0032888

9 1 of 7

Mr. John Grantham
State of Washington
Department of Ecology
Nuclear & Mixed Waste Program
P. O. Box 47600
Olympia, WA 98504-7600

FLUOR DANIEL, INC.

Date: September 27, 1993

Reference: Hanford Waste Vitrification Plant
DOE Contract DE-AC06-86RL10838
Fluor Contract 8457

Transmittal No.: WDOE-630

Dear Mr. Grantham:

TRANSMITTAL

We enclose * copy of the items listed below. These are issued per US-DOE request.
* = 2 FULLSIZE ROLLED, 1 REDUCED, 2 SPECIFICATION

Response due to Fluor: N/A
Responds to: B210A

NUMBER	REV	DATE	TITLE
SEE TRANSMITTAL ATTACHMENT	-----	-----	VITRIFICATION BUILDING FOUNDATION
ATT A: PIPELINE LIST			B210A PACKAGE REVISION 4
ATT B: SPECIFICATION LIST			
ATT C: DRAWING LIST			

Distribution:
Reference: FRP-1203, FUP-642
R. L. Long: DOE-RL, w/0
TWP/AME Corresp Cntrl Cntr, MSIN A5-10 (B210A), w/0
P. Felise, WHC-RL (MSIN G6-06), w/1F & 1 SPEC
Environmental Data Management Center (MSIN H6-08), w/1F & 1 SPEC
D. Duncan, US EPA, Region X, w/0

Very truly yours,

Rosalie Cadenas for
R. S. Poulter
Project Director

RSP:PP:lh

SEP 1993
RECEIVED

ATTACHMENT A

HANFORD WASTE VITRIFICATION PROJECT
PIPE LINE LIST
FLUOR DANIEL CONTRACT 80845734
WBS B210A (SEPTEMBER 27, 1993 ISSUE)

REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG / OPER PSIG	DES TEMP / OPER TEMP	VAP LIQ	PWHT STRS	INSUL	SFTY	REMARKS
C	H-2-129806	2	6	PE	1/2	050 058	A	INSTRUMENT	ROOM 1020 TE-338	CHEMICAL PROCESS CELL ROOM 0048	25 / 0	150 / AMB	VAP	NO / NO	NONE	3	FOR TE 338
C	H-2-129806	2	6	PE	1/2	050 059	A	INSTRUMENT	ROOM 1020 PIT-345	CHEMICAL PROCESS CELL ROOM 0048	25 / 0	150 / AMB	VAP	NO / NO	NONE	3	FOR PIT 345
C	H-2-129806	2	6	PE	1/2	050 060	A	INSTRUMENT	ROOM 1020 TE-338 SPARE	CHEMICAL PROCESS CELL ROOM 0048	25 / 0	150 / AMB	VAP	NO / NO	NONE	3	SPARE FOR PE-1/2"-050-058-A
C	H-2-129806	1	6	PE	1/2	050 061	A	INSTRUMENT	ROOM 1300	REMOTE EQUIPMENT DECON CELL ROOM 0052	25 / 0	150 / AMB	VAP	NO / NO	NONE	3	FOR TE 341
C	H-2-129806	1	6	PE	1/2	050 062	A	INSTRUMENT	ROOM 1300	REMOTE EQUIPMENT DECON CELL ROOM 0052	25 / 0	150 / AMB	VAP	NO / NO	NONE	3	SPARE FOR PE-1/2"-050-061-A
C	H-2-129806	1	6	PE	1/2	050 063	A	INSTRUMENT	ROOM 1300	REMOTE EQUIPMENT DECON CELL ROOM 0052	25 / 0	150 / AMB	VAP	NO / NO	NONE	3	FOR PIT 342
C	H-2-129806	1	6	PE	1/2	050 064	A	INSTRUMENT	ROOM 1300	HEME CELL ROOM 055	25 / 0	150 / AMB	VAP	NO / NO	NONE	3	FOR TE 340
C	H-2-129806	1	6	PE	1/2	050 065	A	INSTRUMENT	ROOM 1300	HEME CELL ROOM 055	25 / 0	150 / AMB	VAP	NO / NO	NONE	3	SPARE FOR PE-1/2"-050-064-A
C	H-2-129805	1	5	PE	1/2	050 068	A	INSTRUMENT	ROOM 1300	CONTACT MAINTENCE & DECON CELL ROOM 0066	25 / 0	150 / AMB	VAP	NO / NO	NONE	3	FOR PIT 322

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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG OPER PSIG	DES TEMP OPER TEMP	VAP LIQ	PWHT STRS	INSUL	SFTY	REMARKS
C	H-2-129805	1	4	PE	1/2	050 069	A	INSTRUMENT	ROOM 1300	CONTACT MAINTENCE & DECON CELL ROOM 0066	25 0	150 AMB	VAP	NO NO	NONE	3	FOR TE 321
C	H-2-129805	1	4	PE	1/2	050 070	A	INSTRUMENT	ROOM 1300	CONTACT MAINTENCE & DECON CELL ROOM 0066	25 0	150 AMB	VAP	NO NO	NONE	3	SPARE
C	H-2-129805	1	5	PE	1/2	050 071	A	INSTRUMENT	ROOM 1020	RAILROAD WELL ROOM 0067	25 0	150 AMB	VAP	NO NO	NONE	3	FOR PIT-317
C	H-2-129805	1	4	PE	1/2	050 072	A	INSTRUMENT	ROOM 1020	RAILROAD WELL ROOM 0067	25 0	150 AMB	VAP	NO NO	NONE	3	FOR TE-320
C	H-2-129805	1	4	PE	1/2	050 073	A	INSTRUMENT	ROOM 1020	RAILROAD WELL ROOM 0067	25 0	150 AMB	VAP	NO NO	NONE	3	SPARE
C	H-2-129803	1	3	PE	1/2	050 074	A	INSTRUMENT	ROOM 1300	CANISTER DECON CELL ROOM 0036	25 0	150 AMB	VAP	NO NO	NONE	3	FOR TE-204
C	H-2-129803	1	4	PE	1/2	050 075	A	INSTRUMENT	ROOM 1300	CANISTER DECON CELL ROOM 0036	25 0	150 AMB	VAP	NO NO	NONE	3	FOR PIT 208
C	H-2-129803	1	4	PE	1/2	050 076	A	INSTRUMENT	ROOM 1300	CANISTER DECON CELL ROOM 0036	25 0	150 AMB	VAP	NO NO	NONE	3	SPARE
C	H-2-129803	1	3	PE	1/2	050 077	A	INSTRUMENT	ROOM 0082	SMEAR TEST EXIT TUNNEL ROOM 0086	25 0	150 AMB	VAP	NO NO	NONE	3	FOR PIT 210

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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG / OPER PSIG	DES TEMP / OPER TEMP	VAP LIQ	PWHT / STRS	INSUL	SFTY	REMARKS
C	H-2-129803	1	3	PE	1/2	050 078	A	INSTRUMENT	ROOM 0082	SMEAR TEST EXIT TUNNEL ROOM 0086	25 / 0	150 / AMB	VAP	NO / NO	NONE	3	SPARE
C	H-2-129803	1	3	PE	1/2	050 079	A	INSTRUMENT	ROOM 0082	SMEAR TEST EXIT TUNNEL ROOM 0086	25 / 0	150 / AMB	VAP	NO / NO	NONE	3	FOR TE 203
D	H-2-123040	3	7	PE	3	110 002	DF	PROCESS	PRO-3"-110-001-DB	PRO-3"-110-003-A	275 / 175	340 / 190	LIQ	NO / YES	IH	3	CEM, SAFETY CLASS 1 DESIGN BASIS EARTHQUAKE
D	H-2-123040	3	7	PE	3	110 017	DF	PROCESS	PRO-3"-110-016-DB	PRO-3"-110-018-A	275 / 175	340 / 190	LIQ	NO / YES	IH	3	CEM, INSULATION IS FOR THERMAL EXPANSION. SCI DBE
D	H-2-123040	4	7	PE	3	110 038	DF	PROCESS	PRO-3"-110-032-A	PRO-3"-110-039-A	275 / 175	340 / 190	LIQ	NO / YES	IH	3	CEM, SAFETY CLASS 1 DESIGN BASIS EARTHQUAKE.
D	H-2-123040	4	7	PE	3	110 041	DF	PROCESS	PRO-3"-110-040	PRO-3"-110-042-A	275 / 175	340 / 190	LIQ	NO / YES	IH	3	CEM, SAFETY CLASS 1 DESIGN BASIS EARTHQUAKE
C	H-2-123170	7	7	PE	1/2	14A 030	K	SAMPLE LINES	SPL-1/2"-14A-081-A RM# 1730	SPL-1/2"-14A-024-K RM# 0053	150 / -3.4	150 / 133	VAP	NO / NO	IH	3	DES FOR FULL VAC. OP/DATA N/AVAL. CEM PER FRF-1848
C	H-2-123170	7	5	PE	1/2	14A 031	K	SAMPLE LINES	SPL-1/2"-14A-025-K RM# 1730	SPL-1/2"-14A-084-A RM# 0053	150 / -3.4	150 / 133	VAP	NO / NO	NONE	3	DES FOR FULL VAC. OP/DATA N/AVAL. CEM PER FRF-1848
C	H-2-123170	7	4	PE	1/2	14A 032	K	SAMPLE LINES	ROOM 0053 - SPARE CONNECTION	SPL-1/2"-14A-026-K RM# 1730	150 / -3.4	150 / 133	VAP	NO / NO	IH	3	DES FOR FULL VAC. OP/DATA N/AVAL. CEM PER FRF-1848

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C	H-2-123170	7	4	PE	1/2	14A 033	K	SAMPLE LINES	SPL-1/2"-14A-027-K RM# 1730	RM#-0053 - SPARE CONNECTION	150 / -3.4	150 / 133	VAP	NO / NO	NONE	3	DES FOR FULL VAC. OP/DATA N/AVAL. CEM PER FRF-1848
C	H-2-123030	12	4	PE	14	14A 071	C	PVV MOG SPARE	ROOM 0048	ROOM 0002, 0053	-7.5 / -2.4	225 / 153	VAP	NO / YES	IH	3	SPARE FOR MOG/PVV, DESIGN FOR FULL VACUUM
C	H-2-123250	11	4	PE	1 1/2	14A 089	A	PROCESS COOLING WTR SUPLY	PSW CONNECTION - OUT OF CELL - ROOM 1020	PSW CONNECTION - IN CELL - ROOM 0053	100 / 72	150 / 80	LIQ	NO / NO	NONE	3	
A	H-2-123250	11	3	PE	1 1/2	14A 090	A	PROCESS COOLING WTR RET	PRW CONNECTION - OUT OF CELL - ROOM 1020	PRW CONNECTION - IN CELL - ROOM 0053	100 / 85	150 / 90	LIQ	NO / NO	NONE	3	
A	H-2-123250	14	3	PE	6	14A 101	A	PROCESS COOLING WTR RET	PRW CONNECTION- IN CELL	OUT OF CELL PRW CONNECTION	100 / 13	150 / 77	LIQ	NO / NO	NONE	3	
A	H-2-123250	14	3	PE	6	14A 102	A	PROCESS COOLING WTR SPPLY	PSW CONNECTION- OUT OF CELL	OUT OF CELL PSW CONNECTION	100 / 13	150 / 17	LIQ	NO / NO	NONE	3	
B	H-2-123250	7	5	MOG	8	14A 121	C	MELTER OFFGAS	MOG-8"-14A-119-A-IH	MOG-8"-14A-080-A-IH	-7.5 / -2.5	160 / 131	VAP	NO / YES	IH	3	
B	H-2-123250	9	5	MOG	8	14B 030	C	MELTER OFFGAS	MOG-8"-14B-035-A-IH	MOG-8"-14B-024-A-IH	-7.5 / -2.4	255 / 153	VAP	NO / YES	IH	3	
C	H-2-123251	7	8	PVV	14	15A 003	C	PROCESS VESSEL VENT	PVV-14"-15A-080-A	PVV-14"-15A-081-A	-15 / -4	160 / 132	VAP	NO / YES	IH	3	

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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG OPER PSIG	DES TEMP OPER TEMP	VAP LIQ	PWHT STRS	INSUL	STY	REMARKS
C	H-2-123170	8	5	PE	1/2	15A 099	K	SAMPLE LINES	SPL-1/2"-15A-119-K	SPL-1/2"-15A-094-A	25 -3	150 123	LIQ	NO NO	NONE	3	DES FOR -7.5 PSIG. CEM PER FRF-1848
C	H-2-123170	8	5	PE	1/2	15A 104	K	SAMPLE LINES	SPL-1/2"-15A-079-K	SPL-1/2"-15A-097-K	25 -3	150 123	LIQ	NO NO	IH	3	DES FOR -7.5 PSIG. CEM PER FRF-1848
C	H-2-123170	8	7	PE	1/2	15A 105	K	SAMPLE LINES	SPL-1/2"-15A-077-K	SPL-1/2"-15A-118-K	25 -3	150 123	LIQ	NO NO	IH	3	DES FOR -7.5 PSIG. CEM PER FRF-1848
C	H-2-123170	8	4	PE	1/2	15A 106	K	SAMPLE LINES	SPL-1/2"-15A-098-K	SPL-1/2"-15A-078-K	25 -3	150 123	LIQ	NO NO	NONE	3	DES FOR -7.5 PSIG. CEM PER FRF-1848
C	H-2-123251	7	8	PVV	14	15B 002	C	PROCESS VESSEL VENT	PVV-14"-15B-011-A	PVV-14"-15B-012-A	-7.5 -2.6	150 123	VAP	NO YES	IH	3	
C	H-2-123251	18	5	PVV	10	15G 030	C	PROCESS VESSEL VENT	PVV-10"-15G-029-A	PVV-10"-15G-031-A	-15 -1	150 117	VAP	NO YES	IH	3	PRESSURE/TEMPERATURE DATA PRELIMINARY-12/30/92
C	H-2-123151	16	4	PE	2	16A 051	A	HWX	HWX-1 1/2"-16A-050-G	HWX-2"-16A-022-A	150 55	200 150	LIQ	NO NO	NONE	3	
C	H-2-123151	16	3	PE	2	16A 052	A	SPARE	ROOM 0260	ROOM 0044	150 55	200 150		NO NO	NONE	3	
C	H-2-123152	2	6	PE	1/2	170 016	A	SPARE	ROOM 1300	CONNECTIONS IN CELL MV-013	150 100	150 70		NO NO	NONE	3	SPARE HELIUM PENETRATION

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C	H-2-123152	2	6	PE	1/2	170 017	A	SPARE	ROOM 1300	CONNECTIONS IN CELL MV-011	150 100	150 70		NO NO	NONE	3	SPARE HELIUM PENETRATION
C	H-2-123152	2	6	PE	1/2	170 019	A	HELIUM	HEX-1/2"-170-001-L	HEX-1/2"-170-002-A	150 100	150 70	VAP	NO NO	NONE	3	
C	H-2-123152	5	6	PE	1	170 023	A	NITROGEN	N2X-1"-170-060-AL	VENT TO CELL	200 50	150 70	VAP	NO NO	NONE	3	
C	H-2-123152	5	6	PE	1	170 024	DH	NITROGEN	YV-170-404A	WE-170-001V PLUG WELDER DATA AQ. SYSTEM.	3000 100	150 70	VAP	NO YES	NONE	3	
C	H-2-123152	5	5	PE	1	170 025	DH	NITROGEN	OUT OF CELL CONNECTION AT ROOM 082/086 WALL	WE-170-001V PLUG WELDER DATA AQ. SYSTEM.	3000 100	150 70	VAP	NO YES	NONE	3	
C	H-2-123152	5	5	PE	1	170 026	DH	NITROGEN	N2X-1"-170-063-AL	WE-170-001V PLUG WELDER DATA AQ. SYSTEM.	3000 100	150 70	VAP	NO YES	NONE	3	
A	H-2-123152	5	4	PE	1	170 027	A	NITROGEN	N2X-1"-170-064-AL	VENT TO CELL	200 0	150 AMB	VAP	NO NO	NONE	3	
C	H-2-123152	5	5	PE	1	170 028	DH	NITROGEN	N2X-1"-170-065-AL	WE-170-001V PLUG WELDER DATA AQ. SYSTEM.	3000 100	150 70	VAP	NO YES	NONE	3	
C	H-2-123152	4	7	PE	1	170 029	A	HYDRAULIC OIL	HYD-1"-170-053-AL	IN CELL CATCH BASIN PACKAGE	150 50	150 70	LIQ	NO NO	NONE	3	

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C	H-2-123152	4	8	PE	1 1/2	170 031	DH	HYDRAULIC OIL	HYD-1"-170-054-AL	WE-170-001V-PS ICC PRESS RAM	3000 200	150 150	LIQ	NO YES	NONE	3	
C	H-2-123152	4	6	PE	1 1/2	170 032	DH	HYDRAULIC OIL	HYD-1"-170-055-AL	WE-170-001V-PS ICC PRESS RAM	3000 200	150 150	LIQ	NO YES	NONE	3	
C	H-2-123152	4	3	PE	1	170 033	DH	NITROGEN	N2X-1"-170-0560AL	IN CELL CONNECTION TO WE-170-001V-PS PACKAGE	3000 200	150 70	VAP	NO YES	NONE	3	
C	H-2-123152	4	3	PE	1	170 034	A	NITROGEN	N2X-1"-170-057-AL	VENT TO CELL	200 0	150 70	VAP	NO NO	NONE	3	
C	H-2-123152	4	3	PE	1	170 035	DH	NITROGEN	N2X-1"-170-058-AL	IN CELL CONNECTION TO WE-170-001V-PS PACKAGE	3000 200	150 70	VAP	NO YES	NONE	3	
C	H-2-123152	7	7	PE	1/2	170 037	A	INERT GAS	OUT OF CELL INERT WELD GAS CONNECTION	IN CELL INERT WELD GAS CONNECTION	150 -	150 -	VAP	NO NO	NONE	3	
C	H-2-123152	7	4	PE	1	170 038	A	LEAK DET	OUT OF CELL CONNECTION FOR ROUGHING PUMP EXH LEAK DETECTOR	IN CELL CONNECTION FOR ROUGHING PUMP EXH LEAK DETECTOR	25 -	150 -	LIQ	NO NO	NONE	3	
C	H-2-123152	7	4	PE	2	170 039	A	VAC LEAK DET	OUT OF CELL CONNECTION FOR VACUUM LINE	IN CELL CONNECTION FOR VACUUM LINE	-15 -	150 -	VAP	NO NO	NONE	3	WILL CHANGE TO "AP" SPEC

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C	H-2-123152	6	3	PE	1	170 042	A	NITROGEN	N2X-1"-170-040-L	N2X-1"-170-043-L	150 115	150 70	VAP	NO NO	NONE	3	
C	H-2-123030	11	8	PE	2	170 044	A	SPARE	ROOM 0082	ROOM 0086 SMEAR TEST EXIT TUNNEL	200 0	150 AMB		NO NO	NONE	3	SPARE
C	H-2-123030	11	8	PE	1	170 045	A	SPARE	ROOM 0082	ROOM 0086 SMEAR TEST EXIT TUNNEL	200 0	150 AMB		NO NO	NONE	3	SPARE
C	H-2-123030	11	7	PE	1	170 046	A	SPARE	ROOM 0082	ROOM 0086 SMEAR TEST EXIT TUNNEL	200 0	150 AMB		NO NO	NONE	3	SPARE
C	H-2-123030	11	8	PE	1	170 047	DH	SPARE	ROOM 0082	ROOM 0086 SMEAR TEST EXIT TUNNEL	3000 200	150 70		NO YES	NONE	3	SPARE
C	H-2-123030	11	7	PE	1	170 048	DH	SPARE	ROOM 0082	ROOM 0086 SMEAR TEST EXIT TUNNEL	3000 200	150 70		NO YES	NONE	3	
C	H-2-123030	11	7	PE	1	170 049	A	SPARE	ROOM 0082	ROOM 0086 SMEAR TEST EXIT TUNNEL	200 0	150 AMB		NO NO	NONE	3	SPARE
C	H-2-123030	11	7	PE	1	170 050	DH	SPARE	ROOM 0082	ROOM 0086 SMEAR TEST EXIT TUNNEL	3000 200	150 70		NO YES	NONE	3	
C	H-2-123030	11	7	PE	1 1/2	170 051	DH	SPARE	ROOM 0082	ROOM 0086 SMEAR TEST EXIT TUNNEL	3000 200	150 70		NO YES	NONE	3	SPARE

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C	H-2-123030	11	7	PE	1	170 052	A	SPARE	ROOM 0082	ROOM 0086 SMEAR TEST EXIT TUNNEL	200 / 0	150 / AMB	NO / NO	NO	NONE	3	SPARE
C	H-2-123030	6	4	PE	1/2	170 066	A	SPARE	ROOM 1300	ROOM 0047	200 / 0	150 / 70	NO / NO	NO	NONE	3	SPARE
C	H-2-123030	6	4	PE	1/2	170 067	A	SPARE	ROOM 1300	ROOM 0047	200 / 0	150 / 70	NO / NO	NO	NONE	3	SPARE
C	H-2-123030	6	4	PE	1/2	170 068	A	SPARE	ROOM 1300	ROOM 0047	200 / 0	150 / 70	NO / NO	NO	NONE	3	SPARE
C	H-2-123152	2	5	PE	2	170 905	A	ELECTRICAL CONDUIT	OUT OF CELL ELECRICAL CONNECTION ROOM 2200/0047 WALL	ELE-2"-170-904-A	N/A / N/A	N/A / N/A	NO / NO	NO	NONE	3	
C	H-2-123152	1	5	PE	2	170 907	A	ELECTRICAL CONDUIT	OUT OF CELL ELECTRICAL	ELE-170-900-A	N/A / N/A	N/A / N/A	NO / NO	NO	NONE	3	
C	H-2-123152	1	4	PE	2	170 908	A	ELECTRICAL CONDUIT	OUT OF CELL ELECTRICAL	ELE-2"-170-901-A	N/A / N/A	N/A / N/A	NO / NO	NO	NONE	3	
C	H-2-123152	2	4	PE	2	170 909	A	ELECTRICAL CONDUIT	OUT OF CELL ELECTRICAL	ELEC-2"-170-903-A	N/A / N/A	N/A / N/A	NO / NO	NO	NONE	3	
C	H-2-123152	2	5	PE	2	170 910	A	ELECTRICAL CONDUIT	OUT OF CELL ELECTRICAL CONNECTION ROOM 1300/0047 WALL	ELEC-2"-170-902-A	N/A / N/A	N/A / N/A	NO / NO	NO	NONE	3	

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C	H-2-123030	6	8	PE	2	170 936	A	ELECTRICAL CONDUIT	OUT OF CELL ELECTRICAL CONNECTION RM 1300/0047 WALL	IN CELL ELECTRICAL CONNECTION RM 1300/0047 WALL	N/A N/A	N/A N/A		NO NO	NONE	3	
C	H-2-123030	6	8	PE	2	170 937	A	ELECTRICAL CONDUIT	OUT OF CELL ELECTRICAL CONNECTION RM 1300/0047 WALL	IN CELL ELECTRICAL CONNECTION RM 1300/0047 WALL	N/A N/A	N/A N/A		NO NO	NONE	3	
C	H-2-123030	6	8	PE	2	170 938	A	ELECTRICAL CONDUIT	OUT OF CELL ELECTRICAL CONNECTION RM 1300 WALL	IN CELL ELECTRICAL CONNECTION RM 0047 WALL	N/A N/A	N/A N/A		NO NO	NONE	3	
C	H-2-123030	6	8	PE	2	170 939	A	ELECTRICAL CONDUIT	OUT OF CELL ELECTRICAL CONNECTION RM 1300 WALL	IN CELL ELECTRICAL CONNECTION RM 0047 WALL	N/A N/A	N/A N/A		NO NO	NONE	3	
D	H-2-123060	32	7	PE	2	20A 295	DJ	PROCESS	PRO-2"-20A-1019-DB	PRO-2"-20A-XXXX-A	400 100	240 125	LIQ	NO YES	IH	3	CEM
D	H-2-123060	32	7	PE	2	20A 296	DJ	PROCESS	PRO-2"-20A-1020-DB	SPARE	400 100	240 125	LIQ	NO YES	IH	3	CEM
D	H-2-123060	32	7	PE	2	20B 064	DJ	PROCESS	PRO-2"-20B-059-A	PRO-2"-20B-062-DB	400 100	240 125	LIQ	NO YES	IH	3	CEM

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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG / OPER PSIG	DES TEMP / OPER TEMP	VAP LIQ	PWHT / STRS	INSUL	STY	REMARKS
D	H-2-123060	32	7	PE	2	20B 065	DJ	PROCESS	PRO-2"-20B-060-A	PRO-2"-20B-063-DB	400 100	240 125	LIQ	NO YES	IH	3	CEM
C	H-2-123060	24	6	PE	1 1/2	20C 010	A	PROCESS	PRO-1 1/2"-20C-009-A	PRO-1 1/2"-20C-011-A	150 20	150 77	LIQ	NO NO	NONE	3	
C	H-2-123060	23	6	PE	2	20C 015	DD	PROCESS	OUT OF CELL CONNECTION RM 0044	PRO-2"-20C-121-A	200 43	388 212	LIQ	NO YES	IH	3	SPARE
C	H-2-123060	23	7	PE	1	20C 018	A	PROCESS	PRO-2"-20C-223-A	PRO-1"-20C-019-A	200 43	388 212	LIQ	NO NO	NONE	3	
C	H-2-123060	23	3	PE	1	20C 024	A	PROCESS	PRO-1"-20C-222	PRO-6"-20C-023-A	200 43	388 212	LIQ	NO YES	NONE	3	
C	H-2-123060	23	3	PE	1	20C 026	A	PROCESS	BLIND	PRO-6"-20C-025-A	200 43	388 212	LIQ	NO YES	NONE	3	SPARE
C	H-2-123060	24	6	PE	1 1/2	20C 027	A	PROCESS	PRO-1 1/2"-20C-013-A	PRO-1 1/2"-20C-028-A	150 35	150 77	LIQ	NO NO	NONE	3	
C	H-2-123060	24	4	PE	1	20C 096	DD	PROCESS	FLANGED CONNECTION IN ROOM 0086	PRO-1 1/2"-20C-097-A	200 43	388 212	LIQ	NO YES	NONE	3	SPARE
C	H-2-123060	24	6	PE	1 1/2	20C 115	A	PROCESS	PRO-1 1/2"-20C-074-DA	PRO-1 1/2"-20C-116-A	150 40	150 77	LIQ	NO NO	NONE	3	CEM PER FRF-1848

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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG / OPER PSIG	DES TEMP / OPER TEMP	VAP / LIQ	PWHT / STRS	INSUL	STY	REMARKS
C	H-2-123030	11	3	PE	2	20C 140	A	SPARE	ROOM 3280	MELTER CELL/CDC TUNNEL ROOM 0044	200 / 0	388 / AMB		NO / YES	IH	3	SPARE LINE
C	H-2-123060	15	3	PE	1	20C 141	A	PROCESS	SU-20C-006	LE-296	.500 / 0	150 / AMB	VAP	NO / NO	NONE	3	LEAK DETECTION PIPE, MAX TEST TEST PRESS = 1 PSIG
C	H-2-123060	15	3	PE	1	20C 142	A	PROCESS	SU-20C-031	LE-818	.500 / 0	150 / AMB	VAP	NO / NO	NONE	3	LEAK DETECTION PIPE, MAX TEST TEST PRESS = 1 PSIG
C	H-2-123060	15	3	PE	1	20C 143	A	PROCESS	SU-20C-013	LE-216	.500 / 0	150 / AMB	VAP	NO / NO	NONE	3	LEAK DETECTION PIPE, MAX TEST TEST PRESS = 1 PSIG
C	H-2-123060	15	3	PE	1	20C 144	A	PROCESS	SU-20C-004	LE-178	.500 / 0	150 / AMB	VAP	NO / NO	NONE	3	LEAK DETECTION PIPE, MAX TEST TEST PRESS = 1 PSIG
C	H-2-123060	15	3	PE	1	20C 145	A	PROCESS	SU-20C-002	LE-138	.500 / 0	150 / AMB	VAP	NO / NO	NONE	3	LEAK DETECTION PIPE, MAX TEST PRESS = 1 PSIG
C	H-2-123060	15	3	PE	1	20C 146	A	PROCESS	SU-20C-027	LE-276	.500 / 0	150 / AMB	VAP	NO / NO	NONE	3	LEAK DETECTION PIPE, MAX TEST PRESS = 1 PSIG
C	H-2-123060	15	3	PE	1	20C 147	A	PROCESS	SU-20C-032	LE-838	.500 / 0	150 / AMB	VAP	NO / NO	NONE	3	LEAK DETECTION PIPE, MAX TEST PRESS = 1 PSIG
C	H-2-123060	15	3	PE	1	20C 148	A	PROCESS	SU-20C-030	LE-236	.500 / 0	150 / AMB	VAP	NO / NO	NONE	3	LEAK DETECTION PIPE, MAX TEST PRESS = 1 PSIG

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C	H-2-123060	15	3	PE	1	20C 149	A	PROCESS	SU-20C-003	LE-158	.500 / 0	150 / AMB	VAP	NO / NO	NONE	3	LEAK DETECTION PIPE, MAX TEST PRESS = 1 PSIG
C	H-2-123060	15	3	PE	1	20C 151	A	PROCESS	SU-20C-007	LE-616	.500 / 0	150 / AMB	VAP	NO / NO	NONE	3	LEAK DETECTION PIPE, MAX TEST PRESS = 1 PSIG
C	H-2-123060	15	3	PE	1	20C 152	A	PROCESS	SU-20C-001	LE-138	.500 / 0	150 / AMB	VAP	NO / NO	NONE	3	LEAK DETECTION PIPE, MAX TEST PRESS = 1 PSIG
C	H-2-123060	15	3	PE	1	20C 153	A	PROCESS	SU-20C-005	LE-196	.500 / 0	150 / AMB	VAP	NO / NO	NONE	3	LEAK DETECTION PIPE, MAX TEST PRESS = 1 PSIG
C	H-2-123030	12	5	PE	1/2	20C 155	A	SPARE	ROOM 0067	ROOM 3280	200 / 0	150 / AMB		NO	NONE	3	SPARE FOR RAILROAD WELL
C	H-2-123030	12	5	PE	1	20C 156	A	SPARE	ROOM 0067	ROOM 3280	200 / 0	388 / AMB		NO / YES	IH	3	SPARE FOR RAILROAD WELL
B	H-2-123060	9	8	PE	2	20C 159	A	REGULATED DRAIN	RM 0067, FLOOR DRAIN	SU-20C-015	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123030	12	8	PE	1	20C 160	A	SPARE	ROOM 0053	ROOM 3280	200 / 0	388 / AMB		NO / YES	IH	3	SPARE FOR CMR
C	H-2-123030	12	8	PE	1/2	20C 161	A	SPARE	ROOM 0053	ROOM 3280	200 / 0	150 / AMB		NO / NO	NONE	3	SPARE FOR CMR

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C	H-2-123060	23	7	PE	1	20C 170	A	PROCESS	PRO-1"-20C-064-A3	PRO-1"-20C-126-A @ RM 0040/0048 WALL	200 43	388 137	LIQ	NO YES	IH	3	
C	H-2-123060	23	4	PE	1	20C 172	A	PROCESS	PRO-1"-20C-067-A	PRO-1"-20C-128-A @ RM 0067/0048 WALL	200 43	388 137	LIQ	NO YES	IH	3	
C	H-2-123060	23	3	PE	1	20C 173	A	PROCESS	PRO-1"-20C-070-A3	PRO-1"-20C-129-A3 @ RM 0053/0048 WALL	200 43	388 137	LIQ	NO YES	IH	3	
C	H-2-123060	24	6	PE	1 1/2	20C 177	A	PROCESS	PRO-1 1/2"-134-A	PRO-1 1/2"-20C-132-A	150 35	150 77	LIQ	NO NO	NONE	3	
C	H-2-123060	24	5	PE	1 1/2	20C 178	A	PROCESS	PRO-1 1/2"-20C-135-A	PRO-1 1/2"-20C-131-A	150 35	150 77	LIQ	NO NO	NONE	3	
A	H-2-123060	24	4	PE	1	20C 185	DD	PROCESS	PRO-1 1/2"-20C-068-A	PRO-1 1/2"-20C-095-A & NEZ-1/2"-20C-100-A	200 43	388 137	LIQ	NO YES	NONE	3	CEM PER FRF-1848
C	H-2-123060	23	6	PE	2	20C 186	DD	PROCESS	PRO-2"-20C-036-A	PRO-2"-20C-105-A	200 43	388 212	LIQ	NO YES	NONE	3	
C	H-2-123060	15	3	PE	2	20C 193	A	PROCESS	SUMP FLUSH SU-20C-002	ROOM 0036	150 0	150 AMB	LIQ	NO NO	NONE	3	
C	H-2-123060	15	3	PE	2	20C 194	A	PROCESS	SUMP FLUSH SU-20C-031	ROOM 0044	150 0	150 AMB	LIQ	NO NO	NONE	3	

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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG / OPER PSIG	DES TEMP / OPER TEMP	VAP LIQ	PWHT STRS	INSUL	SFTY	REMARKS
C	H-2-123060	15	3	PE	2	20C 195	A	PROCESS	SUMP FLUSH SU-20C-006	ROOM 0044	150 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123060	15	3	PE	2	20C 196	A	PROCESS	SUMP FLUSH SU-20C-004	ROOM 0044	150 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123060	15	3	PE	2	20C 197	A	PROCESS	SUMP FLUSH SU-20C-013	ROOM 0047	150 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123060	15	3	PE	2	20C 198	A	PROCESS	SUMP FLUSH SU-20C-003	ROOM 0047	150 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123060	15	3	PE	2	20C 199	A	PROCESS	SUMP FLUSH SU-20C-027	ROOM 0048	150 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123060	15	3	PE	2	20C 200	A	PROCESS	SUMP FLUSH SU-20C-032	ROOM 0043	150 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123060	15	3	PE	2	20C 201	A	PROCESS	SUMP FLUSH SU-20C-030	ROOM 0055	150 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123060	15	3	PE	2	20C 202	A	PROCESS	SUMP FLUSH SU-20C-001	ROOM 0092	150 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123060	15	3	PE	2	20C 203	A	PROCESS	SUMP FLUSH SU-20C-005	ROOM 0092	150 / 0	150 / AMB	LIQ	NO / NO	NONE	3	

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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG / OPER PSIG	DES TEMP / OPER TEMP	VAP LIQ	PWHT / STRS	INSUL	STY	REMARKS
C	H-2-123060	15	3	PE	2	20C 204	A	PROCESS	SUMP FLUSH SU-20C-007	ROOM 0052	150 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
A	H-2-123160	11	3	PE	1/2	210 070	A	ARGON	ARX-1/2"-210-069-A	ARX-3/4"-210-074-A @ RM 066/130 WALL	150 / 20	150 / 78	VAP	NO / NO	NONE	3	
C	H-2-123030	3	6	PE	1 1/2	210 085	A	SPARE	ROOM 0066	ROOM 3280	200 / 0	150 / AMB		NO / NO	NONE	3	SPARE FOR CDMC SUMP SU-20C-007
C	H-2-123030	3	6	PE	1	210 086	A	SPARE	ROOM 0066	ROOM 3280	200 / 0	150 / AMB		NO / NO	NONE	3	SPARE FOR CDMC SUMP SU-20C-007
C	H-2-123160	9	6	PE	1	210 121	C3	DECON MIXTURE SOLUTION	DMS-2"-210-052-CC	DMS-1"-210-060-C3	260 / 220	400 / 180	LIQ	NO / NO	NONE	3	
C	H-2-123160	9	6	PE	1	210 122	C3	DECON MIXTURE SOLUTION	DMS-1"-210-054-CC	DMS-1"-210-061-C3	260 / 100	400 / 336	LIQ	NO / NO	NONE	3	DESIGN PRESSURE TO BE LOWERED BELOW 200 PSIG
	H-2-123160	11	3	PE	1/2	210 125	A	ARGON	ARX-1/2"-210-069-L	ARX-1/2"-210-073-A	150 / 20	150 / 78	VAP	NO / NO	NONE	3	
C	H-2-123160	11	3	PE	1/2	210 126	A	OXYGEN	O2X-1/2"-210-065-L	O2X-1/2"-210-075-A	150 / 20	150 / 78	VAP	NO / NO	NONE	3	CLEAN FOR OXYGEN SERVICE
C	H-2-123160	11	3	PE	1/2	210 127	A	ACETYLENE	ACT-1/2"-210-067-L	ACT-1/2"-210-076-A	150 / 8	150 / 78	VAP	NO / NO	NONE	3	

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C	H-2-123030	3	5	PE	2	210 160	C3	SPARE	ROOM 1300	ROOM 0066	260 0	210 AMB		NO YES	IH	3	CDMC SPARE
C	H-2-123030	3	5	PE	2	210 161	C3	SPARE	ROOM 1300	ROOM 0066	200 0	388 AMB		NO YES	IH	3	CDMC SPARE
C	H-2-123161	1	6	PE	1 1/2	230 003	A	PLANT AIR	XE-230-002V-VX VENDOR PACKAGE RM 0082	PAX VENDOR PIPING ROOM 0086	150 105	150 105	VAP	NO NO	NONE	3	
C	H-2-123161	1	5	PE	1 1/2	230 006	A	PLANT AIR	XE-230-002V-VX VENDOR PACKAGE RM 0082	PAX VENT	150 105	150 105	VAP	NO NO	NONE	3	
C	H-2-123161	1	5	PE	1 1/2	230 007	A	PLANT AIR	XE-230-002V-VX VENDOR PACKAGE RM 0082	PAX VENDOR PIPING ROOM 0086	150 105	150 105	VAP	NO NO	NONE	3	
B	H-2-123161	3	4	PE	2	230 906	A	ELECTRICAL CONDUIT	CC-230-002V	CC-230-002V INSTRUMENTATION @ RM 130/040 WALL	N/A N/A	N/A N/A		NO NO	NONE	3	SPARE
B	H-2-123161	3	4	PE	2	230 907	A	ELECTRICAL CONDUIT	CC-230-002V	CC-230-002V INSTRUMENTATION @ RM 130/040 WALL	N/A N/A	N/A N/A		NO NO	NONE	3	
C	H-2-123030	12	2	PE	2	410 226	A	PLANT AIR	ROOM 1300	PAX-2"-410-206-G	200 0	150 AMB	VAP	NO NO	NONE	3	SPARE TO SAND FILTER BUILDING
C	H-2-123160	10	4	PE	1/2	410 261	A	INSTRUMENT AIR	IAX-1/2"-410-510-L	IAX-1/2"-410-513-A	150 85	150 90	VAP	NO NO	NONE	3	

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C	H-2-123350	4	3	PE	1	410 531	A	PLANT AIR	PAX-1"-410-530-G	PAX-1"-410-532-G	150 105	150 105	VAP	NO NO	NONE	3	
C	H-2-123060	9	6	PE	1/2	410 768	A	INSTRUMENT AIR	IAX SUPPLY	CELL REFERENCE @ 0086 WALL	150 85	150 90	VAP	NO NO	NONE	3	
C	H-2-123060	14	6	PE	1/2	410 963	A	PLANT AIR	PAX-1/2"-410-683-G RM# 3260	PAX-1/2"-410-437-A RM# 0066	150 105	150 105	VAP	NO NO	NONE	3	
C	H-2-123060	14	6	PE	1/2	410 964	A	INSTRUMENT AIR	INSTR AIR SUPPLY	IAX-1/2"-410-438-A	150 85	150 90	VAP	NO NO	NONE	3	
C	H-2-123060	15	5	PE	1/2	410 972	A	PLANT AIR	PAX-1/2"-410-617-G	PAX-1/2"-410-439-A	150 105	150 105	VAP	NO NO	NONE	3	
C	H-2-123060	15	5	PE	1/2	410 973	A	INSTRUMENT AIR	IAX SUPPLY	IAX-1/2"-410-428-A (RM 0040)	150 85	150 90	VAP	NO NO	NONE	3	SU-20C-012
C	H-2-123060	15	5	PE	1/2	410 974	A	PLANT AIR	PAX-1/2"-410-615-G	PAX-1/2"-410-407-A	150 105	150 105	VAP	NO NO	NONE	3	SU-20C-013
C	H-2-123060	15	5	PE	1/2	410 975	A	INSTRUMENT AIR	IAX SUPPLY	IAX-1/2"-410-429-A	150 85	150 90	VAP	NO NO	NONE	3	
C	H-2-123060	9	6	PE	1/2	410 976	A	PLANT AIR	PAX-1/2"-410-611-G	PAX-1/2"-410-380-A	150 105	150 105	VAP	NO NO	NONE	3	LINE SHOWN ON SHEETS 9 & 15

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C	H-2-123060	9	5	PE	1/2	410 977	A	INSTRUMENT AIR	INSTRUMENT AIR SUPPLY	IAX-1/2"-410-417-A	150 / 85	150 / 90	VAP	NO / NO	NONE	3	LINE SHOWN ON SHEETS 9 & 15
A	H-2-123060	15	5	PE	1/2	410 978	A	PLANT AIR	PAX-1/2"-410-682-G RM# 3260	PAX-1/2"-410-441-A RM# 0067	150 / 105	150 / 105	VAP	NO / NO	NONE	3	SU-20C-015
C	H-2-123060	15	5	PE	1/2	410 979	A	INSTRUMENT AIR	IAX SUPPLY	IAX-1/2"-410-430-A RM# 0067	150 / 85	150 / 90	VAP	NO / NO	NONE	3	SU-20C-015
C	H-2-123060	15	5	PE	1/2	410 994	A	PLANT AIR	PAX-1/2"-410-640-G RM #3040	PAX-1/2"-410-498-A RM# 0053	150 / 105	150 / 105	VAP	NO / NO	NONE	3	
C	H-2-123060	15	5	PE	1/2	410 995	A	INSTRUMENT AIR	IAX SUPPLY	IAX-1/2"-410-454-A	150 / 85	150 / 90	VAP	NO / NO	NONE	3	
C	H-2-123160	9	7	PE	1	410 1173	A	PLANT AIR	PAX-1"-410-645-G	PAX-1"-410-506-A	150 / 105	150 / 105	VAP	NO / NO	NONE	3	
C	H-2-123160	9	7	PE	1	410 1174	A	PLANT AIR	PAX-1"-410-645-G	PAX-1"-410-507-A	150 / 105	150 / 105	VAP	NO / NO	NONE	3	
C	H-2-123152	2	8	PE	1/2	410 1201	A	INSTRUMENT AIR	OUT OF CELL AIR - MV-019	IAX-1/2"-410-009-A	150 / 85	150 / 90	VAP	NO / NO	NONE	3	
C	H-2-123152	2	7	PE	1/2	410 1202	A	INSTRUMENT AIR	OUT OF CELL AIR - MV-018	IAX-1/2"-410-008-A	150 / 85	150 / 90	VAP	NO / NO	NONE	3	

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C	H-2-123060	15	5	PE	1/2	410 1333	A	INSTRUMENT AIR	IAX SUPPY	CELL REFERENCE AT SU-20C-013	200 0	150 AMB	VAP	NO NO	NONE	3	SPARE CONN (BLANKED)
C	H-2-123060	15	5	PE	1/2	410 1341	A	INSTRUMENT AIR	IAX SUPPLY	CELL REFERENCE AT SU-20C-012	150 85	150 90	VAP	NO NO	NONE	3	FI-405
C	H-2-123060	15	5	PE	1/2	410 1342	A	INSTRUMENT AIR	IAX SUPPLY	CELL REFERENCE AT SU-20C-015	150 85	150 90	VAP	NO NO	NONE	3	FI-465
C	H-2-123060	15	5	PE	1/2	410 1344	A	INSTRUMENT AIR	IAX SUPPLY	CELL REFERENCE AT SU-20C-028	150 85	150 90	VAP	NO NO	NONE	3	FI-325
C	H-2-123060	15	5	PE	1/2	410 1350	A	INSTRUMENT AIR	IAX SUPPLY	CELL REFERENCE AT SU-20C-007	150 85	150 90	VAP	NO NO	NONE	3	FI-604
C	H-2-123350	6	7	PE	2	410 1355	A	BREATHING AIR	BAX-2"-410-388-AB	BAX-3/4"-410-1170-AB	150 100	150 AMB	VAP	NO NO	NONE	3	
C	H-2-123350	4	7	PE	1	410 1364	A	PLANT AIR	PAX-1"-410-578-G	PAX-1"-410-596-G	150 105	150 105	VAP	NO NO	NONE	3	
C	H-2-123350	7	7	PE	1 1/2	410 1365	A	INSTRUMENT AIR	IAX-1 1/2"-410-705-G	IAX-1 1/2"-410-776-G	150 85	150 90	VAP	NO NO	NONE	3	
C	H-2-123060	15	5	PE	1	420 086	A	MEDIUM PRESS STEAM	MPS-1"-420-024-L-IH, RM 3280	MPS-2"-420-055-A, RM 0040	200 155	388 375	VAP	NO YES	IH	3	

HANFORD WASTE VITRIFICATION PROJECT
PIPE LINE LIST
FLUOR DANIEL CONTRACT 80845734
WBS B210A (SEPTEMBER 27, 1993 ISSUE)

REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG / OPER PSIG	DES TEMP / OPER TEMP	VAP LIQ	PWHT / STRS	INSUL	SFTY	REMARKS
C	H-2-123060	15	5	PE	2	420 087	A	MEDIUM PRESS STEAM	MPS-1"-420-023-L-IH	MPS-2"-420-047-A	200 / 155	388 / 375	VAP	NO / YES	IH	3	
C	H-2-123060	9	4	PE	1	420 088	A	MEDIUM PRESS STEAM	MPS-1"-420-020-L-IH	MPS-1"-420-048-A-IS	200 / 155	388 / 375	VAP	NO / YES	IH	3	LINE IS SHOWN ON SHEETS 9 & 15
C	H-2-123060	15	5	PE	1	420 089	A	MEDIUM PRESS STEAM	MPS-1"-420-012-L-IH RM# 3280	MPS-1"-420-049-A-IS, RM# 0067	200 / 155	388 / 375	VAP	NO / YES	IH	3	JX-20C-015
C	H-2-123060	15	5	PE	1	420 094	A	MEDIUM PRESS STEAM	MPS-1"-420-035-L-IH RM# 1020	MPS-1"-420-054-A-IS RM# 0053	200 / 155	388 / 375	VAP	NO / YES	IH	3	
C	H-2-123160	9	6	PE	2	420 098	A3	MEDIUM PRESS STEAM	MPS-2"-420-036-L-IH	MPS-2"-420-065-A3	200 / 155	388 / 375	VAP	NO / YES	NONE	3	
C	H-2-123352	2	7	PE	3	430 043	A3	PROCESS CONDENSATE	PRC-430-041-AC	STAGE EQUIPMENT LAYDOWN, SU-20C-030	195 / 10	390 / 238	LIQ	NO / YES	IH	3	
C	H-2-123250	15	7	PE	1 1/2	450 422	A	PROCESS COOLING WTR RET	PRW-3"-450-019-A, ROOM 0053	PRW-3"-450-020-AB ROOM 1020	100 / 2	150 / 100	LIQ	NO / NO	NONE	3	
C	H-2-123250	15	6	PE	1 1/2	450 423	A	PROCESS COOLING WTR SPPLY	PSW-3"-450-054-AB, RM 0053	PSW-3"-450-018-AB, ROOM 1020	100 / 72	150 / 80	LIQ	NO / NO	NONE	3	
C	H-2-123355	2	2	PE	2	460 008	A	MELTER COOLING WTR RET	MRW-2"-460-607-AB	STAGED EQPT LAYDOWN, SU-20C-030	100 / 25	150 / 115	LIQ	NO	NONE	3	

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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG / OPER PSIG	DES TEMP / OPER TEMP	VAP LIQ	PWHT STRS	INSUL	SFTY	REMARKS
A	H-2-123060	14	5	PE	1	480 711	A	PROCESS WATER	LPW-1"-480-310-G ROOM# 3280	LPW-1"-480-487-A RM# 0066	125 / 70	100 / 70	LIQ	NO / NO	NONE	3	
C	H-2-123357	2	6	PE	1	480 916	A	PROCESS WATER	LPW-2"-480-375-G	LPW-2"-480-264-R	125 / 70	100 / 70	LIQ	NO / NO	NONE	3	
B	H-2-123358	1	6	PE	4	500 067	A	FIREWATER	FWX-6"-500-066-G	RM 0086, SMEAR TEST/ EXIT TUNNEL	150 / 100	100 / 70	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	6	PE	3	520 007	A	REGULATED FLOOR DRAIN	NEZ-ROOM 1080 FLOOR DRAIN,SERV. CORRIDOR	PE-3"-520-102-A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	6	PE	3	520 008	A	REGULATED FLOOR DRAIN	NEZ-SERVICE CORRIDOR (RM 1080) FLOOR DRAIN	PE-3"-520-102-A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	6	PE	3	520 032	A	REGULATED FLOOR DRAIN	NEZ FLOOR DRAIN - SERVICE CORRIDOR ROOM 1080	PE-6"-520-067-DD	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	4	PE	3	520 045	A	REGULATED FLOOR DRAIN	NEZ - SERVICE CORRIDOR (ROOM 1020) FLOOR DRAIN	PE-3"-520-115-A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	7	5	PE	3	520 054	A	REGULATED FLOOR DRAIN	NEZ-3"-540-152-AB, FLOOR DRAIN ROOM 3040	NEZ-3"-520-130-AB	25 / 0	150 / AMB	LIQ	NO	NONE	3	
C	H-2-123360	6	4	PE	3	520 066	A	REGULATED FLOOR DRAIN	NEZ-SERVICE CORRIDOR (RM 1020) FLOOR DRAIN	PE-3"-540-115-A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	

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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG OPER PSIG	DES TEMP OPER TEMP	VAP LIQ	PWHT STRS	INSUL	SFTY	REMARKS
D	H-2-123360	6	8	PE	3 6 4	520 067	DD	REGULATED FLOOR DRAIN	LIQUID WASTE COLLECTION HEADER	NEZ-6"-520-120-AB, NEZ-1/2"-520-074-AB	25 0	150 AMB	LIQ	NO YES	NONE	3	CEM
C	H-2-123360	8	7	PE	3	520 068	A	REGULATED FLOOR DRAIN	FLOOR DRAIN (RM.1600) ANALYTICAL SINKS (RM.1600)	NEZ-3"-520-063-AB, RM 0074	150 0	150 AMB	LIQ	NO NO	NONE	3	NO CEM PER FRF-1848
C	H-2-123360	6	5	PE	3	520 069	A	REGULATED FLOOR DRAIN	NEZ -SERVICE CORRIDOR (RM 1020) FLOOR DRAIN	PE-3"-520-115-A	25 0	150 AMB	LIQ	NO NO	NONE	3	
C	H-2-123360	6	8	PE	3	520 072	A	REGULATED FLOOR DRAIN	SERVICE CORRIDOR (ROOM 1080) FLOOR DRAIN	PE-3"-520-113-A	25 0	150 AMB	LIQ	NO	NONE	3	
C	H-2-123360	6	8	PE	3	520 073	A	REGULATED FLOOR DRAIN	REMOTE CELL OPERATIN GALLERY (RM 1300) FLOOR DRAIN	PE-3"-520-208-A	25 0	150 AMB	LIQ	NO	NONE	3	
C	H-2-123360	6	3	PE	3	520 083	A	REGULATED FLOOR DRAIN	ELEC INSTR SHOP RM 1620 FLOOR DRAIN	PE-3"-520-117-A	25 0	150 AMB	LIQ	NO NO	NONE	3	
C	H-2-123360	6	4	PE	3	520 084	A	REGULATED FLOOR DRAIN	ELECTRICAL & INSTRUMENT SHOP (RM 1620) FLOOR DRAIN	PE-3"-520-117-A	25 0	150 AMB	LIQ	NO NO	NONE	3	
C	H-2-123360	6	8	PE	3	520 085	A	REGULATED FLOOR DRAIN	SERVICE CORRIDOR (RM 1020) FLOOR DRAIN	PE-3"-520-113-A	25 0	150 AMB	LIQ	NO NO	NONE	3	
C	H-2-123360	6	6	PE	3	520 089	A	REGULATED FLOOR DRAIN	REMOTE CELL OPERATING GALLERY (ROOM 1300) FLOOR DRAIN	PE-3"-520-208-A	25 0	150 AMB	LIQ	NO	NONE	3	

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PIPE LINE LIST
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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG / OPER PSIG	DES TEMP / OPER TEMP	VAP LIQ	PWHT STRS	INSUL	SFTY	REMARKS
C	H-2-123360	6	5	PE	3	520 091	A	NEZ	REMOTE CELL OPERATING GALLERY (RM 1300) FLOOR DRAIN	PE-3"-520-116-A	25 / 0	150 / AMB	LIQ	NO	NONE	3	
C	H-2-123360	6	5	PE	3	520 096	A	REGULATED FLOOR DRAIN	PE-3"-520-208-A	PE-3"-520-001-A	25 / 0	150 / AMB	LIQ	NO	NONE	3	
C	H-2-123360	6	6	PE	3	520 102	A	REGULATED FLOOR DRAIN	PE-3"-520-007-A,PE-2"-520-008-A	PE-3"-520-001-A, PE-3"-520-208-A	25 / 0	150 / AMB	LIQ	NO	NONE	3	
C	H-2-123360	6	7	PE	3	520 103	A	REGULATED FLOOR DRAIN	SERVICE CORRIDOR RM-1020 FLOOR DRAIN	PE-6"-520-067-DD	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	7	PE	3	520 104	A	REGULATED FLOOR DRAIN	NEZ FLOOR DRAIN SERVICE CORRIDOR (RM 1020)	PE-6"-520-067-DD	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	5	PE	3	520 112	A	REGULATED FLOOR DRAIN	NEZ-3"-520-145-AB	PE-3"-520-116-A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	8	PE	3	520 113	A	REGULATED FLOOR DRAIN	520-072-A, 520-085-A, 520-102-A	PE-6"-520-067-DD,PE-3"-520-001-A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	6	PE	4	520 114	DD	REGULATED FLOOR DRAIN	NEZ-4"-520-078-AB	PE-6"-520-067-DD	250 / 0	150 / AMB	LIQ	NO / NO	NONE	3	

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PIPE LINE LIST
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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG / OPER PSIG	DES TEMP / OPER TEMP	VAP LIQ	PWHT STRS	INSUL	STY	REMARKS
C	H-2-123360	6	4	PE	3	520 115	A	REGULATED FLOOR DRAIN	PE-3"-520-045-A, PE-3"-520-116-A, PE-6"-520-067-A	PE-6"-520-067-DD,PE-3"-520-001-A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
D	H-2-123360	6	5	PE	3	520 116	A	REGULATED FLOOR DRAIN	PE-3"-520-091-A, PE-3"-520-112A	PE-3"-520-208-A, PE-3"-520-001-A	25 / 0	150 / AMB	LIQ	NO	NONE	3	
D	H-2-123360	6	4	PE	3	520 117	A	REGULATED FLOOR DRAIN	FLOOR DRAINS ROOM 1620 & 1020, PE-6"-520-067-DD	PE-6"-520-067-DD, PE-3"-520-002-A	25 / 0	150 / AMB	LIQ	NO	NONE	3	
D	H-2-123360	5	8	PE	3	520 125	A	REGULATED FLOOR DRAIN	NEZ-2"-520-123, 124-AB, NEZ-3"-520-126-AB, NEZ-2"-620-004-AB	NEZ-3"-520-127-AB	150 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	8	NEZ	3	520 192	A	REGULATED FLOOR DRAIN	SERVICE CORRIDOR (ROOM 1020) FLOOR DRAIN	PE-3"-520-113A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	6	PE	3	520 199	A	REGULATED FLOOR DRAIN	REMOTE CELL OPERATING GALLERY (RM 1300) FLOOR DRAIN	PE-3"-520-208-A	25 / 0	150 / AMB	VAP	NO / NO	NONE	3	
C	H-2-123360	6	6	PE	3	520 200	A	REGULATED FLOOR DRAIN	REMOTE CELL OPERATING GALLERY (RM 1300) FLOOR DRAIN	NEZ-3"-520-208-A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	5	PE	3	520 201	A	REGULATED FLOOR DRAIN	REMOTE CELL OPERATING GALLERY (RM 1300) FLOOR DRAIN	NEZ-3"-520-208-A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	

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PIPE LINE LIST
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WBS 8210A (SEPTEMBER 27, 1993 ISSUE)

REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG / OPER PSIG	DES TEMP / OPER TEMP	VAP LIQ	PWHT / STRS	INSUL	SFTY	REMARKS
C	H-2-123360	6	7	PE	3	520 203	A	REGULATED FLOOR DRAIN	SERVICE CORRIDOR (ROOM 1020) FLOOR DRAIN	PE-6"-520-067-DD	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	3	PE	3	520 204	A	REGULATED FLOOR DRAIN	REMOTE CELL OPERATING GALLERY (RM 1300) FLOOR DRAIN	PE-3"-520-208-A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	2	PE	3	520 205	A	REGULATED FLOOR DRAIN	REMOTE CELL OPERATING GALLERY (RM 1300) FLOOR DRAIN	PE-3"-520-208-A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	3	PE	3	520 208	A	REGULATED FLOOR DRAIN	FROM VARIOUS FLOOR DRAINS	PE-6"-520-067-DD (HDR), PE-3"-520-002-A	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	6	2	PE	3	520 209	A	REGULATED FLOOR DRAIN	CHEM ADDITION TANK GS-430-001V-TK2 DRAIN FUNNEL ROOM 1300	PE-3"-520-208-A (HDR)	25 / 0	150 / AMB	LIQ	NO / NO	NONE	3	
C	H-2-123360	7	4	PE	3	520 234	DD	REGULATED FLOOR DRAIN	OXALIC ACID DECON AREA (ROOM 130) FLR DRN, NEZ-2"-540-270-AB	NEZ-3"-520-237-AB	150 / 0	150 / AMB	LIQ	NO / YES	NONE	3	CEM PER FRF-1848
C	H-2-123360	7	4	PE	4	520 241	DD	REGULATED FLOOR DRAIN	NEZ-4"-540-149-AB	NEZ-4"-520-132-AB	25 / 0	150 / AMB	LIQ	NO / YES	NONE	3	CEM PER FRF-1848

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PIPE LINE LIST
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WBS B210A (SEPTEMBER 27, 1993 ISSUE)

REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG / OPER PSIG	DES TEMP / OPER TEMP	VAP / LIQ	PWHT / STRS	INSUL	SFTY	REMARKS
C	H-2-123360	7	6	PE	3	520 242	DE	REGULATED FLOOR DRAIN	NEZ-2"-540-128-CB	NEZ-3"-520-249-CB	25 / 0	150 / AMB	LIQ	NO / YES	NONE	3	CEM PER FRF-1848
C	H-2-123362	12	3	PE	1 1/2	540 325	DE	90% FORMIC ACID	FAK-1 1/2"540-175-DI	FAK-1 1/2"540-379-CB	150 / 10	150 / 77	LIQ	NO / YES	NONE	3	SPARE FOR 540-374. CEM PER FRF-1848
C	H-2-123362	12	3	PE	1 1/2	540 374	DE	90% FORMIC ACID	FAK-1 1 1/2"540-372-CB	FAK-1 1 1/2"540-378-CB	150 / 10	150 / 77	LIQ	NO / YES	NONE	3	CEM PER FRF-1848
C	H-2-123160	9	6	PE	2	540 769	A3	NITRIC ACID DECON SOLN	NDS-2"-540-435-AC	NDS-1"-540-474-A3	260 / 220	210 / 77	LIQ	NO / NO	NONE	3	REQUESTED CONFIRMATION OF DESIGN TEMPERATURE
C	H-2-123160	9	3	PE	2	540 770	A3	OXALIC ACID DECON SOLN	ODS-2"-540-263-CC	ODS-1"-540-475-C3	260 / 220	210 / 77	LIQ	NO / NO	NONE	3	
A	H-2-123160	9	7	PE	1 1/2	540 781	C	DECON CAUSTIC SOLUTION	DSS-1 1/2"-540-780-CB	DSS-1"-540-782-C	150 / 78	150 / 77	LIQ	NO / NO	NONE	3	
C	H-2-123160	13	8	PE	2	540 791	DD	NITRIC ACID DECON SOLN	NDS-2"-540-771-AC	SPRAYHEADS IN SMEAR TEST/EXIT TUNNEL (RM 0086)	260 / 232	150 / 77	LIQ	NO / YES	NONE	3	DESIGN TEMP TO BE CONFIRMED. CEM PER FRF-1848
C	H-2-123160	13	8	PE	2	540 792	DD	NITRIC ACID DECON SOLN	NDS-2"-540-791-AC	SPRAYHEADS IN SMEAR TEST/EXIT TUNNEL (RM 0086)	260 / 232	150 / 77	LIQ	NO / YES	NONE	3	CEM PER FRF-1848
C	H-2-123160	13	8	PE	2	540 793	DD	NITRIC ACID DECON SOLN	NDS-2"-540-791-AC	SPRAYHEADS IN SMEAR TEST/EXIT TUNNEL (RM 0086)	260 / 232	150 / 77	LIQ	NO / YES	NONE	3	CEM PER FRF-1848

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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG OPER PSIG	DES TEMP OPER TEMP	VAP LIQ	PWHT STRS	INSUL	SFTY	REMARKS
C	H-2-123160	13	6	PE	2	540 794	DD	NITRIC ACID DECON SOLN	NDS-2"-540-776-AC	ROOM 0044 MC/CDC/TRANSFER TUNNEL	260 232	150 77	LIQ	NO YES	IH	3	DESIGN TEMP TO BE CONFIRMED. CEM PER FRF-1848
C	H-2-123364	2	6	PE	2	560 026	A	SOLENOID VALVE VENT	SVV-2"-560-024-A	RM. 0053	150 90	150 90	VAP	NO NO	NONE	3	
C	H-2-123370	9	7	PE	1	620 014	A	INSTRUMENT	ROOM 0066	RP 003 IN ROOM 0062	15 0	150 AMB		NO NO	NONE	3	DESIGN FOR -5 PSIG
C	H-2-123370	9	7	PE	1	620 015	A	INSTRUMENT	ROOM 0066	RP 004 IN ROOM 0086	15 0	150 AMB		NO NO	NONE	3	DESIGN FOR -5 PSIG
C	H-2-123370	9	6	PE	2 1	620 050	A	INSTRUMENT	ROOM 0066	RP 073 IN ROOM 1300	15 0	150 AMB		NO NO	NONE	3	DESIGN FOR -5 PSIG
C	H-2-123370	9	6	PE	2 1	620 051	A	INSTRUMENT	ROOM 0066	RP 072 IN ROOM 1300	15 0	150 AMB		NO NO	NONE	3	DESIGN FOR -5 PSIG
C	H-2-123370	9	5	PE	1	620 054	A	SAMPLE LINES	SPL-1"-620-452-CT	ROOM 0008	15 0	150 AMB	VAP	NO NO	NONE	3	WILL CHANGE TO "AP" SPEC, DESIGN FOR -5 PSIG
C	H-2-123370	9	5	PE	1	620 055	A	SAMPLE LINES	ROOM 0008	SPL-1"-620-449-CT	15 0	150 AMB	VAP	NO NO	NONE	3	WILL CHANGE TO "AP" SPEC, DESIGN FOR -5 PSIG
C	H-2-123370	9	5	PE	1	620 056	A	SAMPLE LINES	SPL-1"-620-445-CT	ROOM 0086	15 0	150 AMB	VAP	NO NO	NONE	3	WILL CHANGE TO "AP" SPEC, DESIGN FOR -5 PSIG

