

SANDIA REPORT

SFP 30 1996

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Waste Isolation Pilot Plant Shaft Sealing System Compliance Submittal Design Report

Volume 2 of 2: Appendix E

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Repository Isolation Systems Department

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for the United States Department of Energy
under Contract DE-AC04-94AL85000

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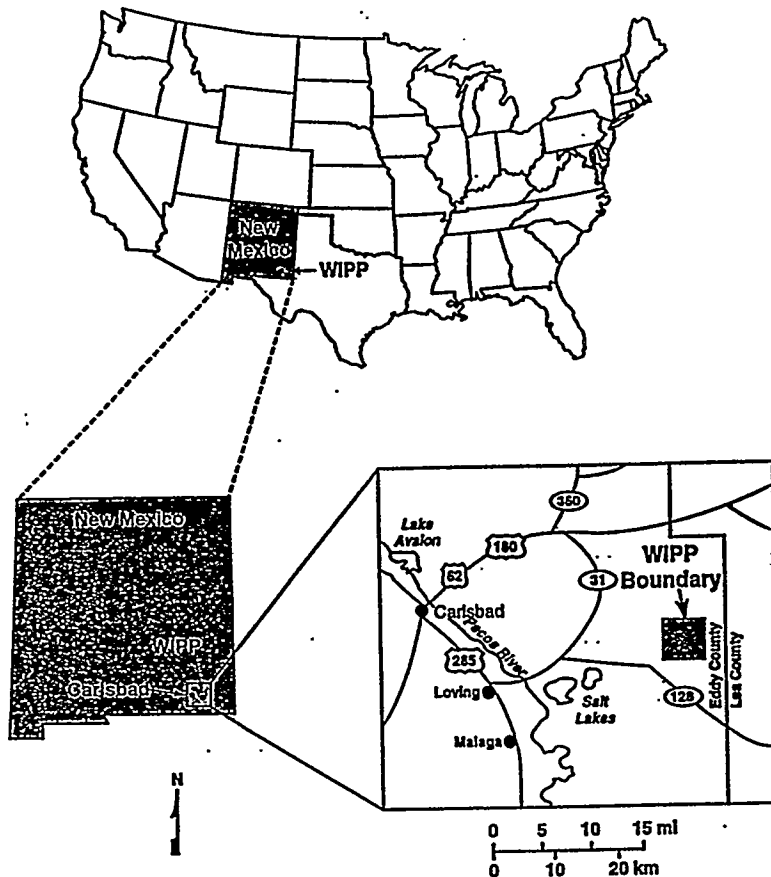
STE ISOLATION PILOT PLANT

CARLSBAD, NM

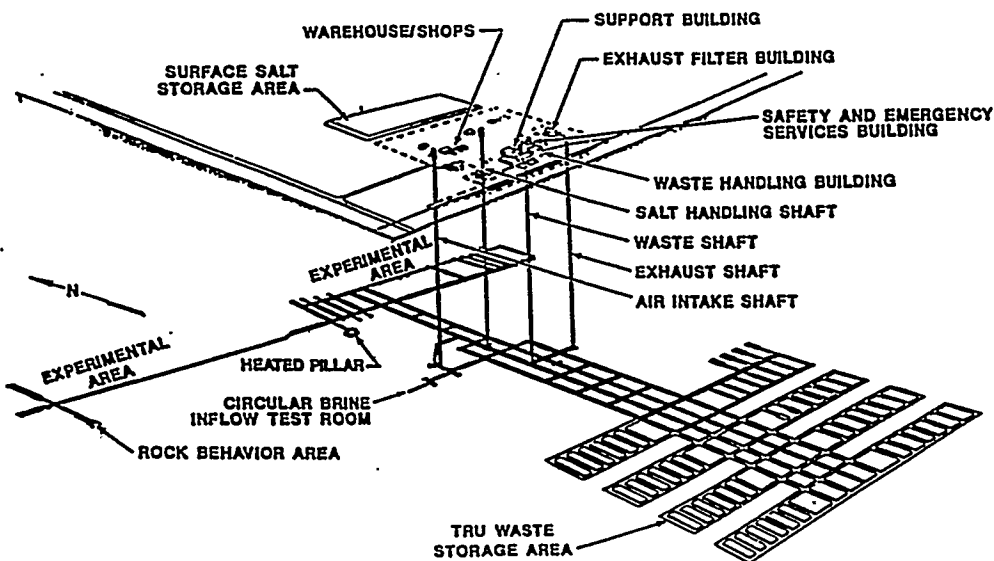
AFT SEALING SYSTEM DESIGN

DESIGN DRAWINGS

DRAWING NUMBER	TITLE	DRAWING NUMBER	TITLE
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 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 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 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 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 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 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 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 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



WIPP LAYOUT



DRAWING NUMBER	TITLE
SNL-007 1 OF 28	WIPP SHAFT SEALING SYS SHAFT LOCATION PLAN, ABBREVIATIONS, GENERAL NOTES AND LEGEND
SNL-007 2 OF 28	WIPP SHAFT SEALING SYS NEAR-SURFACE/RUSTLER FC WASTE SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS
SNL-007 3 OF 28	WIPP SHAFT SEALING SYS SALADO FORMATION WASTE SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS
SNL-007 4 OF 28	WIPP SHAFT SEALING SYS NEAR-SURFACE/RUSTLER FC WASTE SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE
SNL-007 5 OF 28	WIPP SHAFT SEALING SYS SALADO FORMATION WASTE SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE
SNL-007 6 OF 28	WIPP SHAFT SEALING SYS WASTE SHAFT SHAFT STATION MONOLITH
SNL-007 7 OF 28	WIPP SHAFT SEALING SYS NEAR-SURFACE/RUSTLER F AIR INTAKE SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS
SNL-007 8 OF 28	WIPP SHAFT SEALING SYS SALADO FORMATION AIR INTAKE SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS
SNL-007 9 OF 28	WIPP SHAFT SEALING SYS NEAR-SURFACE/RUSTLER F AIR INTAKE SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE

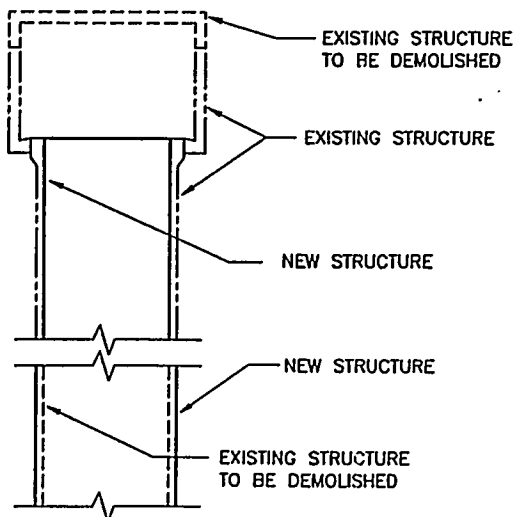
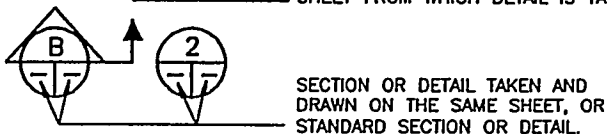
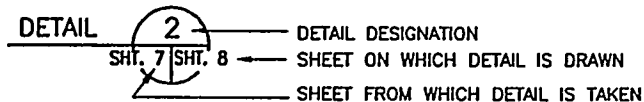
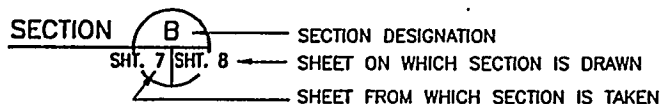
GENERAL NOTES:

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.

LEGEND FOR PROPOSED SHAFT SEALING SYSTEM:



ABBREVIATIONS:

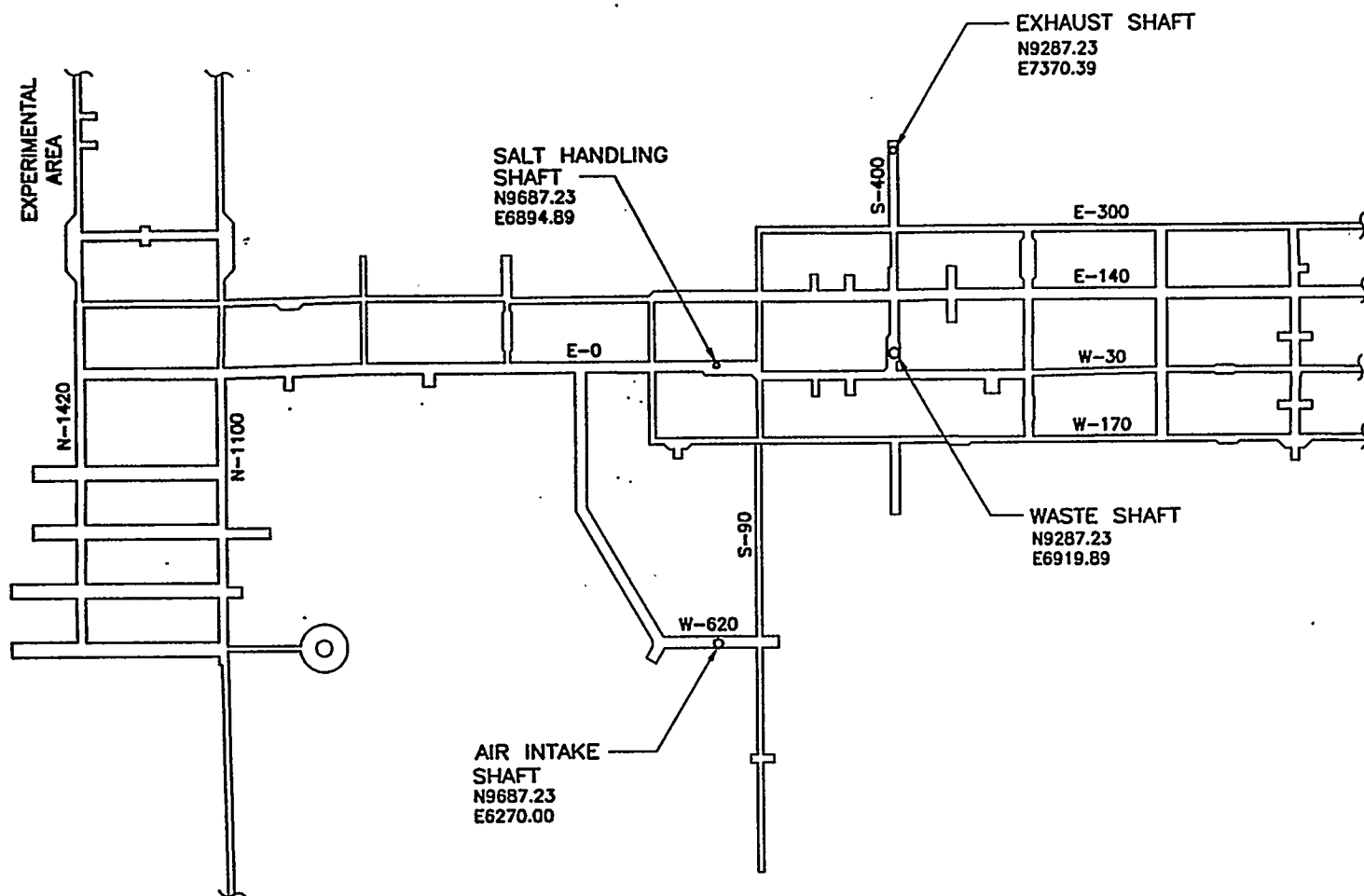
CL	CENTERLINE
ANH.	ANHYDRITE
CMP	CORRUGATED METAL PLATE
CONC.	CONCRETE
DOE	DEPARTMENT OF ENERGY
DWG.	DRAWING
E	EAST
EL.	ELEVATION
EXIST.	EXISTING
FT.	FOOT, FEET
HT.	HEIGHT
I.D.	INSIDE DIAMETER
IN.	INCHES
MB	MARKER BED
MIN.	MINIMUM
MSL	MEAN SEA LEVEL
N	NORTH
NO.	NUMBER
R	RADIUS
S	SOUTH
SHT.	SHEET NUMBER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



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 WIPP SHAFT SEALING SYSTEM SHAFT LOCATION PLAN, ABBREVIATIONS, GENERAL NOTES AND LEGEND					
CONTRACT NO: AG-4909 NAME BY <i>SAE</i> 8/2/96 CK. <i>SAE</i> 8/2/96 APP. <i>SAE</i> 8/2/96 APP. <i>SAE</i> 8/2/96			SCALE: SIZE B SNL DWG. NO. SNL-007 SHEET NO. 1 OF 28		

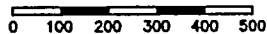
E-4

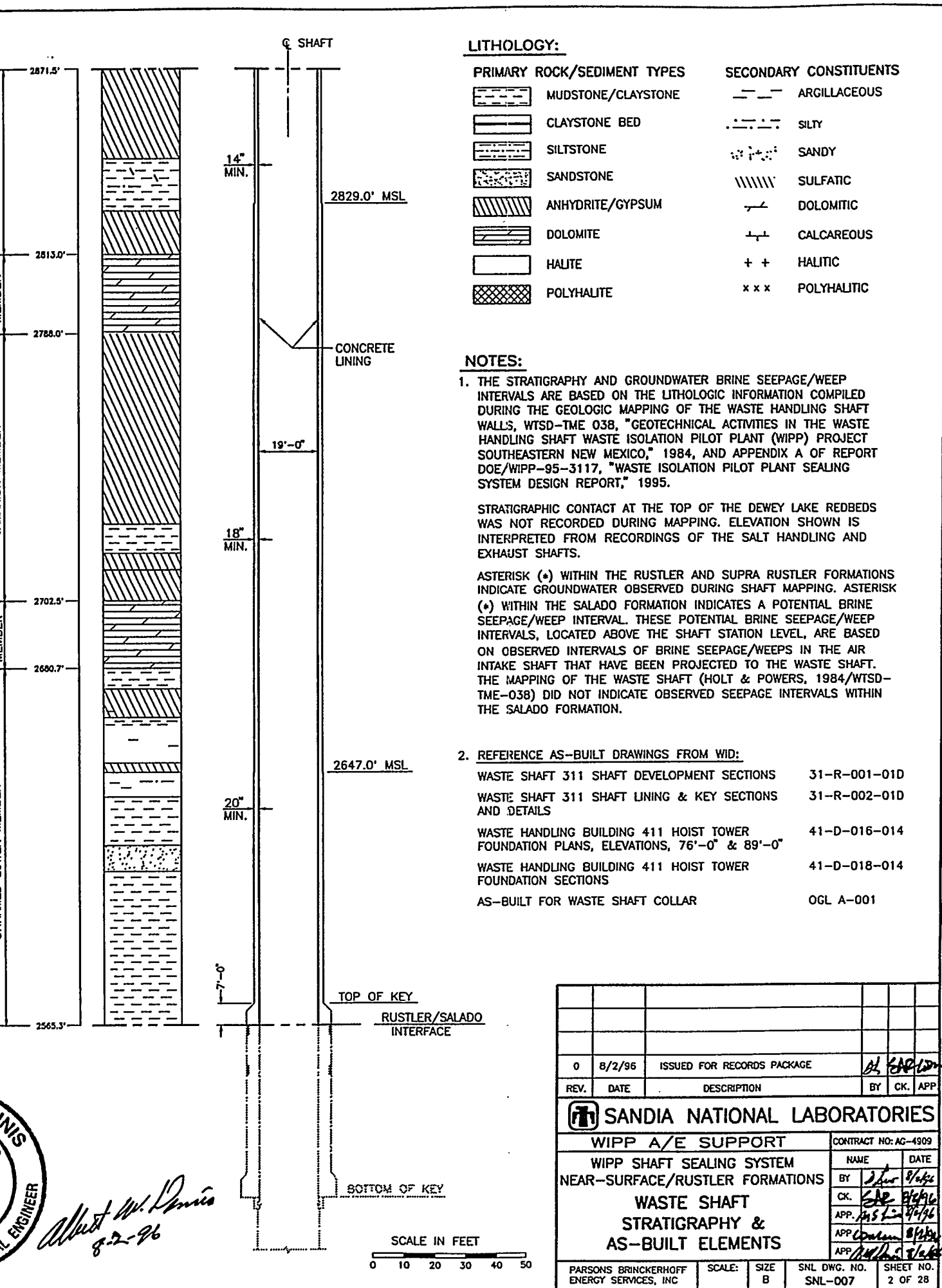


SHAFT SEALS LOCATION PLAN



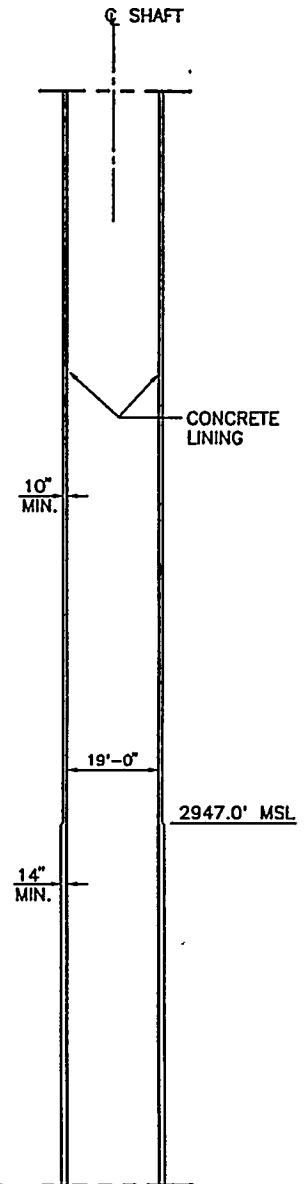
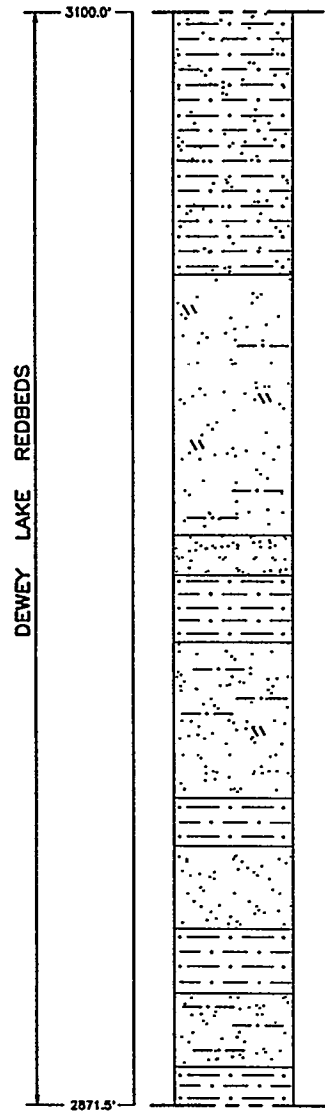
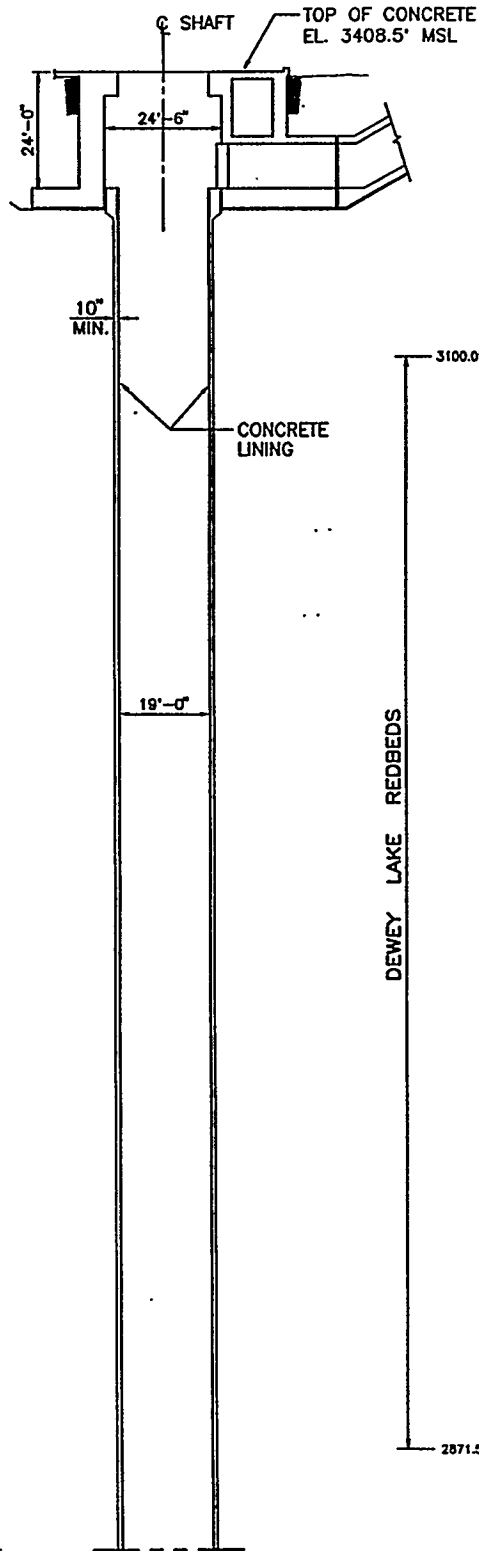
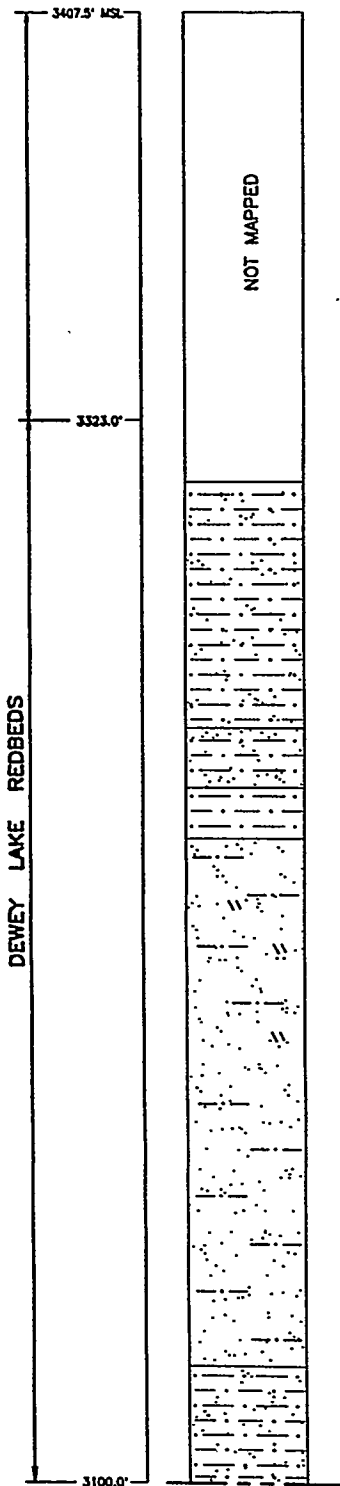
SCALE IN FEET





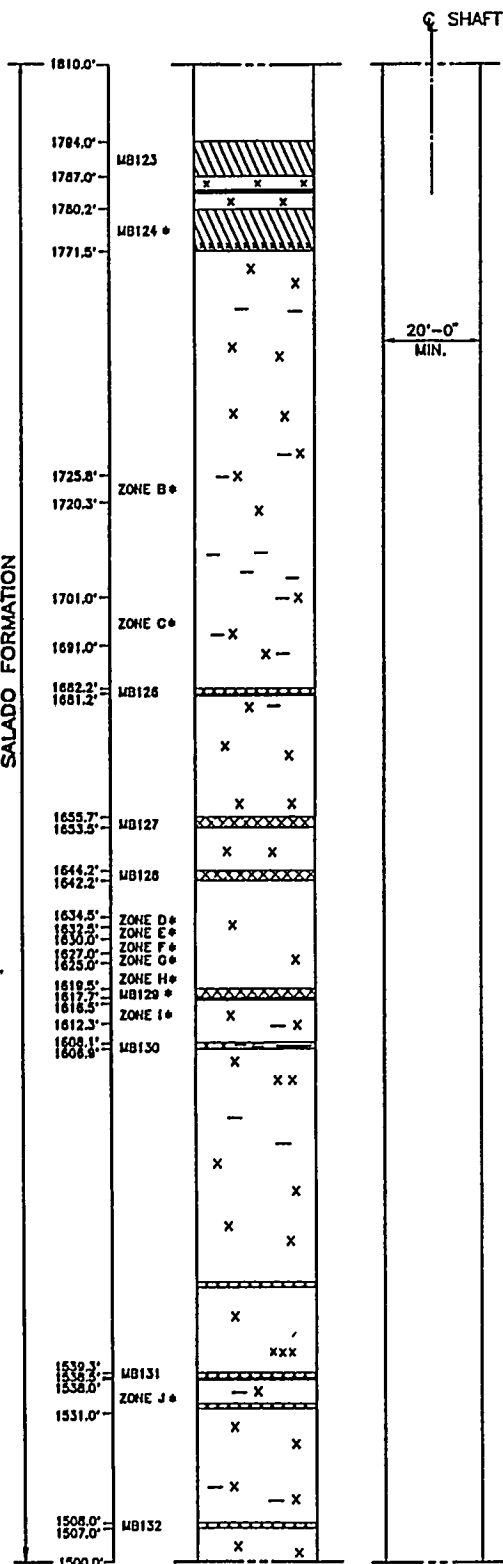
STRATIGRAPHY
(SEE NOTE 1)

SHAFT



RUSTLER FORMATION





SALADO FORMATION

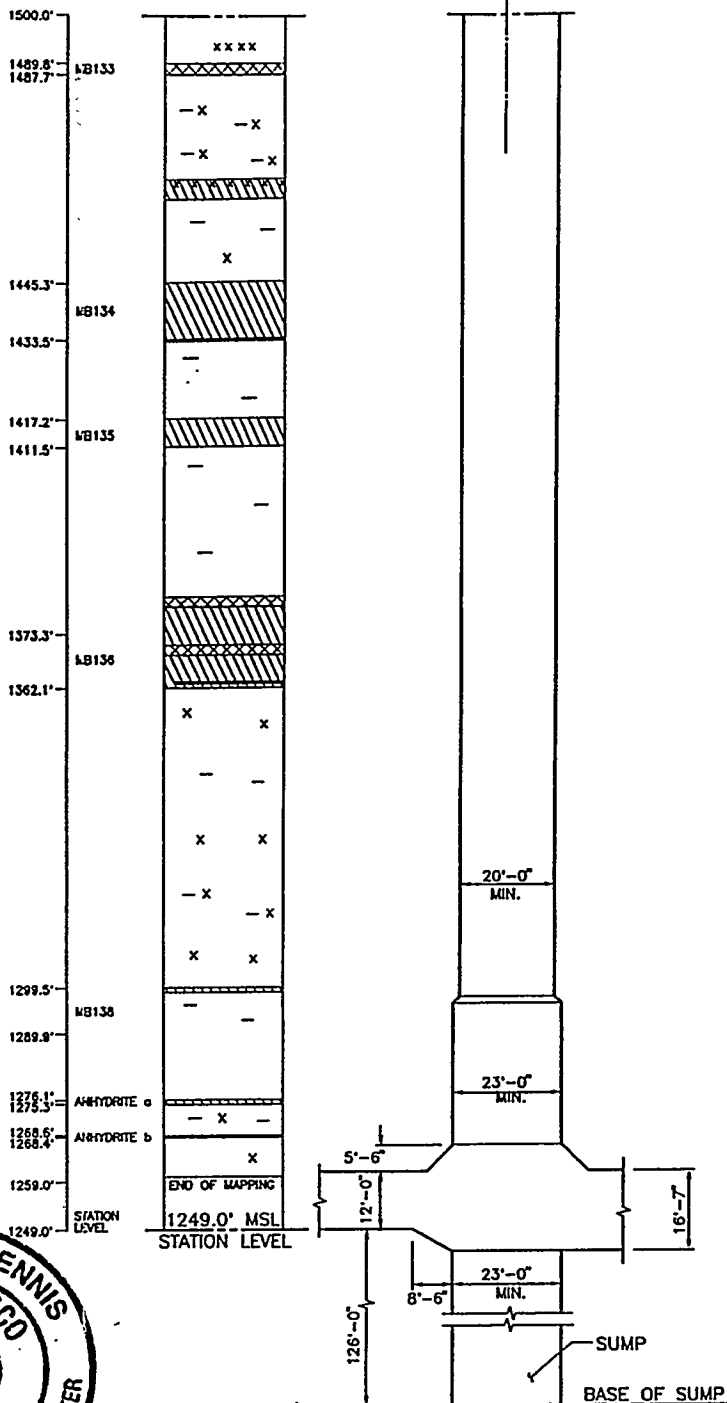


Albert W. Dennis
8-2-96

NOTES:

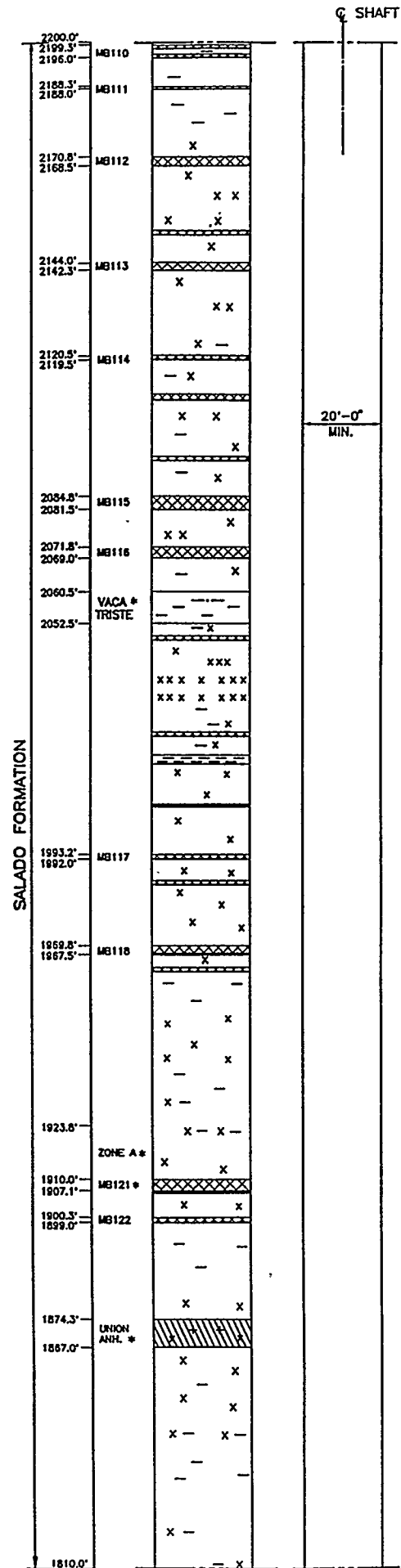
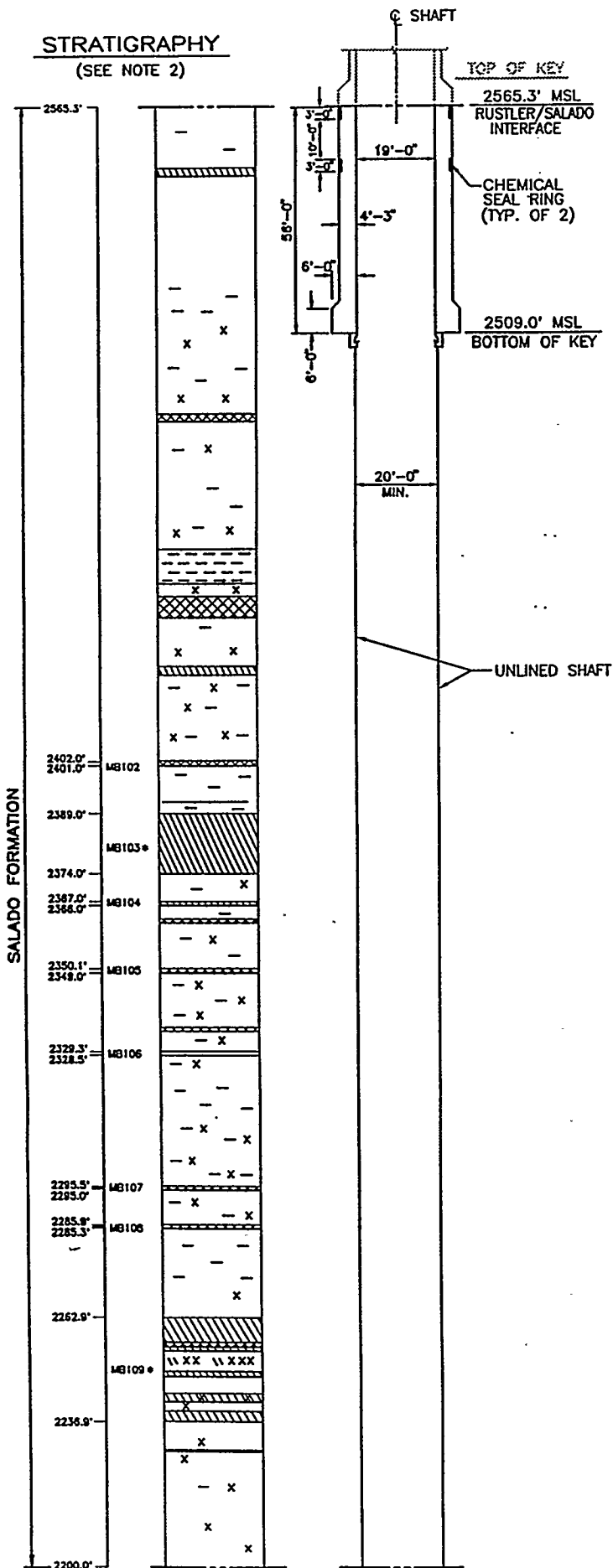
- SEE SHT. 1 FOR GENERAL NOTES AND ABBREVIATIONS.
- SEE SHT. 2 FOR LITHOLOGY AND NOTES.

