

SANDIA REPORT

SAND96-1326/2 • UC-721

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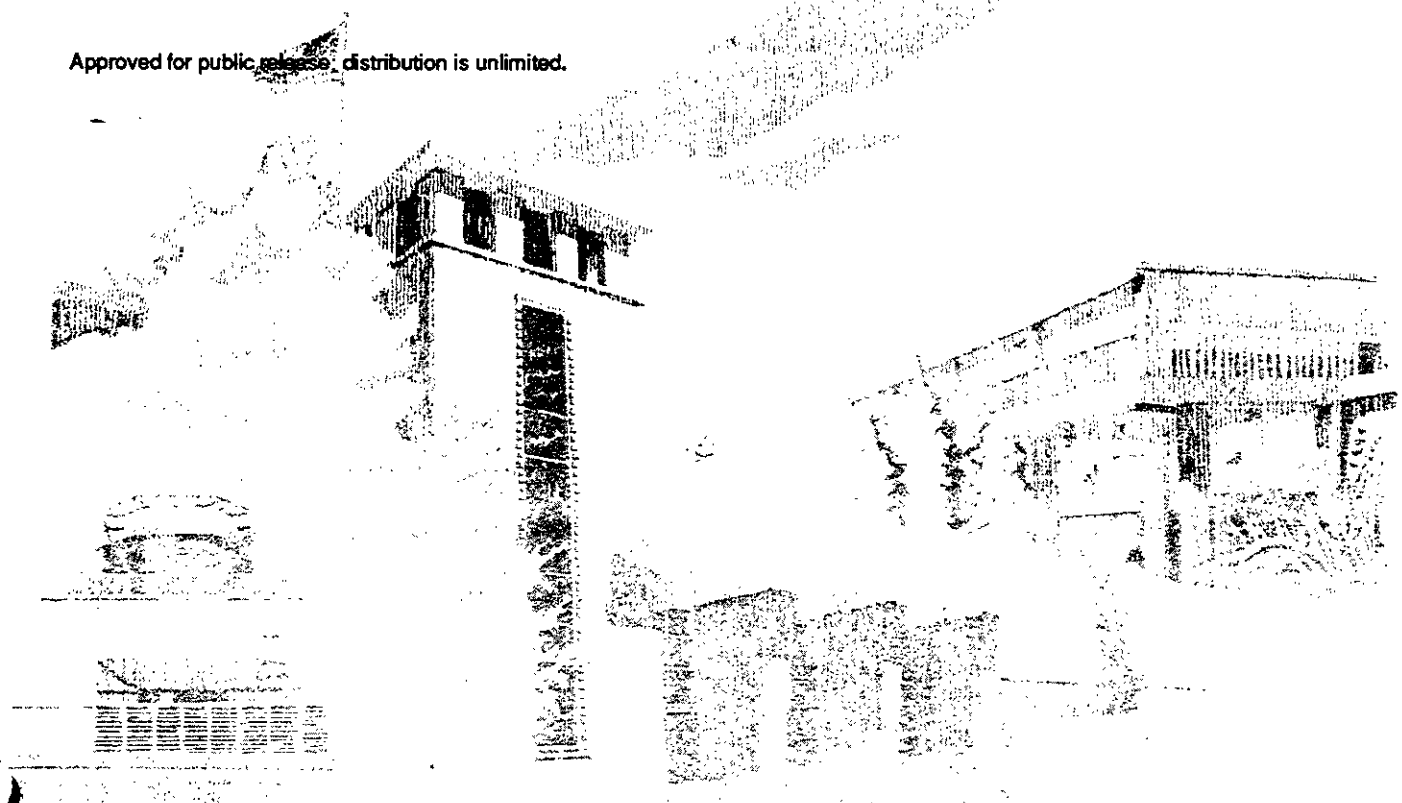
Waste Isolation Pilot Plant Shaft Sealing System Compliance Submittal Design Report

Volume 2 of 2: Appendix E

Repository Isolation Systems Department

Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185 and Livermore, California 94550
for the United States Department of Energy
under Contract DE-AC04-94AL85000

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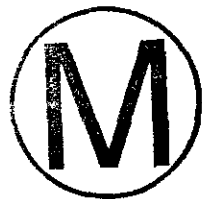
**Waste Isolation Pilot Plant
Shaft Sealing System
Compliance Submittal Design Report**

**Volume 2 of 2:
Appendix E**

Repository Isolation Systems Department
Sandia National Laboratories
Albuquerque, NM 87185

ABSTRACT

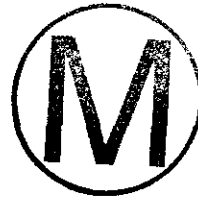
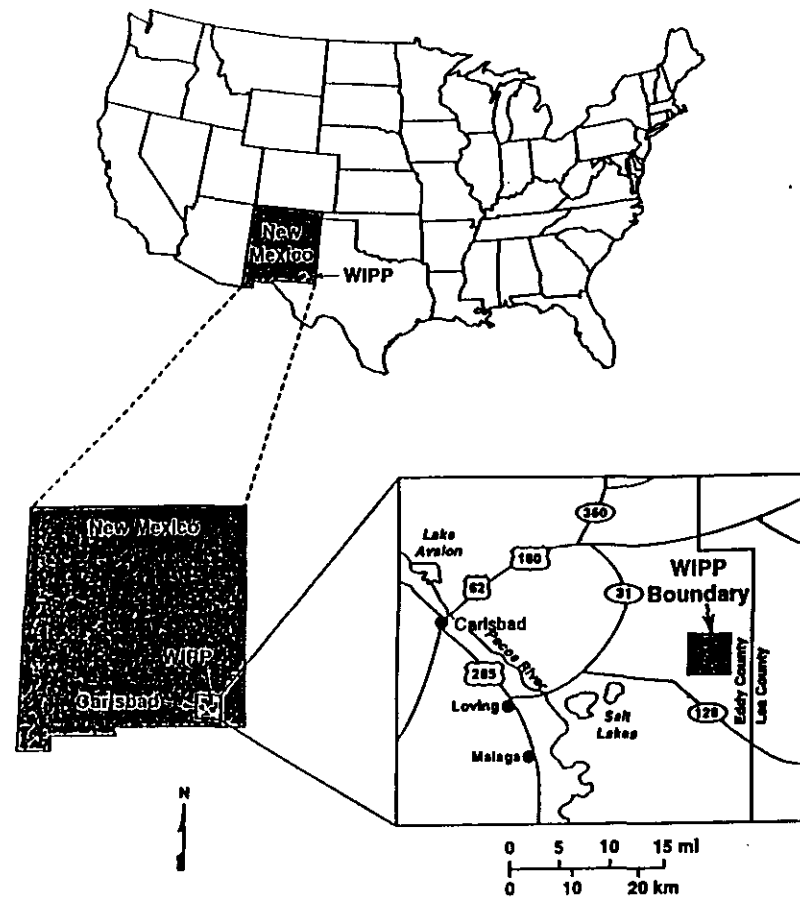
This is the second volume of a two-volume report describing a shaft sealing system design for the Waste Isolation Pilot Plant. This appendix contains detailed drawings of the shaft sealing system and its components.



WASTE ISOLATION PILOT PLANT

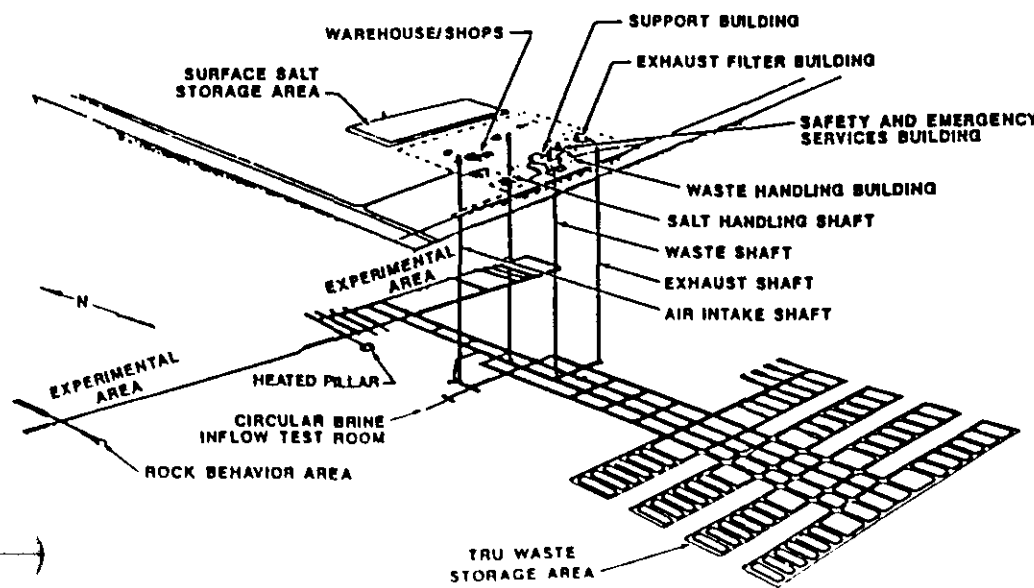
CARLSBAD, NM

SHAFT SEALING SYSTEM DESIGN



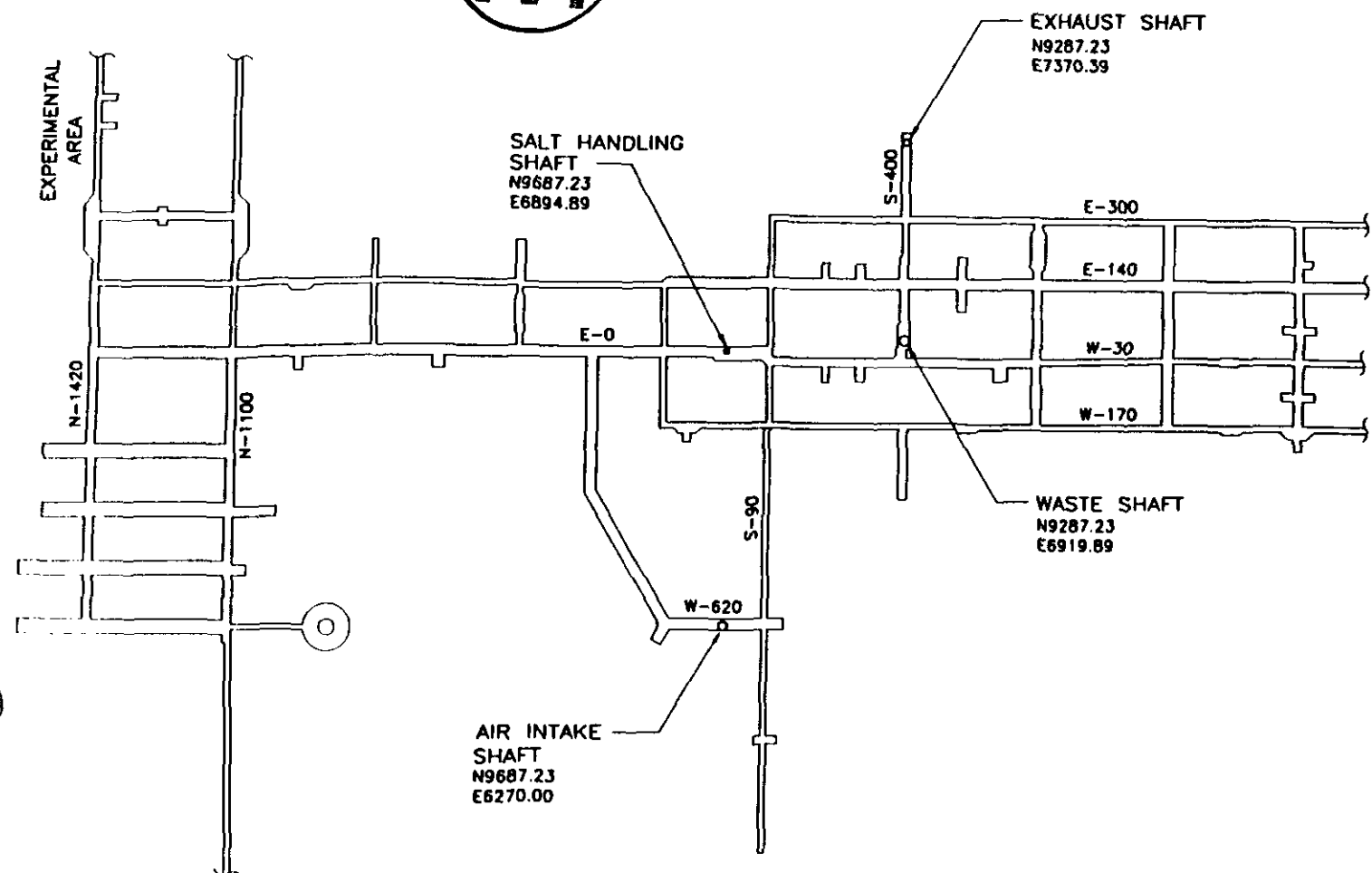
DESIGN DRAWINGS

WIPP LAYOUT



DRAWING NUMBER	TITLE	DRAWING NUMBER	TITLE	DRAWING NUMBER	TITLE
SNL-007 1 OF 28	WIPP SHAFT SEALING SYSTEM SHAFT LOCATION PLAN, ABBREVIATIONS, GENERAL NOTES AND LEGEND	SNL-007 10 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION AIR INTAKE SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE	SNL-007 19 OF 28	WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS SALT HANDLING SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE
SNL-007 2 OF 28	WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS WASTE SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS	SNL-007 11 OF 28	WIPP SHAFT SEALING SYSTEM AIR INTAKE SHAFT SHAFT STATION MONOLITH	SNL-007 20 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION SALT HANDLING SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE
SNL-007 3 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION WASTE SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS	SNL-007 12 OF 28	WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS EXHAUST SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS	SNL-007 21 OF 28	WIPP SHAFT SEALING SYSTEM SALT HANDLING SHAFT SHAFT STATION MONOLITH
SNL-007 4 OF 28	WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS WASTE SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE	SNL-007 13 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION EXHAUST SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS	SNL-007 22 OF 28	WIPP SHAFT SEALING SYSTEM CONCRETE-ASPHALT WATERSTOP IN SALADO FORMATION
SNL-007 5 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION WASTE SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE	SNL-007 14 OF 28	WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS EXHAUST SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE	SNL-007 23 OF 28	WIPP SHAFT SEALING SYSTEM ASPHALT COLUMN
SNL-007 6 OF 28	WIPP SHAFT SEALING SYSTEM WASTE SHAFT SHAFT STATION MONOLITH	SNL-007 15 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION EXHAUST SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE	SNL-007 24 OF 28	WIPP SHAFT SEALING SYSTEM UPPER AND LOWER SALADO COMPACTED CLAY COLUMNS
SNL-007 7 OF 28	WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS AIR INTAKE SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS	SNL-007 16 OF 28	WIPP SHAFT SEALING SYSTEM EXHAUST SHAFT SHAFT STATION MONOLITH	SNL-007 25 OF 28	WIPP SHAFT SEALING SYSTEM COMPACTED SALT COLUMN
SNL-007 8 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION AIR INTAKE SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS	SNL-007 17 OF 28	WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS SALT HANDLING SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS	SNL-007 26 OF 28	WIPP SHAFT SEALING SYSTEM CONCRETE PLUG
SNL-007 9 OF 28	WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS AIR INTAKE SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE	SNL-007 18 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION SALT HANDLING SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS	SNL-007 27 OF 28	WIPP SHAFT SEALING SYSTEM RUSTLER COMPACTED CLAY COLUMN
				SNL-007 28 OF 28	WIPP SHAFT SEALING SYSTEM COMPACTED EARTHEN FILL AND CONCRETE PLUG

2-18-98
JS
M



SHAFT SEALS LOCATION PLAN **N**



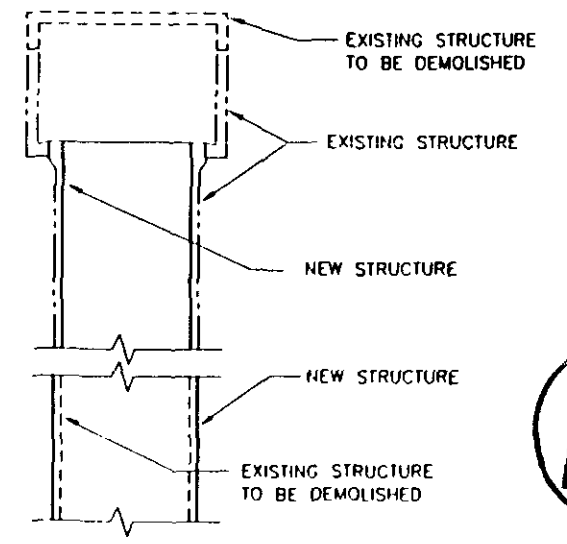
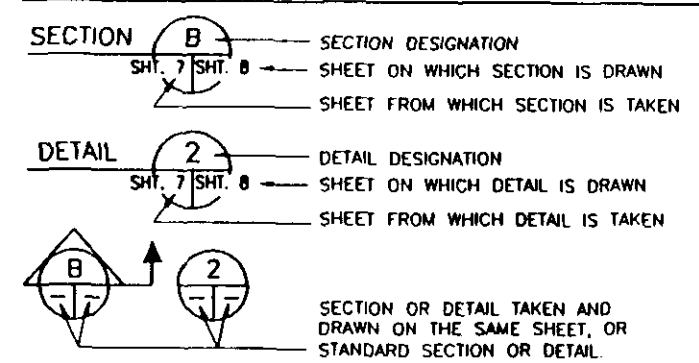
GENERAL NOTES:

1. THE DRIFT NUMBERING SYSTEM (E-300, S-400, ETC.) IS BASED ON THE DIRECTION AND NOMINAL DISTANCE IN FEET THE DRIFT IS FROM THE SALT HANDLING SHAFT'S DESIGNATED CENTERLINE LOCATION OF N-000. E-000. THE WIPP PLANT COORDINATE SYSTEM CENTERLINE LOCATION FOR THE SALT HANDLING SHAFT IS N9687.23, AND E6894.89. THE PLANT COORDINATE SYSTEM IS DESCRIBED IN WESTINGHOUSE DRAWING NO. 51-W-109-W, UNDERGROUND EXCAVATIONS, DATED 6/15/92.
2. THE AS-BUILT DIMENSIONS AND DEPTHS AND/OR ELEVATIONS SHOWN IN THESE DRAWINGS ARE NOMINAL IN THAT DIMENSIONS MAY CHANGE DUE TO LOCAL VARIANCE OF THE STRATIFICATION, OPERATIONAL MODIFICATIONS MADE TO SUIT THE CREEP CLOSURE OF THE HALITE, AND OTHER OPERATIONAL REQUIREMENTS. THEREFORE THE AS-BUILT DIMENSIONS AND THE PERTINENT ELEVATIONS FOR SITING THE SEALING SYSTEM SHALL BE VERIFIED BY FIELD SURVEYING AND EXPLORATORY CORE DRILLING DURING SITE PREPARATION FOR THE FINAL CONSTRUCTION.
3. **DRAWING NUMBERS:**
FOR CLARITY ON DETAIL AND SECTION DESIGNATIONS, AND NOTES, ONLY THE SHEET NUMBER IS SHOWN.

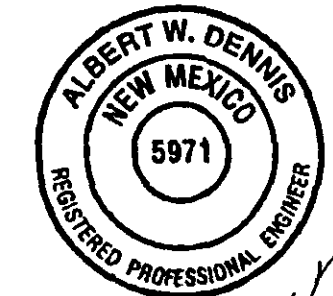
ABBREVIATIONS:

CL	CENTERLINE
ANH.	ANHYDRITE
CMP	CORRUGATED METAL PLATE
CONC.	CONCRETE
DOE	DEPARTMENT OF ENERGY
DWG.	DRAWING
E	EAST
EL.	ELEVATION
EXIST.	EXISTING
FT.	FOOT, FEET
HT.	HEIGHT
I.D.	INSIDE DIAMETER
IN.	INCHES
MB	MARKER BED
MIN.	MINIMUM
MSL	MEAN SEA LEVEL
N	NORTH
NO.	NUMBER
R	RADIUS
S	SOUTH
SHT.	SHEET NUMBER
SMC	SALADO MASS CONCRETE
TYP.	TYPICAL
USGS	UNITED STATES GEOLOGICAL SURVEY
W	WEST
WID	WESTINGHOUSE WASTE ISOLATION DIVISION
WIPP	WASTE ISOLATION PILOT PLANT

LEGEND FOR PROPOSED SHAFT SEALING SYSTEM:



M

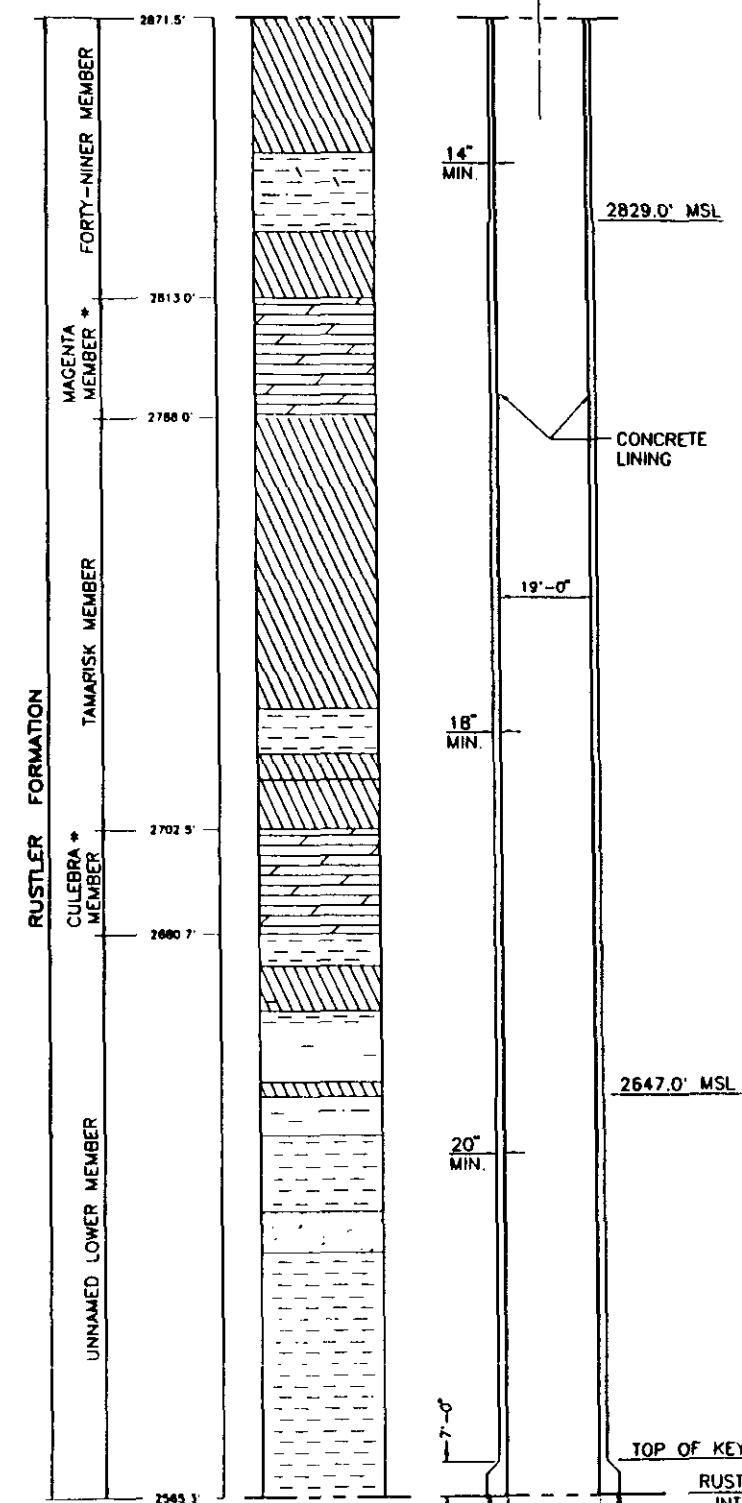
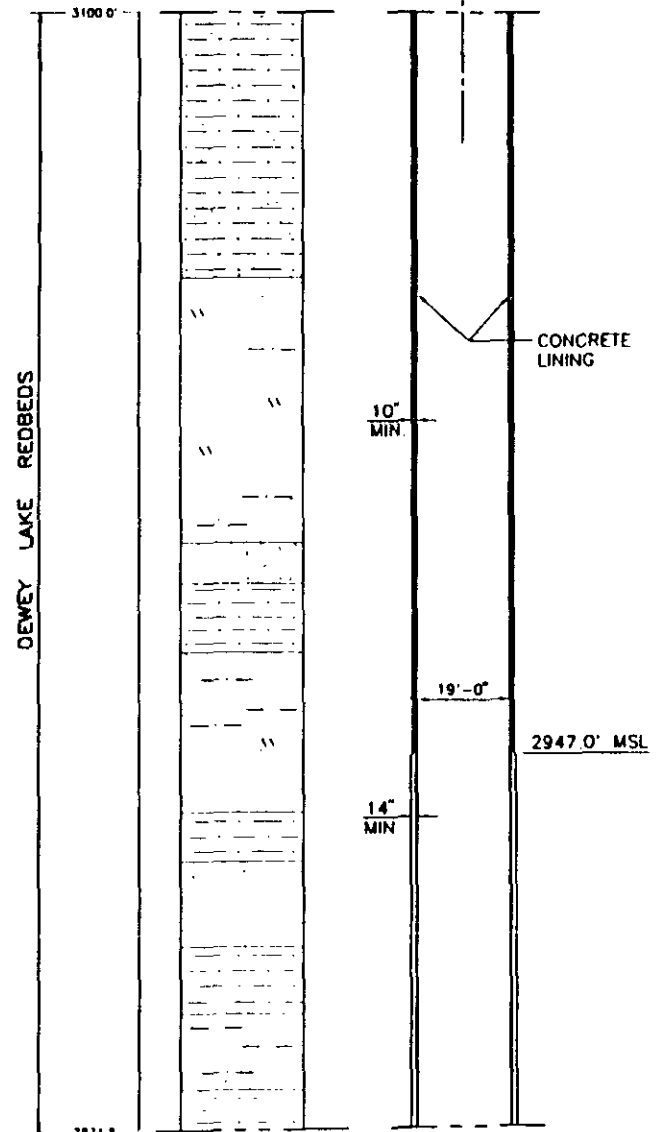
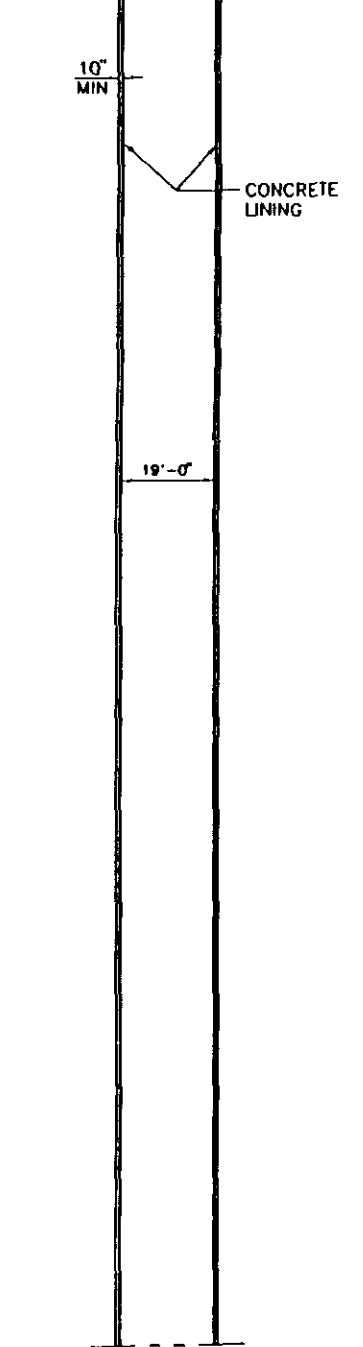
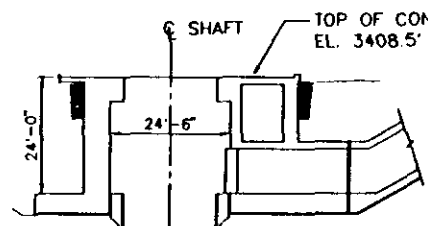
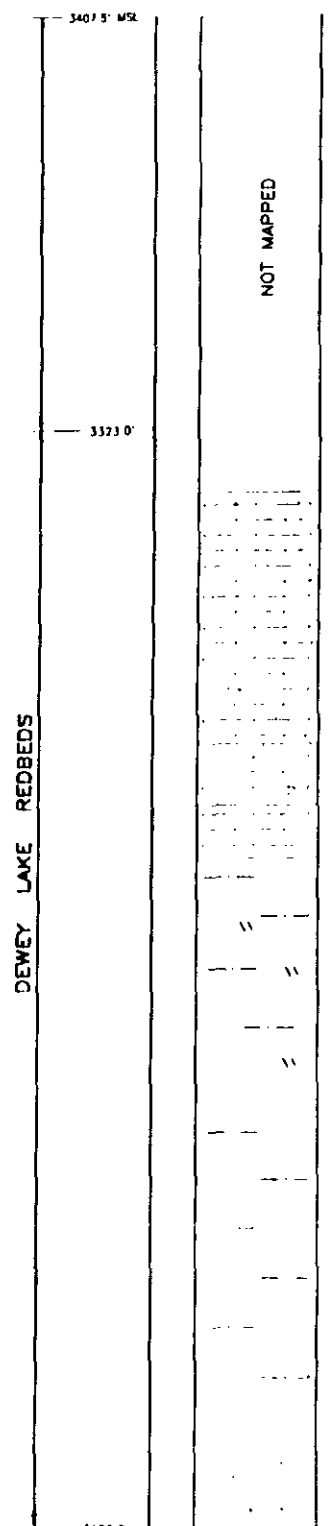


Albert W. Dennis
8-2-96

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WIPP SHAFT SEALING SYSTEM			NAME	DATE	
SHAFT LOCATION PLAN, ABBREVIATIONS, GENERAL NOTES AND LEGEND			BY: [Signature]	8/2/96	
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SNL DWG. NO. SNL-007			APP: [Signature]	8/2/96	
SHEET NO. 1 OF 28					

STRATIGRAPHY
(SEE NOTE 1)

SHAFT



LITHOLOGY:

PRIMARY ROCK/SEDIMENT TYPES	SECONDARY CONSTITUENTS
MUDSTONE/CLAYSTONE	ARGILLACEOUS
CLAYSTONE BED	SILTY
SILTSTONE	SANDY
SANDSTONE	SULFATIC
ANHYDRITE/GYPSUM	DOLOMITIC
DOLOMITE	CALCAREOUS
HALITE	HALITIC
POLYHALITE	POLYHALITIC

NOTES:

1. THE STRATIGRAPHY AND GROUNDWATER BRINE SEEPAGE/WEEP INTERVALS ARE BASED ON THE LITHOLOGIC INFORMATION COMPILED DURING THE GEOLOGIC MAPPING OF THE WASTE HANDLING SHAFT WALLS, WTSD-TME 038, "GEOTECHNICAL ACTIVITIES IN THE WASTE HANDLING SHAFT WASTE ISOLATION PILOT PLANT (WIPP) PROJECT SOUTHEASTERN NEW MEXICO," 1984, AND APPENDIX A OF REPORT DOE/WIPP-95-3117, "WASTE ISOLATION PILOT PLANT SEALING SYSTEM DESIGN REPORT," 1995.

STRATIGRAPHIC CONTACT AT THE TOP OF THE DEWEY LAKE REDBEDS WAS NOT RECORDED DURING MAPPING. ELEVATION SHOWN IS INTERPRETED FROM RECORDINGS OF THE SALT HANDLING AND EXHAUST SHAFTS.

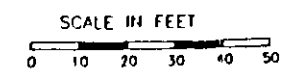
ASTERISK (*) WITHIN THE RUSTLER AND SUPRA RUSTLER FORMATIONS INDICATE GROUNDWATER OBSERVED DURING SHAFT MAPPING. ASTERISK (*) WITHIN THE SALADO FORMATION INDICATES A POTENTIAL BRINE SEEPAGE/WEEP INTERVAL. THESE POTENTIAL BRINE SEEPAGE/WEEP INTERVALS, LOCATED ABOVE THE SHAFT STATION LEVEL, ARE BASED ON OBSERVED INTERVALS OF BRINE SEEPAGE/WEEPS IN THE AIR INTAKE SHAFT THAT HAVE BEEN PROJECTED TO THE WASTE SHAFT. THE MAPPING OF THE WASTE SHAFT (HOLT & POWERS, 1984/WTSD-TME-038) DID NOT INDICATE OBSERVED SEEPAGE INTERVALS WITHIN THE SALADO FORMATION.

