RENEWAL APPLICATION
APPENDIX I2E

DESIGN DRAWINGS

SHAFT SEALING SYSTEM
COMPLIANCE SUBMITTAL DESIGN REPORT

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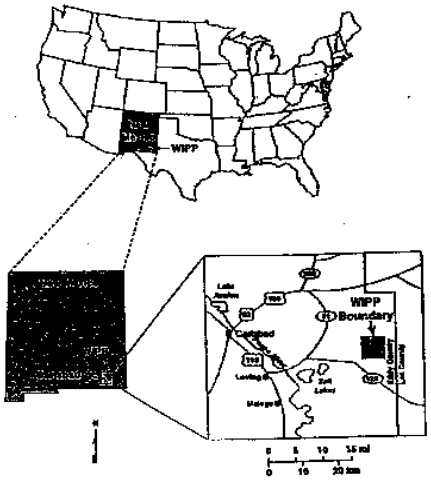
WASTE ISOLATION PILOT PLANT

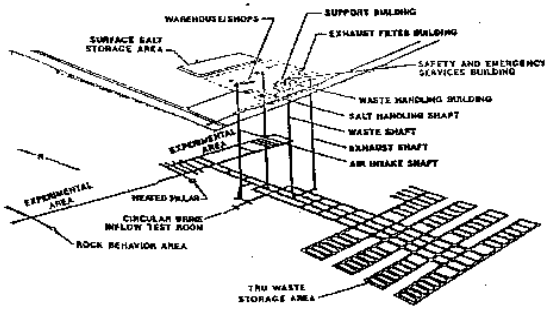
CARLSBAD, NM

SHAFT SEALING SYSTEM DESIGN

DESIGN DRAWINGS



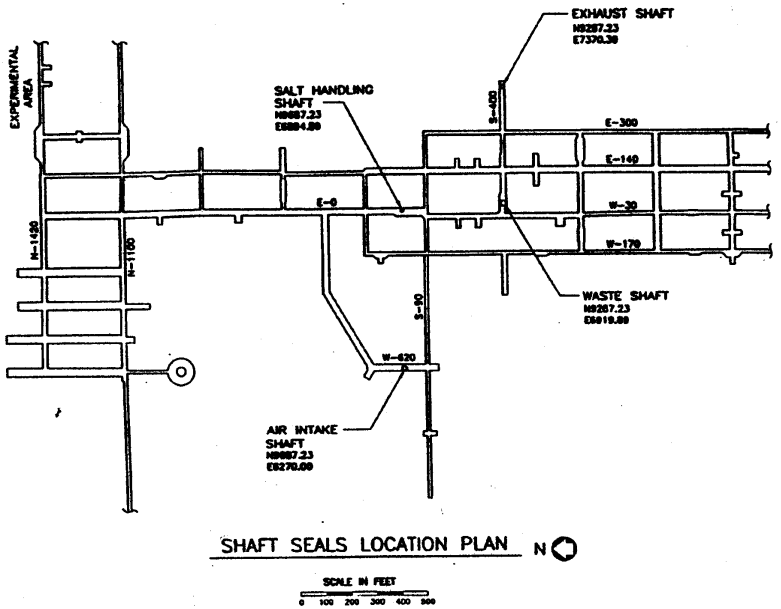
WIPP LAYOUT



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

DRAWING NUMBER	TITLE
SNL-007 10 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION AIR INTAKE SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE
SNL-007 11 OF 28	WIPP SHAFT SEALING SYSTEM AIR INTAKE SHAFT SHAFT STATION MONOLITH
SNL-007 12 OF 28	WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS EXHAUST SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS
SNL-007 13 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION EXHAUST SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS
SNL-007 14 OF 28	WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS EXHAUST SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE
SNL-007 15 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION EXHAUST SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE
SNL-007 16 OF 28	WIPP SHAFT SEALING SYSTEM EXHAUST SHAFT SHAFT STATION MONOLITH
SNL-007 17 OF 28	WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS SALT HANDLING SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS
SNL-007 18 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION SALT HANDLING SHAFT STRATIGRAPHY & AS-BUILT ELEMENTS

DRAWING NUMBER	TITLE
SNL-007 19 OF 28	WIPP SHAFT SEALING SYSTEM NEAR-SURFACE/RUSTLER FORMATIONS SALT HANDLING SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE
SNL-007 20 OF 28	WIPP SHAFT SEALING SYSTEM SALADO FORMATION SALT HANDLING SHAFT STRATIGRAPHY & SEALING SUBSYSTEM PROFILE
SNL-007 21 OF 28	WIPP SHAFT SEALING SYSTEM SALT HANDLING SHAFT SHAFT STATION MONOLITH
SNL-007 22 OF 28	WIPP SHAFT SEALING SYSTEM CONCRETE-ASPHALT WATERSTOP IN SALADO FORMATION
SNL-007 23 OF 28	WIPP SHAFT SEALING SYSTEM ASPHALT COLUMN
SNL-007 24 OF 28	WIPP SHAFT SEALING SYSTEM UPPER AND LOWER SALADO COMPACTED CLAY COLUMNS
SNL-007 25 OF 28	WIPP SHAFT SEALING SYSTEM COMPACTED SALT COLUMN
SNL-007 26 OF 28	WIPP SHAFT SEALING SYSTEM CONCRETE PLUG
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



SHAFT SEALS LOCATION PLAN N

SCALE IN FEET
0 100 200 300 400 500

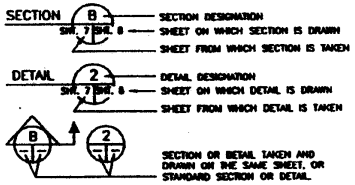
GENERAL NOTES:

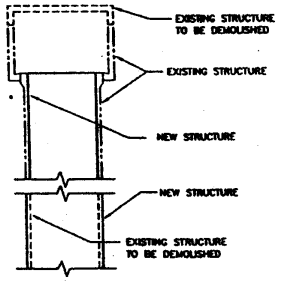
1. THE DRIFT NUMBERING SYSTEM (E-300, S-400, ETC.) IS BASED ON THE DIRECTION AND NOMINAL DISTANCE IN FEET THE DRIFT IS FROM THE SALT HANDLING SHAFT'S DESIGNATED CENTERLINE LOCATION OF N-000, E-000. THE WIPP PLANT COORDINATE SYSTEM CENTERLINE LOCATION FOR THE SALT HANDLING SHAFT IS N9087.23, AND E6894.89. THE PLANT COORDINATE SYSTEM IS DESCRIBED IN WESTINGHOUSE DRAWING NO. 51-W-100-W, UNDERGROUND EXCAVATIONS, DATED 6/15/82.

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:

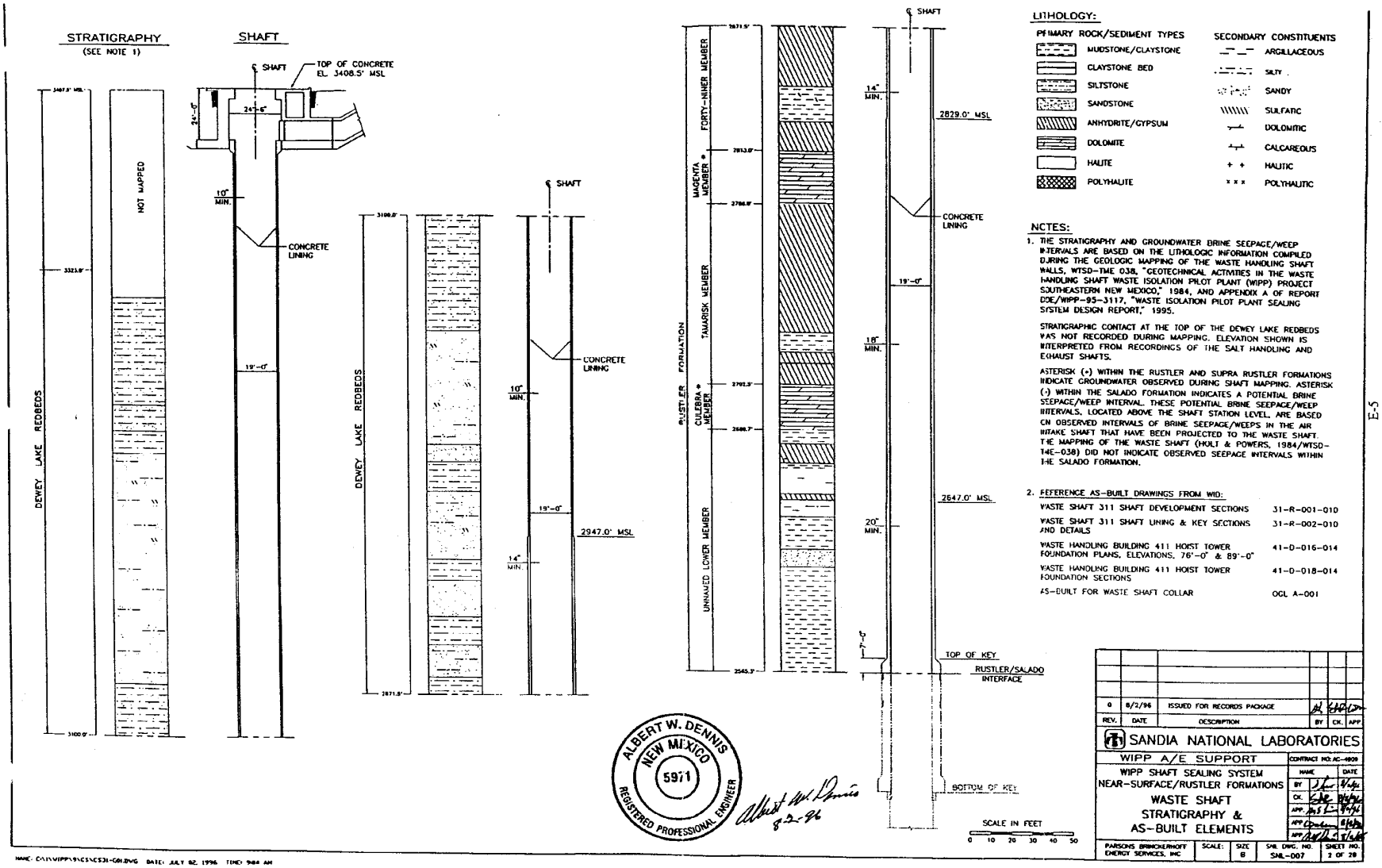
℄	CENTERLINE
ANH.	ANHYDRITE
CMP	CORRUGATED METAL PLATE
CONC.	CONCRETE
DOE	DEPARTMENT OF ENERGY
DWG.	DRAWING
E	EAST
EL.	ELEVATION
EXIST.	EXISTING
FT.	FOOT, FEET
HT.	HEIGHT
I.D.	INSIDE DIAMETER
IN.	INCHES
MB	MARKER BED
MIN.	MINIMUM
MSL	MEAN SEA LEVEL
N	NORTH
NO.	NUMBER
R	RADIUS
S	SOUTH
SHT.	SHEET NUMBER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

ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER

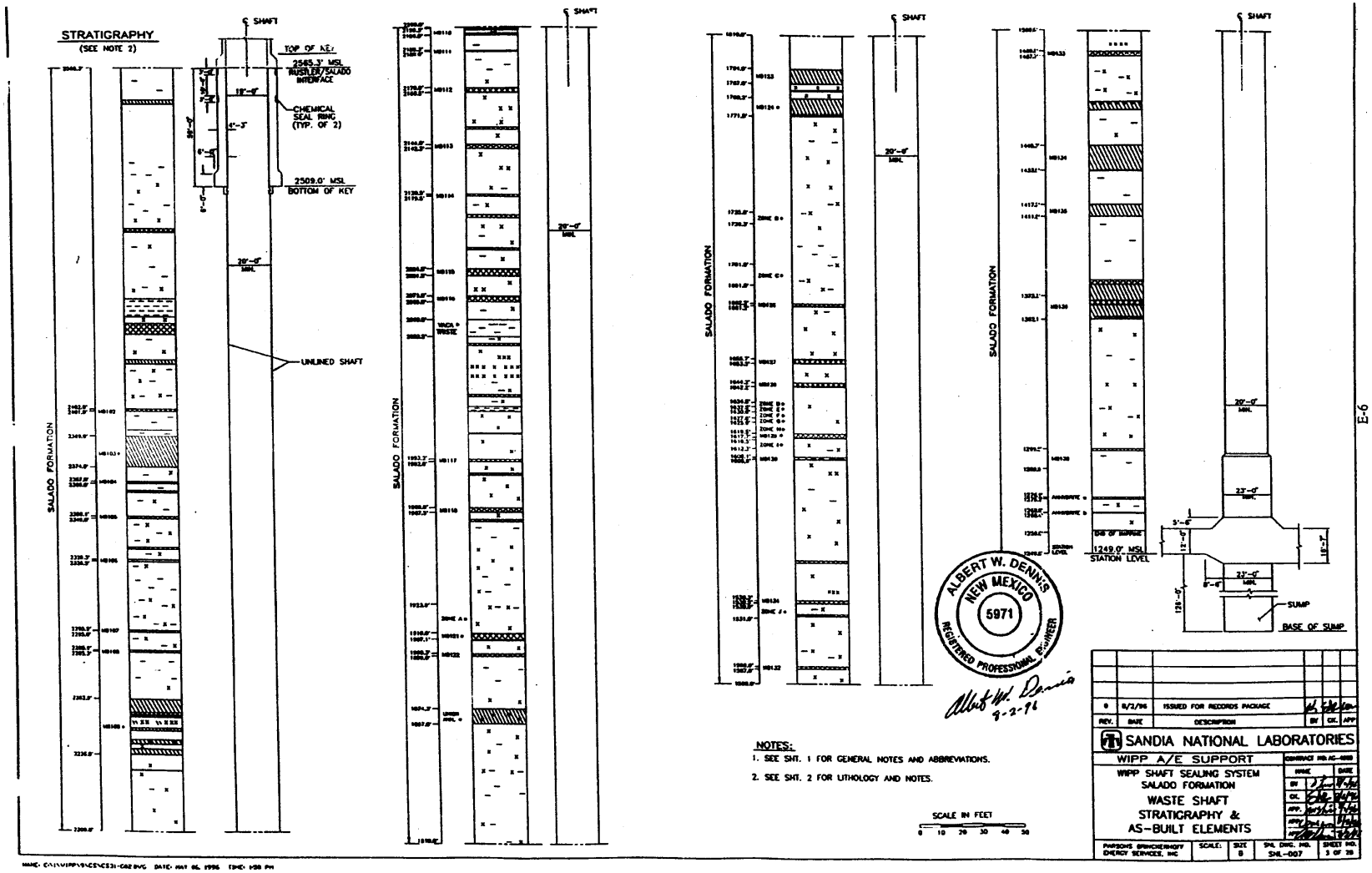
REV.	DATE	DESCRIPTION	BY	CK.	APP
0	6/2/96	ISSUED FOR RECORDS PACKAGE			

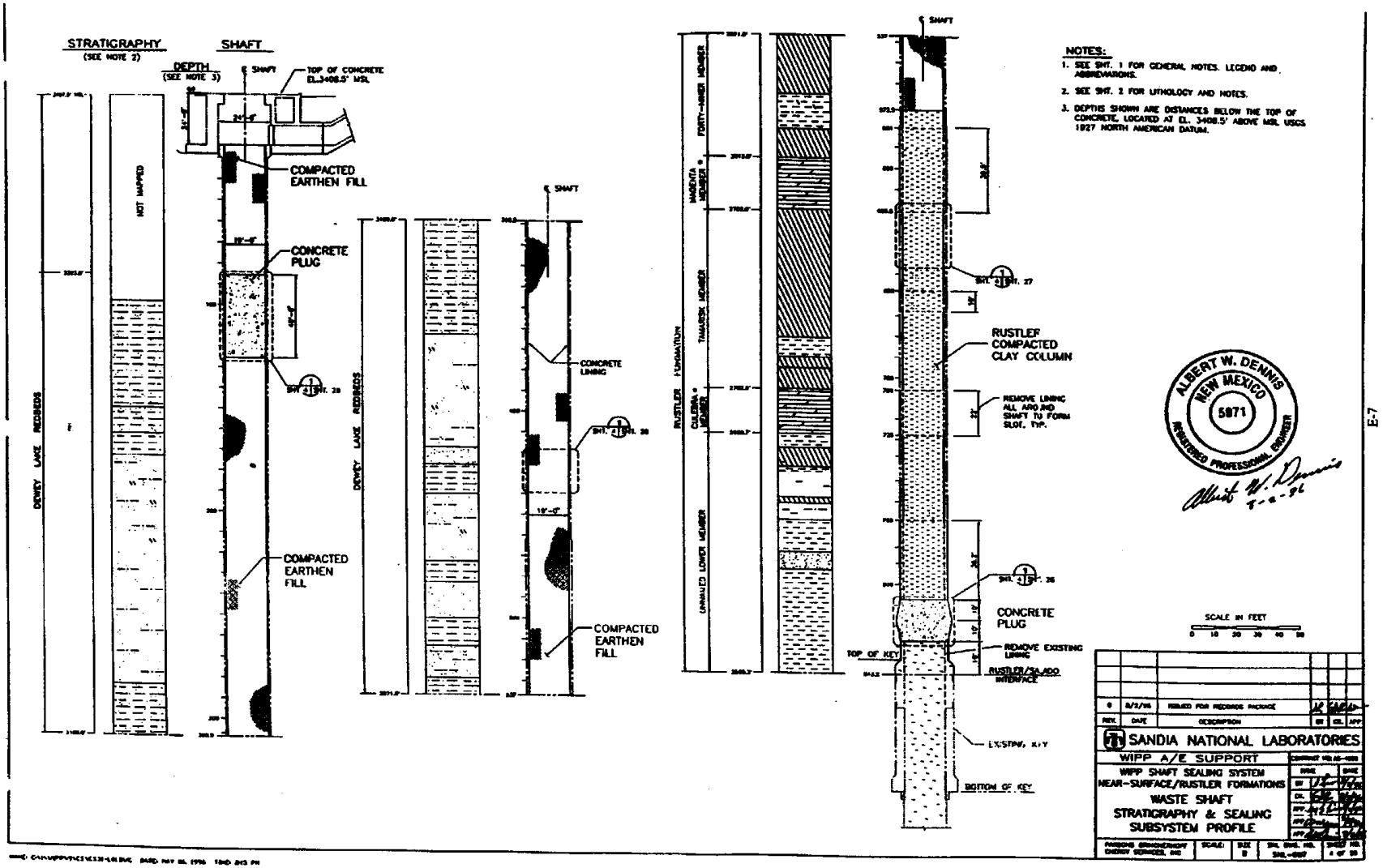
SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
WIPP SHAFT SEALING SYSTEM
SHAFT LOCATION PLAN, ABBREVIATIONS, GENERAL NOTES AND LEGEND

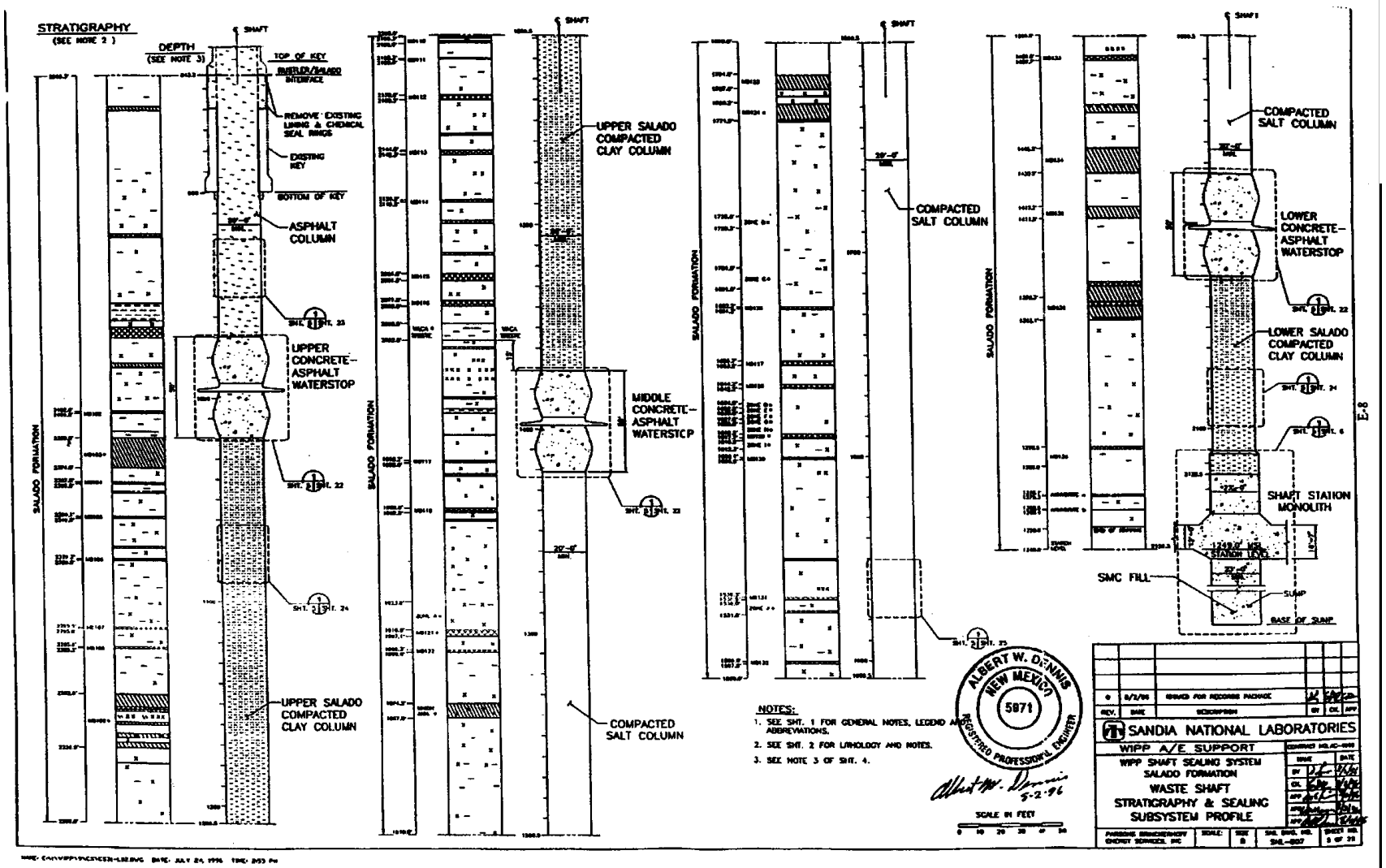
PARSONS BRINCKERHOFF DHORT BERNDEL INC | SCALE: | SIZE B | SNL DWG. NO SNL-087 | SHEET NO. 1 OF 28