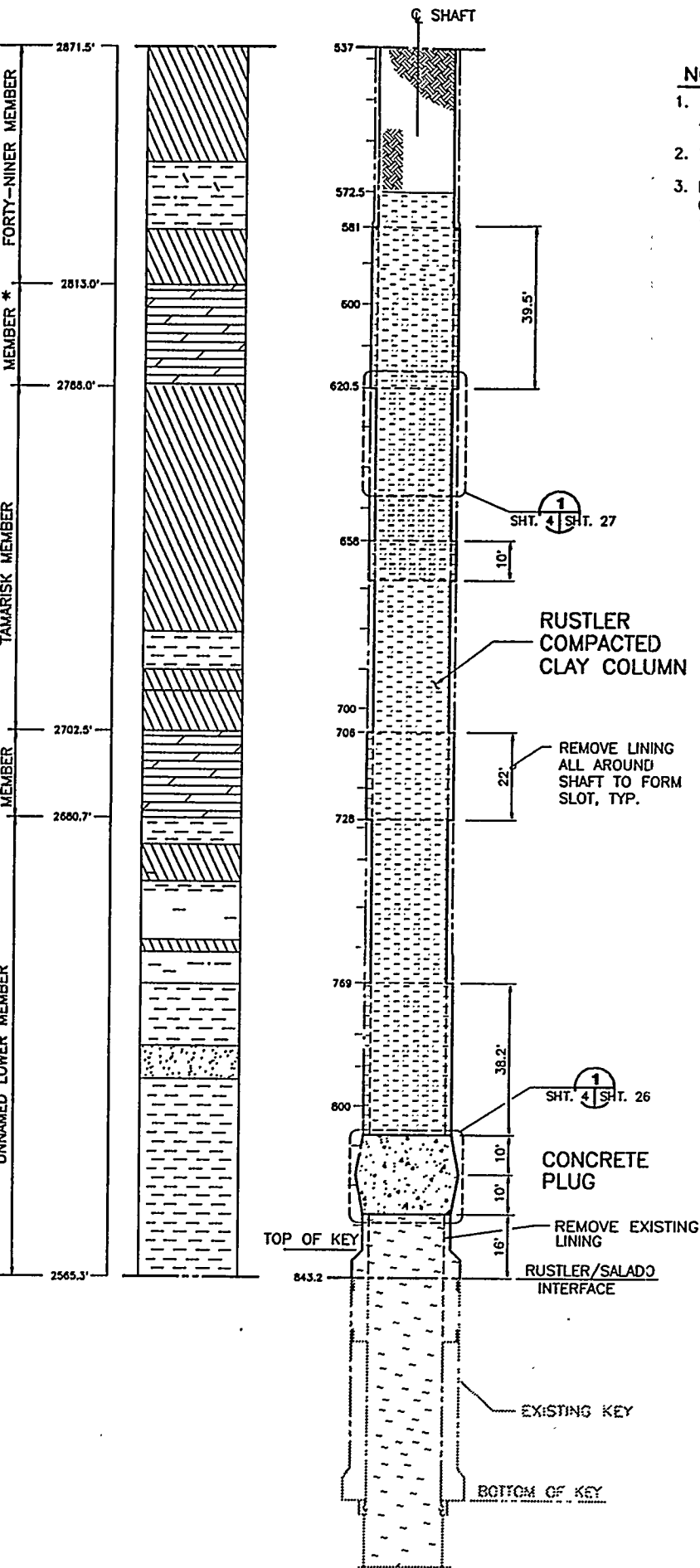
SCALE IN FEET
0 10 20 30 40 50



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 SALADO FORMATION WASTE SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS					
CONTRACT NO: AG-4909			NAME		
DATE			DATE		
BY			DATE		
CK			DATE		
APP			DATE		
APP			DATE		
PARSONS BRINCKERHOFF ENERGY SERVICES, INC			SCALE: SIZE B		
SNL DWG. NO. SNL-007			SHEET NO. 3 OF 28		

STRATIGRAPHY (SEE NOTE 2)



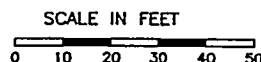


NOTES:

1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. SEE SHT. 2 FOR LITHOLOGY AND NOTES.
3. DEPTHS SHOWN ARE DISTANCES BELOW THE TOP OF CONCRETE, LOCATED AT EL. 3408.5' ABOVE MSL USGS 1927 NORTH AMERICAN DATUM.



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 WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS WASTE SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE					
CONTRACT NO: AG-4909			NAME	DATE	
			BY	8/4/96	
			CK	8/4/96	
			APP	8/4/96	
			APP	8/4/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC			SCALE:	SIZE B	SNL DWG. NO. SNL-007
			SHEET NO. 4 OF 28		

STRATIGRAPHY

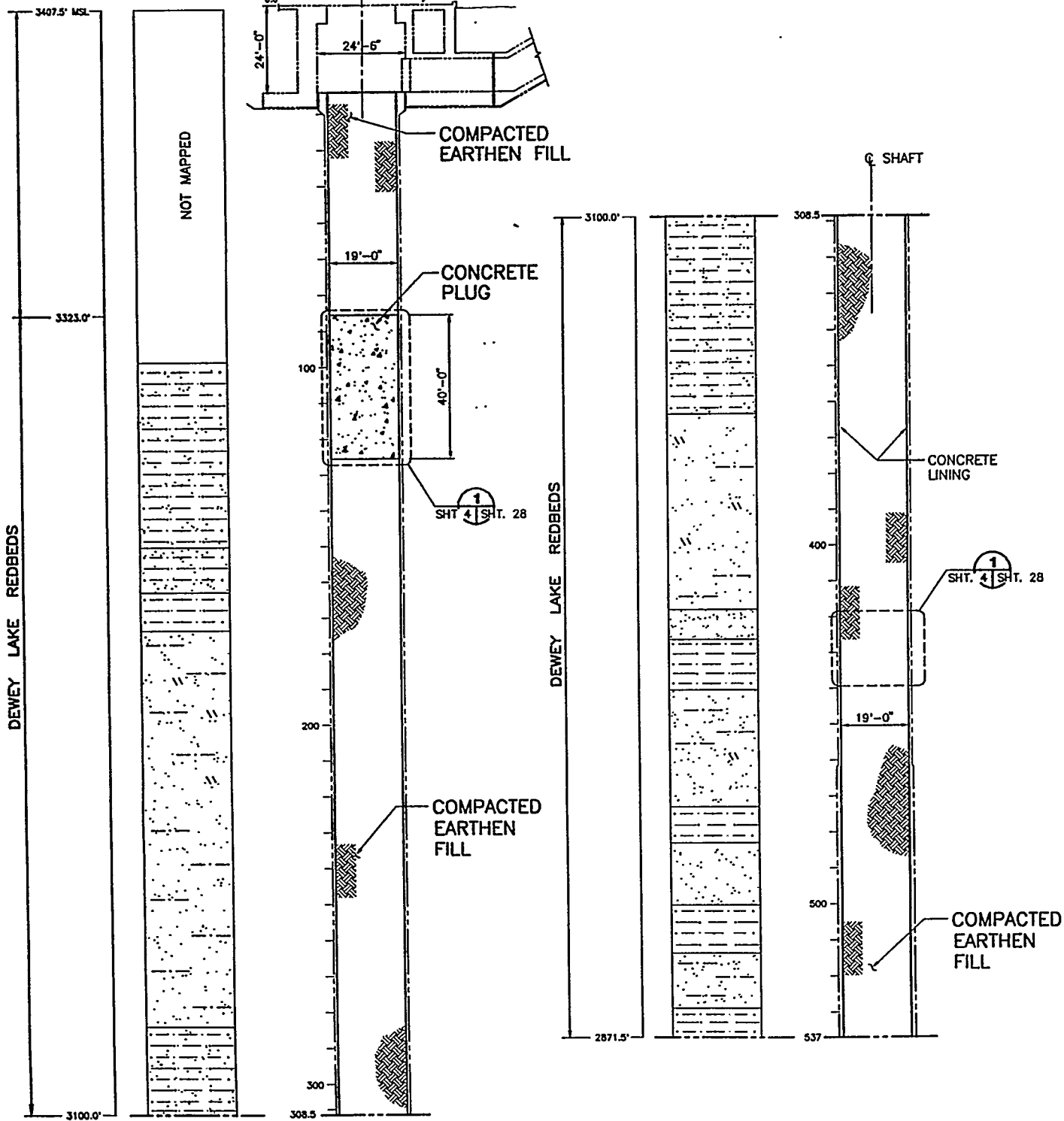
(SEE NOTE 2)

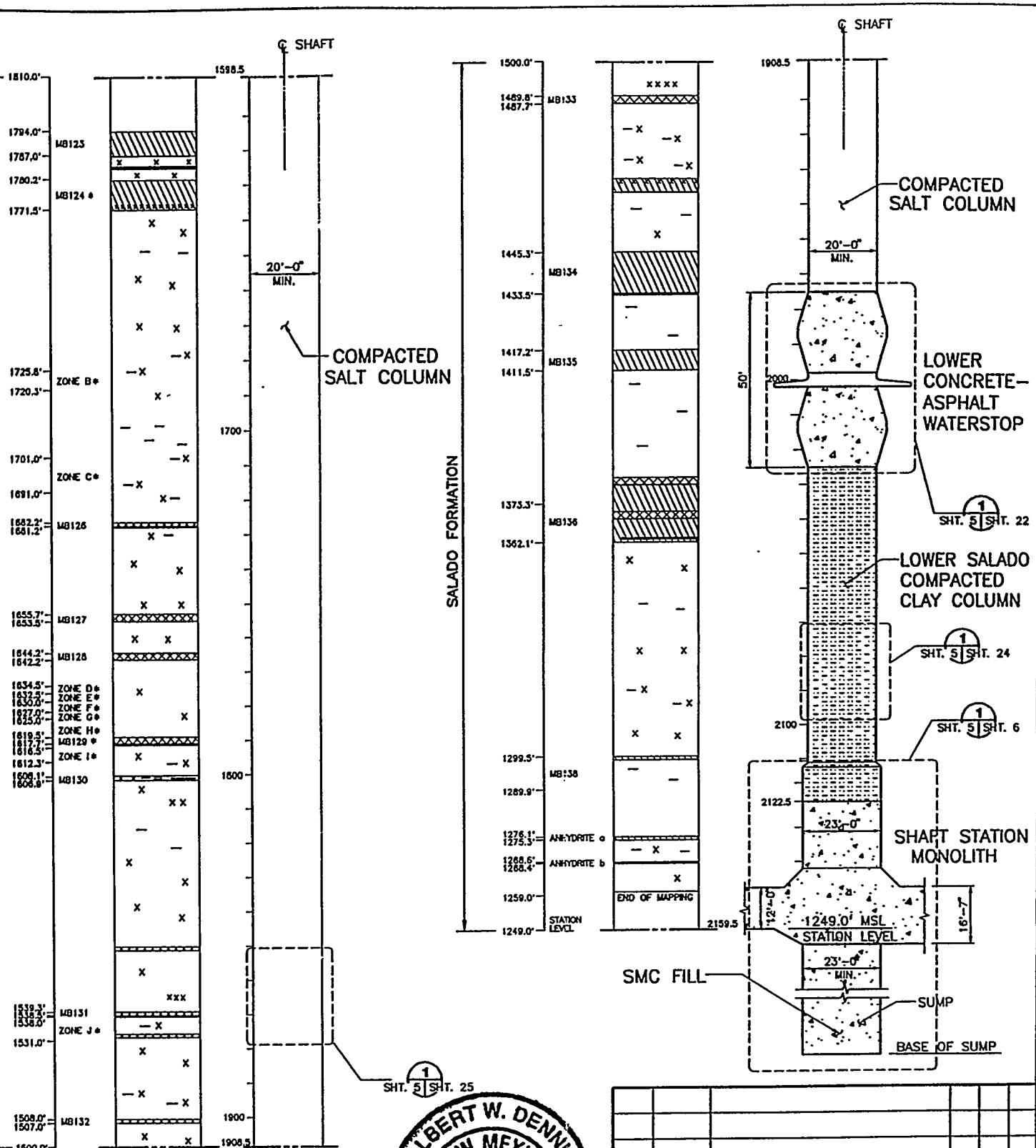
SHAFT

DEPTH
(SEE NOTE 3)

SHAFT

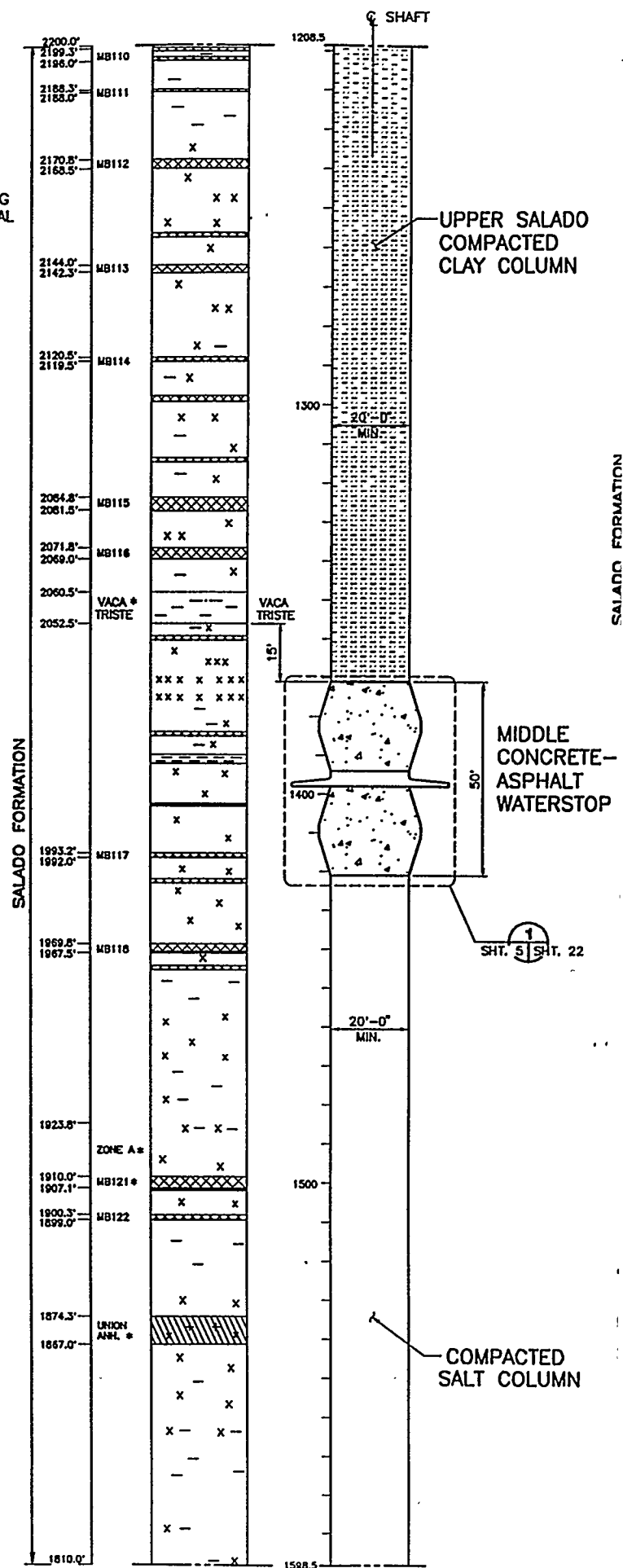
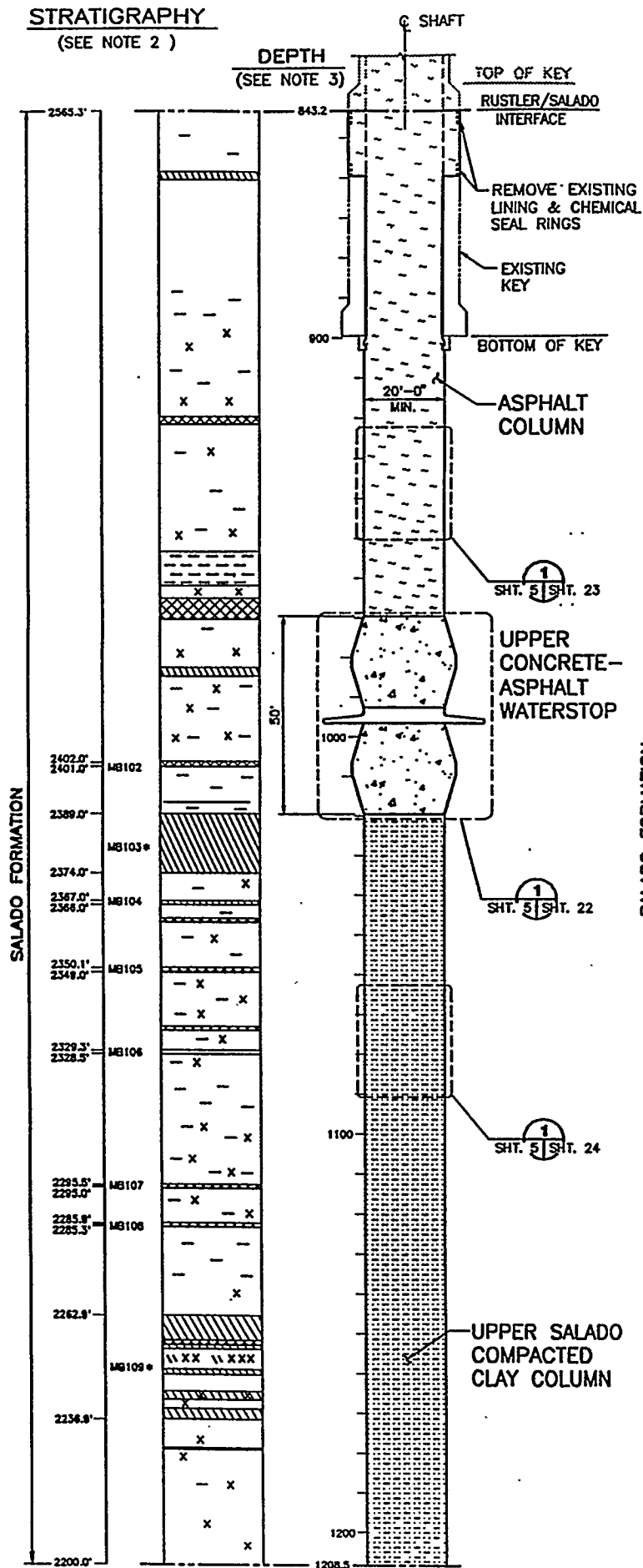
TOP OF CONCRETE
EL. 3408.5' MSL

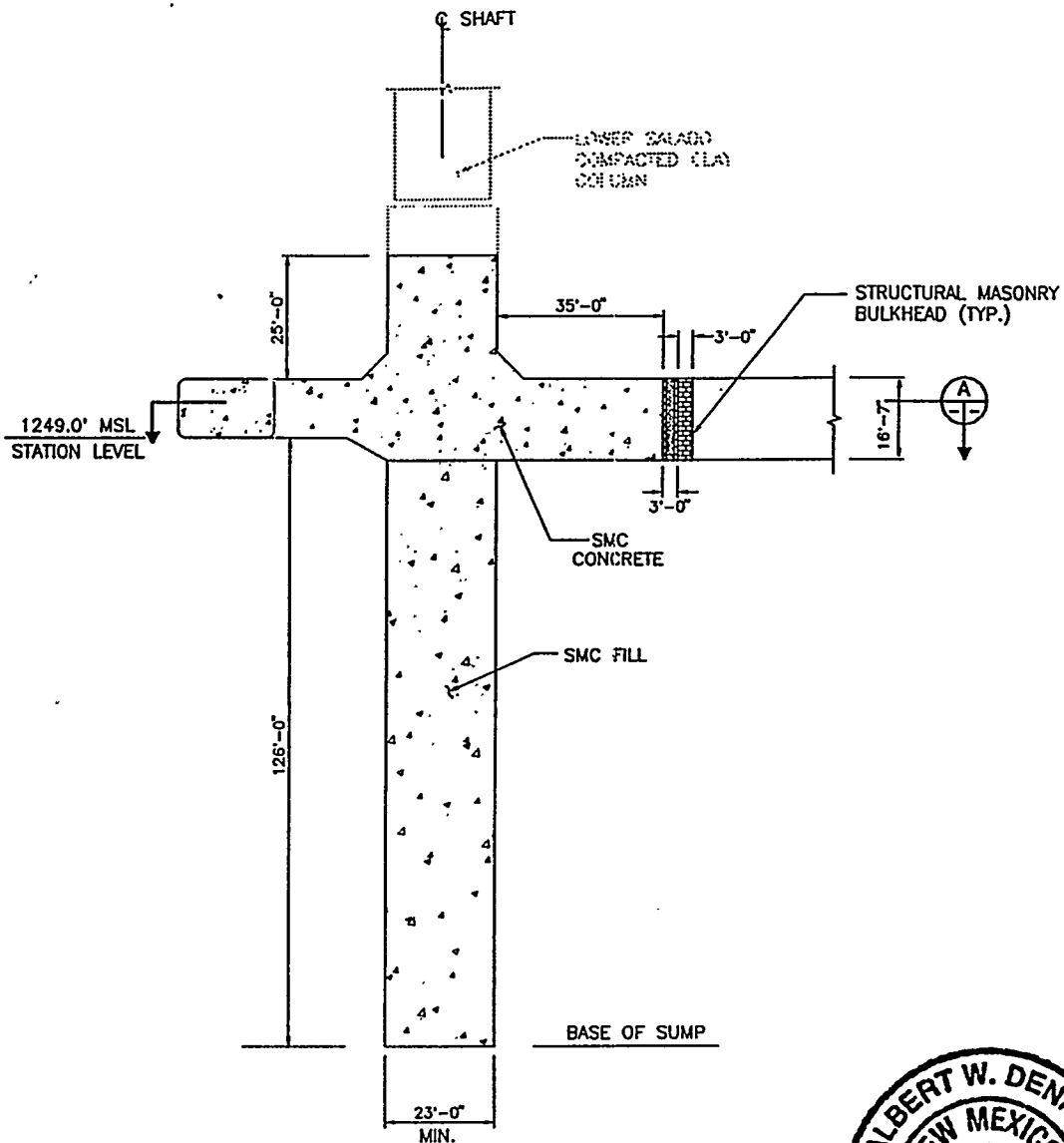




STRATIGRAPHY

(SEE NOTE 2)





DETAIL

SHT. 5 | SHT. 6



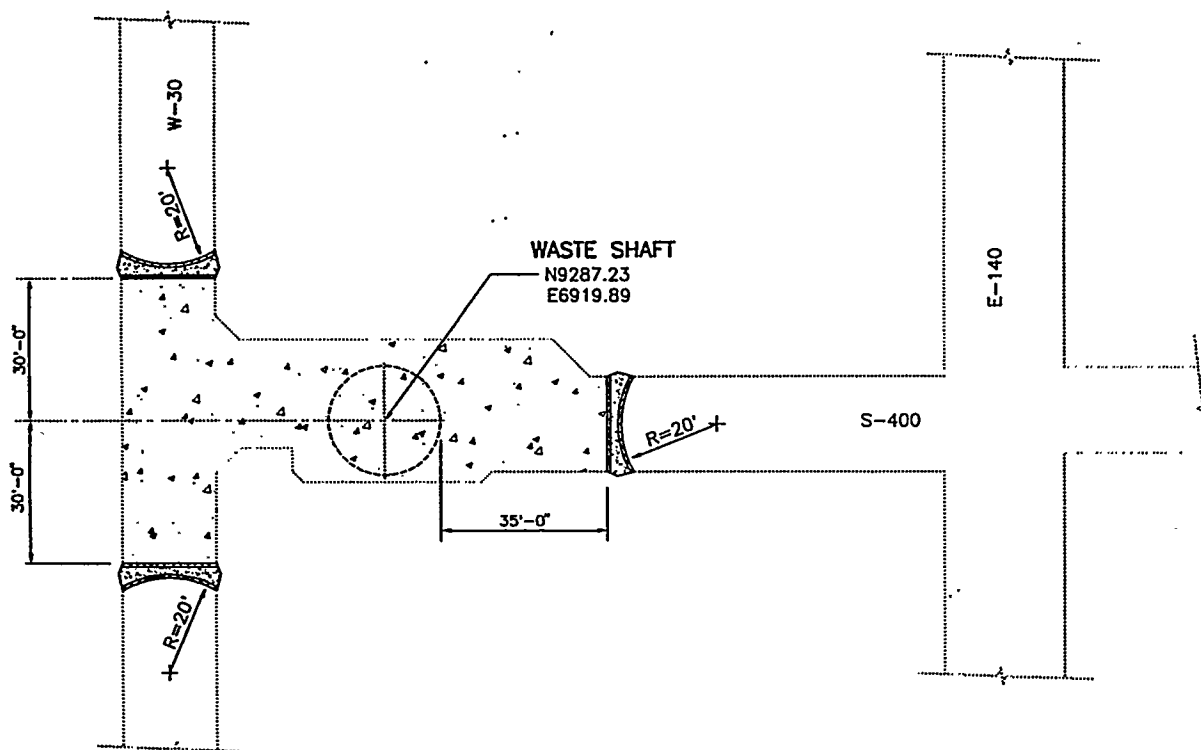
Albert W. Dennis
8-2-96

GENERAL NOTES, LEGEND AND

SCALE IN FEET
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REV.	DATE	DESCRIPTION	BY	CK.	APP.
SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT			CONTRACT NO: AC-4909		
WIPP SHAFT SEALING SYSTEM			NAME	DATE	
WASTE SHAFT SHAFT STATION MONOLITH			BY	8/2/96	
			CK.	8/2/96	
			APP.	8/2/96	
			APP.	8/2/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC			SCALE:	SIZE	SNL DWG. NO.
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					SHEET NO.
					6 OF 28

E-9

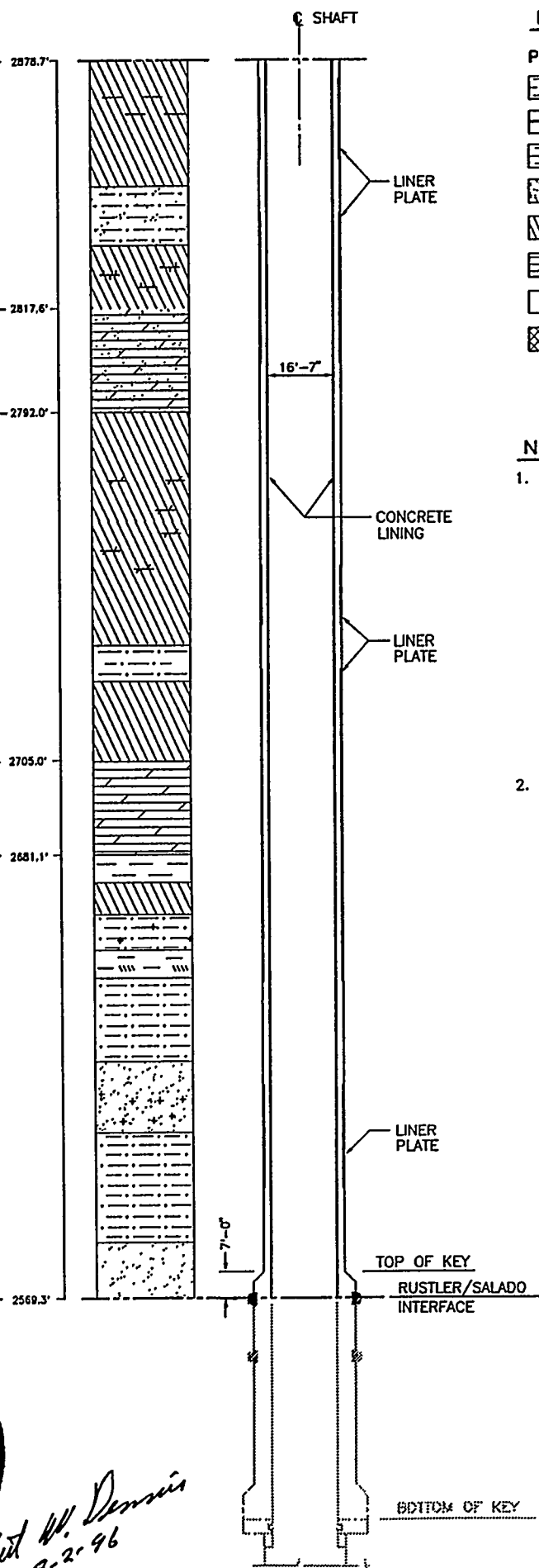


SECTION



NOTES:

1. SEE SHT. 1 FOR GEOMETRIC ABBREVIATIONS.



LITHOLOGY:

PRIMARY ROCK/SEDIMENT TYPES

	MUDSTONE/CLAYSTONE
	CLAYSTONE BED
	SILTSTONE
	SANDSTONE
	ANHYDRITE/GYPSUM
	DOLOMITE
	HALITE
	POLYHALITE

SECONDARY CONSTITUENTS

	ARGILLACEOUS
	SILTY
	SANDY
	SULFATIC
	DOLOMITIC
	CALCAREOUS
	HALITIC
	POLYHALITIC
	LANGBEINITE

NOTES:

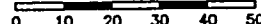
- THE STRATIGRAPHY AND GROUNDWATER BRINE SEEPAGE/WEEP INTERVALS ARE BASED ON THE LITHOLOGIC INFORMATION COMPILED DURING THE GEOLOGIC MAPPING OF THE AIR INTAKE SHAFT WALLS, DOE/WIPP-90-051, "GEOLOGIC MAPPING OF THE AIR INTAKE SHAFT AT THE WASTE ISOLATION PILOT PLANT", 1990, AND APPENDIX A OF REPORT DOE/WIPP-95-3117,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

- 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

SCALE IN FEET



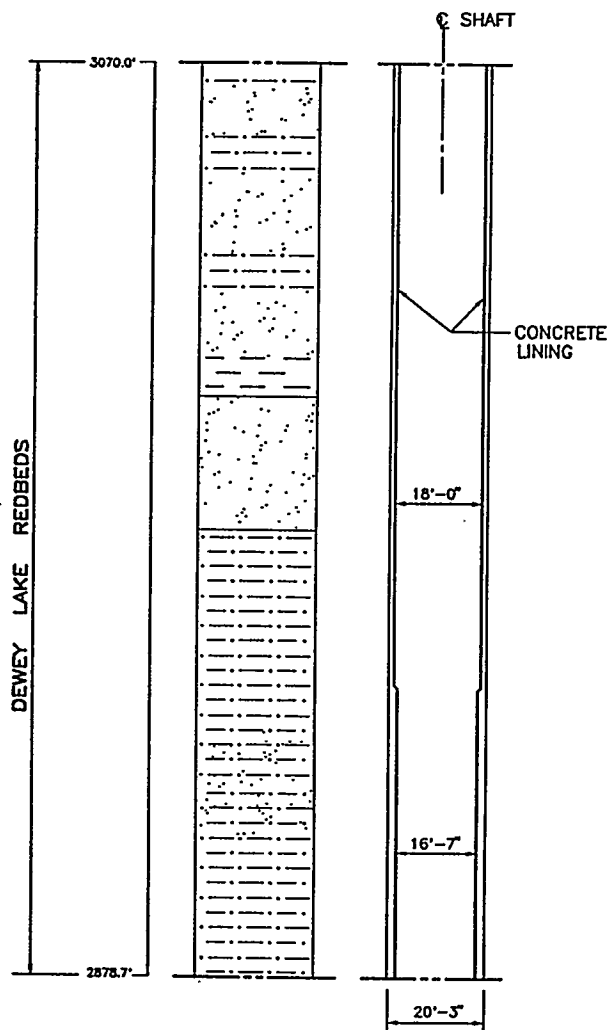
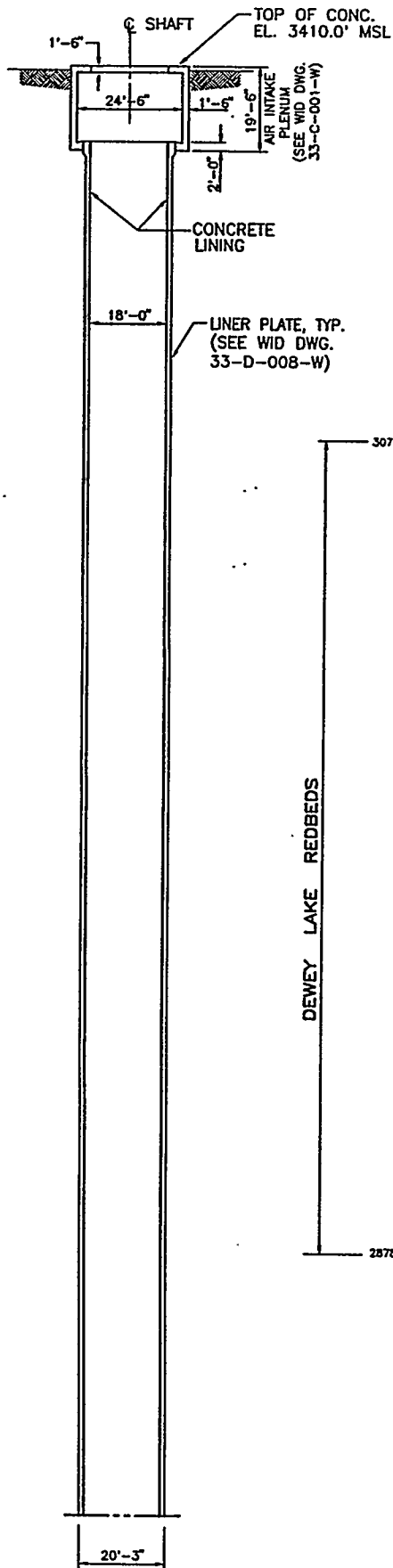
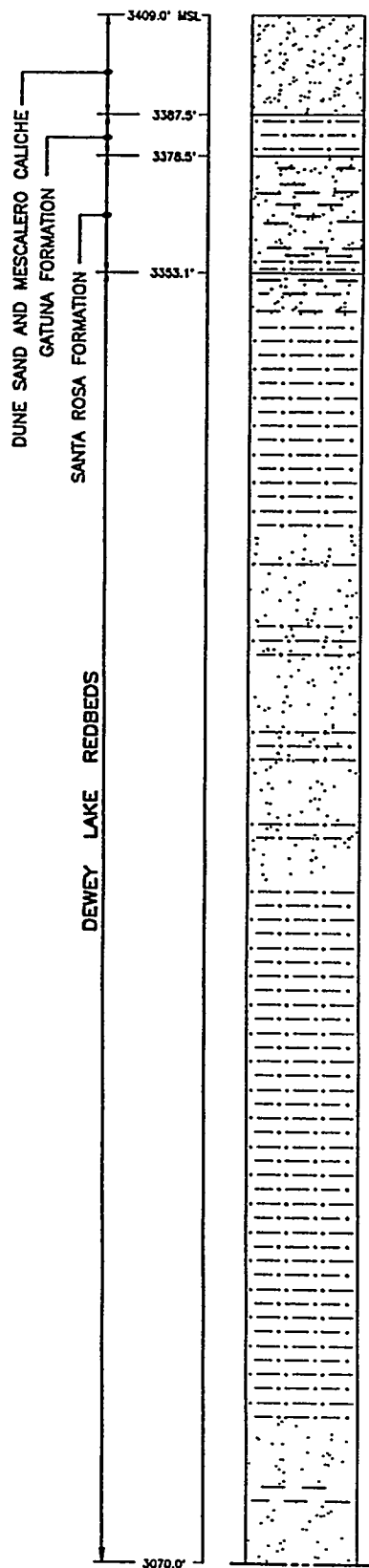
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WIPP SHAFT SEALING SYSTEM			NAME	DATE	
NEAR-SURFACE/RUSTLER FORMATIONS			BY	8/2/96	
AIR INTAKE SHAFT			CK	8/2/96	
STRATIGRAPHY &			APP	8/2/96	
AS-BUILT ELEMENTS			APP	8/2/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC		SCALE: B	SIZE	SNL DWG. NO. SNL-007	SHEET NO. 7 OF 28