2. REFERENCE AS-BUILT DRAWINGS FROM WID:

WASTE SHAFT 311 SHAFT DEVELOPMENT SECTIONS	31-R-001-010
WASTE SHAFT 311 SHAFT LINING & KEY SECTIONS AND DETAILS	31-R-002-010
WASTE HANDLING BUILDING 411 HOIST TOWER FOUNDATION PLANS, ELEVATIONS, 76'-0" & 89'-0"	41-D-016-014
WASTE HANDLING BUILDING 411 HOIST TOWER FOUNDATION SECTIONS	41-D-018-014
AS-BUILT FOR WASTE SHAFT COLLAR	OGL A-001

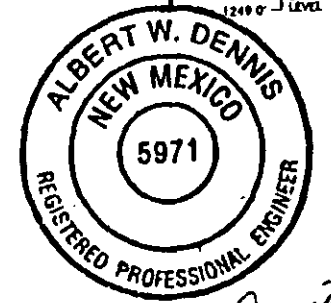
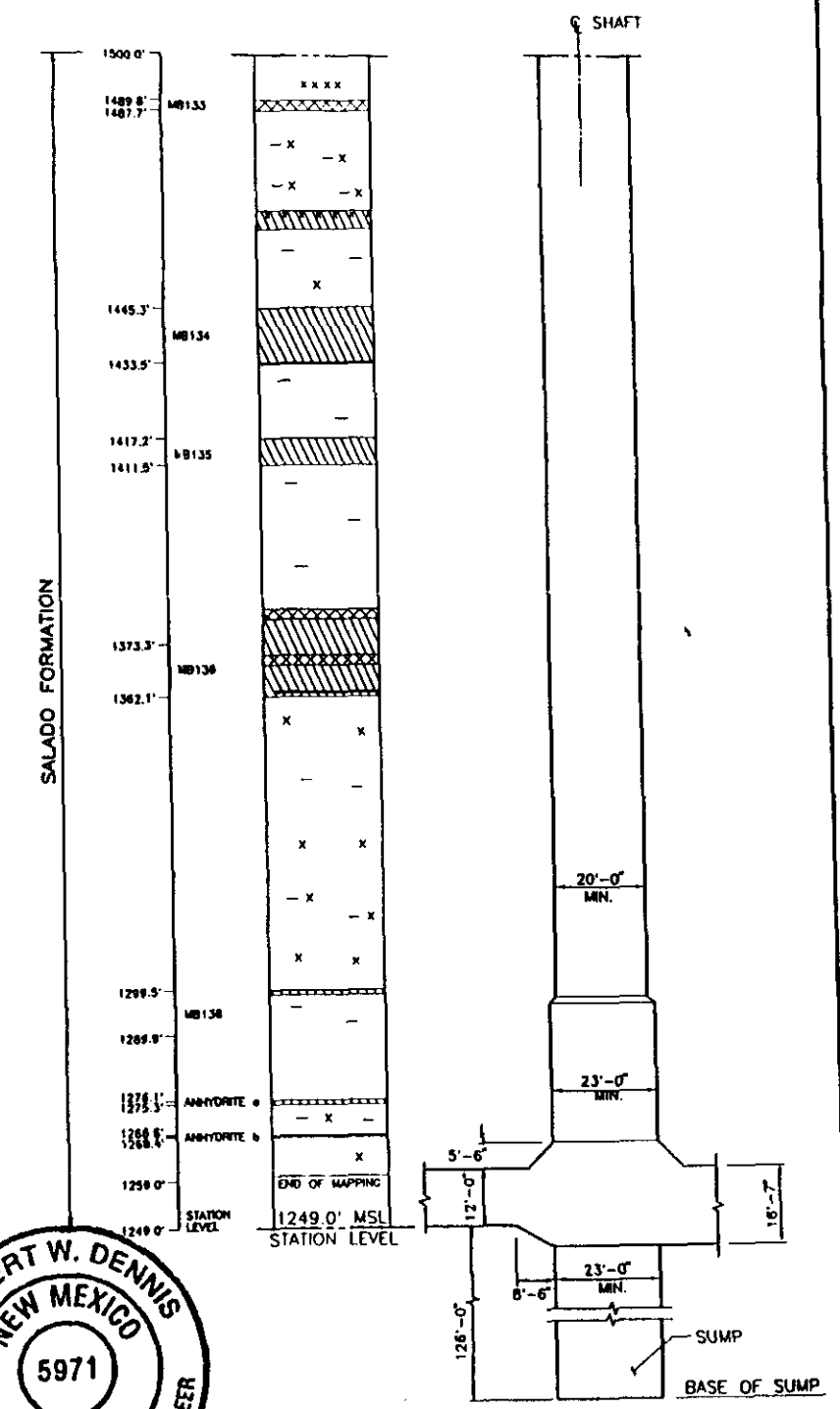
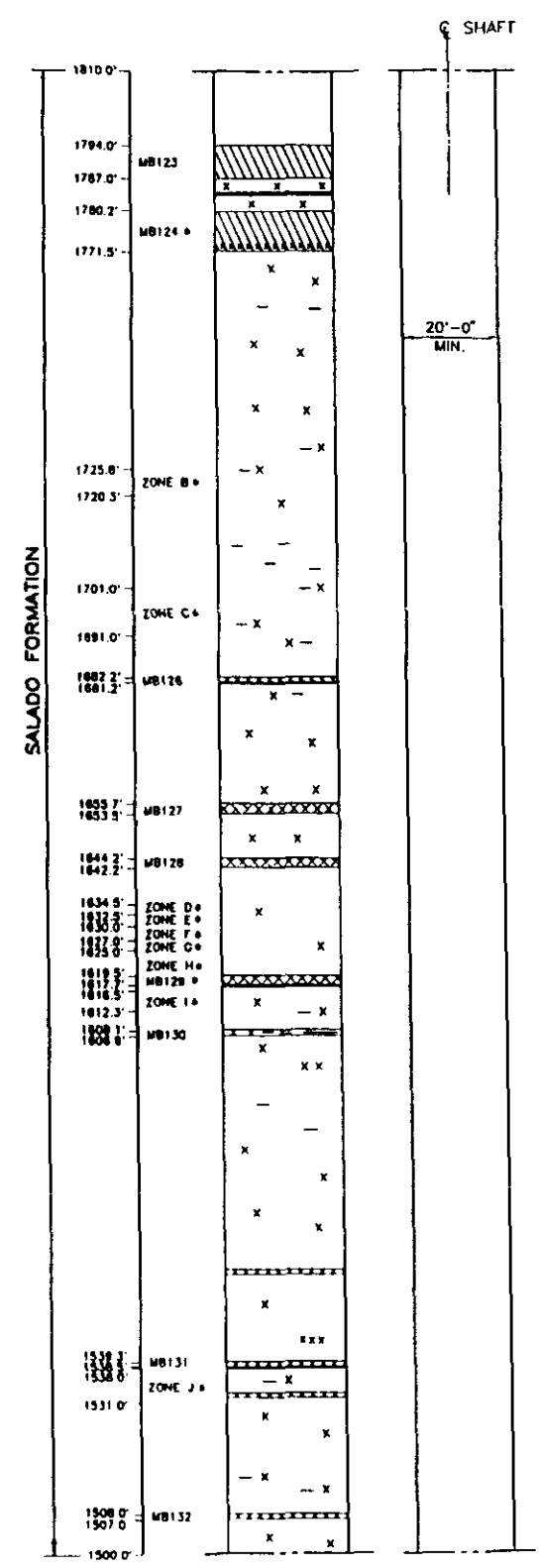
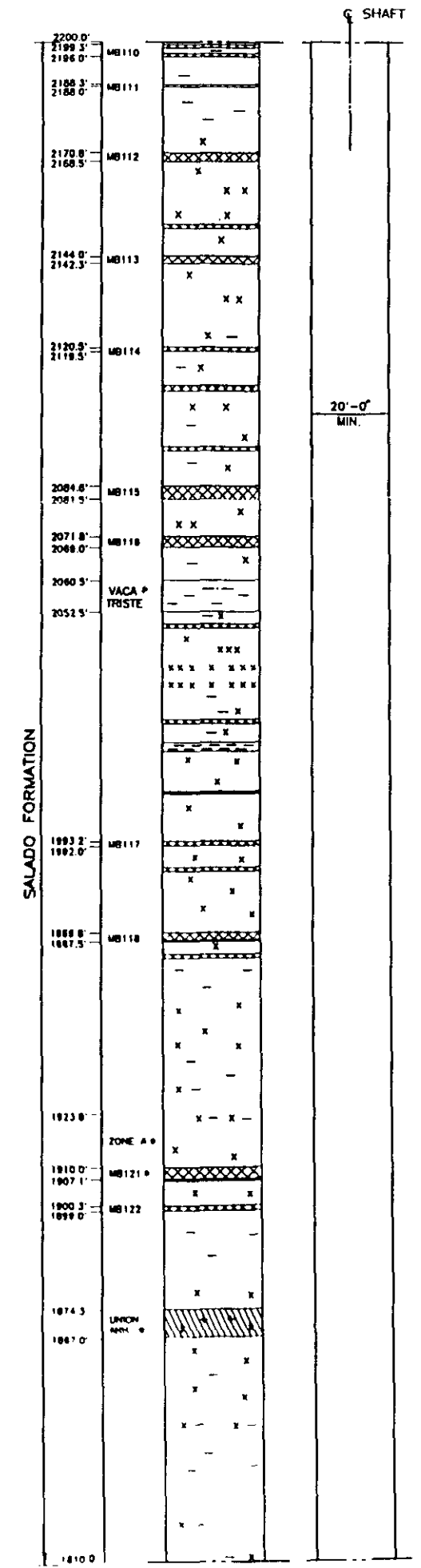
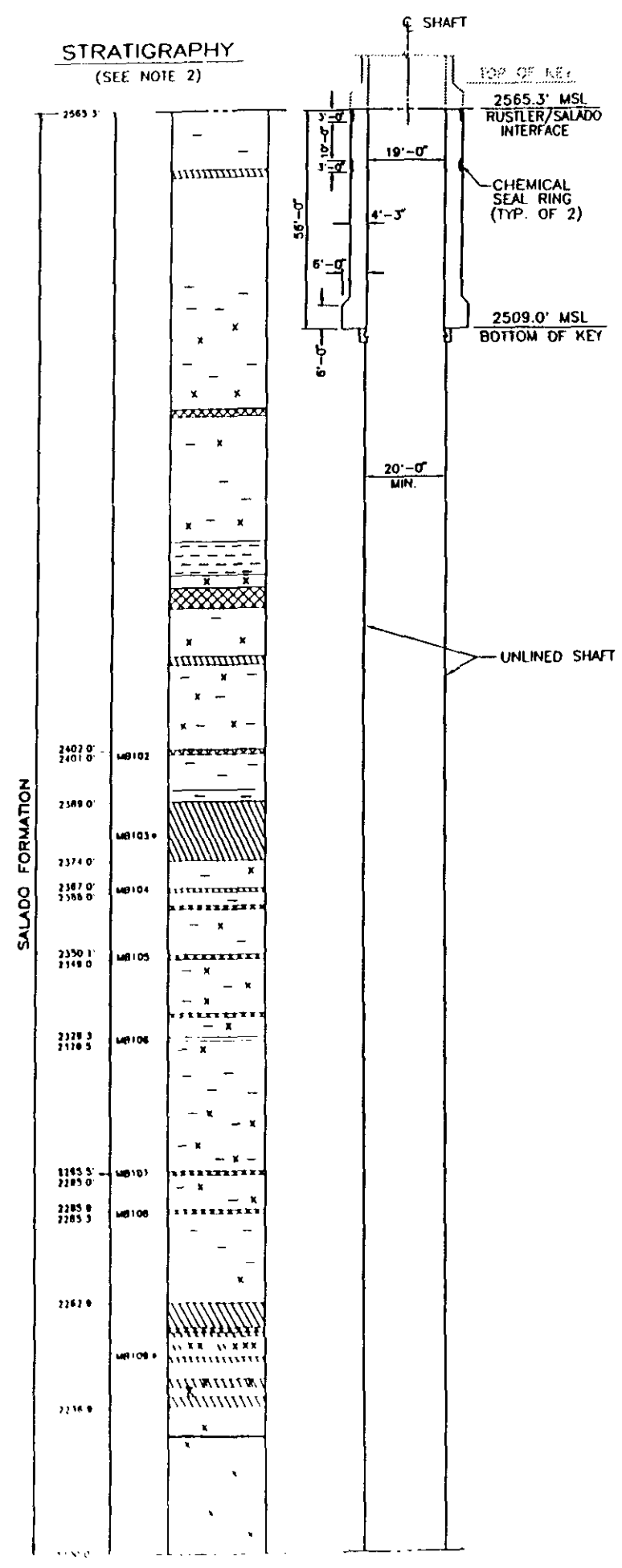


Albert W. Dennis
8-2-96



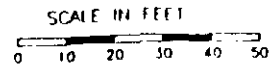
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NEAR-SURFACE/RUSTLER FORMATIONS					
WASTE SHAFT					
STRATIGRAPHY & AS-BUILT ELEMENTS					
PARSONS BRINCKERHOFF ENERGY SERVICES, INC.	SCALE	SIZE	SNL DWG NO	SHEET NO	
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STRATIGRAPHY
(SEE NOTE 2)



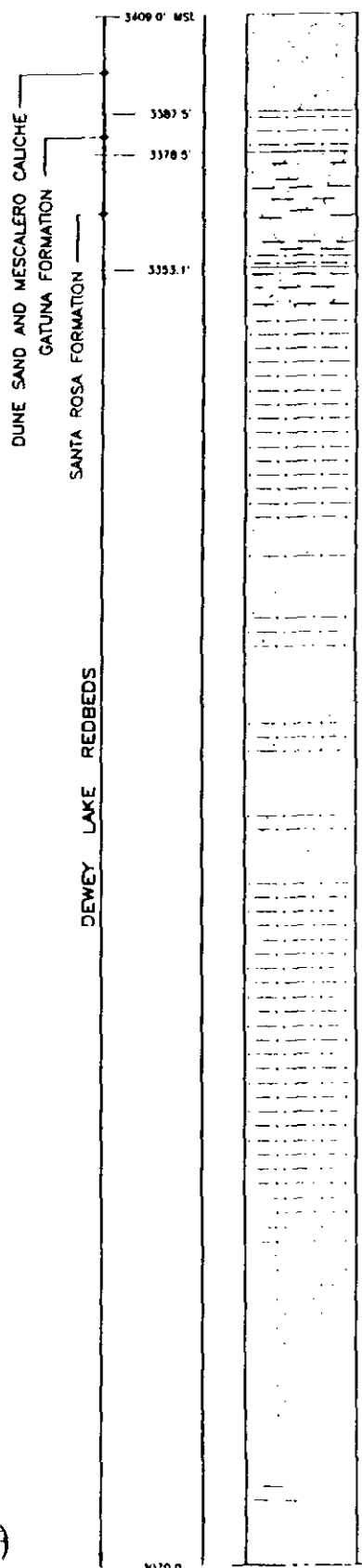
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9-2-96

- NOTES:**
1 SEE SHT 1 FOR GENERAL NOTES AND ABBREVIATIONS
2 SEE SHT 2 FOR LITHOLOGY AND NOTES

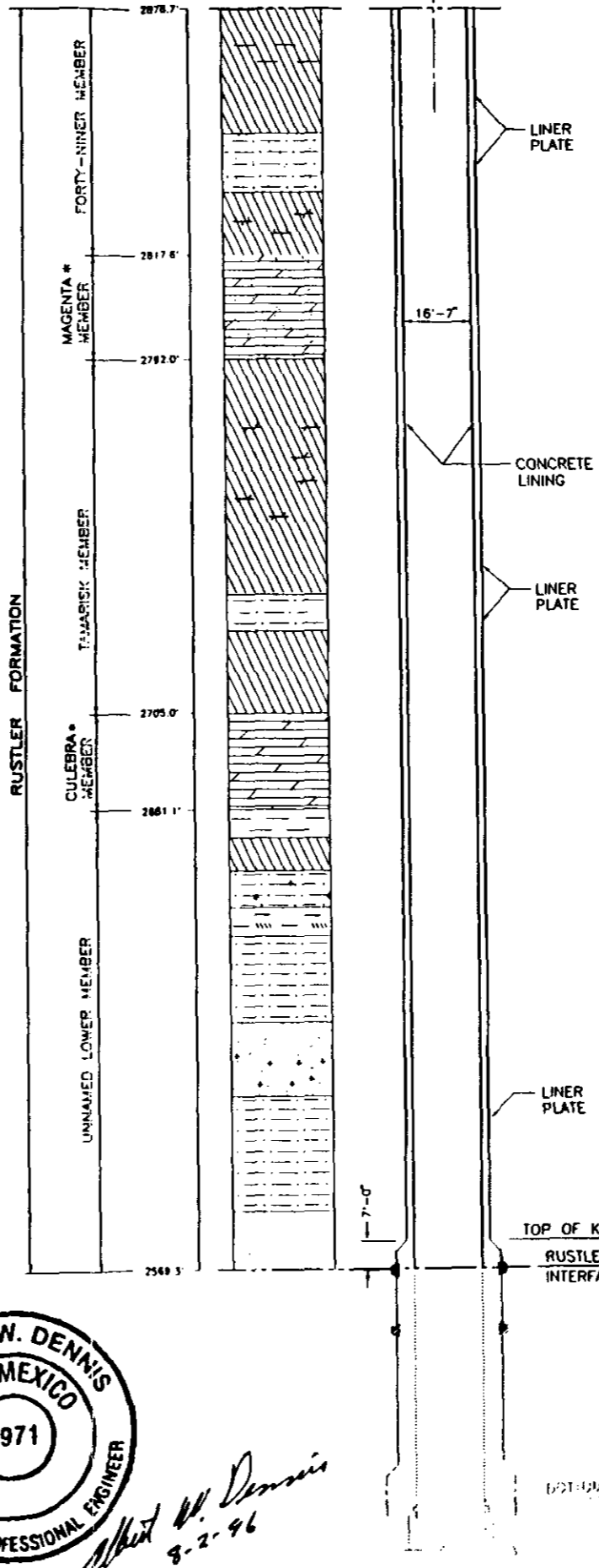
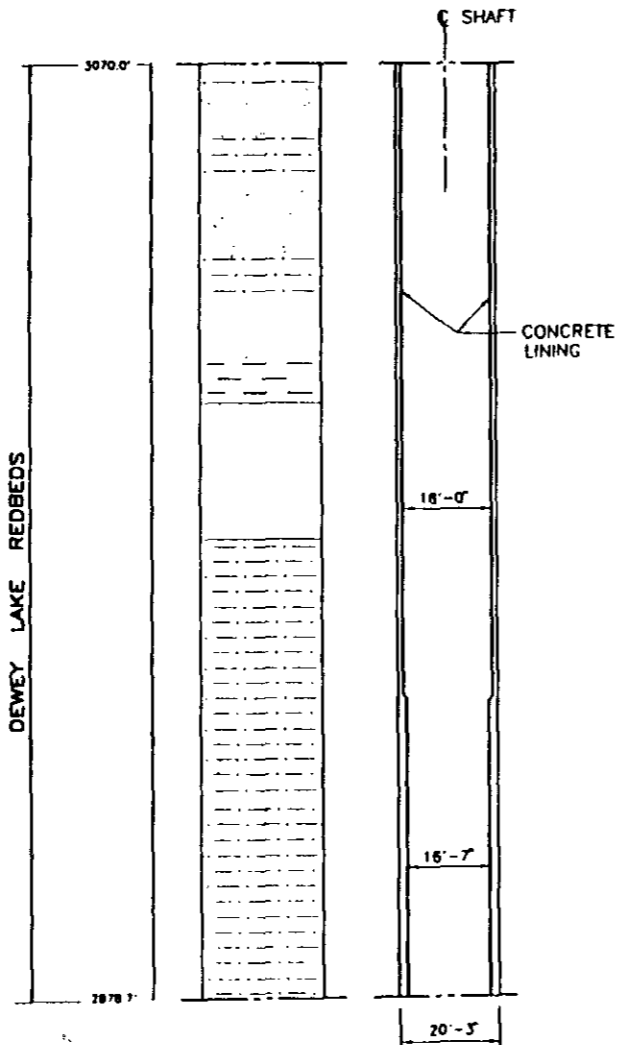
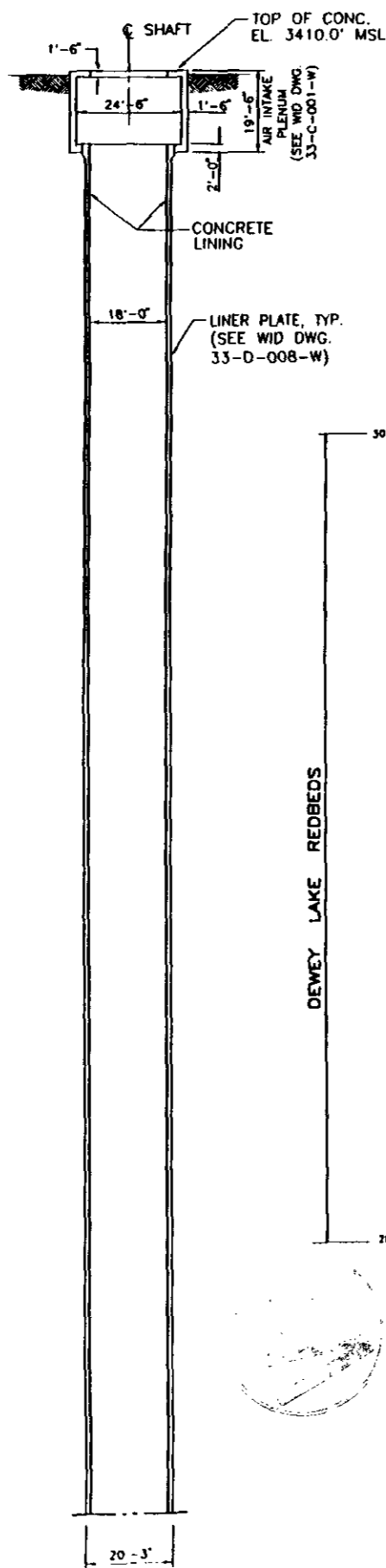


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SALADO FORMATION			DATE: [Signature]
WASTE SHAFT			BY: [Signature]
STRATIGRAPHY &			CK: [Signature]
AS-BUILT ELEMENTS			APP: [Signature]
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PARSONS BRINCKERHOFF ENERGY SERVICES, INC.		SCALE: B	SHEET NO. 3 OF 28

STRATIGRAPHY
(SEE NOTE 1)



SHAFT



LITHOLOGY:

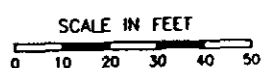
PRIMARY ROCK/SEDIMENT TYPES	SECONDARY CONSTITUENTS
[Symbol] MUDSTONE/CLAYSTONE	[Symbol] ARGILLACEOUS
[Symbol] CLAYSTONE BED	[Symbol] SILTY
[Symbol] SILTSTONE	[Symbol] SANDY
[Symbol] SANDSTONE	[Symbol] SULFATIC
[Symbol] ANHYDRITE/GYPSUM	[Symbol] DOLOMITIC
[Symbol] DOLOMITE	[Symbol] CALCAREOUS
[Symbol] HALITE	[Symbol] HALITIC
[Symbol] POLYHALITE	[Symbol] POLYHALITIC
	[Symbol] LANGBEINITE

NOTES:

1. THE STRATIGRAPHY AND GROUNDWATER BRINE SEEPAGE/WEEP INTERVALS ARE BASED ON THE LITHOLOGIC INFORMATION COMPILED DURING THE GEOLOGIC MAPPING OF THE AIR INTAKE SHAFT WALLS, DOE/WIPP-90-051, "GEOLOGIC MAPPING OF THE AIR INTAKE SHAFT AT THE WASTE ISOLATION PILOT PLANT", 1990, AND APPENDIX A OF REPORT DOE/WIPP-95-3117, "WASTE ISOLATION PILOT PLANT SEALING SYSTEM DESIGN REPORT", 1995.

ASTERISK(*) INDICATES GROUNDWATER (RUSTLER/SUPRA RUSTLER FORMATIONS) OR BRINE SEEPAGE/WEEPS (SALADO FORMATION) OBSERVED DURING THE MAPPING OF THE AIR INTAKE SHAFT. AS OF 1994, ONLY MB103 SHOWED VISIBLE MOISTURE ON THE SALADO FORMATION SURFACE EXPOSED WITHIN THE AIR INTAKE SHAFT, "BRINE SAMPLING EVALUATION PROGRAM 1992-1993 REPORT," 1994, DOE-WIPP 94-011.

2. REFERENCE AS-BUILT DRAWINGS FROM WID:
- AIR INTAKE SHAFT 331 SHAFT COLLAR / AIR INTAKE PLENUM PLAN, SECTIONS AND DETAILS. 33-C-001-W
 - AIR INTAKE SHAFT 331 SHAFT COLLAR / AIR INTAKE PLATFORM PLAN, SECTIONS AND DETAILS. 33-C-002-W
 - AIR INTAKE SHAFT 331 STRUCTURE PLAN, SECTIONS AND DETAILS. 33-C-003-W1
 - AIR INTAKE SHAFT 331 SHAFT KEY PLAN, SECTIONS AND DETAILS. 33-C-004-W1
 - AIR INTAKE SHAFT 331 LINING DETAILS. 33-C-005-W
 - AIR INTAKE SHAFT 331 EXCAVATION AS-BUILT. 33-D-002-W
 - AIR INTAKE SHAFT 331 GENERAL ARRANGEMENT. 33-D-008-W
 - AIR INTAKE SHAFT 331 SHAFT STATION PLAN, SECTIONS AND DETAILS. 51-W-212-W



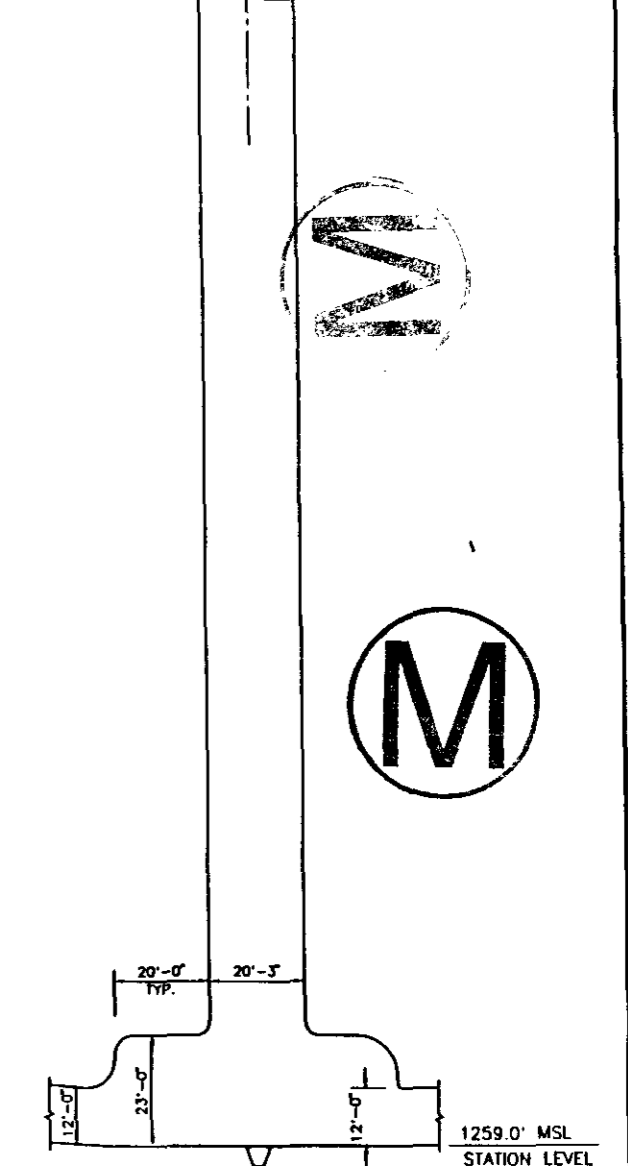
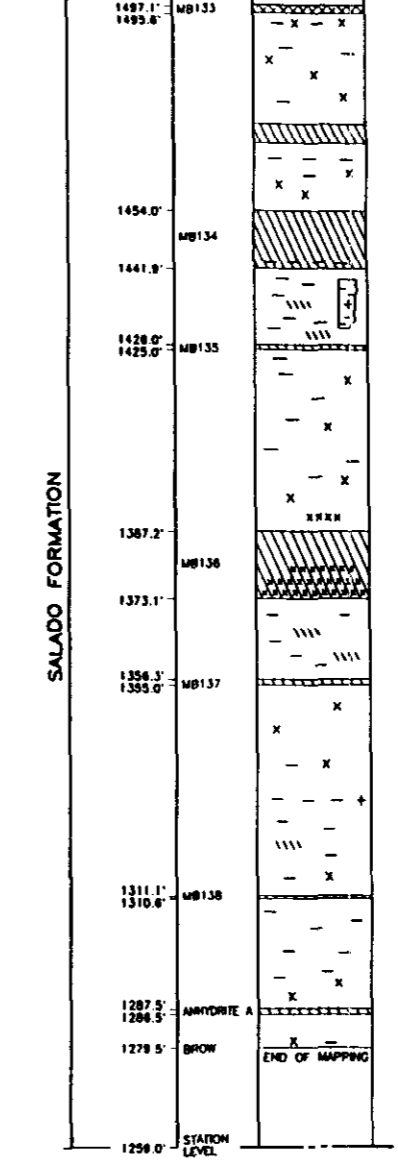
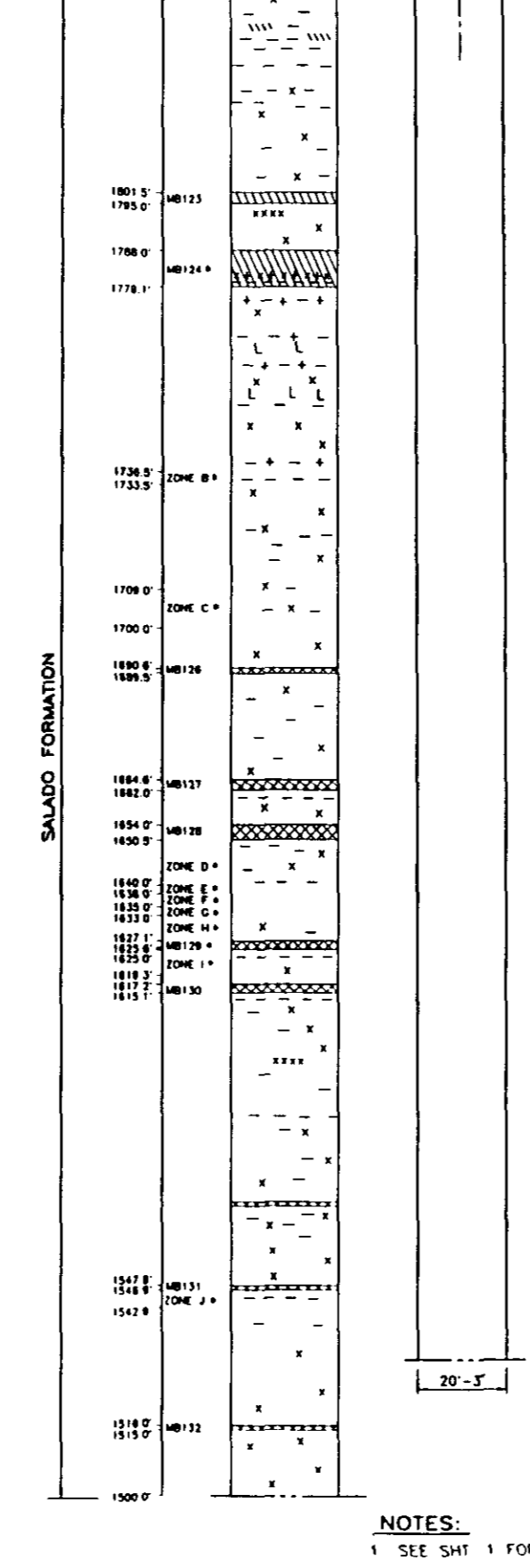
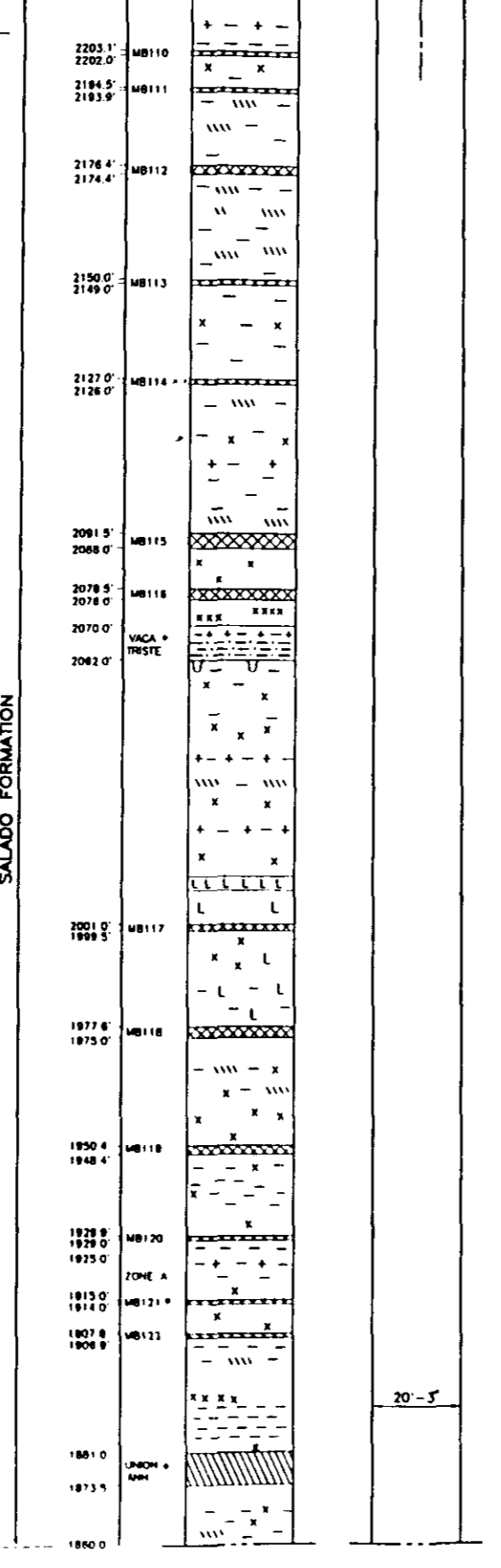
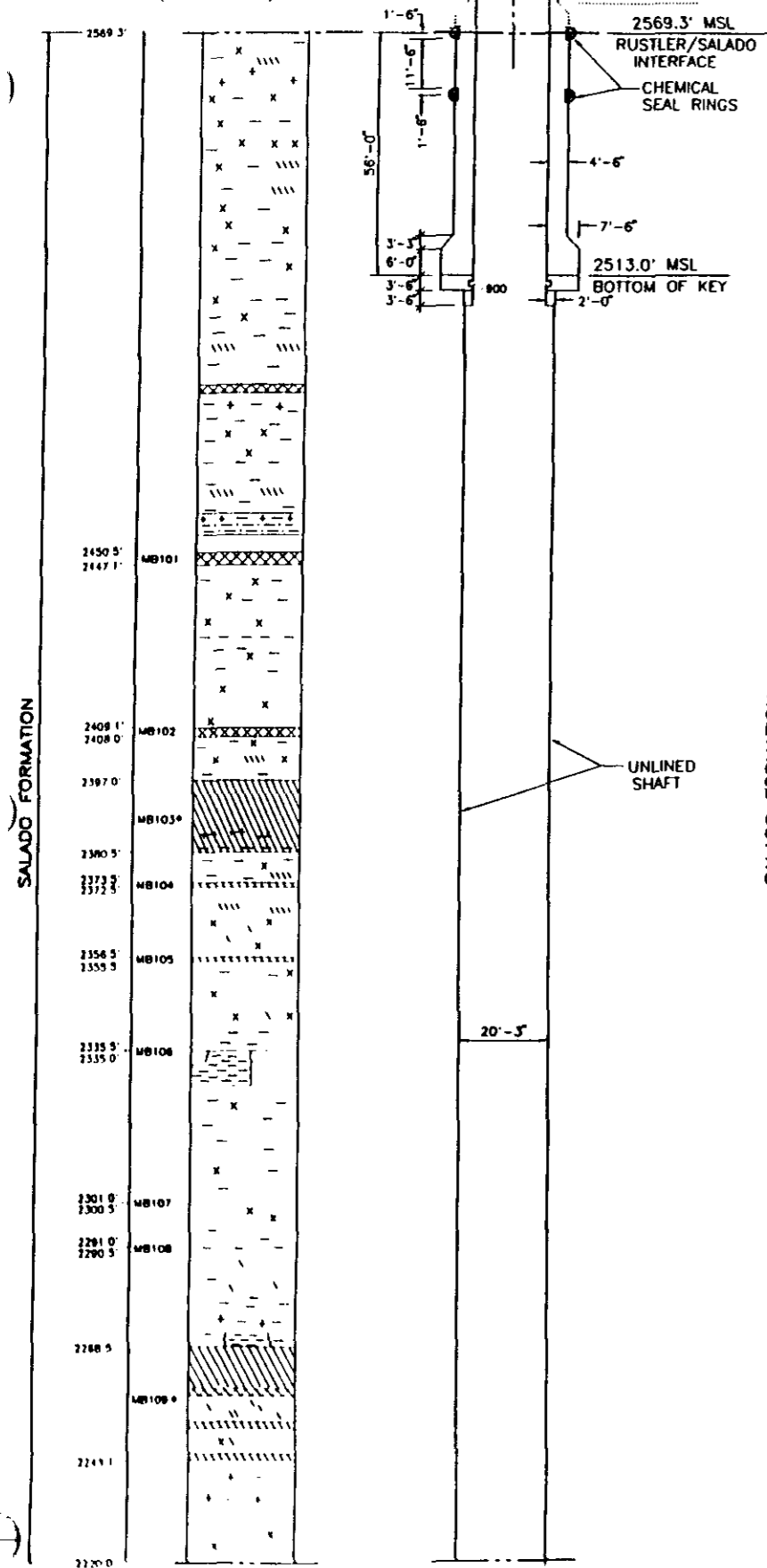
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WIPP SHAFT SEALING SYSTEM					
NEAR-SURFACE/RUSTLER FORMATIONS					
AIR INTAKE SHAFT					
STRATIGRAPHY & AS-BUILT ELEMENTS					
PARSONS BRINCKERHOFF ENERGY SERVICES, INC.	SCALE: 8	SIZE:	SNL DWG. NO: SNL-007	SHEET NO: 7 OF 28	