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REV	P & ID	SH	SEC	SVC	SIZE	SYS NUM	MATL CLASS	COMMODITY	FROM	TO	DES PSIG OPER PSIG	DES TEMP OPER TEMP	VAP LIQ	PWHT STRS	INSUL	SFTY	REMARKS
C	H-2-123370	9	5	PE	1	620 057	A	SAMPLE LINES	ROOM 0086	SPL-1"-620-441-CT	15 0	150 AMB	VAP	NO NO	NONE	3	WILL CHANGE TO "AP" SPEC, DESIGN FOR -5 PSIG
C	H-2-123370	9	2	PE	1	620 058	A	SAMPLE LINES	SPL-1"-620-438-CT	ROOM 0066	15 0	150 AMB	VAP	NO NO	NONE	3	WILL CHANGE TO "AP" SPEC, DESIGN FOR -5 PSIG
C	H-2-123370	9	2	PE	1	620 059	A	SAMPLE LINES	ROOM 0066	SPL-1"-620-437-A	15 0	150 AMB	VAP	NO NO	NONE	3	WILL CHANGE TO "AP" SPEC, DESIGN FOR -5 PSIG
C	H-2-123370	2	3	PE	1	620 244	A	VACUUM AIR	VAX-1"-620-266-L, RM0090	VAX-1"-620-278, RM 1020	-15 -11	150 AMB	VAP	NO NO	NONE	3	
C	H-2-123030	11	3	PE	2	710 915	A	ELECTRICAL CONDUIT	ROOM 2200	MELTER CELL/CDC TUNNEL ROOM 0044	N/A N/A	N/A N/A		NO NO	NONE	3	SPARE
C	H-2-123030	11	3	PE	2	710 916	A	ELECTRICAL CONDUIT	ROOM 2200	MELTER CELL/CDC TUNNEL ROOM 0044	N/A N/A	N/A N/A		NO NO	NONE	3	
C	H-2-123380	1	3	PE	2	710 951	A	ELECTRICAL CONDUIT	EAST WALL	ROOM 2200	N/A N/A	N/A N/A		NO NO	NONE	3	
C	H-2-123380	8	5	PE	2	710 952	A	ELECTRICAL CONDUIT	ROOM 1300	ROOM 0044	N/A N/A	N/A N/A		NO NO	NONE	3	

ATTACHMENT B

TRANSMITTAL ATTACHMENT FOR PACKAGE SPECIFICATIONS

SPEC NUMBER	PKG SIGN DATE	PKG REV	SECT REV	SECTION	SECTION TITLE
B-595-C-B210A	B210A	3	VITRIFICATION BUILDING FOUNDATION		
	09/24/93		2	05059A	WELDING - STAINLESS STEEL LINERS
	09/24/93		0	05059B	WELDING - STAINLESS STEEL LINERS
	09/24/93		2	05123A	MISCELLANEOUS METALS
	09/24/93		0	05123B	MISCELLANEOUS METALS
	09/24/93		3	15062B	PIPING MATERIAL, FAB., ERECTION & PRESSURE TESTING (DOUBLE CONTAINED PIPING)
	09/24/93		3	16100	ELECTRICAL INSTALLATION
	09/24/93		3	RD-1	PIPING ISOMETRICS

ATTACHMENT C

TRANSMITTAL ATTACHMENT FOR PACKAGE DRAWINGS

PACKAGE NUMBER: B210A

DRAWING NUMBER	SHT NO.	REV	DATE	DRAWING TITLE	SOFTWARE
H-2-117425	1	3	09/24/93	STRUCTURAL VITRIFICATION BUILDING GENERAL NOTES	A
H-2-117425	7	2	09/24/93	STRUCT VIT BLDG TYPICAL CONSTR JOINTS FOR MAT, SLAB & WALLS	A
H-2-117426	1	2	09/24/93	STRUCT VIT BLDG TUNNEL CONFIG PLAN & DWG INDEX	A
H-2-117427	1	2	09/24/93	STRUCT VIT BLDG CONFIGURATION SECTIONS A & B	A
H-2-117428	1	2	09/24/93	STRUCT VIT BLDG CONFIGURATION SECTIONS C & D	A
H-2-117429	1	2	09/24/93	STRUCT VIT BLDG CONFIGURATION SECTIONS E, F, G & H	A
H-2-117431	1	2	09/24/93	STRUCT VIT BLDG TUNNEL FORMING PLAN SOUTH END	A
H-2-117432	1	2	09/24/93	STRUCT VIT BLDG TUNNEL FORMING PLAN NORTH END	A
H-2-117435	1	2	09/24/93	STRUCT VIT BLDG TUNNEL MAT REINF PLAN SOUTH END BOT REINF	A
H-2-117437	1	2	09/24/93	STRUCT VIT BLDG TUNNEL MAT REINF PLAN SOUTH END TOP REINF	A
H-2-117438	1	2	09/24/93	STRUCT VIT BLDG TUNNEL MAT REINF PLAN NORTH END TOP REINF	A
H-2-117439	1	2	09/24/93	STRUCT VIT BLDG TRANSVERSE TUNNEL MAT REINF PLAN	A
H-2-117442	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117443	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117444	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117445	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117446	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117447	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117448	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117449	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117450	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117451	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117452	1	3	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117453	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117454	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117456	1	2	09/24/93	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	A
H-2-117468	1	3	09/24/93	STRUCT VIT BLDG REINFORCING SECTION R	A
H-2-117469	1	2	09/24/93	STRUCT VIT BLDG REINFORCING SECTIONS S & T	A
H-2-117470	1	3	09/24/93	STRUCT VIT BLDG REINFORCING SECTIONS U & V	A

TRANSMITTAL ATTACHMENT FOR PACKAGE DRAWINGS

PACKAGE NUMBER: B210A

DRAWING NUMBER	SHT NO.	REV	DATE	DRAWING TITLE	SOFTWARE
H-2-117471	1	3	09/24/93	STRUCT VIT BLDG REINFORCING SECTIONS W & X	A
H-2-117472	1	3	09/24/93	STRUCT VIT BLDG REINFORCING SECTIONS AN, AP, & AQ	A
H-2-117939	1	2	09/24/93	STRUCT VIT BLDG WALL LOCATION PLAN TUNNEL	A
H-2-117941	1	2	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117942	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117943	1	2	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117944	1	2	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117955	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117957	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117962	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117963	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117964	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117965	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117966	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117967	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117970	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117971	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117975	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117979	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117979	2	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117991	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-117994	1	3	09/24/93	STRUCTURAL VIT BLDG WALL ELEVATIONS	A
H-2-118227	2	1	09/24/93	STRUCTURAL VIT BLDG TUNNEL REINF SECTIONS	A
H-2-118227	3	1	09/24/93	STRUCTURAL VIT BLGS TUNNEL REINF SECTIONS	A
H-2-118228	1	3	09/24/93	STRUCTURAL VIT BLDG SECTIONS AND DETAILS	A
H-2-118229	1	3	09/24/93	STRUCT VIT BLDG REINFORCING SECTIONS	A
H-2-118230	1	3	09/24/93	STRUCTURAL VIT BLDG SECTIONS & DETAIL	A
H-2-118232	2	3	09/24/93	STRUCTURAL VIT BLDG SECTIONS & DETAILS	A
H-2-118234	2	3	09/24/93	STRUCTURAL VIT BLDG SECTIONS & DETAILS	A

TRANSMITTAL ATTACHMENT FOR PACKAGE DRAWINGS

PACKAGE NUMBER: B210A

DRAWING NUMBER	SHT NO.	REV	DATE	DRAWING TITLE	SOFTWARE
H-2-118234	4	1	09/24/93	STRUCTURAL VIT BLDG SECTIONS & DETAILS	A
H-2-118235	1	2	09/24/93	STRUCTURAL VIT BLDG SS SUMPS	A
H-2-118235	2	2	09/24/93	STRUCTURAL VIT BLDG SS SUMPS	A
H-2-118235	3	2	09/24/93	STRUCTURAL VIT BLDG SS SUMPS	A
H-2-118235	4	2	09/24/93	STRUCTURAL VIT BLDG SS SUMPS	A
H-2-118235	5	2	09/24/93	STRUCTURAL VIT BLDG SUMPS	A
H-2-118235	6	2	09/24/93	STRUCTURAL VIT BLDG SUMPS	A
H-2-118237	1	2	09/24/93	STRUCTURAL VIT BLDG SECTION AND DETAILS	A
H-2-118238	1	3	09/24/93	STRUCTURAL VIT BLDG SECTIONS AND DETAILS	A
H-2-118243	1	3	09/24/93	STRUCTURAL VIT BLDG SECTIONS & DETAIL	A
H-2-118245	1	3	09/24/93	STRUCT VIT BLDG EQUIP PIERS SCHED & DETAILS	A
H-2-118249	1	3	09/24/93	STRUCTURAL VIT BLDG SECTIONS & DETAILS	A
H-2-118252	4	1	09/24/93	STRUCTURAL VIT BLDG SECTIONS AND DETAILS	A
H-2-118253	1	0	09/24/93	STRUCTURAL VIT BLDG DETAILS	A
H-2-118253	2	0	09/24/93	STRUCTURAL VIT BLDG DETAILS	A
H-2-118253	3	0	09/24/93	STRUCTURAL VIT BLDG DETAILS	A
H-2-118280	1	3	09/24/93	STRUCTURAL VIT BLDG LINER PLATE DETAILS	A
H-2-118283	1	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL FORMING PLAN	A
H-2-118283	2	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL PLAN	A
H-2-118283	3	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL PLAN	A
H-2-118283	4	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL PLAN	A
H-2-118283	5	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL PLAN	A
H-2-118283	6	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL PLAN	A
H-2-118283	7	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL PLAN	A
H-2-118284	1	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS AND DETAILS	A
H-2-118284	2	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS AND DETAILS	A
H-2-118284	3	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS AND DETAILS	A
H-2-118284	4	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS AND DETAILS	A
H-2-118284	5	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS AND DETAILS	A

TRANSMITTAL ATTACHMENT FOR PACKAGE DRAWINGS

PACKAGE NUMBER: B210A

DRAWING NUMBER	SHT NO.	REV	DATE	DRAWING TITLE	SOFTWARE
H-2-118284	6	1	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS AND DETAILS	A
H-2-118284	7	2	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS AND DETAILS	A
H-2-118284	8	2	09/24/93	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS AND DETAILS	A
H-2-118286	1	2	09/24/93	STRUCT VIT BLDG CATCH TANK AREA FLOOR LINER PL	A
H-2-118286	2	2	09/24/93	STRUCT VIT BLDG CATCH TANK AREA FLOOR LINER PL	A
H-2-116005	1	4	09/24/93	VIT BUILDING FOUNDATION TITLE SHEET	A
H-2-116006	1	4	09/24/93	VIT BUILDING FOUNDATION DRAWING INDEX	A
H-2-116006	2	4	09/24/93	VIT BUILDING FOUNDATION DRAWING INDEX	A
H-2-120002	1	1	09/24/93	MECH VIT BLDG EMBEDDED TUBE MSM BAG TYPE ASSEMBLY	A
H-2-120037	1	1	09/24/93	EB-710-100-EMBEDDED TUBE PLUG DELIVERY SYSTEM ASSEMBLY	A
H-2-120037	2	1	09/24/93	EB-710-100-EMBEDDED TUBE PLUG DELIVERY SYSTEM SECT & VIEW	A
H-2-120061	1	1	09/24/93	EB-710-102 EMBEDDED TUBE SMEAR TEST EXIT TUNNEL ASSEMBLY	A
H-2-120073	1	1	09/24/93	GEP-0047-17 MC-ICC ELECT CONN INR CSTR CLOSURE ASSY	A
H-2-120073	2	1	09/24/93	GEP-0047-17 MC-ICC ELECT CONN INR CSTR CLOSURE EMBED FR	A
H-2-120073	3	1	09/24/93	GEP-0047-17 MC-ICC ELECT CONN INR CSTR CLOSURE SECT & DET	A
H-2-120073	4	1	09/24/93	GEP-0047-17 MC-ICC ELECT CONN INR CSTR CLOSURE ADJ FR	A
H-2-120141	1	1	09/24/93	EB-710-104 EMBED TUBE CRN RTRV SYS SMEAR TEST EXIT TNL	A
H-2-120241	1	1	09/24/93	GEP-0044-02 MC-CDC TRANS TUNNEL SUMP PRCS CONN ASSEMBLY	A
H-2-120241	2	1	09/24/93	GEP-0044-02 MC-CDC TRANS TUNNEL SUMP PRCS CONN SECT & DET	A
H-2-120241	3	1	09/24/93	GEP-0044-02 MC-CDC TRANS TUNNEL SUMP PRCS CONN EMBED FR ASSY	A
H-2-120241	4	1	09/24/93	GEP-0044-02 MC-CDC TRANS TUNNEL SUMP PRCS CONN SECT & DET	A
H-2-120241	5	1	09/24/93	GEP-0044-02 MC-CDC TRANS TUNNEL SUMP PRCS CONN ADJ FR	A
H-2-120244	1	1	09/24/93	MECH SGL 2" PUREX PRCS CONN FOR SST LINED CELL ASSEMBLY	A
H-2-120244	2	1	09/24/93	MECH SGL 2" PUREX PRCS CONN FOR SST LINED CELL SECT & DET	A
H-2-120244	3	1	09/24/93	MECH SGL 2" PUREX PRCS CONN FOR SST LINED CELL EMBED FR	A
H-2-120244	4	1	09/24/93	MECH SGL 2" PUREX PRCS CONN FOR SST LINED CELL ADJ FR	A
H-2-120245	1	1	09/24/93	GEP-0047-18 MC-ICC PRCS CONN INR CSTR CLOSURE ASSEMBLY	A
H-2-120245	2	1	09/24/93	GEP-0047-18 MC-ICC PRCS CONN INR CSTR CLOSURE SECT & DET	A
H-2-120245	3	1	09/24/93	GEP-0047-18 MC-ICC PRCS CONN INR CSTR CLOSURE EMBED FRAME	A

TRANSMITTAL ATTACHMENT FOR PACKAGE DRAWINGS

PACKAGE NUMBER: B210A

DRAWING NUMBER	SHT NO.	REV	DATE	DRAWING TITLE	SOFTWARE
H-2-120245	4	1	09/24/93	GEP-0047-18 MC-ICC PRCS CONN INR CSTR CLOSURE ADJ FR	A
H-2-120461	1	1	09/24/93	EB-710-107 REDC RADIATION DETECTOR EMBED ASSEMBLY	A
H-2-120501	1	1	09/24/93	MECHANICAL EXTENDED SINGLE 2" PUREX PRCS CONN ASSY	A
H-2-120501	2	1	09/24/93	MECHANICAL EXTENDED SINGLE 2" PUREX PRCS CONN EMBED FR	A
H-2-120501	3	1	09/24/93	MECHANICAL EXTENDED SINGLE 2" PUREX PRCS CONN ADJ FR	A
H-2-120501	4	1	09/24/93	MECHANICAL EXTENDED SINGLE 2" PUREX PRCS CONN SECT & DET	A
H-2-120522	1	1	09/24/93	MECH SGL 2" PUREX PRCS CONN FOR UNLINED CELL ASSY	A
H-2-120522	2	1	09/24/93	MECH SGL 2" PUREX PRCS CONN FOR UNLINED CELL SECT & DET	A
H-2-120522	3	1	09/24/93	MECH SGL 2" PUREX PRCS CONN FOR UNLINED CELL EMBED FR	A
H-2-120522	4	1	09/24/93	MECH SGL 2" PUREX PRCS CONN FOR UNLINED CELL ADJ FR	A
H-2-120558	1	1	09/24/93	MECHANICAL LINED CELL EXTENDED 2" PUREX PRCS CONN ASSY	A
H-2-120558	2	1	09/24/93	MECHANICAL LINED CELL EXTENDED 2" PUREX PRCS EMBED FR	A
H-2-120558	3	1	09/24/93	MECHANICAL LINED CELL EXTENDED 2" PUREX PRCS CONN ADJ FR	A
H-2-120558	4	1	09/24/93	MECHANICAL LINED CELL EXTD 2" PUREX PRCS SECT & DET	A
H-2-124091	1	2	09/24/93	PIPING VIT BUILDING STANDARD FABRICATION DETAILS	A
H-2-124094	1	2	09/24/93	PIPING PLAN VIT BUILDING AREA S-A-1 AND S-A-2	C
H-2-124095	1	2	09/24/93	PIPING PLAN VIT BUILDING AREA S-B-1 THRU S-B-3	C
H-2-126175	8	1	09/14/93	PE-3"-110-017-DF-Ih SHEET 01 PIPING ISOMETRIC	C
H-2-126176	5	1	09/21/93	PE-2"-20B-065-DE-NONE SHEET 01 PIPING ISOMETRIC	C
H-2-126179	15	1	02/10/93	PE-2"-20C-196-A-NONE SHEET 01 PIPING ISOMETRIC	C
H-2-126184	1	1	09/13/92	PE-1"-20C-144-A-NONE SHEET 01 PIPING ISOMETRIC	C
H-2-126185	3	0	09/14/93	PE-3" 110-002-DD-IH SHEET 01 PIPING ISOMETRIC	C
H-2-126186	3	0	09/13/93	PE-3"-110-041-DF-Ih SHEET 01 PIPING ISOMETRIC	C
H-2-126187	2	1	09/13/92	PE-6"-520-067-DD-NONE SHEET 02 PIPING ISOMETRIC	C
H-2-126187	3	1	09/13/92	PE-6"-520-067-DD-NONE SHEET 03 PIPING ISOMETRIC	C
H-2-126187	9	1	09/13/93	PE-3"-110-038-DD-IH SHEET 01 PIPING ISOMETRIC	C
H-2-126188	6	1	09/21/93	PE-2"-20B-064-DE-NONE SHEET 01 PIPING ISOMETRIC	C
H-2-126188	18	1	09/13/93	PE-2"-20C-198-A-NONE SHEET 01 PIPING ISOMETRIC	C
H-2-126189	6	0	09/21/93	PE-2"-20A-295-DJ-IH PIPING ISOMETRICS	C

TRANSMITTAL ATTACHMENT FOR PACKAGE DRAWINGS

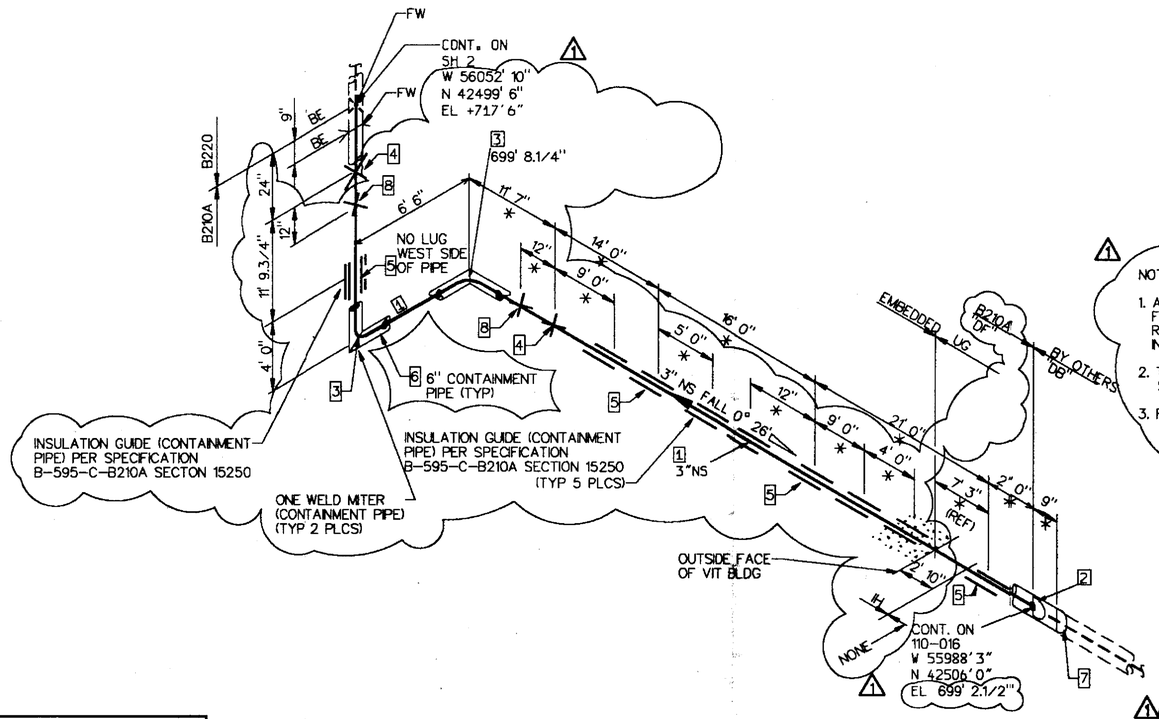
PACKAGE NUMBER: B210A

DRAWING NUMBER	SHT NO.	REV	DATE	DRAWING TITLE	SOFTWARE
H-2-126189	7	0	09/21/93	PE-2"-20A-296-DJ-IH PIPING ISOMETRICS	C
H-2-122382	2	3	09/24/93	ELECTRICAL VIT BLDG STANDARD DETAILS	A
H-2-122383	1	2	09/24/93	ELECTRICAL VIT BLDG UNDERGROUND CONDUIT & GROUNDING PLAN	A
H-2-122383	2	2	09/24/93	ELECTRICAL VIT BLDG UNDERGROUND CONDUIT & GROUNDING PLAN	A
H-2-122383	3	2	09/24/93	ELECTRICAL VIT BLDG UNDERGROUND CONDUIT & GROUNDING PLAN	A
H-2-122383	4	2	09/24/93	ELECTRICAL VIT BLDG UNDERGROUND CONDUIT & GROUNDING PLAN	A
H-2-122384	1	2	09/24/93	ELECTRICAL VIT BLDG UNDERGROUND & GROUNDING SECTIONS	C
H-2-122384	2	2	09/24/93	ELECTRICAL VIT BLDG UNDERGROUND & GROUNDING SECTIONS	C
H-2-122384	3	2	09/24/93	ELECTRICAL VIT BLDG UNDERGROUND & GROUNDING SECTIONS	C

| FABRICATION MATERIALS |

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
	CARRIER PIPE			
1	PIPBAR PIPE SCH 40S SMLS HASTELLOY C-22 B622	3	5866846	87.4'
	CARRIER FITTINGS			
2	CAPBW CAP SCH 40S HASTELLOY C-22 B366	3	5863523	1
3	ELLBW ELL 90 DEG LR SCH 40S HASTELLOY C-22 B366	3	5863518	2
4	PIPE ANCHOR 5EA1 PER DWG H-2-124091 SH 1	3-6	5EA1	2
5	PIPE GUIDE 5EG1 PER DWG H-2-124091	3-6	5EG1	4
	CONTAINMENT PIPE			
6	PIPE BAR PIPE SCH 40S SMLS 304L SS A312	6	5364086	88.9'
	CONTAINMENT FITTINGS			
7	CAPBW CAP SCH 40S 304L SS A403 WP304L	6	5438932	1
8	ANCHOR 5IA2 PER DWG H-2-124091 SH 1	6	5IA2	2

BILL OF MATERIAL FOR REFERENCE ONLY



NOTES:

1. ALL PRESSURE CONTAINING PIPING SHALL BE FABRICATED FROM CORROSION EVALUATED MATERIAL (CEM). CEM REQUIREMENTS AND ACCEPTABLE CORROSION RATES SHALL IN ACCORDANCE WITH SPECIFICATION SECTION 15062A.
2. THE FEED RECEIPT SYSTEM IS DESIGNED FOR SAFETY CLASS I DESIGN BASIS EARTHQUAKE (DBE).
3. REVISED PER CR-HWVP 0939.

* TRUE LENGTH

QUALITY LEVEL I
SAFETY CLASS 3
(SEE NOTE 2)

MODEL: PIPE/PAES3T

[X] DENOTES PART NO., SEE BILL OF MATERIAL

REV.	TYPE	BY	DATE	CHK'D	APPV'D	MAT'L	STRESS
1	SEE NOTE 3	MS	[illegible]	[illegible]	[illegible]		[illegible]
0	AFC	PA	02-10-93	SDW	GVV		JG

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					
PARTIAL ISO	X				X

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ___ SIZE ___		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-C-B210A SECTION 15062A

CONDITION	PRESS (PSIG)	TEMP (°F)	SERVICE
DESIGN	275	340	PRO
OPERATING	175	190	VAPOR / LIQUID X

REFERENCE PLAN DWG: H-2-124094-1; H-2-124101-1
REFERENCE P&ID: H-2-123040-3
SECTION: A7

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

U.S. DEPARTMENT OF ENERGY
Richland Field Office
DE-AC06-86RL10838

CADFILE: B126175HI
CADCODE: 2B:APL:DDM3:7.0.76:SS
DRAWN BY: P. ABRAHAM
DATE: 11/24/92
CLASSIFICATION: NONE
BY: NOT REQUIRED
LINE NUMBER AND CLASS: PE-3"-110-017-DF-IH
SHEET 01 OF

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT
PROJECT: B-595
FLUOR CONTRACT NO.: B457
CWBS NO.: B210A
SCALE: NONE
BUILDING NO.: 1
INDEX NO.:
DRAWING NUMBER: H-2-126175
SHEET 8 OF
REV. 1

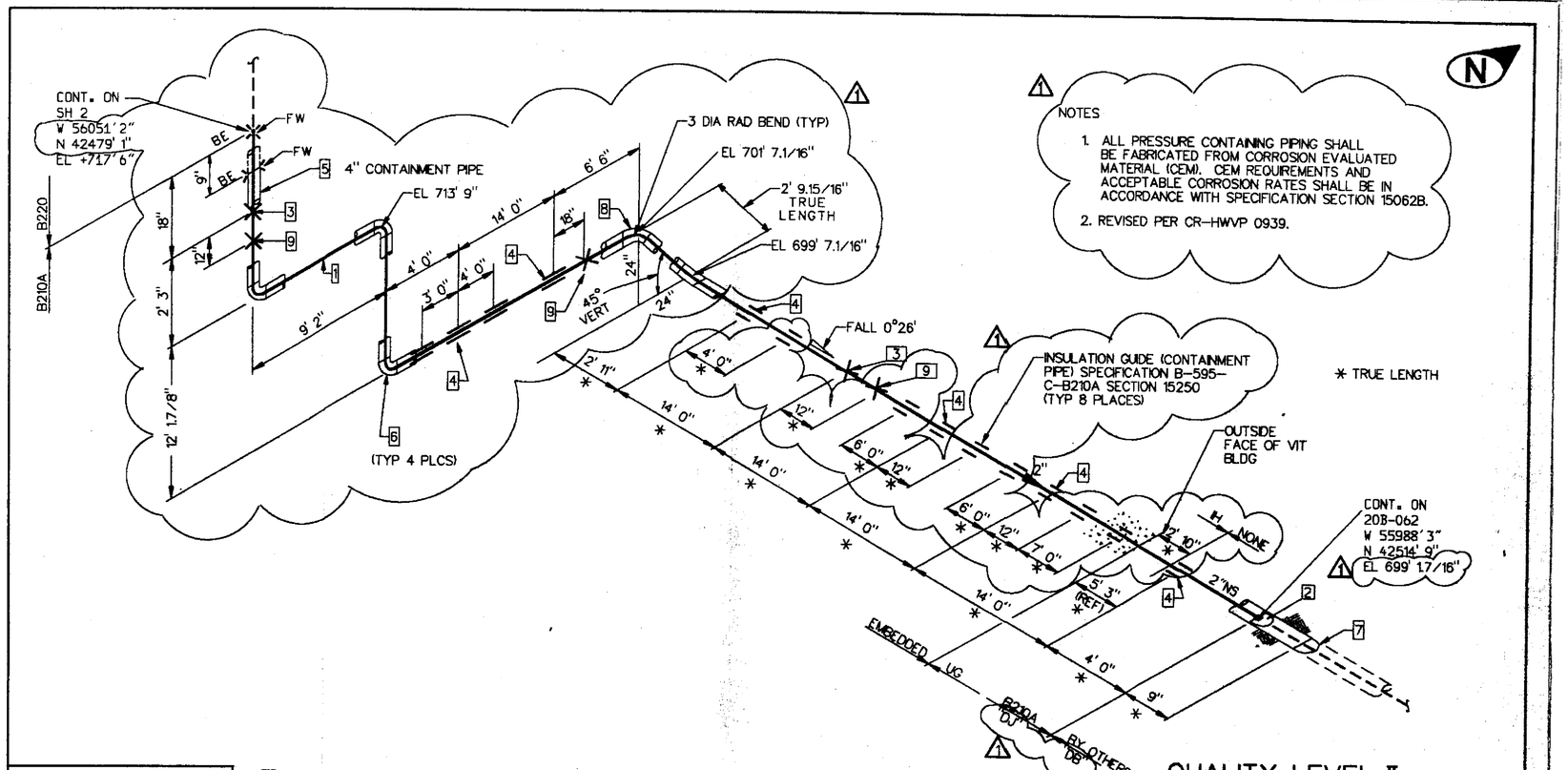
210A H-2-126175 1 8 R.1

DISTRIBUTION CODE: 504
PDS MS 07-15-93

| FABRICATION MATERIALS |

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
	CARRIER PIPE			
1	PIPBAR PIPE SCH 40S SMLS ALLOY 20CB B464	2	5366846	115.8'
	CARRIER FITTINGS			
2	CAPBW CAP SCH 40S ALLOY 20 WP20CB B366	2	5463526	1
3	PIPE ANCHOR 5EA1 PER DWG H-2-124091 SH 1	2-4	5EA1	2
4	PIPE GUIDE 5EG1 PER DWG H-2-124091 SH 1	2-4	5EG1	6
	CONTAINMENT PIPE			
5	PIPBAR PIPE SCH 40S SMLS 304L SS A312	4	5364086	110.8'
	CONTAINMENT FITTINGS			
6	ELLBW ELL 90 DEG LR SCH 40S 304L SS A403 WP304L	4	5438922	4
7	CAPBW CAP SCH 40S 304L SS A403 WP304L	4	5438932	1
8	ELLBW ELL 45 DEG SCH 40S 304L SS A403 WP304L	4	5438928	1
9	PIPE ANCHOR 5IA2 PER DWG H-2-124091 SH 1	4	5IA2	3

BILL OF MATERIAL FOR REFERENCE ONLY



NOTES

1. ALL PRESSURE CONTAINING PIPING SHALL BE FABRICATED FROM CORROSION EVALUATED MATERIAL (CEM). CEM REQUIREMENTS AND ACCEPTABLE CORROSION RATES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 15062B.
2. REVISED PER CR-HWVP 0939.

MODEL: PIPE/PAES3T

[X] DENOTES PART NO., SEE BILL OF MATERIAL

QUALITY LEVEL II
SAFETY CLASS 3

REV.	TYPE	BY	DATE	CHK'D	APPV'D	MAT'L	STRESS
1	SEE NOTE 2	MS	09-21-93	MKF	[signature]		[signature]
0	AFC	PA	02-10-93	SDW	GVV		JG

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					
PARTIAL ISO	X				X

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ___ SIZE ___		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-C-B210A SECTION 15062B

CONDITION	PRESS (PSIG)	TEMP (°F)	SERVICE
DESIGN	400	240	PRO
OPERATING	100	125	VAPOR / LIQUID X

REFERENCE PLAN DWG: H-2-124094-1; H-2-124109-1
REFERENCE P&ID: H-2-123060-32
SECTION: C7

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

U.S. DEPARTMENT OF ENERGY
Richland Field Office
DE-AC06-86RL10838

CADFILE: B126176E
CADCODE: 2B:APL:DDM3:7.0.78:SS
DRAWN BY: M.SCHJOLBERG
DATE: 03/30/93
CLASSIFICATION: NONE
BY: NOT REQUIRED
LINE NUMBER AND CLASS: PE-2"-20B-065-DJ-IH
SHEET 01 OF

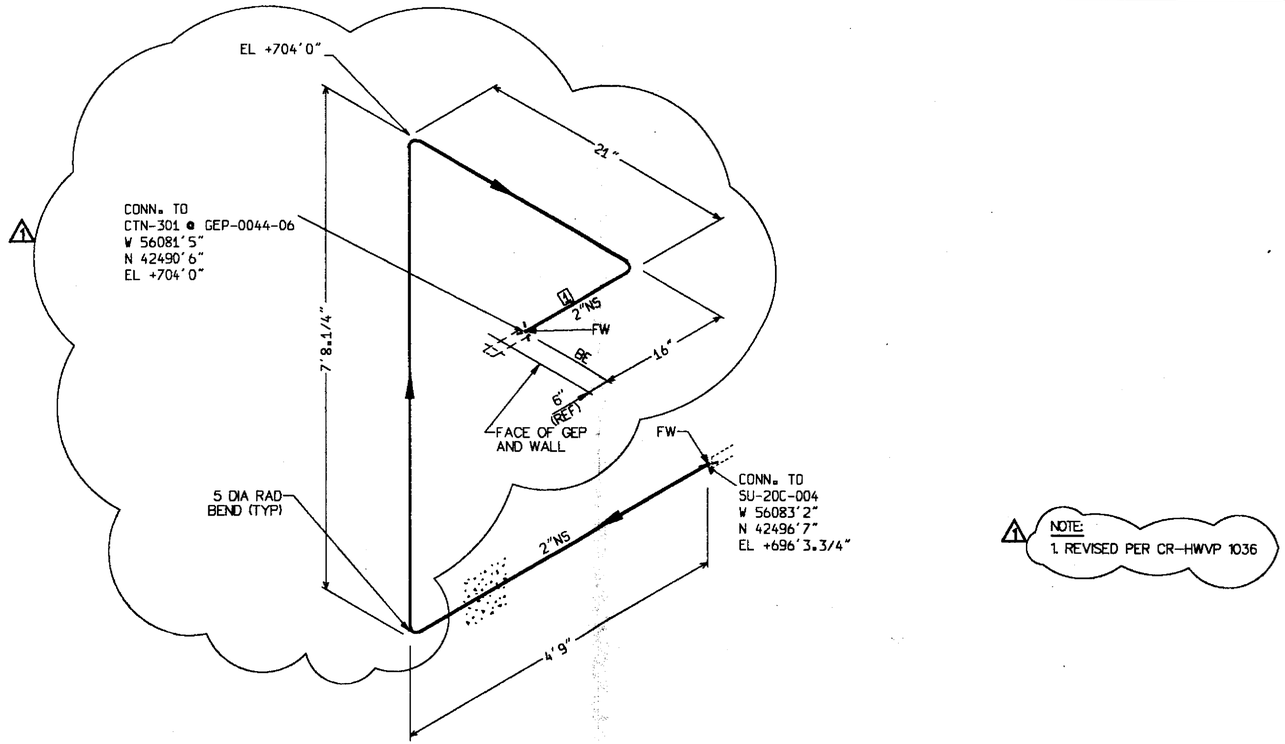
PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT
PROJECT: B-595
FLUOR CONTRACT NO.: 8457
CWBS NO.: B210A
SCALE: NONE
BUILDING NO.: 1
INDEX NO.:
DRAWING NUMBER: H-2-126176
SHEET 5 OF
REV. 1

DISTRIBUTION CODE: 504 PDS SDW 9-21-93

ue Sep 21 10:08:04 1993 CALMA VELLUM E:XXB3MF6E.SPL

| FABRICATION MATERIALS |

PT NO	PIPE	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
1		PIPBAR PIPE SCH 40S SMLS 304L SS A312	2	5364086	15.6'



NOTE:
1. REVISED PER CR-HWVP 1036

MODEL: PIPE/PAES3T

[X] DENOTES PART NO., SEE BILL OF MATERIAL

QUALITY LEVEL II
SAFETY CLASS 3

REV.	TYPE	BY	DATE	CHK'D	APPV'D	MAT'L	STRESS
1	SEE NOTE 1	TQ	09-16-93	MKF	[signature]		[signature]
0	AFC	PA	2-10-93	SDW	GVV		JG

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					X
PARTIAL ISO					

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ____ SIZE ____		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-B210A SECTION 15060

CONDITION	PRESS (PSIG)	TEMP (°F)	SERVICE
DESIGN	150	150	PRO
OPERATING	0	AMBIENT	VAPOR / LIQUID X

REFERENCE PLAN DWG: H-2-124094-A; H-2-124098-1
REFERENCE P&ID: H-2-123060-15/8
SECTION: E3/A6

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

U.S. DEPARTMENT OF ENERGY
Richland Field Office
DE-AC06-86RL10838

CADFILE: B126179R
CADCODE: 28:APL:DDM3:8.0:SS
DRAWN BY: T. QUINILAN
DATE: 07/19/93
CLASSIFICATION: NONE
BY: NOT REQUIRED
LINE NUMBER AND CLASS: PE-2"-20C-196-A-NONE
SHEET 01 OF 01

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT
PROJECT: B-595
FLUOR CONTRACT NO.: 8457
CWBS NO.: B210A
SCALE: NONE
BUILDING NO.: 1
INDEX NO.:
DRAWING NUMBER: H-2-126179
SHEET 15 OF
REV. 1

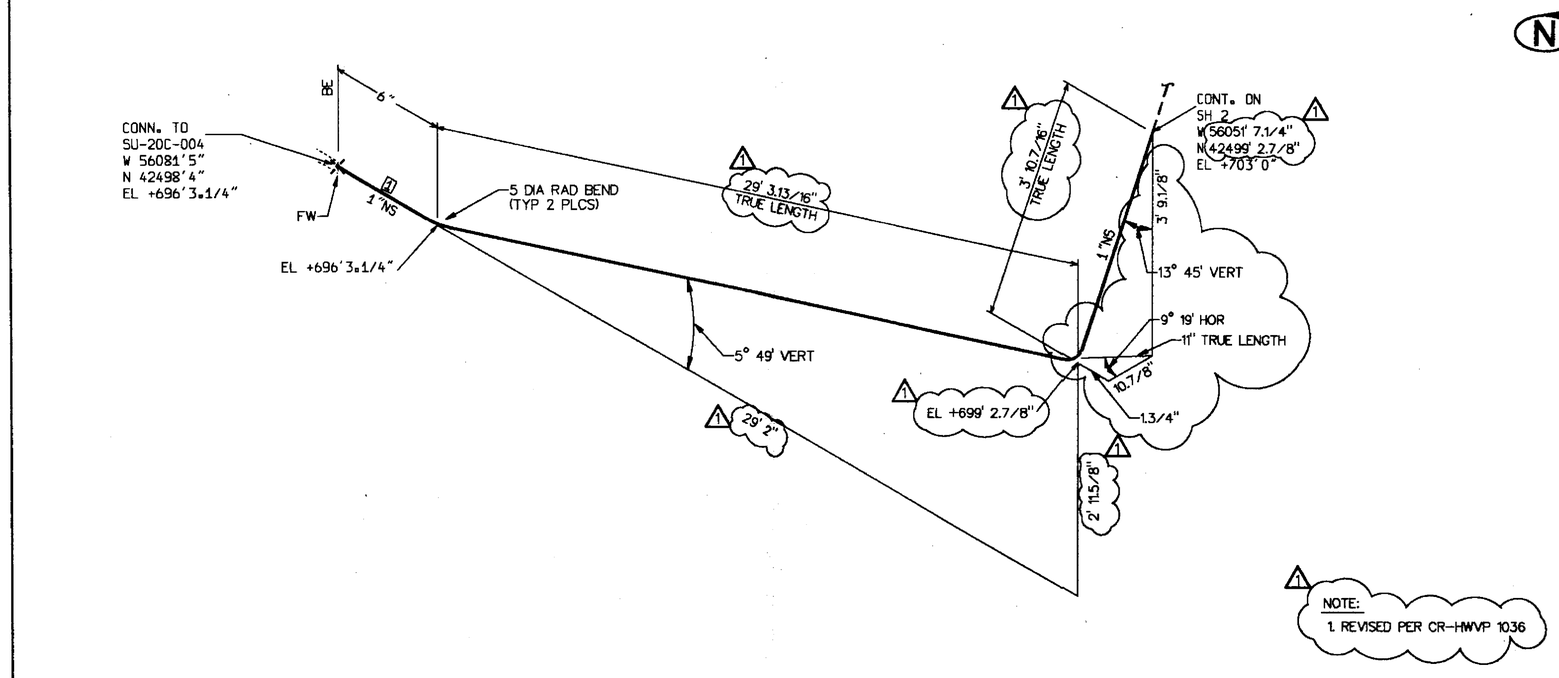
DISTRIBUTION CODE: 504
PDS
JD 8-31-93

BILL OF MATERIAL FOR REFERENCE ONLY

Su Sep 02 07:48:10 1993 CALMA VELLUM E:XXB3MF9R.SPL

| FABRICATION MATERIALS |

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
--	PIPE			
1	PIPBAR PIPE SCH 40S SMLS 304L SS A312	1	5364086	34.2'



NOTE:
1. REVISED PER CR-HWVP 1036

QUALITY LEVEL II
SAFETY CLASS 3

MODEL: PIPE/PAES3T

[X] DENOTES PART NO., SEE BILL OF MATERIAL

REV.	TYPE	BY	DATE	CHK'D	APPV'D	MAT'L	STRESS
1	SEE NOTE 1	TO	04-13-93	MKP	GW		
0	AFC	ELC	11-10-92	SDW	GVV		JG

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					X
PARTIAL ISO					

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ____ SIZE ____		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-C-B210A SECTION 15060

CONDITION	PRESS (PSIG)	TEMP (°F)	SERVICE		
DESIGN	0.500	150	PROCESS		
OPERATING	0	AMBIENT	VAPOR	X	LIQUID

REFERENCE PLAN DWG: H-2-124094-1 (1)
REFERENCE P&ID: H-2-123060-15/8
SECTION: E3/A7

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

U.S. DEPARTMENT OF ENERGY
Richland Field Office
DE-AC06-86RL10838

CADFILE	B126184A
CADCODE	2B:APL:DDM3:7.0:SS
DRAWN BY:	E COLLINS
DATE	08/04/92
CLASSIFICATION	NONE
BY	NOT REQUIRED
LINE NUMBER AND CLASS	PE-1"-20C-144-A-NONE
SHEET	01
OF	
PROJECT TITLE	HANFORD WASTE VITRIFICATION PLANT
PROJECT	B-595
FLUOR CONTRACT NO.	8457
CWBS NO.	B210A
SCALE	NONE
BUILDING NO.	1
INDEX NO.	
DRAWING NUMBER	H-2-126184
SHEET	1
OF	1
REV.	1

B210A H-2-126184 1 1 R.1

DISTRIBUTION CODE: 504

PDS JD 8-31-93

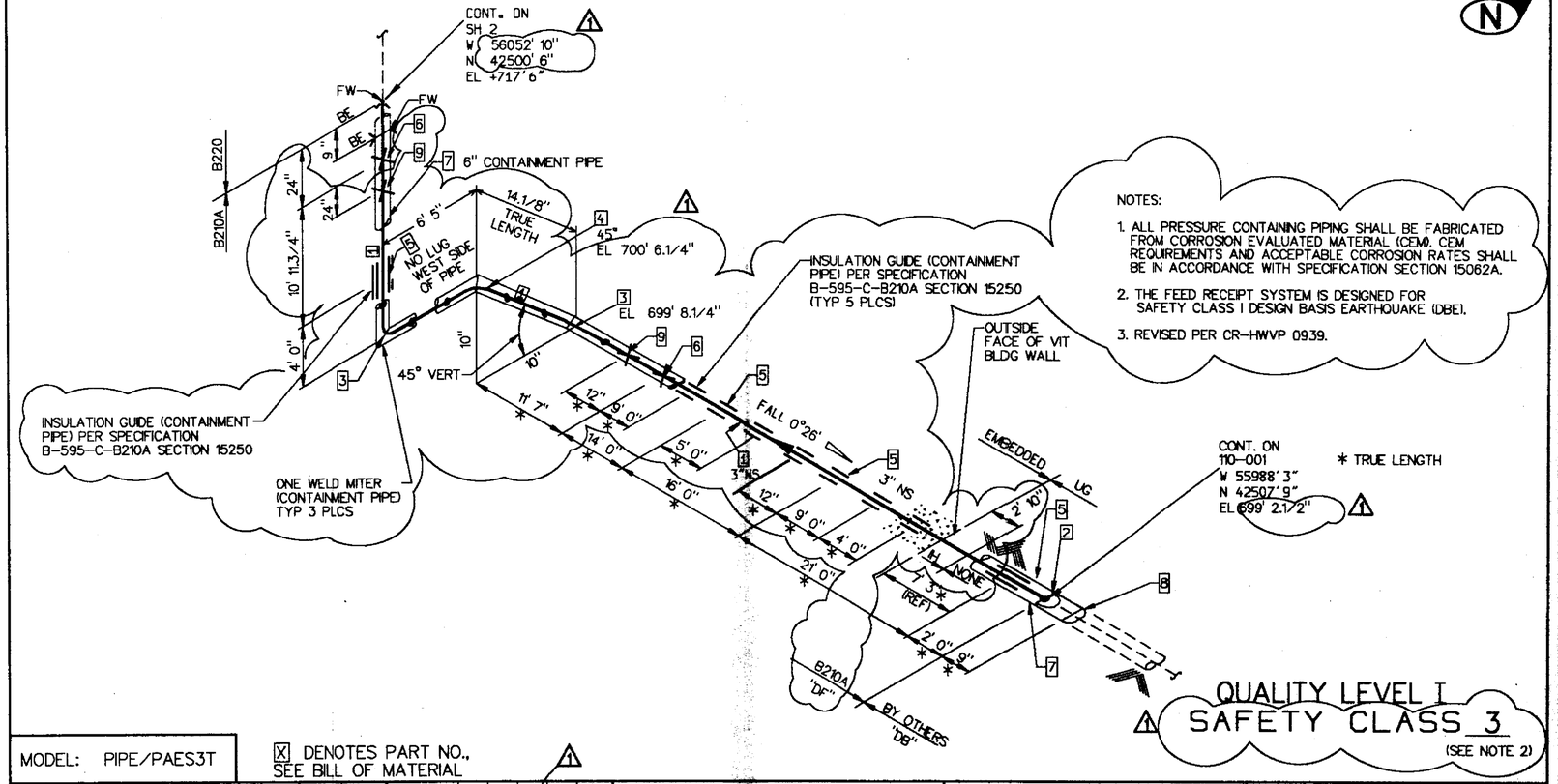
BILL OF MATERIAL FOR REFERENCE ONLY

u Sep 02 07:00:17 1993 CALMA VELLUM E:XXB3MF6C.SPL

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
	CARRIER PIPE			
1	PIPBAR PIPE SCH 40S SMLS HASTELLOY C-22 B622	3	5866846	87.3'
	CARRIER FITTINGS			
2	CAPBW CAP SCH 40S HASTELLOY C-22 B366	3	5863523	1
3	ELLBW ELL 90 DEG LR SCH 40S HASTELLOY C-22 B366	3	5863518	2
4	45LBW ELL 45 DEG SCH 40S HASTELLOY C-22 B366	3	5863519	1
5	PIPE GUIDE 5EG1 PER DWG H-2-124091 SH 1	3-6	5EG1	4
6	PIPE ANCHOR 5EA1 PER DWG H-2-124091 SH 1	3-6	5EA1	2
	CONTAINMENT PIPE			
7	PIPBAR PIPE SCH 40S SMLS 304L SS A312	6	5364086	89.2'
	CONTAINMENT FITTINGS			
8	CAPBW CAP SCH 40S 304L SS A403 WP304L	6	5438932	1
9	ANCHOR 5IA2 PER DWG H-2-124091 SH 1	6	5IA2	2

BILL OF MATERIAL FOR REFERENCE ONLY



NOTES:

1. ALL PRESSURE CONTAINING PIPING SHALL BE FABRICATED FROM CORROSION EVALUATED MATERIAL (CEM). CEM REQUIREMENTS AND ACCEPTABLE CORROSION RATES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 15062A.
2. THE FEED RECEIPT SYSTEM IS DESIGNED FOR SAFETY CLASS I DESIGN BASIS EARTHQUAKE (DBE).
3. REVISED PER CR-HWVP 0939.

QUALITY LEVEL I
SAFETY CLASS 3
(SEE NOTE 2)

MODEL: PIPE/PAES3T

[X] DENOTES PART NO., SEE BILL OF MATERIAL

REV.	TYPE	BY	DATE	CHK'D	APPV'D	MAT'L	STRESS
1	SEE NOTE 3	MS	09-14-93	MKF	[signature]		[signature]
0	AFC	PA	02-10-93	SDW	GVV		JG

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					
PARTIAL ISO	X				X

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ___ SIZE ___		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-C-B210A SECTION 15062A

CONDITION	PRESS (PSIG)	TEMP (°F)	SERVICE
DESIGN	275	340	PRO
OPERATING	175	190	VAPOR / LIQUID X

REFERENCE PLAN DWG: H-2-124094-1; H-2-124101-1
REFERENCE P&ID: H-2-123040-3
SECTION: A7

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

U.S. DEPARTMENT OF ENERGY
Richland Field Office
DE-AC06-86RL10838

CADFILE: B126185C
CADCODE: 2B:APL:DD13:7.0.76:SS
DRAWN BY: P. ABRAHAM
DATE: 11/24/92
CLASSIFICATION: NONE
BY: NOT REQUIRED
LINE NUMBER AND CLASS: PE-3"-110-002-DF-1H
SHEET 01 OF

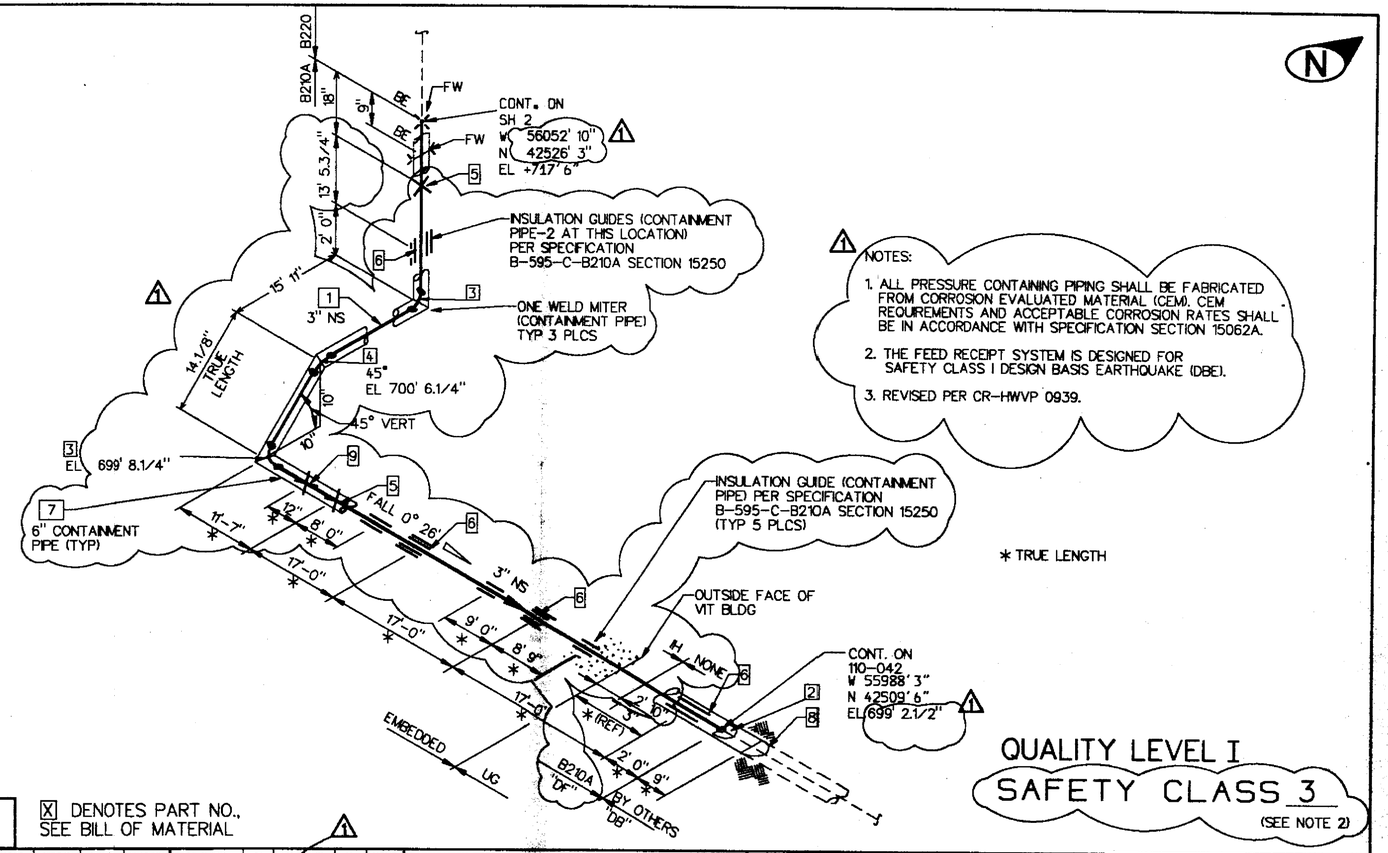
PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT
PROJECT: B-595
FLUOR CONTRACT NO.: 8457
CWBS NO.: B210A
SCALE: NONE
BUILDING NO.: 1
INDEX NO.:
DRAWING NUMBER: H-2-126185
SHEET 3 OF
REV. 1

DISTRIBUTION CODE: 504 PDS
MKF 07-13-93

| FABRICATION MATERIALS |

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
	CARRIER PIPE			
1	PIPBAR PIPE SCH 40S SMLS HASTELLOY C-22 B622	3	5866846	94.0'
	CARRIER FITTINGS			
2	CAPBW CAP SCH 40S HASTELLOY C-22 B366	3	5863523	1
3	ELLBW ELL 90 DEG LR SCH 40S HASTELLOY C-22 B366	3	5863518	2
4	45LBW ELL 45 DEG SCH 40S HASTELLOY C-22 B366	3	5863519	1
5	PIPE ANCHOR 5EA1 PER DWG H-2-124091 SH 1	3-6	5EA1	2
6	PIPE GUIDE 5EG1 PER DWG H-2-124091 SH 1	3-6	5EG1	4
	CONTAINMENT PIPE			
7	PIPBAR PIPE SCH 40S SMLS 304L SS A312	6	5364086	96.0'
	CONTAINMENT FITTINGS			
8	CAPBW CAP SCH 40S 304L SS A403 WP304L	6	5438932	1

BILL OF MATERIAL FOR REFERENCE ONLY



NOTES:

1. ALL PRESSURE CONTAINING PIPING SHALL BE FABRICATED FROM CORROSION EVALUATED MATERIAL (CEM). CEM REQUIREMENTS AND ACCEPTABLE CORROSION RATES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 15062A.
2. THE FEED RECEIPT SYSTEM IS DESIGNED FOR SAFETY CLASS I DESIGN BASIS EARTHQUAKE (DBE).
3. REVISED PER CR-HWVP 0939.