E-10

8-2-96

STRATIGRAPHY (SEE NOTE 1)

SHAFT



RUSTLER FORMATION

FORTY-NINER MEMBER

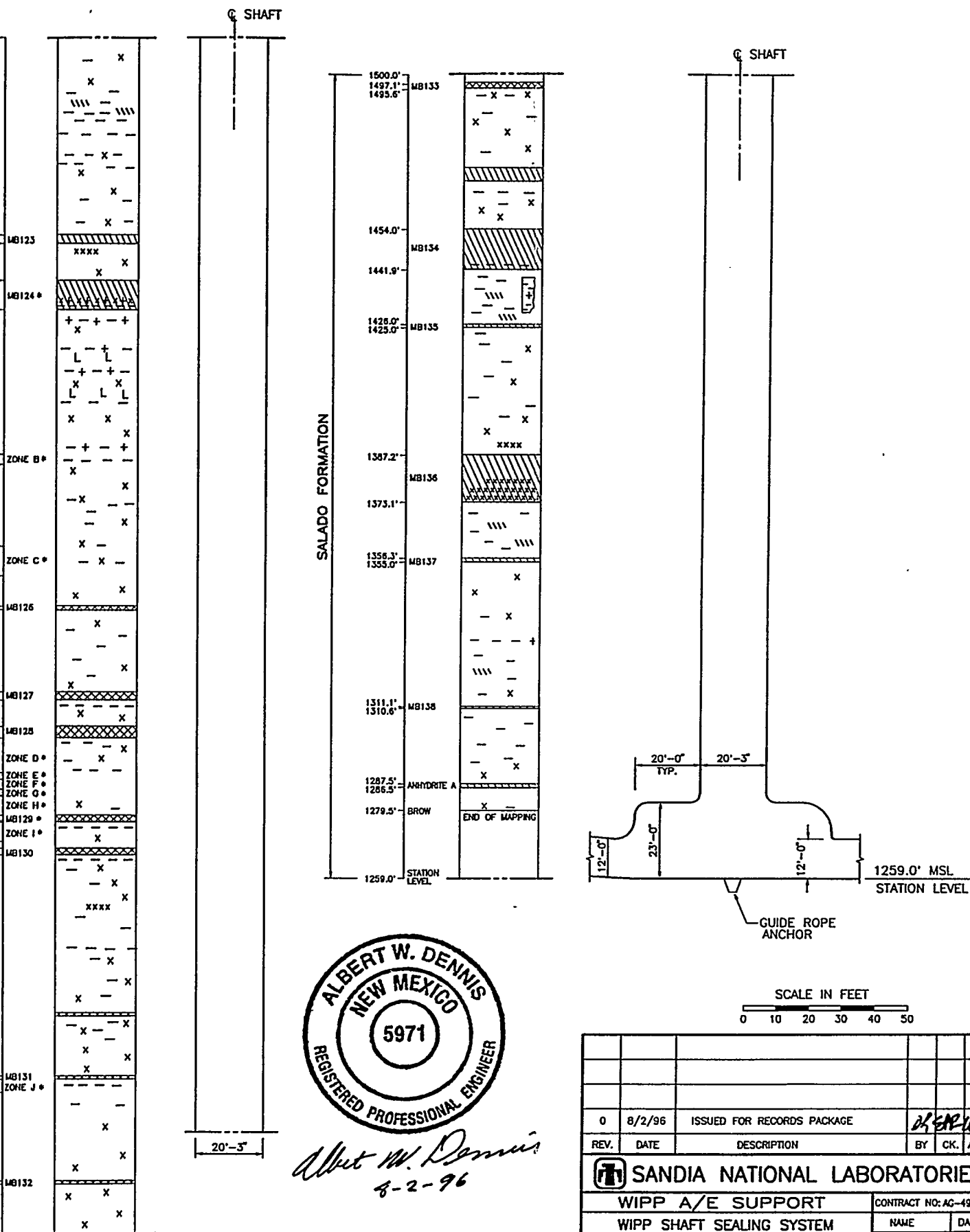
MAGENTA * MEMBER

TAMARISK MEMBER

CULEBRA * MEMBER

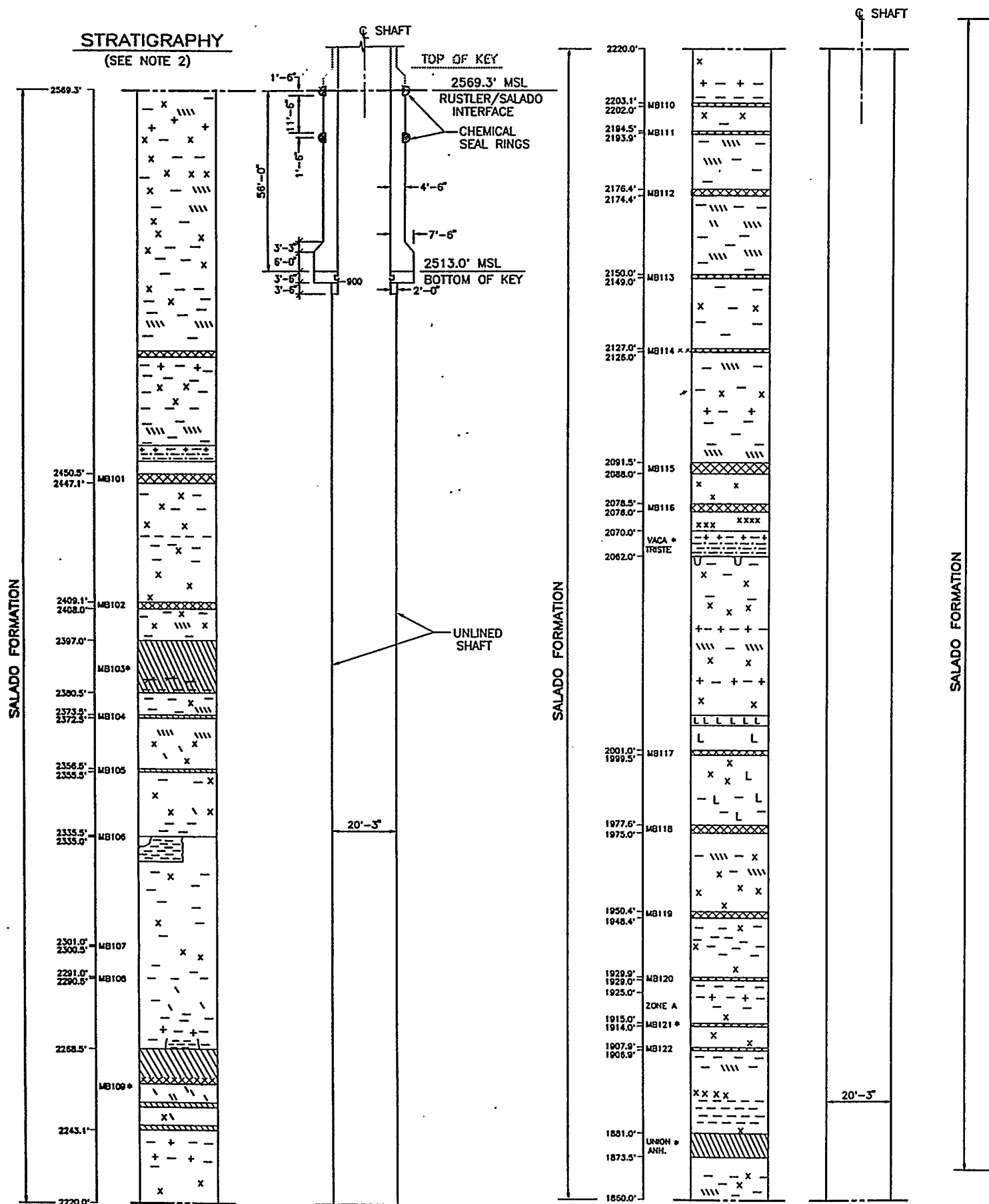
UNNAMED LOWER MEMBER



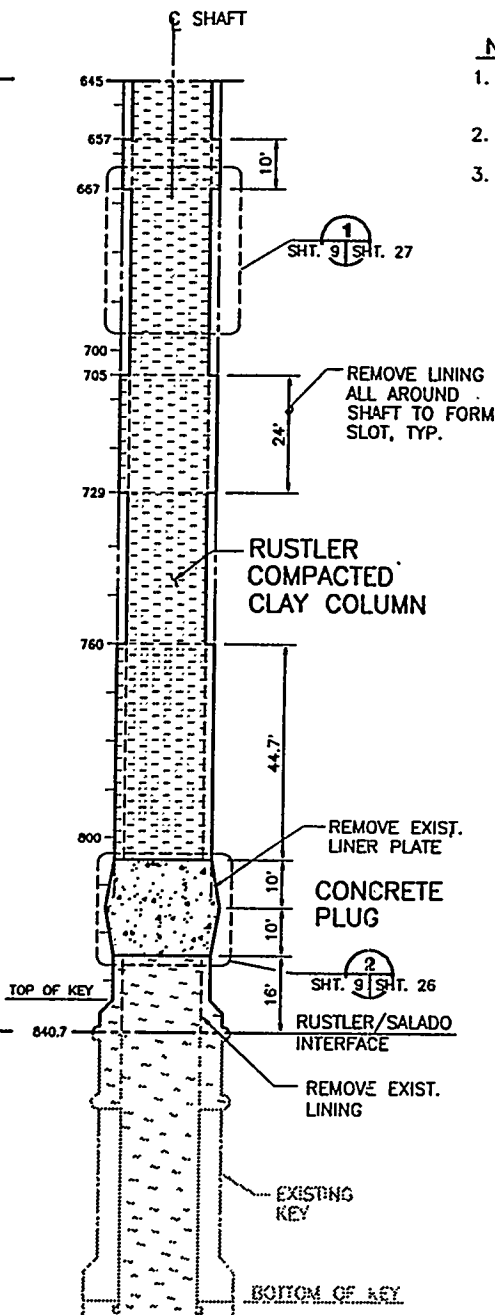
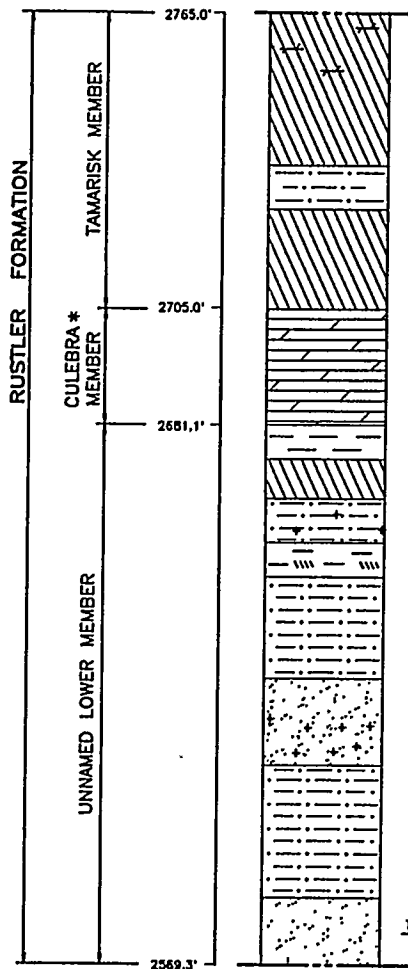


STRATIGRAPHY

(SEE NOTE 2)



RUSTLER FORMATION



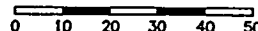
NOTES:

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.



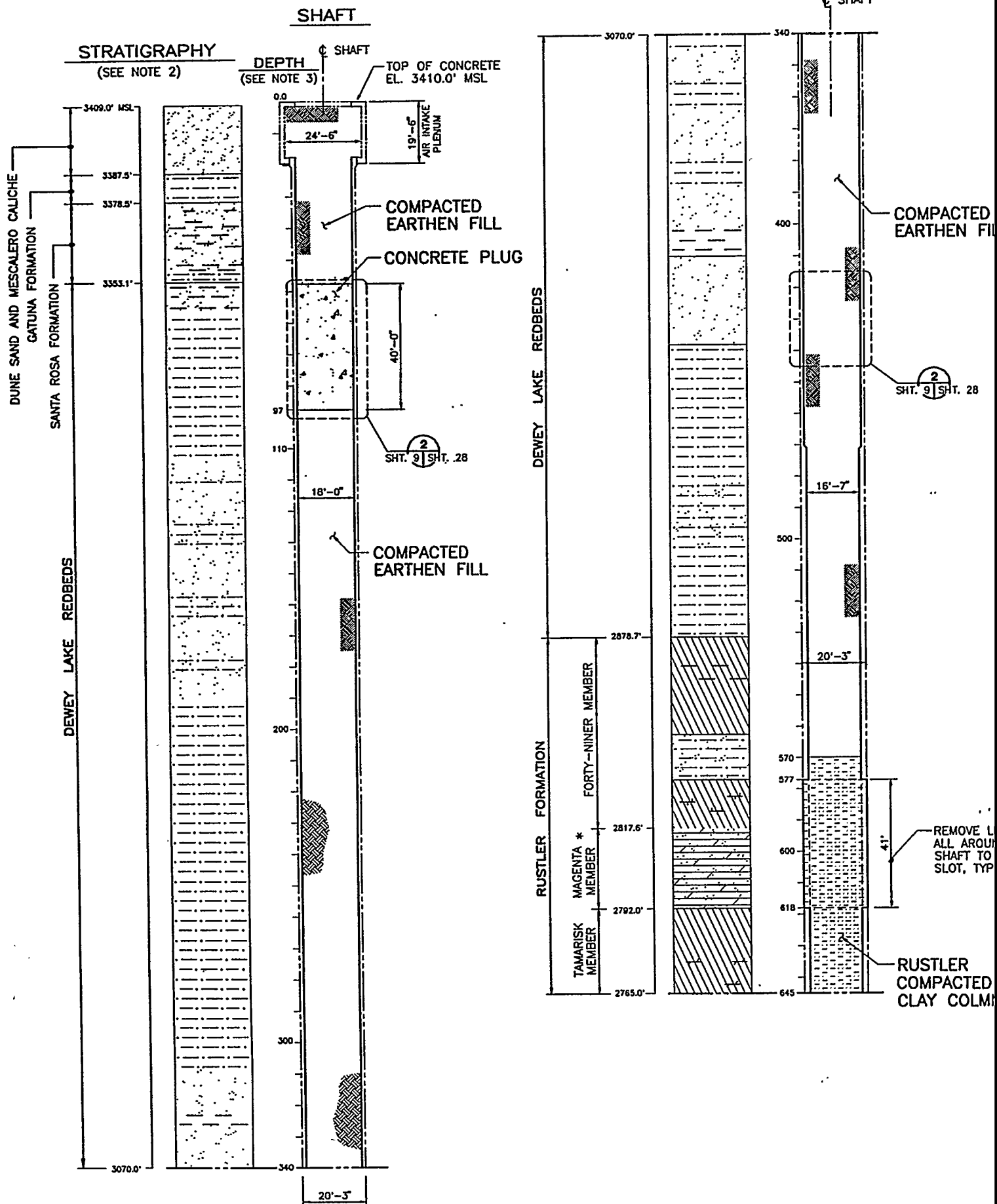
Albert W. Dennis
8-2-96

SCALE IN FEET



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-4909		
WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS AIR INTAKE SHAFT STRATIGRAPHY AND SEALING SUBSYSTEM PROFILE			NAME	DATE	
			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	SNL DWG. NO.	SHEET NO.	
		B	SNL-007	9 OF 28	

E-12



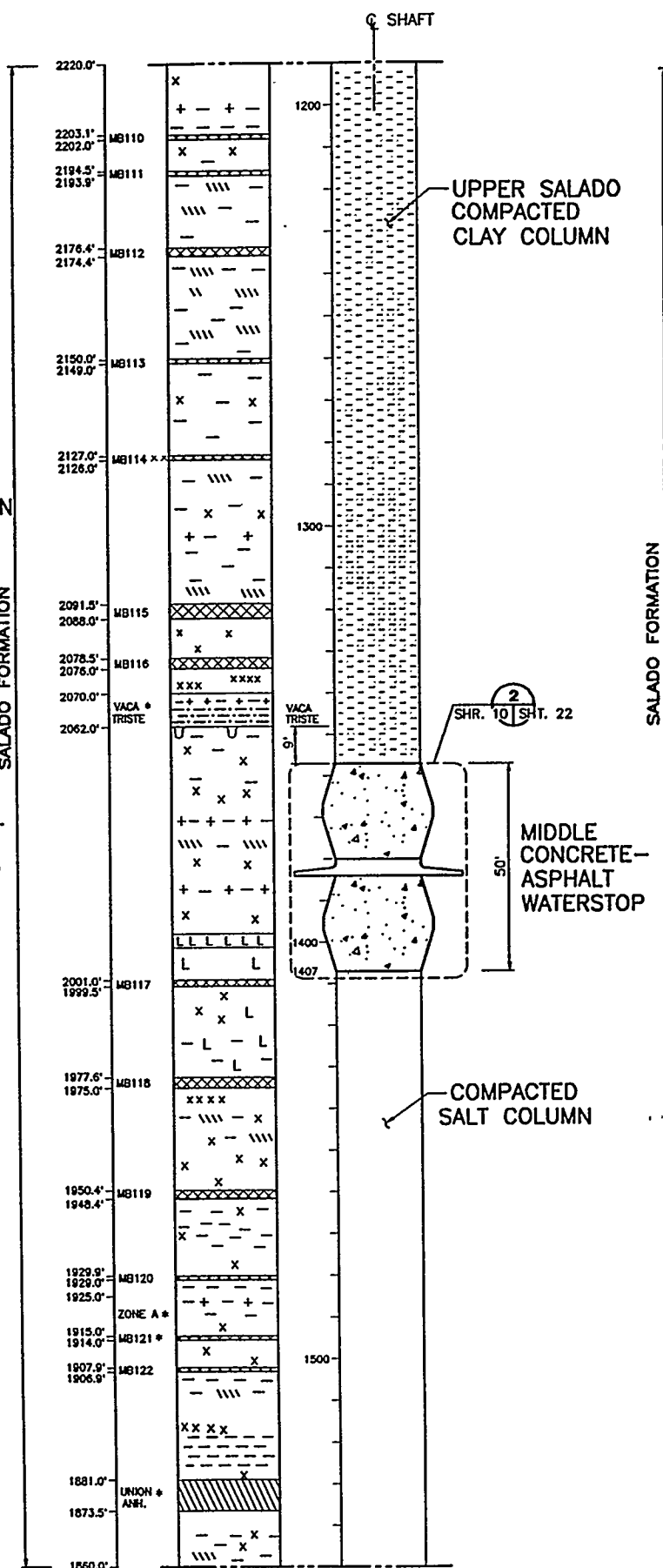
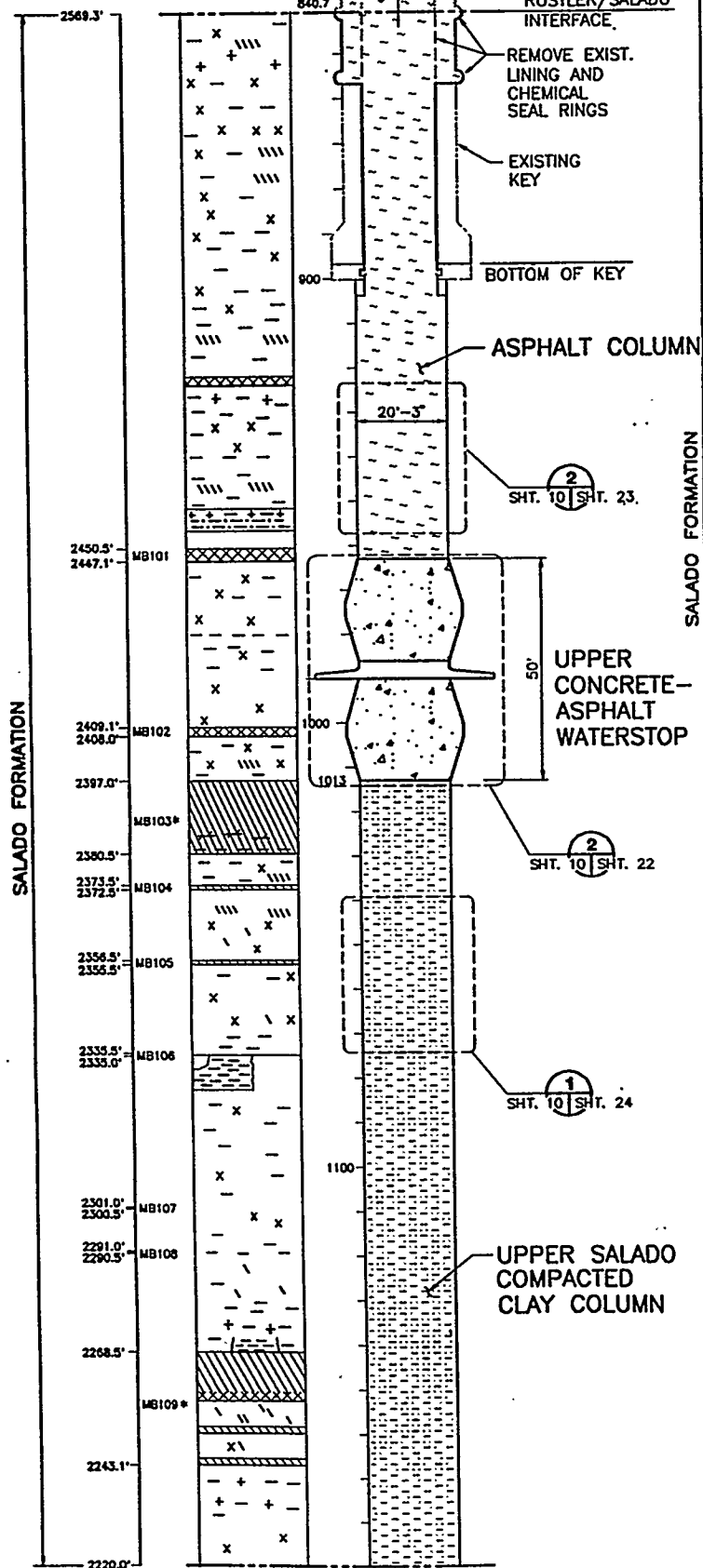


1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS
2. SEE SHT. 7 FOR LITHOLOGY AND NOTES.
3. SEE NOTE 3 OF SHT. 9.

0	8/2/96	ISSUED FOR RECORDS PACKAGE							
REV.	DATE	DESCRIPTION				BY	CK.	APP	
SANDIA NATIONAL LABORATORIES									
WIPP A/E SUPPORT						CONTRACT NO: AG-4909			
WIPP SHAFT SEALING SYSTEM SALADO FORMATION AIR INTAKE SHAFT STRATIGRAPHY AND SEALING SUBSYSTEM PROFILE						NAME	DATE		
						BY	D. Lauer 8/4/96		
						CK.	SAR 8/4/96		
						APP.	MSF 8/4/96		
						APP	C. D. [unclear] 8/12/96		
PARSONS BRINCKERHOFF ENERGY SERVICES, INC						SCALE:	SIZE B	SNL DWG. NO. SNL-007	SHEET NO. 10 OF 28

STRATIGRAPHY
(SEE NOTE 2)

DEPTH
(SEE NOTE 3)





ENRY

E-14

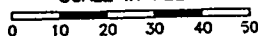
NOTES:

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

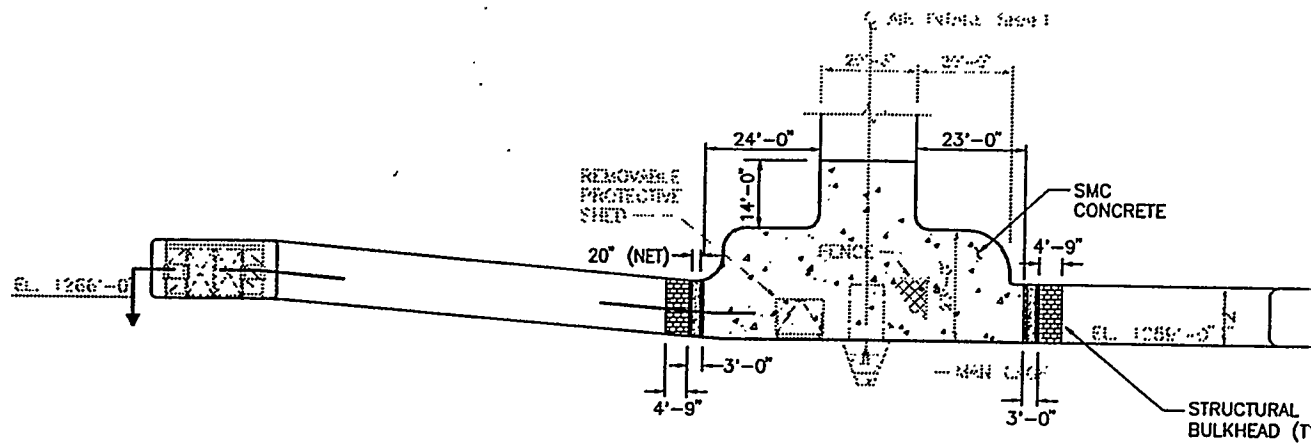


A. W. Dennis
8-2-96

SCALE IN FEET

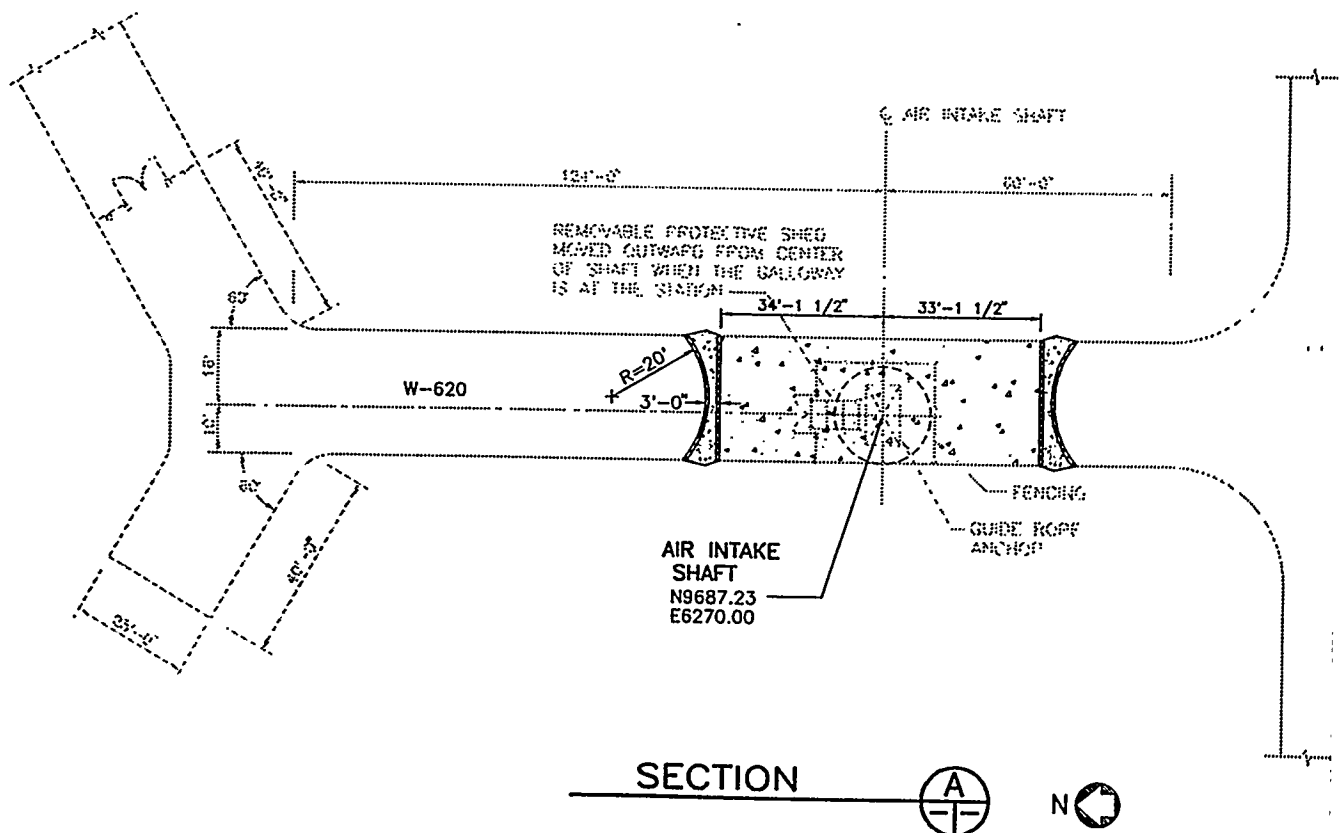


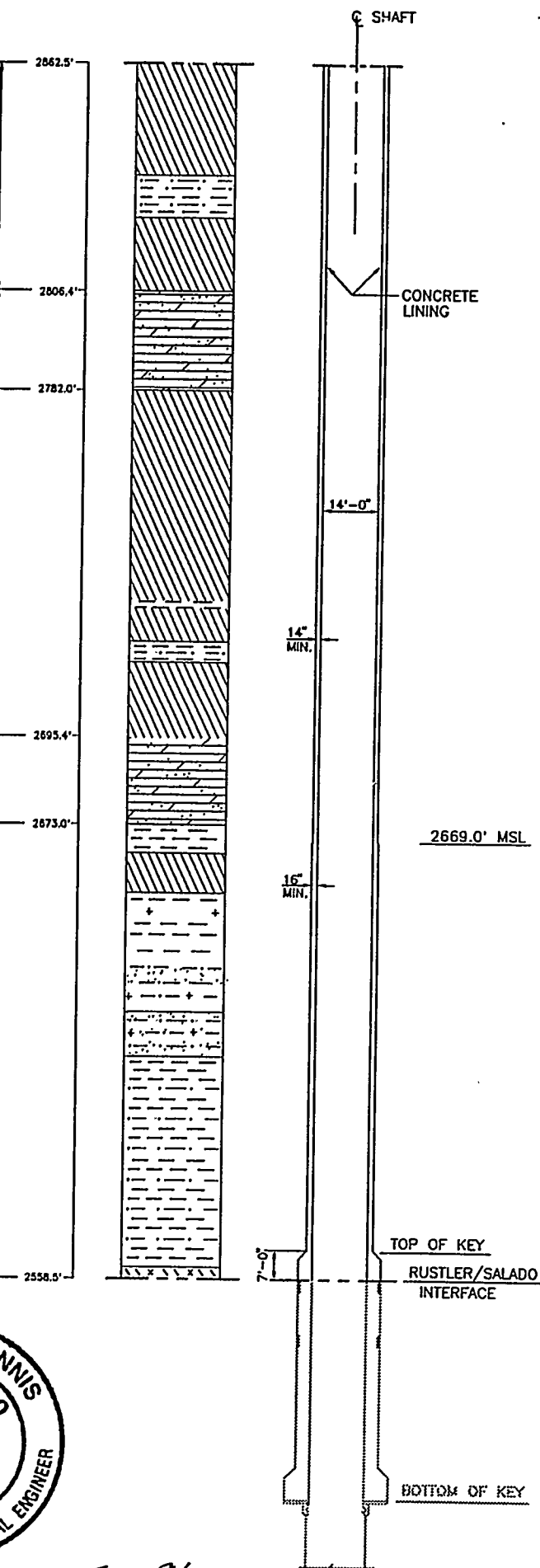
0	8/2/96	ISSUED FOR RECORDS PACKAGE	BY	CK.	APP.
REV.	DATE	DESCRIPTION	BY	CK.	APP.
SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT			CONTRACT NO: AG-4909		
WIPP SHAFT SEALING SYSTEM			NAME	DATE	
AIR INTAKE SHAFT SHAFT STATION MONOLITH			BY	8/2/96	
			CK.	SAP 8/2/96	
			APP.	8/2/96	
			APP.	8/2/96	
			APP.	8/2/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC		SCALE:	SIZE B	SNL DWG. NO. SNL-007	SHEET NO. 11 OF 28



DETAIL

1
SHT. 10 | SHT. 11





LITHOLOGY:

PRIMARY ROCK/SEDIMENT TYPES

	MUDSTONE/CLAYSTONE
	CLAYSTONE BED
	SILTSTONE
	SANDSTONE
	ANHYDRITE/GYPSUM
	DOLOMITE
	HALITE
	POLYHALITE
	CALICHE

SECONDARY CONSTITUENTS

	ARGILLACEOUS
	SILTY
	SANDY
	SULFATIC
	DOLOMITIC
	CALCAREOUS
	HALITIC
	POLYHALITIC

NOTE:

- 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, "GEOTECHNICAL 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	WTSD 390D064 (1 of 2)

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 NEAR-SURFACE/RUSTLER FORMATIONS EXHAUST SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS								
CONTRACT NO: AG-4909								
NAME		DATE						
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 B		SNL DWG. NO. SNL-007		SHEET NO. 12 OF 28		