Albert W. Dennis
8-2-96

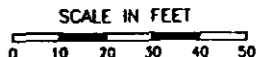


STRATIGRAPHY
(SEE NOTE 2)



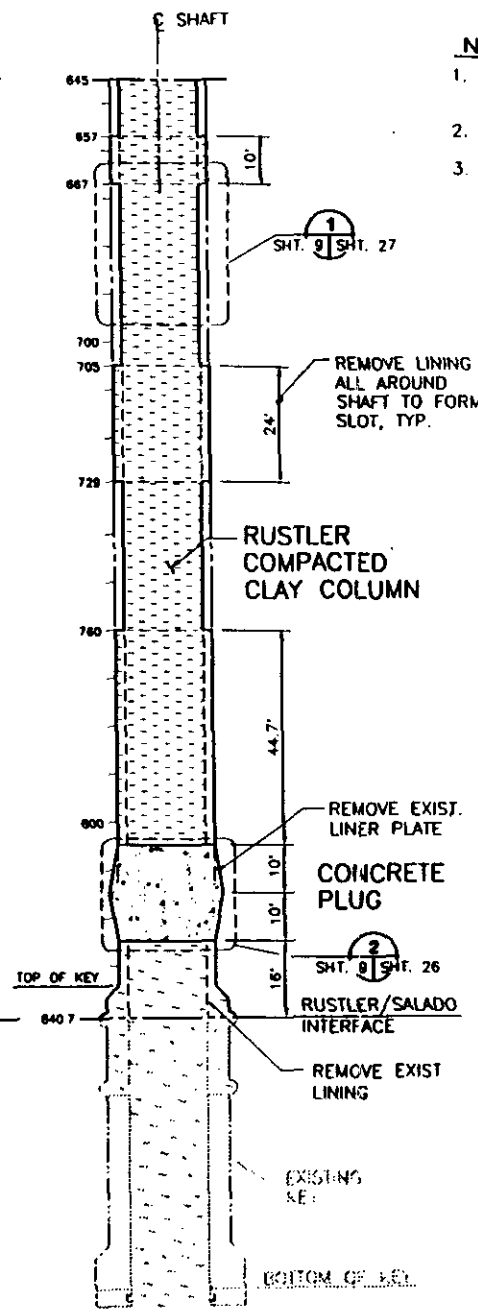
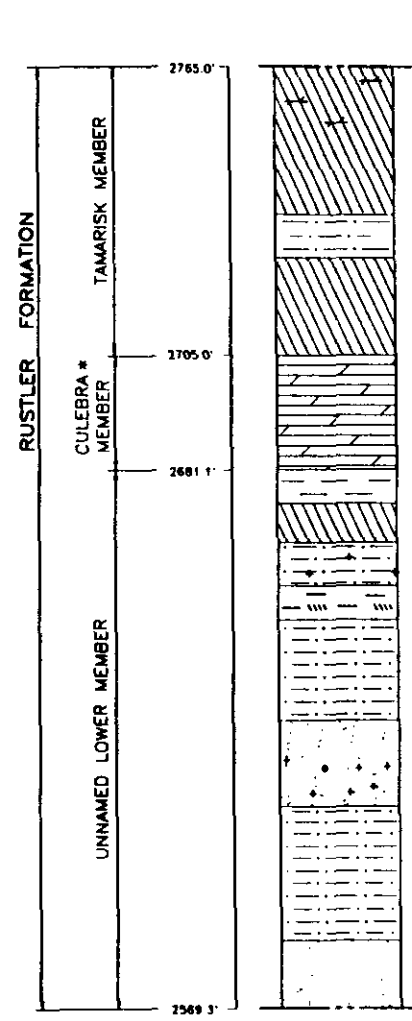
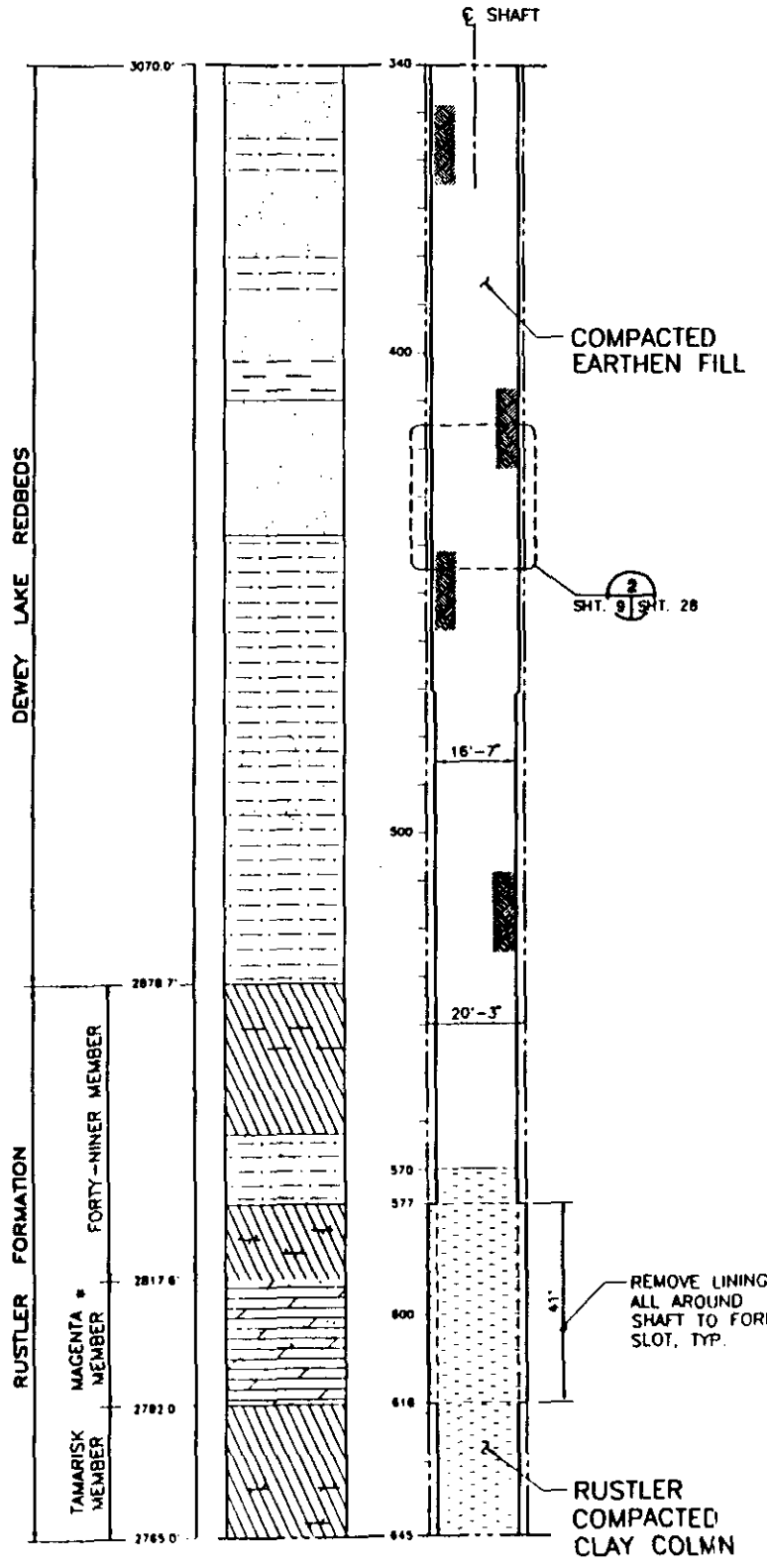
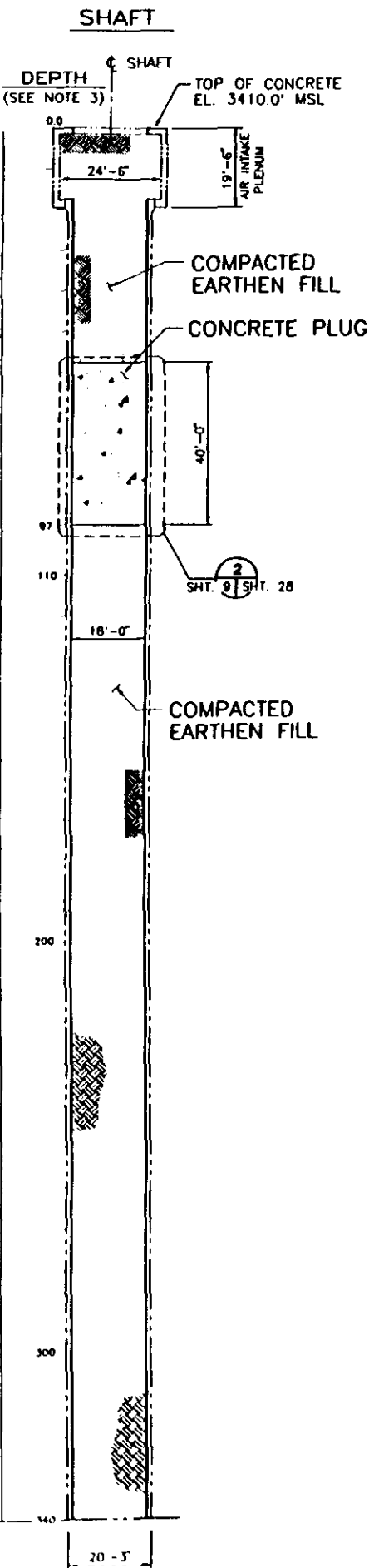
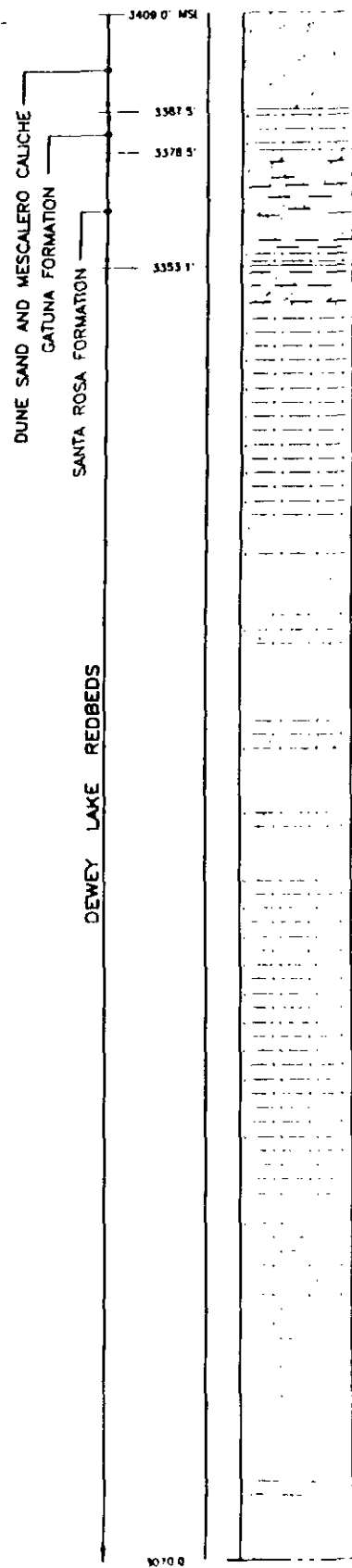
Albert W. Dennis
4-2-96

- NOTES:**
1 SEE SHT 1 FOR GENERAL NOTES AND ABBREVIATIONS
2 SEE SHT 7 FOR LITHOLOGY AND NOTES

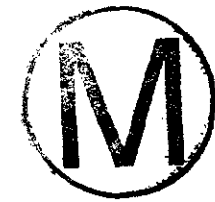


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BY	DATE				
CK					
APP					
APP					
PARSONS, BRINCKERHOFF ENERGY SERVICES, INC.	SCALE B	SIZE B	SND LING NO SNL-007	SHEET NO 8 OF 28	

STRATIGRAPHY
(SEE NOTE 2)



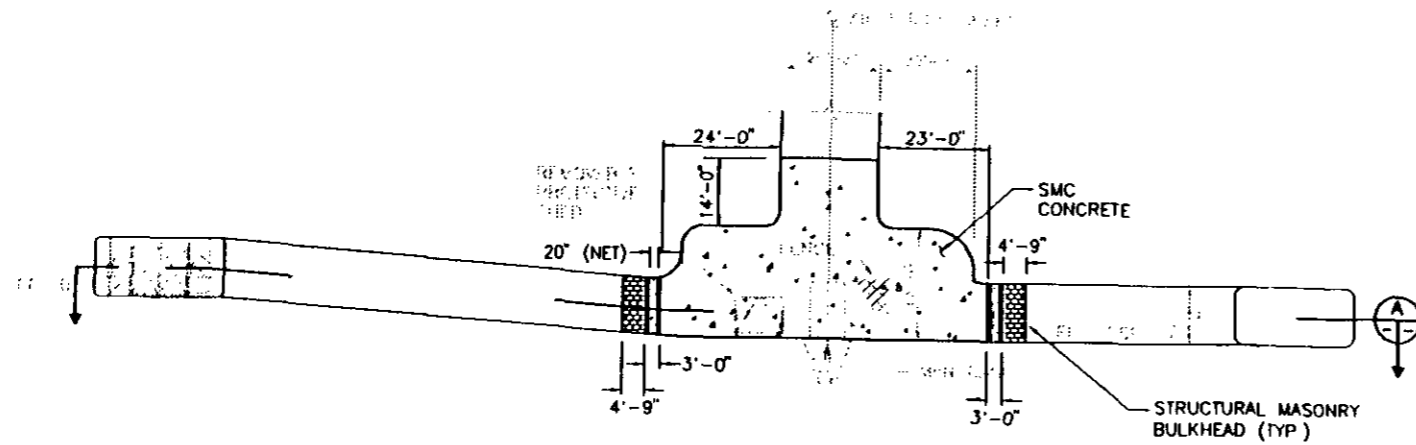
- NOTES:**
1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS
 2. SEE SHT. 7 FOR LITHOLOGY AND NOTES.
 3. DEPTHS SHOWN ARE DISTANCES BELOW THE TOP OF CONCRETE, LOCATED AT EL. 3410.0' ABOVE MSL USGS 1927 NORTH AMERICAN DATUM



Albert W. Dennis
9-2-96

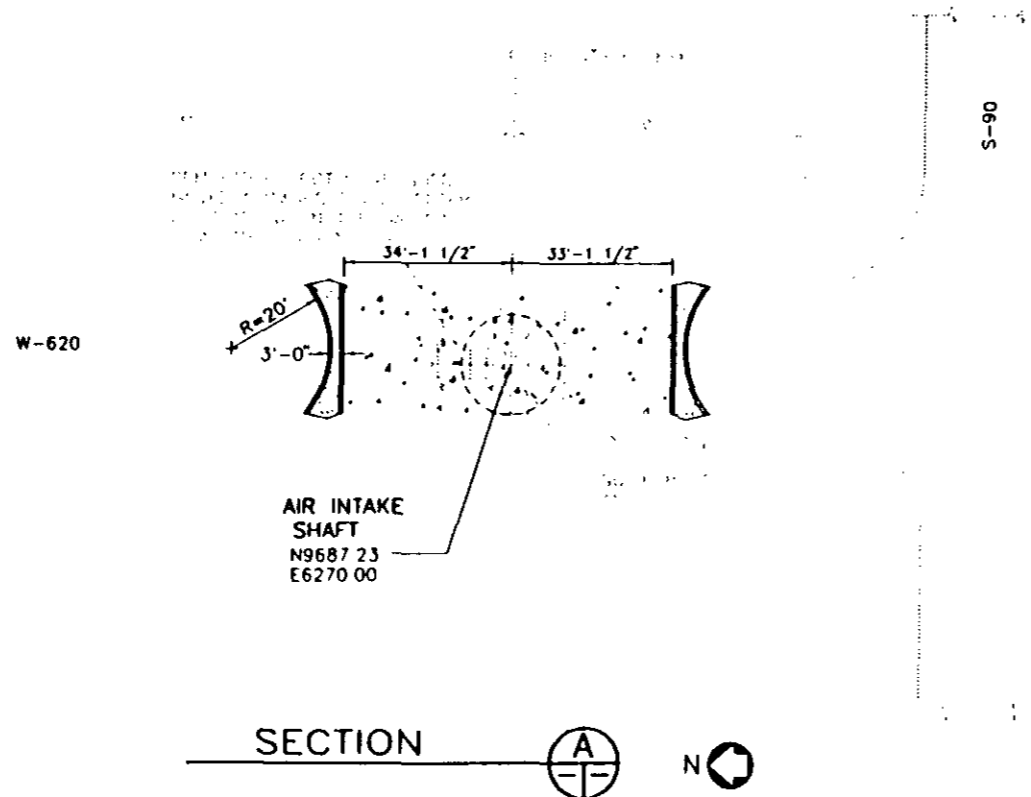
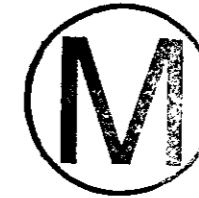


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BY	<i>[Signature]</i>	8/2/96			
CK	<i>[Signature]</i>	8/2/96			
APP	<i>[Signature]</i>	8/2/96			
APP	<i>[Signature]</i>	9/2/96			
APP	<i>[Signature]</i>	9/2/96			
PARSONS, BRINCKERHOFF ENERGY SERVICES, INC.	SCALE	SIZE	SNL DWG NO.	SNL SHEET NO.	DATE
	B	B	SNL-007	9 OF 28	



DETAIL

SHT. 10 | SH. 11



SECTION

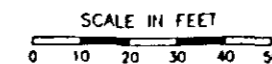
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NOTES:

1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.



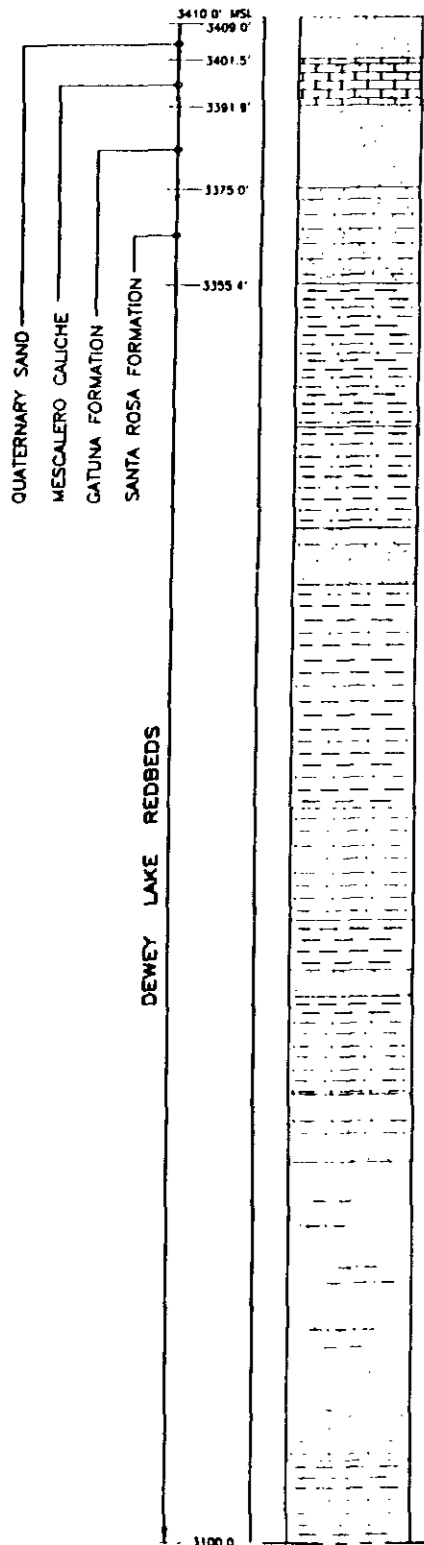
Albert W. Dennis
8-2-96



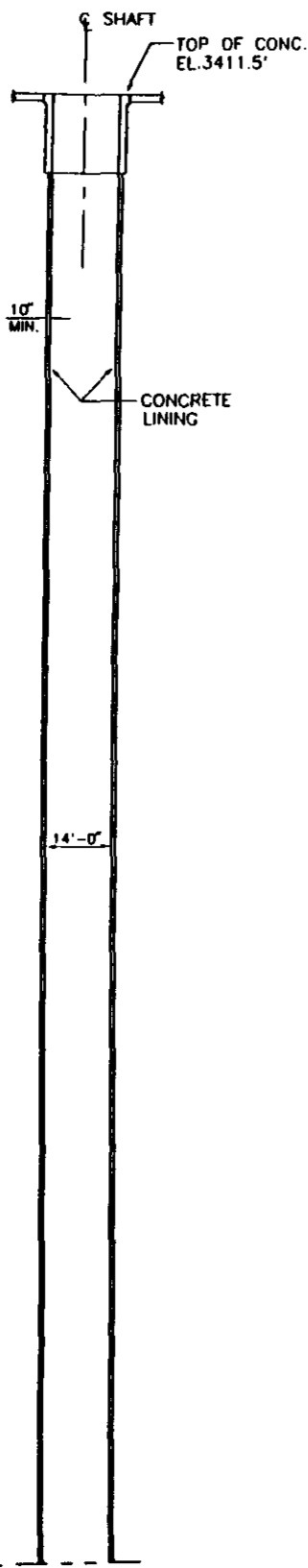
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CONTRACT NO. AG-4909 NAME: _____ DATE: _____ BY: _____ CK: _____ APP: _____ APP: _____			PARSONS BRINCKERHOFF ENERGY SERVICES, INC.		
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STRATIGRAPHY

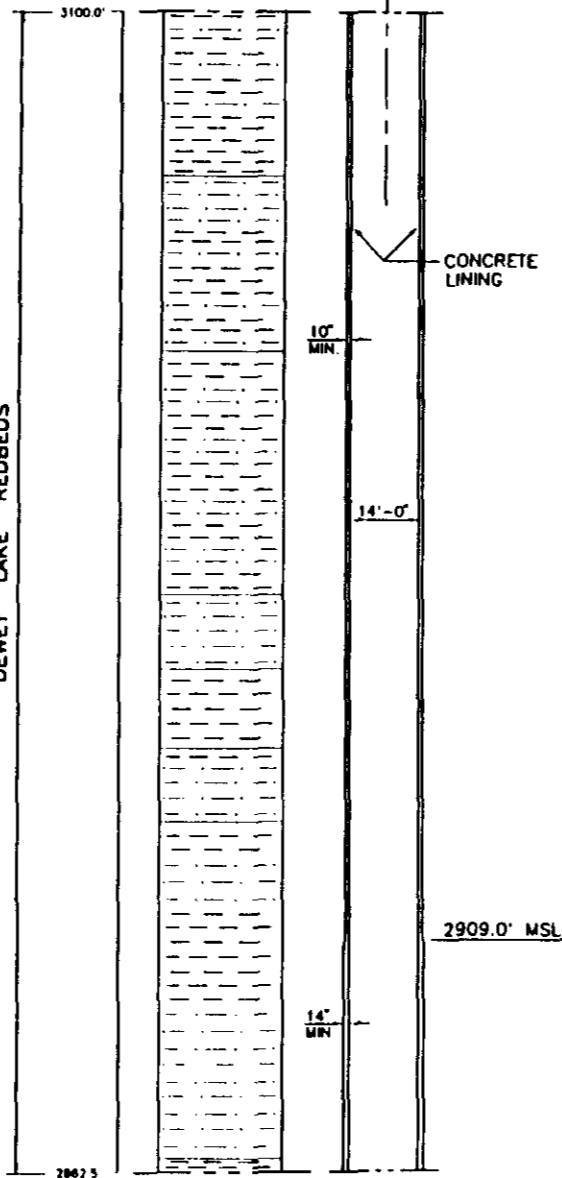
(SEE NOTE 1)



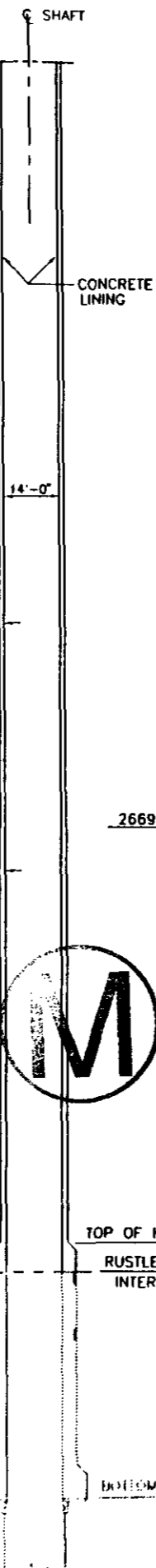
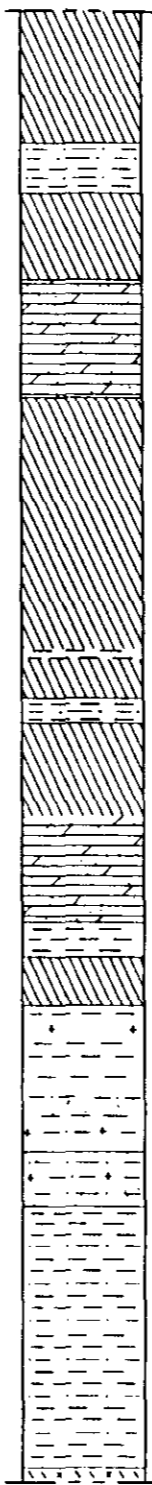
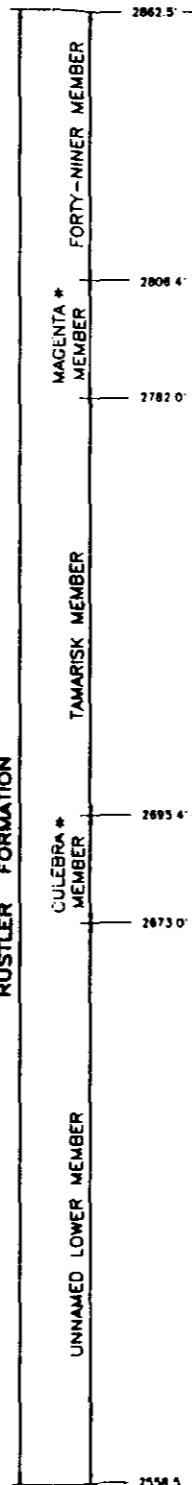
SHAFT



DEWEY LAKE REDBEDS



RUSTLER FORMATION



LITHOLOGY:

PRIMARY ROCK/SEDIMENT TYPES	SECONDARY CONSTITUENTS
[Symbol] MUDSTONE/CLAYSTONE	[Symbol] ARGILLACEOUS
[Symbol] CLAYSTONE BED	[Symbol] SILTY
[Symbol] SILTSTONE	[Symbol] SANDY
[Symbol] SANDSTONE	[Symbol] SULFATIC
[Symbol] ANHYDRITE/GYPSUM	[Symbol] DOLOMITIC
[Symbol] DOLOMITE	[Symbol] CALCAREOUS
[Symbol] HALITE	[Symbol] HALITIC
[Symbol] POLYHALITE	[Symbol] POLYHALITIC
[Symbol] CALICHE	

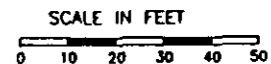
NOTE:

1. THE STRATIGRAPHY AND GROUNDWATER BRINE SEEPAGE/WEEP INTERVALS ARE BASED ON THE LITHOLOGIC INFORMATION COMPILED DURING THE GEOLOGIC MAPPING OF THE EXHAUST SHAFT WALLS DOE-WIPP-86-008, "GEOLOGIC ACTIVITIES IN THE EXHAUST SHAFT", AND APPENDIX A OF REPORT DOE/WIPP-95-3117, "WASTE ISOLATION PILOT PLANT SEALING SYSTEM DESIGN REPORT", 1995.