QUALITY LEVEL I

SAFETY CLASS 3 (SEE NOTE 2)

MODEL: PIPE/PAES3T

[X] DENOTES PART NO., SEE BILL OF MATERIAL

REV.	TYPE	BY	DATE	CHK'D	APPV'D	MATL	STRESS
1	SEE NOTE 3	MS					
0	AFC	PA		SDW	GVV		

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					
PARTIAL ISO	X				X

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ____ SIZE ____		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-C-B210A SECTION 15062A

CONDITION	PRESS (PSIG)	TEMP (°F)	SERVICE		
DESIGN	275	340	PRO		
OPERATING	175	190	VAPOR	LIQUID	X

REFERENCE PLAN DWG: H-2-124094-1, H-2-124101-1

REFERENCE P&ID: H-2-123040-4

SECTION: B7

FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION

U.S. DEPARTMENT OF ENERGY, Richland Field Office, DE-AC06-86RL10838

CADFILE: B126186C

CADCODE: 2B:APL:DDM3:7.0.76;SS

DRAWN BY: P. ABRAHAM

DATE: 11/24/92

CLASSIFICATION: NONE

BY NOT REQUIRED

LINE NUMBER AND CLASS: PE-3"-110-041-DF-IH

SHEET 01 OF

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT: B-595

FLUOR CONTRACT NO.: 8457

CWBS NO.: B210A

SCALE: NONE

BUILDING NO.: 1

INDEX NO.:

DRAWING NUMBER: H-2-126186

SHEET 3 OF REV. 1

DISTRIBUTION CODE: 504

PDS JD 9-9-93

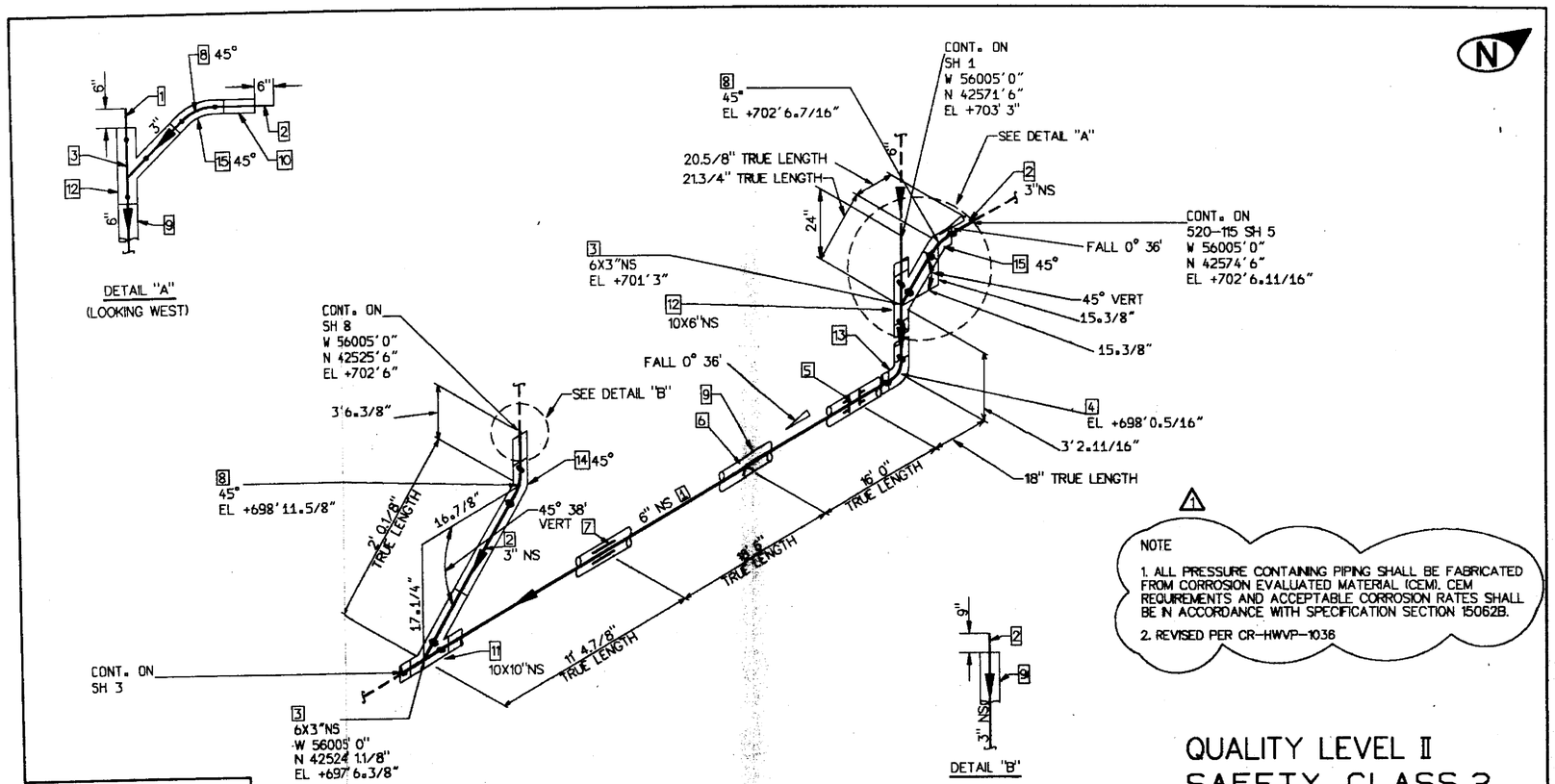
210A H-2-126186 R.1

9 SEP 09 16:12:59 1993 CALMA VELLUM EXXBIIIBXX01.PS

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
	CARRIER PIPE			
1	PIPBAR PIPE SCH 40S SMLS 304L SS A312	6	5364086	48.7'
2	PIPBAR PIPE SCH 40S SMLS 304L SS A312	3	5364086	6.4'
	CARRIER FITTINGS			
3	LATBW LATERAL, SCH40S, SMLS, SS-304L	6X3	5440851	2
4	ELLBW ELL 90 DEG LR SCH40S 304L SS A403 WP304L	6	5438922	1
5	ANCHOR 5EDA2 PER DWG H-2-124091 SH 1	6-10	5EDA2	1
6	PIPE SUPPORT 5ES1 PER DWG H-2-124091 SH 1	6-10	5ES1	1
7	PIPE GUIDE 5EG1 PER DWG H-2-124091 SH 1	6-10	5EG1	1
8	45LBW ELL 45 DEG SCH 40S 304L SS A403 WP304L	3	5438928	2
	CONTAINMENT PIPE			
9	PIPBAR PIPE SCH40S SMLS 304L SS A312	10	5364086	49.4'
10	PIPBAR PIPE SCH 40S SMLS 304L SS A312	6	5364086	1'
	CONTAINMENT FITTINGS			
11	LATBW SPLIT-LATERAL,SCH 40S,SS-304L	10X10	5440852	1
12	LATBW SPLIT-LATERAL,SCH 40S,SS-304L	10X6	5440852	1
13	ELLBW ELL 90 DEG LR SCH40S 304L SS A403 WP304L	10	5438922	1
14	45LBW ELL 45 DEG SCH 40S 304L SS A403	10	5438928	1
15	45LBW ELL 45 DEG SCH 40S 304L SS A403	6	5438928	1

BILL OF MATERIAL FOR REFERENCE ONLY



NOTE

1. ALL PRESSURE CONTAINING PIPING SHALL BE FABRICATED FROM CORROSION EVALUATED MATERIAL (CEM). CEM REQUIREMENTS AND ACCEPTABLE CORROSION RATES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 15062B.
2. REVISED PER CR-HWVP-1036

QUALITY LEVEL II
SAFETY CLASS 3

MODEL: PIPE/PAES3T

[X] DENOTES PART NO., SEE BILL OF MATERIAL

REV.	TYPE	BY	DATE	CHK'D	APPV'D	MATL	STRESS
1	SEE NOTE 2	IS	7-13-92	MKF	[illegible]		[illegible]
0	AFC	ELC	4-10-92	MKF	JV		JG

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					X
PARTIAL ISO					

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ___ SIZE ___		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-C-B210A SECTION 15062B

CONDITION	PRESS (PSIG)	TEMP (°F)	SERVICE	
DESIGN	25	150	NEZ	
OPERATING	0	AMBIENT	VAPOR	LIQUID X

REFERENCE PLAN DWG: H-2-124095-1
REFERENCE P&ID: H-2-123360-6
SECTION: B4

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

U.S. DEPARTMENT OF ENERGY
Richland Field Office
DE-AC06-86RL10838

CADFILE	B126187B
CADCODE	2B:APL:DDM3:7.0:SS
DRAWN BY:	E COLLINS
DATE	08/12/92
CLASSIFICATION	NONE
BY	NOT REQUIRED
LINE NUMBER AND CLASS	PE-6"-520-067-DD-NONE
SHEET	02
OF	
PROJECT TITLE	HANFORD WASTE VITRIFICATION PLANT
PROJECT	B-595
FLUOR CONTRACT NO.	8457
GWBS NO.	B210A
SCALE	NONE
BUILDING NO.	1
INDEX NO.	
DRAWING NUMBER	H-2-126187
SHEET	2
OF	
REV.	1

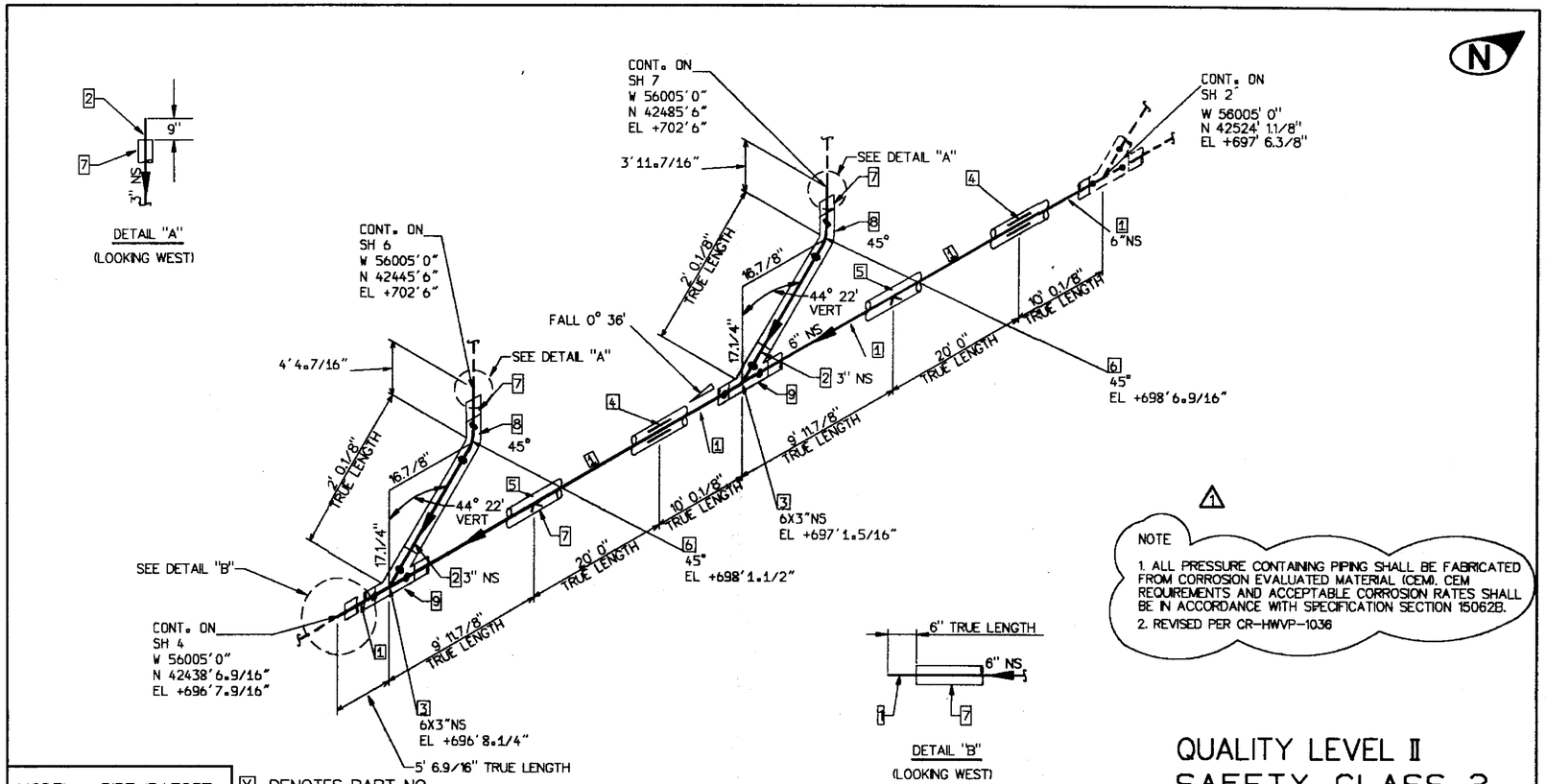
DISTRIBUTION CODE: 504

PDS IS 7-22-92

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
	CARRIER PIPE			
1	PIPBAR PIPE SCH 40S SMLS 304L SS A312	6	5364086	82.2'
2	PIPBAR PIPE SCH 40S SMLS 304L SS A312	3	5364086	9.7'
	CARRIER FITTINGS			
3	LATBW LATERAL, SCH40S, SMLS, SS-304L	6X3	5440851	2
4	PIPE GUIDE 5EG1 PER DWG H-2-124091 SH 1	6-10	5EG1	2
5	PIPE SUPPORT 5ES1 PER DWG H-2-124091 SH 1	6-10	5ES1	2
6	45LBW ELL 45 DEG SCH 40S 304L SS A403 WP304L	3	5438928	2
	CONTAINMENT PIPE			
7	PIPBAR PIPE SCH 40S SMLS 304L SS A312	10	5364086	86.6'
	CONTAINMENT FITTINGS			
8	45LBW ELL 45 DEG SCH 40S 304L SS A403 WP304L	10	5438928	2
9	LATBW SPLIT-LATERAL, SCH40S,SMLS, SS-304L	10X10	5440852	2

BILL OF MATERIAL FOR REFERENCE ONLY



NOTE

1. ALL PRESSURE CONTAINING PIPING SHALL BE FABRICATED FROM CORROSION EVALUATED MATERIAL (CEM). CEM REQUIREMENTS AND ACCEPTABLE CORROSION RATES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 15062B.
2. REVISED PER CR-HWVP-1036

MODEL: PIPE/PAES3T

[X] DENOTES PART NO., SEE BILL OF MATERIAL

QUALITY LEVEL II
SAFETY CLASS 3

REV.	TYPE	BY	DATE	CHK'D	APPV'D	MATL	STRESS
1	SEE NOTE 2	IS					
0	AFC	ELC		MKF	JV		

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					X
PARTIAL ISO					

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ___ SIZE ___		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-C-B210A SECTION 15062B

CONDITION	PRESS (PSIG)	TEMP (°F)	SERVICE
DESIGN	25	150	NEZ
OPERATING	0	AMBIENT	VAPOR / LIQUID X

REFERENCE PLAN DWG: H-2-124095-1
REFERENCE PLAN: H-2-123360-6
SECTION: B6

FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION

U.S. DEPARTMENT OF ENERGY
Richland Field Office
DE-AC06-86RL10838

CADFILE: B126187C
CADCODE: 2B:APL:DDM3:7.0:SS
PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT
DRAWN BY: E COLLINS
DATE: 08/12/92
PROJECT: B-595
FLUOR CONTRACT NO.: 8457
CWBS NO.: B210A
CLASSIFICATION: NONE
BY: NOT REQUIRED
SCALE: NONE
BUILDING NO.: 1
INDEX NO.:
LINE NUMBER AND CLASS: PE-6"-520-067-DD-NONE
SHEET 03 OF
DRAWING NUMBER: H-2-126187
SHEET 3 OF
REV. 1

2 1 0A H-2-126187 1 3 R.1

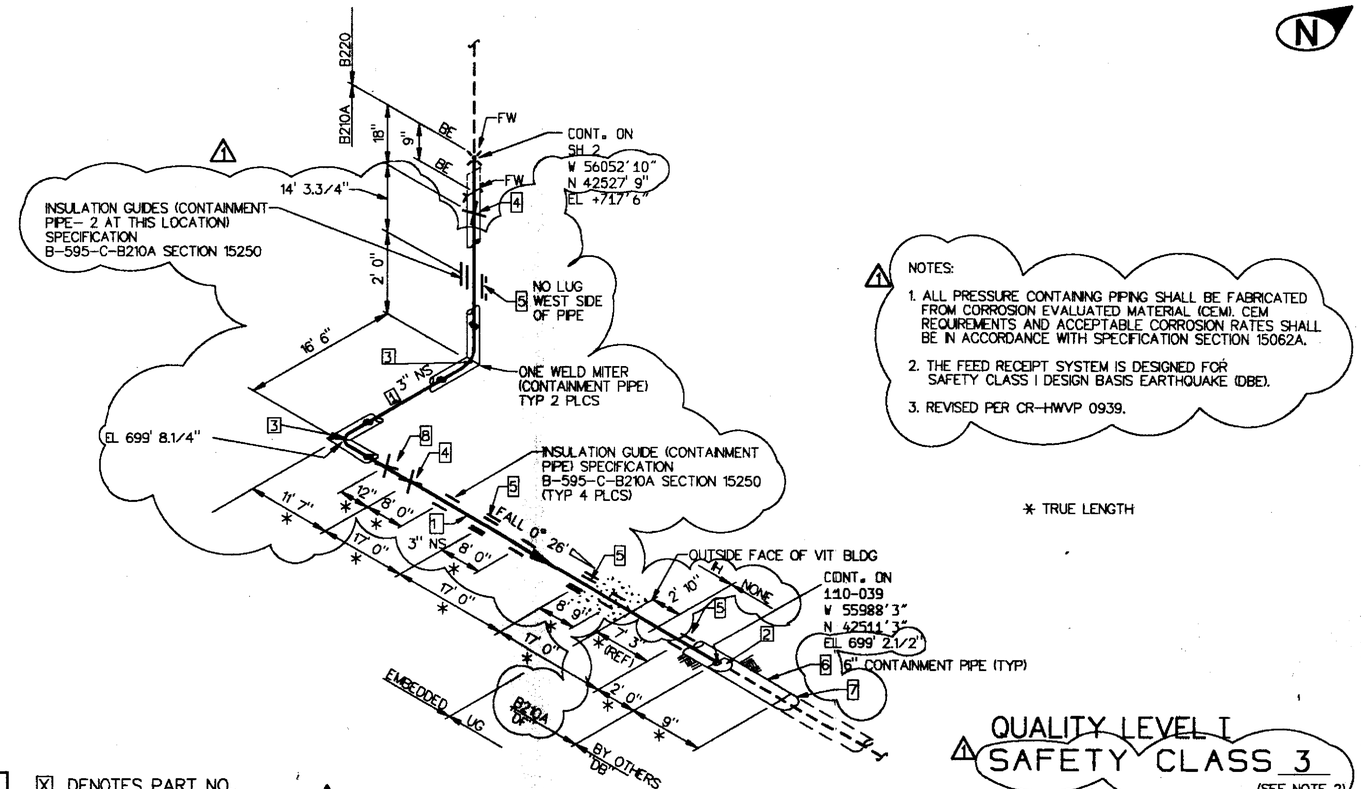
DISTRIBUTION CODE: 504

PDS 5 7-23-93

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
	CARRIER PIPE			
1	PIPBAR PIPE SCH 40S SMLS HASTELLOY C-22 B622	3	5866846	97.5'
	CARRIER FITTINGS			
2	CAPBW CAP SCH 40S HASTELLOY C-22 B366	3	5863523	1
3	ELLBW ELL 90 DEG LR SCH 40S HASTELLOY C-22 B366	3	5863518	2
4	PIPE ANCHOR 5EA1 PER DWG H-2-124091 SH 1	3-6	5EA1	2
5	PIPE GUIDE 5EG1 PER DWG H-2-124091 SH 1	3-6	5EG1	4
	CONTAINMENT PIPE			
6	PIPEBAR PIPE SCH 40S SMLS 304L SS A312	6	5364086	97.0'
	CONTAINMENT FITTINGS			
7	CAPBW CAP SCH 40S 304L SS A403 WP304L	6	5438932	1
8	ANCHOR 51A2 PER DWG H-2-124091 SH 1	6	51A2	1

BILL OF MATERIAL FOR REFERENCE ONLY



MODEL: PIPE/PAES3T

[X] DENOTES PART NO., SEE BILL OF MATERIAL

REV.	TYPE	BY	DATE	CHK'D	APPV'D	MAT'L	STRESS
1	SEE NOTE 3	MS	09-13-93				
0	AFC	PA	2-10-93	SDW	GVV		JG

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					
PARTIAL ISO	X				X

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ____ SIZE ____		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-C-B210A SECTION 15062A

CONDITION	PRESS (PSIG)	TEMP (°F)	SERVICE		
DESIGN	275	340	PRO		
OPERATING	175	190	VAPOR	LIQUID	X

REFERENCE PLAN DWG: H-2-124094-1
REFERENCE P&ID: H-2-123040-4
SECTION: B7
H-2-124102-1

FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION

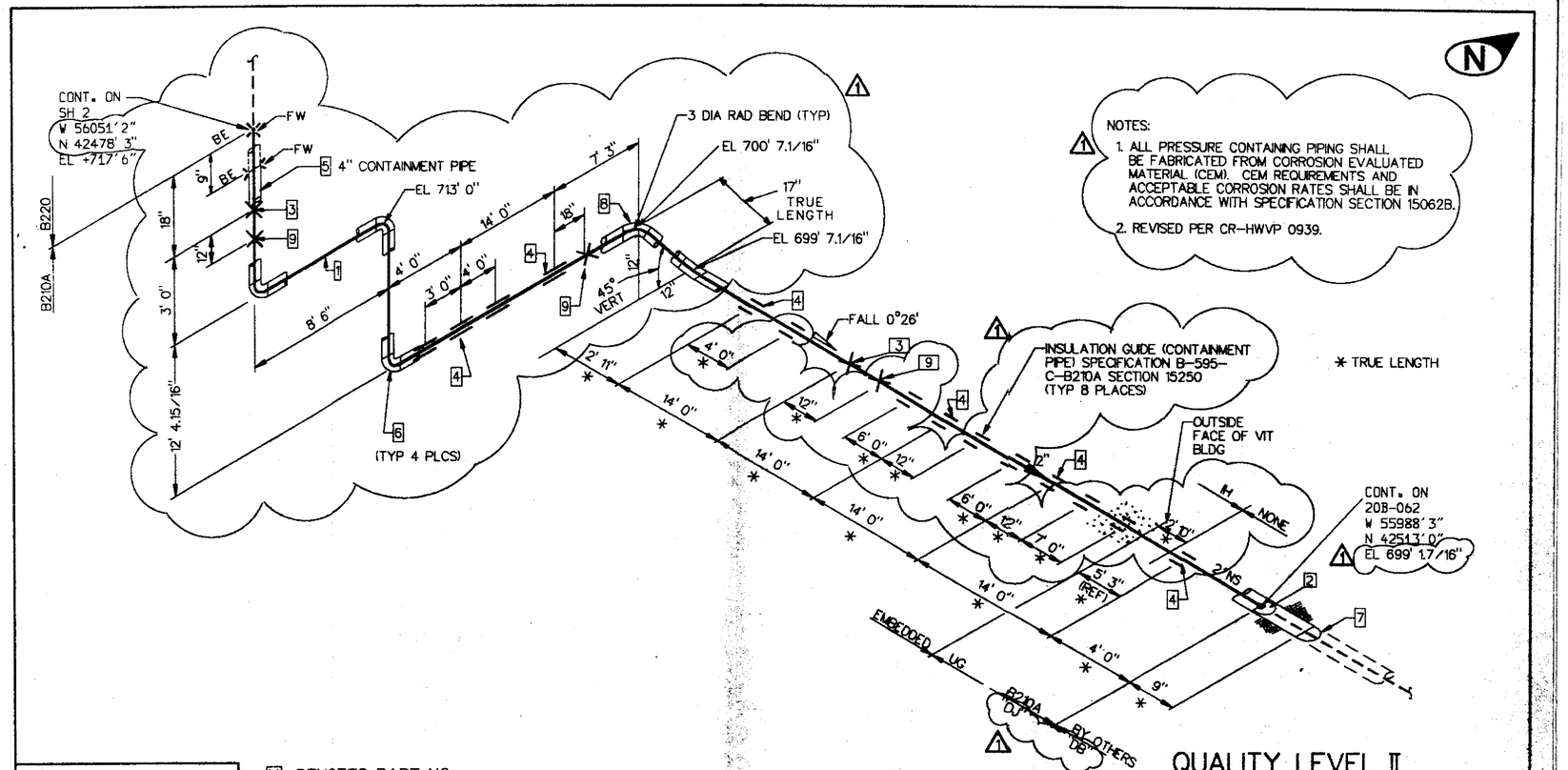
U.S. DEPARTMENT OF ENERGY
Richland Field Office
DE-AC06-86RL10838

CADFILE: B126187J
CADCODE: 28:APL:DDM3:7.0.78:SS
DRAWN BY: M. SCHJOLBERG
DATE: 03/30/93
CLASSFICATION: NONE
BY: NOT REQUIRED
LINE NUMBER AND CLASS: PE-3"-110-038-DF-IH
SHEET: 01 OF

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT
PROJECT: B-595
FLUOR CONTRACT NO.: 8457
CWBS NO.: 8210A
SCALE: NONE
BUILDING NO.: 1
INDEX NO.:
DRAWING NUMBER: H-2-126187
SHEET: 9 OF
REV.: 1

DISTRIBUTION CODE: 504
PDS
JD 9-9-93

FABRICATION MATERIALS				
PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
	CARRIER PIPE			
1	PIPBAR PIPE SCH 40S SMLS ALLOY 20CB B464	2	5366846	115.5'
	CARRIER FITTINGS			
2	CAPBW CAP SCH 40S ALLOY 20 WP20CB B366	2	5463526	1
3	PIPE ANCHOR 5EA1 PER DWG H-2-124091 SH 1	2-4	5EA1	2
4	PIPE GUIDE 5EG1 PER DWG H-2-124091 SH 1	2-4	5EG1	6
	CONTAINMENT PIPE			
5	PIPBAR PIPE SCH 40S SMLS 304L SS A312	4	5364086	110.5'
	CONTAINMENT FITTINGS			
6	ELLBW ELL 90 DEG LR SCH 40S 304L SS A403 WP304L	4	5438922	4
7	CAPBW CAP SCH 40S 304L SS A403 WP304L	4	5438932	1
8	ELLBW ELL 45 DEG SCH 40S 304L SS A403 WP304L	4	5438928	1
9	PIPE ANCHOR 5IA2 PER DWG H-2-124091 SH 1	4	5IA2	3



MODEL: PIPE/PAES3T

[X] DENOTES PART NO., SEE BILL OF MATERIAL

QUALITY LEVEL II
SAFETY CLASS 3

REV.	TYPE	BY	DATE	CHK'D	APPV'D	MAT'L	STRESS
1	SEE NOTE 2	MS	03-21-93	MKF			
0	AFC	PA	02-10-93	SDW	GVV		JG

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					
PARTIAL ISO	X				X

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ___ SIZE ___		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-C-B210A SECTION 15062B

	PRESS (PSIG)	TEMP (°F)	SERVICE
DESIGN	400	240	PRO
OPERATING	100	125	VAPOR / LIQUID X

REFERENCE PLAN DWG: H-2-124094-1
REFERENCE PMD: H-2-123060-32
SECTION: C7
H-2-124109-1

FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION

CADFILE: B126188F
CADCODE: 2B:APL:DDM3:7.0.78:SS
DRAWN BY: M. SCHJOLBERG
DATE: 03/30/93
CLASSIFICATION: NONE BY: NOT REQUIRED
LINE NUMBER AND CLASS: PE-2"-20B-064-DJ-IH
SHEET 01 OF

U.S. DEPARTMENT OF ENERGY
Richland Field Office
DE-AC06-86RL10838

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A
SCALE: NONE	BUILDING NO. 1	INDEX NO.

DRAWING NUMBER: H-2-126188 SHEET 6 OF 1 REV. 1

DISTRIBUTION CODE: 504

PDS SDW 09-21-93

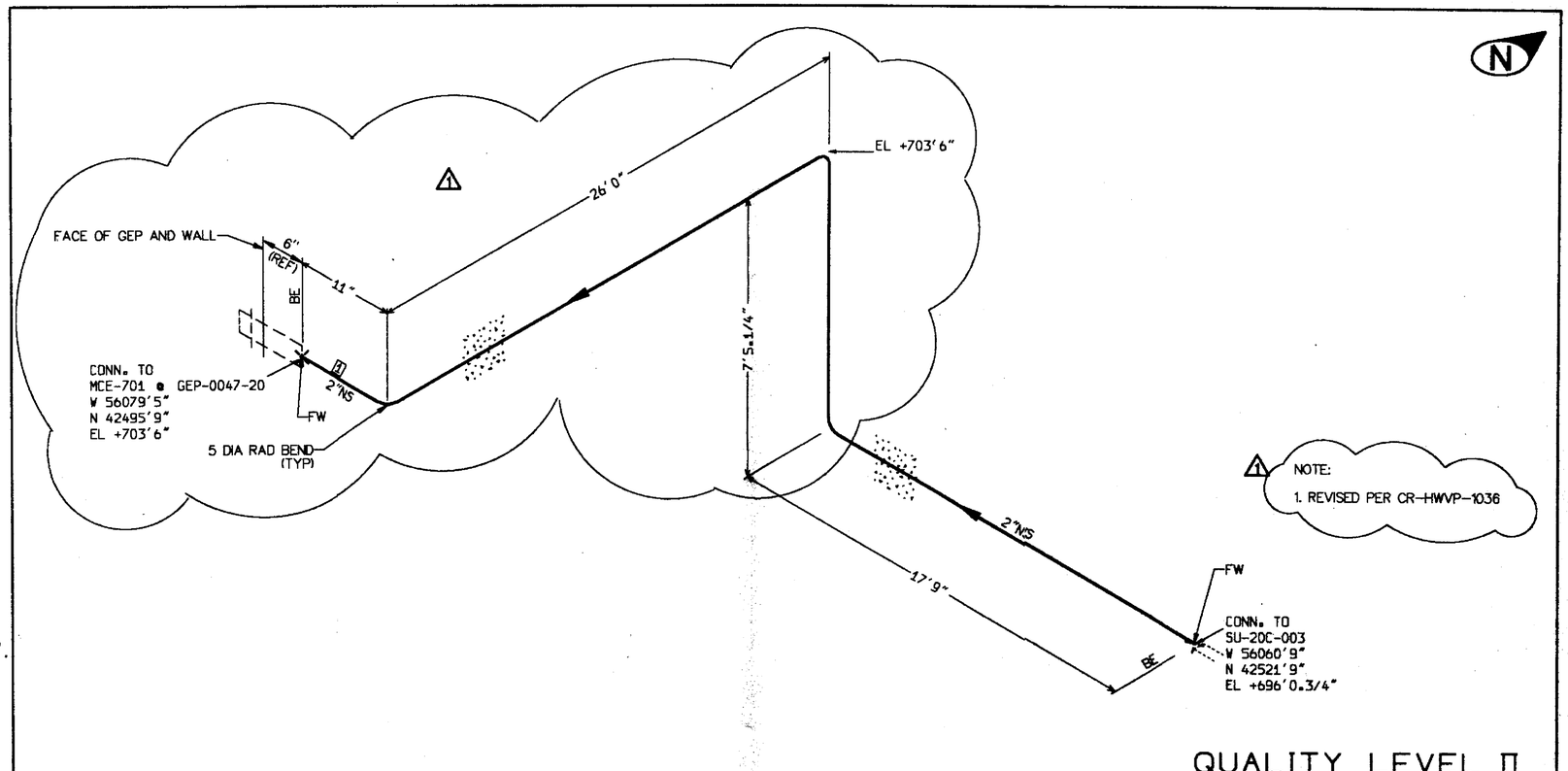
BILL OF MATERIAL FOR REFERENCE ONLY

Sep 21 06:44:59 1993 CALMA VELLUM E:XXB3MF8F.SPL

| FABRICATION MATERIALS |

PT NO	PIPE	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
1		PIPBAR PIPE SCH 40S SMLS 304L SS A312	2	5364086	52.2'

BILL OF MATERIAL FOR REFERENCE ONLY



QUALITY LEVEL II
SAFETY CLASS 3

MODEL: PIPE/PAES3T

[X] DENOTES PART NO., SEE BILL OF MATERIAL

REV.	TYPE	BY	DATE	CHK'D	APPV'D	MAT'L	STRESS
1	SEE NOTE 1	TO	[illegible]	MCF	[illegible]		[illegible]
0	AFC	MS	2-2-93	SDW	GVV		JG

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					X
PARTIAL ISO					

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ___ SIZE ___		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-B210A SECTION 15060

CONDITION	PRESS (PSIG)	TEMP (°F)	SERVICE
DESIGN	150	150	PRO
OPERATING	0	AMBIENT	VAPOR / LIQUID X

REFERENCE PLAN DWG: H-2-124094-1, H-2-124097-1
REFERENCE P&ID: H-2-123060-15/8
SECTION: F3/A6

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

U.S. DEPARTMENT OF ENERGY
Richland Field Office
DE-AC06-86RL10838

CADFILE: B126188U
CADCODE: 2B:APL:DDM3:8.0:SS
DRAWN BY: M. SCHJOLBERG
DATE: 07/21/93
CLASSIFICATION: NONE
BY: NOT REQUIRED
LINE NUMBER AND CLASS: PE-2"-20C-198-A-NONE
SHEET 01 OF 01

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT
PROJECT: B-595
FLUOR CONTRACT NO.: 8457
CWBS NO.: B210A
SCALE: NONE
BUILDING NO.: 1
INDEX NO.:
DRAWING NUMBER: H-2-126188
SHEET 18 OF
REV. 1

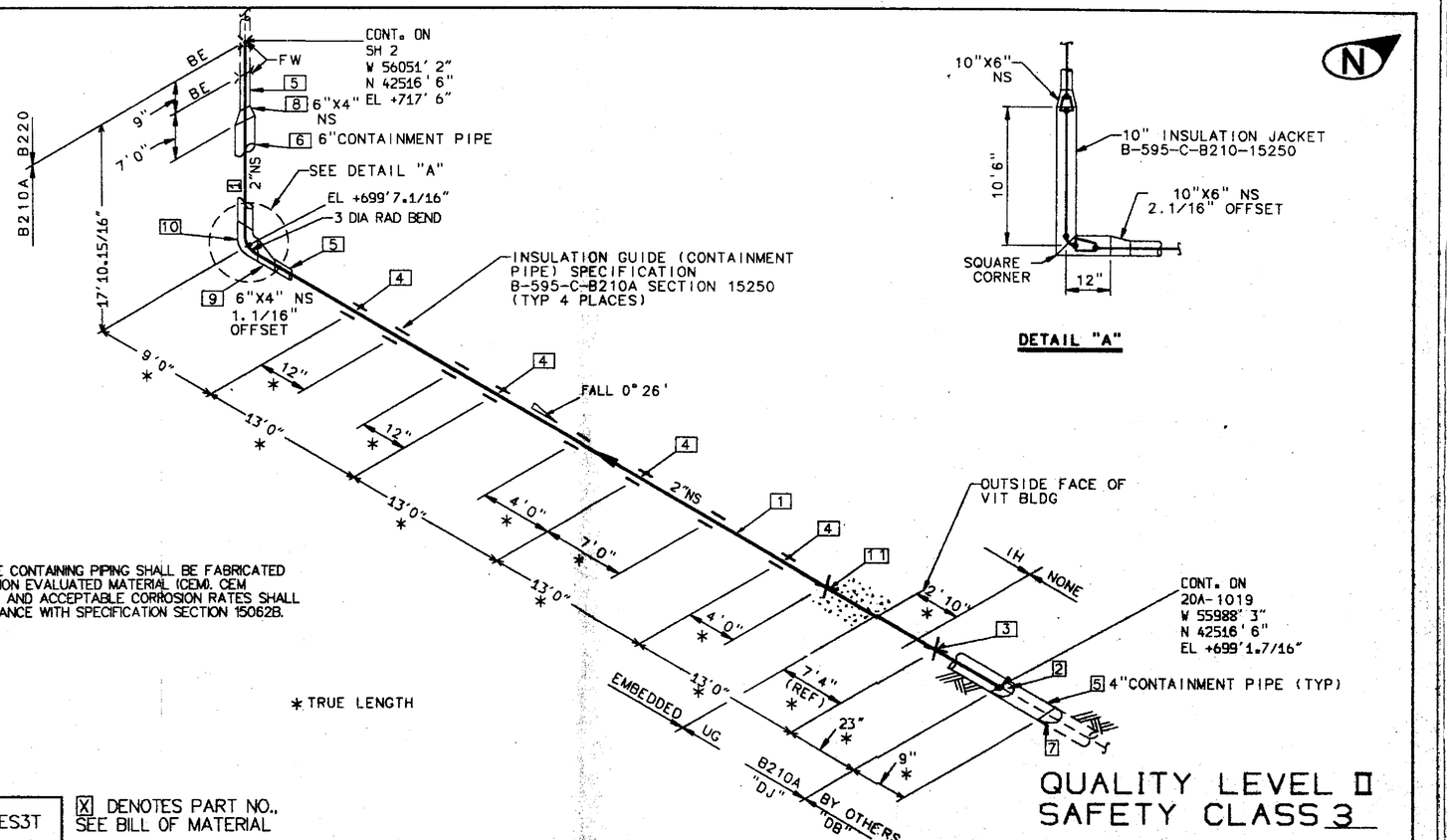
DISTRIBUTION CODE: 504
PDS
JD 8-31-93

Jul Sep 02 07:50:48 1993 CALMA VELLUM E:XXB3MF8U.SPL

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
	CARRIER PIPE			
1	PIPBAR PIPE SCH 40S SMLS ALLOY 20CB B464	2	5366846	80.9'
	CARRIER FITTINGS			
2	CAPBW CAP SCH 40S ALLOY 20 WP20CB B366	2	5463526	1
3	PIPE ANCHOR 5EA1 PER DWG H-2-124091 SH 1	2-4	5EA1	1
4	PIPE GUIDE 5EG1 PER DWG H-2-124091 SH 1	2-4	5EG1	4
	CONTAINMENT PIPE			
5	PIPBAR PIPE SCH 40S SMLS 304L SS A312	4	5364086	70.9'
6	PIPBAR PIPE SCH 40S SMLS 304L SS A312	6	5364086	10.0'
	CONTAINMENT FITTINGS			
7	CAPBW CAP SCH 40S 304L SS A403 WP304L	4	5438932	1
8	REDCBW REDUCER CONC SCH 40S 304L SS A403 WP304L	6X4	5438933	1
9	REDCBW REDUCER ECC SCH 40S 304L SS A403 WP304L	6X4	5438934	1
10	ELL 90 DEG SR SCH 40S 304L SS A403 WP304L	6	5438923	1
11	PIPE ANCHOR 51A2 PER DWG H-2-124091 SH 1	4	51A2	1

BILL OF MATERIAL FOR REFERENCE ONLY



NOTE:

1. ALL PRESSURE CONTAINING PIPING SHALL BE FABRICATED FROM CORROSION EVALUATED MATERIAL (CEM). CEM REQUIREMENTS AND ACCEPTABLE CORROSION RATES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 15062B.

MODEL: PIPE/PAES3T

[X] DENOTES PART NO., SEE BILL OF MATERIAL

QUALITY LEVEL II
SAFETY CLASS 3

REV.	TYPE	BY	DATE	CHK'D	APPV'D	MATL	STRESS
0	AFC	SRW	09-21-93	MKF	[illegible]		[illegible]

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					
PARTIAL ISO	X				X

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ____ SIZE ____		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-C-B210A SECTION 15062B

CONDITION	PRESS (PSIG)	TEMP (°F)	SERVICE		
DESIGN	400	240	PRO		
OPERATING	100	125	VAPOR	LIQUID	X

REFERENCE PLAN DWG: H-2-124094-1
REFERENCE PAID: H-2-123060-32
SECTION: C7
H-2-124110-1

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

U.S. DEPARTMENT OF ENERGY
Richland Field Office
DE-AC06-86RL10838

CADFILE: B126189F
CADCODE: 2B:APL:DDM3:8.0:SS
DRAWN BY: S WICKMAN
DATE: 08/18/93
CLASSIFICATION: NONE BY: NOT REQUIRED
LINE NUMBER AND CLASS: PE-2"-20A-295-DJ-IH
SHEET 01 OF

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT
PROJECT: B-595
FLUOR CONTRACT NO.: 8457
CWBS NO.: 8210A
SCALE: NONE
BUILDING NO.: 1
INDEX NO.:
DRAWING NUMBER: H-2-126189
SHEET 6 OF REV. 0

DISTRIBUTION CODE: 504
PDS SW 09-21-93

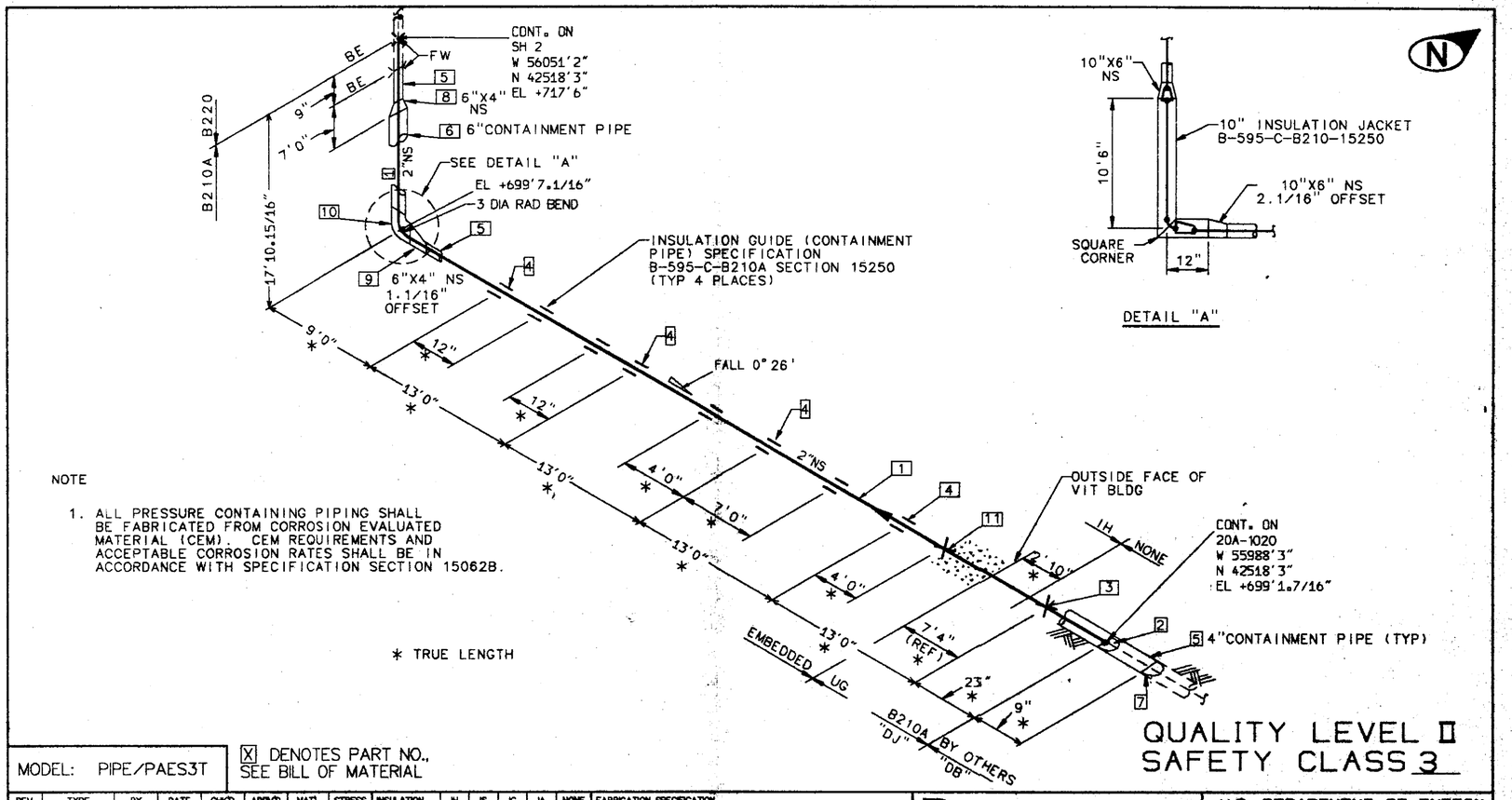
20A H-2-126189 0 6 AFC

e Sep 21 06:54:25 1993 CALMA VELLUM E:XBRMF96.SPL

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY
	CARRIER PIPE			
1	PIPBAR PIPE SCH 40S SMLS ALLOY 20CB B464	2	5366846	80.9'
	CARRIER FITTINGS			
2	CAPBW CAP SCH 40S ALLOY 20 WP20CB B366	2	5463526	1
3	PIPE ANCHOR 5EA1 PER DWG H-2-124091 SH 1	2-4	5EA1	1
4	PIPE GUIDE 5EG1 PER DWG H-2-124091 SH 1	2-4	5EG1	4
	CONTAINMENT PIPE			
5	PIPBAR PIPE SCH 40S SMLS 304L SS A312	4	5364086	70.9'
6	PIPBAR PIPE SCH 40S SMLS 304L SS A312	6	5364086	10.0'
	CONTAINMENT FITTINGS			
7	CAPBW CAP SCH 40S 304L SS A403 WP304L	4	5438932	1
8	REDCBW REDUCER CONC SCH 40S 304L SS A403 WP304L	6X4	5438933	1
9	REDCBW REDUCER ECC SCH 40S 304L SS A403 WP304L	6X4	5438934	1
10	ELL 90 DEG SR SCH 40S 304L SS A403 WP304L	6	5438923	1
11	PIPE ANCHOR 5IA2 PER DWG H-2-124091 SH 1	4	5IA2	1

BILL OF MATERIAL FOR REFERENCE ONLY



REV.	TYPE	BY	DATE	CHK'D	APPV'D	MAT'L	STRESS
0	AFC	SDW	09-21-93	MKF			

INSULATION	IH	IS	IC	IA	NONE
TOTAL ISO					
PARTIAL ISO	X				X

HEAT TRACING REQUIREMENTS	YES	NO
TRACING MEDIUM		X
TRACER: QTY ___ SIZE ___		X
ELECTRIC TRACE		X
HEAT TRANSFER CEMENT REQUIRED		X

FABRICATION SPECIFICATION: B-595-C-B210A SECTION 15062B

CONDITION	PRESS (PSIG)	TEMP (°F)	SERVICE	
DESIGN	400	240	PRO (SPARE)	
OPERATING	100	125	VAPOR / LIQUID	X

REFERENCE PLAN DWG: H-2-124094-1
REFERENCE PAID: H-2-123060-32
SECTION: C7
H-2-124110-1

FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION

U.S. DEPARTMENT OF ENERGY
Richland Field Office
DE-AC06-86RL10838

CADFILE: B126189G
CADCODE: 28:APL:DDM3:8.0:SS
PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT
DRAWN BY: S WICKMAN
DATE: 08/18/93
PROJECT: B-595
FLUOR CONTRACT NO.: 8457
CWBS NO.: B210A
CLASSIFICATION: NONE
BY: NOT REQUIRED
SCALE: NONE
BUILDING NO.: 1
INDEX NO.:
LINE NUMBER AND CLASS: PE-2"-20A-296-DJ-IH
SHEET 01 OF
DRAWING NUMBER: H-2-126189
SHEET 7 OF
REV. 0
DISTRIBUTION CODE: 504
PDS
SW 09-21-93

B10A H-2-126189 0 7 AFC

VITRIFICATION BUILDING FOUNDATION B-595-C-B210A

SPECIFICATIONS

HANFORD WASTE VITRIFICATION PLANT

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE

FLUOR DANIEL
ADVANCED TECHNOLOGY DIVISION
CONTRACT 8457

DOE CONTRACT NO.
DE-AC06-86RL10838

U.S. DEPARTMENT OF ENERGY
Hanford Waste Vitrification Plant
Richland, Washington
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.
Advanced Technology Division
Fluor Contract 8457

VITRIFICATION BUILDING FOUNDATION
SPECIFICATION B-595-C-B210A

APPROVED FOR CONSTRUCTION

Revision 3 PER CR-1036

Issue Date SEP 2 4 1993

APPROVED BY:

D. M. Garrett	Project Package Engineer	Date 9-22-93
J. J. Salchak	Area Project Manager	Date 9-22-93
P. J. Speidel	Engineering Project Manager	Date 9/22/93
J. D. Smets	Systems Manager	Date 9/22/93
A. K. Yee	Independent Safety Manager	Date 9/22/93
J. G. Kelley	Quality Assurance Manager	Date 9/24/93
R. S. Poulter	Project Director	Date 9/22/93

VITRIFICATION BUILDING FOUNDATION
B-595-C-B210A

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DIVISION 3 - CONCRETE

Section	Title	
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03252	Concrete Anchors	1
03300	Cast-in-Place Concrete	1
03010	Metallic Topping	0

DIVISION 5 - METALS

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05059B	Welding Stainless Steel Liners	0
05062A	Welding Piping	1
05062B	Welding Piping	0
05123A	Miscellaneous Metals	2
05123B	Miscellaneous Metals	0
05560	Embedded Wall Penetrations	1

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

Section	Title	
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DIVISION 9 - FINISHES

Section	Title	
09875	Priming of Steel	0

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15060	Piping Material, Fabrication, Erection and Pressure Testing (Alloy Piping)	1
15062A	Piping Material, Fabrication, Erection and Pressure Testing (Intra-Area Transfer Lines)	0
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16110	Electrical Material and Devices	2
16111	Conduit Schedule	0
16905	Electrical Testing	0

* Submitted as Reference Document

U.S. DEPARTMENT OF ENERGY
Hanford Waste Vitrification Plant
Richland, Washington
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.
Advanced Technology Division
Fluor Contract 8457

SECTION 05059A
WELDING - STAINLESS STEEL LINERS
B-595-C-B210A-05059A

APPROVED FOR CONSTRUCTION

REVISION 2 PER CR HWVP-1036
ISSUE DATE SEP 2 4 1993

WAPA YES ___ NO X
QUALITY LEVEL I X II ___
SAFETY CLASS 1__ 2__ 3 X 4__

ORIGINATOR(S):

CHECKER(S):

A. Estrada, Welding Engineer 9/14/93 Date

D. A. Buzzelli, Lead Discipline Engr. 9-20-93 Date

APPROVED BY:

R. B. Erickson Deputy Lead Discipline Engineer 9-20-93 Date

SECTION 05059A
WELDING - STAINLESS STEEL LINERS
B-595-C-B210A-05059A

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SECTION 05059A
WELDING - STAINLESS STEEL LINERS

PART 1 GENERAL

1.1 SUMMARY

This specification section defines the welding, examination and testing requirements for fabrication of stainless steel embeds, carbon steel embeds, stainless steel liner plates, stainless steel sumps, Hastelloy C-22 sumps and galvanized decking.

1.2 REFERENCES

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

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
Boiler and Pressure Vessel Code

ASME Section V	1989 Nondestructive Examination
ASME Section VIII, Division 1	1989 Rules for Construction of Pressure Vessels
ASME Section IX	1989 (Addenda 90) Welding and Brazing Qualification

AMERICAN SOCIETY OF NONDESTRUCTIVE TESTING (ASNT)

ASNT SNT-TC-1A	1988 Recommended Practice - Personnel Qualification and Certification in Nondestructive Testing

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1	1990 Structural Welding Code
AWS D10.11	1987 Recommended Practice for Root Pass Welding of Pipe Without Backing

1.3 **RELATED REQUIREMENTS**

Specification Section 09875	Priming of Steel
Specification Section 13252	Precautions for Fabrication, Handling and Storage of Stainless Steel and Nickel Alloys

1.4 **DEFINITIONS**

CMTR - Certified Material Test Report

NDE - Nondestructive Examination

1.5 **SYSTEMS DESCRIPTION**

(Not Used)

1.6 **SUBMITTALS**

Submit the following in accordance with the Vendor Drawing and Data Requirements section of the Order/Subcontract.

1.6.1 Welding Procedure Specifications and Procedure Qualification Records shall be submitted for Buyer approval. This requirement shall also pertain to purchased items contracted by Seller. They shall be in accordance both with AWS D1.1 or ASME Section IX and this specification section. Seller shall review the contractor's procedures to verify their conformance to the requirements of this specification section.

1.6.2 Welding Procedure Specification and Procedure Qualification Records for shear stud bases shall be submitted for Buyer approval.

1.6.3 Welder Performance Qualifications shall be submitted for Buyer review. This requirement shall also pertain to purchased items contracted by Seller. They shall be in accordance both with AWS D1.1 or ASME Section IX and this specification section.

1.6.4 Welder Performance Qualification for shear stud bases shall be submitted for Buyer information.

1.6.5 Certified Material Test Reports (CMTRs) for filler material shall be submitted for Buyer review.

1.6.6 Weld repair procedures shall be submitted for Buyer approval.

1.6.7 Final weld nondestructive examination (NDE) and inspection reports shall be submitted for Buyer review. These shall include visual inspection reports.

1.7 **CLASSIFICATION OF SYSTEMS AND COMPONENTS**

(Not Used)

1.8 **PROJECT OR SITE ENVIRONMENTAL CONDITIONS**

(Not Used)

PART 2 PRODUCTS

2.1 **MATERIALS AND EQUIPMENT**

2.1.1 Matching weld filler materials shall be in accordance with AWS D1.1, Table 4.1.

2.1.2 For welding carbon steel to carbon steel a minimum 70 ksi weld filler metal shall be used.

2.1.3 For welding galvanized carbon steel decking AWS Classification E6010 is acceptable.

2.1.4 Weld filler materials shall be used so that the principal elements in the deposited weld metal shall be of the same nominal composition as the base metal (Example: for Type 304L stainless steel, use AWS classification E/ER 308L filler material).

2.1.5 Solid wires for automatic welding processes shall contain the principal alloying elements required for the deposited weld metal. Welds deposited by the submerged arc process shall not derive any principal alloying elements from the flux. Alloy flux is not acceptable.

2.1.6 Fluxes that the flux manufacturer recommends for single-pass shall not be used for multiple-pass welds.

2.1.7 Submerged arc welding shall be performed using the same name brand flux and the same name brand of AWS classification wire as used for the procedure qualifications.

2.1.8 Storage and handling of electrodes, fluxes and other welding material after shipping containers are opened shall be in accordance with Seller's filler materials control procedure. This procedure shall follow the guidelines of AWS D1.1 and the filler metal manufacturer's recommendations. Hastelloy C-22 SMAW electrode shall be stored in an electrode oven before use. Oven temperature shall be between 300°F and 400°F, inclusive.

2.1.9 Tack welds shall be made with the equivalent type of filler wire that is used for the root pass.

2.1.10 Temporary backup rings or strips, when required on the Contract Documents, shall be of the same nominal composition as the base material.

2.1.11 For dissimilar joints in base materials consisting of carbon steel on one side and austenitic stainless steel on the other, the filler metal shall be AWS classification E/ER 309L.

2.1.12 Use AWS classification E/ER 309L for all weld passes when joint detail indicates that stainless steel liner is being welded to carbon steel embed.

2.1.13 For welding Hastelloy C-22 to itself and to stainless steel, use AWS classification ERNiCrMo-10 or ENiCrMo-10 filler metal.

2.2 FABRICATION AND MANUFACTURE

2.2.1 General Requirements

2.2.1.1 Fabrication to this specification section shall be in accordance with the requirements of AWS D1.1, Section 8.

2.2.1.2 Cleanliness shall be maintained during welding. All stubs, rods, flux, slag and other foreign material shall be removed from the weld area.

2.2.1.3 All weld spatter, burrs, etc. shall be ground to a smooth contour.

2.2.1.4 Arc strikes, weld starts and stops shall be confined to the weld joint. Arc strikes found outside the weld joint that are deeper than 1/32 inch shall be welded to fill depression and then ground to a smooth contour. Those less than 1/32 inch shall be ground to a smooth contour.

2.2.1.5 Fabrication aids, temporary supporting lugs, etc., that are removed by gouging or cutting shall not be cut closer than 1/8 inch from the base metal surface. The remaining metal shall then be ground flush with the base metal surface. The ground area shall be inspected for cracks or porosity either by liquid penetrant or magnetic particle examination, whichever is applicable. Liquid penetrant and magnetic particle examination shall be in accordance with Paragraph 3.2.9.

2.2.1.6 Fabrication aids, temporary supporting lugs, etc., used on Type 304L stainless steel shall be made of Type 304L/316L stainless steel.

2.2.1.7 Welding of galvanized carbon steel to stainless steel is not acceptable. This restriction shall also apply to carbon steel which has had any galvanizing removed.

2.2.1.8 Care shall be taken when welding shear studs through holes in galvanized decking to ensure that galvanized areas are not melted. Arcing between galvanized decking and stainless steel liner plates shall not be permitted.

2.2.2 Welding Qualifications

2.2.2.1 Welding procedures, welders, welding operators and tackers shall be qualified in accordance either with AWS D1.1 or ASME Section IX where applicable. ASME Section IX, Welder Performance Qualification, may be used in lieu of AWS D1.1 qualifications.

2.2.2.2 Qualification of shear stud bases shall be in accordance with AWS D1.1, Section 7. For carbon steel shear studs welded to stainless steel material, Procedure Qualification and Personnel Qualification shall be performed on material equivalent (in type and thickness) to material used in construction.

2.2.2.3 At the request of the Buyer, any welder shall be retested and recertified when the work of said welder creates a reasonable doubt as to the quality of his/her workmanship.

2.2.2.4 The format of welding procedure specifications including prequalified welding procedures and welding procedure qualification records shall be in accordance with AWS D1.1, Appendix E or ASME Section IX, Appendix A or equivalent.

2.2.2.5 Deleted.

2.2.2.6 Welding Procedures Specification and Procedure Qualification Records for welding galvanized carbon steel qualifies the procedure for welding plain carbon steel, but not vice versa.

2.2.3 Acceptable Welding Processes

2.2.3.1 Welding may be achieved by any one or combination of the following welding processes:

Welding Process	AWS Letter Designation
Shielded Metal Arc Welding	SMAW
Gas Metal Arc Welding (spray transfer)	GMAW
Flux-Cored Arc Welding (with shielding gas)	FCAW
Shear Stud Welding	SW
Automatic Submerged Arc Welding	SAW
Manual and Automatic Gas Tungsten Arc Welding	GTAW

	Electroslag Welding	ESW
	Electrogas Welding	EGW

2.2.3.2 Other welding processes such as Gas Metal Arc (short arc) or Semi-automatic Submerged Arc require specific written authorization by the Buyer. Submit all pertinent data and intended application of said process for evaluation.

2.2.3.3 FCAW and SAW processes are not permitted on Hastelloy C-22.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Weld joint preparation shall be made by machining, grinding or thermal cutting. When thermal cutting is performed the joint surfaces shall be ground to bright metal prior to welding. Oxy-fuel cutting shall not be used for joint preparation of stainless steel and Hastelloy C-22.

3.1.2 For structural tubular welds, longitudinal weld seams shall be parallel to the longitudinal axis and shall be complete (100 percent) penetration butt welds. Longitudinal seams of adjoining tubular members shall not be in line but shall be offset from other longitudinal seams by at least five (5) times the wall thickness of the tubular component.

3.1.3 Permanent backup strips or backing rings are not permitted without specific written authorization from the Buyer. Embeds are not considered backup strips. If temporary backup strips are used and then removed, the weld area shall be dressed and examined for cracks and other defects. Examination of area shall be performed visually and by either magnetic particle or liquid penetrant method. Examination shall be in accordance with Paragraph 3.2.9.

3.1.4 The parts to be joined shall be in accordance with the assembly requirements of AWS D1.1, Section 3.3.

3.1.5 To minimize the contamination of austenitic stainless steel and Hastelloy C-22, Seller shall follow the requirements of Specification Section 13252 prior to and after welding.

3.1.6 All surfaces to be welded shall be free of paint, oil, dirt, scale, oxides and other foreign materials detrimental to weld soundness.

3.1.7 For stainless steel, joint edges and adjacent surfaces to be welded shall be wire brushed. They shall be cleaned with an ethyl alcohol or acetone dampened lint-free cloth before welding begins.

3.1.8 Wire brushes used on stainless steel and Hastelloy C-22 welds shall be made of 300 series austenitic stainless steel. Mechanical cleaning tools used on stainless steel and Hastelloy C-22 such as grinding wheels, files, deburring tools and wire brushes shall be clearly marked. Marking shall identify tools to be used on stainless steel and Hastelloy C-22 only.

3.1.9 Grinding shall be done in such a method that overheating of stainless steel base metal and weld metal is minimized. Heat tint is an indication of overheating. Abrasive disks and abrasive flapper wheels are preferred over grinding disk or continuous-belt grinders.

3.1.10 For double-wall containment portion of sumps where double-welded butt joints cannot be utilized, the root pass welds shall be made with the GTAW process. Back-purging gas shall be used during welding. The purge shall be maintained until at least 0.250 inch depth of weld metal has been deposited or the weld joint is filled, whichever is less. Back-purging shall be in accordance with AWS D10.11.

3.1.11 Tack welds in open butt joints shall be feathered into surrounding material. Cracked tack welds shall be removed.

3.1.12 For Hastelloy C-22, an area one inch wide on each side of weld joint shall be ground to bright metal with 80 grit abrasive disk prior to welding.

3.1.13 For Hastelloy C-22, the design of weld joint shall take into consideration the low fluidity and low penetration characteristics inherent in nickel alloys.

3.1.14 Where double-welded joints are utilized for full-penetration welds, the backside of the root pass shall be ground to bright metal prior to depositing weld from the backside.

3.1.15 Galvanized surfaces that are welded shall be prepared and primed in accordance with Specification Section 09875.

3.2 INSTALLATION, APPLICATION AND ERECTION

3.2.1 All welds shall be made in accordance both with Contract Drawings and Seller's fabrication drawings.

3.2.2 All plug and buttwelds on liner plates shall be ground smooth and flush with the base metal for ease of decontamination.

3.2.3 Where the embed joint detail indicates 2t root opening (t = base metal thickness), the first welds deposited shall be fillet welds fusing the carbon steel embed to the stainless steel liner plates.

3.2.4 Welding starts and stops in welds shall be held to a minimum. Each such stop shall be ground to eliminate crater cracks before continuing the weld. The use of starting and stopping plates is recommended where possible.

3.2.5 Plug welds and square edge butt joints shall have a minimum of 3 passes when welded to carbon steel embeds.

3.2.6 To prevent oxidation on Hastelloy C-22 filler metal during the GTAW process, the filler metal tip shall remain in the shielding gas until the weld is complete or the tip is allowed to cool. If the tip is oxidized, the oxidized portion shall be cut off before welding is resumed.

3.2.7 Preheat and Interpass Temperature Control

3.2.7.1 The minimum preheat and interpass temperature requirements for carbon steel shall be in accordance with AWS D1.1, Paragraphs 4.2 and 4.3.

3.2.7.2 The minimum preheat for stainless steel shall be 50°F. Interpass temperature shall not exceed 350°F.

3.2.7.3 The minimum preheat for Hastelloy C-22 shall be 50°F. Interpass temperature shall not exceed 200°F.

3.2.8 Stress Relief Heat Treatment

3.2.8.1 When required by Contract Documents, welded assemblies shall be stress-relieved by heat treating.

3.2.8.2 Stress relief for purposes of dimensional stability is not acceptable for ganged embeds with PUREX nozzles.

3.2.8.3 Stress relief heat treatment shall be in accordance with AWS D1.1, Section 4.4. Exception: alternate stress relief times and temperatures permitted by Table 4.5 shall not be used.

3.2.8.4 All required finish machining shall be done after heat treatment.

3.2.9 Inspection and Nondestructive Examination

Specific nondestructive examination (NDE) shall be performed in accordance both with Contract Documents and Seller's fabrication drawings. NDE methods, acceptance criteria and additional general requirements shall be in accordance with the following subparagraphs. All NDE, except visual examination, shall be performed by personnel certified in accordance with ASNT SNT-TC-1A.

3.2.9.1 Inspection

A. The welding inspector for visual examination shall be qualified and certified in accordance with AWS D1.1, Paragraph 6.1.3.

B. All weld inspection reports shall be submitted in accordance with Paragraph 1.6.

3.2.9.2 Visual Examination

A. Visual examination shall be performed in accordance with AWS D1.1, Section 6.

B. Seller shall visually inspect all completed welds in accordance with AWS D1.1, Section 8.15.1. Weld profiles shall be in accordance with Figure 3.4 of AWS D1.1. Defective welds shall be repaired in accordance with Seller's approved weld repair procedures.

C. In addition to visual examination of the completed weld, visual examination is required for all ground and blended welds.

D. For butt joints, the weld metal on the front surface shall in no place be lower than the adjacent base metal surfaces.

E. Plug and groove welds shall have a uniform transition from the joined material into the weld deposit. They shall be free of undercut and unfused overlap of the weld deposit.

F. Fillet weld surfaces shall have a uniform transition from the base material into the weld deposit. They shall be free of undercut and unfused overlap.

G. For fillet welds, sizes indicated on weld symbols are minimum sizes.

3.2.9.3 Liquid Penetrant Examination (Structural Steel Embeds)

Liquid penetrant examination shall be in accordance with AWS D1.1, Section 6.7.7, when required by the Contract Documents. Acceptance criteria shall be in accordance with AWS D1.1, Section 8.15.5.

3.2.9.4 Liquid Penetrant Examination (Austenitic Stainless Steel Liner Plates)

A. Liquid penetrant examination shall be in accordance with ASME Section V, Article 6 when required by the Contract Documents. Acceptance criteria shall be in accordance with

ASME Section VIII, Division 1, Appendix 8, Paragraphs 8.3 and 8.4. Exception: maximum round indication shall not exceed 1/16 inch.

B. Liquid penetrant examination shall be performed after welds have been ground and visually examined. Examination shall include a band of base metal no less than 1 inch on each side of the weld.

C. Penetrant material shall be in accordance with ASME Section V, Article 6, T-625 for sulfur and halogen content.

3.2.9.5 Magnetic Particle Examination

Magnetic particle examination shall be in accordance with AWS D1.1, Section 6.7.6, when required by the Contract Documents. Acceptance criteria shall be in accordance with AWS D1.1, Section 8.15.5.

3.2.9.6 Ultrasonic Examination

Ultrasonic examination shall be in accordance with AWS D1.1, Chapter 6, Part C, when required by the Contract Documents. Acceptance criteria shall be in accordance with AWS D1.1, Section 8.15.4.

3.2.9.7 Leak Testing

A. When required by the Contract Documents, the helium mass spectrometer test detector probe technique method shall be performed in accordance with ASME Section V, Article 10, Appendix IV. Acceptance criteria shall be in accordance with Paragraph IV-1050. The maximum helium gas pressure shall not exceed 5 psig.

B. When required by the Contract Documents, the vacuum box test method shall be performed in accordance with ASME Section V, Article 10, Appendix II. Acceptance criteria shall be in accordance with Paragraph II-1050.

3.3 FIELD QUALITY CONTROL

(Not Used)

3.4 ADJUSTMENTS

3.4.1 Weld Repairs

3.4.1.1 All weld repairs shall be performed in accordance with the approved weld repair procedures.

3.4.1.2 Unacceptable indications shall be completely removed by chipping, gouging, grinding or other authorized methods (for the type of material being repaired) to clean, bright metal. The excavated areas shall then be examined either by the magnetic particle or liquid penetrant method to assure complete removal of defects. Magnetic particle or liquid penetrant examination shall be in accordance with Paragraph 3.2.9.

3.4.1.3 The repaired areas shall be reexamined using the same inspection procedures by which the defect was originally detected, along with all other inspection called out for the particular weld.

3.4.1.4 Two repair attempts will be allowed on any one defective area. No further repair attempts shall be carried out without the authorization of the Buyer.

3.5 **CLEANING**

(Not Used)

3.6 **PROTECTION**

(Not Used)

3.7 **DEMONSTRATION**

(Not Used)

3.8 **SCHEDULES**

(Not Used)

END OF SECTION

U.S. DEPARTMENT OF ENERGY
Hanford Waste Vitrification Plant
Richland, Washington
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.
Advanced Technology Division
Fluor Contract 8457

SECTION 05059B
WELDING - STAINLESS STEEL LINERS
B-595-C-B210A-05059B

APPROVED FOR CONSTRUCTION

REVISION 0
ISSUE DATE SEP 2 4 1993

WAPA YES ___ NO X
QUALITY LEVEL I X II ___
SAFETY CLASS 1 X 2 ___ 3 ___ 4 ___

ORIGINATOR(S):

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APPROVED BY:

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SECTION 05059B
WELDING - STAINLESS STEEL LINERS
B-595-C-B210A-05059B

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SECTION 05059B
WELDING - STAINLESS STEEL LINERS

PART 1 GENERAL

1.1 SUMMARY

This specification section defines the welding, examination and testing requirements for fabrication of stainless steel embeds, carbon steel embeds and stainless steel liner plates.

1.2 REFERENCES

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

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
Boiler and Pressure Vessel Code

ASME Section V	1989 Nondestructive Examination
ASME Section VIII, Division 1	1989 Rules for Construction of Pressure Vessels
ASME Section IX	1989 (Addenda 90) Welding and Brazing Qualification

AMERICAN SOCIETY OF NONDESTRUCTIVE TESTING (ASNT)

ASNT SNT-TC-1A	1988 Recommended Practice - Personnel Qualification and Certification in Nondestructive Testing

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1	1990 Structural Welding Code

1.3 RELATED REQUIREMENTS

Specification Section 13252	Precautions for Fabrication, Handling and Storage of Stainless Steel and Nickel Alloys

1.4 DEFINITIONS

CMTR - Certified Material Test Report

NDE - Nondestructive Examination

1.5 **SYSTEMS DESCRIPTION**

(Not Used)

1.6 **SUBMITTALS**

Submit the following in accordance with the Vendor Drawing and Data Requirements section of the Order/Subcontract.