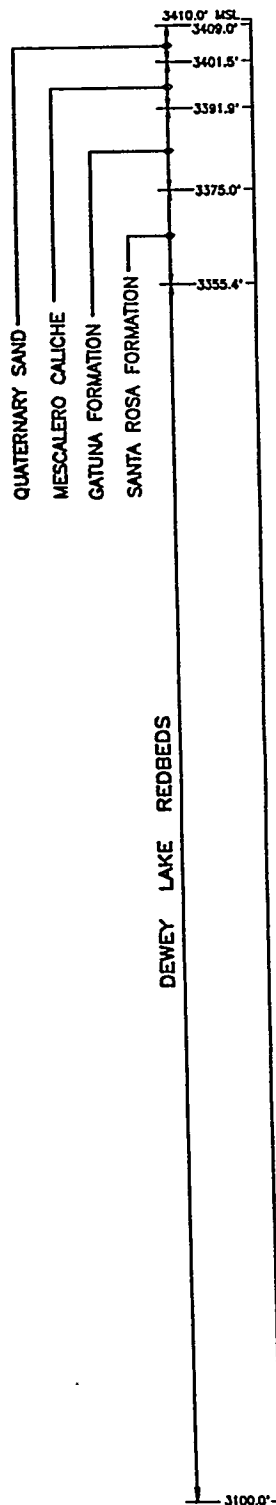
ANNIS
ENGINEER

8.2-96

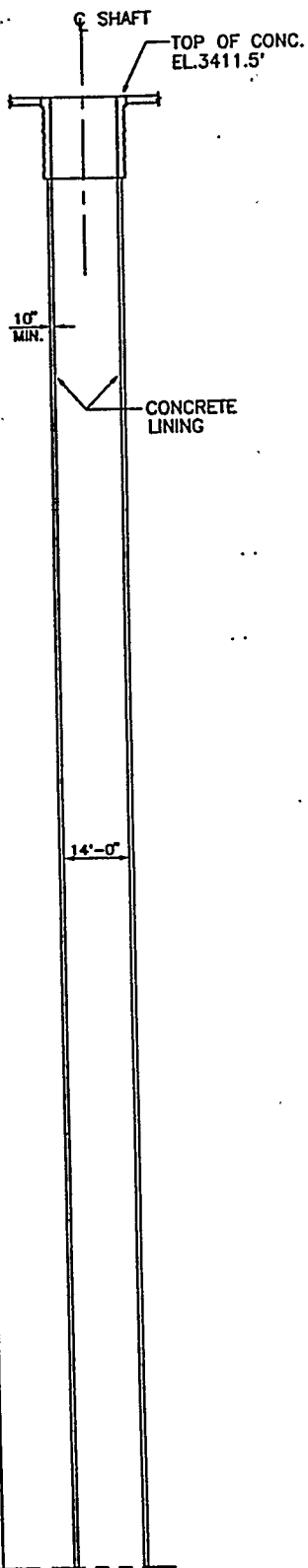
E-15

STRATIGRAPHY

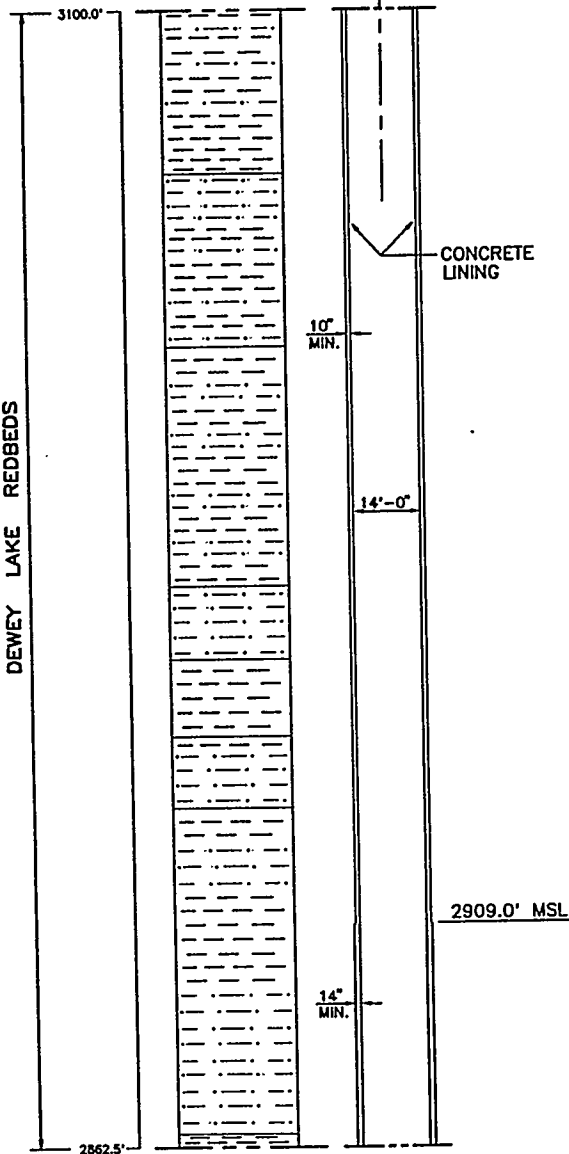
(SEE NOTE 1)



SHAFT



DEWEY LAKE REDBEDS

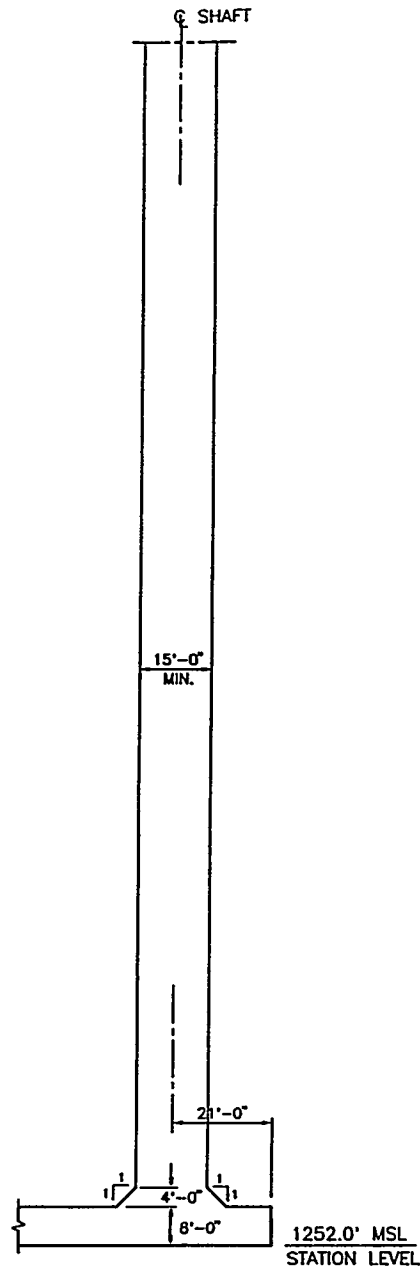
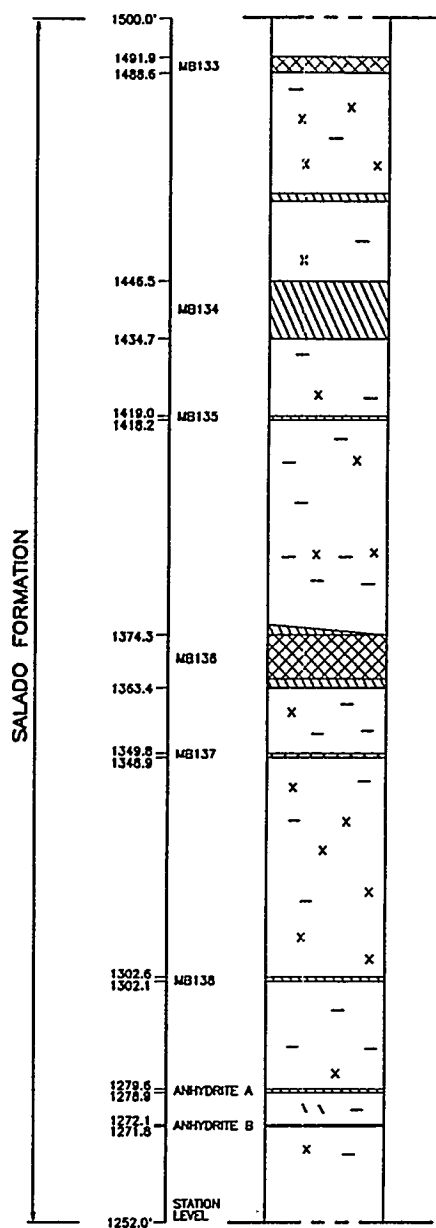
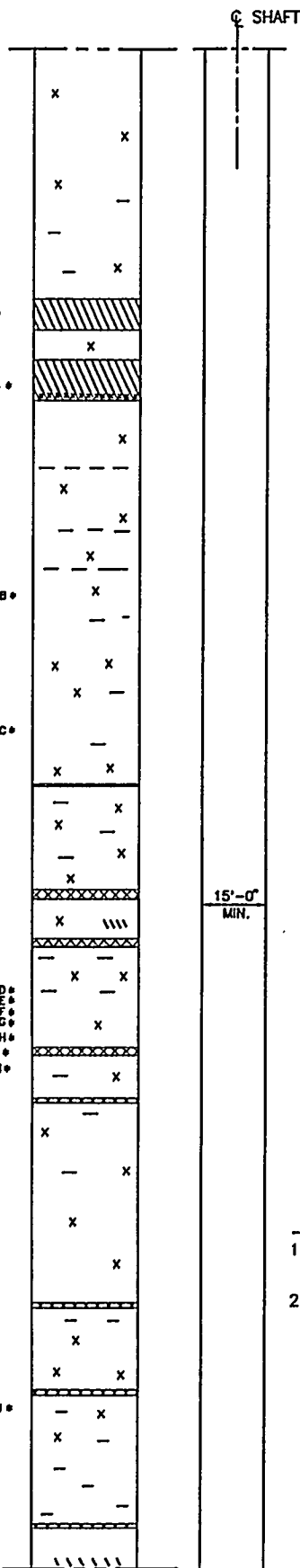


RUSTLER FORMATION

QUATERNARY SAND
MAGENTA *
TAMARICK *
CULEBRA *
UNPAVED *
FIFTY-NINER *
DEWEY LAKE REDBEDS

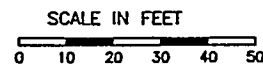


Albert W. D.



NOTES:

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

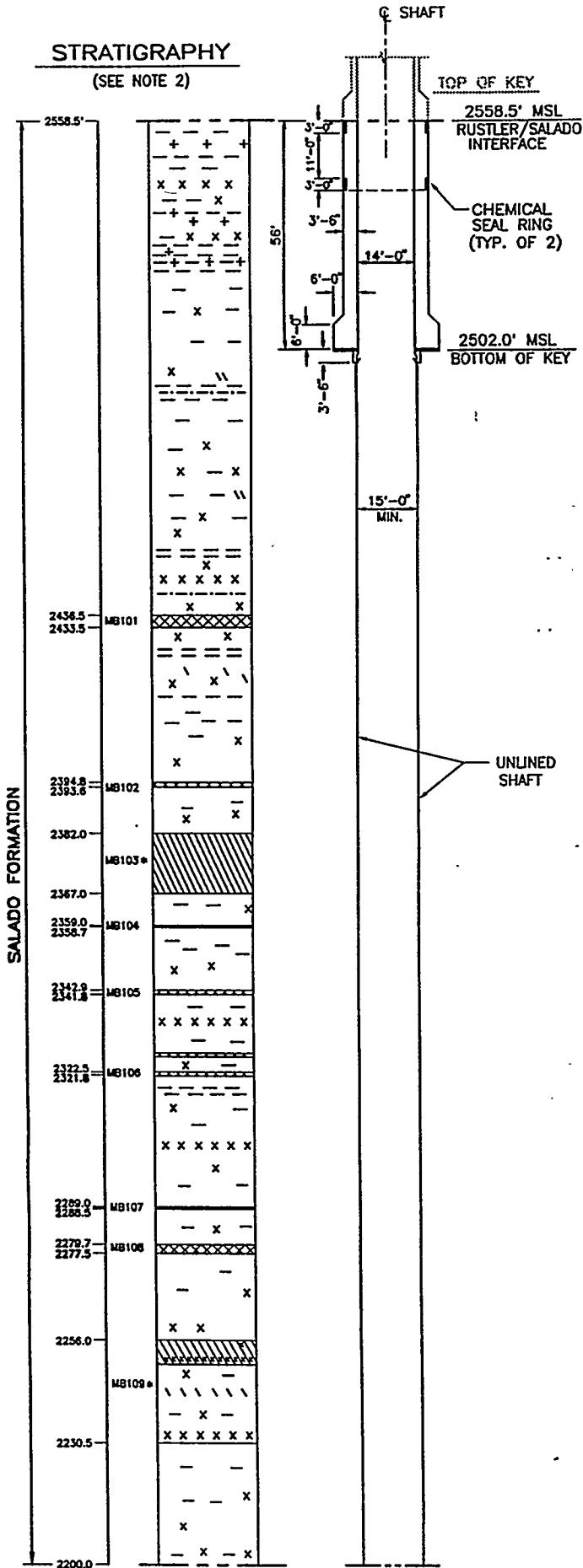


A. W. Dennis
8-2-96

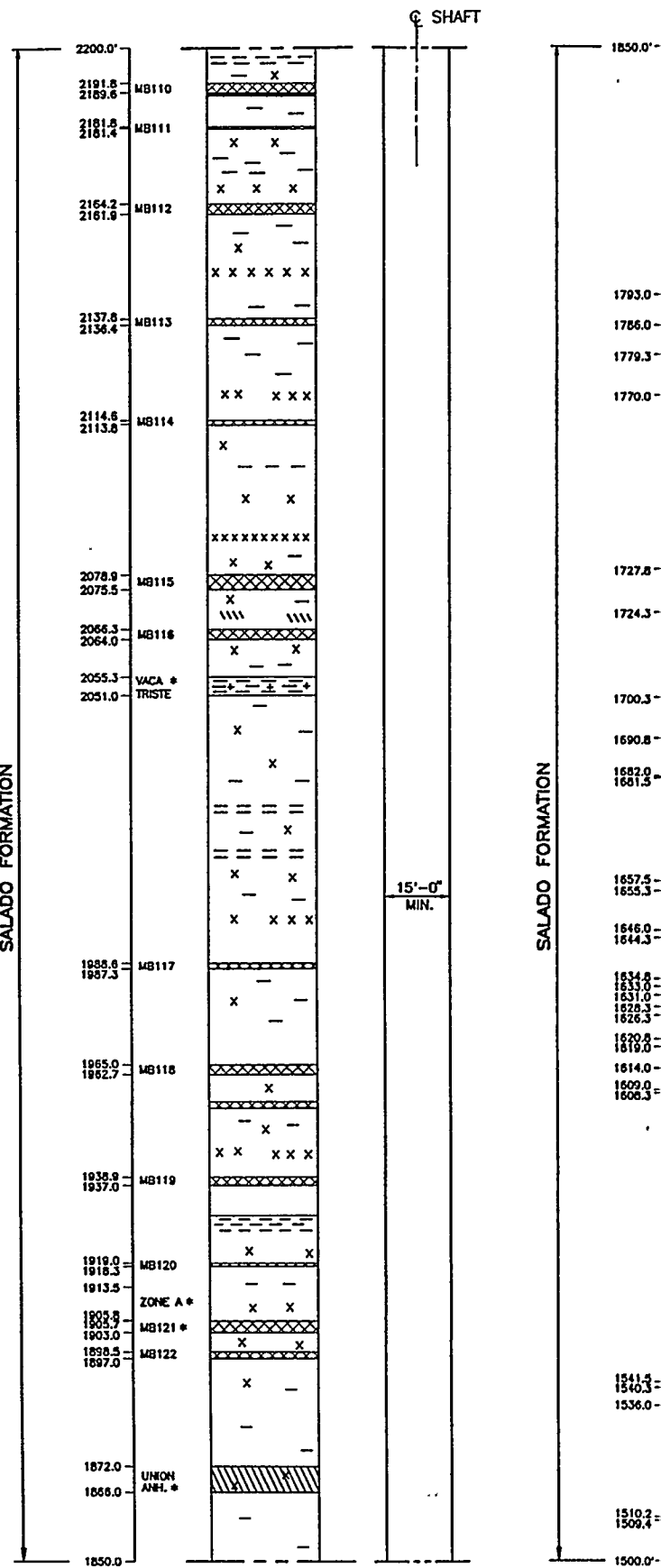
0	8/2/96	ISSUED FOR RECORDS PACKAGE	BY	CK.	APP.
REV.	DATE	DESCRIPTION	BY	CK.	APP.
SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT			CONTRACT NO: AC-4909		
WIPP SHAFT SEALING SYSTEM			NAME	DATE	
SALADO FORMATION			BY	8/2/96	
EXHAUST SHAFT			CK.	8/2/96	
STRATIGRAPHY &			APP.	8/2/96	
AS-BUILT ELEMENTS			APP.	8/2/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC	SCALE:	SIZE B	SNL DWG. NO. SNL-007	SHEET NO. 13 OF 28	

STRATIGRAPHY

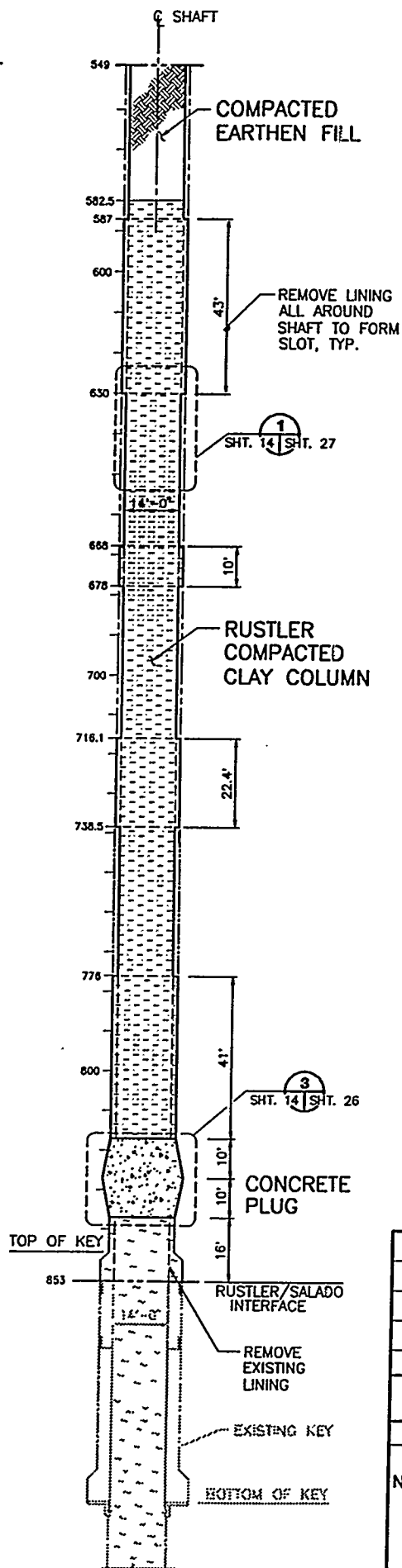
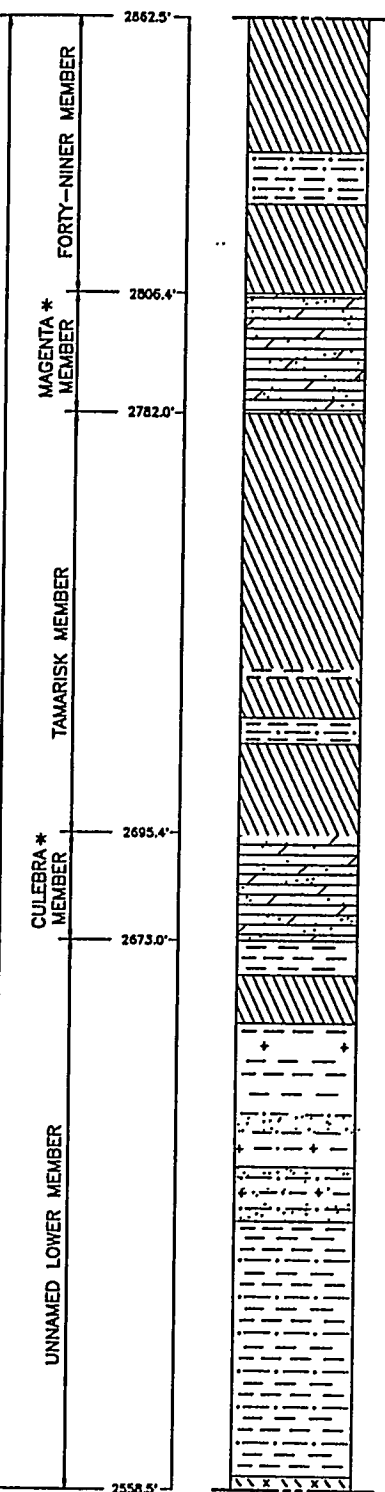
(SEE NOTE 2)



SALADO FORMATION



SALADO FORMATION



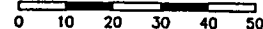
NOTES:

1. SEE SHT. 1 FOR GENERAL NOTE, LEGEND AND ABBREVIATIONS
2. SEE SHT. 12 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 8-2-86

SCALE IN FEET



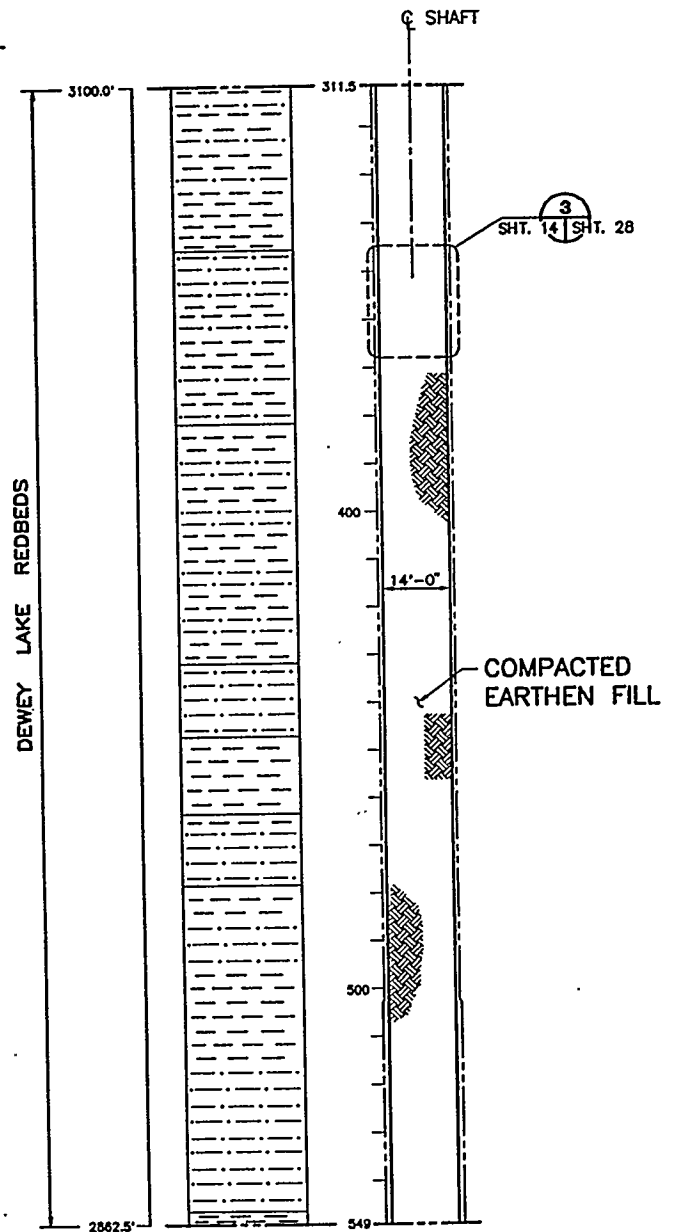
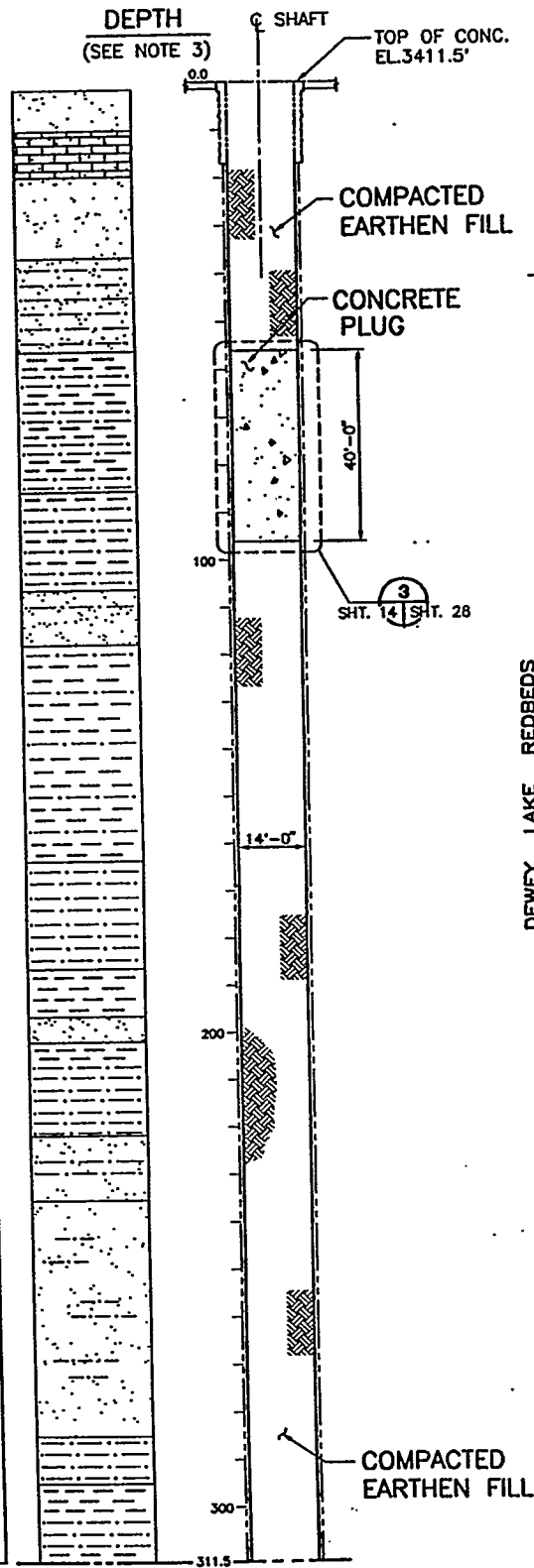
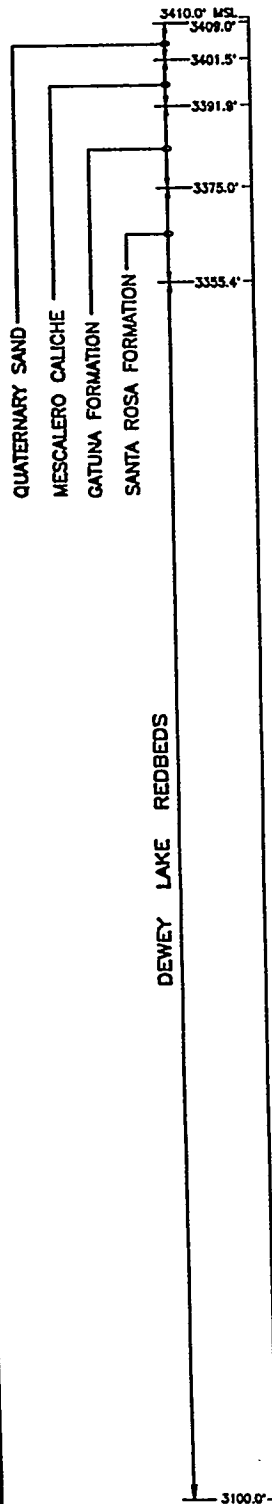
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REV.	DATE	DESCRIPTION	BY	CK	APP
SANDIA NATIONAL LABORATORIES WIPP A/E SUPPORT WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS EXHAUST SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE					
PARSONS BRINCKERHOFF ENERGY SERVICES, INC			SCALE: SIZE B	SNL DWG. NO. SNL-007	SHEET NO. 14 OF 28

STRATIGRAPHY

(SEE NOTE 2)

SHAFT

DEPTH
(SEE NOTE 3)



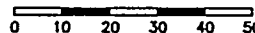


1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. SEE SHT. 12 FOR LITHOLOGY AND NOTES.
3. SEE NOTE 3 OF SHT. 14.



A. M. Dennis
8-2-96

SCALE IN FEET

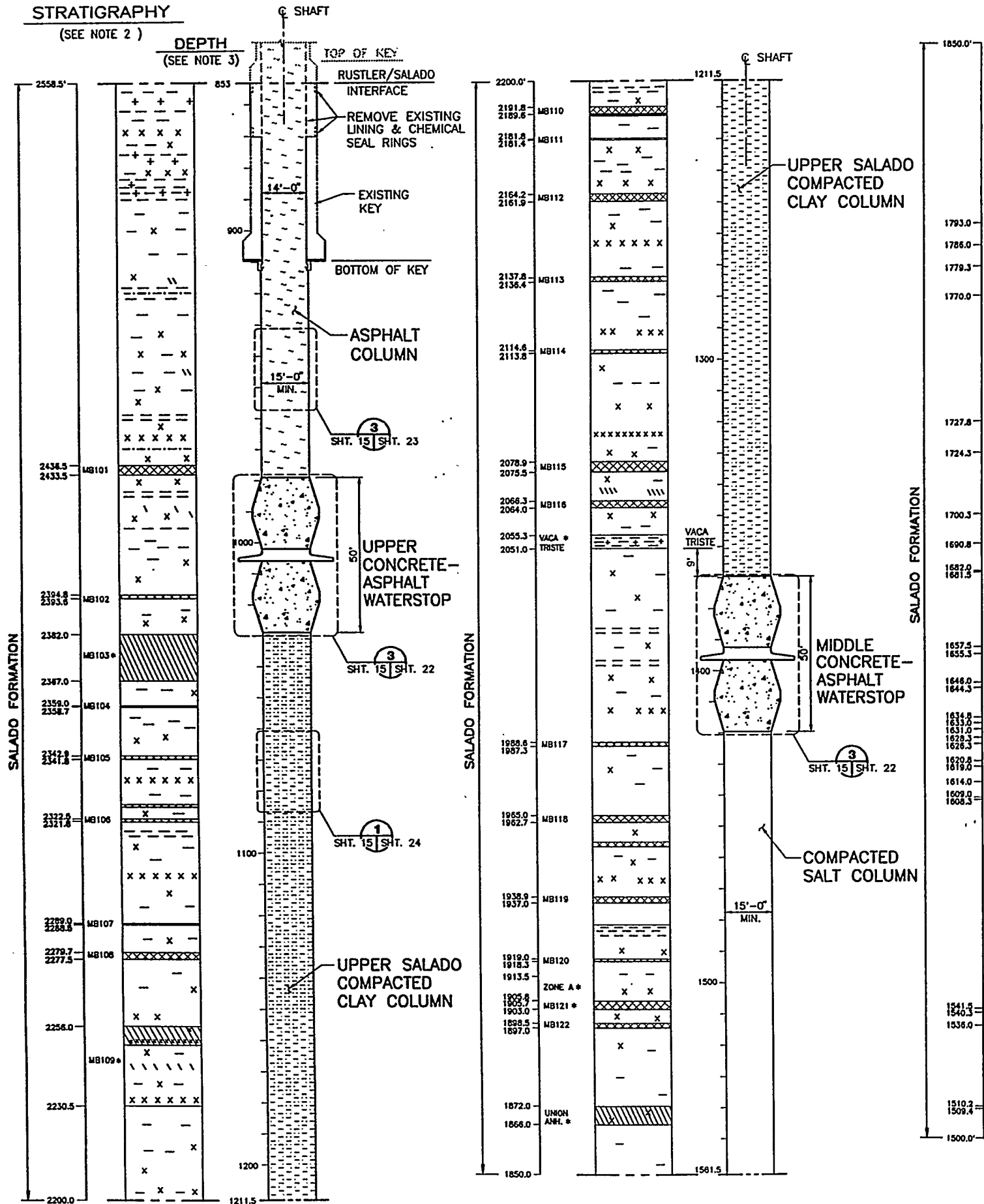


0	8/2/96	ISSUED FOR RECORDS PACKAGE					<i>R. S. L.</i>		
REV.	DATE	DESCRIPTION					BY	CK.	APP.
SANDIA NATIONAL LABORATORIES									
WIPP A/E SUPPORT WIPP SHAFT SEALING SYSTEM SALADO FORMATION EXHAUST SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE							CONTRACT NO: AG-4909		
							NAME	DATE	
							BY	<i>[Signature]</i> 8/6/96	
							CK.	<i>SAP</i> 8/6/96	
							APP.	<i>M.S.L.</i> 8/6/96	
							APP.	<i>C. Mena</i> 9/2/96	
							APP.	<i>[Signature]</i> 7/2/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC			SCALE:	SIZE	SNL DWG. NO. SNL--007		SHEET NO. 15 OF 28		

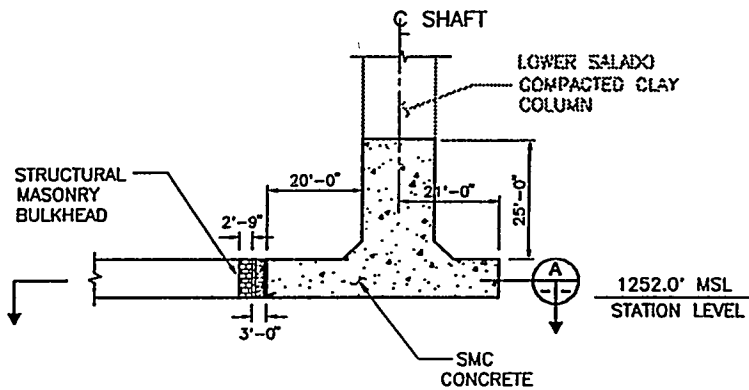
STRATIGRAPHY

(SEE NOTE 2)

DEPTH
(SEE NOTE 3)



EXHAUST SHAFT
N9287.23
E7370.39



DETAIL

SHT. 15 | 1 | SHT. 16

NOTES:

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



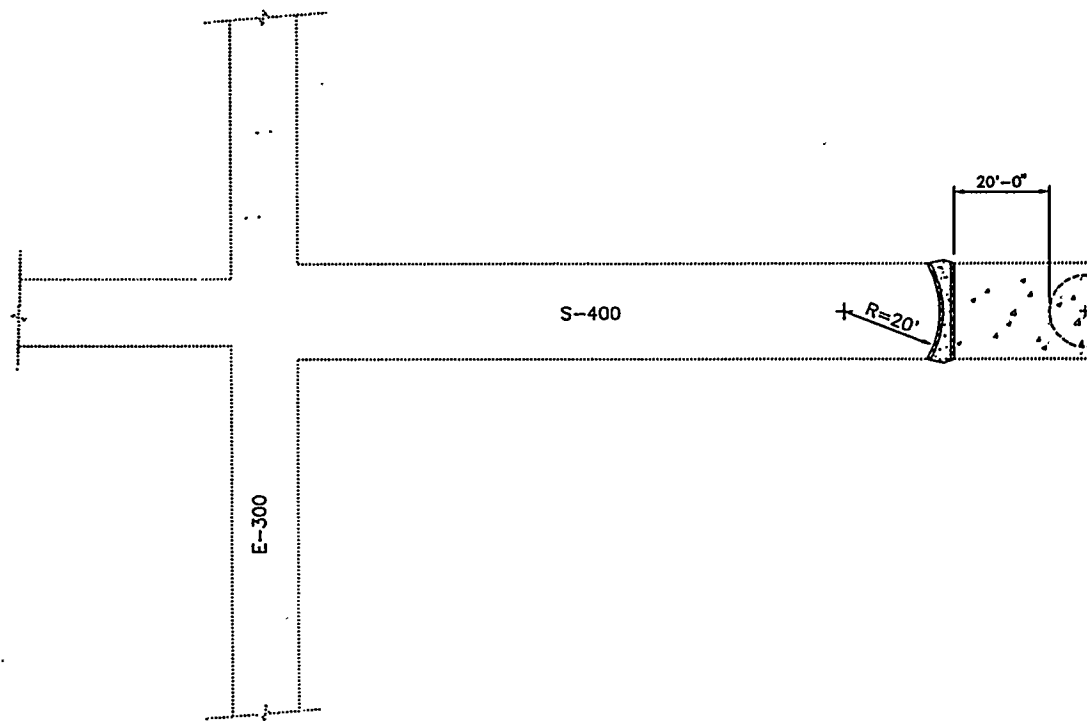
A. W. Dennis 8-2-96

SCALE IN FEET

0 10 20 30 40 50

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-4909		
WIPP SHAFT SEALING SYSTEM			NAME	DATE	
EXHAUST SHAFT SHAFT STATION MONOLITH			BY	8/2/96	
			CK.	SAP 8/2/96	
			APP.	MST 8/2/96	
			APP.	EDM 8/2/96	
			APP.	MST 8/2/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC		SCALE:	SIZE B	SNL DWG. NO. SNL-007	SHEET NO. 16 OF 28

E-19



SECTION



LITHOLOGY:

PRIMARY ROCK/SEDIMENT TYPES

	MUDSTONE/CLAYSTONE
	CLAYSTONE BED
	SILTSTONE
	SANDSTONE
	ANHYDRITE/GYPSUM
	DOLOMITE
	HALITE
	POLYHALITE

SECONDARY CONSTITUENTS

	ARGILLACEOUS
	SILTY
	SANDY
	SULFATIC
	DOLOMITIC
	CALCAREOUS
	HALITIC
	POLYHALITIC

NOTES:

1. 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.