ASTERISK (*) WITHIN THE RUSTLER AND SUPRA RUSTLER FORMATIONS INDICATE GROUNDWATER OBSERVED DURING SHAFT MAPPING. ASTERISK (*) WITHIN THE SALADO FORMATION INDICATES A POTENTIAL BRINE SEEPAGE/WEEP INTERVAL. THESE POTENTIAL BRINE SEEPAGE/WEEP INTERVALS ARE BASED ON OBSERVED INTERVALS OF BRINE SEEPAGE/WEEPS IN THE AIR INTAKE SHAFT THAT HAVE BEEN PROJECTED TO THE EXHAUST SHAFT. THE MAPPING OF THE EXHAUST SHAFT (HOLT & POWERS, 1986/DOE-WIPP 86-008) DID NOT INDICATE OBSERVED SEEPAGE INTERVALS WITHIN THE SALADO FORMATION.

2. REFERENCE AS-BUILT DRAWINGS FROM WID:

EXHAUST SHAFT 351, SHAFT LINING AND KEY SECTION AND DETAILS	35-R-002-01D
EXHAUST SHAFT 351, GENERAL ARRANGEMENT, PLANS AND SECTIONS	35-R-004-01D
EXHAUST SHAFT WINCH AND COLLAR LAYOUT - SHOWS PERMANENT COLLAR STRUCTURE	OGL-S-020-1FB
EXHAUST SHAFT, SHAFT DEVELOPMENT, PLAN, SECTIONS AND DETAIL	WTSO 3900064 (1 of 2)



Albert W. Dennis 8.2-96

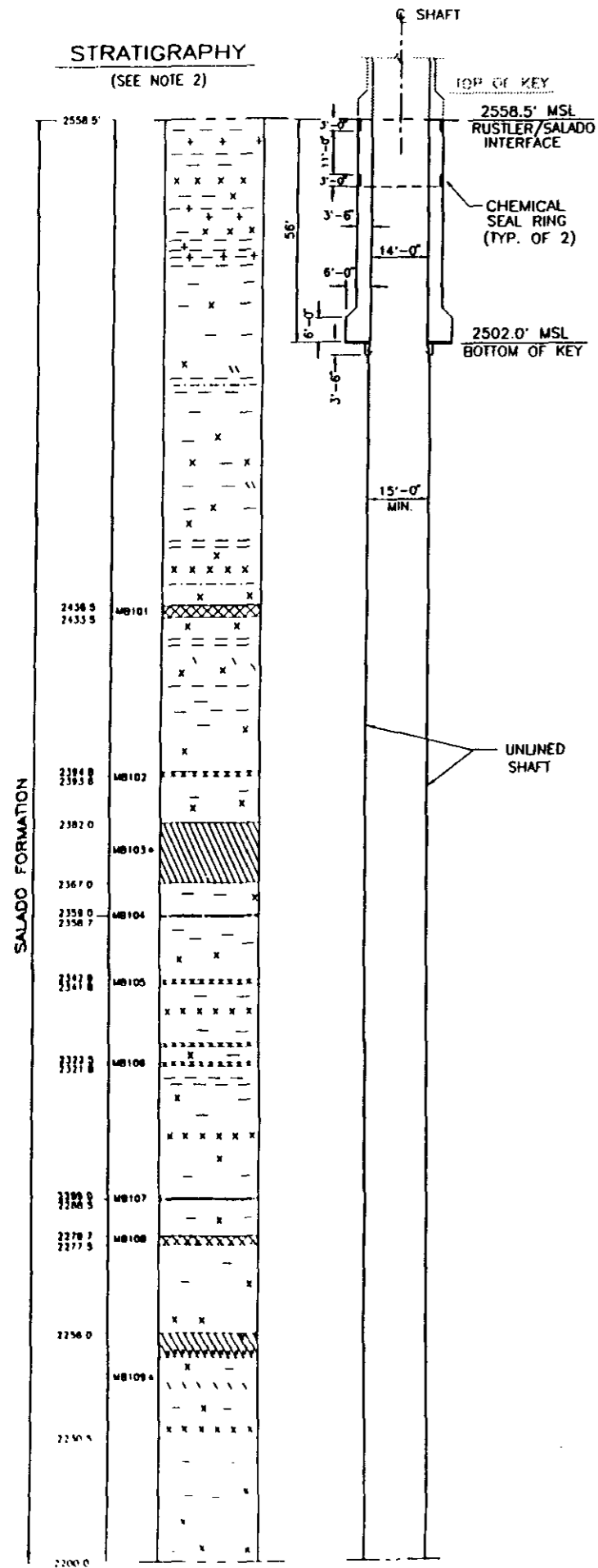
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SANDIA NATIONAL LABORATORIES
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 WIPP SHAFT SEALING SYSTEM
 NEAR-SURFACE/RUSTLER FORMATIONS
EXHAUST SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS

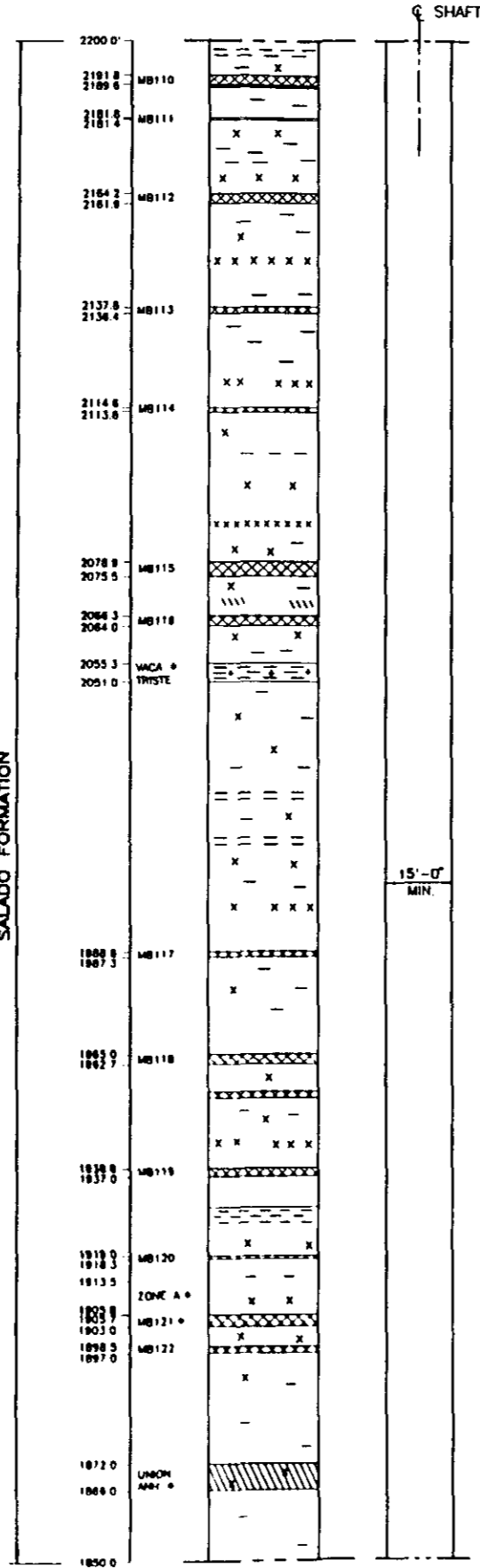
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BY: [Signature]	8/2/96
CK: [Signature]	8/2/96
APP: [Signature]	8/2/96
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PARSONS BRINCKERHOFF ENERGY SERVICES, INC. SCALE: SIZE: 8 SML DWG NO: SML-007 SHEET NO: 12 OF 28

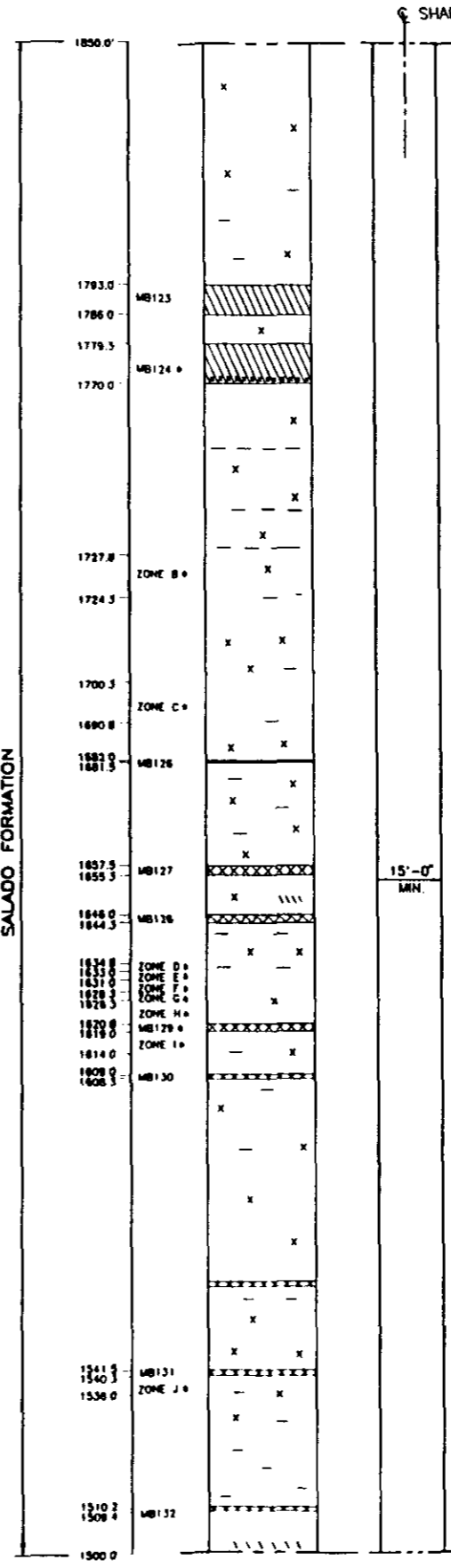
STRATIGRAPHY
(SEE NOTE 2)



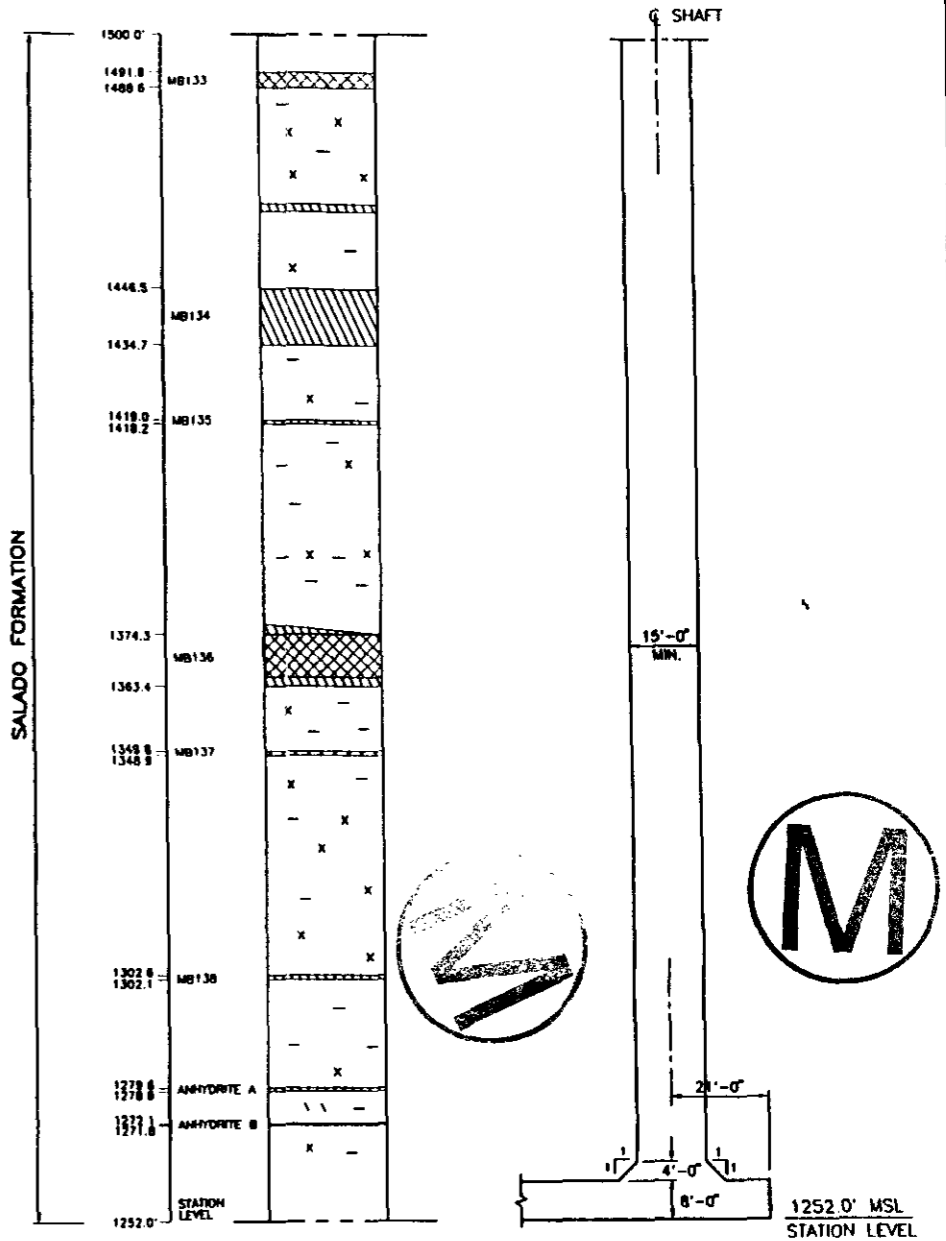
SALADO FORMATION



SALADO FORMATION

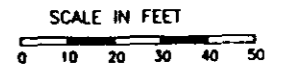


SALADO FORMATION



NOTES:

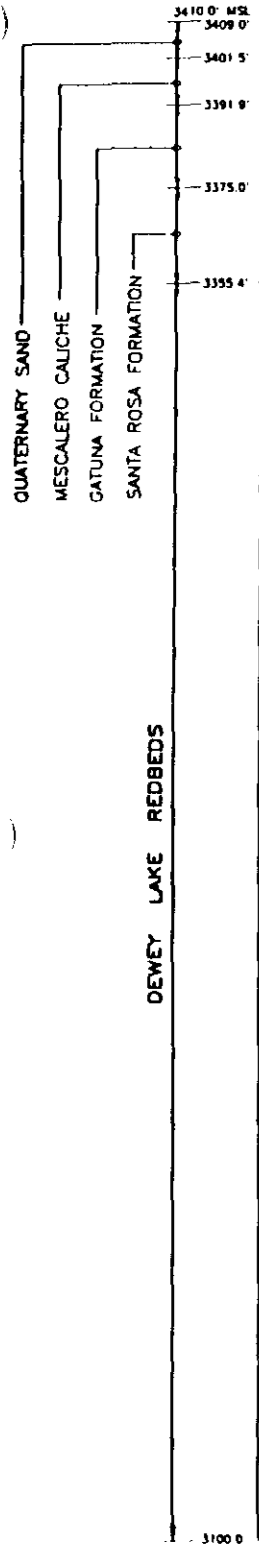
- SEE SHT. 1 FOR GENERAL NOTES AND ABBREVIATIONS
- SEE SHT. 12 FOR LITHOLOGY AND NOTES.



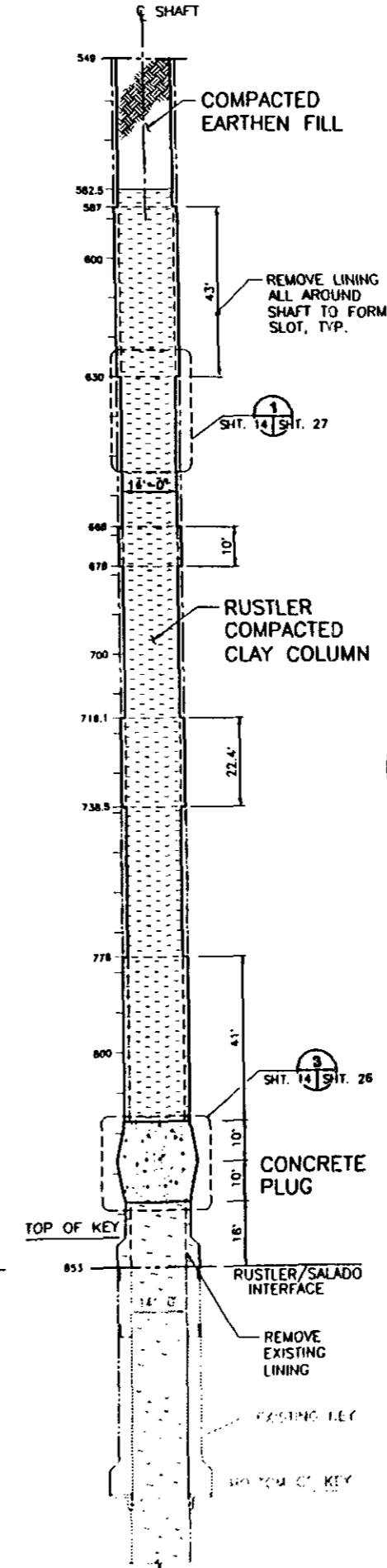
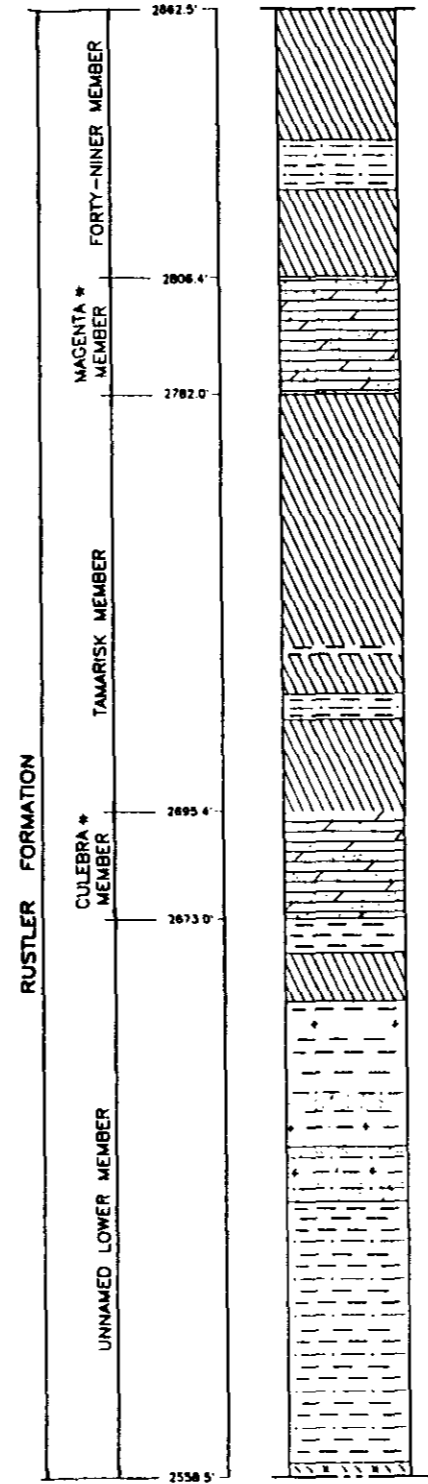
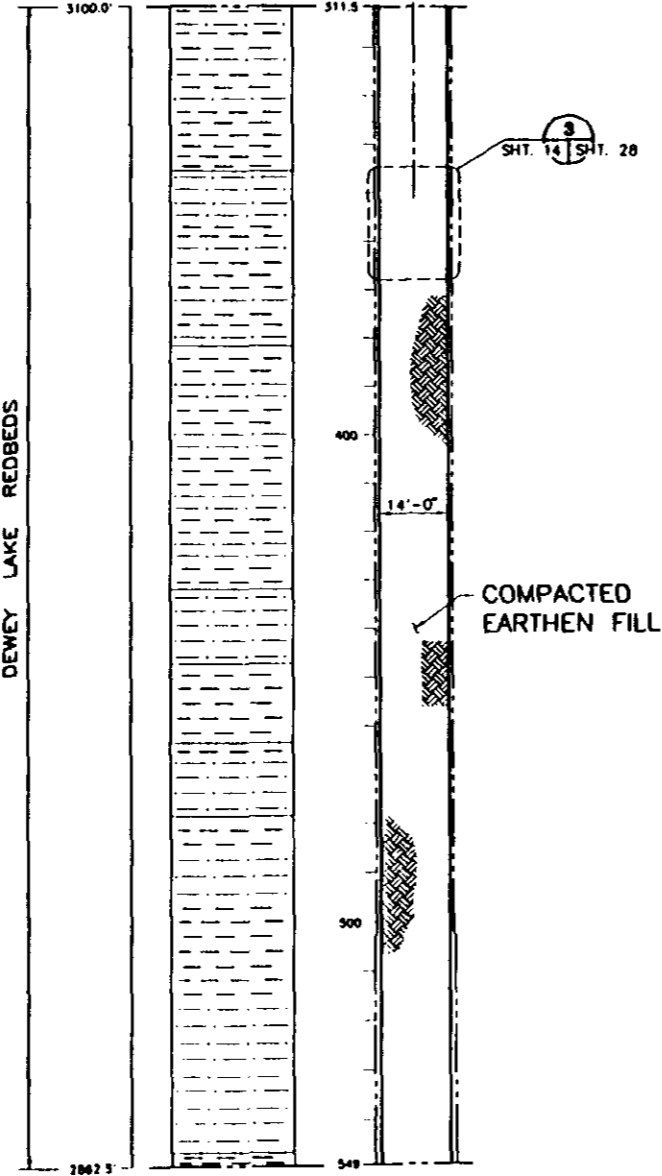
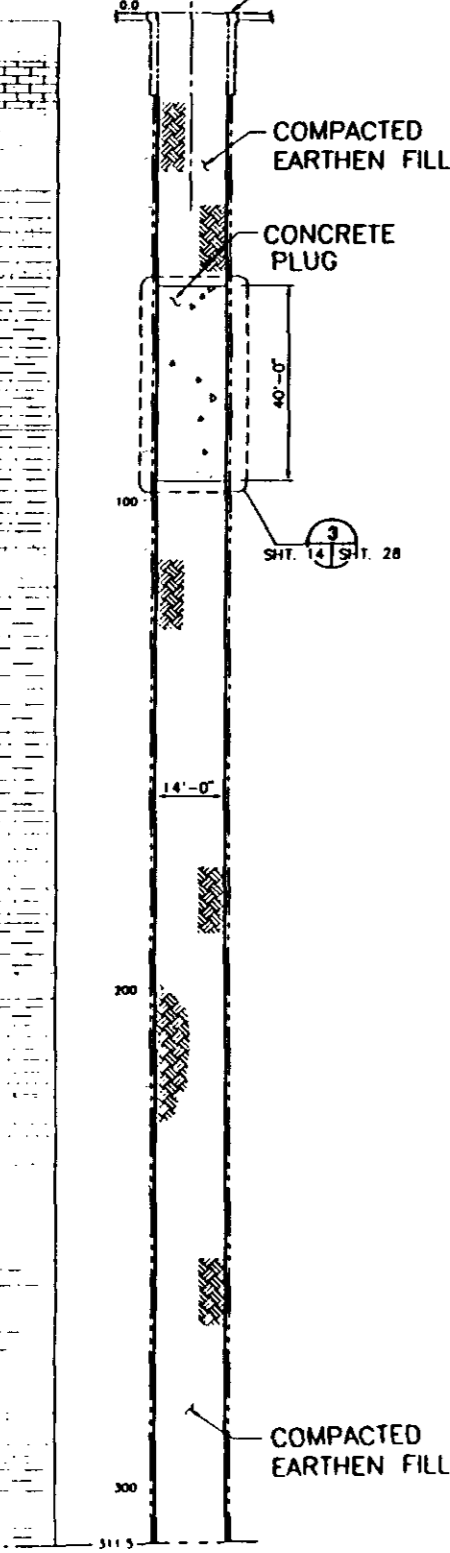
A. W. Dennis
8-2-96

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CONTRACT NO. AG-4908			NAME	DATE	
			BY	DATE	
			CK	DATE	
			APP	DATE	
			APP	DATE	
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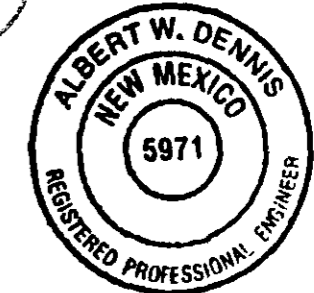
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(SEE NOTE 2)



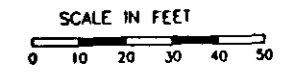
SHAFT
DEPTH
(SEE NOTE 3)



- NOTES:**
- SEE SHT. 1 FOR GENERAL NOTE, LEGEND AND ABBREVIATIONS
 - SEE SHT. 12 FOR LITHOLOGY AND NOTES.
 - DEPTHS SHOWN ARE DISTANCES BELOW THE TOP OF CONCRETE, LOCATED AT EL. 3411.5' ABOVE MSL USGS 1927 NORTH AMERICAN DATUM.



A.W. Dennis 9-2-96

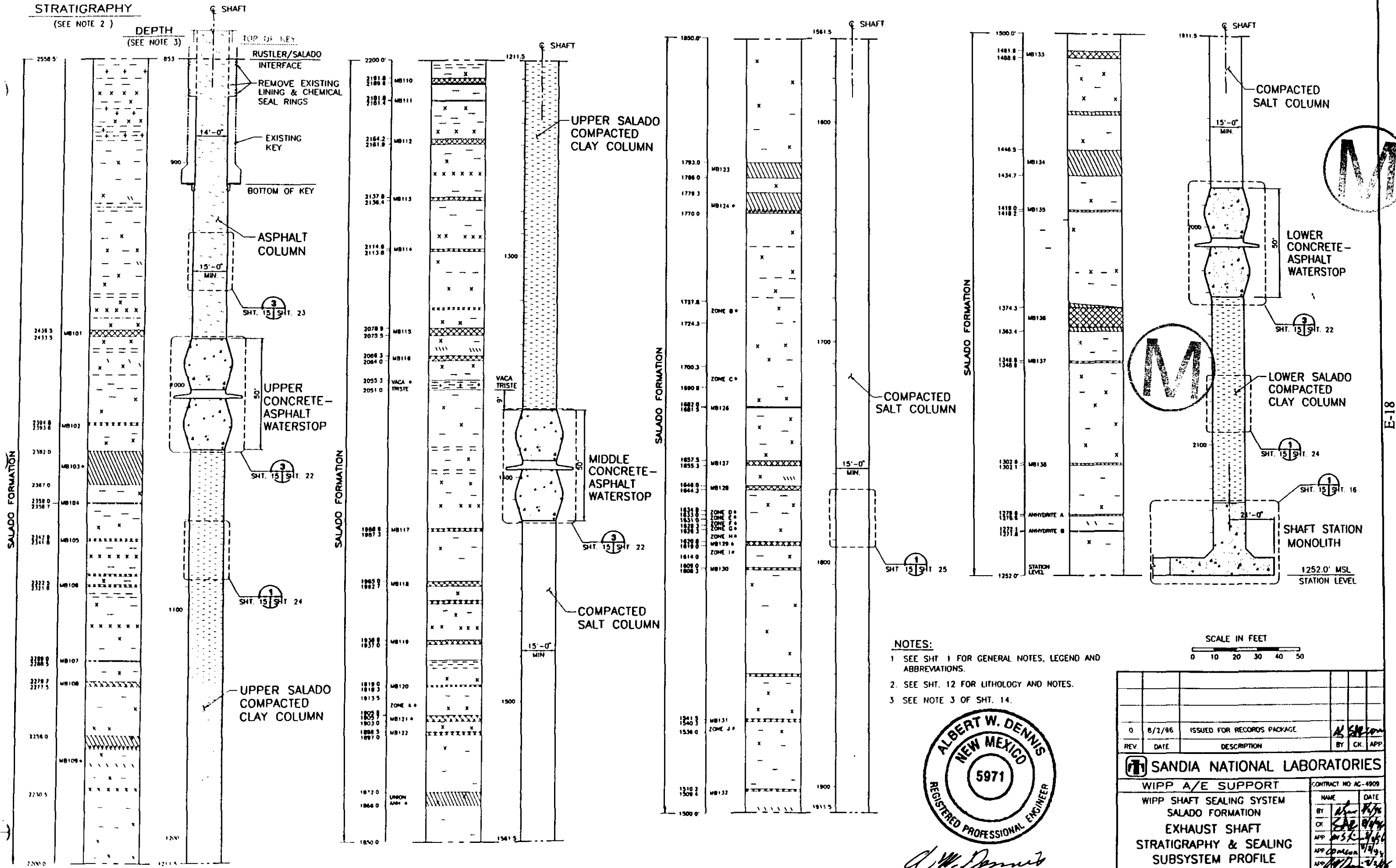


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			BY	8/2/96
			CK	8/2/96
			APP	8/2/96
			APP	8/2/96
			APP	8/2/96
PARSONS BRINCKERHOFF ENERGY SERVICES, INC.	SCALE	SIZE	SHEET NO.	SHEET NO.
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STRATIGRAPHY

(SEE NOTE 2)

DEPTH
(SEE NOTE 3)

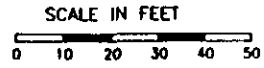


NOTES:

1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. SEE SHT. 12 FOR LITHOLOGY AND NOTES.
3. SEE NOTE 3 OF SHT. 14.

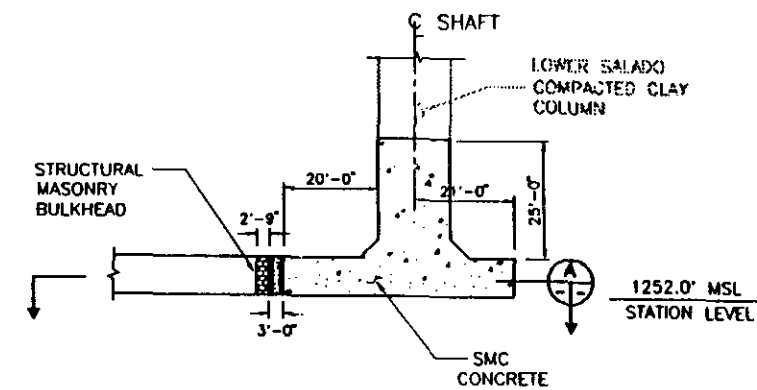
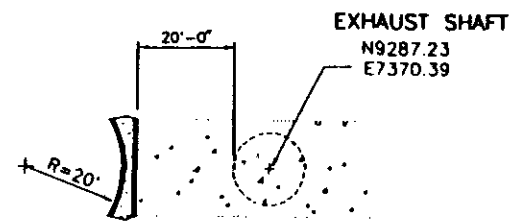
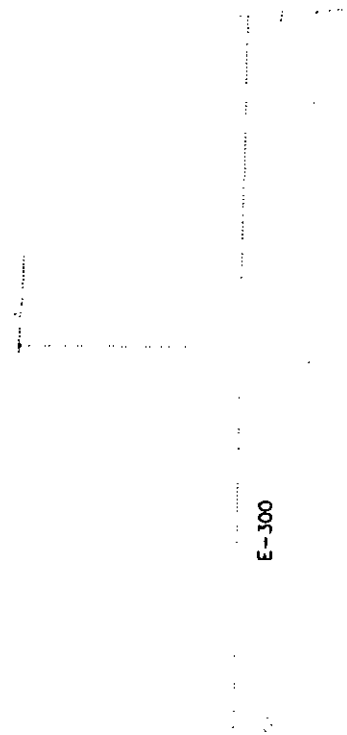
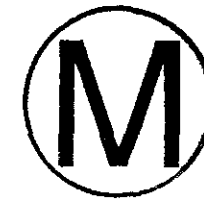
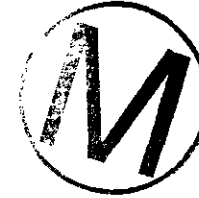


Albert W. Dennis
8-2-96



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				CK	8/2/96
				APP	8/2/96
				APP	8/2/96
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PARSONS BRINCKERHOFF ENERGY SERVICES, INC		SCALE	SIZE	SNL DWG NO	SHEET NO
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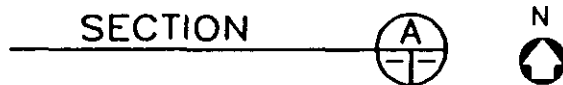
E-18



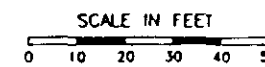
DETAIL
SHT. 15 SHT. 16

NOTES:

- 1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.