1.6.1 Welding Procedure Specifications and Procedure Qualification Records shall be submitted for Buyer approval. This requirement shall also pertain to purchased items contracted by Seller. They shall be in accordance both with AWS D1.1 or ASME Section IX and this specification section. Seller shall review the contractor's procedures to verify their conformance to the requirements of this specification section.

1.6.2 Welding Procedure Specifications and Procedure Qualification Records for shear stud bases shall be submitted for Buyer information.

1.6.3 Welder Performance Qualifications shall be submitted for Buyer review. This requirement shall also pertain to purchased items contracted by Seller. They shall be in accordance both with AWS D1.1 or ASME Section IX and this specification section.

1.6.4 Welder Performance Qualification for shear stud bases shall be submitted for Buyer information.

1.6.5 Certified Material Test Reports (CMTRs) for filler material shall be submitted for Buyer review.

1.6.6 Weld repair procedures shall be submitted for Buyer approval.

1.6.7 Final weld nondestructive examination (NDE) and inspection reports shall be submitted for Buyer review. These shall include visual inspection reports.

1.7 **CLASSIFICATION OF SYSTEMS AND COMPONENTS**

(Not Used)

1.8 **PROJECT OR SITE ENVIRONMENTAL CONDITIONS**

(Not Used)

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

2.1.1 Matching weld filler materials shall be in accordance with AWS D1.1, Table 4.1.

2.1.2 For welding of carbon steel to carbon steel a minimum 70 ksi weld filler metal shall be used.

2.1.3 Weld filler materials shall be used so that the principal elements in the deposited weld metal shall be of the same nominal composition as the base metal (Example: for Type 304L stainless steel, use AWS classification E/ER 308L filler material).

2.1.4 Solid wires for automatic welding processes shall contain the principal alloying elements required for the deposited weld metal. Welds deposited by the submerged arc process shall not derive any principal alloying elements from the flux. Alloy flux is not acceptable.

2.1.5 Fluxes that the flux manufacturer recommends for single-pass shall not be used for multiple-pass welds.

2.1.6 Submerged arc welding shall be performed using the same name brand flux and the same name brand of AWS classification wire as used for the procedure qualifications.

2.1.7 Storage and handling of electrodes, fluxes and other welding material after shipping containers are opened shall be in accordance with Seller's filler materials control procedure. This procedure shall follow the guidelines of AWS D1.1, and the filler metal manufacturer's recommendations.

2.1.8 Tack welds shall be made with the equivalent type of filler wire that is used for the root pass.

2.1.9 Temporary backup rings or strips, when required on the Contract Documents, shall be of the same nominal composition as the base material.

2.1.10 For dissimilar joints in base materials consisting of carbon steel on one side and austenitic stainless steel on the other, the filler metal shall be AWS classification E/ER 309L.

2.1.11 Use AWS classification E/ER 309L for all weld passes when joint detail indicates that stainless steel liner is being welded to carbon steel embed.

2.2 FABRICATION AND MANUFACTURE

2.2.1 General Requirements

2.2.1.1 Fabrication to this specification section shall be in accordance with the requirements of AWS D1.1, Section 8.

2.2.1.2 Cleanliness shall be maintained during welding. All stubs, rods, flux, slag and other foreign material shall be removed from the weld area.

2.2.1.3 All weld spatter, burrs, etc. shall be ground to a smooth contour.

2.2.1.4 Arc strikes, weld starts and stops shall be confined to the weld joint. Arc strikes found outside the weld joint that are deeper than 1/32 inch shall be welded to fill depression and then ground to a smooth contour. Those less than 1/32 inch shall be ground to a smooth contour.

2.2.1.5 Fabrication aids, temporary supporting lugs, etc., that are removed by gouging or cutting shall not be cut closer than 1/8 inch from the base metal surface. The remaining metal shall then be ground flush with the base metal surface. The ground area shall be inspected for cracks or porosity either by liquid penetrant or magnetic particle examination, whichever is applicable. Liquid penetrant and magnetic particle examination shall be in accordance with Paragraph 3.2.7.

2.2.1.6 Fabrication aids, temporary supporting lugs, etc., used on Type 304L stainless steel shall be made of Type 304L/316L stainless steel.

2.2.1.7 Welding of galvanized carbon steel to stainless steel is not acceptable. This restriction shall also apply to carbon steel which has had any galvanizing removed.

2.2.1.8 Care shall be taken when welding shear studs through holes in galvanized decking to ensure that galvanized areas are not melted. Arcing between galvanized decking and stainless steel liner plates shall not be permitted.

2.2.2 Welding Qualifications

2.2.2.1 Welding procedures, welders, welding operators and tackers shall be qualified in accordance either with AWS D1.1 or ASME Section IX where applicable. ASME Section IX, Welder Performance Qualification, may be used in lieu of AWS D1.1 qualifications.

2.2.2.2 Qualification of shear stud bases shall be in accordance with AWS D1.1, Section 7. For carbon steel shear studs welded to stainless steel material, Procedure Qualification and Personnel Qualification shall be performed on material equivalent (in type and thickness) to material used in construction.

2.2.2.3 At the request of the Buyer, any welder shall be retested and recertified when the work of said welder creates a reasonable doubt as to the quality of his/her workmanship.

2.2.2.4 The format of welding procedure specifications including prequalified welding procedures and welding procedure qualification records shall be in accordance either with AWS D1.1, Appendix E or ASME Section IX, Appendix A or equivalent.

2.2.2.5 Welding Procedures Specification and Procedure Qualification Records for welding galvanized carbon steel qualifies the procedure for welding plain carbon steel, but not vice versa.

2.2.3 Acceptable Welding Processes

2.2.3.1 Welding may be achieved by any one or combination of the following welding processes:

Welding Process	AWS Letter Designation
Shielded Metal Arc Welding	SMAW
Flux-Cored Arc Welding (with shielding gas)	FCAW
Gas Metal Arc Welding (spray transfer)	GMAW
Shear Stud Welding	SW
Automatic Submerged Arc Welding	SAW
Manual and Automatic Gas Tungsten Arc Welding	GTAW
Electroslag Welding	ESW
Electrogas Welding	EGW

2.2.3.2 Other welding processes such as Gas Metal Arc (short arc) or Semi-automatic Submerged Arc require specific written authorization by the Buyer. Submit all pertinent data and intended application of said process for evaluation.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Weld joint preparation shall be made by machining, grinding or thermal cutting. When thermal cutting is performed the joint surfaces shall be ground to bright metal prior to welding. Oxy-fuel cutting shall not be used for joint preparation of stainless steel.

3.1.2 For structural tubular welds, longitudinal weld seams shall be parallel to the longitudinal axis and shall be complete (100 percent) penetration butt welds. Longitudinal seams of adjoining tubular members shall not be in line but shall be offset from other longitudinal seams by at least five (5) times the wall thickness of the tubular component.

3.1.3 Permanent backup strips or backing rings are not permitted without specific written authorization from the Buyer. Embeds are not considered backup strips. If temporary backup strips are used and then removed, the weld area shall be dressed and examined for cracks and other defects. Examination of area shall be performed visually and by either magnetic particle or liquid penetrant method. Examination shall be in accordance with Paragraph 3.2.8.

3.1.4 The parts to be joined shall be in accordance with the assembly requirements of AWS D1.1, Section 3.3.

3.1.5 To minimize the contamination of austenitic stainless steel Seller shall follow the requirements of Specification Section 13252 prior to and after welding.

3.1.6 All surfaces to be welded shall be free of paint, oil, dirt, scale, oxides and other foreign materials detrimental to weld soundness.

3.1.7 For stainless steel, joint edges and adjacent surfaces to be welded shall be wire brushed. They shall be cleaned with an ethyl alcohol or acetone dampened lint-free cloth before welding begins.

3.1.8 Wire brushes used on stainless steel welds shall be made of 300 series austenitic stainless steel. Mechanical cleaning tools used on stainless steel such as grinding wheels, files, deburring tools and wire brushes shall be clearly marked. Marking shall identify tools to be used on stainless steel only.

3.1.9 Grinding shall be done in such a method that overheating of stainless steel base metal and weld metal is minimized. Heat tint is an indication of overheating. Abrasive disks and abrasive flapper wheels are preferred over grinding disk or continuous-belt grinders.

3.1.10 Tack welds in open butt joints shall be feathered into surrounding material. Cracked tack welds shall be removed.

3.1.11 Where double-welded joints are utilized for full-penetration welds, the backside of the root pass shall be ground to bright metal prior to depositing weld from the backside.

3.2 **INSTALLATION, APPLICATION AND ERECTION**

3.2.1 All welds shall be made in accordance both with Contract Drawings and Seller's fabrication drawings.

3.2.2 All plug and buttwelds on liner plates shall be ground smooth and flush with the base metal for ease of decontamination.

3.2.3 Where the embed joint detail indicates 2t root opening (t = base metal thickness), the first welds deposited shall be fillet welds fusing the carbon steel embed to the stainless steel liner plates.

3.2.4 Welding starts and stops in welds shall be held to a minimum. Each such stop shall be ground to eliminate crater cracks before continuing the weld. The use of starting and stopping plates is recommended where possible.

3.2.5 Plug welds and square edge butt joints shall have a minimum of 3 passes when welded to carbon steel embeds.

3.2.6 Preheat and Interpass Temperature Control

3.2.6.1 The minimum preheat and interpass temperature requirements for carbon steel shall be in accordance with AWS D1.1, Paragraphs 4.2 and 4.3.

3.2.6.2 The minimum preheat for stainless steel shall be 50°F. Interpass temperature shall not exceed 350°F.

3.2.7 Inspection and Nondestructive Examination

Specific nondestructive examination (NDE) shall be performed in accordance both with Contract Documents and Seller's fabrication drawings. NDE methods, acceptance criteria and additional general requirements shall be in accordance with the following subparagraphs. All NDE, except visual examination, shall be performed by personnel certified in accordance with ASNT SNT-TC-1A.

3.2.7.1 Inspection

A. The welding inspector for visual examination shall be qualified and certified in accordance with AWS D1.1, Paragraph 6.1.3.

B. All weld inspection reports shall be submitted in accordance with Paragraph 1.6.

3.2.7.2 Visual Examination (Structural Steel and Stainless Steel Liner Plates)

A. Visual examination shall be performed in accordance with AWS D1.1, Section 6.

B. Seller shall visually inspect all completed welds in accordance with AWS D1.1, Section 8.15.1. Weld profiles shall be in accordance with Figure 3.4 of AWS D1.1. Defective welds shall be repaired in accordance with Seller's approved weld repair procedures.

C. In addition to visual examination of the completed weld, visual examination is required for all ground and blended welds.

D. For butt joints, the weld metal on the front surface shall in no place be lower than the adjacent base metal surfaces.

E. Plug and groove welds shall have a uniform transition from the joined material into the weld deposit. They shall be free of undercut and unfused overlap of the weld deposit.

F. Fillet weld surfaces shall have a uniform transition from the base material into the weld deposit. They shall be free of undercut and unfused overlap.

G. For fillet welds, sizes indicated on weld symbols are minimum sizes.

3.2.7.3 Visual Examination (Shear Studs)

A. Pre-production and Production testing shall be in accordance with AWS D1.1, Section 7.7. Shear studs welded to stainless steel liner plates shall have their pre-production testing performed on material similar in thickness and properties to the production member. Bending of shear studs on production stainless steel liner plates is not acceptable.

B. Fabrication and verification inspection requirements shall be in accordance with AWS D1.1, Section 7.8. Shear studs welded to stainless steel liner plates shall show 360° flash. Studs not in accordance with this requirement shall either be repaired in accordance with AWS D1.1, Section 7.7.3; or shall be removed and rewelded. Bending as required by AWS D1.1, Section 7.8.1 is not required. This includes any stud repaired by manual welding.

3.2.7.4 Liquid Penetrant Examination (Structural Steel Embeds)

Liquid penetrant examination shall be in accordance with AWS D1.1, Section 6.7.7, when required by the Contract Documents. Acceptance criteria shall be in accordance with AWS D1.1, Section 8.15.5.

3.2.7.5 Liquid Penetrant Examination (Austenitic Stainless Steel Liner Plates)

A. Liquid penetrant examination shall be in accordance with ASME Section V, Article 6 when required by the Contract Documents. Acceptance criteria shall be in accordance with ASME Section VIII, Division 1, Appendix 8, Paragraphs 8.3 and 8.4. Exception: maximum round indication shall not exceed 1/16 inch.

B. Liquid penetrant examination shall be performed after welds have been ground and visually examined. Examination shall include a band of base metal no less than 1 inch on each side of the weld.

C. Penetrant material shall be in accordance with ASME Section V, Article 6, T-625 for sulfur and halogen content.

3.2.7.6 Magnetic Particle Examination

Magnetic particle examination shall be in accordance with AWS D1.1, Section 6.7.6, when required by the Contract Documents. Acceptance criteria shall be in accordance with AWS D1.1, Section 8.15.5.

3.2.7.7 Ultrasonic Examination

Ultrasonic examination shall be in accordance with AWS D1.1, Chapter 6, Part C, when required by the Contract Documents. Acceptance criteria shall be in accordance with AWS D1.1, Section 8.15.4.

3.3 FIELD QUALITY CONTROL

(Not Used)

3.4 ADJUSTMENTS

3.4.1 Weld Repairs

3.4.1.1 All weld repairs shall be performed in accordance with the approved weld repair procedures.

3.4.1.2 Unacceptable indications shall be completely removed by chipping, gouging, grinding or other authorized methods (for the type of material being repaired) to clean, bright metal. The excavated areas shall then be examined either by the magnetic particle or liquid penetrant method to assure complete removal of defects. Magnetic particle or liquid penetrant examination shall be in accordance with Paragraph 3.2.7.

3.4.1.3 The repaired areas shall be reexamined using the same inspection procedures by which the defect was originally detected, along with all other inspection called out for the particular weld.

3.4.1.4 Two repair attempts will be allowed on any one defective area. No further repair attempts shall be carried out without the authorization of the Buyer.

3.5 **CLEANING**

(Not Used)

3.6 **PROTECTION**

(Not Used)

3.7 **DEMONSTRATION**

(Not Used)

3.8 **SCHEDULES**

(Not Used)

END OF SECTION

U.S. DEPARTMENT OF ENERGY
Hanford Waste Vitrification Plant
Richland, Washington
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.
Advanced Technology Division
Fluor Contract 8457

SECTION 05123A
MISCELLANEOUS METALS
B-595-C-B210A-05123A

APPROVED FOR CONSTRUCTION

REVISION 2 PER CR-1036
ISSUE DATE SEP 2 4 1993

WAPA YES ___ NO X
QUALITY LEVEL I X II ___
SAFETY CLASS 1__ 2__ 3 X 4__

ORIGINATOR:

M. S. Whitten 9/22/93
M. S. Whitten, Structural Engineer Date

CHECKER:

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SECTION 05123A
MISCELLANEOUS METALS
B-595-C-B210A-05123A

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SECTION 05123A
MISCELLANEOUS METALS

PART 1 GENERAL

1.1 SUMMARY

This section covers the technical requirements for the furnishing, fabrication, delivery, installation and inspection of miscellaneous carbon and stainless steel embedded into concrete.

1.2 REFERENCES

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

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC S302	1986 Code of Standard Practice for Steel Buildings and Bridges

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A36/A36M	1990 Standard Specification for Structural Steel
ASTM A53	1990 Standard Specification for Pipe, Steel, Black and Hop-Dipped, Zinc-Coated Welded and Seamless
ASTM A108	1990 Standard Specification for Steel Bars, Carbon, Cold-Finished, Standard Quality
ASTM A240	1991 Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels
ASTM A262	1991 Standard Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels
ASTM A276	1990 Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes
ASTM A312/A312M	1991 Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes

ASTM A446	1989 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality
ASTM A480/A480M	1991 General Requirements for Flat-Rolled Stainless Heat-Resisting Steel Plate, Sheet and Strip
ASTM A484/A484M	1991 Standard Test Methods for General Requirements for Stainless and Heat-Resisting Bars, Billets and Forgings
ASTM A494	1991 (Rev. A) Standard Specification for Castings, Nickel and Nickel Alloy
ASTM A496	1990 (Rev. A) Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement
ASTM A525	1987 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, General Requirements
ASTM A770/770M	1986 Standard Specification for Through-Thickness Tension Testing of Steel Plates for Special Applications
ASTM G28	1985 Test Methods of Detecting Susceptibility to Intergranular Attack in Wrought, Nickel-Rich, Chromium-Bearing Alloys

1.3 RELATED REQUIREMENTS

Specification Section 03252	Concrete Anchors
Specification Section 05059A	Welding - Stainless Steel Liners
Specification Section 09875	Priming of Steel
Specification Section 13252	Precautions for Fabrication, Handling and Storage of Stainless Steel and Nickel Alloys

1.4 DEFINITIONS

1.4.1 The integral method of liner plate installation utilizes the liner plate as permanent forms for concrete placement.

1.4.2 The wallpaper method of liner plate installation utilizes embeds in previously placed concrete to fasten the liner plate.

1.4.3 A containment boundary weld is a weld located such that in the final installation, it will be exposed to the room interior.

1.5 SYSTEM DESCRIPTION

(Not Used)

1.6 SUBMITTALS

Submit the following in accordance with the Vendor Drawing and Data Requirements section of the Order/Subcontract.

1.6.1 Certified Material Test Reports (CMTRs) demonstrating material conformance to all the noted ASTM requirements identified in Paragraph 2.1.

1.6.2 Sample of stainless steel plate for liner for acceptance of finish specified in Paragraph 2.1.2.1.

1.6.3 Shop and erection drawings meeting the requirements of Paragraph 2.2.1.1.

1.6.4 Documentation of quality control and inspection procedures in accordance with Paragraph 3.3.1.

1.6.5 Records of certification and test reports in accordance with Paragraph 3.3.1.

1.7 CLASSIFICATION OF SYSTEM AND COMPONENTS

(Not Used)

1.8 PROJECT OR SITE ENVIRONMENTAL CONDITIONS

(Not Used)

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

2.1.1 Carbon Steel Materials

2.1.1.1 Structural steel members (shapes, bars, and plate): ASTM A36.

Plates exceeding 2 inches thick shall have through-thickness (Z-direction) tension tests performed and submitted in accordance with ASTM A770. The material shall meet the acceptance standards of Section 5 and marking per Section 6 of ASTM A770. The Carbon Equivalent value shall also be determined and furnished.

2.1.1.2 Pipe: ASTM A53, Type E or Type S, Grade B.

2.1.1.3 Welded studs: Nelson Type S3L or H4L or equal conforming to ASTM A108 Grades C-1010 through C-1020 (low carbon cold drawn steel), with a minimum ultimate tensile stress capacity of 55,000 psi, or Nelson Type D2L deformed bar anchors or equal conforming to ASTM A496 with a minimum ultimate tensile stress capacity of 80,000 psi. Length of studs or anchors shall be as specified on the Contract Drawings. Weld the studs and anchors per manufacturer's recommendations.

2.1.1.4 Floor plates: Floor plate shall be skid resistant raised pattern carbon steel plate, 1/4 inch thick excluding the height of the raised pattern. The plate material shall have a minimum yield stress of 33000 psi.

2.1.1.5 Paint and coatings: Specification Section 09875, Priming of Steel.

2.1.1.6 Weld materials: Specification Section 05059A, Welding-Stainless Steel Liners. Low hydrogen welding electrodes with a tensile strength of 70,000 psi. Electrodes shall be compatible with the welding process and materials being welded.

2.1.1.7 Bolts, nuts and washers: See Specification 03252 - Concrete Anchors for Carbon Steel Materials.

2.1.2 Stainless Steel Materials

2.1.2.1 Plate: ASTM A240, Type 304L; hot rolled, solution annealed, surface cleaned and polished to a No. 4 finish in accordance with ASTM A480/A480M on exposed side of plate.

2.1.2.2 Bars and shapes: ASTM A276, Type 304L (F_y = 25 ksi); hot finished, condition A for bars; hot finished, Class A or C in accordance with ASTM A484/A484M for shapes.

2.1.2.3 Stainless steel material specified on the Contract Drawings for corrosion evaluation, shall be tested in accordance with ASTM A262 Practice C. One test shall be conducted per heat of material. The acceptance criteria shall be a measured corrosion rate of less than 0.002 inches/month. Material passing Practice A, the Rapid Screening Test, is considered acceptable. A Certified Material Test Report (CMTR) from the original manufacturer with the above corrosion testing requirement for the actual heat of material is acceptable. Typical CMTRs are not acceptable.

2.1.2.4 Pipe: ASTM A312, Grade TP304L; seamless.

2.1.2.5 Weld materials: Specification Section 05059A, Welding - Stainless Steel Liners. For welding stainless steel to stainless steel use E/ER 308L electrodes with a tensile strength of 75,000 psi. For welding carbon steel to stainless use E/ER 309L with a tensile strength of 75,000 psi.

2.1.2.6 Bolts, nuts and washers: See Specification 03252 - Concrete Anchors for Stainless Steel Materials

2.1.3 Hastelloy C-22 Materials

2.1.3.1 Plate: Wrought product comparable to cast alloy per ASTM A494, Grade CX2MW, B/SB-575, HRAP finish, meeting the following chemical composition:

A.

Composition	Min. %	Max. %
Ni	Balance	
Cr	21.00	22.40
Mo	12.90	13.90
Fe	3.10	4.80
W	2.60	3.40
C	----	0.010
P	----	0.02
S	----	0.010
Si	----	0.08
Co	----	2.5
Mn	----	0.5
V	----	0.35

B. Melting practice shall consist of electric arc primary melting, argon/oxygen decarburization treatment, and electroslag remelting into final ingot.

2.1.3.2 Material shall be subjected to corrosion evaluation in accordance with ASTM G28, Practice B. One test shall be conducted per heat of material. The acceptance criteria shall be a measured corrosion rate of less than 0.0008 inches/month. A Certified Material Test Report (CMTR) from the original manufacturer with the above corrosion testing requirement for the actual heat of material is acceptable. Typical CMTRs are not acceptable.

2.1.4 Metal Decking

Metal deck shall be by ASC Pacific, Inc. or approved equal. Deck shall be manufactured from steel conforming to ASTM A446 Grade C, having a minimum yield strength of 40,000 psi, and shall receive a commercial zinc coating (G90) in accordance with ASTM A525.

2.2 **FABRICATION AND MANUFACTURE**

2.2.1 Shop Detailing

2.2.1.1 Prepare and submit shop and erection drawings for structural steel, metal deck, liner plate and embeds for Buyer's review. Include dimensioning, fabrication and erection details, connection details, methods of field assembly, mark numbers and bills of material. Clearly note field bolting and welding requirements.

2.2.1.2 Each item detailed shall be provided with a unique identifier (mark number) which identifies the structure or building number, the fabricators detail sheet number and an individual piece designation number. Clearly show piece mark numbers on erection drawings.

2.2.1.3 Cut or raw edges shall be rounded off and smooth to the touch.

2.2.1.4 Bends shall have a minimum radius equal to the thickness of the material.

2.2.2 Shop Fabrication - Carbon Steel

2.2.2.1 Do not begin shop fabrication until the shop and erection drawings have been reviewed and released for fabrication by the Buyer.

2.2.2.2 Fabrication of structural steel shall be in accordance with the requirements of the AISC (S302), Sections 6.1 through 6.6, with the modifications and additional requirements specified hereinafter.

2.2.2.3 All fabricated steel shall be indelibly marked with the mark number shown on the shop drawings.

2.2.2.4 Shop welding, including welding qualification, process and preparation, shall be in accordance with Specification Section 05059A, Welding - Stainless Steel Liners, as applicable for carbon steel. Only visual examination of welds, in accordance with procedures specified in Specification Section 05059A, is required unless noted otherwise on the Contract Drawings.

2.2.2.5 Steel shall be primed in accordance with Specification Section 09875, Priming of Steel.

2.2.2.6 Prior to priming, all sharp corners, burrs (including bolt hole burrs), weld spatter, slag, weld flux, loose mill scale and other foreign matter shall be removed.

2.2.3 Shop Fabrication - Stainless Steel and Hastelloy C-22

2.2.3.1 Precautions shall be taken to prevent scratching, abrading, nicking and denting during fabrication and handling. Maintain the original surface finish during fabrication, or restore following fabrication to a quality equal to the original finish.

2.2.3.2 The requirements of Specification Section 13252, Precautions for Fabrication, Handling and Storage of Stainless Steel and Nickel Alloys, shall be followed for handling, fabrication, shipment and storage techniques to minimize the risk of contamination of stainless steel.

2.2.3.3 Do not coat stainless steel and Hastelloy C-22 materials.

2.2.3.4 Make erection marks on fabricated liner plate with vegetable dyes or vibroetching. Painting, chemical etching and die stamping are not acceptable.

2.2.3.5 Shop welding, including welding qualification, process and preparation, shall be in accordance with Specification Section 05059A, Welding - Stainless Steel Liners.

2.2.3.6 The stainless steel liner for walls may be installed by the integral method or wallpaper method at the option of the Seller.

2.2.3.7 Determine the extent of shop fabrication and the size of shipping pieces within the requirements indicated in the Contract Drawings.

2.2.3.8 Join liner plate into shipping pieces with complete joint penetration groove welds and clearly note on the shop and erection drawings. Welds shall be ground flush with the plate to a 250-microinch finish.

2.2.3.9 Fabricated liner plate shall be free from warp or twist in excess of 1/4 inch in 10 feet. Inspect fabricated liner plate to verify tolerances.

2.2.3.10 Injurious surface defects, such as caused by removal of temporary attachments, arc strikes, mechanical damage, etc., shall be ground to remove the defects. Arc strikes will be allowed on the unexposed side of the liner plate. Grinding shall not reduce the weld or base metal by more than 1/32 of an inch of the specified thickness or 10% of the specified thickness, whichever is less. All surface imperfections, the removal of which will reduce the specified plate thickness to less than that stated above, shall be repaired by welding. Specified thickness is defined as that thickness stated on the Contract Drawings or the specifications. All weld repairs and areas where temporary welds have been made shall be suitably ground, and tested, in accordance with Paragraph 2.2.3.12 of this section.

2.2.3.11 Temporary attachments shall be removed flush with the base metal without encroaching on the required minimum wall thickness. Where a surface has been restored by welding, all areas from which attachments have been removed shall be examined in accordance with Paragraph 2.2.3.12 of this section.

2.2.3.12 Nondestructive examination (NDE) methods and acceptance criteria of welds and weld repairs shall be performed in accordance with Specification Section 05059A, Welding Stainless Steel Liners, as required below:

A. Liquid penetrant examination shall be performed on cap pass of complete joint penetration groove welds joining liner plate into shipping pieces. Testing shall be performed after all grinding is complete.

B. Leak testing (helium mass spectrometer test method) shall be performed on welds which are part of the double containment portion of stainless steel and Hastelloy C-22 sumps.

2.2.4 Shop Fabrication - Metal Deck

Deck units shall be cut to required lengths so that end laps will occur on supporting members. The stainless steel liner shall be attached (welded) to the deck in the factory or shop to the maximum extent practical.

2.2.5 Shipping

2.2.5.1 Shipping lists shall accompany each shipment of steel.

2.2.5.2 Cars and/or trucks shall be loaded and cribbed so they can be readily unloaded. The steel shall be protected from damage caused by shifting of steel during transit.

2.2.5.3 The sizes of fabricated pieces shall be as large as practicable considering clearances and capacities of railroad cars or trucks between the fabricating shop and the jobsite.

2.2.5.4 Small pieces shall be bundled with steel bands to prevent damage during shipment and to facilitate unloading.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Prior to beginning field erection, the Seller shall review the erection drawings, verify receipt of all required materials, and develop an erection plan. The erection plan shall take into account erection loads and provide sufficient temporary bracing to maintain the steel in a safe condition. The temporary bracing shall maintain the steel in a plumb and correctly aligned condition until erection has been completed.

3.1.2 Store structural steel members, insert plates, metal deck and liner plates in an area designated by the Buyer, aboveground on platforms, skids or other supports, in such manner that any deformation or damage of shapes, plates, etc., shall be avoided.

3.1.3 The requirements of Specification Section 13252, Precautions for Fabrication, Handling and Storage of Stainless Steel and Nickel Alloys, shall be followed for handling, storage and erection techniques to minimize the risk of contamination of stainless steel and Hastelloy C-22.

3.2 INSTALLATION, APPLICATION AND ERECTION

Erect structural steel in accordance with the requirements of the AISC S302, Section 7, with the modifications and additional requirements specified herein. All steel, decking and liner plates shall be installed in accordance with reviewed shop/detail drawings.

3.2.1 Immediately report to the Buyer errors in shop work or errors in existing conditions that are discovered in the field. Do not take corrective action without approval by the Buyer.

3.2.2 Field weld components as indicated on the erection drawings. Field weld welded studs in accordance with manufacturer's instructions.

3.2.3 All field welding shall be performed in accordance with Specification Section 05059A, Welding - Stainless Steel Liners. Welds on the stainless steel liner shall be ground flush with the plate to a 250-microinch finish. Only visual examination of welds, in

accordance with procedures specified in Specification Section 05059 is required unless otherwise noted on the Contract Drawings.

3.2.4 After erection, inspection and acceptance, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete in accordance with Specification Section 09875, Priming of Steel.

3.2.5 Seal weld and grind flush all nail holes in embed plates.

3.2.6 General erection tolerances shall be in accordance with AISC S302, Section 7.11 and as indicated on the Contract Drawings.

3.2.7 After erection, liner plates shall satisfy a flatness tolerance of 1/4 inch in 10 feet.

3.2.8 After erection, inspection and acceptance of the stainless steel liner, the stainless steel surfaces (including sumps, trenches and curbs), shall satisfy the limits for contamination in Specification Section 13252, Precautions for Fabrication, Handling and Storage of Stainless Steel and Nickel Alloys.

3.2.9 Injurious surface defects on the exposed face of the liner plate, such as caused by removal of temporary attachment, arc strikes, mechanical damage, etc., shall be ground to remove the defects. Grinding of any face shall not reduce the weld or base metal by more than 1/32 of an inch of the specified thickness or 10% of the specified thickness, whichever is less. All surface imperfections, the removal of which will reduce the specified plate thickness to less than that stated above, shall be repaired by welding. Specified thickness is defined as that thickness stated on Contract Drawings or the specifications. All areas of the exposed face where temporary welds have been made and all weld repairs shall be suitably ground, and tested, in accordance with Section 3.3 of this specification.

3.2.10 The use of temporary welded attachments during fabrication and erection shall be minimized. All temporary attachment material used for erection shall be compatible with the attached liner material. Temporary attachments on the exposed side shall be removed flush with the base metal by grinding without encroaching on the required minimum wall thickness. Temporary attachments on either side may be knocked off provided that the temporary attachment is the same grade and type of material as the base metal and that the attachment weld is sufficiently small to allow for easy removal with no damage to the base metal. Areas from which temporary attachments have been removed shall be examined in accordance with Section 3.3 of this specification. Temporary attachments on the unexposed side shall be removed when interference with other embedded items occurs.

Temporary attachments on the exposed face of the liner plate shall be removed flush with the base metal without encroaching on the required minimum wall thickness. Where a surface has been restored by welding, all areas from which attachments have been removed shall be examined in accordance with Section 3.3 of this specification.

3.2.11 For metal deck do not remove temporary shoring until concrete has attained the specified compressive strength as determined by the cylinder tests.

3.3 **FIELD QUALITY CONTROL**

3.3.1 The Seller shall develop quality control program and inspection procedures for the fabrication and erection of the structural steel, insert plates and liner plates to assure conformance with the contract requirements. The Seller's quality control program and inspection procedures shall be submitted in writing to the Buyer for approval. Personnel shall be certified to perform inspection activities. Records of certifications, inspection and certified reports of tests required shall be submitted to the Buyer. The Buyer shall be allowed complete access during fabrication and erection and shall be allowed to inspect all operations including welding and testing.

3.3.2 Nondestructive examination (NDE) methods and acceptance criteria of welds and weld repairs shall be performed in accordance with Specification Section 05059A, Welding Stainless Steel Liners, as required below:

3.3.2.1 Liquid penetrant examination shall be performed on all cap pass field welds joining stainless steel liner plates. Testing shall be performed after all grinding is complete.

3.3.2.2 Final leak testing (vacuum box test method) shall be performed on all shop and field welds of the installed stainless steel liner floor plate joints and up to an including first horizontal joint with wall liner or top of wainscot. Any weld areas detected to be leaking shall be corrected and retested.

3.3.2.3 All plates exceeding 2 inches thick shall be checked for lamellar tearing around the areas welded normal to the thickness. Surface cracking shall be checked by visual inspection and subsurface tearing shall be checked by ultrasonic examination for welds exceeding 3/8 inch fillet. Above requirements apply to both shop and field welds.

3.4 **ADJUSTMENTS**

(Not Used)

3.5 **CLEANING**

(Not Used)

3.6 **PROTECTION**

All stainless steel liner plate shall be protected after installation from exposure to sunlight by covering with canvas, tarpaulin, plywood or 5-ply PVC film and nylon yarn laminate, such as Griffolyn T-95FR or equal. Liner shall also be protected from any damage during installation and subsequent work in the lined rooms/areas.

3.7 **DEMONSTRATION**

(Not Used)

3.8 **SCHEDULES**

(Not Used)

END OF SECTION

U.S. DEPARTMENT OF ENERGY
Hanford Waste Vitrification Plant
Richland, Washington
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.
Advanced Technology Division
Fluor Contract 8457

SECTION 05123B
MISCELLANEOUS METALS
B-595-C-B210A-05123B

APPROVED FOR CONSTRUCTION

REVISION 0
ISSUE DATE ~~SEP 2 2 1993~~

WAPA YES ___ NO X
QUALITY LEVEL I X II ___
SAFETY CLASS 1 X 2 ___ 3 ___ 4 ___

ORIGINATOR:

M. S. Whitten 9/22/93
M. S. Whitten, Structural Engineer Date

CHECKER:

E. Jorgensen 9-22-93
E. Jorgensen, Structural Engineer Date

APPROVED BY:

M. S. Whitten
M. S. Whitten Lead Discipline Engineer

9/22/93
Date

SECTION 05123B
MISCELLANEOUS METALS
B-595-C-B210A-05123B

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SECTION 05123B
MISCELLANEOUS METALS

PART 1 GENERAL

1.1 SUMMARY

This section covers the technical requirements for the furnishing, fabrication, delivery, installation and inspection of miscellaneous carbon and stainless steel embedded into concrete.

1.2 REFERENCES

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

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

ANSI/AISC N690	1984 Nuclear Facilities - Steel Safety-Related Structures for Design, Fabrication and Erection

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A36/A36M	1990 Standard Specification for Structural Steel
ASTM A53	1990 Standard Specification for Pipe, Steel, Black and Hop-Dipped, Zinc-Coated Welded and Seamless
ASTM A108	1990 Standard Specification for Steel Bars, Carbon, Cold-Finished, Standard Quality
ASTM A240	1991 Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels
ASTM A276	1990 Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes
ASTM A312/A312M	1991 Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes

ASTM A480/A480M	1991 General Requirements for Flat-Rolled Stainless Heat-Resisting Steel Plate, Sheet and Strip
ASTM A484/A484M	1991 Standard Test Methods for General Requirements for Stainless and Heat-Resisting Bars, Billets and Forgings
ASTM A496	1990 (Rev. A) Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement
ASTM A770/770M	1986 Standard Specification for Through-Thickness Tension Testing of Steel Plates for Special Applications

1.3 **RELATED REQUIREMENTS**

Specification Section 05059B	Welding - Stainless Steel Liners
Specification Section 13252	Precautions for Fabrication, Handling and Storage of Stainless Steel and Nickel Alloys

1.4 **DEFINITIONS**

1.4.1 The integral method of liner plate installation utilizes the liner plate as permanent forms for concrete placement.

1.4.2 The wallpaper method of liner plate installation utilizes embeds in previously placed concrete to fasten the liner plate.

1.4.3 A containment boundary weld is a weld located such that in the final installation, it will be exposed to the room interior.

1.5 **SYSTEM DESCRIPTION**

(Not Used)

1.6 **SUBMITTALS**

Submit the following in accordance with the Vendor Drawing and Data Requirements section of the Order/Subcontract.

1.6.1 Certified Material Test Reports (CMTRs) demonstrating material conformance to all the noted ASTM requirements identified in Paragraph 2.1.

1.6.2 Sample of stainless steel plate for liner for acceptance of finish specified in Paragraph 2.1.2.1.

1.6.3 Shop and erection drawings meeting the requirements of Paragraph 2.2.1.1.

1.6.4 Documentation of quality control and inspection procedures in accordance with Paragraph 3.3.1.

1.6.5 Records of certification and test reports in accordance with Paragraph 3.3.1.

1.7 **CLASSIFICATION OF SYSTEM AND COMPONENTS**

(Not Used)

1.8 **PROJECT OR SITE ENVIRONMENTAL CONDITIONS**

(Not Used)

PART 2 PRODUCTS

2.1 **MATERIALS AND EQUIPMENT**

2.1.1 Carbon Steel Materials

2.1.1.1 Structural steel members (shapes, bars, and plate): ASTM A36.

Plates exceeding 2 inches thick shall have through-thickness (Z-direction) tension tests performed and submitted in accordance with ASTM A770. The material shall meet the acceptance standards of Section 5 and marking per Section 6 of ASTM A770. The Carbon Equivalent value shall also be determined and furnished.

2.1.1.2 Pipe: ASTM A53, Type E or Type S, Grade B.

2.1.1.3 Welded studs: Nelson Type S3L or H4L or equal conforming to ASTM A108 Grades C-1010 through C-1020 (low carbon cold drawn steel), with a minimum ultimate tensile stress capacity of 55,000 psi, or Nelson Type D2L deformed bar anchors or equal conforming to ASTM A496 with a minimum ultimate tensile stress capacity of 80,000 psi. Length of studs or anchors shall be as specified on the Contract Drawings. Weld the studs and anchors per manufacturer's recommendations.

2.1.1.4 Paint and coatings: Specification Section 09875, Priming of Steel.

2.1.1.5 Weld materials: Specification Section 05059B, Welding-Stainless Steel Liners. Low hydrogen welding electrodes with a tensile strength of 70,000 psi. Electrodes shall be compatible with the welding process and materials being welded.

2.1.2 Stainless Steel Materials

2.1.2.1 Plate: ASTM A240, Type 304L; hot rolled, solution annealed, surface cleaned and polished to a No. 4 finish in accordance with ASTM A480/A480M on exposed side of plate.

2.1.2.2 Bars and shapes: ASTM A276, Type 304L (F_y = 25 ksi); hot finished, condition A for bars; hot finished, Class A or C in accordance with ASTM A484/A484M for shapes.

2.1.2.3 Pipe: ASTM A312, Grade TP304L; seamless.

2.1.2.4 Weld materials: Specification Section 05059B, Welding - Stainless Steel Liners. For welding stainless steel to stainless steel use E/ER 308L electrodes with a tensile strength of 75,000 psi. For welding carbon steel to stainless use E/ER 309L with a tensile strength of 75,000 psi.

2.2 **FABRICATION AND MANUFACTURE**

2.2.1 Shop Detailing

2.2.1.1 Prepare and submit shop and erection drawings for structural steel, metal deck, liner plate and embeds for Buyer's review. Include dimensioning, fabrication and erection details, connection details, methods of field assembly, mark numbers and bills of material. Clearly note field bolting and welding requirements.

2.2.1.2 Each item detailed shall be provided with a unique identifier (mark number) which identifies the structure or building number, the fabricators detail sheet number and an individual piece designation number. Clearly show piece mark numbers on erection drawings.

2.2.1.3 Cut or raw edges shall be rounded off and smooth to the touch.

2.2.1.4 Bends shall have a minimum radius equal to the thickness of the material.

2.2.2 Shop Fabrication - Carbon Steel

2.2.2.1 Do not begin shop fabrication until the shop and erection drawings have been reviewed and released for fabrication by the Buyer.

2.2.2.2 Fabrication of structural steel shall be in accordance with the requirements of the ANSI/AISC N690, Section Q1.23 with the modifications and additional requirements specified hereinafter.

2.2.2.3 All fabricated steel shall be indelibly marked with the mark number shown on the shop drawings.

2.2.2.4 Shop welding, including welding qualification, process and preparation, shall be in accordance with Specification Section 05059B, Welding - Stainless Steel Liners, as applicable for carbon steel. Only visual examination of welds, in accordance with procedures specified in Specification Section 05059B, is required unless noted otherwise on the Contract Drawings.

2.2.2.5 Steel shall be primed in accordance with Specification Section 09875, Priming of Steel.

2.2.2.6 Prior to priming, all sharp corners, burrs (including bolt hole burrs), weld spatter, slag, weld flux, loose mill scale and other foreign matter shall be removed.

2.2.3 Shop Fabrication - Stainless Steel

2.2.3.1 Precautions shall be taken to prevent scratching, abrading, nicking and denting during fabrication and handling. Maintain the original surface finish during fabrication, or restore following fabrication to a quality equal to the original finish.

2.2.3.2 The requirements of Specification Section 13252, Precautions for Fabrication, Handling and Storage of Stainless Steel and Nickel Alloys, shall be followed for handling, fabrication, shipment and storage techniques to minimize the risk of contamination of stainless steel.

2.2.3.3 Do not coat stainless steel materials.

2.2.3.4 Make erection marks on fabricated liner plate with vegetable dyes or vibroetching. Painting, chemical etching and die stamping are not acceptable.

2.2.3.5 Shop welding, including welding qualification, process and preparation, shall be in accordance with Specification Section 05059B, Welding - Stainless Steel Liners.

2.2.3.6 The stainless steel liner for walls may be installed by the integral method or wallpaper method at the option of the Seller.

2.2.3.7 Determine the extent of shop fabrication and the size of shipping pieces within the requirements indicated in the Contract Drawings.

2.2.3.8 Join liner plate into shipping pieces with complete joint penetration groove welds and clearly note on the shop and erection drawings. Welds shall be ground flush with the plate to a 250-microinch finish.

2.2.3.9 Fabricated liner plate shall be free from warp or twist in excess of 1/4 inch in 10 feet. Inspect fabricated liner plate to verify tolerances.

2.2.3.10 Injurious surface defects, such as caused by removal of temporary attachments, arc strikes, mechanical damage, etc., shall be ground to remove the defects. Arc strikes will be allowed on the unexposed side of the liner plate. Grinding shall not reduce the weld or base metal by more than 1/32 of an inch of the specified thickness or 10% of the specified thickness, whichever is less. All surface imperfections, the removal of which will reduce the specified plate thickness to less than that stated above, shall be repaired by welding. Specified thickness is defined as that thickness stated on the Contract Drawings or the specifications. All weld repairs and areas where temporary welds have been made shall be suitably ground, and tested, in accordance with Paragraph 2.2.3.12 of this section.

2.2.3.11 Temporary attachments shall be removed flush with the base metal without encroaching on the required minimum wall thickness. Where a surface has been restored by welding, all areas from which attachments have been removed shall be examined in accordance with Paragraph 2.2.3.12 of this section.

2.2.3.12 Nondestructive examination (NDE) methods and acceptance criteria of welds and weld repairs shall be performed in accordance with Specification Section 05059B, Welding Stainless Steel Liners, as required below:

Liquid penetrant examination shall be performed on cap pass of complete joint penetration groove welds joining liner plate into shipping pieces. Testing shall be performed after all grinding is complete.

2.2.4 Shipping

2.2.4.1 Shipping lists shall accompany each shipment of steel.

2.2.4.2 Cars and/or trucks shall be loaded and cribbed so they can be readily unloaded. The steel shall be protected from damage caused by shifting of steel during transit.

2.2.4.3 The sizes of fabricated pieces shall be as large as practicable considering clearances and capacities of railroad cars or trucks between the fabricating shop and the jobsite.

2.2.4.4 Small pieces shall be bundled with steel bands to prevent damage during shipment and to facilitate unloading.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Prior to beginning field erection, the Seller shall review the erection drawings, verify receipt of all required materials, and develop an erection plan. The erection plan shall take into account erection loads and provide sufficient temporary bracing to maintain the steel in a safe condition. The temporary bracing shall maintain the steel in a plumb and correctly aligned condition until erection has been completed.

3.1.2 Store structural steel members, insert plates, metal deck and liner plates in an area designated by the Buyer, aboveground on platforms, skids or other supports, in such manner that any deformation or damage of shapes, plates, etc., shall be avoided.

3.1.3 The requirements of Specification Section 13252, Precautions for Fabrication, Handling and Storage of Stainless Steel and Nickel Alloys, shall be followed for handling, storage and erection techniques to minimize the risk of contamination of stainless steel.

3.2 INSTALLATION, APPLICATION AND ERECTION

Erect structural steel in accordance with the requirements of the ANSI/AISC N690, Section Q1.25, with the modifications and additional requirements specified herein. All steel and liner plates shall be installed in accordance with reviewed shop/detail drawings.

3.2.1 Immediately report to the Buyer errors in shop work or errors in existing conditions that are discovered in the field. Do not take corrective action without approval by the Buyer.

3.2.2 Field weld components as indicated on the erection drawings. Field weld welded studs in accordance with manufacturer's instructions.

3.2.3 All field welding shall be performed in accordance with Specification Section 05059B, Welding - Stainless Steel Liners. Welds on the stainless steel liner shall be ground flush with the plate to a 250-microinch finish. Only visual examination of welds, in accordance with procedures specified in Specification Section 05059B is required unless otherwise noted on the Contract Drawings.

3.2.4 After erection, inspection and acceptance, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete in accordance with Specification Section 09875, Priming of Steel.

3.2.5 Seal weld and grind flush all nail holes in embed plates.

3.2.6 General erection tolerances shall be in accordance with ANSI/AISC N690, Section Q1.25.7 and as indicated on the Contract Drawings.

3.2.7 After erection, liner plates shall satisfy a flatness tolerance of 1/4 inch in 10 feet.

3.2.8 After erection, inspection and acceptance of the stainless steel liner, the stainless steel surfaces shall satisfy the limits for contamination in Specification Section 13252, Precautions for Fabrication, Handling and Storage of Stainless Steel and Nickel Alloys.

3.2.9 Injurious surface defects on the exposed face of the liner plate, such as caused by removal of temporary attachment, arc strikes, mechanical damage, etc., shall be ground to remove the defects. Grinding of any face shall not reduce the weld or base metal by more than 1/32 of an inch of the specified thickness or 10% of the specified thickness, whichever is less. All surface imperfections, the removal of which will reduce the specified plate thickness to less than that stated above, shall be repaired by welding. Specified thickness is defined as that thickness stated on Contract Drawings or the specifications. All areas of the exposed face where temporary welds have been made and all weld repairs shall be suitably ground, and tested, in accordance with Section 3.3 of this specification.

3.2.10 The use of temporary welded attachments during fabrication and erection shall be minimized. All temporary attachment material used for erection shall be compatible with the attached liner material. Temporary attachments on the exposed side shall be removed flush with the base metal by grinding without encroaching on the required minimum wall thickness. Temporary attachments on either side may be knocked off provided that the temporary attachment is the same grade and type of material as the base metal and that the attachment weld is sufficiently small to allow for easy removal with no damage to the base metal. Areas from which temporary attachments have been removed shall be examined in accordance with Section 3.3 of this specification. Temporary attachments on the unexposed side shall be removed when interference with other embedded items occurs.

Temporary attachments on the exposed face of the liner plate shall be removed flush with the base metal without encroaching on the required minimum wall thickness. Where a surface has been restored by welding, all areas from which attachments have been removed shall be examined in accordance with Section 3.3 of this specification.

3.3 **FIELD QUALITY CONTROL**

3.3.1 The Seller shall develop quality control program and inspection procedures for the fabrication and erection of the structural steel, insert plates and liner plates to assure conformance with the contract requirements. The Seller's quality control program and inspection procedures shall be submitted in writing to the Buyer for approval. Personnel shall be certified to perform inspection activities. Records of certifications, inspection and certified reports of tests required shall be submitted to the Buyer. The Buyer shall be allowed complete access during fabrication and erection and shall be allowed to inspect all operations including welding and testing.

3.3.2 Nondestructive examination (NDE) methods and acceptance criteria of welds and weld repairs shall be performed in accordance with Specification Section 05059B, Welding Stainless Steel Liners, as required below:

3.3.2.1 Liquid penetrant examination shall be performed on all cap pass field welds joining stainless steel liner plates. Testing shall be performed after all grinding is complete.

3.3.2.2 All plates exceeding 2 inches thick shall be checked for lamellar tearing around the areas welded normal to the thickness. Surface cracking shall be checked by visual inspection and subsurface tearing shall be checked by ultrasonic examination for welds exceeding 3/8 inch fillet. Above requirements apply to both shop and field welds.

3.4 **ADJUSTMENTS**

(Not Used)

3.5 **CLEANING**

(Not Used)

3.6 **PROTECTION**

All stainless steel liner plate shall be protected after installation from exposure to sunlight by covering with canvas, tarpaulin, plywood or 5-ply PVC film and nylon yarn laminate, such as Griffolyn T-95FR or equal. Liner shall also be protected from any damage during installation and subsequent work in the lined rooms/areas.

3.7 DEMONSTRATION

(Not Used)

3.8 SCHEDULES

(Not Used)

END OF SECTION

U.S. DEPARTMENT OF ENERGY
Hanford Waste Vitrification Plant
Richland, Washington
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.
Advanced Technology Division
Fluor Contract 8457

SECTION B210A
RELATED DOCUMENT NO. 1
PIPING ISOMETRICS
B-595-C-B210A-RD-1

APPROVED FOR CONSTRUCTION

REVISION 3
ISSUE DATE ~~9-27-93~~ SEP 2 4 1993

WAPA YES ___ NO X
QUALITY LEVEL I * II *
SAFETY CLASS 1* 2* 3* 4*

*See Individual Isometrics

ORIGINATOR:

for F. E. Griffin, Piping 9/23/93 Date

CHECKER:

G. F. Van Leyder 9/23/93
G. F. Van Leyder, Piping Supervisor Date

APPROVED BY:

for G. Barauskas
G. Barauskas Lead Discipline Engineer

9-23-93
Date

09/23/93 2:16pm
106\VOL5...\SPECS\B210A\RD1-2

CWBS B210A PIPING ISOMETRIC INDEX VITRIFICATION BUILDING

DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126175	1	0	11/17/92	PE-2"-20C-159-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126175	2	0	11/17/92	PE-2"-20C-159-A-NONE SHEET 02 PIPING ISOMETRIC		
H-2-126175	3	0	02/12/93	PE-3"-520-045-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126175	4	0	02/12/93	PE-3"-520-066-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126175	5	0	02/12/93	PE-3"-520-069-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126175	8	1	09/27/93	PE-3"-110-017-DF-Ih SHEET 01 PIPING ISOMETRIC	CR-HWVP-0939	3
H-2-126175	9	0	02/12/93	PE-3"-520-234-DD-NONE SHEET 07 PIPING ISOMETRIC		
H-2-126175	10	0	02/12/93	PE-3"-520-234-DD-NONE SHEET 08 PIPING ISOMETRIC		
H-2-126175	11	0	01/04/93	PE-3"-520-234-DD-NONE SHEET 09 PIPING ISOMETRIC		
H-2-126175	13	0	02/12/93	PE-1/2"-15A-105-K-Ih SHEET 01 PIPING ISOMETRIC		
H-2-126175	14	0	02/12/93	PE-1"-20C-172-A-Ih SHEET 01 PIPING ISOMETRIC		
H-2-126175	15	0	02/12/93	PE-1"-20C-172-A-Ih SHEET 02 PIPING ISOMETRIC		
H-2-126175	16	0	02/10/93	PE-2"-20C-203-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126175	17	0	02/12/93	PE-1"-20C-145-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126175	18	0	02/12/93	PE-1"-620-057-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126175	19	0	02/05/93	PE-2"-540-770-A3-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126175	20	0	02/04/93	PE-1 1/2"-540-781-C-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126175	21	0	02/08/93	PE-2"-210-161-C3-Ih SHEET 01 PIPING ISOMETRIC		
H-2-126175	22	0	02/04/93	PE-1/2"-410-261-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126175	23	0	02/04/93	PE-1/2"-210-070-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126176	1	0	11/17/92	PE-1"-20C-147-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126176	2	0	02/16/93	PE-1"-20C-147-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126176	4	0	02/05/93	PE-1"-170-024-DH-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	5	1	09/27/93	PE-2"-208-065-DJ-NONE SHEET 01 PIPING ISOMETRIC	CR-HWVP-0939	3
H-2-126176	6	0	02/04/93	PE-2"-210-160-C3-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126176	7	0	02/12/93	PE-4"-520-241-DD-NONE SHEET 01 PIPING ISOMETRIC		2

CWBS B210A PIPING ISOMETRIC INDEX VITRIFICATION BUILDING

DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126176	8	0	02/12/93	PE-1"-410-531-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126176	9	0	02/12/93	PE-1/2"-15A-099-K-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	10	0	02/12/93	PE-1/2"-410-1342-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	11	0	02/04/93	PE-3"-520-125-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	12	0	01/11/93	PE-1"-20C-018-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	13	0	02/04/93	PE-3"-520-205-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	14	0	02/04/93	PE-3"-520-209-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	15	0	02/05/93	PE-3"-520-204-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	16	0	02/05/93	PE-3"-520-112-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	17	0	02/05/93	PE-3"-520-091-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	18	0	02/05/93	PE-3"-520-116-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	19	0	02/05/93	PE-3"-520-201-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	20	0	02/05/93	PE-3"-520-096-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	21	0	02/10/93	PE-2"-20C-204-A-NONE SHEET 01 PIPING ISOMETRIC		1
H-2-126176	22	0	02/12/93	PE-1"-620-054-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126176	23	0	02/12/93	PE-3"-520-125-A-NONE SHEET 02 PIPING ISOMETRIC		1
H-2-126177	1	0	11/17/92	PE-1"-20C-148-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126177	2	0	02/16/93	PE-1"-20C-148-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126177	3	0	01/13/93	PE-3"-520-102-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	4	0	12/23/92	PE-3"-520-102-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126177	5	0	01/13/93	PE-3"-520-102-A-NONE SHEET 03 PIPING ISOMETRIC		2
H-2-126177	6	0	12/23/92	PE-3"-520-102-A-NONE SHEET 04 PIPING ISOMETRIC		2
H-2-126177	7	0	02/12/93	PE-6"-14A-101-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	8	0	02/12/93	PE-6"-14A-102-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	9	0	02/12/93	PE-1/2"-15A-104-K-1h SHEET 01 PIPING ISOMETRIC		2
H-2-126177	10	0	02/12/93	PE-1/2"-410-979-A-NONE SHEET 01 PIPING ISOMETRIC		2

CWBS B210A PIPING ISOMETRIC INDEX VITRIFICATION BUILDING

DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126177	11	0	01/11/93	PE-1/2"-410-768-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	12	0	01/11/93	PE-1"-20C-170-A-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126177	13	0	02/05/93	PE-1"-170-034-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	14	0	02/05/93	PE-1/2"-050-061-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	15	0	02/05/93	PE-1/2"-050-062-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	16	0	02/05/93	PE-1/2"-050-063-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	17	0	02/05/93	PE-1/2"-050-064-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	18	0	01/18/93	PE-1/2"-050-065-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	19	0	02/05/93	PE-1/2"-050-068-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	20	0	02/05/93	PE-1/2"-050-069-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	21	0	02/05/93	PE-1/2"-050-070-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126177	22	0	02/10/93	PE-2"-20C-195-A-NONE SHEET 01 PIPING ISOMETRIC		1
H-2-126177	23	0	02/12/93	PE-1"-620-055-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	1	0	11/17/92	PE-1"-20C-152-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126178	2	0	02/16/93	PE-1"-20C-152-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126178	3	0	12/23/92	PE-3"-520-008-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	4	0	02/12/93	PE-1"-20C-156-A-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126178	5	0	02/08/93	PE-1"-20C-096-DD-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	6	0	02/01/93	PE-1"-420-086-A-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126178	7	0	02/12/93	PE-1 1/2"-450-423-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	8	0	02/12/93	PE-1 1/2"-450-422-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	9	0	02/12/93	PE-1/2"-15A-106-K-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	10	0	01/11/93	PE-1/2"-410-977-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	11	0	02/12/93	PE-1/2"-410-978-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	12	0	01/11/93	PE-1 1/2"-20C-115-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	13	0	02/05/93	PE-1"-170-049-A-NONE SHEET 01 PIPING ISOMETRIC		2

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DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126178	14	0	02/10/93	PE-2"-20C-197-A-NONE SHEET 01 PIPING ISOMETRIC		1
H-2-126178	15	0	02/01/93	PE-3"-430-043-A3-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126178	16	0	02/01/93	PE-3"-430-043-A3-Ih SHEET 02 PIPING ISOMETRIC		2
H-2-126178	17	0	02/10/93	PE-2"-20C-193-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126178	18	0	02/05/93	PE-2"-460-008-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	19	0	02/12/93	PE-3"-520-068-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	20	0	02/12/93	PE-3"-520-104-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	21	0	02/12/93	PE-3"-520-083-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	22	0	02/05/93	PE-2"-230-906-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126178	23	0	02/05/93	PE-1/2"-170-067-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	1	0	11/17/92	PE-1"-20C-153-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126179	2	0	02/16/93	PE-1"-20C-153-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126179	3	0	02/16/93	MOG-8"-14B-030-C-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126179	4	0	02/12/93	PE-1"-20C-160-A-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126179	5	0	01/13/93	PE-2"-20C-140-A-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126179	6	0	12/12/93	PE-3"-520-242-DE-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	7	0	02/05/93	PE-2"-170-936-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	8	0	12/23/93	PE-3"-520-089-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	9	0	02/12/93	PE-1/2"-14A-033-K-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	10	0	01/11/93	PE-1/2"-410-976-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	11	0	02/12/93	PE-1"-420-089-A-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126179	12	0	01/11/93	PE-1 1/2"-20C-010-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	14	0	02/05/93	PE-1/2"-050-079-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	15	1	09/27/93	PE-2"-20C-196-A-NONE SHEET 01 PIPING ISOMETRIC	CR-HWVP-1036	3
H-2-126179	16	0	02/10/93	PE-2"-20C-194-A-NONE SHEET 01 PIPING ISOMETRIC		1
H-2-126179	17	0	02/12/93	PE-3"-520-203-A-NONE SHEET 01 PIPING ISOMETRIC		2

CWBS B210A PIPING ISOMETRIC INDEX VITRIFICATION BUILDING

DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126179	18	0	02/05/93	PE-2"-420-098-A3-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	19	0	02/05/93	PE-1/2"-210-125-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	20	0	02/05/93	PE-1/2"-210-126-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	21	0	02/05/93	PE-1/2"-210-127-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	22	0	02/05/93	PE-1"-410-1173-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126179	23	0	02/05/93	PE-1"-410-1174-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	1	0	11/17/92	PE-1"-20C-151-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126180	2	0	02/12/93	PE-1"-20C-151-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126180	3	0	02/16/93	MOG-8"-14A-121-C-IH SHEET 01 PIPING ISOMETRIC		2
H-2-126180	4	0	02/08/93	PE-1 1/2"-170-031-DH-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	5	0	02/08/93	PE-2"-540-791-DD-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	6	0	02/12/93	PE-1 1/2"-540-374-DE-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	7	0	02/12/93	PE-1 1/2"-540-325-DE-NONE SHEET 01 PIPING ISOMERIC		2
H-2-126180	8	0	02/01/93	PE-2"-170-937-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	9	0	12/23/92	PE-3"-520-200-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	10	0	02/12/93	PE-1/2"-14A-032-K-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126180	11	0	01/13/93	PE-2"-410-1355-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	12	0	02/12/93	PE-1/2"-410-1350-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	13	0	01/11/93	PE-1 1/2"-20C-177-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	14	0	01/11/93	PE-1 1/2"-20C-177-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126180	15	0	02/05/93	PE-1"-170-046-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	16	0	02/10/93	PE-2"-20C-199-A-NONE SHEET 01 PIPING ISOMETRIC		1
H-2-126180	17	0	02/12/93	PE-1/2"-050-060-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	18	0	02/12/93	PE-3"-520-032-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	19	0	02/01/93	PE-2"-230-907-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126180	22	0	02/01/93	PE-1/2"-170-017-A-NONE SHEET 01 PIPING ISOMETRIC		2

CWBS B210A PIPING ISOMETRIC INDEX VITRIFICATION BUILDING

DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126180	23	0	02/12/93	PE-1/2"-050-072-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	1	0	11/17/92	PE-1"-20C-141-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126181	2	0	02/12/93	PE-1"-20C-141-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126181	3	0	02/16/93	PVV-10"-15G-030-C-IH SHEET 01 PIPING ISOMETRIC		2
H-2-126181	4	0	02/08/93	PE-1"-170-025-DH-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	5	0	01/13/93	PE-2"-20C-015-DD-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	6	0	02/05/93	PE-2"-20C-186-DD-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	7	0	02/01/93	PE-2"-170-938-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	8	0	12/23/93	PE-3"-520-199-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	9	0	02/12/93	PE-1/2"-14A-031-K-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	10	0	01/11/93	PE-1/2"-410-1341-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	11	0	02/12/93	PE-1/2"-410-964-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	12	0	02/05/93	PE-2"-540-769-A3-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	13	0	01/11/93	PE-1"-210-121-C3-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	14	0	02/08/93	PE-1"-210-122-C3-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	15	0	02/05/93	PE-2"-170-044-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	16	0	02/05/93	PE-1/2"-050-077-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	17	0	02/12/93	PE-1/2"-050-058-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	18	0	02/05/93	PE-2"-16A-051-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	19	0	02/05/93	PE-1/2"-170-068-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	20	0	02/12/93	PE-1/2"-050-071-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	21	0	02/12/93	PE-1/2"-050-073-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	22	0	02/08/93	PE-2"-170-909-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126181	23	0	02/05/93	PE-2"-170-908-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	1	0	11/17/92	PE-1"-20C-142-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126182	2	0	02/12/93	PE-1"-20C-142-A-NONE SHEET 02 PIPING ISOMETRIC		2

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DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126182	3	0	02/16/93	PVV-14"-14A-071-C-IH SHEET 01 PIPING ISOMETRIC		2
H-2-126182	4	0	02/08/93	PE-1"-170-026-DH-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	6	0	02/08/93	PE-1"-170-050-DH-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	7	0	02/08/93	PE-2"-170-939-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	8	0	01/13/93	PE-3"-520-007-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	9	0	01/13/93	PE-3"-520-073-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	10	0	02/12/93	PE-1/2"-14A-030-K-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126182	11	0	01/11/93	PE-1/2"-410-973-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	12	0	02/12/93	PE-1/2"-410-963-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	13	0	01/11/93	PE-1 1/2"-20C-178-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	14	0	01/11/93	PE-1/1/2"-20C-178-A-NONE SHEET 02 PIPING ISOMENTRIC		2
H-2-126182	15	0	02/08/93	PE-1"-170-045-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	16	0	02/08/93	PE-1/2"-050-078-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	17	0	02/12/93	PE-1/2"-050-059-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	18	0	02/08/93	PE-2"-16A-052-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	19	0	02/08/93	PE-1/2"-170-019-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	20	0	02/08/93	PE-2"-170-905-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	21	0	02/08/93	PE-2"-170-910-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	22	0	02/08/93	PE-2"-170-907-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126182	23	0	02/08/93	PE-4"-500-067-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126183	1	0	11/17/92	PE-1"-20C-143-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126183	2	0	02/12/93	PE-1"-20C-143-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126183	3	0	02/16/93	PVV-14"-15B-002-C-IH SHEET 01 PIPING ISOMETRIC		2
H-2-126183	4	0	02/08/93	PE-1"-170-028-DH-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126183	5	0	02/02/93	PE-2"-520-234-DD-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126183	6	0	02/02/93	PE-2"-520-234-DD-NONE SHEET 02 PIPING ISOMETRIC		2

