914

NUMBER	TITLE	REFERENCES
H-2-80894	DWG LIST	
H-2-99963	DWG LIST/CIVIL SITE PLAN	

DRAWING TRACEABILITY LIST — NEXT USED ON

REV NO.	DESCRIPTION	REV BY	DATE	KEN APPROVALS
1	ECN NO16-55 GENERAL REV	DG FEX 4-91	5-22-91	5/30/91

REVISIONS

CAD FILE BOBCAT9EA | CAD CODE C:\TEM\ACD2:10.0\NN

		DATE
DRAWN	B HOLLENBECK	8-17-90
ENGINEER	CONSELMAN	8-16-90
SAFETY	LUNDGREN	8-17-90
ENGRG	HOLLENBECK	8-22-90
QE	T.C. OTEY	8-17-90
LEAD ENG APPR	A.S. LANGEVIN	8-17-90

APPROVED FOR IMPLEMENTATION BY J.D. HOLLENBAY FOR WHC — DATE 9-27-90

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

CIVIL
SITE PLAN & DET

PROJECT W-016H RMW STORAGE FACILITY

SIZE F | BLDG NO. 2403-WA/WB/WC/WD | FCILITY NO. 0110 | DWG NO. H-2-80895 | REV NO. 1

SCALE SHOWN | JOB NO. CR9265 | SHEET 1 of 3

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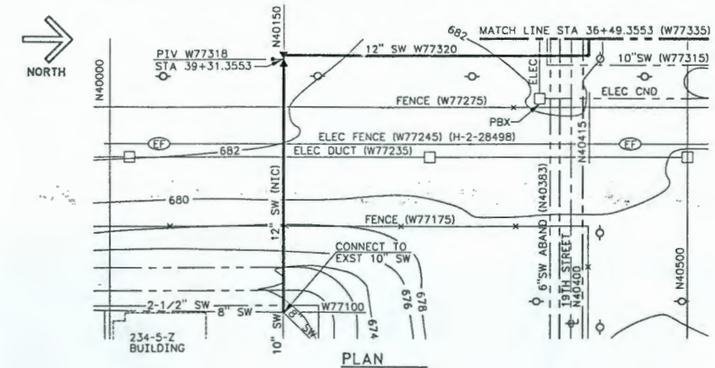

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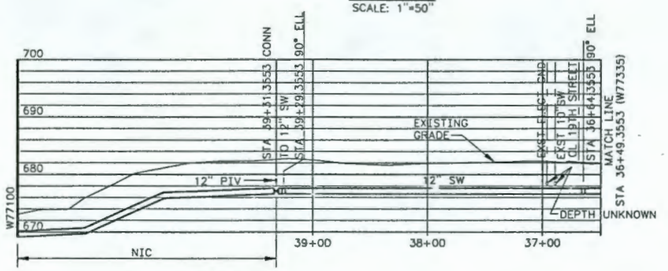

PROFILE
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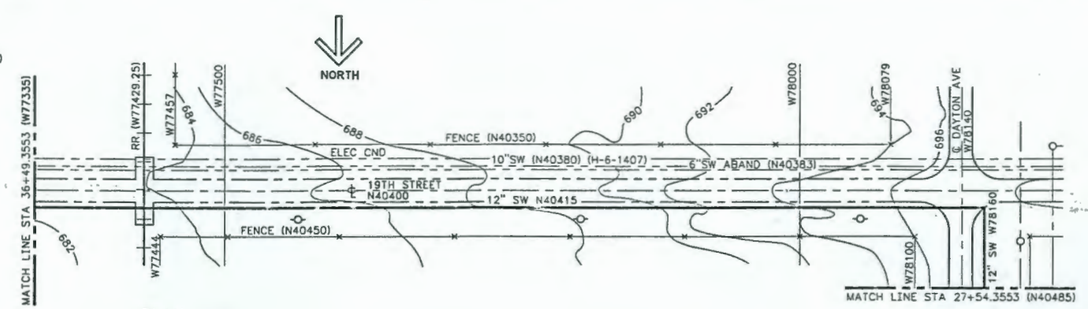
VERT: 1"=10'



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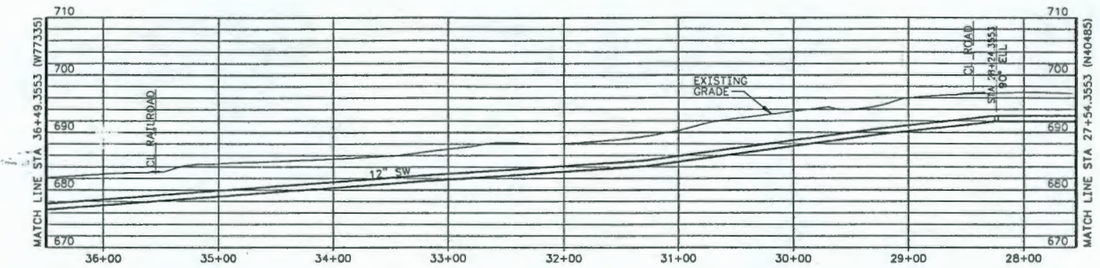

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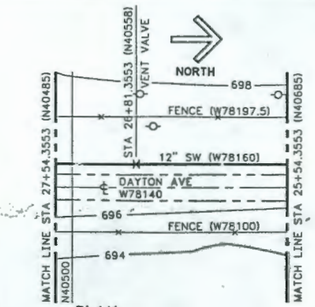

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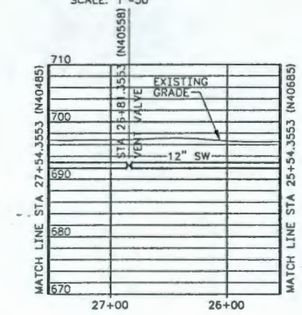

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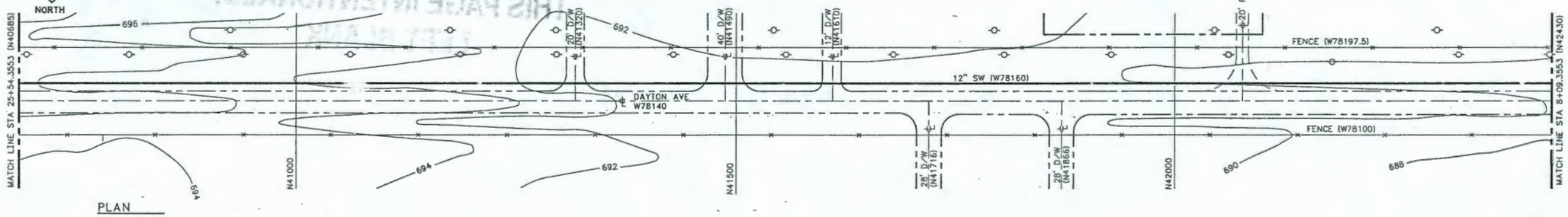

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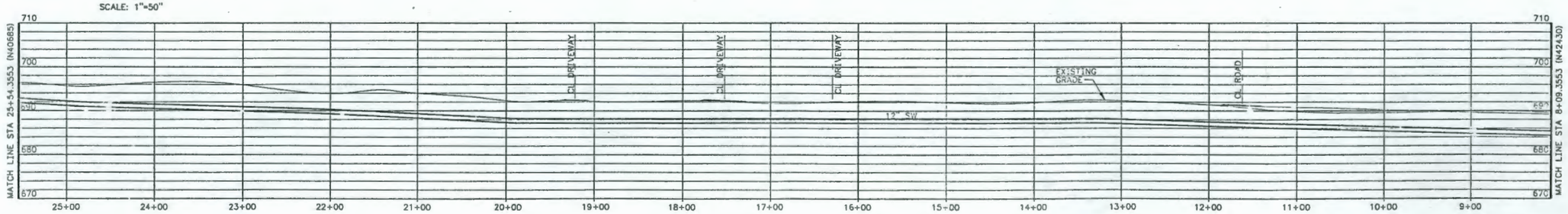

PROFILE
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VERT: 1"=10'

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DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION
REVIEWING OFFICIAL/ADC: E.(.) G.
DATE: 4/22/91

OFFICIAL RELEASE BY WHC
DATE JUN - 6 1991

THIS SHEET ADDED TO REFLECT AS-BUILT CONDITIONS PER ECN WO16-56

100 0 100 200
SCALE IN FEET

NUMBER	TITLE	NUMBER	TITLE
DRAWING TRACEABILITY LIST		REFERENCES	
		NEXT USED ON	

REV NO	DESCRIPTION	REV BY DATE	NEW APPROVALS	APPD FOR IMPLMTN FOR DATE
REVISIONS				

CAD FILE B0808958 CAD CODE 2J:IBM:ACD2:10.0 NN

IMPACT LEVEL 3 | ECN WO16-56

Drawn M. JACOBS 3-21-90
Checked G.J. ZVN 3-21-90
Safety
Engineering
Cost Engineering
Cognizant Engineer

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

CIVIL
SITE PLAN & DETAIL
12"SW PLAN AND PROFILE

PROJECT W-016H RAW STORAGE FACILITY

SIZE	SYSTEM NO	DISCIPLINE	DRAWING NO	REV NO
F	2CCM	0301	H-2-80895	0

SCALE SHOWN JOB NO CR1065 SHEET 2 OF 3

KEHCAD

9212760889

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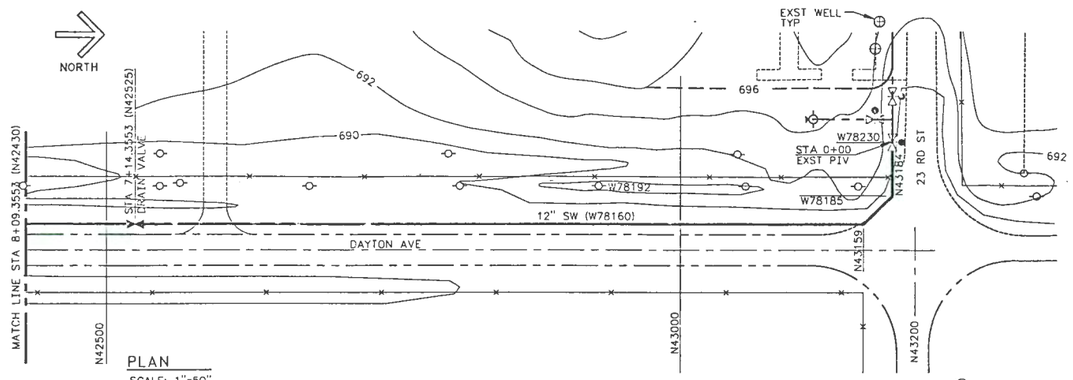

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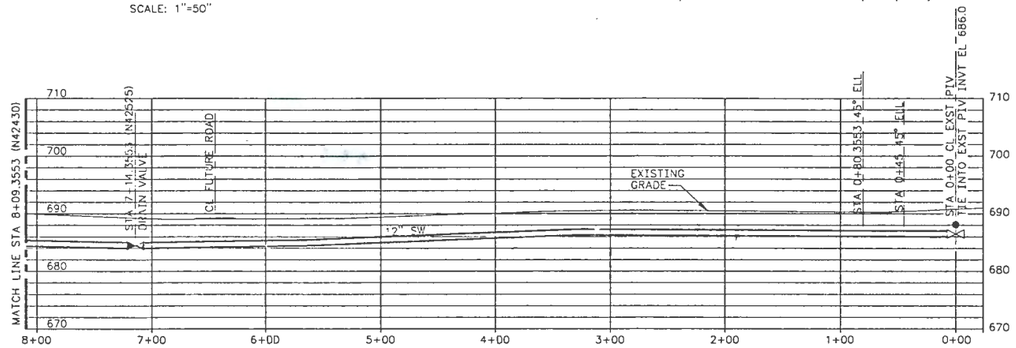

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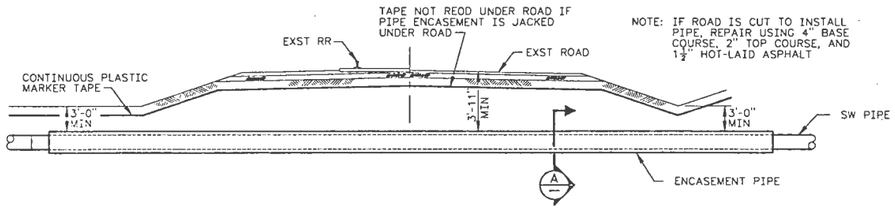

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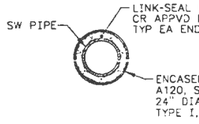

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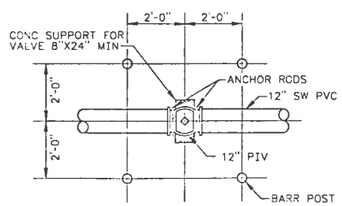

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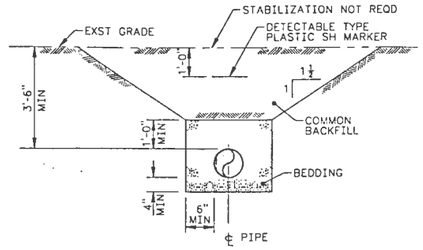

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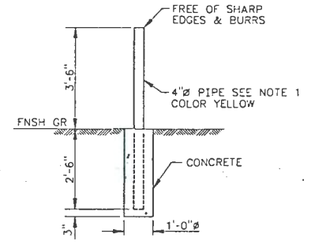

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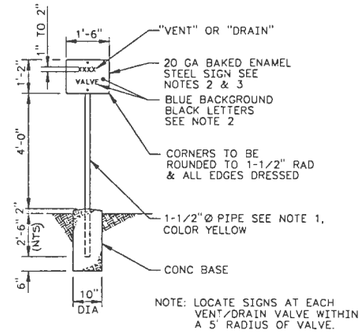

TYP SIGN POST DET
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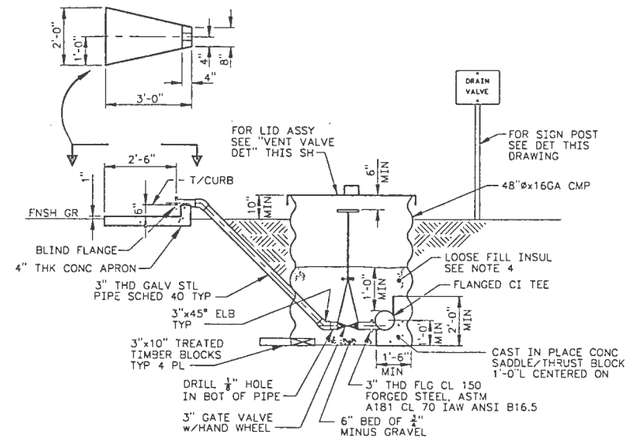
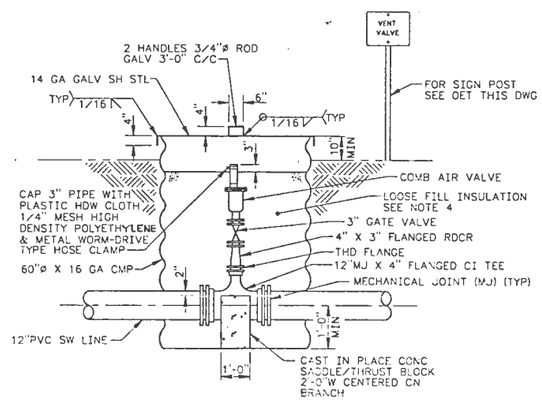


TYP DRAIN VALVE DET
SCALE: NONE



TYP VENT VALVE DET
SCALE: NONE

NOTES

1- PIPE SHALL BE BLACK STEEL, SCH 40, ASTM A53, TYPE E OR S, GRADE A OR B, OR ASTM A106 GRADE A OR B, PAINT IAW SPEC SECT 09900.

2- CHARACTERS SHALL BE CAPITAL, VERT BLOCK TYPE (GOTHIC).

3- MT SIGN USING GALV BOLTS, NUTS & WASHERS, 5/16" MIN.

4- LOOSE FILL INSULATION TO BE VERMICULITE, IAW ASTM C516-80 TYPE II.

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

REVIEWING OFFICIAL/ADC: [signature]
DATE: 5/21/91

OFFICIAL RELEASE BY WHC DATE JUN - 6 1991

THIS SHEET ADDED TO REFLECT AS-BUILT CONDITIONS PER ECN W016-56

IMPACT LEVEL 3	ECN W016-56
DRAWN RC CROSBREYS 3-21-91	U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE KAISER ENGINEERS HANFORD COMPANY
CHECKED	CIVIL
SAFETY	SITE PLAN & DETAIL 12" SW PLAN, PROFILE & DET
ENGR	
	PROJECT W-016 TH RWM STORAGE FACILITY
F 200W 0301	H-2-80895 REV NO 0
SCALE SHOWN	TAB NO CR1065 SHEET 3 OF 3

H-2-81394 CAD LIST

NUMBER	TITLE	REFERENCES	DESCRIPTION	BY	DATE	NEW APPROVALS

DRAWING TRACE & SUBMITTAL LIST — WHAT USED ON — CHANGE DESCRIPTION — CAD SYSTEM: PLUS/HAD 2.0 PC

KEY-CAD

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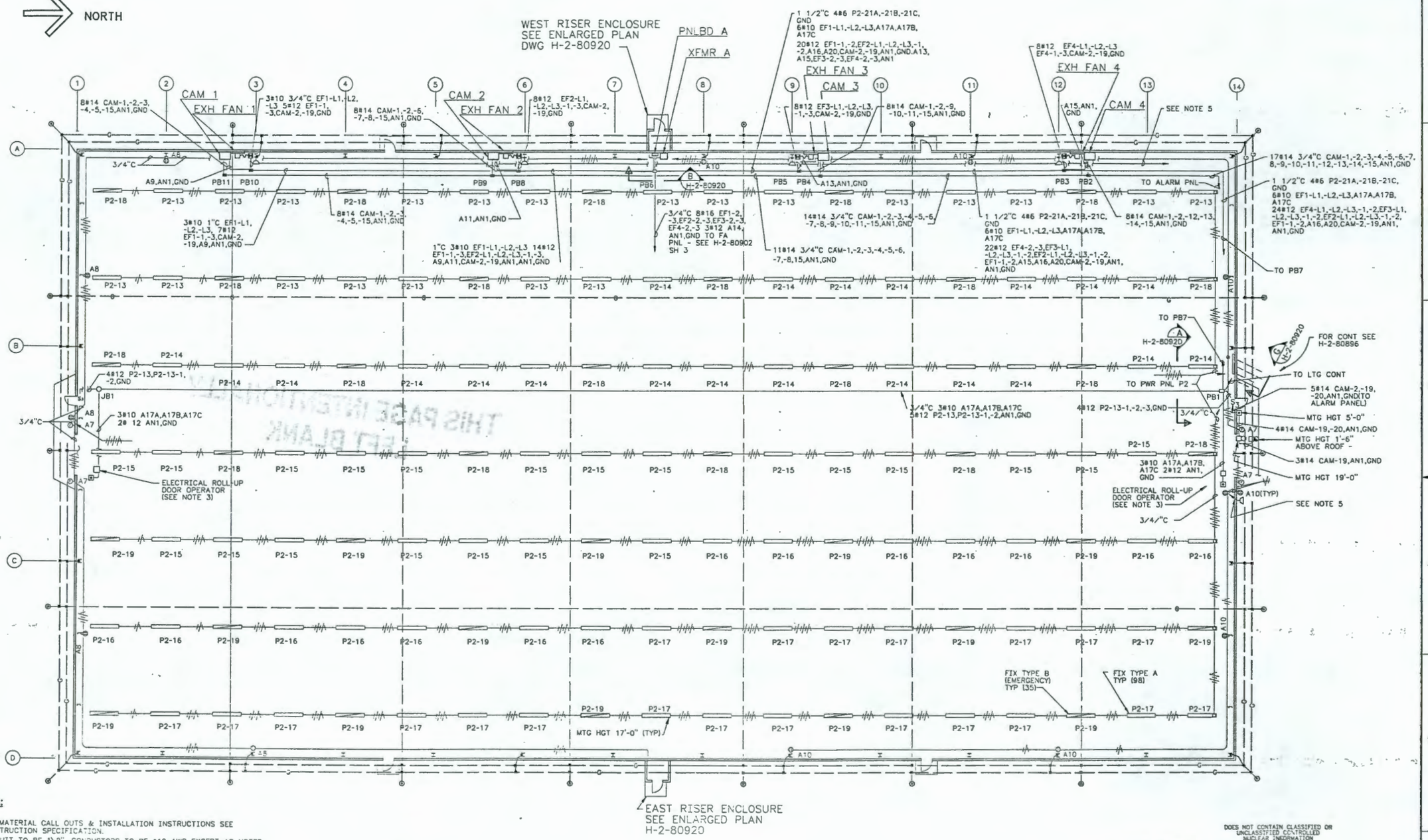

BLDG PLAN
SCALE: 3/32" = 1'-0"

NOTES:

1. FOR MATERIAL CALL OUTS & INSTALLATION INSTRUCTIONS SEE CONSTRUCTION SPECIFICATION.
2. CONDUIT TO BE 1\2", CONDUCTORS TO BE #12 AWG EXCEPT AS NOTED.
3. ELECTRICAL OPERATORS FOR THE ROLL-UP DOORS ARE VENDOR SUPPLIED AND INCLUDE SAFETY INTERLOCKS, LIMIT SWITCHES AND PUSHBUTTON STATION. INSTALLATION SHALL BE AS DIRECTED BY DOOR VENDOR INSTALLATION INSTRUCTIONS WITH DOOR CONTROL PUSHBUTTON STATIONS MOUNTED 5'-0" ABOVE THE FLOOR IMMEDIATELY ADJACENT TO THE DOOR.
4. SEE H-2-80906 SH 2 FOR WIRING OF EXHAUST FAN FIRE ALARM SYSTEM INTERLOCK CIRCUITS.
5. INTERCONNECT 5 SPKRS WITH 2#18 AWG SPKR WIRES (TO PAGING SYS PNL)
6. LIGHTING CIRCUITS A3,A5,A8,A10 ARE TO BE #10 AWG CONDUCTORS.

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

OFFICIAL RELEASE BY WHC DATE OCT - 4 1990

PHASE 2

H-7-1275	ELECTRICAL SYMBOL LIST
H-2-80894	DRAWING LIST

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL PLAN

PROJECT W-016H RWM STORAGE FACILITY

F | 2403 -WD | 7301 7422 | H-2-80917 | 0

SCALE 3/32" = 1'-0" | CRD255 | SHEET 1 OF 1

KEHCAO

9 2 1 2 7 7 0 9 0 7

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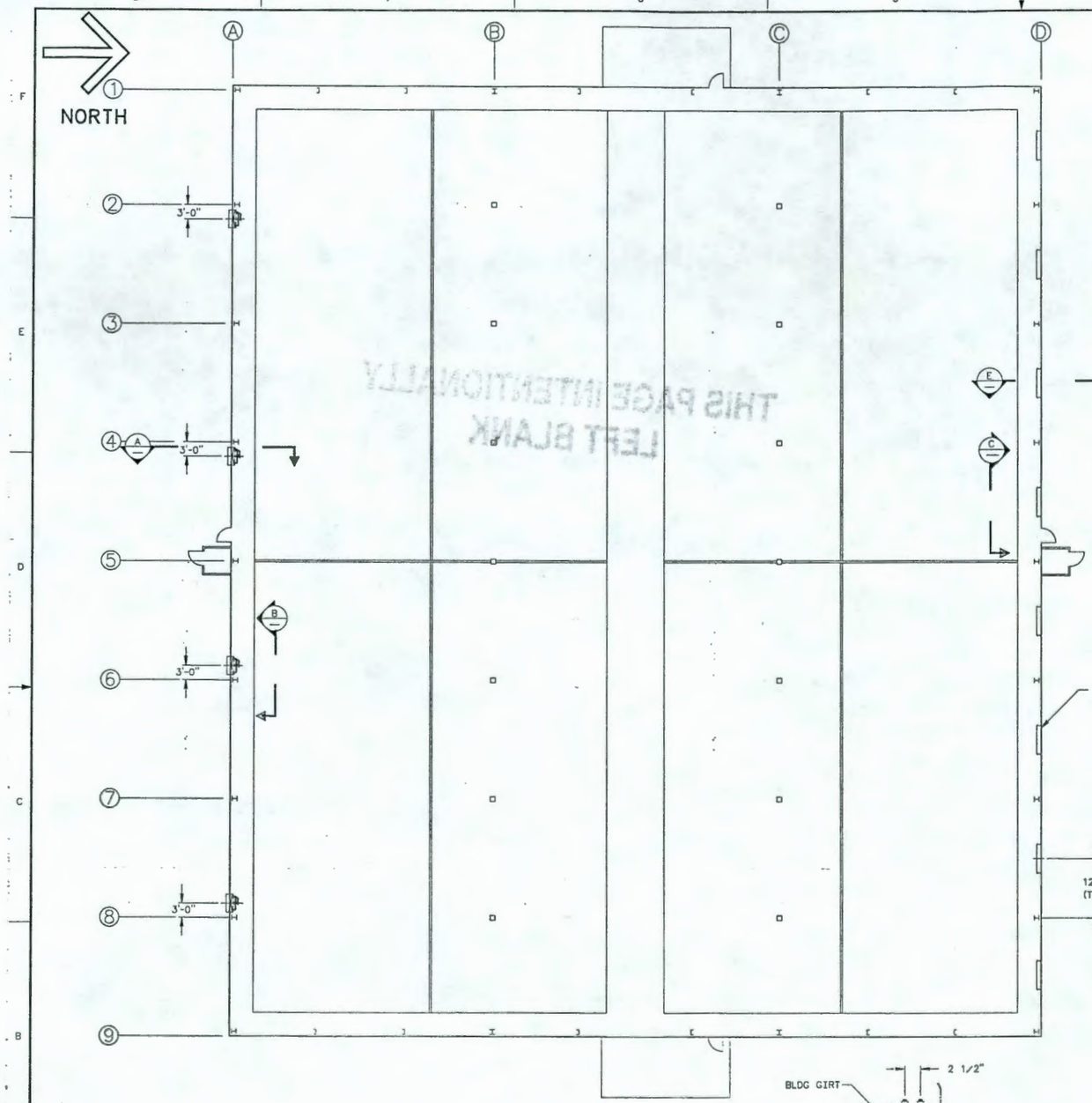
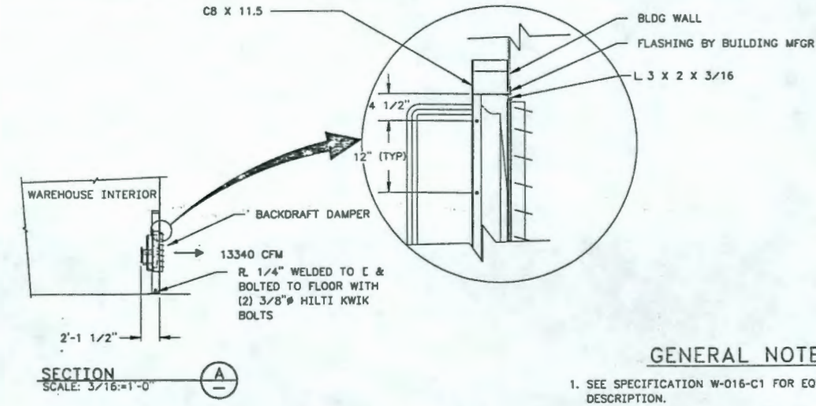


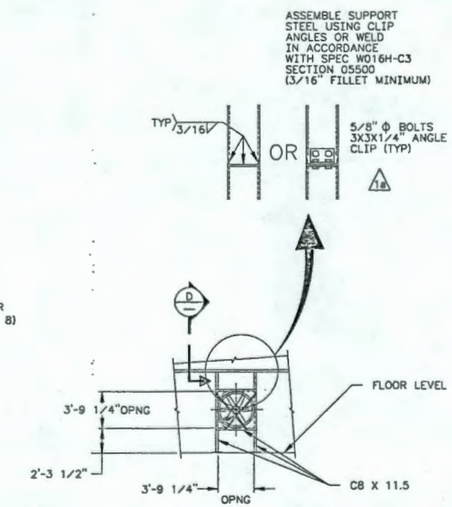
PLAN VIEW
SCALE: 3/32"=1'-0"



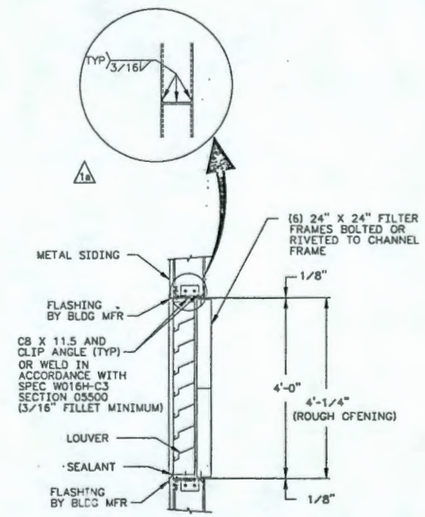
SECTION A
SCALE: 3/16"=1'-0"

GENERAL NOTES

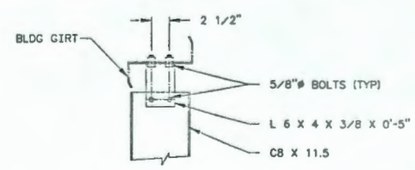
1. SEE SPECIFICATION W-016-C1 FOR EQUIPMENT DESCRIPTION.
2. ALL DIMENSIONS TO BE VERIFIED WITH LOUVER AND EXHAUST FAN REQUIREMENTS.



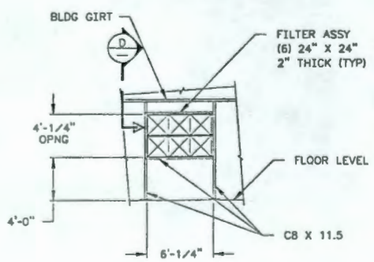
SECTION B
SCALE: 3/16"=1'-0"
TYP 4 PLACES



SECTION E
NTS



SECTION D
SCALE: 1 1/2"=1'-0"



SECTION C
SCALE: 3/16"=1'-0"
TYP 8 PLACES

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

E.A. VICKERY
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8/16/90
Date

PHASE 4

H-2-80904 DWG LIST

NUMBER	TITLE	NUMBER	TITLE

NUMBER	TITLE	REFERENCES

REV NO	DESCRIPTION	REV BY	DATE	KEM APPROVALS
RS 1	ECN W016-57 Z C-D2,3			

REVISIONS

CAD FILE R0809040 CAD CODE 2.NEW\A002\10.DWN

DRAWN	H G HALE	8/20/90
CHECKED	RD PETERSON	8/90
REVIEWED	D LUNDGREN	8/90
ENGINEER	R LENBECK	8/90
	TC OTEN	8/90
CAD TYPE APPROVED	HALE	8/90

IMPACT LEVEL 3 EDT 125914

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

HVAC PLAN, SECT & DETAILS

PROJECT W-016H RWW STORAGE FACILITY

SIZE	BLDG NO	INDEX NO	DWG NO	REV NO
F	240JWB	8900	H-2-80904	1

SCALE SHOWN JOB NO CR 9265 SHEET 3 OF 3

KEHCAD

9212786

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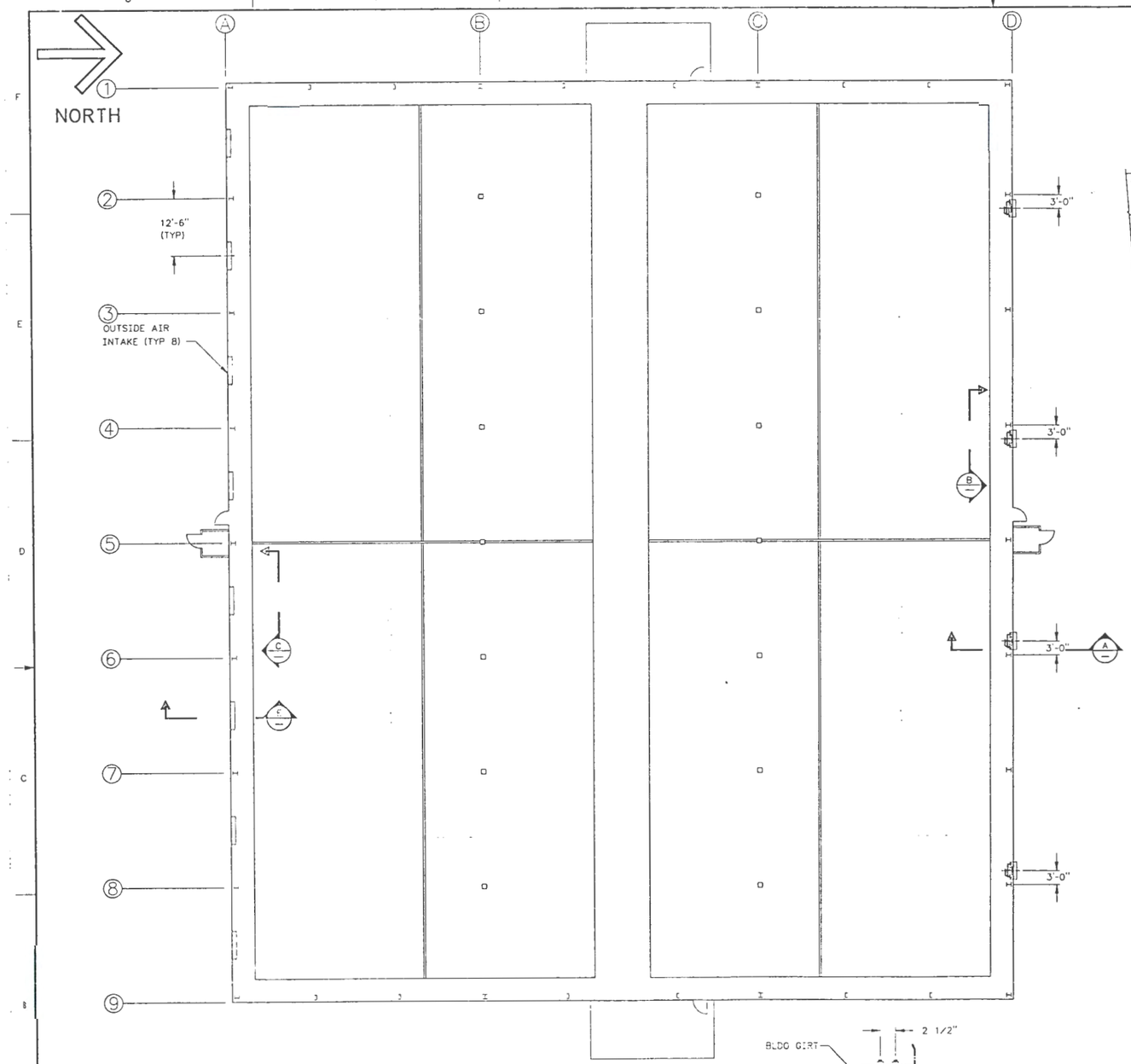
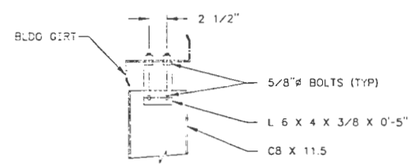
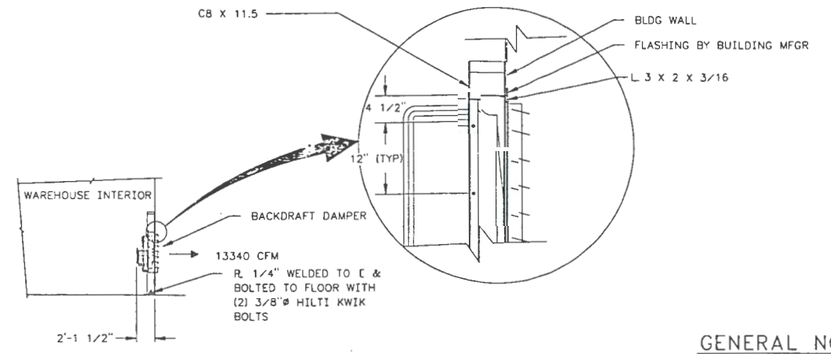


PLAN VIEW
SCALE: 3/32"=1'-0"

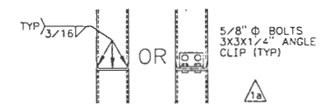


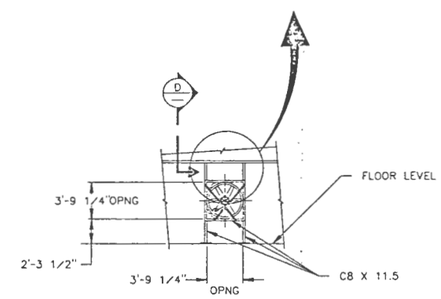
SECTION D
SCALE: 1 1/2"=1'-0"



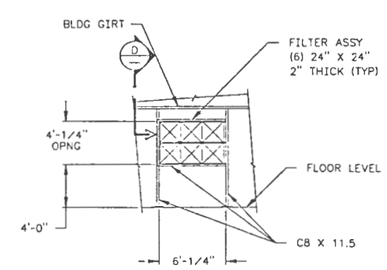
SECTION A
SCALE: 3/16"=1'-0"

ASSEMBLE SUPPORT STEEL USING CLIP ANGLES OR WELD IN ACCORDANCE WITH SPEC W016H-C3 SECTION 05500 (3/16" FILLET MINIMUM)





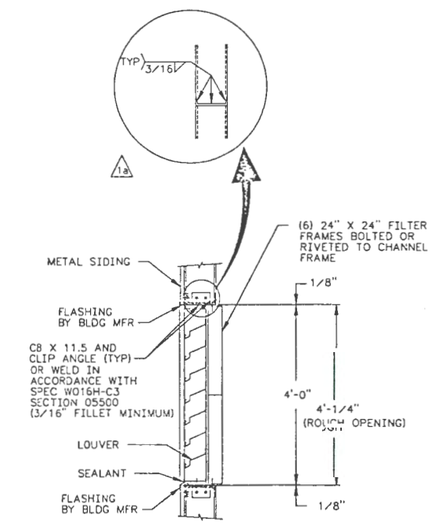
SECTION B
SCALE: 3/16"=1'-0"
TYP 4 PLACES



SECTION C
SCALE: 3/16"=1'-0"
TYP 8 PLACES

GENERAL NOTES

1. SEE SPECIFICATION W-016-C1 FOR EQUIPMENT DESCRIPTION.
2. ALL DIMENSIONS TO BE VERIFIED WITH LOUVER AND EXHAUST FAN REQUIREMENTS.



SECTION E
NTS

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

E.A. VICKERY
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8/16/90
Date

PHASE 3

IMPACT LEVEL 3 | EDT 125914

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

HVAC
PLAN, SECT & DETAILS

W-016H RWM STORAGE FACILITY

H-2-80904

CR 3765 | SHEET 2 OF 3

DWG LIST

DESCRIPTION

KEY APPROVALS

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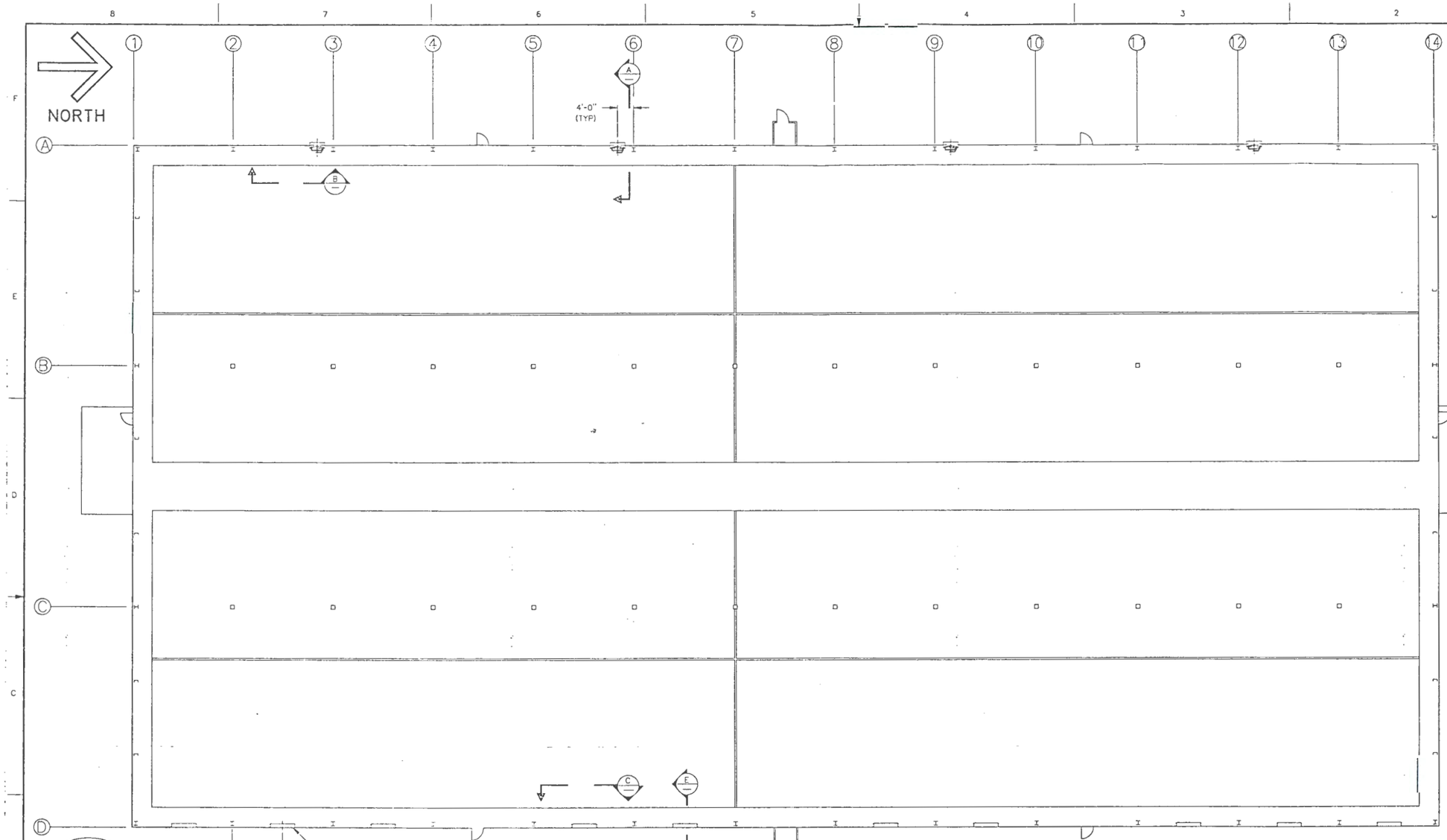
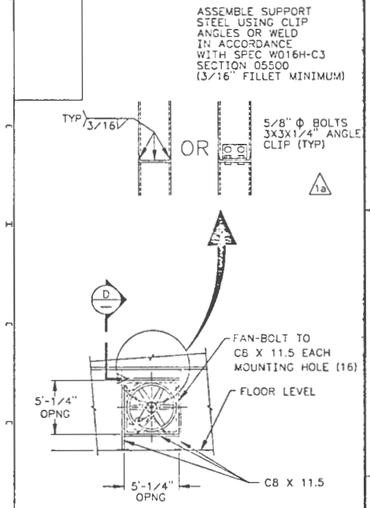


PLAN VIEW
SCALE: 3/32"=1'-0"

GENERAL NOTES

1. SEE SPECIFICATION W-016-C1 FOR EQUIPMENT DESCRIPTION.
2. ALL DIMENSIONS TO BE VERIFIED WITH LOUVER AND EXHAUST FAN REQUIREMENTS.



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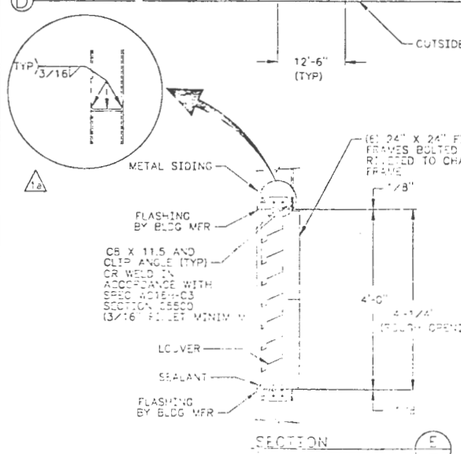

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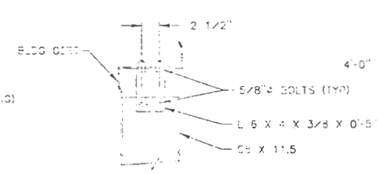

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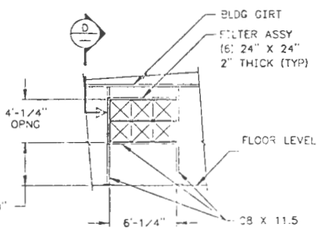

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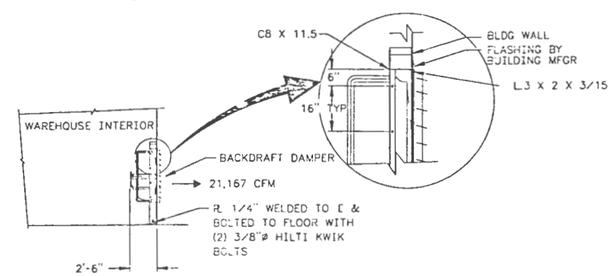

SECTION
SCALE: 3/16"=1'-0"

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

E.A. VICKERY
Reviewing Official
Kaiser Engineers Hanford Company
6/16/90
Date

PHASE 2

DRAWN R G HALE	U.S. DEPARTMENT OF ENERGY	
CHECKED RD PETERSON	NC PLANT OPERATIONS OFFICE	
SAFETY D LUNDGREN	KAISER ENGINEERS HANFORD COMPANY	
CHIEF R MOLENBECK	HVAC	
DR TC OTEN	PLAN, SECT & DETAILS	
LEAD ENG APVD RG HALE		
	200 AREA PAW STORAGE FACILITY	
	F	H-2-80904 1

a) ECN W016-57 Z BB.C.D1

REVISIONS

DRAWING TRANSMITTAL LIST

DWG LIST

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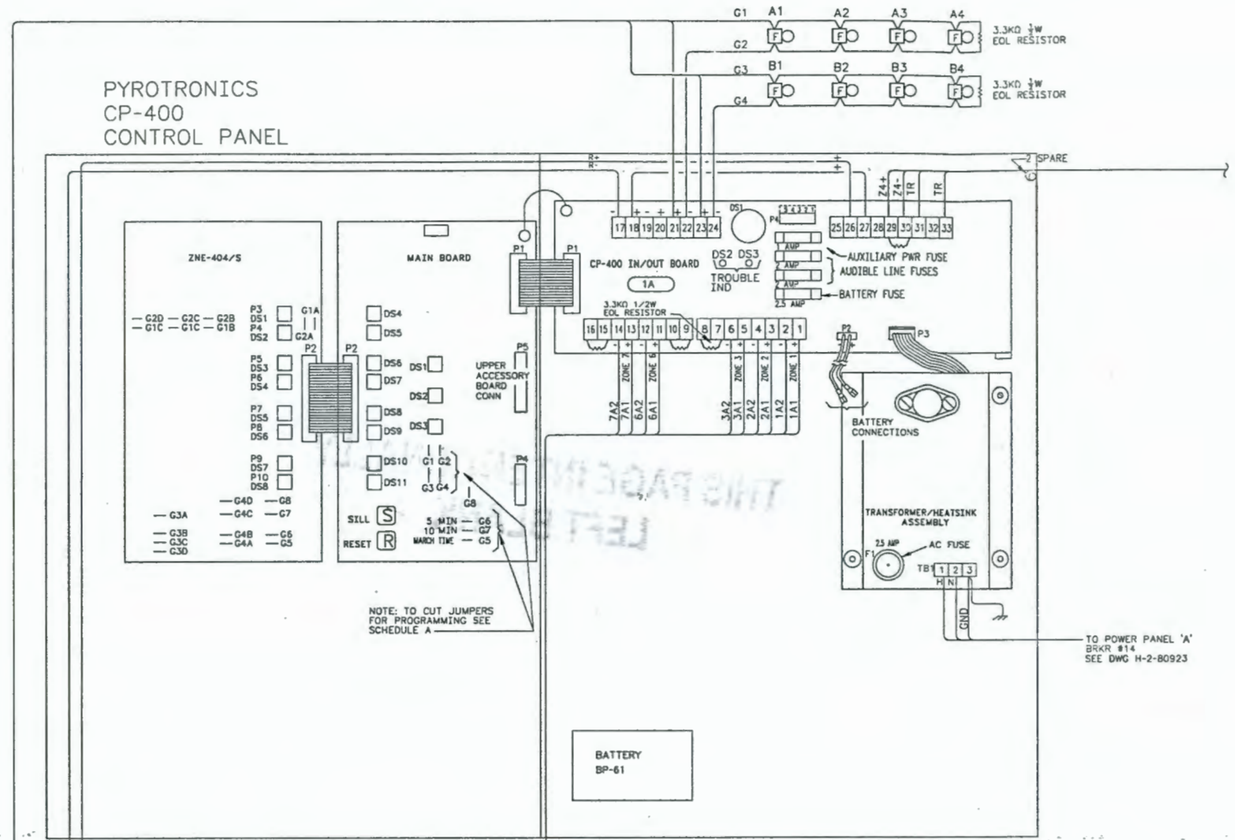
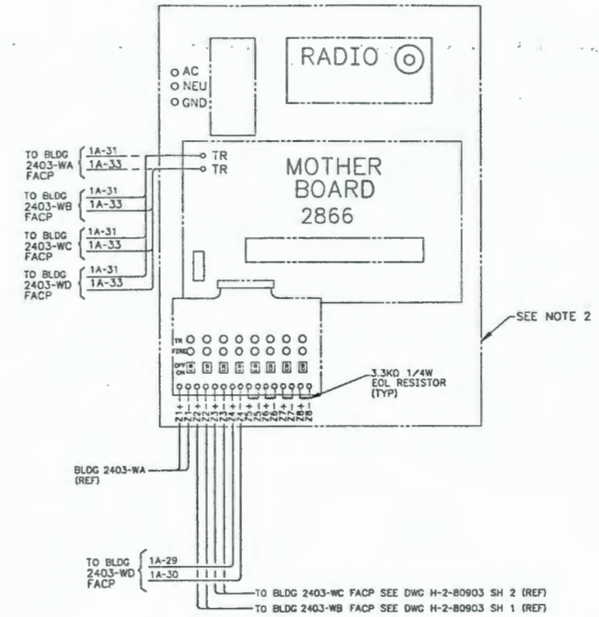


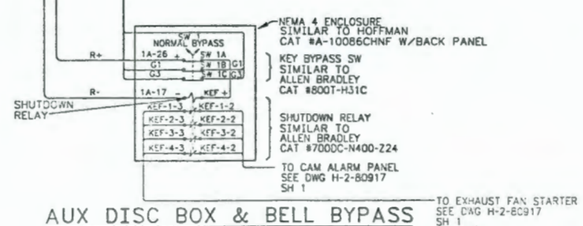


EXISTING RFAR - BLDG 2403-WA

FOR LOCATION SEE KEY PLAN, DWG H-2-80902 SH 1

WIRING DIAGRAM BLDG 2403-WD

SCALE: NONE



AUX DISC BOX & BELL BYPASS

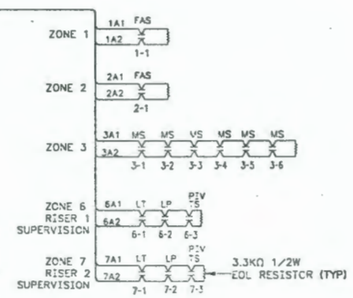
SCALE: NONE

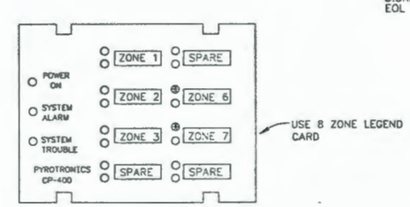
LOCATE IN CLOSE PROXIMITY TO FACP

PROGRAM SCHEDULE							
MAIN BOARD		EXTENDER BOARD					
G1	X	G1A		G3A		G5	
G2	X	G1B	X	G3B		G6	X
G3	X	G1C	X	G3C		G7	X
G4		G1D		G3D		G8	
G5		G2A		G4A			
G6	X	G2B	X	G4B	X		
G7	X	G2C	X	G4C	X		
G8	X	G2D		G4D			

X = CUT JUMPER

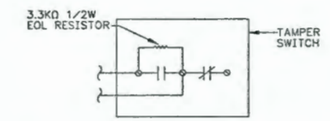
SCHEDULE A





LEGEND CARD FOR CP-400 WITH ZNE-404/S

* = REPLACE W/YELLOW LED



TAMPER SWITCH (PIV) WITH EOL RESISTOR

SCALE: NONE

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

E.A. VICKERY
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8/17/90
Date

FOR NOTES, LEGEND & KEY PLAN SEE DWG H-2-80902 SH 1

PHASE 2

REV NO	DESCRIPTION	REV BY DATE	KEY APPROVALS	APPD KEY DATE	APPD DATE
1	BECN W016-63 Z A6.7 BECN W016-94 GEN. REV	MAKO 10/91 5/91 MAKO 10/91 5/91			

REVISIONS

CAD FILE B0803C LOAD CODE 2J:IBM-AC02:10 CHAN

DRAWN	C MCCLOSH	8/90
CHKD	G BUBB	8/90
SMITH	D LUNDGREN	8/90
ENGR	R HOLLENBECK	8/90
QC	C OTEN	8/90
LEAD ENG APPD	LUNDGREN	8/90

IMPACT LEVEL 3 EDT 125914

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

FIRE PROTECTION ALARM SYSTEM WIRING DIAGRAM

PROJECT W016H RWM STORAGE FACILITY

SIZE F | DWG NO 2403-WD 7702 | DWG NO H-2-80903 | REV NO 1

SCALE SHOWN | CODE NO CR9255 | SHEET 3 OF 3

KEYCAD

NUMBER	TITLE	REFERENCES
H-2-80904	DRAWING LIST	

DRAWING PREPARATION LIST | NEXT USED ON

9212903

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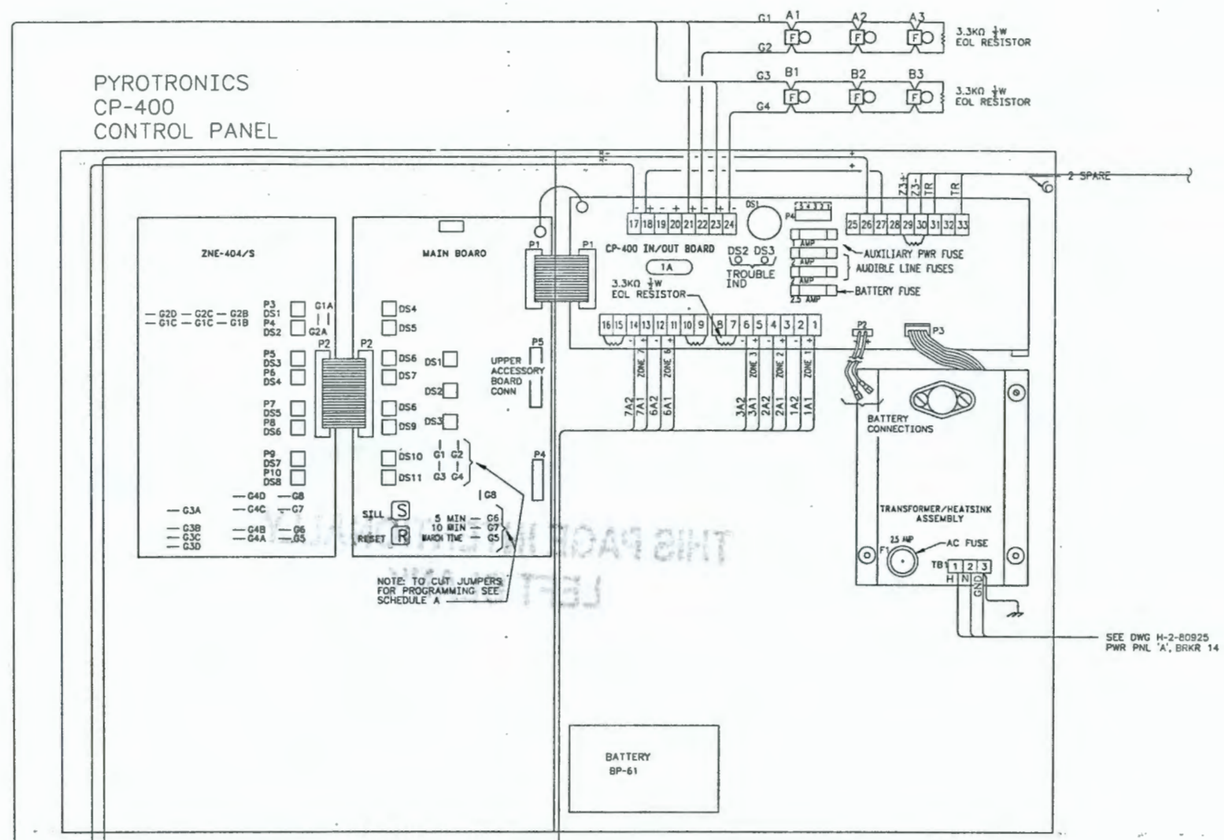
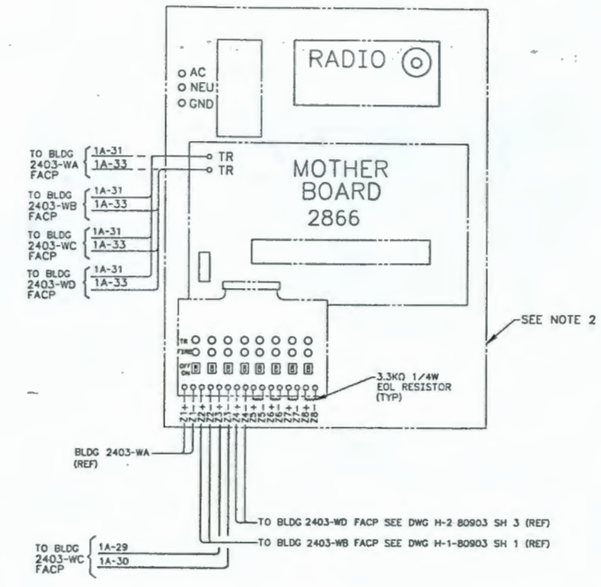
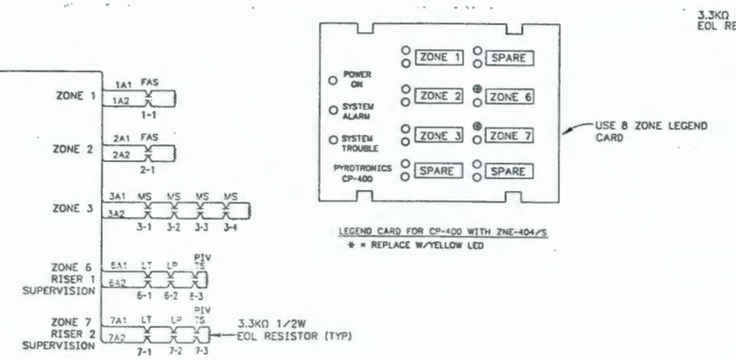


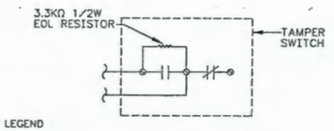
WIRING DIAGRAM FACP BLDG 2403-WC
SCALE: NONE



EXISTING RFAR - BLDG 2403-WA
FOR LOCATION SEE KEY PLAN, DWG H-2-80902 SH 1



LEGEND CARD FOR CP-400 WITH ZNE-404/S
* = REPLACE W/YELLOW LED

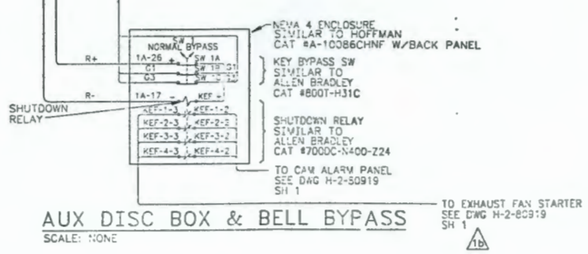


TAMPER SWITCH (PIV) WITH EOL RESISTOR
SCALE: NONE

PROGRAM SCHEDULE							
MAIN BOARD		EXTENDER BOARD					
G1	X	G1A		G3A		G5	
G2	X	G1B	X	G3B		G6	X
G3	X	G1C	X	G3C		G7	X
G4		G1D		G3D		G8	
G5		G2A		G4A			
G6	X	G2B	X	G4B	X		
G7	X	G2C	X	G4C	X		
G8	X	G2D		G4D			

X = CUT JUMPER

SCHEDULE A



AUX DISC BOX & BELL BYPASS
SCALE: NONE

LOCATE IN CLOSE PROXIMITY TO FACP

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

E.A. VICKERY
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8/17/90
Date

FOR NOTES, LEGEND & KEY PLAN SEE DWG H-2-80902 SH 1

PHASE 3

IMPACT LEVEL 3 | EDT 125914

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

FIRE PROTECTION ALARM SYSTEM WIRING DIAGRAM

W016H RWM STORAGE FACILITY

F | 2403-WC | 7702 | H-2-80903 | 1

SCALE SHOWN | JOB NO. CR9265 | SHEET 2 OF 3

DRAWING LIST: H-2-80904

REVISIONS: 80903B

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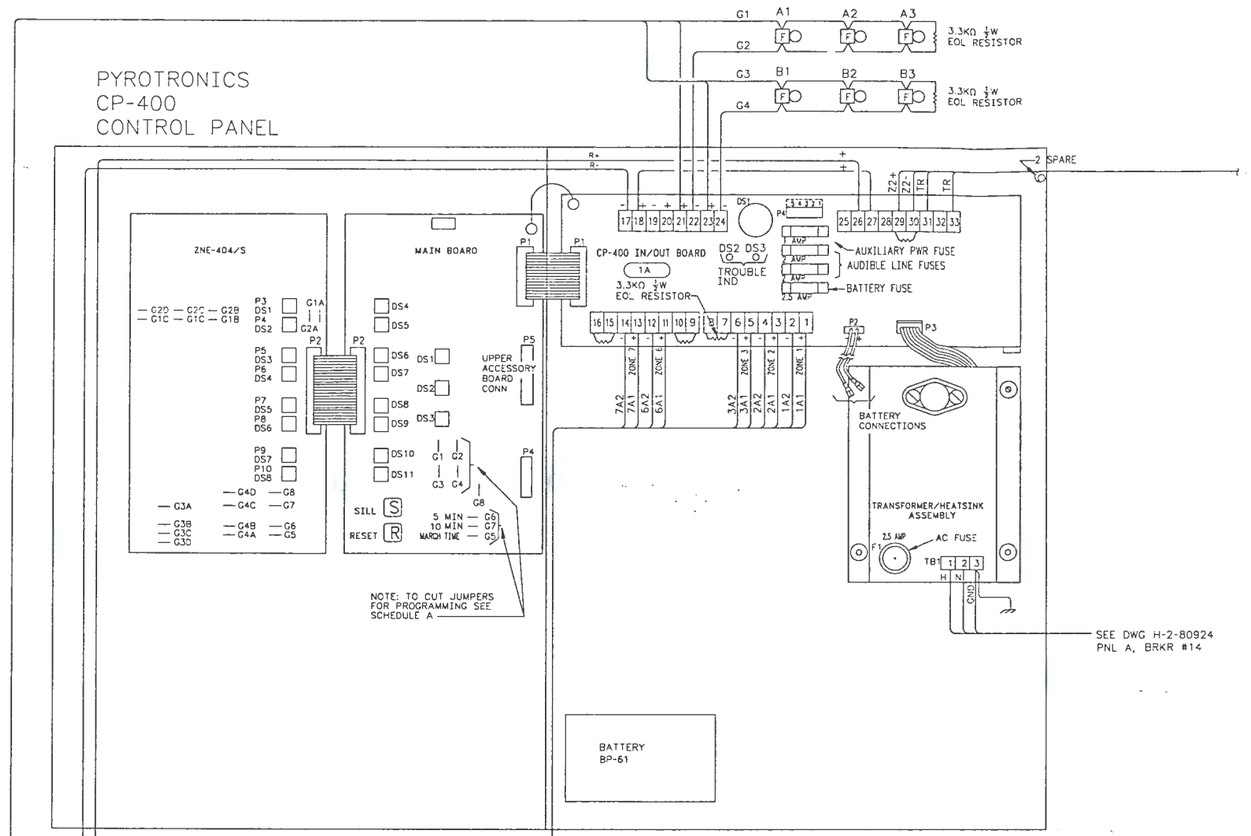
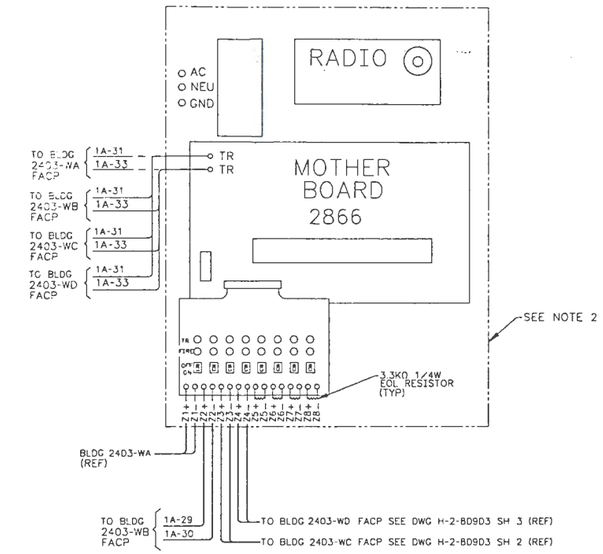
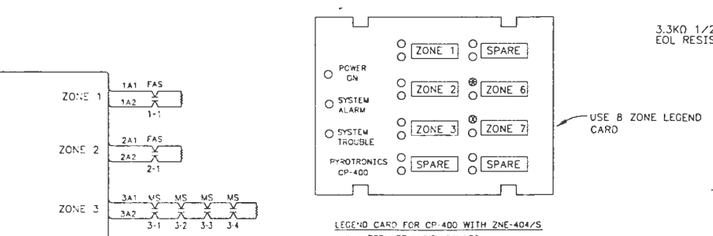


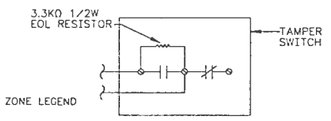
WIRING DIAGRAM BLDG 2403-WB
SCALE: NONE



EXISTING RFAR - BLDG 2403-WA
FOR LOCATION SEE KEY PLAN, DWG H-2-80902 SH 1



LEGEND CARD FOR CP-400 WITH 2NE-404/S
* = REPLACE W/YELLOW LED

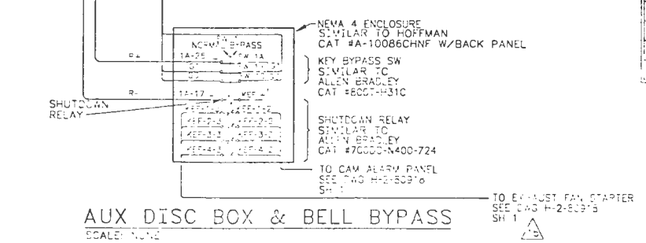


TAMPER SWITCH (PIV) WITH EOL RESISTOR (1)
SCALE: NONE

PROGRAM SCHEDULE							
MAIN BOARD		EXTENDER BOARD					
G1	X	G1A		G3A		G5	
G2	X	G1B	X	G3B		G6	X
G3	X	G1C	X	G3C		G7	X
G4		G1D		G3D		G8	
G5		G2A		G4A			
G6	X	G2B	X	G4B	X		
G7	X	G2C	X	G4C	X		
G8	X	G2D		G4D			

X = CUT JUMPER

SCHEDULE A



AUX DISC BOX & BELL BYPASS
SCALE: NONE

LOCATE IN CLOSE PROXIMITY TO FACP

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

E.A. VICKERY
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8/17/90
Date

FOR NOTES, LEGEND & KEY PLAN SEE DWG H-2-80902 SH 1

PHASE 4

DRAWN	C MCGOUGH	DATE
CHECKED	G BUBB	8/90
SUPVR	D LUNDGREN	8/90
ENGR	R HOLENBECK	8/90
ETC	OTEN	8/90
APPROVED	D LUNDGREN	8/90