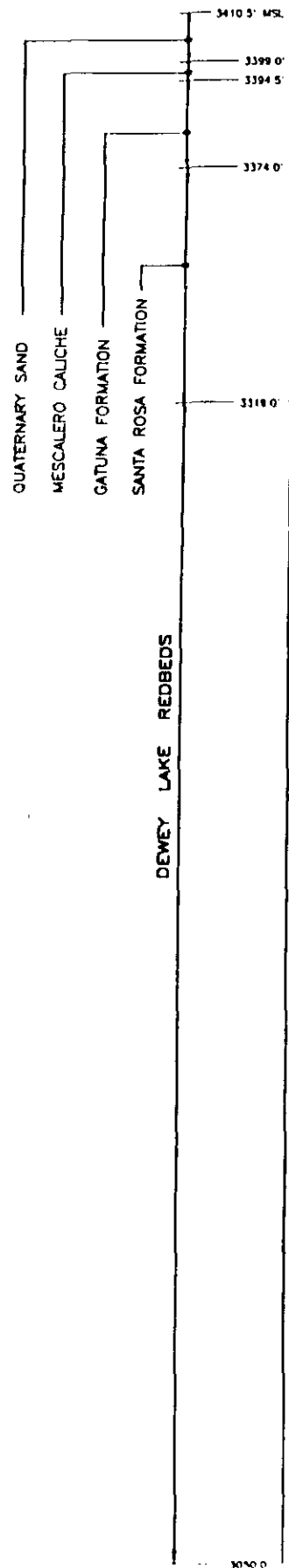


A. W. Dennis 8-2-96



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			CK		
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			APP		
			APP		
PARSONS BRINCKERHOFF ENERGY SERVICES, INC	SCALE	SIZE	SNL DWG NO	SHEET NO	
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STRATIGRAPHY
(SEE NOTE 1)



NOT MAPPED

NOT MAPPED

SHAFT

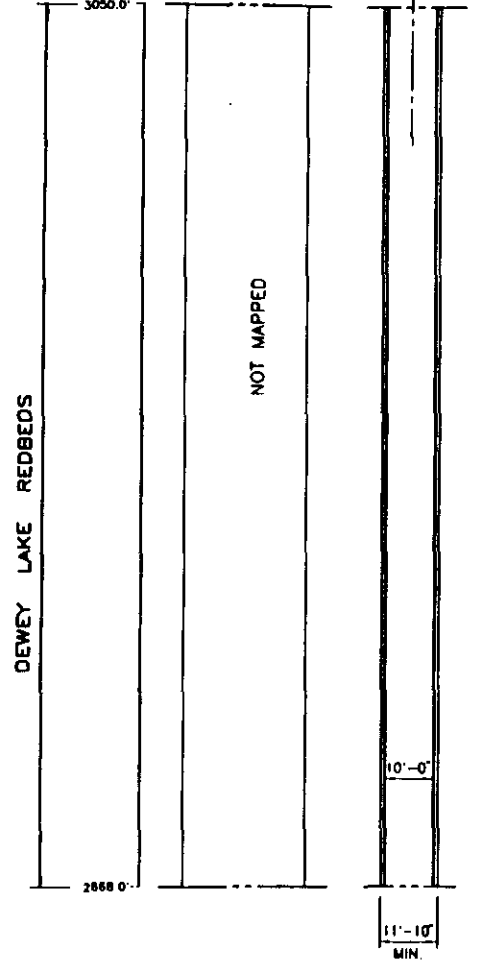
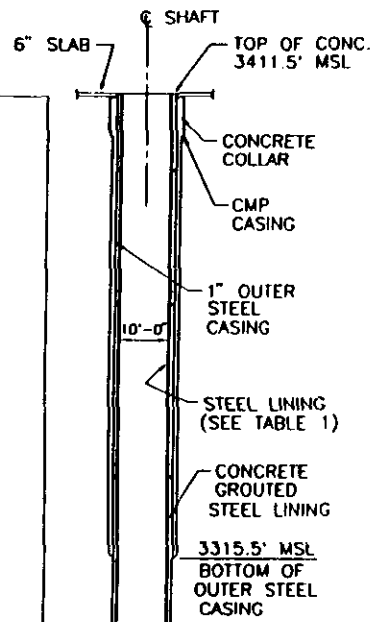
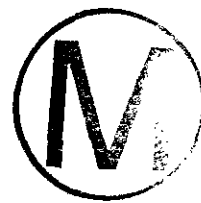


TABLE 1: STEEL LINING SCHEDULE
(SEE NOTE 4)

THICKNESS (IN)	TOP EL. MSL	BOT. EL. MSL	SECTION LENGTH (FT.)
5/8	3411.5	3246	165.5
1	3246	2886	360
1 1/4	2886	2786	100
1 3/8	2786	2686	100
1 1/2	2686	2586	100
1 1/2 PETAL BASKET	2586	2573	13
TOTAL LENGTH			838.5



Albert W. Dennis 8-2-96

LITHOLOGY:

PRIMARY ROCK/SEDIMENT TYPES	SECONDARY CONSTITUENTS
MUDSTONE/CLAYSTONE	ARGILLACEOUS
CLAYSTONE BED	SILTY
SILTSTONE	SANDY
SANDSTONE	SULFATIC
ANHYDRITE/GYPSUM	DOLOMITIC
DOLOMITE	CALCAREOUS
HALITE	HALITIC
POLYHALITE	POLYHALITIC

NOTES:

- THE STRATIGRAPHY AND GROUNDWATER BRINE SEEPAGE/WEEP INTERVALS ARE BASED ON THE LITHOLOGIC INFORMATION COMPILED DURING THE GEOLOGIC MAPPING OF THE SALT HANDLING SHAFT WALLS, TME 3178; "GEOTECHNICAL ACTIVITIES IN THE EXPLORATORY SHAFT-SELECTION OF THE FACILITY INTERVAL"; AND APPENDIX A OF REPORT DOE/WIPP-95-3117, "WASTE ISOLATION PILOT PLANT SEALING SYSTEM DESIGN REPORT", 1995.
- REFERENCE AS-BUILT DRAWINGS FROM WID:
EXPLORATORY SHAFT KEY SHAFT STATION LOCATION, SECTIONS 37-R-010
EXPLORATORY SHAFT KEY, SECTIONS AND DETAILS 37-R-012
EXPLORATORY SHAFT STATION DEVELOPMENT - EXPERIMENTAL LEVEL PLAN AND SECTIONS 37-R-019
UNDERGROUND BASE PLAN E-0 DRIFT FROM N-9900 TO N-9580 51-W-126-W5
WIPP EXHAUST SHAFT 120" I.D. CASING x 834' FS-M3259-01
WIPP PROJECT 120" I.D. CASING LINER HOLE COMPLEX FS M3259-02
- HISTORICAL NOTE: SINCE ITS CONSTRUCTION, THE SALT HANDLING SHAFT HAS BEEN REFERRED TO AS THE EXHAUST SHAFT, THE EXPLORATORY SHAFT, THE CONSTRUCTION AND SALT HANDLING SHAFT, AND THE SALT HANDLING SHAFT.
- THICKNESS OF STEEL LINING VARIES, LINING TYPE AND LENGTH ARE BASED ON FENIX AND SCISSION AS-BUILT DWGS. M3259-02, REV. 0, DATED 11/30/79, WIPP PROJECT 120" I.D. CASING LINER HOLE COMPLEX, AND M3259-01, REV. 1, DATED 10/13/80, WIPP EXHAUST SHAFT 120" I.D. CASING x 834'.

1 1/2" STEEL LINING
CONCRETE LINING

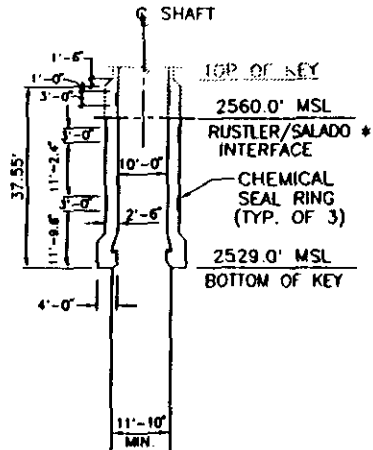
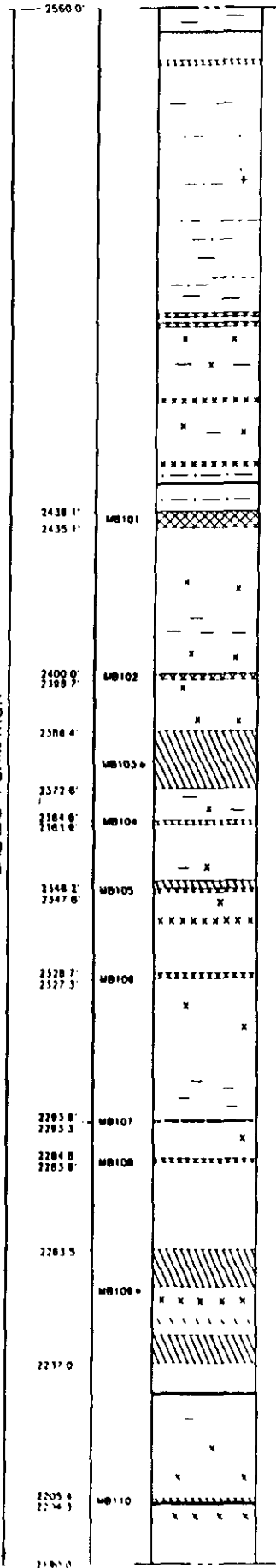
TOP OF KEY
RUSTLER/SALADO * INTERFACE

BOTTOM OF KEY

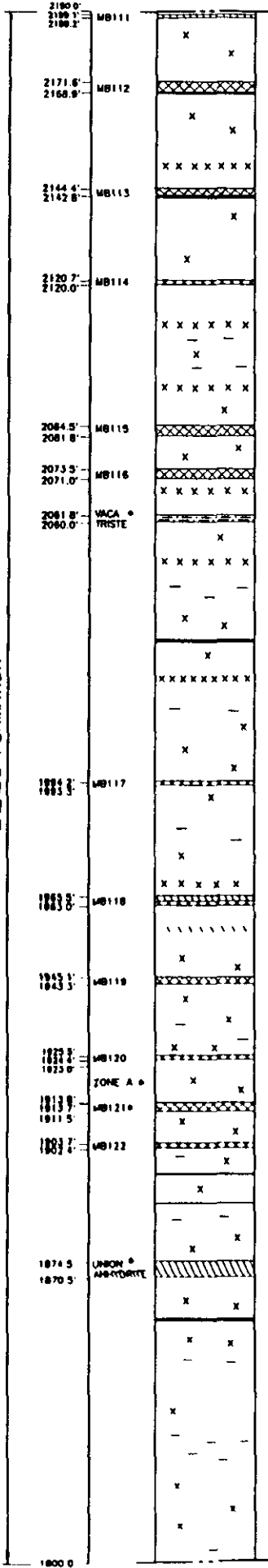


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REV.	DATE	DESCRIPTION	BY	CK	APP
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WIPP A/E SUPPORT					
WIPP SHAFT SEALING SYSTEM					
NEAR-SURFACE/RUSTLER FORMATIONS					
SALT HANDLING SHAFT					
STRATIGRAPHY &					
AS-BUILT ELEMENTS					
PARSONS BRINCKERHOFF ENERGY SERVICES, INC.	SCALE	SIZE	SNL DWG NO	SHEET NO	
		B	SML-007	17 OF 28	

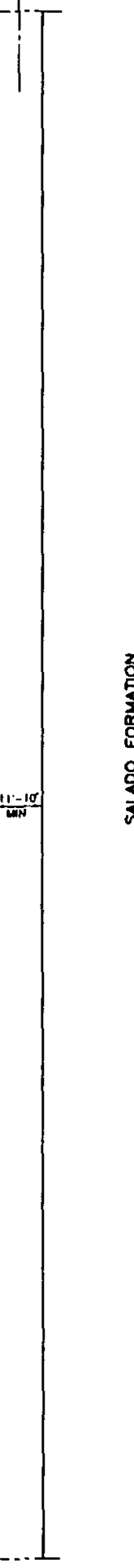
STRATIGRAPHY
(SEE NOTE 2)



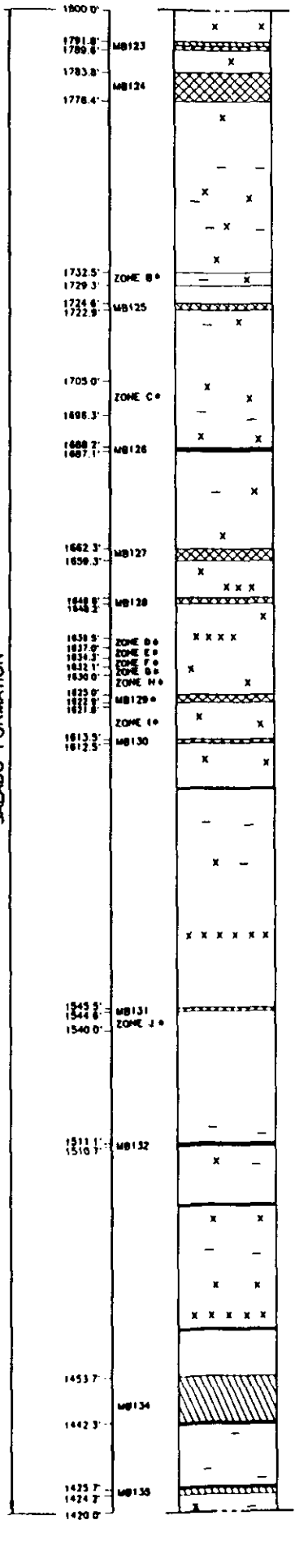
SALADO FORMATION



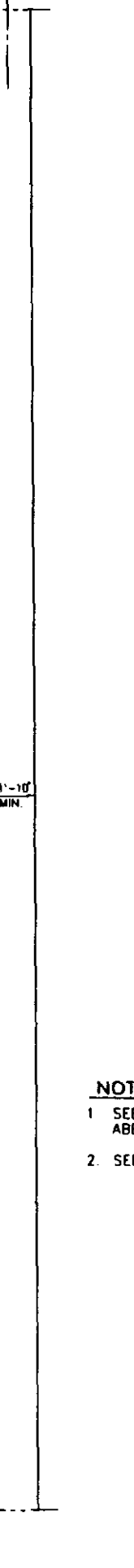
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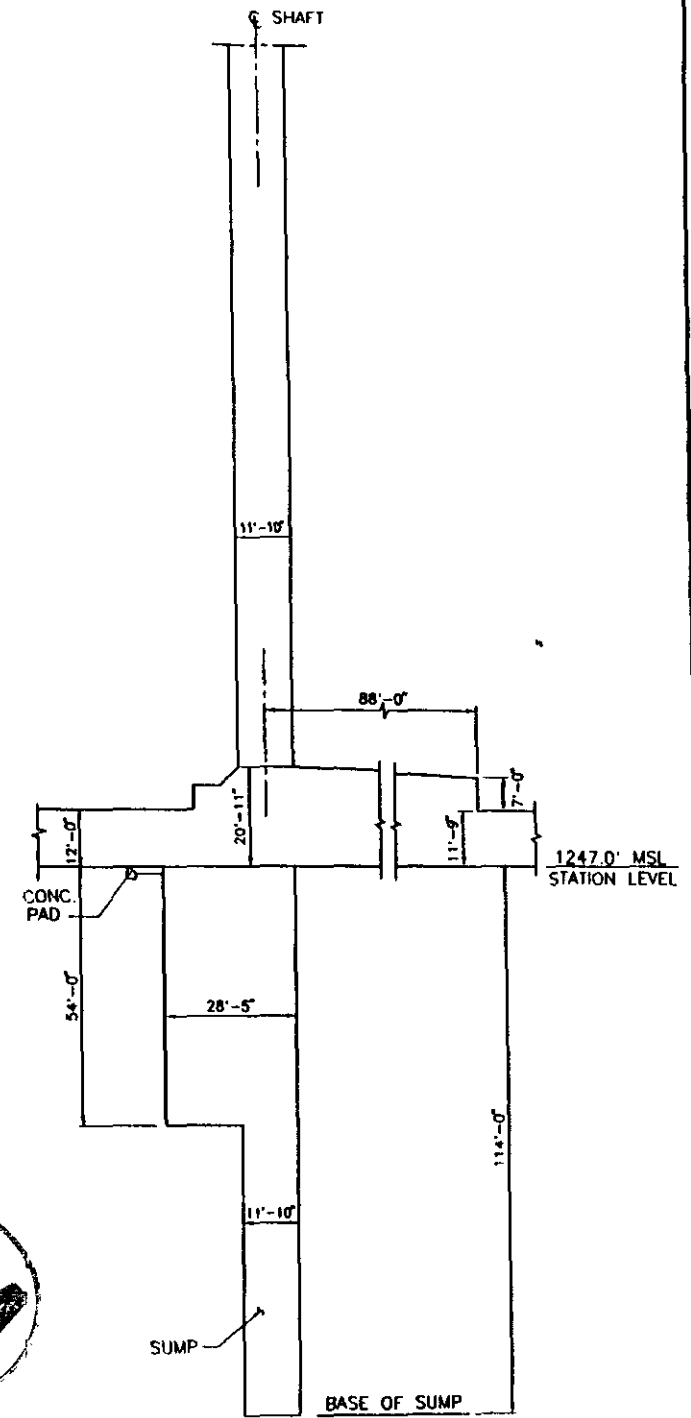
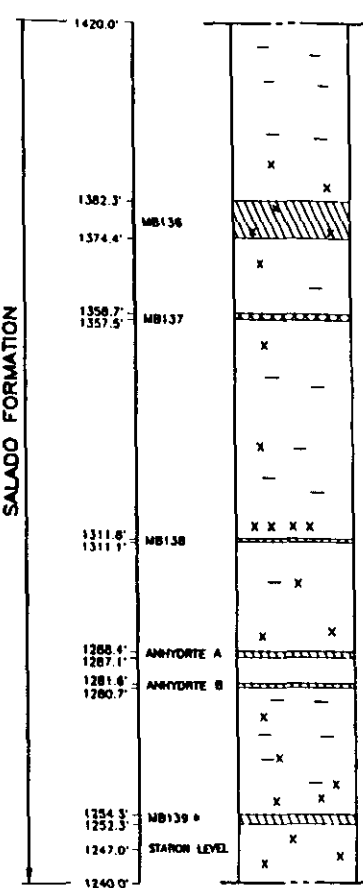
SALADO FORMATION



SALADO FORMATION



SALADO FORMATION



- NOTES:
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2. SEE SHT 17 FOR LITHOLOGY AND NOTES.

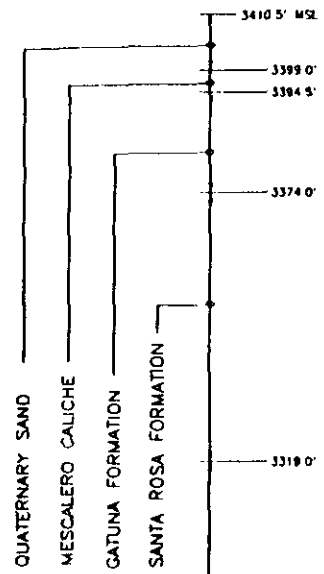


A. W. Dennis 8-2-96



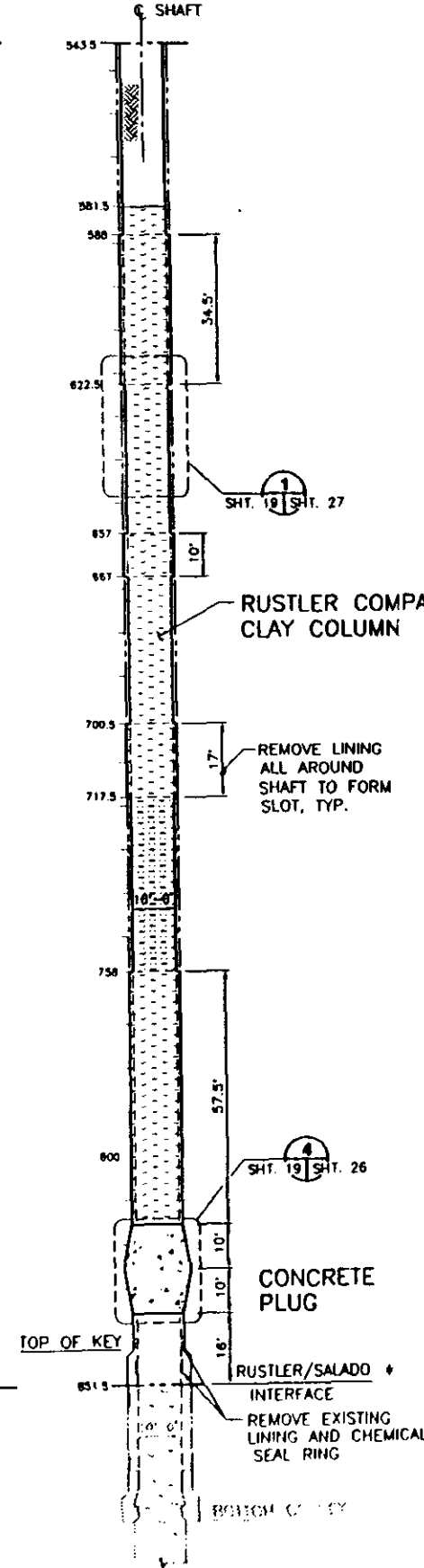
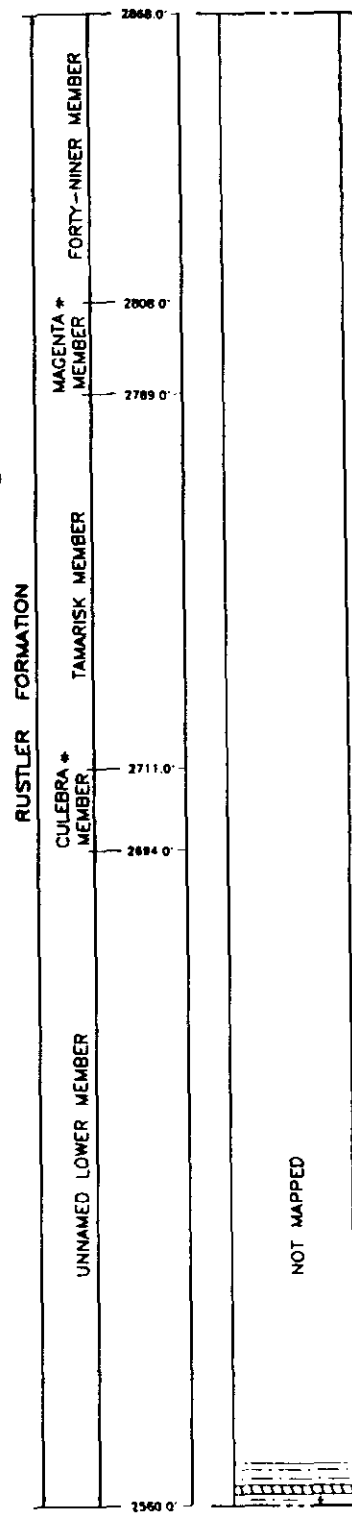
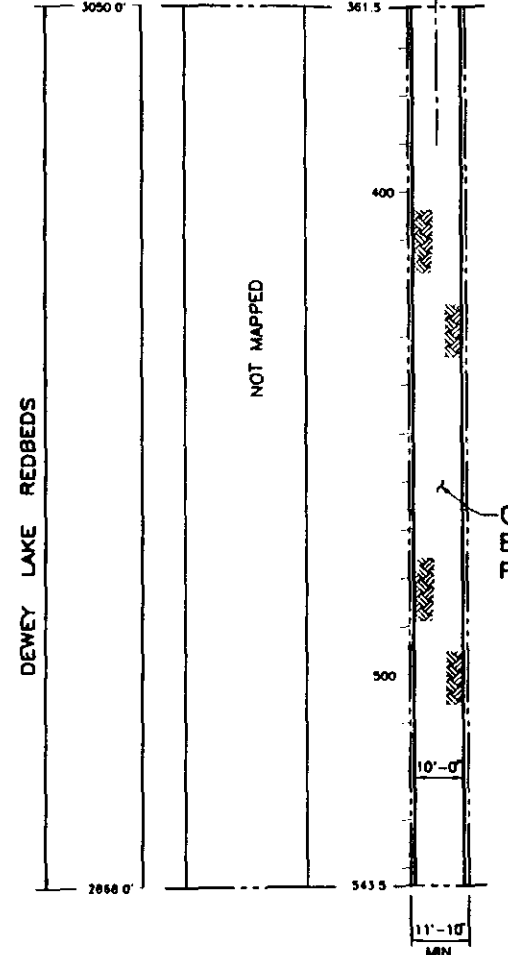
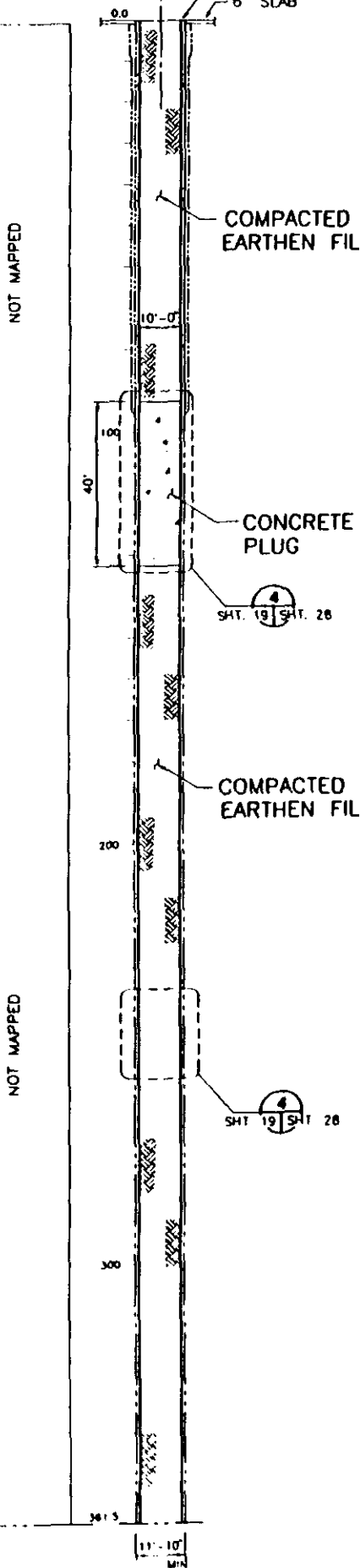
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WIPP SHAFT SEALING SYSTEM		NAME	DATE
SALADO FORMATION		BY	08/02/96
SALT HANDLING SHAFT		CK	08/02/96
STRATIGRAPHY &		APP	08/02/96
AS-BUILT ELEMENTS		APP	08/02/96
PARSONS BRINCKERHOFF ENERGY SERVICES, INC	SCALE	SIZE	SHEET NO
	B	B	18 OF 28

STRATIGRAPHY
(SEE NOTE 2)

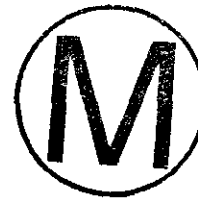


DEWEY LAKE REDBEDS

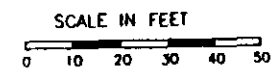
SHAFT
DEPTH
(SEE NOTE 3)



- NOTES:**
1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
 2. SEE SHT. 17 FOR LITHOLOGY AND NOTES.
 3. DEPTHS SHOWN ARE DISTANCES BELOW THE TOP OF CONCRETE, LOCATED AT EL. 3411.5' ABOVE MSL USGS 1927 NORTH AMERICAN DATUM.