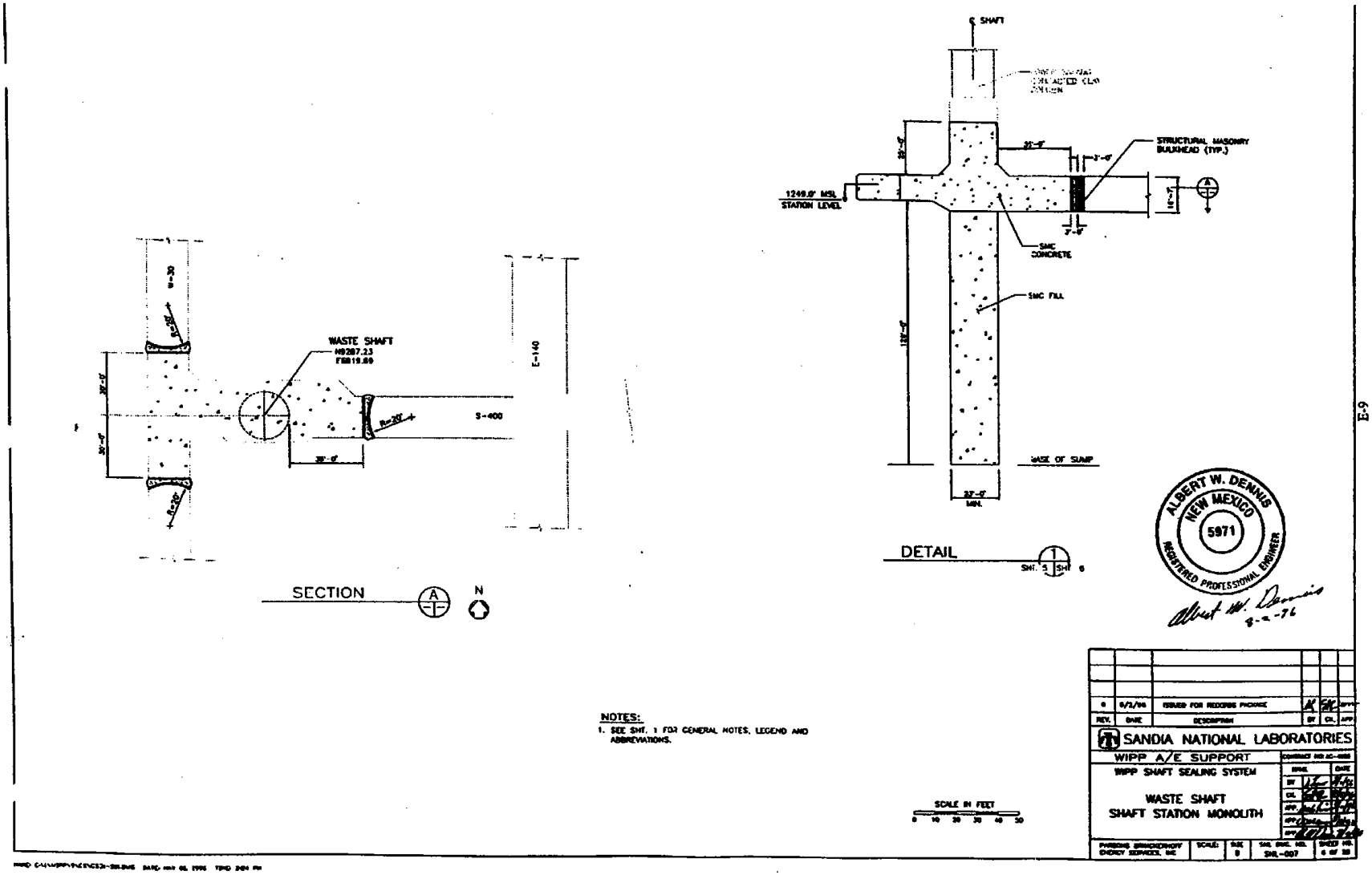


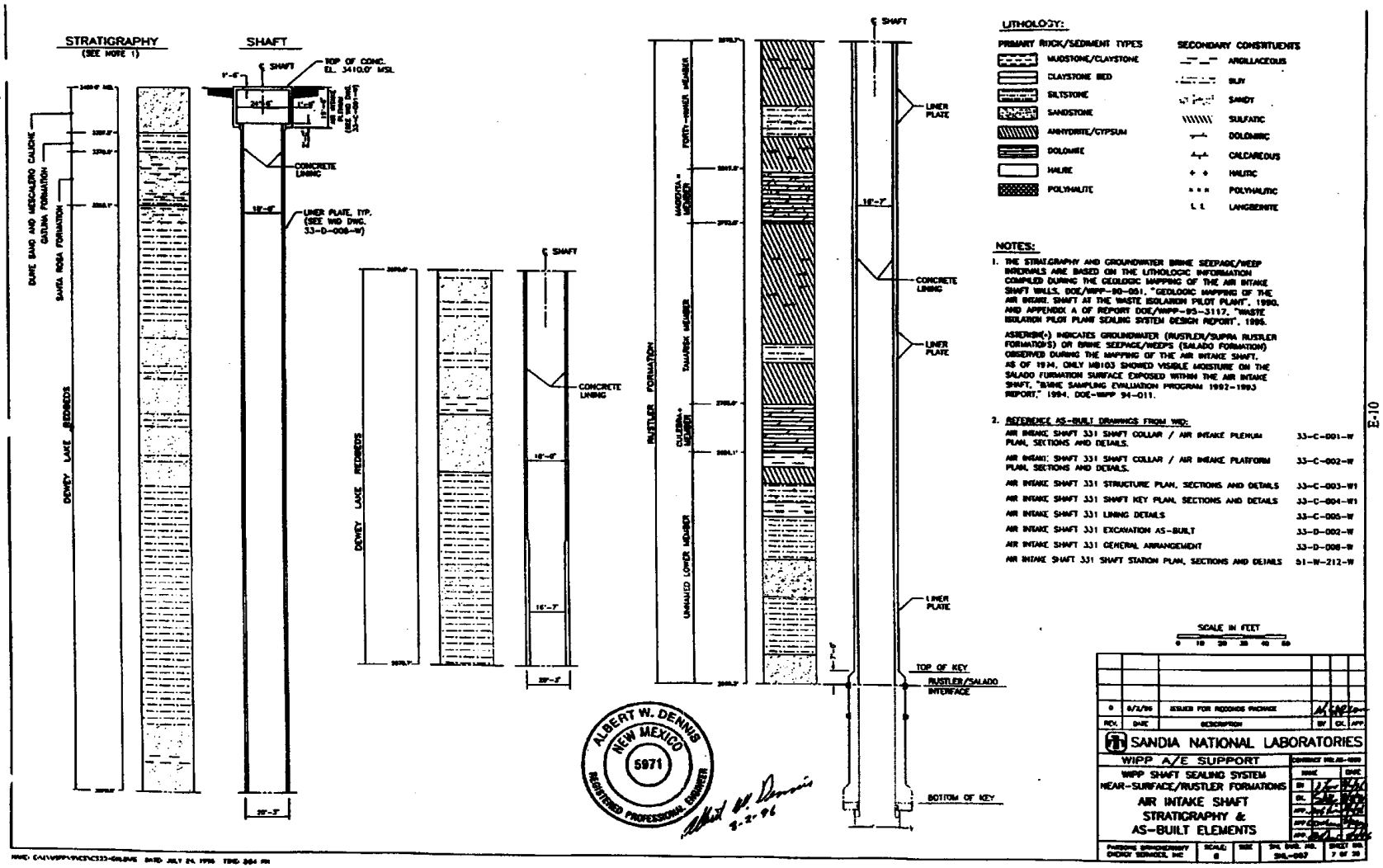
Near-Surface/Rustler Formations Waste Shaft Stratigraphy and AS-Built Elements Sheet 2 of 28


STRATIGRAPHY
(SEE NOTE 2)
SALADO FORMATION
℄ SHAFT
TOP OF K.E.
2545.3' MSL
RUSTLER/SALADO INTERFACE
CHEMICAL SEAL RING (TYP. OF 2)
2509.0' MSL
BOTTOM OF KEY
20'-0" MIN.
UNLINED SHAFT
1249.0' MSL
STATION LEVEL
SUMP
BASE OF SUMP
NOTES:
1. SEE SHT. 1 FOR GENERAL NOTES AND ABBREVIATIONS.
2. SEE SHT. 2 FOR LITHOLOGY AND NOTES.
SCALE IN FEET
ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER
SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
WIPP SHAFT SEALING SYSTEM
SALADO FORMATION
WASTE SHAFT
STRATIGRAPHY &
AS-BUILT ELEMENTS
ISSUED FOR RECORDS PACKAGE
PARSONS BRINCKERHOFF ENERGY SERVICES, INC
SHL-007
E-6

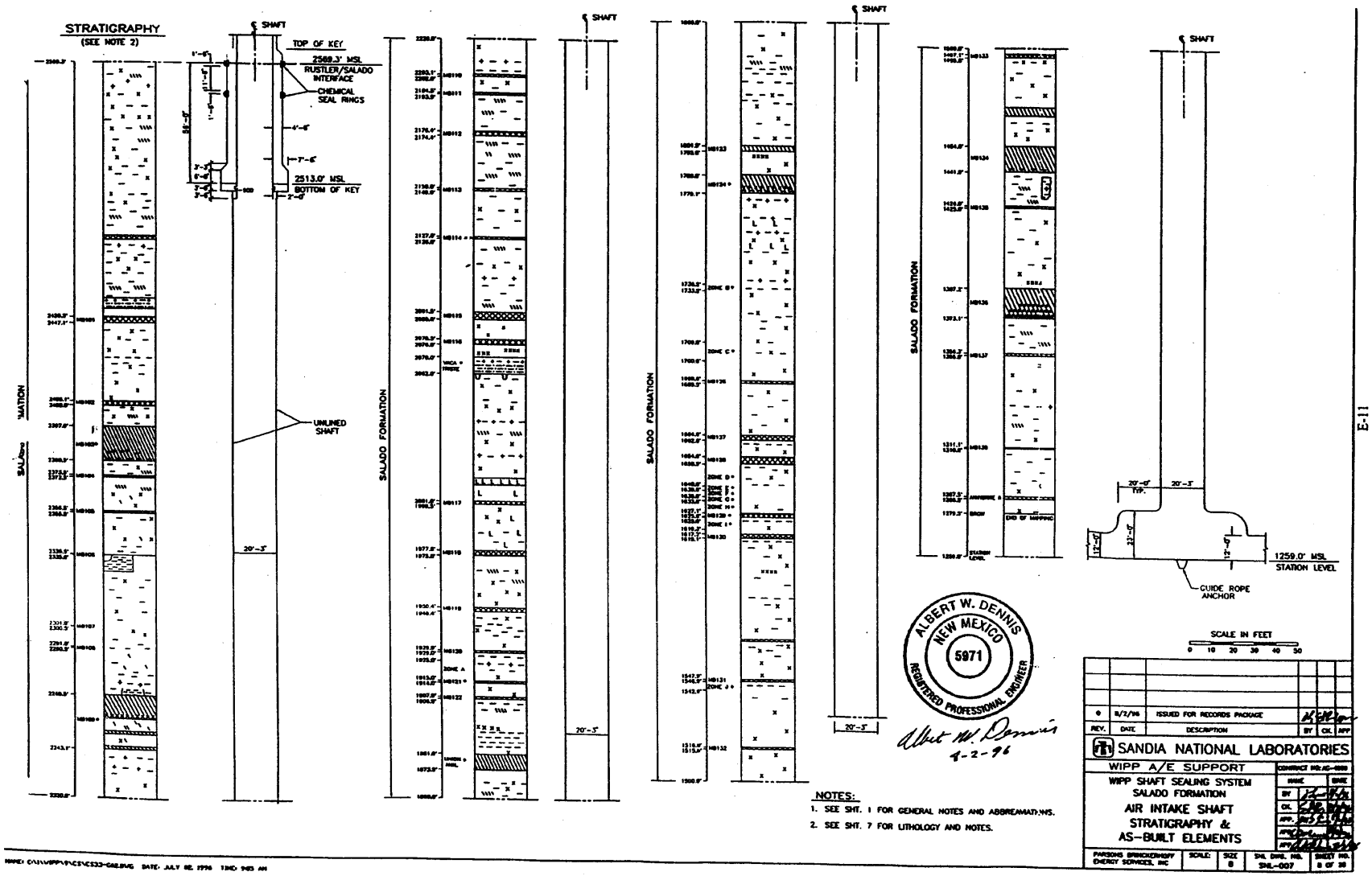

STRATIGRAPHY
(SEE NOTE 2)
SHAFT
DEPTH
(SEE NOTE 3)
℄ SHAFT
TOP OF CONCRETE
EL.3408.5' MSL
COMPACTED
EARTHEN FILL
CONCRETE
PLUG
COMPACTED
EARTHEN FILL
DEWEY LAKE REDBEDS
NOT MAPPED
CONCRETE
LINING
COMPACTED
EARTHEN FILL
RUSTLER FORMATION
FORTY-NINER MEMBER
MAGENTA MEMBER
TAMARISK MEMBER
CULEBRA MEMBER
UNNAMED LOWER MEMBER
RUSTLER
COMPACTED
CLAY COLUMN
REMOVE LINING
ALL AROUND
SHAFT TO FORM
SLOT, TYP.
CONCRETE
PLUG
REMOVE EXISTING
LINING
TOP OF KEY
RUSTLER/SALADO
INTERFACE
EXISTING KEY
BOTTOM OF KEY
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
NEW MEXICO
5871
REGISTERED PROFESSIONAL ENGINEER
SCALE IN FEET
0 10 20 30 40 50
SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
WIPP SHAFT SEALING SYSTEM
NEAR-SURFACE/RUSTLER FORMATIONS
WASTE SHAFT
STRATIGRAPHY & SEALING
SUBSYSTEM PROFILE
E-7