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

FIRE PROTECTION ALARM SYSTEM WIRING DIAGRAM

PROJECT: WASTE RWM STORAGE FACILITY

F 2403 AP 7702 | H-2-80903 | REV 1

SCALE: NONE | DATE: 8/17/90 | SHEET 1 OF 3

H-2-80904 DRAWING LIST

REVISION W016-88 Z KELP
REVISION W016-88 KELP REV
DR CHANGE

MAK

IMPACT LEVEL 3 | EDT 125914

FOR CONTROL

APPROVED FOR CONSTRUCTION
DATE 8/17/90

PROJECT ENGINEER | DATE | PROGRAM MANAGER | DATE

FELICAD

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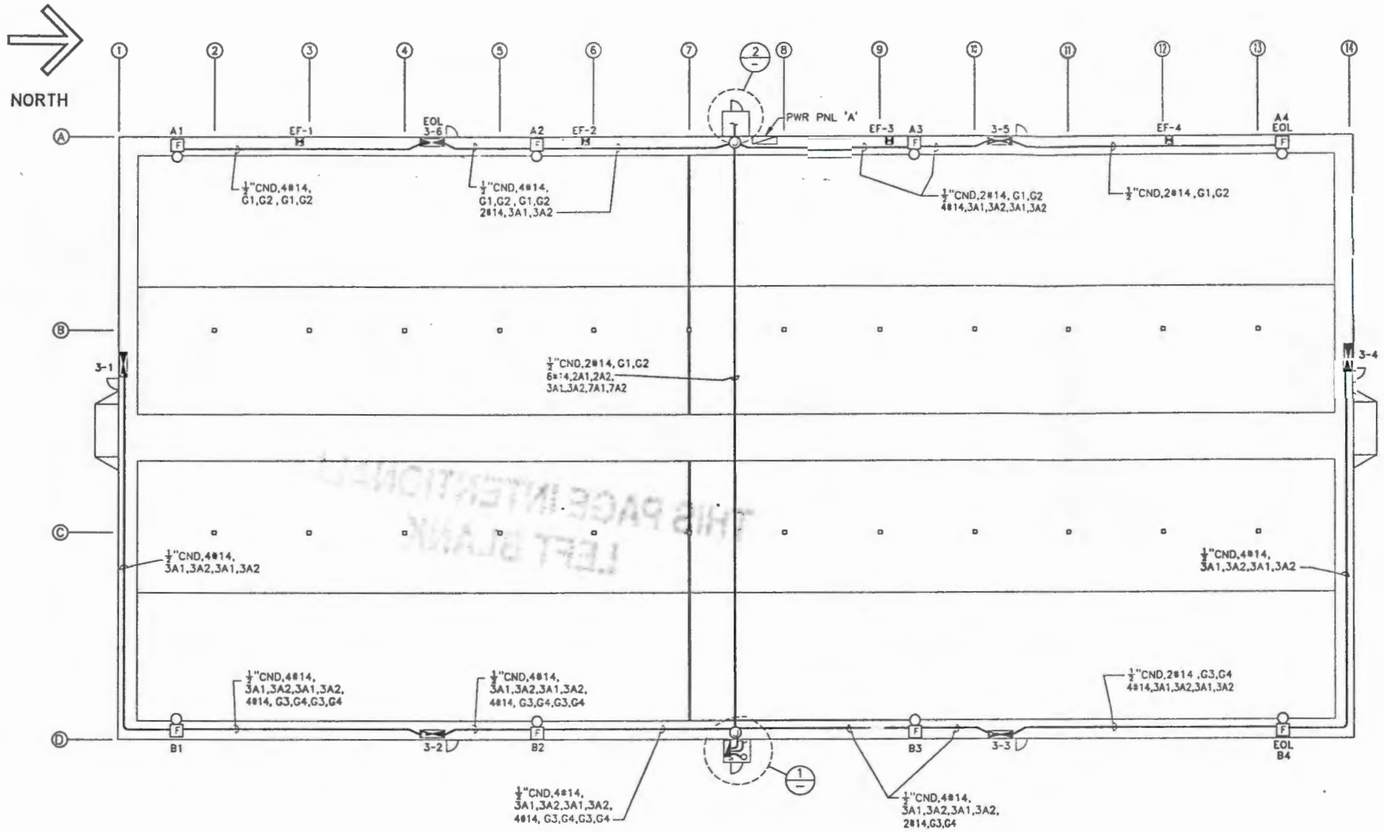
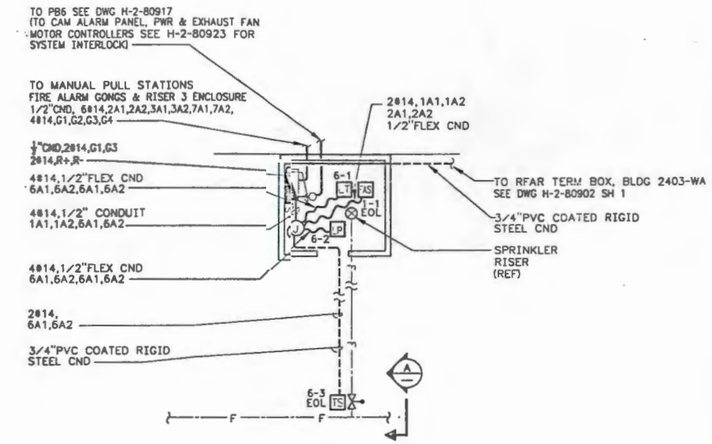
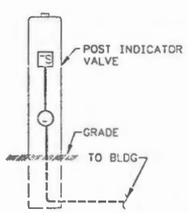


PLAN VIEW BLDG 2403-WD
SCALE: NONE



SPRINKLER RISER 1
ENCLOSURE DETAIL (1)
SCALE: NONE



SECTION (A)
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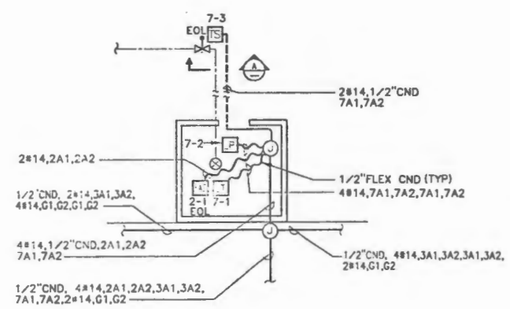

SPRINKLER RISER 2
ENCLOSURE DETAIL (2)
SCALE: NONE

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

R. HARMON
Reviewing Official/ADC
Kaiser Engineers Hanford Company
9-26-90
Date

FOR NOTES, LEGEND & KEY PLAN SEE DWG H-2-80902 SH 1

PHASE 2

DRAWN C. MCCOUGH		IMPACT LEVEL 3	EDT 125914
CHECKED C. BURR	9/90	U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE KAISER ENGINEERS HANFORD COMPANY	
SAFETY J. ARCHIBALD	9/90		
ENGR DK DAHOLL	9/90	FIRE PROTECTION ALARM SYSTEM PLAN, SECTIONS & DETAILS	
DE TC OTEN	9/90		
LEAD ENG APPRO LUNDGREN	9/90	PROJECT W016H RMW STORAGE FACILITY	
		EDT F / JOB NO 2403-AQ / TYPE OF INS 7701	DWG NO H-2-80902 / REV 1 / SHEET 1
		SCALE SHOWN	JOB NO 289265 / SHEET 3 OF 36

REV NO	DESCRIPTION	REV BY DATE	NEW APPROVALS	APPD FOR CONSTRUCTION DATE
1	aECN W016-54 GEN REV	EKG ADT 4/91		

REVISIONS

CAD FILE 80902002 CAD CODE 2JJBMACD2:10.0:NN

NUMBER	TITLE
H-2-80904	DRAWING LIST

DRAWING TRANSMITTAL LIST

NUMBER	TITLE

REFERENCES

NEXT USED ON

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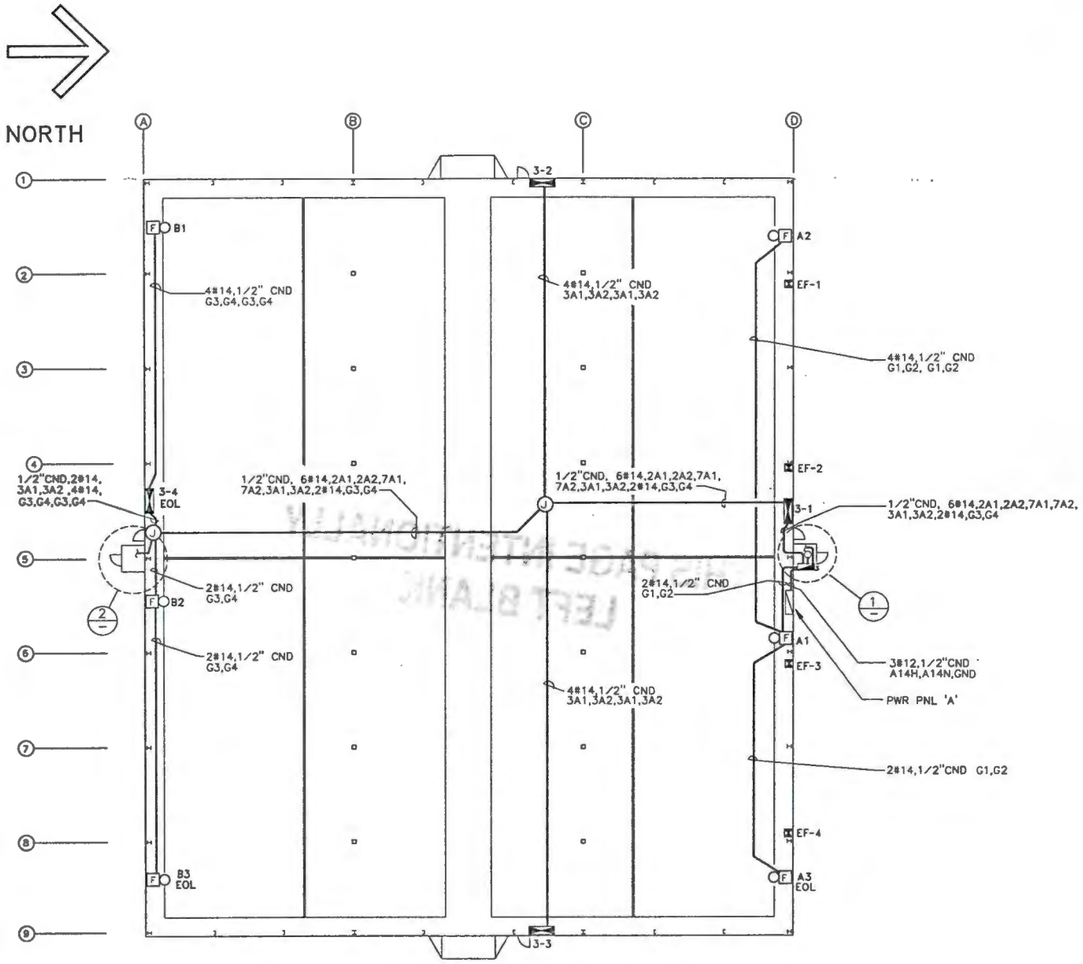
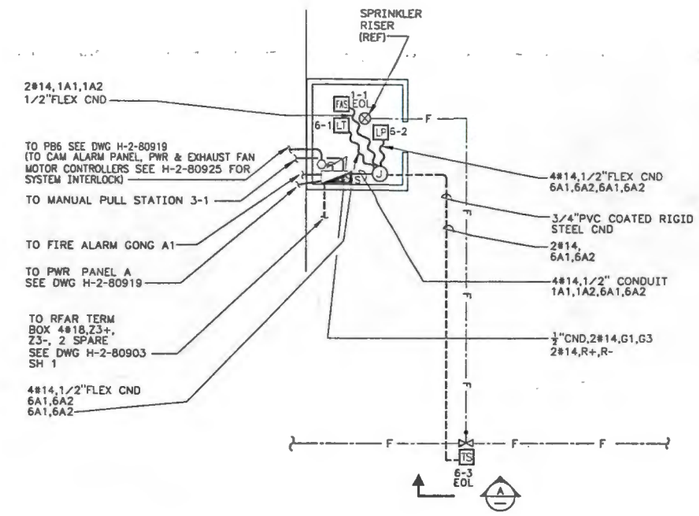
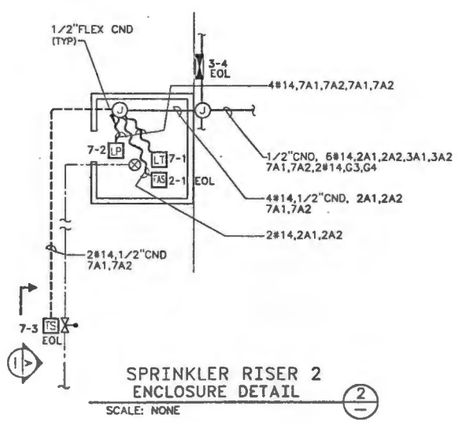


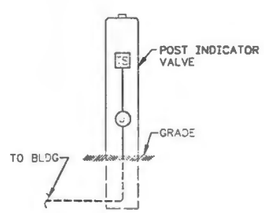
PLAN VIEW BLDG 2403-WC
SCALE: NONE



SPRINKLER RISER 1
ENCLOSURE DETAIL (1)
SCALE: NONE



SPRINKLER RISER 2
ENCLOSURE DETAIL (2)
SCALE: NONE



SECTION (A)
SCALE: NONE

DOES NOT CONTAIN CLASSIFIED OR
UNCLASSIFIED CONTROLLED
NUCLEAR INFORMATION

R. HARMON
Reviewing Official/ADC
Kaiser Engineers Hanford Company
9-26-90
Date

FOR NOTES, LEGEND & KEY PLAN SEE DWG H-2-80902 SH 1

PHASE 3

DRAWN	C MCGOUGH	9-26-90	
CHECKED	G BUBB	9/90	
SAFETY	J ARCHIBALD	9/90	
CHKD	DK DABOLL	9/90	
QC	TC OTEN	9/90	
LEAD ENG APVD	D LUNDGREN	9/90	

IMPACT LEVEL 3 | EDT 125914

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

FIRE PROTECTION
ALARM SYSTEM
PLAN, SECTIONS & DETAILS

PROJECT W016H RMW STORAGE FACILITY

SIZE	BLDG NO	TRADE NO	DWG NO	REV NO
F	2403-WC	7701	H-2-80902	1

SCALE SHOWN | JOB NO. CR9257 | SHEET 2 OF 3

APPROVED FOR INSTRUMENTATION
BY H.E. WELLSNAT
FOR WHC DATE 9-27-90

REV	DESCRIPTION	REV BY / DATE	KEH APPROVALS	APVD FOR IMPL/CNC FOR DATE
1	ECN W016-54 GEN REV	DKG ADT 4/91		

REVISIONS

CAD FILE H-2-80902B | CAD CODE 2J:EDM:ACD2:10.0:NN

H-2-80904 DRAWING LIST

NUMBER	TITLE	NUMBER	TITLE

DRAWING TRACEABILITY LIST | REFERENCES | NEXT USED ON

KEHCAD

9212750009

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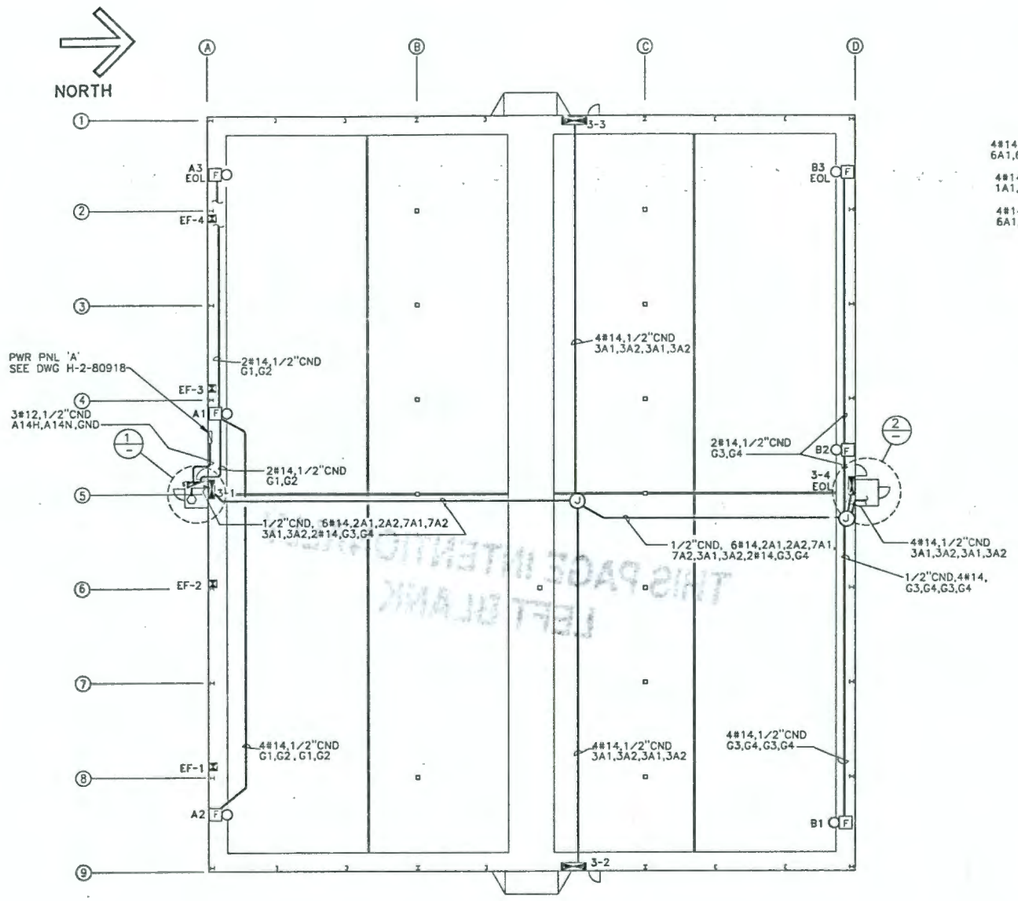
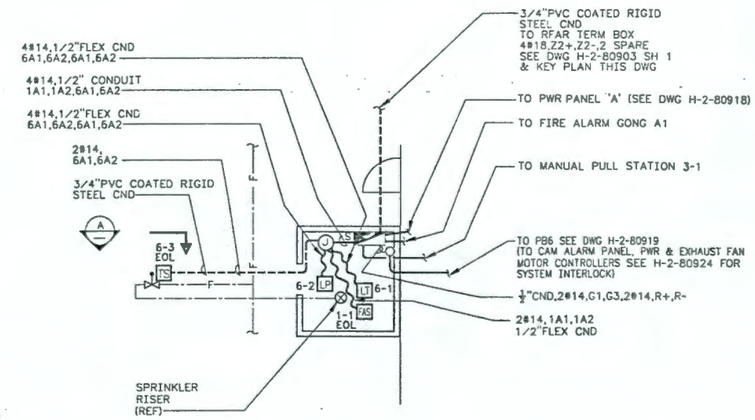


PLAN VIEW 2403-WB
SCALE: NONE



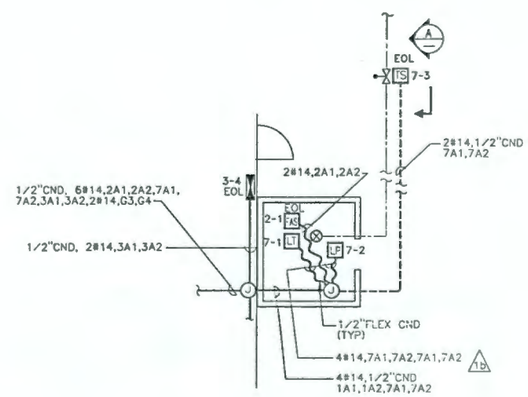
SPRINKLER RISER 1
ENCLOSURE DETAIL
SCALE: NONE

LEGEND

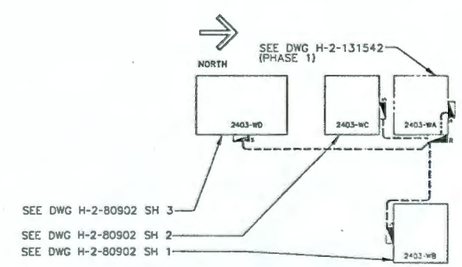
- EXISTING
- FLEX CONDUIT
- UNDERGROUND LINE
- UNDERGROUND CONDUIT
- NEW CONDUIT
- FIRE ALARM GONG
- FIRE ALARM CONTROL PANEL (FACP)
- RADIO MASTERBOX (RFAR)
- JUNCTION BOX
- LOW AIR PRESSURE SUPERVISORY SW
- TAMPER SWITCH
- MANUAL PULL STATION
- TERMINAL BOX
- LOW TEMPERATURE SWITCH
- FLOW ALARM PRESSURE SWITCH
- EOL END OF LINE DEVICE
- RED INDICATOR LIGHT
- EXHAUST FAN MOTOR CONTROLLER
- AUX DISCONNECT BOX

NOTES

1. FIELD ROUTE NEW CONDUIT.
2. FINAL WIRING CONNECTIONS IN RFAR TO BE MADE BY WHC TELECOMMUNICATIONS.
3. FIELD WIRING CONTINUITY SUPERVISED; BRANCHING NOT PERMITTED.



SPRINKLER RISER 2
ENCLOSURE DETAIL
SCALE: NONE



KEY PLAN
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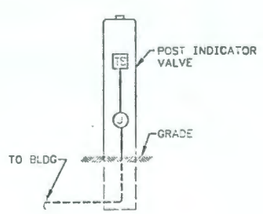

SECTION
SCALE: NONE

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

R. HARMON
Reviewing Official/ADC
Kaiser Engineers Hanford Company
9-26-90
Date

PHASE 4

IMPACT LEVEL 3			
U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE KAISER ENGINEERS HANFORD COMPANY			
FIRE PROTECTION ALARM SYSTEM PLAN, SECTIONS & DETAILS			
PROJECT W016H RWW STORAGE FACILITY			
F	2403 AB	7701	H-2-80902	1
SCALE SHOWN			SHEET 1 OF 3

H-2-80904 DRAWING LIST

REV	TITLE	NUMBER	TITLE
	DRAWING TRACEABILITY LIST	NONE SHOWN	REFERENCES

REV NO.	DESCRIPTION	REV BY	DATE	KEY REFERENCES
1	(b)ECN W016-53 7 92 (b)ECN W016-54 GEN REV			

REVISIONS

CAD FILE: P0809072A CAD CODE: D:\RISM\ACCD110.0.NN

KEHCAD

9212786098

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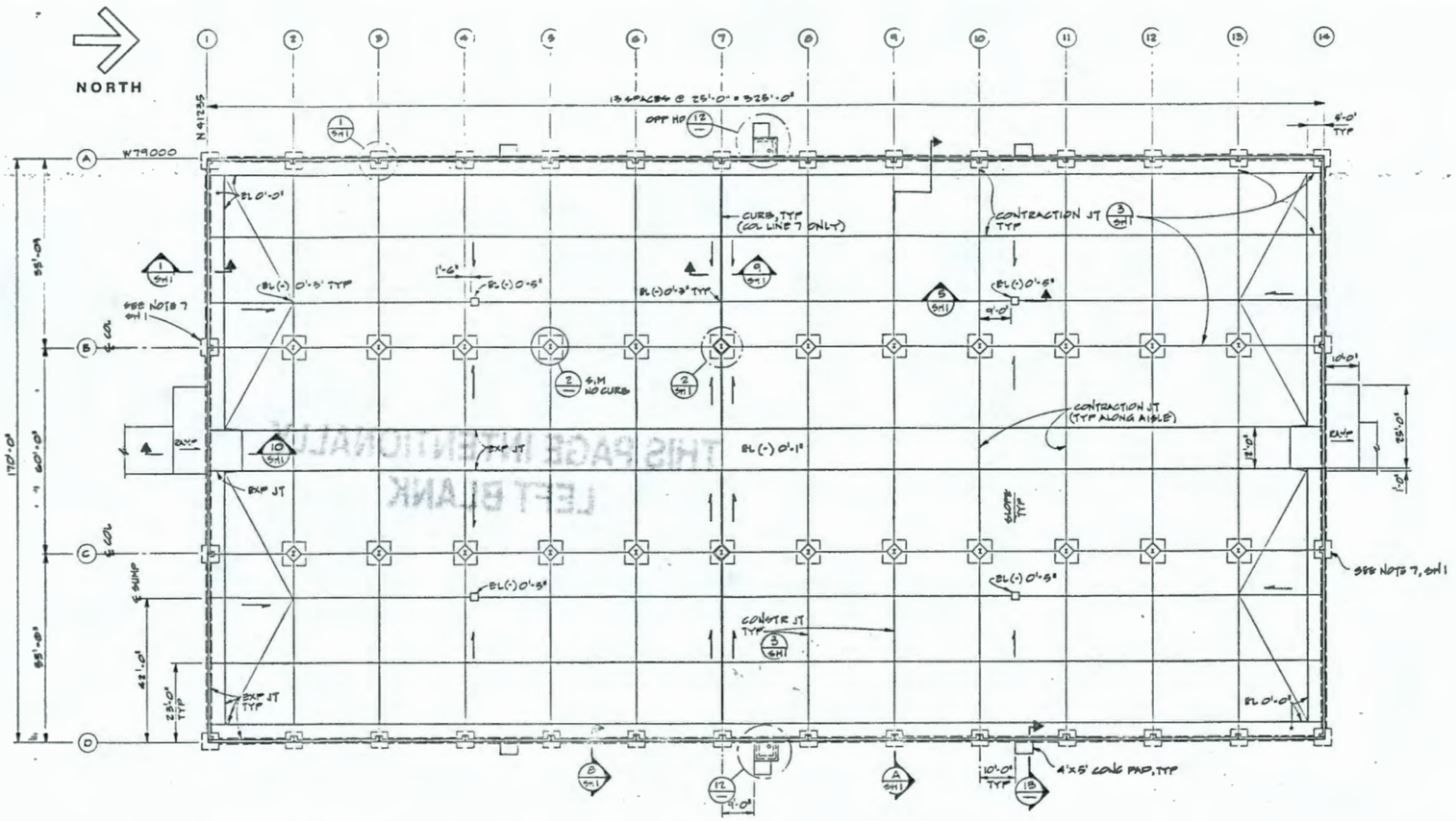
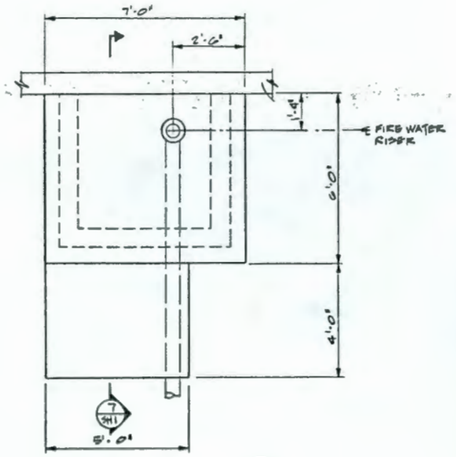


F D N P L A N

SCALE: 1/16" = 1'-0" DATUM: EL 706.0' = 0'-0" - BLDG 2403-WD



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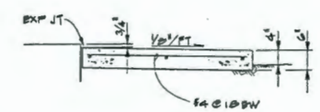

CONC PAD (13)
SCALE: 3/4" = 1'-0"
(TYP 4 PL)

NOTE:
SEE H-2-80901, SH 1 FOR NOTES & DETAILS

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION
Reviewing Official/NDC
Kaiser Engineers Hanford Company
4/25/90
Date

PHASE 2

OFFICIAL RELEASE BY WHC DATE OCT - 4 1990

NUMBER	TITLE
H-2-80004	DRAWING LIST

DRAWING TRACEABILITY LIST — REFERENCES — NEXT USED ON — REVISIONS — CADFILE — CADCODE

DRAWN	DAP 2-20-90
CHECKED	1/23/90
SAFETY	1-23-90
ENVIR	1/25/90
QE	1/25/90
LEAD ENG	1/26/90

APPROVED FOR IMPLEMENTATION BY WHC DATE 9-27-90

IMPACT LEVEL 3 — REV 125910

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

STRL
FOUNDATION PLAN & DETAILS

PROJECT NO 1GH RMW STORAGE FACILITY

SITE	BLDG NO	PROJ NO	DRAWING NO	REV NO
F	2403-WD	0900	H-2-80901	0

SCALE SHOWN — JOB NO CR 9265 — SHEET 2 OF 2

92120697

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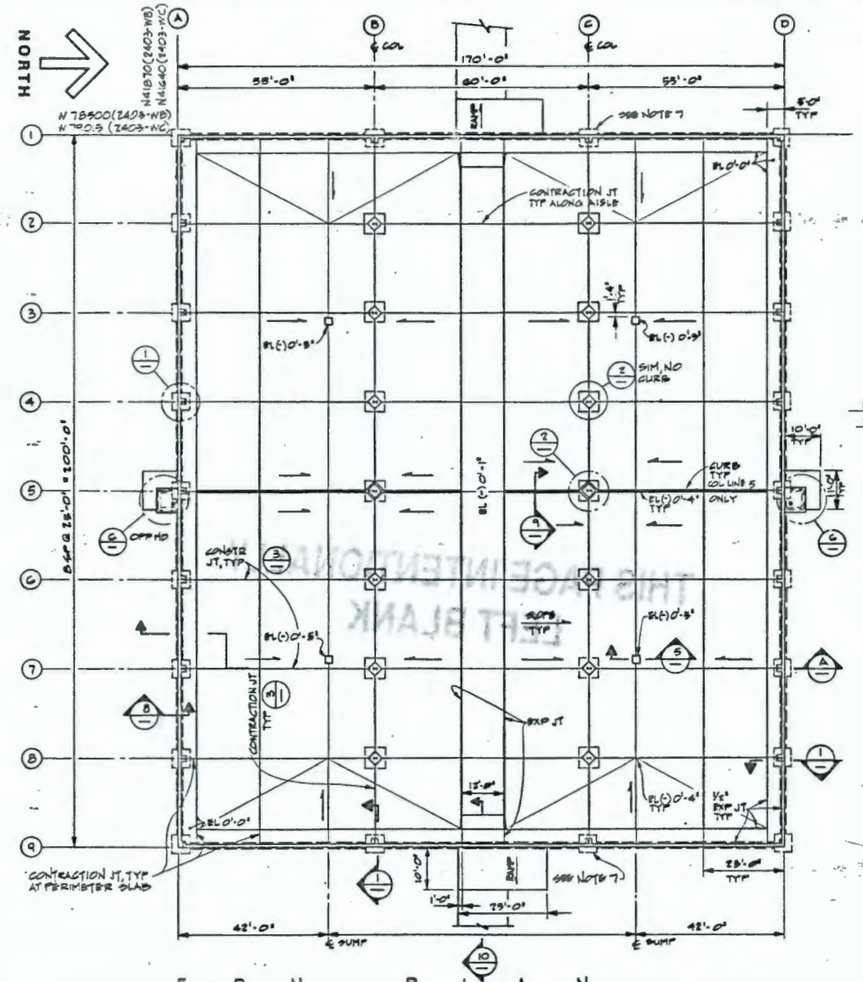
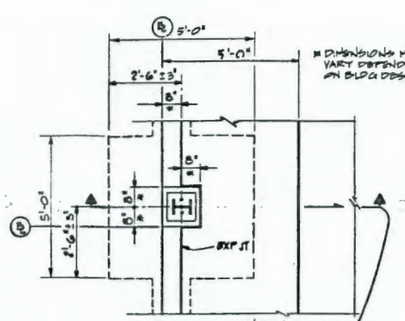
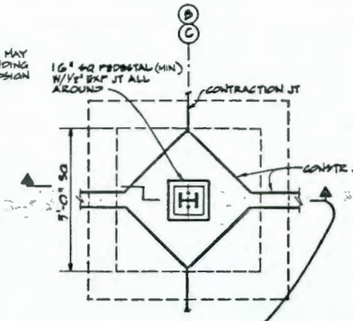


F D N P L A N

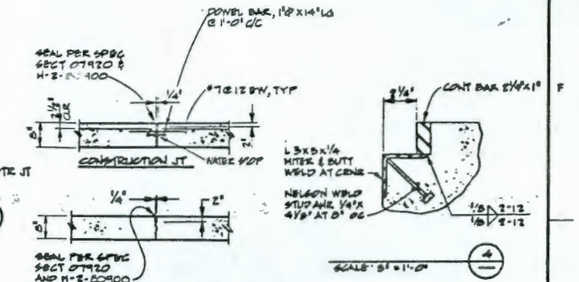
SCALE: 1/16" = 1'-0" DATUM EL 710.0 = EL 0'-0" BLDG 2403-WC
DATUM EL 699.6 = EL 0'-0" BLDG 2403-WB

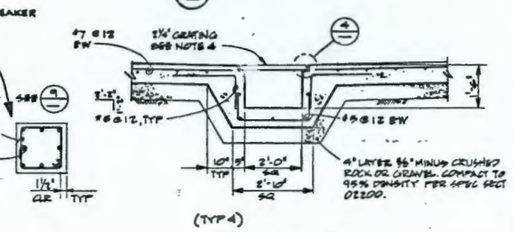


TYP EXT FOOTINGS (1)
SCALE: 1/2" = 1'-0"
SEE NOTE 6



INTERIOR FOOTINGS AND PED AT CURB (2)
SCALE: 1/2" = 1'-0"
SEE NOTE 6





(TYP 4)
TYP SUMP (5)
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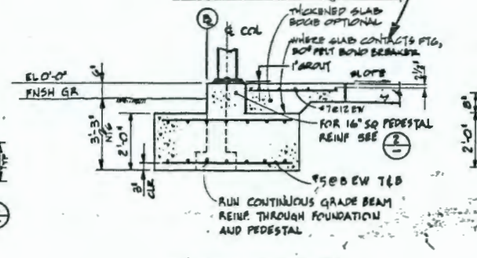

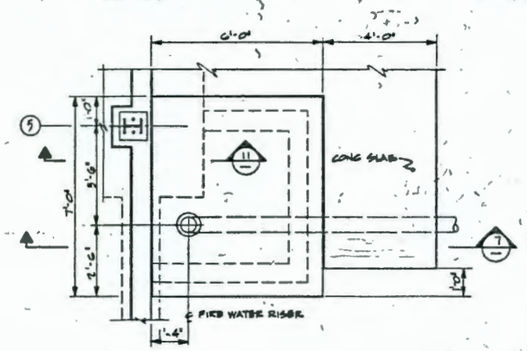

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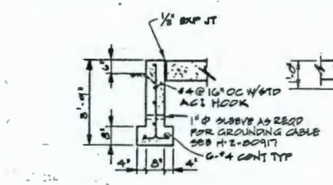

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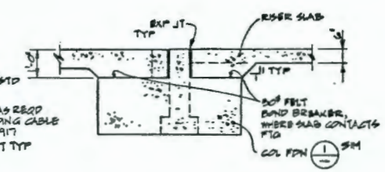

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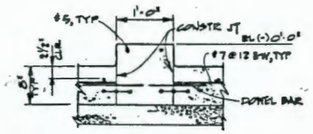
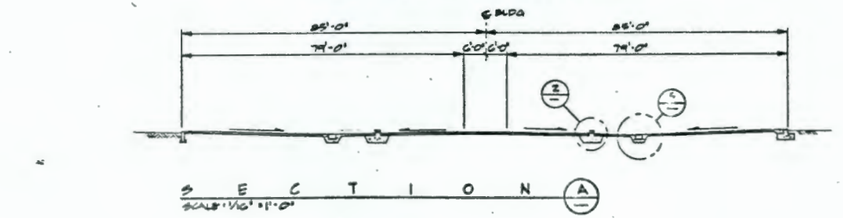


TYP SLAB REINF & CURB (9)
SCALE: 1" = 1'-0"



S E C T I O N (A)
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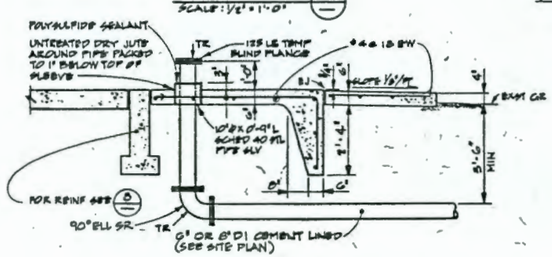

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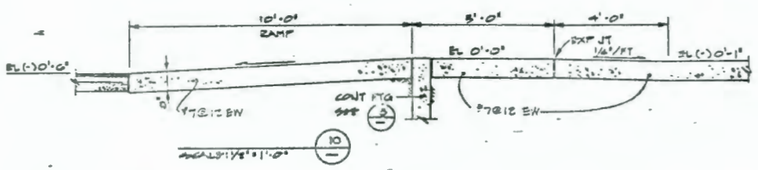

SCALE: 1/2" = 1'-0" (10)

NOTES:

1. FOR LEGEND SEE H-2-80895.
2. COAT ALL EXPOSED CONC & GROUT INSIDE OF BLDGS 2403-WB, WC, WD WITH SPECIAL PROTECTIVE COATING LAW SPEC SECT 09800.
3. DESIGN STRESSES:

SOIL BEARING	2600 PSF
CONCRETE	f'c = 4500 PSI AT 28 DAYS
REINFORCING STEEL	fy = 60,000 PSI

4. GRATING TO HAVE 2 1/4" x 3/8" BEARING BARS SPACED 1 3/8" CC W/CROSSBARS AT 4" CC. INSTALL 2 SECTIONS, EA 2'-4" LG x 1'-2" WIDE.
5. CUT EVERY OTHER REINF BAR PASSING THROUGH CONTRACTION JOINTS.
6. COORDINATE SIZE & LOCATION OF FOOTINGS, BASE PLATES & ANCHOR BOLTS WITH METAL BUILDING SUPPLIER
7. NO. & LOC OF SIDEWALL COL MAY VARY DEPENDING ON BLDG DESIGN. PROVIDE ADDITIONAL SIDEWALL FTG PER DET 1 AS REQD
8. ALL EXPANSION JTS SHALL BE 1/2". SEE H-2-80900

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION
Reviewing Official/ADC
Kaiser Engineers Hanford Company
Date 6/5/90

OFFICIAL RELEASE BY WHC DATE OCT - 4 1990

PHASE 2, 3 & 4

DRAWN	E. GUTZOM	DATE
CHECKED		6/5/90
SAFETY		6/7/90
DWGS		6/25/90
OF		6/29/90
LEAD SYS APPD		
NEW SYS		
APPROVED FOR SUBMITTAL BY		
WHC		7-23-90

IMPACT LEVEL 3 REF 125916

U. S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

STRL
FOUNDATION PLAN & DETAILS

PROJECT N-0.0M RVW STORAGE FACILITY

SIZE	BLDG NO	INDEX NO	DRAWING NO	REV NO
F	2403-WB 2403-WC 2403-WD	0900	H-2-80901	0

SCALE 1/16" = 1'-0" JOB NO CR 9205 SHEET 1 OF 2

NUMBER	TITLE	NUMBER	TITLE
DRAWING TRACEABILITY LIST		H-2-80894	DRAWING LIST
		NEXT USED ON H-2-80895	

REFERENCES

UP	REV NO	DESCRIPTION	REV BY DATE	REV APPROVALS	APPD FOR REPL 1 SC	APPD FOR REPL 2 SC

REVISIONS

CADFILE CADCODE

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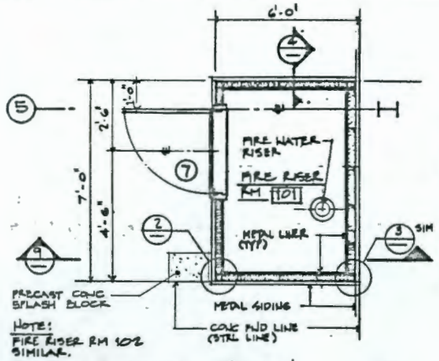
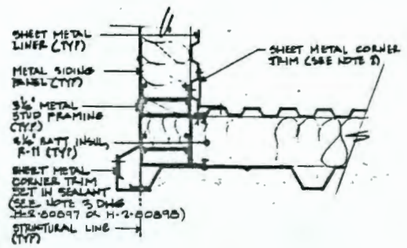


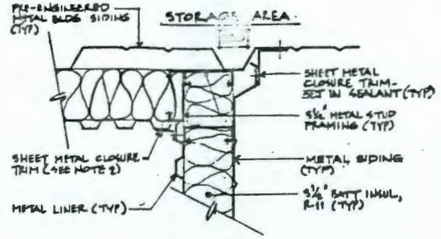
ENLARGED PLAN (1)

SCALE: 1/2"=1'-0"



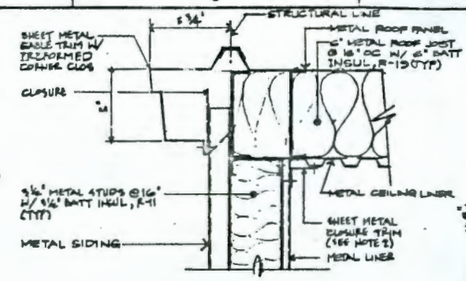
EXTERIOR CORNER DETAIL (2)

SCALE: 3"=1'-0"



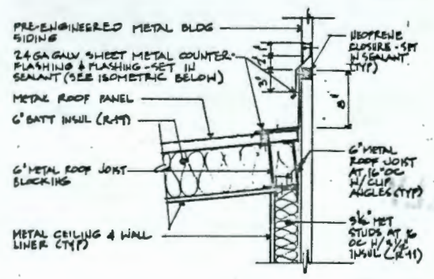
CORNER DETAIL (3)

SCALE: 3"=1'-0"



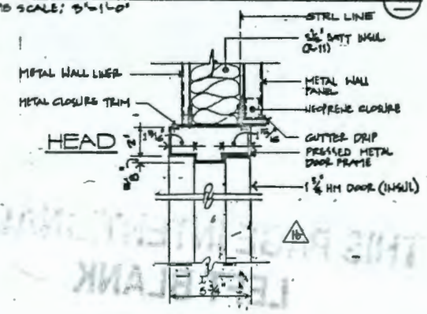
GABLE TRIM DETAIL (4)

SCALE: 3"=1'-0"



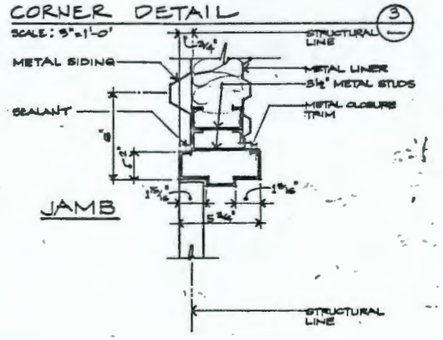
ROOF FLASHING DETAIL (5)

SCALE: 1 1/2"=1'-0"



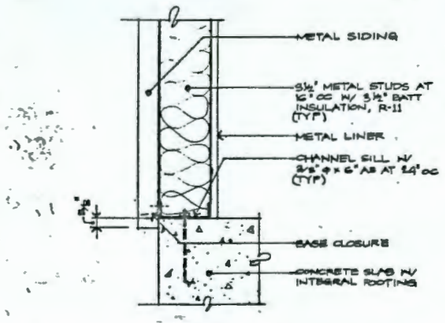
DR HD AND SILL DET AT MET FR (6)

SCALE: 3"=1'-0"



DOOR JAMB AT MET FRAMING (7)

SCALE: 3"=1'-0"



BASE DETAIL (8)

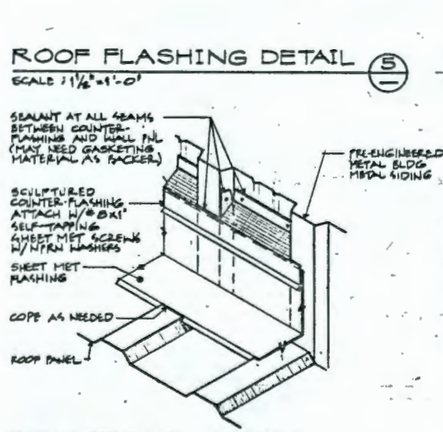
SCALE: 3"=1'-0"

SECTION AT MET FRAMING (9)

SCALE: 3/4"=1'-0"

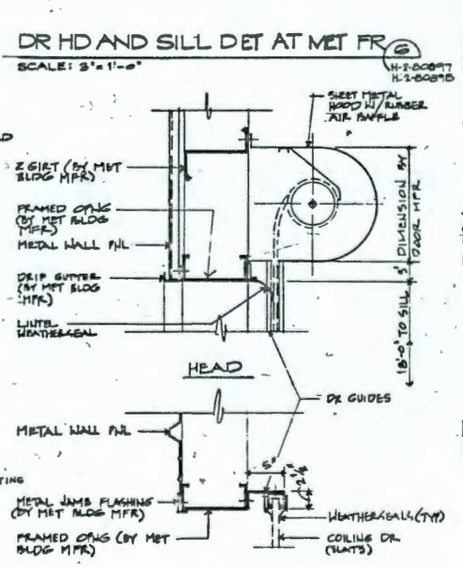
NOTES

1. SEE GENERAL NOTES ON DRAWING H-2-80897 AND H-2-80898.
2. METAL TRIM SHALL BE STANDARD AND SUPPLIED BY LINER MANUFACTURER.
3. SPECIAL PROTECTIVE COATING SYS TO STOP AT JOINT.
4. SEALANT PER SPECIAL PROTECTIVE COATING SYS MFR RECOMMENDATIONS.



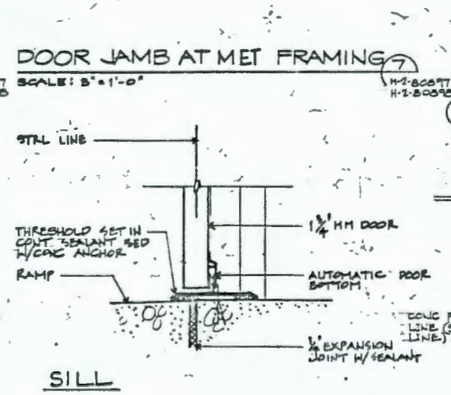
ISOMETRIC VIEW

SCALE: NONE



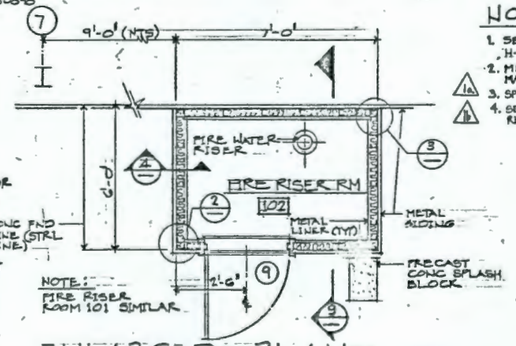
DR HD AND SILL DET AT MET FR (6)

SCALE: 3"=1'-0"



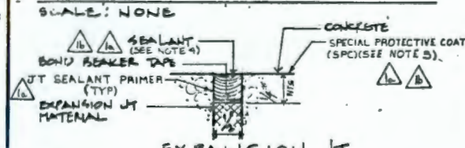
DOOR SILL DETAIL (10)

SCALE: 3"=1'-0

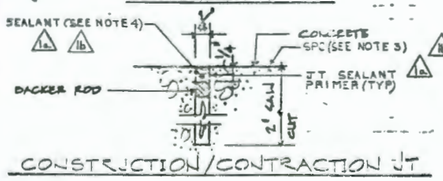


ENLARGED PLAN (12)

SCALE: 1/2"=1'-0"



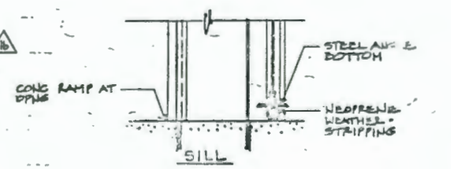
EXPANSION JT



CONSTRUCTION/CONTRACTION JT

TYPICAL SEALANT DETAILS

SCALE: FULL



DOOR DETAIL (11)

SCALE: 1 1/2"=1'-0"

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

Reviewing Official/ADC
Kaiser Engineers Hanford Company

8-15-90
Date

OFFICIAL RELEASE BY WSC
DATE OCT-4 1990

PHASE 2, 3 & 4.

NUMBER	TITLE
H-2-80896	DWG LIST/CIVIL SITE PLAN

DRAWING TRACEABILITY LIST — NEXT USED ON

REV NO	DESCRIPTION	REV BY DATE
1	WECN NOW-63 & A878102 / WECN WCH-58 & A878103-24-41	

REVISIONS

CADD NO — CADCODE

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

ARCHITECTURAL PLAN, SECT & DETAILS

PROJECT W-069 FMW STORAGE FACILITY

F | H-2-80900 | REV NO 1

SCALE SHOWN ON CR 9265 | SHEET 1 OF 1

9212336 0895

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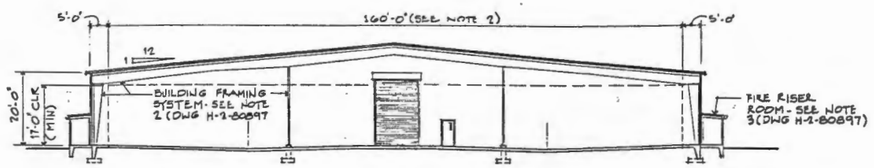
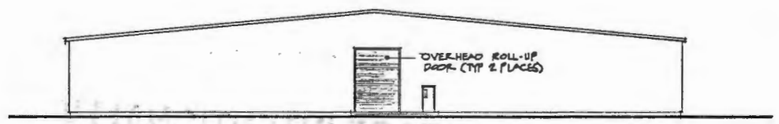
NOTES

1. SEE GENERAL NOTES ON DWG H-2-80897.
2. OVERHEAD STRUCTURAL CLEARANCE, 17'-0" (MIN).



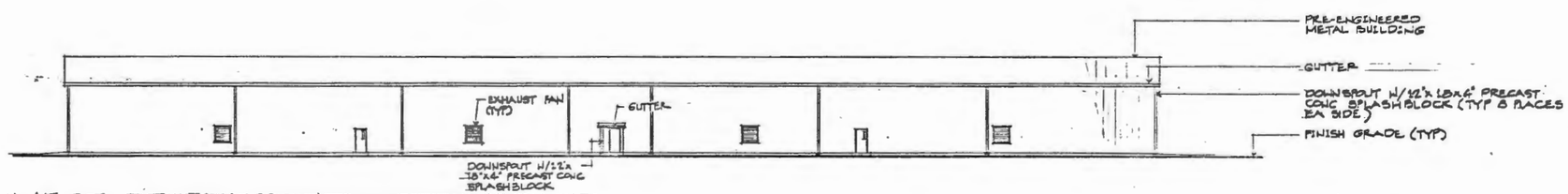
SECTION A H-2-80897

SCALE: 1/16" = 1'-0"



NORTH ELEVATION (SOUTH ELEVATION SIMILAR)

SCALE: 1/16" = 1'-0"



WEST ELEVATION (EAST ELEVATION SIMILAR)

SCALE: 1/16" = 1'-0"

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

Reviewing Official/ADC
Kaiser Engineers Hanford Company

Date 8-15-90

OFFICIAL RELEASE BY WHC
DATE OCT -4 1990

PHASE 2

DRAWN	DHOUM
CHECKED	
SAFETY	
DWNR	
DE	
LEAD ENG APVD	

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

ARCHITECTURAL ELEVATIONS & SECT

PROJECT 241-B-SH RWM STORAGE FACILITY

SIZE	BLDG NO	POES NO		REV NO
F	2609 WD	6800	H-2-80899	0

SCALE SHOWN | JOB NO CR0265 | SHEET 1 OF 1

NUMBER	TITLE
H-2-80094	DWG LIST / CIVIL SITE PLAN

DRAWING TRACEABILITY LIST — REFERENCES — NEXT USED ON

NO	REV NO	DESCRIPTION	REV BY DATE	NON APPROVALS	APVD FOR IMPL / INC FOR DATE

REVISIONS — CADFILE — CADCODE

APPROVED FOR IMPLEMENTATION BY J. G. Wolfe 9-17-90 FOR N/A DATE

IMPACT LEVEL 8

9 2 1 2 7 3 6 5 0 8 0 8 9 4

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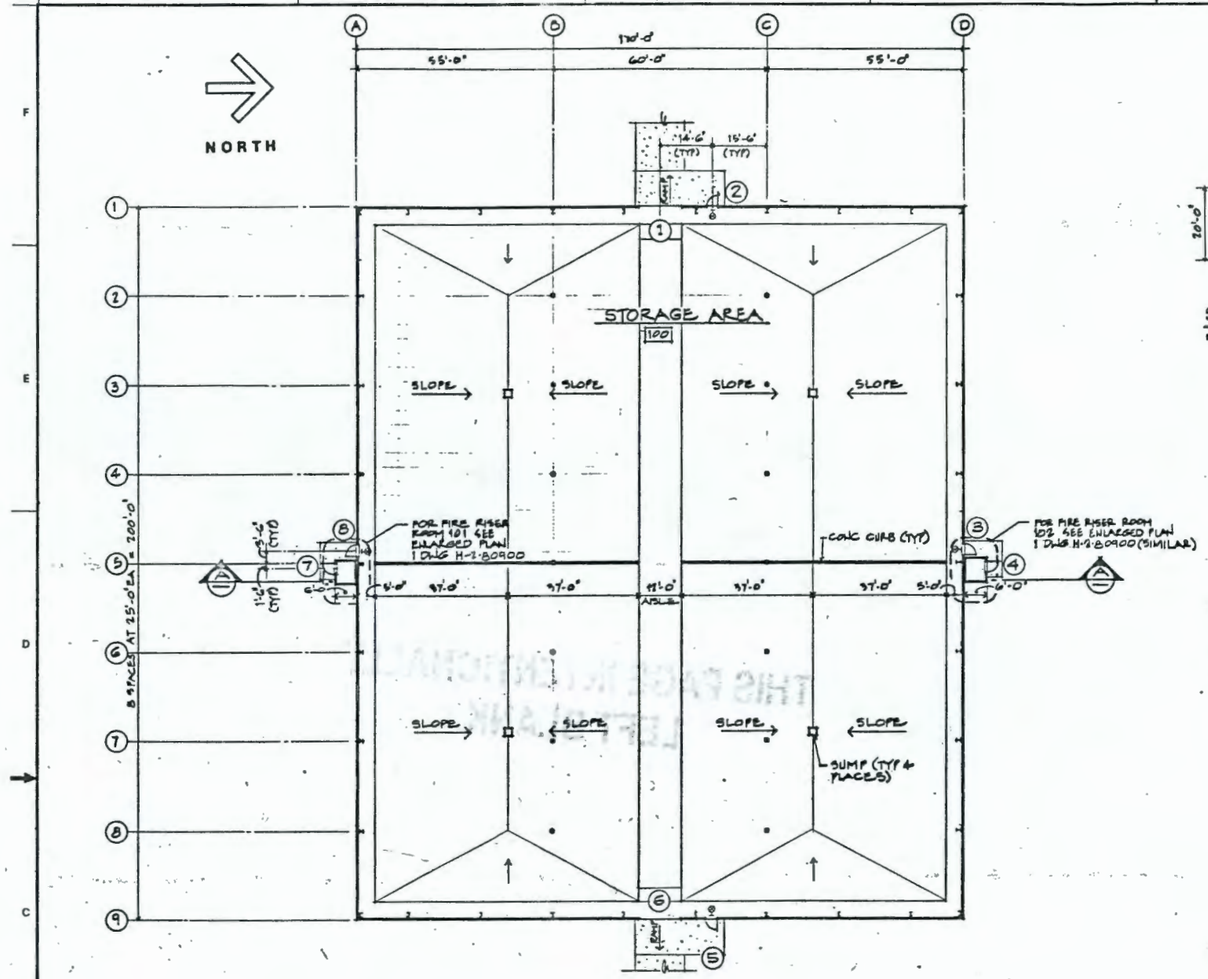
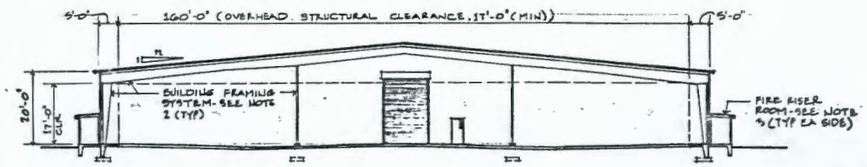


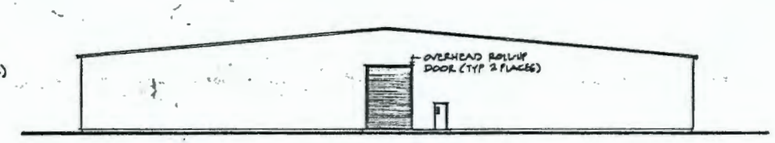
FLOOR PLAN

SCALE: 1/16" = 1'-0"



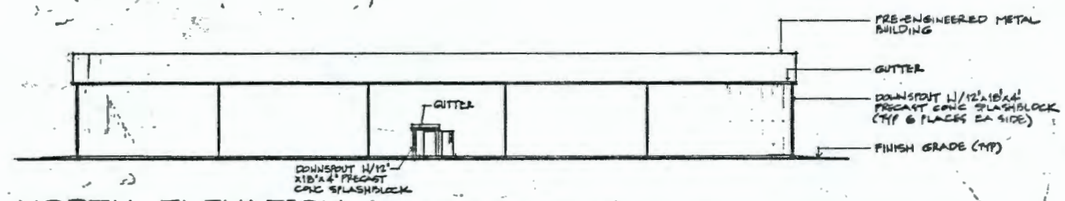
SECTION A

SCALE: 1/16" = 1'-0"



EAST ELEVATION (WEST ELEVATION SIMILAR)

SCALE: 1/16" = 1'-0"

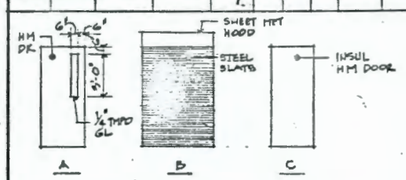


NORTH ELEVATION (SOUTH ELEVATION SIMILAR)

SCALE: 1/16" = 1'-0"

DOOR SCHEDULE (SEE NOTES 5 & 6)

NO	TYPE	LOCATION	OPNG SIZE	THKNS	FRAME HEAD	FRAME JAMB	FRAME SILL	HDW GROUP	WS	LABEL	REMARKS
1	B	—	12'-0"x18'-0"	—	11	11	11	—	YES	—	
2	A	—	3'-0"x7'-0"	1 3/4"	6 SM	7 SM	10	2	YES	—	
3	A	—	3'-0"x7'-0"	1 3/4"	6 SM	7 SM	10	1	YES	—	
4	C	—	3'-0"x7'-0"	1 3/4"	6	7	10	1	YES	—	
5	A	—	3'-0"x7'-0"	1 3/4"	6 SM	7 SM	10	2	YES	—	
6	B	—	12'-0"x18'-0"	—	11	11	11	—	YES	—	
7	C	—	3'-0"x7'-0"	1 3/4"	6	7	10	1	YES	—	
8	A	—	3'-0"x7'-0"	1 3/4"	6 SM	7 SM	10	1	YES	—	



DOOR TYPES

SCALE: NONE

3. PROVIDE SELF-POWERED WALL MOUNTED EXIT SIGN ABOVE DOOR AT LOCATIONS MARKED 2.

GENERAL NOTES

1. ABBREVIATIONS USED ARE PER ANSI Y1.1, 1972.
2. PRE-ENGINEERED METAL BUILDING BASE DESIGN - BUTLER MRF-II BUILDING.
3. METAL SIDING, ROOFING TRIM AND GUTTERS FOR THE FIRE RISER ROOMS SHALL BE SUPPLIED BY PRE-ENGINEERED METAL BUILDING MFG AND MATCH BUILDING SIDING, ROOFING, TRIM AND GUTTERS.
4. FOR CONCRETE FLOOR SLAB SLOPE & CONSTRUCTION JOINTS SEE STRUCTURAL DRAWING H-2-80901 SHEET 1 OF 2.
5. FOR FRAME DETAILS SEE DWG H-80900.
6. FOR DOOR HARDWARE GROUPS SEE SPECIFICATION SECTION 08710.
7. FOR EXH FAN & F.T.R. ASSY SIZE & LOCATION, FOR BLDG 2609-WB SEE HVAC DWG H-7-80906 SH 3 OF 3 AND FOR BLDG 2609-WC SEE HVAC DWG H-2-80904 SH 2 OF 3.

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8-15-90
Date

OFFICIAL RELEASE BY WHC
DATE OCT - 2 1990

PHASE 3 & 4

NUMBER	TITLE
H-2-80894	DWG LIST/CIVIL SITE PLAN

DRAWING TRACEABILITY LIST

NUMBER	TITLE	NEXT USED ON

REV	DESCRIPTION	DATE
1	ECN W016-58 & B7	5-29-91

REVISIONS

CADFILE — CADCODE

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

ARCHITECTURAL PLAN, SECT, EL & SCHED

PROJECT W-016H & MW STORAGE FACILITY

H-2-80898 1

SCALE: SHOWN — JOB NO. CR 9265 — SHEET 1 OF 1

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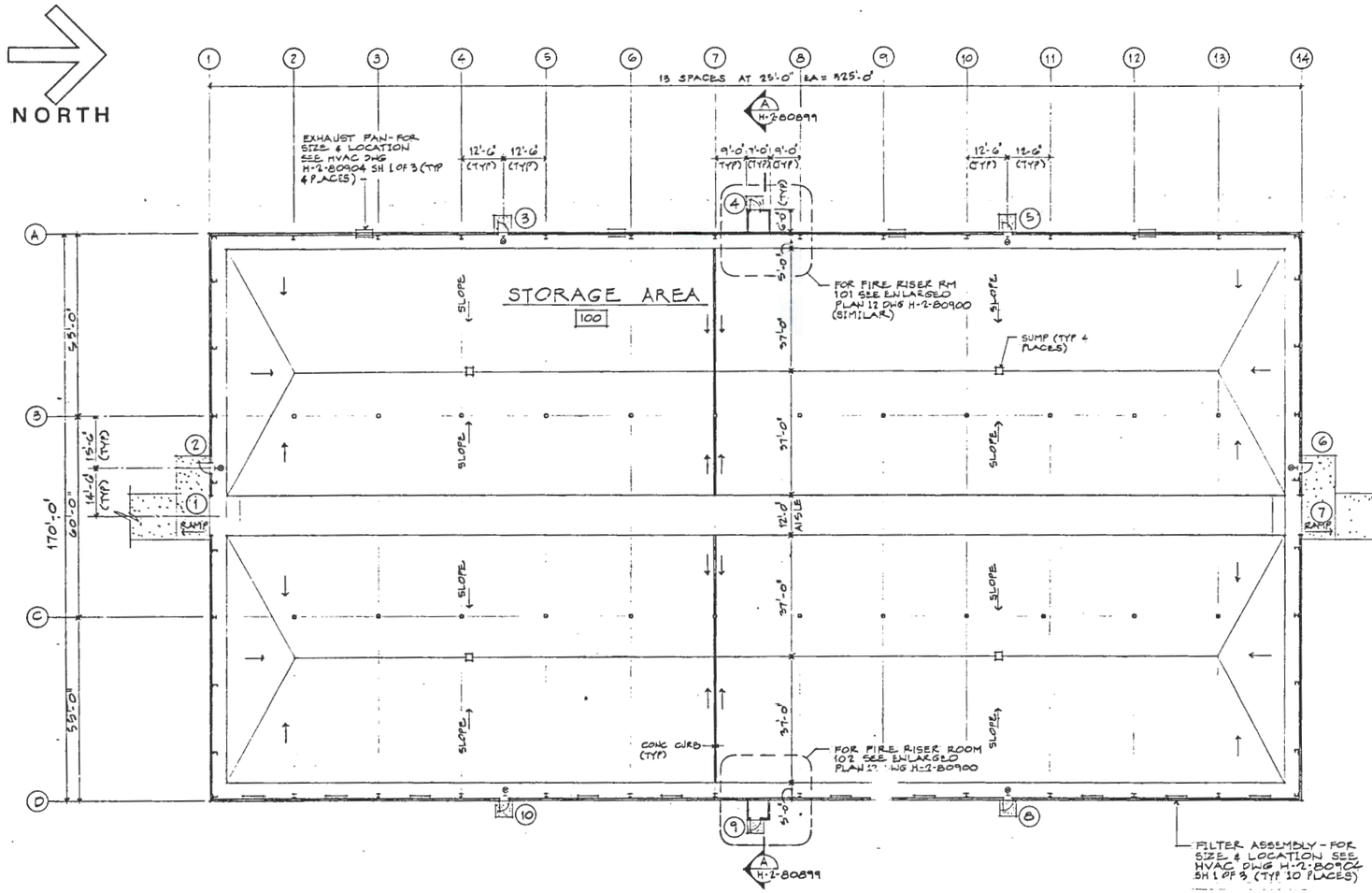
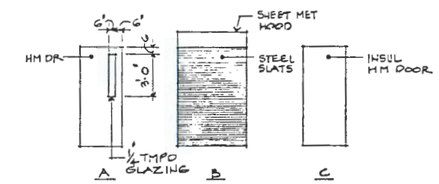


FLOOR PLAN

SCALE: 1/16" = 1'-0"

DOOR SCHEDULE (SEE NOTES 5 & 6)

NO	TYPE	LOCATION	OPNG SIZE	THKNS	FRAME HEAD	FRAME JAMB	FRAME SILL	HDW GROUP	WS	LABEL	REMARKS
1	B	—	12'-0"x10'-0"	—	11	11	11	—	YES	—	
2	A	—	3'-0"x7'-0"	1 3/4"	6SIM	7SIM	10	2	YES	—	
3	A	—	3'-0"x7'-0"	1 3/4"	6SIM	7SIM	10	1	YES	—	
4	C	—	3'-0"x7'-0"	1 3/4"	6	7	10	1	YES	—	
5	A	—	3'-0"x7'-0"	1 3/4"	6SIM	7SIM	10	1	YES	—	
6	A	—	3'-0"x7'-0"	1 3/4"	6SIM	7SIM	10	2	YES	—	
7	B	—	12'-0"x12'-0"	—	11	11	11	—	YES	—	
8	A	—	3'-0"x7'-0"	1 3/4"	6SIM	7SIM	10	1	YES	—	
9	C	—	3'-0"x7'-0"	1 3/4"	6	7	10	1	YES	—	
10	A	—	3'-0"x7'-0"	1 3/4"	6SIM	7SIM	10	1	YES	—	



DOOR TYPES

SCALE: NONE

GENERAL NOTES

1. ABBREVIATIONS USED PER ANSI Y1.1, 1972.
2. PRE-ENGINEERED METAL BUILDING BASE DESIGN - BUTLER MRF-II BUILDING.
3. METAL SIDING, ROOFING, TRIM, AND GUTTERS FOR THE FIRE RISER ROOMS SHALL BE SUPPLIED BY PRE-ENGINEERED METAL BUILDING MFG AND MATCH BUILDING SIDING, ROOFING, TRIM AND GUTTERS.
4. FOR CONCRETE FLOOR SLAB SLOPE & CONSTRUCTION JOINTS SEE STRUCTURAL DRAWING H-2-80901 SHEET 2 OF 2.
5. FOR FRAME DETAILS SEE DWG H-2-80900.
6. FOR DOOR HARDWARE GROUPS SEE SPECIFICATION SECTION 08710.
7. PROVIDE SELF-POWERED WALL MOUNTED EXIT SIGN ABOVE DOOR AT LOCATIONS MARKED ?.