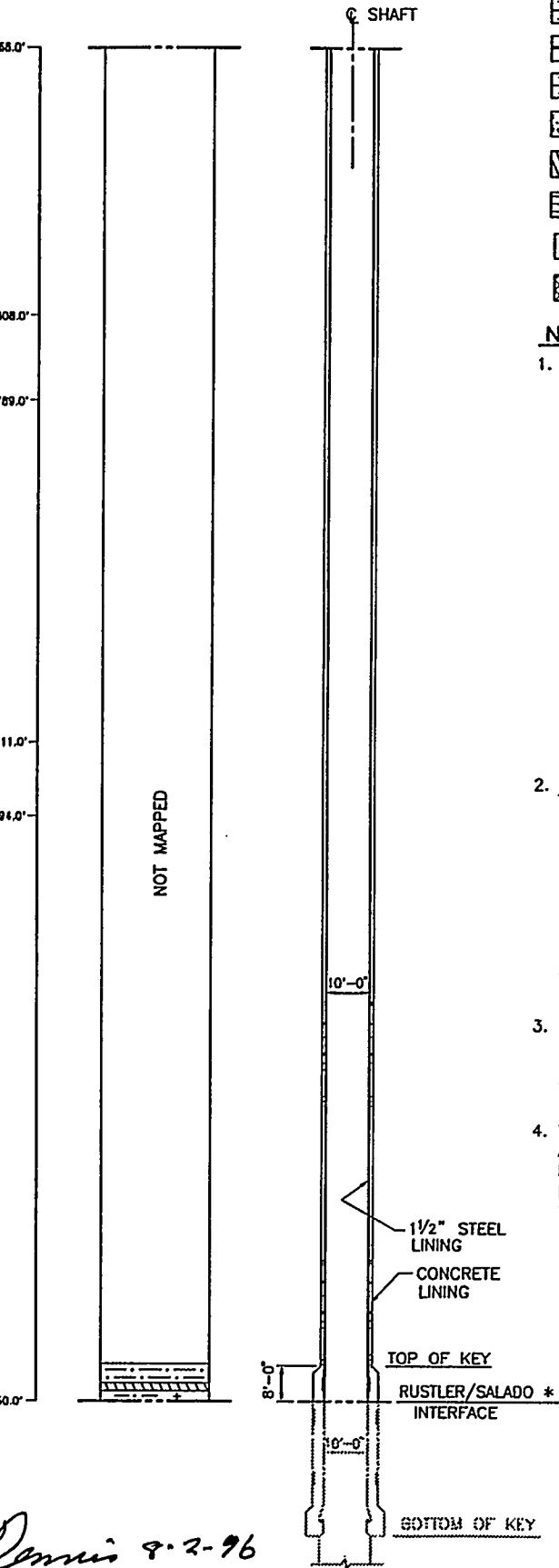
ASTERISK (*) WITHIN THE RUSTLER AND SUPRA RUSTLER FORMATIONS AND THE RUSTLER/SALADO FORMATION CONTACT INDICATES GROUNDWATER OBSERVED PRIOR TO SHAFT LINING INSTALLATION. ASTERISK (*) WITHIN THE SALADO FORMATION INDICATES A POTENTIAL BRINE SEEPAGE/WEEP INTERVAL. THESE POTENTIAL BRINE SEEPAGE/WEEP INTERVALS, 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 SALT HANDLING SHAFT. THE MAPPING OF THE SALT HANDLING SHAFT (JAROLMEK ET AL., 1983/TME-3178) DID NOT INDICATE OBSERVED SEEPAGE INTERVALS WITHIN THE SALADO FORMATION.

2. 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

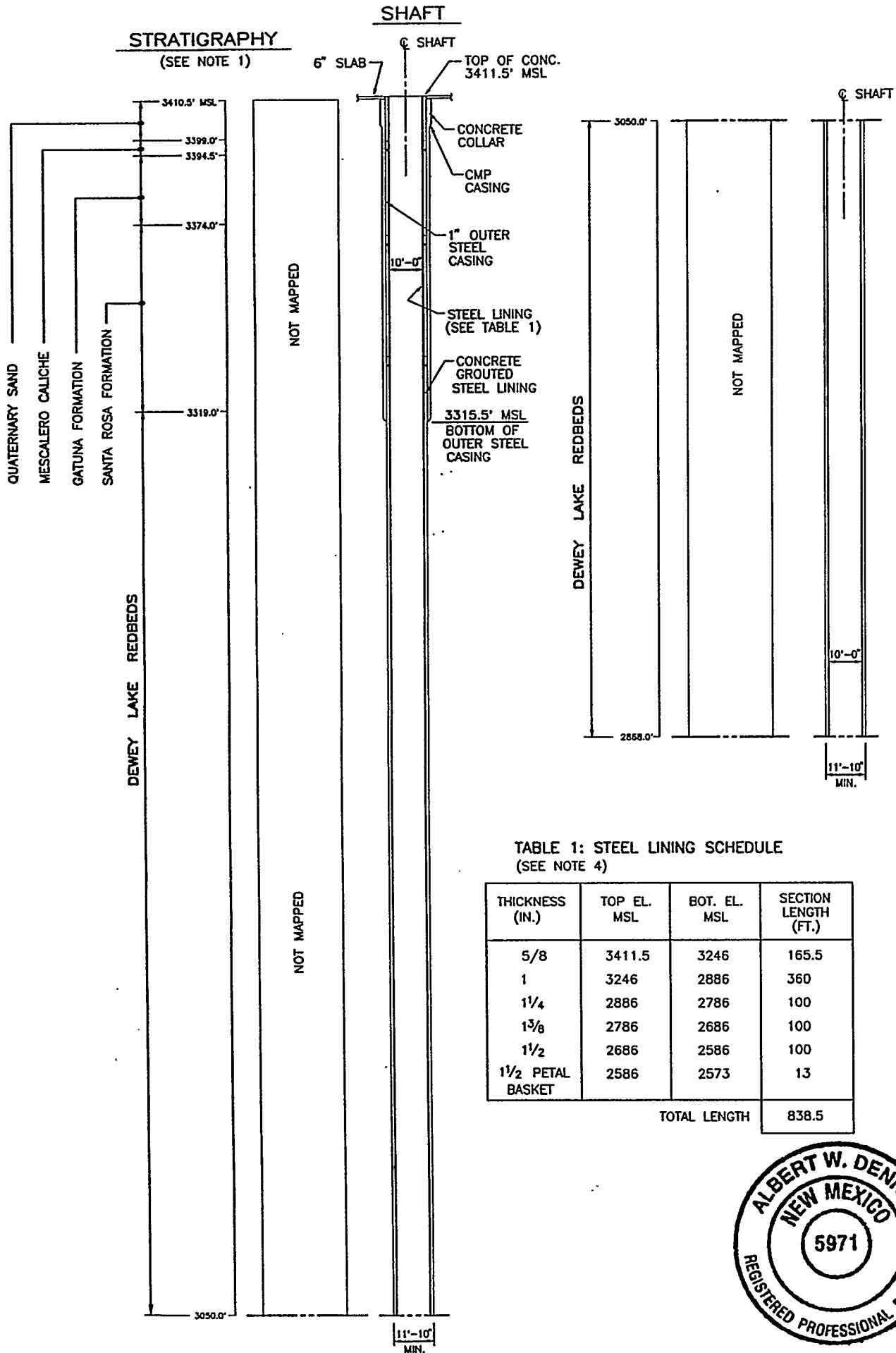
3. HISTORICAL NOTE: SINCE ITS CONSTRUCTION, THE SALT HANDLING SHAFT HAS BEEN REFERRED TO AS THE EXHAUST SHAFT, THE EXPLORATORY SHAFT, THE CONSTRUCTION AND SALT HANDLING SHAFT, AND THE SALT HANDLING SHAFT.

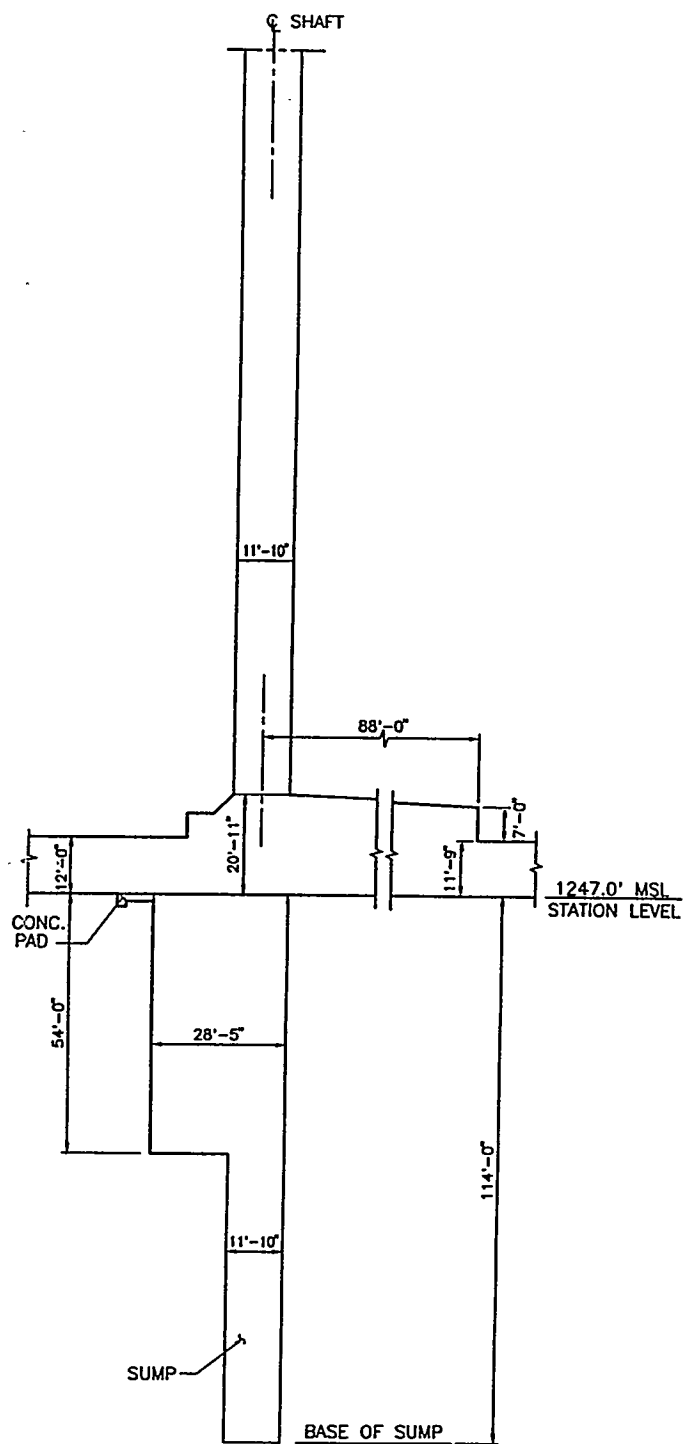
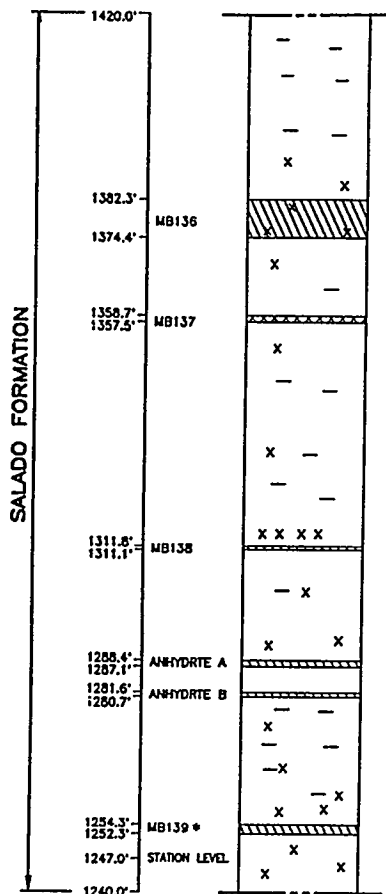
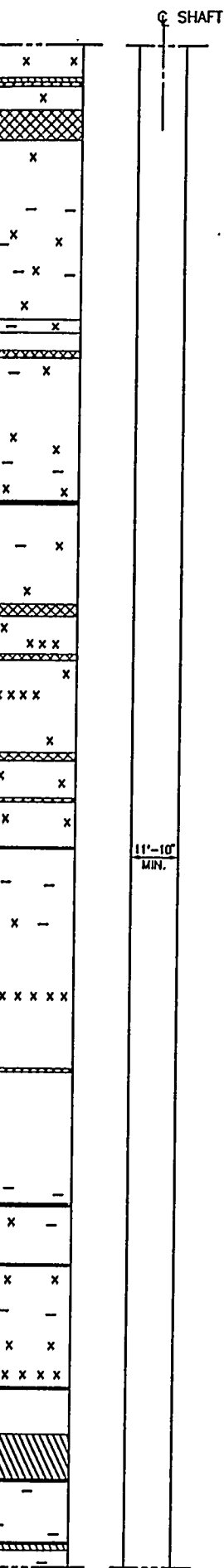
4. THICKNESS OF STEEL LINING VARIES, LINING TYPE AND LENGTH ARE BASED ON FENIX AND SCISSON AS-BUILT DWGS. M3259-02, REV. 0, DATED 11/30/79, WIPP PROJECT 120" I.D. CASING LINER HOLE COMPLEX, AND M3259-01, REV. 1, DATED 10/13/80, WIPP EXHAUST SHAFT 120" I.D. CASING x 834'.



SCALE IN FEET
0 10 20 30 40 50

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 NEAR-SURFACE/RUSTLER FORMATIONS SALT HANDLING SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS			CONTRACT NO: AG-4909 <table border="1"> <tr> <td>NAME</td> <td>DATE</td> </tr> <tr> <td>BY: <i>02/08/96</i></td> <td></td> </tr> <tr> <td>CK: <i>SAP 8/2/96</i></td> <td></td> </tr> <tr> <td>APP: <i>AS 8/2/96</i></td> <td></td> </tr> <tr> <td>APP: <i>CDM 8/2/96</i></td> <td></td> </tr> <tr> <td>APP: <i>02/08/96</i></td> <td></td> </tr> </table>			NAME	DATE	BY: <i>02/08/96</i>		CK: <i>SAP 8/2/96</i>		APP: <i>AS 8/2/96</i>		APP: <i>CDM 8/2/96</i>		APP: <i>02/08/96</i>	
NAME	DATE																
BY: <i>02/08/96</i>																	
CK: <i>SAP 8/2/96</i>																	
APP: <i>AS 8/2/96</i>																	
APP: <i>CDM 8/2/96</i>																	
APP: <i>02/08/96</i>																	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC	SCALE:	SIZE 8	SNL DWG. NO. SNL-007	SHEET NO. 17 OF 28													



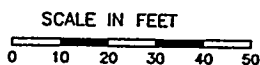


NOTES:

1. SEE SHT. 1 FOR GENERAL NOTES AND ABBREVIATIONS
2. SEE SHT. 17 FOR LITHOLOGY AND NOTES.



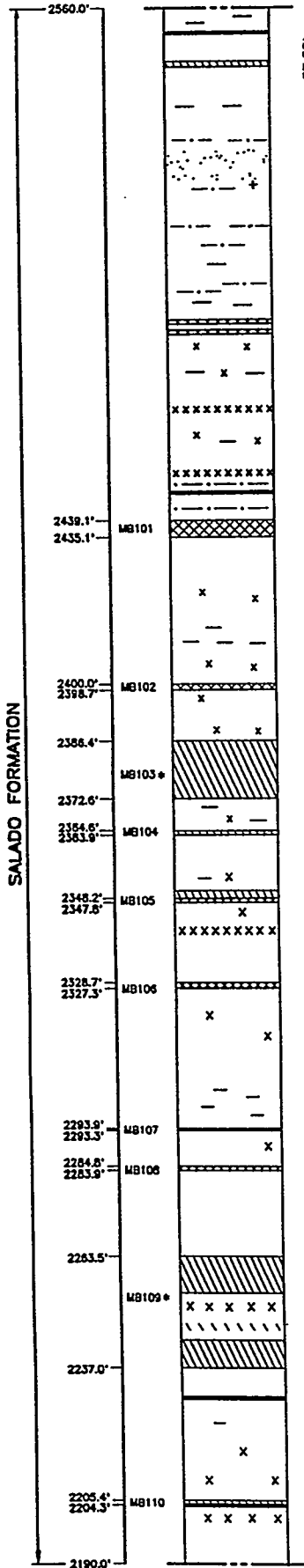
A. W. Dennis 8-2-96



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-4909		
WIPP SHAFT SEALING SYSTEM SALADO FORMATION SALT HANDLING SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS			NAME	DATE	
			BY	8/4/96	
			CK.	SAR 8/4/96	
			APP.	HLS 8/4/96	
			APP.	COM 8/5/96	
			APP.	HLS 8/5/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC		SCALE:	SIZE B	SNL DWG. NO. SNL-007	SHEET NO. 18 OF 28

STRATIGRAPHY (SEE NOTE 2)

SALADO FORMATION



G SHAFT

TOP OF KEY

2560.0' MSL
RUSTLER/SALADO *
INTERFACE

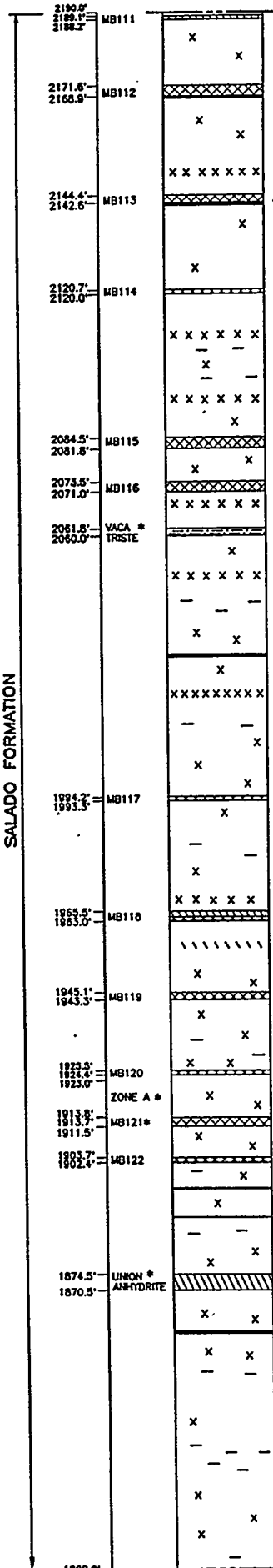
CHEMICAL
SEAL RING
(TYP. OF 3)

2529.0' MSL
BOTTOM OF KEY

11'-10"
MIN.

UNLINED
SHAFT

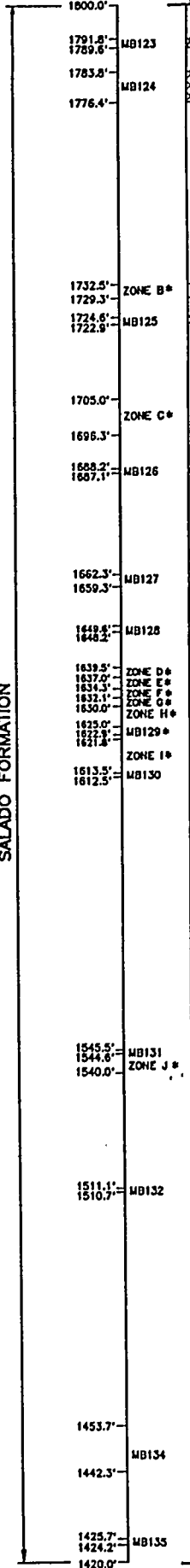
SALADO FORMATION



G SHAFT

11'-10"
MIN.

SALADO FORMATION

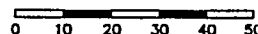


1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. SEE SHT. 17 FOR LITHOLOGY AND NOTES.
3. DEPTHS SHOWN ARE DISTANCES BELOW THE TOP OF CONCRETE, LOCATED AT EL. 3411.5' ABOVE MSL USGS 1927 NORTH AMERICAN DATUM.



A. W. Dennis 8-2-96

SCALE IN FEET



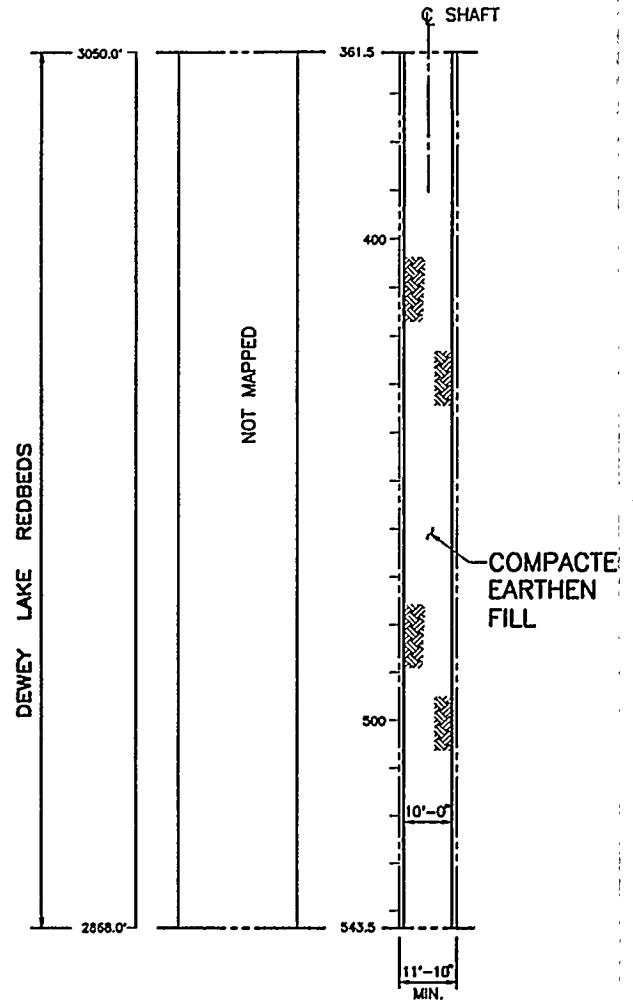
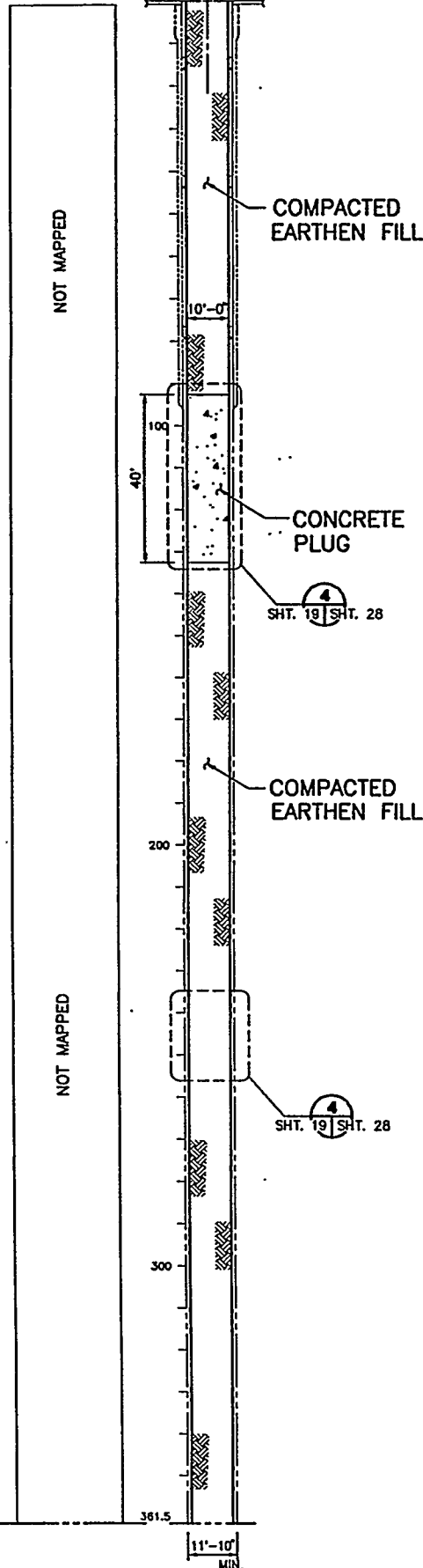
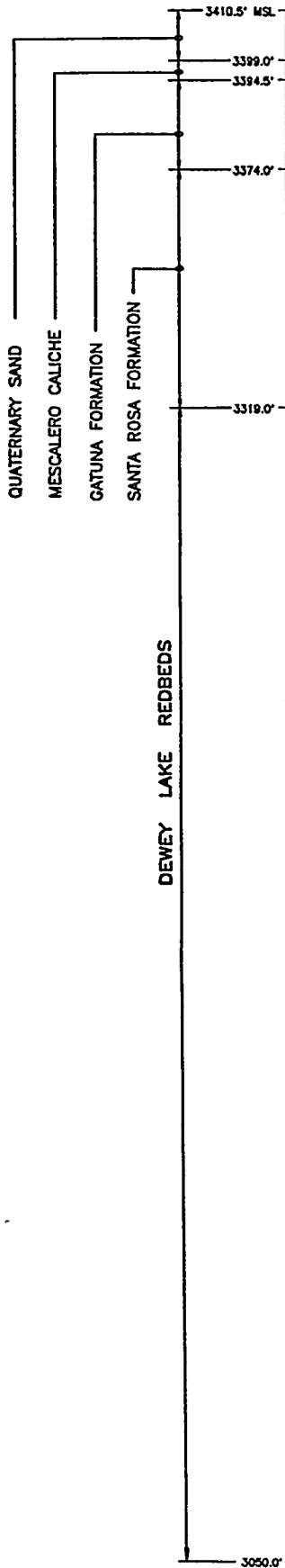
0	8/2/96	ISSUED FOR RECORDS PACKAGE										<i>SLP</i> <i>SLP</i> <i>SLP</i>								
REV.	DATE	DESCRIPTION										BY	CK. APP							
 SANDIA NATIONAL LABORATORIES																				
WIPP A/E SUPPORT												CONTRACT NO: AG-4809								
WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS SALT HANDLING SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE												NAME	DATE							
												BY	<i>SLP</i> <i>8/2/96</i>							
												CK.	<i>SLP</i> <i>8/2/96</i>							
												APP.	<i>MSL</i> <i>8/2/96</i>							
												APP.	<i>CPLM</i> <i>8/2/96</i>							
												APP.	<i>SLP</i> <i>8/2/96</i>							
PARSONS BRINCKERHOFF ENERGY SERVICES, INC						SCALE:		SIZE 8		SNL DWG. NO. SNL--007				SHEET NO. 19 OF 28						

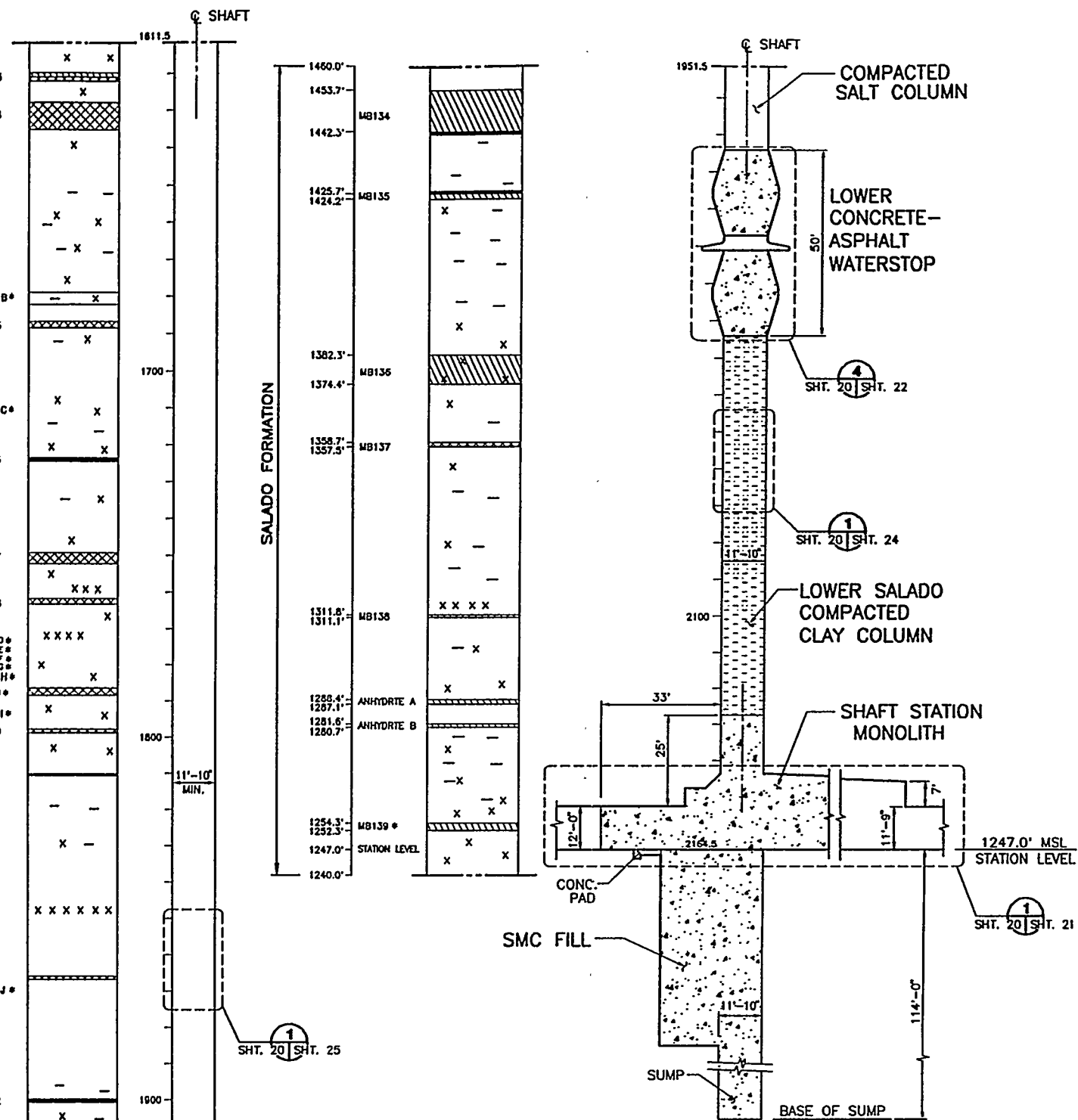
STRATIGRAPHY

(SEE NOTE 2)

SHAFT

DEPTH
(SEE NOTE 3)





E-23

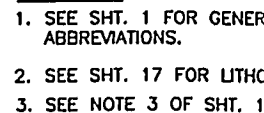
NOTES, LEGEND AND
AND NOTES.