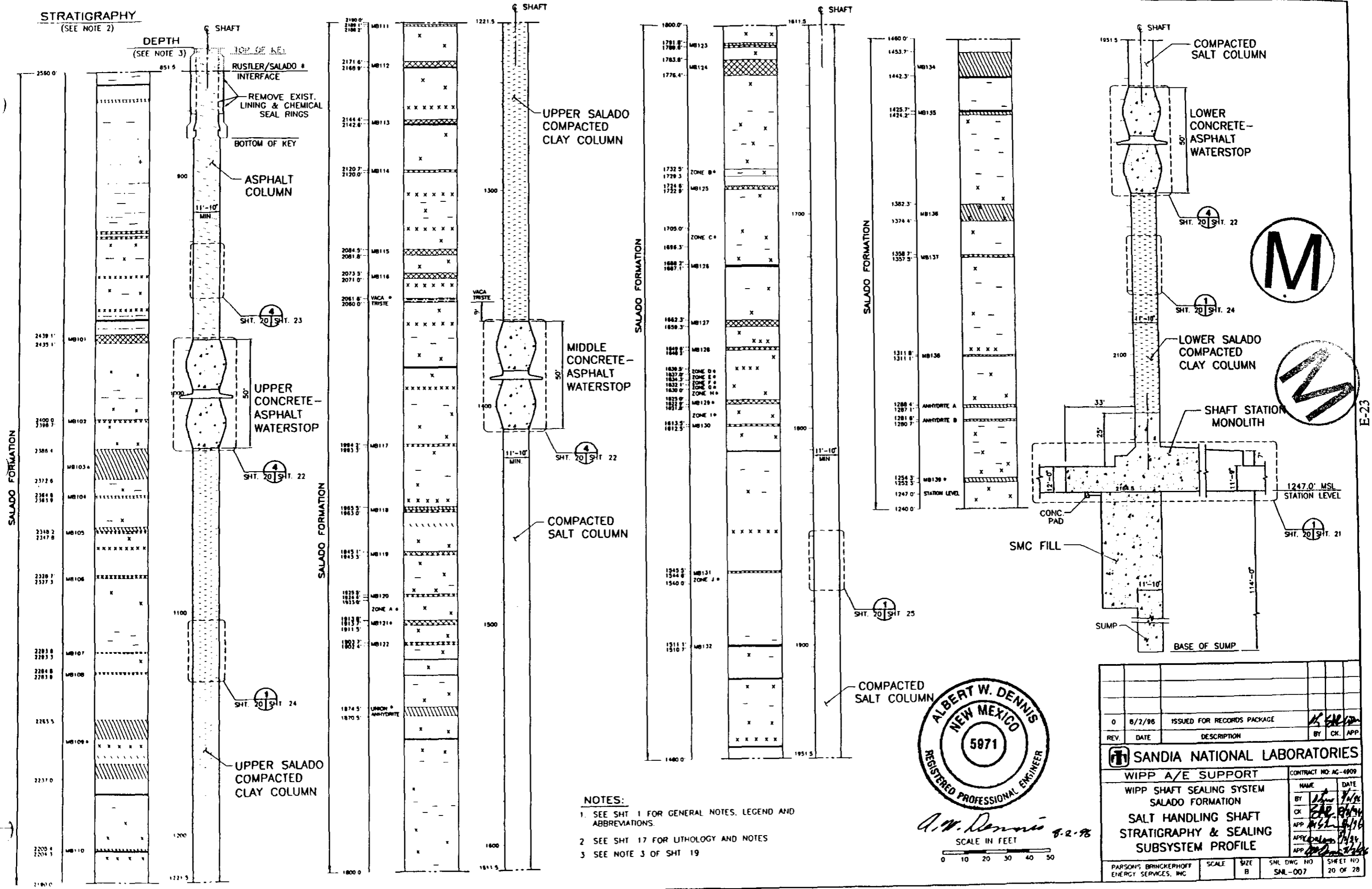


A. W. Dennis 9-2-96



REV.	DATE	DESCRIPTION	BY	CK.	APP.
0	8/2/96	ISSUED FOR RECORDS PACKAGE			
SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT				CONTRACT NO AG-4809	
WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS					
NAME		DATE			
BY		7/1/96			
CK.		SAP/8/96			
SALT HANDLING SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE					
APP.		9/2/96			
APP.		10/2/96			
PARSONS BRINCKERHOFF ENERGY SERVICES, INC.	SCALE	SIZE	SNL Dwg NO	SHEET NO	
	B	8	SNL-007	19 OF 28	

STRATIGRAPHY
(SEE NOTE 2)

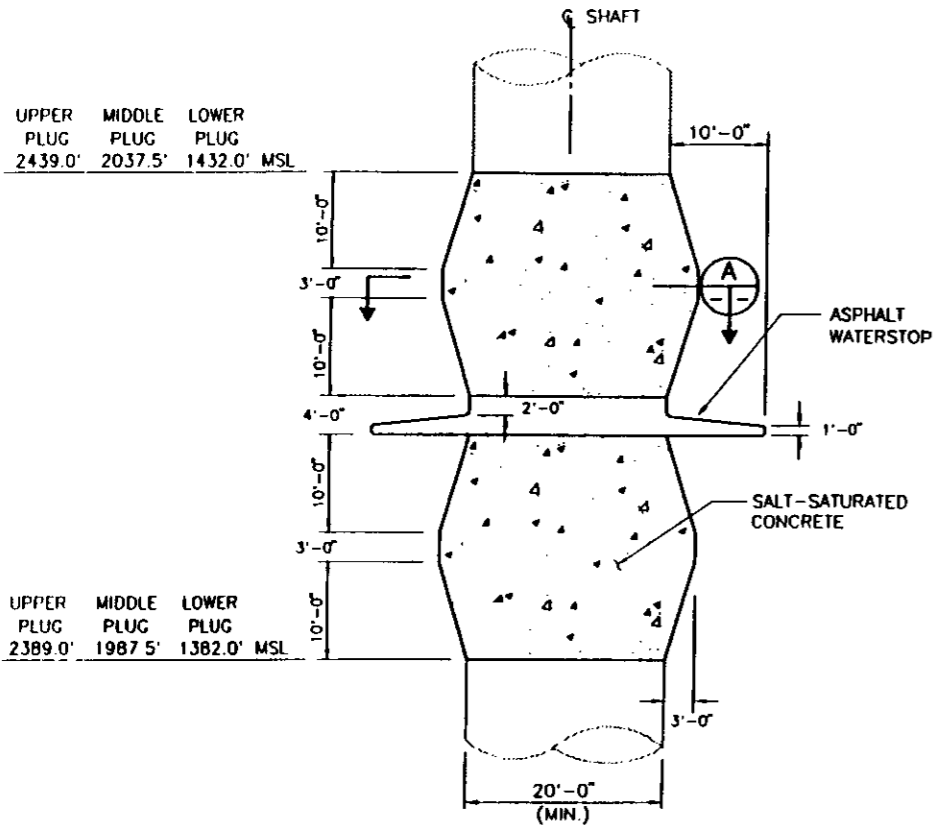


- NOTES:**
1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
 2. SEE SHT. 17 FOR LITHOLOGY AND NOTES
 3. SEE NOTE 3 OF SHT. 19



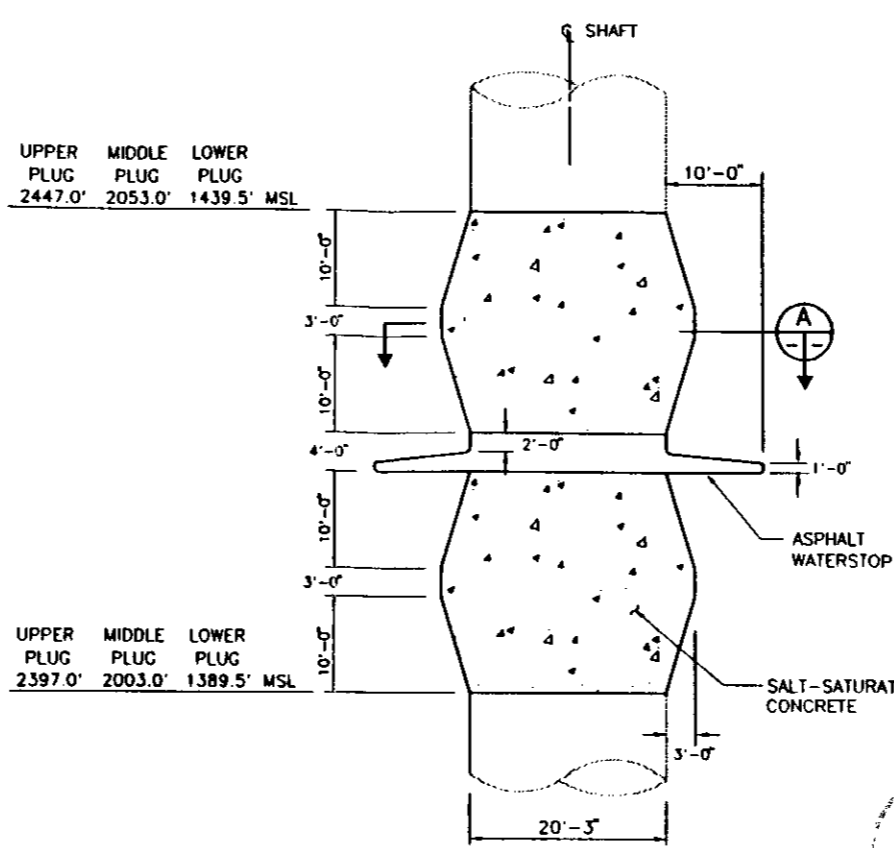
Albert W. Dennis 8-2-98
SCALE IN FEET
0 10 20 30 40 50

0	8/2/98	ISSUED FOR RECORDS PACKAGE	BY: <i>[Signature]</i>
REV.	DATE	DESCRIPTION	BY: CK. APP.
SANDIA NATIONAL LABORATORIES			
WIPP A/E SUPPORT			CONTRACT NO. AG-4909
WIPP SHAFT SEALING SYSTEM			NAME: _____ DATE: _____
SALADO FORMATION			BY: <i>[Signature]</i>
SALT HANDLING SHAFT			CK: <i>[Signature]</i>
STRATIGRAPHY & SEALING			APP: <i>[Signature]</i>
SUBSYSTEM PROFILE			APP: <i>[Signature]</i>
PARSONS BRINCKERHOFF ENERGY SERVICES, INC.	SCALE: B	SIZE: B	SML DWG NO. SNL-007 SHEET NO. 20 OF 28



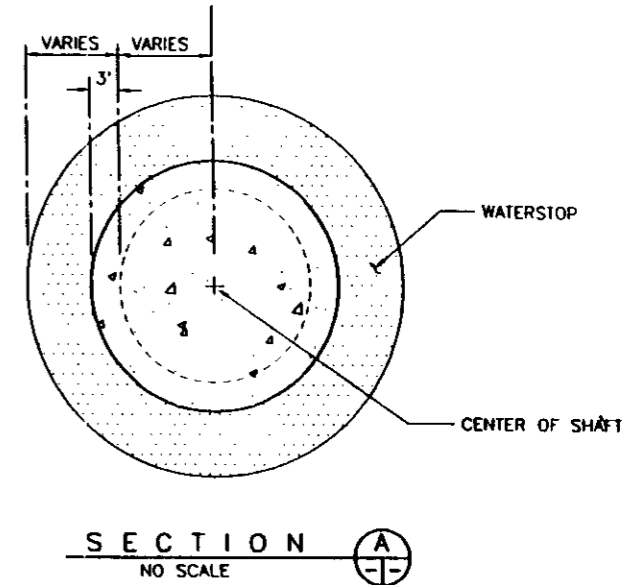
DETAIL 1
WASTE SHAFT SHT. 5 SH 22

UPPER PLUG 2389.0'
MIDDLE PLUG 1987.5'
LOWER PLUG 1382.0' MSL

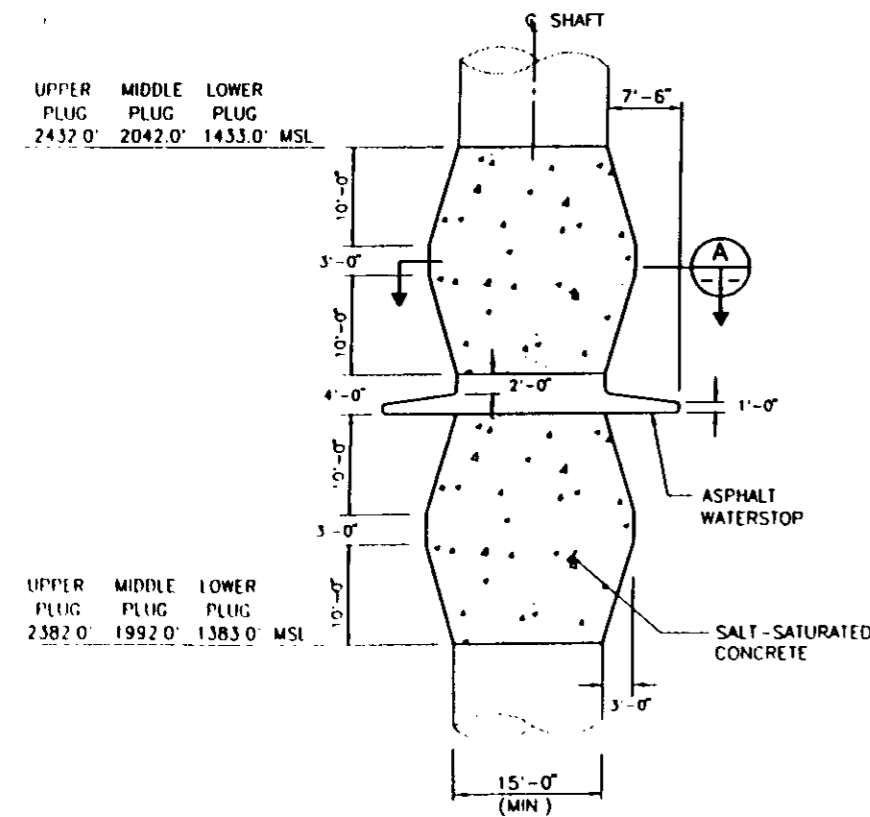


DETAIL 2
AIR INTAKE SHAFT SHT. 10 SH 22

UPPER PLUG 2397.0'
MIDDLE PLUG 2003.0'
LOWER PLUG 1389.5' MSL

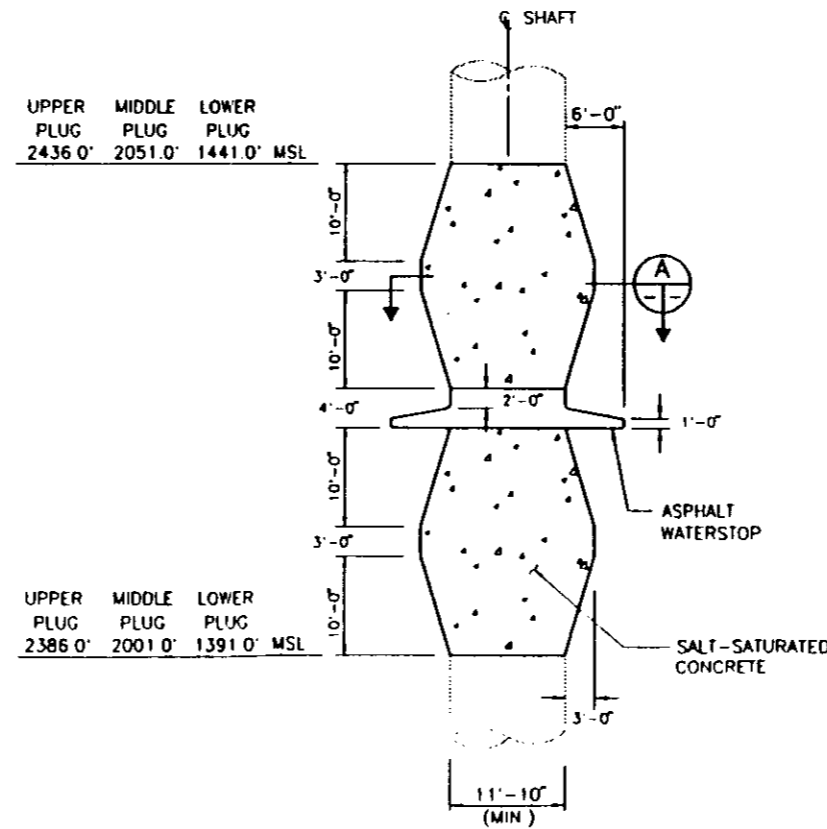


SECTION A-A
NO SCALE



DETAIL 3
EXHAUST SHAFT SHT. 15 SH 22

UPPER PLUG 2382.0'
MIDDLE PLUG 1992.0'
LOWER PLUG 1383.0' MSL

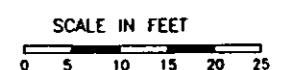


DETAIL 4
SALT HANDLING SHAFT SHT. 20 SH 22

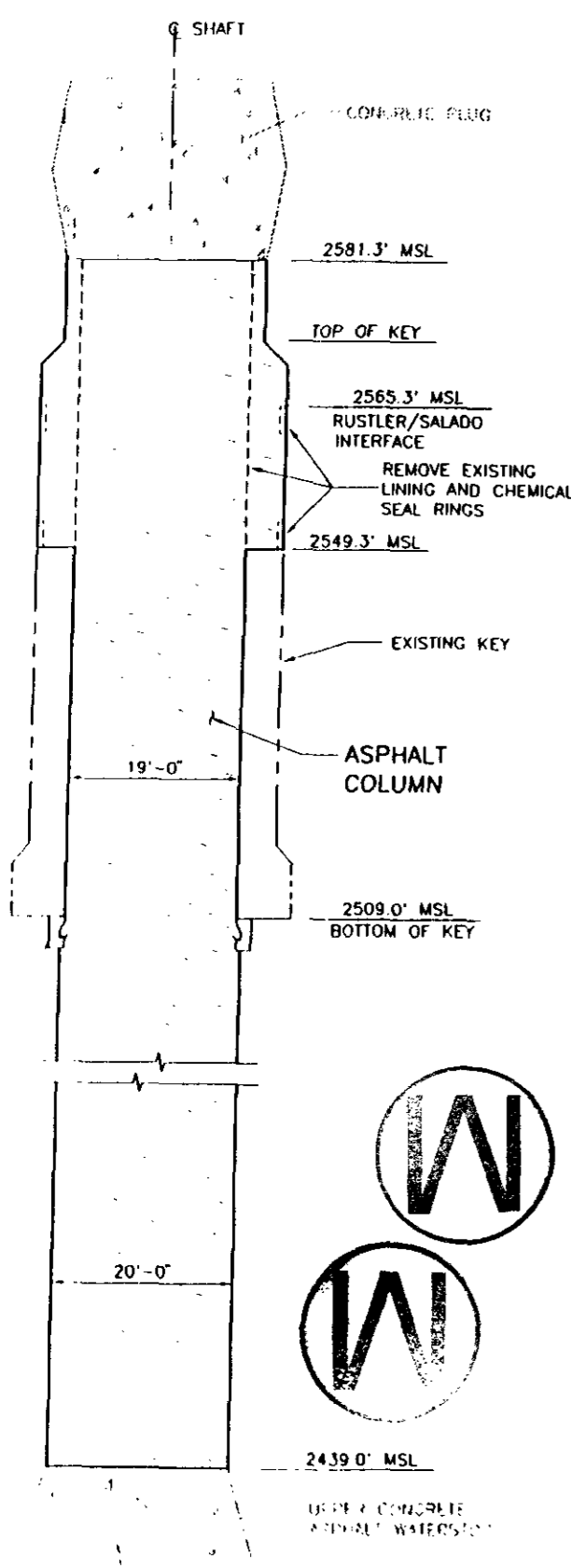
UPPER PLUG 2436.0'
MIDDLE PLUG 2051.0'
LOWER PLUG 1441.0' MSL



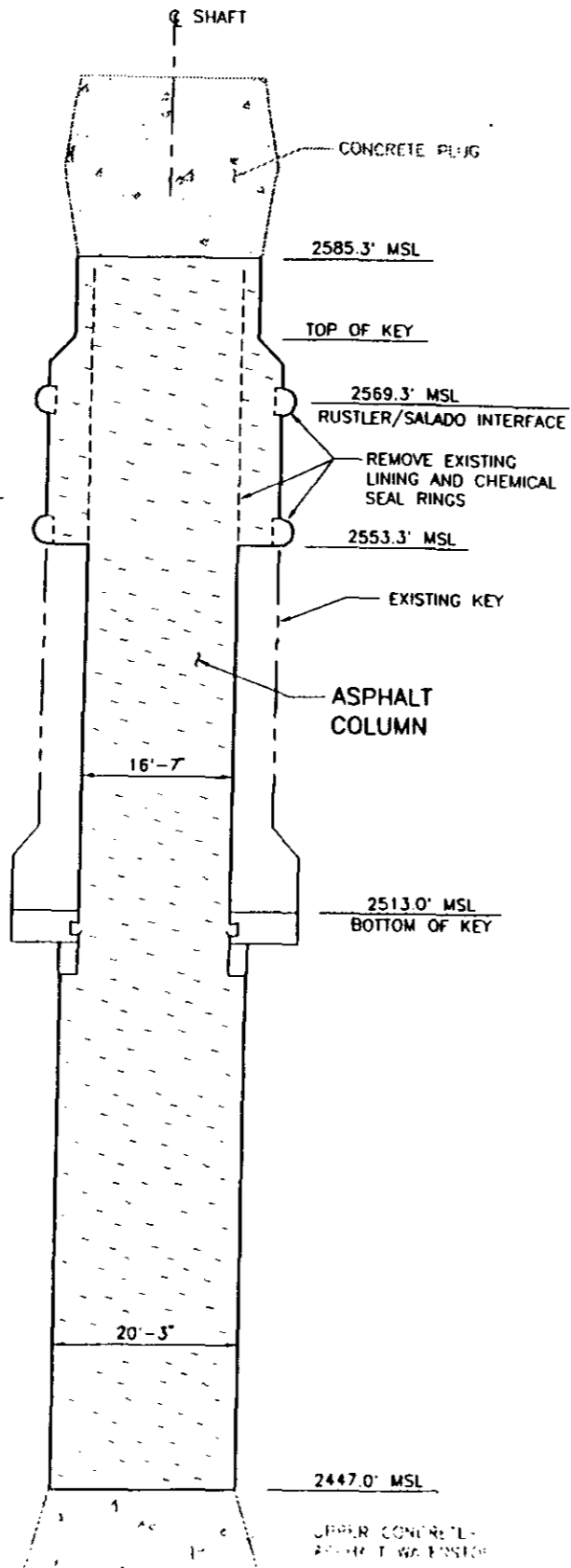
Albert W. Dennis
8-2-96



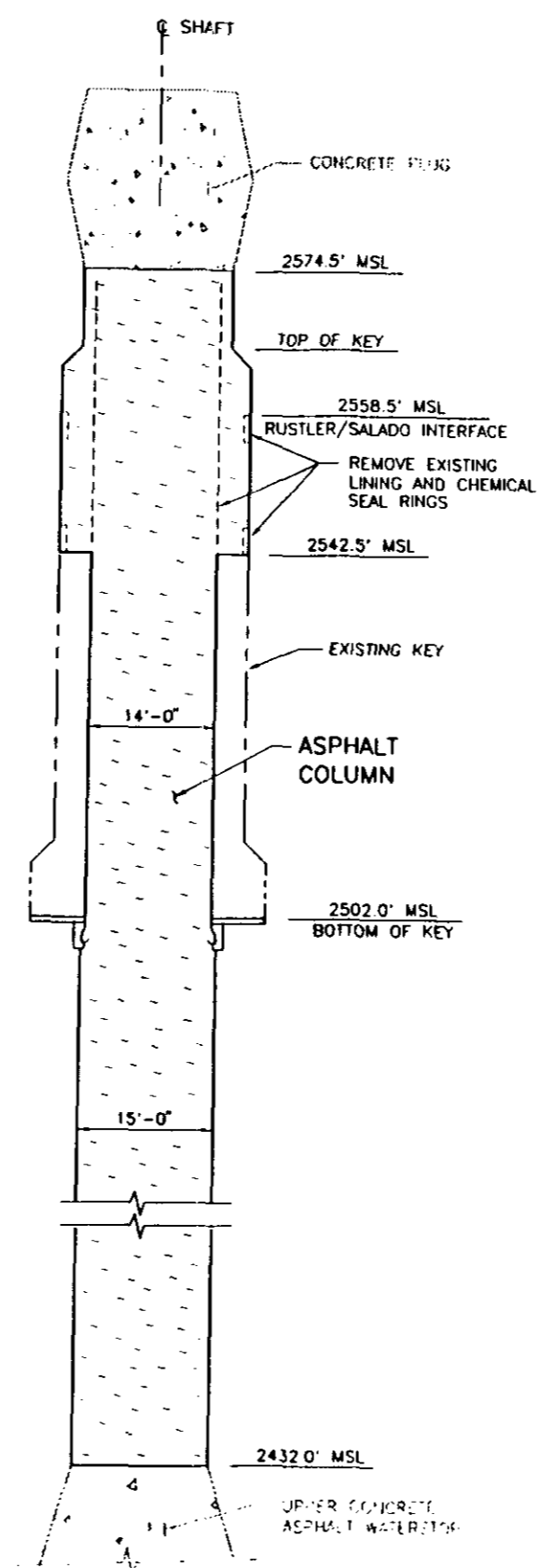
0	8/2/96	ISSUED FOR RECORDS PACKAGE	BY	CK	APP
REV.	DATE	DESCRIPTION	BY	CK	APP
SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT			CONTRACT NO. AG-4809		
WIPP SHAFT SEALING SYSTEM					
CONCRETE-ASPHALT WATERSTOP IN SALADO FORMATION			NAME	DATE	
BY			[Signature]		
CK			[Signature]		
APP			[Signature]		
APP			[Signature]		
APP			[Signature]		
PARSONS BRINCKERHOFF ENERGY SERVICES, INC.	SCALE	SIZE	SNL DWG. NO.	SHEET NO.	
		B	SNL-007	22 OF 28	



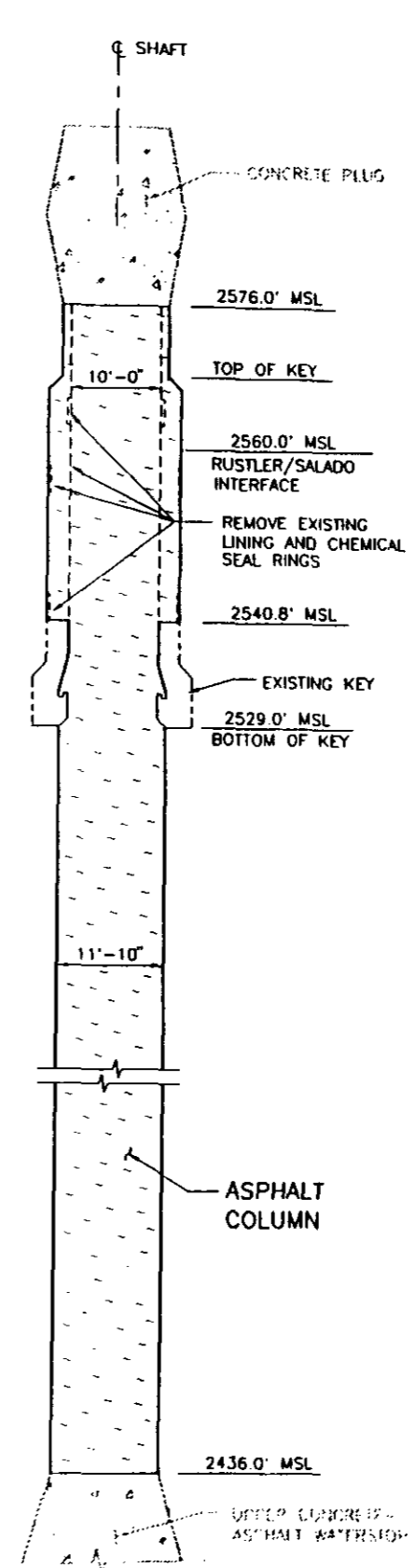
DETAIL WASTE SHAFT SHT. 5 | SHT. 23



DETAIL AIR INTAKE SHAFT SHT. 10 | SHT. 23



DETAIL EXHAUST SHAFT SHT. 15 | SHT. 23



DETAIL SALT HANDLING SHAFT SHT. 20 | SHT. 23



Albert W. Dennis
8-2-96



0	8/2/96	ISSUED FOR RECORDS PACKAGE			
REV.	DATE	DESCRIPTION	BY	CK.	APP.
SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT			CONTRACT NO. AC-4809		
WIPP SHAFT SEALING SYSTEM					
NAME		DATE			
BY					
CK					
APP					
APP					
APP					
PARSONS BRINCKERHOFF ENERGY SERVICES, INC.	SCALE	SIZE	SNL DWG. NO.	SHEET NO.	
		B	SNL-007	23 OF 28	

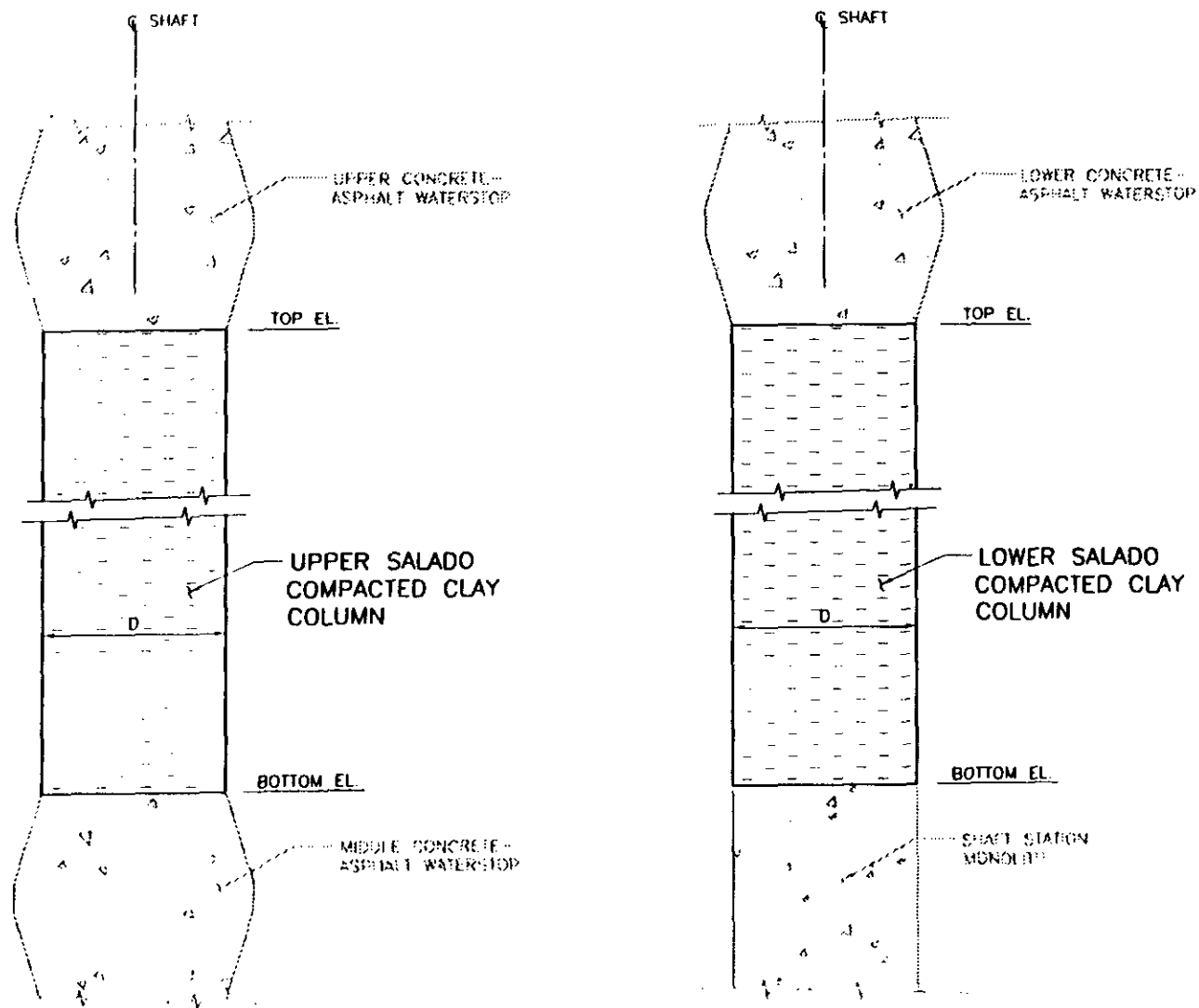


TABLE 1

SHAFT	NOMINAL SHAFT DIAMETER D	UPPER SALADO COMPACTED CLAY COLUMN			LOWER SALADO COMPACTED CLAY COLUMN		
		TOP EL. (FT. MSL)	BOTTOM EL. (FT. MSL)	TOTAL HT. (FT.)	TOP EL. (FT. MSL)	BOTTOM EL. (FT. MSL)	TOTAL HT. (FT.)
WASTE	20'-0"	2389.0	2037.5	351.5	1382.0	1286.0	96.0
AIR INTAKE	20'-3"	2397.0	2053.0	344.0	1389.5	1296.0	93.5
EXHAUST	15'-0"	2382.0	2042.0	340.0	1383.0	1285.0	98.0
SALT HANDLING	11'-10"	2386.0	2051.0	335.0	1391.0	1284.0	107.0

DETAIL
SEE TABLE 1 FOR DETAILS
NO SCALE

SHT. 5 | 1 | 24
SHT. 10
SHT. 15
SHT. 20



Albert W. Dennis
9-2-96

0	8/2/96	ISSUED FOR RECORDS PACKAGE	BY	CK	APP
REV.	DATE	DESCRIPTION	BY	CK	APP
SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT					
WIPP SHAFT SEALING SYSTEM					
UPPER AND LOWER SALADO COMPACTED CLAY COLUMNS					
CONTRACT NO AG-4909		SHEET NO 24 OF 28			
PAPSON'S BRINCKERHOFF ENERGY SERVICES, INC.		SCALE	SIZE	SHEET NO	SHEET NO
		8	B	24	28

E-27

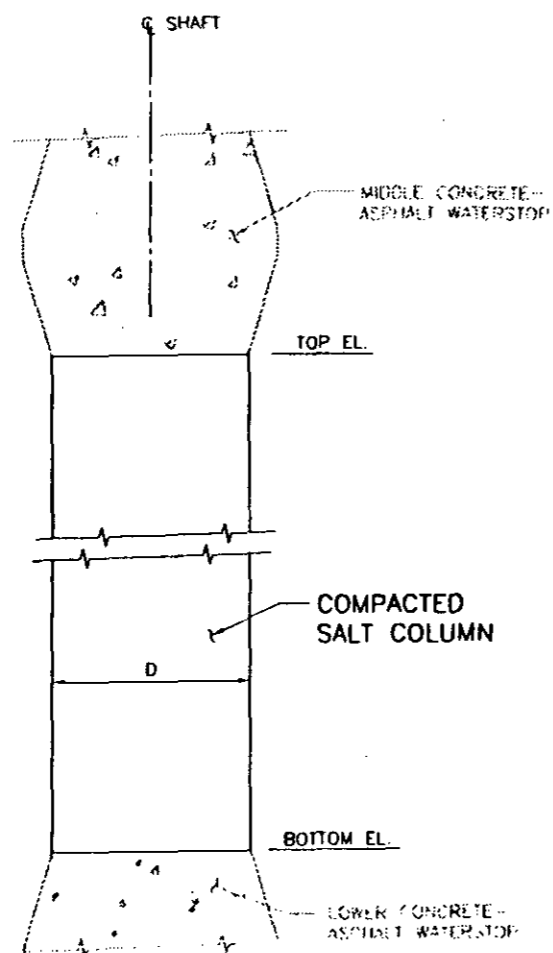


TABLE 1

SHAFT	NOMINAL SHAFT DIAMETER D	COMPACTED SALT COLUMN		
		TOP EL. (FT. MSL)	BOTTOM EL. (FT. MSL)	TOTAL HT. (FT.)
WASTE	20'-0"	1987.5	1432.0	555.5
AIR INTAKE	20'-3"	2003.0	1439.5	563.5
EXHAUST	15'-0"	1992.0	1433.0	559.0
SALT HANDLING	11'-10"	2001.0	1441.0	560.0