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

Reviewing Official/ADC
Kaiser Engineers Hanford Company

Date 8-15-90

OFFICIAL RELEASE BY WHC
DATE OCT 04 1990

PHASE 2

NUMBER	TITLE
H-2-80941	DWG LEGEND
H-2-80942	SITE PLAN

DRAWING TRACEABILITY LIST — REFERENCES — NEXT USED ON

REV NO	DESCRIPTION	REV BY / DATE	APPROVALS
1	a) ECN-W016-58 & F1,2	DB 4-5-91; LCA 5/12/91; MCV 5/29/91; WHP 5/31/91	

REVISIONS — CADFILE — CADCODE

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

ARCHITECTURAL FLOOR PLAN & SCHED

200H RMW STORAGE FACILITY

DRAWING NO H-2-80897 REV NO 1

SCALE 1/16"=1'-0" JOB NO CR9265 SHEET 1 OF 1

92126

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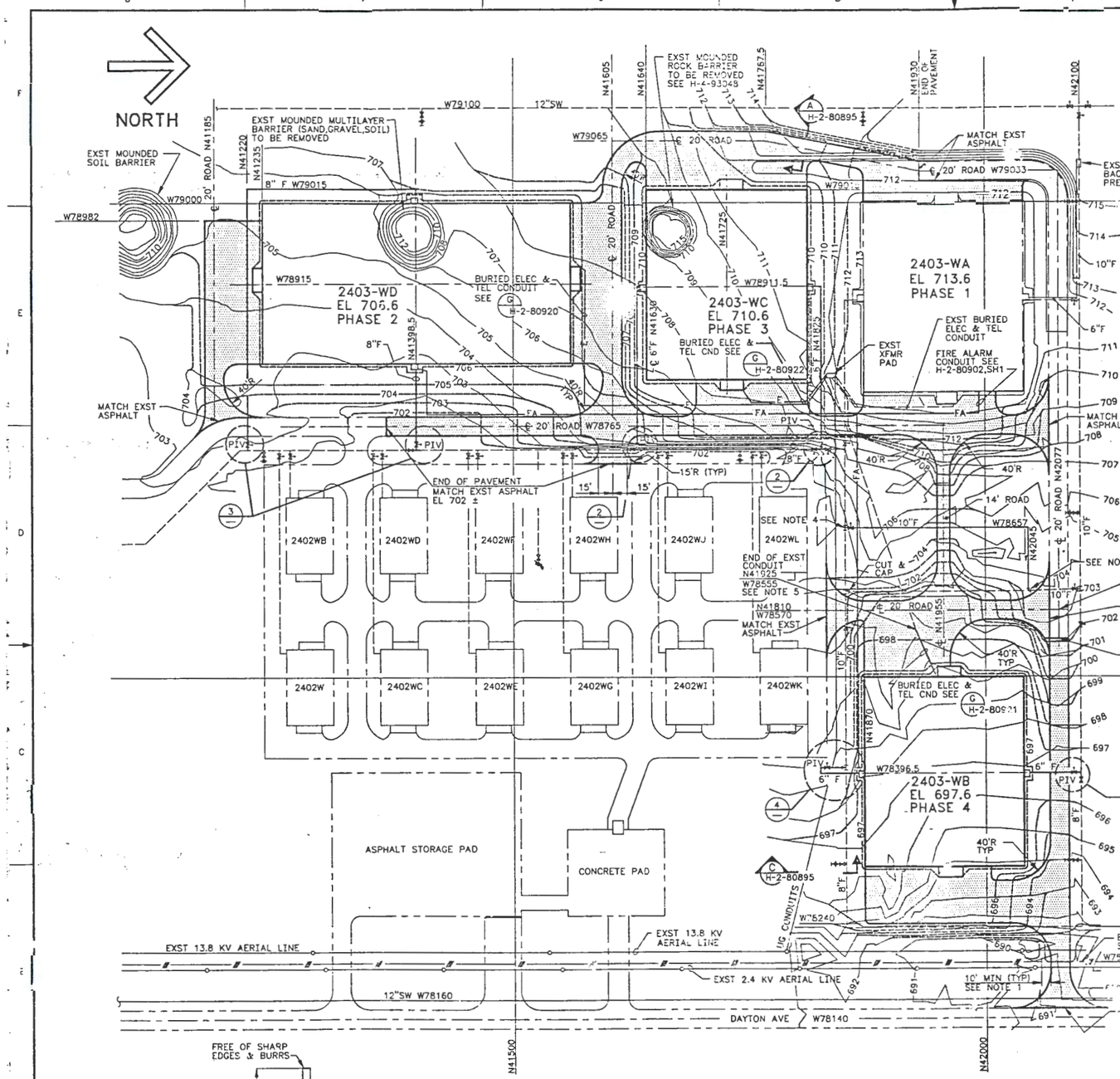
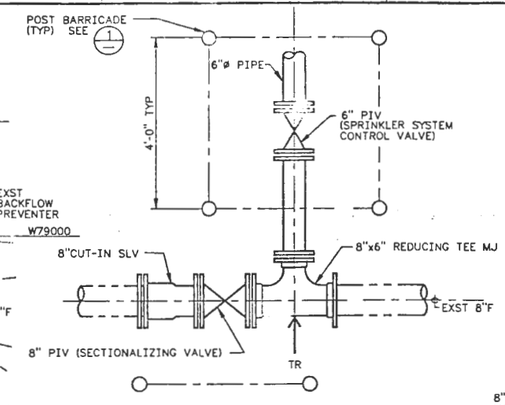


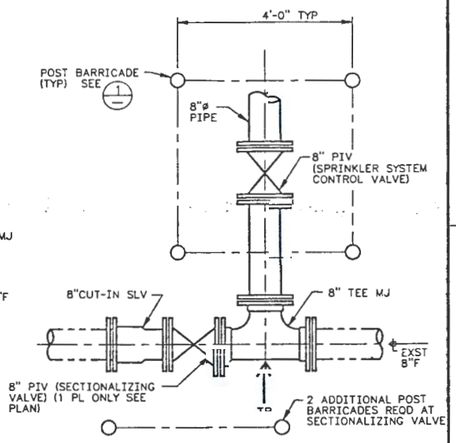
ENLARGED SITE PLAN

SCALE: 1" = 50'-0"



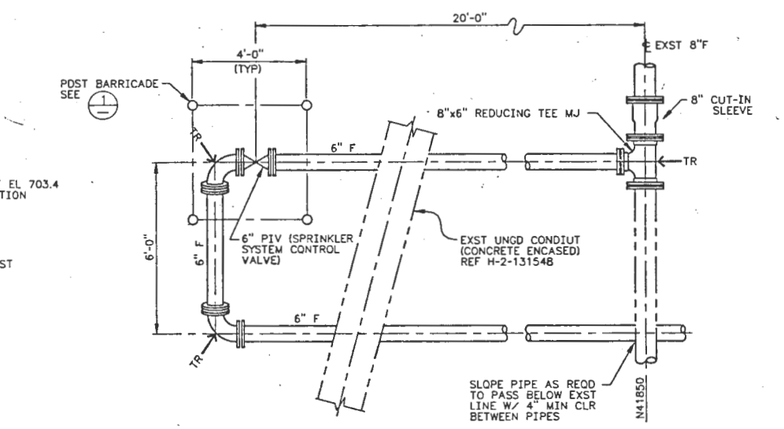
6"F TIE-IN (3PL) 2

SCALE: 1/4" = 1'-0"



8"F TIE-IN (2PL) 3

SCALE: 1/4" = 1'-0"

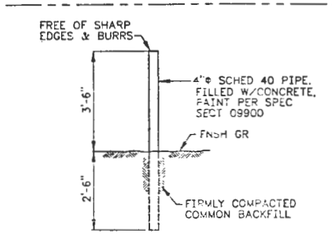


DETAIL 4

SCALE: 1/2" = 1'-0"

NOTES:

1. REMOVE EXISTING FENCE 10 FT MINIMUM FROM EDGE OF ROAD, EACH SIDE, OR TO FIRST POST.
2. FOR LEGEND SEE H-2-80895
3. CUT & CONNECT NORTH PART OF EXST 10"F LINE TO NEW 10"F LINE BY 10" ELBOW
4. FOR CONNECTION OF THE EXST 10"F LINE TO NEW 10"F LINE USE 10" TAPPING TEE
5. RELOCATE & EXTEND EXST CONDUIT AS REQUIRED TO PROVIDE ELECTRICAL & TELECOM SERVICES



POST BARRICADE 1

SCALE: 1" = 1'-0"

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

E.A. VICKERY
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8-16-90
Date

PHASE 2,3, & 4

NUMBER	TITLE	REVISIONS
H-2-131548	ELEC ELEV & DET	
H-2-999641	CIVIL ENLARGED SITE PLAN	
H-2-93048	SITE CLOSURE METHODS DEVELOPMENT	
H-2-80894	DWG LIST	

DRAWING TRACEABILITY LIST — NEXT USED ON H-2-[illegible]

REV. NO.	DESCRIPTION	REV BY DATE	KEM APPROVALS	APPD FOR CONCURR FOR SITE
1	A1 ECN W016-55 & W016-64 GENERAL REVISION	EDW 8/16/90		

CAD FILE 80896SEA CAD CODE C:\KEM\ACD2\TO.DWG

IMPACT LEVEL 3 EDT 125914

DRAWN B. HOLLENBECK 8-16-90
CHECKED M. CONSELMAN 8-16-90
DSIGN'D LUNDGREN 8-17-90
DRAFT'D HOLLENBECK 8-20-90
DSIGN MGR O. OTEN 8-17-90
LEAD ENG APPR'D S. LANDEVIN 8-16-90

APPROVED FOR INFORMATION BY M.E. [illegible] FOR WHC DATE 8-27-90

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

CIVIL
ENLARGED SITE PLAN & DET

PROJECT W-016H RMW STORAGE FACILITY

SIZE	BLDG NO.	INDEX NO.	DWG NO.	REV NO.
F	2403-WA 2403-WB 2403-WC 2403-WD	0110	H-2-80896	1

SCALE SHOWN — JOB NO. CR9265 — SHEET 1 OF 1

KEHCAD

9 2 1 2 1 6 1

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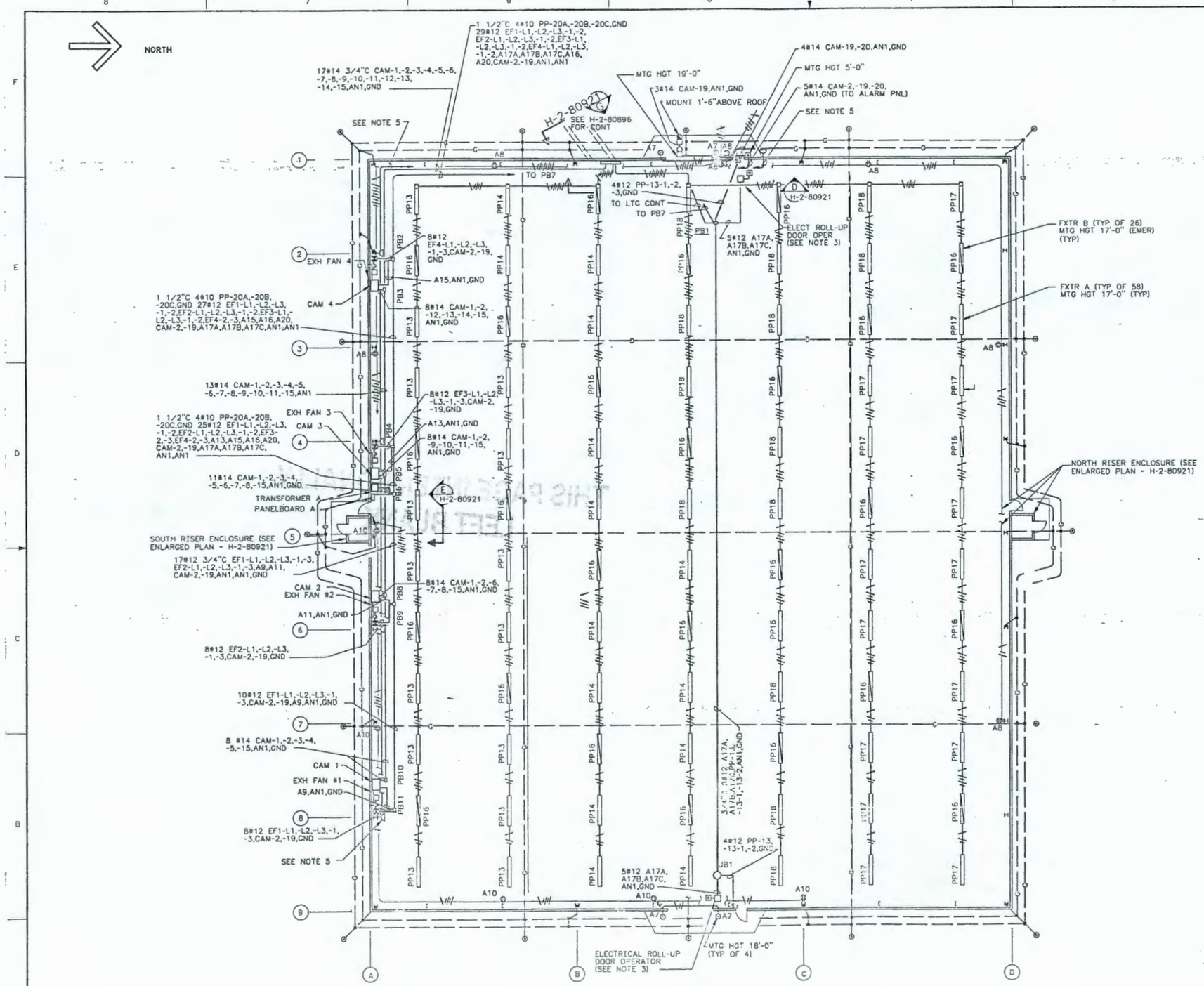

NOTES:

1. FOR MATERIAL CALL OUTS & INSTALLATION INSTRUCTIONS SEE CONSTRUCTION SPECIFICATION.
2. CONDUIT TO BE 1/2", CONDUCTORS TO BE #12 AWG EXCEPT AS NOTED.
3. ELECTRICAL OPERATORS FOR THE ROLL-UP DOORS ARE VENDOR SUPPLIED AND INCLUDE SAFETY INTERLOCKS, LIMIT SWITCHES AND PUSHBUTTON STATION. INSTALLATION SHALL BE AS DIRECTED BY DOOR VENDOR INSTALLATION INSTRUCTION WITH DOOR CONTROL PUSHBUTTON STATIONS MOUNTED 5'-0" ABOVE THE FLOOR IMMEDIATELY ADJACENT TO THE DOOR.
4. SEE H-2-80910 SH 2 FOR WIRING OF EXHAUST FAN FIRE ALARM SYSTEM INTERLOCK CIRCUITS.
5. INTERCONNECT 5 SPKRS WITH 2#18 SPKR WIRES TO PAGING SYS PNL.

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

Reviewing Official/ADC
Kaiser Engineers Hanford Company
8-15-90
Date

OFFICIAL RELEASE BY WHC
DATE OCT - 4 1990

PHASE 4

H-7-1275	ELECTRICAL SYMBOL LIST
H-2-80894	DRAWING LIST

NUMBER	TITLE

DRAWING TRACEABILITY LIST

NUMBER	TITLE

NEXT LIST ON

REV NO.	DESCRIPTION	REV BY (DATE)	REV APPROVALS	APPD FOR DRAWING FOR DATE
	REVISIONS			

CAD FILE BC80918A CAD CODE 2U (SMALL ACCUM D.O.N.)

IMPACT LEVEL 3 | EDT 12EP 4

DRAWN EE COYNE 8-13-90
ENGINEER 8-15-90
SAFETY 8-17-90
CWSR 8/14/90
QC
LEAD ENG APVD 8-15-90

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL PLAN

PROJECT W-016H RMW STORAGE FACILITY

SYM	BLDG. NO.	PAGE NO.	DWG NO.	REV NO.
F	2403 -WB	7301 7401	H-2-80918	0

PREPARED IN ACCORDANCE WITH ASME Y14.100 BY 8-15-90 FOR KEHC DATE 8-15-90

SCALE 3/32" = 1'-0" | JOB NO CR9255 | SHEET 1 OF 1

KEHCAD

9212766 8/09/90

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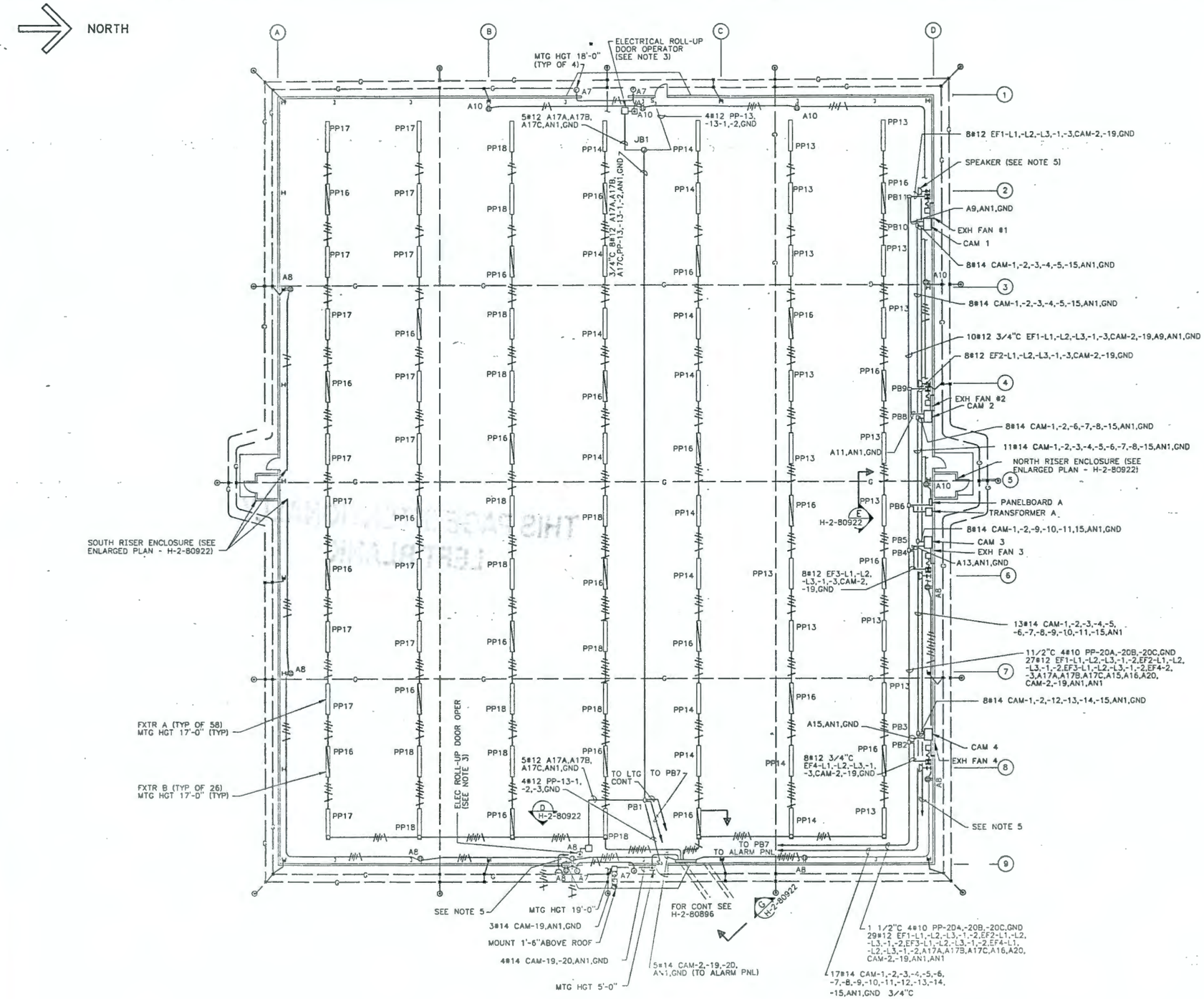

NOTES:

1. FOR MATERIAL CALL OUTS & INSTALLATION INSTRUCTIONS SEE CONSTRUCTION SPECIFICATION.
2. CONDUIT TO BE 1/2", CONDUCTORS TO BE #12 AWG EXCEPT AS NOTED.
3. ELECTRICAL OPERATORS FOR THE ROLL-UP DOORS ARE VENDOR SUPPLIED AND INCLUDE SAFETY INTERLOCKS, LIMIT SWITCHES AND PUSHBUTTON STATION. INSTALLATION SHALL BE AS DIRECTED BY DOOR VENDOR INSTALLATION INSTRUCTION WITH DOOR CONTROL PUSHBUTTON STATIONS MOUNTED 5'-0" ABOVE THE FLOOR IMMEDIATELY ADJACENT TO THE DOOR.
4. SEE H-2-80908 FOR WIRING OF EXHAUST FAN FIRE ALARM SYSTEM INTERLOCK CIRCUITS.
5. INTERCONNECT 5 SPKRS WITH 2#18 SPKR WIRES TO PAGING SYS PNL.

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

Reviewing Official/ADC
Kaiser Engineers Hanford Company
8-15-90
Date

OFFICIAL RELEASE BY WHC
DATE OCT - 4 1990

PHASE 3

NUMBER	TITLE
H-7-1275	ELECTRICAL SYMBOL LIST
H-2-80894	DRAWING LIST

DRAWING TRACEABILITY LIST

REV NO.	DESCRIPTION	REV BY	DATE	KEH APPROVALS	APPROVAL FOR DATE

REVISIONS

CAD FILE B0809194 CAD CODE 2J:IBM:ACCD:D.DWG

IMPACT LEVEL 5 EDT 125914

DRAWN EE COYNE
CHECKED
SAFETY
ENVIR
ENG
LEAD ENGINEER

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL PLAN

PROJECT W-016H RWA STORAGE FACILITY

SIZE	BLDG NO	PROJECT NO	DWG NO	REV NO
F	2403 -WC	7301 7401	H-2-80919	0

SCALE 1/8" = 1'-0" JOB NO C40765 SHEET 1 OF 1

KEHCAD

9212770609

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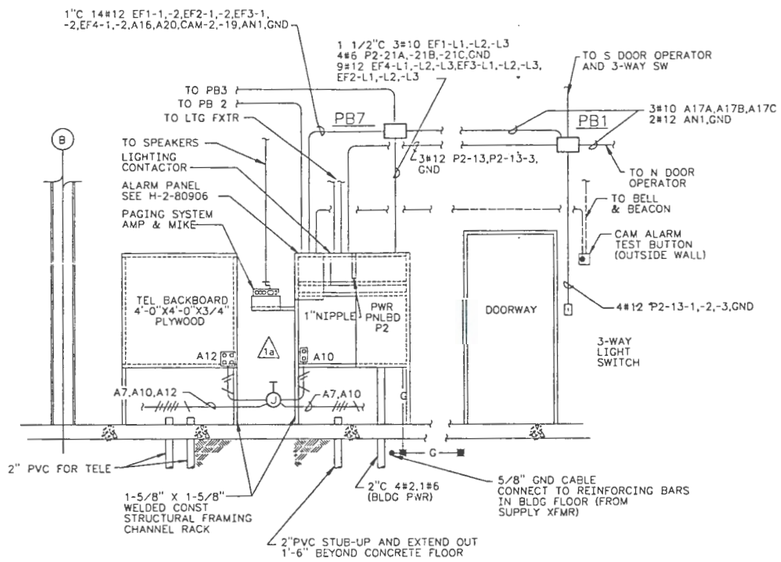
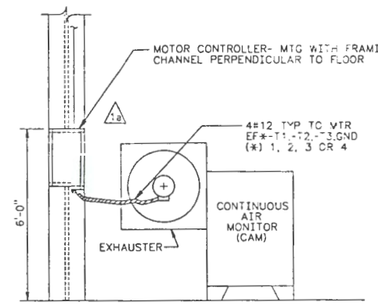


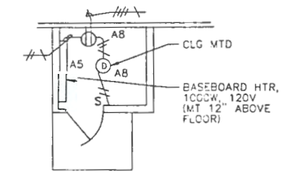
ELEVATION (A) H-2-80917
SCALE: 1/2" = 1'-0"



ELEVATION - CAM 3 & 4
COL 9 & 12
SCALE: 1/2" = 1'-0"

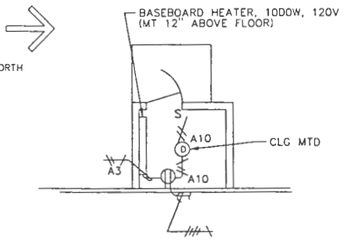
ELEVATION - CAM 1 & 2
COL 3 & 6
OPPOSITE HAND

NORTH

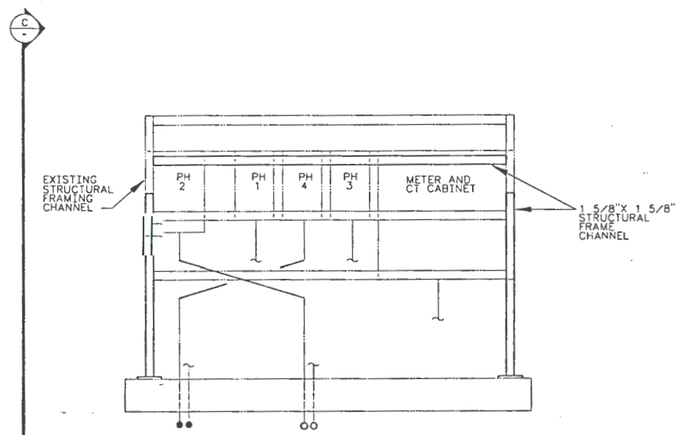


ENLARGED PLAN
EAST RISER ENCLOSURE
SCALE:NONE

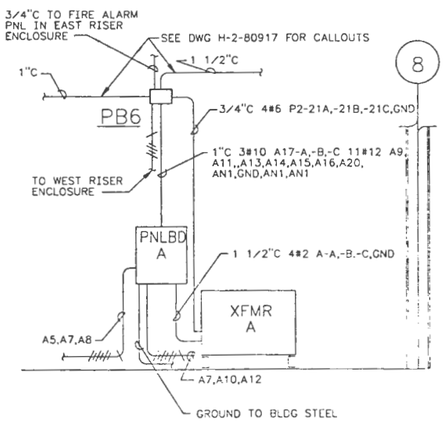
NORTH



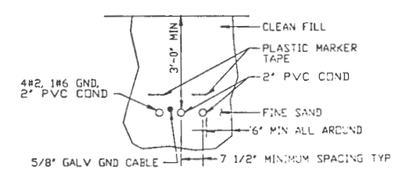
ENLARGED PLAN
WEST RISER ENCLOSURE
SCALE:NONE



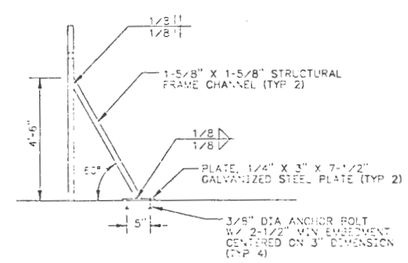
MAIN DISCONNECT SWITCH RACK
S.E. CORNER OF 2403 WA



ELEVATION (B) H-2-80917
SCALE: 1/4" = 1'-0"



SECTION (G) H-2-80917
SCALE: NONE



SECTION (C)
SCALE: NONE
SEE NOTE 2

NOTES:

1. FOR MAIN BUILDING PLAN SEE H-2-80917.
2. STRUCTURAL FRAME CHANNEL ADDED TO EXISTING MAIN DISCONNECT SWITCH RACK.

REVIEWING OFFICIAL/ADC: R.J. HARVAN
DATE: 8-15-90

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

PHASE 2

IMPACT LEVEL 3 | EDT 125914

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL
ELEVATIONS & DETAILS

W 016H RMW STORAGE FACILITY

F 2403 WA | 7301 | H-2-80920

SHOWN | CR9765 | SHEET 1 OF 1

KEYCAD

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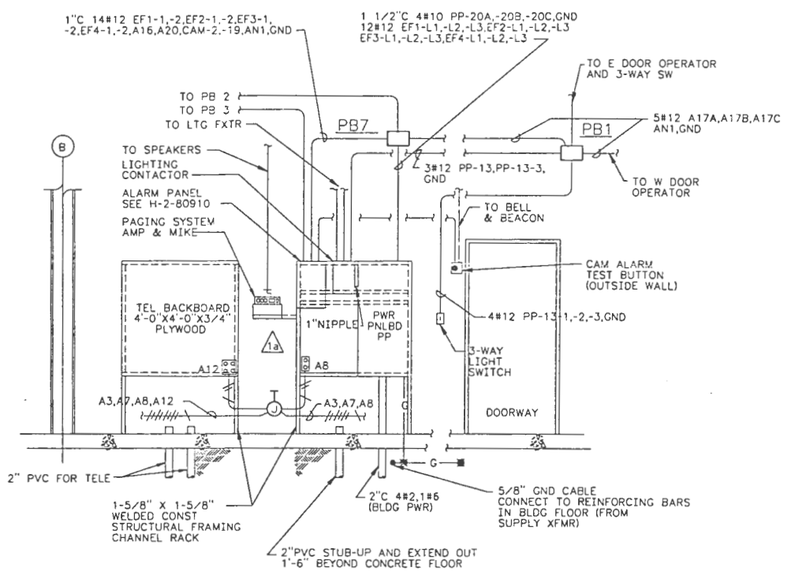
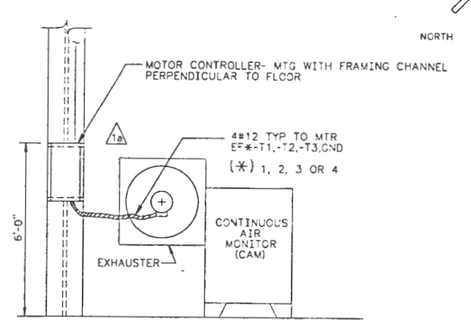
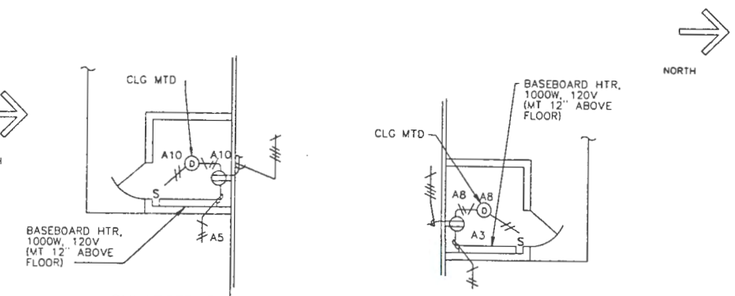


ELEVATION (D) H-2-80918
SCALE: 1/2" = 1'-0"



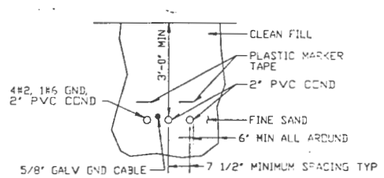
ELEVATION - CAM 1 & 2
COL 8 & 5
SCALE: 1/2" = 1'-0"

ELEVATION - CAM 3 & 4
COL 4 & 2
OPPOSITE HAND

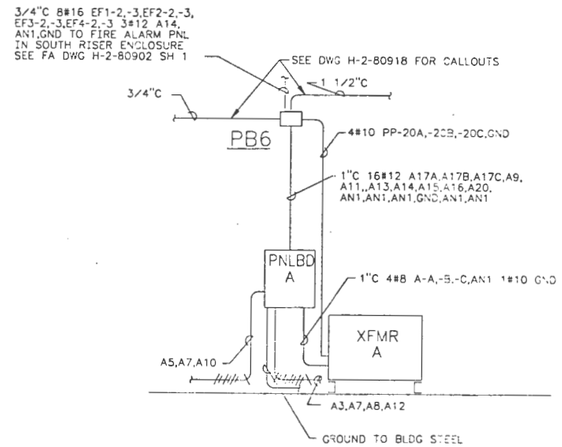


ENLARGED PLAN
SOUTH RISER ENCLOSURE
SCALE:NONE

ENLARGED PLAN
NORTH RISER ENCLOSURE
SCALE:NONE



SECTION (G) H-2-80918
SCALE: NONE



ELEVATION (E) H-2-80918
SCALE: 1/4" = 1'-0"

NOTES:

1. FOR MAIN BUILDING PLAN SEE H-2-80918.

REVIEWING OFFICIAL/ADC: R.J. HARMAN
DATE: 8-15-90

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

PHASE 4

DRAWN E.E. COYNE		IMPACT LEVEL 3	EDT 125914
CHECKED W. ALEXANDER	8-15-91	U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE KAISER ENGINEERS HANFORD COMPANY	
APPROVED J. JUNGREN	8-17-90	M	ELECTRICAL ELEVATIONS & DETAILS
APPROVED J. HALLENBECK	8-20-90		
APPROVED K.C. OTEN	8-17-90		
APPROVED E.E. COYNE	8-15-90	PROJECT W-016H RWM STORAGE FACILITY	
		SIZE F	DWG NO 2403-WS 7301 H-2-80921 REV NO 1
		SCALE SHOWN	JOB NO C88945 SHEET 1 OF 1

REVISIONS

REV NO	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	ECN A016-53 Z E7, E8			

11275	ELECTRICAL SYMBOL LIST
10894	DRAWING LIST

KEHCAD 1

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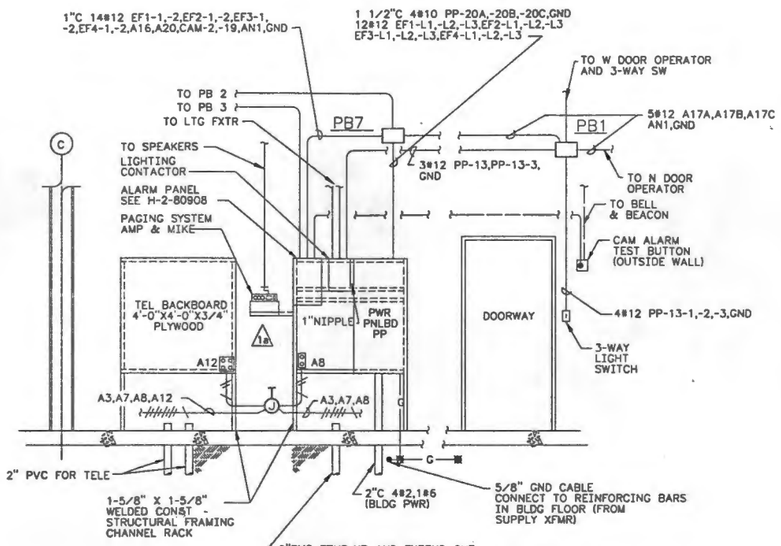
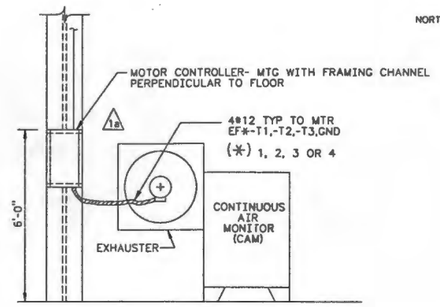
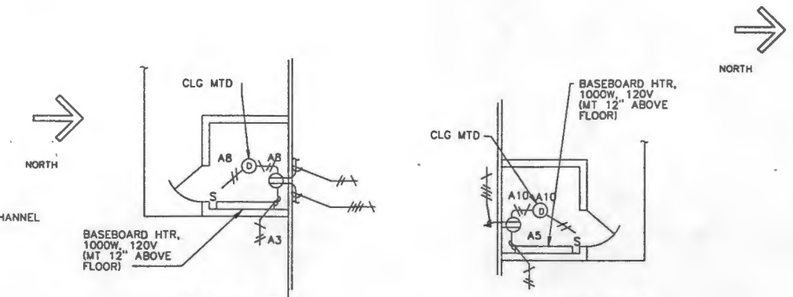


ELEVATION
SCALE: 1/2" = 1'-0"
D H-2-80919



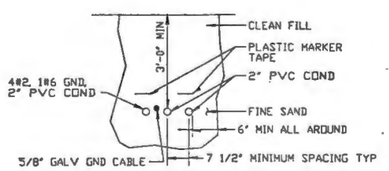
ELEVATION - CAM 1 & 2
COL 2 & 4
SCALE: 1/2" = 1'-0"

ELEVATION - CAM 3 & 4
COL 6 & 8
OPPOSITE HAND

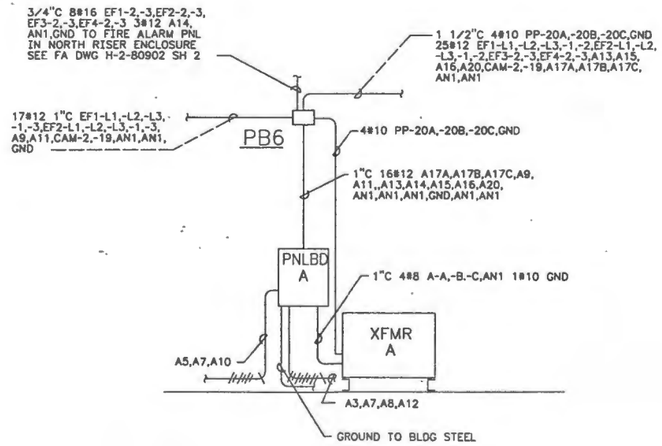


ENLARGED PLAN
SOUTH RISER ENCLOSURE
SCALE:NONE

ENLARGED PLAN
NORTH RISER ENCLOSURE
SCALE:NONE



SECTION
SCALE: NONE
G H-2-80919



ELEVATION
SCALE: 1/4" = 1'-0"
E H-2-80919

NOTES:

1. FOR MAIN BUILDING PLAN SEE H-2-80919.

REVIEWING OFFICIAL/ADC: R.J. HARMAN
DATE: 8-15-90

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

PHASE 3

NUMBER	TITLE
H-7-1275	ELECTRICAL SYMBOL LIST
H-2-80941	DRAWING LIST

DRAWING TRACEABILITY LIST

REV NO	DESCRIPTION
1	a) ECN W016-53 Z E5,E7

REVISIONS

CAD FILE 80S0922A

IMPACT LEVEL 3 | EDT 1225914

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL
ELEVATIONS & DETAILS

PROJECT W-016H RWM STORAGE FACILITY

SHEET	ZONE NO	DWG NO	REV NO
F	2903-NC 7301	H-2-80922	1

SCALE SHOWN | CRS265 | SHEET 1 of 1

KEHCAD

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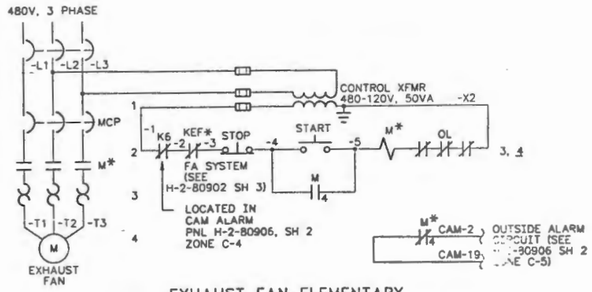


EXHAUST FAN ELEMENTARY

TYPICAL OF 4 - PREFIX WIRE NO W/EXH FAN NO. (EF1 THRU EF4)

* - INDICATES EXHAUST FAN NUMBER

PANELBOARD A — LOCATION W WALL BET COL 7-8 — VOLTS 120/208VAC 3PH, 4W

MFG & TYPE SQ D NQOD — POWER SUPPLIED FROM 30KVA XFMR A

CKT BRKR TYPE BOLT-ON

NEMA TYPE ENCL 1

☒ SURFACE MOUNTED ☐ FLUSH MOUNTED

☒ MAIN CKT BRKR ☐ MAIN LUGS ONLY ☐ TOP ☒ BOT

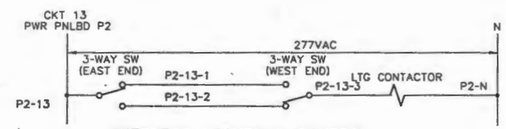
☐ PANELBOARD GROUND FAULT PROTECTION ☒ GROUND BUS

100A AMP BUS
100A AMP NEUT

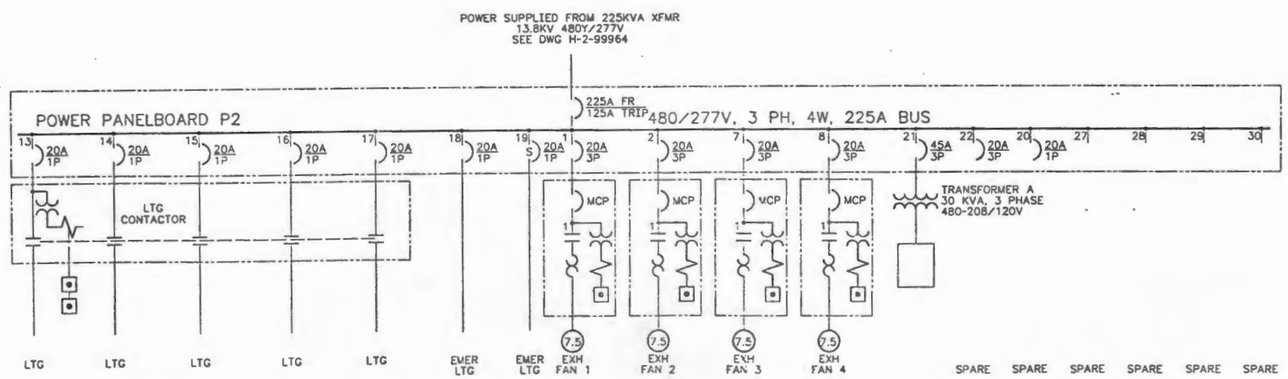
SERVICE	VA	NO.		NO.	VA	SERVICE
SPARE		1		2		SPARE
W RISER ENCL HTR	1000	3				
E RISER ENCL HTR	1000	5		6		SPARE
EXTERIOR LTG N & S	540	7		8	1180	CONVENIENCE OUTLETS
CAM 1	1800	9		10	1900	CONVENIENCE OUTLETS
CAM 2	1800	11		12	360	TEL BACKBOARD RCPT
CAM 3	1800	13		14		FIRE ALARM SYS
CAM 4	1800	15		16	530	CAM ALARM PANEL
MOTOR OPERATED DOORS	1500	17		18		SPARE
				20	530	CAM ALARM PANEL
				22		SPACE
SPACE		23		24		SPACE

80A

ALL CIRCUIT BREAKERS ARE 20A UNLESS OTHERWISE NOTED
G = GROUND FAULT INTERRUPTER BREAKER
* = CIRCUIT BREAKER WITH LOCKING DEVICE



INTERIOR LIGHTING CONTROL



ONE-LINE DIAGRAM

(CIRCUIT 18 & 19 CIRCUIT BREAKER SHALL BE APPROVED FOR SWITCHING DUTY)

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

R.J. HARVAN
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8-15-90
Date

PHASE 2

H-7-1275	ELECTRICAL SYMBOL LIST
H-2-80934	DRAWING LIST

NUMBER	TITLE
	REFERENCES

DRAWING TRACEABILITY LIST

REV NO	DESCRIPTION	REV BY	DATE	KEH APPROVALS	DATE
1	IAW ECN W016-59 Z 77				

REVISIONS

CAD FILE B80923A — CAD CODE 2J0 PANEL SCHEDULE

DRAWN EE COYNE DATE
SHEETROCK ALEXANDER 6-21-90
SAFETY LUNDGREN 6-27-90
ENVIR HOLLENBECK 6-28-90
M.E.P.C. OTEN 6-28-90
LEAD ENG ANVED COYNE 6-21-90

ISSUED FOR CONSTRUCTION
BY KEH
FOR AWP DATE 8-17-90

IMPACT LEVEL 3 — EDT 125914

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

M ELECTRICAL
DIAG - PNLBD SCHED

PROJECT W-016H RWM STORAGE FACILITY

BLDG F — SYSTEM 2403 -WD — SUBSYS 7701 7304 — DWG NO H-2-80923 — REV NO 1

SCALE NONE — JOB NO CR9765 — SHEET 1 OF 1

KEHCAD

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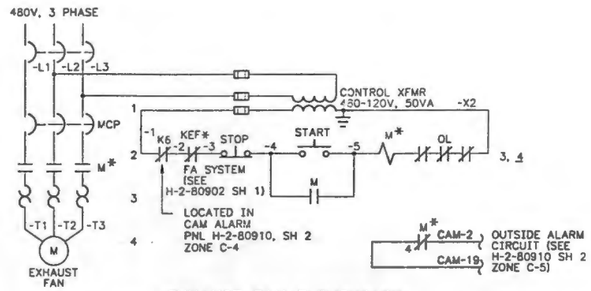

EXHAUST FAN ELEMENTARY

TYPICAL OF 4 - PREFIX WIRE NO W/EXH FAN NO. (EF1 THRU EF4)

* - INDICATES EXHAUST FAN NUMBER

PANELBOARD A LOCATION RMW STOR FAC S WALL VOLTS 120/208Y VAC 3PH, 4W

MFG & TYPE SQ D NQOD POWER SUPPLIED FROM 15KVA XFMR A

CKT BRKR TYPE

NEMA TYPE ENCL

☒ SURFACE MOUNTED ☐ FLUSH MOUNTED

☒ MAIN CKT BRKR ☐ MAIN LUGS ONLY ☐ TOP ☒ BOT

☐ PANELBOARD GROUND FAULT PROTECTION ☒ GROUND BUS

100A AMP BUS
100A AMP NEUT

SERVICE	VA	NO.		NO.	VA	SERVICE
SPARE		1		2		SPARE
N RISER ENCL HTR	1000	3				
S RISER ENCL HTR	1000	5		6		SPARE
EXTERIOR LTG E & W	540	7		8	1720	CONVENIENCE OUTLETS (WEST END)
CAM 1	1045	9		10	1180	CONVENIENCE OUTLETS (EAST END)
CAM 2	1045	11		12	360	TEL BACKBOARD RCPT
CAM 3	1045	13		14		FIRE ALARM SYS
CAM 4	1045	15		16	530	CAM ALARM PANEL
MOTOR OPERATED DOORS	1500	17		18		SPARE
				20	530	CAM ALARM PANEL
				22		SPACE
SPACE		23		24		SPACE

ALL CIRCUIT BREAKERS ARE 20A UNLESS OTHERWISE NOTED
G = GROUND FAULT INTERRUPTER BREAKER
* = CIRCUIT BREAKER WITH LOCKING DEVICE

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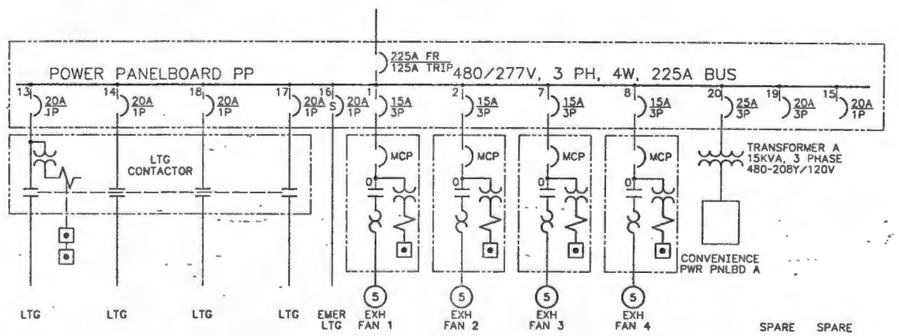
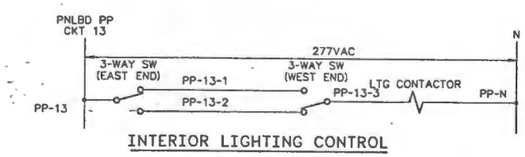
POWER SUPPLIED FROM 225KVA XFMR
13.8KV 480/277V
SEE DWG H-2-55964



ONE-LINE DIAGRAM

(CIRCUIT 16 CIRCUIT BREAKER SHALL BE APPROVED FOR SWITCHING DUTY)



INTERIOR LIGHTING CONTROL

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

R.J. HARMAN
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8-15-90
Date

PHASE 4

H-7-1275	ELECTRICAL SYMBOL LIST	
H-2-80894	DRAWING LIST	
NUMBER	TITLE	REFERENCES

DRAWING TRACEABILITY LIST

REV NO	DESCRIPTION	REV BY DATE	KEH APPROVALS
1	a) ECN W016-59 Z E6,7		

REVISIONS

CAD FILE 80B0924A CAD CODE 2J0TBMJAC02*C0.CKN

DRAWN EE COYNE 8-15-90
CHECKED W. ALEXANDER 8-15-90
SAFETY D. LUNDGREN 8-17-90
ENGTRG HC LENBECK 8-20-90
SK T.C. OTEN 8-17-90
CAD ENG APPROVED COYNE 8-15-90

ESTIMATED FOR IMPLEMENTATION BY HE AUXILIARY
FOR INFO DATE 9-27-90

IMPACT LEVEL 3 EDT 125914

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

M ELECTRICAL
DIAG - PNLBD SCHED

PROJECT W-016H RMW STORAGE FACILITY

SYS F | FUNC NO 2403/7201 -WB1 | DWG NO 7304 | DWG NO H-2-80924 | REV NO 1

SCALE NONE | CODE NO CR2155 | SHEET 1 OF 1

KEHCAD

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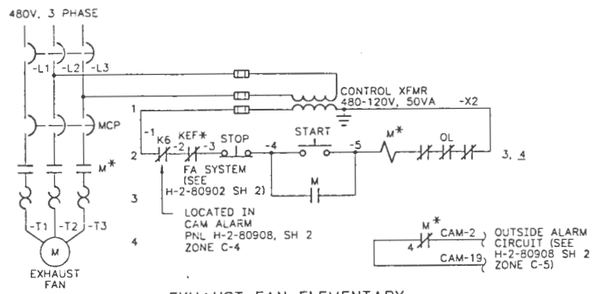


EXHAUST FAN ELEMENTARY

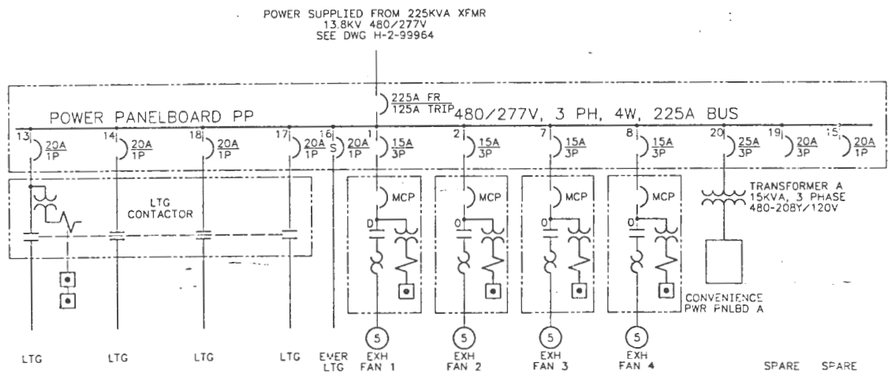
TYPICAL OF 4 - PREFIX WIRE NO W/EXH FAN NO. (EF1 THRU EF4)

* - INDICATES EXHAUST FAN NUMBER

PANELBOARD A LOCATION RMW STOR FAC S WALL VOLTS 120/208Y VAC
MFG & TYPE SQ D NQOD POWER SUPPLIED FROM 15KVA XFMR A 3Ø, 4W
CKT BRKR TYPE
NEMA TYPE ENCL
☒ SURFACE MOUNTED ☐ MAIN CKT BRKR ☐ PANELBOARD GROUND FAULT PROTECTION 100A AMP BUS
☐ FLUSH MOUNTED ☐ MAIN LUGS ONLY 100A AMP NEUT
☐ TOP ☒ BOT ☒ GROUND BUS

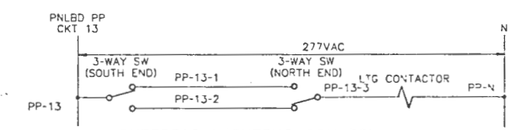
SERVICE	VA	NO.		NO.	VA	SERVICE
SPARE		1		2		SPARE
S RISER ENCL HTR	1000	3				
N RISER ENCL HTR	1000	5		6		SPARE
EXTERIOR LTG E & W	540	7		8	1720	CONVENIENCE OUTLETS (EAST END)
CAM 1	1045	9		10	1180	CONVENIENCE OUTLETS (WEST END)
CAM 2	1045	11		12	360	TEL BACKBOARD RCPT
CAM 3	1045	13		14		FIRE ALARM SYS
CAM 4	1045	15		16	530	CAM ALARM PANEL
MOTOR OPERATED DOORS	1500	17		18		SPARE
				20	530	CAM ALARM PANEL
				22		SPACE
SPACE		23		24		SPACE

ALL CIRCUIT BREAKERS ARE 20A UNLESS OTHERWISE NOTED
G = GROUND FAULT INTERRUPTER BREAKER
* = CIRCUIT BREAKER WITH LOCKING DEVICE



ONE-LINE DIAGRAM

(CIRCUIT 16 CIRCUIT BREAKER SHALL BE APPROVED FOR SWITCHING DUTY)



INTERIOR LIGHTING CONTROL

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

R.J. HARMAN
Reviewing Official/AAC
Kaiser Engineers Hanford Company
8-15-90
Date

PHASE 3

U. S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL
DIAG - PNLBD SCHED

W-016M RMW STORAGE FACILITY

H-2-80925 | 1

ELECTRICAL SYMBOL LIST

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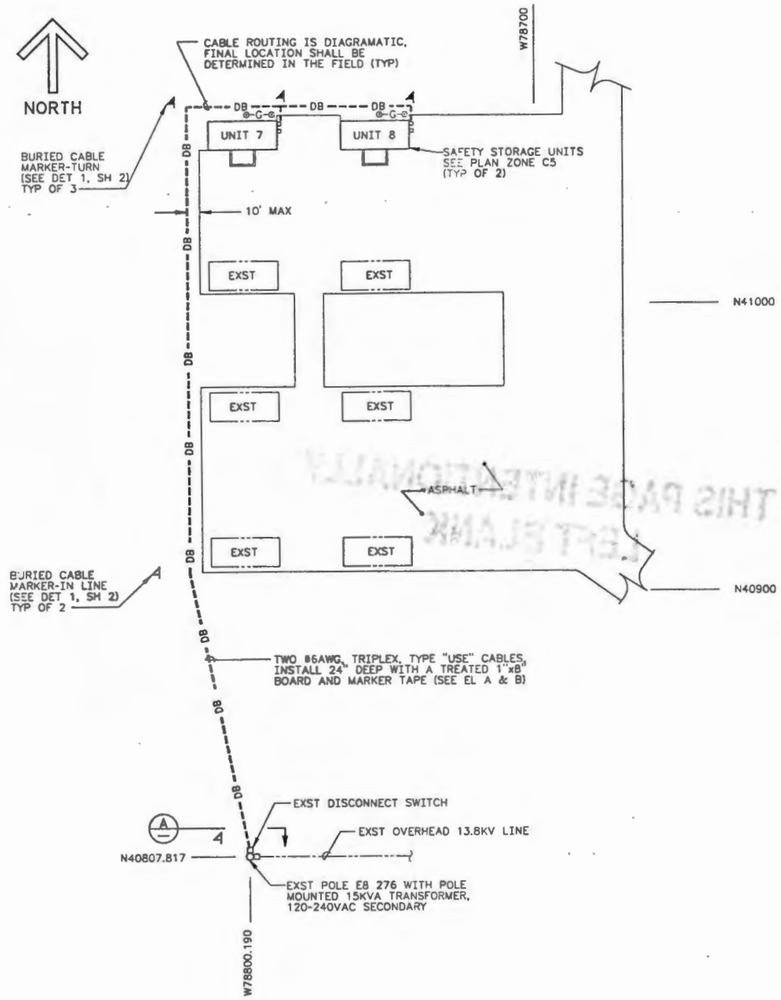
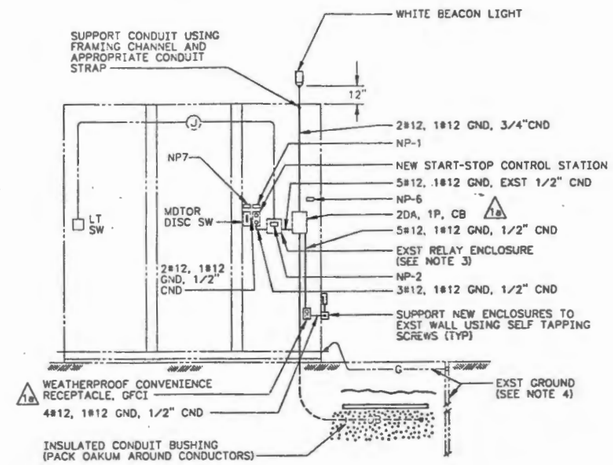


PLAN
SCALE:1"=20'-0"



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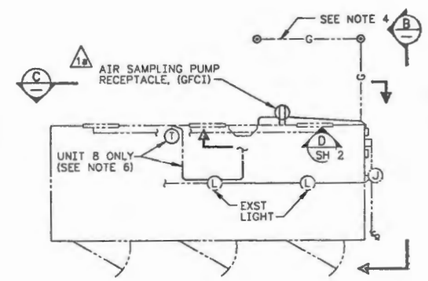


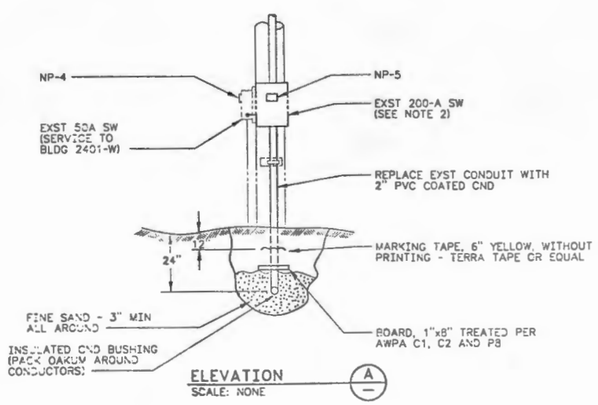
SAFETY STORAGE UNIT PLAN
1/4"=1'-0"
(TYPICAL OF UNITS 7 & 8)

NAMEPLATE LEGEND		
NP	ENGRAVING	SIZE (IN.)
1	EXHAUST FAN CONTROL (PUSH AND HOLD-5 SEC)	1½ x 3
2	EXHAUST FAN RELAY	1 x 2
3	AIR SAMPLING PUMP ONLY	1 x 2
4	BUILDING 2401-W SERVICE	1½ x 3
5	FLAMMABLE MIXED WASTE STORAGE SERVICE	1½ x 3
6	BEACON INDICATES LOSS OF EXH FAN FLOW	4 x 6
7	EXH FAN DISC SW	1½ x 3

(3/16" LETTERING EXCEPT 1/2" FOR NAMEPLATE 6)

NOTES:

1. FOR MATERIAL AND INSTALLATION SEE CONSTRUCTION SPECIFICATION ON SHEET 3.
2. THE LOAD SIDE OF THE EXISTING 200-A SWITCH IS NOW SUPPLYING THE LINE SIDE OF THE 50 AMP SWITCH THAT SERVES BLDG 2401-W. DISCONNECT THE EXISTING #6 AWG (RED) FROM THE LOAD SIDE AND RECONNECT TO THE LINE SIDE. INSTALL NEW 2 POLE, 60 AMP FUSE HOLDER ON LOAD SIDE OF 200 AMP SWITCH AND CONNECT IN SERIES WITH NEW SERVICE. CONTACT CONTRACTING OFFICER PRIOR TO INTERRUPTING POWER TO BUILDING 2401-W.
3. REPLACE EXISTING DPDT PLUG-IN RELAY WITH A NEW TIME DELAY RELAY ADJUSTED TO OPERATE 2 SECONDS AFTER ENERGIZATION. SEE ELEMENTARY DIAGRAM FOR NEW WIRING.
4. INSTALL ONE 5/8" x 8'-0" GALVANIZED GROUND ROD AT EACH STORAGE UNIT AND ATTACH TO EXISTING ROD USING 5/8", 7 STRAND GALVANIZED CABLE WITH CLASS B ZINC COATING IN ACCORDANCE WITH ASTM A475. RODS SHALL BE NOT LESS THAN 6'-0" FROM THE EXISTING ROD AND ALL CONNECTIONS SHALL BE EXOTHERMICALLY WELDED, CLEANED AND COATED WITH TAR BEFORE WELD COOLS.
5. INSTALL FLAGS PARALLEL TO THE UNDERGROUND RUN, POINTING FROM THE SOURCE TO THE POINT OF UTILIZATION, ONE FOOT FROM THE UNDERGROUND RUN WITH THE PAINTED SIDE OF THE ARROW TOWARD THE UNDERGROUND RUN.
6. THE TEMPERATURE CONTROL THERMOSTAT LOCATED ON THE NORTH WALL OF UNIT 8 SHALL BE REMOVED. REMOVE CONDUIT AND WIRE BETWEEN THERMOSTAT AND LIGHT FIXTURE. RESTORE CIRCUIT AND INSTALL PLUG IN THREADED BOSS OF FIXTURE OUTLET BOX.
7. PAINTING: AFTER COMPLETION OF DRILLING, CUTTING, GRINDING, AND WELDING OF THE AIR FLOW SWITCH MOUNTING BRACKET AND THE AIR VENTILATION DUCT, CLEAN AND PAINT ALL EXPOSED CARBON STEEL SURFACES WITH ONE COAT OF ZINC CHROMATE PRIMER (FEDERAL SPECIFICATION TT-P-645A) TINTED GREY AND TWO COATS OF FINISH ENAMEL (FEDERAL SPECIFICATION TT-E-509C) TINTED TO MATCH COLOR OF EXISTING AIR VENTILATION DUCT. DO NOT PAINT THREADED SURFACES.
8. SEE DRAWING H-7-1275 FOR ELECTRICAL SYMBOLS.



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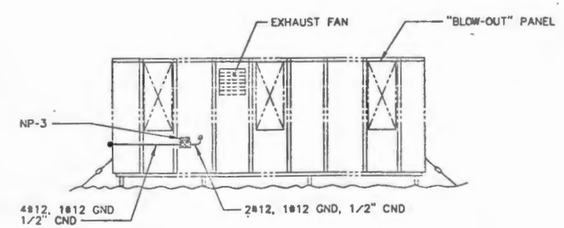

ELEVATION
SCALE: NONE

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

R.J. HARMAN
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8/27/90
Date

NUMBER	TITLE	NEXT USED ON
H-7-1275	ELECTRICAL SYMBOLS	

DRAWING TRACEABILITY LIST

NUMBER	TITLE	REFERENCES

REV	DESCRIPTION	REV BY	DATE	KEH APPROVALS
1	AS-BUILT FOR PROJ. W-149. ECN W149-2 Z 0.E4.5	KCA	8/8/91	

REVISIONS

CAD FILE: RCB1296A CAD CODE: 2J0BV:AC02:10.0:NA

IMPACT LEVEL 3 EDT 125917

DRAWN LS JONES 8/90
SHEET M ALEXANDER 8/90
SAFETY J ARCHIBALD 8/90
ENGR DL FORT 8/90
IC TC OTEN 8/90
CO ENG APVD R HARMAN 8/90

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL
STORAGE MODULES 7 & 8
PLANS & DETAILS

PROJECT W-149 LOW FLASHPOINT MIXED WASTE TRU STOR

SIZE F | SCALE SHOWN | DWG NO. H-2-81296 | REV NO 1 | JOB NO. ER0248 | SHEET 1 of 3

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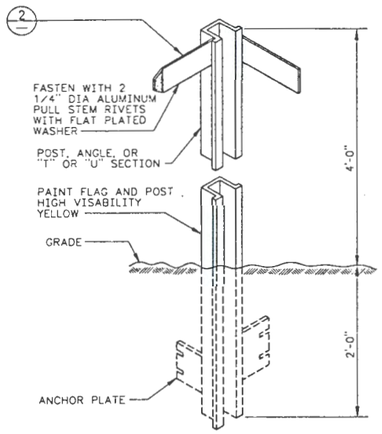
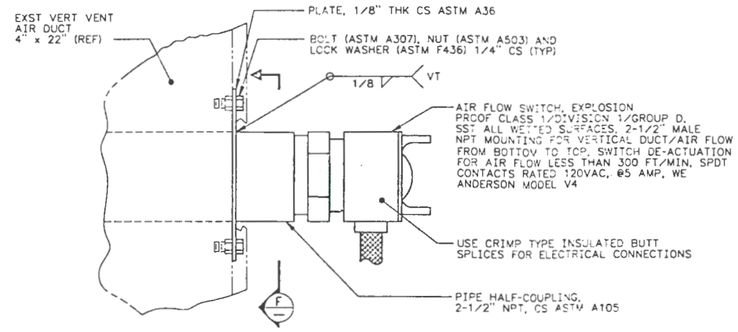


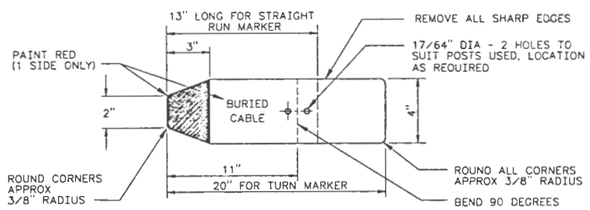
MARKER FLAG AND POST

DETAIL 1 H-2-81296 SH1
SCALE: NONE
(SEE NOTE 5)

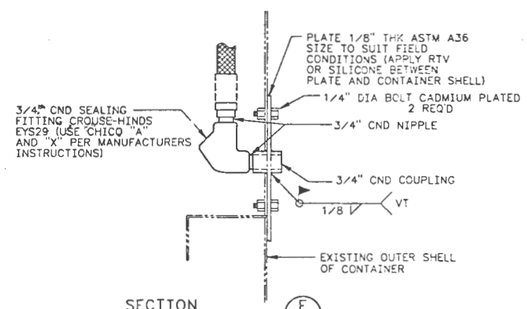


INSTALLED AIR FLOW SWITCH

DETAIL 3
SCALE: 1/2"=1"
(SEE NOTE 7)



DETAIL 2
SCALE: NONE
.1 INCH THICK ALUMINUM



SECTION E
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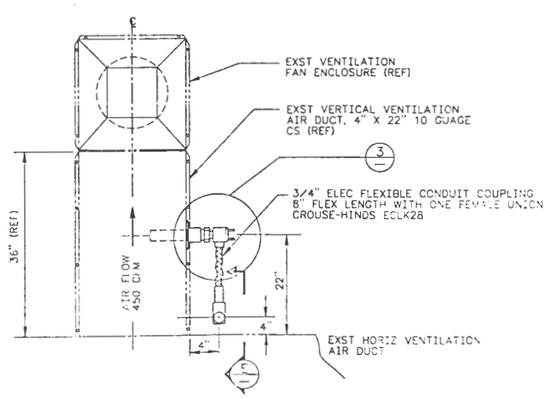
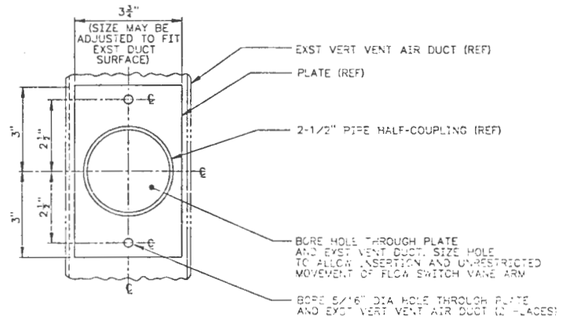
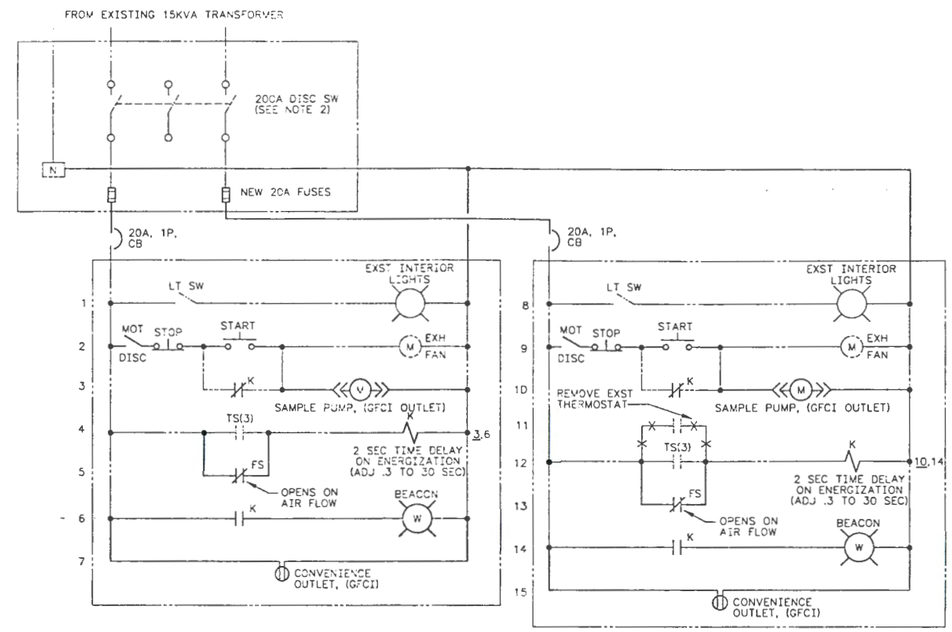


ELEVATION D
SCALE: NONE
H-2-81296 SH 1



SECTION F
SCALE: 1/2"=1"
AIR FLOW SWITCH REMOVED
PLATE ATTACHMENT BOLTS REMOVED
TOLERANCE ± 1/16"



UNIT 7

UNIT 8

ELEMENTARY DIAGRAM

NOTES:

1. SEE SHEET 1 FOR LEGENDS AND NOTES.
2. SEE SHEET 3 FOR SPECIFICATIONS.

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

R.J. HARMAN
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8/27/90
Date

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL
STORAGE MODULES 7 & 8
DETAILS & DIAGRAMS

FLASHPOINT MIXED WASTE TRU STOR

H-2-81296 | 1

SHEET 2 OF 3

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CONSTRUCTION SPECIFICATION (DIVISION 16)

PART 1 - GENERAL

1.1 REFERENCES

1.1.1 REFERENCE STANDARDS AND SPECIFICATIONS: THE FOLLOWING STANDARDS AND SPECIFICATIONS, INCLUDING DOCUMENTS REFERENCED THEREIN, FORM PART OF THIS SECTION TO EXTENT DESIGNATED HEREIN.

1.1.1.1 AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C80.1-1983	AMERICAN NATIONAL STANDARD FOR RIGID STEEL CONDUIT--ZINC COATED

1a 1.1.1.2 AMERICAN WELDING SOCIETY (AWS)

AWS D9.1-1984	SPECIFICATION FOR WELDING SHEETMETAL

1a 1.1.1.3 FEDERAL SPECIFICATIONS (FS)

WW-C-D0540C INCLUDING INT AMD 1	CONDUIT, METAL, RIGID: AND COUPLING, ELBOW, AND NIPPLE, ELECTRICAL CONDUIT: ALUMINUM

1.1.1.4 NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

STANDARDS PUBLICATION/ NO. FB 1-1988	FITTINGS, CAST METAL BOXES, AND CONDUIT BODIES FOR CONDUIT AND CABLE ASSEMBLIES
STANDARDS PUBLICATION/ NO. FU1-1986	LOW VOLTAGE CARTRIDGE FUSES-600 VOLT OR LESS
STANDARDS PUBLICATION/ NO. ICS 2-1983 W/REV THROUGH JUNE 1985	STANDARDS FOR INDUSTRIAL CONTROL DEVICES, CONTROLLERS, AND ASSEMBLIES
STANDARDS PUBLICATION/ NO. ICS 6-1988	ENCLOSURES FOR INDUSTRIAL CONTROLS AND SYSTEMS
STANDARDS PUBLICATION/ NO. RN 1-1986	POLYVINYL CHLORIDE EXTERNALLY COATED GALVANIZED RIGID STEEL CONDUIT AND ELECTRICAL METALLIC TUBING
STANDARDS PUBLICATION/ NO. WD 1-1983	GENERAL REQUIREMENTS FOR WIRING DEVICES

1.1.1.5 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	NATIONAL ELECTRICAL CODE, 1990 EDITION

1.1.1.6 UNDERWRITERS LABORATORIES, INC (UL)

1989	ELECTRICAL APPLIANCE AND UTILIZATION EQUIPMENT DIRECTORY
1989	ELECTRICAL CONSTRUCTION MATERIALS DIRECTORY

1.2 QUALITY ASSURANCE

1.2.1 STANDARDS: PRODUCTS SHALL BE IDENTIFIED FOR INTENDED PURPOSE BY UNDERWRITERS LABORATORIES, INC (UL) IN THE ELECTRICAL APPLIANCE AND UTILIZATION EQUIPMENT DIRECTORY OR ELECTRICAL CONSTRUCTION MATERIALS DIRECTORY, AND BEAR LISTING MARK OF LABORATORY. LISTING AND MARKING BY UL IS NOT REQUIRED FOR PRODUCTS SPECIFIED TO MEET THE REQUIREMENTS OF A NATIONAL STANDARD, OR DESIGNATED BY MANUFACTURER'S PART NUMBER ON THE DRAWINGS.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 SOLDERLESS CONNECTORS AND TERMINAL LUGS: PRESSURE TYPE, RATED FOR USE WITH COPPER CONDUCTORS AND RATED FOR SYSTEM UTILIZATION VOLTAGE.

2.1.1.1 FOR CONDUCTORS #8 AWG AND SMALLER.

SIMILAR TO THOMAS AND BETTS COMPANY "STA-KON".

2.1.1.2 FOR CONDUCTORS #6 AWG AND LARGER.

SIMILAR TO BURNDY ENGINEERING COMPANY "SCREW PRESSURE CONNECTORS OR "HYDENT".

2.1.2 RACEWAYS, FITTINGS, AND BOXES

2.1.2.1 CONDUITS SHALL BE RIGID STEEL AND MEET THE REQUIREMENTS OF ANSI C80.1.

2.1.2.2 PVC COATING ON RIGID STEEL CONDUIT SHALL MEET THE REQUIREMENTS OF NEMA RN 1, TYPE A-40.

2.1.2.3 CONDUIT FITTINGS SHALL MEET THE REQUIREMENTS OF NEMA FB 1.

2.1.2.4 USE "MYERS" TYPE WATERTIGHT FITTINGS OR SEALING LOCKNUTS FOR CONDUIT ENTRIES INTO SIDES OR TOPS OF NEMA 4 ENCLOSURES.

2.1.2.5 EXTERIOR RECEPTACLE OUTLET BOXES: CAST METAL TYPE FD.

2.1.3 CONDUCTORS: #6 - STRANDED COPPER, TYPE USE
CONDUCTORS: #12 - SOLID COPPER, TYPE THWN/THHN OR XHHW.

2.1.4 EQUIPMENT NAMEPLATES: LAMINATED PLASTIC, 1/16 INCH THICK WITH WHITE SURFACE AND BLACK CORE. EDGES BEVELED ANO SMOOTH. ENGRAVED NOMENCLATURE SHARP AND CLEAR.