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DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126183	7	0	02/02/93	PE-2"-520-234-DD-NONE SHEET 03 PIPING ISOMETRIC		2
H-2-126183	8	0	02/02/93	PE-2"-520-234-DD-NONE SHEET 04 PIPING ISOMETRIC		2
H-2-126183	9	0	02/02/93	PE-2"-520-234-DD-NONE SHEET 05 PIPING ISOMETRIC		2
H-2-126183	10	0	02/02/93	PE-3"-520-234-DD-NONE SHEET 06 PIPING ISOMETRIC		2
H-2-126183	11	0	02/12/93	PE-1/2"-410-994-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126183	12	0	02/12/93	PE-1/2"-410-995-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126183	13	0	01/11/93	PE-1/2"-410-972-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126183	14	0	02/12/93	PE-1"-480-711-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126183	15	0	02/08/93	PE-1"-170-052-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126183	16	0	02/08/93	PE-1/2"-050-076-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126183	17	0	02/12/93	PE-3"-520-113-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126183	18	0	02/12/93	PE-3"-520-113-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126183	19	0	02/12/93	PE-3"-520-113-A-NONE SHEET 03 PIPING ISOMETRIC		2
H-2-126183	20	0	02/08/93	PE-2"-710-951-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126183	21	0	02/08/93	PE-1"-480-916-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126183	23	0	02/05/93	PE-1"-420-088-A-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126184	1	1	09/27/93	PE-1"-20C-144-A-NONE SHEET 01 PIPING ISOMETRIC	CR-HWVP-1036	3
H-2-126184	2	0	02/12/93	PE-1"-20C-144-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126184	3	0	02/16/93	PVV-14"-15A-003-C-IH SHEET 01 PIPING ISOMETRIC		2
H-2-126184	4	0	02/09/93	PE-1"-170-033-DH-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	5	0	02/09/93	PE-2"-540-792-DD-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	6	0	02/09/93	PE-1"-170-047-DH-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	7	0	02/12/93	PE-1 1/2"-14A-089-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	8	0	02/12/93	PE-1 1/2" 14A-090-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	9	0	02/12/93	PE-2"-560-026-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	10	0	01/11/93	PE-1/2"-410-1203-A-NONE SHEET 01 PIPING ISOMETRIC		2

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DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126184	11	0	02/12/93	PE-1/2"-210-085-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	12	0	01/11/93	PE-1 1/2"-20C-027-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	13	0	01/11/93	PE-1 1/2"-20C-027-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126184	14	0	02/09/93	PE-1"-170-029-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	15	0	02/08/93	PE- 1/2"-050-074-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	16	0	02/12/93	PE-3"-520-072-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	17	0	02/09/93	PE-2"-420-087-A-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126184	18	0	02/08/93	PE-2"-710-915-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	19	0	02/08/93	PE-2"-710-952-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126184	20	0	02/12/93	PE-1"-20C-173-A-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126184	21	0	02/12/93	PE-1"-20C-173-A-Ih SHEET 02 PIPING ISOMETRIC		2
H-2-126184	22	0	02/12/93	PE-1"-20C-173-A-Ih SHEET 03 PIPING ISOMETRIC		2
H-2-126184	23	0	02/12/93	PE-1"-20C-026-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	1	0	11/17/92	PE-1"-20C-149-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126185	2	0	02/12/93	PE-1"-20C-149-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126185	3	1	09/27/93	PE-3" 110-002-DF-IH SHEET 01 PIPING ISOMETRIC	CR-HWVP-0939	3
H-2-126185	4	0	02/08/93	PE-1"-170-035-DH-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	5	0	02/09/93	PE-2"-540-793-DD-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	6	0	02/09/93	PE-1"-170-048-DH-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	7	0	02/12/93	PE-1"-420-094-A-Ih SHEET 01 PIPING ISOMETRIC		2
H-2-126185	8	0	01/11/93	PE-2"-410-226-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	9	0	01/11/93	PE-1"-410-1364-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	10	0	01/11/93	PE-1/2"-410-1202-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	11	0	02/12/93	PE-1"-20C-024-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	12	0	02/12/93	PE-1"-20C-024-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126185	13	0	02/09/93	PE-1"-170-023-A-NONE SHEET 01 PIPING ISOMETRIC		2

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DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126185	14	0	02/09/93	PE-1/2"-050-075-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	15	0	02/12/93	PE-3"-520-192-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	16	0	02/12/93	PE-3"-520-054-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	17	0	02/08/93	PE-2"-710-916-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	18	0	02/08/93	PE-1"-20C-185-DD-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	19	0	02/12/93	PE-1"-620-059-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	20	0	02/12/93	PE-1"-620-058-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	21	0	02/12/93	PE-1/2"-20C-161-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126185	22	0	02/10/93	PE-1/2"-20C-202-A-NONE SHEET 01 PIPING ISOMETRIC		1
H-2-126185	23	0	02/10/93	PE-2"-20C-200-A-NONE SHEET 01 PIPING ISOMETRIC		1
H-2-126186	1	0	11/17/92	PE-1"-20C-146-A-NONE SHEET 01 PIPING ISOMETRIC		
H-2-126186	2	0	02/12/93	PE-1"-20C-146-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126186	3	1	09/27/93	PE-3"-110-041-DF-Ih SHEET 01 PIPING ISOMETRIC	CR-HWVP-0939	3
H-2-126186	4	0	02/08/93	PE-1 1/2"-170-032-DH-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126186	5	0	02/09/93	PE-1 1/2"-170-051-DH-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126186	6	0	01/13/93	PE-3"-520-208-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126186	7	0	01/13/93	PE-3"-520-208-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126186	8	0	01/13/93	PE-3"-520-208-A-NONE SHEET 03 PIPING ISOMETRIC		2
H-2-126186	9	0	01/13/93	PE-3"-520-208-A-NONE SHEET 04 PIPING ISOMETRIC		2
H-2-126186	10	0	01/13/93	PE-3"-520-208-A-NONE SHEET 05 PIPING ISOMETRIC		2
H-2-126186	11	0	12/23/92	PE-3"-520-208-A-NONE SHEET 06 PIPING ISOMETRIC		2
H-2-126186	12	0	12/23/92	PE-3"-520-208-A-NONE SHEET 07 PIPING ISOMETRIC		2
H-2-126186	13	0	12/23/92	PE-3"-520-208-A-NONE SHEET 08 PIPING ISOMETRIC		2
H-2-126186	14	0	12/23/92	PE-3"-520-208-A-NONE SHEET 09 PIPING ISOMETRIC		2
H-2-126186	15	0	02/08/93	PE-3"-520-208-A-NONE SHEET 10 PIPING ISOMETRIC		2
H-2-126186	16	0	02/12/93	PE-1"-210-086-A NONE SHEET 01 PIPING ISOMETRIC		2

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DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126186	17	0	02/08/93	PE-3"-520-208-A-NONE SHEET 11 PIPING ISOMETRIC		2
H-2-126186	18	0	02/09/93	PE-3"-520-208-A-NONE SHEET 12 PIPING ISOMETRIC		2
H-2-126186	19	0	02/12/93	PE-3"-520-085-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126186	20	0	02/10/93	PE-2"-20C-201-A-NONE SHEET 01 PIPING ISOMETRIC		1
H-2-126186	21	0	02/12/93	PE-1/2"-410-1344-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126186	22	0	02/12/93	PE-1"-620-244-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126186	23	0	02/12/93	PE-1"-20C-026-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126187	1	0	02/16/93	PE-6"-520-067-DD-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126187	2	1	09/27/93	PE-6"-520-067-DD-NONE SHEET 02 PIPING ISOMETRIC	CR-HWVP-1036	3
H-2-126187	3	1	09/27/93	PE-6"-520-067-DD-NONE SHEET 03 PIPING ISOMETRIC	CR-HWVP-1036	3
H-2-126187	4	0	02/12/93	PE-6"-520-067-DD-NONE SHEET 04 PIPING ISOMETRIC		2
H-2-126187	5	0	02/12/93	PE-6"-520-067-DD-NONE SHEET 05 PIPING ISOMETRIC		2
H-2-126187	6	0	02/12/93	PE-3"-520-067-DD-NONE SHEET 06 PIPING ISOMETRIC		2
H-2-126187	7	0	02/12/93	PE-3"-520-067-DD-NONE SHEET 07 PIPING ISOMETRIC		2
H-2-126187	8	0	02/12/93	PE-3"-520-067-DD-NONE SHEET 08 PIPING ISOMETRIC		2
H-2-126187	9	1	09/27/93	PE-3"-110-038-DF-IH SHEET 01 PIPING ISOMETRIC	CR-HWVP-0939	3
H-2-126187	10	0	01/11/93	PE-1/2"-410-1201-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126187	11	0	02/12/93	PE-1/2"-20C-155-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126187	12	0	02/09/93	PE-1"-170-027-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126187	13	0	02/08/93	PE-2"-170-039-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126187	14	0	02/08/93	PE-1 1/2"-230-003-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126187	15	0	02/12/93	PE-3"-520-103-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126187	16	0	02/12/93	PE-3"-520-117-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126187	17	0	02/12/93	PE-3"-520-117-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126187	18	0	02/08/93	PE-1/2"-170-066-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126187	19	0	02/08/93	PE-2"-540-794-DD-NONE SHEET 01 PIPING ISOMETRIC		2

CWBS B210A PIPING ISOMETRIC INDEX VITRIFICATION BUILDING

DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126187	20	0	02/08/93	PE-2"-540-794-DD-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126187	21	0	02/08/93	PE-1"-620-014-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126187	22	0	02/08/93	PE-1"-620-015-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126187	23	0	02/12/93	PE-1"-20C-026-A-NONE SHEET 03 PIPING ISOMETRIC		2
H-2-126188	1	0	02/12/93	PE-3"-520-115-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	2	0	02/16/93	PE-3"-520-115-A-NONE SHEET 02 PIPING ISOMETRIC		2
H-2-126188	3	0	02/12/93	PE-3"-520-115-A-NONE SHEET 03 PIPING ISOMETRIC		2
H-2-126188	4	0	02/12/93	PE-3"-520-115-A-NONE SHEET 04 PIPING ISOMETRIC		2
H-2-126188	5	0	02/12/93	PE-3"-520-115-A-NONE SHEET 05 PIPING ISOMETRIC		2
H-2-126188	6	1	09/27/93	PE-2"-20B-064-DJ-NONE SHEET 01 PIPING ISOMETRIC	CR-HWVP-0939	3
H-2-126188	7	0	02/08/93	PE-1/2"-410-974-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	8	0	01/11/93	PE-1/2"-410-975-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	9	0	01/11/93	PE-1/2"-410-1333-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	10	0	01/13/93	PE-1 1/2"-410-1365-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	11	0	02/09/93	PE-1"-170-038-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	12	0	02/08/93	PE-1/2"-170-037-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	13	0	02/08/93	PE-1 1/2"-230-007-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	14	0	02/08/93	PE-1 1/2"-230-006-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	15	0	02/12/93	PE-1"-620-056-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	16	0	02/12/93	PE-4"-520-114-DD-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	17	0	02/12/93	PE-3"-520-084-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	18	1	09/27/93	PE-2"-20C-198-A-NONE SHEET 01 PIPING ISOMETRIC	CR-HWVP-1036	3
H-2-126188	19	0	02/08/93	PE-1"-170-042-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	20	0	02/09/93	PE-1/2"-170-016-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	21	0	02/08/93	PE-1"-620-050-A-NONE SHEET 01 PIPING ISOMETRIC		2
H-2-126188	22	0	02/08/93	PE-1"-620-051-A-NONE SHEET 01 PIPING ISOMETRIC		2

CWBS B210A PIPING ISOMETRIC INDEX VITRIFICATION BUILDING

DRAWING NUMBER	SHEET NUMBER	DRW REV	REV DATE	LINE NUMBER, CLASS, AND SHEET NUMBER	REMARKS	RD REV
H-2-126189	6	0	09/27/93	PE-2"-20A-295-DJ-Ih SHEET 01 PIPING ISOMETRIC	CR-HWVP-0939	3
H-2-126189	7	0	09/27/93	PE-2"-20A-296-DJ-Ih SHEET 01 PIPING ISOMETRIC	CR-HWVP-0939	3

U.S. DEPARTMENT OF ENERGY
Hanford Waste Vitrification Plant
Richland, Washington
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.
Advanced Technology Division
Fluor Contract 8457

SECTION 15062B
PIPING MATERIAL, FABRICATION, ERECTION & PRESSURE TESTING (DOUBLE CONTAINED PIPING)
B-595-C-B210A-15062B

APPROVED FOR CONSTRUCTION

REVISION 3 PER CR HWVP-1036
ISSUE DATE SEP 24 1993

WAPA YES ___ NO X
QUALITY LEVEL I ___ II X
SAFETY CLASS 1__ 2__ 3X 4__

ORIGINATOR:

9/20/93
Cliff Johnson, Piping Engineer Date

CHECKER:

9/20/93
Larry LaCosse, Piping Engineer Date

APPROVED BY:

George Barauskas Lead Discipline Engineer

9-24-93
Date

09/23/93 2:55pm
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SECTION 15062B
PIPING MATERIAL, FABRICATION, ERECTION & PRESSURE TESTING (DOUBLE CONTAINED PIPING)
B-595-C-B210A-15062B

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ATTACHMENTS

ATTACHMENT	TITLE
A	UNDERGROUND PIPE DETAILS

SECTION 15062B
PIPING MATERIAL, FABRICATION, ERECTION & PRESSURE TESTING (DOUBLE CONTAINED PIPING)

PART 1 GENERAL

1.1 SUMMARY

This Section defines the technical requirements for the furnishing, fabrication, erection and testing of Double Contained Piping.

1.2 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME/ANSI B16.9	1986 Factory-Made Wrought Steel Buttwelding Fittings
ASME B31.3	1990 Chemical Plant and Petroleum Refinery Piping, Including Addenda a and b

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 182/A 182M	1990 Standard Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service
ASTM A 193/A 193M	1990 Standard Specification for Alloy Steel and Stainless Steel Bolting Material for High-Temperature Service
ASTM A 194/A 194M	1990 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
ASTM A 234/A 234M	1990 Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures
ASTM A 240	1991 Standard Specification for Heat-Resisting Chromium and Chromium- Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels

ASTM A 262	1986 Standard Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels
ASTM A 312/A 312M	1991 Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes
ASTM A 403/A 403M	1991 Standard Specification for Wrought Austenitic Stainless Steel Piping Fittings
ASTM B 366	1991 Standard Specification for Factory-Made Wrought Nickel and Nickel Alloy Welding Fittings
ASTM B 464	1991 Standard Specification for Welded UNS N08020, N08024, and N08026 Alloy Pipe

NATIONAL ASSOCIATION OF CORROSION ENGINEERS (NACE)

NACE RP02-74	1974 High Voltage Electrical Inspection of Pipeline Coatings Prior to Installation

PIPE FABRICATION INSTITUTE (PFI)

PFI Standard ES-3	1990 Fabricating Tolerances
PFI Standard ES-24	1990 Pipe Bending Methods, Tolerances, Process and Material Requirements
PFI Standard ES-32	1985 Tool Calibration

1.3 RELATED REQUIREMENTS

This specification is to be used in conjunction with the following specifications:

Specification Section 05062	Welding Piping
Specification Section 13252	Precautions for Fabrication, Handling and Storage of Stainless Steel and Nickel Alloys

1.4 DEFINITIONS

The term "erection," where used in this specification, shall be defined as follows: Shop or field fabricated erection - the placing of any pipe or component of a piping or instrument system in its final position specified in the Contract Drawings and/or specifications.

1.5 **SYSTEM DESCRIPTION**

All components, fabrication, erection, and testing, except as otherwise qualified herein, shall be in accordance with the requirements of ASME B31.3.

1.6 **SUBMITTALS**

Submit the following in accordance with Part III, Section I, Exhibit 5 of the Request for Proposal (RFP), Vendor Drawing and Data Requirements (VDDR).

1.6.1 Shop Drawings

Submit shop drawings of nonstandard components per Paragraph 2.1.3B.

1.6.2 Quality Control Submittals

A. Factory Acceptance Tests (FATS)

The following test reports shall include itemized test activities, inspection requirements and functional performance requirements, together with the corresponding acceptance criteria for the tests.

1) Submit corrosion test reports for each heat per Paragraph 2.1.6 for Piping Material Classes DD, DE and DJ.

B. Construction Acceptance Tests (CATS)

The following test reports shall include itemized test activities, inspection requirements and functional performance requirements, together with the corresponding acceptance criteria for the tests.

1) Submit Pressure Test Reports per Paragraph 3.3.4.

2) Submit cleaning reports per Paragraph 3.5.3.

1.6.3 Certificates

Certified Material Test Reports (CMTRs) for all pressure containing and/or wetted parts.

1.7 **CLASSIFICATION OF SYSTEMS AND COMPONENTS**

(Not Used)

1.8 **PROJECT OR SITE ENVIRONMENTAL CONDITIONS**

(Not Used)

PART 2 PRODUCTS

2.1 **MATERIALS/EQUIPMENT**

2.1.1 Piping Material Classes

A. Piping Material Classes are listed herein conform to designations as shown on the drawings.

B. Unless otherwise specified, all pressures and temperatures listed are design conditions.

C. Piping Material Classes/Services Index

CLASS	MATERIAL	RATING CLASS	SERVICE
DD	Carrier - 304L SS Containment - 304L SS	300 300	Process Regulated Drains
DE	Carrier - 316L SS Containment - 316L SS	300 300	Process Regulated Drains (Formic Acid Drains) 90% Formic Acid
DH	Carrier - 304L SS Containment - 304L SS	3000 PSIG @ 150°F	Hydraulic Oil Nitrogen
DJ	Carrier - Alloy 20 Containment - 304L	300 150	Process

D. Identification of Piping

Example:

```
PE-   3"  -520-067- DD-NONE - 01
XXX-XXXXXX-XXX-XXX-XXX-XXXX - XX
```

- Isometric Drawing Sheet Number (As Identified on Piping Plan Drawings)
- Insulation or Heat Tracing Symbol (None if no Insulation)
- Piping Material Class
- Line Number
- System/Subsystem
- Nominal Pipe Size
- Embedded in Concrete Replaces Line Service

Piping Material Class DD

General Material:	Carrier and Containment - 304L Stainless Steel
Rating:	Carrier - Class 300 Containment - Class 300
Temperature Limit:	-20°F thru 450°F
Maximum Pressure:	260 PSIG
Corrosion Allowance:	Carrier - .065" (See Note 3) Containment - None
Construction:	Carrier and Containment - Buttweld (except socketweld connections to containment drains)

ITEM	DESCRIPTION
Carrier and Containment Pipe	
2" - 8"	Seamless stainless steel, schedule 40S, ASTM A 312/A 312M, Grade TP304L, beveled ends.
Carrier and Containment Fittings (ells, tees, laterals, caps, and reducers, See Note 1)	
2" - 8"	Stainless steel, ASTM A 403/A 403M, Grade WP304L-S, buttweld type, schedule 40S.
Containment Self Reinforced Branch Connections	
1/2" - 2"	Class 3000 stainless steel, ASTM A 182/A 182M, Grade F304L, socketweld. Bonney Forge Sockolet or equal.
Carrier Branch Construction	
	Use reducing tees or reducing laterals within the size range of reducing tees per ASME/ANSI B16.9. Use reducing tees/laterals and reducers (or swage nipples) where not within the size range of ASME/ANSI B16.9.
Containment Branch Construction	
	Use reducing tees or reducing laterals (split and reweld to suit) within the size range of reducing tees per ASME/ANSI B16.9. Use reducing tees/laterals (split and reweld to suit) and reducers (or swage nipples) where not within the size range of ASME/ANSI B16.9.
Carrier Swages	
2" - 2"	Concentric swage, stainless steel ASTM A 403/A 403M, Grade WP304L-S, schedule 40S, beveled both ends.

Piping Material Class DD (continued)

Flanges (See Note 4)

2" - 8"	Plate flange, ASTM A 240, 304L stainless steel flat face slip-on type, 1/4" thick. Flange drilling to match that of ASME/ANSI B16.5 Class 150 flange.
2" - 8"	Blind flange, ASTM A 240, 304L stainless steel flat face, 1/4" thick. Flange drilling to match that of ASME/ANSI B16.5 Class 150 blind flange.

Gaskets (See Note 4)

2" - 8"	Class 125 full face red rubber gasket, 1/8" thick. Sepco 20 or equal.

Bolts (See Note 4)

Stud bolts, 304 stainless steel, ASTM A 193, Grade B8 with ASTM A 194 Grade 8S nuts.

Centering Guides

Centering guides shall be made from 1/4" thick ASTM A 240, Grade 304L stainless steel plate.

Notes:

1. Use bends with a radius of 3 nominal pipe diameters (3D) on carrier piping for sizes 2", and fittings on containment piping except where indicated otherwise on the drawings.

2. Deleted.

3. All embedded lines have been checked to ensure an available corrosion allowance of .120 inch minimum on the carrier pipe. New "field addition" embedded lines shall be checked to ensure that available corrosion allowance is a minimum of .120 inch on the carrier pipe.

4. Use these items only at cleanouts for drain lines.

Piping Material Class DE

General Material:	Carrier and Containment - 316L Stainless Steel
Rating:	Carrier - Class 300 Containment - Class 300
Temperature Limit:	-20°F thru 450°F
Maximum Pressure:	260 PSIG
Corrosion Allowance:	Carrier - .065" (See Note 3) Containment - None
Construction:	Carrier and Containment - Buttweld (except socketweld connections to containment drains)

ITEM	DESCRIPTION
Carrier and Containment Pipe	
2" - 8"	Seamless stainless steel, schedule 40S, ASTM A 312/A 312M, Grade TP316L, beveled ends.
Carrier and Containment Fittings (ells, tees, laterals, caps, and reducers, See Note 1)	
2" - 8"	Stainless steel, ASTM A 403/A 403M, Grade WP316L-S, buttweld type, schedule 40S.
Containment Self Reinforced Branch Connections	
1/2" - 2"	Class 3000 stainless steel, ASTM A 182/A 182M, Grade F316L, socketweld. Bonney Forge Sockolet or equal.
Carrier Branch Construction	
	Use reducing tees or reducing laterals within the size range of reducing tees per ASME/ANSI B16.9. Use reducing tees/laterals and reducers (or swage nipples) where not within the size range of ASME/ANSI B16.9.
Containment Branch Construction	
	Use reducing tees or reducing laterals (split and reweld to suit) within the size range of reducing tees per ASME/ANSI B16.9. Use reducing tees/laterals (split and reweld to suit) and reducers (or swage nipples) where not within the size range of ASME/ANSI B16.9.
Carrier Swages	
2" - 2"	Concentric swage, stainless steel ASTM A 403/A 403M, Grade WP316L-S, schedule 40S, beveled both ends.

Piping Material Class DE (continued)

Centering Guides

Centering guides shall be made from 1/4" thick ASTM A 240, Grade 316L stainless steel plate.

Flanges (See Note 4)

2" - 8"	Plate flange, ASTM A 240, 316L stainless steel flat face slip-on type, 1/4" thick. Flange drilling to match that of ASME/ANSI B16.5 Class 150 flange.
2" - 8"	Blind flange, ASTM A 240, 316L stainless steel flat face, 1/4" thick. Flange drilling to match that of ASME/ANSI B16.5 Class 150 blind flange.

Gaskets (See Note 4)

2" - 8"	Class 125 full face red rubber gasket, 1/8" thick. Sepco 20 or equal.

Bolts (See Note 4)

Stud bolts, 304 stainless steel, ASTM A 193, Grade B8 with ASTM A 194 Grade 8S nuts.

Notes:

1. Use bends with a radius of 3 nominal pipe diameters (3D) on carrier piping for size 2", and fittings on containment piping except where indicated otherwise on the drawings.

2. Deleted.

3. All embedded lines have been checked to ensure an available corrosion allowance of .120 inch minimum on carrier piping. New "field addition" embedded lines shall be checked to ensure that available corrosion allowance is a minimum of .120 inch on carrier piping.

4. Use these items only at cleanouts for drain lines.

Piping Material Class DH

General Material:	Carrier and Containment - 304L Stainless Steel
Rating:	Carrier - 3000 PSIG Containment - 3000 PSIG
Temperature Limit:	-20°F thru 150°F
Maximum Pressure:	3000 PSIG
Corrosion Allowance:	Carrier - .03" Containment - None
Construction:	Carrier and Containment - Buttweld

ITEM	DESCRIPTION
Carrier and Containment Pipe (See Note 1)	
1" - 1"	Seamless stainless steel, schedule 80S, ASTM A 312/A 312M, Grade TP304L, beveled ends.
1" - 1"	Seamless stainless steel, schedule 160, ASTM A 312/A 312M, Grade TP304L, beveled ends. (Use on 3D bends).
1 1/2" - 1 1/2"	Seamless stainless steel, schedule 160, ASTM A 312/A 312M, Grade TP304L, beveled ends.
3" - 3"	Seamless stainless steel, schedule 160, ASTM A 312/A 312M, Grade TP304L, beveled ends.
Containment Fittings	
3" - 3"	Stainless steel, ASTM A 403/A 403M, Grade WP304L-S, buttweld type, schedule 160 short radius elbow. (Use as containment for 1" carrier size)
3" - 3"	Stainless steel, ASTM A 403/A 403M, Grade WP304L-S, buttweld type, long radius elbow schedule 160. (Use as containment for 1 1/2" carrier size)
Centering Guides	
	Centering guides shall be made from 1/4" thick ASTM A 240, Grade 304L stainless steel plate.

Notes:

1. Use bends with a radius of 3 nominal pipe diameters (3D) on carrier piping and fittings on containment piping except where indicated otherwise on the drawings.

Piping Material Class DJ

General Material:	Carrier - Alloy 20 Containment - 304L Stainless Steel
Rating:	Carrier - Class 300 Containment - Class 150
Temperature Limit:	-20°F thru 240°F
Maximum Pressure:	400 PSIG
Corrosion Allowance:	Carrier - .065" Containment - None
Construction:	Carrier and Containment - Buttweld (except socketweld connections to containment drains)

ITEM	DESCRIPTION
Carrier Pipe (See Note 1)	
2" - 3"	Seamless Alloy 20CB, Schedule 40S, ASTM B 464, Alloy UNS N08020, beveled ends.
Containment Pipe	
4" - 6"	Seamless stainless steel, Schedule 40S, ASTM A 312/A 312M, Grade TP304L, beveled ends.
Carrier Fittings (See Note 1)	(Ells, tees, laterals and reducers)
2" - 3"	Alloy 20, buttweld type, Schedule 40S beveled ends ASTM B 366, Grade WP20CB.
Containment Fittings	(Ells, tees, laterals, and reducers)
4" - 6"	Stainless steel, ASTM A 403/A 403M, Grade WP304L-S, buttweld type, Schedule 40S.
Containment Self Reinforced Branch Connections	
1/2" - 2"	Class 3000 stainless steel, ASTM A 182/A 182M, Grade F304L, socketweld. Bonney Forge Sockolet or equal.
Carrier Branch Construction	
	Use reducing tees or reducing laterals within the size range of reducing tees per ASME/ANSI B16.9. Use reducing tees/laterals and reducers (or swage nipples) where not within the size range of ASME/ANSI B16.9.

Piping Material Class DJ (Continued)

Containment Branch Construction

Use reducing tees or reducing laterals (split and reweld to suit) within the size range of reducing tees per ASME/ANSI B16.9. Use reducing tees/laterals (split and reweld to suit) and reducers (or swage nipples) where not within the size range of ASME/ANSI B16.9.

Carrier Swages

2" - 2"	Concentric swage, Alloy 20, Schedule 40S seamless to ASTM B 366, Grade WP20CB beveled both ends.

Centering Guides

Centering guides shall be made from 1/4" thick ASTM A 240, Grade 304L stainless steel plate.

Notes:

1. Use bends with a radius of 3 nominal pipe diameters (3D) on carrier piping for size 2" and fittings on containment piping except where indicated otherwise on the drawings.

2.1.2 Pressure Testing Materials

A. Test Water Requirements

Water used for cleaning and/or hydrotest shall conform to Specification Section 13252.

B. Pneumatic Air Requirements

The air for pneumatic testing shall have a dew point of -20°F or less at atmospheric pressure and shall contain less than 10 parts per million oil.

C. Leak Detector Solution

Leak detector solution for pneumatic testing shall be Nupro "Snoop" or equal.

D. Pressure Test Blinds

Plain 1/4" thick stainless steel test blanks made from ASTM A 240, Grade TP304 plate with 1/16 inch thick non-asbestos gaskets shall be used for blanking raised face flanges for sizes up to 6 inches.

E. Pressure Test Plugs

Open ends of piping systems (i.e., plain end or beveled end) that cannot otherwise be blanked off for pressure testing shall be closed off with commercial pressure test plugs suitable for the pipe size and test pressure.

2.1.3 Components

A. The requirements contained in this Section shall apply to all Material Classes included in this specification.

B. Pipe, fittings, and all other piping components (i.e., valves, strainers, gaskets, bolting, etc.) shall be standard components conforming to the standards listed in ASME B31.3, Appendix E within the size ranges of those standards. Where such conformance is not possible (i.e., fittings smaller than 1/2" NPS, manufacturer's proprietary design, etc.), the Seller shall submit a dimensional drawing of the component, and the component shall be certified by the manufacturer as being suitable for the design conditions of the applicable material class. The Seller shall adjust field dimensions if the materials procured do not correspond to the dimensions depicted on the drawings.

2.1.4 Buried Warning and Identification Tape

Tape shall be an alkali-resistant polyethylene plastic tape manufactured specifically for warning and identification of buried utility lines, and shall be provided in rolls, 6 inches wide with minimum thickness of 0.004 inch and shall have a minimum strength of 1750 pounds per square inch lengthwise and 150 pounds per square inch crosswise. The tape shall be manufactured with integral wires, foil backing or other means to enable detection by a metal detector when the tape is buried up to 3 feet deep. The metallic core of the tape shall be encased in a protective jacket or provided with other means to protect it from corrosion. The tape shall be as specified in Table 1 and shall be imprinted in bold black letters continuously and repeatedly over entire tape length.

TABLE 1

TAPE COLOR

Red: Gas, Oil, Dangerous Materials

Warning and identification shall be "CAUTION BURIED (Intended Service) LINE BELOW" or similar wording. Code and letter coloring shall be permanent, unaffected by moisture and other substances contained in the trench backfill.

2.1.5 Corrosion Control Materials for Underground Pipe

A. Cold Applied Tape Wrap system shall consist of a tape manufacturer recommended primer and a Nomex or equal base cloth and phenolic base resin, and shall be suitable for operation at 340°F. Knight-Laggi 200 System or equal.

B. High Temperature Cement for packing of voids and repair of coating at exothermic welds shall be a matrix composed primer and chopped fibers of the tape base cloth.

C. Magnesium ribbon anode shall consist of .135" diameter core wire coated with magnesium in a 3/8" x 3/4" rectangular shape, with a nominal weight of 0.243 pounds per foot. Dow DC-1016 Galvoline or approved equal.

D. 12 gauge wire for test leads and jumper wire shall be suitable for direct burial, with Type RHW insulation.

2.1.6 Corrosion Evaluated Material (CEM) Requirements

A. Piping lines requiring CEM material are indicated by notes on the piping Contract Drawings and on the line list.

B. Type 304L SS material shall be corrosion tested per ASTM A262, Practice C when indicated on the Contract Drawing. One test shall be conducted per heat of material. The acceptance criteria shall be a measured corrosion rate of less than 0.002 inches/month. Material passing Practice A, the Rapid Screening Test, is considered acceptable. A Certified Material Test Report (CMTR) from the original manufacturer with the above corrosion testing requirement for the actual heat of material used is acceptable. Typical CMTRs are not acceptable.

C. Type 316L SS material shall be corrosion tested per ASTM A 262, Practice B when indicated on the Contract Drawing. One test shall be conducted per heat of material. The acceptance criteria shall be a measured corrosion rate of less than 0.004 inches/month. Material passing Practice A, the Rapid Screening Test, is considered acceptable. A Certified Material Test Report (CMTR) from the original manufacturer with the above corrosion testing requirement for the actual heat of material used is acceptable. Typical CMTRs are not acceptable.

D. Deleted.

E. Alloy 20 UNS N08020 shall be corrosion tested per ASTM A 262. The applicable practice and acceptable criteria TBD.

F. Piping that is fabricated with CEM And is hot-formed or heat-treated may require addition corrosion testing after fabrication depending upon the type of hot-forming or heat-treatment. This may be accomplished by corrosion testing a CEM coupon of the same heat as the piping being fabricated, provided said coupon has been subjected to the same hot-forming or heat-treatment cycle as the finished product. If the coupon does not pass the corrosion test, results will be submitted to the Buyer for evaluation. The entire part may need a solution anneal heat-treatment if the Buyer's evaluation determines that this is required.

G. Double contained piping only requires CEM for the carrier piping material.

H. Weld filler metal does not require CEM testing.

2.2 FABRICATION AND MANUFACTURE

2.2.1 Shop Assembly

A. Welding

Welding, weld examination and postweld heat treatment shall be in accordance with Specification Section 05062.

B. Internal Misalignment

Where the ends of piping components are to be joined by welding and the internal surface misalignment exceeds the dimensional limits of the qualified welding procedure, one of the following procedures shall be used to correct this condition.

1) Taper bore or grind the wall of the component extending internally using a 4 to 1 maximum taper. Such tapering shall not result in a finished wall thickness, before welding, that is less than the nominal pipe wall thickness minus the manufacturer's mill tolerance. Further reduction of the wall thickness requires Buyer's authorization.

2) Use spreaders or internal and/or external lineup clamps to correct moderate out-of-round condition.

C. Cleanliness

Cleanliness requirements for fabrication, handling and storage of 300 series stainless steel and nickel alloy piping shall be per Specification Section 13252.

D. Any deviations in dimensions from the drawings shall be submitted to the Buyer in writing, for approval, prior to fabrication of the affected piping.

E. Dimensions on the Piping Plan drawings are in inches when dimensions are less than 1'-0". Feet and inches are shown when dimensions are 1'-0" and more. Dimensions on the Piping Isometric drawings are in inches when less than 2 feet. Feet and inches are shown when dimensions are 2 feet or greater.

F. Dimensions are to the centerline of pipe.

G. Where cold spring (CS) or prespring (PS) is required, the Piping drawings have been adjusted to accommodate this. The piping shall be fabricated to the dimensions shown.

H. Reducers are concentric (except for slurry services) unless otherwise noted on the drawings.

2.2.2 Fabrication - Dimensional Tolerances

Pipe fabrication tolerances shall be in accordance with Pipe Fabrication Institute ES-3.

2.2.3 Fabrication - Pipe Bending

A. Pipe bending shall be in accordance with Pipe Fabrication Institute ES-24. Except, pipe bend post wall thickness shall be no less than 78.1 percent of the pre-bend thickness.

B. When three diameter bends "3D" are referenced, they are to be fabricated in accordance with the 3D requirements. (The requirements for 3Dn are not to be applied under any circumstance.)

2.2.4 Packaging and Shipping

A. Preparation for shipment shall conform to the manufacturer's standard, and as a minimum shall provide protection against corrosion and damage from normal handling and storage.

B. Minimum preparation shall include the following:

All pipe ends shall be protected by means of a plastic (non-PVC) or 300 series stainless steel plug or cap.

PART 3 EXECUTION

3.1 PREPARATION

(Not Used)

3.2 INSTALLATION APPLICATION AND ERECTION

3.2.1 Field Fabrication and Erection

A. All field fabrication shall conform to the paragraph titled "Fabrication", except that field installation tolerances shall be plus or minus 1/2".

B. All piping and tubing shall be fabricated and installed in accordance with the Piping drawings.

C. Coordinates and elevations are used extensively on the Piping drawings. The Seller shall establish the required fabrication dimensions.

D. Elevations are designated as follows:

Nonsloped lines - "Bottom of Pipe" (BOP EL _____)
"Centerline Elevation" (℄ EL _____)
"Beveled End Elevation" (BE EL _____)
"Plain End Elevation" (PE EL _____)

Sloped lines - "Centerline Work Point Elevation"
(℄ W.P. EL _____)

E. Piping shall be examined before erection to ensure that all foreign matter has been removed.

F. The Seller shall be responsible for the proper horizontal and vertical alignment of the piping as shown on the drawings.

G. The Seller may elect, at his option, to split and reweld secondary containment piping, fittings, anchors, etc.

H. The Seller shall place buried warning and identification tape conforming to Paragraph 2.1.4 to identify the presence of underground piping at a depth of 12 inches below finished grade or as shown on the Contract Drawings.

I. Fitting make-up is not dimensioned on the drawings.

3.2.2 Corrosion Protection for Underground Piping

A. All exposed piping (including stainless steel containment pipe) in underground service shall be protected from exterior corrosion by use of a cold applied tape wrap. Materials, surface preparation, application and inspection requirements shall be in accordance with manufacturer's recommendations.

B. All buried piping shall be holiday tested, for coating discontinuities, per NACE RP02-74.

C. Refer to Attachment A for temporary cathodic protection requirements.

3.3 FIELD QUALITY CONTROL

3.3.1 Pressure Tests

A. The minimum test pressure is the lowest allowable test pressure gauge reading (the calculated test pressure plus the additional pressure resulting from the static head of the test fluid above the test gauge).

B. The maximum test pressure shall be the greater of:

1) 1.1 times (1.1x) the minimum test pressure

2) 60 psi greater than the minimum test pressure

C. Prior to initial operation, all installed piping shall be tested except where otherwise qualified by this specification.

D. Piping that is to be purged after installation shall be tested and all repairs made prior to purging.

E. The Buyer's Representative shall be given two working days prior notification of the time and date of any testing to be performed.

F. The Seller shall prepare and submit a hydrostatic and pneumatic test procedure, including test diagrams, and test report format.

3.3.2 Pressure Testing of Piping

A. All pressure testing shall be per ASME B31.3.

B. All piping systems shall be hydrostatically tested (carrier piping).

C. The annular space of double contained pipe shall be pneumatically tested with air at 10 psig, meeting the requirements of paragraph 2.1.2.B of this specification.

3.3.3 Pressure Test Preparation

A. All joints, including welds, are to be left uninsulated and exposed for examination during the test. Joints may be insulated or coated once they have been previously tested in accordance with this specification.

B. Pressure test gauges shall be calibrated per PFI ES-32. The calibration shall be made using a dead weight tester with calibration records traceable to the National Institute of Standards and Technology. Gauge shall be tagged with the dates of the last and next calibrations. The date of the gauge calibration shall be recorded by the Seller.

C. The Seller shall furnish the pumps, gauges, measuring devices, temporary plug valves, and other miscellaneous equipment necessary for testing.

D. The test pressure, minimum duration, and acceptance criteria shall be in accordance ASME B31.3. The following additional requirements shall be included:

1) The test pressure shall be applied and maintained for at least five minutes prior to start of minimum test duration to assure that the pressure has equalized.

2) The test pressure shall be maintained for a time sufficient to examine all joints and connections for leakage, but in any case not less than ten minutes. The acceptance criteria is zero leakage. Leakage from temporary gaskets and seals, installed for the purpose of conducting the test and which will be replaced and retested later, may be permitted unless the leakage exceeds the capacity of the pressure source to maintain the required pressure for the duration of the test. Tightness of all joints after final testing shall be insured.

3) If leaks are found, then

their locations shall be marked;

the test pressure shall be gradually released;

the piping shall be drained;

appropriate repairs or replacement shall be made;

and the pressure testing shall be repeated until acceptable results have been achieved.

3.3.4 Test Records

The Seller shall prepare and submit to the Buyer test reports for all piping systems requiring tests. The test reports shall contain, as a minimum, the following data:

A. Job title and Contract Number

B. Date of test

C. Contract drawing and line numbers identification of piping systems

D. Type of test, i.e., Hydrostatic, Pneumatic,

E. Pressure applied and length of time at Test pressure

F. Test results

G. Test by

H. Signature of Seller Test Supervisor

I. Comments, if any

J. Gauge identification and dates of last and next calibration

K. Signature or stamp of the Buyer's Representative

3.4 **ADJUSTMENT**

(Not Used)

3.5 **CLEANING**

3.5.1 Cleaning After Hydrotesting

After hydrotesting, the following procedure shall be followed:

A. Water used in cleaning austenitic stainless steel and other alloy piping shall conform to Specification Section 13252.

B. Flushing velocity shall not exceed 10 feet per second but shall be a minimum of 4 feet per second.

C. Piping systems shall be flushed for a minimum of 10 minutes (continuous).

D. Visual examination of cleanliness shall be by visual examination of a clean white cloth used to filter the system discharge. Additional 10 minute flushes shall be performed until the visual examination reveals no visible debris collection on the cloth.

E. To ensure the absence of moisture after cleaning, lines shall be drained and blown dry. The drying procedure shall be per Specification 13252.

F. Immediately after cleaning, drying, and inspection, all non-flanged openings shall be tightly sealed with polyethylene caps to protect the bevel and pipe ends and to prevent the entry of moisture and foreign matter.

3.5.2 Cleaning After Pneumatic Testing

After pneumatic testing, piping shall be purged at a minimum velocity of ten feet per second until no foreign matter is seen exiting the pipe. Air quality shall be that specified per paragraph 2.1.2.B of this specification.

3.5.3 Cleaning Reports

All visual examinations, flushes, and purges shall be documented in a test report to be submitted to the Buyer.

3.6 **PROTECTION**

All open ends of piping shall be protected with polyethylene or stainless steel caps or plugs. Open ends of annular spaces of double contained piping shall be protected with polyethylene annular plugs or wrapped with 2 mil or thicker polyethylene sheet.

3.7 **DEMONSTRATION**

(Not Used)

3.8 **SCHEDULE**

(Not Used)

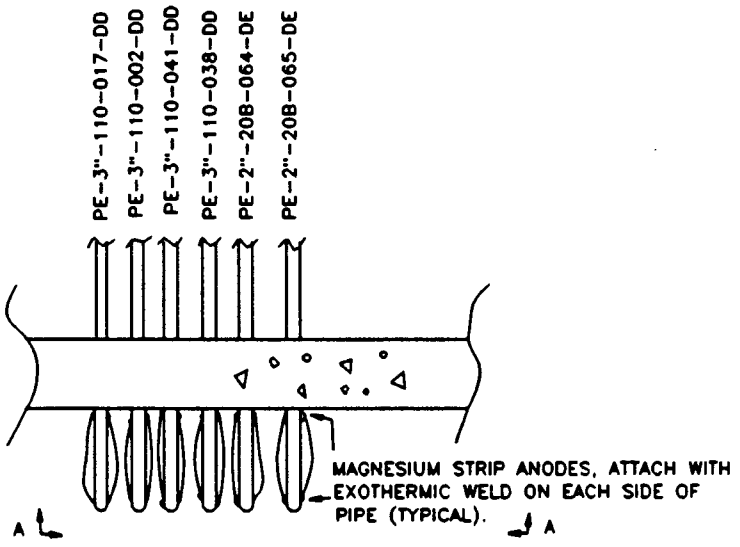
END OF SECTION

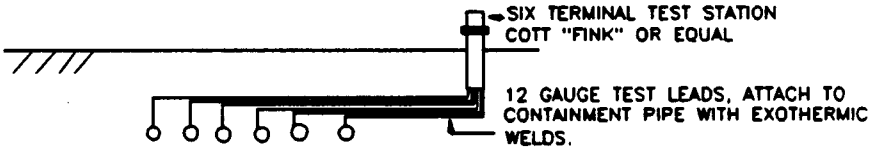
ATTACHMENT A
UNDERGROUND PIPE DETAILS

DETAIL "B"

TEMPORARY CATHODIC PROTECTION DETAIL
FOR LINES LEAVING VITRIFICATION BUILDING SLAB
(SEE NOTES 1 AND 2)

PLAN VIEW





SECTION "A-A"
(SEE NOTE 3)

NOTES:

1. COVER EXOTHERMIC WELDS WITH HIGH TEMPERATURE CEMENT PRIOR TO WRAPPING AREA WITH HIGH TEMPERATURE TAPE.
2. REFER TO DETAIL "B" FOR ADDITIONAL REQUIREMENTS APPLICABLE TO INSULATED LINES.
3. LABEL EACH TEST LEAD WITH LINE NUMBER USING COMPUTER PRINTED CHARACTERS ON WHITE HEAT SHRINK SLEEVE, BRADY CATALOG NUMBER B321 OR EQUAL.

U.S. DEPARTMENT OF ENERGY
Hanford Waste Vitrification Plant
Richland, Washington
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.
Advanced Technology Division
Fluor Contract 8457

SECTION 16100
ELECTRICAL INSTALLATION
B-595-C-B210A-16100

APPROVED FOR CONSTRUCTION

REVISION 3 PER CR-1036
ISSUE DATE SEP 2 4 1993

WAPA YES ___ NO X
QUALITY LEVEL I ___ II X
SAFETY CLASS 1__ 2__ 3X 4__

ORIGINATOR:

Charles C. Simpson 9-20-93
C. C. Simpson, Electrical Engineer Date

CHECKER:

A Larsen 9-21-93
A. Larsen, Electrical Engineer Date

APPROVED BY:

K. A. Owrey
K. A. Owrey Lead Discipline Engineer

9-21-93
Date

9/20/93 3:09pm
106\VOL5...\SPECS\B210A\16100-3.

SECTION 16100
ELECTRICAL INSTALLATION
B-595-C-B210A-16100

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SECTION 16100
ELECTRICAL INSTALLATION

PART 1 GENERAL

1.1 SUMMARY

1.1.1 This specification defines the technical requirements for installation of electrical materials and devices in the Vitrification Building foundation.

1.1.2 Seller shall furnish all labor, material, tools, and equipment necessary to perform installation of wall embedments, underground duct banks and grounding system for the Vitrification Building foundation package as shown on the Contract Drawings and in accordance with the requirements of this section.

1.1.3 Seller shall be responsible for electrical installation and field routing of conduit and grounding system where not specifically defined on the Contract Drawings.

1.1.4 Seller shall provide and install locknuts, union fittings, caps, plugs, and hardware, etc., as required to complete the installation per the Contract Drawings.

1.1.5 Dimensional tolerance shall be ±1 inch unless otherwise specified on the Contract Drawings.

1.2 REFERENCES

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

AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)

ASTM D 2855	1990 Standard Practice for Making Solvent-Cemented Joints with Polyvinyl Chloride, PVC Pipe and Fittings

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	1990 National Electrical Code (NEC)

1.3 RELATED REQUIREMENTS

Specification Section 16110	Electrical Materials and Devices
Specification Section 16111	Conduit Schedule
Specification Section 16905	Electrical Testing

1.4 **DEFINITIONS**

(Not Used)

1.5 **SYSTEM DESCRIPTION**

(Not Used)

1.6 **SUBMITTALS**

1.6.1 Submit the following in accordance with the Vendor Drawing and Data Requirements section of the subcontract.

A. As-Built Drawings

1.7 **CLASSIFICATION OF SYSTEM AND COMPONENTS**

(Not Used)

1.8 **PROJECT OR SITE ENVIRONMENTAL CONDITIONS**

1.8.1 Climatic and Geographic Site Conditions

A.	Site Elevation	714 feet above sea level
B.	Barometric Pressure	14.3 psia
C.	Outside Design Temperature	
	1) Maximum Design Temperature	110°F
	2) Minimum Design Temperature	-20°F

PART 2 PRODUCTS

2.1 **MATERIALS AND EQUIPMENT**

2.1.1 Seller shall install all materials including grounding system, underground duct banks, wall embeds and conduit stub-ups required to complete electrical installation in accordance with the Contract Drawings and specification sections.

2.1.2 Electrical material and devices shall be in accordance with Specification Section 16110, Electrical Materials and Devices.

2.2 **FABRICATION AND MANUFACTURE**

(Not Used)

PART 3 EXECUTION

3.1 INSTALLATION, APPLICATION AND ERECTION

3.1.1 Materials and devices shall be installed in accordance with the National Electrical Code, NFPA 70, all applicable federal, state and local codes, regulations and ordinances, the Contract Drawings and manufacturer's instructions.

3.1.2 Conduit

3.1.2.1 Conduits installed below grade shall be polyvinyl chloride (PVC) Schedule 80 or rigid steel galvanized conduit as noted on the Contract Drawings.

3.1.2.2 Rigid galvanized steel conduit shall be cut square with a conduit cutter and threaded with a conduit threader. The ends shall be reamed of burrs and all metal shavings and cutting lubricants shall be removed before the conduit is connected to the conduit system.

3.1.2.3 Stainless steel conduits shall be cut square with a conduit cutter.

3.1.2.4 Electrical embeds shall be stainless steel conduit.

3.1.2.5 Conduit crushed or deformed in bending will be rejected. Concentric bends are not required; however, the Seller shall maintain identical spacing between adjacent conduit runs both at the beginning and after the bend.

3.1.2.6 Supports shall be erected square, and true to line and grade, with a minimum of one support for every 10 feet of conduit length.

3.1.2.7 Conduit openings into which dirt, mortar mix or debris may fall shall be closed with caps or plugs during the construction period. Conduits in which such material has accumulated shall be thoroughly cleaned. Where such accumulations cannot be readily removed, the conduit shall be replaced.

3.1.2.8 When not shown in detail on the Contract Drawings or when an installation interference exists, the exact locations and routing of conduit shall be determined by the Seller and approved by the Buyer.

3.1.2.9 Fittings on conduit systems having threaded connections shall be made up tight, with full thread engagement, and with a minimum of wrench work in order to avoid wrench cuts. Running threads and slip joints are not permitted. Joints shall provide structural rigidity and low electrical resistance.

3.1.2.10 Before making up conduit runs, the interiors of all conduit, conduit bends and fittings shall be inspected and cleaned of all dirt, cuttings and other foreign material.

3.1.2.11 Deleted.

3.1.2.12 Rigid galvanized steel conduit threads shall have anti-seize compound. The application of the coating shall overlap the unthreaded conduit by one inch minimum all around.

3.1.2.13 Wall embedded conduits shall be installed with the largest symmetrical bending radius permitted as noted on the Contract Drawings. The entry and exit conduit penetrations shall be 90°/perpendicular to the wall.

3.1.2.14 Installation procedures for making PVC conduit joints, using PVC primer and solvent cement, shall be in accordance with ASTM D 2855.

3.1.3 Conduit and Hardware Supports

3.1.3.1 Conduit supports shall be furnished and installed by the Seller as required by National Electrical Code and as shown on the Contract Drawings.

3.1.4 Deleted.

3.1.4.1 Deleted.

3.1.4.1.1 Deleted.

3.1.4.1.2 Deleted.

3.1.5 Grounding

3.1.5.1 The grounding system including underground duct banks, ground rods, embedded ground plates, instrument test ground, etc., shall be in accordance with the Contract Drawings. In addition to the grounding specified herein or on the Contract Drawings, all ground connections required by the National Electrical Code shall be furnished and installed.

3.1.5.2 Grounding conductors shall be copper. Routing shall be as shown on the Contract Drawings.

3.1.5.3 Before connections are made, all contact surfaces shall be clean of grease, dirt and debris. Apply approved anti-oxidizing compound as specified in Section 16110 to clean contact surfaces connections.

3.1.5.4 Exothermic weld connections shall be made by the Cadweld process or equal. Grounding connections shall include but not be limited to, all cable to cable splices, tees, X's, cable to ground rods, copper to steel or cast iron and cable lug terminations as shown on the Contract Drawings.

3.1.5.5 Building rebar shall be grounded as shown on the Contract Drawings.

3.1.5.6 Grounding cables shall be protected against mechanical damage before and during backfill. Backfill material within 1'-0" of cables shall not contain rocks larger than 2" in diameter.

3.1.6 Instrument Test Grounding

3.1.6.1 Instrument test grounding shall be a separate and isolated grounding system. The insulated copper conductor shall be run in PVC conduit and stubup shall be in rigid steel conduit. Routing shall be as shown on the Contract Drawings.

3.1.7 Underground Duct Banks

3.1.7.1 Underground duct banks shall consist of rigid galvanized steel conduit, PVC conduit and ground wire encased in a minimum of 3" concrete all around as shown on the Contract Drawings. Joints in conduit shall be water-tight.

3.1.7.2 Minimum depth to top of duct banks shall be 2'-6" except as noted on the Contract Drawings.

3.1.7.3 After underground conduit runs have been completed, pull a test mandrel and wire brush through each conduit to check alignment and remove foreign matter.

3.2 FIELD QUALITY CONTROL

Electrical materials and devices shall be inspected and tested in accordance with Specification Section 16905, Electrical Testing.

3.3 ADJUSTMENTS

(Not Used)

3.4 CLEANING

3.4.1 Clean and remove all debris, excess material and equipment from the job site after completion of installation.

3.4.2 Clean electrical parts with approved cleaner to remove conductive and deleterious materials.

3.4.3 Clean and repair all steel surfaces damaged during preparation, welding or installation with an approved galvanizing compound in accordance with manufacturer's recommendations and instructions.

3.5 **PROTECTION**

3.5.1 Seller shall be responsible for receiving, storing and site handling of all Seller furnished equipment and materials.

3.5.2 During installation Seller shall protect from damage all existing facilities, equipment and materials. Existing facilities, equipment or materials which are damaged during the installation shall be repaired at Seller's expense in accordance with contract terms and conditions.

3.5.3 Where the corrosion protective finish on any material or equipment is removed by machining, welding, or by accident, the original finish shall be restored by an application of compatible protective finish.

3.6 **DEMONSTRATION**

(Not Used)

3.7 **SCHEDULES**

(Not Used)

END OF SECTION

PROJECT TITLE:

B-595 HWVP-HANFORD WASTE VITRIFICATION PLANT

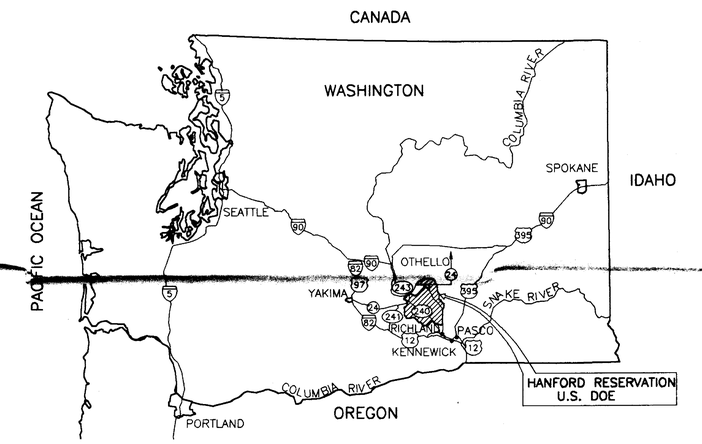
CWBS B210A VITRIFICATION BUILDING FOUNDATION

FOR:

U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE

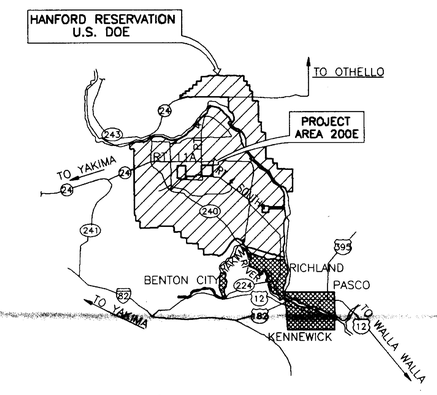
BY:

FLUOR DANIEL, INC



REGIONAL MAP

0 20 40 60 80 100
GRAPHIC SCALE
1" = 40 MILES



VICINITY MAP

0 5 10 15 20 25
GRAPHIC SCALE
1" = 10 MILES

LEGEND

DENOTES HANFORD RESERVATION U.S. DOE

DENOTES CITY LIMITS

REV. NO.	DATE	REVISION DESCRIPTION				APPROVAL INITIALS
4	9/24/93	REVISION PER CR-HWVP-1036	JLD	LK	JLD	PJS / JLS
3	7/14/93	REVISIONS AND PACKAGE TBD/HOLD SUMMARY BLOCK AND TBD/HOLD HWVP-FD-211, 242, & 243 REMOVED PER CR-HWVP-0972	JLD	LK	JLD	PJS / JLS
			JJS	AKY	BER	NHW
2	3/1/93	REVISION PER CR-HWVP-0929	JLD	SS	JLD	PJS / JLS
		COMPLETED	JJS	AKY	ED	RSP
1	2/25/93	REVISION PER CR-HWVP-0929	JLD	LK	JLD	PJS / JLS
			JJS	MJH	FF	NHW
0	11/12/92	APPROVED FOR CONSTRUCTION WITH TBD/HOLD NO. HWVP-FD-211	JLD	PVK	JLD	GNK / JLS
						RSP

CADFILE: B116005A CADCODE: 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV _____ DATE _____
ERO _____

SIGNATURE	DATE
PROJ DIR R. S. POULTER	11-12-92
OP MGR B. E. RITTBERG	11-12-92
INDEPENDENT SAFETY MGR A. K. YEE	11-12-92
PROJECT MGR D. M. GARRETT	11-12-92
SYSTEMS MGR J. L. SMETS	11-12-92
ENGINEERING MGR G. N. KIMURA	11-12-92
SUPERVISOR J. L. DATTE	11-11-92
DESIGN ENGINEER P. V. KRONBURG	11-11-92
CHECKED J. L. DATTE	11-11-92
DRAWN S. SAM	08-24-92

U.S. DEPARTMENT OF ENERGY
SEP 24 1993 Richland Field Office
DE - AC06-88RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

VIT BUILDING
FOUNDATION
TITLE SHEET

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG NO.	INDEX NO.
SHOWN	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-116005	1	1	4

DWG NO.	DRAWING TITLE
	REFERENCE DRAWINGS

NEXT USED ON

2 1 0 A H-2-116005 R.4

DISTRIBUTION CODE: 301 T1 ACAD INITIALS: LK DATE: 09-13-93

DRAWING INDEX

DRAWING NO.	CODE NO.	TITLE	REV
GENERAL			
H-2-116005	T1	VIT BUILDING FOUNDATION TITLE SHEET	4
H-2-116006 SH 1	T2	VIT BUILDING FOUNDATION DRAWING INDEX	4
H-2-116006 SH 2	T3	VIT BUILDING FOUNDATION DRAWING INDEX	4
CIVIL			
H-2-117074	C1	CIVIL VIT BUILDING GEN NOTES AND OVERALL SITE PLAN	0
H-2-117075	C2	CIVIL VIT BUILDING GRADING & DRAINAGE PLAN	0
H-2-117076	C3	CIVIL VIT BUILDING SECTIONS	0
STRUCTURAL			
H-2-117425 SH 1	S1	STRUCTURAL VITRIFICATION BUILDING GENERAL NOTES	3
H-2-117425 SH 2	S2	STRUCT VIT BLDG ABBREVIATIONS AND LEGEND	2
H-2-117425 SH 3	S3	STRUCT VIT BLDG ANCHOR BOLT & SLEEVE TYPICAL DETAILS	1
H-2-117425 SH 4	S4	STRUCT VIT BLDG CONC REINF TYPICAL DETAILS	1
H-2-117425 SH 5	S5	STRUCT VIT BLDG TYP WALL & SLAB DETS SINGLE LAYER WALL REINF	2
H-2-117425 SH 6	S6	STRUCT VIT BLDG TYP WALL & SLAB DETS DOUBLE LAYER WALL REINF	2
H-2-117425 SH 7	S7	STRUCT VIT BLDG TYPICAL CONSTR JOINTS FOR MAT, SLAB & WALLS	2
H-2-117425 SH 8	S8	STRUCT VIT BLDG EMBEDDED ITEMS AND MISC DETAILS	2
H-2-117426	S9	STRUCT VIT BLDG TUNNEL CONFIG PLAN & DWG INDEX	2
H-2-117427	S10	STRUCT VIT BLDG CONFIGURATION SECTIONS A & B	2
H-2-117428	S11	STRUCT VIT BLDG CONFIGURATION SECTIONS C & D	2
H-2-117429	S12	STRUCT VIT BLDG CONFIGURATION SECTIONS E, F, G & H	2
H-2-117431	S13	STRUCT VIT BLDG TUNNEL FORMING PLAN SOUTH END	2
H-2-117432	S14	STRUCT VIT BLDG TUNNEL FORMING PLAN NORTH END	2
H-2-117435	S15	STRUCT VIT BLDG TUNNEL MAT REINF PLAN SOUTH END BOT REINF	2
H-2-117436	S16	STRUCT VIT BLDG TUNNEL MAT REINF PLAN NORTH END BOT REINF	1
H-2-117437	S17	STRUCT VIT BLDG TUNNEL MAT REINF PLAN SOUTH END TOP REINF	2
H-2-117438	S18	STRUCT VIT BLDG TUNNEL MAT REINF PLAN NORTH END TOP REINF	2
H-2-117439	S19	STRUCT VIT BLDG TRANSVERSE TUNNEL MAT REINF PLAN	2
H-2-117441	S20	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	0
H-2-117442	S21	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	2
H-2-117443	S22	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	2
H-2-117444	S23	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	2
H-2-117445	S24	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	2
H-2-117446	S25	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	2
H-2-117447	S26	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	2
H-2-117448	S27	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	2
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H-2-117451	S30	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	2
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H-2-117456	S35	STRUCTURAL VIT BLDG TUNNEL FLOOR PLAN	2
H-2-117458	S36	STRUCT VIT BLDG TUNNEL & FIRST FLR EQUIP FDN SCHEDULE	2
H-2-117460	S37	STRUCT VIT BLDG FIRST FLOOR CONFIG PLAN & DWG INDEX	0
H-2-117461	S38	STRUCT VIT BLDG FIRST FLOOR FORMING PLAN SOUTH END	0
H-2-117462	S39	STRUCT VIT BLDG FIRST FLOOR FORMING PLAN NORTH END	0
H-2-117465	S40	STRUCT VIT BLDG FIRST FLOOR REINF PLAN SOUTH END	0
H-2-117466	S41	STRUCT VIT BLDG FIRST FLOOR REINF PLAN NORTH END	0
H-2-117468	S42	STRUCT VIT BLDG REINFORCING SECTION R	3
H-2-117469	S43	STRUCT VIT BLDG REINFORCING SECTIONS S & T	2
H-2-117470	S44	STRUCT VIT BLDG REINFORCING SECTIONS U & V	3
H-2-117471	S45	STRUCT VIT BLDG REINFORCING SECTIONS W & X	3
H-2-117472	S46	STRUCT VIT BLDG REINFORCING SECTIONS AN, AP & AQ	3
H-2-117473	S47	STRUCT VIT BLDG REINFORCING SECTIONS AR, EV & FE	2
H-2-117474	S48	STRUCTURAL VIT BLDG FIRST FLOOR PLAN	0
H-2-117475	S49	STRUCTURAL VIT BLDG FIRST FLOOR PLAN	0
H-2-117476	S50	STRUCTURAL VIT BLDG FIRST FLOOR PLAN	0
H-2-117477	S51	STRUCTURAL VIT BLDG FIRST FLOOR PLAN	0
H-2-117478	S52	STRUCTURAL VIT BLDG FIRST FLOOR PLAN	0
H-2-117479	S53	STRUCTURAL VIT BLDG FIRST FLOOR PLAN	0
H-2-117480	S54	STRUCTURAL VIT BLDG FIRST FLOOR PLAN	0
H-2-117481	S55	STRUCTURAL VIT BLDG FIRST FLOOR PLAN	0
H-2-117482	S56	STRUCTURAL VIT BLDG FIRST FLOOR PLAN	0
H-2-117483	S57	STRUCTURAL VIT BLDG FIRST FLOOR PLAN	0
H-2-117484	S58	STRUCTURAL VIT BLDG FIRST FLOOR PLAN	0
H-2-117485 SH 1	S59	STRUCT VIT BLDG ROOMS 0013 & 0086 CEILING PLAN	0
H-2-117485 SH 2	S60	STRUCT VIT BLDG ROOMS 0008 & 0012 CEILING PLANS	2
H-2-117939 SH 1	S61	STRUCT VIT BLDG WALL LOCATION PLAN TUNNEL	0
H-2-117939 SH 2	S62	STRUCT VIT BLDG WALL LOCATION PLAN FIRST FLOOR	0
H-2-117940	S63	STRUCTURAL VIT BLDG WALL 0047W1 ELEVATIONS	1
H-2-117941	S64	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117942	S65	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117943	S66	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117944	S67	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117945	S68	STRUCTURAL VIT BLDG WALL ELEVATIONS	1
H-2-117946	S69	STRUCTURAL VIT BLDG WALL ELEVATIONS	1
H-2-117947	S70	STRUCTURAL VIT BLDG WALL ELEVATIONS	1

DRAWING INDEX

DRAWING NO.	CODE NO.	TITLE	REV
STRUCTURAL (CONT)			
H-2-117948	S71	STRUCTURAL VIT BLDG WALL ELEVATIONS	1
H-2-117949	S72	STRUCTURAL VIT BLDG WALL 0048W1 ELEV	1
H-2-117950	S73	STRUCTURAL VIT BLDG WALL ELEVATIONS	1
H-2-117951	S74	STRUCTURAL VIT BLDG WALL ELEVATIONS	1
H-2-117952	S75	STRUCTURAL VIT BLDG WALL ELEVATIONS	1
H-2-117953 SH 1	S76	STRUCTURAL VIT BLDG WALL ELEVATIONS	1
H-2-117953 SH 2	S77	STRUCTURAL VIT BLDG WALL ELEVATIONS	0
H-2-117954	S78	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117955	S79	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117956	S80	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117957	S81	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117958	S82	STRUCTURAL VIT BLDG WALL 0048W3 ELEVATIONS	2
H-2-117959	S83	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117960	S84	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117961	S85	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117962	S86	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117963	S87	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117964	S88	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117965	S89	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117966	S90	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117967	S91	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117968 SH 1	S92	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117968 SH 2	S93	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117969 SH 1	S94	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117969 SH 2	S95	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117970	S96	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117971	S97	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117972	S98	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117973	S99	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117974	S100	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117975	S101	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117976	S102	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117977	S103	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117978	S104	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117979 SH 1	S105	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117979 SH 2	S106	STRUCTURAL VIT BLDG WALL ELEVATIONS	3
H-2-117980	S107	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117981	S108	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117982 SH 1	S109	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117982 SH 2	S110	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117983	S111	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117984 SH 1	S112	STRUCTURAL VIT BLDG WALL ELEVATIONS	0
H-2-117984 SH 2	S113	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117985 SH 1	S114	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117985 SH 2	S115	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117986 SH 1	S116	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117986 SH 2	S117	STRUCTURAL VIT BLDG WALL ELEVATIONS	0
H-2-117987	S118	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117988	S119	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117989	S120	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117990	S121	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117991	S122	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117992	S123	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117993	S124	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117994	S125	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117995	S126	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117996 SH 1	S127	STRUCTURAL VIT BLDG WALL ELEVATIONS	0
H-2-117996 SH 2	S128	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117997	S129	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117998	S130	STRUCTURAL VIT BLDG WALL ELEVATIONS	2
H-2-117999	S131	STRUCTURAL VIT BLDG WALL ELEVATIONS	0
H-2-118226	S132	STRUCT VIT BLDG REINF SECTS CA, CB, CC, CD, CE, & CF	2
H-2-118227 SH 1	S133	STRUCTURAL VIT BLDG TUNNEL REINF SECTIONS	2
H-2-118227 SH 2	S134	STRUCTURAL VIT BLDG TUNNEL REINF SECTIONS	1
H-2-118227 SH 3	S135	STRUCTURAL VIT BLDG TUNNEL REINF SECTIONS	1
H-2-118228 SH 1	S136	STRUCTURAL VIT BLDG SECTIONS AND DETAILS	3
H-2-118228 SH 2	S137	STRUCTURAL VIT BLDG SECTIONS	0
H-2-118229	S138	STRUCTURAL VIT BLDG REINFORCING SECTIONS	3
H-2-118230	S139	STRUCTURAL VIT BLDG SECTIONS & DETAIL	3
H-2-118231	S140	STRUCTURAL VIT BLDG SECTIONS & DETAILS	2
H-2-118232 SH 1	S141	STRUCTURAL VIT BLDG SECTION & DETAILS	0
H-2-118232 SH 2	S142	STRUCTURAL VIT BLDG SECTIONS & DETAILS	3
H-2-118232 SH 3	S143	STRUCTURAL VIT BLDG SECTIONS & DETAILS	2
H-2-118233	S144	STRUCTURAL VIT BLDG SECTIONS & DETAILS	2
H-2-118234 SH 1	S145	STRUCTURAL VIT BLDG SECTION AND DETAILS	2
H-2-118234 SH 2	S146	STRUCTURAL VIT BLDG SECTIONS & DETAILS	3
H-2-118234 SH 3	S147	STRUCTURAL VIT BLDG SECTIONS & DETAILS	2
H-2-118234 SH 4	S148	STRUCTURAL VIT BLDG SECTIONS & DETAILS	1
H-2-118235 SH 1	S149	STRUCTURAL VIT BLDG SS SUMPS	2
H-2-118235 SH 2	S150	STRUCTURAL VIT BLDG SS SUMPS	2
H-2-118235 SH 3	S151	STRUCTURAL VIT BLDG SS SUMPS	2
H-2-118235 SH 4	S152	STRUCTURAL VIT BLDG SS SUMPS	2
H-2-118235 SH 5	S153	STRUCTURAL VIT BLDG SUMPS	2
H-2-118235 SH 6	S154	STRUCTURAL VIT BLDG SUMPS	2
H-2-118236	S155	STRUCTURAL VIT BLDG SECTIONS AND DETAILS	3
H-2-118237	S156	STRUCTURAL VIT BLDG SECTION AND DETAILS	2
H-2-118238	S157	STRUCTURAL VIT BLDG SECTIONS AND DETAILS	3
H-2-118239 SH1	S158	STRUCTURAL VIT BLDG INSERT PLATE SCHEDULE	3
H-2-118239 SH2	S159	STRUCTURAL VIT BLDG INSERT PLATE SCHEDULE	2
			0

NOTE:

1. FOR CROSS REFERENCING DRAWINGS, SEE SPECIFIC NOTATION ON THE DRAWING, THE REFERENCE DRAWING BLOCK, OR THE PACKAGE DRAWING INDEX H-2-116006 FOR APPLICABLE DRAWINGS.