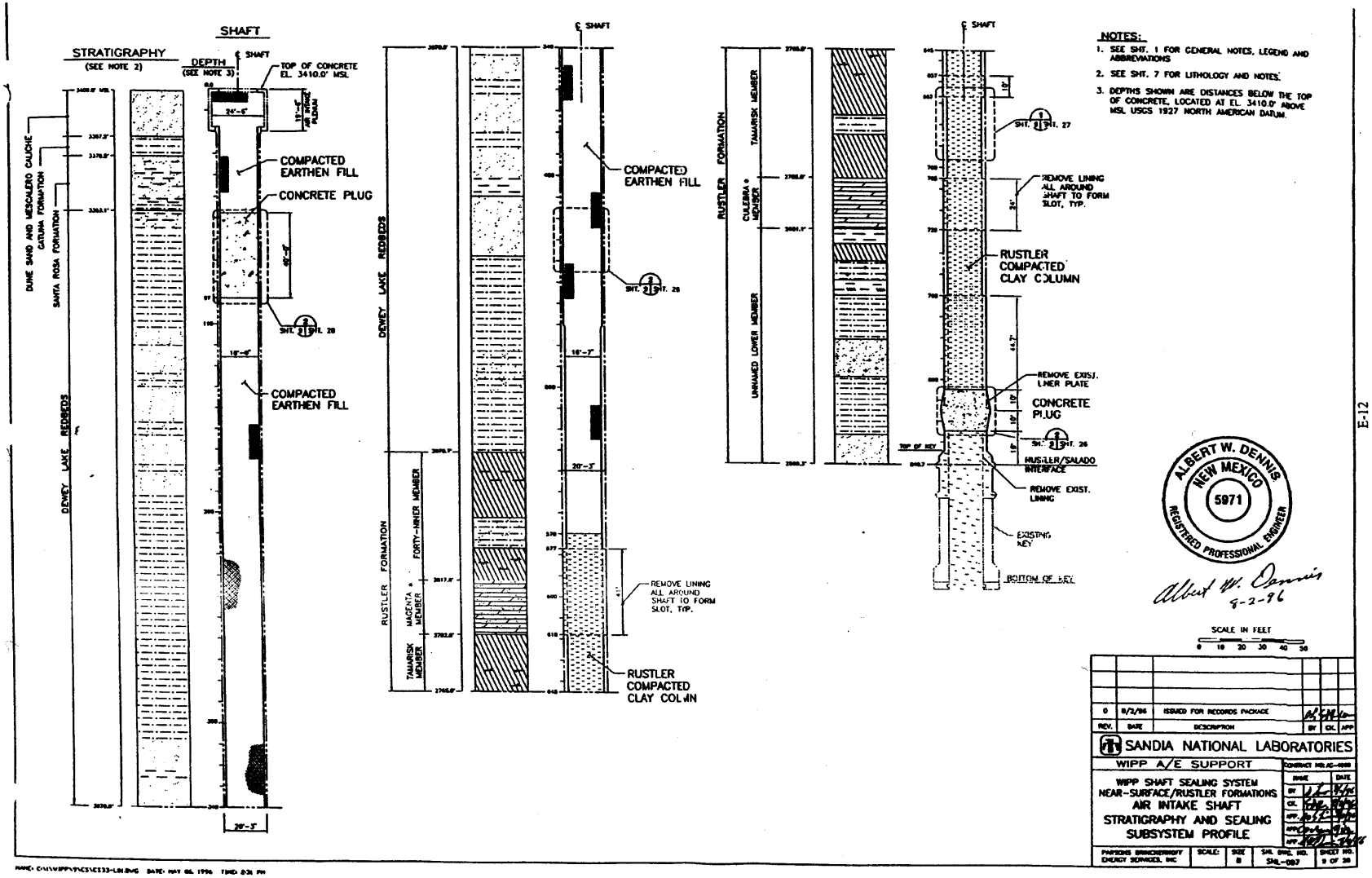

STRATIGRAPHY
(SEE NOTE 2)
DEPTH
(SEE NOTE 3)
SHAFT
TOP OF KEY
BASELOX/SALADO INTERFACE
REMOVE EXISTING LINING & CHEMICAL SEAL RINGS
EXISTING KEY
BOTTOM OF KEY
ASPHALT COLUMN
UPPER CONCRETE-ASPHALT WATERSTOP
UPPER SALADO COMPACTED CLAY COLUMN
SALADO FORMATION
UPPER SALADO COMPACTED CLAY COLUMN
MIDDLE CONCRETE-ASPHALT WATERSTOP
COMPACTED SALT COLUMN
COMPACTED SALT COLUMN
COMPACTED SALT COLUMN
LOWER CONCRETE-ASPHALT WATERSTOP
LOWER SALADO COMPACTED CLAY COLUMN
SHAFT STATION MONOLITH
SMC FILL
SUMP
BASE OF SUMP
NOTES:
1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. SEE SHT. 2 FOR LITHOLOGY AND NOTES.
3. SEE NOTE 3 OF SHT. 4.
ALBERT W. DENNIS
NEW MEXICO
5871
REGISTERED PROFESSIONAL ENGINEER
5-2-96
SCALE IN FEET
SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
WIPP SHAFT SEALING SYSTEM
SALADO FORMATION
WASTE SHAFT
STRATIGRAPHY & SEALING
SUBSYSTEM PROFILE

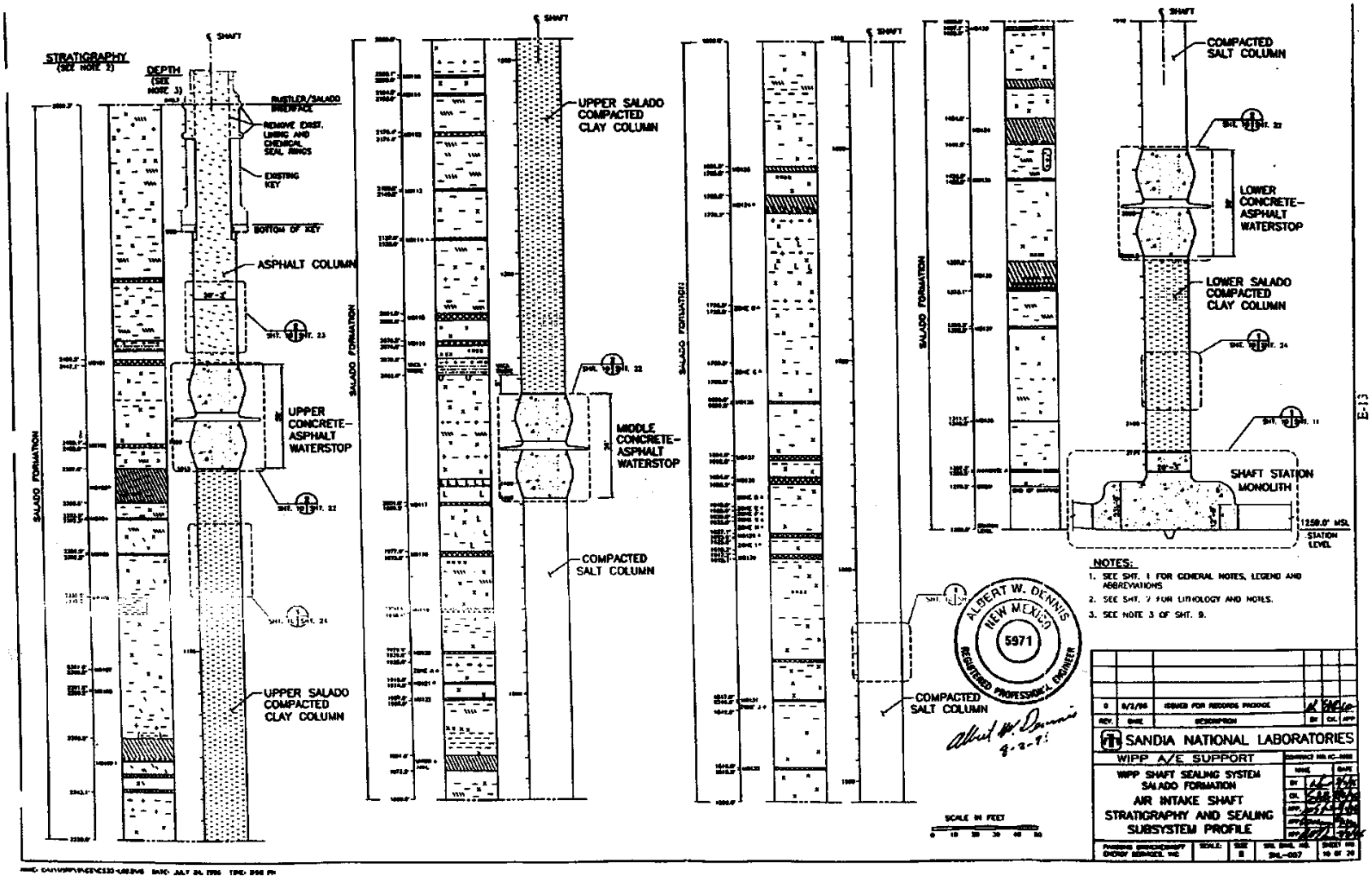

WASTE SHAFT
N9287.23
E-140
S-400
SECTION
N
℄ SHAFT
STRUCTURAL MASONRY BULKHEAD (TYP.)
1249.9' MSL STATION LEVEL
SMC CONCRETE
SMC FILL
BASE OF SUMP
DETAIL
NOTES:
1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
SCALE IN FEET
SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
WIPP SHAFT SEALING SYSTEM
WASTE SHAFT
SHAFT STATION MONOLITH
ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER
E-9



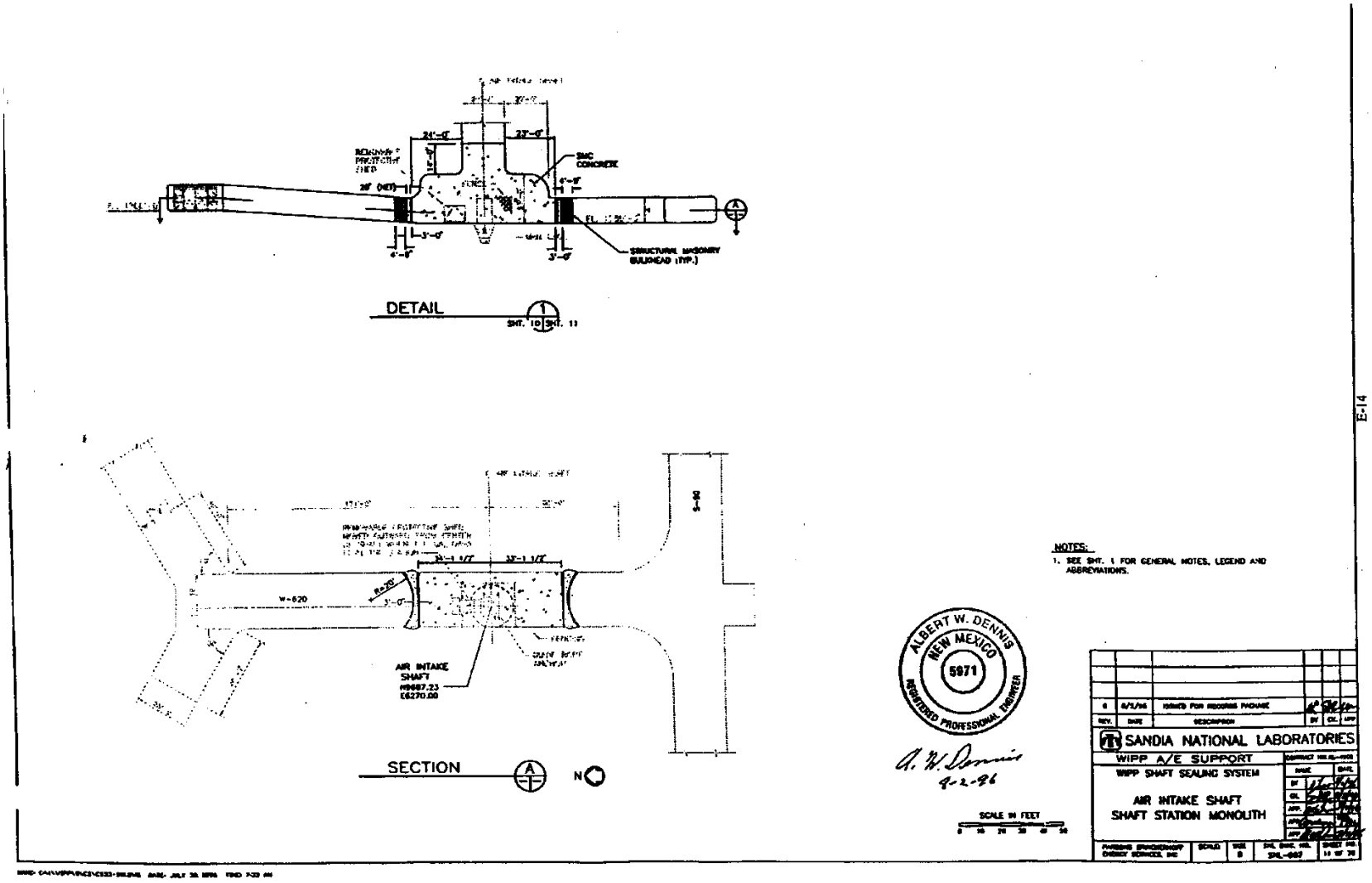
Near-Surface / Rustler Formations Air Intake Shaft Stratigraphy and AS-Built Elements Sheet 7 of 28