2.1.5 PLASTIC INSULATING TAPE: SIMILAR TO SCOTCH NO. 33 MANUFACTURED BY 3M COMPANY.

2.2 EQUIPMENT

2.2.1 EQUIPMENT ENCLOSURES SHALL MEET THE REQUIREMENTS OF NEMA ICS 6 AND BE TYPE 4.

2.2.2 FUSEHOLDER: SINGLE PIECE PHENOLIC BASE, TIN PLATED COPPER ALLOY FUSE CLIP, 2 POLE, 60 AMP, 250 VOLT, SQUARE D FB222-1 WITH ADAPTER FOR 20 AMP FUSES. FUSES SHALL BE 250 VOLT RATED, SIMILAR TO BUSS, FUSETRON, CATALOG NO. FRN CONFORMING TO NEMA FU1.

2.2.3 RELAY, TIME-DELAY, OCTAL BASE PLUG-IN, 120 VAC COIL, 10A DPDT CONTACTS, 0.3 TO 30 SEC ADJUSTABLE TIME DELAY ON ENERGIZATION, POTTER AND BRUMFIELD CD SERIES, TYPE CDB38.70006.

2.2.4 ALARM LIGHT, 120 VAC, PIKE MOUNTED WITH WHITE LENS. SIMILAR TO TESCOR TECHNOLOGY "SAFTI-STROBE" #2012D-008.

1b 2.2.5 RECEPTACLES: DUPLEX, BROWN, SPECIFICATION GRAOE, 20 AMPERES, 120 VOLT, 2 POLE, 3-WIRE, GFCI, MEETING THE REQUIREMENTS OF NEMA REFERENCE DESIGNATION 5-20R.

2.2.6 CONTROL STATION, HEAVY DUTY, NEMA 4, MOMENTARY "START-STOP" PUSHBUTTONS, NEMA A600 CONTACTS RATED 10 AMPS, 120V A.C. WITH APPROPRIATE NAMEPLATES-SOUARE D KYK21

2.2.7 SWITCH, SINGLE POLE, 15A, 120-277 VAC, BROWN, RATED FOR 1/2 HP, 120-V MOTOR, IN WEATHERPROOF ENCLOSURE.

1b 2.2.8 CIRCUIT BREAKERS: REPLACE EXST 20A, 1P GFCI BREAKERS WITH SIMILAR MAKE AND MODEL WITHOUT GFCI TRIPPING CHARACTERISTICS. PROVIDE THERMAL MAGNETIC TRIPPING ONLY. PROVIDE BREAKERS WITH SAME FRAME TYPE AND MOUNTING METHOD AS ORIGINALLY SUPPLIED.

PART 3 - EXECUTION

3.1 PREPARATION

3.1.1 FIELD MEASUREMENTS: SCALE DIMENSIONS ON DRAWINGS SHOW DESIRED LOCATION OF EQUIPMENT, ACTUAL LOCATIONS, DISTANCES, AND LEVELS SHALL BE GOVERNED BY FIELD CONDITIONS.

3.2 INSTALLATION

3.2.1 GENERAL; PERFORM WORK IN ACCORDANCE WITH NEC.

3.2.2 IDENTIFY COMPONENTS BY NAMEPLATE ENGRAVED WITH DESIGNATION AND FUNCTION SHOWN. ATTACH NAMEPLATES, WITH CLEAR RTV SILICONE SEALANT.

3.2.3 CONDUIT

3.2.3.1 MAKE ELBOWS, OFFSETS, AND BENDS UNIFORM AND SYMMETRICAL. BEND CONDUIT WITH APPROVED BENDING DEVICES.

3.2.3.2 CUT SOUARE, REAM, AND REMOVE BURRS. CONDUIT SHALL BE CLEAN, DRY, AND FREE OF DEBRIS. IMMEDIATELY AFTER INSTALLATION, PLUG OR CAP EXPOSED ENDS WITH STANDARD ACCESSORIES UNTIL WIRES ARE INSTALLED.

3.2.3.3 THREADED HUBS OR SEALING TYPE LOCKNUTS SHALL BE USED OUTDOORS OR WHERE MOISTURE IS PRESENT. USE ERICKSON TYPE COUPLINGS WHERE REQUIRED.

3.2.3.4 USE 1 HOLE CLAMPS EQUIPPED WITH CLAMPBACKS TO SECURE CONDUITS.

3.2.3.5 SET UP JOINTS IN CONDUIT INSTALLED UNDERGROUND, OR EXPOSED TO WEATHER, WITH HIGH TEMPERATURE, ANTISEIZE, CONDUCTIVE THREAD LUBRICANT AND SEALANT.

3.2.3.6 INSTALL PVC COATEO CONDUIT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. REPAIR COATING, DAMAGED DURING HANDLING OR INSTALLATION USING PVC PAINT RECOMMENDED BY CONDUIT MANUFACTURER.

3.2.4 INSTALL BOXES, ENCLOSURES, AND WIRING DEVICES FIRMLY IN POSITION AND PLUMB.

3.2.5 CONDUCTORS

3.2.5.1 DO NOT BEND CABLES INSTALLED IN WIREWAYS TO LESS THAN MANUFACTURER'S RECOMMENDED MINIMUM BENDING RADIUS; RECOMMENDED PULLING TENSION SHALL NOT BE EXCEEDED.

3.2.5.2 DO NOT INSTALL OR HANDLE WIRES WITH THERMOPLASTIC INSULATION OR JACKET WHEN AMBIENT TEMPERATURE IS 15° F OR BELOW

3.2.5.3 SPLICES SHALL BE MADE USING APPROVED INSULATED CRIMPING SLEEVES; WIRE SHALL BE TERMINATED USING CRIMP TYPE LUGS.

3.2.5.4 INSTALL AND MARK DIRECT BURIAL CABLE IN ACCORDANCE WITH THE DRAWINGS.

3.3 FIELD OUALITY CONTROL

3.3.1 TESTING, GENERAL

3.3.1.1 TEST EQUIPMENT AND WIRING FOR CONTINUITY AND UNINTENTIONAL GROUNDS, AND VERIFY PROPER VOLTAGE AT EOUIPMENT SERVED BEFORE ATTEMPT IS MADE TO OPERATE EQUIPMENT. NOTIFY KEH BEFORE START OF TESTS. CORRECT ITEMS FOUND, DURING TESTING OR EXAMINATION BY KEH TO BE AT VARIANCE WITH THE DRAWINGS.

3.3.1.2 IN ADDITION TO TESTING SPECIFIED TO BE PERFORMED BY CONTRACTOR, INSTALLATION WILL BE SUBJECT TO EXAMINATION BY KEH FOR CONFORMANCE WITH DESIGN AND APPLICABLE CODES. ASSIST THE KEH AS REQUESTED.

3.3.2 WIRING SYSTEMS

3.3.2.1 TEST WIRING OPERATING LESS THAN 150 VOLTS TO GROUND FOR CONTINUITY AND UNINTENTIONAL GROUNDS. RESISTANCE SHALL NOT EXCEED 1 OHM ON CONTINUITY CHECKS.

3.3.3 EXHAUST FAN OPERATION (TEST UNITS 7 AND 8)

3.3.3.1 TURN ON CIRCUIT BREAKER AND MOTOR DISCONNECT SWITCH.

3.3.3.1 PUSH "START" BUTTON AND HOLD LESS THAN 2 SECONDS: VERIFY FAN STARTS BUT DOES NOT CONTINUE TO RUN.

3.3.3.2 PUSH "START" BUTTON AND HOLD FOR 5 SECONDS: VERIFY FAN STARTS AND CONTINUES TO RUN, BEACON IS NOT ON AND SAMPLE PUMP RECEPTACLE IS ENERGIZED.

3.3.3.3 FORCE EXHAUST LOUVERS CLOSED MOMENTARILY: VERIFY UNINTERRUPTED FAN OPERATION. (IF FAN STOPS, INCREASE TIME DELAY RELAY SETTING AND REPEAT TEST)

3.3.3.4 FORCE EXHAUST LOUVERS CLOSED AND HOLD FOR 2 SECONDS (OR TIME SET IN STEP 3): VERIFY, EXHAUST FAN STOPS, BEACON IS ON AND SAMPLE PUMP RECEPTACLE IS DE-ENERGIZED.

3.3.3.5 RESTART EXHAUST FAN.

3.3.3.6 PUSH "STOP" BUTTON AND HOLD FOR 5 SECONDS: CONFIRM FAN STOPS, BEACON IS ON AND SAMPLE PUMP RECEPTACLE IS DE-ENERGIZED.

3.3.3.7 RESTART EXHAUST FAN.

3.3.4 WELDS INDICATING VISUAL TESTING (VT) IS REQUIRED SHALL BE EXAMINED AS REQUIRED BY AWS D9.1.

ATTEST SUCCESSFUL TEST RESULTS:

ENGINEER ELECTRIC (DNLC) INSTALLATION CONTRACTOR	8/26/91 DATE	CONTRACTING OFFICER (KEH)	9/6/91 DATE
WHC PROJECT ENGINEER	DATE		

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

R.J. HARMAN
Reviewing Official/ADC
Kaiser Engineers Hanford Company
8/27/90
Date

NUMBER	TITLE	NUMBER	TITLE
			REFERENCES
DRAWING TRACEABILITY LIST		NEXT USED ON	

REV NO	DESCRIPTION	REV BY / DATE	KEH APPROVAL S	APVD FOR IMPLEMENTATION FOR DATE
M RS 1	AS-BUILT FOR PROJ. W-149 b)ECN W149-2 Z D,E4-5 a)ECN W149-1 Z C1-3:E6-8	KCA 6/4/91 MAK 6/21	6-6-91	6-6-91

REVISIONS

CAD FILE B081296C CAD CODE 2J:IBM:AC22:10.0:NN

IMPACT LEVEL 3 IDT 125917

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

DRAWN LS JONES DATE
CHECKED M. ALEXANDER 8/90
SAFETY J ARCHIBALD 8/90
OWNER DL FORT 8/90
DC TC OTEN 8/90
LEAD ENG APVD R HARMAN 8/90

M ELECTRICAL STORAGE MODULES 7 & 8 SPECIFICATIONS

PROJECT W-149 LOW FLASHPOINT MIXED WASTE TRU STOR

APPROVED FOR IMPLEMENTATION BY E.D. BERRIGAN FOR DATE 8/28/90

SIZE	BLDG NO	TYPE NO	DWG NO	REV NO
F	200W	7301	H-2-81296	1
SCALE NONE		JOB NO ER0248	SHEET 3 OF 3	

KEHCAD

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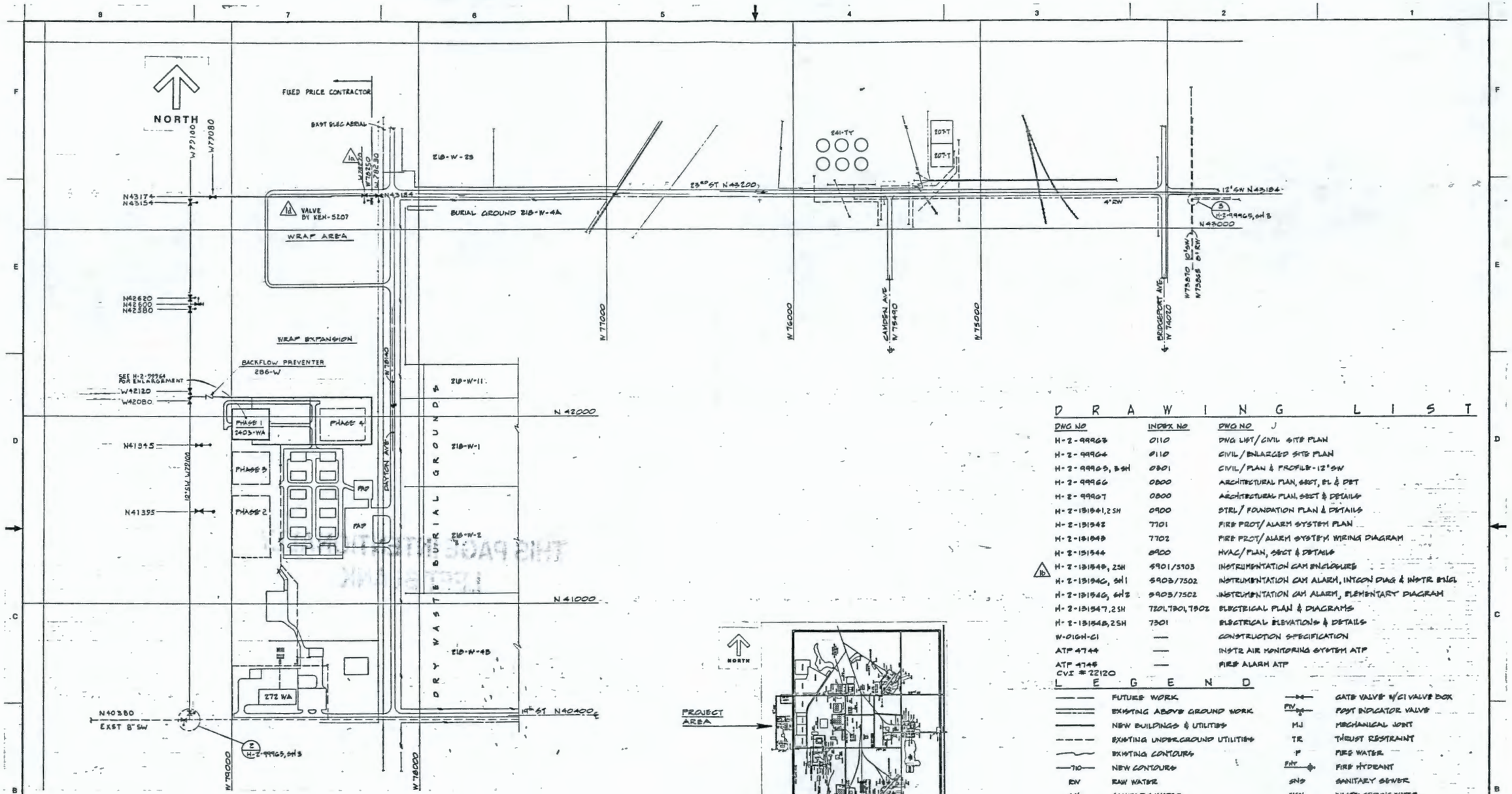

SITE PLAN

SCALE: 1" = 200'

DRAWING LIST

DWG NO	INDEX NO	DWG NO J
H-2-99963	0110	DWG LIST/CIVIL SITE PLAN
H-2-99964	0110	CIVIL/ENLARGED SITE PLAN
H-2-99965, SH	0801	CIVIL/PLAN & PROFILE-12" SW
H-2-99966	0800	ARCHITECTURAL PLAN, SECT, EL & DET
H-2-99967	0800	ARCHITECTURAL PLAN, SECT & DETAILS
H-2-131541, 2 SH	0900	STRL/FOUNDATION PLAN & DETAILS
H-2-131543	7701	FIRE PROT/ALARM SYSTEM PLAN
H-2-131545	7702	FIRE PROT/ALARM SYSTEM WIRING DIAGRAM
H-2-131544	8900	HVAC/PLAN, SECT & DETAILS
H-2-131548, 2 SH	5901/5903	INSTRUMENTATION CAM ENCLOSURES
H-2-131546, SH 1	5903/7502	INSTRUMENTATION CAM ALARM, INTCON DWG & INSTR SNGL
H-2-131546, SH 2	5903/7502	INSTRUMENTATION CAM ALARM, ELEMENTARY DIAGRAM
H-2-131547, 2 SH	7201, 7301, 7302	ELECTRICAL PLAN & DIAGRAMS
H-2-131548, 2 SH	7301	ELECTRICAL ELEVATIONS & DETAILS
W-016H-C1	—	CONSTRUCTION SPECIFICATION
ATP 4744	—	INSTR AIR MONITORING SYSTEM ATP
ATP 4745	—	FIRE ALARM ATP
CVI # 22120		

LEGEND

— — —	FUTURE WORK	—⊳⊲—	GATE VALVE W/CI VALVE BOX
═══	EXISTING ABOVE GROUND WORK	PIV	POST INDICATOR VALVE
———	NEW BUILDINGS & UTILITIES	MJ	MECHANICAL JOINT
- - - -	EXISTING UNDERGROUND UTILITIES	TR	THRUST RESTRAINT
~~	EXISTING CONTOURS	F	FIRE WATER
—710—	NEW CONTOURS	FHY	FIRE HYDRANT
RW	RAW WATER	SNS	SANITARY SEWER
SW	SANITARY WATER	WCW	WASTE COOLING WATER
		CI	CAST IRON

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

Authorizing Official ADC
Kaiser Engineers Hanford Company
11-7-89
Date

OFFICIAL RELEASE BY WHC DATE DEC 21 1989

NUMBER	TITLE
H-2-83604	DRAWING LIST/CIVIL SITE PLAN
H-2-89500	CIVIL STORAGE PAD PLAN SECT & DET
H-2-80578	DRAWING LIST/CIVIL SITE PLAN
H-2-64510	KEY PLAN AREA MAP 200 WEST
H-2-36634	CIVIL PLAN & PROFILE, 6" W. C. WATER
H-2-33472	216-T-36 CRIB PLAN, PROFILE & MISC DETS
H-2-1204	FIRST CYCLE EVAP. 200 WEST PLOT PLAN
H-2-2459	200 WEST AREA WATER LINE PLOT PLAN
H-2-44511	AREA MAP 200 WEST "T" PLANT FACILITIES SHEETS 134, 135, & 176 OF 186

DRAWING TRACEABILITY LIST — REFERENCES — NEXT USED ON

REV NO	DESCRIPTION	REV BY DATE	REV APPROVALS	REPRO FOR SUPL / INC FOR DATE
1	AS-BUILT FOR PROJ W016 WCN W-016-50 GEN REV WCN W-016-38 & E-16-7 WCN W-016-46 & C3 WCN W-016-3 & C1-3 WCN W-016-3 & E-F6-7	EW 3-91 ABT 1/91	CL 5/7/91	MSR 5/7/91

CADFILE — REVISIONS — CADCODE

DRAWN	R. COTRON
CHECKED	W. FIBEN
SAFETY	
ENGR	
QE	TD HAYES
LEAD ENG	
ADM REP	
APPROVED FOR IMPLEMENTATION BY	R. J. Morin 12/19/89
FOR	WHC

IMPACT LEVEL 3 — EDT 151561

U. S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

DWG LIST/CIVIL SITE PLAN

PROJECT H-016H RAW STORAGE FACILITY

SIZE	SCHEDULE NO	INDEX NO	DRAWING NO	REV NO
F	200W	0110	H-2-99963	1

SCALE SHOWN — JOB NO CR4106 — SHEET 1 OF 1

9212776 0960

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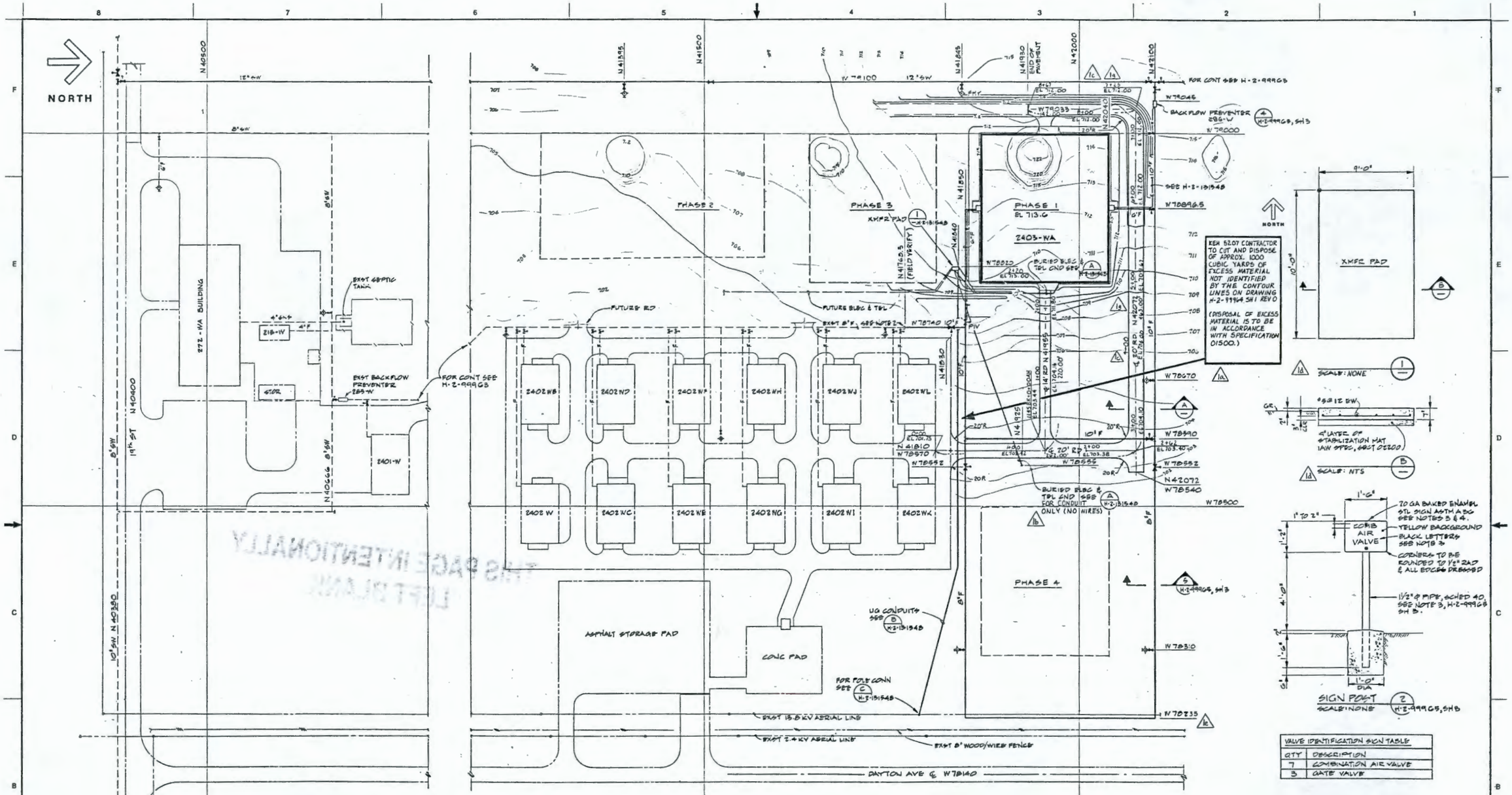
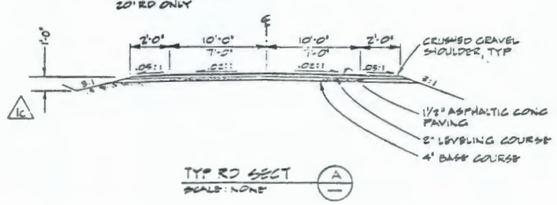


VALVE IDENTIFICATION SIGN TABLE	
QTY	DESCRIPTION
7	COMBINATION AIR VALVE
3	GATE VALVE

NOTES

1. FOR LEGEND SEE H-2-99963
2. REMOVE EXISTING THRUST RESTRAINT & CAP. CONNECT NEW 10" ϕ TO EXIST 8" ϕ LINE.
3. CHARACTERS SHALL BE CAPITAL, VERTICAL BLK TYPE (GOTHIC).
4. MOUNT SIGN USING GALV BOLT, NUTS + WASHERS, SIZE #1/16" MIN, AND SHALL CONFORM TO ASTM A307 GRADE-A W/AMERICAN STD COARSE THREAD, SERIES 2A + 2B. GALVANIZE IAW ASTM B633.

NOTE: PAVEMENT STRIPING IAW SPEC SECT 02512 FOR 20' RD ONLY



TYP RD SECT (A) SCALE: NONE

DRAWING TRACEABILITY LIST			
NUMBER	TITLE	NEXT USED ON	
H-2-80787	DWG LIST/CIVIL SITE PLAN		
H-2-99963	DRAWING LIST		

REFERENCES	
NUMBER	TITLE

REVISIONS						
REV NO	DESCRIPTION	REV BY DATE	REV APPROVALS			APVD FOR MFG / INC FOR DATE
R3	AS-BUILT FOR PROJ W-016	MAK 5-4-91 DKG 5-4-91 AOT 1-5-91	ECA 5/30/91	MGR 5/30/91	WGR 5/30/91	5/30/91
	h) ECN W-016-50 GEN. REV.					
	g) ECN W-016-46 & D3:D-F2-3					
	f) ECN W-016-30 & A5-6					
	e) ECN W-016-24 & B2					
	d) ECN W-016-11 & D1:E1					
	c) ECN W-016-7 & A7:D-F2-3					
	b) ECN W-016-6 & A3-4:D3					
	a) ECN W-016-1 & E3					

CADFILE | CADCODE

IMPACT LEVEL 3 | EDT 151561

DRAWN B. OATSON 11/89 | CHECKED H. RUCKER 11-17-89 | SAFETY R.J. Bellinger 12-8-89 | ENVIR R.J. Bellinger 12-8-89 | QA T.D. Elkins 12-13-89 | LEAD ENG APPVD M. CHRISMAN 12/8/89 | REN REP

APPROVED FOR IMPLEMENTATION BY R.J. Bellinger 12/14/89 FOR WMC

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

CIVIL
ENLARGED SITE PLAN

PROJECT 100GH 200W STORAGE FACILITY

SIZE	BLDG NO	INDEX NO	DRAWING NO	REV NO
F	2403 WA	0110	H-2-99964	1

SCALE 1" = 80' | JOB NO CR9106 | SHEET 1 OF 1

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION
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Kaiser Engineers Hanford Company
11-7-89
Date

OFFICIAL RELEASE BY WHC
DATE DEC 21 1989

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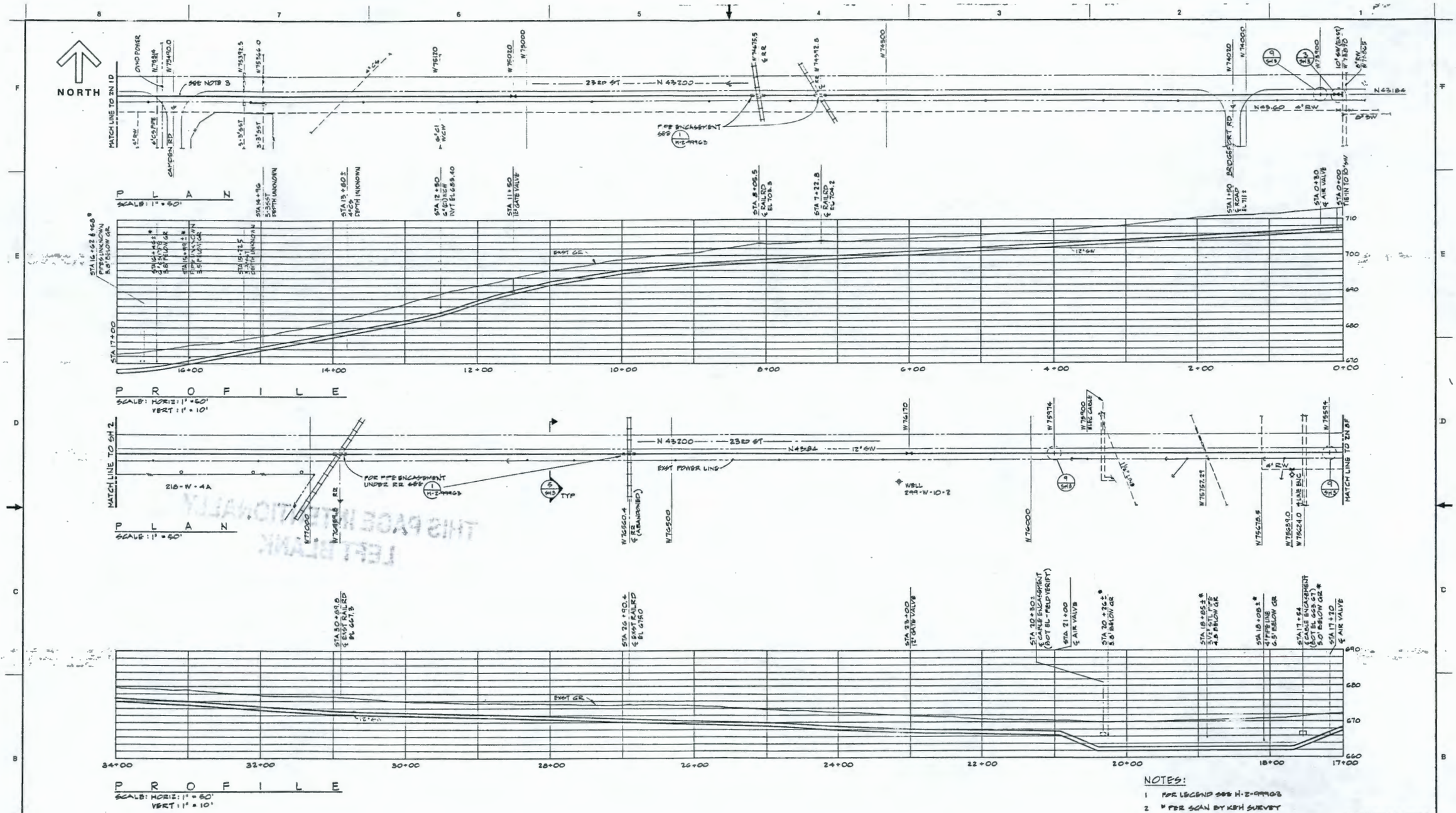

NOTES:

1. FOR LEGEND SEE H-2-99963
2. " FOR SCAN BY KEH SURVEY DATED 6-1-89
3. REPAIR EXIST RD IAW SPEC SECT 02236 & 02812.

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

Reviewing Official/ADC
Kaiser Engineers Hanford Company
11-7-89
Date

OFFICIAL RELEASE BY: WC
DATE DEC 21 1989

VOID 5-24-91
M. G. Kuhnle

12	1	WECN-WHC-SC DWG VOID	MAK	LCA	HSR	WTH	5/24/91
11			2-7-91	4/24/91	5/7/91	5/16/91	
NO	DATE NO	DESCRIPTION	REV BY DATE	NON-APPROVALS		APPD FOR IMPL / IMP DATE	

REVISIONS

DRAWN	E. OSTROM 2-2-88
CHECKED	J.L.S. Ruffin 12-1-89
SAFETY	[signature] 12-1-89
ENGR	T.R. Sidwell 12-12-89
DE	T.D. Johnson 12-12-89
LEAD ENG APPD C.A. CHIEF ENGINEER	
KEH REP	[signature]

APPROVED FOR IMPLEMENTATION
BY R.J. Wolf 12/19/89
FOR WMC

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

CIVIL
PLAN & PROFILE - 12" SW

PROJECT 100-N RUN STORAGE FACILITY

SIZE	BLDG NO	INDEX NO	DRAWING NO	REV NO
F	200N	0301	H-2-99965	1

SCALE SHOWN | JOB NO CR 9105 | SHEET 1 OF 8

IMPACT LEVEL 3 | EST 151561

NUMBER	TITLE	NEXT USED ON
H-2-99963	DRAWING LIST	

DRAWING TRACEABILITY LIST

NUMBER	TITLE	REFERENCES

CADFILE | CADCODE

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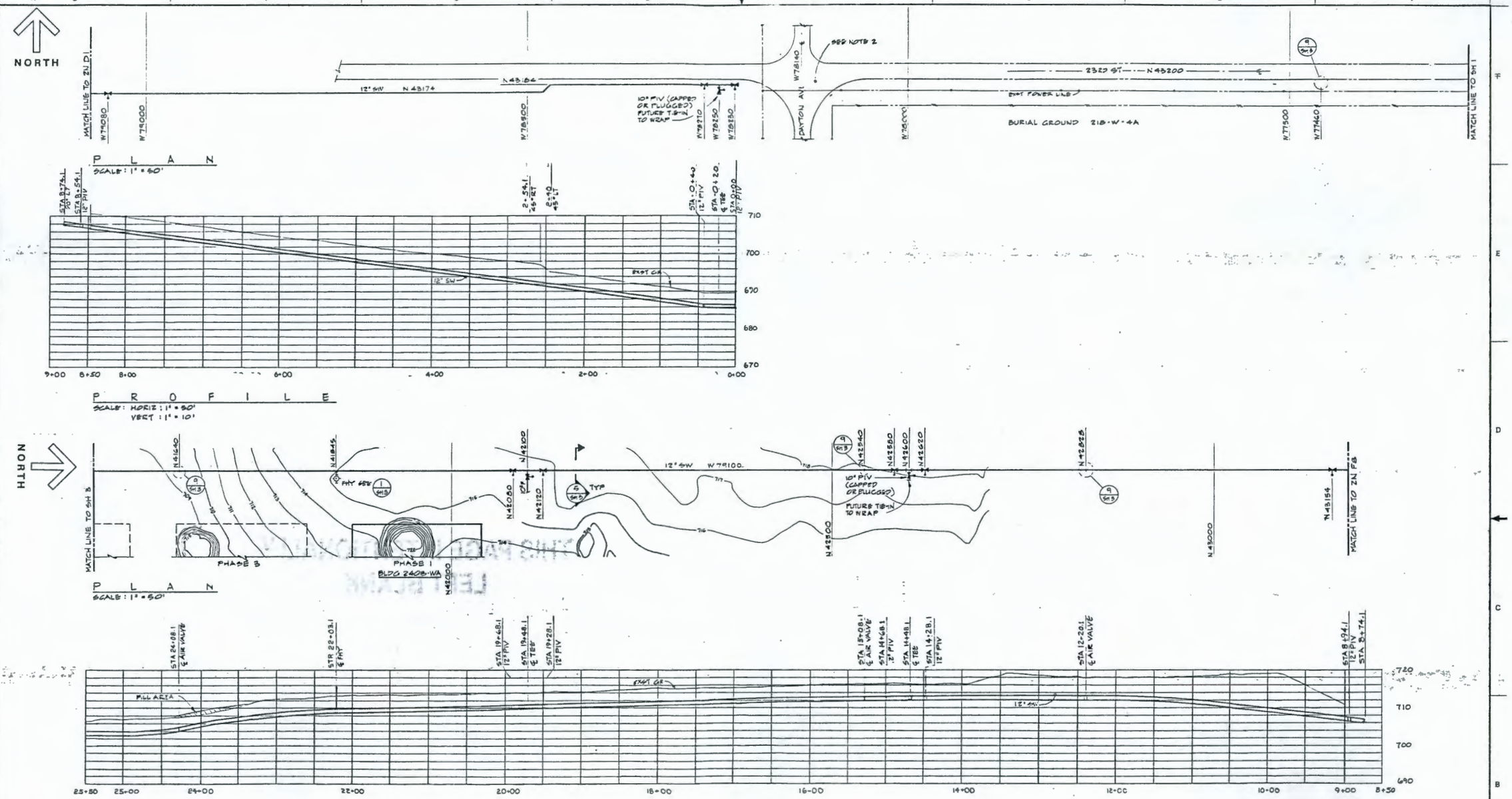

NOTES:

1 FOR LEGEND SEE H-2-99963

2 REPAIR EXIST RD IAW SPEC SECT 02235 & 02912.

H-2-99965 SH1 REV 0 VOIDED BY ECN W016-50

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

Reviewing Official/ADC
Kaiser Engineers Hanford Company
11-7-89
Date

OFFICIAL RELEASE BY
DATE DEC 21 1989

NUMBER	TITLE
H-2-99963A	DRAWING LIST

DRAWING TRACEABILITY LIST

NUMBER	TITLE
	REFERENCES

NEXT USED ON

REV	DESCRIPTION	REV BY	REV APPROVALS
1	AS-BUILT FOR PROJ W016	MAR 5/30/91	LCA 5/30/91
1	ECN W016-50 GEN REV	EW 5/30/91	LSR 5/30/91
			LWH 5/30/91
			JSW 5/30/91

REVISIONS

CADFILE

CADCODE

APPROVED FOR IMPLEMENTATION
NHC

IMPACT LEVEL 3

EDT 151561

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

CIVIL
PLAN & PROFILE - 12" SW

PROJECT HIGH RUN STORAGE FACILITY

SIZE	BLDG NO	INDEX NO	DRAWING NO	REV NO
F	8004	0301	H-2-99965	1

SCALE SHOWN JOB NO CR9106 SHEET 2 OF 3

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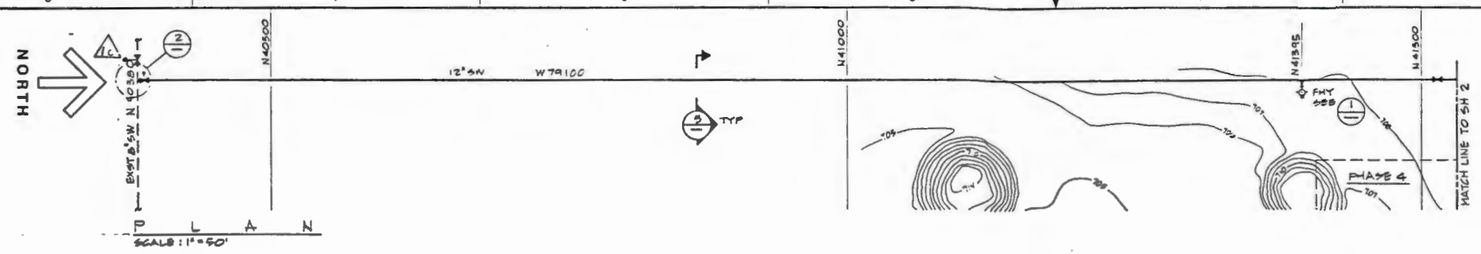
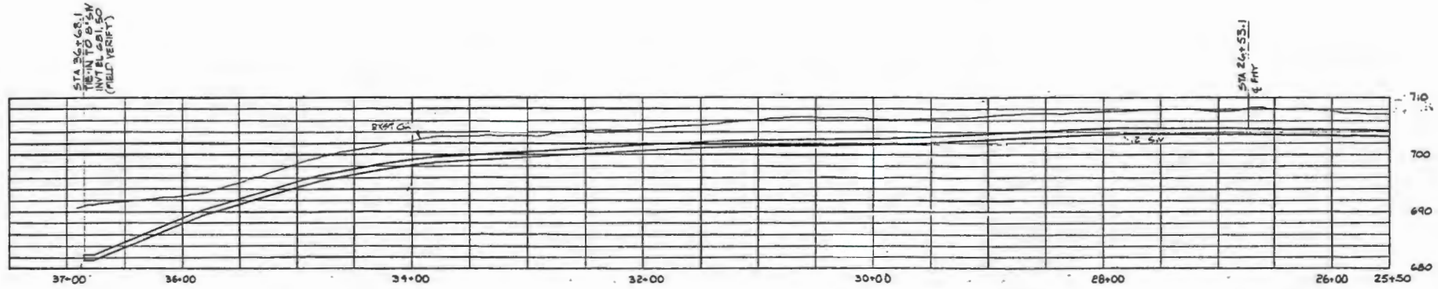


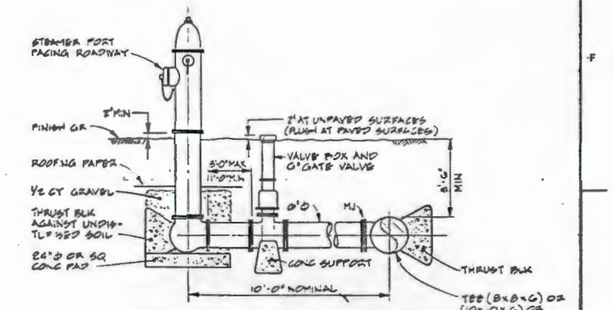
PLAN

SCALE: 1" = 50'



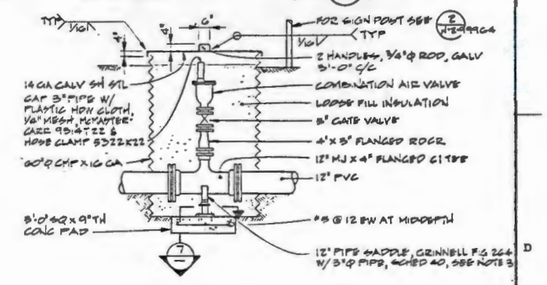
PROFILE

SCALE: HORIZ: 1" = 50'
VERT: 1" = 10'



FIRE HYDRANT INSTL

SCALE: NONE



MANHOLE

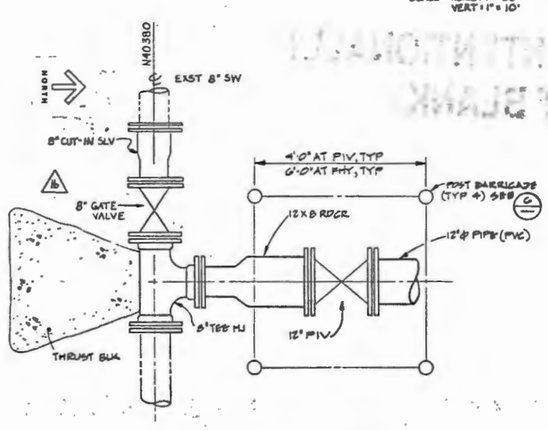
SCALE: 3/8" = 1'-0"

NOTES:

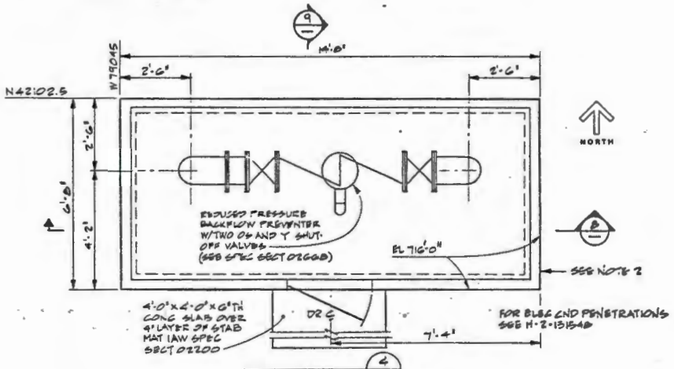
1. FOR LEGEND SEE H-2-99963
2. BACKFLOW PREVENTER BLDG BASE DESIGN - ARMCO TEC-LINE 1 BLDG, 10 FOOT EAVE HEIGHT. SEE SPEC SECTION 13120. BLDG DIMENSIONS ARE MINIMUM.
3. PIPE SHALL BE BLACK STEEL, ASTM A53, TYPE S, GRADE B OR ASTM A106, GRADE B.
4. FLANGES SHALL BE ASTM A105, RAISED FACE, WELD NECK, CL 150, IN ACCORDANCE WITH ANSI B16.5. BORE TO MATCH PIPE ID. BOLTS SHALL BE CARBON STEEL, HEAVY HEX SERIES, ASTM A307, GRADE B. NUTS SHALL BE HEAVY HEX, ASTM A563, GRADE A. GASKETS SHALL BE COMPRESSED SYNTHETIC FIBER, 1/16" THICK, ANCHOR PACKING NO. 443.
5. ALL BURIED VALVES SHALL BE PROVIDED WITH A CI VALVE BOX, COMPLETE WITH COLLAR & LID, WHICH EXTENDS TO GRADE.

PIPE SIZE	THRUST BLOCK BEARING AREA (FT²)		
	45° BEND	90° BEND	TEES, PLUGS, CAPS & HYDRANTS
6"	—	6.25	6.25
8"	—	10.5	9.0
10"	—	15.0	12.0
12"	24.0	21.0	18.0

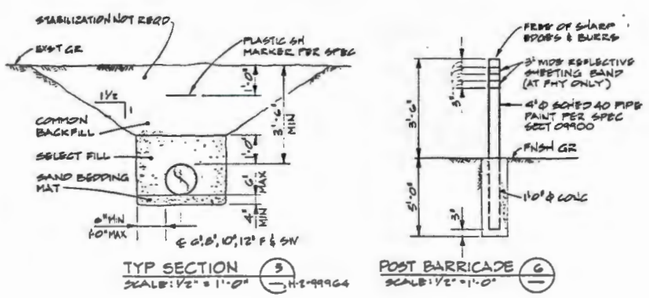
H-2-99965 SH 1 REV 0 VOIDED BY ECN-W016-50



SCALE: NONE



SCALE: 1/2" = 1'-0"

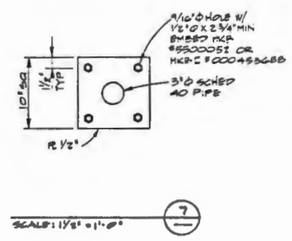


TYP SECTION — H-2-99964

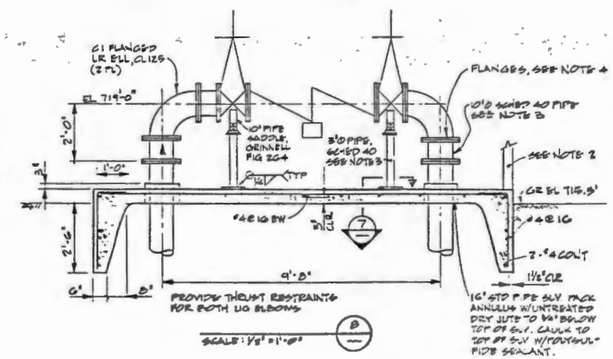
SCALE: 1/2" = 1'-0"

POST BARRICADE

SCALE: 1/2" = 1'-0"



SCALE: 1 1/2" = 1'-0"



SCALE: 1/2" = 1'-0"

NUMBER	TITLE

DRAWING TRACEABILITY LIST

NUMBER	TITLE
H-2-99963	DRAWING LIST

REFERENCES

NEXT USED ON

REV NO	DESCRIPTION	REV BY	DATE	ECN APPROVALS	CHKD FOR INTL	CHKD FOR DATE
11	AS-BUILT FOR PROJ W-016	MAK				
10	FB-C23-8	E.W.	3-91			
9	a) ECN W-016-50 2 B1,2,CD5,6	DAG				
8	b) ECN W-016-17 2 C-D3	ADT				
7	c) ECN W-016-12 2 D1-2	1/91				
RS				ECN 5/14/91	LLSR 5/14/91	5/15/91

REVISIONS

CADFILE

ICN CODE

DRAWN E. OSTROM
CHECKED U.S. KUBEN 12-12-89
SAFETY
ENGR
CE
LEAD ENG APPR C. A. CRAIG
ICN REP.
APPROVED FOR IMPLEMENTATION R. J. Weyer 12/15/89 WHC

IMPACT LEVEL 3 EDT 151561

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

CIVIL
PLAN & PROFILE - 12" SW

PROJECT W-016 EMW STORAGE FACILITY

SIZE	BLDG NO	INDEX NO	DRAWING NO	REV NO
F	200W	0301	H-2-99965	1

SCALE SHOWN JOB NO CR 9106 SHEET 5 OF 3

THIS DOCUMENT CONTAINS CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

OFFICIAL RELEASE BY WHC
DATE DEC 21 1989

Kaiser Engineers Hanford Company

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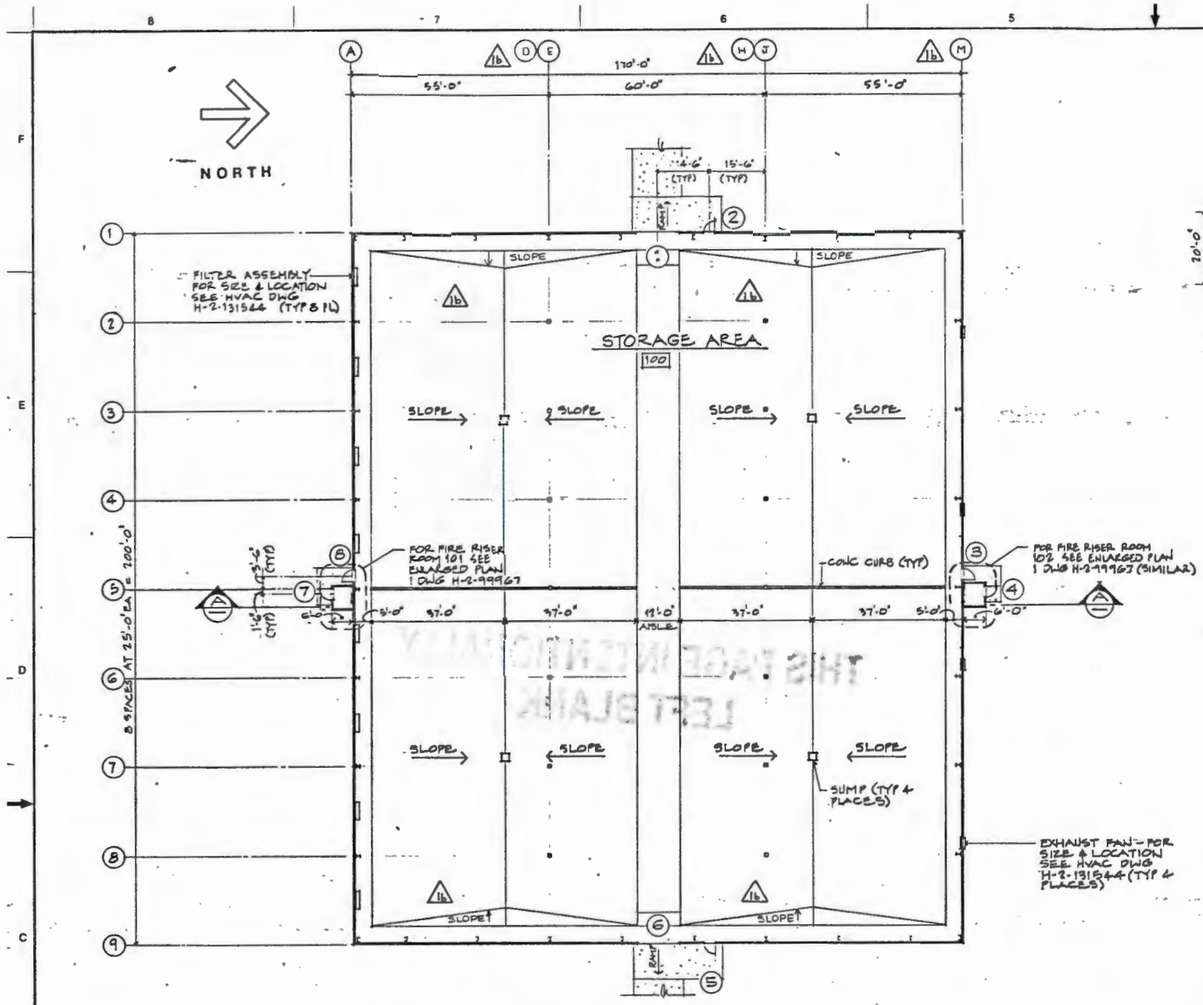
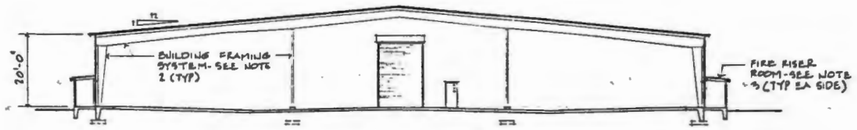


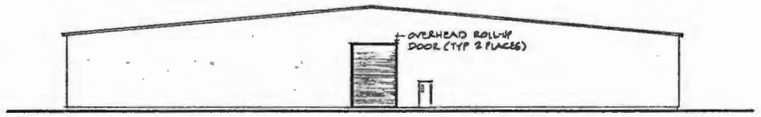
FLOOR PLAN

SCALE: 1/16" = 1'-0"



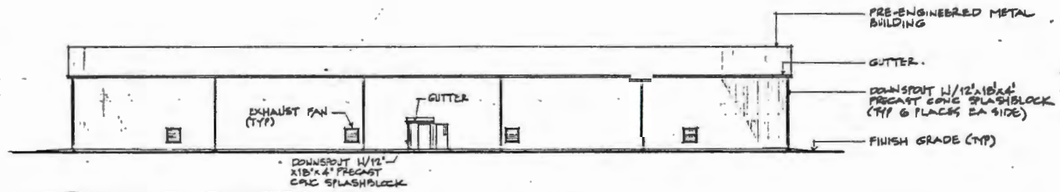
SECTION

SCALE: 1/16" = 1'-0"



EAST ELEVATION (WEST ELEVATION SIMILAR)

SCALE: 1/16" = 1'-0"

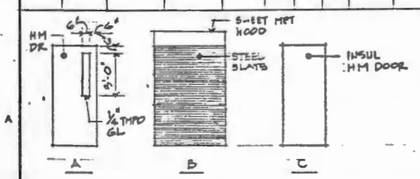


NORTH ELEVATION (SOUTH ELEVATION SIMILAR)

SCALE: 1/16" = 1'-0"

DOOR SCHEDULE (SEE NOTES 5 & 6)

NO	TYPE	LOCATION	OPNG SIZE	THKNS	FRAME HEAD	FRAME JAMB	FRAME SILL	HDW GROUP	WS	LABEL	REMARKS
1	B	—	12'-0"x18'-0"	—	11	11	11	—	YES	—	
2	A	—	3'-0"x7'-0"	1 3/4"	6 SM	7 SM	10	2	YES	—	
3	A	—	3'-0"x7'-0"	1 3/4"	6 SM	7 SM	10	1	YES	—	
4	C	—	3'-0"x7'-0"	1 3/4"	6	7	10	1	YES	—	
5	A	—	3'-0"x7'-0"	1 3/4"	6 SM	7 SM	10	2	YES	—	
6	B	—	12'-0"x18'-0"	—	11	11	11	—	YES	—	
7	C	—	3'-0"x7'-0"	1 3/4"	6	7	10	1	YES	—	
8	A	—	3'-0"x7'-0"	1 3/4"	6 SM	7 SM	10	1	YES	—	



DOOR TYPES

SCALE: NONE

GENERAL NOTES

1. ABBREVIATIONS USED ARE PER ANSI Y1.1, 1972.
2. PRE-ENGINEERED METAL BUILDING BASE DESIGN - BUTLER MRP-II BUILDING.
3. METAL SIDING, ROOFING TRIM AND GUTTERS, FOR THE FIRE RISER ROOMS, SHALL BE SUPPLIED BY PRE-ENGINEERED METAL BUILDING MFG AND MATCH BUILDING SIDING, ROOFING, TRIM AND GUTTERS.
4. FOR CONCRETE FLOOR SLAB SLOPE & CONTRACTION JOINTS SEE STRUCTURAL DRAWING H-2-151541.
5. FOR FRAME DETAILS SEE DWG H-2-99967.
6. FOR DOOR HARDWARE GROUPS SEE SPECIFICATION SECTION 08710.

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

OFFICIAL RELEASE BY WHO
DATE DEC 21 1989

Bechtel Design Office/A/E
Kaiser Engineers Hanford Company
11-7-89

NO	DWG LAST/CIVIL SITE PLAN	NUMBER	TITLE
NUMBER	TITLE	REFERENCES	

DRAWING TRACEABILITY LIST | NEXT USED ON | CADFILE | CADDCCS

REVISIONS

REV NO	DESCRIPTION	REV BY DATE	NON APPROVALS
F	AS-BUILT FOR PROJ W-016 E&T, F5-7 WECN W-016-50 ZC6,7 WECN W-016-40 Z 27	MAK 5/30/91 ECA 5/30/91 MSR 5/30/91 WRH 5/30/91 JLGr 5/30/91	

APPROVED FOR IMPLEMENTATION BY R.J. Wren 5/19/89

DRAWN W. WINDOLF
CHECKED W. Bechtel 12-11-89
SUPT D. Dunlap 12-11-89
MANR E.J. Wilbert 12-12-89
SF T.D. Dunlap 12-13-89
LEAD ENG R.J. Wren 12-14-89
NON REP
APPROVED FOR ISSUE / NON ISSUE

IMPACT LEVEL 3
ISSUE DATE 12/15/89

U. S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

ARCHITECTURAL PLAN, SECT, EL & DET

PROJECT W-016H RMW STORAGE FACILITY

SIZE F | IDENT NO 24089 WA | INDEX NO 0800 | DRAWING NO H-2-99966 | REV NO 1

SCALE 1/16=1'-0" | JOB NO C29106 | SHEET 1 OF 1

9212764024

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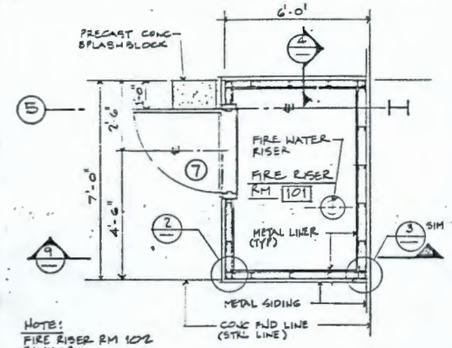
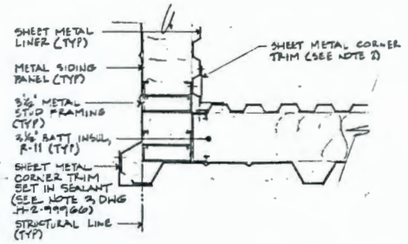


NOTE:
FIRE RISER RM 102 SIMILAR.

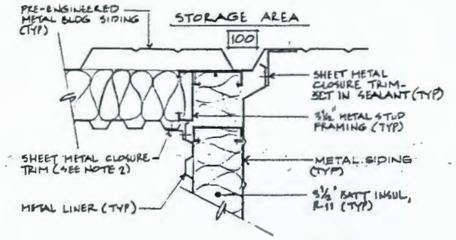
ENLARGED PLAN (1) H-2-99966

SCALE: 1/2"=1'-0"



EXTERIOR CORNER DETAIL (2)

SCALE: 3"=1'-0"



CORNER DETAIL (3)

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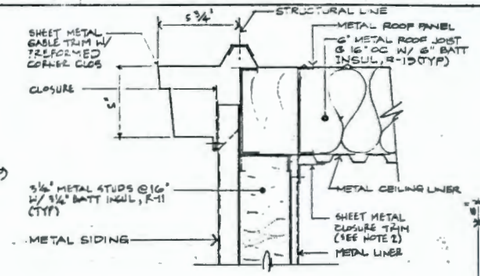

GABLE TRIM DETAIL (4)

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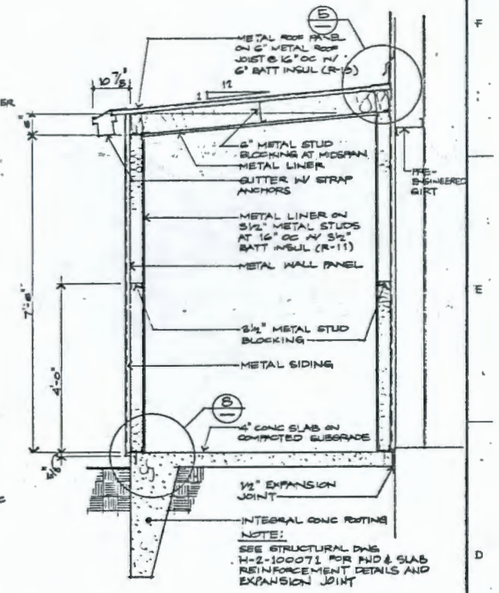
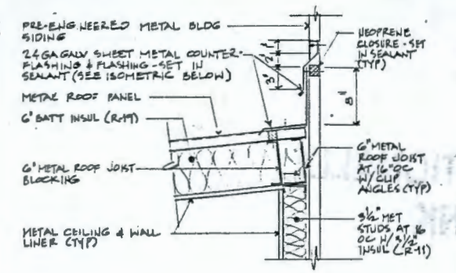


NOTE:
SEE STRUCTURAL DWG H-2-100071 FOR FND & SLAB REINFORCEMENT DETAILS AND EXPANSION JOINT

SECTION AT MET FRAMING (9)

SCALE: 3/4"=1'-0"



ROOF FLASHING DETAIL (5)

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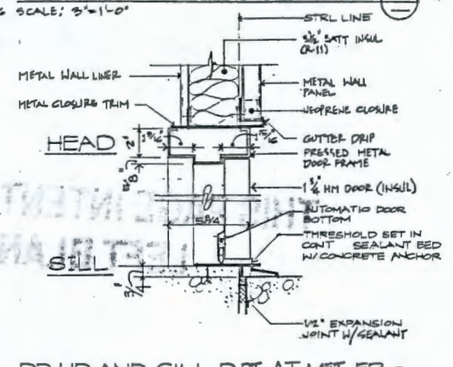

DR HD AND SILL DET AT MET FR (6) H-2-99966

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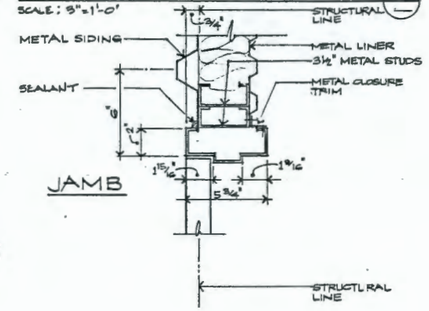

DOOR JAMB AT MET FRAMING (7) H-2-99966

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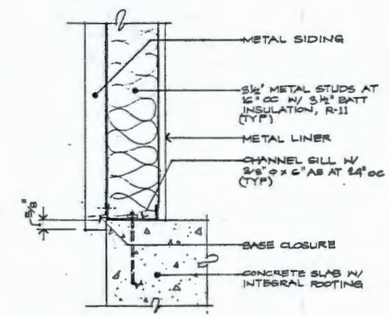
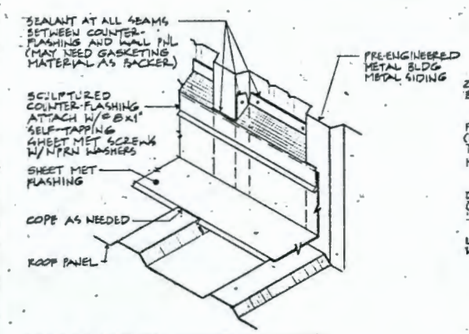


BASE DETAIL (8)

SCALE: 3"=1'-0"

NOTES

1. SEE GENERAL NOTES ON DRAWING H-2-99966.
2. METAL TRIM SHALL BE STANDARD AND SUPPLIED BY LINER MANUFACTURER.



ISOMETRIC VIEW

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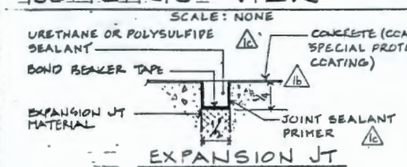
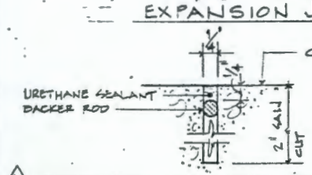


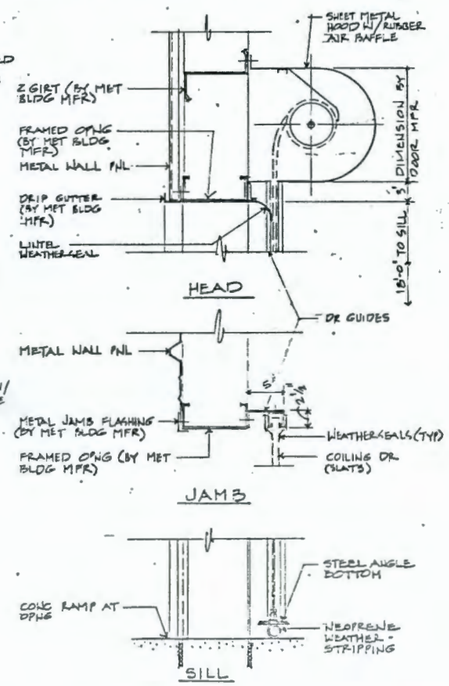
EXPANSION JT



1a CONSTRUCTION / CONTRACTION JOINT

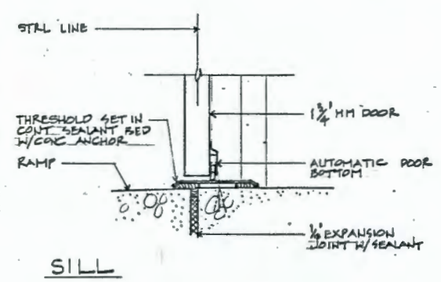
TYPICAL SEALANT DETAILS

SCALE: F.U.



DOOR DETAIL (11) H-2-99966

SCALE: 1 1/2"=1'-0"



DOOR SILL DETAIL (10) H-2-99966

SCALE: 3"=1'-0"

NUMBER	TITLE	NUMBER	TITLE
H-2-99965	DWG LIST / CIVIL SITE PLAN		

DRAWING TRACEABILITY LIST — REFERENCES — NEXT USED ON

REV NO	DESCRIPTION	REV BY / DATE	KEN APPROVAL
1	AS-BUILT FOR PROJ W016 (ECN A-016-49 & B7,8 (ECN W-016-37 & 87 (ECN A-016-3 & 27,8	MAN DKG ADT MAN / RCA 12/01/91	MCR 5/30/91 / WGW 12/04/91 / 12/04/91

REVISIONS — CADFILE — CADCODE

APPROVED FOR IMPLEMENTATION: R J Morrow 12/19/91

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION
Patricia Orcutt
PATRICIA ORCUTT, ADC
KAISER ENGINEERS HANFORD COMPANY
12-20-89
Date

OFFICIAL NOTICE BY DATE DEC 21 1989

SAFETY LEVEL B | EST 15.561

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ARCHITECTURAL PLAN, SECT & DETAILS

PROJECT W016 RMW STORAGE FACILITY

B&R CODE	PROJ NO	PHASE NO	DRAWING NO	REV NO
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SCALE AS SHOWN | JOB NO CR9106 | SHEET 1 OF 1

9212760925

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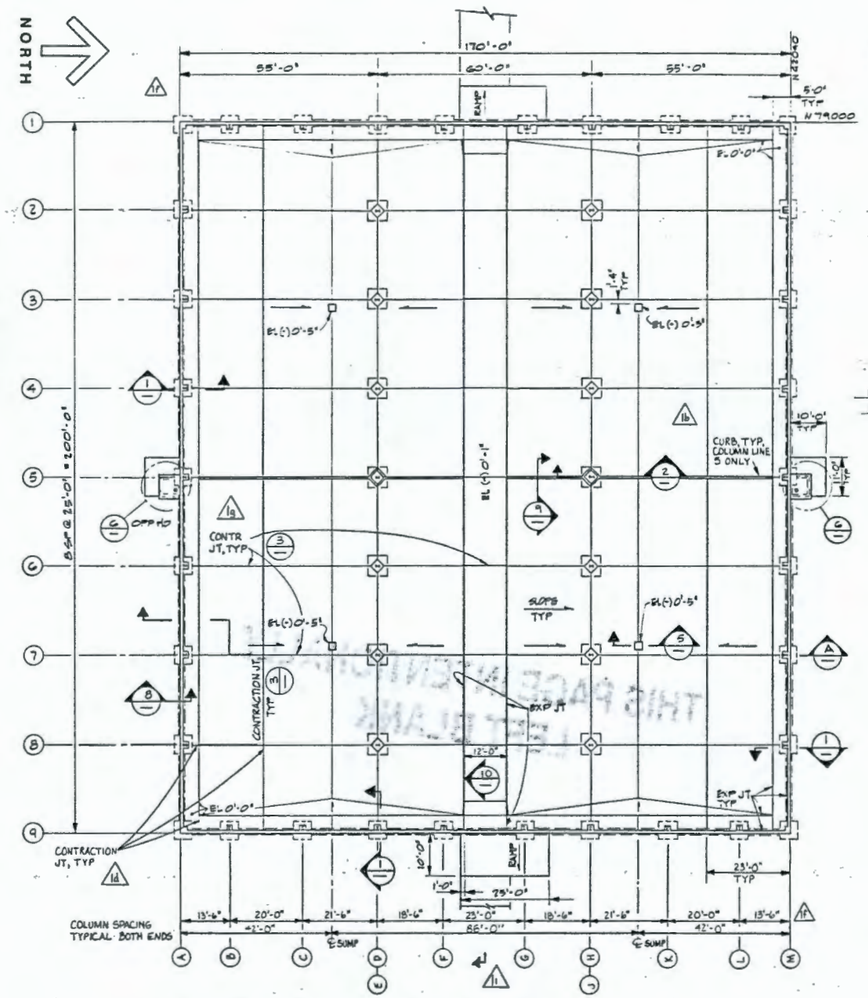
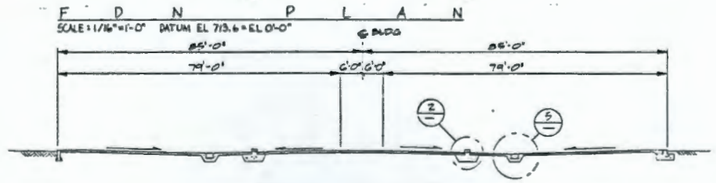


F D N P L A N

SCALE: 1/16" = 1'-0" DATUM EL 713.6 = EL 0'-0"



S E C T I O N A

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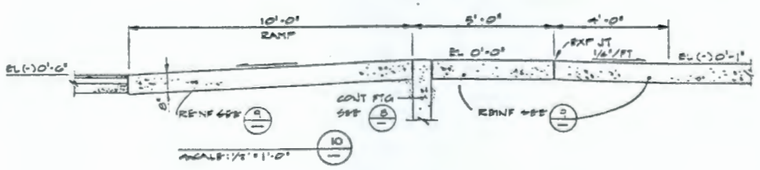

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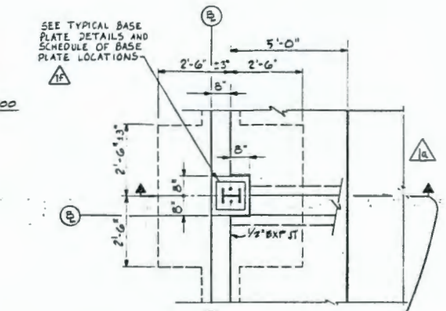
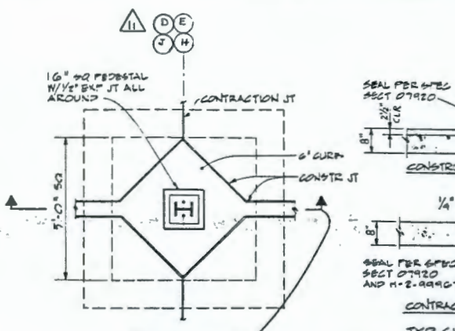


(TYP 34)

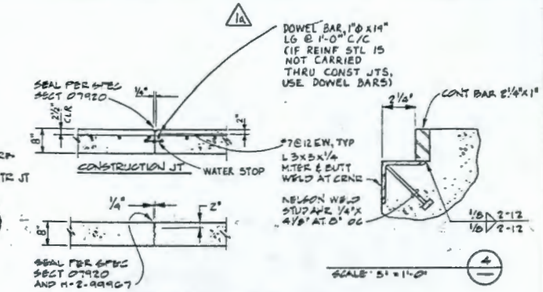
SCALE: 1/2" = 1'-0"
SEE NOTE 6



(TYP 14)

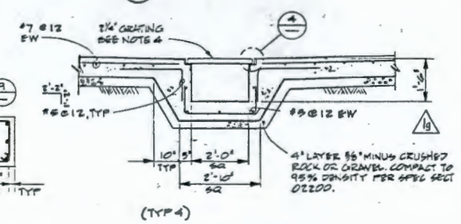
TYP PEDESTAL

SCALE: 1/2" = 1'-0"
SEE NOTE 6



CONTRACTION JT (SEE NOTE 5)

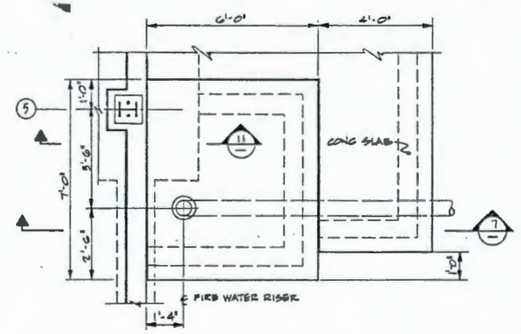
TYP SLAB JTS



(TYP 4)

TYP SUMP

SCALE: 1/2" = 1'-0"



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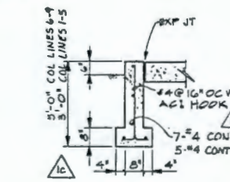

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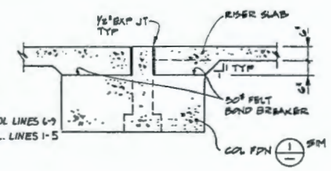

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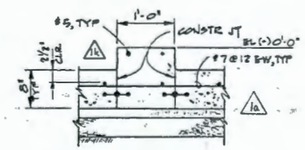
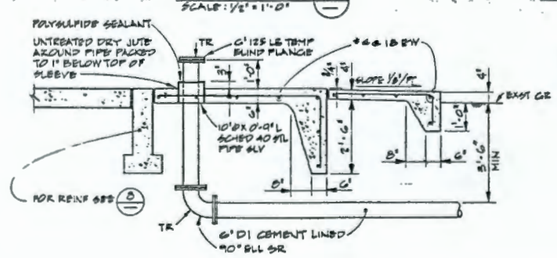


TYP SLAB REINF & CURB

SCALE: 1" = 1'-0"



SCALE: 1/2" = 1'-0"

NOTES:

1. FOR LEGEND SEE H-2-99968
2. COAT ALL EXPOSED CONC & GROUT INSIDE OF BLDG 2405-WA WITH SPECIAL PROTECTIVE COATING IAW SPEC SECT 09805.
3. DESIGN STRESSES:
   - SOIL BEARING — 2000 PSF
   - CONCRETE — f'_c = 4500 PSI AT 28 DAYS
   - REINFORCING STEEL — f_y = 60,000 PSI
4. GRATING TO HAVE 2 1/4" x 3/8" BEARING BARS SPACED 1 3/8" CC W/ CROSSBARS AT 4" CC. INSTALL 2 SECTIONS, EA 2'-4" LG x 1'-2" WIDE.