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
4	9/14/93	REVISION PER CR-HWVP-1036	JLD	LK	JLD	PJS JLS
3	7/14/93	REVISIONS AND TBD/HOLD 244 REMOVED PER CR-HWVP-0972 AND ADDED CROSS REFERENCING NOTE	JLD	LK	JLD	PJS JLS
			JJS	AKY	BER	NHW
2	3/1/93	REVISION PER CR-HWVP-0929	JLD	SS	JLD	PJS JLS
		COMPLETED	JJS	AKY	ED	RSP
1	2/25/93	REVISION PER CR-HWVP-0929	JLD	LK	JLD	PJS JLS
			JJS	MJH	FF	NHW
0	11/12/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD	

CADFILE B116006A CHECKCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV _____ DATE _____
ERO _____

U.S.DEPARTMENT OF ENERGY
Richland Field Office
DE - AC06-86RL10838
SEP 24 1993

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

SIGNATURE	DATE
PROJ DIR R. S. POULTER	11-12-92
QA MGR B. E. RITTBERG	11-12-92
INDEPENDENT SAFETY MGR A. K. YEE	11-12-92
PROJECT MGR D. M. GARRETT	11-12-92
SYSTEMS MGR J. L. SMETS	11-12-92
ENGINEERING MGR G. N. KIMURA	11-12-92
SUPERVISOR J. L. DATTE	11-11-92
DESIGN ENGINEER P. V. KRONBURG	11-11-92
CHECKED J. L. DATTE	11-11-92
DRAWN S. SAM	08-27-92

VIT BUILDING FOUNDATION DRAWING INDEX

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG NO.	INDEX NO.
NONE	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-116006	1	2	4

DWG NO.	DRAWING TITLE
REFERENCE DRAWINGS	
NEXT USED ON	

2 1 0 A H-2-116006 4 1 2 R.4

DISTRIBUTION CODE: 301 T2 ACAD INITIALS: LK DATE: 09-13-93

DRAWING INDEX

DRAWING NO.	CODE NO.	TITLE	REV
STRUCTURAL (CONT)			
H-2-118240 SH 1	S160	STRUCTURAL VIT BLDG INSERT PL SCHED & DETS	2
H-2-118240 SH 2	S161	STRUCTURAL VIT BLDG INSERT PL DETAILS	0
H-2-118242	S162	STRUCTURAL VIT BLDG EMBED PL SCHED & DETS	0
H-2-118243	S163	STRUCTURAL VIT BLDG SECTIONS & DETAIL	2
H-2-118244	S164	STRUCT VIT BLDG PUMP FDNS SCHED & DETAIL	2
H-2-118245	S165	STRUCT VIT BLDG EQUIP PIERS SCHED & DETAILS	0
H-2-118246	S166	STRUCTURAL VIT BLDG SLEEVE SCHEDULE	0
H-2-118247	S167	STRUCTURAL VIT BLDG SLEEVE DETAILS	0
H-2-118248 SH 1	S168	STRUCTURAL VITRIFICATION BUILDING CONCRETE HATCH DETAILS	0
H-2-118248 SH 2	S169	~~STRUCTURAL VITRIFICATION BUILDING CONCRETE HATCH DETAILS~~	0
H-2-118248 SH 3	S170	STRUCTURAL VITRIFICATION BUILDING CONCRETE HATCH DETAILS	0
H-2-118248 SH 4	S171	STRUCTURAL VITRIFICATION BUILDING CONCRETE HATCH DETAILS	0
H-2-118248 SH 5	S172	STRUCTURAL VITRIFICATION BUILDING CONCRETE HATCH DETAILS	0
H-2-118249	S173	STRUCTURAL VIT BLDG SECTIONS & DETAILS	2
H-2-118250	S174	STRUCT VIT BLDG RAILROAD DOOR EMBEDS SECTIONS & DETAILS	2
H-2-118251	S175	STRUCTURAL VIT BLDG MISC CONCRETE EMBEDS	0
H-2-118252 SH 1	S176	STRUCTURAL VIT BLDG SECTIONS & DETAILS	0
H-2-118252 SH 2	S177	STRUCTURAL VIT BLDG SECTIONS & DETAILS	0
H-2-118252 SH 3	S178	STRUCTURAL VIT BLDG SECTIONS AND DETAILS	0
H-2-118252 SH 4	S179	STRUCTURAL VIT BLDG SECTIONS & DETAILS	0
H-2-118253 SH 1	S216	STRUCTURAL VIT BLDG DETAILS	1
H-2-118253 SH 2	S217	STRUCTURAL VIT BLDG SECTIONS AND DETAILS	0
H-2-118253 SH 3	S218	STRUCTURAL VIT BLDG DETAILS	0
H-2-118280	S180	STRUCTURAL VIT BLDG LINER PLATE DETAILS	3
H-2-118281 SH 1	S181	STRUCTURAL VIT BLDG TRUNNION LINER	0
H-2-118281 SH 2	S182	STRUCTURAL VIT BLDG TRUNNION LINER	0
H-2-118281 SH 3	S183	STRUCTURAL VIT BLDG TRUNNION LINER	0
H-2-118281 SH 4	S184	STRUCTURAL VIT BLDG TRUNNION LINER	0
H-2-118281 SH 5	S185	STRUCTURAL VIT BLDG TRUNNION LINER	0
H-2-118281 SH 6	S186	STRUCTURAL VIT BLDG TRUNNION LINER	0
H-2-118281 SH 7	S187	STRUCTURAL VIT BLDG TRUNNION LINER	0
H-2-118281 SH 8	S188	STRUCTURAL VIT BLDG TRUNNION LINER	0
H-2-118282 SH 1	S189	STRUCTURAL VIT BLDG LINER DETAILS	0
H-2-118282 SH 2	S190	STRUCTURAL VIT BLDG LINER DETAILS	0
H-2-118282 SH 3	S191	STRUCTURAL VIT BLDG LINER DETAILS	0
H-2-118282 SH 4	S192	STRUCTURAL VIT BLDG LINER DETAILS	0
H-2-118283 SH 1	S193	STRUCT VIT BLDG EXHAUST TUNNEL FORMING PLAN	1
H-2-118283 SH 2	S194	STRUCT VIT BLDG EXHAUST TUNNEL PLAN	1
H-2-118283 SH 3	S195	STRUCT VIT BLDG EXHAUST TUNNEL PLAN	1
H-2-118283 SH 4	S196	STRUCT VIT BLDG EXHAUST TUNNEL PLAN	1
H-2-118283 SH 5	S197	STRUCT VIT BLDG EXHAUST TUNNEL PLAN	1
H-2-118283 SH 6	S198	STRUCT VIT BLDG EXHAUST TUNNEL PLAN	1
H-2-118283 SH 7	S199	STRUCT VIT BLDG EXHAUST TUNNEL PLAN	1
H-2-118284 SH 1	S200	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS & DETAILS	1
H-2-118284 SH 2	S201	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS & DETAILS	1
H-2-118284 SH 3	S202	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS & DETAILS	1
H-2-118284 SH 4	S203	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS & DETAILS	1
H-2-118284 SH 5	S204	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS & DETAILS	1
H-2-118284 SH 6	S205	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS & DETAILS	1
H-2-118284 SH 7	S206	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS & DETAILS	1
H-2-118284 SH 8	S207	STRUCT VIT BLDG EXHAUST TUNNEL SECTIONS & DETAILS	1
H-2-118285 SH 1	S208	STRUCT VIT BLDG EXHAUST TUNNEL ROOF PLAN	2
H-2-118285 SH 2	S209	STRUCT VIT BLDG EXHAUST TUNNEL ROOF PLAN	2
H-2-118285 SH 3	S210	STRUCT VIT BLDG EXHAUST TUNNEL ROOF PLAN	0
H-2-118285 SH 4	S211	STRUCT VIT BLDG EXHAUST TUNNEL ROOF PLAN	0
H-2-118285 SH 5	S212	STRUCT VIT BLDG EXHAUST TUNNEL ROOF PLAN	0
H-2-118285 SH 6	S213	STRUCT VIT BLDG EXHAUST TUNNEL ROOF PLAN	0
H-2-118286 SH 1	S214	STRUCT VIT BLDG CATCH TANK AREA FLOOR LINER PL	2
H-2-118286 SH 2	S215	STRUCT VIT BLDG CATCH TANK AREA FLOOR LINER PL	2
ARCHITECTURAL/ PLUMBING			
H-2-117523	A1	ARCHITECTURAL/PLUMBING VITRIFICATION BLDG DRAINAGE EMBEDS	0

DRAWING INDEX

DRAWING NO.	CODE NO.	TITLE	REV
MECHANICAL			
H-2-120002	M1	MECH VIT BLDG EMBEDDED TUBE MSM BAG TYPE ASSEMBLY	1
H-2-120037 SH 1	M2	EB-710-100 EMBEDDED TUBE PLUG DELIVERY SYSTEM ASSEMBLY	1
H-2-120037 SH 2	M3	EB-710-100 EMBEDDED TUBE PLUG DELIVERY SYSTEM SECT & VIEW	1
H-2-120060 SH 1	M4	MECH VIT BLDG EMBEDDED PIPING SAMPLING RABBIT SYSTEM ASSY	0
H-2-120060 SH 2	M5	MECH VIT BLDG EMBEDDED PIPING SAMPLING RABBIT SYSTEM DET	0
H-2-120061	M6	EB-710-102 EMBEDDED TUBE SMEAR TEST EXIT TUNNEL ASSEMBLY	1
H-2-120073 SH 1	M7	GEP-0047-17 MC-ICC ELEC CONN INR CSTR CLOSURE ASSY	1
H-2-120073 SH 2	M8	GEP-0047-17 MC-ICC ELEC CONN INR CSTR CLOSURE EMBED FR	1
H-2-120073 SH 3	M9	GEP-0047-17 MC-ICC ELEC CONN INR CSTR CLOSURE SECT & DET	1
H-2-120073 SH 4	M10	GEP-0047-17 MC-ICC ELEC CONN INR CSTR CLOSURE ADJ FR	1
H-2-120141	M11	EB-710-104 EMBED TUBE CRN RTRV SYS SMEAR TEST EXIT TNL	1
H-2-120241 SH 1	M12	GEP-0044-02 MC-CDC TRANS TUNNEL SUMP PRCS CONN ASSEMBLY	1
H-2-120241 SH 2	M13	GEP-0044-02 MC-CDC TRANS TUNNEL SUMP PRCS CONN SECT & DET	1
H-2-120241 SH 3	M14	GEP-0044-02 MC-CDC TRANS TUNNEL SUMP PRCS CONN EMBED FR ASSY	1
H-2-120241 SH 4	M15	GEP-0044-02 MC-CDC TRANS TUNNEL SUMP PRCS CONN SECT & DET	1
H-2-120241 SH 5	M16	GEP-0044-02 MC-CDC TRANS TUNNEL SUMP PRCS CONN ADJ FR	1
H-2-120244 SH 1	M17	MECH SGL 2" PUREX PRCS CONN FOR SST LINED CELL ASSEMBLY	1
H-2-120244 SH 2	M18	MECH SGL 2" PUREX PRCS CONN FOR SST LINED CELL SECT & DET	1
H-2-120244 SH 3	M19	MECHSGL 2" PUREX PRCS CONN FOR SST LINED CELL EMBED FR	1
H-2-120244 SH 4	M20	MECHSGL 2" PUREX PRCS CONN FOR SST LINED CELL ADJ FR	1
H-2-120245 SH 1	M21	GEP-0047-18 MC-ICC PRCS CONN INR CSTR CLOSURE ASSEMBLY	1
H-2-120245 SH 2	M22	GEP-0047-18 MC-ICC PRCS CONN INR CSTR CLOSURE SECT & DET	1
H-2-120245 SH 3	M23	GEP-0047-18 MC-ICC PRCS CONN INR CSTR CLOSURE EMBED FRAME	1
H-2-120245 SH 4	M24	GEP-0047-18 MC-ICC PRCS CONN INR CSTR CLOSURE ADJ FR	1
H-2-120461	M25	EB-710-107 REDC RADIATION DETECTOR EMBED ASSEMBLY	1
H-2-120501 SH 1	M26	MECHANICAL EXTENDED SINGLE 2" PUREX PRCS CONN ASSY	1
H-2-120501 SH 2	M27	MECHANICAL EXTENDED SINGLE 2" PUREX PRCS CONN EMBED FR	1
H-2-120501 SH 3	M28	MECHANICAL EXTENDED SINGLE 2" PUREX PRCS CONN ADJ FR	1
H-2-120501 SH 4	M29	MECHANICAL EXTENDED SINGLE 2" PUREX PRCS CONN SECT & DET	1
H-2-120522 SH 1	M30	MECH SGL 2" PUREX PRCS CONN FOR UNLINED CELL ASSY	1
H-2-120522 SH 2	M31	MECH SGL 2" PUREX PRCS CONN FOR UNLINED CELL SECT & DET	1
H-2-120522 SH 3	M32	MECH SGL 2" PUREX PRCS CONN FOR UNLINED CELL EMBED FR	1
H-2-120522 SH 4	M33	MECH SGL 2" PUREX PRCS CONN FOR UNLINED CELL ADJ FR	1
H-2-120558 SH 1	M34	MECHANICAL LINED CELL EXTENDED 2" PUREX PRCS CONN ASSY	1
H-2-120558 SH 2	M35	MECHANICAL LINED CELL EXTENDED 2" PUREX PRCS CONN EMBED FR	1
H-2-120558 SH 3	M36	MECHANICAL LINED CELL EXTENDED 2" PUREX PRCS CONN ADJ FR	1
H-2-120558 SH 4	M37	MECHANICAL LINED CELL EXTD 2" PUREX PRCS CONN SECT & DET	1
PIPING			
H-2-124090	P1	PIPING VIT BUILDING GENERAL NOTES, LEGEND AND SYMBOLOGY	1
H-2-124091	P2	PIPING VIT BUILDING STANDARD FABRICATION DETAILS	2
H-2-124092 SH 1	P3	PIPING VIT BUILDING TUNNEL SLAB LEVEL DRAWING INDEX	1
H-2-124092 SH 2	P6	PIPING VIT BUILDING TUNNEL WALL LEVEL DRAWING INDEX	0
H-2-124092 SH 3	P7	PIPING VIT BUILDING FIRST FLOOR LEVEL DRAWING INDEX	0
H-2-124094	P4	PIPING PLAN VIT BUILDING AREA S-A-1 AND S-A-2	2
H-2-124095	P5	PIPING PLAN VIT BUILDING AREA S-B-1 THRU S-B-3	2
H-2-124096	P8	PIPING PLAN VIT BUILDING AREA T-A-1	0
H-2-124097	P9	PIPING PLAN VIT BUILDING AREA T-B-1	0
H-2-124098	P10	PIPING PLAN VIT BUILDING AREA T-C-1	0
H-2-124099	P11	PIPING PLAN VIT BUILDING AREA T-D-1	0
H-2-124100	P12	PIPING PLAN VIT BUILDING AREA T-E-1	0
H-2-124101	P13	PIPING PLAN VIT BUILDING AREA T-F-1	0
H-2-124102	P14	PIPING PLAN VIT BUILDING AREA T-G-1	0
H-2-124103	P15	PIPING PLAN VIT BUILDING AREA T-H-1	0
H-2-124104	P16	PIPING PLAN VIT BUILDING AREA 1-A-1	0
H-2-124105	P17	PIPING PLAN VIT BUILDING AREA 1-B-1	0
H-2-124106	P18	PIPING PLAN VIT BUILDING AREA 1-C-1	0
H-2-124107	P19	PIPING PLAN VIT BUILDING AREA 1-D-1	0
H-2-124108	P20	PIPING PLAN VIT BUILDING AREA 1-E-1	0
H-2-124109	P21	PIPING PLAN VIT BUILDING AREA 1-F-1	0
H-2-124110	P22	PIPING PLAN VIT BUILDING AREA 1-G-1	0
H-2-124111	P23	PIPING PLAN VIT BUILDING AREA 1-H-1	0
ELECTRICAL			
H-2-122380	E1	ELECTRICAL VIT BLDG DRAWING INDEX	1
H-2-122381 SH 1	E2	ELECTRICAL VIT BLDG STANDARD DRAFTING SYMBOLS	2
H-2-122381 SH 2	E3	ELECTRICAL VIT BLDG STANDARD ABBREVIATIONS AND GENERAL NOTES	2
H-2-122382 SH 1	E4	ELECTRICAL VIT BLDG STANDARD ASSEMBLIES	1
H-2-122382 SH 2	E5	ELECTRICAL VIT BLDG STANDARD DETAILS	3
H-2-122383 SH 1	E6	ELECTRICAL VIT BLDG UNDERGROUND CONDUIT & GROUNDING PLAN	2
H-2-122383 SH 2	E7	ELECTRICAL VIT BLDG UNDERGROUND CONDUIT & GROUNDING PLAN	2
H-2-122383 SH 3	E8	ELECTRICAL VIT BLDG UNDERGROUND CONDUIT & GROUNDING PLAN	2
H-2-122383 SH 4	E9	ELECTRICAL VIT BLDG UNDERGROUND CONDUIT & GROUNDING PLAN	2
H-2-122384 SH 1	E10	ELECTRICAL VIT BLDG UNDERGROUND & GROUNDING SECTIONS	2
H-2-122384 SH 2	E11	ELECTRICAL VIT BLDG UNDERGROUND & GROUNDING SECTIONS	2
H-2-122384 SH 3	E12	ELECTRICAL VIT BLDG UNDERGROUND & GROUNDING SECTIONS	2
H-2-122385 SH 1	E13	ELECTRICAL VIT BLDG TUNNEL LEVEL EMBED PLAN	0
H-2-122385 SH 2	E14	ELECTRICAL VIT BLDG TUNNEL LEVEL EMBED PLAN	0
H-2-122386 SH 1	E15	ELECTRICAL VIT BLDG WALL EMBED ELEVATIONS	0
H-2-122386 SH 2	E16	ELECTRICAL VIT BLDG WALL EMBED ELEVATIONS	0
H-2-122386 SH 3	E17	ELECTRICAL VIT BLDG WALL EMBED ELEVATIONS	0
H-2-122386 SH 4	E18	ELECTRICAL VIT BLDG WALL EMBED ELEVATIONS	0
H-2-122386 SH 5	E19	ELECTRICAL VIT BLDG WALL EMBED DETAILS AND ELEVATIONS	0
H-2-122386 SH 6	E20	ELECTRICAL VIT BLDG WALL EMBED ELEVATIONS	0
H-2-122386 SH 7	E21	ELECTRICAL VIT BLDG WALL EMBED ELEVATIONS	0
H-2-122386 SH 8	E22	ELECTRICAL VIT BLDG WALL EMBED ELEVATIONS	0
H-2-122386 SH 9	E23	ELECTRICAL VIT BLDG WALL EMBED ELEVATIONS	0

NOTES:

1. FOR CROSS REFERENCING DRAWINGS, SEE SPECIFIC NOTATION ON THE DRAWING, THE REFERENCE DRAWING BLOCK, OR THE PACKAGE DRAWING INDEX H-2-116006 FOR APPLICABLE DRAWINGS.
2. FOR ISOMETRIC DRAWING NUMBERS SEE RELATED DOCUMENT NO. 1 PIPING ISOMETRICS B-595-B210A-RD-1.

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
4	9/15/93	REVISION PER CR-HWVP-1036		LK	JLD	PJS JLS
3	7/14/93	REVISIONS AND TBD/HOLD 244 REMOVED PER CR-HWVP-0972 AND ADDED CROSS REFERENCING NOTE	JLD / JJS	LK / AKY	JLD / BER	PJS JLS / NHW
2	3/1/93	REVISION PER CR-HWVP-0929	JLD	SS	JLD	PJS JLS
		COMPLETED	JJS	AKY	ED	RSP
1	2/23/93	REVISION PER CR-HWVP-0929 AND OTHER MINOR CHANGES	JLD / JJS	LK / MJH	JLD / FF	PJS JLS / NHW
0	12/1/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD	

CADFILE: B116006B CADCODE: 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV _____ DATE _____
ERO _____

SIGNATURE	DATE
PROJ CIR R. S. POULTER	11-12-92
CH. MGR B. E. RITTBERG	11-12-92
INDEPENDENT SAFETY MGR A. K. YEE	11-12-92
PROJECT MGR D. M. GARRETT	11-12-92
SYSTEMS MGR J. L. SMETS	11-12-92
ENGINEERING MGR G. N. KIMURA	11-12-92
SUPERVISOR J. L. DATTE	11-11-92
DESIGN ENGINEER P. V. KRONBURG	11-11-92
CHECKED J. L. DATTE	11-11-92
DRAWN S. SAM	09-03-92

U.S.DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993 DE - AC06-88RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

VIT BUILDING
FOUNDATION
DRAWING INDEX

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG NO.	INDEX NO.
NONE	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-116006	2	2	4

DWG NO. | DRAWING TITLE
REFERENCE DRAWINGS
NEXT USED ON

DISTRIBUTION CODE: 301 T3 ACAD INITIALS: LK DATE: 09-13-93

NOTES:

I GENERAL:

1. THE STRUCTURAL DRAWINGS (DESIGNATED AS S1, S2, ETC) CONTAIN STRUCTURAL CONCRETE, EMBEDDED STEEL AND ANCHOR DETAILS FOR THE VITRIFICATION BUILDING.
2. THE SELLER SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE PRIOR TO STARTING CONSTRUCTION AND THE BUYER SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES OR INCONSISTENCIES.
3. SELLER SHALL PROTECT FROM DAMAGE ALL EXISTING ABOVEGROUND OR UNDERGROUND UTILITIES WITHIN THE WORK AREA.
4. COORDINATES AND ELEVATIONS SHOWN ON DRAWINGS ARE IN THE HANFORD COORDINATE SYSTEM.
5. ALL DIMENSIONS REQUIRED TO LOCATE OPENINGS, SLEEVES, EMBEDS, ANCHOR BOLTS, EQUIPMENT FOUNDATIONS, ETC., SHALL BE MEASURED FROM CENTERLINE OF COLUMN, GRIDLINE OR ANY ESTABLISHED REFERENCE LINE FROM THE BUILDING COORDINATES.
6. △2 FOR CROSS REFERENCE DRAWINGS SEE SPECIFIC NOTATION ON THE DRAWING, THE REFERENCE DRAWING BLOCK, OR THE PACKAGE DRAWING INDEX (DRAWINGS H-2-116006/SH 1 & 2) FOR APPLICABLE DRAWINGS.

II GENERAL DESIGN CRITERIA:

1. GENERAL DESIGN CRITERIA FOR BUILDINGS AND STRUCTURES CONFORM TO THE DOE 6430.1A, UBC-1988, ASCE 7-88 (FORMERLY ANSI A58.1-1982) AND HANFORD PLANT STANDARD ARCHITECTURAL / CIVIL DESIGN CRITERIA HPS-SDC-4.1 REVISION 11. THE BUILDING STRUCTURAL SYSTEM IS CLASSIFIED AND DESIGNED AS SAFETY CLASS-1 STRUCTURE.
2. ROOF LIVE LOAD OR SNOW LOAD IS 20 PSF.
3. DESIGN BASIS ASHFALL LOAD IS 27 PSF.
4. DESIGN LIVE LOADS ARE:

– TUNNEL LEVEL, EXCEPT EXHAUST TUNNEL, VOID AND LAYDOWN AREAS	200* PSF
– TUNNEL LEVEL, LAYDOWN AREAS	250 PSF
– FIRST THRU THIRD FLOOR CORRIDOR/GALLERY AND FOURTH FLOOR	100* PSF
– OPERATING PLATFORMS – CONCRETE	200* PSF
– OPERATING PLATFORMS – STEEL	100 PSF
– PARTITION LOAD	20 PSF
– CRANE MAINTENANCE AREA	250 PSF
– STAIRS	100 PSF
– EQUIPMENT ROOM, BATTERY ROOM, COMPUTER ROOM	200 PSF

– IN ADDITION, ALL FLOORS HAVE BEEN DESIGNED FOR 2000 POUNDS CONCENTRATED LOAD OVER AN AREA OF 2.5 FEET SQUARE, BUT NOT COMBINED WITH THE ABOVE UNIFORM LIVE LOAD.

* THE TUNNEL LEVEL, FIRST FLOOR, AND CONCRETE PLATFORMS AT SHIELD WINDOWS ARE DESIGNED FOR 26000 POUNDS WINDOWS PLUS CART LOAD OVER 5 FEET SQUARE AREA.

5. DESIGN BASIS WIND LOAD IS PER ASCE 7-88, SPEED OF 90 MPH, EXPOSURE "C".
6. DESIGN BASIS EARTHQUAKE LOAD IS DBE SAFETY CLASS 1 RESPONSE SPECTRA ANCHORED AT PEAK HORIZONTAL GROUND ACCELERATION OF 0.2g. (SDC-4.1, REV 11, FIG. 3)
7. FOUNDATIONS AND BELOW GRADE STRUCTURES HAVE BEEN DESIGNED IN CONFORMANCE WITH THE RECOMMENDATIONS GIVEN IN THE GEOTECHNICAL INVESTIGATION REPORT PREPARED BY DAMES AND MOORE FOR KAISER ENGINEERS: JOB NO. 10805-383-016, DATED NOVEMBER 15, 1989 AND SUPPLEMENTS THEREOF. NET ALLOWABLE SOIL BEARING PRESSURE IS 6000 PSF WITH A 33 PERCENT INCREASE ALLOWED FOR WIND OR SEISMIC LOADS. ACTIVE AND PASSIVE EARTH PRESSURES, INCLUDING DYNAMIC EFFECTS DUE TO EARTHQUAKE, AND SURCHARGE LOADS DUE TO ADJACENT SUPPORT BUILDING FOUNDATIONS AND CONSTRUCTION CRANE, HAVE BEEN CONSIDERED IN THE DESIGN OF BELOW GRADE WALLS AND FOUNDATIONS.
8. LATERAL EARTH PRESSURES ARE BASED ON THE FOLLOWING COEFFICIENTS:
   - ACTIVE: $K_a = 0.27$
   - AT-REST: $K_o = 0.43$
   - PASSIVE: $K_p = 2.50$
9. THE WATER TABLE IS APPROXIMATELY 310 FEET BELOW GRADE AND DESIGN FROST DEPTH IS 30 INCHES BELOW GRADE.

△2

III EXCAVATION AND BACKFILL:

1. THE BUILDING AREA HAS BEEN MASS EXCAVATED (CWBS-B200) TO THE BOTTOM OF FOUNDATION LEVEL, PLUS 6 INCHES FOR AN OPTIONAL MUD MAT. SELLER SHALL MAKE FINAL GRADE ADJUSTMENTS AS REQUIRED TO CONSTRUCT THIS PACKAGE.
2. EXTERIOR WALLS SOUTH OF GRID LINE 4 MAY BE BACKFILLED UP TO ELEVATION 688'-0" AFTER THE CONCRETE HAS REACHED ITS SPECIFIED DESIGN COMPRESSIVE STRENGTH. BALANCE OF THE BACKFILL SOUTH OF GRID LINE 4 SHALL BE DONE AFTER THE CONSTRUCTION OF THE FIRST FLOOR SLAB AT ELEVATION 708'-0" EXTERIOR WALLS NORTH OF GRID LINE 4 MAY BE BACKFILLED AFTER THE CONCRETE HAS REACHED ITS SPECIFIED COMPRESSIVE STRENGTH.
3. BACKFILL SHALL NOT BE PLACED UNTIL UNDERGROUND UTILITIES AND DAMPPROOFING HAVE BEEN INSTALLED AND INSPECTED.
4. BACKFILL SHALL BE BROUGHT TO ROUGH GRADE PER CIVIL DRAWING H-2-117075.

IV CAST-IN-PLACE CONCRETE:

1. IMMEDIATELY PRIOR TO PLACING THE OPTIONAL MUD MAT OR FORMING AND REINFORCING, THE SUB-GRADE SHALL BE INSPECTED. SUBGRADE SHALL CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 02220, EXCAVATION AND BACKFILL.
2. FORMING DIMENSIONS AND ANCHOR BOLT LOCATIONS SHOWN IN PLAN ARE SYMMETRICAL ABOUT CENTERLINES UNO.
3. IN AREAS DESIGNATED AS "VOID" WHERE NO PERSONNEL ACCESS IS PROVIDED THE FORMWORK MAY BE LEFT IN PLACE. ALL DEBRIS SHALL BE REMOVED PRIOR TO CLOSURE OF VOID AREA.
4. ALL PIPING, ELECTRICAL, SUMPS AND OTHER ITEMS EMBEDDED IN OR UNDER THE CONCRETE SHALL BE IN PLACE PRIOR TO PLACING CONCRETE.
5. FOR ELECTRICAL GROUNDING OF THE BUILDING AND EQUIPMENT SEE ELECTRICAL DRAWINGS.
6. DAMPPROOFING OF BELOW GRADE WALLS SHALL BE PER DRAWINGS AND SPECIFICATION SECTION 07160.
7. ALL REINFORCING BAR SPLICES AND DEVELOPMENT LENGTHS SHALL BE PER STANDARD REINFORCING BAR SCHEDULES SHOWN ON DRAWING H-2-117425 SHEET 4 UNLESS NOTED OTHERWISE ON DESIGN DRAWINGS.
8. FURNISHING AND DELIVERY OF CONCRETE SHALL CONFORM TO SPECIFICATION B-595-A-A900 AND MIX CLASSES AS STATED HEREIN.
   a. MC3 OR MC3P (NON AIR ENTRAINED, 1-1/2" MAX AGGREGATE SIZE) FOR INTERIOR WALLS AND SOME PORTIONS OF EXTERIOR WALLS AS INDICATED ON DRAWINGS H-2-117431 & H-2-117432.
   b. MC1 OR MC1P (AIR ENTRAINED, 1-1/2" MAX AGGREGATE SIZE) FOR EXTERIOR WALLS AND BASE MAT AT TUNNEL LEVEL.
   c. ST4 OR ST4P (NON-AIR ENTRAINED, 3/4" MAX AGGREGATE SIZE) FOR FIRST FLOOR SLAB AT EL 708'-0".
   d. M (2500 PSI) FOR OPTIONAL MUD MAT AND FOR REFERENCES TO LEAN CONCRETE.
   e. △2 HD1 OR HD1P (NON-AIR ENTRAINED, 3/4" MAX AGGREGATE SIZE) FOR FIRST FLOOR SLAB, WHERE INDICATED ON DRAWING H-2-117461.
9. THE TOP OF CONCRETE ELEVATION OF PIERS/PADS RECEIVING GROUT SHALL BE WITHIN +0" AND -1/4" TOLERANCE. GROUT WHERE INDICATED WILL BE BY THE EQUIPMENT OR ITEM INSTALLATION CONTRACTOR AND IS NOT PART OF THIS WORK.
10. FOR WATER STOP SEE NOTE 5 ON DRAWING H-2-117425 SH 7.
11. △1 THE WALLS AND FLOORS OF VOID SPACES 0130, 0131, 0132, AND 0133 SHALL BE FINISHED WITH CONCRETE SEALER/HARDENER AS SPECIFIED IN CWBS B265A SPECIFICATION SECTION 03350, "CONCRETE SEALER AND HARDENER" AND CWBS B265A DRAWINGS H-2-117587 SHEET 1, AND H-2-117587 SHEET 2.

V ANCHOR BOLTS:

1. ANCHOR BOLTS SHALL CONFORM TO SPECIFICATION SECTION 03252.
2. BOLT, NUT AND SLEEVE DIMENSIONS SHALL COMPLY WITH DRAWING H-2-117425, SHEET 3.
3. FOR IDENTIFICATION SPRAY BOTTOM NUT OF ANCHOR BOLT, EMBEDDED IN CONCRETE, WITH FLUORESCENT RED PAINT PRIOR TO SHIPMENT.
4. FOR TYPICAL ANCHOR BOLT CALLOUT SEE DWG H-2-117425, SHEET 3.
5. UNLESS NOTED OTHERWISE, CAST-IN-PLACE ANCHOR BOLT LOCATION SHALL CONFORM TO THE FOLLOWING TOLERANCES (MEASURED AT CONCRETE SURFACE):

BOLT PROJECTION:	△2 +1/4",-0"
BOLT LOCATION WITHIN A GROUP OF BOLTS:	±1/16"
CENTERLINE LOCATION OF BOLT GROUPS:	±1/8"
PLUMBNESS:	1/8" IN 3'-0"

6. ANCHOR BOLT NUTS SHALL BE TIGHTENED (NIC) TO A "SNUG TIGHT" CONDITION TO INSURE THAT THE NUT AND AND BASE BEING ANCHORED ARE BROUGHT INTO GOOD CONTACT WITH EACH OTHER. "SNUG TIGHT" IS DEFINED AS THE TIGHTNESS ATTAINED AT THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH.

VI EMBEDDED STEEL:

1. UNLESS NOTED OTHERWISE, EMBEDDED PLATE (EXCEPT GEP'S) AND SLEEVE LOCATION SHALL CONFORM TO THE FOLLOWING TOLERANCES:

LOCATION	±1/4"
ELEVATION	±1/4"
PLUMBNESS	1/16" IN 3'-0"

2. ALL CARBON STEEL EMBEDDED PLATES SHALL BE FABRICATED TO THE FOLLOWING TOLERANCES UNLESS SPECIFICALLY NOTED OTHERWISE WITHIN THE DESIGN DRAWINGS:

PLATE LENGTH AND WIDTH	±1/8"
SQUARENESS (I.E. THE DIFFERENCE IN THE TWO PLATE DIAGONALS)	±3/16"
PENETRATION DIAMETERS	±1/8"
PENETRATION LOCATIONS	
DISTANCE FROM THE CENTERLINES OF PLATE	±1/8"
DISTANCE FROM EACH OTHER (NON-ACCUMULATIVE)	±1/8"
PLATE FLATNESS (3/16" THRU 1 1/2" THICKNESS)	±1/8" IN 24" (NOT TO EXCEED 1/4" TOTAL)
PLATE FLATNESS (GREATER THAN 1 1/2" THICKNESS)	±1/4" IN 24"

3. ALL STAINLESS STEEL EMBEDDED PLATES (EXCEPT GEP'S) SHALL BE FABRICATED TO THE FOLLOWING TOLERANCES UNLESS SPECIFICALLY NOTED OTHERWISE WITHIN THE DESIGN DRAWINGS:

PLATE LENGTH AND WIDTH	±1/8" FROM CENTERLINE (NOT TO EXCEED 1/4" TOTAL)
SQUARENESS (I.E. THE DIFFERENCE IN THE TWO PLATE DIAGONALS)	±3/16"
PENETRATION DIAMETERS	±1/16"
PENETRATION LOCATIONS	
DISTANCE FROM THE CENTERLINES OF PLATE	±1/16"
DISTANCE FROM EACH OTHER (NON-ACCUMULATIVE)	±1/16"
PLATE FLATNESS	±1/8" IN 24" (NOT TO EXCEED 1/4" TOTAL)

4. CENTERLINES FOR LOCATING AND MEASURING PENETRATIONS SHALL BE MARKED ON PLATES TO WITHIN ±1/16".
5. ALL EMBEDDED STEEL SHALL BE CARBON STEEL UNLESS NOTED OTHERWISE ON DESIGN DRAWINGS.
6. ALL CARBON STEEL, EMBEDS, PLATES AND PIPE SLEEVES SHALL BE PRIMED PER SPECIFICATION SECTION 09875.

VII STAINLESS STEEL LINER:

1. STAINLESS STEEL LINER PLATES AND APPURTENANCES SHALL BE FURNISHED, INSTALLED AND TESTED IN ACCORDANCE WITH SPECIFICATION SECTION 05123. PLATE SEAMS SHALL BE GROUND SMOOTH WITHIN 250 MICRONS AND TESTED FOR LEAKS.
2. ALL EXPOSED STEEL AND BACKING STRIPS SHALL BE STAINLESS STEEL.
3. △1 DIMENSIONS ON PLANS AND ELEVATIONS OF CELLS WITH LINER PLATE ARE TO THE EXPOSED FACE OF THE 3/16" WALL PLATE UNLESS NOTED OTHERWISE.
4. ERECTION OF WALL LINER PLATES:
   THE WALL LINER PLATE ABOVE THE WAINSCOT SHALL BE INSTALLED AS FORMS FOR CONCRETE PLACEMENT. THE LINER SHALL BE TEMPORARILY REINFORCED WITH ADDITIONAL FORMING, BRACING AND TIES TO WITHSTAND THE WET CONCRETE PRESSURES AND TO MAINTAIN THE OVERALL FLATNESS REQUIREMENTS.
5. ERECTION OF FLOOR LINER PLATES:
   THE FLOOR OF THE CATCH TANK AREA (ROOM-0008) SHALL BE INSTALLED AS WALLPAPER AFTER THE CONSTRUCTION OF CONCRETE WITH STEEL EMBEDMENTS. SUMPS TRENCHES AND CURBS MAY BE INSTALLED AS FORMS FOR CONCRETE.
6. ERECTION OF EXHAUST TUNNEL LINER:
   AT THE OPTION OF THE SELLER THE LINER MAY BE INSTALLED AS FORMS FOR CONCRETE PLACEMENT OR AS WALLPAPER AFTER CONCRETE CONSTRUCTION. IN SOME SECTIONS THE WHOLE TUNNEL LINER COULD BE PREFABRICATED, SET IN PLACE AND THE CONCRETE PLACED IN STAGES. WHERE WHOLE TUNNEL IS PREFABRICATED, PROVIDE ADDITIONAL BRACING AS INDICATED IN NOTE 4 ABOVE.
7. WHERE ROUNDED LINER CORNER (COVE) CREATES VOID BETWEEN LINER AND WALLS, OR WALL AND FLOOR, VOID SHALL BE FILLED WITH GROUT, PREFORMED CONCRETE OR CAST-IN-PLACE CONCRETE. WHEN GROUT IS USED IT SHALL BE INJECTED FROM ONE END, OR THROUGH INJECTION HOLES DRILLED IN THE INSTALLED LINER, WITH VENT HOLES DRILLED IN THE LINER TO ASSURE THAT THE GROUT HAS FILLED THE VOID. GROUT SHALL BE INJECTED UNTIL IT BEGINS TO COME OUT OF THE VENT HOLE. INJECTION HOLES AND VENT HOLES SHALL BE PLUG WELDED AND GROUND SMOOTH IN ACCORDANCE WITH SPECIFICATION SECTION 05059. PREFORMED CONCRETE SHALL BE FORMED TO THE RADIUS SHOWN FOR THE LINER WITHIN A TOLERANCE OF ±1/16" AND TO A LEVELNESS TOLERANCE OF ±1/4 IN 10 FEET ALONG ITS LENGTH.
8. PRIOR TO START OF WORK SELLER SHALL SUBMIT FOR BUYER'S APPROVAL THE LINER FABRICATION AND ERECTION DRAWINGS INDICATING SHOP AND FIELD WORK. ALSO FOR LINER TO BE INSTALLED AS FORMS, SUBMIT THE FORMWORK DRAWINGS, CALCULATIONS AND CONCRETE PLACEMENT SEQUENCE/SCHEDULE.
9. LINER PROTECTION:
   ALL STAINLESS STEEL LINER (FLOORS, WALLS AND WAINSCOTS) SHALL BE PROTECTED AFTER INSTALLATION FROM EXPOSURE TO SUNLIGHT BY COVERING WITH CANVAS, TARPAULIN, PLYWOOD OR 5-PLY PVC FILM AND NYLON YARN LAMINATE, SUCH AS GRIFFOLYN T-95FR OR EQUAL. LINER SHALL ALSO BE PROTECTED FROM ANY DAMAGE DURING INSTALLATION AND SUBSEQUENT WORK IN THE LINED ROOMS/AREAS.
10. △2 THE LINER SHALL CONFORM TO THE FLATNESS TOLERANCES OF ±1/8" IN 10 FEET FOR FLOORS AND ±1/4" IN 10 FEET ELSEWHERE, UNLESS NOTED OTHERWISE.
11. △1 BACKING BARS SHALL BE PROVIDED AT ALL FIELD WELDED LINER SEAMS, HOWEVER THEY ARE OPTIONAL AT SHOP WELDED SEAMS. SOME DETAILS HEREIN OMIT SHOWING BACKING BARS FOR REASON OF CLARITY.

VIII GANGED EMBED PLATES:

1. GANGED EMBED PLATES (GEP) WITH PROCESS AND/OR ELECTRICAL CONNECTORS (PUREX TYPE) SHALL BE FABRICATED PER DIMENSIONS AND TOLERANCES SPECIFIED ON MECHANICAL DRAWINGS.
2. THE PHYSICAL LOCATION OF THE GEP SHALL BE MADE BY ESTABLISHING A CELL DATUM AND REFERENCE PLANE FROM THE MASTER BUILDING COORDINATE AND ELEVATION DATUM.
3. THE GEP'S SHALL BE INSTALLED TO MEET THE FOLLOWING FINAL TOLERANCES AT EACH CONNECTOR.
   a. INSTALL PROCESS WALL CONNECTORS TO ±1/8 INCH IN X-Y-Z DIRECTIONS IN THE CHEMICAL PROCESS CELL (ROOM-0048) AND TO ±1/4 INCH IN ALL OTHER CELLS. TOLERANCE FOR TILT ACROSS NOZZLE FACES ARE ±1/64 INCH OR 1/32 INCH OVERALL. TOLERANCE FOR ROTATION OF 3-WAY CONNECTORS (NOZZLES) ARE ± 1 DEGREE.
   b. INSTALL ELECTRICAL WALL CONNECTORS TO ±1/8 INCH IN X-Y-Z DIRECTIONS IN THE CHEMICAL PROCESS CELL (ROOM-0048) AND TO ±1/4 INCH IN ALL OTHER CELLS. CRITICAL DIMENSIONS ARE TO THE CONNECTOR FACE (MATING SURFACE) IN THE Z-Z PLANE, NOT THE CENTERLINE OF CONNECTOR. THE CONNECTOR SHALL BE PARALLEL TO THE CELL REFERENCE PLANE WITHIN ±1/64 INCH OR 1/32 INCH INCH OVERALL ACROSS THE CONNECTOR FACE.

IX BUILDING SETTLEMENT MEASUREMENT:

1. SETTLEMENT MONITORING MONUMENTS AS SHOWN ON THE DRAWINGS SHALL BE INSTALLED BY THE SELLER.
2. THE BUYER SHALL MONITOR THE BUILDING SETTLEMENT BY MEASURING AND RECORDING THE ELEVATION OF EACH MONUMENT DURING THE CONSTRUCTION OF THE BUILDING.
3. SETTLEMENT MEASUREMENTS SHALL BE TAKEN AT EACH OF THE FOLLOWING STAGES OF COMPLETION OF THE BUILDING:
   a. FOUNDATION MAT TO EL 701'-0" (INITIAL).
   b. FIRST FLOOR SLAB AT EL 708'-0".
   c. MEZZANINE AT EL 728'-4".
   d. SECOND FLOOR SLAB AT EL 748'-8".
   e. THIRD FLOOR SLAB AT EL 771'-2".
   f. FOURTH FLOOR SLAB AT EL 801'-2" & 810'-2" (FINAL).

X CONSTRUCTION CRANE FOUNDATION:

1. CONSTRUCTION CRANE FOUNDATIONS SHOWN ON DWG H-2-117426 WILL BE BY THE BUYER. SELLER SHALL COORDINATE CONSTRUCTION AND BACKFILL ACTIVITIES WITH THE BUYER.

△3

NOTE:

FOR B210A PHASE I (BASE MAT) AND PHASE II CLARIFICATION SEE CLARIFICATION NOTE ON DRAWING H-2-117427.

DWG. NO.	DRAWING TITLE
H-2-117460	FIRST FLOOR CONFIG PLAN & DWG INDEX
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

REFERENCE DRAWINGS

NEXT USED ON

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
3	9/24/93	MINOR CHANGES	[signature]	[signature]	[signature]	NA / NA
			NA	NA	NA	NA
2	7/14/93	REVISION PER CR HWVP-0972, ADDED NOTE 6 SECT 1 AND NOTE 8e SECT IV, DELETED NOTE 10 SECT II, REVISED TOLERANCE NOTE 5 SECT V & NOTE 10 SECT VII, REMOVED TBD/HOLD HWVP-FD-211 PER CR HWVP-0972	RD	GK	MSW	NA / NA
			NA	NA	NA	NA
1	3/1/93	REVISION PER CR HWVP-0929, REVISION PER CR HWVP-0892, REVISED TO RELEASE DESIGN ITEM 24B PER TBD/HOLD HWVP-FD-211, ADDED NOTE 11 SECT IV AND NOTE 11 SECT VII, REVISED NOTE 3 SECT VII AND CLARIFICATION NOTE.	MJO	GK	MSW	NA / NA
			NA	NA	NA	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	JCB	GK	RPK	NA / NA
			NA	NA	NA	NA

CADFILE B117425A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. ____ DATE ____
ERO. ____

SIGNATURE	DATE
PROJ. DIR. NA	
Q.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED J. BOYCE	11/11/92
DRAWN R. MCDOWELL	03/23/92

U.S.DEPARTMENT OF ENERGY
SEP 24 1993
Richland Field Office
DE – AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

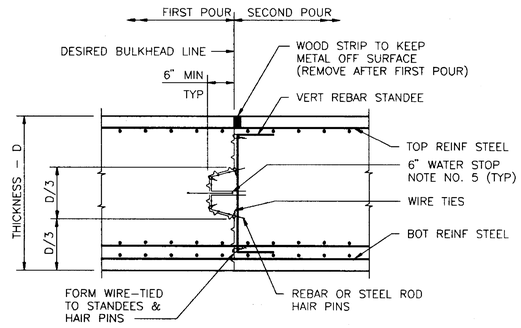
STRUCTURAL
VITRIFICATION BUILDING
GENERAL NOTES

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A
SCALE: NONE	BLDG. NO.: 1	INDEX NO.

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117425	1	8	3

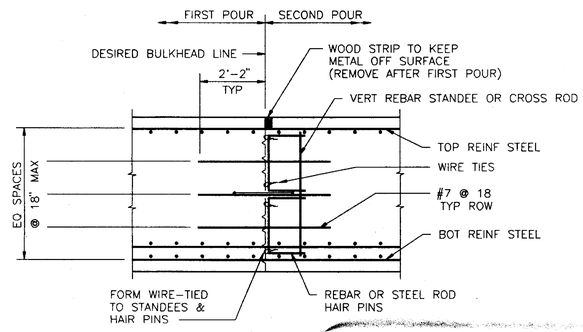
DISTRIBUTION CODE: 101 S1 ACAD INITIALS: D.S. DATE: 09/13/93



SECTION

OPTION 1 – USING STAY–FORM W/ KEYWAY

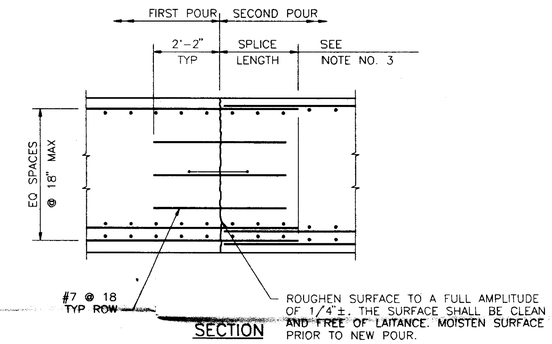
SEE NOTE NO. 2



SECTION

OPTION 2 – USING STAY–FORM W/O KEYWAY

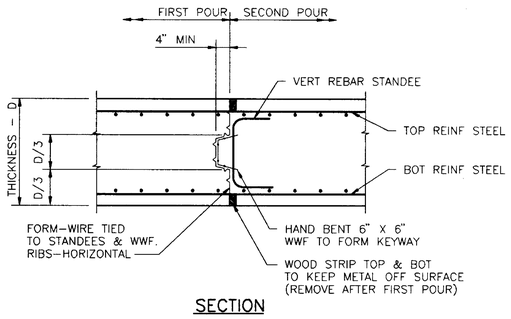
SEE NOTE NO. 2



SECTION

OPTION 3 – CONSTRUCTION JOINT W/O STAY–FORM

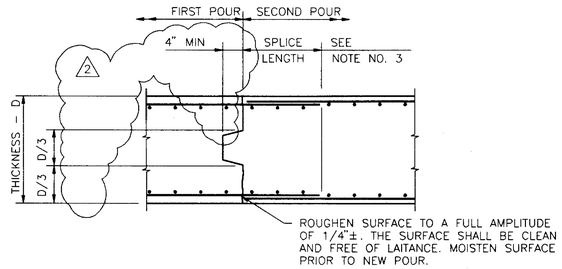
TYPICAL MAT CONSTRUCTION JOINT



SECTION

OPTION 1 – USING STAY–FORM W/ KEYWAY

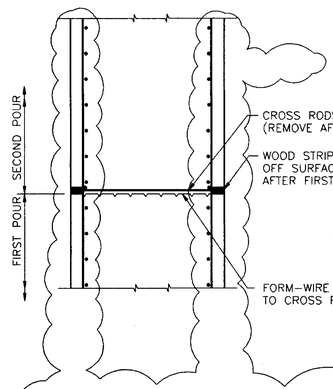
SEE NOTE NO. 2



SECTION

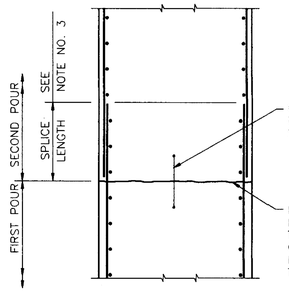
OPTION 2 – CONSTRUCTION JOINT W/O STAY–FORM

TYPICAL ELEVATED SLAB CONSTRUCTION JOINT



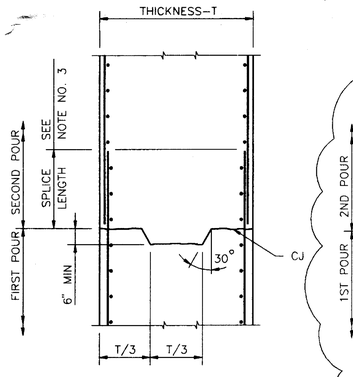
OPTION 1 – USING STAY–FORM

VERTICAL JOINT ONLY
SEE NOTE 2



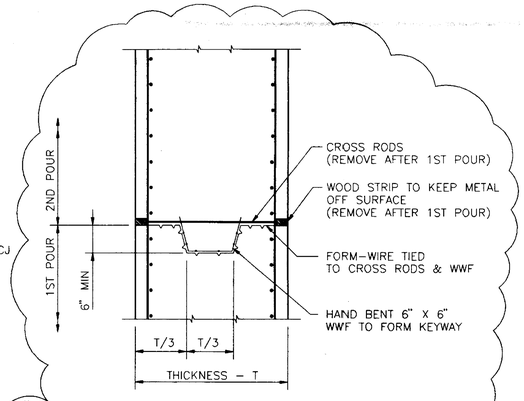
OPTION 2 – WITHOUT STAY–FORM

VERTICAL OR HORIZONTIAL JOINT



OPTION 3 – WITHOUT STAY–FORM

VERTICAL OR HORIZONTIAL JOINT



OPTION 4 – USING STAY–FORM

VERTICAL JOINT ONLY
SEE NOTE 2

NON KEYED JOINTS
SEE NOTE 7

KEYED JOINTS
SEE NOTE 7

2

TYPICAL WALL CONSTRUCTION JOINT

CONSTRUCTION JOINT NOTES:

1. ALL CONSTRUCTION JOINTS (CJ) SHOWN ARE MANDATORY. ADDITIONAL CJ MAY BE LOCATED AS REQUIRED TO SUPPORT THE SELLER'S WORK PLAN AND PLACEMENT SCHEDULE. LOCATIONS AND DETAILS SHALL BE SUBMITTED FOR THE BUYER'S APPROVAL.
2. LEAVE–IN–PLACE CONCRETE FORMS, WHEN USED, SHALL CONFORM TO "STAY–FORM" AS MANUFACTURED BY ALABAMA INDUSTRIES CORP OR EQUAL. STAY FORM, INCLUDING STANDEES, CROSS RODS AND ANY OTHER REQUIRED SUPPORTS OR TIES, SHALL BE DESIGNED BY THE SELLER PER MANUFACTURER'S RECOMMENDATIONS AND SHALL BE SUBMITTED FOR BUYER'S APPROVAL.
3. FOR APPROPRIATE SPLICE LENGTH SEE SPLICE SCHEDULE ON DRAWING H–2–117425 SH 4 UNLESS SHOWN OTHERWISE ON DESIGN DRAWINGS.
4. CONSTRUCTION JOINTS IN FLOORS SHALL BE LOCATED NEAR THE MIDDLE OF SPANS.
5. DUMBELL TYPE WATER STOPS SHALL BE PROVIDED AT ALL CONSTRUCTION JOINTS IN THE FOUNDATION MAT AND WALLS WHICH ARE BELOW ELEVATION 708'–0" AND ARE IN CONTACT WITH THE SOIL. THE WEST EXTERIOR WALL SHALL HAVE WATER STOPS AT ALL CONSTRUCTION JOINTS AT ELEVATION 712'–0" AND BELOW.
6. SURFACE PREPARATION OF THE JOINTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 03300.
7. KEYED JOINTS ONLY. OPTION 3 OR OPTION 4. SHALL BE USED IN THE FOLLOWING WALLS: 2

WALL NO.	WALL NO.	WALL NO.	WALL NO.
0002W1	0036W4	0047W2	0086W1
0002W3	0040W1	0047W3	0086W2
0002W4	0040W2	0048W1	0086W3
0002W5	0040W3	0048W2	0092W1
0012W1	0042W1	0048W3	0095W1
0015W1	0042W2	0050W1	0095W2
0032W1	0042W3	0052W1	0096W1
0032W2	0043W1	0055W1	0097W1
0036W1	0044W1	0061W5	
0036W2	0046W2	0066W1	
0036W3	0047W1	0082W2	

QUALITY LEVEL I
SAFETY CLASS 1

REV NO.	DATE	REVISION DESCRIPTION				APPROVAL INITIALS
2	11/5/93	REVISION PER CR HWVP–1036, REV NOTE 7, REVISED KEYED JOINT AND CONSTRUCTION JOINT W/O STAY FORM	NA	NA	NA	NA/NA
1	7/14/93	REVISION PER CR HWVP–0972	RD	GK	MSW	NA/NA
0	11/12/92	APPROVED FOR CONSTRUCTION	JCB	GK	RPK	NA/NA

CADFILE B117425G CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERD. _____

SIGNATURE	DATE
PROJ. DIR. NA	
Q.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED J. BOYCE	11/11/92
DRAWN R. MCDOWELL	03/31/92

U.S.DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993 DE – AC06–86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCT VIT BLDG
TYPICAL CONSTR JOINTS
FOR MAT, SLAB & WALLS

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B–595	8457	B210A

SCALE	BLDG. NO.	INDEX NO.
NONE	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H–2–117425	7	8	2

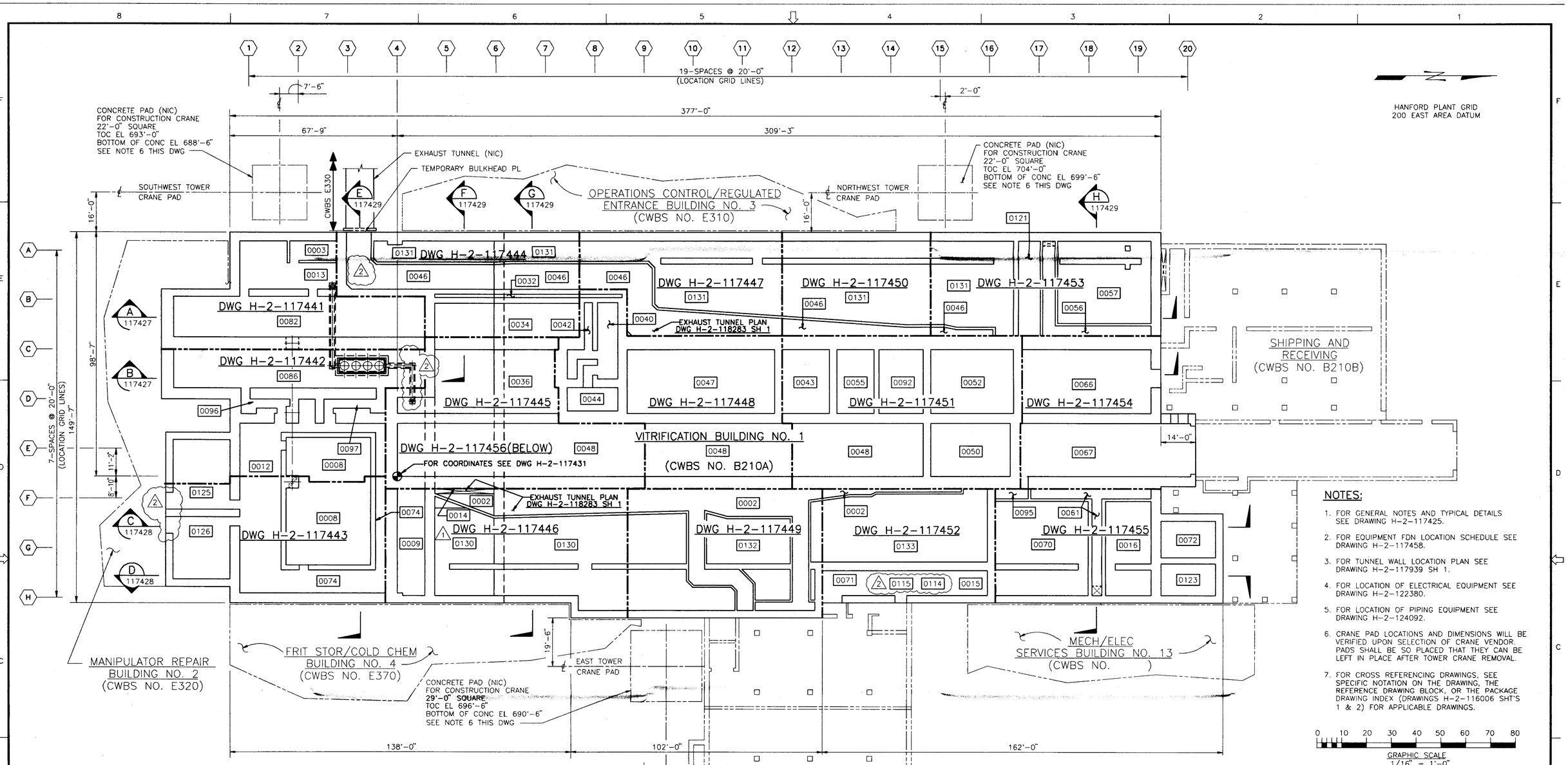
DWG. NO.	DRAWING TITLE
H–2–117460	FIRST FLOOR CONFIG PLAN & DWG INDEX
H–2–117426	TUNNEL CONFIG PLAN & DWG INDEX

REFERENCE DRAWINGS

NEXT USED ON

2 1 0 A H–2–117425 R 2

DISTRIBUTION CODE: 101 S7 ACAD INITIALS: CBW DATE: 09/15/93



NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. FOR EQUIPMENT FDN LOCATION SCHEDULE SEE DRAWING H-2-117458.
3. FOR TUNNEL WALL LOCATION PLAN SEE DRAWING H-2-117939 SH 1.
4. FOR LOCATION OF ELECTRICAL EQUIPMENT SEE DRAWING H-2-122380.
5. FOR LOCATION OF PIPING EQUIPMENT SEE DRAWING H-2-124092.
6. CRANE PAD LOCATIONS AND DIMENSIONS WILL BE VERIFIED UPON SELECTION OF CRANE VENDOR. PADS SHALL BE SO PLACED THAT THEY CAN BE LEFT IN PLACE AFTER TOWER CRANE REMOVAL.
7. FOR CROSS REFERENCING DRAWINGS, SEE SPECIFIC NOTATION ON THE DRAWING, THE REFERENCE DRAWING BLOCK, OR THE PACKAGE DRAWING INDEX (DRAWINGS H-2-116006 SHT'S 1 & 2) FOR APPLICABLE DRAWINGS.