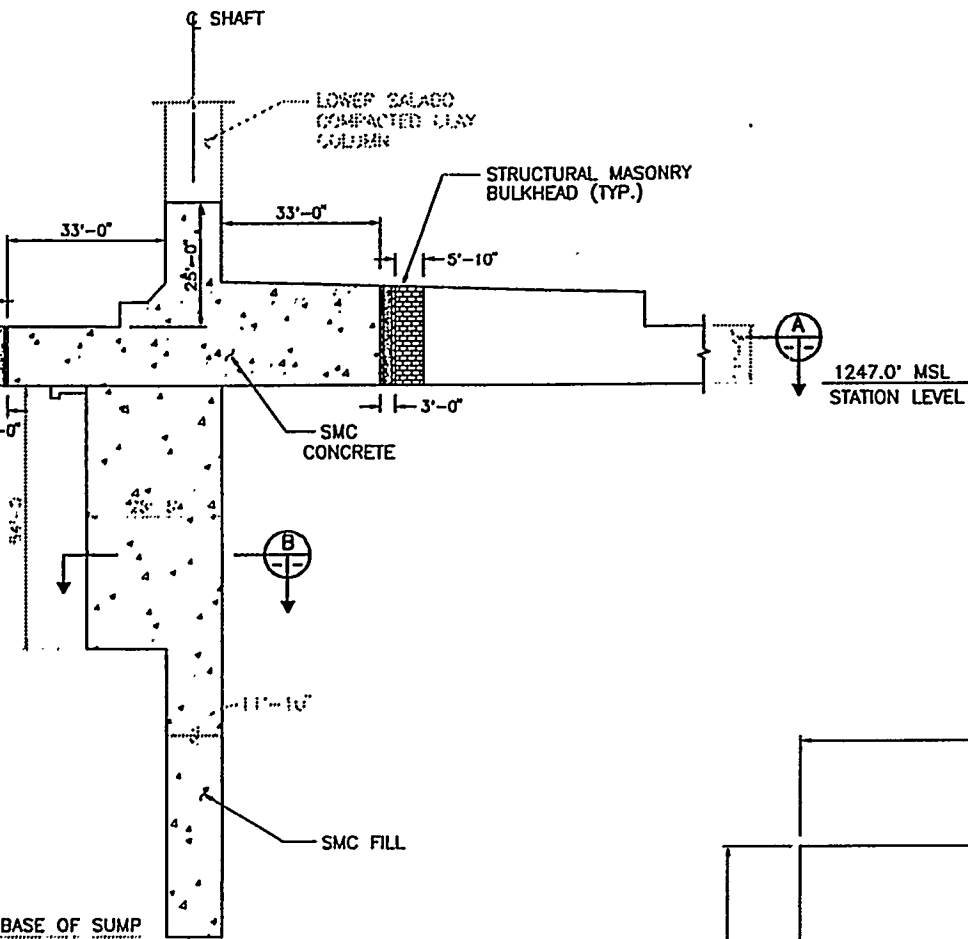


A.W. Dennis 8-2-96
SCALE IN FEET
0 10 20 30 40 50

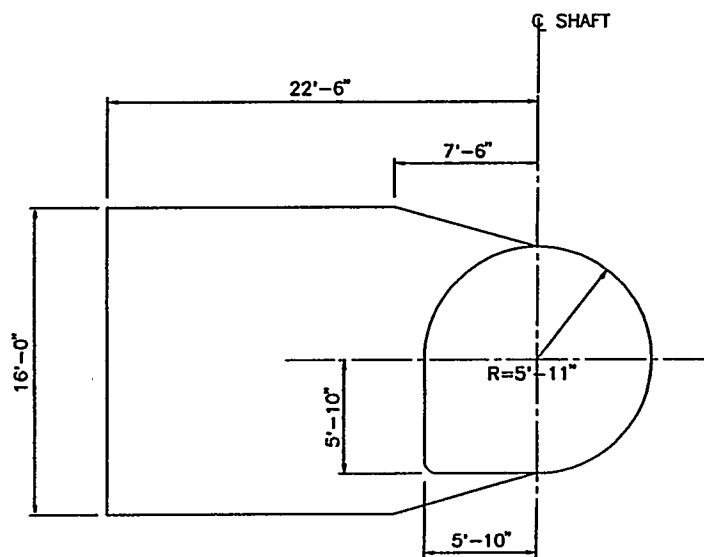
0	8/2/96	ISSUED FOR RECORDS PACKAGE	BY	CK.	APP.
REV.	DATE	DESCRIPTION	BY	CK.	APP.
SANDIA NATIONAL LABORATORIES WIPP A/E SUPPORT WIPP SHAFT SEALING SYSTEM SALADO FORMATION SALT HANDLING SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE					
CONTRACT NO: AC-4909			NAME	DATE	
			BY	DATE	
			CK.	DATE	
			APP.	DATE	
			APP.	DATE	
			APP.	DATE	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC			SCALE:	SIZE	SNL DWG. NO.
			B	B	SNL-007
					SHEET NO.
					20 OF 28

(SEE NOTE 2)





DETAIL 1
SHT. 20 | SHT. 21
SCALE IN FEET
0 10 20 30 40 50



SECTION B

SCALE IN FEET
0 5 10 15 20

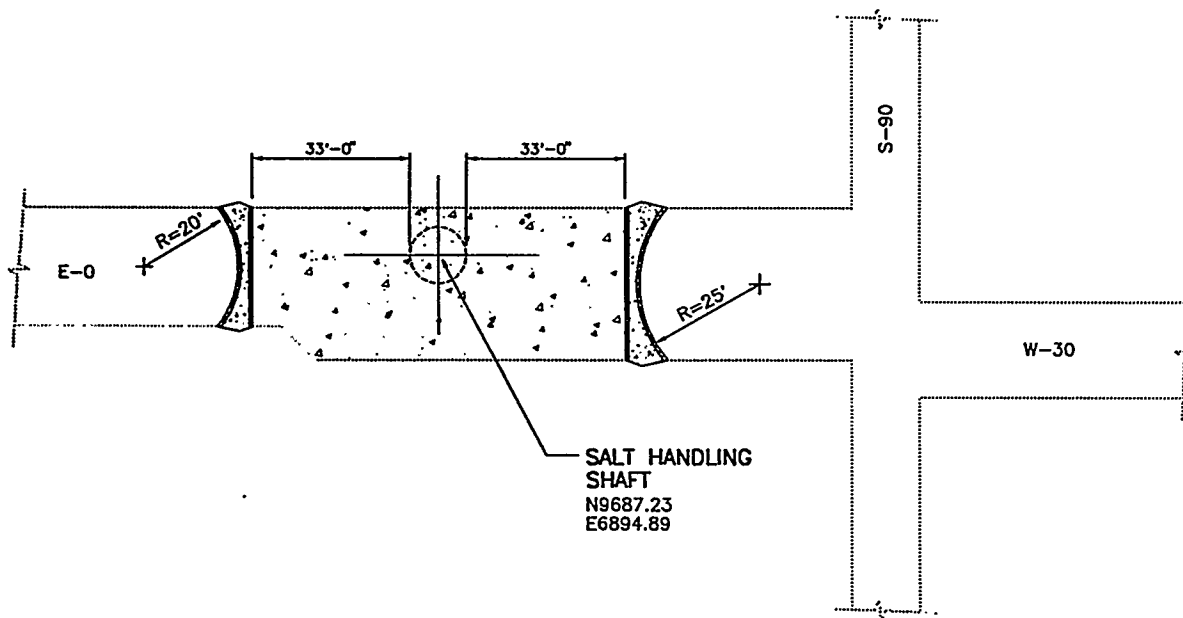
NOTES:

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



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			CONTRACT NO: AG-4909		
WIPP A/E SUPPORT			NAME		
WIPP SHAFT SEALING SYSTEM			DATE		
SALT HANDLING SHAFT			BY		
SHAFT STATION MONOLITH			CK		
			APP		
			APP		
PARSONS BRINCKERHOFF ENERGY SERVICES, INC			SCALE:	SIZE	SNL DWG. NO.
				B	SNL-007
					SHEET NO.
					21 OF 28

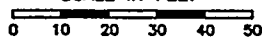


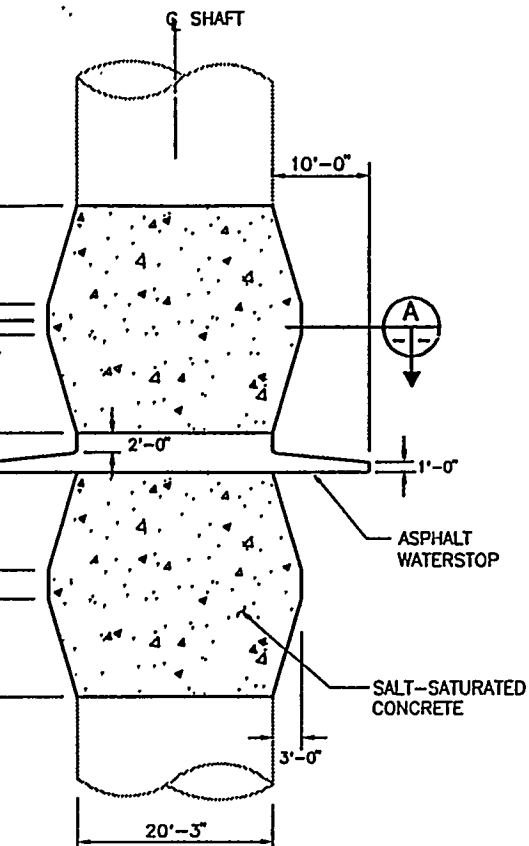
SALT HANDLING
SHAFT
N9687.23
E6894.89

SECTION

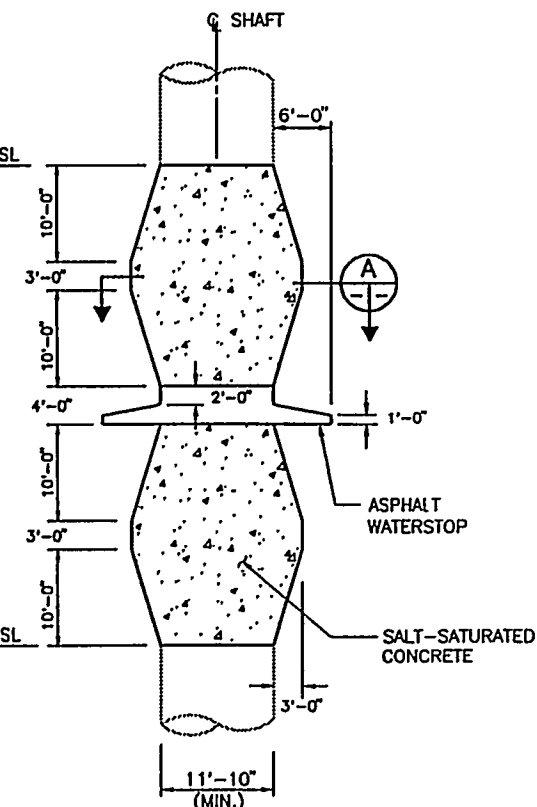


SCALE IN FEET

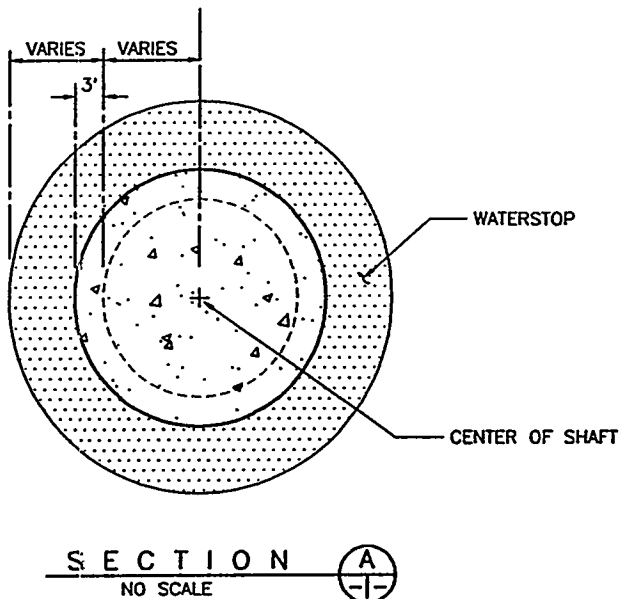




DETAIL 2
R INTAKE SHAFT SHT. 10 SHT. 22



DETAIL 4
SALT HANDLING SHAFT SHT. 20 SHT. 22



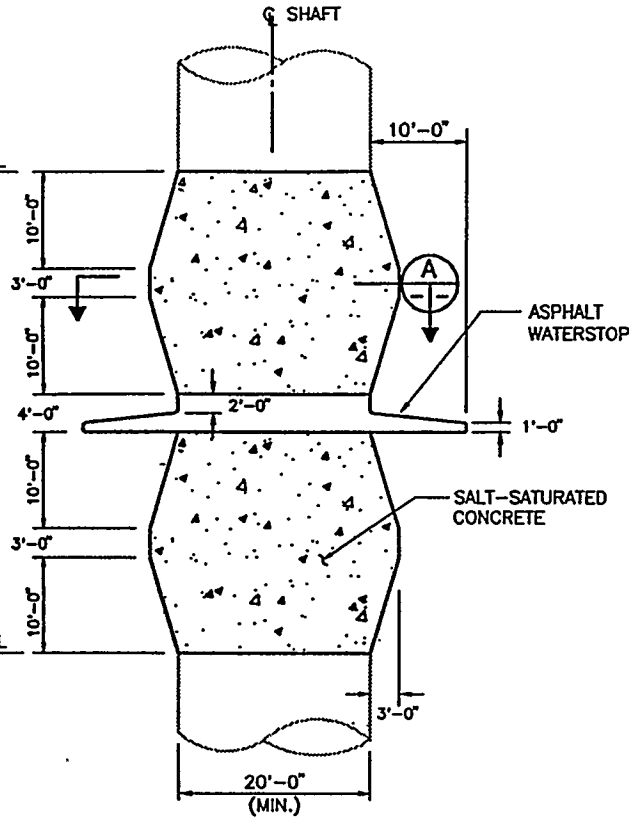
Albert W. Dennis
4-2-96

SCALE IN FEET
0 5 10 15 20 25

0	8/2/96	ISSUED FOR RECORDS PACKAGE	CH	SA	AM
REV.	DATE	DESCRIPTION	BY	CK.	APP.
SANDIA NATIONAL LABORATORIES WIPP A/E SUPPORT WIPP SHAFT SEALING SYSTEM CONCRETE-ASPHALT WATERSTOP IN SALADO FORMATION					
CONTRACT NO: AG-4909			NAME	DATE	
			BY	2/20/96	
			CK.	SAE 8/2/96	
			APP.	CH 5/2/96	
			APP.	CH 5/2/96	
			APP.	CH 5/2/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC	SCALE:	SIZE B	SNL DWG. NO. SNL-007	SHEET NO. 22 OF 28	

E-25

UPPER PLUG	MIDDLE PLUG	LOWER PLUG
2439.0'	2037.5'	1432.0' MSL



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

UPPER PLUG	MIDDLE PLUG	LOWER PLUG
2447.0'	2053.0'	1439.5' MSL

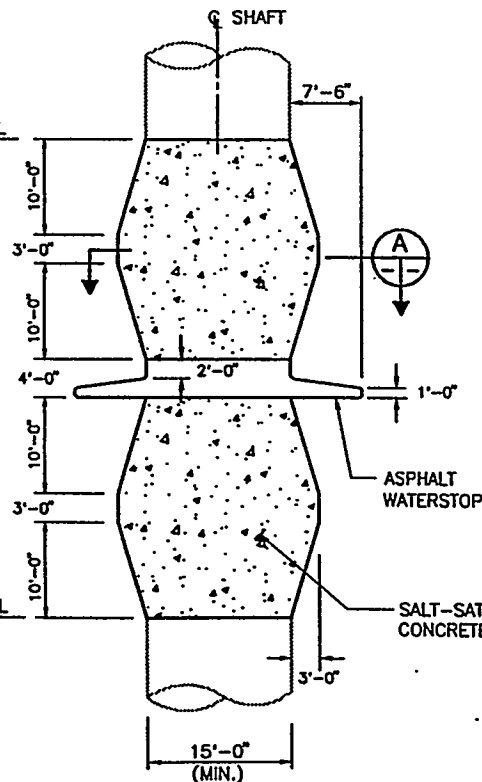
UPPER PLUG	MIDDLE PLUG	LOWER PLUG
2397.0'	2003.0'	1389.5' MSL

DETAIL

WASTE SHAFT

SHT. 5 | SHT. 22

UPPER PLUG	MIDDLE PLUG	LOWER PLUG
2432.0'	2042.0'	1433.0' MSL



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

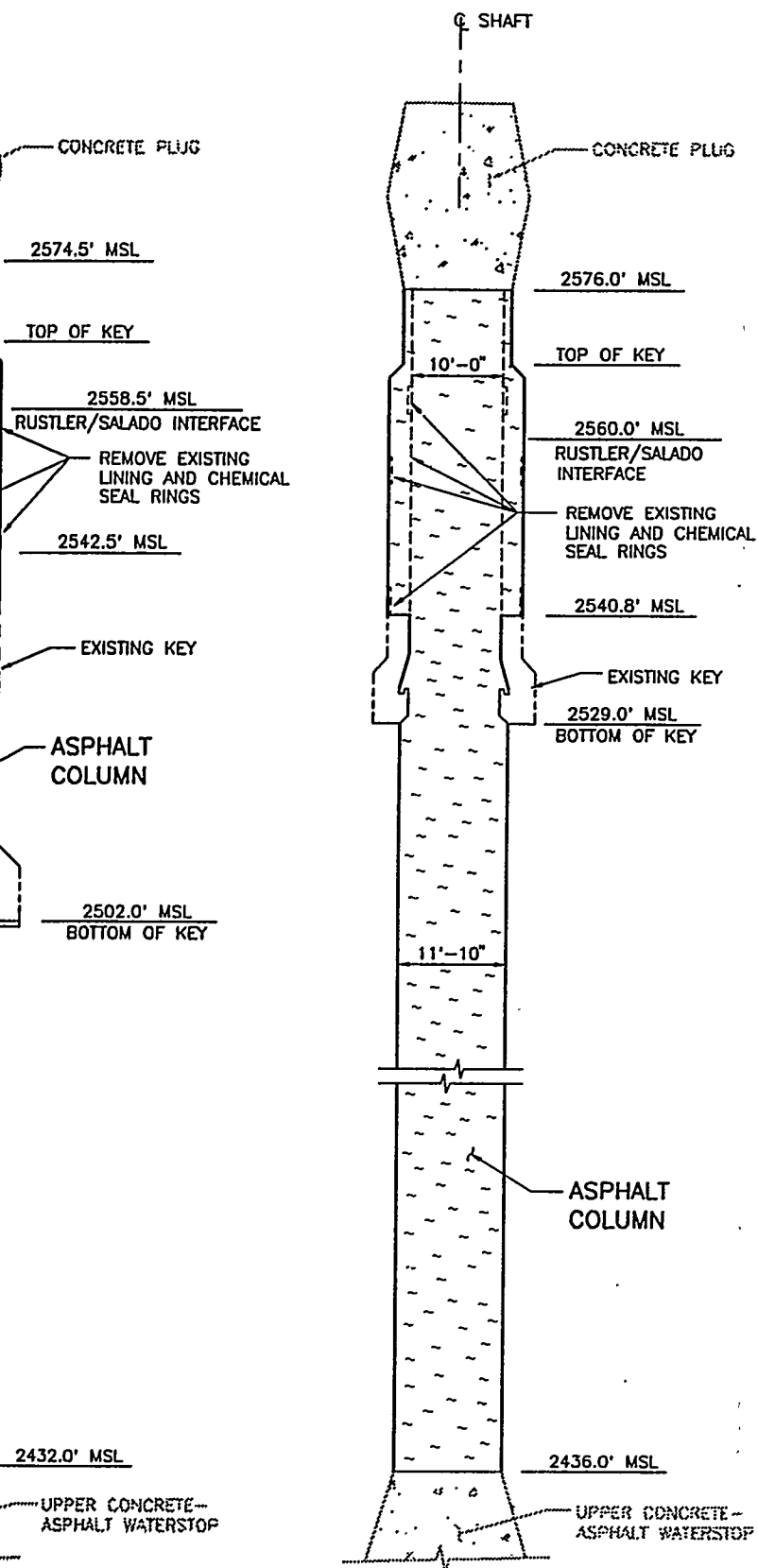
UPPER PLUG	MIDDLE PLUG	LOWER PLUG
2436.0'	2051.0'	1441.0' MSL

UPPER PLUG	MIDDLE PLUG	LOWER PLUG
2386.0'	2001.0'	1391.0' MSL

DETAIL

EXHAUST SHAFT

SHT. 15 | SHT. 22



Albert W. Dennis
8-2-96

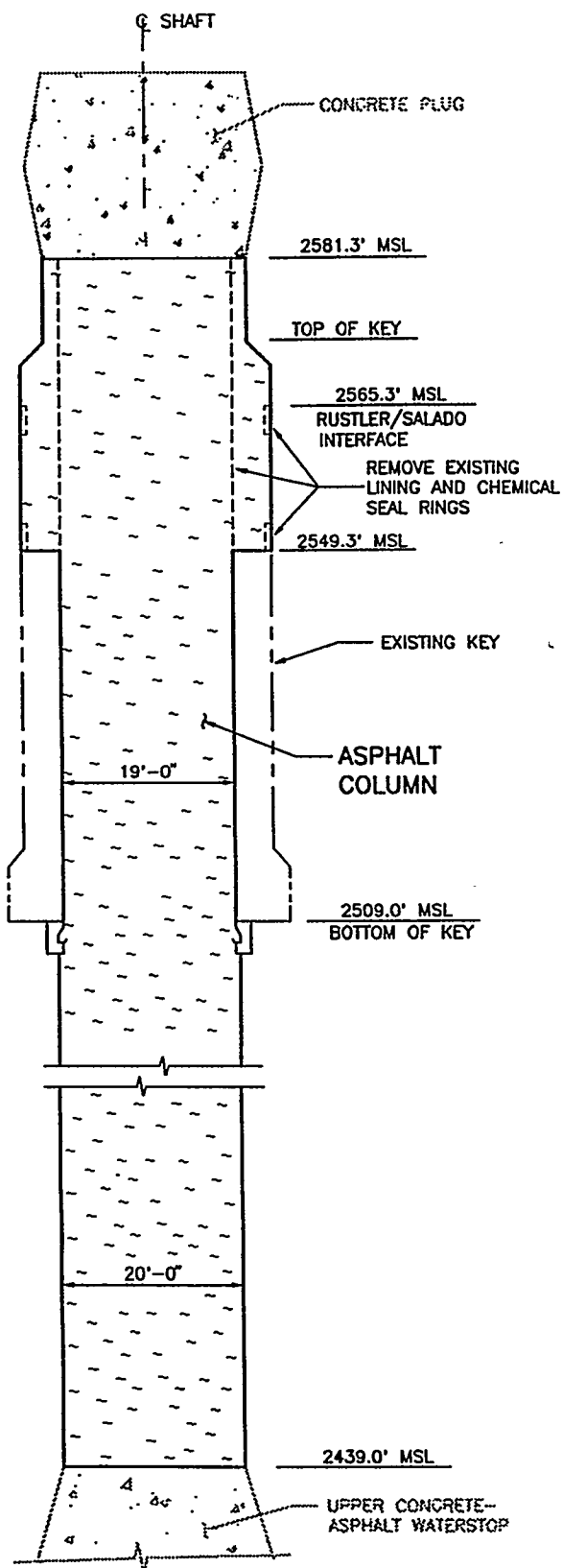
SCALE IN FEET
0 5 10 15 20 25

3
SHT. 15 | SHT. 23

DETAIL
SALT HANDLING SHAFT
4
SHT. 20 | SHT. 23

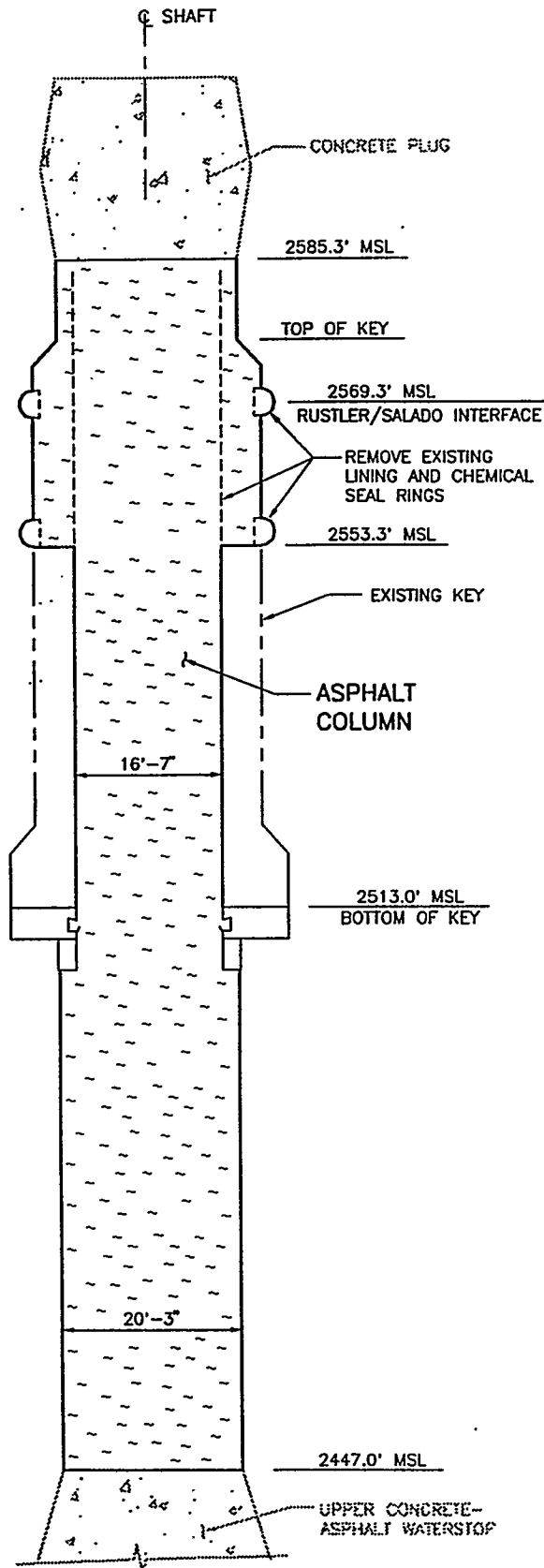
0	8/2/96	ISSUED FOR RECORDS PACKAGE	BY	CK.	APP.
REV.	DATE	DESCRIPTION	BY	CK.	APP.
SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT			CONTRACT NO: AG-4909		
WIPP SHAFT SEALING SYSTEM			NAME	DATE	
ASPHALT COLUMN			BY	8/2/96	
			CK.	8/2/96	
			APP.	8/2/96	
			APP.	8/2/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC		SCALE:	SIZE 8	SNL DWG. NO. SNL-007	SHEET NO. 23 OF 28

E-26



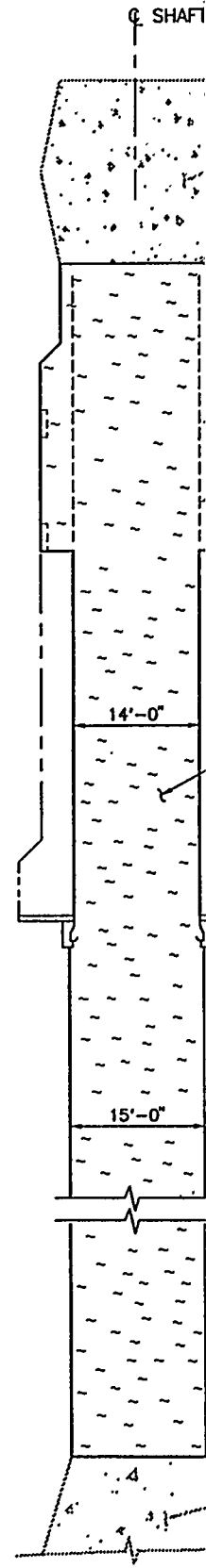
DETAIL
WASTE SHAFT

1
SHT. 5 | SHT. 23



DETAIL
AIR INTAKE SHAFT

2
SHT. 10 | SHT. 23



DETAIL
EXHAUST SHAFT

FILE 1

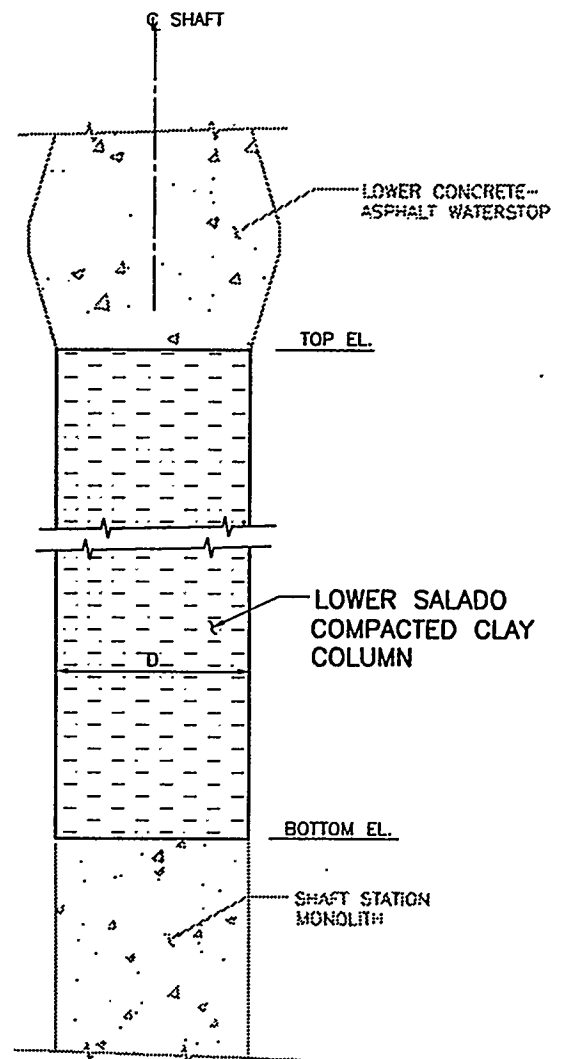
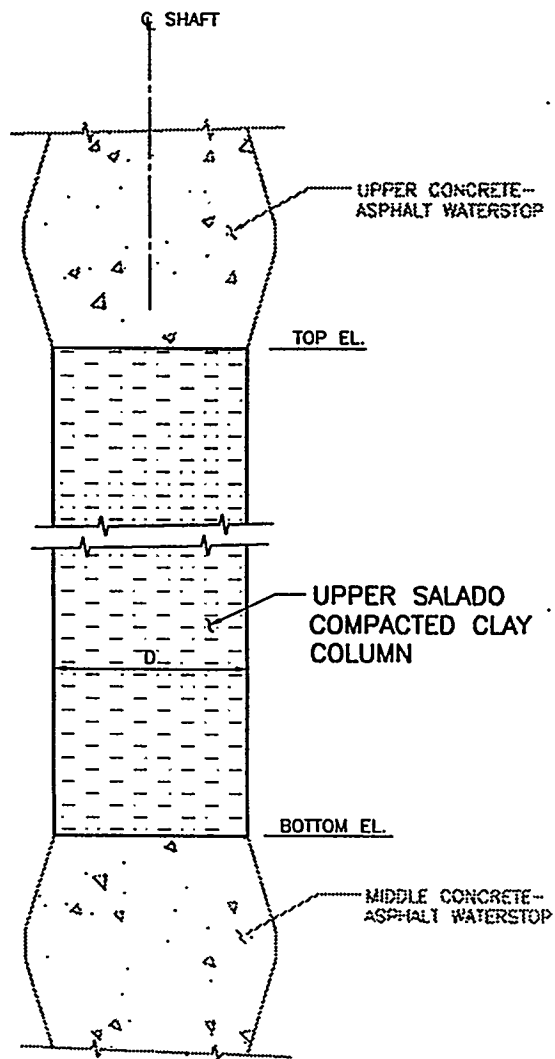
SHAFT	NOMINAL SHAFT DIAMETER D	UPPER SALADO COMPACTED CLAY COLUMN			LOWER SALADO COMPACTED CLAY COLUMN		
		TOP EL. (FT. MSL)	BOTTOM EL. (FT. MSL)	TOTAL HT. (FT.)	TOP EL. (FT. MSL)	BOTTOM EL. (FT. MSL)	TOTAL HT. (FT.)
WASTE	20'-0"	2389.0	2037.5	351.5	1382.0	1286.0	96.0
AIR INTAKE	20'-3"	2397.0	2053.0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



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			CONTRACT NO: AG-4909		
WIPP SHAFT SEALING SYSTEM			NAME	DATE	
			BY	8/2/96	
			CK.	SAP 8/2/96	
UPPER AND LOWER SALADO COMPACTED CLAY COLUMNS			APP.	M.S.K. 9/4/96	
			APP.	C.M. 9/4/96	
			APP.	M.D. 9/4/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC		SCALE:	SIZE B	SNL DWG. NO. SNL-007	SHEET NO. 24 OF 28

E-27



DETAIL

SEE TABLE 1 FOR DETAILS
NO SCALE

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

BLE 1

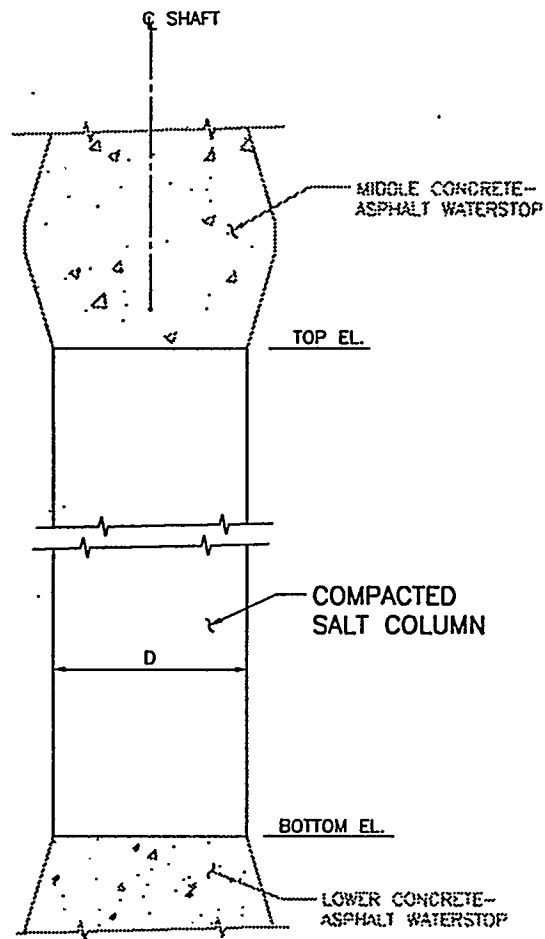
SHAFT	NOMINAL SHAFT DIAMETER D	COMPACTED SALT COLUMN		
		TOP EL. (FT. MSL)	BOTTOM EL. (FT. MSL)	TOTAL H _T . (FT.)
ASTE	20'-0"	1987.5	1432.0	555.5
AIR ITAKE	20'-3"	2003.0	1439.5	563.5
HAUST	15'-0"	1992.0	1433.0	559.0
ALT NDLING	11'-10"	2001.0	1441.0	560.0



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-4909		
WIPP SHAFT SEALING SYSTEM COMPACTED SALT COLUMN			NAME	DATE	
			BY	8/2/96	
			CK.	SAP 8/2/96	
			APP.	WES 8/2/96	
			APP.	COP 8/2/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC		SCALE:	SIZE 8	SNL DWG. NO. SNL-007	SHEET NO. 25 OF 28