CONT ON SHT 2 & C1-2

H-2-99963 DRAWING LIST

NUMBER	TITLE

NUMBER	TITLE

DRAWING TRACEABILITY LIST | REFERENCES | NEXT USED ON

REVISIONS

SYM	REV NO	DESCRIPTION	REV BY DATE	APPD FOR	APPD FOR DSPL	APPD FOR DATE
A	1	AS-BUILT FOR PROJ W-016 1) ECN W-016-50 & A1, F3, C5, 6 2) ECN W-016-44 & B3 3) ECN W-016-26 & A1 4) ECN W-016-25 & A1 5) ECN W-016-22 & D7; E1-2 6) ECN W-016-21 & A1; C, F5-8 7) ECN W-016-20 & C5 8) ECN W-016-19 & C-4; 5-8 9) ECN W-016-12 & C2, D3 10) ECN W-016-6 & E6 11) ECN W-016-5 & F2 12) ECN W-016-3 & B1; C3; E-F4	MAK E.W. 3/31/94 DKG ADT 1/91	GCA 3/31/94	ASB 5/31/91	WHS 5/31/91	SKW 5/30/91

CADFILE | CADCODE

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

Reviewing Official/ADC
Kaiser Engineers Hanford Company
11-7-89
Date

OFFICIAL RELEASE BY W. C.
DATE DEC 21 1989

IMPACT LEVEL 3 | REF 151561

DRAWN B. OSTROM 12-13-89
CHECKED H. S. MoDEM 12-13-89
SAFETY 12-13-89
ENVIR R. R. Erickson 12-13-89
QE T. D. Lerner 12-13-89
LEAD ENG APPD C. M. CHRISMAN 12-13-89
KEM REP

U. S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

STRL
FOUNDATION PLAN & DETAILS

PROJECT W-016H RMN STORAGE FACILITY

APPROVED FOR IMPLEMENTATION BY R. J. Marion 12/13/89 KEM WMC DATE

SIZE	BLDG NO	INDEX NO	DRAWING NO	REV NO
F	2405-WA	0900	H-2-131541	1

SCALE 1"=1'-0" | JOB NO CE 0106 | SHEET 1 OF 2

92123696029

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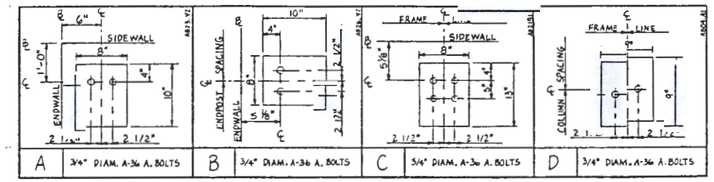

TYPICAL BASE PLATE DETAIL

SCHEDULE OF BASE PLATE LOCATIONS

PLATE TYPE	LOCATION
A	CORNERS
B	ENDWALLS
C	SIDEWALLS
D	INTERIOR COLUMNS

CONT FROM SH 1 & C1-2

NOTES:

5 CUT EVERY OTHER REINFORCING BAR PASSING THROUGH CONTRACTION JOINTS ON INTERIOR BUILDING SLABS. RESTEEL MAY BE CONTINUOUS THROUGH CONTRACTION JOINTS IN 3'-0" WALK THAT GOES AROUND THE INSIDE PERIMETER OF THE BUILDING AND THE 12'-0" WALK THAT GOES EAST-WEST DOWN THE CENTER OF THE BUILDING.

6 COORDINATE SIZE & LOCATION OF FOOTINGS, BASE PLATES & ANCHOR BOLTS WITH METAL BUILDING SUPPLIER.

7 CONCRETE FOR FOOTINGS SHALL HAVE 3 TO 6% AIR ENTRAINMENT.

THIS SHEET ADDED TO REFLECT AS-BUILT CONDITIONS PER ECN W016-21,23,26,50

OFFICIAL RELEASE BY WHC DATE JUN - 4 1991

IMPACT LEVEL B

ECN W-016-50

WHC APPROVAL BY	DATE 5/30/91	U.S. DEPARTMENT OF ENERGY Richland Operations Office
PROJ ENGR	5/30/91	KAISER ENGINEERS HANFORD COMPANY
QA		STRL
APPROVED BY KEH	12/3/91	FOUNDATION PLAN & DETAILS
SAFETY		
APPROVED BY	5/30/91	PROJECT TITLE RMW STORAGE FACILITY
CHECKED BY	12/3/90	PROJ W-016H / WO CR9326 / JOB
DRAWN BY LINDA THOMAS	1991	SCALE SHOWN / BLDG 2403-WF / INDEX 0900
DESIGNED BY		DRAWING NUMBER H-2-131541 / SHEET 2 / OF 2 / REV 0

MICROFILMED	BY-DATE	BY-DATE	REV BY DATE	DESCRIPTION	REV
APPROVAL	KEH APPROVAL				
REVISIONS					
COMMENT REVIEW					

DRAWING LIST

NUMBER	TITLE	REFERENCES

DRAWING TRACEABILITY LIST

NUMBER	TITLE	NEXT USED ON

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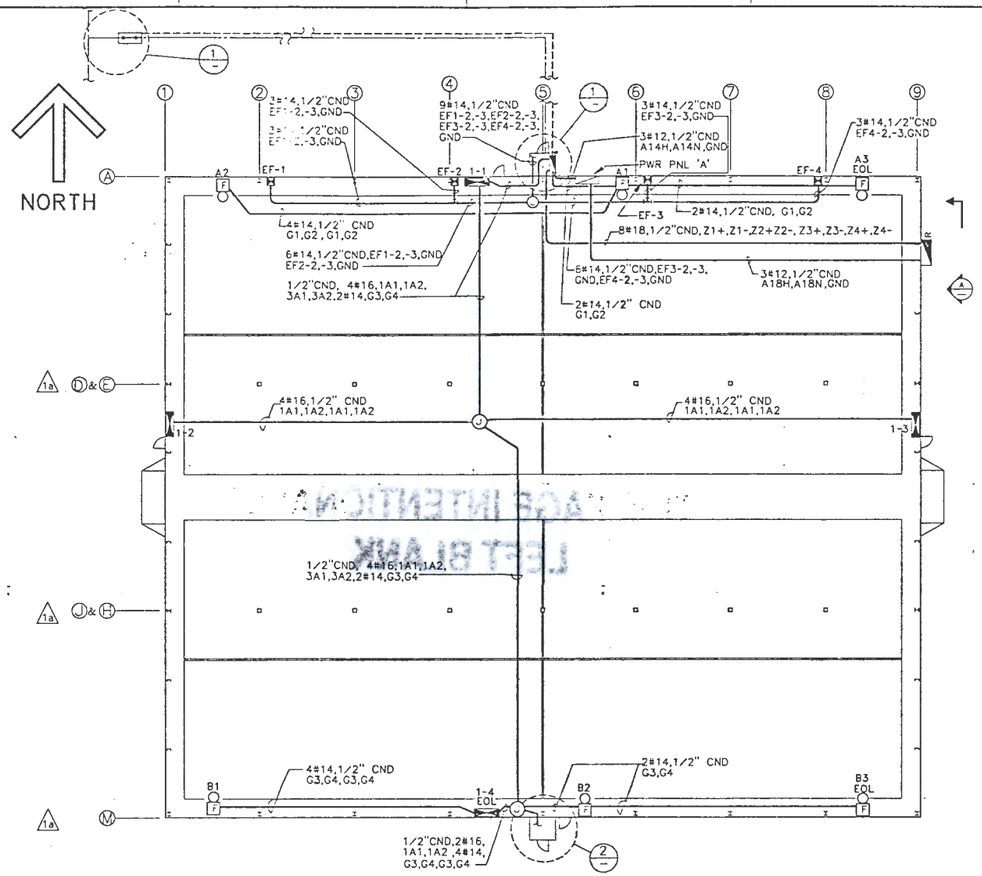

PLAN VIEW
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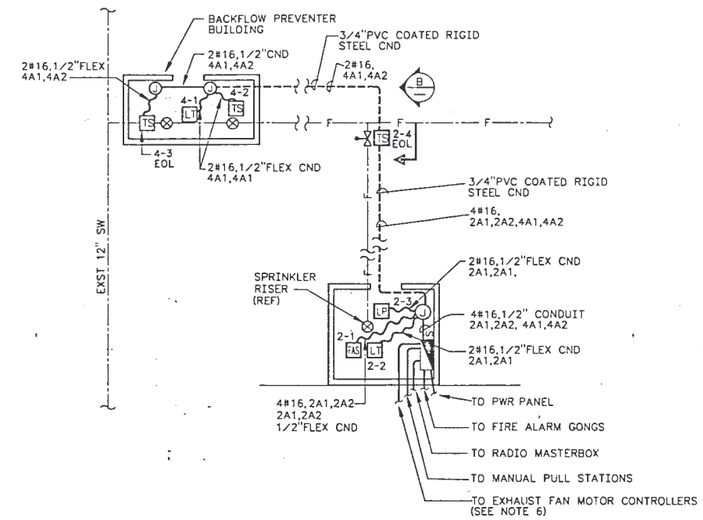


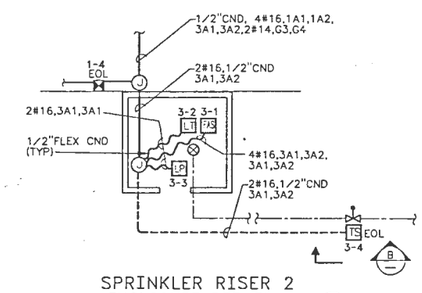
SPRINKLER RISER 1
ENCLOSURE DETAIL
SCALE: NONE

LEGEND

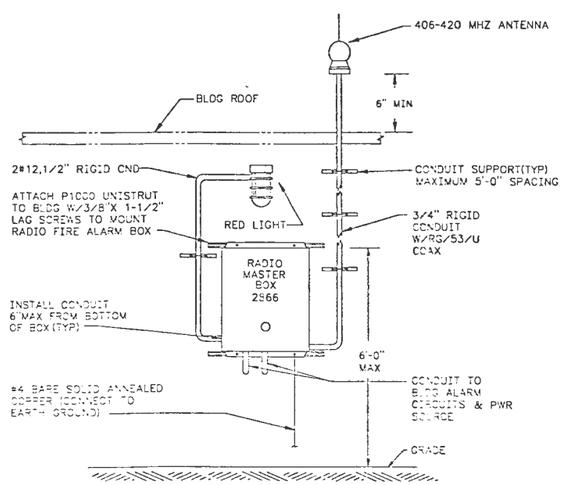
- FLEX CONDUIT
- UNDERGROUND LINE
- UNDERGROUND CONDUIT
- NEW CONDUIT
- FIRE ALARM GONG
- FIRE ALARM CONTROL PANEL
- RADIO MASTERBOX
- JUNCTION BOX
- LOW AIR PRESSURE SUPERVISORY SW
- TAMPER SWITCH
- MANUAL PULL STATION
- LOW TEMPERATURE SWITCH
- FLOW ALARM PRESSURE SWITCH
- EOL END OF LINE DEVICE
- RED INDICATOR LIGHT
- EXHAUST FAN MOTOR CONTROLLER

NOTES

1. FINAL WIRING CONNECTIONS IN RADIO MASTERBOX TO BE MADE BY WHC TELECOMMUNICATIONS.
2. LABEL ALL MODULES WITH TYPE WRITTEN LABELS.
3. FOR LEGEND SEE DWG H-2-131542
4. SET SWITCHES IN 405-R BOARD AS FOLLOWS:
   S1 - POSITION 1
   S2 - POSITION 2
   S3 - POSITION 3
   S4 - POSITION 4
5. FIELD ROUTE NEW CONDUIT
6. SEE DWG H-2-131547 FOR FIRE ALARM SYSTEM EXHAUST FAN INTERLOCK CIRCUIT.



SPRINKLER RISER 2
ENCLOSURE DETAIL
SCALE: NONE



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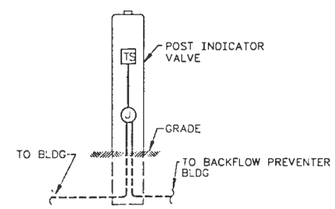

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DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

REVIEWING OFFICIAL/ADC: R.J. HARVON

DATE: 12-8-89

REV NO	DESCRIPTION	REV BY / DATE	KEM APPROVALS
1	AS-BUILT FOR PROJ W016 a) ECN W016-59 Z 0-E8	KCA 5/30/91	ABK 5/30/91 WLH 5/30/91

REVISIONS

CAD FILE B131542A

IMPACT LEVEL 3 | EDT 151561

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

M. FIRE PROTECTION PLAN, SECT & DETAILS

PROJECT W016H RMW STORAGE FACILITY PHASE I

SIZE F | DWG NO 2403AA | SYSTEM 7701 | DWG NO H-2-131542 | REV NO 1

SCALE SHOWN | CRT NO CR8106 | SHEET 1 OF 1

KEHCAD

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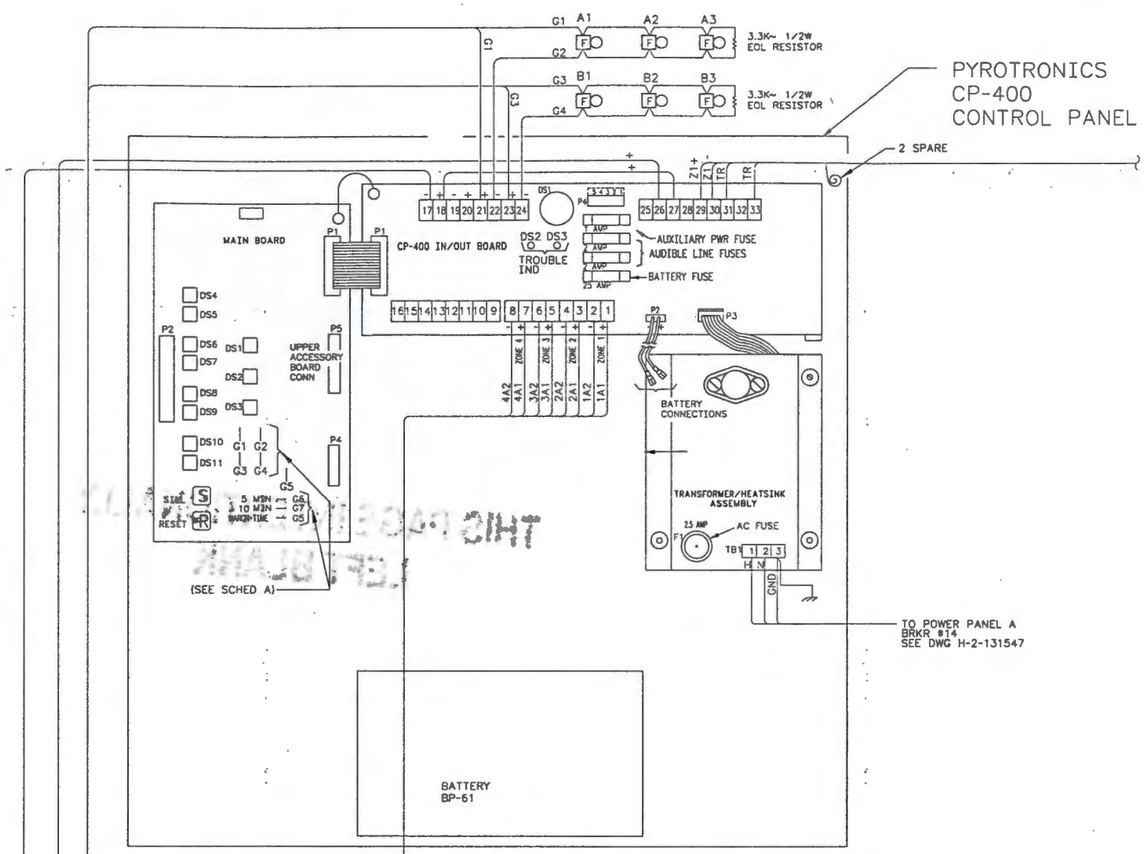
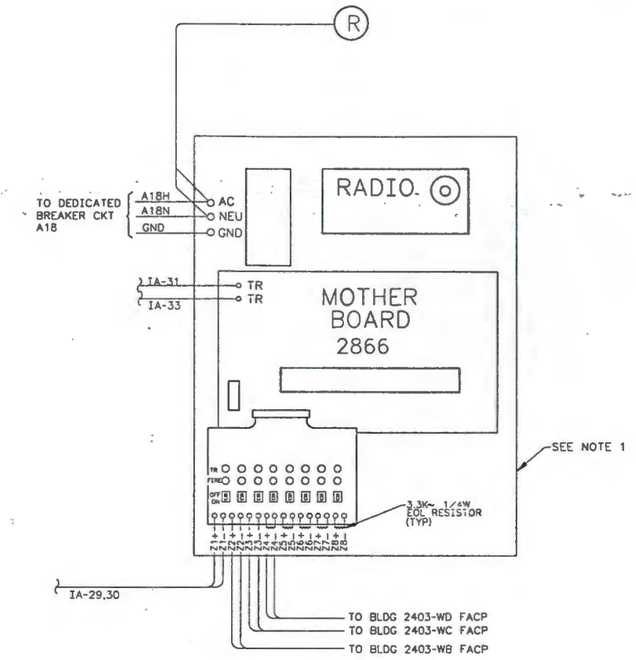
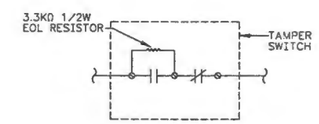


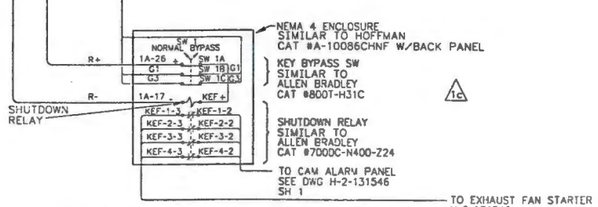
WIRING DIAGRAM
SCALE: NONE



READ - BLDG 2403-WA



TAMPER SWITCH
WITH EOL RESISTOR (1)
SCALE: NONE

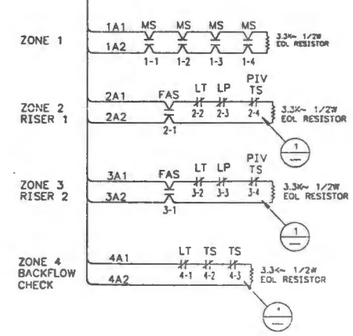


AUX DISC BOX & BELL BYPASS
SCALE: NONE

LOCATE IN CLOSE PROXIMITY
TO FACP

CUT PROGRAM JUMPERS	
G1	X
G2	X
G3	X
G4	X
G5	
G6	X
G7	X
G8	

SCHEDULE A



FOR NOTES AND LEGEND SEE DWG H-2-131542 SH 1

DOES NOT CONTAIN CLASSIFIED OR
UNCLASSIFIED CONTROLLED
NUCLEAR INFORMATION

REVIEWING
OFFICIAL/ADC: R.J. HARVON

DATE: 12-8-89

NUMBER	TITLE	NUMBER	TITLE

DRAWING TRACEABILITY | NOT USED ON | REFERENCES

REVISIONS

REV	DESCRIPTION	DATE	REV APPROVALS
B3 1	AS-BUILT FOR PROJ W016 (3) ECN W016-50 & 63 7 A-B6-8 (5) ECN W016 46 GEN REV (8) ECN W016-27 GEN REV		

CAD FILE R131543A | CAD COST

IMPACT LEVEL: 3 | ECN: *51561

DRAWN C MCCOUGH | CHECKED G. BURR 11-16-89 | SAFETY J ARCHIBALD 11-16-89 | ENGR R HOLLENBECK 11-21-89 | DES TD HAYS 11-21-89 | CAD ENG APPD D ELLINGREN 11-21-89

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

FIRE PROTECTION
ALARM SYSTEM
WIRING DIAGRAM

PROJECT W016 - RWM STORAGE FACILITY PHASE I

SIZE F | 2403WA | 7702 | H-2-131543 | REV NO 1

SCALE NONE | DRAWING TYPE | SHEET 1 OF 1

KEYCAD

9212764 0929

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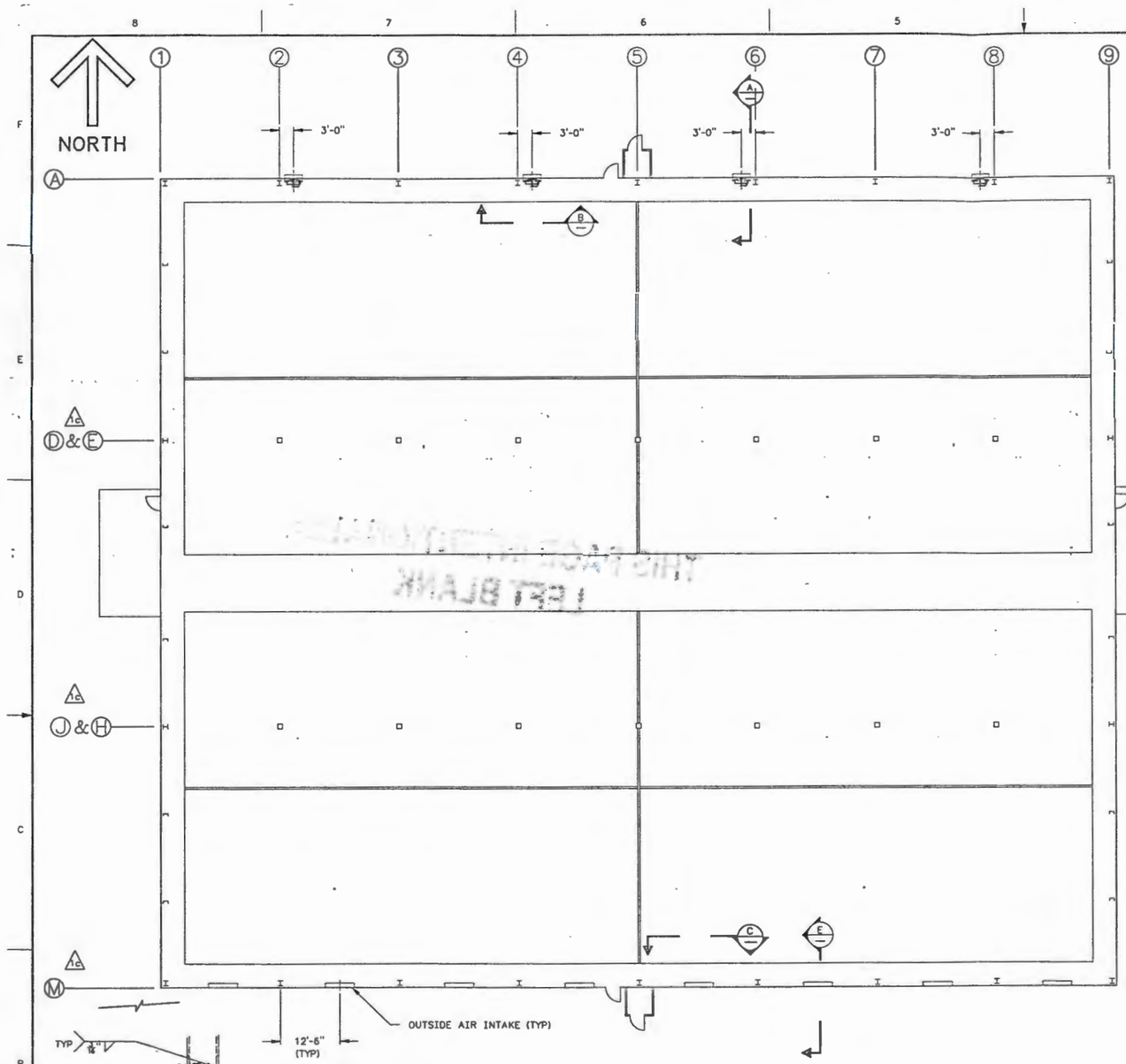
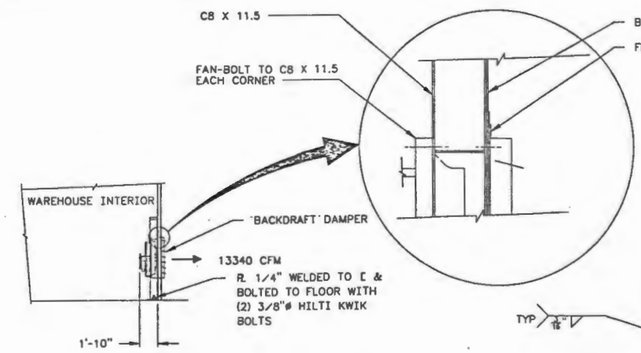
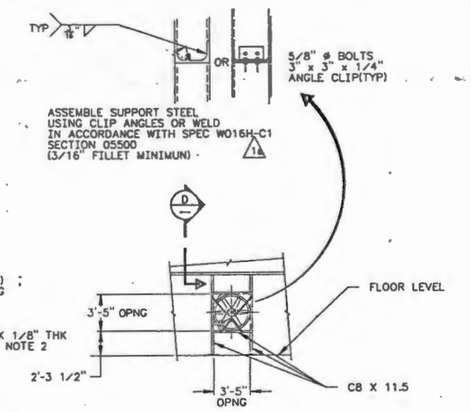


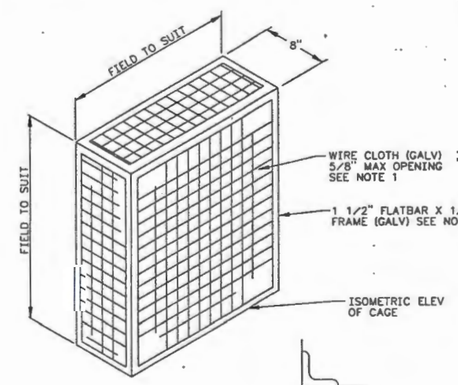
PLAN VIEW
SCALE: 3/32"=1'-0"



SECTION A
SCALE: 3/16"=1'-0"

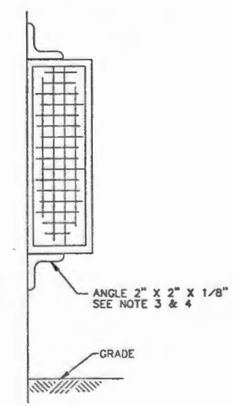


SECTION B
SCALE: 3/16"=1'-0"

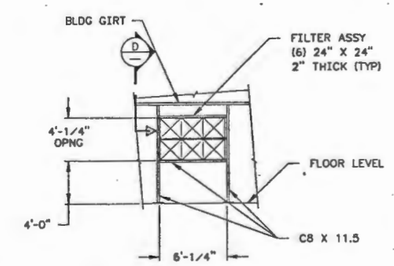


NOTES:

1. SECURE WIRE CLOTH TO FLATBAR FRAME.
2. BOLT FRAME SECTION TOGETHER WITH INTERIOR ANGLE CLIPS 12" MAX ON CENTER (2 CLIPS MIN PER SIDE)
3. BOLT ANGLE THROUGH INTERIOR FAN SUPPORT STEEL 4 PLC TOP & BOTTOM 1/2" ø BOLT AND HDWR.
4. BOLT CAGE TO ANGLE 4 PLC TOP & BOTTOM 5/8" ø BOLTS AND HDWR.
5. REPLACE 7 1/8" DIAMETER FAN SHEAVES WITH 10 1/2" FAN SHEAVES (1 3/16" BORE DIAMETER) ON ALL FOUR FANS



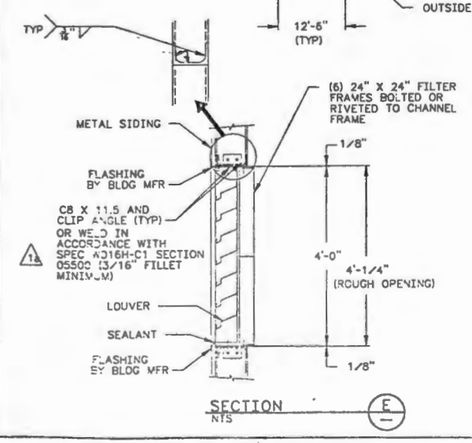
ELEVATION



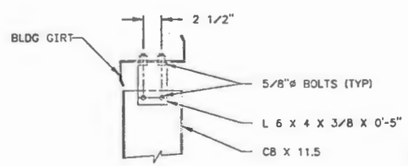
SECTION C
SCALE: 3/16"=1'-0"

GENERAL NOTES

1. SEE SPECIFICATION W-016-C1 FOR EQUIPMENT DESCRIPTION.
2. ALL DIMENSIONS TO BE VERIFIED WITH LOUVER AND EXHAUST FAN REQUIREMENTS.



SECTION E
NTS



SECTION D
SCALE: 1 1/2"=1'-0"

EXHAUST FAN LOUVERS COVER (TYP 4 PLCS)

SCALE: NONE

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

R.J. HARMON
Reviewing Official/ADC
Kaiser Engineers Hanford Company
11-7-89
Date

REV NO	DESCRIPTION	DATE	KEM APPROVALS
1	AS-BUILT FOR PROJ W016 c) ECN W016-50 7 9-E8 b) ECN W01A-48 ZA-E2-4 a) ECN W016-31 2 AB8.C01.2	12-19-89	

REVISIONS

CAD FILE B131544A | CAD CODE ZWJBW-ACD2:10 CNN

DR	R G HALE	12-11-89
CHECKED	PETERSON	12-12-89
DESIGN	J ARCHIBALD	12-11-89
DESIGN	J MARSHALL	12-12-89
DR	TD HAYS	12-12-89
LEAD ENG APPR	RG HALE	12-11-89
ENG MGR	JL HENDERSON	12-12-89
APPROVED FOR IMPLEMENTATION BY		
FOR	DATE 12-19-89	

IMPACT LEVEL 3 | EDT 151561

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

M

HVAC PLAN, SECT & DETAILS

PROJECT W-016H RADIOACTIVE MIXED WASTE FACILITY

SITE	BLDG NO	SYSTEM NO	DWG NO	REV NO
F	2403WA	8900	H-2-131544	1

SCALE SHOWN | JOB NO CR 9106 | SHEET 1 of 1

KEHCAD

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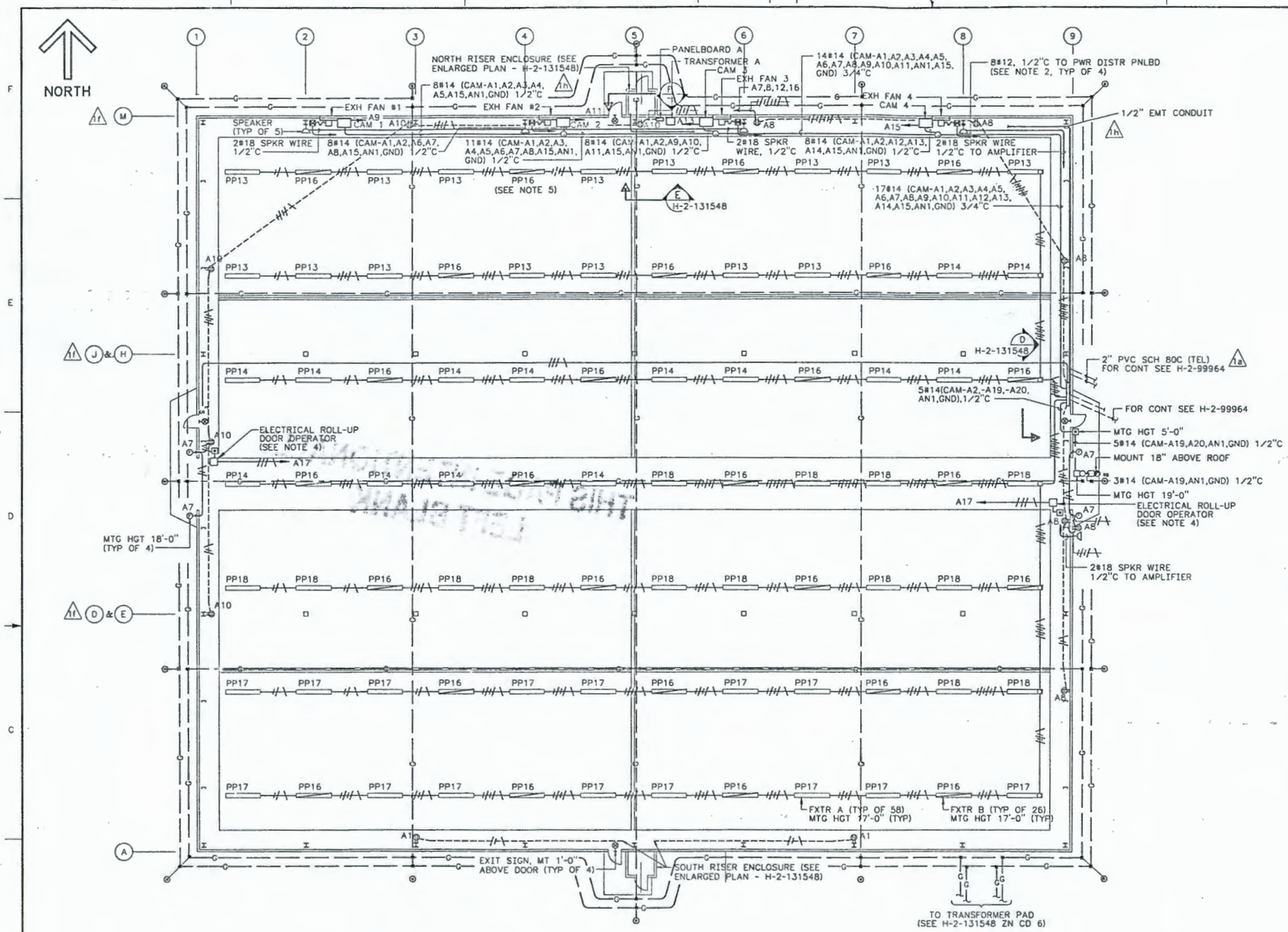
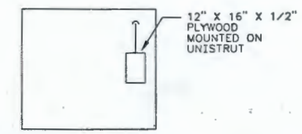


BLDG PLAN
SCALE: 3/32" = 1'-0"



SECTION F
NTS

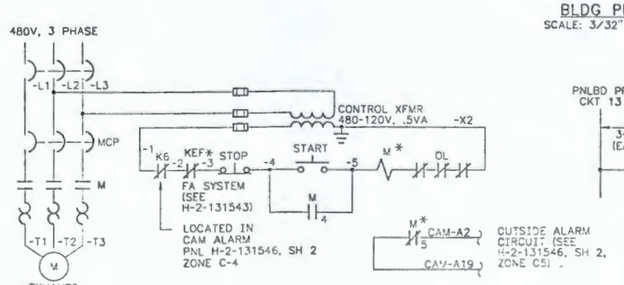
PANELBOARD A	LOCATION RMV STOR FAC N WALL	VOLTS 120/208Y VAC
MFG & TYPE SQ D NQOD	POWER SUPPLIED FROM 15KVA XFMR A	3PH, 4W
CKT BRKR TYPE		
NEMA TYPE ENCL	☒ MAIN CKT BRKR ☐ MAIN LUGS ONLY	☐ PANELBOARD GROUND FAULT PROTECTION 100A AMP BUS
☒ SURFACE MOUNTED		100A AMP NEUT
☐ FLUSH MOUNTED	☐ TOP ☒ BOT	☒ GROUND BUS

SERVICE	KVA WATTS	NO.	NO.	KVA WATTS	SERVICE
RISER ENCL RCPT, LTG & EXT LTG (N & S)	1000	1	2	2000	BACKFLOW PREVENTOR ENCLOSURE HEATER
N RISER ENCL HTR	1000	3			
S RISER ENCL HTR	1000	5	6	355	BACKFLOW PREVENTER ENCL LIGHT & PWR
EXTERIOR LTG E & W	540	7	8	1260	CONVENIENCE OUTLETS (EAST END)
CAM 1	1800	9	10	900	CONVENIENCE OUTLETS (WEST END)
CAM 2	1800	11	12	720	TEL BACKBOARD RCPT
CAM 3	1800	13	14		FIRE ALARM SYS
CAM 4	1800	15	16	530	CAM ALARM PANEL
MOTOR OPERATED DOORS	1500	17	18		RADIO MASTERBOX
			20	530	POWER FAILURE ALARM CKT 16
			22		SPACE
SPACE		23	24		SPACE

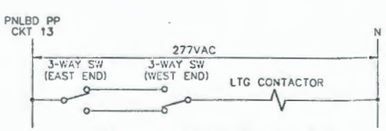
ALL CIRCUIT BREAKERS ARE 20A UNLESS OTHERWISE NOTED
G = GROUND FAULT INTERRUPTER BREAKER
* = CIRCUIT BREAKER WITH LOCKING DEVICE

NOTES:

1. FOR MATERIAL CALL OUTS & INSTALLATION INSTRUCTIONS SEE CONSTRUCTION SPECIFICATION.
2. CONNECT TO CIRCUIT IDENTIFIED ON ONE-LINE DIAGRAM ROUTE WIRE NUMBERS -1 & -2, PREFIXED WITH APPROPRIATE FAN NUMBER, AND N.C. AUXILIARY CONTACT WIRES (CAM-A2 AND CAM-A19), TO ALARM PANEL VIA POWER DISTRIBUTION PANELBOARD. ALL CONDUIT SHALL INCLUDE A GROUND CONDUCTOR.
3. EXPOSED CONDUIT IS 1/2" AND CONCEALED CONDUIT IS 3/4" UNLESS OTHERWISE NOTED. CONDUIT CONTAINS 3#12 UNLESS OTHERWISE NOTED.
4. ELECTRICAL OPERATORS FOR THE ROLL-UP DOORS ARE VENDOR SUPPLIED AND INCLUDE SAFETY INTERLOCKS, LIMIT SWITCHES AND PUSHBUTTON STATION. INSTALLATION SHALL BE AS DIRECTED BY DOOR VENDOR INSTALLATION INSTRUCTION WITH DOOR CONTROL PUSHBUTTON STATIONS MOUNTED 5'-0" ABOVE THE FLOOR IMMEDIATELY ADJACENT TO THE DOOR.
5. SEE H-2-131542 FOR WIRING OF EXHAUST FAN FIRE ALARM SYSTEM INTERLOCK CIRCUITS.
6. FOR SYMBOLS SEE DWG H-7-1275.



EXHAUST FAN ELEMENTARY
TYPICAL OF 4 - PREFIX WIRE NO W/EXH FAN NO. (EF1 THRU EF4)
* - INDICATES EXHAUST FAN NUMBER



INTERIOR LIGHTING CONTROL

NUMBER	TITLE
H-7-1275	ELECTRICAL SYMBOL LIST
H-2-99963	DRAWING LIST

DRAWING TRACEABILITY LIST

REFERENCES

REV NO.	DESCRIPTION	REVISIONS
RS 1	AS-BUILT FOR PROJ W016	
M	1) ECN W-016-15 Z A1	
	h) ECN W-016-63 Z E1-2,E,F4-6	
	g) ECN W-016-51 Z A1	
	f) ECN W016-50 Z D-F8	
	e) ECN W016-46 Z A7,8	
	d) ECN W016-11 Z A1	
	c) ECN W016-3 Z A1	
	b) ECN W016-18 Z C1,2	
	a) ECN W016-9 Z E3,4	

CAD FILE B13:547A CAD CODE 2J:IBM:ACD2:10.0:N

APPROVED FOR IMPLEMENTATION BY: J.R. MALONEY FOR WHC DATE 1-23-90

IMPACT LEVEL 3 IDEF 118589

DRAWN GF MCKEE CHECKED ML ALEXANDER SAFETY J.ARCHIBALD ENGR RL NEWELL SE S. RICHEY LEAD ENG APPR RJ HARMON

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL PLAN AND DIAGRAMS

PROJECT W-016H RADIOACTIVE MIXED WASTE STOR FACILITY

SIZE F | 2403 | 2401 | 2402 | 2403 | H-2-131547 | REV NO 1

SCALE 3/32" = 1'-0" | JOB NO CH-2106 | SHEET 1 OF 2

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

REVIEWING OFFICIAL/ADC R.J. HARMON
DATE 1-19-90

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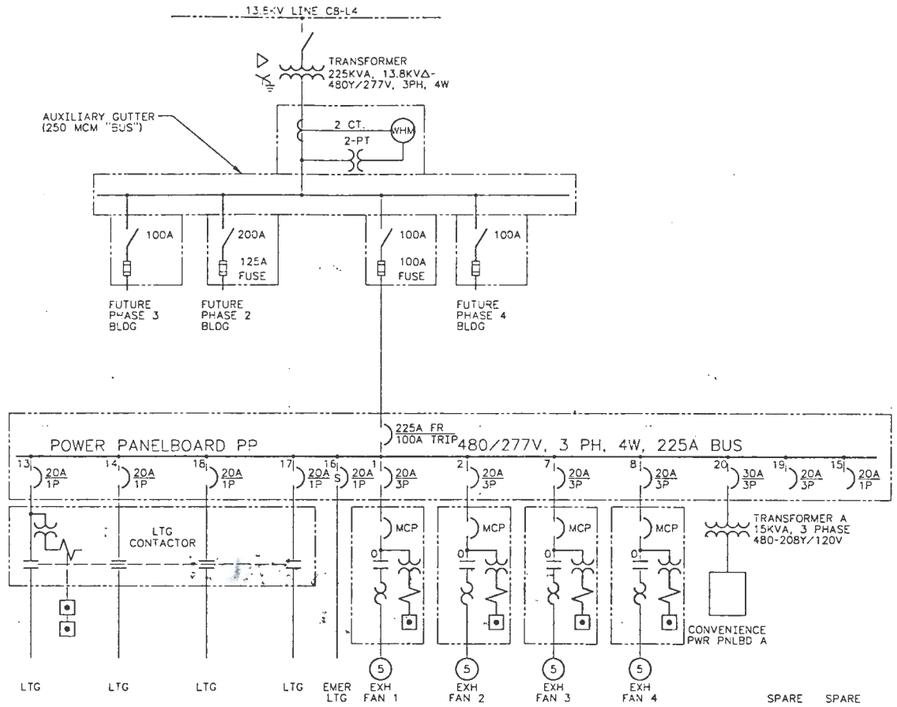


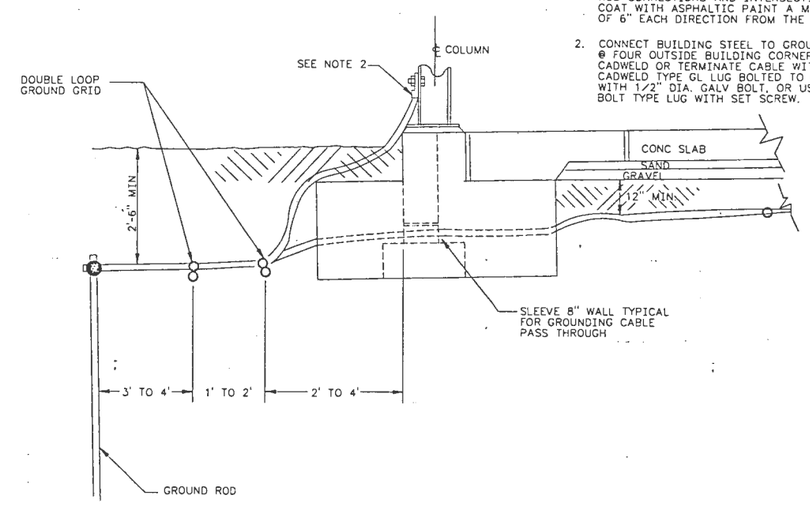
ONE-LINE DIAGRAM

(CIRCUIT 16 CIRCUIT BREAKER SHALL BE APPROVED FOR SWITCHING DUTY)

NOTES:

1. CADWELD ALL UNDERGROUND CABLE TO CABLE AND CABLE TO GROUND ROD CONNECTIONS AND INTERSECTIONS. COAT WITH ASPHALTIC PAINT A MINIMUM OF 6" EACH DIRECTION FROM THE WELD

2. CONNECT BUILDING STEEL TO GROUND GRID @ FOUR OUTSIDE BUILDING CORNERS USING CADWELD OR TERMINATE CABLE WITH A CADWELD TYPE GL LUG BOLTED TO COLUMN WITH 1/2" DIA. GALV BOLT, OR USE SODERLESS BOLT TYPE LUG WITH SET SCREW.



GENERAL GROUNDING DETAIL

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

Reviewing Official/ADC
Kaiser Engineers Hanford Company

5/30/91
Date

OFFICIAL RELEASE
BY WHC
DATE JUN - 4 1991

THIS SHEET ADDED TO REFLECT AS-BUILT CONDITIONS PER ECN W-016-3,11,15,50,51

IMPACT LEVEL 3 ECN-W016-050

DRAWN E. WEBB 2/12/91
CHECKED L.D. SEBREE 2/12/91

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL
PLAN AND
DIAGRAMS

PROJECT W-016H RADIOACTIVE MIXED WASTE STOR FACILITY

F 2403 -WA H-2-131547 0

SCALE NOTED JOB NO. CR9106 SHEET 2 of 2

H-7-1275 ELECTRICAL SYMBOL LIST
H-2-99963 DRAWING LIST

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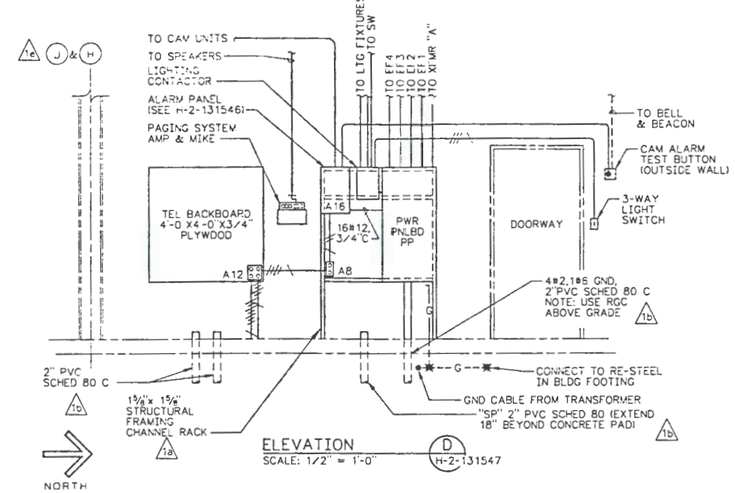
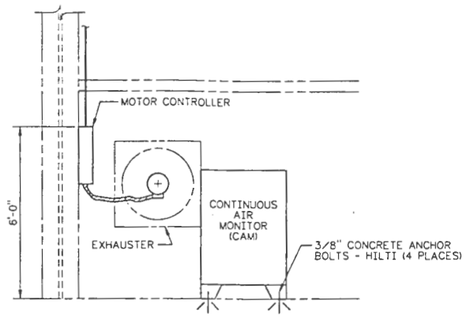
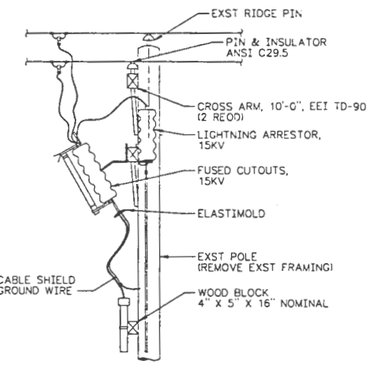


ELEVATION (D H-2-131547)
SCALE: 1/2" = 1'-0"



ELEVATION - CAM 1 & CAM 2
COL 2 & 4
SCALE: 1/2" = 1'-0"

ELEVATION - CAM 3 & CAM 4
COL 6 & 8
OPPOSITE HAND



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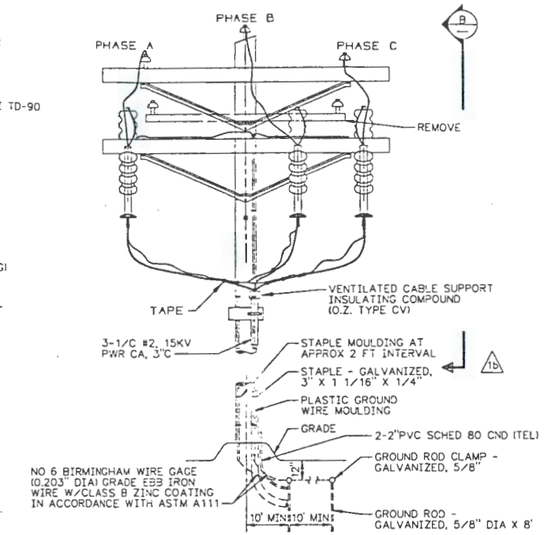
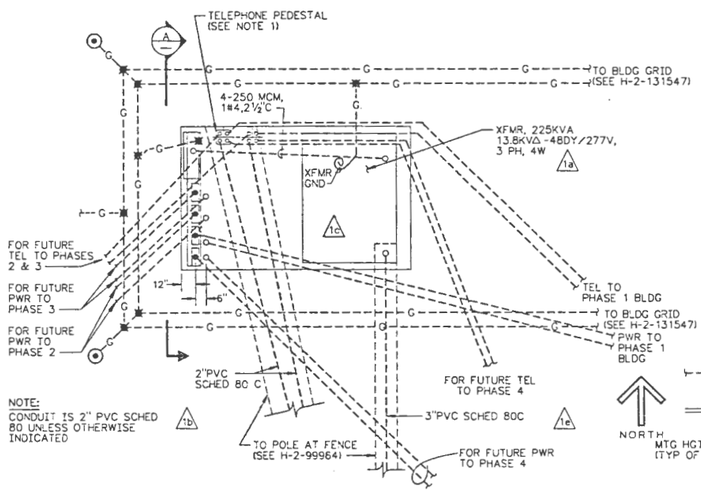


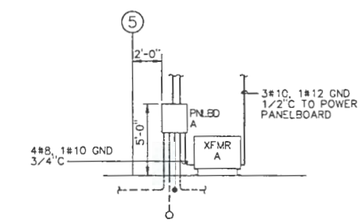
NOTE:
INSTALL CND PER DETAIL 2 ON DWG H-2-131548 SH 2

SECTION (C H-2-99964)
LOOKING SOUTH
SCALE: NONE

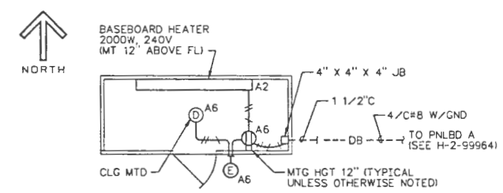


NOTE:
CONDUIT IS 2" PVC SCHED 80 UNLESS OTHERWISE INDICATED

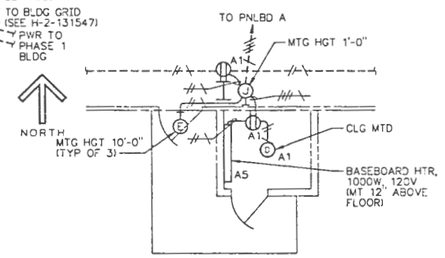
DETAIL (1 H-2-99964)
SCALE: 1/2" = 1'-0"
2" CND STUB-UPS SHALL BE 3 1/2" ON CENTER UNLESS OTHERWISE INDICATED



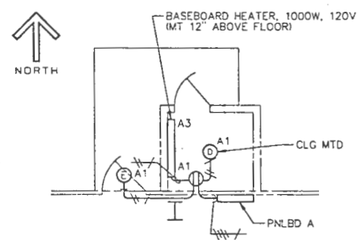
ELEVATION (E H-2-131547)
SCALE: 1/4" = 1'-0"



PLAN
BACKFLOW PREVENTER ENCL
(SEE H-2-99964 FOR LOCATION)



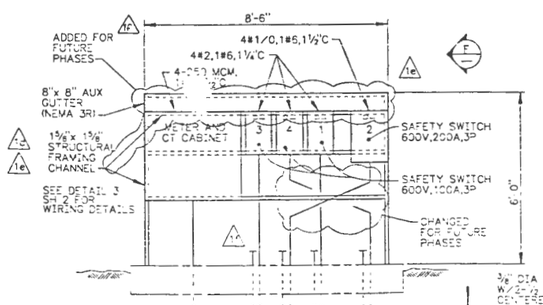
ENLARGED PLAN
SOUTH RISER ENCLOSURE



ENLARGED PLAN
NORTH RISER ENCLOSURE

NOTES:

1. TELEPHONE PEDESTAL WILL BE SUPPLIED BY GENERAL TELEPHONE: CALL TOM DORN (735-5407) FOR DELIVERY TO THE SITE PRIOR TO POUR OF CONCRETE PAD.
2. FOR MAIN BUILDING PLAN SEE H-2-131547.



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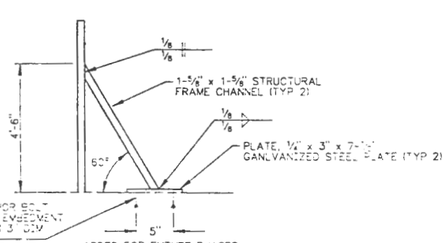

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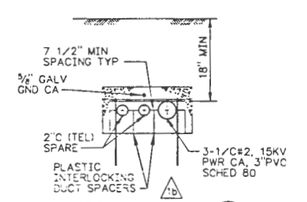

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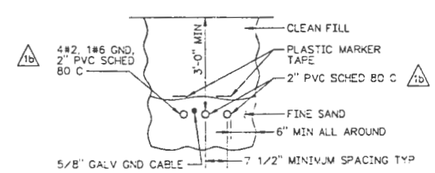
SCALE: NONE



SECTION (A)
SCALE: NONE

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

REVIEWING OFFICIAL/ADC: RJ HARMAN
DATE: 1-19-90

H-2-99963 DRAWING LIST

NUMBER	TITLE

REFERENCES

NUMBER	TITLE

REVISIONS

REV NO	DESCRIPTION	BY	DATE	NSH APPROVALS

U.S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL ELEVATIONS & DETAILS

PROJECT W-016H RADIOACTIVE MIXED WASTE STOR FACILITY

H-2-131548 | 1

SCALE: SHOWN
CRS106
SHEET 1 of 2

-21315488
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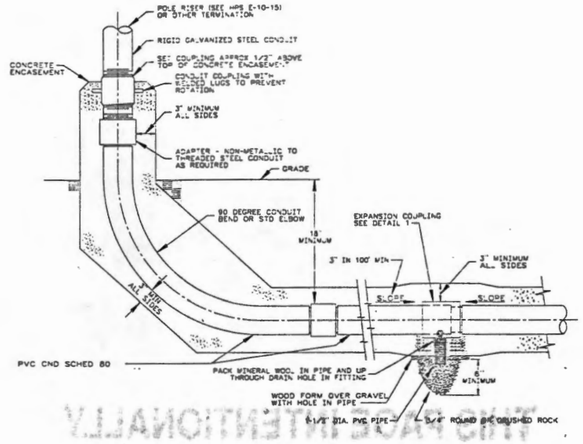
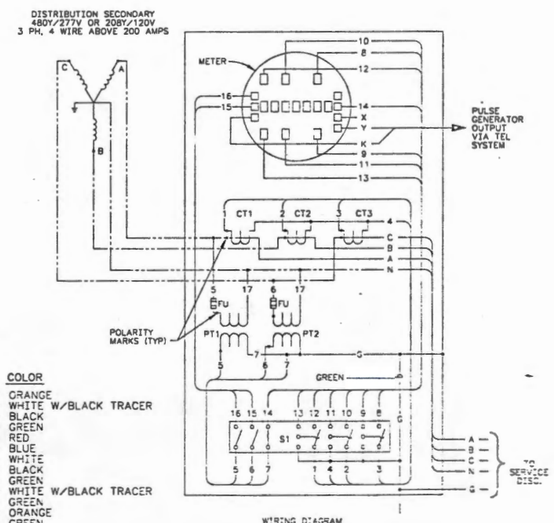


DETAIL 2 SH 1

SCALE: NONE



WIRING DIAGRAM

WIRE No.	COLOR
1	ORANGE
2	WHITE W/BLACK TRACER
3	BLACK
4	GREEN
5	RED
6	BLUE
7	WHITE
8	BLACK
9	GREEN
10	WHITE W/BLACK TRACER
11	GREEN
12	ORANGE
13	GREEN
14	WHITE
15	BLUE
16	RED
17	WHITE

DETAIL 3 SH 1

SCALE: NONE

DOES NOT CONTAIN CLASSIFIED OR UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

Reviewing Official/ADC
Kaiser Engineers Hanford Company

Date 5/31/91

THIS SHEET ADDED TO REFLECT AS-BUILT CONDITIONS PER ECN W-016-9,43 & 50

OFFICIAL RELEASE BY WHC
DATE JUN - 4 1991

NUMBER	TITLE	NUMBER	TITLE

REFERENCES

NO.	DESCRIPTION	DATE	REV APPROVALS

REVISIONS

CAD FILE 913154HB CAD CODE 2-ITEM 4.202:10.0:NN

IMPACT LEVEL 3 ECN W016-50

DRAWN R. BANKEMPER
CHECKED D. GOODENOUGH
SAFETY
ENVIR
QE
LEAD ENG APVD

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
KAISER ENGINEERS HANFORD COMPANY

ELECTRICAL ELEV & DETAILS

PROJECT A-016H RADIOACTIVE MIXED WASTE STOR FACILITY

F 12423-WA 7351 H-2-131548 0

SCALE NONE DRAWING CR2106 SHEET 2 OF 2

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APPENDIX 4C

SECONDARY CONTAINMENT CALCULATIONS

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APPENDIX 4C

SECONDARY CONTAINMENT CALCULATIONS

Low-Flash-Point Mixed Waste Storage Modules

The sump volumes of the Low-Flash-Point Mixed Waste Storage Modules appear in Appendices 4A-6, 4A-9, and 4A-10. These Low-Flash-Point Mixed Waste Storage Modules are purchased preengineered, and the sump volumes that appear in the manufacturers' specifications are accepted.

The Low-Flash-Point Mixed Waste Storage Modules have secondary containment (spill containment) ranging from 366 to 750 gallons (1,387 to 2,843 liters), depending on the manufacturer. Inspection aisle space of 30 inches (76 centimeters) or greater is required. Stacking of containers larger than 55-gallon (208-liter) drums is not allowed. Therefore, only 17 55-gallon (208-liter) drums can be stored in any one module.

As discussed in Chapter 4.0, Section 4.1.1.1, any liquid must be packed with material capable of absorbing twice the volume of the liquid in the same drum. The maximum amount of properly stored liquid in a 55-gallon (208-liter) drum is 15 gallons (57 liters).

Containers larger than 55 gallons (208 liters) are not routinely accepted for storage and are only considered on a case-by-case basis.

Under these conditions, it is considered improbable to exceed the retention capacity of the secondary containment (sump) in any of the Low-Flash-Point Mixed Waste Storage Modules.

The Plutonium/Polychlorinated Biphenyl Mixed Waste Storage Building (2401-W), and the Radioactive and/or Mixed Waste Storage Buildings (2402-W and 2402-WB through 2402-WL)

The Plutonium/Polychlorinated Biphenyl Mixed Waste Storage Building (2401-W) and the 12 radioactive and/or mixed waste storage buildings (2402-W and 2402-WB through 2402-WL) all have the same square footage and all have a 6-inch-high curb for secondary containment.

Building		Building volume (ft^3)		Capacity (gal)
2401-W	=	80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	=	14,960
2402-W	=	80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	=	14,960
2402-WB	=	80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	=	14,960
2402-WC	=	80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	=	14,960

Building	Building volume (ft^3)	Capacity (gal)
2402-WD	= 80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	= 14,960
2402-WE	= 80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	= 14,960
2402-WF	= 80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	= 14,960
2402-WG	= 80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	= 14,960
2402-WH	= 80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	= 14,960
2402-WI	= 80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	= 14,960
2402-WJ	= 80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	= 14,960
2402-WK	= 80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	= 14,960
2402-WL	= 80ftx50ftx6in(curb) = 2,000 cu.ft x (7.48gal/cu.ft)	= 14,960

Phase I Radioactive and/or Mixed Waste Storage Building (2403-WA)

The Phase I Radioactive and/or Mixed Waste Storage Building is 170 feet (51.8 meters) wide and 200 feet (61 meters) long and is divided into four quadrants. Each quadrant is divided by 5-inch (12.7-centimeter) high concrete curbs that slope toward a sump. The following are calculations for the secondary containment system.

Volume of containment = volume of floor + volume of sump.

$$\text{Volume of floor} = \left[\left(37\text{ft} \times \frac{5}{12}\text{ft} \times \frac{1}{2}\right) + \left(37\text{ft} \times \frac{1}{3}\text{ft} \times \frac{1}{2}\right)\right] + \left(43\text{ft} \times \frac{1}{12}\text{ft}\right)(94.5\text{ft}) = 1{,}650\text{ft}^3.$$

Volume of sump = (2ft x 2ft x 1.5ft) = $6ft^3$.

Total for quadrant = $1{,}650ft^3 + 6ft^3 = 1{,}656ft^3$.

Secondary containment capacity for one quadrant = $1{,}656ft^3 \times 7.48gal/ft^3$ = 12,385 gal.

Total secondary containment for 2403-WA = 49,542 gal.

Mixed Waste Storage Pad

The Mixed Waste Storage Pad is 88.5 feet (27 meters) wide by 99 feet (30 meters) long. The Mixed Waste Storage Pad is curbed with 6 inches (15.24 centimeters) of concrete. The following are calculations for the secondary containment system.

Total volume = volume from curbs + volume from trench.

$$\text{Volume from curbs} = \left[\left(88.5\text{ft} \times \frac{1}{3}\right) + \frac{1}{2}\left(88.5\text{ft} \times \frac{5.5}{12}\right)\right] 99\text{ft} = 4{,}928\text{ft}^3.$$

$$\text{Volume of trench} = 1\text{ft} \times 1.33\text{ft} \times 99\text{ft} = 132\text{ft}^3.$$

$$\text{Total volume} = 4{,}928\text{ft}^3 + 132\text{ft}^3 = 5{,}060\text{ft}^3$$

$$= \frac{5{,}060\text{ft}^3 \times 7.48\text{ gal}}{\text{ft}^3} = 37{,}851\text{ gal.}$$

Rainfall Calculations

A maximum 25-year 24-hour rainfall event will produce 2 inches (5.08 centimeters) of rain in a 24-hour period. The following calculations demonstrate that the Mixed Waste Storage Pad secondary containment system is capable of holding the volume of liquid produced by this type of precipitation event.

$$\text{Area of Mixed Waste Storage Pad} = 88.5\text{ft} \times 99\text{ft} = 8{,}762\text{ft}^2.$$

$$\text{Volume of rain} = 8{,}762\text{ft}^2 \times \frac{1}{6}\text{ft} = 1{,}460\text{ft}^3.$$

$$\text{Volume of rain} = 1{,}460\text{ft}^3 \times 7.48\text{ gal/ft}^3 = 10{,}923\text{ gal.}$$

Volume of secondary containment for the Mixed Waste Storage Pad is 37,851 gallons; therefore, the secondary containment system is capable of handling a 25-year/24-hour rainfall event.

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APPENDIX 4D

SEALANT PROPERTIES

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APPENDIX 4D

SEALANT PROPERTIES

The specifications for sealant on the floors in the 2402-W and 2402-WB through -WL Buildings are located in Appendix 4A-2. The joint sealant is UNIFLEX 200* and the coating is UNIFLEX 455*.

The specifications for sealant on the floors in the 2403-WA Building are located in Appendix 4A-3. The joint sealant is NU-KLAD 114, the primer is AMERCOAT 400, and the finish coats are hi-build epoxy series 78 and Amershield*.

The specifications for the sealant on the slabs of the Mixed Waste Storage Pad and the pads of the Low-Flash-Point Storage Modules are located in Appendix 4A-4. The joint sealant is Uniflex 200, followed by sealant coats Uniflex 455 and Uniflex 100*.

The specifications for the sealant of the concrete floors in the 2401-W and 2402-W Buildings are located in Appendix 4A-5. The joint sealant is CONAP TU-400 followed by coatings of AMERCOAT 400 and AMERSHIELD. The specifications for sealing or coating the sump areas of the Low-Flash-Point Storage Modules are located in Appendix 4A, Sections 4A-6, 4A-7, and 4A-8.

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*UNIFLEX 200 is a trademark of United Coatings.
UNIFLEX 455 is a trademark of United Coatings.
NU-KLAD 114 is a trademark of Ameron Corp.
HI-Build Epoxy series 78 is a trademark of Ameron Corp.
Amershield is a trademark of Ameron Corp.
UNIFLEX 100 is a trademark of United Coatings.
CONAP TU-400 is a trademark of CONAP Inc.
AMERCOAT 400 is a trademark of Ameron Corp.

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9214 0244

C O N A P I N C.
1405 Buffalo St.
Olean, New York 14760
716/372-9650

========== MATERIAL SAFETY DATA SHEET ==========

Note: This form is to be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Blank spaces are not permitted.

========== I. IDENTIFICATION ==========

Trade Name CONATHANE TU-400 Part A Date:6/1/89
Chemical Name, common name: Complex Mixture Polyurethane Prepolymer

========== II. HAZARDOUS INGREDIENTS ==========

Chemical Names	CAS No.	%	ACGIH(TLV)	OSHA(PEL)	Other
Dicyclohexylmethane-4,4'-Diisocyanate	5124-30-1	<10%	0.005ppm	.01ppm ceiling	ND

Material may present a dust hazard if cut, ground or machined after curing.

========== III. PHYSICAL DATA ==========

Boiling Point ND !Specific Gravity (H2O=1) 1.06
Vapor Pressure,mm Hg @25C .001
Vapor Density (air=1) >1
Melting Pt./Range ND !Evaporation rate (Ether=1) ND
Solubility in Water:REACTS !Physical State: LIQUID
Percent volatile by volume:NIL
Appearance and Odor:CLEAR VISCOUS LIQUID, NO DISTINCT ODOR

========== IV. FIRE AND EXPLOSION DATA ==========

Flash Point,F (Method): > 395 CC
Flammable Limits: ND LEL: ND UEL: ND
Extinguishing Materials:
-XX-Water Spray -XX-Dry Chemical -XX-Carbon Dioxide
-XX-Foam -ND-Other:
Special Firefighting Procedures:
Fire fighters should wear self contained breathing apparatus.
Unusual Fire and Explosion Hazards:
Toxic gases may be present as a result of thermal decomposition or combustion. Closed container may explode when exposed to extreme heat. Use cold water spray to cool fire exposed containers to reduce the risk of rupture. Closed container may also burst if contaminated with water due to CO2 evolved.