0 10 20 30 40 50 60 70 80
GRAPHIC SCALE
1/16" = 1'-0"

ROOM NUMBERS:

0002	EXHAUST TUNNEL
0003	STAIR No.5
0008	CATCH TANK AREA
0009	VOID
0012	CORRIDOR
0013	CORRIDOR
0014	EXHAUST TUNNEL (1)
0015	STAIR No.6
0016	VOID
0032	VOID
0034	SUPPLY TUNNEL
0036	CANISTER DECON CELL
0040	EMPTY CANISTER ENTRY TUNNEL
0042	STAIR No.10
0043	S.B.S. CELL
0044	MELTER CELL/CANISTER DECON CELL TRANSFER TUNNEL
0046	EXHAUST TUNNEL
0047	MELTER CELL
0048	CHEMICAL PROCESS CELL
0050	LAYDOWN AREA
0052	REMOTE EQUIP DECON CELL
0055	HEME CELL
0056	SUPPLY TUNNEL
0057	VOID
0061	SUPPLY TUNNEL
0066	CONTACT DECON & MAINT. CELL
0067	RAILROAD WELL
0070	VOID
0071	SOP
0072	FREIGHT ELEVATOR SHAFT
0074	CORRIDOR
0082	EXIT TUNNEL OPERATING GALLERY
0086	SMEAR TEST/EXIT TUNNEL
0092	STAGED EQUIP LAYDOWN CELL
0095	AIRLOCK/STAIRWAY
0096	AIRLOCK
0097	AIRLOCK
0114	UNREGULATED CHANGE ROOM (2)
0115	AIRLOCK
0121	VOID
0123	CONDUIT SPACE
0125	NEUTRAL VESTIBULE (MANIPULATOR REPAIR BLDG)
0126	VESTIBULE (MANIPULATOR REPAIR BLDG)
0130	VOID
0131	VOID
0132	VOID
0133	VOID

REV. NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
2	7/14/93	REVISION PER CR HWVP-1036, INCORPORATED DCN #0014,0015, & 000037, ADDED ROOM 0114 & 0115 CALLOUTS & MINOR CHANGES.				NA / NA
			NA	NA	NA	NA
1	3/1/93	REVISION PER CR HWVP-0929, ADDED EXHAUST DUCT ROOM NO. 0014	RD	GK	MSW	NA / NA
			NA	NA	NA	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	JR	GK	RPK	NA / NA
			NA	NA	NA	NA

CADFILE B117426A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERO. _____

SIGNATURE	DATE
PROJ. DIR. NA	
Q.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER C. KUILANOFF	11/11/92
CHECKED J. ROOKER	11/11/92
DRAWN H. KANO	05/12/92

U.S. DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993 DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCT VIT BLDG
TUNNEL CONFIG PLAN
& DWG INDEX

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG. NO.	INDEX NO.
1/16" = 1'-0"	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQD	H-2-117426	1	1	2

DWG. NO.	DRAWING TITLE
H-2-122380	ELECT VIT BLDG - DWG INDEX
H-2-124092	PIPING DWG INDEX - VIT BLDG TUNNEL SLAB LEVEL
H-2-116006	VIT BLDG FDN DWG INDEX

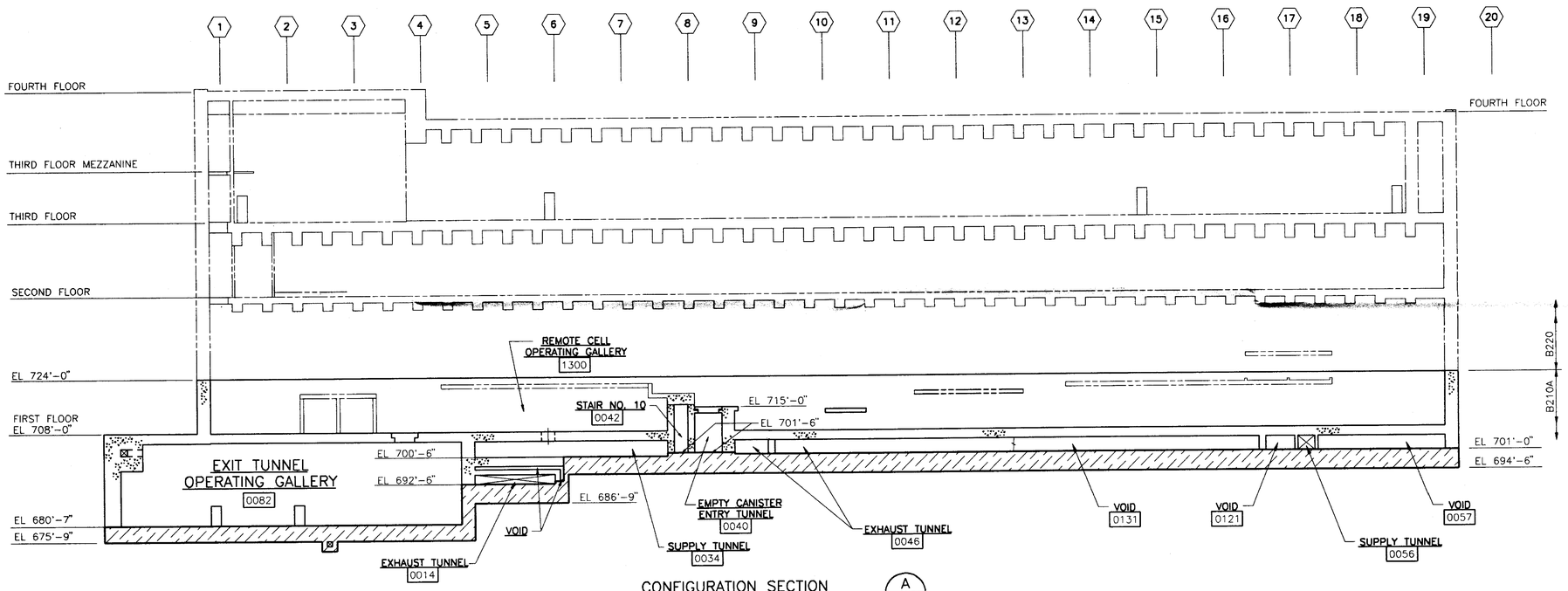
REFERENCE DRAWINGS

NEXT USED ON

210A H-2-117426 R.2

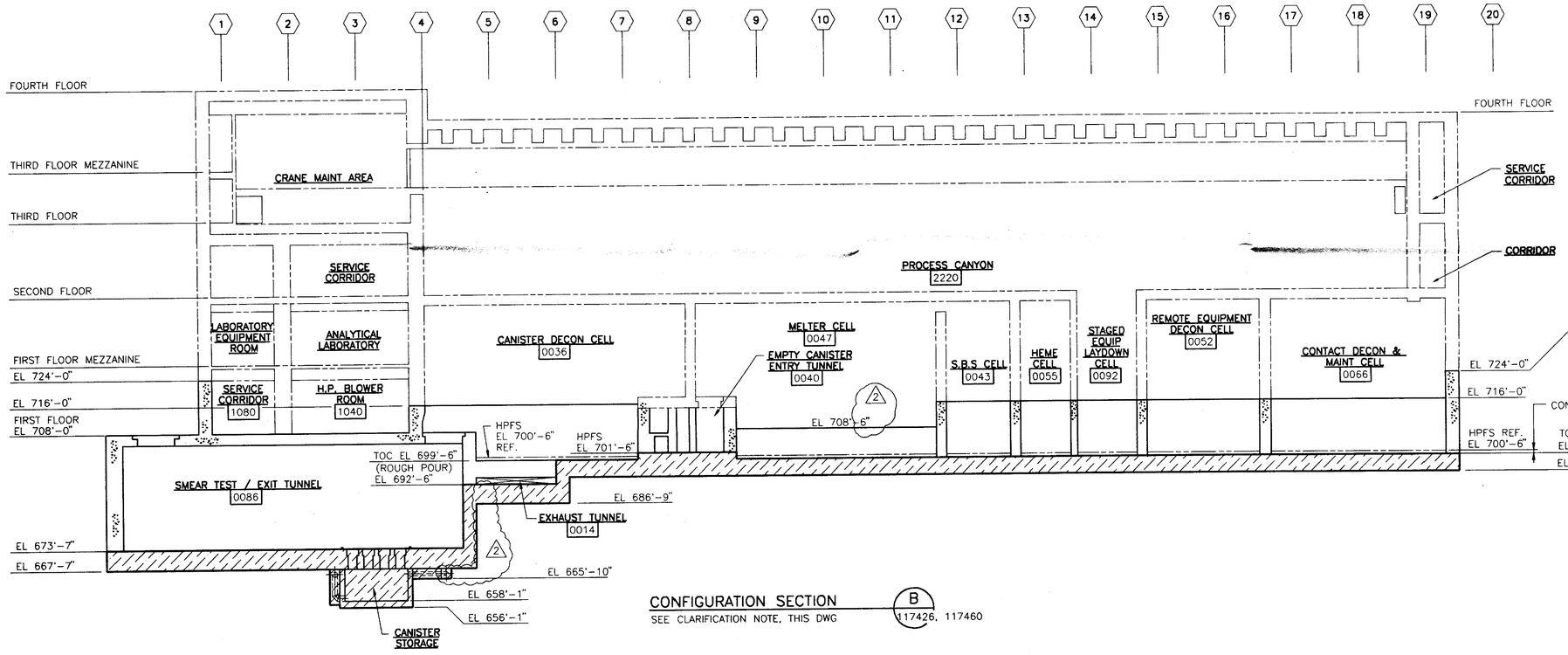
DISTRIBUTION CODE: 103 S9 ACAD INITIALS: HK DATE: 09/09/93

Mon Sep 20 17:47:04 1993 P:\CAD1 P:\PLOTS\PA87B30.PLT



CONFIGURATION SECTION (A) 117426, 117460

SEE CLARIFICATION NOTE, THIS DWG



CONFIGURATION SECTION (B) 117426, 117460

SEE CLARIFICATION NOTE, THIS DWG

PHASE I AND PHASE II CLARIFICATION NOTE:

AS DESIGNATED ON DRAWINGS H-2-117427, H-2-117428 AND H-2-117429, B210A PHASE I (BASE MAT) IS DESIGNATED . INCLUDED IN THIS PHASE I PORTION ARE ALL ITEMS EMBEDDED INTO THE BASE MAT SUCH AS EQUIPMENT SUPPORTS, ANCHOR BOLTS, SUMPS, STAINLESS STEEL LINER AND LINER EMBEDS, EMBED PLATES AND VERTICAL REBAR DOWELS FOR WALLS.

1 - B210A PHASE II IS DESIGNATED . B220 IS DESIGNATED AND IS SHOWN FOR REFERENCE ONLY.

NOTE:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.

LEGEND:

- DENOTES B210A PHASE I BASE MAT
- DENOTES B210A PHASE II
- DENOTES B220 NOT INCLUDED IN THIS CONTRACT.

0 10 20 30 40 50 60 70 80

GRAPHIC SCALE 1/16" = 1'-0"

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
2	11/11/93	REVISION PER CR HWVP-1036, REVISED HVAC DUCT, PACKAGE CUTOFF ELEVATION & MINOR CHANGES				NA/NA
			NA	NA	NA	NA
1	3/1/93	REVISION PER CR HWVP-0929, REVISED ROOM TITLE EXHAUST TUNNEL TO EXHAUST DUCT, REVISED CLARIFICATION NOTE.	RD	GK	MSW	NA/NA
			NA	NA	NA	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	JR	GK	RPK	NA/NA
			NA	NA	NA	NA

CADFILE B117427A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERO. _____

SIGNATURE	DATE
PROJ. DIR. NA	
Q.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED J. ROOKER	11/11/92
DRAWN J. BOYCE	03/23/92

U.S.DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993 DE - AC06-88RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCT VIT BLDG
CONFIGURATION SECTIONS
A & B

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT B-595 | FLOOR CONTRACT NO. B457 | CWBS NO. B210A
SCALE 1/16" = 1'-0" | BLDG. NO. 1 | INDEX NO.

CLASSIFICATION NONE | BY NOT REQD | DRAWING NUMBER H-2-117427 | SHEET 1 | OF 1 | REV. 2

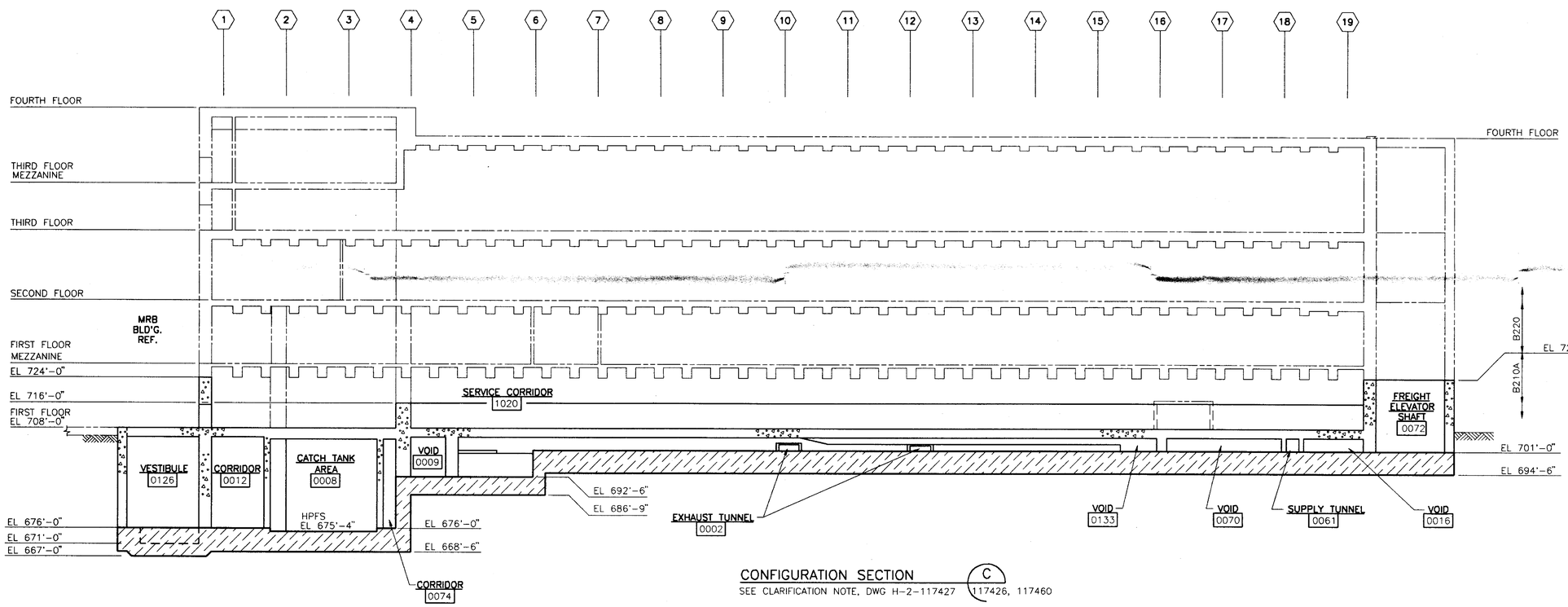
DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

REFERENCE DRAWINGS

NEXT USED ON

210A H-2-117427 2 1 1 R.2

DISTRIBUTION CODE: 103 S10 ACAD INITIALS: D.S. DATE: 09/09/93



CONFIGURATION SECTION (C)
SEE CLARIFICATION NOTE, DWG H-2-117427 117426, 117460

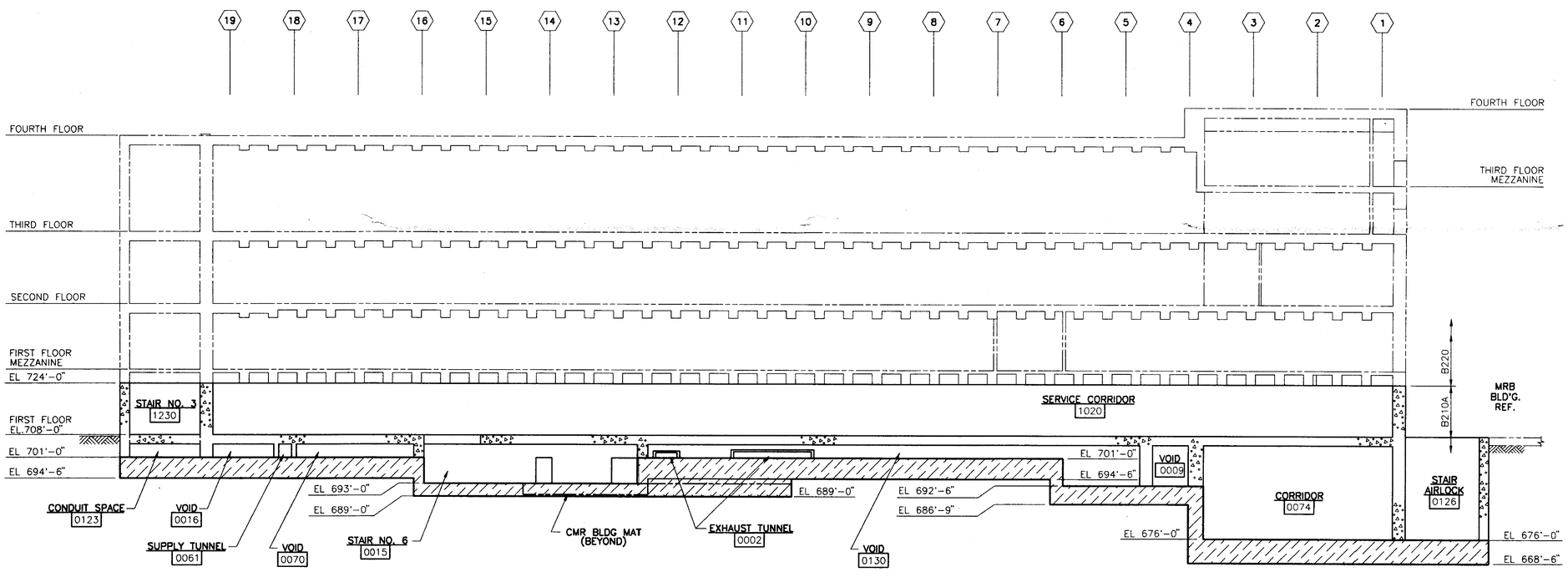
NOTE:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.

LEGEND:

- DENOTES B210A PHASE I BASE MAT
- DENOTES B210A PHASE II
- DENOTES B220 NOT INCLUDED IN THIS CONTRACT.

GRAPHIC SCALE 1/16" = 1'-0"



CONFIGURATION SECTION (D)
SEE CLARIFICATION NOTE, DWG H-2-117427 117426, 117460

REV NO.	DATE	REVISION DESCRIPTION				APPROVAL INITIALS
2	7/24/93	MINOR CHANGES				NA NA
			NA	NA	NA	NA
1	3/1/93	REVISION PER CR HWVP-0929, REVISED ROOM TITLE EXHAUST TUNNEL TO EXHAUST DUCT	RD	GK	MSW	NA NA
			NA	NA	NA	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	JR	GK	RPK	NA NA
			NA	NA	NA	NA

H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX		
DWG. NO.	DRAWING TITLE		
REFERENCE DRAWINGS			
NEXT USED ON			

CADFILE B117428A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERO. _____

SIGNATURE	DATE
PROJ. DIR. NA	
BA. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED J. ROOKER	11/11/92
DRAWN J. BOYCE	03/23/92

CLASSIFICATION: NONE BY: NOT REQD

U.S.DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993 DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCT VIT BLDG
CONFIGURATION SECTIONS
C & D

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

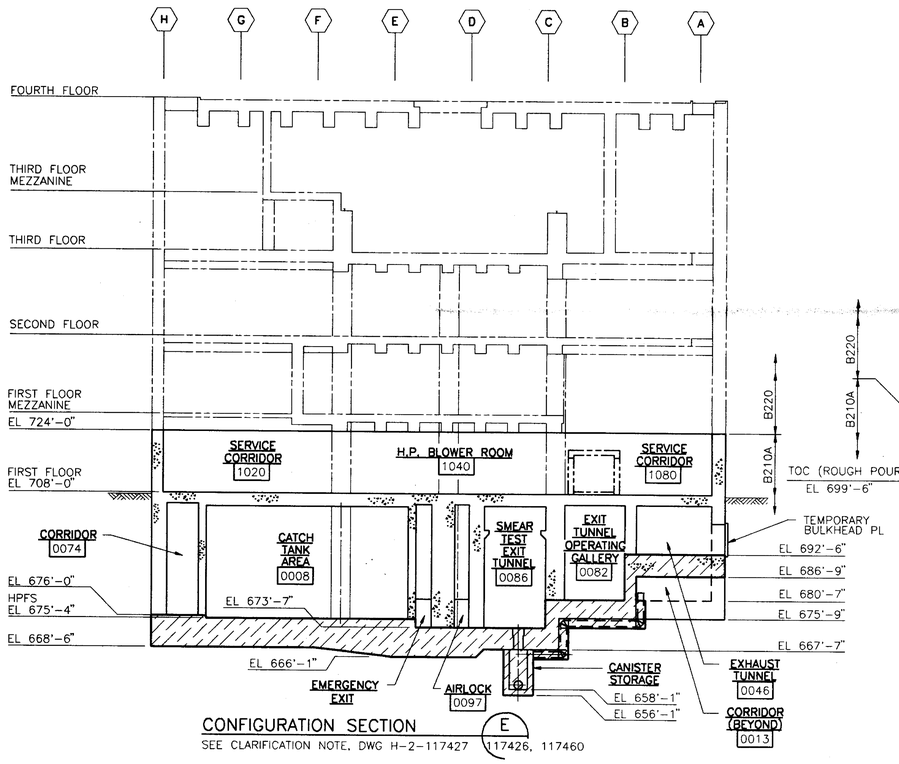
PROJECT B-595 | FLUOR CONTRACT NO. 8457 | CWBS NO. B210A
BLDG. NO. 1 | INDEX NO.
SCALE 1/16" = 1'-0"

DRAWING NUMBER H-2-117428 | SHEET 1 | OF 1 | REV. 2

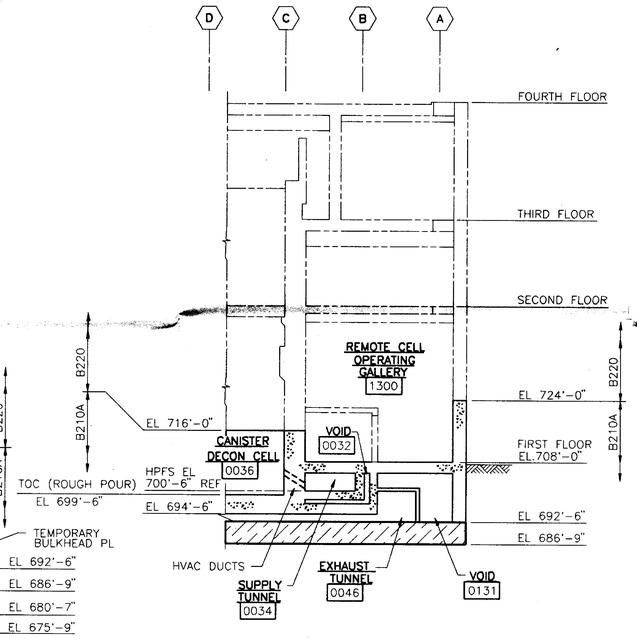
DISTRIBUTION CODE: 103 S11 ACAD INITIALS: HK DATE: 09/09/93

2 1 0 A H-2-117428 2 1 1 R 2

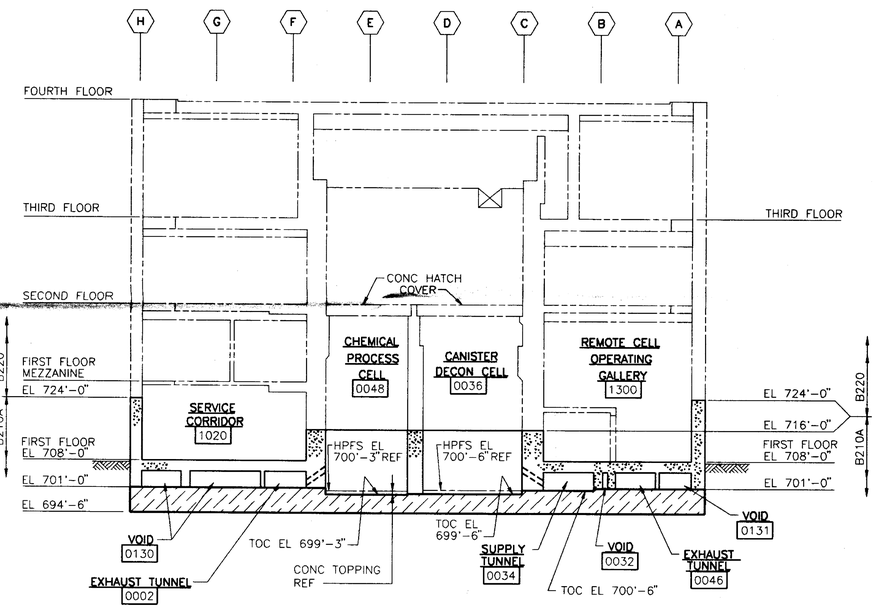
MGD: Sep 20 18:06:38 1993 P:\CAD1 P:\PLOTS\PAA87835.PLT



CONFIGURATION SECTION (E)
SEE CLARIFICATION NOTE, DWG H-2-117427 117426, 117460



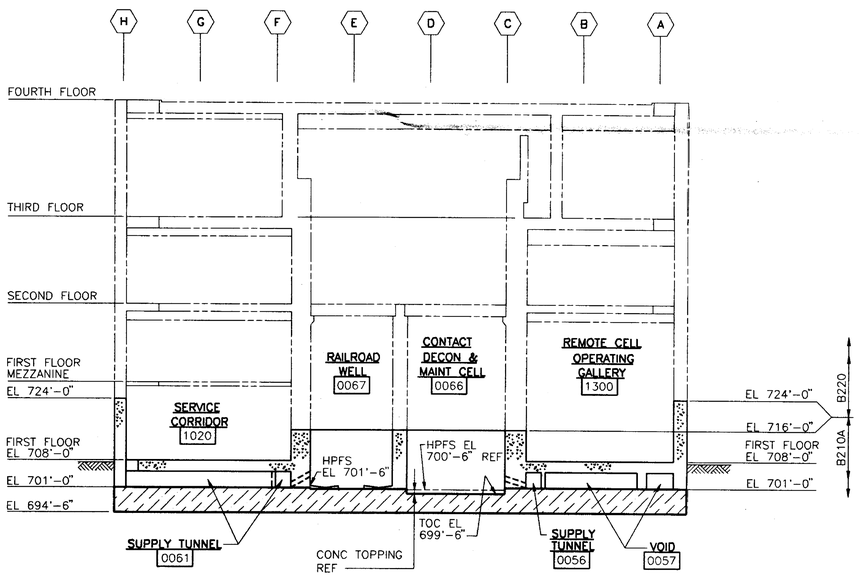
CONFIGURATION SECTION (F)
SEE CLARIFICATION NOTE, DWG H-2-117427 117426, 117460



CONFIGURATION SECTION (G)
SEE CLARIFICATION NOTE, DWG H-2-117427 117426, 117460

NOTE:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425



CONFIGURATION SECTION (H)
SEE CLARIFICATION NOTE, DWG H-2-117427 117426, 117460

LEGEND:

DENOTES B210A PHASE I BASE MAT

DENOTES B210A PHASE II

DENOTES B220 NOT INCLUDED IN THIS CONTRACT.

0 10 20 30 40 50 60 70 80
GRAPHIC SCALE
1/16" = 1'-0"

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS				
2	9/13/93	MINOR CHANGES				NA	NA
			NA	NA	NA	NA	
1	3/1/93	REVISION PER CR HWVP-0929, REVISED ROOM TITLE EXHAUST TUNNEL TO EXHAUST DUCT	RD	GK	MSW	NA	NA
			NA	NA	NA	NA	
0	11/12/92	APPROVED FOR CONSTRUCTION	JR	GK	RPK	NA	NA
			NA	NA	NA	NA	

CADFILE B117429A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. ____ DATE ____
ERO. ____

SIGNATURE	DATE
PROJ. DIR. NA	
QA. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED J. ROOKER	11/11/92
DRAWN J. BOYCE	03/23/92

U.S. DEPARTMENT OF ENERGY
SEP 24 1993 Richland Field Office DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCT VIT BLDG
CONFIGURATION SECTIONS
E, F, G & H

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG. NO.	INDEX NO.
1/16"=1'-0"	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQD	H-2-117429	1	1	2

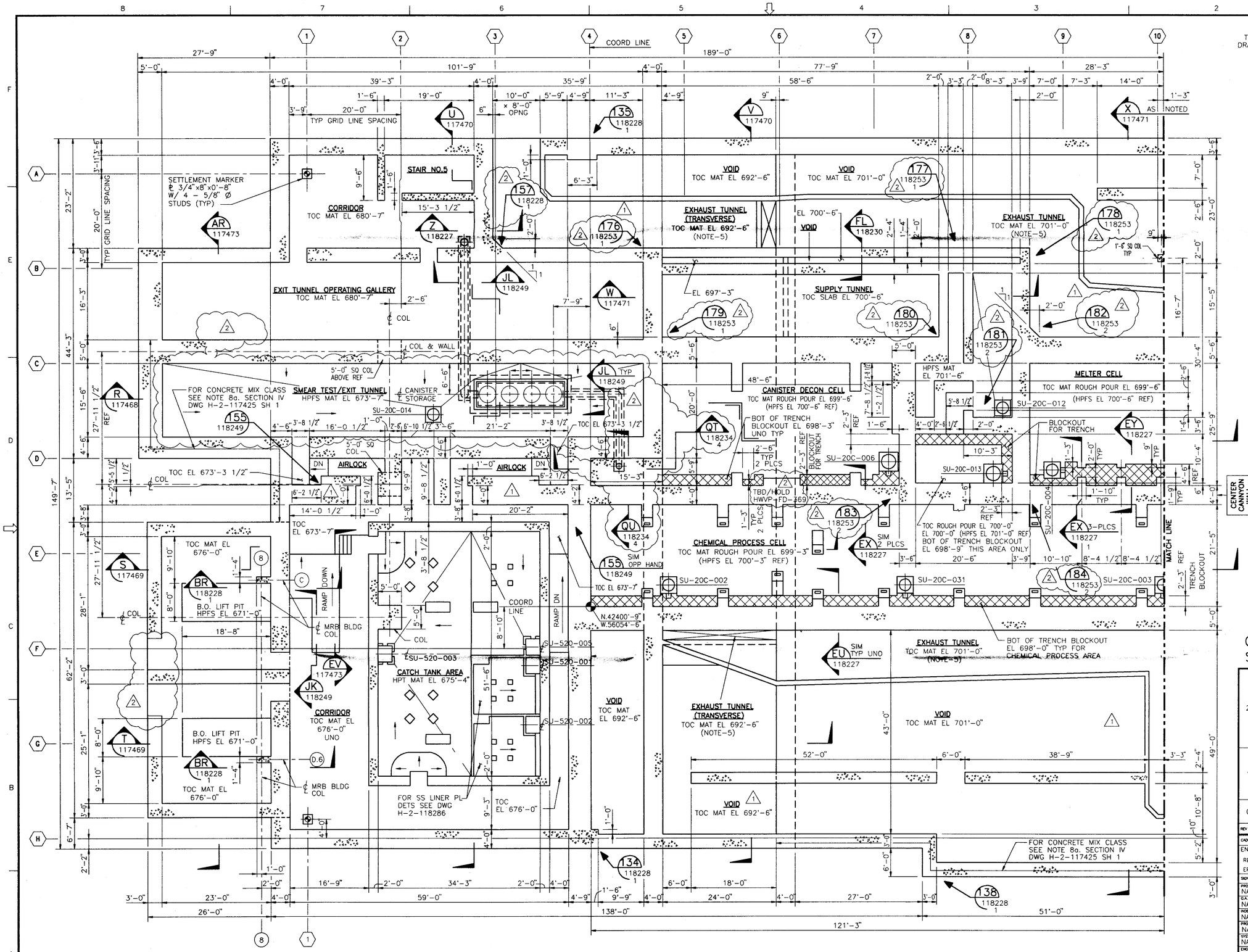
DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

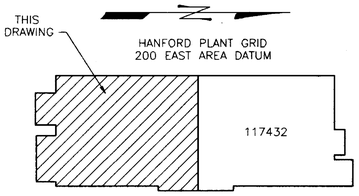
REFERENCE DRAWINGS
NEXT USED ON

2 1 0 A H-2-117429 2 1 1 6 . 2

DISTRIBUTION CODE: 103 S12 ACAD INITIALS: HK DATE: 09/09/93

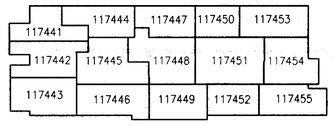
MON SEP 20 20:56:16 1993 P_CAD1 P:\PLOTS\FAAB7925.PLT





FORMING KEY PLAN

SCALE: NONE



NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

DETAIL KEY PLAN

SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. FOR ADDITIONAL DETAILS SEE ENLARGED TUNNEL PLANS. (DETAIL KEY PLAN)
3. ▨ INDICATES TRENCH BLOCKOUT AREA
4. FOR TUNNEL MAT REINFORCING PLANS, SEE DRAWINGS H-2-117435, H-2-117437, AND H-2-117439.
5. FOR ADDITIONAL CLARIFICATIONS TO THE EXHAUST TUNNEL DESIGN, SEE BID CLARIFICATION NOTE 1, DRAWING H-2-117427.

0 5 10 15 20 25 30 35 40

GRAPHIC SCALE
1/8" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
2	9/24/93	REVISION PER CR HWVP-1036. INCORPORATED DCN #0014 & #0015. REMOVED TBD/HOLD HWVP-FD-249 & 250 PER DCN #000037 PER CR HWVP-0943. REMOVED TBD/HOLD HWVP-FD-238 PER DCN #000039 PER CR HWVP-0898. REMOVED TBD/HOLD HWVP-FD-211. ADDED TBD/HOLD HWVP-FD-369, DETAIL CALLOUTS & MINOR CHANGES	C.K.	Ej	[illegible]	NA / NA
			NA	NA	NA	NA
1	2/25/93	REVISION PER CR HWVP-0929, REVISED TO RELEASE DESIGN ITEM 7 AND 18 PER TDB/HOLD HWVP-FD-211, ADDED EXHAUST DUCT WALLS, REVISED DIMENSIONS AT AIR LOCKS, ADDED VOID ROOM CALL OUTS	RD	GK	MSW	NA / NA
			NA	NA	NA	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	JR	GK	RPK	NA / NA
			NA	NA	NA	NA

CADFILE B117431A — CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. ____ DATE ____
ERO. ____

SIGNATURE	DATE
PROJ. DIR. NA	
QA. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED J. ROOKER	11/11/92
DRAWN V. KOLDRE	02/24/92

U.S.DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993 DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCT VIT BLDG
TUNNEL FORMING PLAN
SOUTH END

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

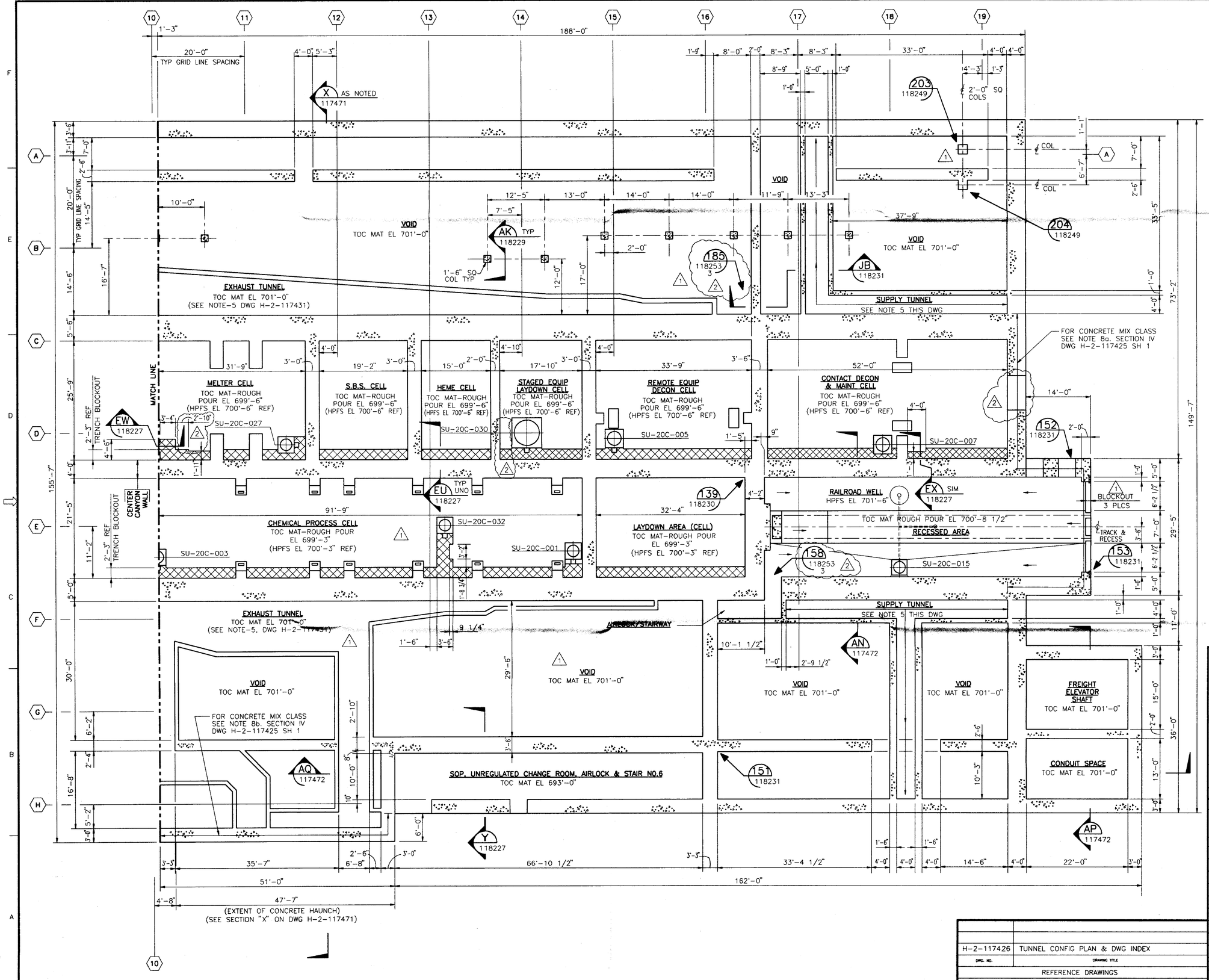
PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

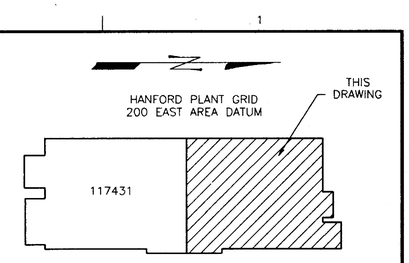
SCALE	BLDG. NO.	INDEX NO.
1/8"=1'-0"	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117431	1	1	2

DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX
	REFERENCE DRAWINGS
NEXT USED ON	

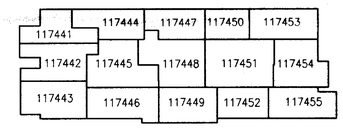
DISTRIBUTION CODE: 103 S13 ACAD INITIALS: D.S. DATE: 09/09/93





FORMING KEY PLAN

SCALE: NONE



NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

DETAIL KEY PLAN

SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. FOR ADDITIONAL DETAILS SEE ENLARGED TUNNEL PLANS. (DET KEY PLAN)
3. ▨ INDICATES TRENCH BLOCKOUT
4. FOR TUNNEL MAT REINFORCING PLANS SEE DRAWINGS H-2-117436 AND H-2-117438.
5. FOR CONSTRUCTION OF THE FIRST FLOOR SLAB 'LEFT-IN-PLACE' METAL DECK FORM MAY BE USED OVER THE SUPPLY TUNNEL AREAS. THE DECK SHALL BE ASC PACIFIC INC FLOOR DECK TYPE 2WF, 16/16 GAUGE OR APPROVED EQUAL. THE DECK SHALL BE PLACED UNDER THE 2'-10" THICK FIRST FLOOR SLAB AND THE UNDERSIDE (EXPOSED) SURFACE OF THE DECKING SHALL BE SMOOTH. IF THIS ALTERNATE METHOD IS USED, THE SELLER SHALL SUBMIT DETAILED PLANS AND DESIGN FOR BUYERS APPROVAL.

0 5 10 15 20 25 30 35 40
GRAPHIC SCALE
1/8" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
2	9/24/93	REVISION PER CR HWVP-1036. REMOVED TBD/HOLD HWVP-FD-211. ADDED DETAILS 185 & 158. DELETED TRUNNIONS. REVISED DOOR, FORMING DIM AND MINOR CHANGES.	C.K.	EJ	MW	NA / NA
			NA	NA	NA	NA
1	2/25/93	REVISION PER CR HWVP-0929. REVISION PER CR HWVP-0536 AND CR HWVP-0671. REVISED TO RELEASE DESIGN ITEM 7, 9, 10 AND 18 PER TBD/HOLD HWVP-FD-211. ADDED EXHAUST DUCT WALLS, VOID CALL OUTS, BLOCKOUTS AT RAILROAD WELL AND ADDED CONC COLUMNS. REVISED TRUNNION GUIDE LOCATIONS	RD	GK	MSW	NA / NA
			NA	NA	NA	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	JR	GK	RPK	NA / NA
			NA	NA	NA	NA

CADFILE B117432A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERD. _____

SIGNATURE	DATE
PROJ. DIR. NA	
D.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED J. ROOKER	11/11/92
DRAWN A. IZURIETA	05/13/92

U.S. DEPARTMENT OF ENERGY
SEP 24 1993 Richland Field Office
DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCT VIT BLDG
TUNNEL FORMING PLAN
NORTH END

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG. NO.	INDEX NO.
1/8" = 1'-0"	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117432	1	1	2

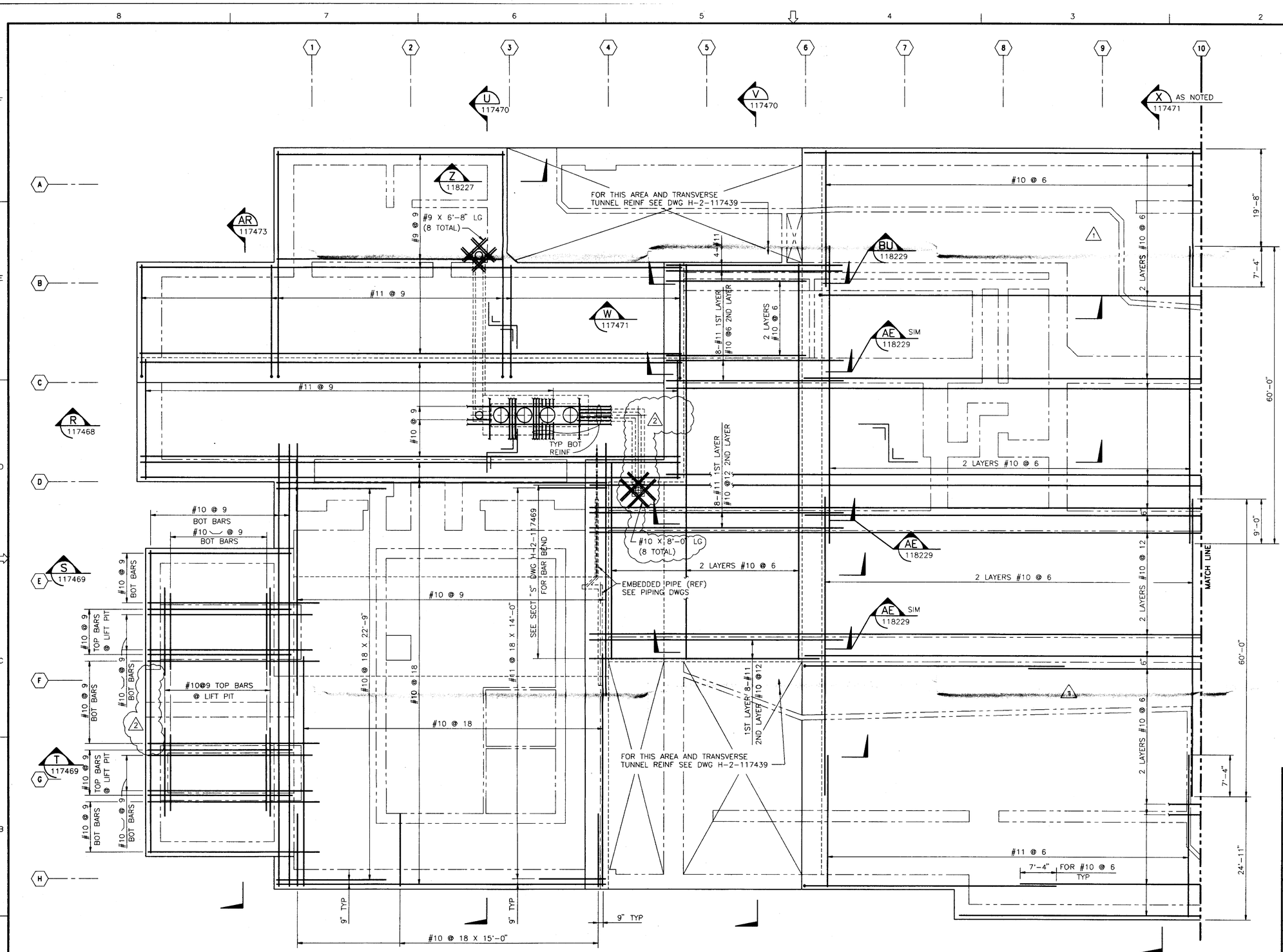
DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

REFERENCE DRAWINGS

NEXT USED ON

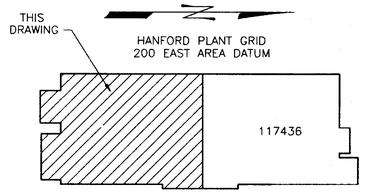
DISTRIBUTION CODE: 103 S14 ACAD INITIALS: D.S. DATE: 09/09/93

Sep 20 18:15:16 1993 P:\CAD1 P:\PLOTS\AA87839.PLT



TUNNEL PLAN – SOUTH END

BOT REINF



KEY PLAN
SCALE: NONE

NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. — — — — INDICATES WALL ABOVE
3. FOR LOCATION OF STIRRUPS SEE DRAWING H-2-117437.
4. USE LAP LENGTH PER SCHEDULE BELOW UNLESS NOTED OTHERWISE.

MAT BOTTOM BAR LAPS				
BAR SIZE	#8	#9	#10	#11
LAP LENGTH	39"	50"	63"	77"

5. FOR TUNNEL FORMING PLAN SEE DRAWING H-2-117431.

0 5 10 15 20 25 30 35 40
GRAPHIC SCALE
1/8" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
2	1/14/93	REVISION PER CR HWVP-1036. REMOVED TBD/HOLD HWVP-FD-211. REVISED DUCT & ADDED PENETRATION REINFORCING & DOOR BLOCKOUT.	HB	EJ	NA	NA/NA
			NA	NA	NA	NA
1	3/1/93	REVISION PER CR HWVP-0929. REVISED TO RELEASE DESIGN ITEM 18 PER TBD/HOLD HWVP-FD-211. ADDED EXHAUST DUCT WALLS	RD	GK	MSW	NA/NA
			NA	NA	NA	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	RD	GK	RPK	NA/NA
			NA	NA	NA	NA

CADFILE B117435A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERO. _____

SIGNATURE	DATE
PROJ. DIR. NA	
G.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED R. DRILLER	11/11/92
DRAWN M. MURRAY	06/22/92

U.S.DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993 DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCT VIT BLDG
TUNNEL MAT REINF PLAN
SOUTH END BOT REINF

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

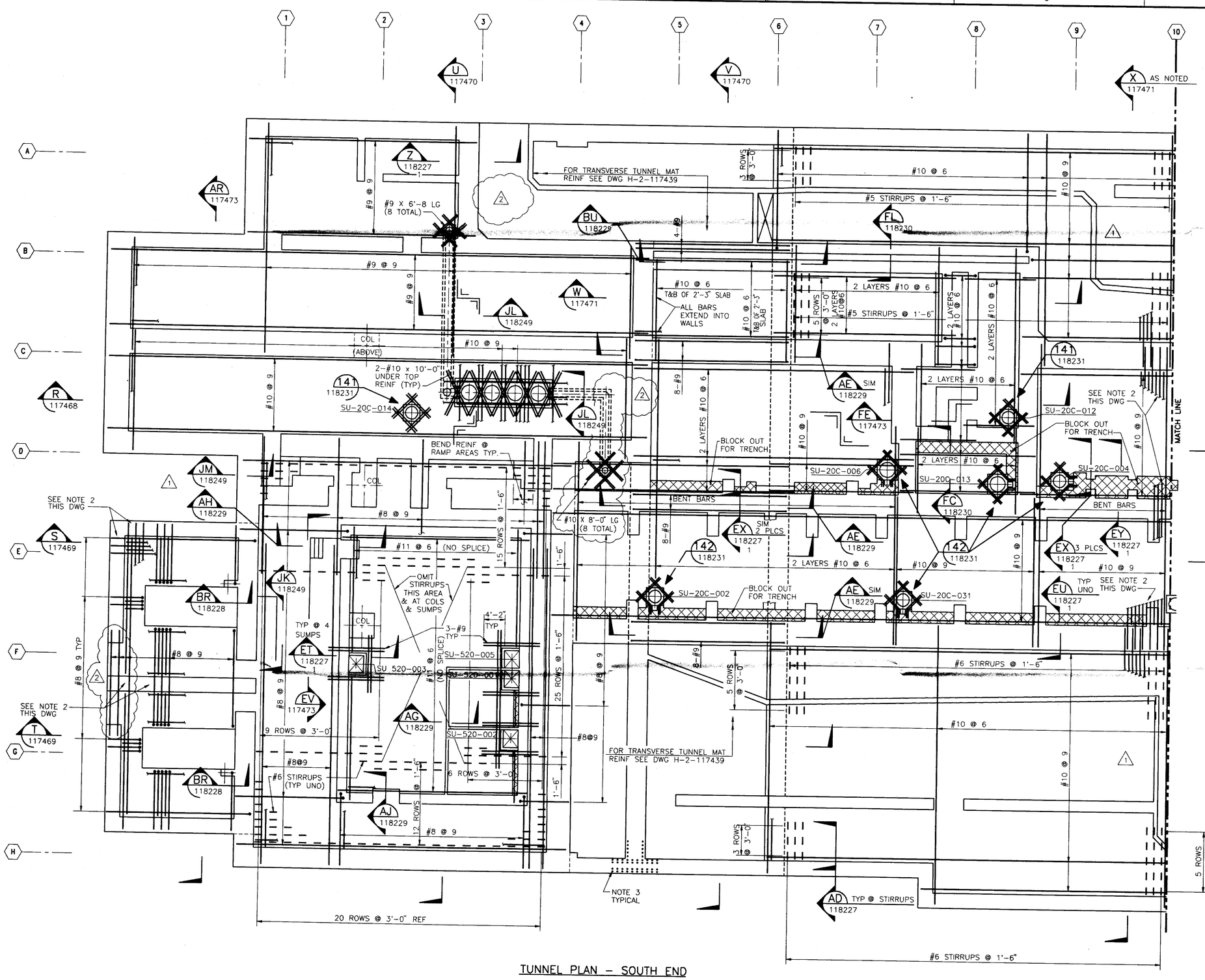
SCALE	BLDG. NO.	INDEX NO.
1/8" = 1'-0"	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117435	1	1	2

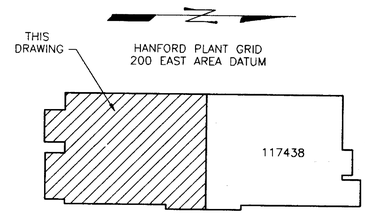
DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

REFERENCE DRAWINGS
NEXT USED ON

DISTRIBUTION CODE: 103 S15 ACAD INITIALS: D.S. DATE: 09/09/93



TUNNEL PLAN – SOUTH END
TOP REINF



NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

KEY PLAN
SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. ALL MAT TOP BARS THAT CROSS UNDER OR EXTEND UNDER WALL AREAS SHALL BE CONTINUOUS AT THE CENTER CANYON WALL AND ALL IN CELL WALLS. EXTERIOR AND OTHER WALLS MAY HAVE ALTERNATING BARS EXTENDING UNDER THE WALL AREA UNLESS NOTED OTHERWISE SEE DWGS H-2-117431 AND H-2-117432.
3. FOR WALL DOWELS SEE SECTIONS AND WALL ELEVATIONS.
4. USE LAP LENGTH PER SCHEDULE BELOW UNLESS NOTED OTHERWISE.

MAT TOP BAR LAPS				
BAR SIZE	#8	#9	#10	#11
LAP LENGTH	42"	52"	66"	80"

5. FOR TUNNEL FORMING PLAN SEE DRAWING H-2-117431.
6. INDICATES TRENCH BLOCKOUT.

0 5 10 15 20 25 30 35 40
GRAPHIC SCALE
1/8" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS				
2	6/1/93	REVISION PER CR HWVP-1036, INCORPORATED DCNS #0015 & 000037, REMOVED TBD/HOLD HWVP-FD-211, REVISED DUCT & ADDED PENETRATION REINFORCING, ADDED DOOR BLOCKOUT & MINOR CHANGES.				NA	NA
			NA	NA	NA	NA	
1	3/1/93	REVISION PER CR HWVP-0929, REVISED TO RELEASE DESIGN ITEM 18 PER TBD/HOLD HWVP-FD-211, ADDED EXHAUST DUCT WALLS, REVISED DWG NO. AT SECT JM	RD	GK	MSW	NA	NA
			NA	NA	NA	NA	
0	11/12/92	APPROVED FOR CONSTRUCTION	RD	GK	RPK	NA	NA
			NA	NA	NA	NA	

CADFILE: B117437A
CADCODE: 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERO. _____

SIGNATURE	DATE
PROJ. DIR. NA	
G.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED R. DRILLER	11/11/92
DRAWN M. MURRAY	04/22/92

U.S. DEPARTMENT OF ENERGY
SEP 24 1993
Richland Field Office
DE – AC06–86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCT VIT BLDG
TUNNEL MAT REINF PLAN
SOUTH END TOP REINF

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

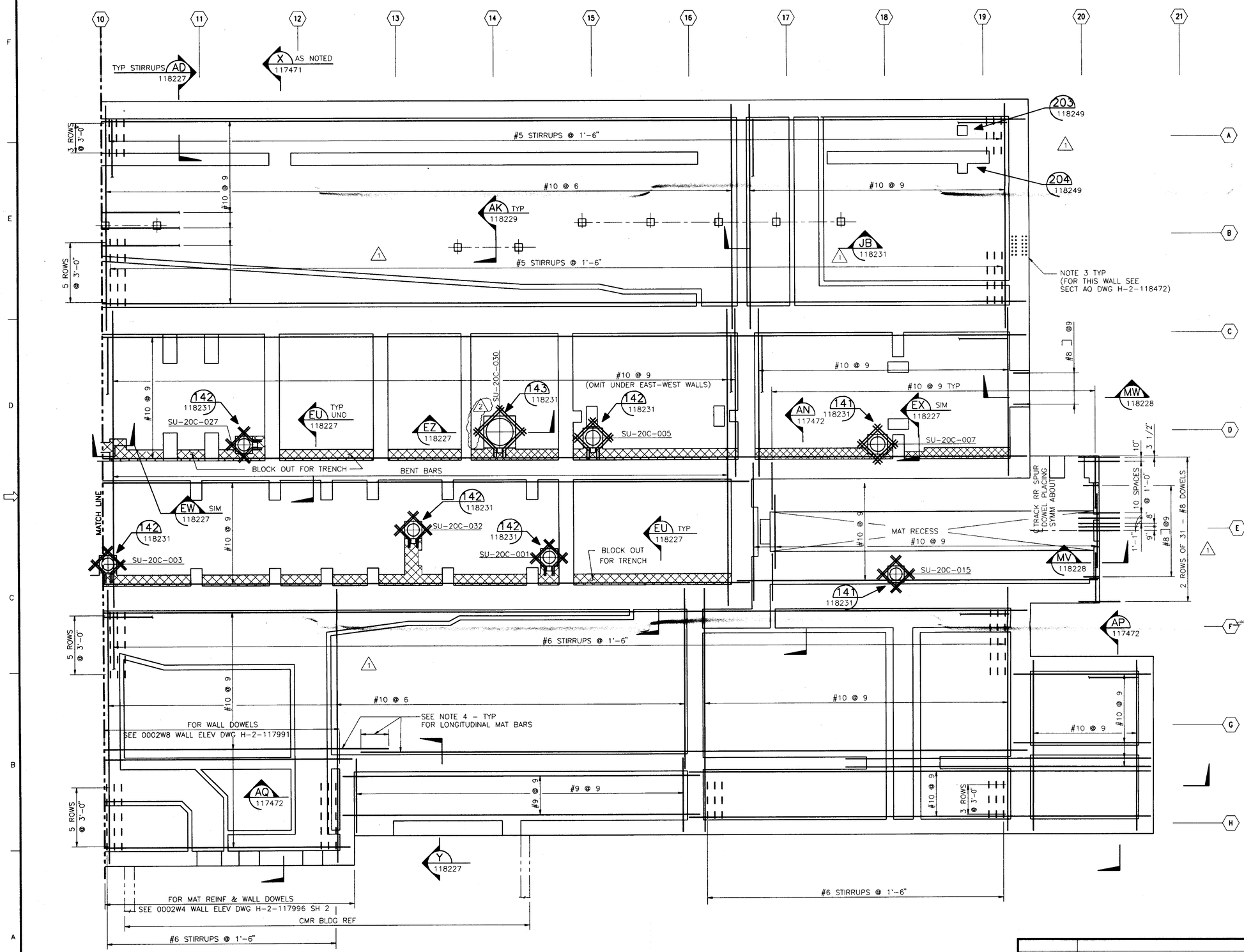
PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG. NO.	INDEX NO.
1/8"=1'-0"	1	

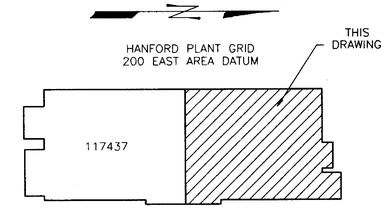
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117437	1	1	2

DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX
	REFERENCE DRAWINGS
NEXT USED ON	

DISTRIBUTION CODE: 103 S17 ACAD INITIALS: HK DATE: 09/09/93



TUNNEL PLAN – NORTH END
TOP REINF



NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

KEY PLAN
SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. ALL MAT TOP BARS THAT CROSS UNDER OR EXTEND UNDER WALL AREAS SHALL BE CONTINUOUS AT THE CENTER CANYON WALL AND ALL IN CELL WALLS. EXTERIOR AND OTHER WALLS MAY HAVE ALTERNATING BARS EXTENDING UNDER THE WALL AREA UNLESS NOTED OTHERWISE. SEE DRAWINGS H-2-117431 AND H-2-117432.
3. FOR WALL DOWELS SEE SECTIONS AND WALL ELEVATIONS.
4. USE LAP LENGTH PER SCHEDULE BELOW UNLESS OTHERWISE NOTED.