STRATIGRAPHY
(SEE NOTE 2)
SHAFT
TOP OF KEY
2569.3' MSL
RUSTLER/SALADO INTERFACE
CHEMICAL SEAL RINGS
2513.0' MSL
BOTTOM OF KEY
UNLINED SHAFT
SALADO FORMATION
20'-3"
1259.0' MSL
STATION LEVEL
GUIDE ROPE ANCHOR
SCALE IN FEET
ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER
NOTES:
1. SEE SHT. 1 FOR GENERAL NOTES AND ABBREVIATIONS.
2. SEE SHT. 7 FOR LITHOLOGY AND NOTES.
ISSUED FOR RECORDS PACKAGE
SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
WIPP SHAFT SEALING SYSTEM
SALADO FORMATION
AIR INTAKE SHAFT
STRATIGRAPHY &
AS-BUILT ELEMENTS
PARSONS BRINCKERHOFF ENERGY SERVICES, INC
SHL-007
E-11

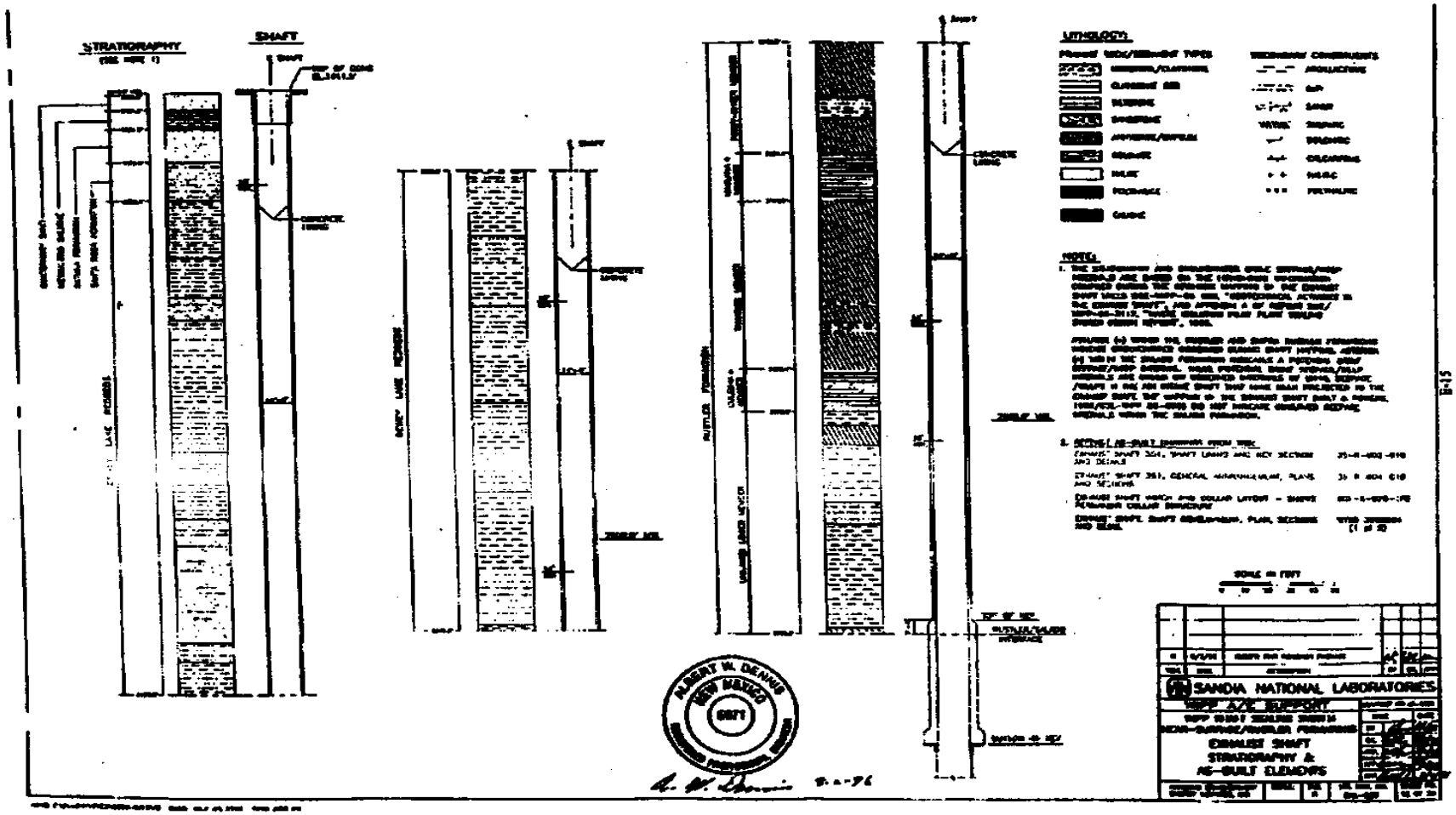

SHAFT
STRATIGRAPHY
(SEE NOTE 2)
DEPTH
(SEE NOTE 3)
℄ SHAFT
TOP OF CONCRETE
EL. 3410.0' MSL
COMPACTED
EARTHEN FILL
CONCRETE PLUG
COMPACTED
EARTHEN FILL
DUNE SAND AND MESCALERO CALICHE
GATUNA FORMATION
SANTA ROSA FORMATION
DEWEY LAKE REDBEDS
RUSTLER FORMATION
TAMARISK MEMBER
MAGENTA MEMBER
FORTY-NINER MEMBER
REMOVE LINING
ALL AROUND
SHAFT TO FORM
SLOT, TYP.
RUSTLER
COMPACTED
CLAY COLUMN
CULEBRA MEMBER
UNNAMED LOWER MEMBER
REMOVE EXIST.
LINER PLATE
CONCRETE
PLUG
RUSTLER/SALADO
INTERFACE
REMOVE EXIST.
LINING
EXISTING
KEY
BOTTOM OF LEG
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
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER
SCALE IN FEET
SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
WIPP SHAFT SEALING SYSTEM
NEAR-SURFACE/RUSTLER FORMATIONS
AIR INTAKE SHAFT
STRATIGRAPHY AND SEALING
SUBSYSTEM PROFILE
E-12



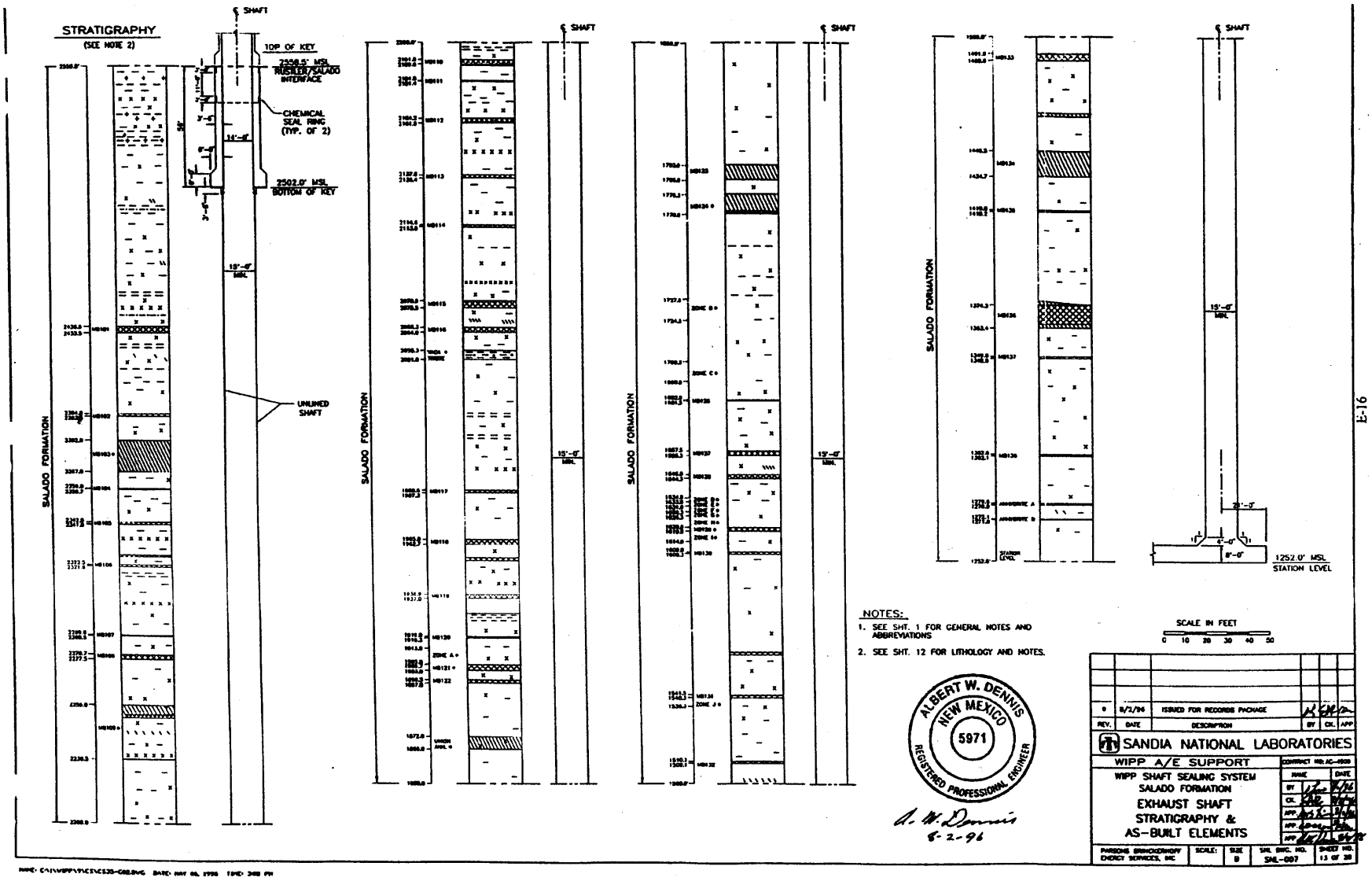
Salado Formation Air Intake Shaft Stratigraphy and Sealing Subsytem Profile Sheet 10 of 28