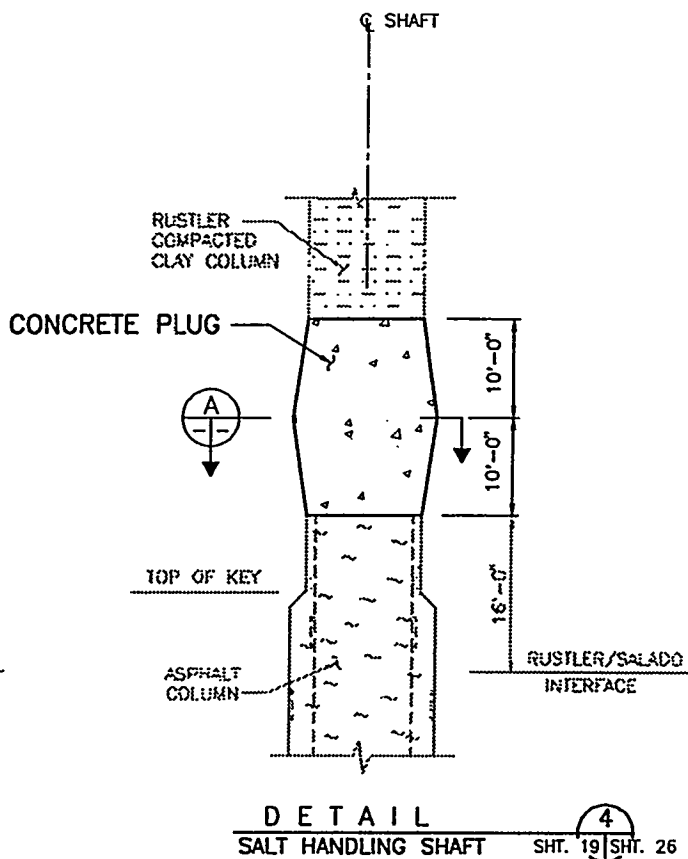
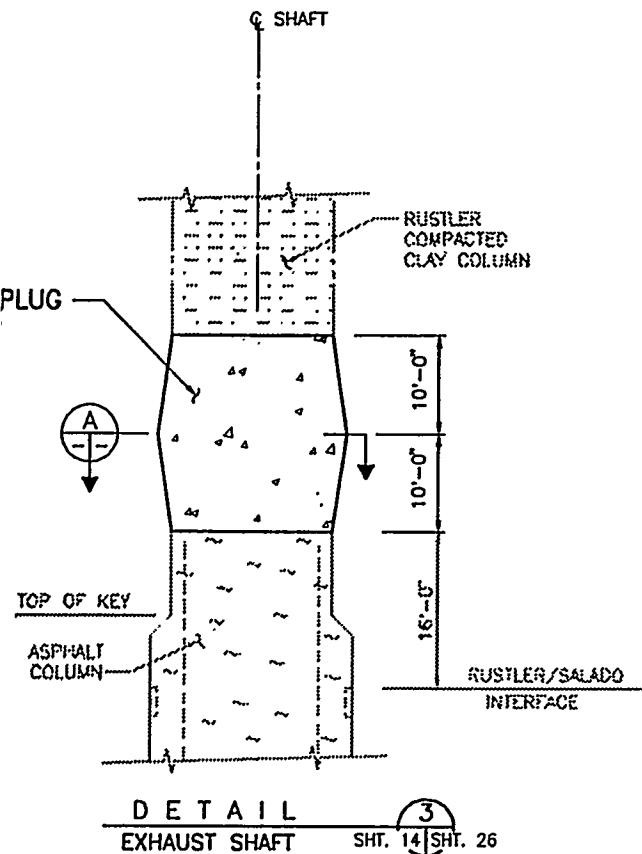
E-28



DETAIL

SEE TABLE 1 FOR DETAILS
NO SCALE

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



Albert W. Dennis
8-2-96

SCALE IN FEET
0 5 10 15 20 25

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-4909		
WIPP SHAFT SEALING SYSTEM			NAME		
CONCRETE PLUG			DATE		
			BY		
			CK.		
			APP.		
			APP.		
PARSONS BRINCKERHOFF ENERGY SERVICES, INC			SCALE:	SIZE	SNL DWG. NO.
			B	SNL-007	SHEET NO.
					26 OF 28

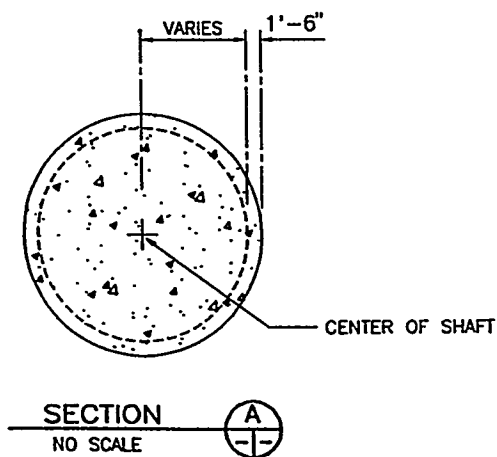
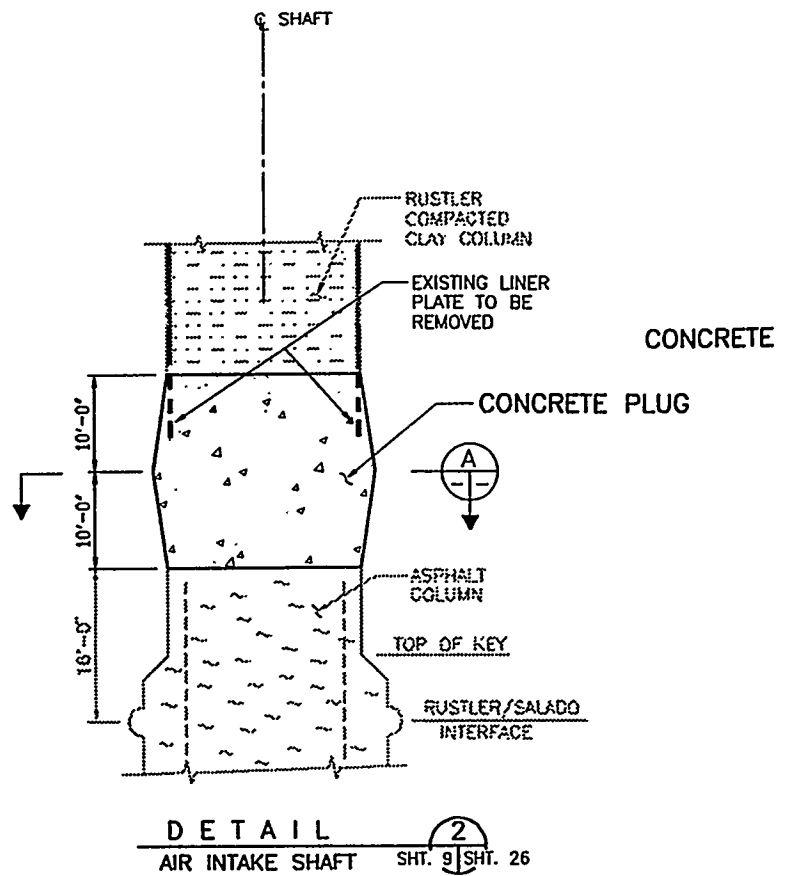
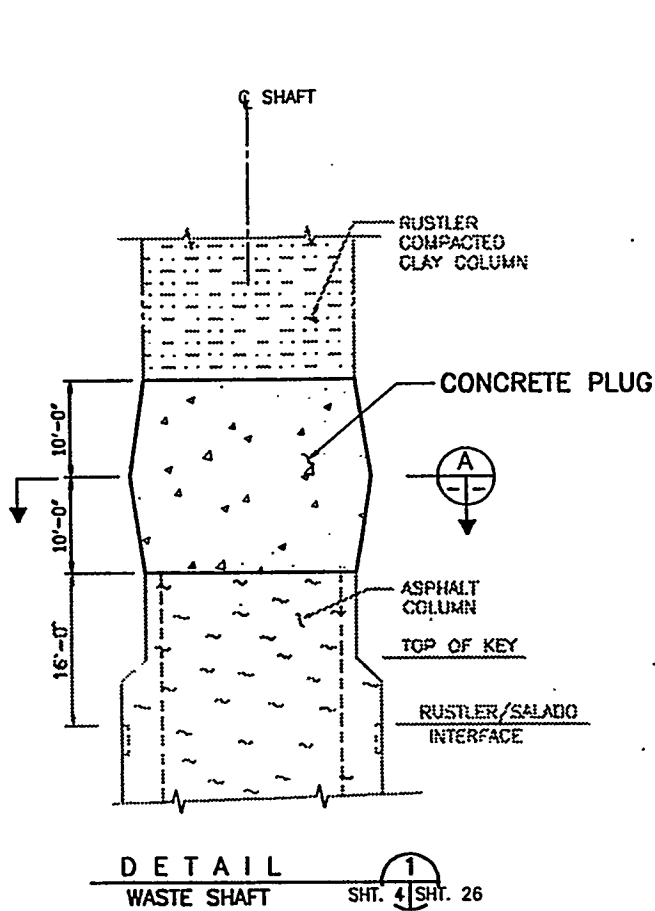


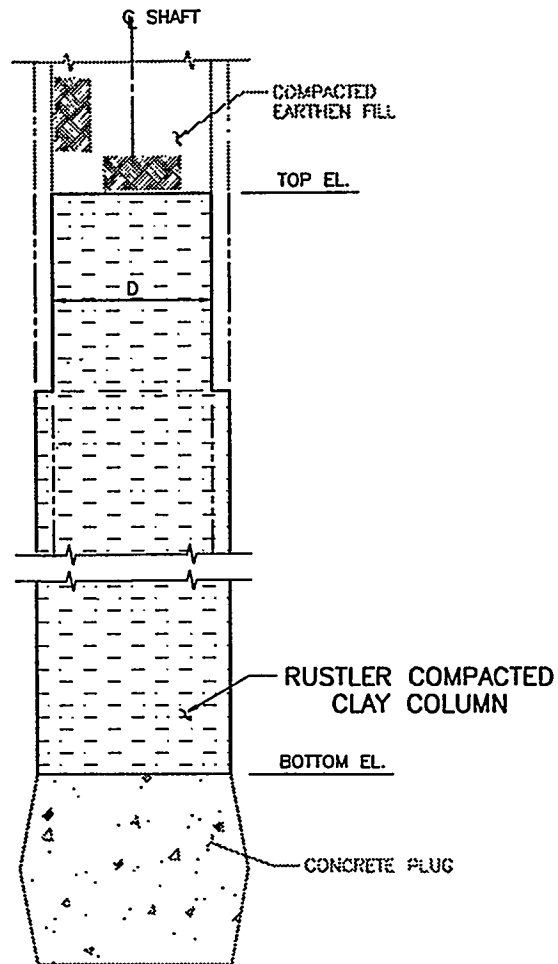
TABLE 1

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
8-2-96

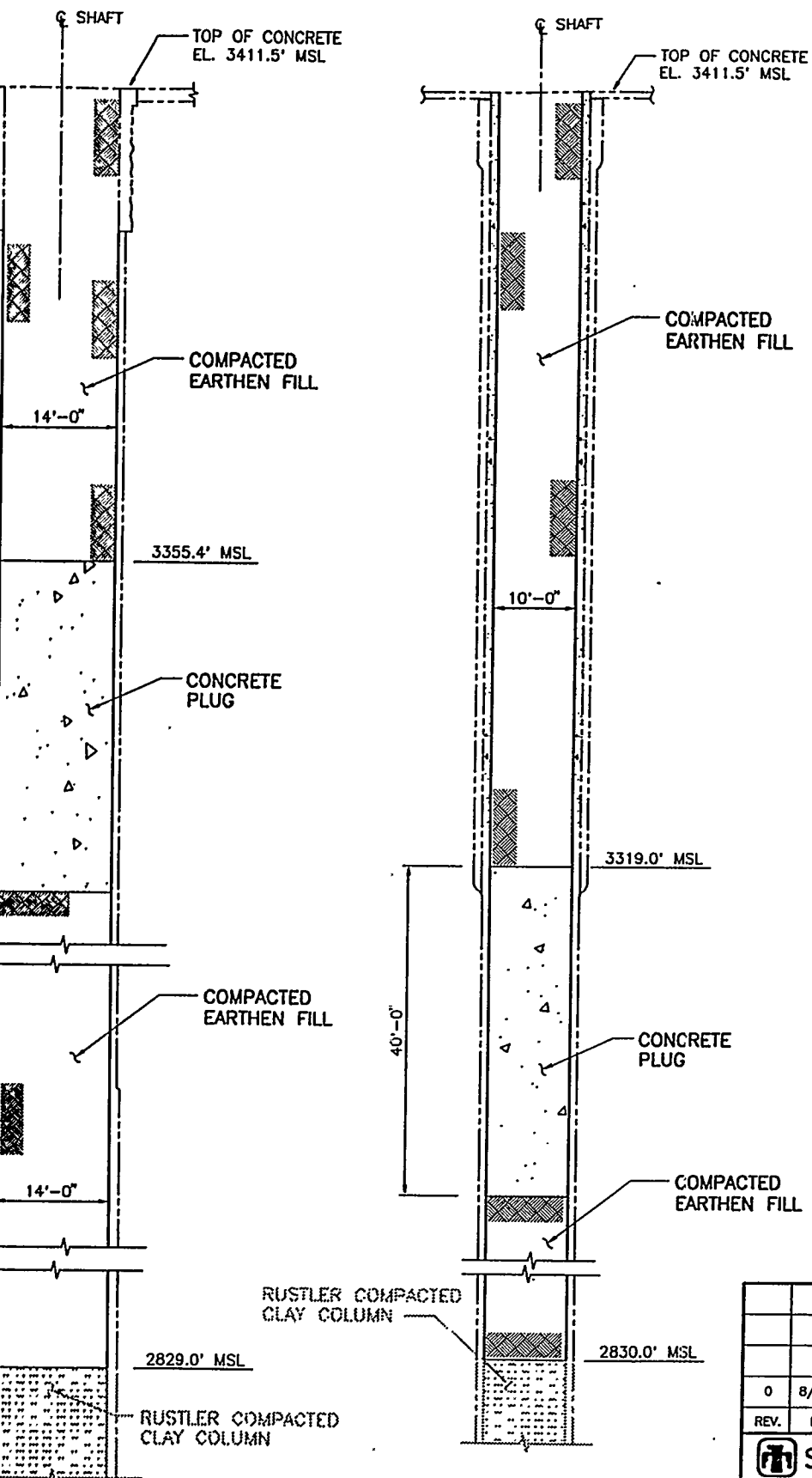
0	8/2/96	ISSUED FOR RECORDS PACKAGE	BY	CK.	APP.
REV.	DATE	DESCRIPTION	BY	CK.	APP.
SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT			CONTRACT NO: AG-4909		
WIPP SHAFT SEALING SYSTEM			NAME	DATE	
RUSTLER COMPACTED CLAY COLUMN			BY	8/2/96	
			CK.	8/2/96	
			APP.	8/2/96	
			APP.	8/2/96	
			APP.	8/2/96	
PARSONS BRINCKERHOFF ENERGY SERVICES, INC		SCALE:	SIZE B	SNL DWG. NO. SNL-007	SHEET NO. 27 OF 28



DETAIL

SEE TABLE 1 FOR DETAILS
NO SCALE

SHT. 4	1	SHT. 27
SHT. 9		
SHT. 14		
SHT. 19		



Albert W. Dennis
4-2-96

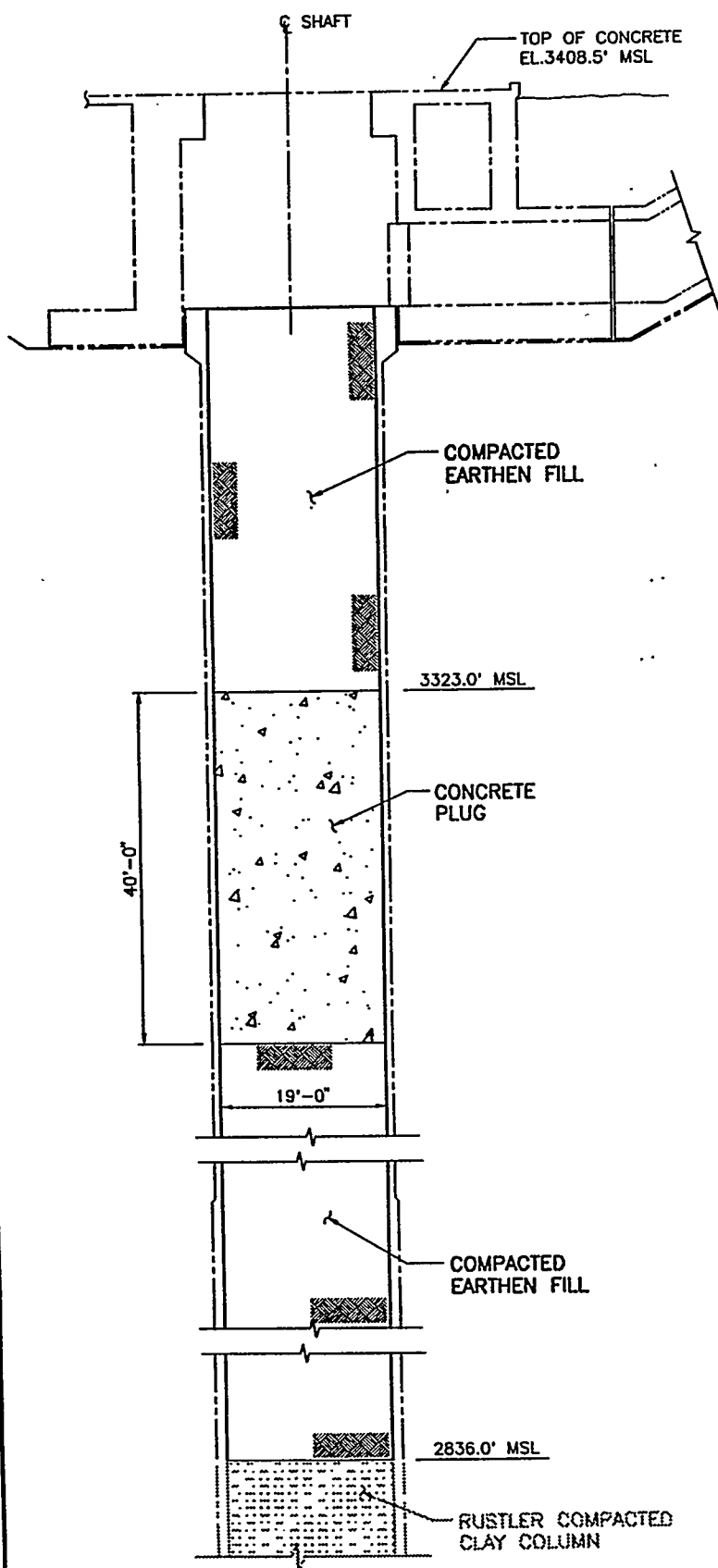
AIL
SHAFT SHT. 14 SHT. 28

DETAIL
SALT HANDLING SHAFT SHT. 19 SHT. 28

SCALE IN FEET
0 5 10 15 20 25

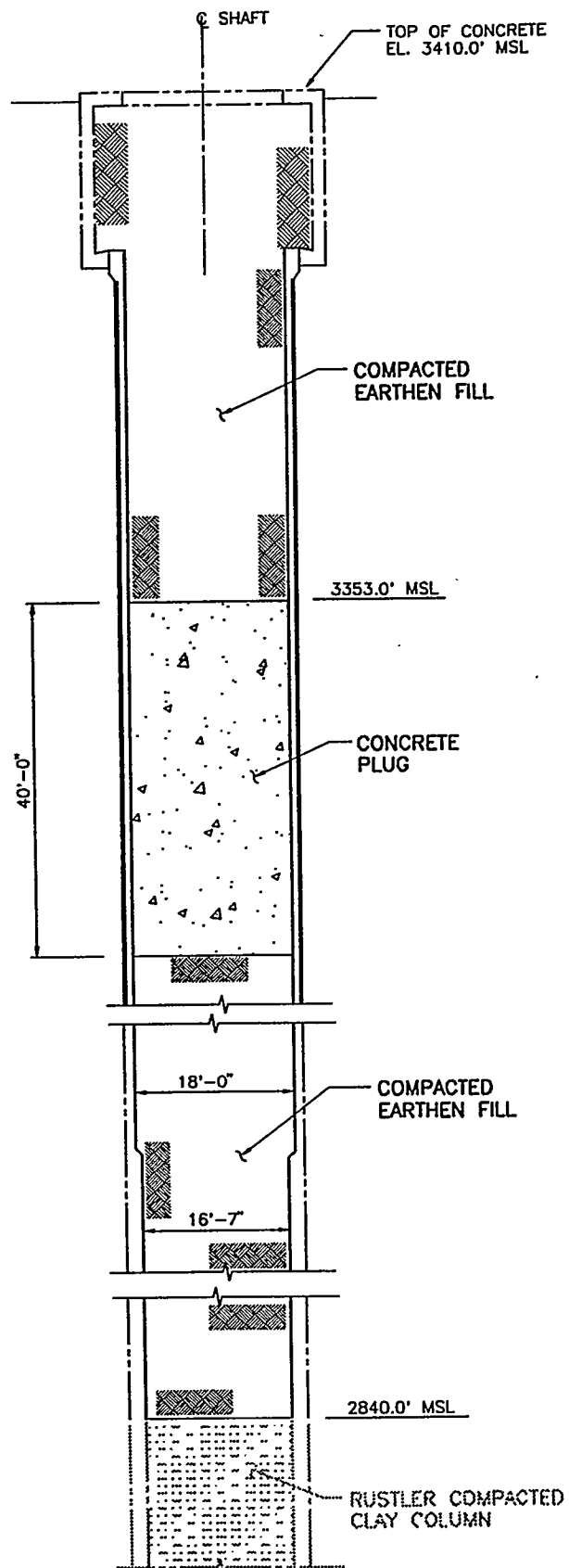
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REV.	DATE	DESCRIPTION	BY	CK.	APP
SANDIA NATIONAL LABORATORIES					
WIPP A/E SUPPORT			CONTRACT NO: AG-4909		
WIPP SHAFT SEALING SYSTEM			NAME		
COMPACTED EARTHEN FILL AND CONCRETE PLUG			DATE		
			BY		
			CK.		
			APP		
			APP		
			APP		
PARSONS BRINCKERHOFF ENERGY SERVICES, INC			SCALE:	SIZE B	SNL DWG. NO. SNL-007
			SHEET NO. 28 OF 28		

E-31



DETAIL
WASTE SHAFT

1
SHT. 4 | SHT. 28



DETAIL
AIR INTAKE SHAFT

2
SHT. 9 | SHT. 28

D E
EXHAU

LOT PLANT

M

TEM DESIGN

UCTION SKETCHES

E-32

SYSTEM
GENERAL
AND SECTIONS

SYSTEM
GENERAL
AND SECTIONS

SYSTEM

SYSTEM
NAME AND
FACILITIES

WASTE ISOLATION
CARLSBAD
SHAFT SEALING S
EQUIPMENT AND CONS'

DRAWING NUMBER

TITLE

SKETCH E-1

WIPP SHAFT SEALIN
SMALLER GALLOWAY
ARRANGEMENT PLA

SKETCH E-2

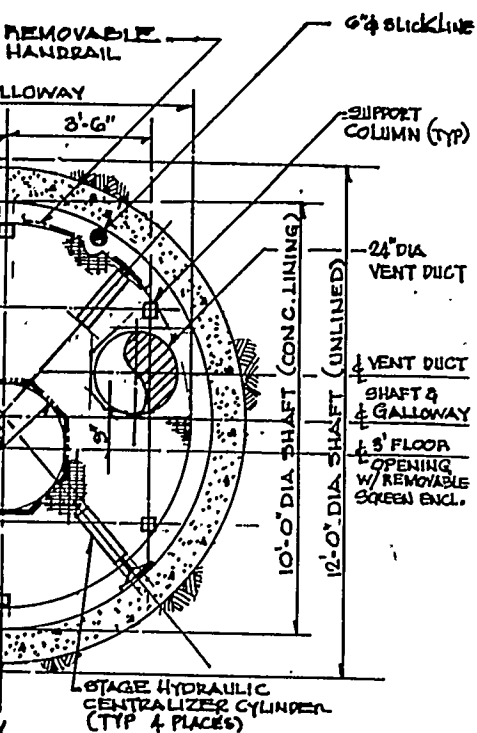
WIPP SHAFT SEALIN
LARGER GALLOWAY
ARRANGEMENT PLA

SKETCH E-3

WIPP SHAFT SEALIN
TYPICAL HEADFRAM
PLANS AND SECTION

SKETCH E-4

WIPP SHAFT SEALIN
PERSPECTIVE HEAD
ASSOCIATED SURFA



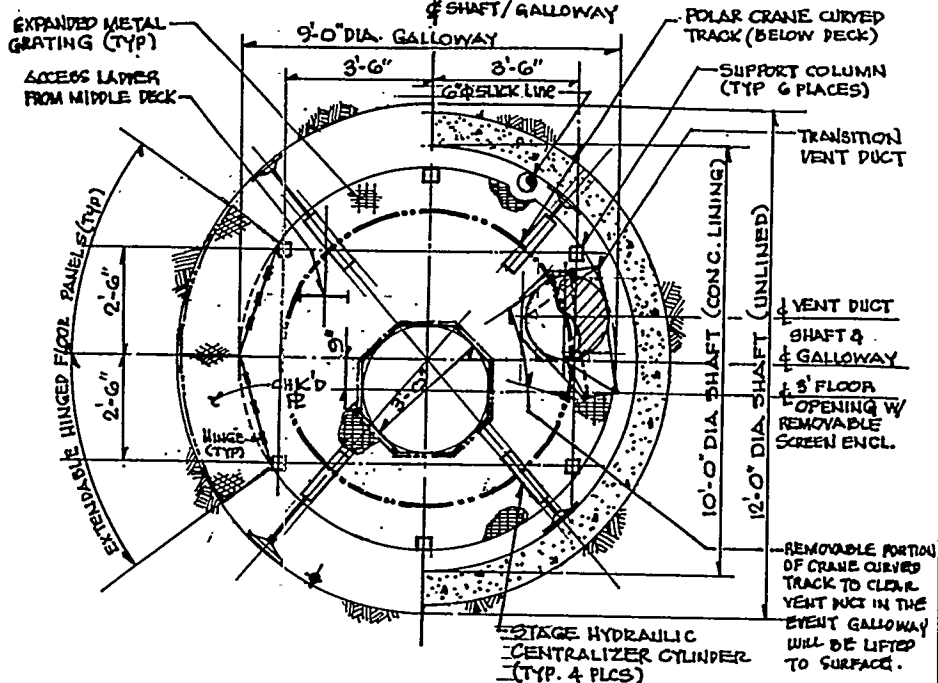
MIDDLE DECK

A SHAFT

5 4 3 2 1 0
FEET

EXPANDED METAL GRATING (TYP)

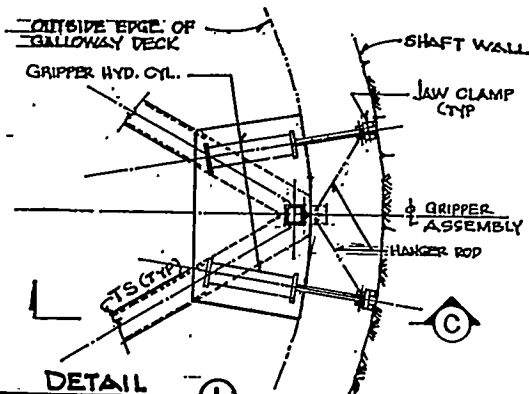
ACCESS LAMER FROM MIDDLE DECK



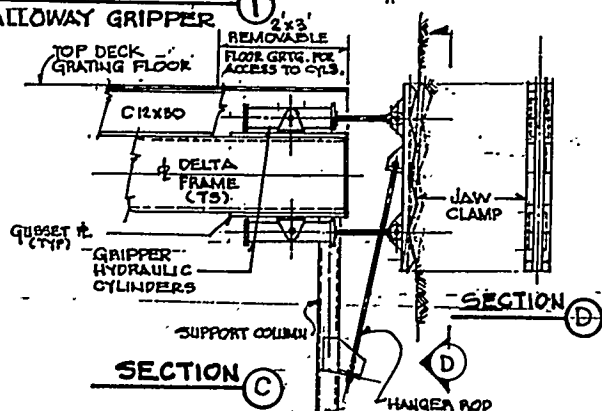
PLAN - BOTTOM DECK

10 FT DIA SHAFT

5 4 3 2 1 0
SCALE IN FEET



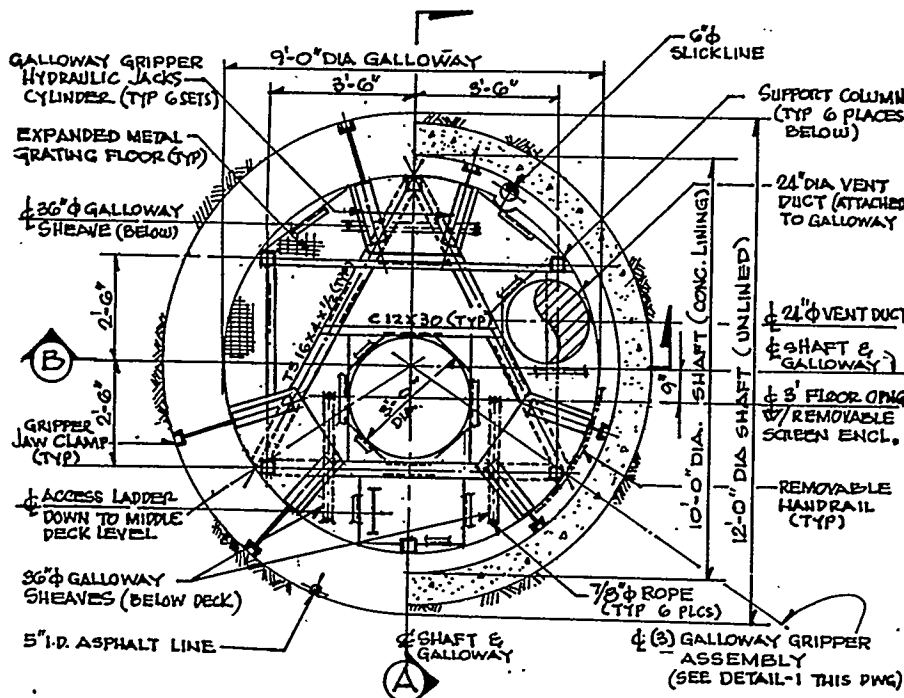
GALLOWAY GRIPPER



WIPP SHAFT SEALING SYSTEM

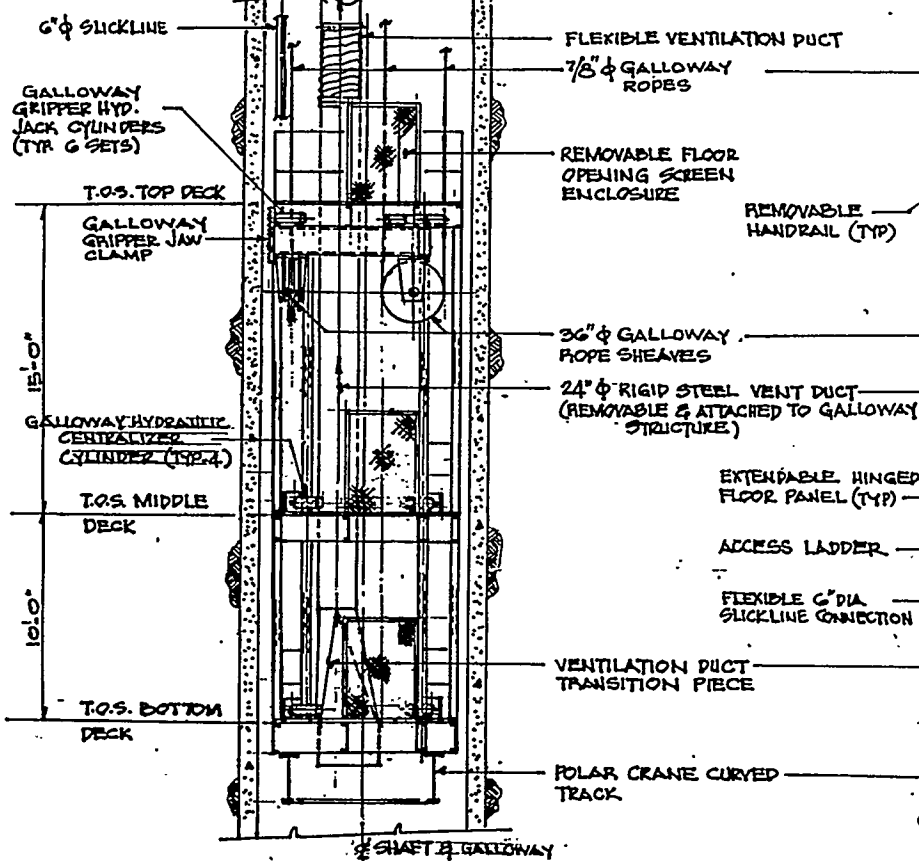
SMALLER GALLOWAY
GENERAL ARRANGEMENT
PLANS & SECTIONS

SKETCH E-1



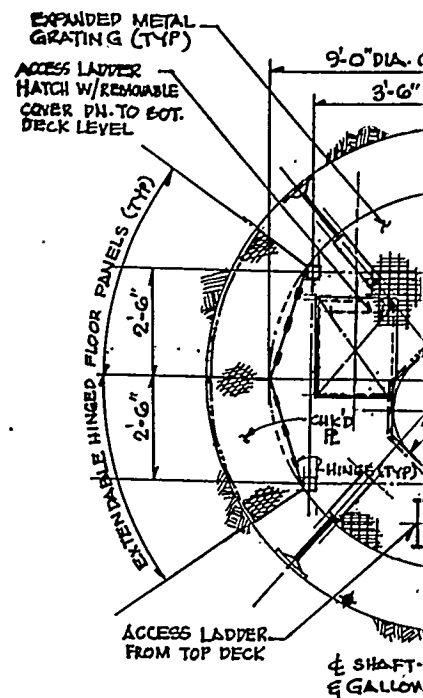
PLAN - TOP DECK

10 FT DIA SHAFT
0 1 2 3 4 5 SCALE IN FEET



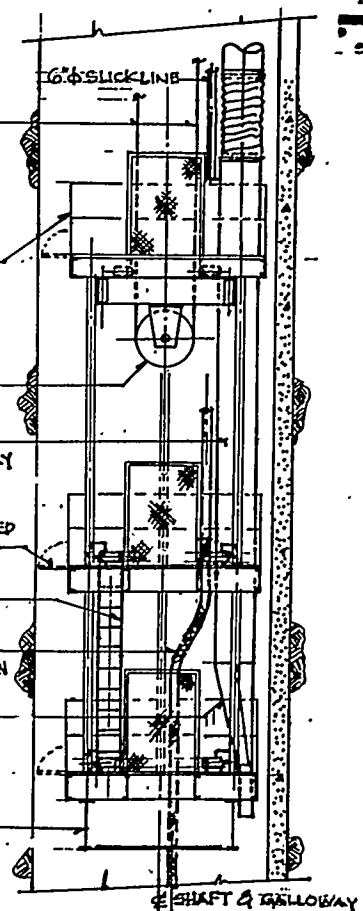
SECTION A

0 1 2 3 4 5 SCALE IN FEET



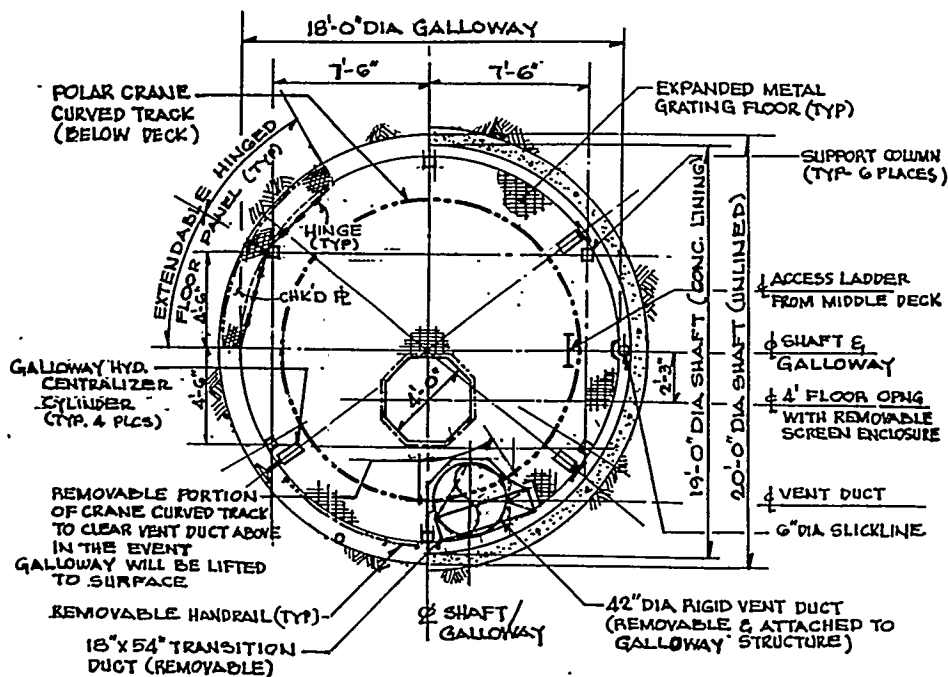
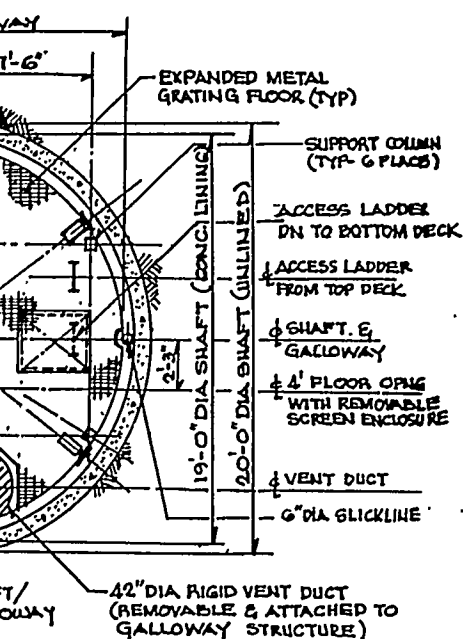
PLAN - MIDDLE DECK