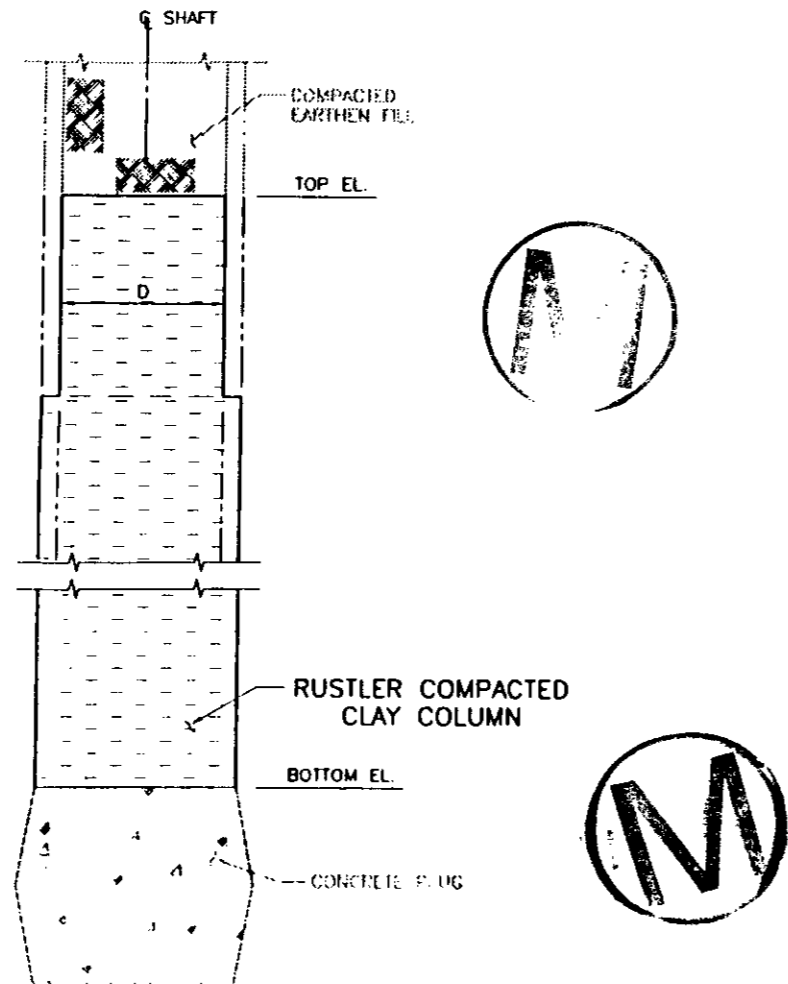
DETAIL
SEE TABLE 1 FOR DETAILS
NO SCALE

SHT. 5 | SH 25
SHT. 10
SHT. 15
SHT. 20



Albert W. Dennis
8-2-96

0	8/2/96	ISSUED FOR RECORDS PACKAGE	DL	CK	APP
REV.	DATE	DESCRIPTION	BY	CK	APP
SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT			CONTRACT NO AG-4909		
WIPP SHAFT SEALING SYSTEM			NAME	DATE	
COMPACTED SALT COLUMN			BY	DL	8/2/96
			CK	DL	8/2/96
			APP	DL	8/2/96
			APP	DL	8/2/96
PARSONS BRINCKERHOFF ENERGY SERVICES, INC.	SCALE	SIZE	SHEET NO	SHEET NO	
		B	SNL-007	25 OF 28	



DETAIL

SEE TABLE 1 FOR DETAILS
NO SCALE

SHT 4 | SH. 27
SHT 9
SHT 14
SHT 19

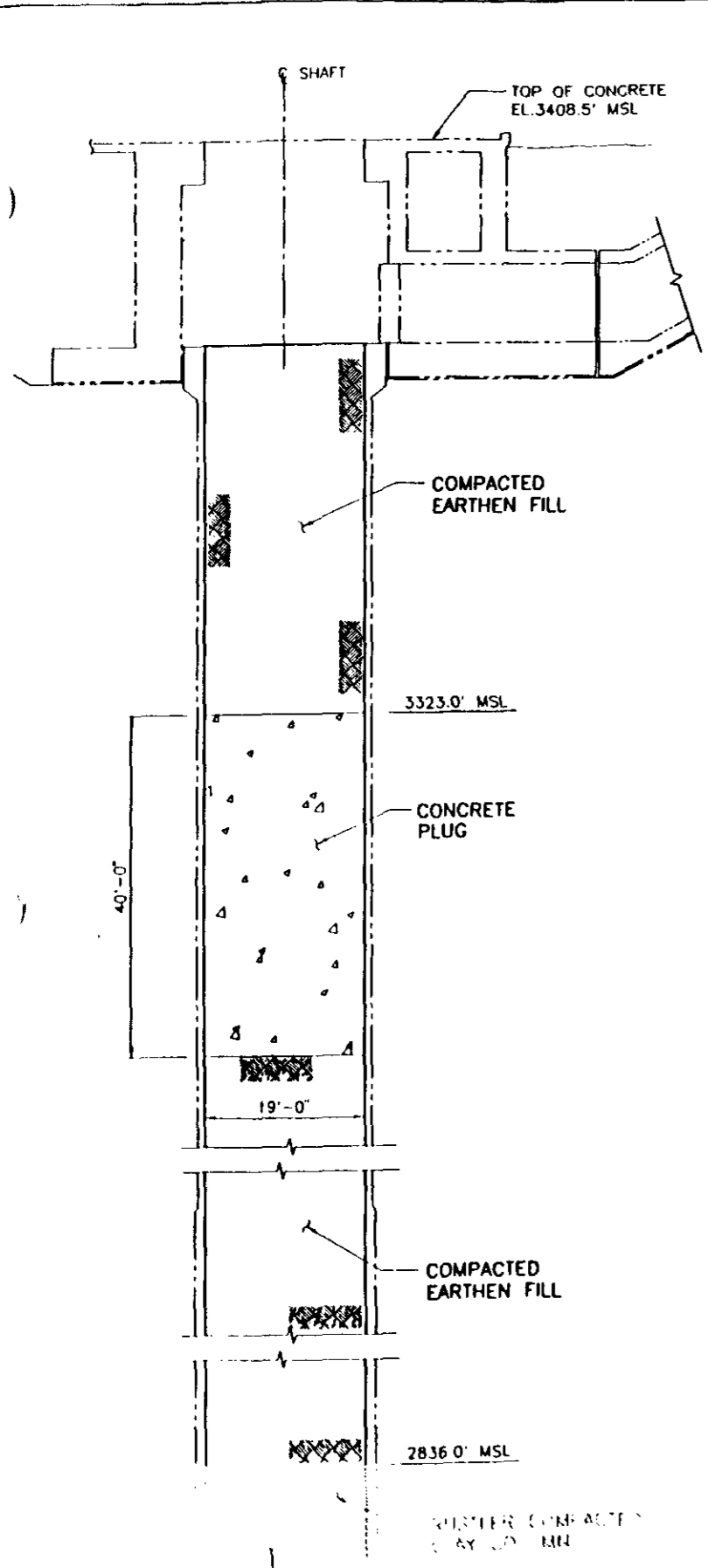
TABLE 1

SHAFT	NOMINAL SHAFT DIAMETER D	RUSTLER COMPACTED CLAY COLUMN		
		TOP EL. (FT. MSL)	BOTTOM EL. (FT. MSL)	TOTAL HT. (FT.)
WASTE	19'-0"	2836.0	2601.3	234.7
AIR INTAKE	16'-7"	2840.0	2605.3	234.7
EXHAUST	14'-0"	2829.0	2594.5	234.5
SALT HANDLING	10'-0"	2830.0	2596.0	234.0

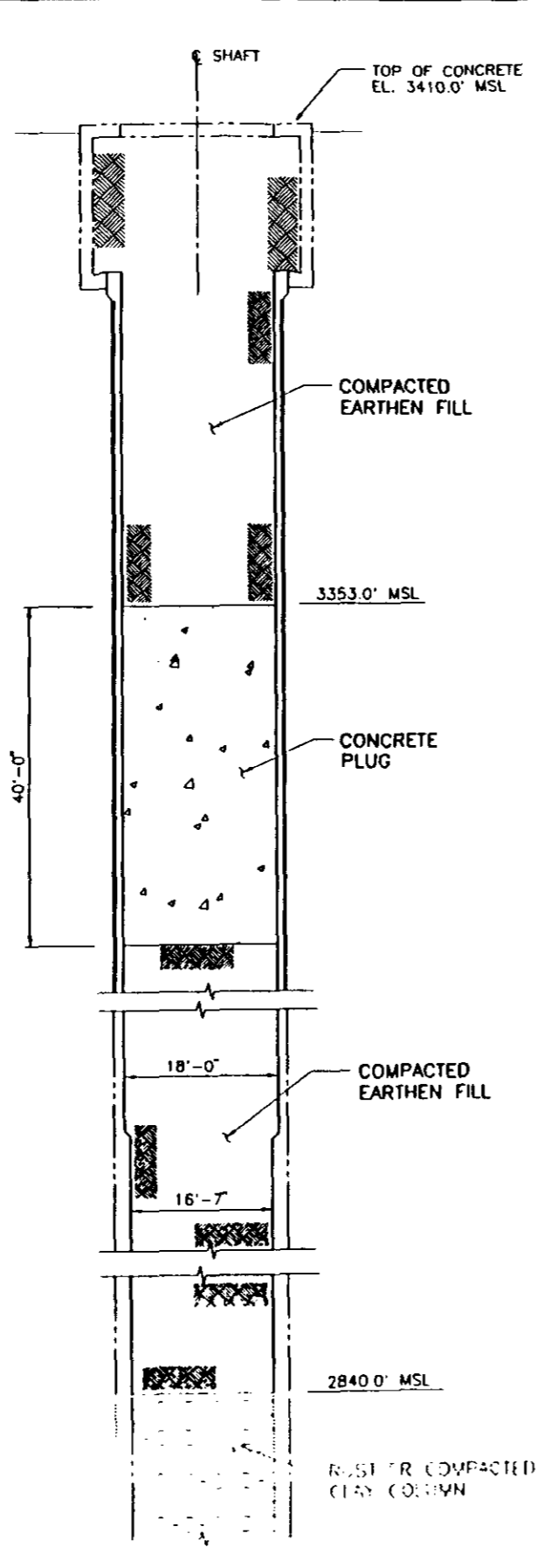


Albert W. Dennis
9-2-96

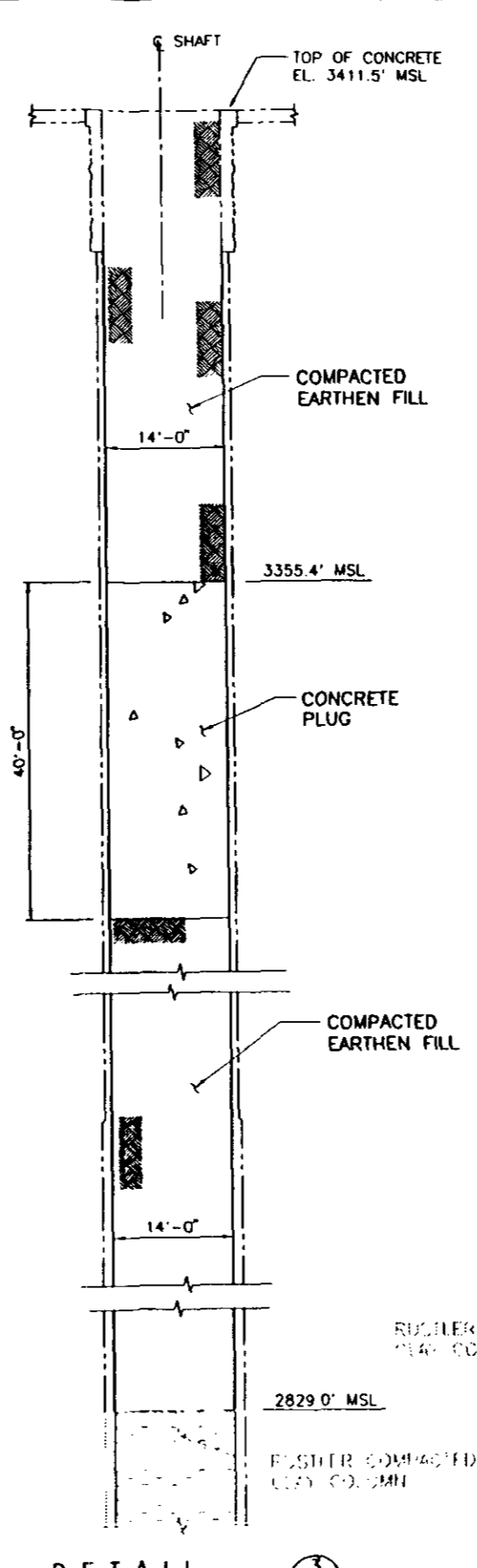
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SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT			CONTRACT NO. AC-4909		
WIPP SHAFT SEALING SYSTEM					
RUSTLER COMPACTED CLAY COLUMN					
NAME	DATE				
BY	8/2/96				
CK	8/2/96				
APP	9/2/96				
APP	9/2/96				
APP	9/2/96				
PARSONS BRINCKERHOFF ENERGY SERVICES, INC.	SCALE	SIZE	SNL DWG. NO.	SHEET NO.	
		B	SNL-007	27 OF 28	



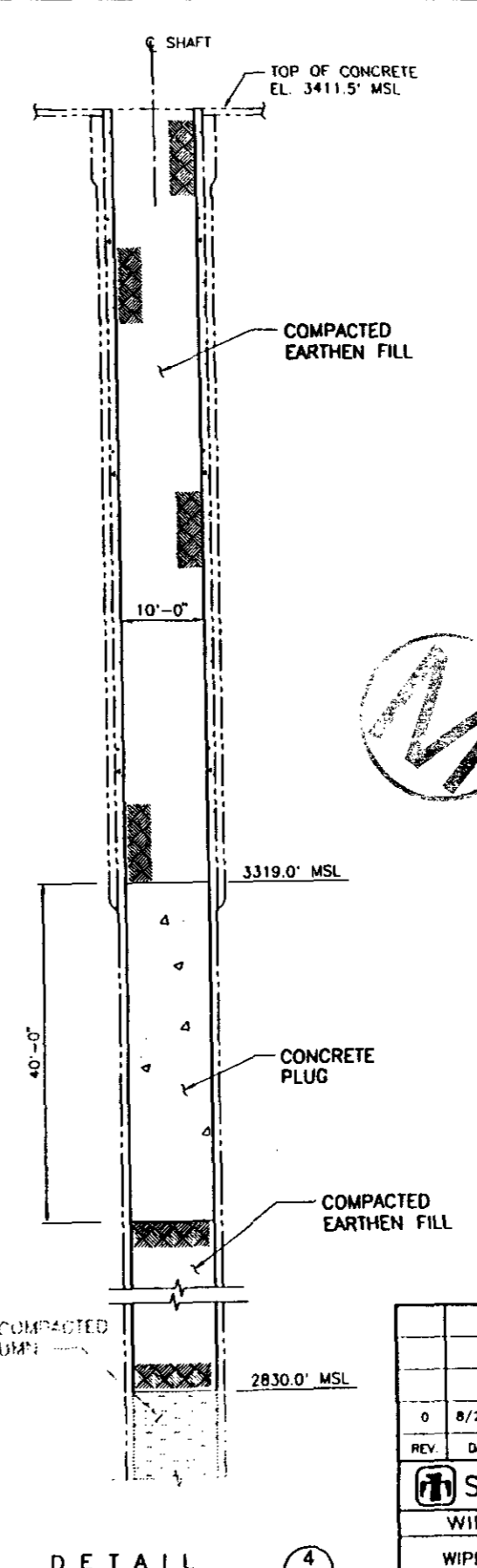
DETAIL WASTE SHAFT SHT. 4 SHT. 28



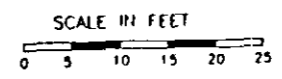
DETAIL AIR INTAKE SHAFT SHT. 9 SHT. 28



DETAIL EXHAUST SHAFT SHT. 14 SHT. 28



DETAIL SALT HANDLING SHAFT SHT. 19 SHT. 28



Albert W. Dennis
4-2-96

0	8/2/96	ISSUED FOR RECORDS PACKAGE	BY: [Signature]	CK: [Signature]	APP: [Signature]
REV.	DATE	DESCRIPTION	BY	CK	APP
SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT					
WIPP SHAFT SEALING SYSTEM					
COMPACTED EARTHEN FILL AND CONCRETE PLUG					
PAPSON'S BRUNCKERHOFF ENERGY SERVICES, INC.		SCALE	SIZE	SHEET NO.	SHEET NO.
		B	8	28 OF 28	28 OF 28

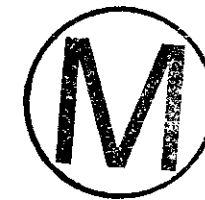
E-31

WASTE ISOLATION PILOT PLANT

CARLSBAD, NM

SHAFT SEALING SYSTEM DESIGN

EQUIPMENT AND CONSTRUCTION SKETCHES



DRAWING NUMBER

TITLE

SKETCH E-1

WIPP SHAFT SEALING SYSTEM
SMALLER GALLOWAY GENERAL
ARRANGEMENT PLANS AND SECTIONS

SKETCH E-2

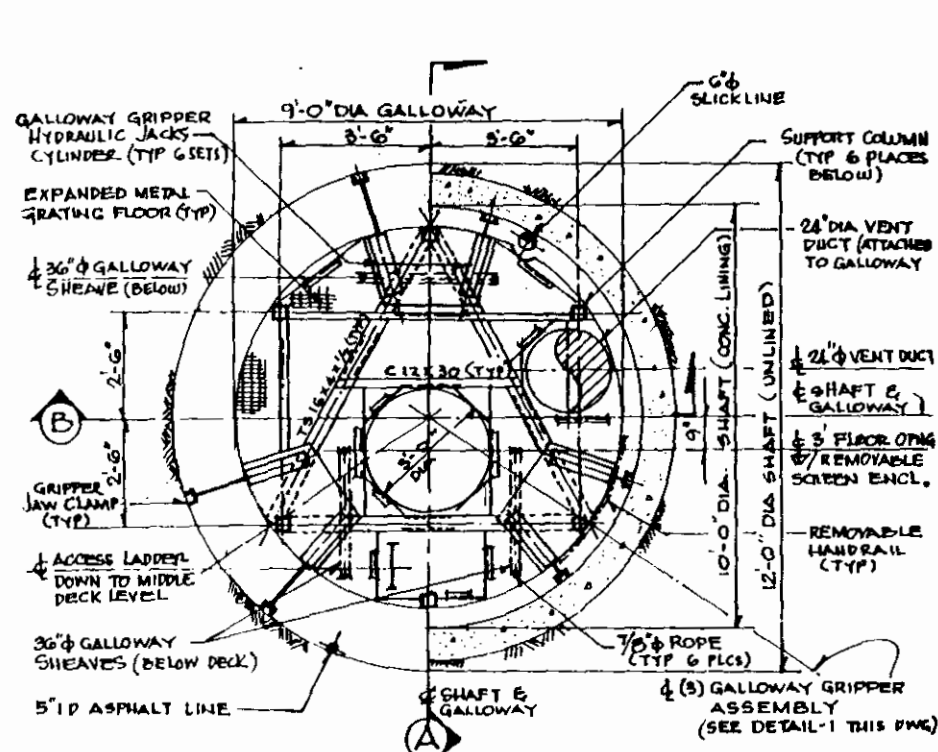
WIPP SHAFT SEALING SYSTEM
LARGER GALLOWAY GENERAL
ARRANGEMENT PLANS AND SECTIONS

SKETCH E-3

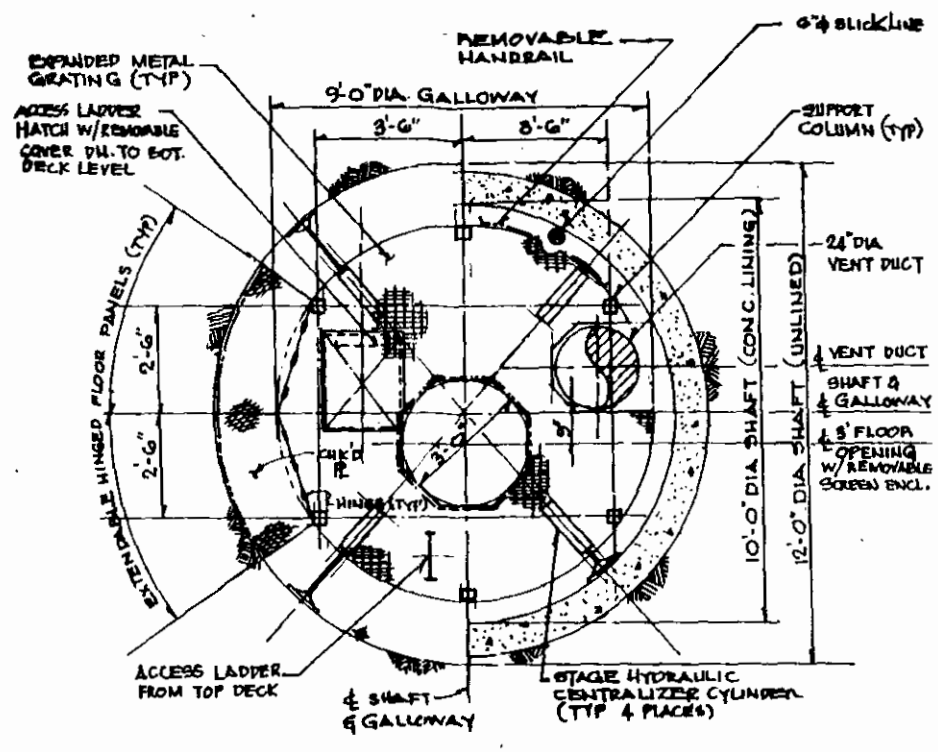
WIPP SHAFT SEALING SYSTEM
TYPICAL HEADFRAME
PLANS AND SECTIONS

SKETCH E-4

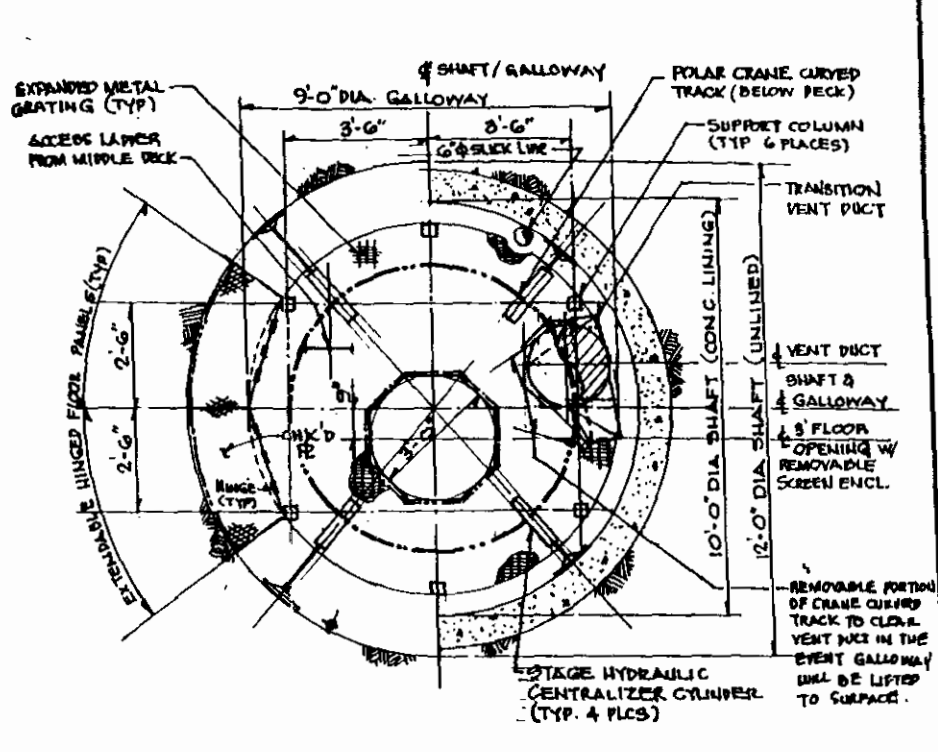
WIPP SHAFT SEALING SYSTEM
PERSPECTIVE HEADFRAME AND
ASSOCIATED SURFACE FACILITIES



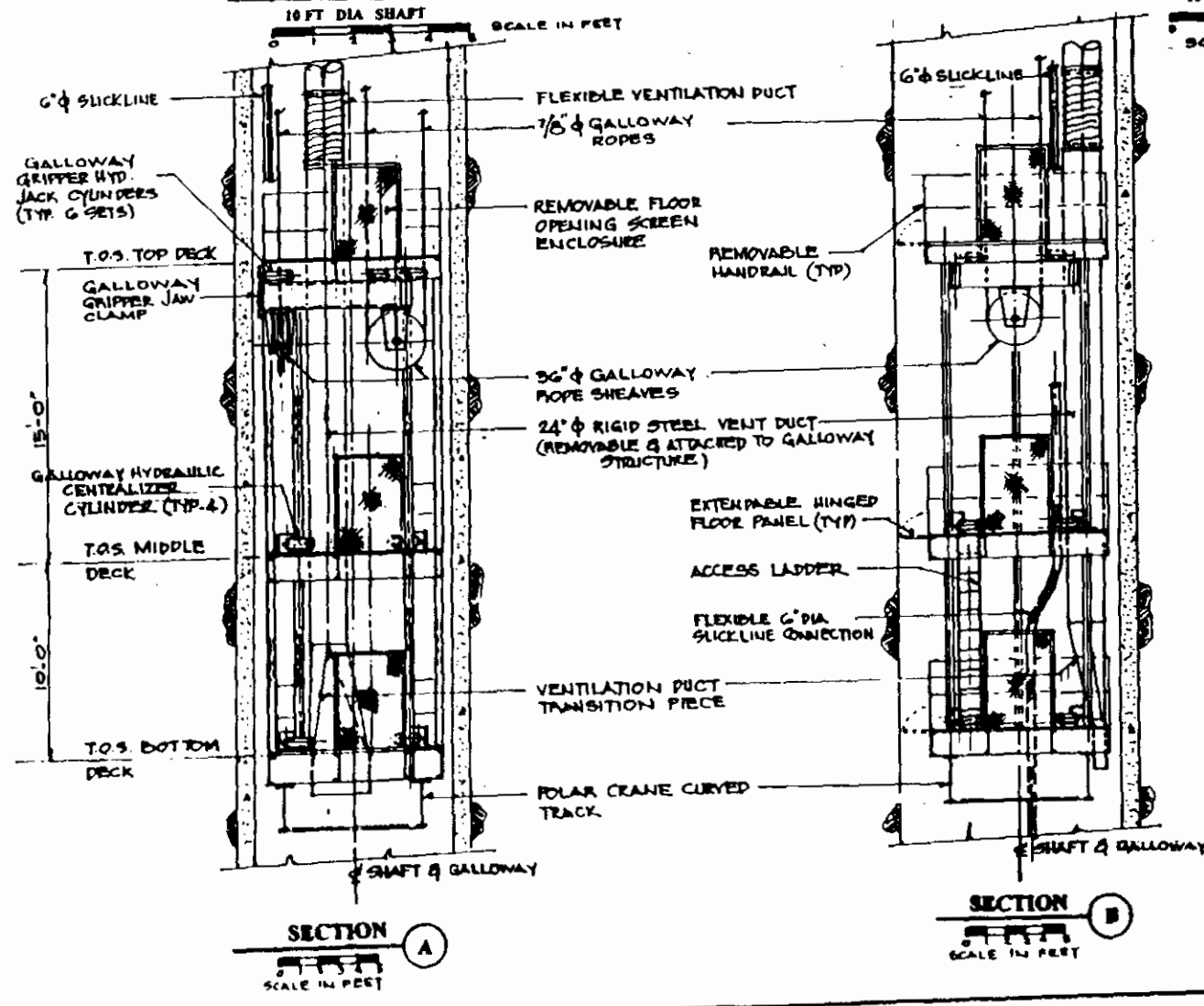
PLAN - TOP DECK
10 FT DIA SHAFT
SCALE IN FEET



PLAN - MIDDLE DECK
10 FT DIA SHAFT
SCALE IN FEET

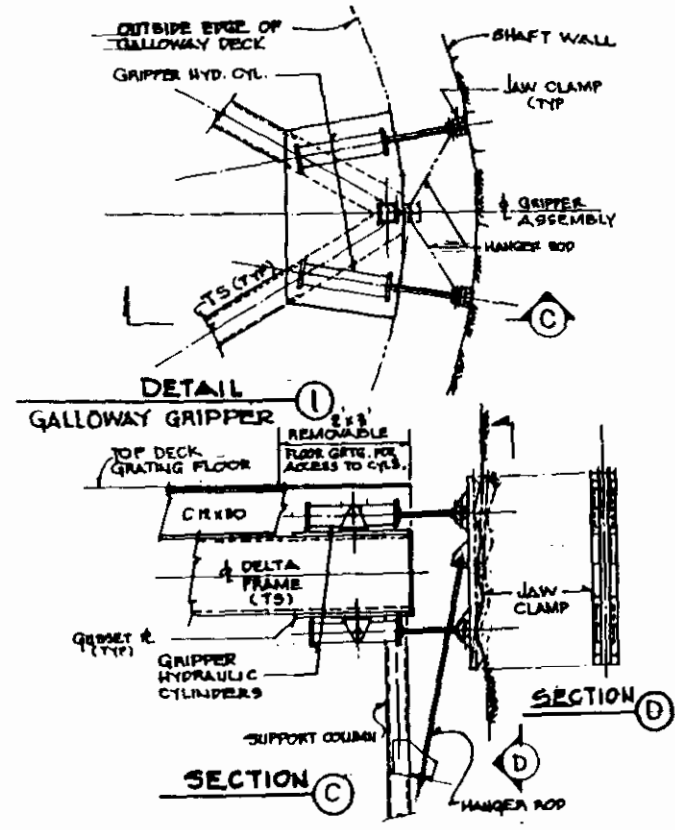


PLAN - BOTTOM DECK
10 FT DIA SHAFT
SCALE IN FEET



SECTION A
SCALE IN FEET

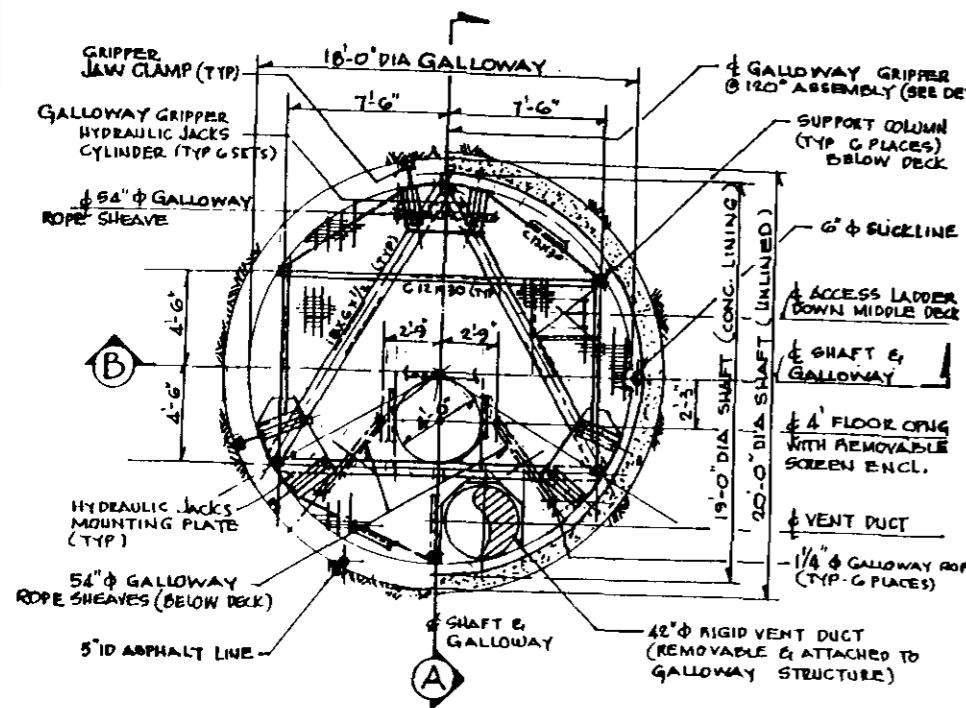
SECTION B
SCALE IN FEET



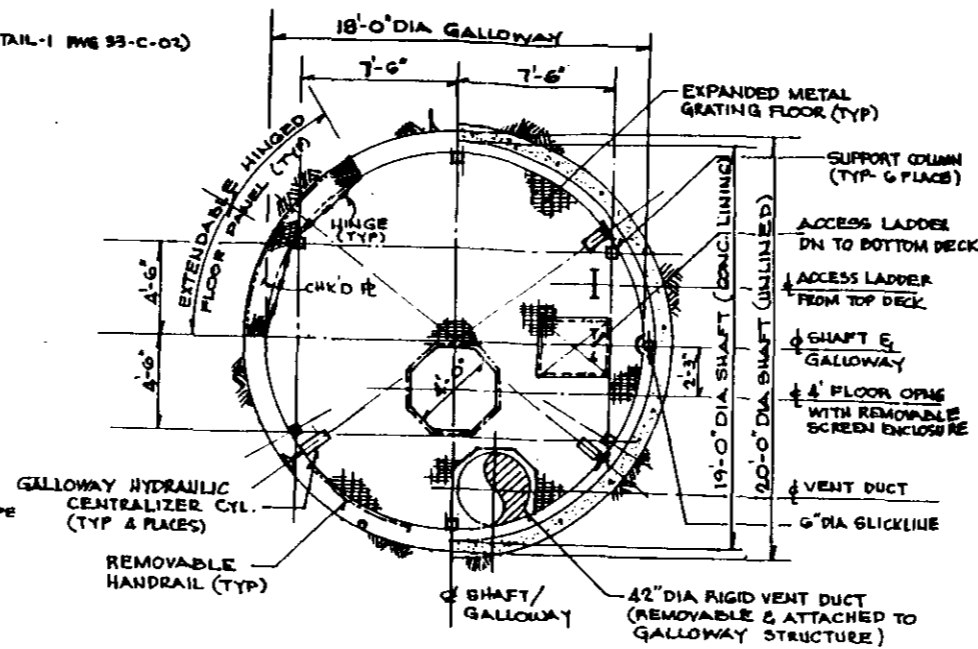
DETAIL 1
GALLOWAY GRIPPER



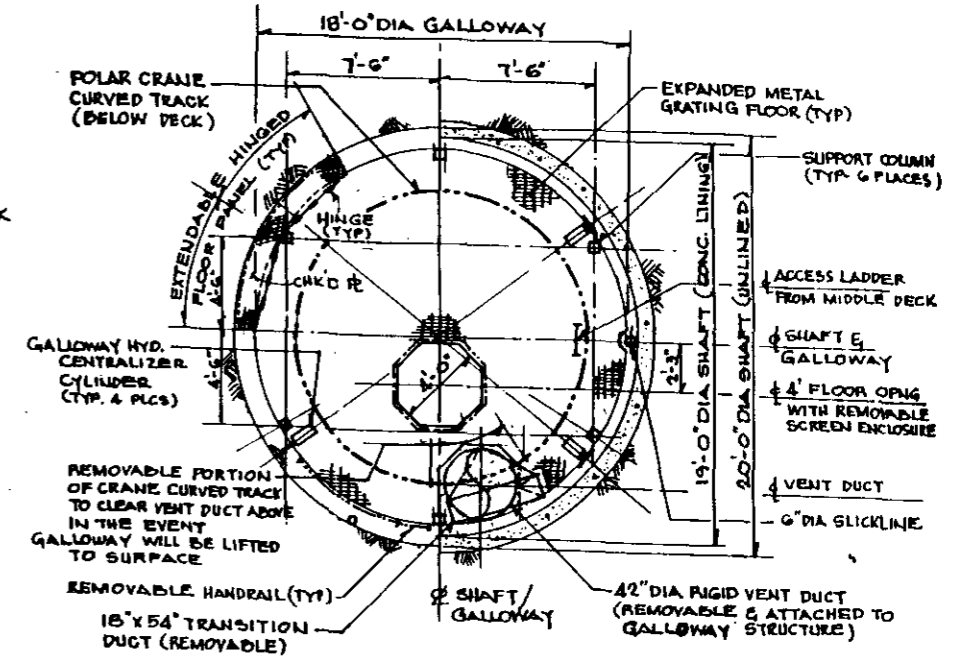
WIPP SHAFT SEALING SYSTEM
SMALLER GALLOWAY
GENERAL ARRANGEMENT
PLANS & SECTIONS
SKETCH E-1