========== V. HEALTH HAZARD INFORMATION ==========

ACUTE TOXICITY (Routes of entry)
Inhalation:
Lowest Lethal Concentration of dicyclohexyl methane

diisocyanate 200 mg/m3 (19 ppm) 4 hrs.-rat.
Inhalation of dust and vapors at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function(breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the intended TLV with similar symptoms as well as an asthma attack. Exposure well above the TLV may lead to bronchitis. bronchial spasm and pulmonary edema (fluid in the lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g.fever, chills),has also been reported.
Ingestion:
(Acute Exposure) Can result in irritation and corrosive action in the mouth, stomach tissue and digestive tract.
Eye Contact:
Mild irritant; reversible- rabbit
(Acute Exposure) Liquid, aerosols or vapors are irritating and can cause tearing, reddening and swelling.
Skin Contact:
Skin irritant and sensitizer - Guinea Pig
Isocyanates react with skin protein and moisture and can cause irritation which may include the following symptoms: reddening, swelling, rash, scaling or blistering. Cured material is difficult to remove. Experience indicates that direct skin contact is the route of exposure most likely to cause sensitization. Once sensitized, an individual may react even to airborne levels below the TLV with the following symptoms; itching and tingling of the earlobes and neck, rash, hives, swelling of the arms and legs or other symptoms common to allergic dermatitis, These symptoms may be immediate of delayed several hours.
Skin Absorption:
ND

CHRONIC TOXICITY
Carcinogenicity:-XXX-No
-NA-Yes: ---NA-NTP --NA--IARC -NA-Federal OSHA
Target Organ Affected:
Specific target organ information not available at this time.

Effects of Overexposure:
Material is a primary skin irritant and potent skin sensitizer. Experience indicates that direct skin contact is the route of exposure most likely to cause sensitization. Once sensitized an individual may react to airborne levels below the TLV with the following symptoms; itching and

tingling of the earlobe and neck, rash, hives, swelling of the arms and legs or symptoms common to allergy dermatitis (rash). Inhalation of vapors or spray mist may also cause irritation of the respiratory tract (dry throat, cough, shortness of breath, chest tightness). These symptoms could be immediate or delayed up to several hours. Similar to many non-specific asthmatic responses,there are reports that once sensitized an individual can experience these symptoms upon
exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years.Chronic overexposure to isocyanate has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent.

Medical Conditions Aggravated By Exposure:
Existing lung conditions and dermal conditions may be aggravated by use of this material.

FIRST AID: EMERGENCY PROCEDURES
Eye Contact:
Flush with clean, lukewarm water (low pressure) for at least 15 minutes, occasionally lifting eye lids. Obtain immediate medical attention.
Skin Contact:
Remove contaminated clothing. Wash skin promptly and thoroughly with soap and water. After Washing, cover affected areas with polyethylene glycol (300-500 mol.wt.) and wash again with soap and water. Wash contaminated clothing thoroughly before reuse . Allergic dermatitis should be treated by a physician to relieve the symptoms. For severe exposures , get under safety shower after removing clothing. Seek medical attention if irritation or allergic dermatitis symptoms develop, or if gross exposure occurs.
Inhalation:
Move to an area free from further risk of exposure.
Administer oxygen or artificial respiration as needed.
Obtain medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Treatment is essentially symptomatic. Consult physician
Ingested:
DO NOT INDUCE VOMITING. Give 1 too 2 cups of milk or water to drink. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON. Consult a physician.
Recommendations to Physician:
Eyes: Stain for evidence of corneal injury. If cornea is

burned, instill antibiotic steroid preparation frequently. Workplace vapors have produced reversible corneal epithelial edema impairing vision. This compound is a known skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burns. There is no specific antidote for ingestion treat symptomatically. Inducing vomiting is contraindicated because of the irritating nature of this compound. Inhalation treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from exposure to any isocyanate.

========== VI. REACTIVITY DATA ==========

Stability: -XXX-Stable: ----Unstable

Conditions to Avoid:

Contact with moisture and other materials which react with isocyanates. Temperatures above maximum storage temperature.

Incompatibility (materials to avoid):

Moisture and other materials that react with isocyanates.

Hazardous Decomposition Products

Oxides of nitrogen, hydrogen cyanide, carbon dioxide and carbon monoxide.

Hazardous Polymerization: --May Occur X-Will not occur

Conditions to avoid:

Temperatures above maximum storage temperatures.

======== VII. SPILL, LEAK AND DISPOSAL PROCEDURES =======

Steps to be taken if material is released or spilled:

Consult section VIII for proper protective equipment. Evacuate non essential personnel. Ventilate the area. Dike or impound spilled material and control further spillage if feasible. Notify appropriate authorities if necessary. Cover spill with sawdust, vermiculite, Fuller's earth or other absorbent material; pour liquid decontaminant over spillage -- allow to react at least ten min., collect material in open containers -- add further amounts of decontaminant solution. Remove containers to safe place -- cover LOOSELY. Wash down area with decontaminant and flush area with water.

Decontamination solutions: Ammonium hydroxide (0-10%), detergent (2-5%) and balance water; or solution of Union Carbide's Tergitol TMN-10 (20%) and water (80%).

Waste Disposal Method:

-XX-Incinerate -NA-Landfill according to any Local, State and Federal Regulations.

Incineration is method of choice. Empty containers must be handled with care due to product residue. decontamination of containers prior to disposal is usually recommended. Contact your disposal company for details.

========== VIII. SPECIAL HANDLING INFORMATION ==========

Respiratory Protection:

A respirator that is recommended or approved for use in isocyanate containing environments (air purifying or fresh air supplied) may be necessary. The use of a positive pressure supplied air respirator is mandatory when: airborne isocyanate concentrations are not known or exceed 0.005 ppm; operations are performed in a confined space or area with limited ventilation; material is heated. An air-purifying respirator is not generally recommended due to the poor warning properties,(e.g.odor or irritation, of this material. By the time the worker would detect leakage of the face seal or breakthrough of the filter cartridge, his exposure could be well above the TLV. Consider the type of application, airborne isocyanate concentrations and materials being used concurrently when determining respirator use and selection. Observe OSHA regulations for respirator use (29CFR 1910.134).

Ventilation:
Exhaust ventilation sufficient to keep the airborne concentration below the TLV must be utilized. Exhaust ventilation should be provided in accordance with the guidelines in INDUSTRIAL VENTILATION published by the American Conference of Governmental Hygienists.
Local exhaust:Recommended
Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination.

Skin Protection:
Chemical resistant gloves. Cover as much of the exposed skin area as possible with appropriate clothing, If skin creams are used, keep the area protected only by the cream to a minimum. When there is potential for a major splash directly onto the skin, such as when breaking into lines, a full acid suit is required. When the application may result in airborne vapor or mist, a full, permeation resistant, protective suit including head covering and face shield, gloves, and overshoes is required.
Eye Protection:
Chemical workers goggles. Safety glasses with side shields.
Other Protective Clothing or Equipment:
Apron and face shield. Safety showers and eye wash stations should be available. Cover as much of exposed skin area as necessary with appropriate clothing.
Work Practices, hygienic practices
Use good hygiene.

========== IX SPECIAL PRECAUTIONS ==========

Handling and Storage:
Storage temperature (min/max): 32F(0C) / 122F (50C)
Other Precautions:
Keep away from heat, sparks and open flame. Store in

tightly closed container and protect from moisture and foreign materials.

========== X Additional Information ==========

SARA Title III Requirements:

Chemical Name	Section: 302	CERCLA	313
Dicyclohexylmethane-4,4' Diisocyanate	Not Listed		

T.S.C.A. Status: On Inventory

==========

Name(print):George C. Karpin !This formulation is subject
Signature: George C. Karpin !to change without notice.
Title:Toxicological Coordinator!In case of accident use the
Date of last revision6/1/89!phone number provided.

To the best of our knowledge, the information contained therein is accurate and meets all State and Federal Guidelines. However,CONAP INC.does not assume any liability whatsoever for the accuracy or completeness of the information contained herein. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of the suitability of any material is the sole responsibility of the user.

//

Date approved 6 / 1 / 89 Approved: [signature]
ND=Not Determined
NA=Not Applicable
6/2/89 Approved: Richard J. Luchas

C O N A P I N C .
1405 Buffalo St.
Olean, New York 14760
716/372-9650

========== MATERIAL SAFETY DATA SHEET ==========

Note: This form is to be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Blank spaces are not permitted.

========== I. IDENTIFICATION ==========

Trade Name: CONATHANE* TU-400 Part B Date:12/11/89
Chemical Name, common name:Complex Mixture 110

========== II. HAZARDOUS INGREDIENTS ==========

Chemical Names	CAS No.	%	ACGIH(TLV)	OSHA(PEL)	Other
Diethyltoluene diamine	68479-98-1	<10%	ND	ND	ND
Polyalkoxylated polyol	25322-69-4	<10%	ND	ND	ND

Material may present a dust hazard if cut, ground, or machined after curing.

========== III. PHYSICAL DATA ==========

Boiling Point: ND !Specific Gravity (H2O=1): 1.01
Vapor Pressure,mm Hg: ND !Vapor Density (air=1): ND
Melting Pt./Range: ND !Evaporation rate (Ether=1):ND
Solubility in Water: ND !Physical State: LIQUID
Percent volatile by volume:Nil
Appearance and Odor: Amber colored liquid.

========== IV. FIRE AND EXPLOSION DATA ==========

Flash Point,F (Method): > 275 F (TCC)
Flammable Limits: LEL: ND UEL: ND
Extinguishing Materials:
(X)-Water Spray (X)-Dry Chemical (X)-Carbon Dioxide
(X)-Foam -ND-Other:
Special Firefighting Procedures:
None
Unusual Fire and Explosion Hazards:
None

========== V. HEALTH HAZARD INFORMATION ==========

ACUTE TOXICITY (Routes of entry)
Inhalation:
No data available.
Ingestion:
Expected to be toxic. Do Not ingest.
Eye Contact:
May cause minor irritation.
Skin Contact:
Mild skin irritant.
Skin Absorption:
Expected to be toxic.

CHRONIC TOXICITY
Carcinogenicity:--X--No
Not listed as a carcinogen.
--NA-NTP ---NA-IARC --NAFederal OSHA
Target Organ Affected:
A two year feading study in rats is in progress. Preliminary data from this study indicates that Diethyltoluene diamine causes pancreatic effects in laboratory animals.
Diethyltoluenediamine has been tested in an extensive battery of in vivo and in vitro short term assays. The results of the battery as a whole predict that Diethyltoluene diamine will not exhibit carcinogenic activity in and animal bioassay. Nonreproducible activity was demonstrated by Diethyltoluene diamine in the Ames test and BALB/3T3 cell point mutation assay. Mutagenic activity has also been reported in the in vitro cytogenetics assay.
A screening test on a limited number of rats given Diethyltoulene diamine subcutaneously over a lifetime was negative for tumorigenicity.

Effects of Overexposure:
Mild eye irritant.; In rare instances, sensitization to DETA has been reported to occur in humans.

Medical Conditions Aggravated By Exposure
ND

FIRST AID: EMERGENCY PROCEDURES
Eye Contact:
Begin immediate eye irrigation with cool water. Consult a physician if irritation persists.
Skin Contact:
Flush skin with water. Wash skin with soap and water. Remove contaminated clothing and shoes. Clean contaminated clothing thoroughly before reuse.
Inhalation:
Remove victim to fresh air. If breathing is difficult administer oxygen. If victim has stopped breathing administer artificial respiration. Do not give anything by mouth to an unconscious person. Get medical attention.
Ingested:
Induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person.
Recommendations to Physician:
Follow standard procedures.

========== REACTIVITY DATA ==========

Stability: --X--Stable --NA-Unstable

Conditions to Avoid:
None
Incompatibility (materials to avoid):
None
Hazardous Decomposition Products
Carbon dioxide, oxides of nitrogen, carbon monoxide.
Hazardous Polymerization:NA-May Occur X-Will not occur
Conditions to avoid:
None

======== VII. SPILL, LEAK AND DISPOSAL PROCEDURES =======

Steps to be taken if material is released or spilled:
Consult section VIII for proper protective equipment.
Contain any spills with dikes or absorbents to prevent migration and entry into sewer and streams. Take up small spills with dry chemical absorbent. Large spills may be taken up with pump or vacuum and finished off with dry chemical absorbent. May require excavation of contaminated soil.
Waste Disposal Methods:
Dispose of according to any Local, State and Federal Regulations. This product is not a hazardous waste or material under RCRA/CERCLA regulations in effect July 3, 1985.

========== VIII. SPECIAL HANDLING INFORMATION ==========

Respiratory Protection:
NIOSH approved organic respirator when exposed to heated vapors. Observe OSHA regulations for respirator use (29 CFR 1910.134).
Ventilation:
Local exhaust-At source of heated vapors.
Mechanical-Recommended
Protective Gloves:Resistant to chemical penetration.
Eye Protection:Chemical goggles.
Other Protective Clothing or Equipment:If skin contact or contamination of clothing is likely, protective clothing should be worn.
Work Practices, hygienic practices
Use good industrial hygiene.

========== IX SPECIAL PRECAUTIONS ==========

Handling and Storage:
None
Other Precautions:
None.

========== X Additional Information ==========

SARA Title III Requirements:

Chemical Name	Section: 302	CERCLA	313
Materials not listed.			

T.S.C.A. Status: On Inventory

==========

Name(print):George C. Karpin !This formulation is subject
Signature: George C. Karpin !to change without notice.
Title:Toxicological Coordinator!In case of accident use the
Date last revision12/11/89 !phone number provided.

To the best of our knowledge, the information contained herein is accurate and meets all State and Federal guidelines . However,CONAP INC.does not assume any liability what so ever for the accuracy or completeness of the information contained herein. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of the suitability of any material is the sole responsibility of the user.

//

*CONATHANE is a Registered Trademark of CONAP, INC.

Date approved: 12/12/89 Approved: [signature]
ND=Not Determined
NA=Not Applicable
Date approved: 12/13/89 Approved: [signature]

NPCA 1-85 (OSHA 174)

MATERIAL SAFETY DATA SHEET
FOR COATINGS, RESINS AND RELATED MATERIALS

Ameron Protective Coatings
201 North Berry Street
Brea, CA 92622-1020

Information: (714) 529-1951 (H. Kline)
Emergency: (800) 424-9300 (CHEMTREC)
Preparation Date: 03-09-90
Supersedes: 12-22-89

SECTION I -- PRODUCT IDENTIFICATION

TRADE NAME: AMERLOCK
PRODUCT CLASS: HIGH-SOLIDS EPOXY
PRODUCT NO: 400 RESN

FOR INDUSTRIAL USE ONLY
HEALTH: WARNING

SECTION II -- HAZARDOUS INGREDIENTS

INGREDIENTS	CAS NO.	% BY WT	EXPOSURE LIMITS OSHA PEL ppm	OSHA PEL mg/m3	ACGIH TLV (TWA) ppm	ACGIH TLV (TWA) mg/m3	VP mm @ 68 F	TOXICITY LD50 g/kg	TOXICITY LC50 ppm
EPOXY RESIN	25068-38-6	<70	dna	dna	2(S)	10	dna	11.4	dna
				(EPCH** @ <1PPM, BISPHENOL A @ <100PPM)					
MAGNESIUM SILICATE	14807-96-6	<30	dna	2	dna	2	na	na	na
				(RESPIRABLE QUARTZ <0.1%)					
+ TITANIUM DIOXIDE	13463-67-7	<30	dna	10	dna	10	na	24	6820
				(AS TI, POSSIBLE IMPURITIES OF ALUMINUM HYDROXIDE & AMORPHOUS SILICA)					
+ CHROMIUM OXIDE	1308-38-9	<15	dna	0.5	dna	0.5	na	dna	dna
				(AS CR)					
+ IRON OXIDE	1309-37-1	<10	dna	5	dna	5	na	dna	dna
				(AS FE FUME)					
1-T-BUTOXY-2-PROPANOL	57018-52-7	4.26	dna	dna	dna	dna 4.9 @ 77F		3.7	dna
HIGH FLASH NAPHTHA (SARA)	64742-95-6	3.09	dna	dna	50	dna	2.7	2.9	3670
				(MFG TLV 50 PPM, BENZENE** 0-900 PPM)					
+ CARBON BLACK	1333-86-4	<5	dna	3.5	dna	3.5	na	dna	dna
1,2,4-TRIMETHYL BENZENE (SARA)	95-63-6	1.50	dna	dna	25	125	dna	dna	dna
CLAY	68953-58-2	<5	dna	10	dna	10	na	dna	dna
				(CRYSTALLINE SILICA** @ <1%)					
+ PHTHALO BLUE (SARA)	147-14-8	<5	dna	dna	dna	0.2	na	6.4	dna
				(AS COPPER FUME; COPPER <1I%)					

Cancer or Suspected Cancer Agent: NO
+ Pigment content is dependent on color.
Ref. RTEC, ACGIH, Fed OSHA
** CALIF. TITLE 26: 22-12000 (PROP 65)
Contains toxic chemical subject to reporting requirements of SARA and CERCLA (40CFR 302,355,372)

SECTION III -- PHYSICAL DATA

BOILING RANGE: 304-336 Deg. F
VOLATILE VOLUME % : 11
WT PER GAL: 9.7-12.7 LBS
APPEARANCE: Liquid
SOLUBILITY IN WATER: na

VAPOR DENSITY: Heavier than air
EVAPORATION RATE: Butyl acetate = 1
LOW: 0.03 HIGH: 0.37
ODOR: Solvent

SECTION IV -- FIRE AND EXPLOSION DATA

FLAMMABILITY: OSHA: Combustible - II
DOT: Combustible

FLASH POINT: 131 F (SETA)
LEL: 0.50

LFS: 64742-95-6
UEL: 6.00

EXTINGUISHING MEDIA: Foam, CO2, dry chemical.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Wear self-contained breathing apparatus. Closed containers may explode when exposed to extreme heat. Isolate from heat, electrical equipment, sparks and open flame.

(C)=Ceiling; (S)=Skin; LD50=Oral,rat; LC50=Inhalation,rat; LFS=Lowest Flashing Solvent
dna=data not available; na=not applicable; b=ppb

SECTION V -- HEALTH HAZARD DATA

ENTRY ROUTES: Inhalation and skin contact.

MEDICAL CONDITIONS AGGRAVATED: Respiratory. Allergies. Kidney and liver disorders. Skin.

EXPOSURE EFFECTS: Vapor, spray mist and/or dust can be harmful. Irritating to skin, mucous membranes, eyes and respiratory system. Excessive inhalation can cause headache, nausea, dizziness or asphyxiation. Repeated and prolonged occupational overexposure to solvents is associated with permanent brain and nervous system damage. Can be harmful or fatal if swallowed. Can be harmful if inhaled or absorbed through the skin. Overexposure can damage central nervous system. Overexposure or ingestion can cause lung, kidney and/or liver damage. Skin and respiratory sensitization and allergic reaction such as rash, hives or asthma can occur.

EMERGENCY AND FIRST AID PROCEDURES: Overexposure to vapor, spray mist or dust - provide fresh air; if breathing labored, give oxygen or artificial respiration. For skin contact, wash thoroughly with soap and water. For eyes, flush immediately with plenty of water for at least 15 minutes and get medical attention. If swallowed, drink 1 or 2 glasses of water to dilute. Do not induce vomiting. Consult physician or poison control center IMMEDIATELY. Treat symptomatically.

SECTION VI -- REACTIVITY DATA

STABILITY: Stable CONDITIONS TO AVOID: Heat, open flame, arc or sparks.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers, acids, alkalies.

HAZARDOUS DECOMPOSITION PRODUCT BY FIRE, BURNING OR WELDING: CO and CO_2. Iron oxide fumes. Aldehydes.

HAZARDOUS POLYMERIZATION: Will not occur

SECTION VII -- SPILL OR LEAK PROCEDURES

SPILLS, LEAKS: Avoid breathing of vapors or dust. Use absorbent cleanup materials or sweep up. Place in separate container. Keep out of public sewers and waterways. If entry is threatened or occurs, notify local authorities. Eliminate all sources of ignition.

WASTE DISPOSAL: In separate, closed metal container in accordance with all applicable regulations.

EPA WASTE NO: D001 U239 U055

SECTION VIII -- SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: NIOSH/MSHA certified respirator. For specific conditions refer to NIOSH Pocket Guide to Chemical Hazards, OHEW NO 78-210. Use air-line respirators in confined or restricted ventilation areas, or with polyurethane or isocyanates. Refer to 29 CFR, OSHA parts 1910, 1915, and 1916 for coating operations.

VENTILATION: Sufficient ventilation, in volume and pattern, should be provided to keep air contaminant concentrations below TLV limit. Remove welding or flame cutting decomposition products. Refer to 29 CFR, OSHA parts 1910, 1915, and 1916 for coating operations.

PROTECTIVE GLOVES: Neoprene or other suitable materials.

EYE PROTECTION: Splash-proof goggles or face shield.

OTHER PROTECTIVE EQUIPMENT FOR APPLICATION OR CLEANUP: Full protective clothing. Spark-proof equipment.

HYGIENIC PRACTICES: Wash thoroughly before eating, smoking or using washroom. Launder contaminated clothing before reuse.

SECTION IX -- SPECIAL PRECAUTIONS

HANDLING AND STORING: Keep container closed, upright when not in use. Store in cool, dry, well-ventilated area. Avoid storage temperatures above 100 degrees Fahrenheit.

OTHER PRECAUTIONS: Do not take internally. Avoid prolonged breathing of dust, vapors or spray mist or contact with skin and eyes. Do not weld or flame cut an empty container. Ground containers when pouring. Destroy contaminated leather and absorbent shoes which cannot be decontaminated.

NPCA 1-85 (OSHA 174)

MATERIAL SAFETY DATA SHEET
FOR COATINGS, RESINS AND RELATED MATERIALS

Ameron Protective Coatings
201 North Berry Street
Brea, CA 92622-1020

Information: (714) 529-1951 (H. Kline)
Emergency: (800) 424-9300 (CHEMTREC)
Preparation Date: 03-09-90
Supersedes: 03-10-89

SECTION I -- PRODUCT IDENTIFICATION

TRADE NAME: AMERSHIELD
PRODUCT CLASS: ALIPHATIC POLYURETHANE
PRODUCT NO: AMERSH RESN

FOR INDUSTRIAL USE ONLY
HEALTH: WARNING

SECTION II -- HAZARDOUS INGREDIENTS

INGREDIENTS	CAS NO.	% BY WT	EXPOSURE LIMITS OSHA PEL ppm	OSHA PEL mg/m3	ACGIH TLV (TWA) ppm	ACGIH TLV (TWA) mg/m3	VP mm @ 68 F	TOXICITY LD50 g/kg	TOXICITY LC50 ppm
+ TITANIUM DIOXIDE	13463-67-7	<40	dna	10	dna	10	na	24	6820
				(AS TI, POSSIBLE IMPURITIES, <10% SILICA [AMORPHORUS], <6% ALUMINUM HYDROXIDE)					
ACRYLIC RESIN POLYMER	dna	<35	dna	dna	dna	dna	dna	dna	dna
CALCIUM SILICATE	13983-17-0	<30	dna	10	dna	10	na	dna	dna
METHYL N-AMYL KETONE	110-43-0	21.92	100	465	50	235	4	1.6	4000
+ IRON OXIDE	1309-37-1	<20	dna	5	dna	5	na	dna	dna
				(AS FE FUME)					
SILICA (QUARTZ)**	14808-60-7	<15	dna	0.1	dna	0.1	na	dna	dna
+ CHROMIUM OXIDE	1308-38-9	<15	dna	0.5	dna	0.5	na	dna	dna
				(AS CR)					
+ CARBON BLACK	1333-86-4	<5	dna	3.5	dna	3.5	na	dna	dna
XYLENE (SARA)	1330-20-7	2.99	100	435	100	435	6.6	4.3	6700
				(BENZENE** @ 0-900 PPM)					
+ PHTHALO BLUE (SARA)	147-14-8	<5	dna	dna	dna	0.2	na	6.4	dna
				(AS COPPER FUME; COPPER <11%)					

Cancer or Suspected Cancer Agent: NO
+ Pigment content is dependent on color.
Ref: RTEC, ACGIH, Fed OSHA
** CALIF. TITLE 26: 22-12000 (PROP 65)
Contains toxic chemical subject to reporting requirements of SARA and CERCLA (40CFR 302,355,372)

SECTION III -- PHYSICAL DATA

BOILING RANGE: 282-300 Deg. F
VOLATILE VOLUME % : 37
WT PER GAL: 10.1-11.7 LBS
APPEARANCE: Liquid
SOLUBILITY IN WATER: na

VAPOR DENSITY: Heavier than air
EVAPORATION RATE: Butyl acetate = 1
LOW: 0.40 HIGH: 0.70
ODOR: Solvent

SECTION IV -- FIRE AND EXPLOSION DATA

FLAMMABILITY: OSHA: Combustible - II
DOT: Combustible

FLASH POINT: 110 F (SETA)
LEL: 1.00

LFS: 1330-20-7
UEL: 8.00

EXTINGUISHING MEDIA: Foam, CO2, dry chemical.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Wear self-contained breathing apparatus. Closed containers may explode when exposed to extreme heat. Isolate from heat, electrical equipment, sparks and open flame.

(C)=Ceiling; (S)=Skin; LD50=Oral,rat; LC50=Inhalation,rat; LFS=Lowest Flashing Solvent
dna=data not available; na=not applicable; b=ppb

SECTION V -- HEALTH HAZARD DATA

ENTRY ROUTES: Inhalation and skin contact.

MEDICAL CONDITIONS AGGRAVATED: Respiratory. Kidney and liver disorders. Skin.

EXPOSURE EFFECTS: Vapor, spray mist and/or dust can be harmful. Irritating to skin, mucous membranes, eyes and respiratory system. Excessive inhalation can cause headache, nausea, dizziness or asphyxiation. Repeated and prolonged occupational overexposure to solvents is associated with permanent brain and nervous system damage. Can be harmful if swallowed. Overexposure can damage central nervous system. Overexposure or ingestion can cause lung, kidney and/or liver damage.

EMERGENCY AND FIRST AID PROCEDURES: Overexposure to vapor, spray mist or dust - provide fresh air; if breathing labored, give oxygen or artificial respiration. For skin contact, wash thoroughly with soap and water. For eyes, flush immediately with plenty of water for at least 15 minutes and get medical attention. If swallowed, drink 1 or 2 glasses of water to dilute. Do not induce vomiting. Consult physician or poison control center IMMEDIATELY. Treat symptomatically.

SECTION VI -- REACTIVITY DATA

STABILITY: Stable CONDITIONS TO AVOID: Heat, open flame, arc or sparks.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers, acids, alkalies.

HAZARDOUS DECOMPOSITION PRODUCT BY FIRE, BURNING OR WELDING: CO and CO_2. Iron oxide fumes.

HAZARDOUS POLYMERIZATION: Will not occur

SECTION VII -- SPILL OR LEAK PROCEDURES

SPILLS, LEAKS: Avoid breathing of vapors or dust. Use absorbent cleanup materials or sweep up. Place in separate container. Keep out of public sewers and waterways. If entry is threatened or occurs, notify local authorities. Eliminate all sources of ignition.

WASTE DISPOSAL: In separate, closed metal container in accordance with all applicable regulations.

EPA WASTE NO: D001 U239

SECTION VIII -- SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: NIOSH/MSHA certified respirator. For specific conditions refer to NIOSH Pocket Guide to Chemical Hazards, DHEW NO 78-210. Use air-line respirators in confined or restricted ventilation areas, or with polyurethane or isocyanates. Refer to 29 CFR, OSHA parts 1910, 1915, and 1916 for coating operations.

VENTILATION: Sufficient ventilation, in volume and pattern, should be provided to keep air contaminant concentrations below TLV limit. Remove welding or flame cutting decomposition products. Refer to 29 CFR, OSHA parts 1910, 1915, and 1916 for coating operations.

PROTECTIVE GLOVES: Neoprene or other suitable materials.

EYE PROTECTION: Splash-proof goggles or face shield.

OTHER PROTECTIVE EQUIPMENT FOR APPLICATION OR CLEANUP: Full protective clothing. Spark-proof equipment.

HYGIENIC PRACTICES: Wash thoroughly before eating, smoking or using washroom. Launder contaminated clothing before reuse.

SECTION IX -- SPECIAL PRECAUTIONS

HANDLING AND STORING: Keep container closed, upright when not in use. Store in cool, dry, well-ventilated area. Avoid storage temperatures above 100 degrees Fahrenheit.

OTHER PRECAUTIONS: Do not take internally. Avoid prolonged breathing of dust, vapors or spray mist or contact with skin and eyes. Do not weld or flame cut an empty container. Ground containers when pouring.

NPCA 1-85 (OSHA 174)

MATERIAL SAFETY DATA SHEET
FOR COATINGS, RESINS AND RELATED MATERIALS

Ameron Protective Coatings
201 North Berry Street
Brea, CA 92622-1020

Information: (714) 529-1951 (H. Kline)
Emergency: (800) 424-9300 (CHEMTREC)
Preparation Date: 04-21-89
Supersedes: 12-28-87

SECTION I -- PRODUCT IDENTIFICATION

TRADE NAME: UNKNOWN
PRODUCT CLASS: EPOXY FILLER COMPOUND — FOR INDUSTRIAL USE ONLY
PRODUCT NO: 114 UNKNOWN — HEALTH: WARNING

SECTION II -- HAZARDOUS INGREDIENTS

INGREDIENTS	CAS NO.	% BY WT	EXPOSURE LIMITS OSHA PEL ppm	OSHA PEL mg/m3	ACGIH TLV (TWA) ppm	ACGIH TLV (TWA) mg/m3	VP mm @ 68 F	TOXICITY LD50 g/kg	TOXICITY LC50 ppm
EPOXY RESIN	25068-38-6	<90	dna	dna	2(S)	10	dna	11.4	dna
				(EPCH** @ <1PPM, BISPHENOL A @ <100PPM)					
FURFURYL ALCOHOL	98-00-0	<15	10(S)	40(S)	10(S)	40(S)	<1	0.1	233
+ TITANIUM DIOXIDE	13463-67-7	<5	dna	10	dna	10	na	24	6820
				(AS TI, POSSIBLE IMPURITIES OF ALUMINUM HYDROXIDE & AMORPHOUS SILICA)					

Cancer or Suspected Cancer Agent: NO
Ref. RTEC, ACGIH, Fed OSHA
** CALIF. TITLE 26: 22-12000 (PROP 65)

+ Pigment content is dependent on color.

SECTION III -- PHYSICAL DATA

BOILING POINT: na
VOLATILE VOLUME % : 1
WT PER GAL: 9.8 LBS
APPEARANCE: Liquid
SOLUBILITY IN WATER: na

VAPOR DENSITY: Heavier than air
EVAPORATION RATE: Butyl acetate = 1
HIGH: na
ODOR: na

SECTION IV -- FIRE AND EXPLOSION DATA

FLAMMABILITY: OSHA: Combustible - IIIB
DOT: Not applicable

FLASH POINT: 203 F (SETA)
LEL: 1.80

LFS: NONE
UEL: dna

EXTINGUISHING MEDIA: Foam, CO2, dry chemical.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Wear self-contained breathing apparatus. Closed containers may explode when exposed to extreme heat. Isolate from heat, electrical equipment, sparks and open flame.

(C)=Ceiling; (S)=Skin; LD50=Oral,rat; LC50=Inhalation,rat; LFS=Lowest Flashing Solvent
dna=data not available; na=not applicable; b=ppb

SECTION V -- HEALTH HAZARD DATA

ENTRY ROUTES: Inhalation and skin contact.

MEDICAL CONDITIONS AGGRAVATED: Respiratory. Allergies.

EXPOSURE EFFECTS: Vapor, spray mist and/or dust can be harmful. Irritating to skin, mucous membranes, eyes and respiratory system. Excessive inhalation can cause headache, nausea, dizziness or asphyxiation. Can be harmful if swallowed. Overexposure can cause skin and eye burns and/or injury. Skin and respiratory sensitization and allergic reaction such as rash, hives or asthma can occur.

EMERGENCY AND FIRST AID PROCEDURES: Overexposure to vapor, spray mist or dust - provide fresh air; if breathing labored, give oxygen or artificial respiration. For skin contact, wash thoroughly with soap and water. For eyes, flush immediately with plenty of water for at least 15 minutes and get medical attention. If swallowed, drink 1 or 2 glasses of water to dilute. Do not induce vomiting. Consult physician or poison control center IMMEDIATELY. Treat symptomatically.

SECTION VI -- REACTIVITY DATA

STABILITY: Stable CONDITIONS TO AVOID: Heat, open flame, arc or sparks.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers, acids, alkalies.

HAZARDOUS DECOMPOSITION PRODUCT BY FIRE, BURNING OR WELDING: CO and CO_2. Aldehydes.

HAZARDOUS POLYMERIZATION: Will not occur

SECTION VII -- SPILL OR LEAK PROCEDURES

SPILLS, LEAKS: Avoid breathing of vapors or dust. Use absorbent cleanup materials or sweep up. Place in separate container. Eliminate all sources of ignition.

WASTE DISPOSAL: In separate, closed metal container in accordance with all applicable regulations.

EPA WASTE NO: None

SECTION VIII -- SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: NIOSH/MSHA certified respirator. For specific conditions refer to NIOSH Pocket Guide to Chemical Hazards, DHEW NO 78-210. Use air-line respirators in confined or restricted ventilation areas, or with polyurethane or isocyanates. Refer to 29 CFR, OSHA parts 1910, 1915, and 1916 for coating operations.

VENTILATION: Sufficient ventilation, in volume and pattern, should be provided to keep air contaminant concentrations below TLV limit. Remove welding or flame cutting decomposition products. Refer to 29 CFR, OSHA parts 1910, 1915, and 1916 for coating operations.

PROTECTIVE GLOVES: Neoprene or other suitable materials.

EYE PROTECTION: Splash-proof goggles or face shield.

OTHER PROTECTIVE EQUIPMENT FOR APPLICATION OR CLEANUP: Full protective clothing.

HYGIENIC PRACTICES: Wash thoroughly before eating, smoking or using washroom. Launder contaminated clothing before reuse.

SECTION IX -- SPECIAL PRECAUTIONS

HANDLING AND STORING: Keep container closed, upright when not in use. Store in cool, dry, well-ventilated area. Avoid storage temperatures above 100 degrees Fahrenheit.

OTHER PRECAUTIONS: Do not take internally. Avoid prolonged breathing of dust, vapors or spray mist or contact with skin and eyes. Do not weld or flame cut an empty container. Ground containers when pouring. Destroy contaminated leather and absorbent shoes which cannot be decontaminated.

<<2 Page Document>>

NPCA 1-85 (OSHA 174)

MATERIAL SAFETY DATA SHEET
FOR COATINGS, RESINS AND RELATED MATERIALS

Ameron Protective Coatings
201 North Berry Street
Brea, CA 92622-1020

Information: (714) 529-1951 (H. Kline)
Emergency: (800) 424-9300 (CHEMTREC)
Preparation Date: 03-09-90
Supersedes: 03-10-89

SECTION I -- PRODUCT IDENTIFICATION

TRADE NAME: NU-KLAD
PRODUCT CLASS: EPOXY FILLER COMPOUND — FOR INDUSTRIAL USE ONLY
PRODUCT NO: 114A RESN — HEALTH: WARNING

SECTION II -- HAZARDOUS INGREDIENTS

INGREDIENTS	CAS NO.	% BY WT	EXPOSURE LIMITS OSHA PEL ppm	OSHA PEL mg/m3	ACGIH TLV (TWA) ppm	ACGIH TLV (TWA) mg/m3	VP mm @ 68 F	TOXICITY LD50 g/kg	TOXICITY LC50 ppm
BARIUM SULFATE (SARA)	7727-43-7	<50	dna	0.5 (AS BA)	dna	10	na	dna	dna
EPOXY RESIN	25068-38-6	<35	dna	dna (EPCH** @ <1PPM, BISPHENOL A @ <100PPM)	2(S)	10	dna	11.4	dna
SILICA (QUARTZ)**	14808-60-7	<20	dna	0.1	dna	0.1	na	3.2	dna
+ TITANIUM DIOXIDE	13463-67-7	<5	dna	10 (AS TI, POSSIBLE IMPURITIES OF ALUMINUM HYDROXIDE & AMORPHOUS SILICA)	dna	10	na	24	6820
FURFURYL ALCOHOL	98-00-0	<5	10(S)	40(S)	10(S)	40(S)	<1	0.1	233

Cancer or Suspected Cancer Agent: NO — + Pigment content is dependent on color.
Ref. RTEC, ACGIH, Fed OSHA
** CALIF. TITLE 26: 22-12000 (PROP 65)
Contains toxic chemical subject to reporting requirements of SARA and CERCLA (40CFR 302,355,372)

SECTION III -- PHYSICAL DATA

BOILING POINT: na
VOLATILE VOLUME % : 1
WT PER GAL: 17.0 LBS
APPEARANCE: Liquid
SOLUBILITY IN WATER: na

VAPOR DENSITY: Heavier than air
EVAPORATION RATE: Butyl acetate = 1
HIGH: na
ODOR: na

SECTION IV -- FIRE AND EXPLOSION DATA

FLAMMABILITY: OSHA: Combustible - IIIB — DOT: Not applicable
FLASH POINT: >200 F (SETA) — LEL: 1.80 — LFS: NONE — UEL: dna
EXTINGUISHING MEDIA: Foam, CO_2, dry chemical.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Wear self-contained breathing apparatus. Closed containers may explode when exposed to extreme heat. Isolate from heat, electrical equipment, sparks and open flame.

(C)=Ceiling; (S)=Skin; LD50=Oral,rat; LC50=Inhalation,rat; LFS=Lowest Flashing Solvent
dna=data not available; na=not applicable; b=ppb

SECTION V -- HEALTH HAZARD DATA

ENTRY ROUTES: Inhalation and skin contact.

MEDICAL CONDITIONS AGGRAVATED: Respiratory. Allergies.

EXPOSURE EFFECTS: Vapor, spray mist and/or dust can be harmful. Irritating to skin, mucous membranes, eyes and respiratory system. Excessive inhalation can cause headache, nausea, dizziness or asphyxiation. Can be harmful if swallowed. Overexposure can damage lungs. Overexposure can cause skin and eye burns and/or injury. Skin and respiratory sensitization and allergic reaction such as rash, hives or asthma can occur.

EMERGENCY AND FIRST AID PROCEDURES: Overexposure to vapor, spray mist or dust - provide fresh air; if breathing labored, give oxygen or artificial respiration. For skin contact, wash thoroughly with soap and water. For eyes, flush immediately with plenty of water for at least 15 minutes and get medical attention. If swallowed, drink 1 or 2 glasses of water to dilute. Do not induce vomiting. Consult physician or poison control center IMMEDIATELY. Treat symptomatically.

SECTION VI -- REACTIVITY DATA

STABILITY: Stable CONDITIONS TO AVOID: Heat, open flame, arc or sparks.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers, acids, alkalies.

HAZARDOUS DECOMPOSITION PRODUCT BY FIRE, BURNING OR WELDING: CO and CO_2. Aldehydes.

HAZARDOUS POLYMERIZATION: Will not occur

SECTION VII -- SPILL OR LEAK PROCEDURES

SPILLS, LEAKS: Avoid breathing of vapors or dust. Use absorbent cleanup materials or sweep up. Place in separate container. Eliminate all sources of ignition.

WASTE DISPOSAL: In separate, closed metal container in accordance with all applicable regulations.

EPA WASTE NO: None

SECTION VIII -- SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: NIOSH/MSHA certified respirator. For specific conditions refer to NIOSH Pocket Guide to Chemical Hazards, DHEW NO 78-210. Use air-line respirators in confined or restricted ventilation areas, or with polyurethane or isocyanates. Refer to 29 CFR, OSHA parts 1910, 1915, and 1916 for coating operations.

VENTILATION: Sufficient ventilation, in volume and pattern, should be provided to keep air contaminant concentrations below TLV limit. Remove welding or flame cutting decomposition products. Refer to 29 CFR, OSHA parts 1910, 1915, and 1916 for coating operations.

PROTECTIVE GLOVES: Neoprene or other suitable materials.

EYE PROTECTION: Splash-proof goggles or face shield.

OTHER PROTECTIVE EQUIPMENT FOR APPLICATION OR CLEANUP: Full protective clothing.

HYGIENIC PRACTICES: Wash thoroughly before eating, smoking or using washroom. Launder contaminated clothing before reuse.

SECTION IX -- SPECIAL PRECAUTIONS

HANDLING AND STORING: Keep container closed, upright when not in use. Store in cool, dry, well-ventilated area. Avoid storage temperatures above 100 degrees Fahrenheit.

OTHER PRECAUTIONS: Do not take internally. Avoid prolonged breathing of dust, vapors or spray mist or contact with skin and eyes. Do not weld or flame cut an empty container. Ground containers when pouring. Destroy contaminated leather and absorbent shoes which cannot be decontaminated.

MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS AND RELATED MATERIALS

(Approved by U.S. Department of Labor "Essentially Similar" to Form OSHA-20)

DATE OF PREP. 6-1-81

Section I

MANUFACTURER'S NAME UNITED PAINT MANUFACTURING, INC.
UNITED COATINGS, INC.

MSDS #21659

STREET ADDRESS FACTORY: E. 19011 Cataldo
CORPORATE OFFICE: E. 1130 Sprague Avenue

CITY, STATE, AND ZIP CODE Greenacres, Wa 99016
Spokane, Wa 99202

EMERGENCY TELEPHONE NO. DAYS: (509) 926-7143
NIGHTS: (509) 448-0408

PRODUCT CLASS EPOXY

MANUFACTURERS CODE IDENTIFICATION 373

TRADE NAME UNI-FLEX 100 PART A

Section II — HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT approximate	TLV PPM	TLV mg/M³	LEL	VAPOR PRESSURE
Epoxy Resin	15%	100		N/A	N/A
Aromatic Hydrocarbons	25%	100		1.0	6 mm Hg
Methyl Isobutyl Ketone (MIBK)	15%	100		1.4	15 mm Hg
Isopropyl Alcohol (IPA)	30%	400		2.5	33 mm Hg

Section III — PHYSICAL DATA

BOILING RANGE 181°F to 284°F

VAPOR DENSITY [x] HEAVIER, [ ] LIGHTER, THAN AIR

EVAPORATION RATE [ ] FASTER [X] SLOWER, THAN ETHER

PERCENT VOLATILE BY WEIGHT: 83.0% ± .5

WEIGHT PER GALLON 7.35 lbs

Section IV — FIRE AND EXPLOSION HAZARD DATA

DOT CATEGORY Flammable

FLASH POINT 58°F Seta Flash Closed Cup LEL 1.0

EXTINGUISHING MEDIA

Foam, CO_2, dry chemical

UNUSUAL FIRE AND EXPLOSION HAZARDS

Do not put closed containers near hot surfaces. Pressure build-up can cause an explosion. Avoid fire and spark producing conditions.

SPECIAL FIRE FIGHTING PROCEDURES

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment; this may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency.

Section V — HEALTH HAZARD DATA

HRESHOLD LIMIT VALUE 100 ppm

FFECTS OF OVEREXPOSURE

Irritation of eyes, throat, ears, headache, narcosis

MSDS #21659

:MERGENCY AND FIRST AID PROCEDURES

If breathing has stopped, remove to fresh air. Apply artificial respiration. CALL A PHYSICIAN IMMEDIATELY. If swallowed, DO NOT induce vomiting. CALL A PHYSICIAN IMMEDIATELY. In case of eye contact, immediately flush thoroughly with water. If irritation persists, get medical attention. For skin contact, wash with soap and water. Flush thoroughly with water. If irritation persists, get medical attention.

Section VI — REACTIVITY DATA

STABILITY [ ] UNSTABLE [X] STABLE CONDITIONS TO AVOID Fire, sparks

INCOMPATABILITY (*Materials to avoid*) May react with strong oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS

Thermal decomposition may product carbon monoxide and/or carbon dioxide.

HAZARDOUS, POLYMERIZATION [ ] MAY OCCUR [x] WILL NOT OCCUR

CONDITIONS TO AVOID N/A

Section VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Soak up in absorbant material. Keep open flames and sparks away.

WASTE DISPOSAL METHOD Dispose of in accordance with Federal, State, or local regulations regarding environmental control.

Section VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION

If needed, self-contained breathing apparatus or its equivalent, for confined areas. For other areas, approved MESA/NIOSH masks should be worn.

VENTILATION

Good ventilation, sufficient to control solvent vapors to TLV. Local exhaust preferred. As vapors are heavier than air, ventilate from lowest level.

PROTECTIVE GLOVES Rubber

EYE PROTECTION Safety glasses with side shields.

OTHER PROTECTIVE EQUIPMENT Clean, body-covering clothing. Eye wash station should be available.

Section IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep away from heat, sparks, and open flames.

OTHER PRECAUTIONS

Avoid prolonged or repeated breathing of vapor or spray mist. Avoid contact with skin and contact with eyes. Keep container closed when not in use. Do not transfer contents to bottles or other unlabeled containers.

Use only in a well ventilated area.

KEEP OUT OF REACH OF CHILDREN.

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MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS AND RELATED MATERIALS

(Approved by U.S. Department of Labor "Essentially Similar" to Form OSHA-20)

DATE PREP. 6-1-80

Section I

MSDS # 21661

MANUFACTURER'S NAME UNITED PAINT MANUFACTURING, INC.
UNITED COATINGS, INC.

STREET ADDRESS FACTORY: E. 19011 Cataldo CITY, STATE, AND ZIP CODE Greenacres, Wa 99016
CORPORATE OFFICE: E. 1130 Sprague Avenue Spokane, Wa 99202

EMERGENCY TELEPHONE NO. DAYS: (509) 926-7143
NIGHTS: (509) 448-0408

PRODUCT CLASS POLYAMIDE CURATIVE. MANUFACTURERS CODE IDENTIFICATION 383

TRADE NAME UNI-FLEX 100 PART B

Section II — HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	TLV PPM	TLV mg/M³	LEL	VAPOR PRESSURE
Polyamide Resin	12%	N/A		N/A	N/A
Aromatic Hydrocarbons	40%	100		1.0	6.0 mm Hg
Isopropyl Alcohol (IPA)	20%	400		2.5	33.0 mm Hg
Butanol	5%	100		1.4	4.0 mm Hg

Section III — PHYSICAL DATA

BOILING RANGE 181°F to 284°F VAPOR DENSITY [x] HEAVIER, [ ] LIGHTER, THAN AIR

EVAPORATION RATE [ ] FASTER [x] SLOWER, THAN ETHER PERCENT VOLATILE BY ~~VOLUME~~ WEIGHT: 86.5% ± .5 WEIGHT PER GALLON 7.10 lbs

Section IV — FIRE AND EXPLOSION HAZARD DATA

DOT CATEGORY Flammable FLASH POINT 55°F Seta Flash Closed Cup LEL 1.0

EXTINGUISHING MEDIA

Foam, CO_2, dry chemical

UNUSUAL FIRE AND EXPLOSION HAZARDS

Do not put closed containers near hot surfaces. Pressure build-up can cause an explosion. Avoid fire and spark producing conditions.

SPECIAL FIRE FIGHTING PROCEDURES

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment; this may include self-contained breathing appartus to protect against the hazardous effects of normal products of combustion or oxygen deficiency.

#383

Section V — HEALTH HAZARD DATA

MSDS # 21661

THRESHOLD LIMIT VALUE 100 ppm

EFFECTS OF OVEREXPOSURE

Irritation of eyes, throat, ears, headache, narcosis

EMERGENCY AND FIRST AID PROCEDURES

If breathing has stopped, remove to fresh air. Apply artificial respiration. CALL A PHYSICIAN IMMEDIATELY. If swallowed, DO NOT induce vomiting. CALL A PHYSICIAN IMMEDIATELY. In case of eye contact, immediately flush thoroughly with water. If irritation persists, get medical attention. For skin contact, wash with soap and water. Flush thoroughly with water. If irritation persists, get medical attention.

Section VI — REACTIVITY DATA

STABILITY [ ] UNSTABLE [X] STABLE CONDITIONS TO AVOID Fire, sparks

INCOMPATABILITY (Materials to avoid) May react with strong oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS

Thermal decomposition may product carbon monoxide and/or carbon dioxide.

HAZARDOUS POLYMERIZATION [ ] MAY OCCUR [x] WILL NOT OCCUR

CONDITIONS TO AVOID N/A

Section VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Soak up in absorbant material. Keep open flames and sparks away.

WASTE DISPOSAL METHOD Dispose of in accordance with Federal, State, or local regulations regardi environmental control.

Section VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION

If needed, self-contained breathing apparatus or its equivalent, for confined areas. For other areas, approved MESA/NIOSH masks should be worn.

VENTILATION

Good ventilation, sufficient to control solvent vapors to TLV. Local exhaust preferred. As vapors are heavier than air, ventilate from lowest level.

PROTECTIVE GLOVES Rubber

EYE PROTECTION Safety glasses with side shields.

OTHER PROTECTIVE EQUIPMENT Clean, body-covering clothing. Eye wash station should be available.

Section IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep away from heat, sparks, and open flames.

OTHER PRECAUTIONS

Avoid prolonged or repeated breathing of vapor or spray mist. Avoid contact with skin and contact with eyes. Keep container closed when not in use. Do not transfer contents to bottles or other unlabeled containers.

Use only in a well ventilated area.

KEEP OUT OF REACH OF CHILDREN.

9212750966

MATERIAL SAFETY DATA

UNITED PAINT & COATINGS
E. 19011 Cataldo
Greenacres, WA 99016
(509) 926-7143 Telex: 32-6316
(800) 541-4383 UNITED CTS SPK

UNIFLEX 455 Basecoat Part B

MSDS # 21660

EMERGENCY TELEPHONE NO.	PREPARATION/REVISION DATE 5-27-86
CHEMICAL FAMILY Polyurethane Elastomer Coating	COMMON NAME UNIFLEX 455 Basecoat Part B (standard)
	FORMULA 7901

HAZARDOUS INGREDIENTS

CHEMICAL AND COMMON NAME	%	APPLICABLE EXPOSURE LIMITS PEL-WISHA/OSHA	TLV-ACGIH	CAS NO.
Xylene - mixed Xylenes	25	100 ppm	100 ppm	1330-20-7
MPK - Methyl n-propyl Ketone	15	200 ppm	200 ppm	107-87-9

CARCINOGENIC INGREDIENTS

CHEMICAL AND COMMON NAME	%	REFERENCE SOURCE NTP	IARC	WISHA/OSHA
none known				

PHYSICAL DATA

BOILING POINT (760mm Hg) 213-280° F	pH n/a	APPEARANCE paint-like
SPECIFIC GRAVITY (H_2O = 1) 1.2 - 1.3	VAPOR PRESSURE (mm Hg) approx. 25 at 70°F	ODOR characteristic aromatic/Ketone
APOR DENSITY (AIR = 1) approx. 3	SOLUBILITY IN H_2O (% BY WT) slight	
VOLATILES (% BY VOLUME) approx. 40	EVAPORATION RATE (BUTYL ACETATE = 1) approx. 1.5	

n/a - not available

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UNIFLEX 455 Basecoat Part B (Std.) 5-27-86

MSDS # 21660

HEALTH INFORMATION

MAJOR ROUTES OF ENTRY Inhalation and ingestion are primary routes of entry.

ACUTE (IMMEDIATE) EFFECTS Inhalation: Concentration of 100-200 ppm cause nose & throat irritation. Higher concentrations cause more severe irritation, headache, nausea, drowsiness, dizziness and incoordination. Ingestion: Moderately toxic. May cause nausea, vomiting, diarrhea.

CHRONIC (DELAYED) EFFECTS May result in central nervous system depression and narcosis.

EMERGENCY AND FIRST AID PROCEDURES DO NOT INDUCE VOMITING. Call a physician. Inhalation: remove to fresh air. Apply artificial respiration or give oxygen if breathing is difficult or has stopped. Eye contact: Immediately flush w/water. Seek medical attention. Skin: Remove contaminated clothing and wash with soap and water.

FIRE PROTECTION INFORMATION

FLASH POINT (TCC SCC PMCC) 46°F FLAMMABLE LIMITS Lel 1.5% Uel 8.0%

EXTINGUISHING MEDIA

Dry chemical CO_2, alcohol foam

SPECIAL FIRE FIGHTING PROCEDURES Use water spray to cool fire-exposed surfaces. Self-contained breathing apparatus and protective clothing required for fire fighting personnel.

UNUSUAL FIRE AND EXPLOSION HAZARDS Vapors from this product are heavier than air and travel along floor to a source of ignition at locations distant from the handling point.

REACTIVITY DATA

HAZARDOUS DECOMPOSITION PRODUCTS CO, CO_2, smoke

MSDS # 21660

HAZARDOUS POLYMERIZATION		MAY OCCUR
	X	WILL NOT OCCUR
STABILITY		UNSTABLE
	X	STABLE

CONDITIONS AND MATERIALS TO AVOID

Strong oxidizing agents

SAFE HANDLING & USE INFORMATION

RESPIRATORY PROTECTION If TLV of the product or any component is exceeded, a NIOSH/MSHA jointly approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators under specified conditions (See your safety equipment supplier). Engineering or administrative controls should be implemented to reduce exposure.

VENTILATION Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(S).

PROTECTIVE GLOVES Wear resistant gloves such as neoprene

EYE PROTECTION Chemical splash goggles in compliance w/OSHA regulations are advised, however, OSHA regulations also permit other type safety glasses (consult safety supplier)

OTHER PROTECTION
To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

SPILL, LEAK & DISPOSAL INFORMATION

SPILL OR LEAKAGE PROCEDURES Extinguish and remove all sources of ignition. Dike and contain spill with inert material such as sand, earth. Transfer to containers for disposal.

WASTE DISPOSAL METHOD Dispose in accordance with all local , state & federal environmental regulations.

WARNING STATEMENTS

WARNING: FLAMMABLE! KEEP FROM HEAT, SPARKS & FLAME. AVOID BREATHING VAPOR, AVOID CONTACT W/EYES, SKIN, & CLOTHING. KEEP CONTAINERS CLOSED. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING.

NOTES TO PHYSICIAN: Aspirated solvent may cause severe lung damage and present a significant hazard. Stomach contents should be evacuated in a manner which avoids aspiration.

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED, SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID). ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBSERVED.

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MATERIAL SAFETY DATA

MSDS #16188

UNITED PAINT & COATINGS
E. 19011 Cataldo
Greenacres, WA 99016
(509) 926-7143 Telex: 32-6316
(800) 541-4383 UNITED CTS SPK

UNIFLEX 455 Part A

EMERGENCY TELEPHONE NO.	PREPARATION/REVISION DATE 5-27-86
CHEMICAL FAMILY Polyurethane Elastomer Coating	COMMON NAME UNIFLEX 455 Part A
	FORMULA 10-R-901

HAZARDOUS INGREDIENTS

CHEMICAL AND COMMON NAME	%	APPLICABLE EXPOSURE LIMITS PEL-WISHA/OSHA	TLV-ACGIH	CAS NO.
Polyurethane Resins	65-75	not established	----------	not supplied
Xylol-mixed Xylenes	10-15	100 ppm	100 ppm	1330-20-7
Methylene Chloride, CH_2Cl_2	18-22	500 ppm	100 ppm	75-09-2
TDI-Toluene Diisocyanate	0.1-0.3	0.02 ppm	0.02 ppm	26471-62-5

CARCINOGENIC INGREDIENTS

CHEMICAL AND COMMON NAME	%	REFERENCE SOURCE NTP	IARC	WISHA/OSHA
None known				

PHYSICAL DATA

BOILING POINT (760mm Hg) 104-290°F	pH n/a	APPEARANCE clear, amber liquid
SPECIFIC GRAVITY (H_2O = 1) 1.14-1.16	VAPOR PRESSURE (mm Hg) not established	ODOR aromatic - do not breathe
VAPOR DENSITY (AIR = 1) 2.9-3.7	SOLUBILITY IN H_2O (% BY WT) negligible	
VOLATILES (% BY VOLUME) approx. 30	EVAPORATION RATE (BUTYL ACETATE = 1) CH_2Cl_2 = 14.5 Xylol = 0.7	

9 2 1 2 3 0 9 7 0

UNIFLEX 455 Part A May 27, 1986

HEALTH INFORMATION

MSDS #16188

MAJOR ROUTES OF ENTRY Inhalation, skin, eye, ingestion

ACUTE (IMMEDIATE) EFFECTS Eye Contact: Causes pain and moderate irritation, possible transient corneal injury. Skin Contact: Prolonged or frequent contact may cause a burn or dermatitus. Ingestion: Low order of toxicity, but if aspirated into lungs may cause severe damage. Over-exposure to vapors can cause dizziness, loss of consciousness and even death. Inhalation: Vapors are irritating & anesthetic. Concentrations in excess of 200 ppm may cause impaired reaction time and lack of coordination, as well as irritation of the nose, throat & eyes. May be accompanied by coughing or labored breathing. Asthma-like breathing may be a delayed reaction.

CHRONIC (DELAYED) EFFECTS Inhalation: Polyurethane resins contain diisocyanates. Inhalation of these vapors can cause lung sensitization. Allergic respiratory reaction may occur in sensitized individuals when exposed to minute amounts of diisocyanates.

EMERGENCY AND FIRST AID PROCEDURES Skin: Remove patient to fresh air. Remove saturated clothing & wash skin thoroughly w/soap & water. Eyes: Flush eyes w/clean water for at least 15 minutes. Ingestion: Do not induce vomiting.

IN ALL CASES SEEK MEDICAL ATTENTION AT ONCE.

FIRE PROTECTION INFORMATION

FLASH POINT (TCC SCC PMCC) 115°F

FLAMMABLE LIMITS Lel n/e Uel n/e
n/e = not established

EXTINGUISHING MEDIA
Dry chemical, CO_2, water fog.

SPECIAL FIRE FIGHTING PROCEDURES
Use water fog only for cooling fire-exposed containers. Use self-contained respiratory equipment.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Pressure build up will occur when container temperatures exceed 90°F.

REACTIVITY DATA

MSDS #16188

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION		MAY OCCUR
	X	WILL NOT OCCUR
STABILITY		UNSTABLE
	X	STABLE

CONDITIONS AND MATERIALS TO AVOID

Do not use near open flames, sparks or welding equipment.

SAFE HANDLING & USE INFORMATION

RESPIRATORY PROTECTION If TLV of the product or any component is exceeded, a NIOSH/MSHA jointly approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators under specified conditions. (see your safety equipment supplier.) Engineering or administrative control should be implemented to reduce exposure.

VENTILATION Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(S).

PROTECTIVE GLOVES Wear resistant gloves such as neoprene

EYE PROTECTION Chemical splash goggles in compliance w/OSHA regulations are advised, however, OSHA regulations also permit other type safety glasses. (Consult your safety equipment supplier.)

OTHER PROTECTION
To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

SPILL, LEAK & DISPOSAL INFORMATION

SPILL OR LEAKAGE PROCEDURES Ventilate areas, soak up immediately; use proper safe handling procedures, dispose of properly. Residue can be neutralized with a diluted mixture of ammonia hydroxide and alcohol.

WASTE DISPOSAL METHOD Dispose of in accordance w/all local, state & federal environmental regulations.

WARNING STATEMENTS

Store below 90°F. Pressure buildup may occur in containers stored above 90°F. Keep containers out of sunlight. Caution - Combustible! Keep away from heat, sparks and open flame. May be harmful or fatal is swallowed.

Overexposure to vapors may be harmful or fatal.

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MATERIAL SAFETY DATA

UNITED PAINT & COATINGS
E. 19011 Cataldo
Greenacres, WA 99016
(509) 926-7143 Telex: 32-6316
(800) 541-4383 UNITED CTS SPK

UNIFLEX 455 Topcoat Part B

MSDS #19568

EMERGENCY TELEPHONE NO.	PREPARATION/REVISION DATE 5-27-86
CHEMICAL FAMILY Polyurethane Elastomer Coating	COMMON NAME UNIFLEX 455 Topcoat Part B
	FORMULA 10-R-852-2

HAZARDOUS INGREDIENTS

CHEMICAL AND COMMON NAME	%	APPLICABLE EXPOSURE LIMITS PEL-WISHA/OSHA	TLV-ACGIH	CAS NO.
MEK, Methy ethyl Ketone, 2 Butanone	25-30	200 ppm	200 ppm	78-93-3
MPK, methy n-propyl Ketone	5-10	200 ppm	200 ppm	107-87-9
Xylol, mixed Xylenes	5-10	100 ppm	100 ppm	1330-20-7

CARCINOGENIC INGREDIENTS

CHEMICAL AND COMMON NAME	%	REFERENCE SOURCE NTP	IARC	WISHA/OSHA
none known				

PHYSICAL DATA

BOILING POINT (760mm Hg) 175°F - 288°F	pH n/a	APPEARANCE paint-like
SPECIFIC GRAVITY (H_2O = 1) 1.18 - 1.22	VAPOR PRESSURE (mm Hg) 71 at 25°C	ODOR characteristic aromatic/Ketone
VAPOR DENSITY (AIR = 1) greater than 1	SOLUBILITY IN H_2O (% BY WT) approx. 10	
VOLATILES (% BY VOLUME) approx. 45	EVAPORATION RATE (BUTYL ACETATE = 1) approx. 3	

n/a = not available

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Uniflex 455 - Topcoat Part B 5-27-86

HEALTH INFORMATION

MSDS # 195568

MAJOR ROUTES OF ENTRY Inhalation and ingestion are primary routes of entry.

ACUTE (IMMEDIATE) EFFECTS Inhalation: Concentration of 100-200 ppm cause nose & throat irritation. Higher concentrations cause more severe irritation, headache, nausea, drowsiness, dizziness and incoordination. Ingestion: Moderately toxic. May cause nausea, vomiting, diarrhea.

CHRONIC (DELAYED) EFFECTS May result in central nervous system depression and narcosis.

EMERGENCY AND FIRST AID PROCEDURES DO NOT INDUCE VOMITING. Cal a physician. Inhalation: remove to fresh air. Apply artificial respiration or give oxygen if breathing is difficult or has stopped. Eye contact: Immediately flush w/water. Seek medical attention. Skin: Remove contaminated clothing and wash with soap and water.

FIRE PROTECTION INFORMATION

FLASH POINT (TCC SCC PMCC) 21°F

EXTINGUISHING MEDIA

Dry chemical CO_2, alcohol foam

FLAMMABLE LIMITS 1.0 Lel Xylol 1.8 MEK — 5.3 Uel Xylol 10.1 MEK

SPECIAL FIRE FIGHTING PROCEDURES Use water spray to cool fire-exposed surfaces. Self-contained breathing apparatus and protective clothing required for fire fighting personnel.

UNUSUAL FIRE AND EXPLOSION HAZARDS Vapors from this product are heavier than air and travel along floor to a source of ignition at locations distant from the handling point.

REACTIVITY DATA

MSDS #19568

HAZARDOUS DECOMPOSITION PRODUCTS CO, CO_2, smoke

HAZARDOUS POLYMERIZATION		MAY OCCUR
	X	WILL NOT OCCUR
STABILITY		UNSTABLE
	X	STABLE

CONDITIONS AND MATERIALS TO AVOID

Strong oxidizing agents

SAFE HANDLING & USE INFORMATION

RESPIRATORY PROTECTION If TLV of the product or any component is exceeded, a NIOSH/MSHA jointly approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators under specified conditions (See your safety equipment supplier). Engineering or administrative controls should be implemented to reduce exposure.

VENTILATION Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(S).

PROTECTIVE GLOVES Wear resistant gloves such as neoprene

EYE PROTECTION Chemical splash goggles in compliance w/OSHA regulations are advised, however, OSHA regulations also permit other type safety glasses (consult safety supplier)

OTHER PROTECTION

To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

SPILL, LEAK & DISPOSAL INFORMATION

SPILL OR LEAKAGE PROCEDURES Extinguish and remove all sources of ignition. Dike and contain spill with inert material such as sand, earth. Transfer to containers for disposal.

WASTE DISPOSAL METHOD Dispose in accordance with all local , state & federal environmental regulations.

WARNING STATEMENTS

WARNING: FLAMMABLE! KEEP FROM HEAT, SPARKS & FLAME. AVOID BREATHING VAPOR, AVOID CONTACT W/EYES, SKIN, & CLOTHING. KEEP CONTAINERS CLOSED. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING.

NOTES TO PHYSICIAN: Aspirated solvent may cause severe lung damage and present a significant hazard. Stomach contents should be evacuated in a manner which avoids aspiration.

CONTENTS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED, SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID). ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBSERVED.

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Steelcote Manufacturing Co.

PRODUCT DATA SHEET

PDS No. 0706

EPO-LUX 121 DEEP PENETRATING SEALER

(Replaces Epo-Lux 100 E-38 PS)

ONE STEELCOTE SQUARE • ST. LOUIS, MO 63103-2990 • (314) 771-8053 • FAX (314) 771-7581

SELECTION DATA

GENERIC TYPE: Polyamide-Cured Epoxy

PRODUCT DESCRIPTION: Epo-Lux 121 is a two-component, epoxy sealer designed to seal and deeply penetrate concrete or masonry locking in loose aggregate on top and forming a hard, impenetratable sub-surface. Epo-Lux 121 is an amber-clear, high solids coating yet possesses a water-thin viscosity, allowing it to penetrate into concrete as much as 1/4 inch. When properly applied, it will hold back as much as five pounds of hydrostatic pressure. Designed mainly for use on concrete, Epo-Lux 121 is in compliance with the requirements of U.S. Department of Agriculture for use in food packaging and processing operations. It may be used alone as a sealer or in conjunction with Epo-Lux 100, 121 Intermediate, and 121 Finish or other approved Steelcote systems as a primer (see below). Low V.O.C. version available or use Monomid water-borne epoxy system.

RECOMMENDED FOR: As an amber-clear, penetrating sealer for concrete or masonry surfaces. Designed to protect concrete against moisture, freeze/thaw cycles, salts, oils and specific chemicals. Helps keep dusting down and aids in the cleanability of floors or walls while increasing the life of the concrete. May be used as a sealer under epoxy or polyurethane coatings for excellent resistance to aircraft hydraulic fluids, gasoline, and oil spillage.

NOT RECOMMENDED FOR: Application at temperatures below 50°F. If using as a sealer, apply the topcoat while the Epo-Lux 121 Penetrating Sealer is still slightly tacky to assure proper adhesion of topcoats. Do not puddle.

PHYSICAL PROPERTIES

RESISTANCE TO: (Splash & Spillage)	Acids: Good Alkali: Very Good Salts: Excellent Solvent: Very Good Water: Excellent
VOLUME SOLIDS:	36.4% +/- 2%
WEIGHT SOLIDS:	41.4% +/- 2%
MIX RATIO, WEIGHT:	100 Parts B to 91 Parts A
MIX RATIO, VOLUME:	1 Part B to 1 Part A
FLASH POINT:	68°F. TCC
POT LIFE:	24 Hours, Minimum
SHELF LIFE:	1 Year, Minimum
INDUCTION TIME:	1 Hour, Minimum
THINNER – REDUCTION:	Not Recommended
THINNER – CLEAN UP:	Steelcote T-201
APPLICATION TEMPERATURE:	50° - 90°F. (10° - 32°C.)
SERVICE TEMPERATURE:	225°F. (107°C.) Maximum
GLOSS:	Not Applicable
COLOR:	Amber-Clear
PACKAGING:	2 and 10 Gallon Units
WEIGHT PER GALLON:	7.9 pounds (3.6 kg) +/- 2%
V.O.C. (Volatile Organic Compound):	4.65#/gal., 557 g/ltr mixed Low V.O.C. version available

COVERAGES

THEORETICAL COVERAGE:
234 square feet per gallon

RECOMMENDED COVERAGE:
185-225 square feet per gallon

RECOMMENDED WET FILM THICKNESS:
Not applicable

RECOMMENDED DRY FILM THICKNESS:
Not applicable

DRYING TIME
@ 77°F. (25°C.) 50% RH

TO TOUCH:	3 hours
TO RECOAT:	6 hours
FINAL CURE:	7 days

RECOMMENDED FINISH COATS
(If used as a primer)

Single-Package Urethane:	MCU 3655
Two-Package Urethane:	Epo-Lux Series Nos. 520, 590 and 595
Epoxy:	Epo-Lux Series Nos. 100, 121 Intermediate and Finish, and 150 Colortop Epo-Floor Top

LIMITED WARRANTY: The information presented herein is, to the best of our knowledge, true and accurate. No warranty or guarantee, express or implied, is made regarding the performance or stability of any product since the manner of use and condition of storage and handling are beyond our control. Our liability in supplying these products is limited solely to replacement of any product found to be defective. THIS LIMITED WARRANTY IS GIVEN EXPRESSLY AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE. CONSTITUTES THE ONLY WARRANTY MADE BY THE MANUFACTURER OF FITNESS OR MERCHANTABILITY, AND THERE ARE NO OTHER GUARANTEES OR WARRANTIES, EXPRESS OR IMPLIED, IN FACT OR BY LAW. No suggestion for product use, nor anything contained herein, shall be construed as a recommendation for its use in infringement of any existing Patent.

The information contained herein is based upon data found by our own, or independent testing laboratory. It is considered accurate at the date of issuance, and is subject to change without notice.

SURFACE PREPARATION

TO CONCRETE OR MASONRY: For proper bonding, apply over a clean, dry, sound surface. For new construction allow the concrete to cure a minimum of twenty-eight (28) days at 60°F. before coating. Concrete should have a maximum moisture content of ten (10) percent or less. All laitance or loose bound concrete should be removed and the surface cleaned leaving a hard, bound substrate preferably by dry abrasive blasting. "Sweep" abrasive blasting is the most effective method of surface preparation. For old concrete, or if dry abrasive blasting is not possible, the concrete may be prepared by acid etching with Steelcote Clean & Etch per label instructions. After etching, neutralize concrete with a solution of two (2) cups aqua ammonia per five (5) gallons of water. Flush clean with water and allow to dry thoroughly. If oil or grease stains exist after etching, clean areas by scrubbing with a solution of Tri-Sodium Phosphate (TSP) and warm water. Flush clean with water and allow to dry thoroughly. Surface must have a profile similar to medium grit sandpaper before applying Epo-Lux 121 Penetrating Sealer.