10 FT
0 1 2 3 4 5 SCALE IN FEET



SECTION B

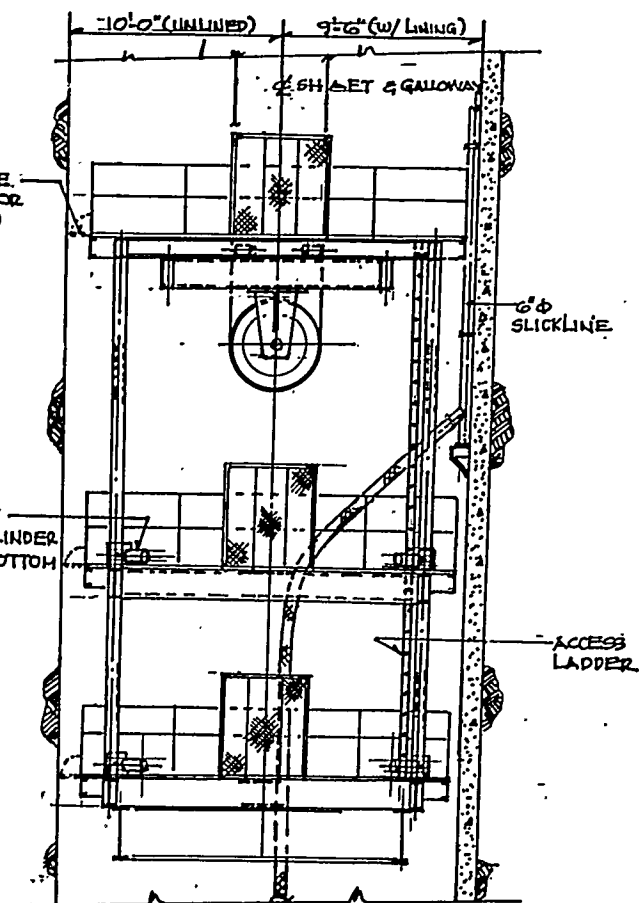
0 1 2 3 4 5 SCALE IN FEET



DECK

PLAN - BOTTOM DECK

20 FT DIA SHAFT



SECTION B

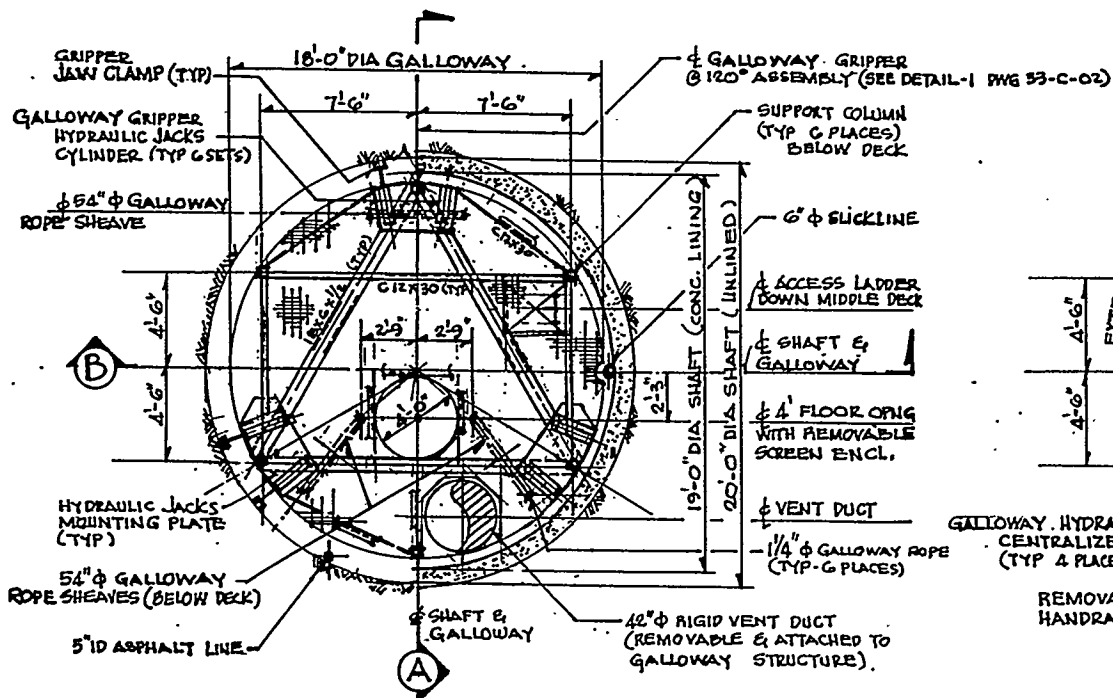
SCALE IN FEET
0 1 2 3 4 5 6

GALLOWAY DESIGN DATA				
	SALT HANDLING SHAFT	EXHAUST SHAFT	AIR INTAKE SHAFT	WASTE SHAFT
Shaft Diameter	10'-0" (lined) 11'-10" (unlined)	14' (lined) 15' (unlined)	16'-7" (lined) 20' (unlined)	19'-0" (lined) 20' (unlined)
Dia of Galloway	9ft	13ft	15'-7"	18ft
Height of Galloway	25ft	25ft	26ft	26ft
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

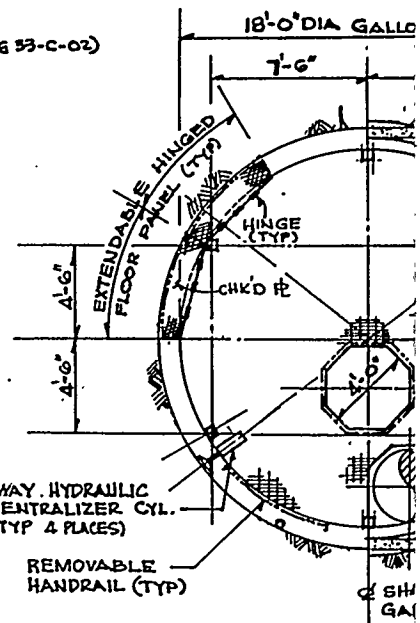
WIPP SHAFT SEALING SYSTEM

LARGER GALLOWAY
GENERAL ARRANGEMENT
PLANS & SECTIONS

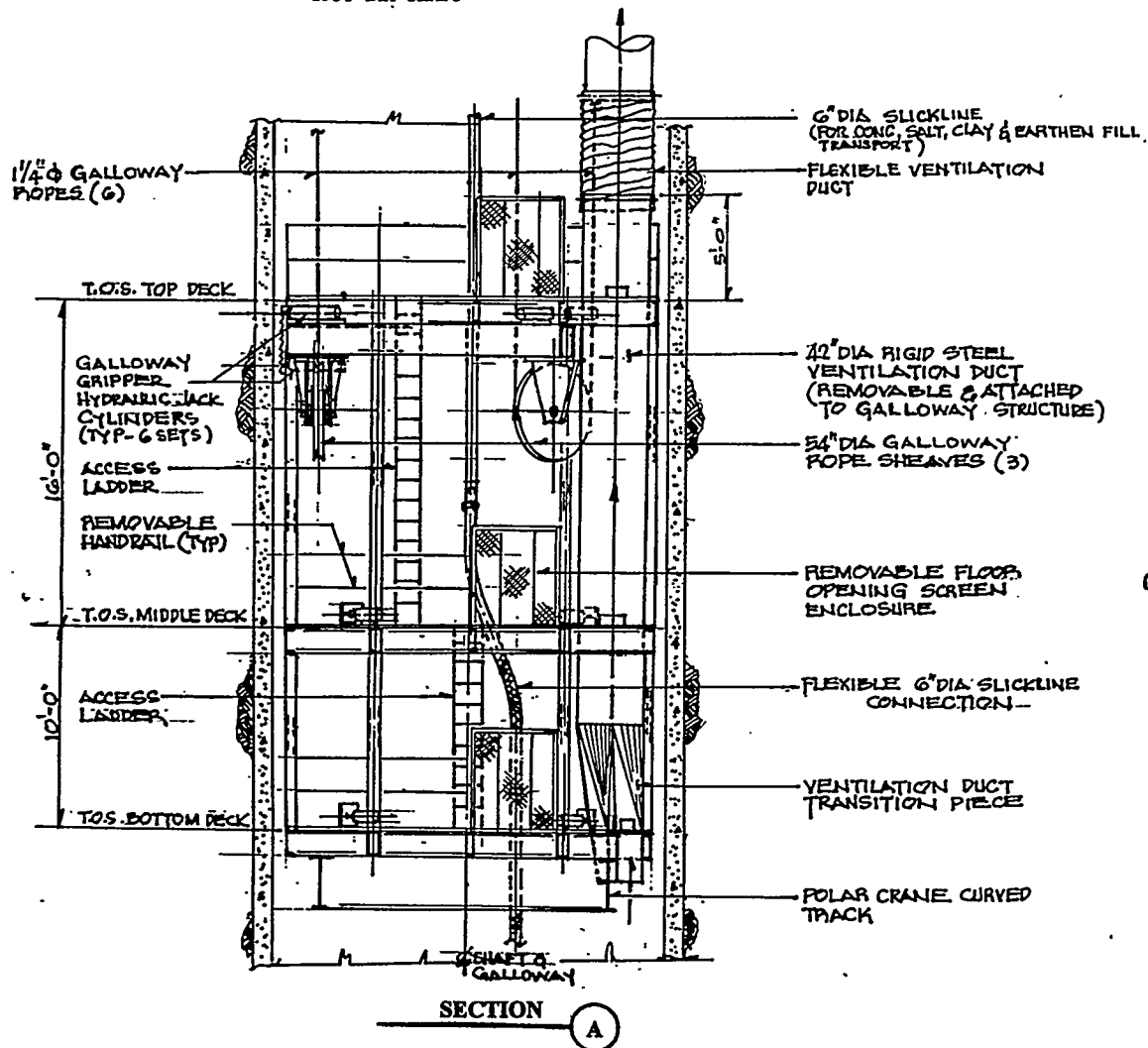
SKETCH E-2



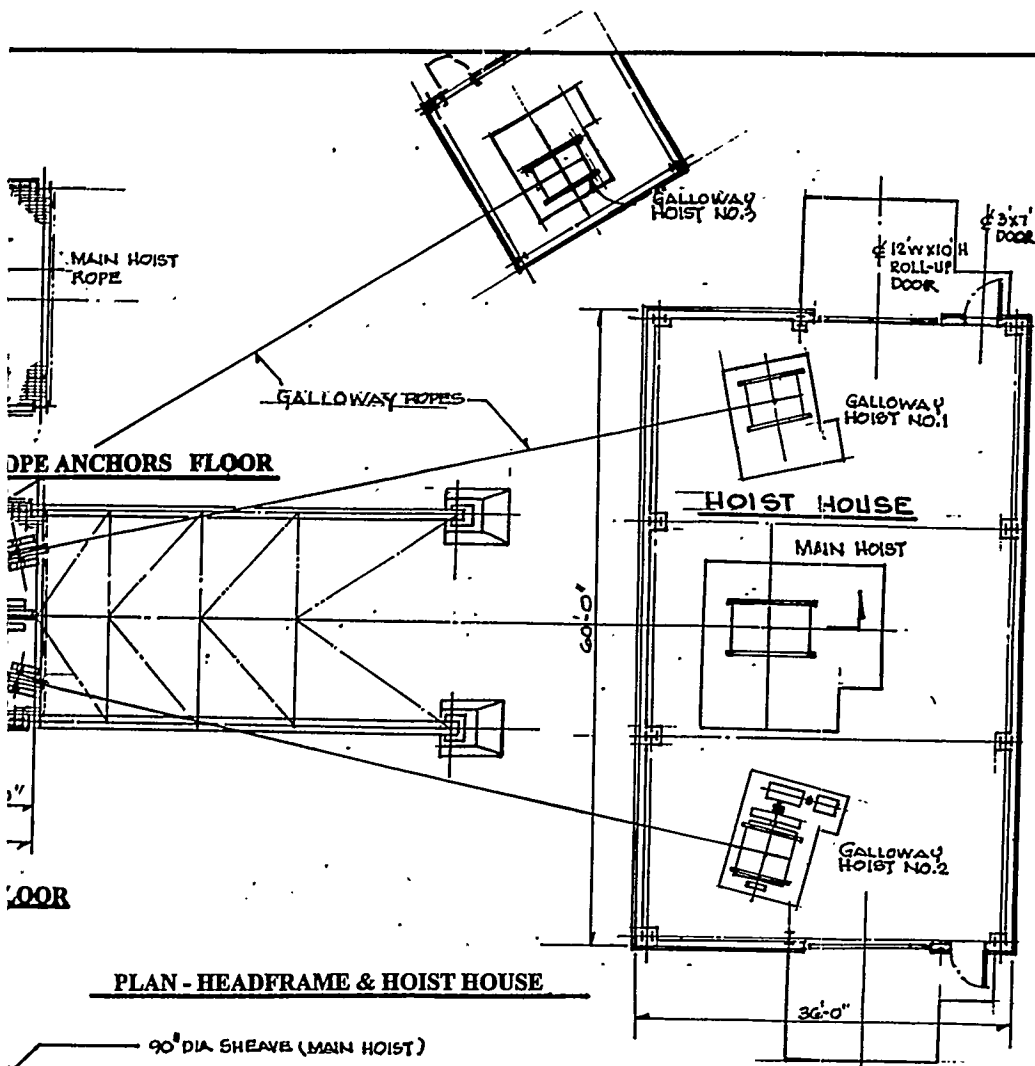
PLAN - TOP DECK
20 FT DIA SHAFT



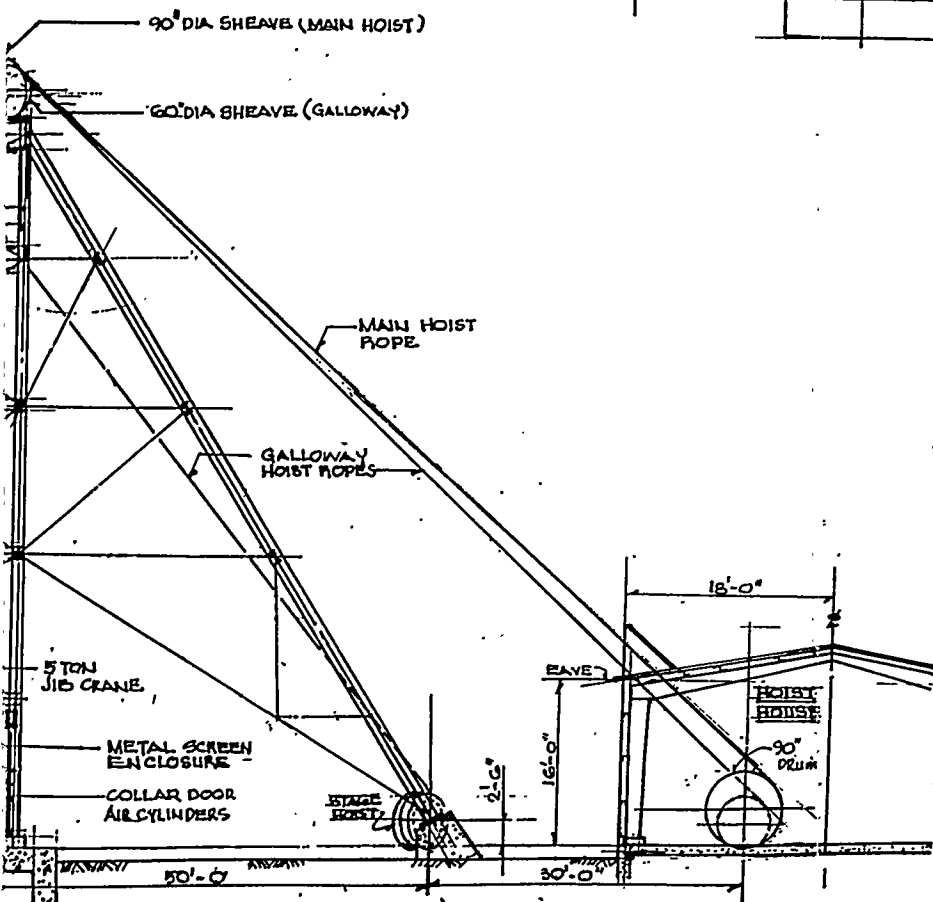
PLAN - MIDDLE DECK
20 FT DIA SHAFT



SECTION A



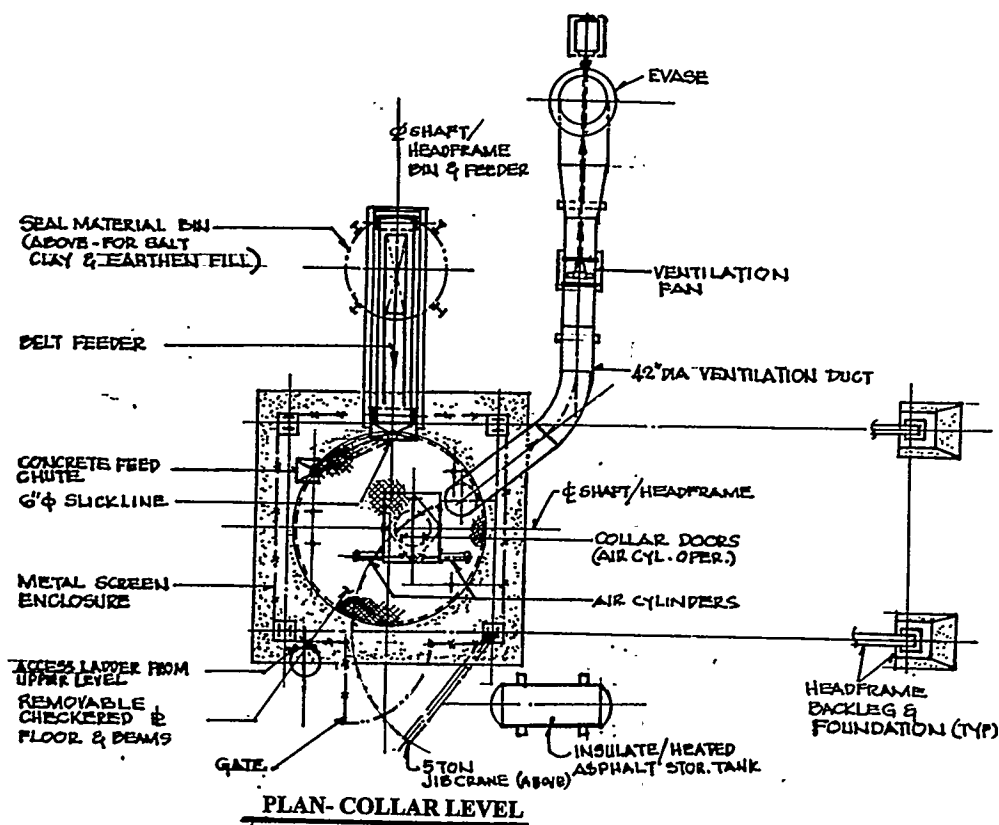
PLAN - HEADFRAME & HOIST HOUSE



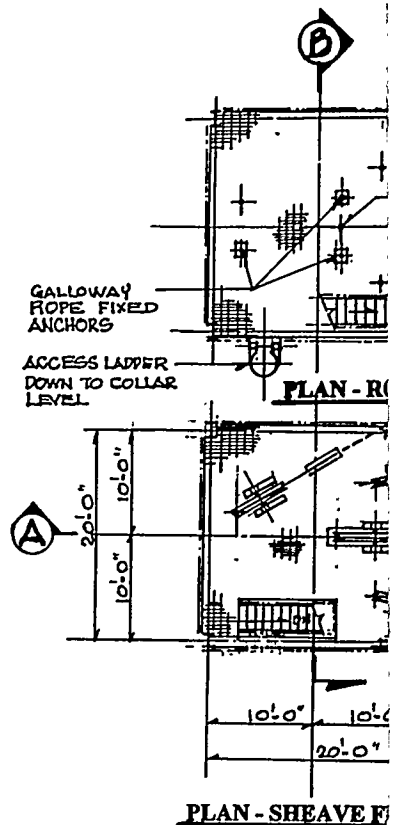
SCALE IN FEET
0 2 4 6 8 10

WIPP SHAFT SEALING SYSTEM

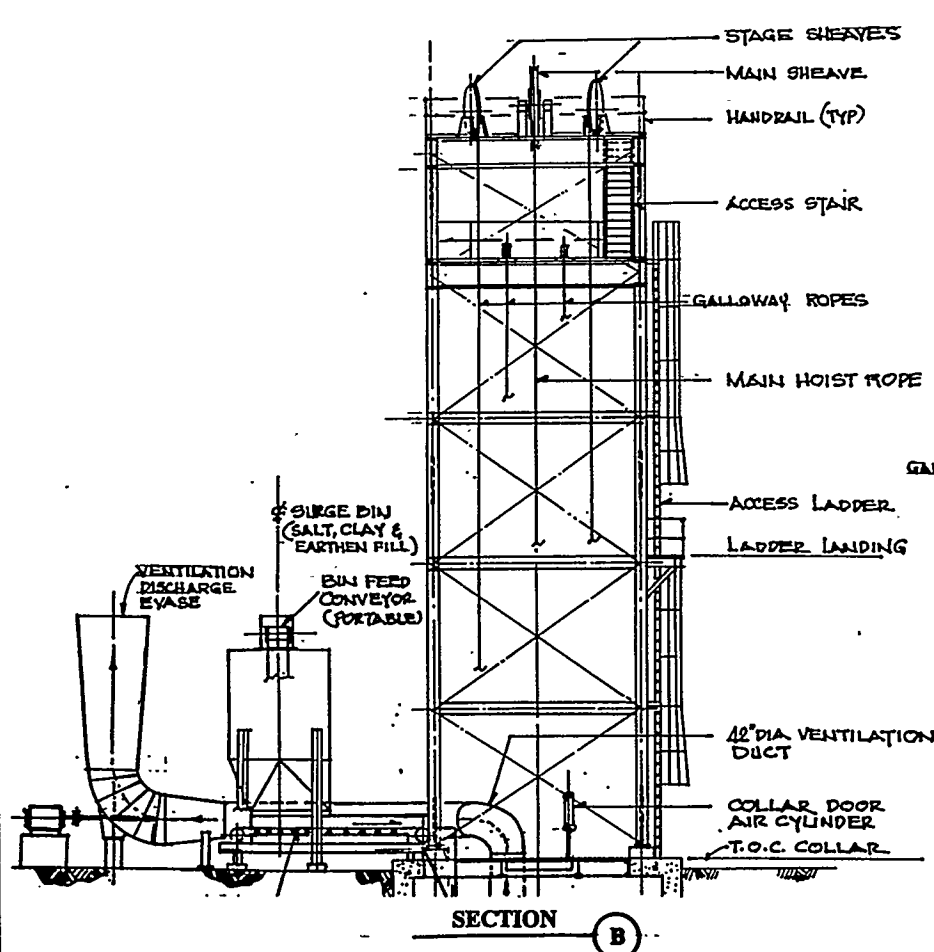
TYPICAL HEADFRAME
PLANS & SECTIONS
SKETCH E-3



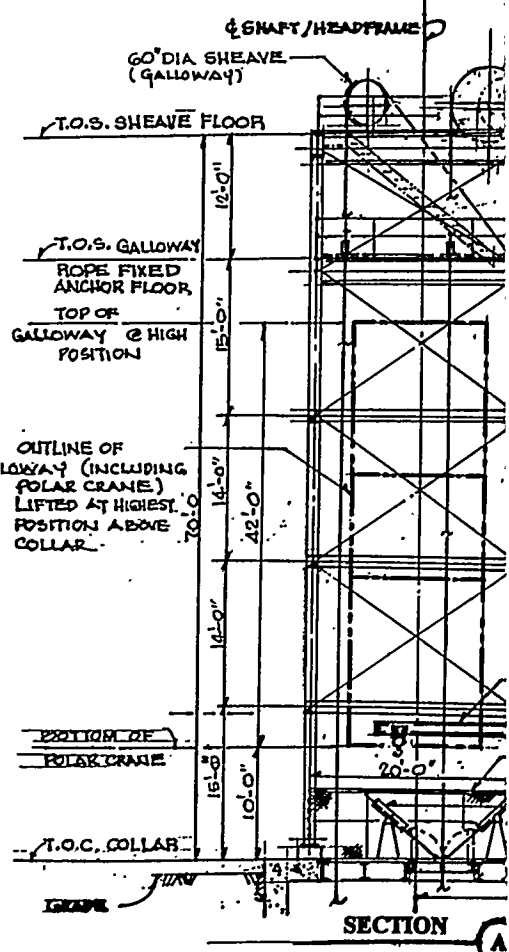
PLAN-COLLAR LEVEL



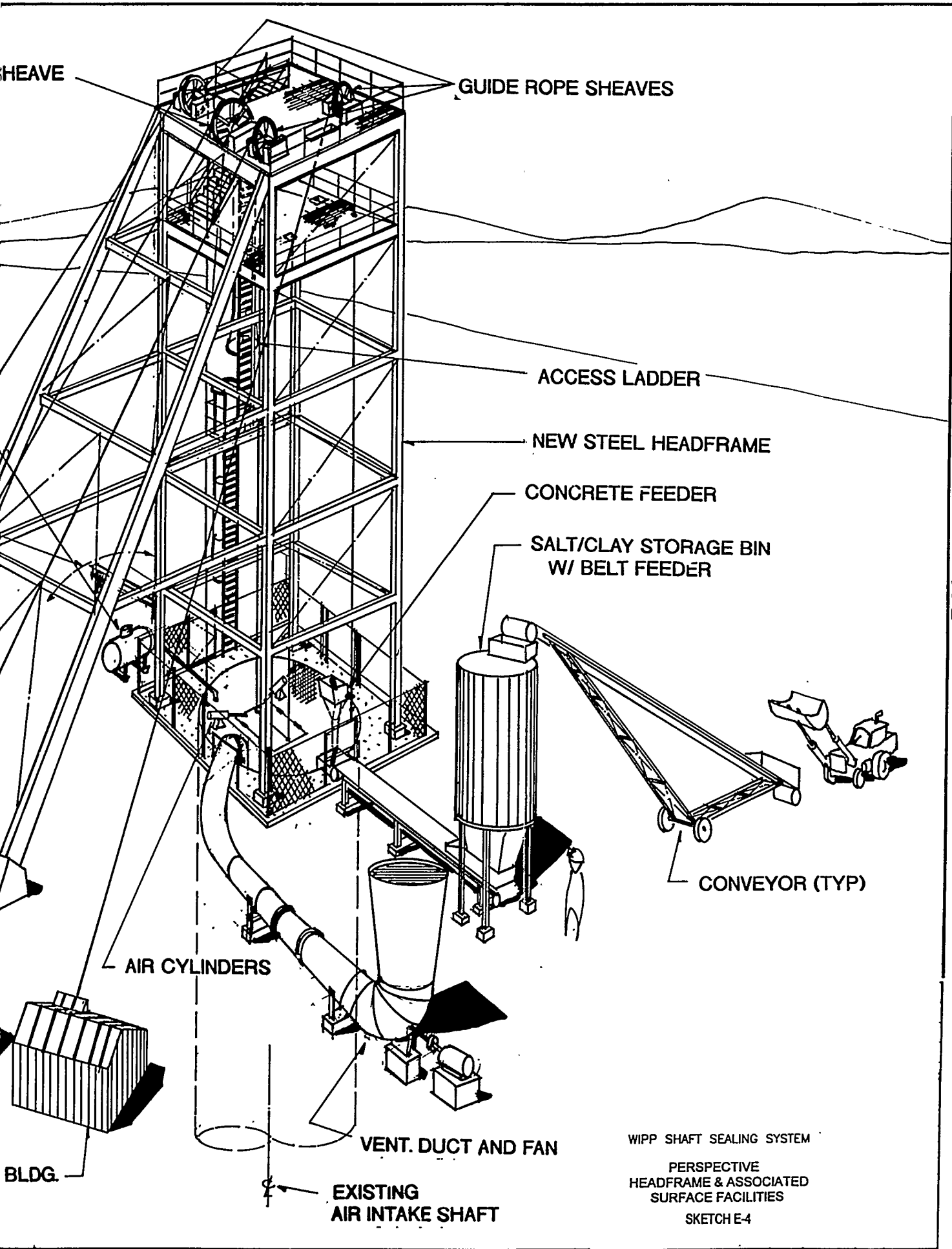
PLAN-SHEAVE FLOOR



SECTION B



SECTION A



E-36

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

MAIN S

PORTABLE PRIMARY
SALT CRUSHING PLANT

SALT STORAGE

PORTABLE OMNICONIC
CRUSHING PLANT

CRUSHED/SCREEN
SALT STORAGE

INSULATED/HEATED
ASPHALT
STORAGE TANK

5 TON
JIB CRANE

SAND

GRAVEL

FLYASH

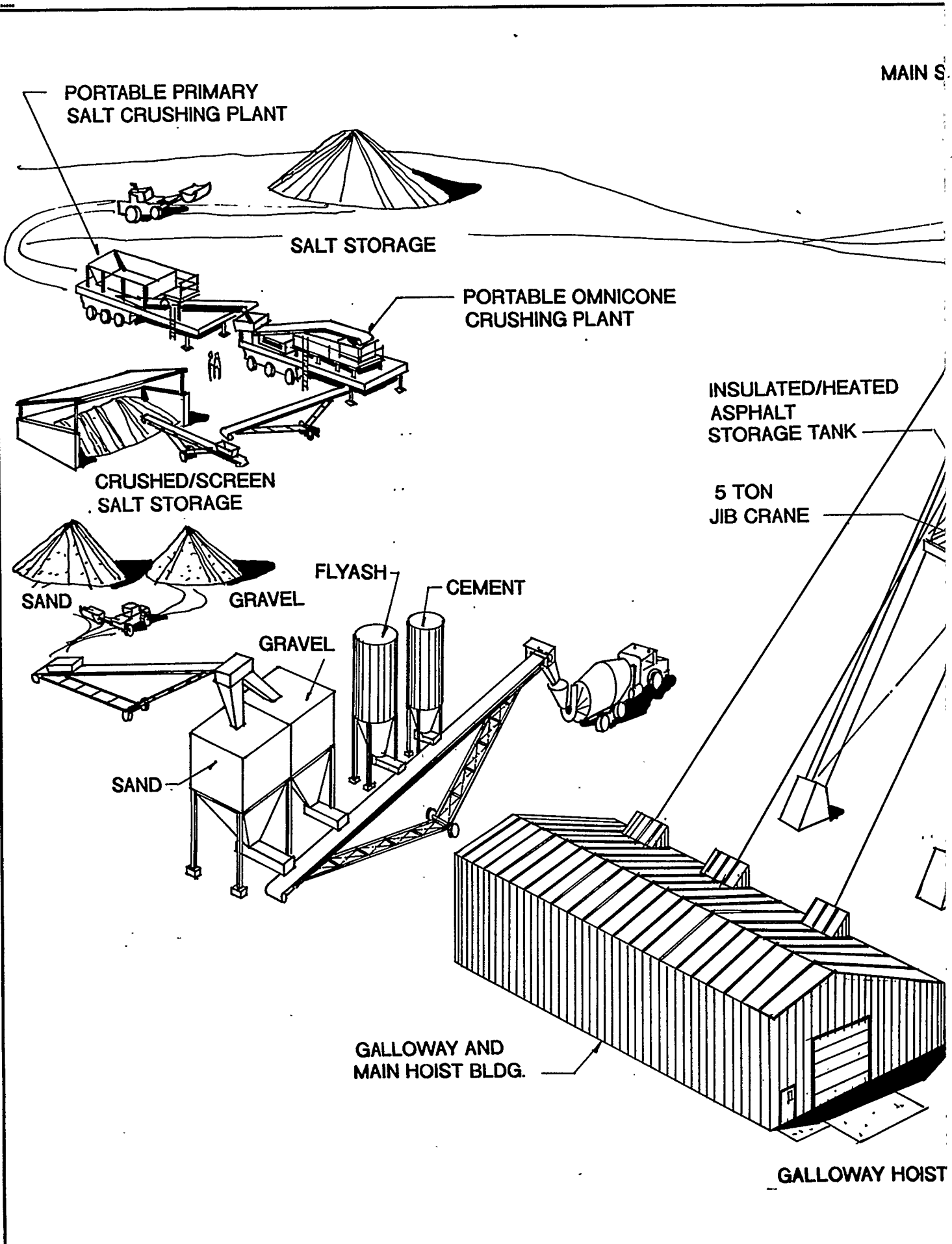
CEMENT

GRAVEL

SAND

GALLOWAY AND
MAIN HOIST BLDG.

GALLOWAY HOIST



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7007 Wyoming NE, Suite F-2
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Director, RW-30
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Washington, DC 20585

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