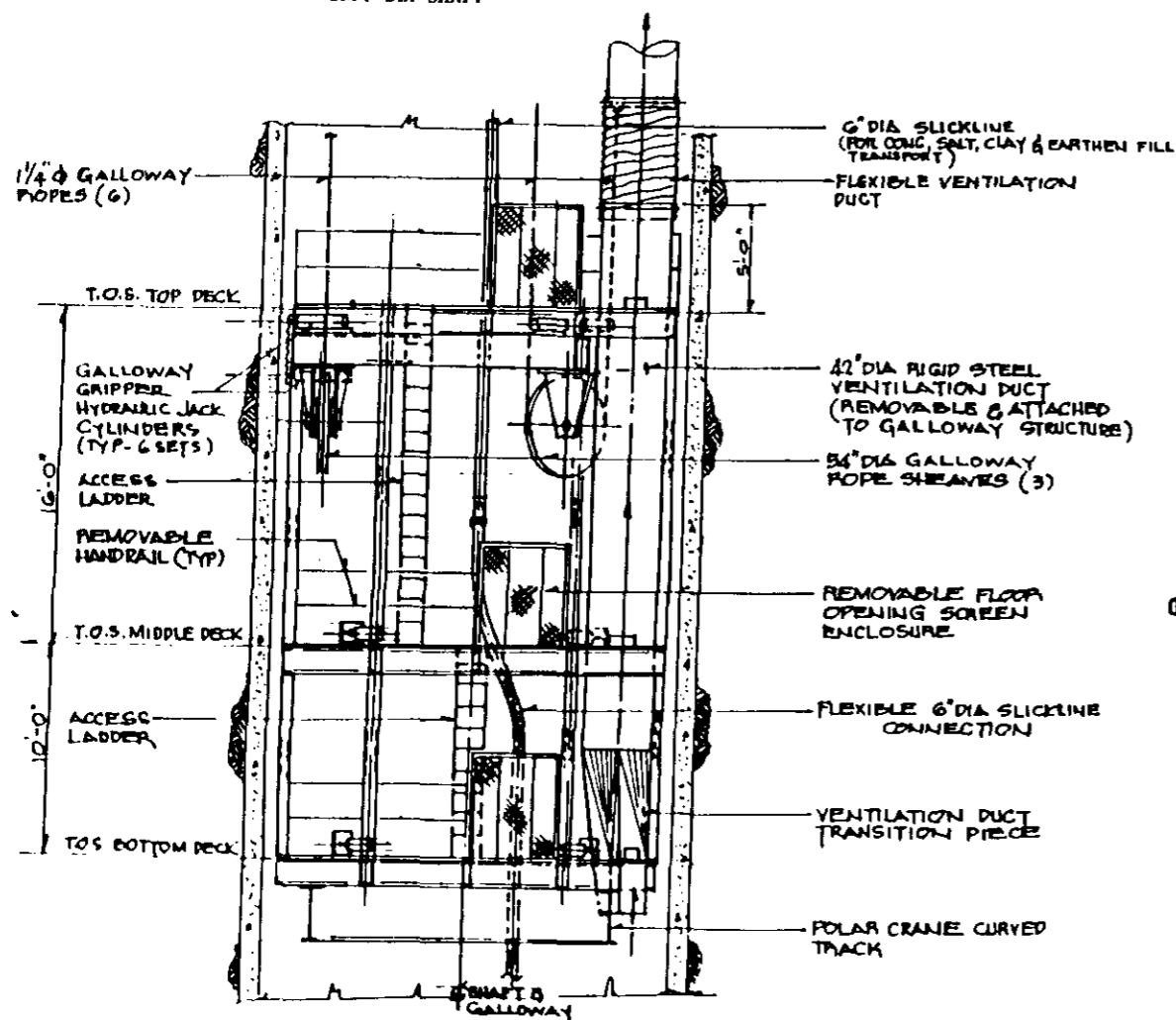
PLAN - TOP DECK
20 FT DIA SHAFT



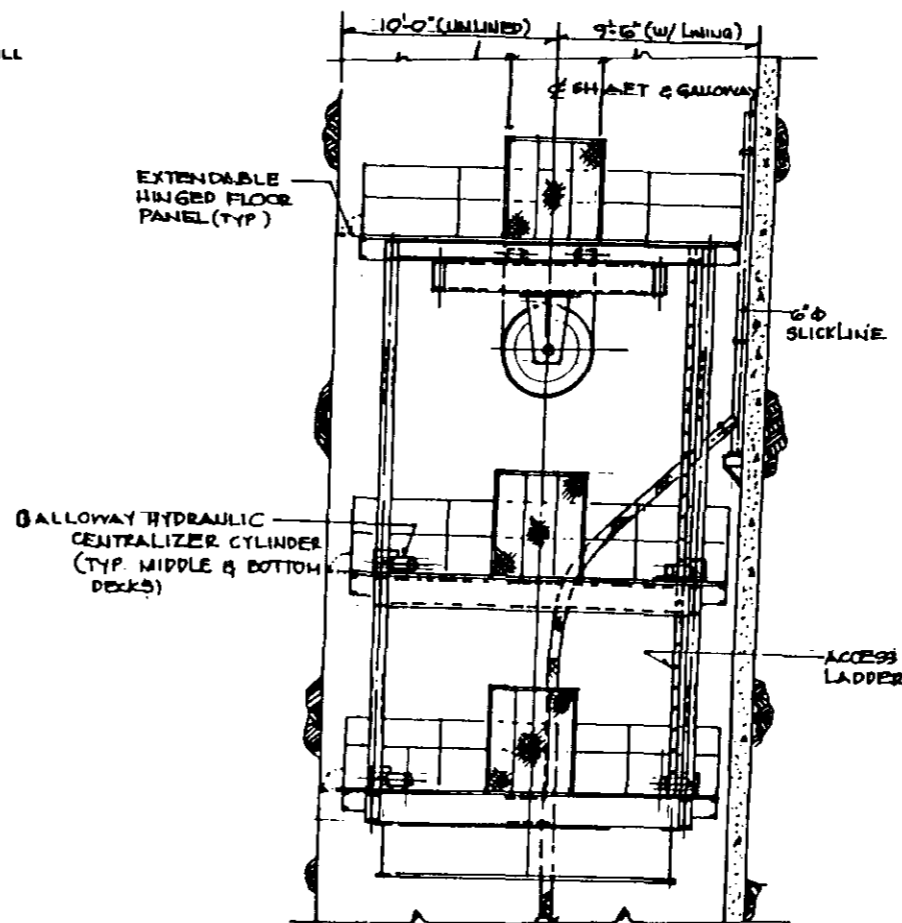
PLAN - MIDDLE DECK
20 FT DIA SHAFT



PLAN - BOTTOM DECK
20 FT DIA SHAFT



SECTION A



SECTION B

GALLOWAY DESIGN DATA				
	SALT HANDLING SHAFT	EXHAUST SHAFT	AIR INTAKE SHAFT	WASTE SHAFT
Shaft Diameter	10'-0" (holed) 11'-10" (unholed)	14' (holed) 15' (unholed)	16'-7" (holed) 20' (unholed)	19'-0" (holed) 20' (unholed)
Dia of Galloway	9R	13R	15'-7"	18R
Height of Galloway	25R	25R	26R	26R
Dia of Vent duct	24 inch	36 inch	42 inch	42 inch
No. of Galloway rope	6	6	6	6
No. of Galloway sheave	3	3	3	3
Dia of Galloway rope	7/8 inch	1 1/8 inch	1 1/4 inch	1 1/4 inch
Dia of Galloway sheaves	36 inch	36 inch	54 inch	54 inch
Wt. of Galloway (struct)	18000 lb	29000 lb	40200 lb	49600 lb
Polar crane wt.	38696 lb	48606 lb	58696 lb	58696 lb
Tamper weight	11394 lb	11394 lb	11394 lb	11394 lb
Total Wt. Galloway (live and dead load)	80409 lb	113816 lb	143622 lb	162622 lb

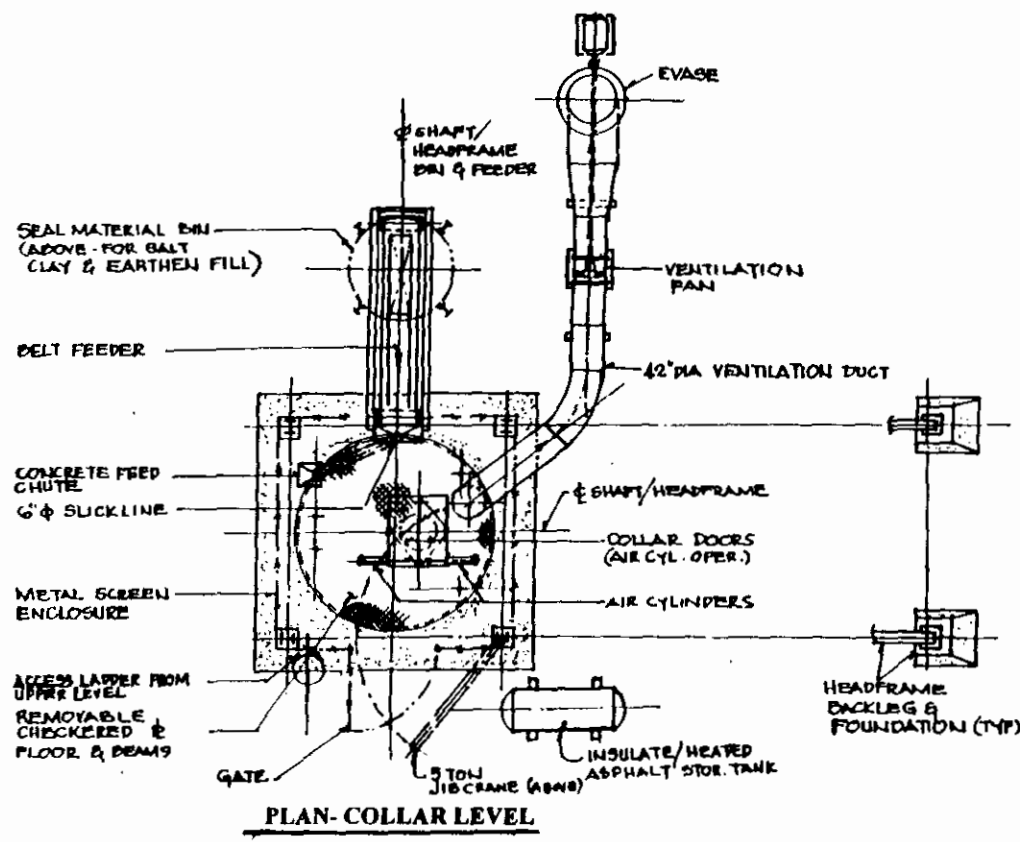


WIPP SHAFT SEALING SYSTEM

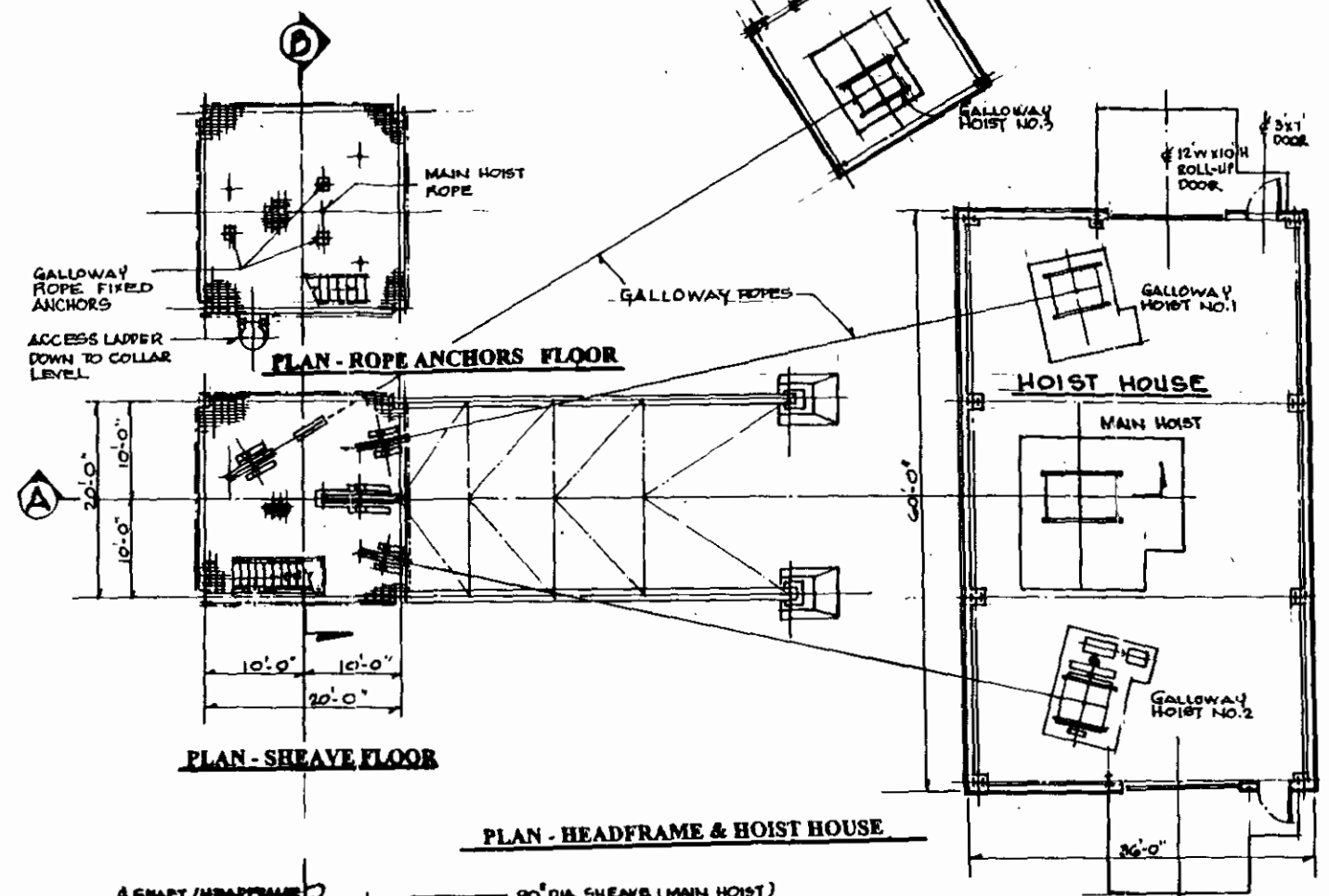
LARGER GALLOWAY
GENERAL ARRANGEMENT
PLANS & SECTIONS

SKETCH E-2

SCALE IN FEET
0 1 2 3 4 5 6



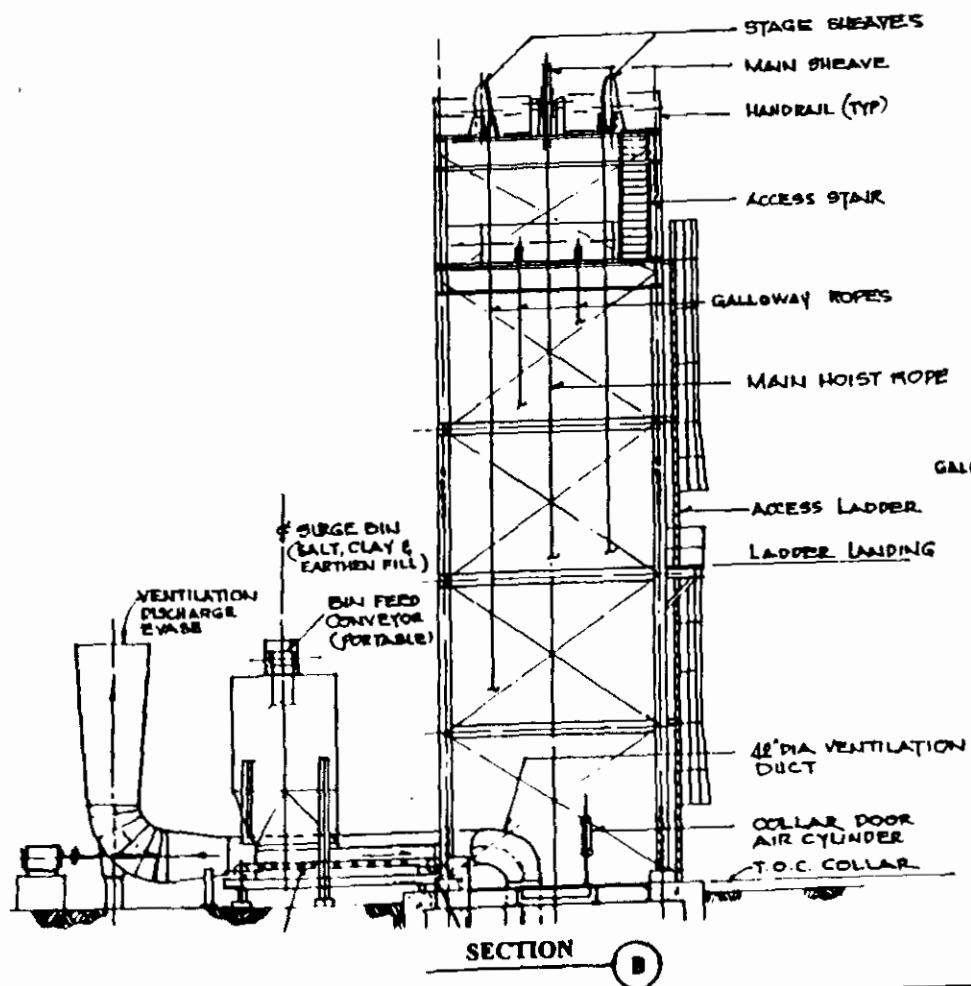
PLAN-COLLAR LEVEL



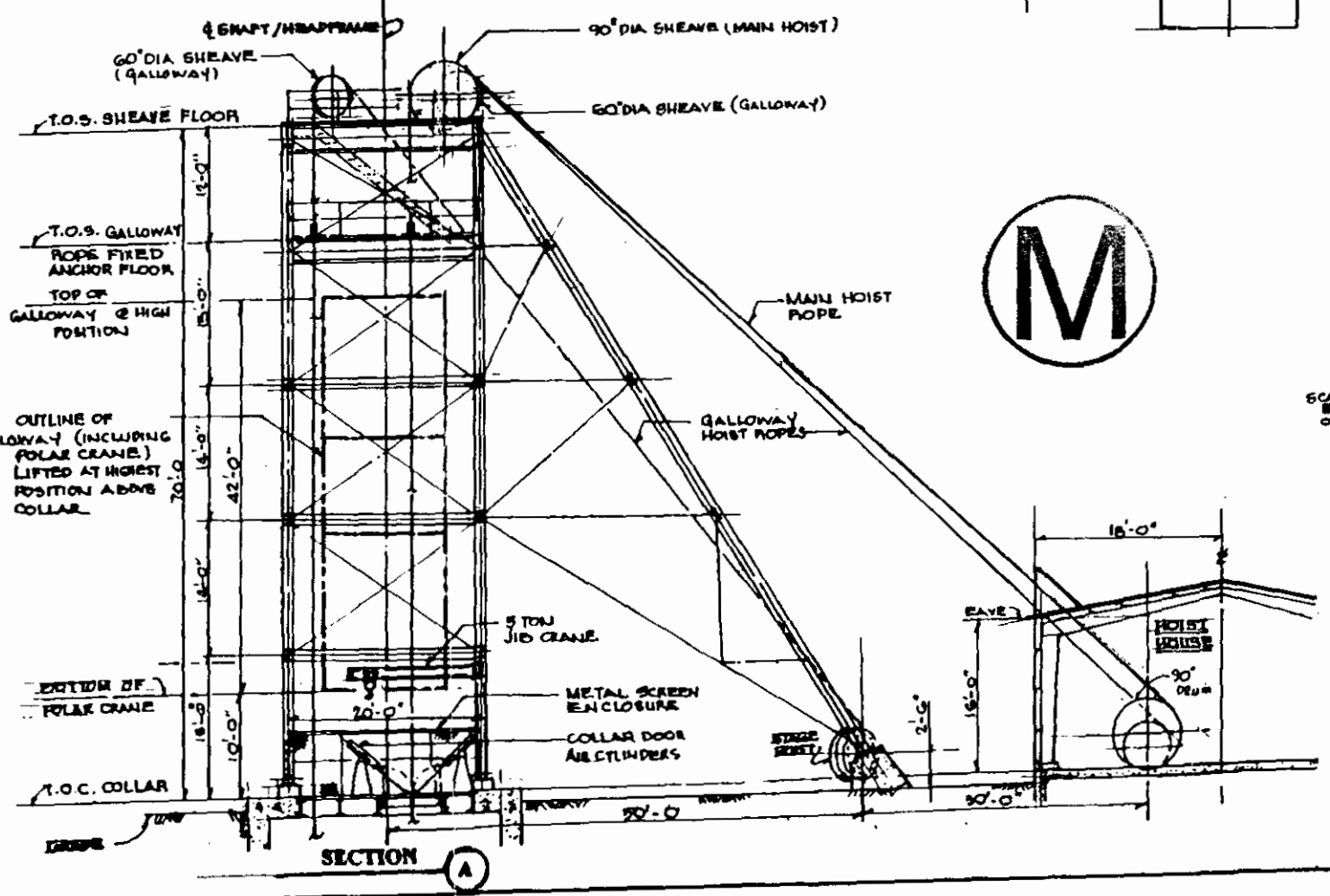
PLAN-ROPE ANCHORS FLOOR

PLAN-SHEAVE FLOOR

PLAN-HEADFRAME & HOIST HOUSE



SECTION B

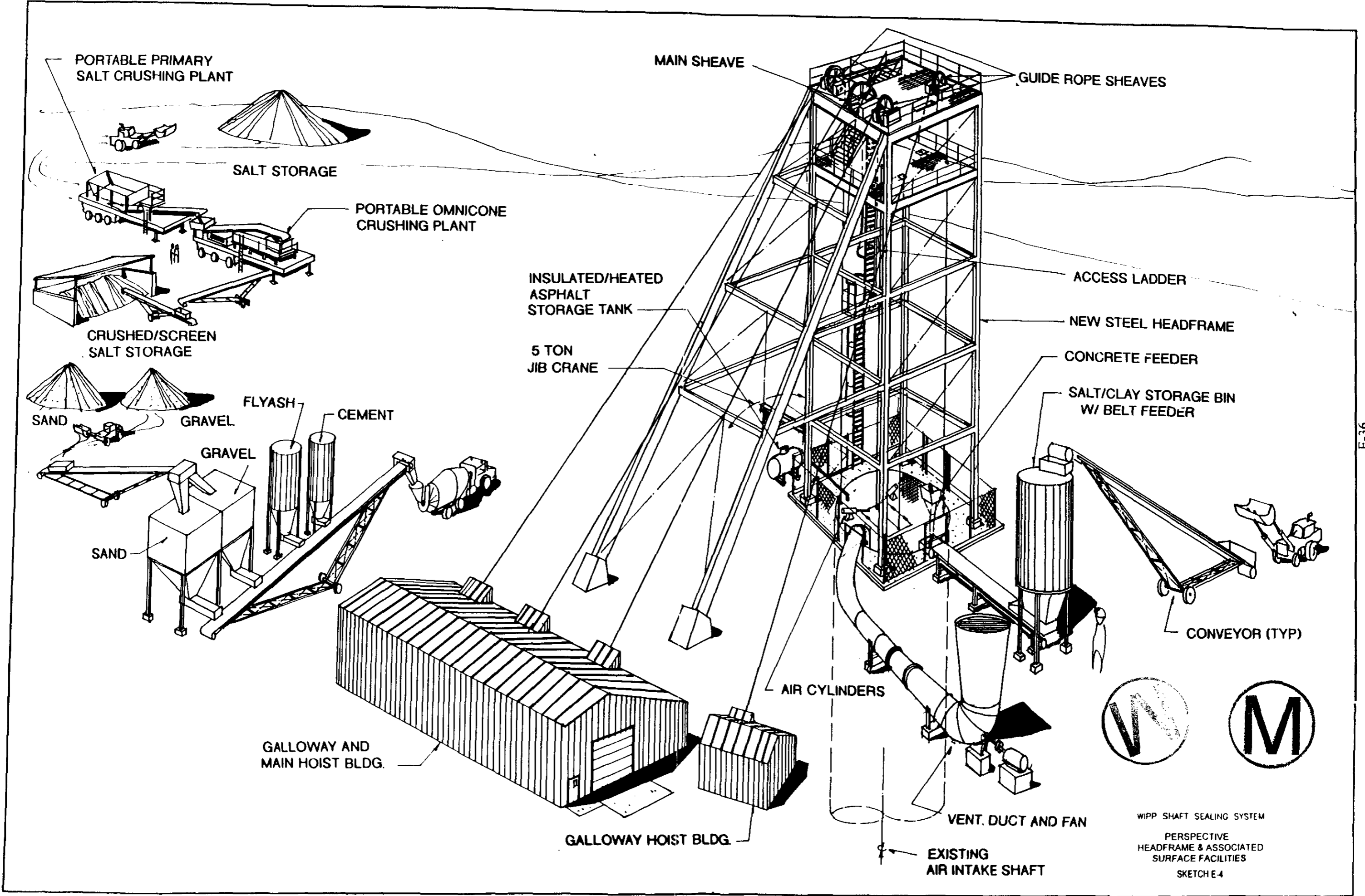


SECTION A



SCALE IN FEET
0 1 2 3 4 5 6 7 8 9 10

WIPP SHAFT SEALING SYSTEM
TYPICAL HEADFRAME
PLANS & SECTIONS
SKETCH E-3



E-36



WIPP SHAFT SEALING SYSTEM
 PERSPECTIVE
 HEADFRAME & ASSOCIATED
 SURFACE FACILITIES
 SKETCH E-4

**WIPP
UC721 Distribution List**

Federal Agencies

US Department of Energy (4)
Office of Civilian Radioactive Waste Mgmt.
Attn: Deputy Director, RW-2
Acting Director, RW-10
Office of Human Resources & Admin.
Director, RW-30
Office of Program Mgmt. & Integ.
Director, RW-40
Office of Waste Accept., Stor., & Tran.
Forrestal Building
Washington, DC 20585

Attn: Project Director (2)
Yucca Mountain Site Characterization Office
Director, RW-3
Office of Quality Assurance
101 Convention Center Drive, Suite #P-110
Las Vegas, NV 89109

US Department of Energy
Albuquerque Operations Office
Attn: National Atomic Museum Library
P.O. Box 5400
Albuquerque, NM 87185-5400

US Department of Energy
Research & Waste Management Division
Attn: Director
P.O. Box E
Oak Ridge, TN 37831

US Department of Energy (8)
Carlsbad Area Office
Attn: G. Dials
D. Galbraith (3)
M. Matthews
M. McFadden
R. Lark
J. A. Mewhinney
P.O. Box 3090
Carlsbad, NM 88221-3090

US Department of Energy
Office of Environmental Restoration and
Waste Management
Attn: J. Lytle, EM-30
Forrestal Building
Washington, DC 20585-0002

US Department of Energy (3)
Office of Environmental Restoration and
Waste Management
Attn: M. Frei, EM-34, Trevion II
Washington, DC 20585-0002

US Department of Energy
Office of Environmental Restoration and
Waste Management
Attn: S. Schneider, EM-342, Trevion II
Washington, DC 20585-0002

US Department of Energy (2)
Office of Environment, Safety & Health
Attn: C. Borgstrom, EH-25
R. Pelletier, EH-231
Washington, DC 20585

US Department of Energy (2)
Idaho Operations Office
Fuel Processing & Waste Mgmt. Division
785 DOE Place
Idaho Falls, ID 83402

US Environmental Protection Agency (2)
Radiation Protection Programs
Attn: M. Oge
ANR-460
Washington, DC 20460

Boards

Defense Nuclear Facilities Safety Board
Attn: D. Winters
625 Indiana Ave. NW, Suite 700
Washington, DC 20004

Nuclear Waste Technical Review Board (2)
Attn: Chairman
S. J. S. Parry
1100 Wilson Blvd., Suite 910
Arlington, VA 22209-2297

State Agencies

Attorney General of New Mexico
P.O. Drawer 1508
Santa Fe, NM 87504-1508

Environmental Evaluation Group (3)
Attn: Library
7007 Wyoming NE, Suite F-2
Albuquerque, NM 87109

Metropolitan Water District of Southern Calif.
Attn: J. Narvaiz
P.O. Box 54153
Los Angeles, CA 90071-3123

NM Energy, Minerals, and Natural
Resources Department
Attn: Library
2040 S. Pacheco
Santa Fe, NM 87505

NM Environment Department (3)
Secretary of the Environment
Attn: Mark Weidler
1190 St. Francis Drive
Santa Fe, NM 87503-0968

NM Bureau of Mines & Mineral Resources
Socorro, NM 87801

NM Environment Department
WIPP Project Site
Attn: P. McCasland
P.O. Box 3090
Carlsbad, NM 88221

Laboratories/Corporations

Battelle Pacific Northwest Laboratories (2)
Attn: R. E. Westerman
R. Romine, MS P8-38
P.O. Box 999
900 Battelle Blvd.
Richland, WA 99352

Brookhaven National Laboratory
Attn: P. D. Moskowitz
Environmental & Waste Technology
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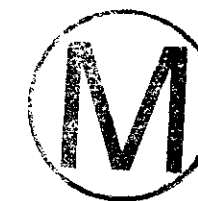
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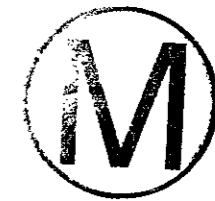
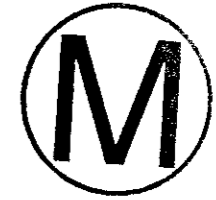
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Section 3, Design Guidance	A.W. Dennis, Sandia
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