MAT TOP BAR LAPS				
BAR SIZE	#8	#9	#10	#11
LAP LENGTH	42"	52"	66"	80"

5. FOR TUNNEL FORMING PLAN SEE DRAWING H-2-117432.
6. INDICATES TRENCH BLOCKOUT AREA.

0 5 10 15 20 25 30 35 40
GRAPHIC SCALE
1/8" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV. NO.	DATE	REVISION DESCRIPTION				APPROVAL INITIALS
2	7/2/92	REVISION PER CR HWVP-1036, REMOVED TBD/HOLD HWVP-FD-211, DELETED PIERS. MINOR CHANGES	NA	NA	NA	NA/NA
1	2/25/93	REVISION PER CR HWVP-0929, REVISED TO RELEASE DESIGN ITEM 7 AND 18 PER TBD/HOLD HWVP-FD-211. ADDED EXHAUST DUCT WALLS, BLOCKOUTS AT RAILROAD WELL, CONC COLUMNS, AND SECT JB CALL OUT	RD	GK	MSW	NA/NA
0	11/12/92	APPROVED FOR CONSTRUCTION	RD	GK	RPK	NA/NA

CADFILE B117438A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERO. _____

U.S. DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993
DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

SIGNATURE	DATE
PROJ. DIR. NA	
G.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED R. DRILLER	11/11/92
DRAWN M. MURRAY	04/23/92

STRUCT VIT BLDG
TUNNEL MAT REINF PLAN
NORTH END TOP REINF

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG NO.	INDEX NO.
1/8" = 1'-0"	1	

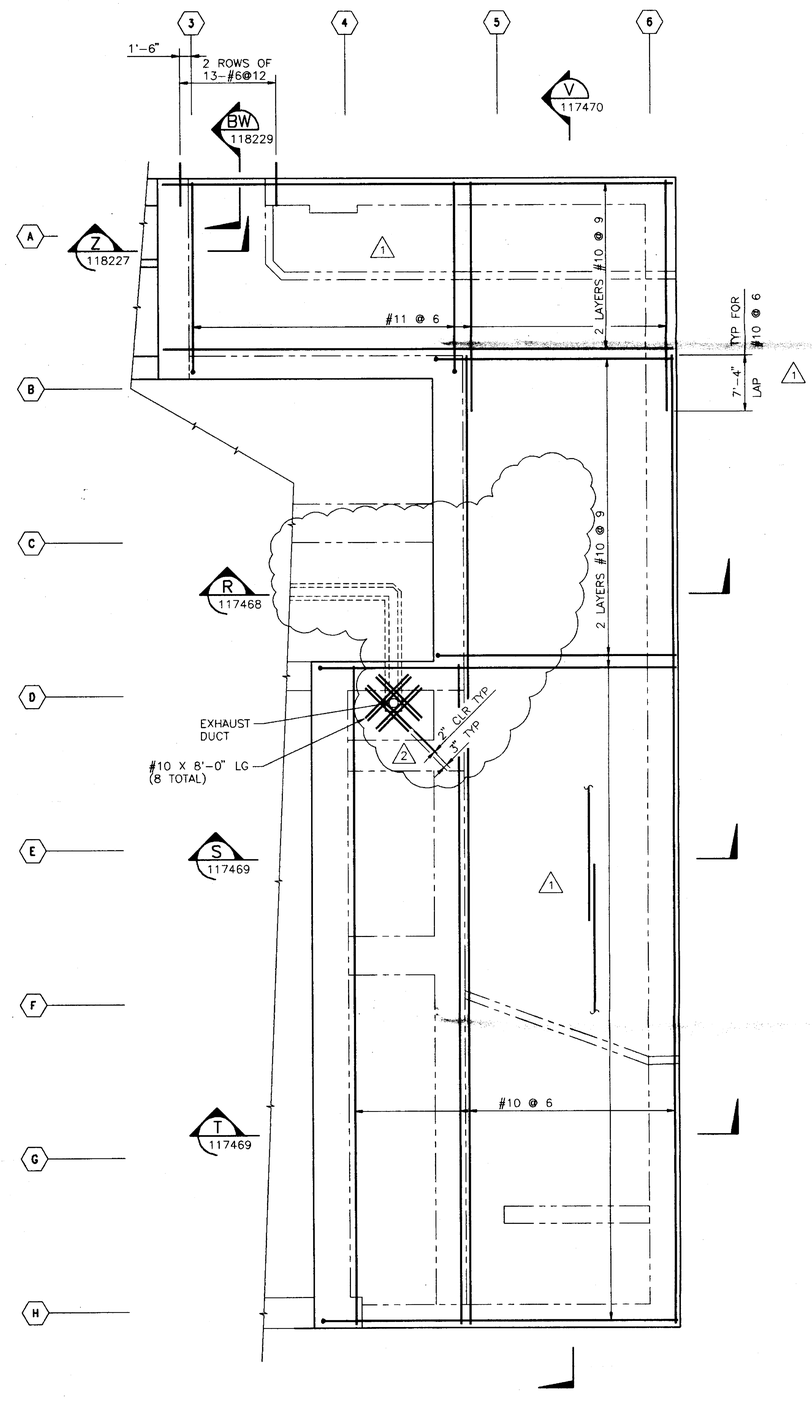
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117438	1	1	2

DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

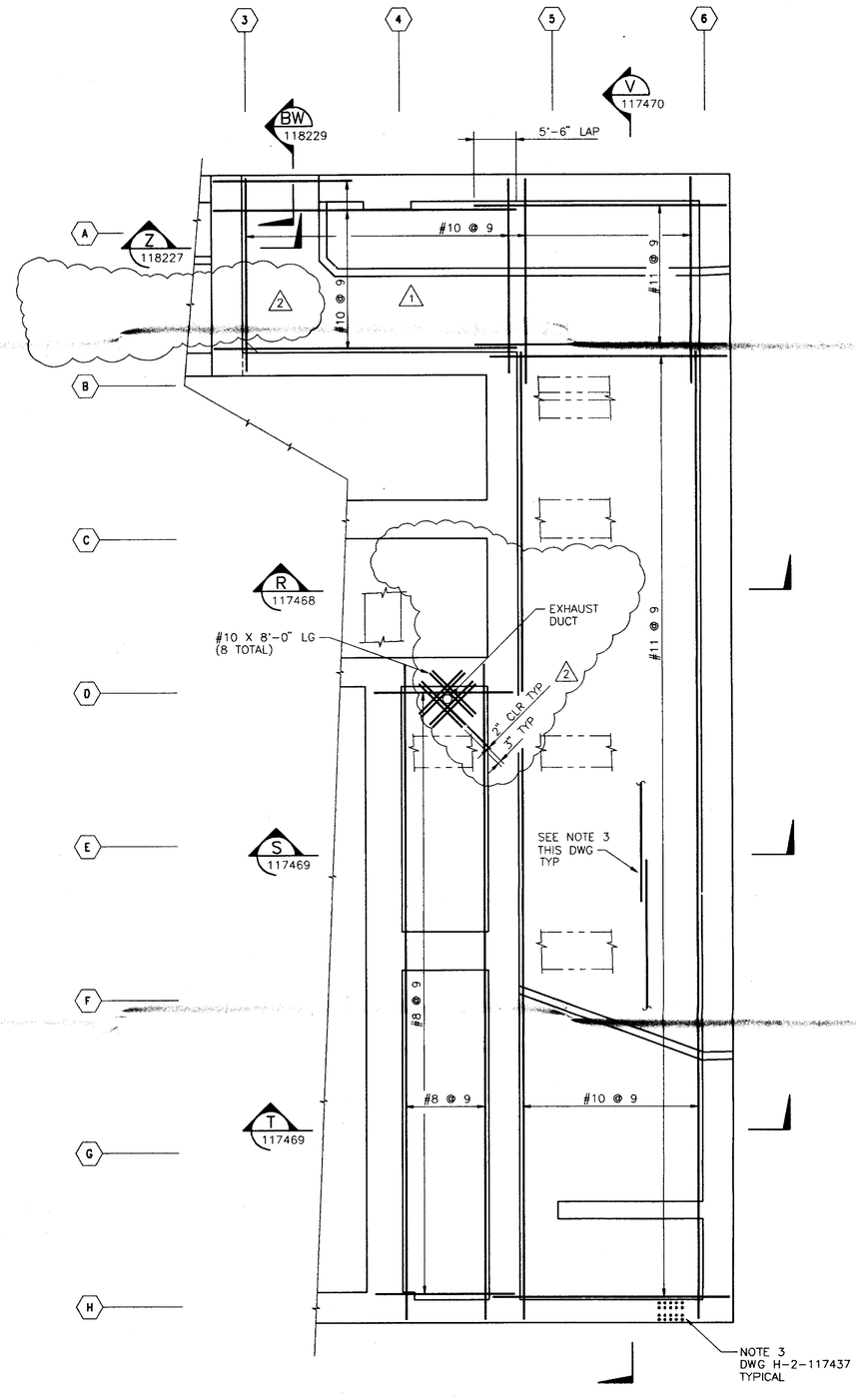
REFERENCE DRAWINGS
NEXT USED ON

DISTRIBUTION CODE: 103 S18 ACAD INITIALS: HK DATE: 09/09/93

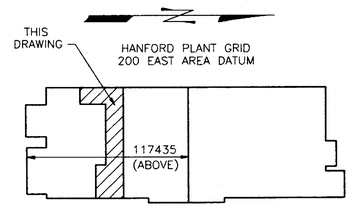
Sep 20 18:24:23 1993 P:\PLOTS\PA87642.PLT



PLAN – SOUTH END
TRANSVERSE TUNNEL MAT
BOT REINF



PLAN – SOUTH END
TRANSVERSE TUNNEL MAT
TOP REINF



NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

KEY PLAN
SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DWG H-2-117425.
2. — - - — INDICATES WALL ABOVE
3. USE LAP LENGTH PER SCHEDULES BELOW UNLESS NOTED OTHERWISE.

MAT TOP BAR LAPS				
BAR SIZE	#8	#9	#10	#11
LAP LENGTH	42"	52"	66"	80"

MAT BOTTOM BAR LAPS				
BAR SIZE	#8	#9	#10	#11
LAP LENGTH	39"	50"	63"	77"

4. FOR TUNNEL FORMING PLAN SEE DRAWING H-2-117431.

0 5 10 15 20 25 30 35 40
GRAPHIC SCALE
1/8" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
2	9/24/93	REVISION PER CR HWVP-1036. REMOVED TBD/HOLD HWVP-FD-250 PER DCN #000037. INCORPORATED DCNS #0014 &000037.	[illegible]	[illegible]	[illegible]	NA/NA
			NA	NA	NA	NA
1	3/1/93	REVISION PER CR HWVP-0929. REVISED TO RELEASE DESIGN ITEM 18 PER TBD/HOLD HWVP-FD-211. ADDED EXHAUST DUCT WALLS. REVISED BOT REINF.	RD	GK	MSW	NA/NA
			NA	NA	NA	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	RD	GK	RPK	NA/NA
			NA	NA	NA	NA

CADFILE B117439A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERO. _____

SIGNATURE	DATE
PROJ. DIR. NA	
Q.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED R. DRILLER	11/11/92
DRAWN M. MURRAY	04/21/92

U.S.DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993 DE – AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCT VIT BLDG
TRANSVERSE TUNNEL MAT
REINF PLAN

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

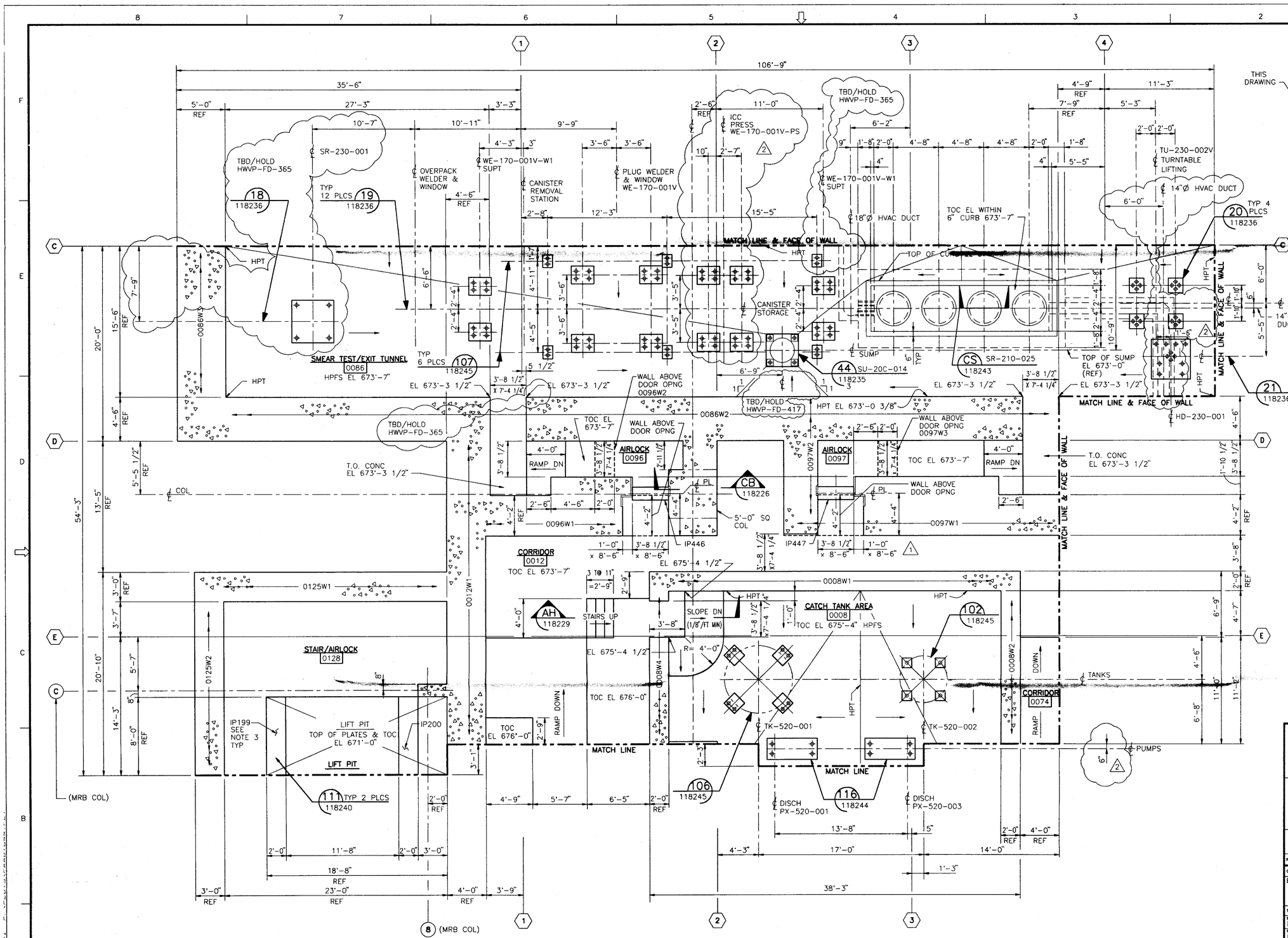
SCALE	BLDG. NO.	INDEX NO.
1/8" = 1'-0"	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117439	1	1	2

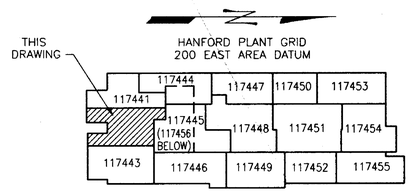
DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

REFERENCE DRAWINGS
NEXT USED ON

DISTRIBUTION CODE: 103 S19 ACAD INITIALS: HK DATE: 09/09/93



PLAN @ TOP OF CONCRETE MAT EL 676'-0"
UNLESS NOTED OTHERWISE



NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

KEY PLAN
SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. FOR TUNNEL FORMING PLANS SEE DRAWINGS H-2-117431 AND H-2-117432.
3. FOR INSERT PLATE SCHEDULE SEE DRAWING H-2-118239.
4. FOR WALL LOCATION PLAN AND DRAWING REFERENCE SEE DRAWING H-2-117939 SHEET 1.
5. FOR EQUIPMENT FOUNDATION SCHEDULE SEE DRAWING H-2-117458.

GRAPHIC SCALE
0 1 2 3 4 5 10 15 20
1/4" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
2	9/14/93	REVISION PER CR HWVP-1036, INCORPORATED DCN #0014, REMOVED TBD/HOLD HWVP-FD-211, ADDED TBD/HOLD HWVP-FD-365 & HWVP-FD-417, RELOCATED ANCHOR BOLTS, REVISED PUMP CENTERLINES.		Ej	mk	NA / NA
			NA	NA	NA	NA
1	2/25/93	REVISION PER CR HWVP-0929, REVISED TO RELEASE DESIGN ITEM 7 PER TBD/HOLD HWVP-FD-211, REVISED DIMENSIONS AND ADDED WALLS ABOVE DOOR OPENINGS AT AIRLOCK 0096 AND 0097	RD	GK	MSW	NA / NA
			NA	NA	NA	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	JT	GK	RPK	NA / NA
			NA	NA	NA	NA

CADFILE B117442A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERO. _____

SIGNATURE	DATE
PROJ. DIR. NA	
G.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED J. TAHARA	11/11/92
DRAWN V. KOLDRE	05/14/92

DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

REFERENCE DRAWINGS
NEXT USED ON

U.S. DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993
DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCTURAL
VIT BLDG
TUNNEL FLOOR PLAN

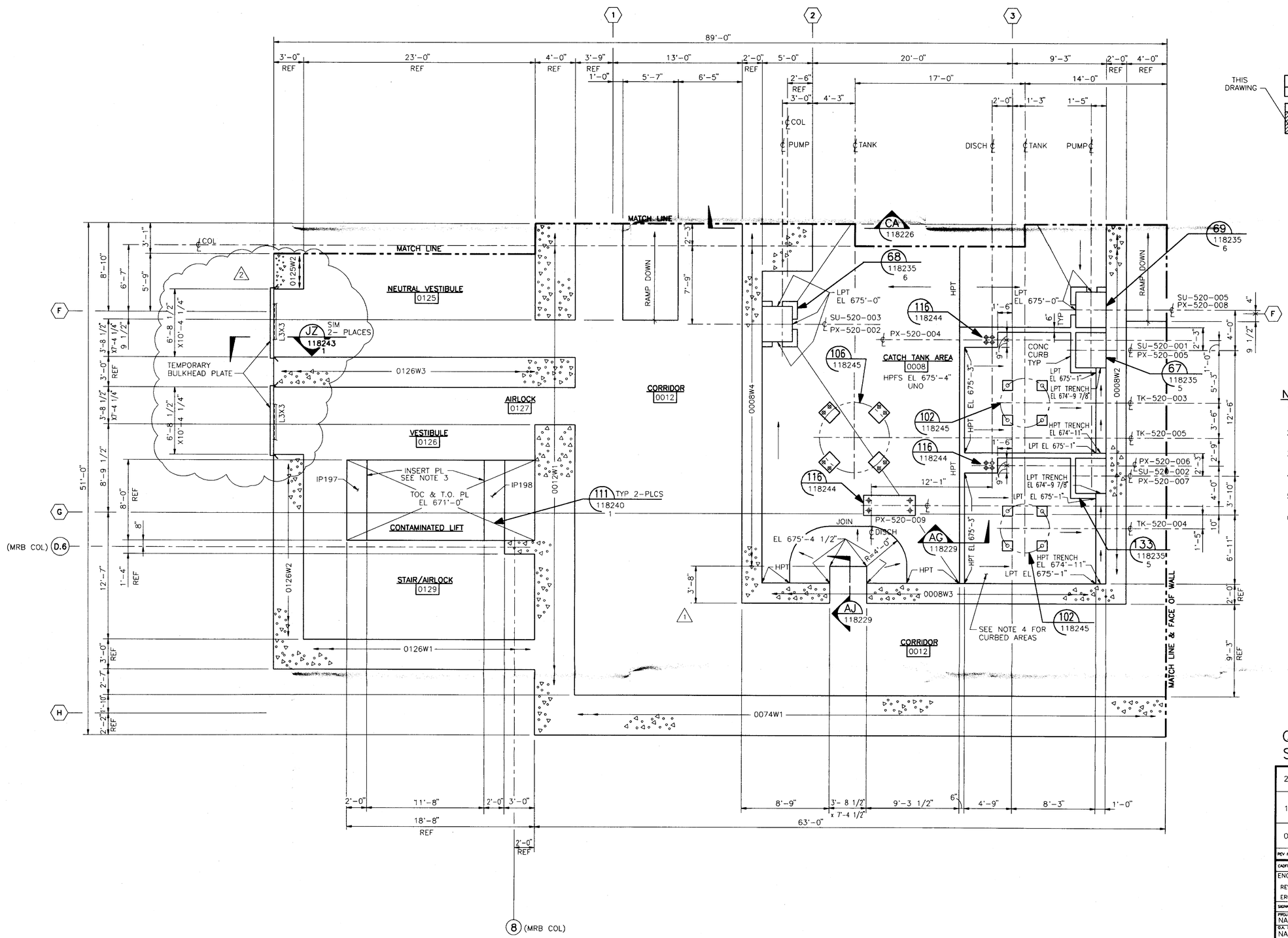
PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117442	1	1	2

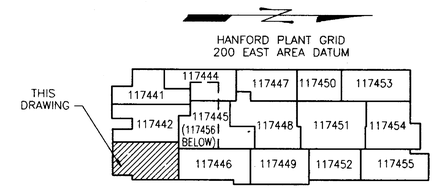
PROJECT B-595 | FLUOR CONTRACT NO. 8457 | CWBS NO. B210A
SCALE 1/4" = 1'-0" | BLDG. NO. 1 | INDEX NO.

H-2-117442 2 10A R. 2

DISTRIBUTION CODE: 103 S21 ACAD INITIALS: CBW DATE: 09/15/93



PLAN @ TOP OF CONCRETE MAT EL 676'-0"
UNLESS NOTED OTHERWISE
SEE NOTE 4.



NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

KEY PLAN
SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. FOR TUNNEL FORMING PLANS SEE DRAWINGS H-2-117431 AND H-2-117432.
3. FOR INSERT PLATE SCHEDULE SEE DRAWING H-2-118239.
4. FOR LINER PLATE DETAILS SEE DRAWING H-2-118286 SH 1 & 2.
5. FOR WALL LOCATION PLAN AND DRAWING REF SEE DWG H-2-117939 SH 1.
6. FOR EQUIPMENT FOUNDATION SCHEDULE SEE DWG H-2-117458.

0 1 2 3 4 5 10 15 20
GRAPHIC SCALE
1/4" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV. NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
2	9/9/93	REVISION PER CR HWVP-1036, INCORPORATE DCN #0015	NA	NA	NA	NA
1	3/1/93	REVISION PER CR HWVP-0929, REVISED DOOR STOOP DIMENSION AT SECT AJ	RD	GK	MSW	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	JT	GK	RPK	NA

CADFILE B117443A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERD. _____

SIGNATURE	DATE
PROJ. DIR. NA	
Q.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED J. TAHARA	11/11/92
DRAWN H. KANO	05/12/92

U.S.DEPARTMENT OF ENERGY
SEP 24 1993 Richland Field Office
DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCTURAL
VIT BLDG
TUNNEL FLOOR PLAN

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG. NO.	INDEX NO.
1/4" = 1'-0"	1	

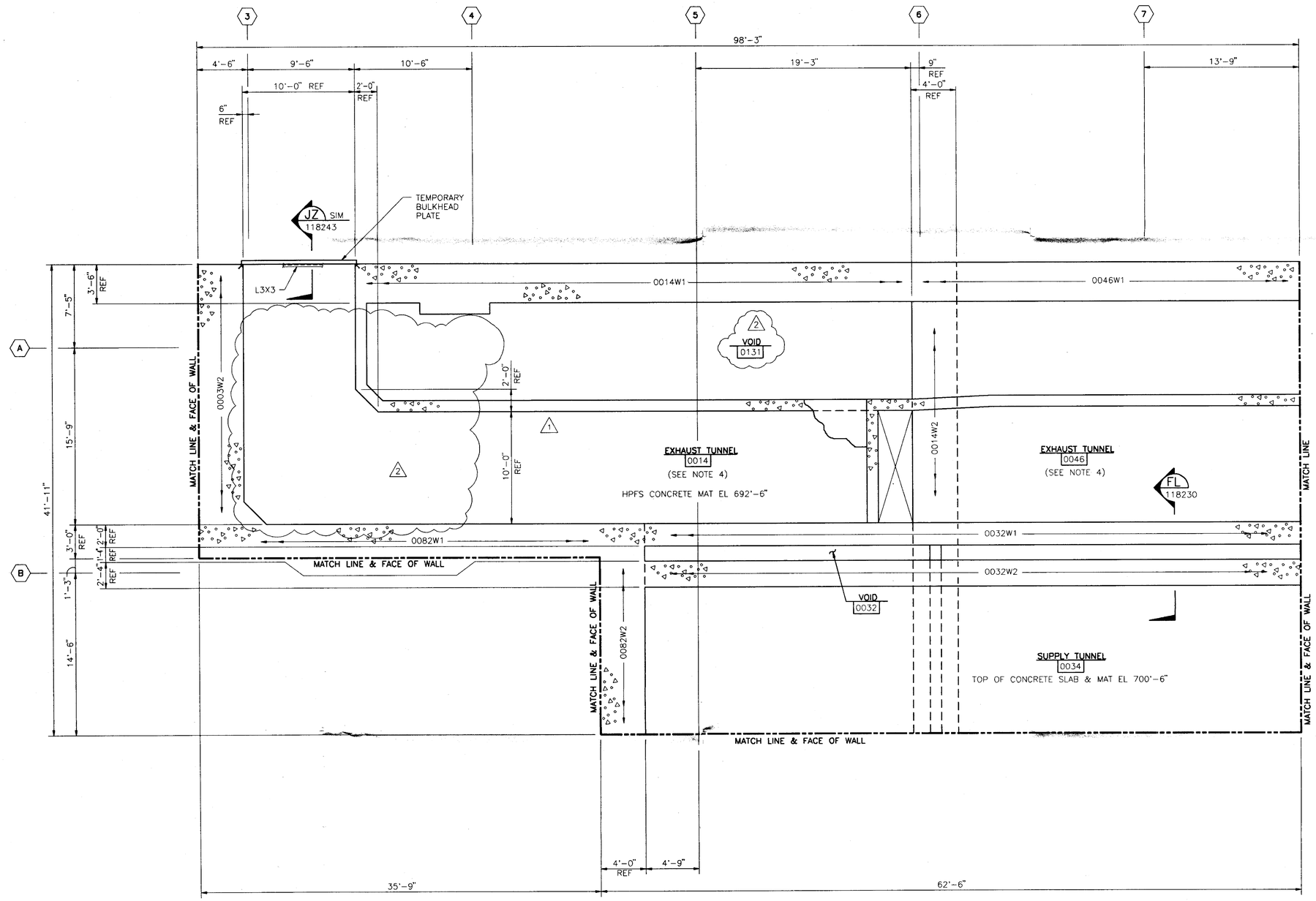
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117443	1	1	2

DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

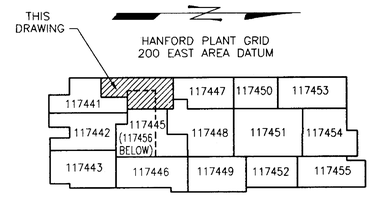
REFERENCE DRAWINGS
NEXT USED ON

DISTRIBUTION CODE: 103 S22 ACAD INITIALS: HK DATE: 09/09/93

2 1 0 A H-2-117443 R 2



PLAN @ TOP OF CONCRETE MAT EL 701'-0"
UNLESS NOTED OTHERWISE



NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

KEY PLAN
SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. FOR TUNNEL FORMING PLANS SEE DRAWINGS H-2-117431 AND H-2-117432.
3. FOR WALL LOCATION PLAN AND DRAWING REFERENCE SEE DRAWING H-2-117939 SH 1.
4. (1) FOR EXHAUST TUNNEL FORMING DIMENSIONS, SS LINER AND EMBEDS REFER TO DRAWING H-2-118283 SH 1 THRU 7, H-2-118284 SH 1 THRU 8 AND H-2-118285 SHT 1 THRU 6.

0 1 2 3 4 5 10 15 20
GRAPHIC SCALE
1/4" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV NO.	DATE	REVISION DESCRIPTION				APPROVAL INITIALS	
2	9/24/93	REVISION PER CR HWVP-1036, REMOVED TBD/HOLD HWVP-FD-211, REMOVED TBD/HOLD HWVP-FD-249 PER DCN #000037, ADDED ROOM 0131 CALLOUT & MINOR CHANGES.	JT	GK	RPK	NA	NA
			NA	NA	NA	NA	
1	3/1/93	REVISION PER CR HWVP-0929, REVISE TO RELEASE DESIGN ITEM 18 PER TBD/HOLD HWVP-FD-211. ADDED EXHAUST DUCT WALLS AND NOTE 4	MC	GK	MSW	NA	NA
			NA	NA	NA	NA	
0	11/12/92	APPROVED FOR CONSTRUCTION	JT	GK	RPK	NA	NA
			NA	NA	NA	NA	

CADFILE B117444A
CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERD. _____

SIGNATURE	DATE
PROJ. DIR. NA	
D.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED J. TAHARA	11/11/92
DRAWN V. KOLDRE	05/12/92

U.S. DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993
DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCTURAL
VIT BLDG
TUNNEL FLOOR PLAN

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG. NO.	INDEX NO.
1/4" = 1'-0"	1	

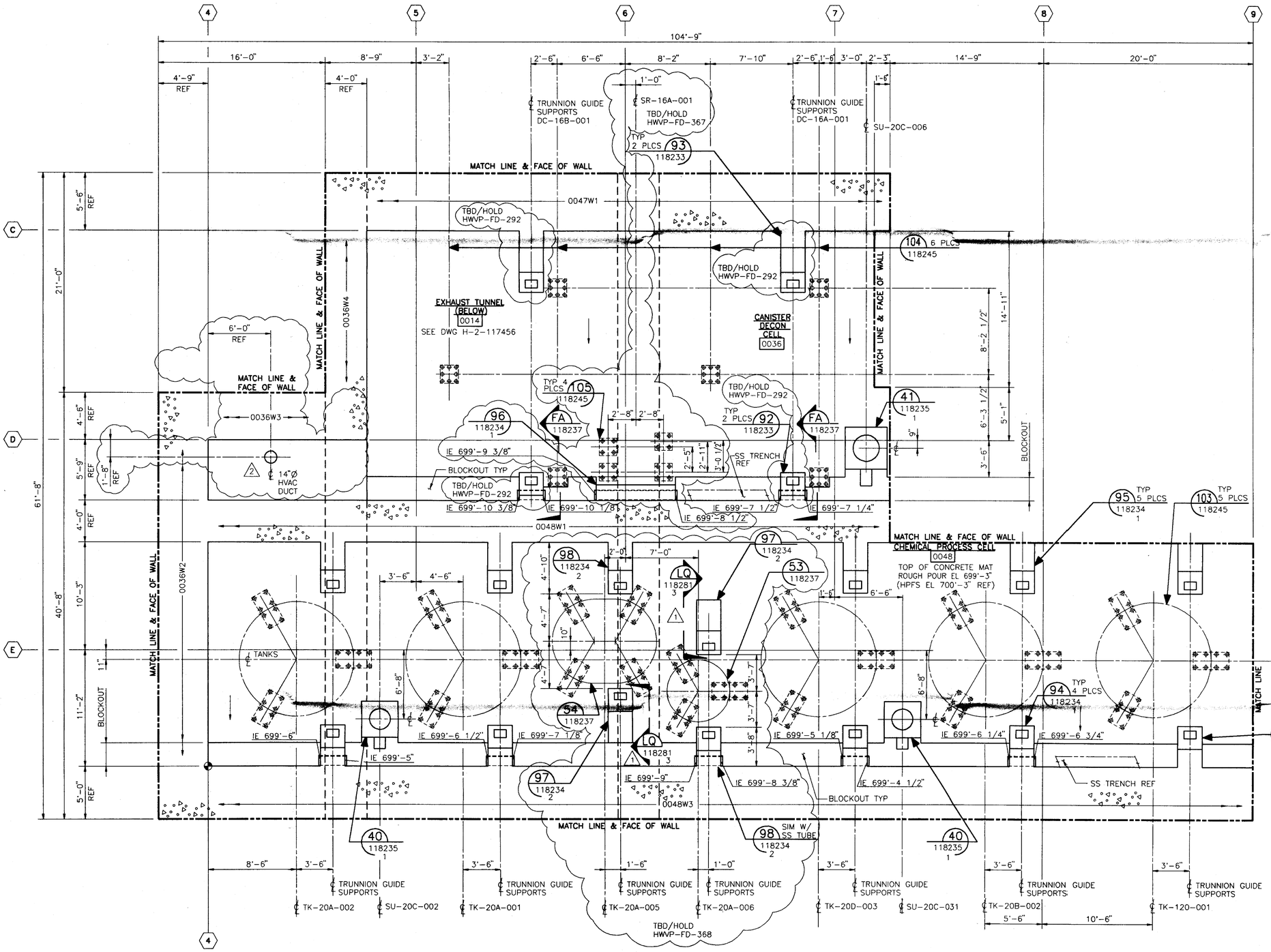
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117444	1	1	2

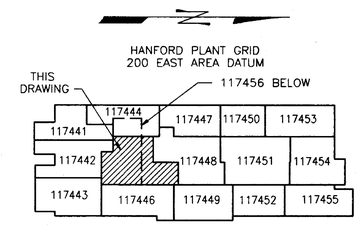
DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

REFERENCE DRAWINGS
NEXT USED ON

2 1 0 A H-2-117444 2 1 1 R 2

DISTRIBUTION CODE: 103 S23 ACAD INITIALS: HK DATE: 09/09/93





NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

KEY PLAN
SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. FOR TUNNEL FORMING PLANS SEE DRAWINGS H-2-117431 AND H-2-117432.
3. FOR EQUIPMENT FOUNDATION SCHEDULE SEE DRAWING H-2-117458.
4. FOR WALL LOCATION PLAN AND DRAWING REFERENCE SEE DRAWING H-2-117939 SH 1.

0 1 2 3 4 5 10 15 20
GRAPHIC SCALE
1/4" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS				
2	9/14/93	REVISION PER CR HWVP-1036, INCORPORATED DCN #0014, ADDED TBD/HOLD HWVP-FD-367 & 368 PER CR-HWVP-0962.	HB	[illegible]	[illegible]	NA	NA
			NA	NA	NA	NA	
1	7/14/93	REVISION PER CR HWVP-0972 ADDED TBD/HOLD HWVP-FD-292 PER CR HWVP-0967, ADDED SECTION LQ CALLOUT	HB	GK	MSW	NA	NA
			NA	NA	NA	NA	
0	11/12/92	APPROVED FOR CONSTRUCTION	CBW	GK	RPK	NA	NA
			NA	NA	NA	NA	

CADFILE B117445A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERO. _____

SIGNATURE	DATE
PROJ. DIR. NA	
G.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED C. B. WINFREY	11/11/92
DRAWN A. IZURIETA	06/16/92

U.S. DEPARTMENT OF ENERGY
SEP 24 1993
Richland Field Office
DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCTURAL
VIT BLDG
TUNNEL FLOOR PLAN

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLOOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG NO.	INDEX NO.
1/4" = 1'-0"	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117445	1	1	2

DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX
REFERENCE DRAWINGS	
NEXT USED ON	

LEGEND

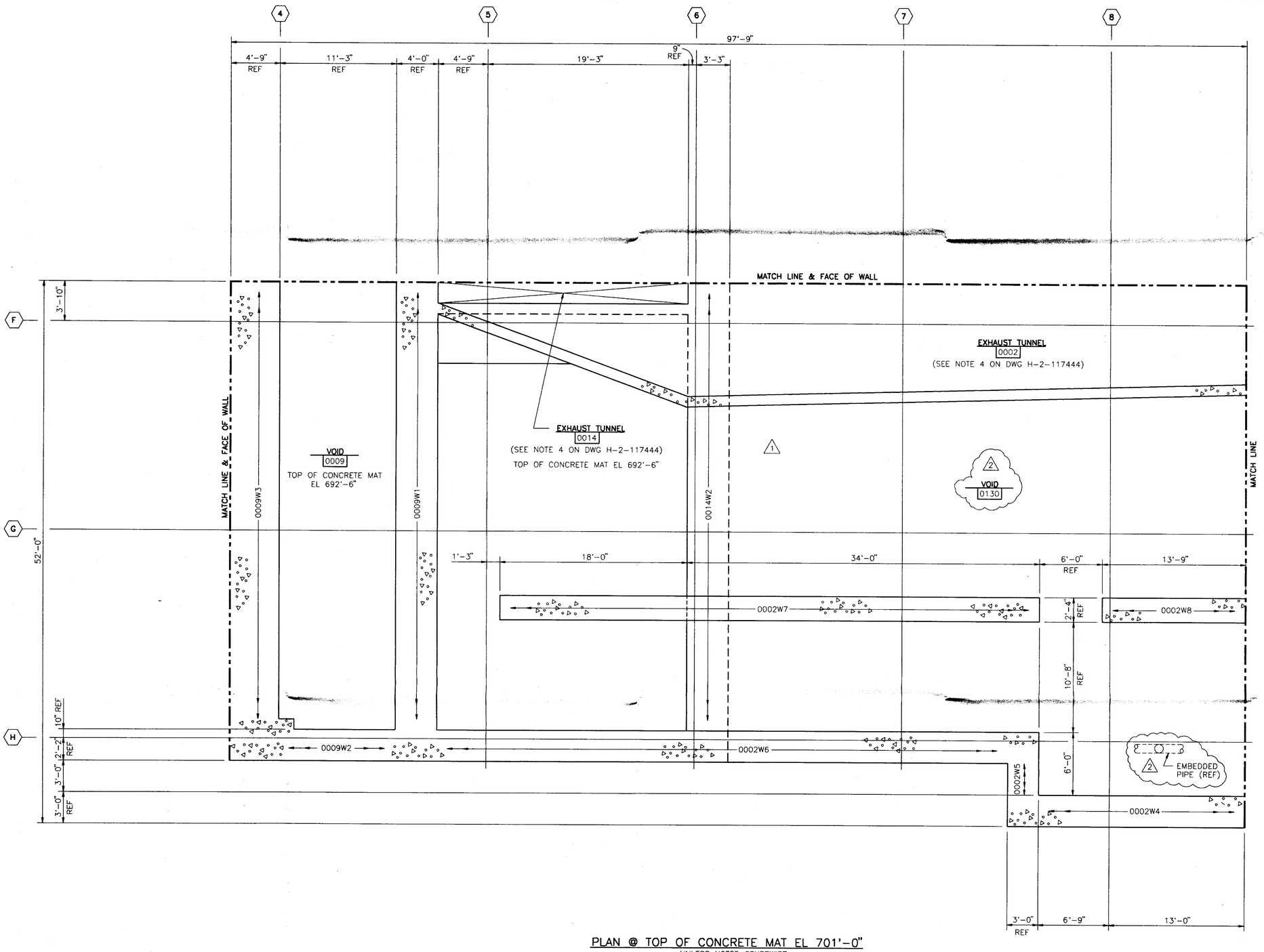
STEEL EQUIP SUPT PAD

PLAN @ TOP OF CONCRETE MAT-ROUGH POUR EL 699'-6" (HPFS EL 700'-6" REF)
UNLESS NOTED OTHERWISE

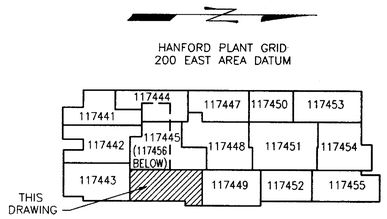
210A H-2-117445 2 1 R 2

DISTRIBUTION CODE: 103 S24 ACAD INITIALS: HK DATE: 09/09/93

Mon Sep 20 18:37:05 1993 P:\CAD1 P:\PLOTS\PAAB7847.PLT



PLAN @ TOP OF CONCRETE MAT EL 701'-0"
UNLESS NOTED OTHERWISE



NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

KEY PLAN
SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. FOR TUNNEL FORMING PLANS SEE DRAWINGS H-2-117431 AND H-2-117432.
3. FOR WALL LOCATION PLAN AND DRAWING REFERENCE SEE DRAWING H-2-117939 SH 1.

0 1 2 3 4 5 10 15 20
GRAPHIC SCALE
1/4" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV. NO.	DATE	REVISION DESCRIPTION				
2	8/31/93	REVISION PER CR HWVP-1036. REMOVED TBD/HOLD HWVP-FD-211. ADDED EMBED PIPE, ROOM 0130 CALLOUT. MINOR CHANGES.	JT	GK	MSW	NA / NA
			NA	NA	NA	NA
1	3/1/93	REVISION PER CR HWVP-0929. REVISE TO RELEASE DESIGN ITEM 18 PER TBD/HOLD HWVP-FD-211. ADDED EXHAUST DUCT WALLS AND NOTE 4	RD	GK	MSW	NA / NA
			NA	NA	NA	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	JT	GK	RPK	NA / NA
			NA	NA	NA	NA

APPROVAL INITIALS

CADFILE B117446A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERD. _____

SIGNATURE	DATE
PROJ. DIR. NA	
Q.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER C. KUILANOFF	11/11/92
CHECKED J. TAHARA	11/11/92
DRAWN V. KOLDRE	06/04/92

U.S. DEPARTMENT OF ENERGY
SEP 24 1993
Richland Field Office
DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCTURAL
VIT BLDG
TUNNEL FLOOR PLAN

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG. NO.	INDEX NO.
1/4" = 1'-0"	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117446	1	1	2

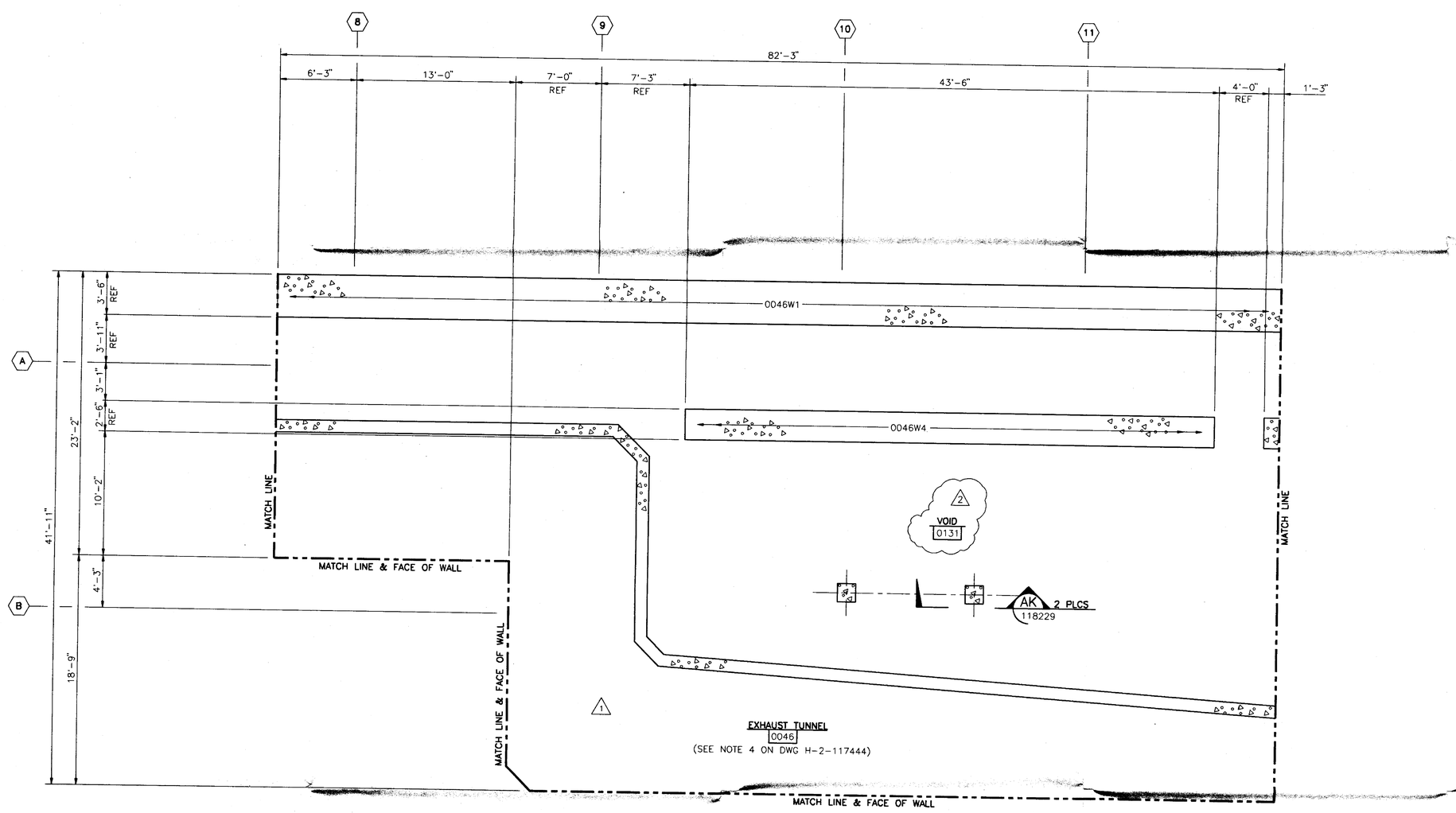
DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

REFERENCE DRAWINGS

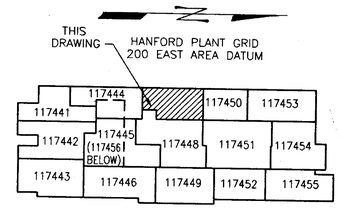
NEXT USED ON

DISTRIBUTION CODE: 103 S25 ACAD INITIALS: HK DATE: 09/15/93

Mon Sep 20 18:39:54 1993 P:\CAD1 P:\PLOTS\PAA87848.PLT



PLAN @ TOP OF CONCRETE EL 701'-0"
UNLESS NOTED OTHERWISE



NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

KEY PLAN
SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. FOR TUNNEL FORMING PLANS SEE DRAWINGS H-2-117431 AND H-2-117432.
3. FOR WALL LOCATION PLAN AND DRAWING REFERENCE SEE DRAWING H-2-117939 SH 1.

0 1 2 3 4 5 10 15 20
GRAPHIC SCALE
1/4" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
2	11/11/93	REVISION PER CR HWVP-1036. REMOVED TBD/HOLD HWVP-FD-211, ADDED ROOM 0131 CALLOUT AND MINOR CHANGES		EG		NA/NA
			NA	NA	NA	NA
1	3/1/93	REVISION PER CR HWVP-0929, REVISED TO RELEASE DESIGN ITEM 18 PER TBD/HOLD HWVP-FD-211, ADDED EXHAUST DUCT WALLS	RD	GK	MSW	NA/NA
			NA	NA	NA	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	JT	GK	RPK	NA/NA
			NA	NA	NA	NA

CADFILE B117447A
CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERO. _____

SIGNATURE	DATE
PROJ. DIR. NA	
Q.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED J. TAHARA	11/11/92
DRAWN H. KANO	06/04/92

U.S.DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993 DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCTURAL
VIT BLDG
TUNNEL FLOOR PLAN

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT

PROJECT	FLUOR CONTRACT NO.	CWBS NO.
B-595	8457	B210A

SCALE	BLDG. NO.	INDEX NO.
1/4" = 1'-0"	1	

CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV.
NONE	NOT REQ'D	H-2-117447	1	1	2

DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

REFERENCE DRAWINGS

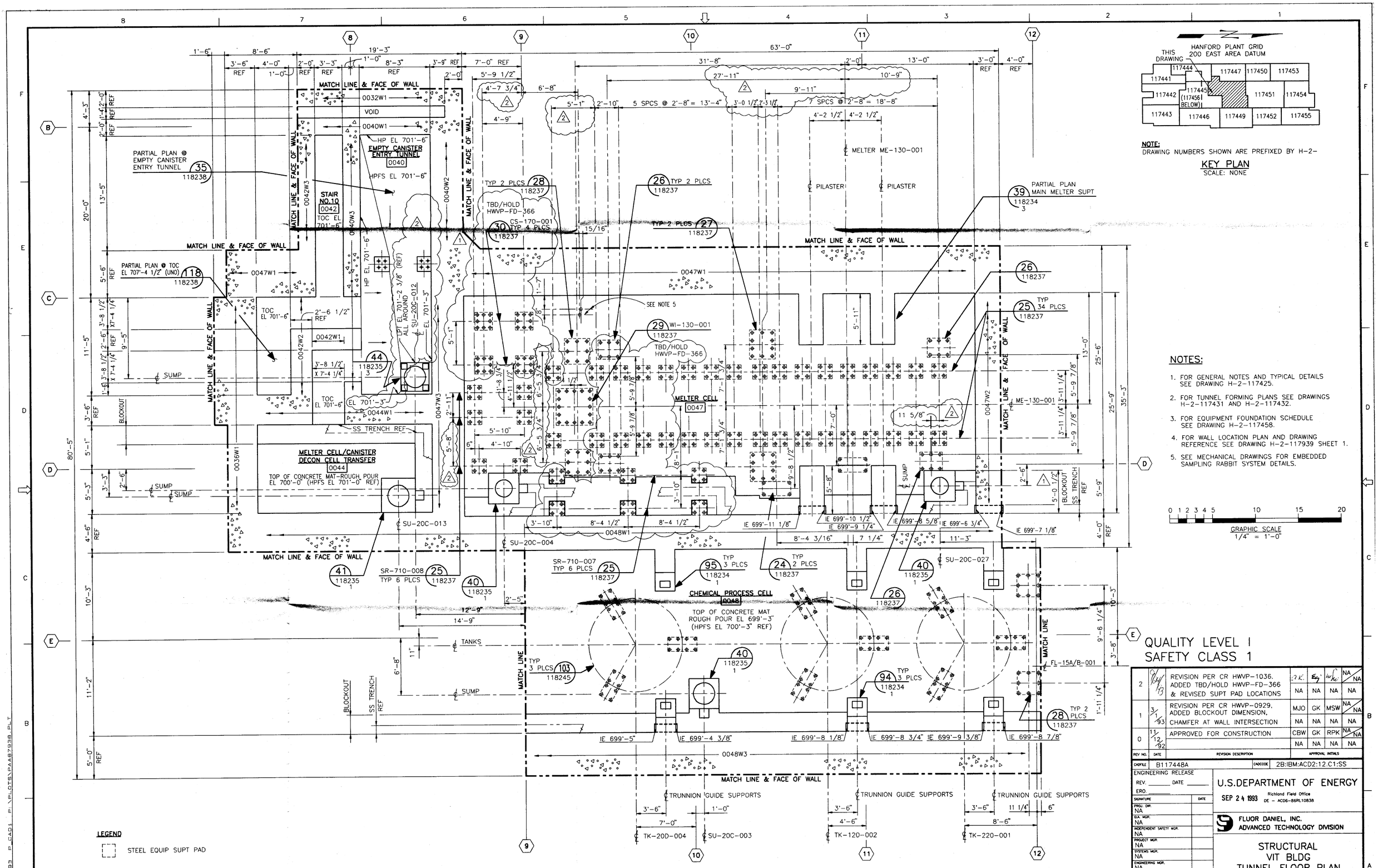
NEXT USED ON

210A H-2-117447 2 1 1 R 2

DISTRIBUTION CODE: 103 S26 ACAD

INITIALS: HK
DATE: 09/09/93

Mon Sep 20 18:42:11 1993 P:\CAD1 P:\PLOTS\PAA87849.PLT



PLAN @ TOP OF CONCRETE MAT-ROUGH POUR EL 699'-6" (HPFS EL 700'-6" REF)
UNLESS NOTED OTHERWISE

NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

KEY PLAN
SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. FOR TUNNEL FORMING PLANS SEE DRAWINGS H-2-117431 AND H-2-117432.
3. FOR EQUIPMENT FOUNDATION SCHEDULE SEE DRAWING H-2-117458.
4. FOR WALL LOCATION PLAN AND DRAWING REFERENCE SEE DRAWING H-2-117939 SHEET 1.
5. SEE MECHANICAL DRAWINGS FOR EMBEDDED SAMPLING RABBIT SYSTEM DETAILS.

0 1 2 3 4 5 10 15 20
GRAPHIC SCALE
1/4" = 1'-0"

QUALITY LEVEL 1
SAFETY CLASS 1

REV. NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS				
2	9/24/93	REVISION PER CR HWVP-1036. ADDED TBD/HOLD HWVP-FD-366 & REVISED SUPT PAD LOCATIONS	D.K.	Eg	[illegible]	NA/NA	
			NA	NA	NA	NA	
1	3/1/93	REVISION PER CR HWVP-0929. ADDED BLOCKOUT DIMENSION, CHAMFER AT WALL INTERSECTION	MJO	GK	MSW	NA/NA	
			NA	NA	NA	NA	
0	11/12/92	APPROVED FOR CONSTRUCTION	CBW	GK	RPK	NA/NA	
			NA	NA	NA	NA	

CADFILE B117448A CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERO. _____

SIGNATURE	DATE
PROJ. DIR. NA	
Q.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED C. B. WINFREY	11/11/92
DRAWN A. IZURIETA	05/28/92

U.S.DEPARTMENT OF ENERGY
SEP 24 1993 Richland Field Office DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCTURAL
VIT BLDG
TUNNEL FLOOR PLAN

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT
PROJECT: B-595 | FLUOR CONTRACT NO.: 8457 | CWBS NO.: B210A
SCALE: 1/4" = 1'-0" | BLDG. NO.: 1 | INDEX NO.:
CLASSIFICATION: NONE | BY: NOT REQ'D | DRAWING NUMBER: H-2-117448 | SHEET 1 | OF 1 | REV. 2

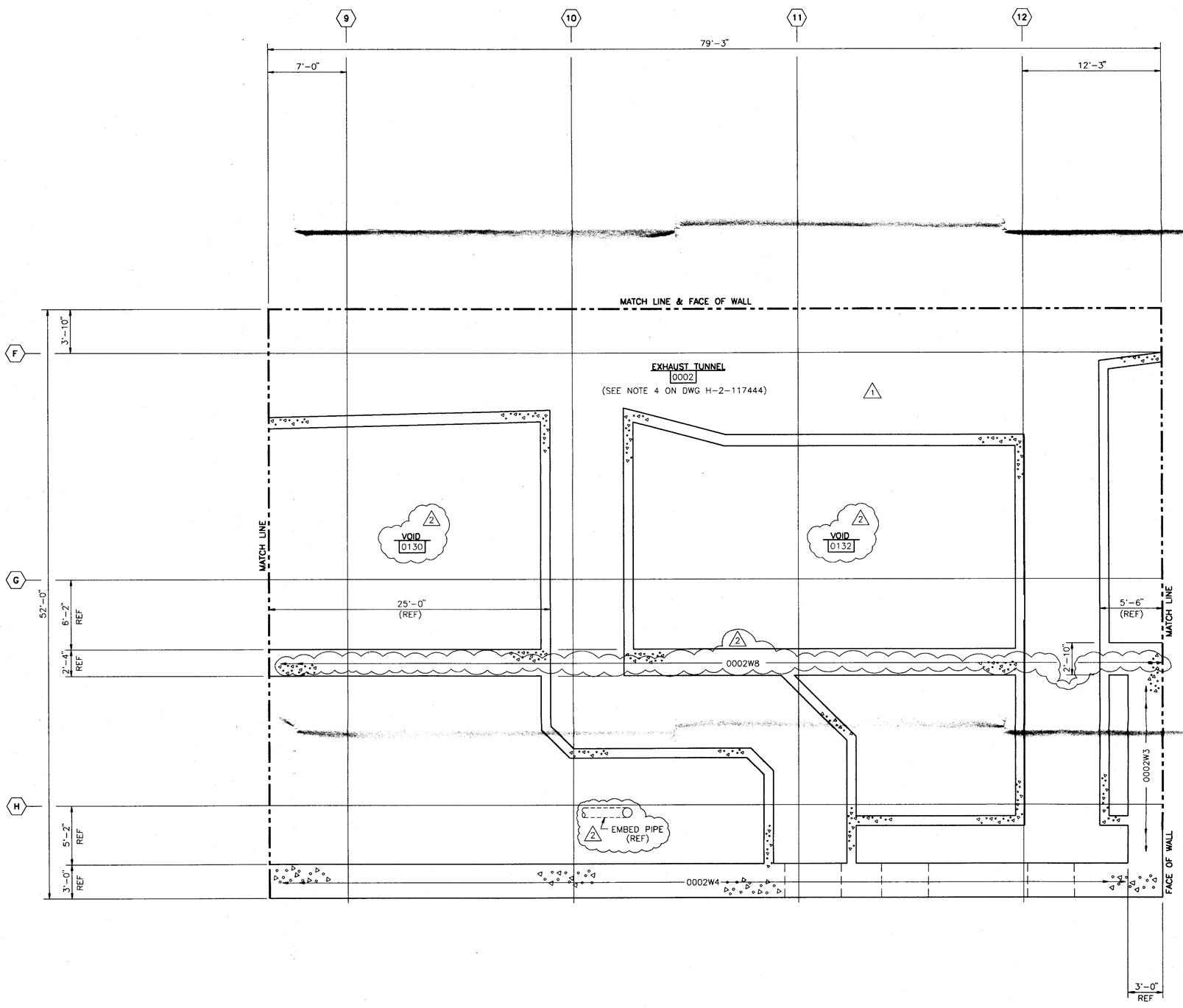
DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

REFERENCE DRAWINGS
NEXT USED ON

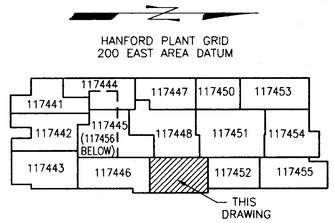
2 1 0 A H-2-117448 2 1 1 R 2

DISTRIBUTION CODE: 103 S27 ACAD INITIALS: D.S. DATE: 09/09/93

Mon SEP 20 21:29:55 1993 P:\CAD1 P:\PLOTS\PAA87938.PLT



PLAN @ TOP OF CONCRETE EL 701'-0"
UNLESS NOTED OTHERWISE



NOTE:
DRAWING NUMBERS SHOWN ARE PREFIXED BY H-2-

KEY PLAN
SCALE: NONE

NOTES:

1. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING H-2-117425.
2. FOR TUNNEL FORMING PLANS SEE DRAWINGS H-2-117431 AND H-2-117432.
3. FOR WALL LOCATION PLAN AND DRAWING REFERENCE SEE DRAWING H-2-117939 SH 1.

0 1 2 3 4 5 10 15 20
GRAPHIC SCALE
1/4" = 1'-0"

QUALITY LEVEL I
SAFETY CLASS 1

REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
2	9/24/93	REVISION PER CR HWVP-1036. REMOVED TBD/HOLD HWVP-FD-211. ADDED EMBED PIPE, ROOM 0130 & 0132 CALLOUTS. MINOR CHANGES	A.K.	Eg	[illegible]	NA / NA
			NA	NA	NA	NA
1	3/1/93	REVISION PER CR HWVP-0929, REVISED TO RELEASE DESIGN ITEM 18 PER TBD/HOLD HWVP-FD-211. ADDED EXHAUST DUCT WALLS	EA	GK	MSW	NA / NA
			NA	NA	NA	NA
0	11/12/92	APPROVED FOR CONSTRUCTION	CBW	GK	RPK	NA / NA
			NA	NA	NA	NA

CADFILE B117449A — CADCODE 2B:IBM:ACD2:12.C1:SS

ENGINEERING RELEASE
REV. _____ DATE _____
ERO. _____

SIGNATURE	DATE
PROJ. DIR. NA	
Q.A. MGR. NA	
INDEPENDENT SAFETY MGR. NA	
PROJECT MGR. NA	
SYSTEMS MGR. NA	
ENGINEERING MGR. NA	
SUPERVISOR R. P. KUMAR	11/11/92
DESIGN ENGINEER G. KUILANOFF	11/11/92
CHECKED C. B. WINFREY	11/11/92
DRAWN D. STEPHENS	05/13/92

U.S.DEPARTMENT OF ENERGY
Richland Field Office
SEP 24 1993 DE - AC06-86RL10838

FLUOR DANIEL, INC.
ADVANCED TECHNOLOGY DIVISION

STRUCTURAL
VIT BLDG
TUNNEL FLOOR PLAN

PROJECT TITLE: HANFORD WASTE VITRIFICATION PLANT
PROJECT: B-595 — FLUOR CONTRACT NO.: 8457 — CWBS NO.: B210A
SCALE: 1/4"=1'-0" — BLDG. NO.: 1 — INDEX NO.:
CLASSIFICATION: NONE — BY: NOT REQ'D — DRAWING NUMBER: H-2-117449 — SHEET 1 OF 1 — REV. 2

DWG. NO.	DRAWING TITLE
H-2-117426	TUNNEL CONFIG PLAN & DWG INDEX

REFERENCE DRAWINGS
NEXT USED ON

DISTRIBUTION CODE: 103 — S28 — ACAD — INITIALS: HK — DATE: 09/09/93