Apply Epo-Lux 121 Penetrating Sealer per label instructions. Allow for proper induction time after mixing. If Epo-Lux 121 Penetrating Sealer is to be used as a primer, for best adhesion apply the appropriate topcoat while the Epo-Lux 121 Penetrating Sealer is still tacky (normally within ten hours). If the Epo-Lux 121 Penetrating Sealer is permitted to dry (and topcoating is still desired) and if any "blush" or residue exists on the surface, remove by either wiping with isopropyl alcohol or washing with a solution of Tri-Sodium Phosphate (TSP) and warm water. If washing with TSP solution, flush with water and allow to dry. If no "blush" or residue exists, it is not necessary to clean the surface and primer, intermediate, or topcoat may be applied. Epo-Lux 121 Intermediate Primer should be applied over this sealer if a topcoat is to be applied in order to avoid "mirror pick-up" of concrete hairline cracks and other imperfections of concrete. Clean all tools and equipment with Steelcote T-201 after use. If primer dries completely, re-prime.

NOTE: Do not "puddle" Epo-Lux 121 Penetrating Sealer on the surface.

APPLICATION EQUIPMENT

BRUSH: Use a clean, natural bristle brush. No reduction necessary.

ROLL: Use a clean, short nap, mohair roller with a phenolic core. No reduction necessary.

OTHER: On smooth concrete, may be applied by lambswool applicator (No. 10 Duplex Block Wax Applicator) if desired.

No reduction necessary.

CONVENTIONAL SPRAY

Gun:	Binks 18 or equal
Fluid Nozzle:	68
Air Nozzle:	68 PB
Air Hose ID:	1/4"
Material Hose ID:	3/8"
Needle:	68
Pressure:	Pot: 10 - 15 psi
Atomization:	30 - 45 psi

Use moisture and oil traps.
No reduction necessary.

AIRLESS SPRAY

Pump Ratio:	28:1
Gun:	Graco 208-327 or equal
Tip Size:	0.017 - 0.019
Fan Size:	6" - 8"
Pressure:	2000 - 2500 psi
Material Hose ID:	1/4"

No reduction necessary.

590R

CAUTION: CONTAINS *FLAMMABLE* SOLVENTS
KEEP AWAY FROM EXCESSIVE HEAT, SPARKS AND OPEN FLAMES. PROVIDE ADEQUATE VENTILATION. AVOID SKIN AND EYE CONTACT. HYPERSENSITIVE PERSONS SHOULD USE PROTECTIVE CREAMS OR GLOVES. IN CONFINED AREAS, A FRESH AIR LINE RESPIRATOR IS RECOMMENDED. SINCE EXPLOSION HAZARDS CAN EXIST, ALL ELECTRICAL EQUIPMENT SHOULD BE GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. WORKMEN SHOULD USE NONFERROUS TOOLS AND WEAR CONDUCTIVE, NON—SPARKING SHOES IN THESE HAZARDOUS AREAS.

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Steelcote® Manufacturing Co.

PRODUCT DATA SHEET

WALL-NU TROWELABLE

3418 GRATIOT STREET • ST. LOUIS, MO. 63103-2990 • (314) 771-8053 • FAX (314) 771-7581

SELECTION DATA

GENERIC TYPE: Amido Amine-Cured Epoxy Mastic.

PRODUCT DESCRIPTION: Wall-Nu Trowelable is a 100% solids, trowelable mastic material suitable for patching, coving, lining, adhesive bonding, and underlayment for construction, maintenance, and marine use. Wall-Nu Trowelable, once properly cured, creates a very strong bond to a wide variety of substrates including wood, concrete, masonry, metal, fiberglass, and even glass. Applied up to 1" thick on vertical surfaces, it is completely non-shrinking, is non-brittle, and has an expansion coefficient similar to concrete. It dries to a hard, water-tight barrier that may be wet-sanded, drilled, or filed if desired. It resists spillage of many acids and alkalies, and is formulated to perform well in corrosive or elevated temperature exposures. An all purpose mastic epoxy, Wall-Nu Trowelable has been found acceptable by the U.S.D.A. for use as a coating for application to structural surfaces where there is a possibility of incidental food contact in food processing or packaging facilities.

RECOMMENDED FOR: May be used for tuckpointing, leveling, coving, patching and resurfacing. Use to alter walls, floor or ceiling topography in order to obtain a smooth or contoured surface. For use in areas where a chemical, water or corrosion resistant barrier is needed for patching and repairing structural cracks, spalls, swimming pools, tanks and secondary containment areas. Withstands water immersion service up to 180°F.

NOT RECOMMENDED FOR: Do not apply in temperature below 50°F. Do not thin material. Not for use in areas subject to flexing or torsion; use Wall-Nu Flexible.

PHYSICAL PROPERTIES

RESISTANCE TO: (Splash & Spillage)	Acids: Good Alkali: Excellent Salts: Excellent Solvent: Fair Water: Excellent
VOLUME SOLIDS:	100%
WEIGHT SOLIDS:	100%
MIX RATIO, WEIGHT:	1 Part A to 1 Part B
MIX RATIO, VOLUME:	1 Part A to 1 Part B
FLASH POINT:	>200°F. (93°C.) TCC
POT LIFE:	1-1/2 Hours Minimum @ 77°F. (25°C.)
SHELF LIFE:	1 Year, Minimum
THINNER – REDUCTION:	Not Recommended
THINNER – CLEAN UP:	Steelcote T-181
APPLICATION TEMPERATURE:	50° - 95°F. (10° - 35°C.)
SERVICE TEMPERATURE:	250°F. (121°C.) Continuous
GLOSS:	Flat
COLOR:	Gray or Off-White
PACKAGING:	1/2, 2 and 10 Gallon Units
WEIGHT PER GALLON:	13.16 pounds (5.98 kg) +/- 2%
V.O.C. (Volatile Organic Compound):	0

COVERAGES

THEORETICAL VOLUME COVERAGE:
231 cubic inches per gallon

THEORETICAL AREA COVERAGE:
12.65 sq. ft. per gal. at 1/8"
(3,125 microns)

MAXIMUM FILM THICKNESS:
1" (25,000 microns) per coat

DRYING TIME
@ 77°F. (25°C.) 50% RH

TO TOUCH:	8 Hours
TO RECOAT:	24 Hours
FOR TRAFFIC:	24 - 48 Hours
FINAL CURE:	7 Days

RECOMMENDED FINISH COATS*

Single-Package Urethane:	MCU 3655
Two-Package Urethane:	Epo-Lux Series Nos. 520, 590, 595 and 600
Epoxy-Polyamide:	Epo-Lux Series Nos. 100, 121 and 150
Epoxy-Amine:	Epo-Line Series Nos. 161 and 164

*In severe immersion environments, sanding Wall-Nu Trowelable before topcoating is recommended.

LIMITED WARRANTY: The information presented herein is, to the best of our knowledge, true and accurate. No warranty or guarantee, express or implied, is made regarding the performance or stability of any product since the manner of use and condition of storage and handling are beyond our control. Our liability in supplying these products is limited solely to replacement of any product found to be defective. THIS LIMITED WARRANTY IS GIVEN EXPRESSLY AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, CONSTITUTES THE ONLY WARRANTY MADE BY THE MANUFACTURER OF FITNESS OR MERCHANTABILITY, AND THERE ARE NO OTHER GUARANTEES OR WARRANTIES, EXPRESS OR IMPLIED, IN FACT OR BY LAW. No suggestion for product use, nor anything contained herein, shall be construed as a recommendation for its use in infringement of any existing Patent.

The information contained herein is based upon data found by our own, or independent testing laboratory. It is considered accurate at the date of issuance, and is subject to change without notice.

SURFACE PREPARATION

TO CONCRETE OR MASONRY: Allow concrete to cure a minimum of twenty-eight (28) days at 60°F. For proper bonding, apply over a clean, dry, sound surface. Remove any existing oil, grease, wax, dirt, loose or foreign matter by washing with a solution of Tri-Sodium Phosphate (TSP) and warm water. Flush with clean water and allow to dry. Obtain "tooth" and remove any existing laitance on concrete floors by dry abrasive blasting with 30/40 mesh silica sand or etching with a solution of Steelcote Clean & Etch per label instructions. If etching, neutralize with a solution of two (2) cups aqua ammonia per five (5) gallons of water. Flush clean with water and allow to dry thoroughly. For new or clean concrete floors, dry abrasive blasting or etching alone is adequate. For filling or repairing cracks, spalls, or small holes, etching or sandblasting is not needed. Apply Wall-Nu Trowelable per label instructions. Topcoat at the appropriate time with the Steelcote recommended finish coat. Clean all tools and equipment with Steelcote T-181 after use.

TO STEEL: Surface must be clean, dry, sound and free from all oil, grease, wax, loose rust and foreign matter. For steel used in non-immersion service, surface should be degreased by solvent wiping with Steelcote T-181 in accordance with SSPC-SP1 specification. Remove any existing loose rust, mill scale, or foreign matter by hand or power tool cleaning in accordance with SSPC-SP2 or SSPC-SP3 specification.

For severe environments, surface should be dry abrasive basted to a Commercial finish (SSPC-SP6). If any grease, oil, or wax is present prior to blasting, remove by solvent wiping (SSPC-SP1). Dry abrasive blast in order to remove at least two-thirds (2/3) of all visible rust, mill scale, paint and other foreign matter from each square inch of surface. Blast to a 2-3 mil profile, minimum, for proper adhesion. After sandblasting, remove all sand, dust and grit by sweeping and/or vacuuming. Apply Wall-Nu Trowelable per label instructions as soon as possible after sandblasting and always before any flash-rusting can occur. Topcoat at the appropriate time with the Steelcote recommended finish coat. Clean all tools and equipment with Steelcote T-181 after use.

NOTE: For immersion environments follow the surface preparation procedures outlined for severe environments. However, dry abrasive blast to a white or near-white finish in accordance with SSPC-SP5 or SSPC-SP10 specification in order to remove all or at least 95% of all rust, mill scale, paint, and other foreign matter from each quare inch of surface. After applying Wall-Nu Trowelable and allowing it to cure, lightly sand the surface before topcoating.

TO FIBERGLASS: For proper bonding, apply over a clean, dry, sound surface. Remove any existing oil, grease, wax, dirt, loose or foreign matter by washing with a solution of Tri-Sodium Phosphate (TSP) and warm water. Flush thoroughly with clean water and allow to dry. Abrade surface by hand or power sanding using 3/0 abrasive or specified sandpaper in accordance with SSPC-SP2 or SSPC-SP3 specification. Remove any dust and wipe with Steelcote T-181 or Toluol. Apply Wall-Nu Trowelable per label instructions. Topcoat at the appropriate time with the Steelcote recommended finish coat. Clean all tools and equipment with Steelcote T-181 after use.

TO WOOD: Surface must be clean, dry, sound and free from all oil, grease, wax, moisture, loose and foreign matter. Remove surface deposits or sap or pitch by scraping, followed by wiping with Steelcote T-181. Sanding with medium grit sandpaper in accordance with SSPC-SP3 specification is recommended. Apply Wall-Nu Trowelable to the surface per label instructions. Wall-Nu Trowelable may be used to repair loose boards, gaps and holes in wood. Topcoat at the appropriate time with Steelcote recommended finish coat.

APPLICATION EQUIPMENT

TROWEL: Use a clean, stainless steel trowel or spatula of the desired shape or dimensions necessary. A flat mixing board is recommended for proper mixing. Steelcote T-212 Trowelling Liquid may be used for final trowel finish for easier, faster, and smoother application.

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KEEP AWAY FROM EXCESSIVE HEAT, SPARKS AND OPEN FLAMES. PROVIDE ADEQUATE VENTILATION. AVOID SKIN AND EYE CONTACT. HYPERSENSITIVE PERSONS SHOULD USE PROTECTIVE CREAMS OR GLOVES. IN CONFINED AREAS, A FRESH AIR LINE RESPIRATOR IS RECOMMENDED SINCE EXPLOSION HAZARDS CAN EXIST. ALL ELECTRICAL EQUIPMENT SHOULD BE GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. WORKMEN SHOULD USE NONFERROUS TOOLS AND WEAR CONDUCTIVE, NON—SPARKING SHOES IN THESE HAZARDOUS AREAS.

3418 GRATIOT STREET

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PRODUCT DATA SHEET

PDS No. 0787

COLORTOP

FORMERLY EPO-ROCK BINDER

ONE STEELCOTE SQUARE • ST. LOUIS, MO 63103-2990 • (314) 771-8053 • FAX (314) 771-7581

SELECTION DATA

GENERIC TYPE: Amine Adduct Cured Epoxy

PRODUCT DESCRIPTION: Steelcote Colortop is a 100% solids resin formulated to be self-leveling and fast-setting. The clear is near water-white in color and forms a very dense, abrasion and early 12-hour mar resistance able to tolerate high volume traffic, chemicals, water, and ultra violet exposure with little of no degradation except slight color changes.

RECOMMENDED FOR: Colortop is a highly versatile resin used as a floor coating either clear or pigmented, as a casting resin or as a binder for 3M Colorquartz® and other architectural aggregate such as exposed aggregate walks. Colortop is recommended for concrete, masonry, and wood surfaces with appropriate primers. It has also been used for coating plastics and steel, when properly primed. For exterior application may be top-coated with Steelcote's MCU 3540, Epo-Lux 595, or Epo-Lux 600 Clear to assure chalk resistance and minimize color drift. Write for detailed information for use with large aggregates for exposed aggregate sidewalks, patios, etc., or for use with 3M Colorquartz® aggregates, non-skid aggregates, or for trowel-on flooring.

NOT RECOMMENDED FOR: Do not apply at temperatures below 50°F.

PHYSICAL PROPERTIES

RESISTANCE TO: (Splash & Spillage)	Acids: Good - Excellent Alkali: Good - Excellent Salts: Excellent Solvent: Good - Excellent
VOLUME & WEIGHT SOLIDS:	99.8% +/- 1/2% (Trace)
VISCOSITY:	Syrup-Self Leveling
FLASH POINT:	>200°F. (93°C.)
MIX RATIO, WEIGHT:	84.25 Parts A to 100 Parts B
MIX RATIO, VOLUME:	1 Part A to 1 Parts B
POT LIFE:	60°F. 30-45 Min. Max./2 Gal. Mix 77°F. 20-30 Min. Max./2 Gal. Mix 85°F. 7-10 Min./2 Gal. Mix Add Diluent "A" to maximize pot life.
INDUCTION TIME:	None
SHELF LIFE:	2 Years, Minimum
THINNER - REDUCTION:	None; If desired Diluent A
THINNER - CLEAN UP:	Steelcote T-201
APPLICATION TEMPERATURE:	50° - 90°F. (10° - 32°C.)
SERVICE TEMPERATURE:	300°F. (148.8°C.) Dry 180°F. (82.2°F.) Immersion
GLOSS:	High Gloss
COLOR:	Water White Clear & Light Gray Other colors on special order
PACKAGING:	2 Gallon and 10 Gallon Units
WEIGHT PER GALLON:	8.89 Pounds (3.94 kg) +/- 2%
V.O.C. (Volatile Organic Compound):	1 Gr/Ltr or less 12 Gr/Ltr Reduced

COVERAGES

THEORETICAL COVERAGE:
160 sq. ft. per gal. at 10 mils DFT
(allow for application losses)

RECOMMENDED WET FILM THICKNESS:
10 - 32 mils (250 - 800 microns)

RECOMMENDED DRY FILM THICKNESS:
10 - 32 mils (250 - 800 microns)

DRYING TIMES

@ 77°F. (25°C.), 50% RH

TO TOUCH:	2 Hours
TO RECOAT:	4 Hours
FOR TRAFFIC:	6-12 Hours
FINAL CURE:	7 - 12 Days

RECOMMENDED PRIMERS

WOOD:	Self priming. Only one coat 8 -15 mils normally sufficient.
CONCRETE:	Epo-Lux 121 PS or self-priming when acid etched with Clean & Etch. Speedepoxy SY-1 White over other coatings or silicate hardeners that cannot be removed. BFB for flexible color base coat. Monomid Clear Sealer for lowest odor and V.O.C.

TOPCOATS (EXTERIOR OR INTERIOR):
Epo-Lux 595; Epo-Lux 600;
MCU 3540

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The information contained herein is based upon data found by our own, or independent testing laboratory. It is considered accurate at the date of issuance, and is subject to change without notice.

SURFACE PREPARATION

CONCRETE: New concrete should be well cured (28 days at 70°F), free of all sealing and hardening compounds, and any other contaminants such as oil, grease and chemicals. Old cement shall be clean and free of the same as above plus old coatings and paints. Shot blasting to a 3-5 mil profile is the recommended method of surface preparation. Acid etching is approved with Steelcote Clean & Etch followed by neutralizing with aqua ammonia in water (2-3 cups per 5 gallons of water). Double etch with Clean & Etch only to 100 mesh sandpaper profile for self-priming. Do not use muriatic acid solution! Clean & Etch contains proper balance of phosphoric and muriatic acid to each without damage to floor! Concrete surfaces must be dry and free of hydrostatic pressure. Do not apply over curing agents, hardeners, oil, grease, or other intervening barriers. If applying over Epo-Lux 121 or Monomid Clear Sealer, apply when sealer is still tacky to assure chemical bond. If sealer is allowed to dry, sanding is required before application of Colortop.

WOOD AND PLYWOOD: These surfaces shall be clean, free of dirt, oil, grease and other contaminants. Loose boards shall be renailed or screwed and counter-sunk. Rot or severe contamination shall be cut out to sound surface and repaired with new wood or filled with Steelcote Color-Top. The surface shall be machine sanded to a smooth, open-pored state.

STEEL: Consult Steelcote's Technical Service Department.

MIXING AND APPLICATION FOR USE AS A COATING: Do not attempt to mix the material if it has been stored in a cold area for a period of time. The material should be warmed thoroughly to room temperature (at least 65°F) so that easier mixing and application can be obtained. Material can be warmed by setting the open cans in hot water or in a hot room by the radiator before use. Warming the material thins it to the proper consistency for easy application and thorough mixing. Do not mix more than a two gallon unit at any one time for best results. Mixing of quantities of two (2) gallons or more of Colortop must be accomplished with an electric "KOL" or equivalent small paste or cement mixer of five (5) gallon or more capacity. **Mixing with paddle or jiffy-type electric mixers or by hand is unacceptable except for mixes of less than two gallons.** Pre-stirring of Part "A" activator and Part "B" Base may be accomplished by hand stirring of each part. Power mixing on KOL Mixer with perforated-type mixing blade of Parts "A" and "B" in proper ratio shall be three (3) minutes by the clock. Mix shall then be transferred to a second clean five gallon pail scraping sidewalls and mixing blade of the first container and pouring into the center of the second container. Re-mix in the second container for one minute. To lengthen pot life and to assure release of trapped air up to 8 fluid ounces (1/2 pint) of Diluent A per 2-gallon unit may be added.

Controls:

To avoid having unmixed or partially mixed batches that can result in uncured wet spots or partially cured "tacky" or soft spots it is necessary to have close mixing checks for each batch. Take a 2 to 3-ounce sample of each mix after completion of mix in a wax cup. Write the time of mix on a tongue depressor placed in each cup. If material in cup does not set up or begin to set up and/or become warm or hot in one hour at 75 degrees Fahrenheit STOP THE APPLICATION. If possible, put the sample in an oven at 120 degrees Fahrenheit for 10-12 minutes. If material does not harden, remove uncured mixed material from surface and re-evaluate mixing procedures. If oven not available, a shallow pie pan filled with hot tap water can be used to accelerate the cure of control specimen.

Application:

Mixed Colortop shall be poured out on floor immediately after mixing in a snake-like fashion to a premeasured area equal to the desired mil thickness. Spread evenly with a 14" serrated vinyl squeegee and cross-rolled with a 1/8" mohair roller with a phenolic core. A brush may be used as required around edges. Roll over "wet" material with a "porcupine" roller to remove air. Keep a wet edge and continue job without interruption until completed or completed to a natural breakpoint.

MIXING AND APPLICATION INSTRUCTIONS FOR NON-SLIP OR SEED-IN COLOR-TOP METHOD:
See Engineering Service Technical Bulletin No. CT-SIM.

MIXING AND APPLICATION INSTRUCTIONS FOR TROWEL IN METHOD ON COLOR-TOP SYSTEM:
See Engineering Service Technical Bulletin No. CT-TOM.

PHYSICAL AND CHEMICAL PROPERTIES: See Engineering Service Technical Bulletin No. CTF.

APPLICATION EQUIPMENT

FOR COATING APPLICATION ONLY

BRUSH: Use a clean, natural bristle brush.

ROLL: Use a clean, short nap, mohair roller with a phenolic core or E-Z Paintr[R] Flat Applicator. Material should be spread with Steelcote 14" serrated squeegee and then cross rolled or spread with flat polyurethane applicator and porcupine roller.

[R]Registered TM - 3M Company

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KEEP AWAY FROM EXCESSIVE HEAT, SPARKS AND OPEN FLAMES. PROVIDE ADEQUATE VENTILATION. AVOID SKIN AND EYE CONTACT. HYPERSENSITIVE PERSONS SHOULD USE PROTECTIVE CREAMS OR GLOVES. IN CONFINED AREAS, A FRESH AIR LINE RESPIRATOR IS RECOMMENDED. SINCE EXPLOSION HAZARDS CAN EXIST, ALL ELECTRICAL EQUIPMENT SHOULD BE GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. WORKMEN SHOULD USE NONFERROUS TOOLS AND WEAR CONDUCTIVE, NON—SPARKING SHOES IN THESE HAZARDOUS AREAS.

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APPENDIX 7A

BUILDING EMERGENCY PLAN CENTRAL WASTE COMPLEX

The building emergency plan is updated annually. Future updates will reflect terminology consistent with the permit application.

This building emergency plan is required to be completed and maintained on an annual basis for all facilities covered by a Safety Analysis Report; designated as a nuclear reactor, nuclear facility, treatment storage or disposal facility; requiring a permit to operate under the Resource Conservation and Recovery Act regulations; or presenting a significant hazard to surrounding facilities or personnel.

This plan covers the following buildings and structures at the Central Waste Complex: 285-W, 2401-W, 2402-W, 2402-WB through 2402-WL, 2403-WA, FS-1 through FS-8 Waste Storage Units, Waste Unloading/Storage Pad (asphalt), and Mixed Waste Storage Pad.

Approved:

M.D. Gibbels Building Emergency Director	1/18/91 Date
J.R. Foster Manager, Emergency Preparedness, or Delegate	1/18/91 Date
for R.J. Martin Nuclear Safety Representative	1-23-91 Date
S.M. McMahon Environmental Compliance Representative	1-22-91 Date

This document will be reviewed and updated at least annually by the Building Emergency Director and approved by the Manager, Emergency Preparedness, or his delegate.

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1.0 INTRODUCTION

The Central Waste Complex (CWC) Emergency Plan has been designed to provide a system of planned responses which will minimize risks to personnel, equipment, buildings, public health, and the environment in the event of an emergency situation. This plan is applicable to the total facility, employees, and visitors identified in Section 1.1.

This plan and its attachments, in conjunction with the *WHC Emergency Plan*, WHC-CM-4-1, and the U.S. Department of Energy-Richland Operations Office (DOE-RL) Emergency Plan and procedures manuals, is intended to meet all applicable requirements for building emergency plans and the Washington State requirements for hazardous and dangerous waste contingency plans. The Building Emergency Director (BED), as mentioned throughout this plan, has the duties described in the Washington (State) Administrative Code (WAC) 173-303, "Dangerous Waste Regulations," of the "Emergency Coordinator."

Emergency situations considered for this facility and identified as requiring emergency response plans are identified in Section 3.0, "Potential Emergency Conditions." The six categories of emergencies considered are identified as follows:

1. Operational emergencies (including security events)
2. Natural hazards
3. Nonradioactive hazardous material hazards (including sudden or nonsudden releases of dangerous wastes)
4. Radioactive material hazards (including sudden or nonsudden release of mixed waste [MW])
5. Criticality
6. Explosive materials and munitions.

Planned responses are those activities which are intended to provide direction to control a fire, minimize the immediate effects of an explosion, contain a spill or release, and minimize the effects of a criticality incident. These responses include, for example, notification of personnel, emergency organizations, and the BED. The plan also provides guidance for notifying personnel to take cover, evacuate, or take other actions that are determined by the particular circumstances. The planned responses also provide for formal notification and reporting, investigation of the incident, cleanup, and restoration.

The CWC is located on the 570 mi^2, U.S. Department of Energy (DOE) Hanford Site in southeastern Washington State. The CWC is located in the 200 West Area of the Hanford Site.

A discussion of the CWC is contained in Section 1.4.

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1.1 **FACILITY NAME:** U. S. Department of Energy Hanford Site
Central Waste Complex

1.2 **FACILITY LOCATION:** Benton County, Washington; within the 200 West Area.

Facilities covered by this plan:

285-W Sanitary Water Shed
2401-W PCB Storage Building
2402-W Mixed Waste Storage Building
2402-WB Mixed Waste Storage Building
2402-WC Mixed Waste Storage Building
2402-WD Mixed Waste Storage Building
2402-WE Mixed Waste Storage Building
2402-WF Mixed Waste Storage Building
2402-WG Mixed Waste Storage Building
2402-WH Mixed Waste Storage Building
2402-WI Mixed Waste Storage Building
2402-WJ Mixed Waste Storage Building
2402-WK Mixed Waste Storage Building
2402-WL Mixed Waste Storage Building
2403-WA Mixed Waste Storage Building
FS-1 through FS-8 Low Flashpoint Waste Storage Units 1 through 8
Waste Unloading/Storage Pad (Asphalt)
Mixed Waste Storage Pad

These facilities are shown in Figures 1 and 2.

1.3 **OWNER/OPERATOR:** U.S. Department of Energy
Richland Operations Federal Building
825 Jadwin Avenue
Richland, Washington

CO-OPERATOR: Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington

1.4 DESCRIPTION OF THE FACILITY AND OPERATIONS

1.4.1 Introduction

The Westinghouse Hanford Company (WHC) began construction of the CWC in response to restrictions promulgated by the Environmental Protection Agency (EPA) in 1984 (effective in 1985) on land disposal for liquid organic hazardous and MW, and to requirements for treatment before land disposal.

9 2 1 2 0 6 0

Figure 1. Plan View of the Central Waste Complex.

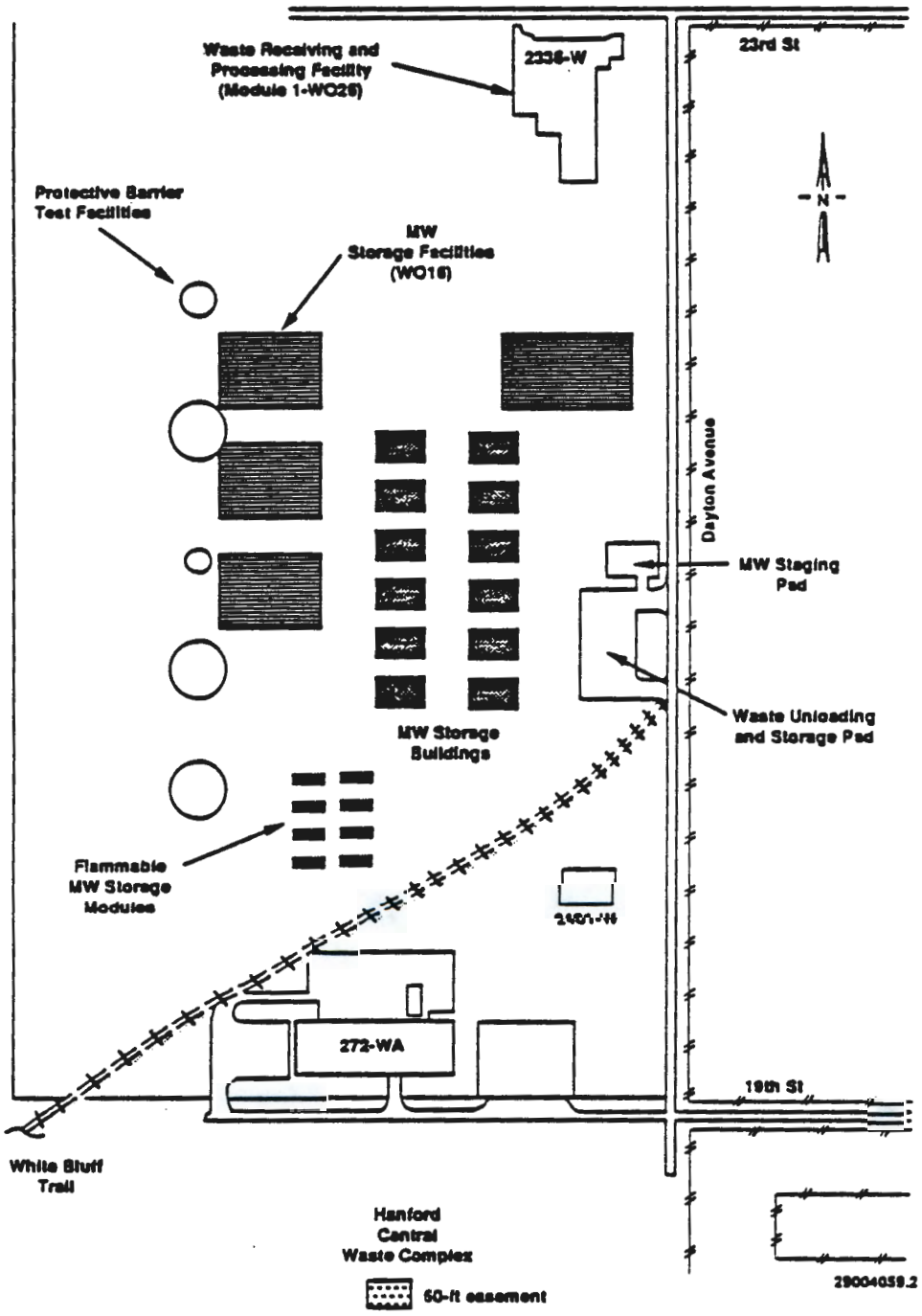
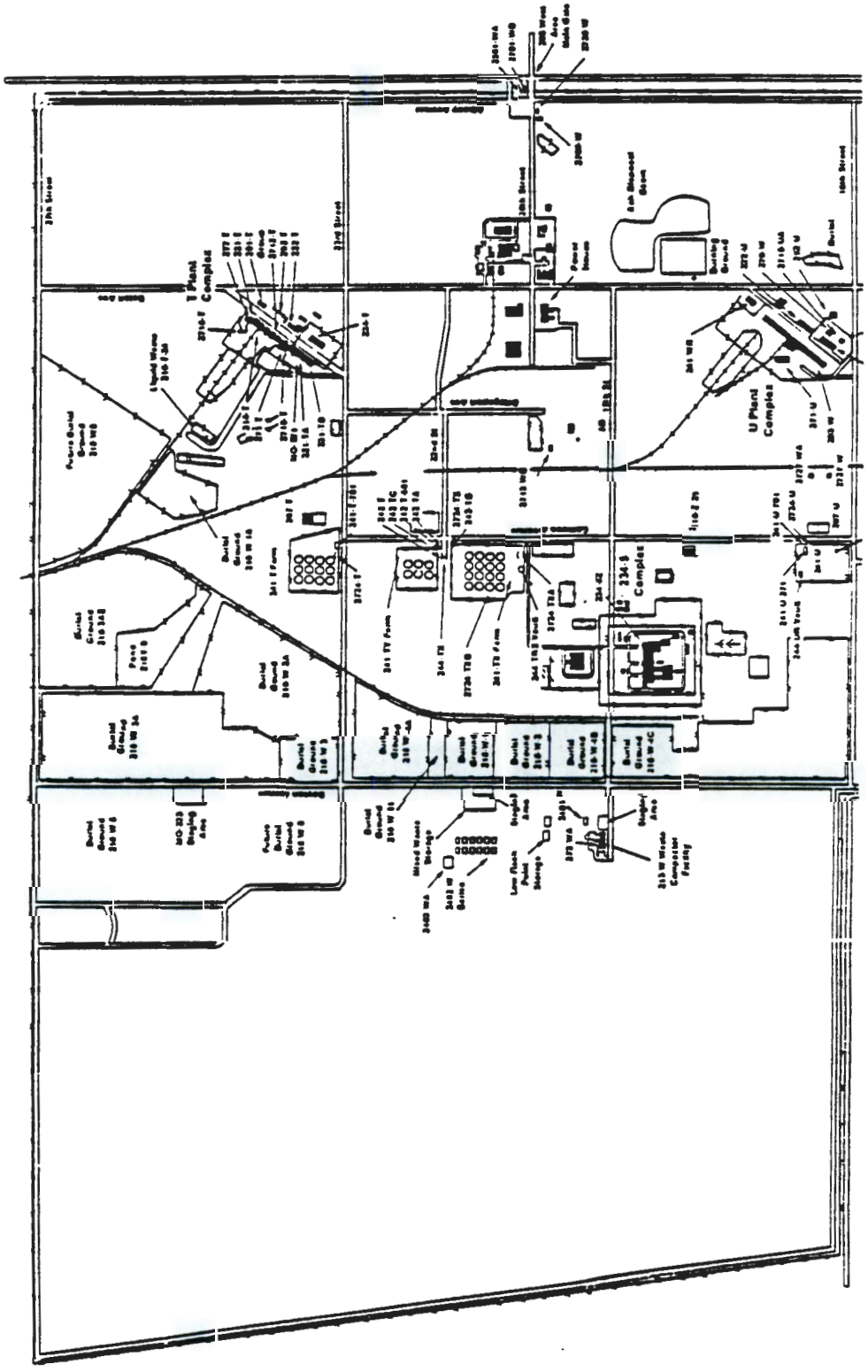


Figure 2. The 200 West Area at the Hanford Site.



At the time the regulations became effective, MW treatment facilities were not available, and MW were stored in retrievable storage units (RSUs), which are belowground trenches at the Hanford Low-Level Burial Grounds.

On May 18, 1987, the DOE issued an interpretive rule clarifying DOE and contractor obligations under the Resource Conservation and Recovery Act (RCRA) that resulted in all DOE MW (radioactive waste contaminated with hazardous waste) being subject to EPA and Washington State Department of Ecology (Ecology) regulation. Subsequently Ecology notified DOE-RL that RSUs were to be classed as landfills; thus, MW could no longer be stored or disposed of in the burial grounds.

A series of construction projects to build long-term storage and treatment facilities was initiated. In November 1987 all MW, except remote handled and "special case" materials, was placed into aboveground storage.

As of the issuance date of this plan, construction of all planned facilities at the CWC is incomplete. This plan addresses those units completed or partially completed as of October 1989. It will briefly describe the function of additional units, but revisions that address each unit will be made as construction of additional units is completed.

1.4.2 Process

The CWC currently provides for storage of mixed solid wastes including waste receipt, storage, repackaging, certification, and offsite shipment.

It is expected that a waste receiving and processing (WRAP) facility will begin operation in 1996 to sort and repackage waste from retrievable storage trenches. Full operation to treat wastes to minimize land disposal of low-level radioactive and MW is expected in 1999. This facility will treat low-level waste (LLW), low-level mixed wastes (LL-MW), transuranic (TRU) waste, transuranic mixed waste (TRU-MW), and hazardous waste. The WRAP facility is expected to perform waste receipt, repackaging, certification, treatment, and volume reduction. Eventually all wastes stored at the CWC will be processed through the WRAP facility, disposed onsite, or sent offsite.

Wastes are received at the CWC facilities from onsite and offsite generators (including other Hanford storage locations such as TRU waste retrievable storage units and caissons). Wastes are certified according to WHC requirements for onsite storage and disposal or other appropriate criteria for offsite storage and disposal sites, such as the Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria.

1.4.3 Solid Waste Handled at the Central Waste Complex

In 1988, 325,216 kg of hazardous or MW were generated at the Hanford Site. Most of the hazardous or MW will be treated in WRAP after 1999. Before 1999 MW it will continue to be received and stored at the CWC.

The following list describes classes and general locations of toxic, dangerous, extremely hazardous, or MW that are commonly handled in the CWC.

Toxic

Polychlorinated biphenyl (PCB) contaminated wastes are stored in the 2401-W building. Mixed waste containing PCBs can also be stored in the 2402-W series buildings if space is not available in 2401-W.

Corrosive/Combustible

Acids, caustics, oxidizers, and other MW are stored in the storage buildings (2402-W Complex).

Flammable

Flammable wastes are stored in the Low Flashpoint Waste Storage Units (FS-1 through FS-8) and in the 2401-WG building.

The CWC expects to receive the following types of wastes for storage:

1. Stored and newly generated suspect contact-handled transuranic (CH-TRU) wastes packaged in drums and boxes awaiting repackaging, certification, and shipment to WIPP

2. Newly generated suspected LLW for final packaging coupled with volume reduction, certification, and disposal

3. Contaminated small equipment and hardware that may be reclassified (e.g., TRU to LLW) or returned to service through the decontamination process

4. Stored and newly generated suspect remote-handled transuranic (RH-TRU) wastes to be packaged into the remote-handled shipping container, certified, and shipped to Oak Ridge National laboratory for treatment, final certification, or shipment to WIPP for disposal

5. Retrievably stored MW

6. Newly generated hazardous wastes for in-house treatment, packaging and onsite disposal, or packaging and certification for offsite treatment and disposal

7. Newly generated MW, including liquid organics, sludges, and wastes that contain hazardous metallic components

8. Contaminated ion exchange resins

9. Contaminated animal wastes
10. Polychlorinated biphenyl waste contaminated with radioactive material that will be packaged for treatment at another DOE Facility (Los Alamos National Laboratory [LANL] or Idaho National Engineering Laboratory)

11. Classified wastes that require special processing before disposal

12. Research reactor fuel that may be designated as TRU or LLW waste

13. Soils and vegetation (i.e., tumbleweeds) recovered as part of TRU waste retrieval operations

14. Contaminated samples and hardware such as instrumentation or motors from single- and double-shell tank waste programs.

Chemical and radioactive materials that may be included in the above waste types are:

- Transuranics (atomic numbers 93-98)

- Uranium (various isotopes)

- Radioactive isotopes (atomic numbers 3-92)

- Polychlorinated biphenyls

- Metals, including cadmium, lead, barium, and mercury

- Various solvents

- Small quantities of MW contaminated with sodium or reactive chemicals which will be stored separately from other waste categories.

Flammable TRU wastes are primarily scintillation cocktails consisting of 33% xylene, 15% trimethylbenzene, 46% nonionic detergents, 1% trioctal phosphine oxide, and 4% carbon tetrachloride.

Currently, the following are not handled at CWC:

- Single- and double-shell tank wastes
- Suspect TRU and LLW wastes buried before 1970, with the exception of those in burial ground No. 618-11, in accordance with the Hanford Defense Wastes Environmental Impact Statement (HDW-EIS) and the HDW-EIS Record of Decision (ROD), Federal Register 1988
- Suspect TRU-contaminated soils considered disposed of in accordance with the HDW-EIS ROD
- Low-level MW buried before November 1987 (considered disposed), except for liquid organics retrievably stored with TRU waste
- Buried reactor vessels and submarine reactor section
- Plutonium-uranium extraction (PUREX) tunnel materials (not to be declared waste until PUREX Plant operations are terminated).

The wastes mentioned above are excluded not necessarily from a processing capability standpoint, but rather from prior programmatic decisions (such as management of waste buried before 1970). Changes in these previous decisions could significantly alter the mission of the CWC.

NOTE: The Transuranic Storage and Assay Facility is currently being used for certified TRU drum storage and assay functions.

Waste components larger than a 55-gal drum are typically placed in metal boxes. These large components may include any of the following items: ladders, ventilation ducts and filter frames, fiberglass, plastic or metal grating, glovebox panels, piping and pumps, fluorescent light fixtures, electrical panels and conduit, leaded glass panels and other wastes such as gloves, table tops and other furniture, fiberglass and plastic panels, Gore-tex®, small shipping containers, plywood and other wood products, scaffolding, and polyvinyl chloride (PVC) pipe.

®Gore-Tex is a registered trademark of W. L. Gore and Associates, Inc., Newark, Delaware.

1.4.4 Building Description

1.4.4.1 **Flammable MW Storage Modules (FS-1 through FS-8).** Upto thirteen modules are to be operational by the third quarter of FY 1991 to store flammable LLW, TRU, LLW-MW, and TRU-MW with flashpoints below 100 °F (38 °C). The total capacity will be 246 55-gal drums. Storage in the modules was initiated in 1988.

The modules are small pre-engineered buildings and are 22 ft 8 in. by 9 ft by 8 ft 7 in. exterior dimensions. The modules each have 176 ft^2 of floor space and weigh 20,000 lbs. They are grounded and tied down to prevent wind damage.

Some of these modules may be dedicated to store MW packages containing sodium waste.

An internal 570-gal capacity spill containment reservoir is provided under the flooring. This spill-holding capacity exceeds the secondary containment requirements mandated in WAC 173-303.

The flooring is either steel or a 1.125-in.-thick, epoxy-coated, exterior grade plywood. The flooring is equipped with removable panels to permit access to the containment reservoir for area leaks or spills. A slip-resistant grit is applied to the top surface of each panel during the second application of epoxy paint. The floor support system is designed for loads up to 250 lb/ft^2.

The front, back, and side walls are constructed of 10-gauge steel coated with chemical-resistant epoxy paint on the inside. The roof is constructed of 12-gauge steel. The facility is draft ventilated. Electrical service, heat, a fire sprinkler system, and water supply are not provided. There are two portable extinguishers located outside units FS-4 and FS-6. If TRU mixed wastes are received, ventilation and sampling will be provided.

Operations consist of receipt, inspection, and storage.

Waste is generally packaged in 55-gal drums and stored in a single tier within the modules. Waste will be transported to the storage modules by forklift and within the module by hand truck. Inspection of containers is performed at least weekly to check for leaks and deterioration of containers. The module storage space is limited to approximately 20 drums per module.

NOTE: One of the 2402-W series buildings may be modified and approved for additional storage for low flashpoint flammable MW, with a capacity of 550 drums).

1.4.4.2 Plutonium/PCB Storage Facility (2401-W Building). The Toxic Substances Control Act, 40 CFR 761, requires analysis of all hydraulic systems if they are suspected of using PCB material. If PCB contamination is found, material removal and management must begin within 6 months. Material disposal and incineration is to take place in an approved facility within 1 year after generation. No treatment facilities currently exist for radioactively contaminated PCB waste; hence, it is held in onsite storage until treatment capability exists.

An initial inventory of plutonium/PCB waste was performed in FY 1983. This waste was stored initially at the Plutonium Finishing Plant. In 1987, it was recognized that a single storage facility was necessary for plutonium/PCB waste for regulatory compliance and storage efficiency.

The 2401-W plutonium/PCB storage facility was completed in May 1988 where the plutonium/PCB wastes will be stored until a facility is available for destruction. Currently, the LANL is the expected facility for destruction (by incineration) of plutonium/PCB waste. A request for LANL incineration of Hanford plutonium/PCB waste was made in 1985. The date for initial shipment is expected to be FY 1991.

Additionally, other combustible LLW as well as plutonium/PCB waste is stored in the 2401-W Facility.

The storage building is a pre-engineered steel structure, 50 ft by 80 ft by 20 ft (eave height) with a clear span in the 50-ft direction. The 26-gauge metal structure has two 12-ft- by 16-ft-high rollup truck doors and two personnel doors.

The foundation is integrated into a perimeter concrete curbing 6 in. abovegrade. The building floor is level and at grade. There are no drains or penetrations through the curb or floor. The floor loading is limited to 450 lb/in^2. The floor finish is a smooth, chemically resistant (epoxy-sealed) concrete free from cracks or gaps. A ramp is provided to cross the curb at the truck door.

The following utilities are provided.

- Electrical--a 100 A, 230 Vac service panel is used for heaters, fan ventilation, and the electronic fire alarm system.
- Sanitary--1,000 gal/min is maintained to support the facility's fire suppression system.

Electrical utility hook-up is from the E8-L2001 line, which is a 20-ft extension to the site. This provides electricity for the building heaters, lighting, and electronic fire alarm system.

The water utility line connection is from an 8-in. potable water line that loops around the 272-WA Building. The line also provides water for the building's fire suppression system.

Operations consist of receipt, inspection, and storage of drums within the building.

Waste stored in the 2401-W Facility is packaged in 55-gal drums. Other waste packages may be accepted after evaluation and approval by the Site Solid Waste Engineering Support Unit (SSWESU).

Drums are banded four per pallet before stacking, and pallets are stacked up to three high in rows that are one pallet wide. Rows are separated by inspection aisles that are at least 36 in. wide. Drums are stacked from the ends toward the center of the building to leave the whole unused floor space for maneuvering the forklift and to minimize backing the forklift in the vicinity of the drums.

A building floor plan is provided in Figure 3.

The Hanford Site PCB inventory includes contaminated liquids, contaminated combustible solids, and contaminated equipment (transformers, capacitors, and fluorescent light ballasts).

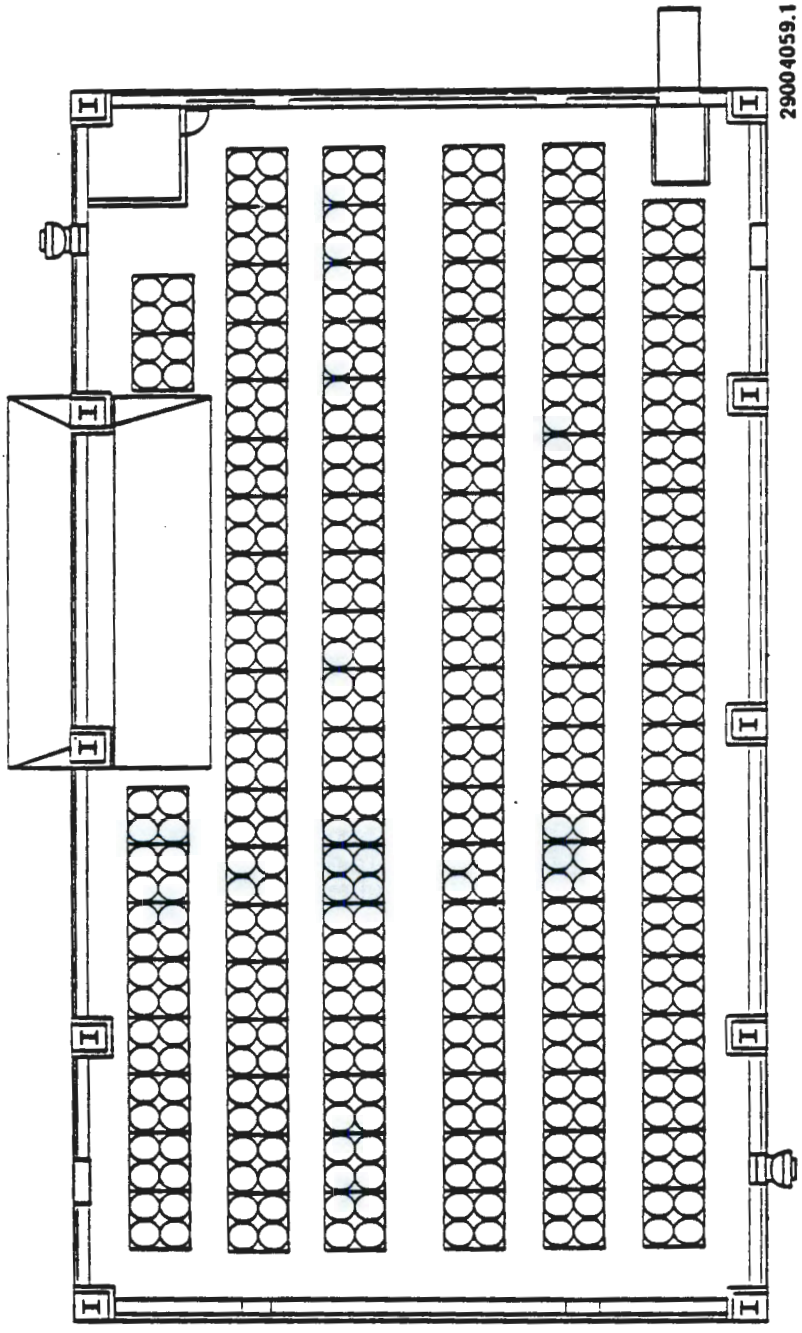
The capacity of the building is 1,000 drums. According to a CWC Loading Plan developed by Solid Waste Engineering, the 2401-W Building will be filled by FY 1995. However, shipment to LANL in 1991 will reduce this inventory.

1.4.4.3 **Mixed Waste Storage Buildings (2402-W Complex).** The 2402-W and 2402-WB through 2402-WL Buildings (12 total) will store all categories of MW (including TRU). The floor space of each building will be 4,000 ft^2. Each will have a 1,000-drum capacity with the exception of the 2402-WG Building, which is planned for a 500-drum capacity for low flashpoint LLW.

These facilities can be used to store MW containing PCBs if space is not available in the 2401-W Facility.

The MW storage buildings are 4,000-ft^2 metal buildings, with a minimum clear span of 50 ft and eave height of approximately 20 ft. Each has a concrete floor, fan ventilation, fire protection system, and lighting. A dry pipe sprinkler system is used for fire protection in the 2402-W series buildings. The floor plans will be similar to that shown in Figure 3.

Figure 3. Floor Plan for the 2401-W Building.



The maximum capacity of the storage buildings is 1,000 drums per building or 7,400 ft^2. Thus, eleven buildings (not counting 2402-WG, which has been allocated for flammable MW) could store 81,400 ft^3, or somewhat more than FY 1989 plus FY 1990 newly generated MW. Additional storage space will eventually be provided by the MW storage buildings (W-016) shown in Figure 1.

In addition to storage of newly generated MW, there will be a requirement to use the MW storage buildings in support of WRAP as soon as it is operational. The support would be short-term lag storage for MW awaiting processing in WRAP or shipment after processing.

1.4.4.4 **Waste Unloading and Storage Pad (asphalt) and MW Pad (concrete).** The asphalt pad is used for truck loading and unloading activities. There is no curbing or other containment device on this pad.

The MW Storage Pad consists of a 2-in.-thick, 9,000-ft^2 concrete pad with a 6-in. high curb. Components of the pad include an access ramp and a rainwater removal system. The rainwater removal system drains water to a collection trench in the center of the pad that drains to a collection sump. Access to the sump is through a lockable grate cover release into a French drain. The area surrounding the pad is sloped so water does not run onto the pad. The 2-in. thick pad is designed to support loading up to 2,000 lb/ft^2.

The Waste Unloading and Storage Pad does not meet RCRA requirements for compliant MW storage. The storage pad is not intended for long-term storage. All waste containers will be eventually be moved from the pad into the 2402-W Buildings when they are completed.

1.4.4.5 **Sanitary Water Shed (285-W).** The Sanitary Water Shed contains a backflow preventer for the CWC.

1.4.4.6 **Large MW Storage Facility.** The large MW Storage Facility, shown in Figure 1 (W-016), will be operational in four phases--from second quarter FY 1991 for Phase I through second quarter FY 1994 for Phase IV. They will store all categories of LL-MW with a 12,000-drum capacity each for Phases I, III, and IV, and 19,000 drums for Phase II (55,000 drums total).

This plan will be revised to address emergency procedures for these buildings when they become operational.

The 2403-WA Facility is a 34,000 ft^2 storage building equipped with a PA system, telephone, alarm system, and a central CAM alarm panel for the 8 CAMs located in the facility. The floor slopes toward the center where four collection sumps are located to retain any liquid run-off. Two dry pipe sprinkler systems provide fire supression protection.

1.4.4.7 **Waste Receiving and Processing Facility.** The WRAP Facility (shown in Figure 1) will be constructed as two modules: the first (Project W-026) will be operational in the fourth quarter of FY 1996 and the second (Project W-100) in the fourth quarter of FY 1999. Module I (Building 2336) will have approximately 52,000 ft^2 of floor space while Module II has not been sized. The WRAP Facility will perform waste receipt, repackaging, certification, treatment, and volume reduction for LLW, TRU, LL-MW, TRU-MW, and hazardous waste. Low-level waste will be processed in WRAP by techniques such as volume reduction, compaction, or incineration.

This plan will be revised to address emergency procedures for the WRAP Facility when it becomes operational.

1.4.4.8 **Support Facilities.** Other facilities not within the CWC site are discussed below because of their proximity to CWC and overlapping functions. The 272-WA Building provides administrative and craft support of the CWC. The LLW compactor (213-W), located just north of the 272-WA Building, is used to compact waste before disposal. Neither facility is considered within the boundaries of the CWC.

1. The 272-WA Operations Support Facility is a 15,000-ft^2 building providing occupancy for 90 people. The facility provides a central base of operations for craft personnel, supervisors, and management who coordinate surveillance and operation of the 200 West Tank Farms and Solid Waste Burial Grounds. It includes offices, a lunch room, a conference area, change rooms, supply and storage rooms, maintenance shops, a garage, and a decontamination room. It provides administrative, supervisory, and craft support for the CWC, with the exception of the WRAP Facility.

2. Emergency procedures for the compactor are described in a separate BEP.

3. During 1983 and 1984, a protective barrier test facility (PBTF) was established in the 218-W-5 Burial Ground Expansion Area, northwest of the 272-WA Building. The facility consisted of five plots of ground with surface gravel test mixes. The objective of the PBTF was to test effects of gravels on the impedance of water infiltration and biointrusion. Originally, the PBTF was to be monitored until at least 1991 when the plots were to be destructively sampled. This was changed in 1988 when WHC informed Pacific Northwest Laboratory (PNL) that construction activities in the area were imminent and the PBTF might be affected. Pacific Northwest Laboratory drafted a plan to sample the PBTF before destruction for construction activities.

This facility is no longer operational.

1.5 BUILDING EVACUATION ROUTING (BUILDING LAYOUT)

Figures 4 and 5 provide identification of emergency evacuation routes. The staging area for the CWC is located east of the 272-WA Building (Figure 4). The alternate staging area is located south of the waste unloading asphalt pad (Figures 4 and 5). These figures also provide the locations of fire extinguishers, fire alarm pull boxes, and other safety equipment. Evacuation alarms are described in Section 5.4 and responses to alarms are given in Section 6.1.

2.0 PURPOSE

2.1 PURPOSE OF PLAN

The purpose of the CWC Emergency Plan is to provide employees and visitors information necessary to react to emergency situations in order to perform the following:

- Maximize employee safety, minimize the risk to life, and provide prompt and efficient treatment for injured persons.
- Ensure continuity of leadership at all times and in all emergency situations.
- Minimize the effects of an accident on the health and safety of the general public and the environment.
- Minimize property damage.
- Ensure prompt internal and external communications with responsible authorities.
- Meet the requirements of DOE Orders 5500 Series.
- Comply with the requirements of WHC-CM-4-1. The emergency plan for this facility is comprised of this plan, the *WHC Emergency Plan*, the DOE-RL Emergency Plan, and the DOE-RL Emergency Procedures Manual.

2.2 EMPLOYEE REQUIREMENTS

Each WHC employee assigned to the CWC is required to annually review this plan and document that review using the "Building Emergency Plan Review Checklist" (form number 54-6000-369) as defined in WHC-CM-4-1.

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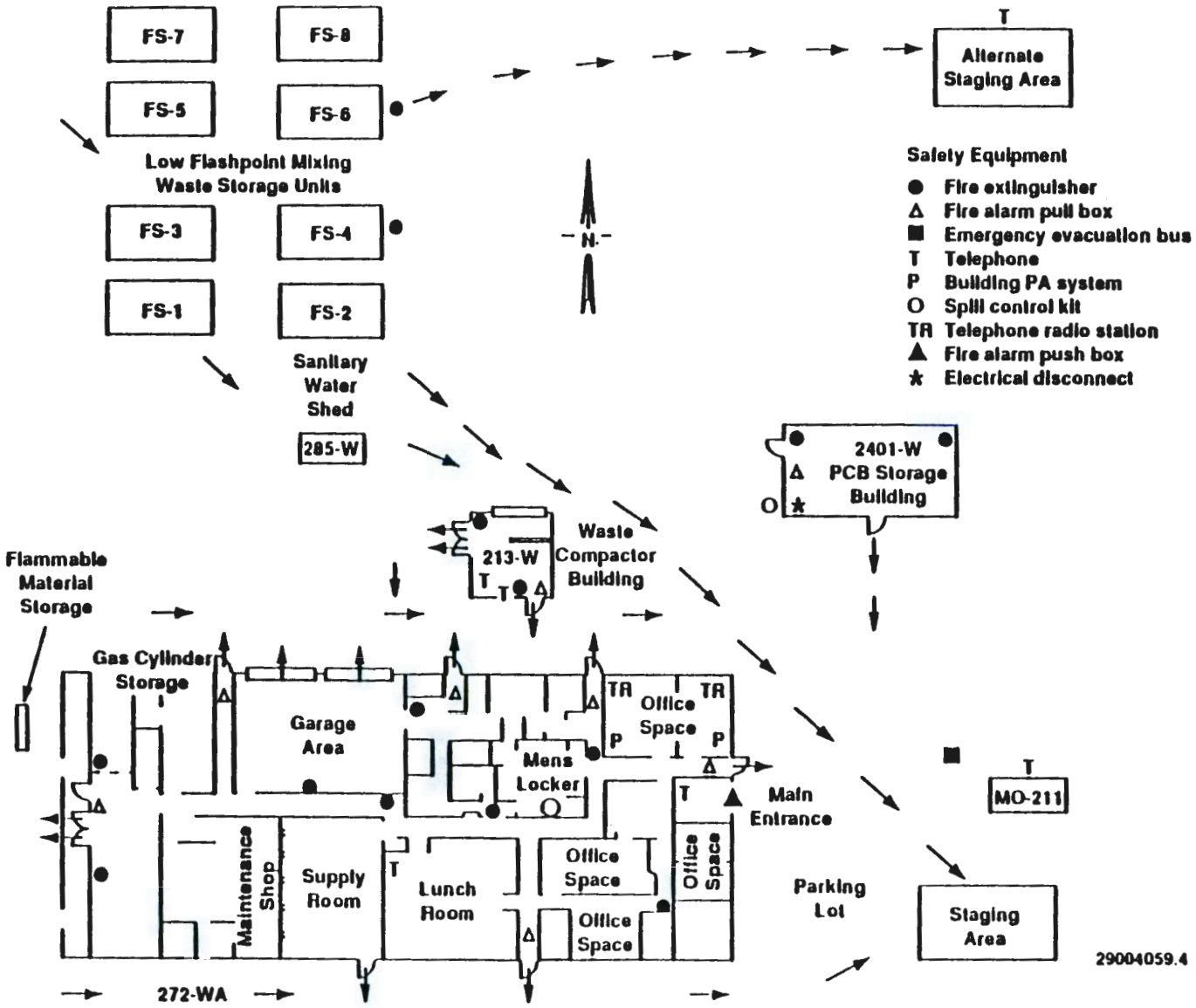
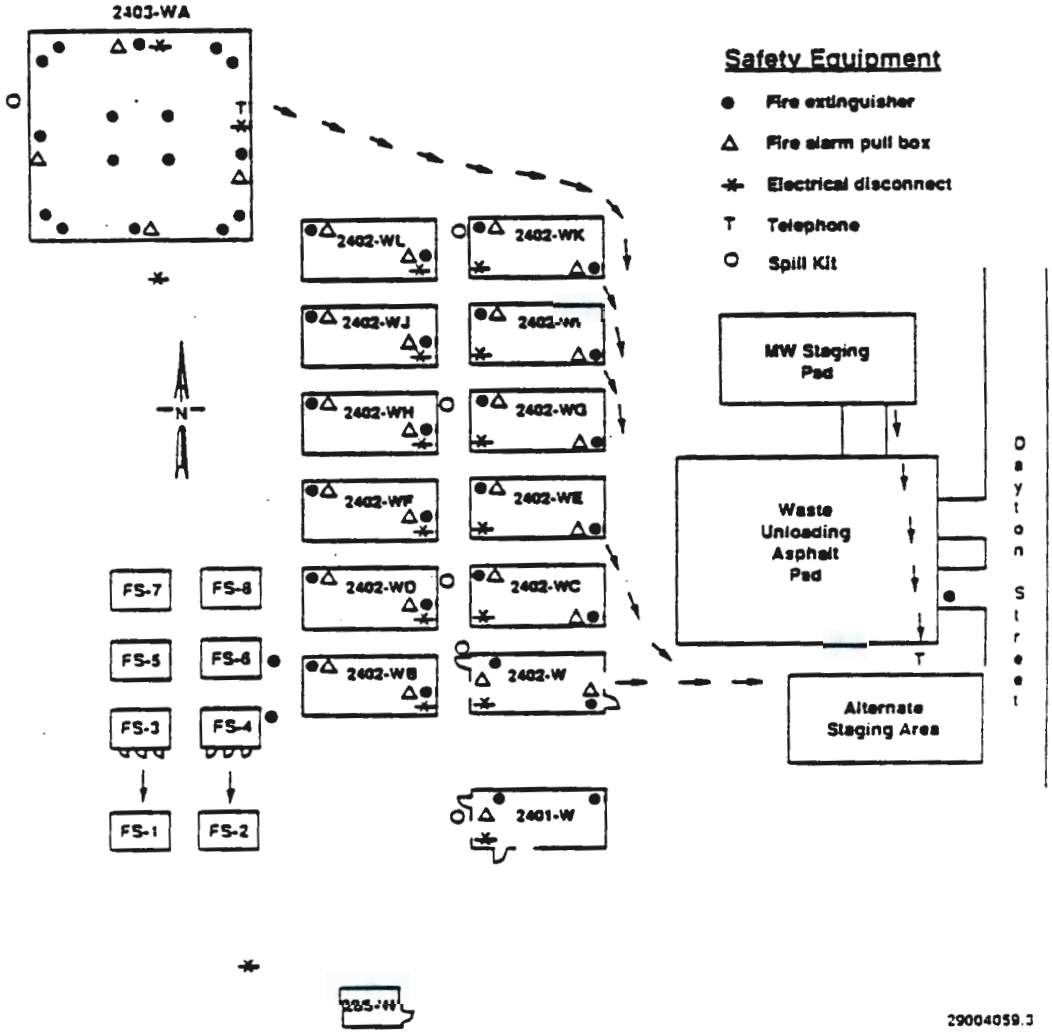


Figure 4. Evacuation Routes for the 272-WA Area.

Figure 5. Evacuation Routes for the 2401-W Area.



3.0 POTENTIAL EMERGENCY CONDITIONS

The following provides a generalized idea of the types and amounts of hazardous materials and wastes stored in the CWC. Job Safety Analysis and Radiation Work Procedures provide the basis for safe use of materials in the workplace. Each employee shall know the appropriate actions to take in case of a spill or unwanted release (where specified). These materials and wastes could be involved in the potential emergencies described in the following subsections. Specific lists of hazardous materials and wastes received at the CWC are maintained by Solid Waste Operations and are accessible to the BED.

3.0.1 Assessment

Based on his knowledge of the materials that may be involved in an emergency incident (as identified in Section 3.0), the BED will assess any potential hazards to human health or the environment using the following criteria:

- Origin of the leak, fire, or explosion, if known
- Conditions of the source, e.g., controllable leak or fire, uncontrollable leak or fire, easily moved, immovable
- Materials involved
- Physical state of the material, e.g., solid, liquid, or gas
- Evidence of reaction(s), e.g., fuming, flaming, gas evolution
- Odor
- Color of material.

This information, in conjunction with the detailed information acquired in determining the material involved, will provide the BED, or person assessing the event, with enough data to assess potential hazards and to determine the appropriate response actions necessary.

The assessment will consider the potential for the following:

- Spread of fire
- Explosion or further chemical reaction
- Increase in spill volume
- Generation of new compounds and their hazards

- Generation or spread of toxic, irritating, or asphyxiating gases
- Identification of exposure and release pathways
- Effect of exposure and appropriate safety precautions
- Contaminated run-off from spilled chemicals, response chemicals or fire, explosion, or reaction residues
- Impacts beyond the immediate area involved.

In cases involving soil contamination, sampling must be performed to determine the lateral and vertical extent of contamination. The BED is responsible for coordinating onsite characterization activities that will be performed by Hanford Site organizations that are qualified to conduct the work.

3.0.2 Sampling

If a review of the wastes handled at the CWC (as discussed in Sections 1.4 and 3.0) does not result in a positive identification of the spilled or released material, sampling may be required.

In cases involving soil contamination, the lateral and vertical extent of contamination must be determined and a decision on the methods and extent of cleanup made. The Hanford Site has onsite organizations that are trained and equipped for sampling and removing soils contaminated with radioactive or dangerous materials. The BED coordinates the following activities of onsite organizations for characterization and cleanup of soil contamination.

1. The BED takes steps to isolate the area and stabilize the soil surface to prevent the spread of contamination by wind or rain run-off, if necessary.

2. The BED determines, with the assistance of the Building Emergency Response Organization, the level of personnel protective equipment required to protect workers from the types of hazards to be encountered.

3. Representative soil samples are collected using the appropriate sampling equipment. Sampling is conducted in accordance with sampling and testing methods specified in WAC 173-303-110, "Sampling and Testing Methods," and SW-846, "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods." An appropriate number of background and blank samples should be collected to aid in data analysis. If contamination is not easily detectable visually or

with the appropriate detection instruments, this step may need to be repeated until the full extent of lateral and vertical contamination is known.

4. Samples are transported to and analyzed by an analytical laboratory in accordance with methods specified in WAC-170-303-110 and SW-846.

5. After the extent of soil contamination is quantified, an appropriate method for removal or permanent stabilization of the contaminated soil is determined.

3.1 EVACUATION AND TAKE COVER

Evacuation alarms at this facility may be activated for the following reasons:

1. Release of hazardous material (radioactive or nonradioactive) at this or another facility impacting this facility

2. Loss of utilities

3. Protective response to emergencies affecting ability to inhabit the facility.

Take cover alarms at this facility may be activated for the following reasons:

1. Release of hazardous material outside of a facility

2. Attack by hostile factions

3. Protective response to emergencies affecting the facility or personnel.

3.2 OPERATIONAL EMERGENCIES

The following emergency situations are those considered credible for this facility, unless determined to be NA (Not Applicable). Described are the types and extent of credible emergency events. Response plans for each type are listed in Section 6.0 of this plan.

The following sections contain a description of the worst case anticipated accident in each category and the event classifications associated with the identified credible event. This information is typically derived from the facility Safety Analysis Report, Hazards Evaluation, or Risk Assessment for the facility.

3.2.1 Bomb Threat

Bomb threats may pose a fire or explosion hazard at CWC. Fire or explosion from a bomb could lead to the release of hazardous chemicals or radioactive materials, and exposure of employees and visitors.

3.2.2 Industrial Accidents

Hazards associated with industrial accidents include the potential for injuries resulting from accidents with moving equipment, from falls, or from radiological or chemical exposure from spilled wastes or chemicals.

Potential material handling mishaps are associated with waste handling during forklift operations and crane operations. These events have the potential to rupture a package because of misalignment of the forklift tines or a load dropped during a crane operation. A material upset without the H_2 + O_2 recombiner (discussed in Section 3.4.3) could conceivably result in a hydrogen explosion with release to onsite populations and the environment.

3.2.3 Loss of Electricity

Electricity powers the fire alarms in the 2401-W, 2402-W and 2403-W Buildings. It also powers two louvered exhaust fan systems in each of the 2402 Buildings and four louvered exhaust fan systems in the 2403-W Buildings or the 2403-W series buildings. Loss of electricity does not constitute an emergency situation. Loss of electric power may result in deactivation of fire alarms, the continuous air monitor (CAM) system, and exhaust fans.

3.2.4 Loss of Water

Loss of water would not create an emergency condition. However loss of fire sprinkler systems in the 2401-W Building and the 2402-W series buildings would impact fire fighting capabilities.

3.2.5 Loss of Ventilation

Loss of fan ventilation in the storage buildings may result in the buildup of toxic or explosive vapors from containers in the event of a leak.

3.2.6 Loss of Steam

NA. Steam is not used at the CWC.

3.2.7 Loss of Air

NA. Compressed air is not used in the CWC.

3.2.8 Fire

Fire hazards include smoke inhalation, burns, and damage to equipment and the release of hazardous or radioactive constituents from the containers.

3.2.9 Major Process Upset

NA. There are no industrial processes at the CWC.

3.2.10 Pressure Hazards

A pressure hazard exists at the CWC due to the possibility of pressure build-up in stored containers.

3.2.11 Security Event

A security event may involve personal injury, fire, explosions, or environmental damage.

3.3 NATURAL HAZARDS EMERGENCIES

The following emergencies are those applicable to facilities on the Hanford Site. Response plans for each are contained in Section 6.0.

3.3.1 Seismic Event

A seismic event may involve hazards caused by overturn and falling of stacked drums, and release of hazardous and radioactive constituents.

3.3.2 Volcanic Eruption and Ashfall

Hazards associated with a volcanic eruption and ashfall include potential interference with loading and unloading activities and with the building ventilation system.

3.3.3 High Winds or Tornado

Hazards associated with high winds or tornado include power loss and damage caused by flying objects penetrating stored drums and releasing hazardous and radioactive constituents. The low flashpoint modules are each secured with four tie-downs such that they are resilient to a force of 100 mi/hour winds. Wind velocities above that may dislodge these buildings.

3.3.4 Flood

NA. The CWC is situated more than 175 ft above the probable maximum flood (PMF) postulated by the U. S. Army Corps of Engineers. The PMF would require a combination of the most severe climatic conditions coupled with a failure of Grand Coulee Dam.

3.3.5 Range Fire

Although range fires on the Hanford Site are probable (due to lightning), significant range fires within the protected areas are not likely because of continuous surveillance, control of plant growth, and the response capabilities of the Hanford Fire Department.

If a range fire reaches this complex, it may pose the same hazards as described in 3.2.8.

3.4 HAZARDOUS MATERIALS AND MIXED WASTE SPILLS AND RELEASES

This section addresses the spill or release of nonradioactive hazardous materials, as well as MW (radioactively contaminated hazardous materials) The term hazardous material as used here means both nonradioactive and MW. Hazardous materials and wastes, including MW, are stored throughout the complex. These areas are the 2401-W Building, the 2402-W Complex, 2403-W Complex, FS-1 through FS-8 Waste Storage Units, Waste Unloading/Storage Pad, and Mixed Waste Pad.

The use, storage, and control of hazardous materials are controlled by Plant Operating Procedures that are located in the 272-WA Building and operations vehicles. Spills or releases may result in conditions described in the following subsections.

3.4.1 Spill of Hazardous Material

Hazards associated with a spill include potential exposure to radioactive, corrosive, and toxic material, as well as potential environmental damage. Releases would likely be confined to a local area because drum contents are not in a liquid or powder form.