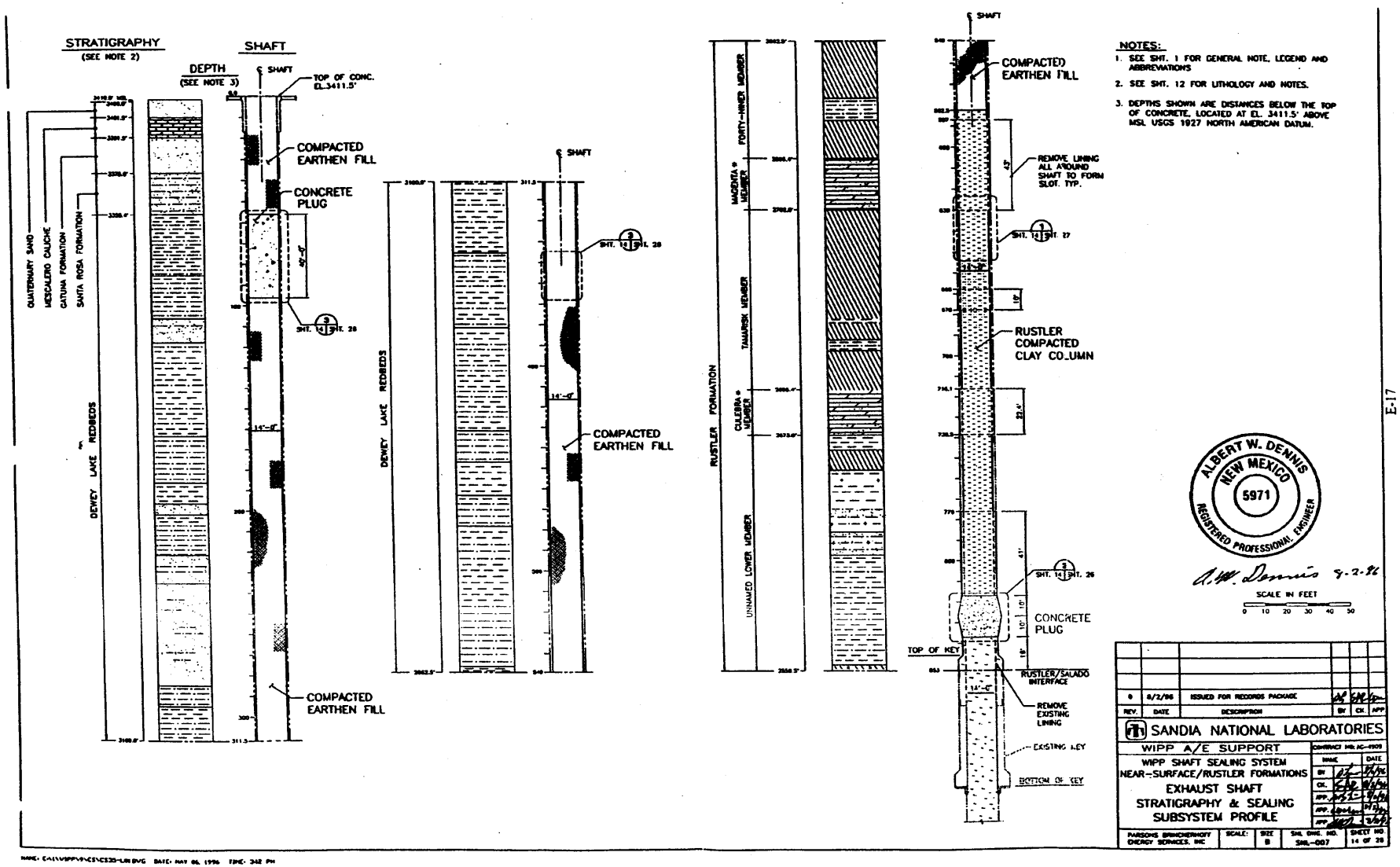


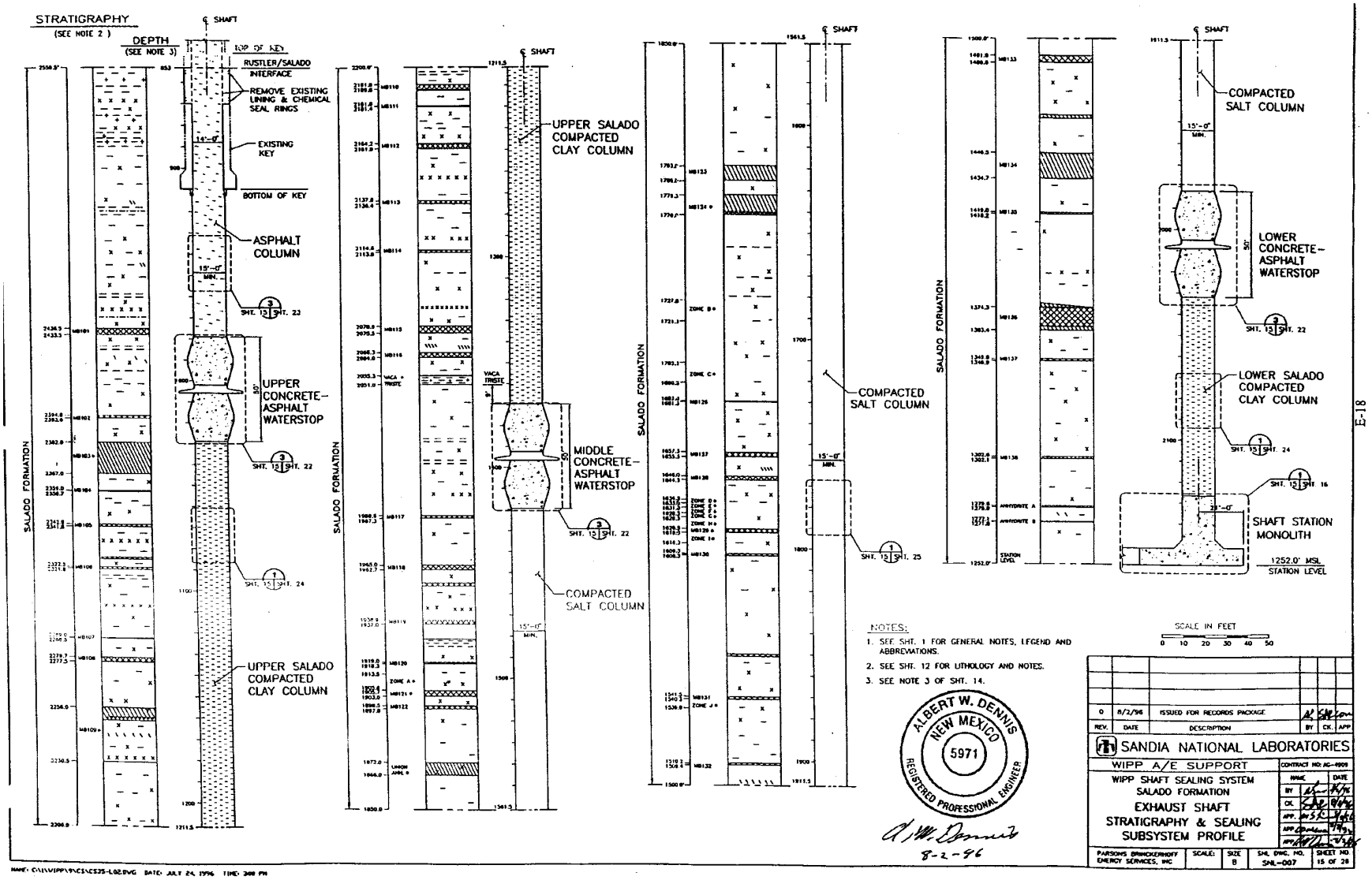
Air Intake Shaft Station Monolith Sheet 11 of 28



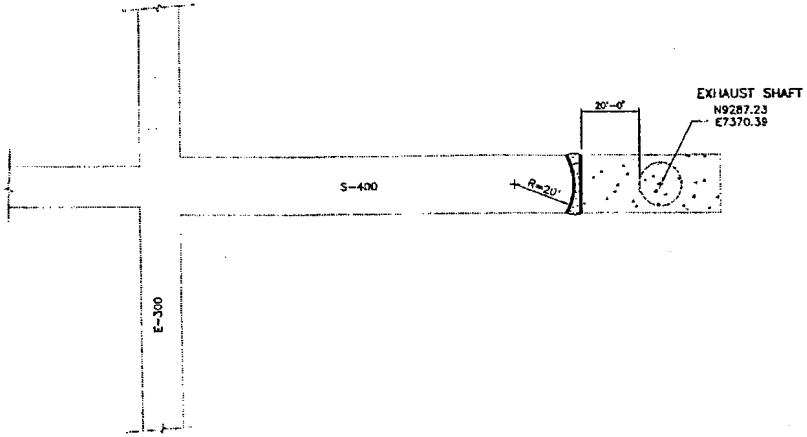
Near-Surface / Rustler Formations Exhaust Shaft Stratigraphy and AS-Built Elements Sheet 12 of 28

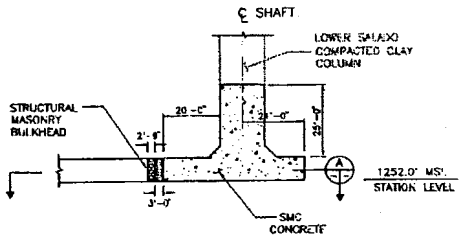

STRATIGRAPHY
(SEE NOTE 2)
SHAFT
TOP OF KEY
2358.5' MSL
RUSTLER/SALADO INTERFACE
CHEMICAL SEAL RING (TYP. OF 2)
14'-0"
2502.0' MSL
BOTTOM OF KEY
19'-0" MIN.
UNLINED SHAFT
SALADO FORMATION
15'-0" MIN.
19'-0" MIN.
20'-0"
4'-0"
8'-0"
1252.0' MSL
STATION LEVEL
NOTES:
1. SEE SHT. 1 FOR GENERAL NOTES AND ABBREVIATIONS
2. SEE SHT. 12 FOR LITHOLOGY AND NOTES.
ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER
A. W. Dennis
8-2-96
SCALE IN FEET
0 10 20 30 40 50
9 8/2/96 ISSUED FOR RECORDS PACKAGE
REV. DATE DESCRIPTION BY CK. APP.
SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
WIPP SHAFT SEALING SYSTEM
SALADO FORMATION
EXHAUST SHAFT
STRATIGRAPHY &
AS-BUILT ELEMENTS
PARSONS BRINCKERHOFF ENERGY SERVICES, INC
SCALE:
SIZE B
SNL DWG. NO. SNL-007
SHEET NO. 13 OF 28
E-16


STRATIGRAPHY
(SEE NOTE 2)
SHAFT
DEPTH
(SEE NOTE 3)
℄ SHAFT
TOP OF CONC. EL.3411.5'
COMPACTED EARTHEN FILL
CONCRETE PLUG
SHT. 12 SHT. 28
QUATERNARY SAND
MESCALERO CALICHE
CATUNA FORMATION
SANTA ROSA FORMATION
DEWEY LAKE REDBEDS
RUSTLER FORMATION
FORTY-NINER MEMBER
MAGENTA MEMBER
TAMARISK MEMBER
CULEBRA MEMBER
UNNAMED LOWER MEMBER
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.
REMOVE LINING ALL AROUND SHAFT TO FORM SLOT. TYP.
SHT. 12 SHT. 27
RUSTLER COMPACTED CLAY COLUMN
SHT. 12 SHT. 26
TOP OF KEY
RUSTLER/SALADO INTERFACE
REMOVE EXISTING LINING
EXISTING KEY
BOTTOM OF KEY
ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER
SCALE IN FEET
0 10 20 30 40 50
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
SHT. 14 OF 28
E-17



Salado Formation Exhaust Shaft Stratigraphy and Sealing Subsystem Profile Sheet 15 of 28





DETAIL 1 SHT. 15 SHT. 16

NOTES:

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

SECTION A

N

ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER

A. W. Dennis 8-2-96

REV.	DATE	DESCRIPTION	BY	CK.	APP.
0	8/2/95	ISSUED FOR REVIEWS PACKAGE			

SANDIA NATIONAL LABORATORIES

WIPP A/E SUPPORT

WIPP SHAFT SEALING SYSTEM

CONTRACT NO: AC-4909

NAME | DATE

BY

I-19

Exhaust Shaft Station Monolith

Sheet 16 of 28

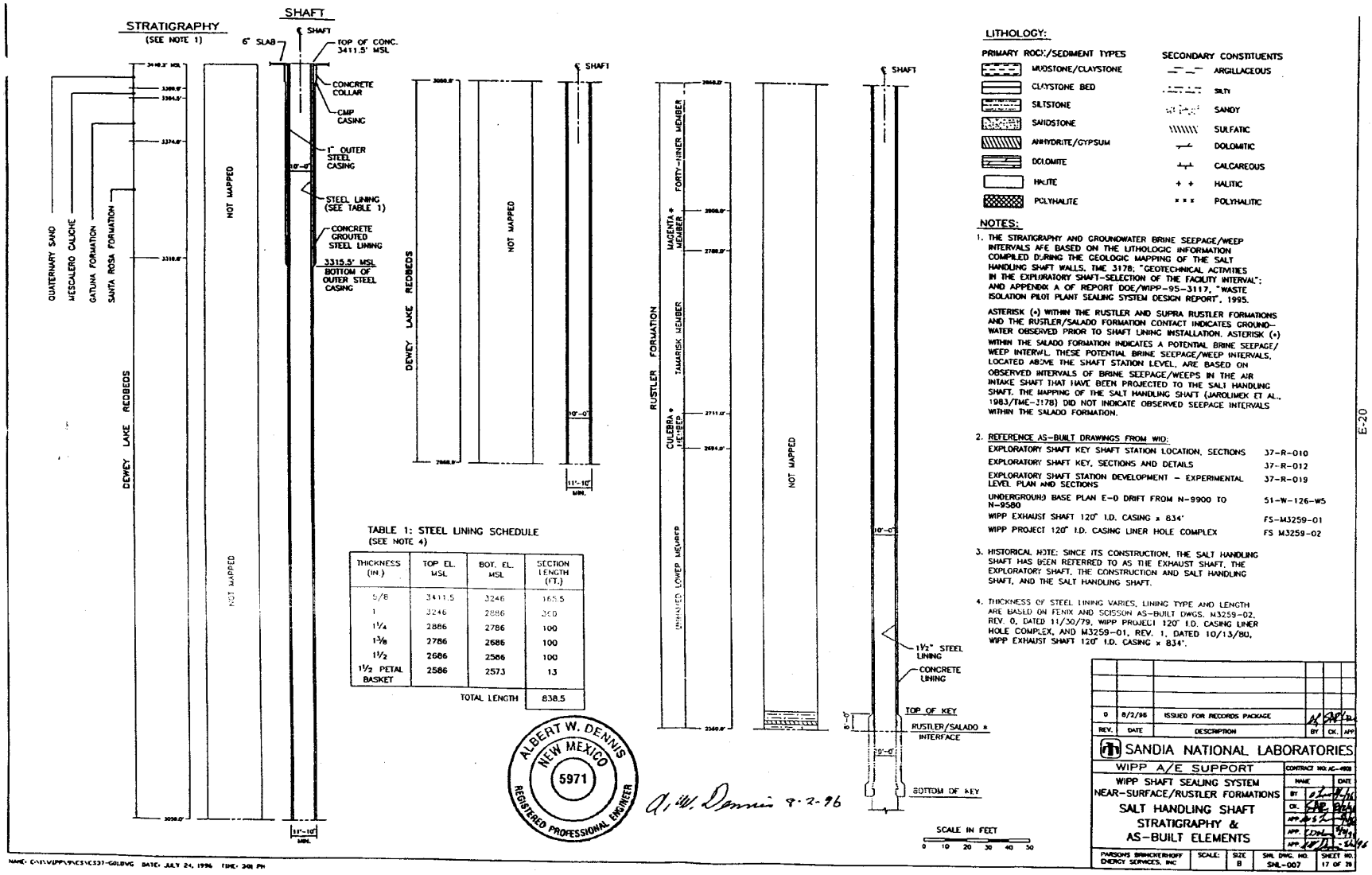
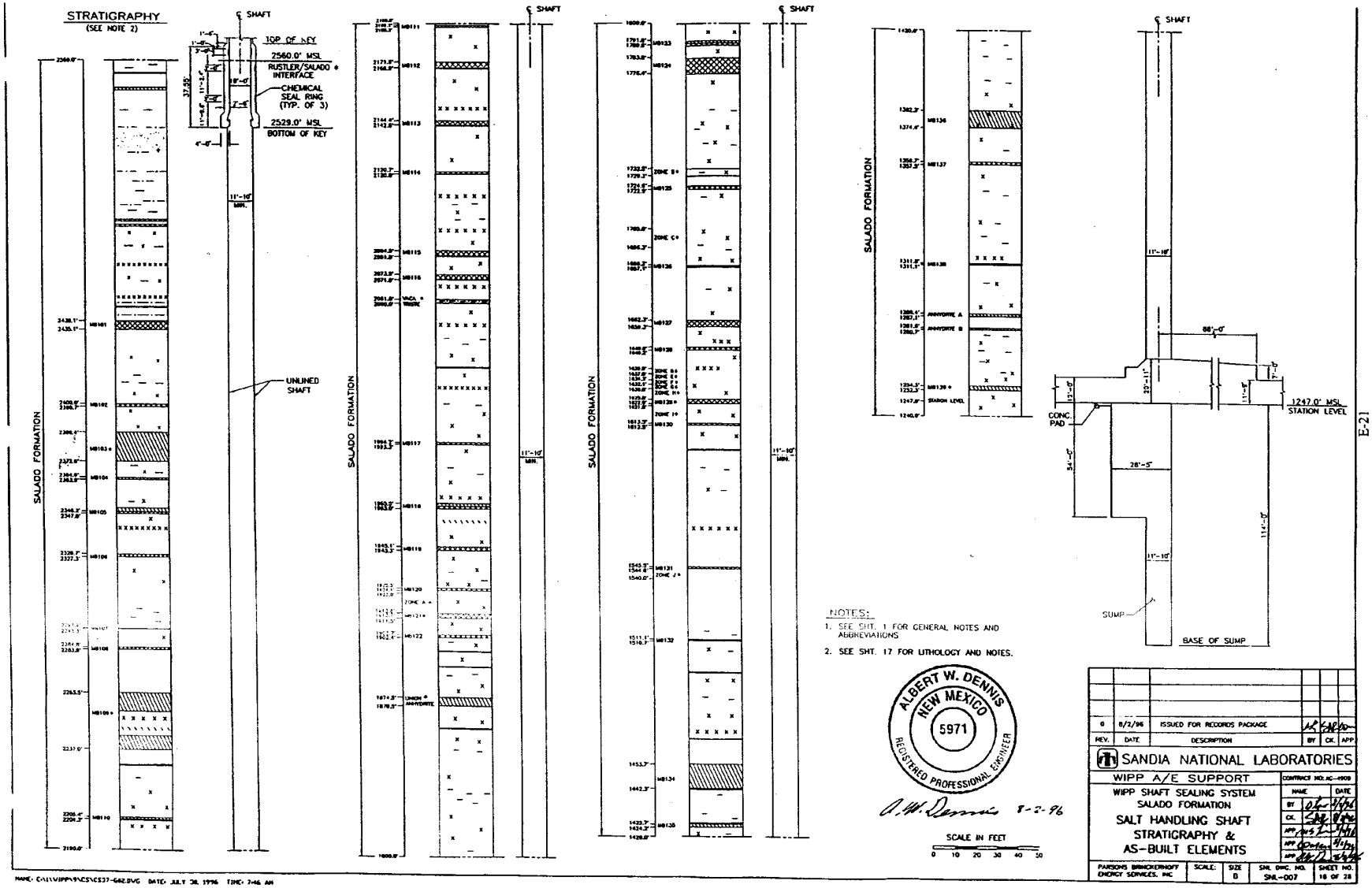
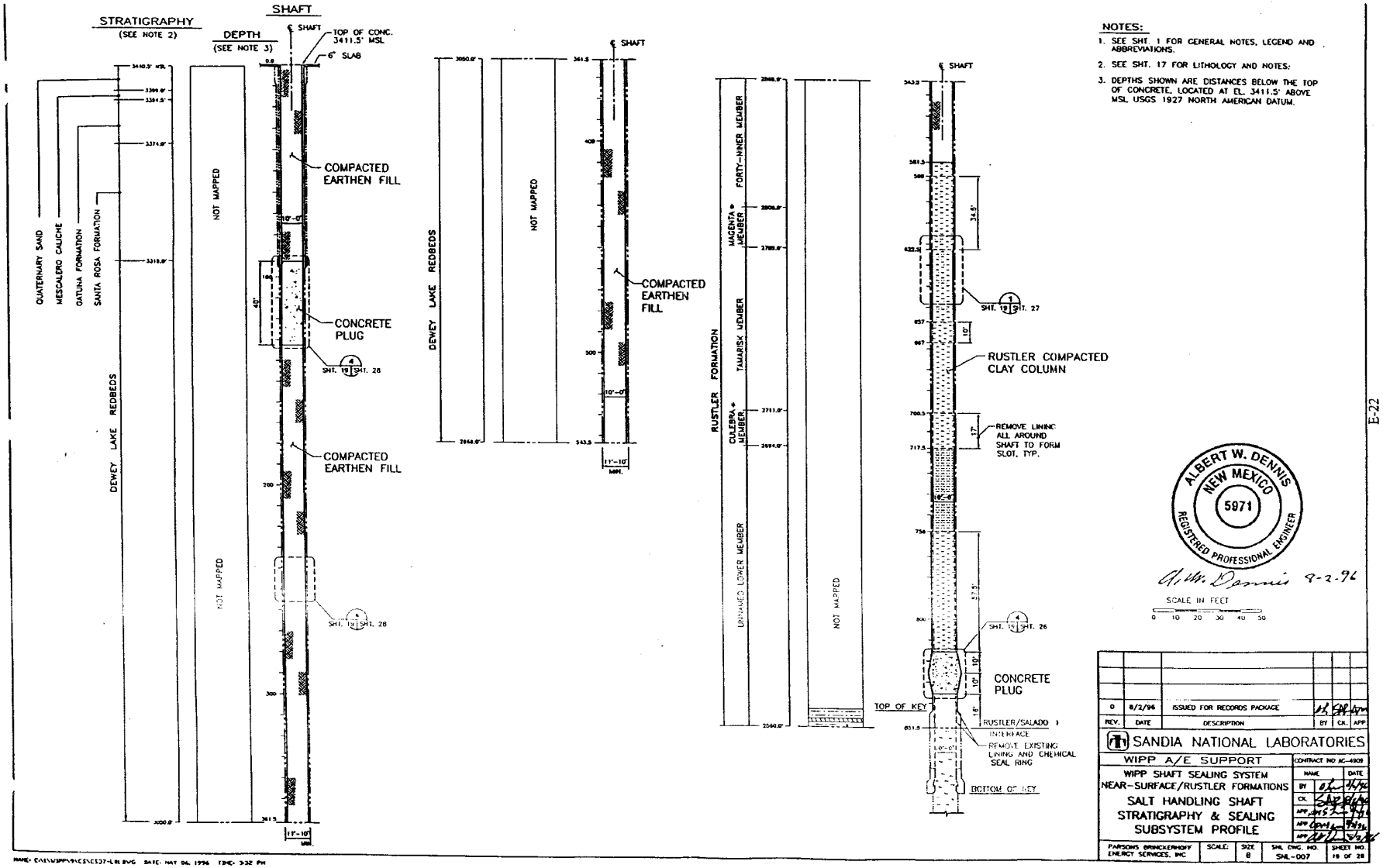