3.4.2 Fires or Explosions Involving Hazardous Material

A fire or explosion in the CWC could result in the release of hazardous and radioactive materials to the air or ground. The combustion potential for a chemical reaction contained in a package is controlled by the management of waste packaging in accordance with WHC-EP-0063, *Hanford Site Radioactive Solid Waste Acceptance Criteria*. Westinghouse Hanford Company prohibits the introduction of chemically incompatible materials in common containers or

packages. Additionally, Washington State Department of Ecology statute WAC 173-303, "Dangerous Waste Regulations," prohibits the commingling of containers of incompatible waste in storage areas.

3.4.3 Toxic Fumes Hazards

Mixed wastes stored at the CWC could produce airborne radioactive contamination. Volatile materials such as concentrated caustics and solvents may generate toxic fumes. Plutonium, an alpha emitter, is known to generate hydrogen gas when hydrogenous materials are present in the waste; however, catalytic recombiners are used to maintain H_2 gas concentrations below 1%. The recombiners used on the Hanford Site are projected to maintain the O_2 concentration below 0.5% and the H_2 concentration below 1%.

Document WHC-EP-0063 requires that wastes with a gas generating potential be identified and the requirement of gas recombiners be specified in the Storage/Disposal Approval Record (SDAR) for Radioactive Waste.

3.4.4 Reactive Chemical and Corrosive Materials Hazards

Various acidic and basic solutions stored at the CWC are corrosive and could cause chemical burns. Potentially reactive incompatible materials are handled at the CWC. Uncontrolled chemical reactions could lead to fire, explosion, and release of radioactive and dangerous constituents.

3.4.5 Thermal Reactions and Hazards

NA. Steam is not used at the CWC.

3.4.6 Flammable Material and Liquids Hazards

Fire associated with flammable materials could cause smoke damage to fire alarms and damage to containers that would result in the escape of radioactive or hazardous materials.

3.4.7 Asbestos Release

Asbestos materials may be a component of MW in storage at the CWC. An unplanned release of friable asbestos to the environment from damage to containers is possible and would result in a health hazard.

3.5 RADIOACTIVE MATERIALS

Radioactive materials are stored in the following locations:

2401-W PCB Storage Building
2402-W Mixed Waste Storage Building

2402-WB Mixed Waste Storage Buildings through 2402-WL
FS-1 through FS-8, Low Flashpoint Waste Storage Units
2403-WA Mixed Waste Storage Building
Waste Unloading/Storage Pad (Asphalt)
Mixed Waste Storage Pad

The following sections describe the types of credible emergencies for this facility and the extent of emergency situations, unless identified as NA. The response plan for each type of emergency is listed in Section 6.0 of this plan.

3.5.1 Gaseous Effluent Discharges

Hazards associated with gaseous releases from the compactor exhaust fans include personnel and environmental exposure to airborne radionuclides.

3.5.2 Liquid Effluent Discharges

NA. The CWC does not produce a liquid discharge.

3.5.3 Significant Contamination Spread or Releases

Significant contamination spread or release may involve hazards including exposure to radioactive, toxic, and corrosive materials.

3.6 CRITICALITY

The CWC is a Limited Control Facility because it can contain more than one-third of a minimum critical mass, but the fissile material is in a form and arrangement which precludes an accidental criticality.

The criticality specification for CWC limits containers to 100 g plutonium/drum. The total quantity of TRU stored at the CWC is limited to 550 plutonium equivalent (PE) curies. This applies to TRU waste stored in the 2401-W Building, 2402-W Buildings, 2403-WA Building, and the MW storage area.

The cumulative TRU inventory is verified with each shipment of TRU waste received for storage at the CWC.

In addition, TRU waste containers are required to be of metal construction and are limited to 3.6 PE Ci.

The Solid Waste Storage/Disposal Record (SWSDR) for each container is reviewed at the time of waste receipt to ensure that the quantity of plutonium does not exceed the specified limit.

3.7 EXPLOSIVE MATERIALS AND MUNITIONS HAZARDS

NA. Explosives and munitions are not handled at the CWC.

4.0 IMPLEMENTATION OF BUILDING EMERGENCY PLAN

4.1 IMPLEMENTATION

The provisions of this emergency plan will be implemented when the BED makes a determination that the severity of an incident is such that there is a potential to endanger human health or the environment. The plan will be implemented whenever there is an imminent threat or an actual incident as listed in Section 3.0.

Emergency circumstances include fire, explosion, or unplanned sudden or nonsudden release of dangerous waste or dangerous waste constituents to the air, soil, surface water, or groundwater.

The BED is responsible for assessing facility emergency incidents to determine the level of action necessary to protect personnel, the facility, and the environment. If the incident requires assistance from patrol, fire, or ambulance units, notification to the Patrol Operations Center (POC) requesting the assistance is made by calling the Hanford Emergency Response Number 811. When additional resources or assistance from outside the facility other than from patrol, fire, or ambulance units is required, notification is given to the Emergency Duty Officer at the POC business number (373-3800). For a relatively minor incident, the situation will be handled by facility personnel under the direction of the BED or line management.

4.2 IDENTIFICATION OF HAZARDOUS MATERIALS

The BED should be aware of the location, types, and general amounts of all hazardous or dangerous materials or wastes in the facility. If there is an emergency incident, and the materials or wastes involved are unknown, they will be identified by using the following methods.

1. Questioning witnesses or individuals familiar with the operations or area where the incident occurred or is occurring.

2. Checking the label or placard on the container or tank, if it is visible from a safe distance.

3. Noting the location of a container, if in a waste storage or accumulation area, and checking that location against the facility's waste inventory log, chemical waste disposal analysis letter file, waste transfer manifest file, or the accumulation area record file.

4. If the wastes cannot be identified by the above methods, the Hazardous Materials Response (HAZMAT) Team will be called (811). The HAZMAT Team will sample the waste in accordance with sampling and testing methods specified in WAC 173-303-110 and SW-846. Following proper chain-of-custody procedures, the samples will be packaged and transported to an analytical laboratory for analysis and identification.

4.3 EMERGENCY DOSE LIMITS

These limits only apply in an emergency. Every effort will be made to maintain doses as low as reasonably achievable.

Circumstances of Exposure	Maximum Single Dose (Whole Body)
Recovery of Hanford Criticality Radiation Dosimeters (see WHC-CM-4-1, Section 9.3.3, for guidelines).	3 rem
Recovery of deceased victim. Prevent property loss and reduce hazard.	10 rem
Reduce hazard or prevent substantial property loss in special circumstances.	25 rem
Save a life or prevent severe effects on health or safety of public.	100 rem

5.0 EMERGENCY RESOURCES

5.1 BUILDING EMERGENCY ORGANIZATION

For the CWC, the personnel listed in Appendix A are the minimum recommended emergency staff of the Building Emergency Response Organization. In an emergency that requires implementation of this plan's provisions, the person acting as the BED has the authority to commit the resources required to carry out this plan, including money, manpower, and equipment.

Definitions of roles and responsibilities of emergency personnel are contained in WHC-CM-4-1.

5.2 IDENTIFICATION AND DESCRIPTION OF EMERGENCY EQUIPMENT

The CWC has a variety of fixed and portable emergency equipment as summarized in the following sections.

Fixed Emergency Equipment

Type/Description	Location	Capabilities
Dry Pipe Sprinkler System	2401-W 2402-W 2402-WB through 2402-WL	Assist in control of a fire
Fire Department Hose mount	Outside units FS-1 through FS-8	Assist in control of a fire
Alarms	See Figures 4 and 5	See Section 1.2, Emergency Signals and Responses

Portable Emergency Equipment

Type/Description	Location	Capabilities
Portable Fire Extinguishers, 10 lb (Dry Chemical)	2401-W, 2402-W, 2403-W series buildings, FS-4 and FS-6 units, Asphalt storage pad dock (See Figures 4 and 5)	Use on any Class A, B, and C fires

Fire Classification Examples

Class A	wood, cloth, paper
Class B	flammable liquids, gases, greases
Class C	energized electrical equipment
Class D	combustible metals, sodium, lithium

Protective Equipment

Type/Description	Location	Capabilities
Special Work Permit (SWP) Respiratory clothing Waterproof coveralls Respirators Filtered masks Acid suit	Men's/Women's Change Rooms, Storage Room, SWP Clothing Room, Laundry Room, Storage Rooms, (272-WA Building)	Dermal and Protection
Spill Control Kit solvents, acids, oxidizers, and	Outside west roll-up door of 2401-W, 2402-W, 2402-WD, 2402-WH 2402-WK, and 2403-WA	Use on organic inorganic solvents, caustics, PCB spills
Emergency Monitoring emergencies to Kit (silver suitcase) detection clothing, and equipment	Proceed to 272-WA, Men's Change Room, or call 373-2658	Use during provide radiation equipment, SWP respiratory

5.3 EMERGENCY NOTIFICATIONS

5.3.1 Notification to Personnel within the Facility

After requesting necessary outside assistance, the employee shall notify their supervisor.

Notification of facility personnel will be given by the BED immediately upon discovering any conditions that affect facility occupants or operations. Any person discovering such an incident should leave the immediate area if there is any danger of harm. If the incident is a fire, the nearest fire alarm should be activated. After activating the fire alarm, and for any other

emergency incident, go to the nearest phone in a safe area, dial 811 or 373-3800, and provide the following information slowly and clearly:

- Your name
- Nature of the emergency
- Exact location of the emergency.

Have the person answering the call repeat the message back to you.

Notification of emergency incidents will be given to facility, area, or site personnel, depending on the severity of the incident, using one or more of the following emergency warning systems:

- Building PAX Public Address (PA) System--used for localized incidents which affect only a limited area in immediate proximity to the incident.
- Priority message system (Management Bulletin)--a network of computers and telefax machines used to communicate written information rapidly across the Hanford Site.
- The DOE-RL radio system--links Management, Patrol, Fire, Safety, and Engineering representatives through a network of base stations and mobile and portable radio units.
- Hanford Site standard emergency signals--summarized in Section 5.4.1 and more fully described in WHC-CM-4-1, Section 6, Subsection 6.1.1.
- Crash alarm telephone system--a telephone system activated by dialing one number and accessing a predefined number of telephones. Used for the purposes of disseminating emergency messages.

ADDITIONAL INFORMATION. Crash phones are identified with a yellow label on the handle. A crash alarm telephone is located in Room 3, 272-WA Building.

Contact the BED, who is listed in Appendix A, upon receipt of a crash alarm message. This is to ensure that the message gets to all personnel.

NOTE: If none of the listed BEDs can be reached, then dial 811 to contact appropriate emergency response personnel.

The BED will notify or direct notification of the field crews using portable radio or telephone.

9 2 1 2 7 5 6 1 0 1 8

5.3.2 Notifications to Personnel and Organizations Outside of the Facility

The DOE-RL is responsible for all notifications to organizations or agencies outside of the DOE and WHC organizations. The DOE-RL reports any release of hazardous or dangerous waste, or materials in quantities greater than the reportable quantities identified in federal and state regulations, to the Washington Department of Ecology (Ecology) and the National Response Center.

In the event of a fire or explosion, the BED or line management must immediately notify the POC by telephone at 811. In the event of any unplanned release of hazardous or dangerous wastes or materials, the BED will immediately notify WHC Environmental Protection at 373-1716 (Manager of Environmental Protection, 200 and 600 Areas), who will notify DOE-RL.

After identification of an emergency , the facility manager or representative must make oral notification to the Occurence Notification Center (ONC) Duty Officer, 6-2900, as required by WHC-CM-1-3, Section MRP 5.14, Occurence Reporting and Processing of Operations Information. The ONC must notify the DOE-RL Facility Representative within 15 minutes of categorization as an emergency occurence. Written notification must be completed as required by MRP5.14 and submitted within 24 hours of the occurance categorization.

5.4 ACTIVATION OF EMERGENCY ALARMS

5.4.1 Standard Emergency Alarms

SIGNAL	MEANING	ACTIONS
Steady tone or siren (3-5 minutes), building PA system, or at manager's request	Area evacuation--radioactive material release, hazardous material release, bomb threat	Get car keys, if time permits, and go to evacuation staging area.
Wavering tone or siren (3 to 5 minutes)	Take cover--hazardous materials release, or security event where evacuation can not be completed in a timely manner	Take cover in nearest building, shut doors and windows, and shut off ventilation.
Howler (ah-oo-gah)	Criticality, nuclear excursion	Run away from alarm sound and go directly to a designated staging area as identified in the BEP.

Gong	Fire	Evacuate unless directed not to do so by the BED.
Continuous ringing bell and flashing red light	Potential airborne radiological contamination	Hold your breath and place one barrier between you and alarm.
Crash alarm (200, 300, 400 areas)—steadily ringing telephone	Emergency communications The all clear signal for any of these alarms or signals will be passed by voice. The facility PA system or crash alarm phones may be used for this purpose.	Pick up phone and listen. Relay message to BED.

5.4.2 Facility Specific Emergency Alarms

Evacuation. Steady siren, 3 to 5 minutes duration.

Take Cover. Wavering siren, 3 to 5 minutes duration.

CAM Unit. Continuous air monitor, steady bell tone.

Fire Alarm. The 272-WA, 2401-W, 2402-W, and 2403-W series buildings are equipped with individual fire system alarms. Fire alarm pull boxes are located at each exit and at the main entrance (see Figures 4 and 5).

PAX Speakers. The PAX speakers installed in the 272-WA Building are located in the North East office space.

Crash Alarm Telephones. Crash alarm telephones are in Room 3, 272-WA Building.

6.0 EMERGENCY RESPONSE PLANS

This section contains emergency response guides that pertain to the CWC.

6.1 RESPONSE TO BUILDING EVACUATION AND TAKE COVER ALARMS

This section identifies the proper response to evacuation and take cover alarms within this facility.

9 2 1 2 7 6 6 1 0 2 0

6.1.1 Evacuation--Steady Siren Response

When an evacuation siren sounds (STEADY SIREN), employees shall proceed to the primary or alternate staging area as identified below. The BED will announce the staging area via the PA System.

During construction of the CWC, the staging area to be used is located east of the 272-WA Building (Figure 4). Figure 5 illustrates the current status of the CWC with an alternate staging area located southwest of the asphalt staging pad.

6.1.1.1 Facility Evacuation. In the event of an evacuation signal, the BED or his delegate shall take the following actions.

1. If a CWC incident requires fire, medical, or patrol assistance, call 811, otherwise call 3-3800 and relay pertinent information.
2. Assign personnel to shutdown duty.
3. Activate the indoor sirens for 10 to 30 seconds and the outdoor sirens for 3 to 5 minutes.
4. Designate evacuation bus drivers, if needed.
5. Notify field crews by radio or telephone.
6. Initiate accountability actions. Report missing personnel to POC.
7. Instruct personnel to board buses if needed.
8. Arrange for transportation for persons with shutdown duties.

6.1.1.2 Area Evacuation. During area evacuations, actions are to be taken at the direction of the BED or Staging Area Manager. The following steps will be followed by these individuals when an area evacuation has been ordered. However, all employees should be familiar with the evacuation process.

Area evacuations will be one of two types, Rapid or Controlled. Differences between Rapid and Controlled evacuations are pointed out as they occur in the following steps. The order to evacuate will normally be passed using the crash alarm system. Because there are not enough crash phones to cover all potentially occupied facilities, those facilities on the crash alarm system must assure that all occupied facilities in their local area

9 2 1 2 7 6 5 1 0 2 1

are also evacuating. Personnel in the CWC will be contacted by the operations personnel from the 272-WA Building. When possible, the following steps should be conducted concurrently.

1. Halt any operations or work (initiate emergency shutdown procedures for Rapid evacuation), and place the facility in a safe condition.

2. Use the facility PA system, radios, and runners as necessary to pass the evacuation order and information to facility employees.

3. Sound the facility evacuation siren. The 200 Area powerhouses (284-E and 284-W) will sound the steam whistles as well as their facility sirens.

4. Evacuate personnel to the staging area.

5. Conduct personnel accountability (not done for Rapid evacuations). Report results to the Emergency Control Center (ECC) (3-38765, 31786, 9-948-0833, Radio Safety Net KOB.743 frequency 165.410 or Operations and Maintenance Net KGB.513 frequency 167.975).

6. Segregate personnel into four groups: SWP clad personnel, persons with keys to immediately available private vehicles, persons with keys to government vehicles, and all others.

7. Relay pertinent evacuation information (routes, destination, etc.) to personnel with vehicle keys and evacuation bus drivers. Unless directed otherwise as part of the area evacuation order, the 272-WA Building evacuation bus will transport CWC personnel along the following route: (1) north on Dayton to 23rd, (2) east on 23rd to Albany, and (3) south on Albany to the main gate.

8. Direct evacuation bus drivers to warm up the buses.

9. Load personnel in civilian clothes into private and government vehicles, and load SWP clad people into regulated government vehicles and buses. Try to reserve transportation for people with late shutdown duties.

10. Dispatch private and government vehicles as soon as they are loaded.

11. Load remaining people into evacuation buses maintaining segregation if possible.

12. Dispatch buses and instruct drivers to pick up pedestrians along their route. If possible, provide bus drivers with portable radios so that they can communicate with the ECC on frequencies mentioned in step 5 above.

13. Report status to the ECC, request additional transportation if required, and report any people remaining to perform late shutdown duties.

14. Direct any remaining people to the pick-up point at the intersection of 19th and Dayton.

6.1.2 Take Cover—Wavering Siren Response

When the take cover alarm is activated, personnel should take cover in the nearest building or trailer. The following actions should be taken or considered:

1. Shut doors and windows and wait for further instructions.

2. Report your location to your Manager or the BED.

3. If possible, secure ventilation and unnecessary electrical equipment.

6.1.3 Attack by Hostile Factions—Take Cover

Normally, the CWC will be alerted of an impending attack via the crash alarm system telephones located in Room 3, Building 272-WA.

6.2 BOMB THREAT RESPONSE GUIDES

A bomb search kit containing some or all of the following items, is located in Room 3, 272-WA Building:

- Flashlights
- Bump hats and gloves
- Set of maps
- Marking pens (for marking up search plans on maps)
- Mirrors and extension handles
- Crescent wrenches (for mirror adjustments)

- Thread or string (for marking paths to objects for investigation)
- Green tape (for repairs, holding string, etc.)
- Masking tape (for taping off areas searched).

6.2.1 Receivers of Telephoned Threats

An employee receiving a direct telephone threat should respond as follows.

1. Using a copy of the bomb threat checklist (Figure 6), obtain as much information as possible about the threat, caller, background noise, etc.
2. Initiate evacuation of the facility.
3. Notify the BED.
4. Notify POC at termination of call.

6.2.2 Receivers of Written Threats

Receivers of written threats should respond as described below.

1. Handle the letter as little as possible to preserve fingerprints and avoid smudging.
2. Immediately notify the POC (811) and the BED.
3. Record all details of the receipt; i.e., where found, how delivered, when found, etc.
4. Tell no one else.
5. Release the letter only to WHC Security personnel or to a person authorized by WHC Security.

6.2.3 Discoverer of a Bomb or Suspicious Object

Discoverers of a bomb or suspicious object should respond as described below.

1. Clear the immediate area of personnel.
2. Do not transmit on a radio near the suspected object.

Figure 6. Bomb Threat Checklist.

Westinghouse
Hanford Company

PLACE THIS CARD ON BACK OF YOUR TELEPHONE

QUESTIONS TO ASK

1. When is bomb going to explode?
2. Where is it right now?
3. What does it look like?
4. What kind of bomb is it?
5. What will cause it to explode?
6. Did you place the bomb?
7. Why?
8. What is your address?
9. What is your name?

FOLD

EXACT WORDING OF THE THREAT

Sex of Caller _____ Race _____

Age _____ Length of Call _____

Number at which call is received

Time _____ Date ____/____/____

80-9100-201 (11/88)

FOLD

BOMB THREAT

CALLER'S VOICE

- ☐ Calm
- ☐ Angry
- ☐ Excited
- ☐ Slow
- ☐ Rapid
- ☐ Soft
- ☐ Loud
- ☐ Laughter
- ☐ Crying
- ☐ Normal
- ☐ Distinct
- ☐ Slurred
- ☐ Nasal
- ☐ Stutter
- ☐ Lisp
- ☐ Raspy
- ☐ Deep
- ☐ Ragged
- ☐ Clearing throat
- ☐ Deep breathing
- ☐ Cracking Voice
- ☐ Disguised
- ☐ Accent
- ☐ Familiar

If voice is familiar, who did it sound like?

BACKGROUND SOUNDS

- ☐ Street Noises
- ☐ Crockery
- ☐ Voices
- ☐ PA System
- ☐ Music
- ☐ House noises
- ☐ Motor
- ☐ Office machinery
- ☐ Factory machinery
- ☐ Animal noises
- ☐ Clear
- ☐ Static
- ☐ Local
- ☐ Long distance
- ☐ Booth
- ☐ Other

THREAT LANGUAGE

- ☐ Well spoken (Educated
- ☐ Foul
- ☐ Irrational
- ☐ Incoherent
- ☐ Taped
- ☐ Message read by threat maker

REMARKS _____

Report call immediately to

Call 811

Call Bldg. Emergency Director

Date _____

Name _____

Position _____

Phone No. _____

CARD PLACEMENT
1. Fold card on lines indicated
2. Attach to back of telephone with paper clips, bold "Bomb Threat" lettering toward front

80-9100-201R (11/88)

9 2 1 2 3 6 6 1 0 2 5

3. Immediately notify the POC (811) and the BED.

4. Stand guard in a sheltered location and at maximum possible distance to assure that no one enters the area.

6.3 OPERATIONAL EMERGENCY RESPONSE PLAN

The following sections contain response plans for each type of emergency condition or hazard identified in Section 3.0.

6.3.1 Utility Disconnect Plan

The purpose of this plan is to provide the steps necessary to place the utilities in a safe and secure condition when an emergency has been declared, or at the direction of the BED.

6.3.1.1 Heating and Ventilation

2401-W Building

1. Locate main electrical distribution control panel on west wall.

2. Locate ON/OFF switches labeled "Northeast Fan" and "Southwest Fan"

3. Put switches in OFF position.

2402-W Series Buildings

1. Locate main electrical distribution control panel on the east or west wall.

2. Locate ON/OFF switches labeled "Fan NE" and "Fan SW".

3. Put switches in OFF position.

2403-WA Building

1. Main electrical service disconnect is located 30 ft south of building.

2. Building electrical disconnects are located near the center on the east and north walls.

3. Each of the four fan units has an electrical disconnect located on the north wall near the unit.

9 2 1 2 7 6 6 1 0 2 6

4. Locate the main panel ON/OFF switches and put switches in OFF position.

6.3.1.2 Electrical (Total Building)

2401-W Building

1. Locate main electrical distribution panel located on west wall.

2. Locate ON/OFF switch labeled "Service Disconnect."
3. Put switch in OFF position.

2402-W Series Buildings

1. Locate main electrical distribution panel on the east or west wall.

2. Locate ON/OFF switch labeled "Service Disconnect".

3. Put switch in OFF position.

2403-WA Building

1. Locate main electrical service disconnect on outside panel south of building.

2. Put "Service Disconnect" switch in OFF position.

6.3.1.3 Fire Sprinkler System (Interior Shutoff)

2401-W Building

1. Proceed to building sprinkler room enclosure at the southwest corner.

2. Locate fire system valves in southwest enclosure.

3. Turn the outside screw and yoke on valve labeled "Main Drain" until it is closed.

2402-W Series Buildings

1. Locate fire system valves in southwest enclosure.

2. Turn outside screw and yoke on valve labeled "Main Drain" until closed.

6.3.1.4 Fire Sprinkler System (Exterior Shutoff)

2401-W Building

1. Proceed to the post-indicator valve which is located south of the 285-W Valve Shed.

2. Use the operating wrench affixed to the valve to shut the valve.

3. The valve is closed when the valve window words change from "Open" to "Shut".

2402-W Series Buildings

1. Proceed to post-indicator valve located about 225 ft west of the buildings.

2. Use operating wrench to shut off valve.

3. The valve is closed when valve window words change from "Open" to "Closed".

2403-WA Building

1. Proceed to the appropriate post-indicator valve, located about 50 ft north of the building for the system in the north half of 2403-WA or about 50 ft south of the building for the system in the south half.

6.3.1.5 Sanitary Water/Sewer

1. The backflow preventer cannot be disconnected by hand.

2. Call the Fire Department (811) to disconnect.

6.3.1.6 Process Water. NA. Process water is not utilized at any buildings in the CWC.

6.3.1.7 Steam. NA. Steam is not used at any of the buildings in the CWC.

6.3.1.8 Telephone Service. NA. Telephone service is not provided to the 2401-W or 2402-W series buildings in the CWC. The 2403-WA Building telephone is located in the center near the entrance on the east side.

6.3.2 Industrial

1. In case of an industrial accident, cease all waste handling activities.
2. Notify the BED.

6.3.3 Loss of Electricity

1. Notify the BED.
2. Notify appropriate maintenance personnel for repair.

6.3.4 Loss of Water

1. Notify the BED.
2. Notify appropriate maintenance personnel for repair.

6.3.5 Loss of Ventilation

1. Notify the BED.
2. Notify appropriate maintenance personnel for repair.

6.3.6 Loss of Steam

NA. Steam is not used at the CWC.

6.3.7 Loss of Air

NA. Compressed air is not supplied to the CWC.

6.3.8 Fire

Fire fighting in the CWC is complicated by the presence of large amounts of radioactive material that may cause contamination. The avoidance of breaching building containment is extremely important.

Personnel discovering the fire shall pull the nearest alarm box and notify the BED.

Facility occupants responding to the fire alarm will stand by for further instructions.

The Fire Department will proceed to the scene of the incident and, coordinating with the BED, initiate actions to control the incident.

The following actions are the responsibility of the BED, or alternate, and should by taken in the event a fire is detected or an explosion occurs at the CWC.

1. Call 811 and request Hanford Fire Department support.

2. Confer with Health Physics and Nuclear Facility Safety for criticality or contamination controls and area postings.

3. Assign a person to meet the Hanford Fire Department and direct them to the location of the alarm or fire.

4. Proceed to the scene of the incident and make an assessment of the situation; request assistance if necessary.

5. Establish an incident command post in a safe location and request additional assistance as necessary.

6. Remove injured personnel to a safe area, provide immediate first aid, and prepare for transport to a full service medical facility for medical treatment.

7. Establish roadblocks to prevent unauthorized personnel from entering as necessary.

8. After the fire has been controlled and extinguished, or the cause of the explosion has been eliminated and there is no longer an imminent threat to human health, the BED will announce an "all clear" signal.

The BED will then ensure that the following cleanup actions are initiated.

- Isolate any hazardous materials and stabilize until they can be removed in a non-emergency mode and properly treated or disposed.

- Clean and repair emergency equipment and return to a condition fit for reuse.

- Replace all expendable supplies.

6.3.9 Major Process Disruption

NA. There are no manufacturing or chemical processes at the CWC.

6.3.10 Pressure Hazards Emergency Response

1. Notify personnel to leave the area of the hazard.

2. Inform the BED.

3. Evacuate affected areas.

4. Obtain appropriate personnel to repackage any drums with pressure build-up.

6.4 NATURAL HAZARDS RESPONSE PLAN

6.4.1 Volcanic Eruption and Ashfall

Volcanic eruptions and ash fallout from several Cascade mountains are a possibility. Notification to the facility when an ash fallout is imminent would be through the crash alarm system. The following actions should be taken when notified that an ash plume is headed for the Hanford Site.

1. The BED should contact the ECC to obtain meteorology data and to determine estimated arrival time for the ash plume.

2. Decide whether to evacuate or initiate take cover emergency response. If the decision is made to evacuate, follow the "Evacuation" response in Section 6.1. If the take cover response is required, follow the "Take Cover" response in Section 6.2.

3. Protect supply air inlets and reduce ventilation flows as appropriate.

4. Determine the need for shutting down some or all drum processing activities. Notify appropriate personnel to begin shutdown activities.

5. Maintain communication with the Emergency Duty Officer or the ECC to discuss building condition and changing fallout conditions.

6.4.2 Seismic Event Response

The WHC Emergency Organization's primary role in a seismic event is to coordinate the initial response to injuries, fires, or fire hazards, and to take measures to contain or control radioactive and toxic material releases that may have an adverse impact.

6.4.2.1 **Response During the Seismic Event.** Each Building Emergency Organization must be ready to respond after a seismic event impacts the Hanford Site and WHC facilities, personnel, and property. The following guidelines identify the responses necessary to respond to a seismic event at this facility:

1. Promptly assess post-earthquake emergency needs
2. Take necessary actions to protect building personnel and onsite and offsite personnel
3. Report needs to 811 or ECC
4. Search for injured or trapped employees
5. Conduct accountability
6. Render first aid
7. Search for fires and other hazards
8. Fight fires
9. Turn off water and electricity
10. Perform facility inspection
11. Consider shutdown of activities
12. Arrange for rescue of personnel
13. Form a recovery plan
14. Perform cleanup.

6.4.2.2 **Employee Response During the Seismic Event.** During the earthquake, building personnel should perform the following actions:

1. Remain calm
2. Stay away from windows and utilities, if indoors
3. Respond to all emergency signals
4. Seek shelter away from windows

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5. Avoid objects which could fall or release hazardous material, if outside.

6.4.2.3 Seismic Event Response Following the Event. After the earthquake, building personnel should perform the following actions:

1. Follow instructions of the BED
2. Check fellow workers for injuries and administer first aid
3. Call 811 for emergency assistance and notify Plant management
4. Do not use matches or lighters
5. Do not touch downed power lines or objects touched by downed wires
6. Do not use the telephone or PAX except for emergency communications
7. Establish damage assessment teams for the local area and areas beyond the facility background
8. Determine if release of hazardous material inventories (both radioactive and nonradioactive) is occurring or likely to occur
9. Determine current local meteorology
10. Warn adjacent facilities of event using crash alarm, radios, telephone, runners, or Hanford Patrol rover vehicles.
11. Initiate road closures to reduce potential exposures
12. Provide resources and personnel assistance to other affected personnel and facilities.

6.4.3 High Winds or Tornado

1. Take cover until the event subsides, as directed.
2. Assess and identify damage to the CWC.
3. Contact the POC at 811 or the Emergency Duty Officer at 373-3800, as appropriate.

6.4.4 Flood

NA.

6.4.5 Range Fire

If a range fire should reach the CWC, it may have the potential to ignite flammable materials stored there. Follow response procedures described in Section 6.3.8, "Fire."

6.5 HAZARDOUS MATERIALS AND MIXED WASTE RESPONSE PLAN

Discovery of a nonradioactive hazardous material or MW spill may be made by anyone. Emergency equipment may be used by individuals discovering a spill providing, however, that the individual has been properly trained in the use of the spill equipment and uses proper respiratory and personnel protective equipment.

6.5.1 Spill Response Plan

The following responses should be taken in response to a spill of hazardous material. The BED has overall responsibility to ensure proper response to emergency situations.

1. Assess the severity of the situation.

2. If the release can be controlled safely and promptly, do so.

3. Notify the BED as soon as possible.

4. The BED will assess the situation and determine the type and quantity of material(s) released and the hazards involved.

5. Activate the appropriate emergency alarms, if necessary, and notify personnel in the immediate area of the incident via the PAX PA system.

6. Respond to the emergency alarm and stand by for further instructions over the PA system.

7. If response is within the capabilities of the Building Emergency Response Organization, actions appropriate for the waste or material involved shall be initiated to contain and control the release.

8. If beyond the capabilities of the Building Emergency Response Organization, the BED will notify the POC at 811 to request additional assistance.
9. Direct facility personnel to take those actions which can be safely performed to control or contain the release before arrival of requested assistance.

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10. Direct an individual to meet the emergency responders from outside the facility and direct them to the event scene.

11. The Hanford Fire Department will proceed immediately to the scene of the incident and, coordinating with the BED, initiate actions to control the incident.

12. Establish an incident command post in a safe location and request additional assistance as necessary.

13. Rescue personnel, provide immediate first aid, and prepare for transport to a full service medical facility.
14. Establish roadblocks or other traffic control measures to prevent unauthorized personnel from entering the area.

15. After the release has been contained and controlled, and there is no longer an imminent threat to human health, announce an "all clear" signal.

16. Residual hazardous materials will be isolated and stabilized by covering or other appropriate means until they can be removed in a nonemergency mode and properly treated or disposed.

17. Emergency equipment used in response to the incident will be cleaned and returned to a condition fit for reuse after the cleanup is completed. All expendable supplies used will be replaced.

6.5.2 Fire and Explosion Associated with Hazardous Materials

Explosions may be the cause or result of a fire or may be totally disassociated. For this plan, fire and explosion are treated simultaneously. Special chemical hazards are addressed in the "Pre-Fire Plans" of the Hanford Fire Department, which are located at the WHC Central Fire Department and also posted at the fire equipment room to each storage building in the CWC.

6.5.2.1 Discoverer of Fire

1. Avoid inhaling smoke, fumes, or vapors even if no hazardous waste is involved.

2. Pull the nearest fire alarm pull box and call 811.

3. Notify the BED or Operations shift office. Provide as much information as possible <u>without personal risk</u>.

4. Move and keep people away from fire scene.

5. The BED will identify the character, exact source, amount, and extent of any released materials. Request support from Process Engineering for this effort.

6. Contact the POC at 811 and provide as much information as possible. Request additional assistance as required.

6.5.2.2 **Building Emergency Director Actions**

1. Evacuate part or all of the facility. Ensure that the staging area remains safe.

2. Consider requesting Patrol to evacuate personnel along adjacent streets and roadways.
3. Ensure that the Hanford Fire Department HAZMAT Team has been notified.

4. Relay pertinent information, including telephone number and proposed location of the Technical Support Center.

5. Establish a command post in a safe location.

6.5.2.3 **Fires during Nonoperational Periods.** In case a fire should be discovered during a period when the CWC Buildings are not occupied, notify the Hanford Fire Department by dialing 811. The Hanford Fire Department will normally call the PFP Facility (373-2337/2534) for Radiation Monitoring, Maintenance, Operations, or other coverage as necessary.

6.5.3 **Toxic Fume Release**

Discovery of a nonradioactive hazardous material toxic fume release may be made by anyone. Rapid communication is a vital part of warning personnel and notifying appropriate response personnel.

6.5.3.1 **Discoverer.** The person discovering the toxic fumes shall take the following immediate actions.

1. ASSUME A FUME RELEASE IS TOXIC UNLESS IT IS ABSOLUTELY KNOWN TO BE HARMLESS.

2. Avoid inhaling smoke, fumes, or vapors even if no hazardous waste is involved.

3. Do not assume that gases or vapors are harmless because of lack of smell.

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4. Contact the BED or Operations shift office immediately. Provide as much information as possible without personal risk.

5. Keep people away from the area of the release.

6.5.3.2 Building Emergency Director. The BED must immediately take the following actions:

1. Identify the character, exact source, amount, and extent of any released materials.

2. Refer to the manifest records and SWSDR for information concerning what type of respiratory and personnel protective equipment should be used to isolate the spill area or stop the leak.

3. If assistance is required, notify the POC at 811 or 373-3800, and request that the Hanford Fire Department HAZMAT Team be dispatched. Provide as much information as possible.

4. Assign a representative to meet and direct the HAZMAT Team to the area of the release.

5. Assess possible hazards to human health and the environment (considering direct, indirect, immediate and long-term effects) that may result from the spill.

6. Contact PNL Meteorology Weather Station on 373-2716 to determine the wind speed, direction, and plume stability.

7. Take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other dangerous waste at the facility.

8. Where applicable, stop drum processing operations, collect and contain release waste, and remove or isolate containers.

9. Evaluate the need to evacuate part or all of the facility. Take into account the location of the spill and ensure the safety of the evacuation staging area.

6.5.4 Reactive Chemical and Corrosive Material Hazard

Spills of corrosive wastes should be handled according to Section 6.5.1, "Spill Response Plan." Explosives or fires caused by reactives should be handled according to Section 6.3.8, "Fires." Vapors released by fuming corrosives should be handled according to Section 6.5.3, "Toxic Fume Release."

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6.5.5 Steam Release Hazard

NA. Steam is not used at the CWC.

6.5.6 Flammable Liquids and Materials

Spills of flammable liquids and materials should be handled according to Section 6.5.1, "Spill Response Plan." Fires caused by flammable liquid releases should be handled according to Section 6.5.2, "Fire and Explosion Associated with Hazardous Materials."

6.5.7 Asbestos Release

An asbestos emergency is defined as an unplanned release of friable asbestos to the environment or within a given area of a facility. An asbestos release could occur if a drum containing asbestos and MW ruptures and releases asbestos. This condition presents an immediate or potential health hazard to personnel. Note that maintenance management has the lead responsibility for any type of asbestos work or cleanup.

6.5.7.1 Immediate Actions to Take

1. Exit the area
2. Notify management
3. Notify one of the "Competent" personnel listed in Appendix A.

6.5.7.2 Responsibilities of "Competent" Personnel

1. Notify Industrial Safety North Area Office (373-2704) or Hanford Environmental Health Foundation (HEHF) (376-6761) personnel to sample the area.
2. Isolate and control entry into the area by use of barricades, ropes, or placards.
3. Identify all personnel exposed to asbestos and send them to HEHF for evaluation.
4. Stabilize asbestos release area.
5. Determine and initiate cleanup activities.

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6.6 RADIOACTIVE MATERIALS RESPONSE PLAN

6.6.1 Radioactive Gaseous Effluent Discharge--Stack Alarm

All potentially contaminated exhausts from the storage buildings discharges are continuously monitored by the CAM system to determine radioactivity. Alarms will be activated automatically to warn personnel to leave the area due to unacceptable airborne radiation levels and possible releases in the storage buildings. There are no stacks in the CWC.

6.6.1.1 Plant Emergency Action. If a release should occur, perform the following actions:

- Notify the CWC BED
- Shut down all activities that affect the building if possible.
- Immediately evacuate affected area
- Contact Health Physics personnel to investigate level of radiation and contamination.

The BED shall perform the following emergency shutdown actions:

1. Call the POC on 811.
2. Notify the Solid Waste Management Manager.
3. Call the Health Physics Manager and Radiological Engineering Manager, establish liaison with Health Physics, and verify findings by changing-out air sample immediately.
4. If results are verified, perform the following:
   a. Call 811
   b. Activate wailing siren (take cover)
   c. Notify personnel to remain under cover and shut down process in an orderly manner.
5. Have managers account for personnel.
6. Return to normal operations will be authorized by the BED. It is the responsibility of Health Physics to verify results, e.g., take samples, check CAM's, survey and cordon off affected area.

7. It is the responsibility of CWC Solid Waste Operations to determine the cause of the event and provide a plan to restore the plant to normal operation.

6.6.2 Radioactive Liquid Effluent Discharge

There are no potentially contaminated liquid discharges from CWC.

6.6.3 Significant Contamination Spread

A contamination spread would typically be indicated by the CAM. Personnel shall respond to a CAM alarm as follows.

- Stop breathing
- Move one barrier away from the alarm to safety
- Dial 811, contact Health Physics, and stand by for survey and contamination status
- If the air is found to be contaminated, Health Physics will place the area on airborne contamination status
- Notify the immediate manager and the BED.

6.7 CRITICALITY RESPONSE PLAN

As a limited control facility, the form and distribution of fissionable material ensures that a safe mass cannot be exceeded. Specifications for facility operation and waste containers are described in section 3.6.

6.8 EXPLOSIVE MATERIALS AND MUNITIONS HAZARDS RESPONSE PLAN

NA. Munitions and explosives are not handled at the CWC.

6.9 PREVENTION OF RECURRENCE OR SPREAD OF FIRES, EXPLOSIONS, OR RELEASES

To ensure that fires, explosions, or releases do not occur, recur, or spread, facility operations have been reviewed to identify potential hazards, and Plant Operating Procedures have been developed to minimize the occurrence of unplanned incidents. Safety systems such as automatic fire sprinklers, CAMs, fire alarms, and spill containment structures have been installed to ensure that if an emergency event occurs, the affected areas will be kept to a minimum.

Should an emergency incident occur, upon completion of the emergency response to that incident, the BED is responsible for analyzing the events that lead to the incident and for conducting a critique, including causes, impacts, and lessons learned from the incident. The requirements of DOE Order 5484.1, "Environmental Protection--Safety and Health Protection Information Reporting Requirements," must be followed to ensure that all appropriate parties are aware of, and participate in, decisions on the best course of action to take to prevent or minimize the possibility of future occurrences.

Specific steps that may be taken for a particular incident include the following:

1. Isolating the site of the initial incident by shutting off power, closing off ventilation systems, and performing other activities to minimize the spread of a release or the potential for a fire or explosion

2. Inspecting containment structures for cracks or leaks

3. Removing released material and waste remaining inside of containment structures as soon as possible

4. Containing and isolating residual waste material using dikes and absorbents

5. Covering or otherwise stabilizing areas where residual released materials remain to prevent migration or spread from wind or precipitation runoff

6. Installation of new facilities, systems, or equipment to enable better management of hazardous or dangerous wastes or materials.

7.0 TERMINATION OF EMERGENCY

Normally, it is a function of the BED to declare the termination of an emergency. However, once the WHC Emergency Organization is activated, only the Area Emergency Director or the WHC Emergency Director shall declare that an emergency has ended. If the DOE-RL Emergency Action and Coordination Team is activated, only the DOE-RL Director will officially terminate the emergency. In all cases, however, the BED must be consulted before reentry is initiated.

8.0 ACCIDENT RECOVERY

The recovery phase of the accident is not handled under emergency criteria, but rather according to a recovery plan developed for the specific event. Thus, the facility manager will create an emergency organization encompassing all required aspects of engineering, operations, maintenance, and functional support, with direction provided by the Hazardous Waste Unit and the Industrial Hygiene and Safety Department. This will include making proper notifications to official agencies (i.e., DOE, U.S. Environmental Protection Agency, or Ecology). Personnel will recapture (where possible), store, and dispose of any material that is released. They will also store and dispose of any contaminated soil, surface water, or any other material that results from a spill, toxic fume generation, fire, or explosion.

No waste that may be incompatible with the released material will be treated, stored, or disposed of until cleanup is completed.

All emergency equipment will be cleaned and made fit for its intended use immediately following an emergency.

9.0 POSTEVENT ANALYSIS AND REPORTING REQUIREMENTS

Damage assessments should be made at the conclusion of the emergency phase and the results of these assessments must be communicated to the ECCs. The BED should designate a recovery manager who will determine necessary steps to return the facility to an operational status. The following items should be considered.

1. Building structures (walls, ceilings, systems, etc.)

2. Utilities
   - Electricity
   - Water

3. Hazardous materials and processes
   - Radioactive systems or equipment
   - Chemical system
   - Toxic
   - Corrosive
   - Explosive

4. Heating and ventilation

5. Emergency Systems
   - Fire alarms
   - Crash alarms

- Sirens and alarms
- Continuous air monitor

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APPENDIX A

BUILDING EMERGENCY RESPONSE ORGANIZATION LISTING

Building Emergency Director*

	Name	Location	Phone
Primary:	Solid Waste Operations Supervisor (RMW Storage Facility)		
Alternate:	Solid Waste Operations Supervisor		
Alternate:	Solid Waste Operations Supervisor		

Staging Area Managers

	Name	Location	Phone
Primary:			
Alternate:			
Alternate:			

Volunteer Bomb Search Team Members

	Name	Location	Phone
Primary:			
Alternate:			

Evacuation Bus Drivers

	Name	Location	Phone
Primary:			

"Competent" Personnel For Asbestos Release

	Name	Location	Phone
Primary:			

*Note: Identification of personnel appointed to the listed emergency response positions will be addressed as part of the Hanford Facility Dangerous Waste Permit Application (DOE-RL 1991a).

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APPENDIX B
RESOURCE CONSERVATION AND RECOVERY ACT
REGULATED UNIT CONTINGENCY PLAN

B.1 INTRODUCTION

This attachment is supplemental to the Central West Complex (CWC) Building Emergency Plan (BEP) and provides specific information and response plans for the Resource Conservation and Recovery Act (RCRA) regulated units. Because of the nature of these regulated units, special plans identified here are required for response to emergencies at this location.

B.1.1 Facility Covered by this Plan

This plan covers the following buildings and structures at the CWC: 285-W, 2401-W, 2402-W, 2402-WB through 2402-WL, 2403-WA, FWS-1 through FWS-8, Waste Unloading/Storage Pad (asphalt), and Mixed Waste Storage Pad.

B.1.2 Location of the Facility

The CWC is located as described in Section 1.2 of this BEP.

B.1.3 Description of Facility and Operations

A description of the CWC and its operations is provided in Section 1.4.

B.2 PURPOSE OF THE PLAN

The purpose of this emergency and contingency plan is to lessen the potential impact on the public health and the environment in an emergency circumstance, including a fire, explosion, or unplanned sudden or nonsudden release of dangerous waste or dangerous waste constituents to air, soil, surface water, or groundwater at the CWC.

B.3 DESCRIPTION OF POTENTIAL EMERGENCIES

Potential emergencies involving the regulated storage areas at the CWC are described in Section 3 of this BEP. Specifically, fire is addressed in Section 3.2.8 and explosion in Section 3.7. Unplanned sudden or nonsudden releases of dangerous waste and constituents are addressed in Section 3.4.

B.4 IMPLEMENTATION OF PLAN

The BEP will be implemented as described in Section 4.

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B.5 EMERGENCY RESPONSE PLAN

B.5.1 Building Emergency Response Organization (Specific)

The Building Emergency Response Organization is given in Appendix A. The Building Emergency Director (BED) has the duties described in Washington Administrative Code (WAC) 173-303, "Dangerous Waste Regulations," for the "Emergency Coordinator". Appendix A identifies the primary and alternate BEDs in the order they will assume responsibility.

B.5.2 Identification and Description of Specialized Emergency Equipment

Section 5.2 provides a listing of all equipment at the CWC, including locations, capabilities, and physical descriptions.

B.5.3 Emergency Plan

Plans for responding to emergencies are located in Section 6.0 of this BEP. Fire and explosion associated with hazardous materials are addressed in Section 6.5.2. Unplanned sudden or nonsudden releases of dangerous waste constituents are addressed in Section 6.5.1. Section 6.5.3 addresses releases of toxic fumes. Additional elements of the BEP that apply to units regulated by RCRA/Washington State Department of Ecology (Ecology), and to dangerous or MW are listed below.

Wastes, accompanied by a manifest, are transported to the CWC both from other areas of the Hanford Site and from offsite facilities. Actions to be taken regarding a damaged shipment per WAC 173-303-350(b), "Contingency Plan and Emergency Procedures," are described below.

Strict administrative controls are in place to ensure that containers received are in good condition and do not contain unacceptable radiation levels. These include packaging and marking requirements, and inspections of onsite and offsite generating facilities to evaluate the manifested wastes sent to the CWC. Any containers received in damaged condition will immediately be repackaged or placed into overpack drums that are stored in the 272-WA areas and the CWC spill kit storage locations. Any spills resulting from a damaged container will be managed as described in Section 6.5.1.

A description of the arrangements agreed to by hospitals, state and local agencies, and governments, is located in Appendix A of the Emergency Plan of the U.S. Department of Energy-Richland Operations Office (DOE-RL).

The evacuation plan for the CWC is located in Sections 1.5 and 6.1 of this BEP.

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Copies of this BEP are maintained at the CWC and by onsite emergency organizations. The U.S. Department of Energy (DOE) is responsible for distributing this BEP to all local police departments, fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency services.

Amendments to this BEP will be made annually or in one of the following situations, if needed:

- Whenever applicable regulations or the facility permit are revised
- The plan fails in an emergency
- The facility changes (in its design, construction, operation, maintenance, or other circumstances) in a way that materially increases the potential for fires, explosions, or releases of dangerous waste or dangerous waste constituents
- The facility changes in a way that changes the response necessary in an emergency
- The list of emergency equipment changes.

The responsibilities and authority of the BED are established in Section 5.1 of the *WHC Emergency Plan*, WHC-CM-4-1.

The BED will at all times be either on the facility premises or on call with the responsibility for coordinating all emergency response measures. The BED will be thoroughly familiar with all aspects of this BEP and the Westinghouse Hanford Company and DOE emergency plans. The BED will also be thoroughly familiar with all operations and activities at the facility, the location and properties of all wastes handled, the location of all records within the facility, and the facility layout. In addition, this person has the authority to commit the resources needed to carry out this BEP.

Whenever there is an imminent or actual emergency situation involving RCRA/Ecology facilities, the BED (or designee when the BED is on call) will immediately do the following:

- Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel
- Initiate notifications of appropriate state or local agencies with designated response roles if their help is needed (using the site emergency organization and the DOE as shown in Figure 6-3 of WHC-CM-4-1).

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Whenever there is a release, fire, or explosion involving RCRA/Ecology facilities, the BED will immediately identify the character, exact source, amount, and real extent of any released materials.

Concurrently, the BED will assess possible hazards to human health and the environment (considering direct, indirect, immediate, and long-term effects) that may result from the release, fire, or explosion.

If the BED determines that the facility has had a release, fire, or explosion that could threaten human health or the environment outside the facility, he must report his findings as follows.

1. If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify local authorities using the site emergency organization. He must be available to help appropriate officials decide whether local areas should be evacuated.

2. He must immediately initiate notifications (using the site emergency organization) of Ecology, and either the government official designated as the on-scene coordinator or the National Response Center, using the Center's 24-hour toll free number (800) 424-8802.

The BED's assessment report (to be passed on to offsite agencies) will include:

- Name and telephone number of the reporter
- Name and address of the facility
- Time and type of incident (e.g. release, fire)
- Name and quantity of material(s) involved, to the extent known
- The extent of injuries
- The possible hazards to human health or the environment outside the facility.

During an emergency, the BED will take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other dangerous waste at the facility. These measures will include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

If the facility stops operations in response to a fire, explosion, or release, the BED will monitor for leaks, pressure buildup, gas generation, or rupture in valves, pipes, or other equipment, wherever this is appropriate.

Immediately after an emergency, the BED will provide for treating, storing, or disposing of recovered waste, contaminated soil, surface water, or any other material that results from a release, fire, or explosion at the facility.

The BED will ensure that in the affected areas of the facility the following will be observed:

- No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed
- All emergency equipment listed in Section 5.2 is cleaned and fit for use before operations are resumed.

The BED will initiate notification to Ecology and local authorities (using the site emergency organization and the DOE) that the facility is in compliance with the incompatible waste and emergency equipment requirements noted above before operations are resumed in the affected areas of the facility. Notification of Ecology and local authorities will be verified as completed before restart.

The BED will verify that the time, date, and details are recorded in the operating log for any incident that requires implementing this portion of the BEP.

The BED will cooperate in preparing a written report on the incident for the DOE to submit (within 15 days after the incident) to Ecology. This report will include the following information:

- Name, address, and telephone number of the owner or operator
- Name, address, and telephone number of the facility
- Date, time, and type of incident (e.g. fire, explosion)
- Name and quantity of material(s) involved
- The extent of injuries, if any
- An assessment of actual or potential hazards to human health or the environment, where applicable

- Estimated quantity and disposition of recovered materials that resulted from the incident
- Cause of the incident
- Description of the corrective action taken to prevent recurrence of the incident.

APPENDIX 8A

TRAINING COURSE DESCRIPTIONS

APPENDIX 8A

CONTENTS

8A.1 GENERAL COURSES . . . . . APP 8A-1

8A.2 UNIT-SPECIFIC COURSES . . . . . APP 8A-5

8A.3 JOB-SPECIFIC COURSES . . . . . APP 8A-6

8A.4 ENVIRONMENTAL AND HAZARDOUS MATERIAL SAFETY TRAINING . . APP 8A-18

8A.1 GENERAL COURSES	
Title	Radiation Safety Training
Description	Course instructs radiation workers in the fundamentals of radiation protection and the proper procedures for monitoring exposures.
Target audience	Radiation workers
Delivery	Classroom
Evaluation	Written test and practical dress/undress exercise
Length	7 hours
Frequency	24 months by completion of radiation safety requalification
Title	Radiation Safety Requalification
Description	Course instructs radiation workers in the fundamentals of radiation protection and the proper procedures for monitoring exposures.
Target audience	Radiation workers
Delivery	Classroom or computer-based training
Evaluation	Written test and practical dress/undress exercise
Length	7 hours
Frequency	24 months
Title	New Employee Safety Training
Description	Course covers U.S. Department of Energy orders and applicable contractor policies pertaining to employer and employee rights and responsibilities, general radiation training, hazardous waste, fire prevention, personal protective equipment, safety requirements, accident reporting, and avenues for addressing safety concerns.
Target audience	All new employees
Delivery	Classroom
Evaluation	Not applicable
Length	3 hours
Frequency	Not applicable

1	Title	Hanford General Employee Training
2	Description	Course covers U.S. Department of Energy orders and applicable contractor policies pertaining to employer and employee rights and responsibilities, general radiation training, hazardous communications and hazardous waste, fire prevention, personal protective equipment, safety requirements, accident reporting, and avenues for addressing safety concerns.
3	Target audience	All employees
4	Delivery	Computer-based training/interactive video
5	Evaluation	Computer generated questions
6	Length	4-6 hours
7	Frequency	12 months
8		
9	Title	On-the-Job Training Instructor Training
10	Description	Course provides an instructional approach to the planning, implementation, and evaluation of on-the-job training. Includes role-model demonstration exercise and practice with critique.
11	Target audience	Identified bargaining unit, exempt personnel
12	Delivery	Classroom
13	Evaluation	Practical exercise
14	Length	12 hours
15	Frequency	Not applicable
16		
17	Title	Fork Truck Operator Training
18	Description	Course is designed to make personnel more knowledgeable of fork truck and components.
19	Target audience	Nuclear operators or anyone who operates a fork truck as part of work assignment
20	Delivery	Classroom, self-study, demonstration training
21	Evaluation	Written test and driving test
22	Length	6 hours
23	Frequency	36 months
24		

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Title	Fork Truck Operator Requalification
Description	Course consists of safety training to requalify operators of fork trucks and similar material-moving vehicles.
Target audience	Nuclear operators or anyone occasionally or regularly operating a fork truck
Delivery	Demonstration training
Evaluation	Written test and driving test
Length	3 hours
Frequency	36 months

Title	Light-Duty Hoist Training
Description	Course covers the proper use of electric and manual hoists as well as the pre-use inspection of rigging hardware.
Target audience	Operations and maintenance personnel
Delivery	Classroom, videocassette and mockup rigging accessories
Evaluation	Written test
Length	8 hours
Frequency	36 months

Title	Building Emergency Director Training
Description	Course provides an overview of building emergency director responsibilities, identifies the building emergency organizations, reviews building emergency plan, and discusses drill and exercise requirements.
Target audience	Primary and alternate building emergency directors and members of a building emergency organization
Delivery	Classroom
Evaluation	Written test
Length	2 hours
Frequency	12 months

1	Title	Basic Crane and Rigging Training
2	Description	Course is designed to familiarize those who operate any type of lifting device who are not professional crane operators. The content includes principles of rigging and lifting as well as safety checks and practices.
3	Target audience	Anyone who operates a lifting device
4	Delivery	Classroom
5	Evaluation	Written test
6	Length	Average = 8 hours
7	Frequency	24 months
8		
9	Title	Orientation to U.S. Department of Energy Order 5000.3A Occurrence Reporting
10	Description	Course is designed to familiarize personnel with the new U.S. Department of Energy Order 5000.3A *Occurrence Reporting and Processing of Operations Information*. Course provides information on Order requirements and the changes made to occurrence reporting and processing of operational information.
11	Target audience	Personnel involved in occurrence reporting
12	Delivery	Classroom
13	Evaluation	Not applicable
14	Length	1.5 hours
15	Frequency	Not applicable
16		
17	Title	Managers Conduct of Operations
18	Description	Course provides indepth discussion of U.S. Department of Energy Order 5480.19, conduct of operations requirements for U.S. Department of Energy sites, and application of requirements to the TSD units.
19	Target audience	Management
20	Delivery	Classroom
21	Evaluation	Not applicable
22	Length	16 hours
23	Frequency	Not applicable
24		

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Title	First Line Managers Conduct of Operations
Description	Course provides indepth discussion of U.S. Department of Energy Order 5480.19, conduct of operations requirements for U.S. Department of Energy sites, and application of requirements to the TSD units plus practical TSD unit walkthrough.
Target audience	Management
Delivery	Classroom and walkthrough unit
Evaluation	Not applicable
Length	24 hours
Frequency	Not applicable

8A.2 UNIT-SPECIFIC COURSES

Title	Solid Waste Operations Orientation
Description	Course consists of a classroom presentation using structured notes and/or a videocassette. Topics to be presented in compliance with federal and state requirements include: entry and exit requirements; location of organizational charts, administrative, and operating procedures; the person in charge of communications; potential hazards; restricted areas; potential emergencies, alarms, communications, responses and staging areas; location and use of personal protective and emergency equipment; identification of waste management units; overview of the process; training requirements.
Target audience	All personnel assigned to or performing work in Solid Waste Operations
Delivery	Classroom or videocassette/self-study
Evaluation	Not applicable
Length	1 hour
Frequency	12 months

Title	Building Emergency Plan Checklist (Appendix 7A)
Description	Course provides the information managers are required to discuss with employees. The checklist is contained in the building emergency plan. The building emergency plan covers designated Solid Waste Operations units.
Target audience	All Solid Waste Operations employees, including contractor personnel
Delivery	Classroom
Evaluation	Not applicable
Length	2 hours
Frequency	12 months

8A.3 JOB-SPECIFIC COURSES

Title	General Radio-Chemical Operator Training
Description	Course consists of self-study, using a manual that covers in general terms the following topics for processing and TSD units: • Introduction • Mathematics • Chemistry • Security • Industrial safety • Emergency preparedness • Radiation safety • Environmental protection • Criticality prevention • Nuclear materials management • Instrumentation • Process and equipment.
Target audience	Nuclear operators (i.e., operator trainee, 18-month nuclear operator, 30-month nuclear operator, 42-month nuclear operator, and nuclear process operator)
Delivery	Classroom or self-study
Evaluation	Written test
Length	Average = 80 hours
Frequency	12 months for operator trainee through nuclear operator 42 month levels; 24 months for nuclear process operator level

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Title	Solid Waste Unit-Specific Training
Description	Course is designed to establish a general understanding and comprehension of Solid Waste Operations.
Target audience	Nuclear operators assigned to Solid Waste Operations (i.e., operator trainee, 18-month nuclear operator, 30-month nuclear operator, 42-month nuclear operator, and nuclear process operator)
Delivery	Self-study
Evaluation	Written test
Length	Average = 80 hours
Frequency	12 months for operator trainee through 42-month nuclear operator level; 24 months for nuclear process operator level.

Title	Solid Waste Operations Nuclear Operator Certifications
Description	Course is designed to prepare and certify Solid Waste Operations nuclear operators to operate the Solid Waste Operations. Operations managers and supervisors complete courses designated by management. Courses will be designed, developed, implemented, and documented based on job and training analyses.
Target audience	Nuclear operators assigned to Solid Waste Operations, and Solid Waste Operations managers and supervisors when required
Delivery	Classroom, self-study, and on-the-job training
Evaluation	Written test and on-the-job training checklist
Length	Average = 80 hours
Frequency	24 months

Title	Solid Waste Operator Certification--Mixed Waste Management
Description	Course covers certification requirements for Hanford Central Waste Complex mixed waste storage units.
Target audience	Nuclear operators, operations personnel, and management
Delivery	Classroom and on-the-job training
Evaluation	Written test and on-the-job training checklist
Length	Classroom = 8 hours OJT = 40 hours
Frequency	24 months

Title	Solid Waste Operations Nuclear Process Operator Emergency Procedures and Abnormal Plant Conditions Training
Description	Course consists of a review of abnormal and emergency conditions that could occur in Solid Waste Operations, associated alarms and communications, and proper responses.
Target audience	Nuclear process operators, beginning 12 months after completion of general radio-chemical operator and plant specific training
Delivery	Self-study and on-the-job training
Evaluation	Written test
Length	Average = 20 hours
Frequency	12 months

SPECIAL NOTE: To comply with the U.S. Department of Energy training requirement for nonreactor nuclear facility operations personnel, nuclear process operators must complete emergency training at least annually. This course must be completed by nuclear operators at the nuclear process operator level in conjunction with the general radio-chemical operator and plant-specific requalification courses. To achieve this, the requalification courses will be completed one year, the emergency procedures and abnormal plant conditions training the next year, then the requalification courses, then the emergency procedures and abnormal plant conditions training, etc. In this way, nuclear process operators complete annual emergency training.

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1	Title	Solid Waste Operations Supervisor Certification
2	Description	Course consists of the following topics: • Administrative information • Technical information • Environmental/hazardous materials requirements • Operations safety requirements • Acceptance, storage, and transfer of dangerous waste • Jobs conducted in the area of assigned responsibility • Processes and services • Equipment.
3	Target audience	Operations supervisors
4	Delivery	Self-study and on-the-job training
5	Evaluation	Written test and on-the-job training checklist
6	Length	Average = 36 hours
7	Frequency	24 months
8		
9	Title	Solid Waste Operations Supervisor Emergency Procedures and Abnormal Plant Conditions Training
10	Description	Course is designed to be a review of abnormal and emergency conditions that could occur in Solid Waste Operations, associated alarms and communications, and proper responses.
11	Target audience	Operations manager and supervisors
12	Delivery	Self-study and on-the-job training
13	Evaluation	Written test
14	Length	Average = 16 hours
15	Frequency	12 months
16		

1	Title	Phase II Process Engineering Certification (Plant-Specific) Training
2	Description	Phase II training covers generic information for a specific operating unit, and covers processes and utilities.
3	Target audience	Process engineers
4	Delivery	Self-study
5	Evaluation	Written test and oral walkthrough
6	Length	Average = 40 hours
7	Frequency	24 months
8		
9	Title	Hazardous Material-Carrier/Driver Course
10	Description	Course familiarizes truck drivers and train crews in procedures for accepting and transporting hazardous and/or dangerous material in compliance with 49 CFR 173 and company requirements
11	Delivery	Classroom
12	Evaluation	Written test
13	Length	8 hours
14	Frequency	24 months
15		
16	Title	Chemical Technologist Qualification
17	Description	Course includes tasks based on job and procedures.
18	Target audience	Chemical technologists
19	Delivery	Classroom and on-the-job training
20	Evaluation	Examination and on-the-job training checklist
21	Length	Average = 20 hours
22	Frequency	12 months
23		

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1	Title	Health Physics Technician Trainee Certification
2	Description	Course consists of the following topics: • Academics • Radiation protection practices • Emergency response • Radiation safety • Criticality safety • Industrial safety • Practical exercises - Dress/undress - Establishing radiation areas and control points - Surveying radiation generating machines - Release surveying - Estimating exposure - Detailed radiological survey.
3	Target audience	Health physics technician trainee
4	Delivery	Classroom
5	Evaluation	Written test
6	Length	Average = 170 hours
7	Frequency	Not applicable. The health physics technician trainee must complete the Health Physics Technician Certification within 15 to 18 months of this course completion, including on-the-job training courses.
8		

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1	Title	Health Physics Technician Trainee General On-the-Job Training
2	Description	Course includes the following topics: • Records and reports • Exposure control - Dosimetry - Survey techniques • Instrumentation • Qualitative respirator fit • Routine radiological control • Job planning - Radiological postings - Hazards analysis • Abnormal conditions and emergencies - Criticality - Radiation area injuries - Personnel decontamination - Radioactive spills - Area evacuation - Continuous alarm monitor alarm response.
3	Target audience	Health physics technician trainee
4	Delivery	On-the-job training
5	Evaluation	On-the-job training checklist
6	Length	Average = 200 hours
7	Frequency	24 months
8		

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1	Title	Health Physics Technician Trainee Solid Waste Operations On-the-Job Training
2	Description	Course includes the following tasks: • Decontamination and decommissioning • General monitoring and applicable routines • Isolation and stabilization monitoring • High-efficiency particulate air filter change • Construction coverage • Routine coverage.
3	Target audience	Health physics technician trainee
4	Delivery	On-the-job training
5	Evaluation	On-the-job training checklist
6	Length	Average = 200 hours
7	Frequency	24 months
8		
9	Title	Health Physics Technician Certification
10	Description	Course includes the following topics: • Academics • Radiation protection practices • Radiological work planning and briefing • Radiation safety • Criticality safety • Emergency response • Practical exercise - radiation detection instrumentation.
11	Target audience	Health physics technician
12	Delivery	Classroom
13	Evaluation	Written test
14	Length	Average = 168 hours
15	Frequency	Not applicable. The health physics technician must complete the Senior Health Physics Technical Certification within 15 to 18 months of this course completion, including on-the-job training.
16		

9 2 L 2 3 6 6 1 9 6 5

1	Title	Health Physics Technician General On-the-Job Training
2	Description	Course includes the following topics: • Records and reports • Exposure control - Dosimetry - Survey techniques • Instrumentation • Qualitative respirator fit • Routine radiological control • Job planning - Radiological postings - Hazards analysis • Abnormal conditions and emergencies - Criticality - Radiation area injuries - Personnel decontamination - Radioactive spills - Area evacuation - Continuous alarm monitor alarm response.
3	Target audience	Health physics technician
4	Delivery	On-the-job training
5	Evaluation	On-the-job training checklist
6	Length	Average = 200 hours
7	Frequency	24 months
8		

9 2 1 2 3 6 5 1 0 6 6

1	Title	Health Physics Technician Solid Waste Operations On-the-Job Training
2	Description	Course includes the following tasks: • Decontamination and decommissioning • General monitoring and applicable routines • Isolation and stabilization monitoring • High-efficiency particulate air filter change • Construction coverage • Routine coverage.
3	Target audience	Health physics technicians
4	Delivery	On-the-job training
5	Evaluation	On-the-job training checklist
6	Length	Average = 200 hours
7	Frequency	24 months
8		
9	Title	Senior Health Physics Technician Certification
10	Description	Course consists of the following topics: • Academics • Radiation protection practices • Emergency response • Radiation safety • Criticality safety • Radiological problem solving • Practical exercises.
11	Target audience	Senior health physics technician
12	Delivery	Classroom
13	Evaluation	Written test
14	Length	Average = 168 hours
15	Frequency	24 months
16		

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1	Title	Senior Health Physics Technician General On-the-Job Training
2	Description	Course includes the following topics: • Records and reports • Exposure control - Dosimetry - Survey techniques • Instrumentation • Qualitative respirator fit • Routine radiological control • Job planning - Radiological postings - Hazards analysis • Abnormal conditions and emergencies - Criticality - Radiation area injuries - Personnel decontamination - Radioactive spills - Area evacuation - Continuous alarm monitor alarm response.
3	Target audience	Senior health physics technician
4	Delivery	On-the-job training General on-the-job training
5	Evaluation	On-the-job training checklist
6	Length	Average = 200 hours
7	Frequency	24 months
8		

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Title	Senior Health Physics Technician Solid Waste Operations On-the-Job Training
Description	Course includes the following tasks: • Decontamination and decommissioning • General monitoring and applicable routines • Isolation and stabilization monitoring • High-efficiency particulate air filter change • Construction coverage • Routine coverage.
Target audience	Senior health physics technicians
Delivery	On-the-job training
Evaluation	On-the-job training checklist
Length	Average = 200 hours
Frequency	24 months
Title	Solid Waste Operations Health Physics Technicians (All) Emergency Procedures and Abnormal Plant Conditions
Description	Course consists of the following topics and alternates from year to year between classroom training and testing, on-the-job training, and on-the-job training checklist: • Continuous air monitor alarm • Contamination spread • Personnel decontamination • Criticality alarm • Chemical spill or problem • General emergencies (e.g., fire).
Target audience	Health physics technician trainee, health physics technician, senior health physics technician
Delivery	Classroom or on-the-job training
Evaluation	Written test or on-the-job training checklist
Length	Average = 16 hours
Frequency	12 months

8A.4 ENVIRONMENTAL AND HAZARDOUS MATERIAL SAFETY TRAINING[1]		
	Course name	Description
1.	Hazard Communication and Waste Orientation	Course provides an overview of the federal and operations contractor hazard communication programs and hazardous and/or dangerous waste disposal programs.
2.	Generator Hazards Safety Training	Course provides the hazardous and/or dangerous material/waste worker with the fundamentals for use and disposal of hazardous and/or dangerous materials.
3.	Hazardous Materials/Waste Job-Specific Training	Course provides specific information on hazardous and/or dangerous chemicals and waste management at the employees' TSD unit.
4.	Initial Radiation Worker Training	Course provides radiation workers with the fundamentals of radiation protection and the proper procedures for maintaining exposures ALARA.
5.	Waste Site-Basics	Course provides required information for the safe operation of hazardous and/or dangerous waste TSD units regulated under 40 CFR 264 and 265 pursuant to RCRA.
6.	Scott 'SKA-PAK'[2] Training-SKA	Course instructs employees in the proper use of the Scott 'SKA-PAK' for entry, exit, or work in conditions 'immediately dangerous to life and health' and instructs employees to recognize and handle emergencies.
7.	Cardiopulmonary Resuscitation	Course of the American Heart Association that provides certification in cardiopulmonary resuscitation for the single rescuer (Heartsaver Course).
8.	Fire Extinguisher Safety	Course provides videocassette presentation that covers types of portable fire extinguishers and the proper usage for each.

[1]Chapter 8.0, Tables 8-4 and 8-5 present a compilation of training requirements.

[2]Scott SKA-PAK is a trademark of Figgie International, Incorporated.

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	Course name	Description
9.	Waste Site-Advanced	Course provides environmental safety information for RCRA and/or CERCLA operations and sites. Topics include regulations and acronyms, occupational health and safety, chemical hazard information, toxicology, personal protective equipment and respirators, site safety, decontamination, and chemical monitoring instrumentation.
10.	Waste Site Field Experience	Course is a 3-day field experience under the direct supervision of a trained, experienced supervisor.
11.	Hazardous Waste Shipment Certification	Course provides an indepth look at federal, state, and onsite requirements for nonradioactive hazardous and/or dangerous waste management and transportation.
12.	Certification of Hazardous Material Shipments	Course provides training in dangerous material regulation of the U.S. Department of Transportation, as required by law, to those who certify the compliance of Hanford Facility hazardous and/or dangerous material shipments. The main focus is on the proper preparation and release of radioactive material shipments.
13.	Hazardous Waste Site Supervisor/Manager	Course provides specialized training to operations and site management in the following programs: safety and health, employee training, personal protective equipment, spill containment, and health hazard monitoring procedures and techniques.

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