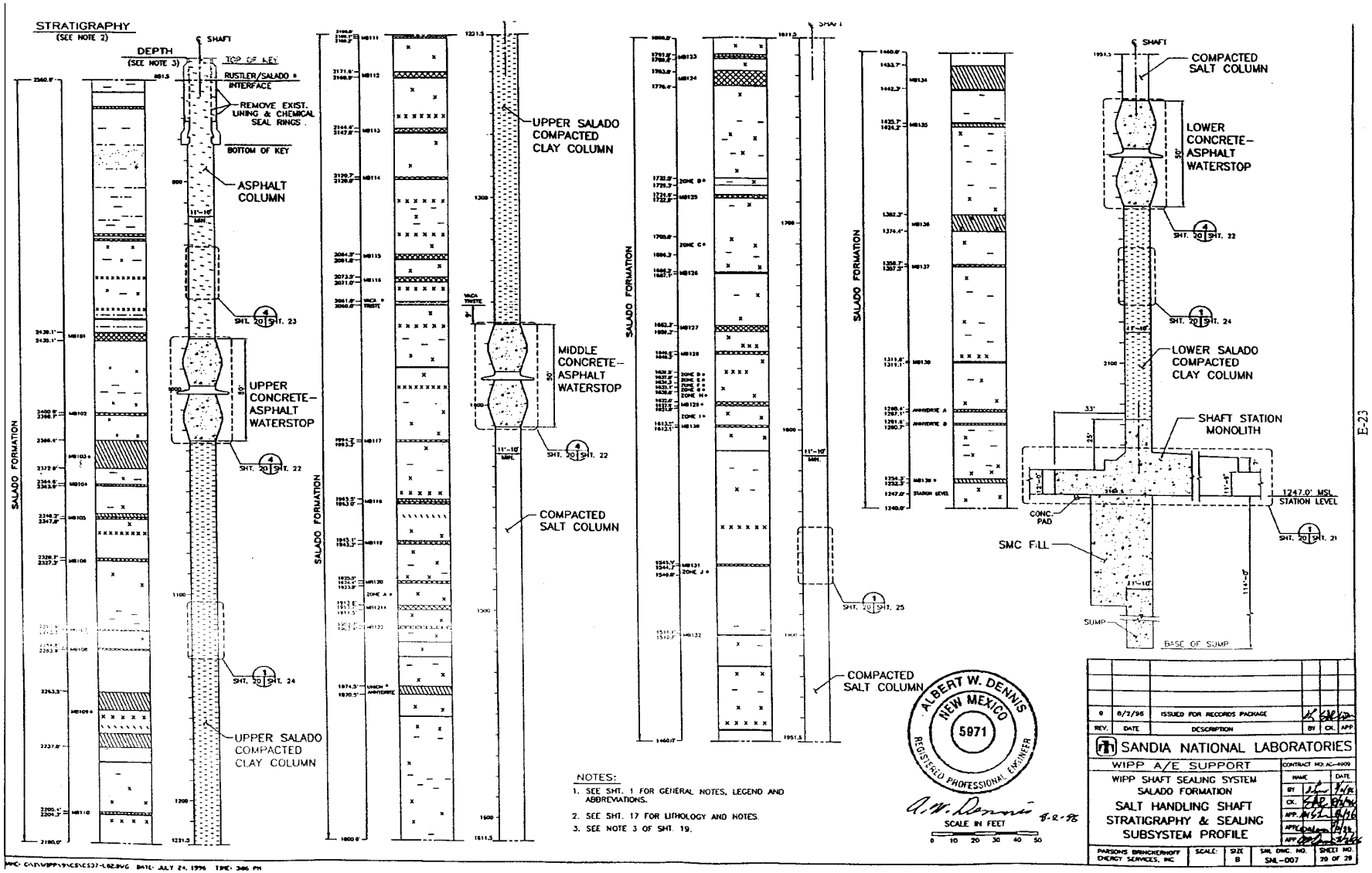
TABLE 1: STEEL LINING SCHEDULE
(SEE NOTE 4)

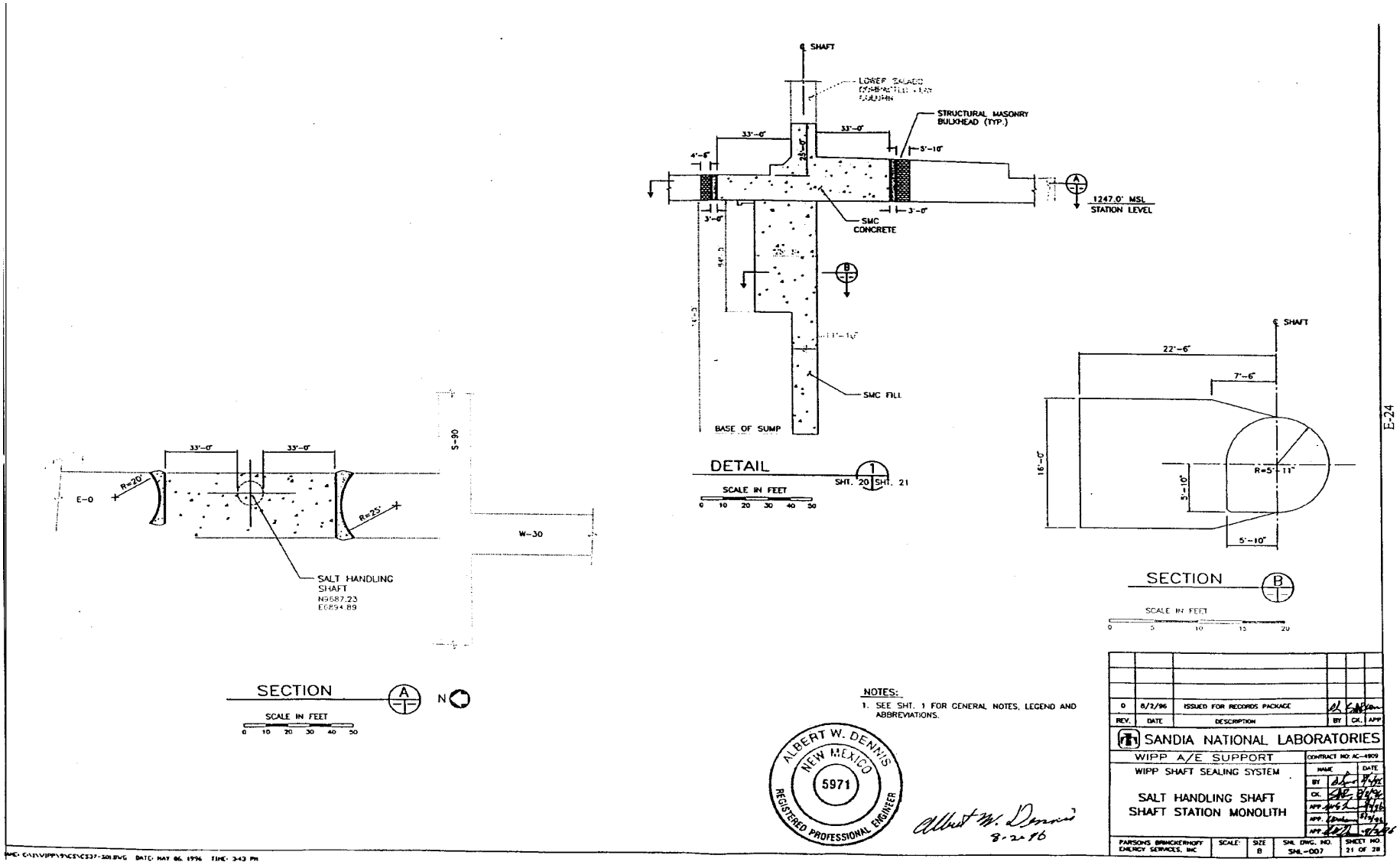
THICKNESS (IN.)	TOP EL. MSL	BOT. EL. MSL	SECTION LENGTH (FT.)
5/8	3411.5	3246	165.5
1	3246	2886	360
1¼	2886	2786	100
1⅜	2786	2686	100
1½	2686	2586	100
1½ PETAL BASKET	2586	2573	13
		TOTAL LENGTH	838.5

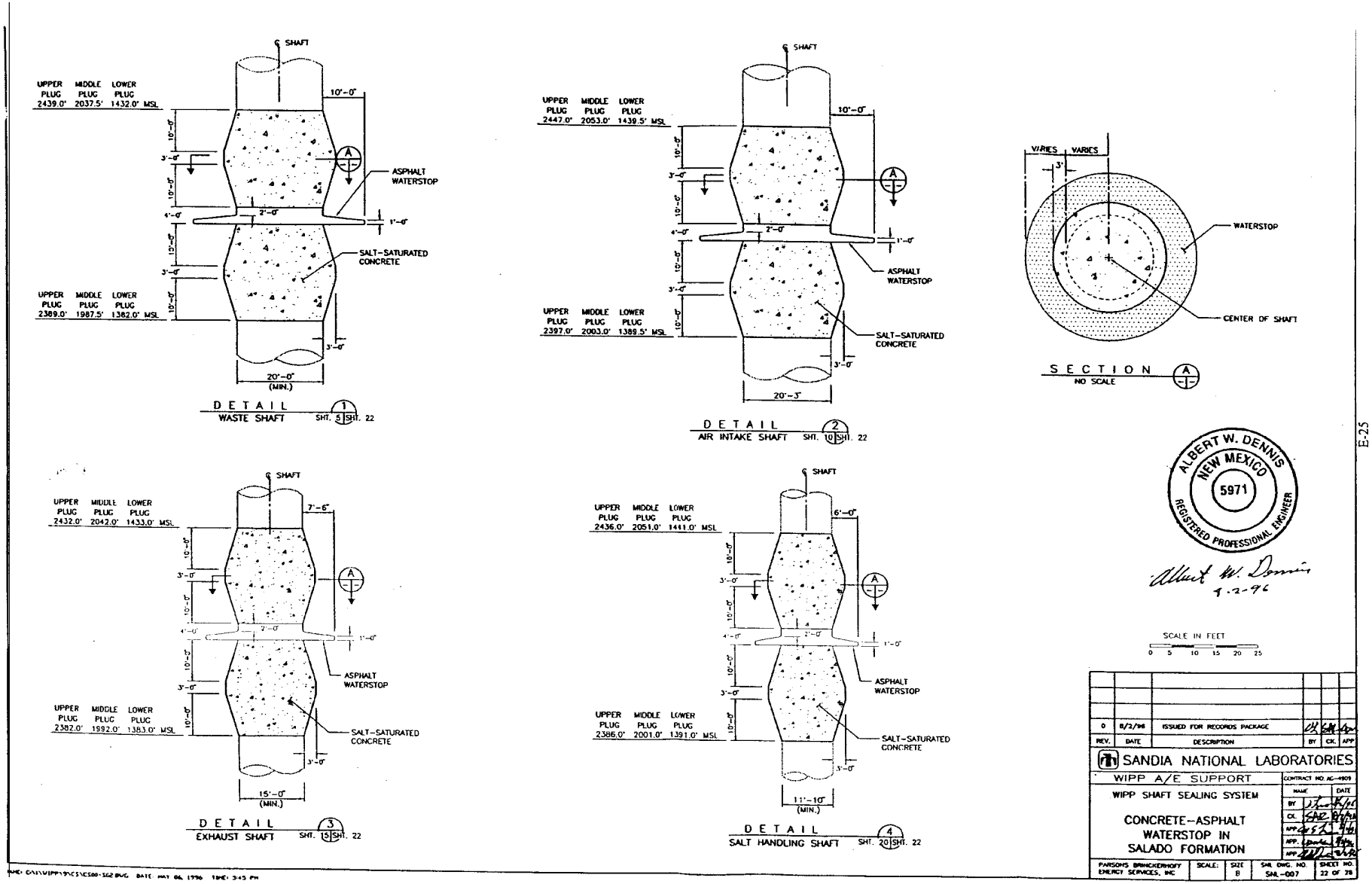

STRATIGRAPHY
(SEE NOTE 2)
SALADO FORMATION
SHAFT
TOP OF KEY
2560.0' MSL
RUSTLER/SALADO INTERFACE
CHEMICAL SEAL RING (TYP. OF 3)
2529.0' MSL
BOTTOM OF KEY
UNLINED SHAFT
11'-10" MIN.
NOTES:
1. SEE SHT. 1 FOR GENERAL NOTES AND ABBREVIATIONS
2. SEE SHT. 17 FOR LITHOLOGY AND NOTES.
ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER
SCALE IN FEET
0 10 20 30 40 50
CONC. PAD
1247.0' MSL
STATION LEVEL
SUMP
BASE OF SUMP
SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
WIPP SHAFT SEALING SYSTEM
SALADO FORMATION
SALT HANDLING SHAFT
STRATIGRAPHY &
AS-BUILT ELEMENTS
ISSUED FOR RECORDS PACKAGE
PARSONS BRINCKERHOFF ENERGY SERVICES, INC
SNL DWG. NO. SNL-007
SHEET NO. 18 OF 28
E-21

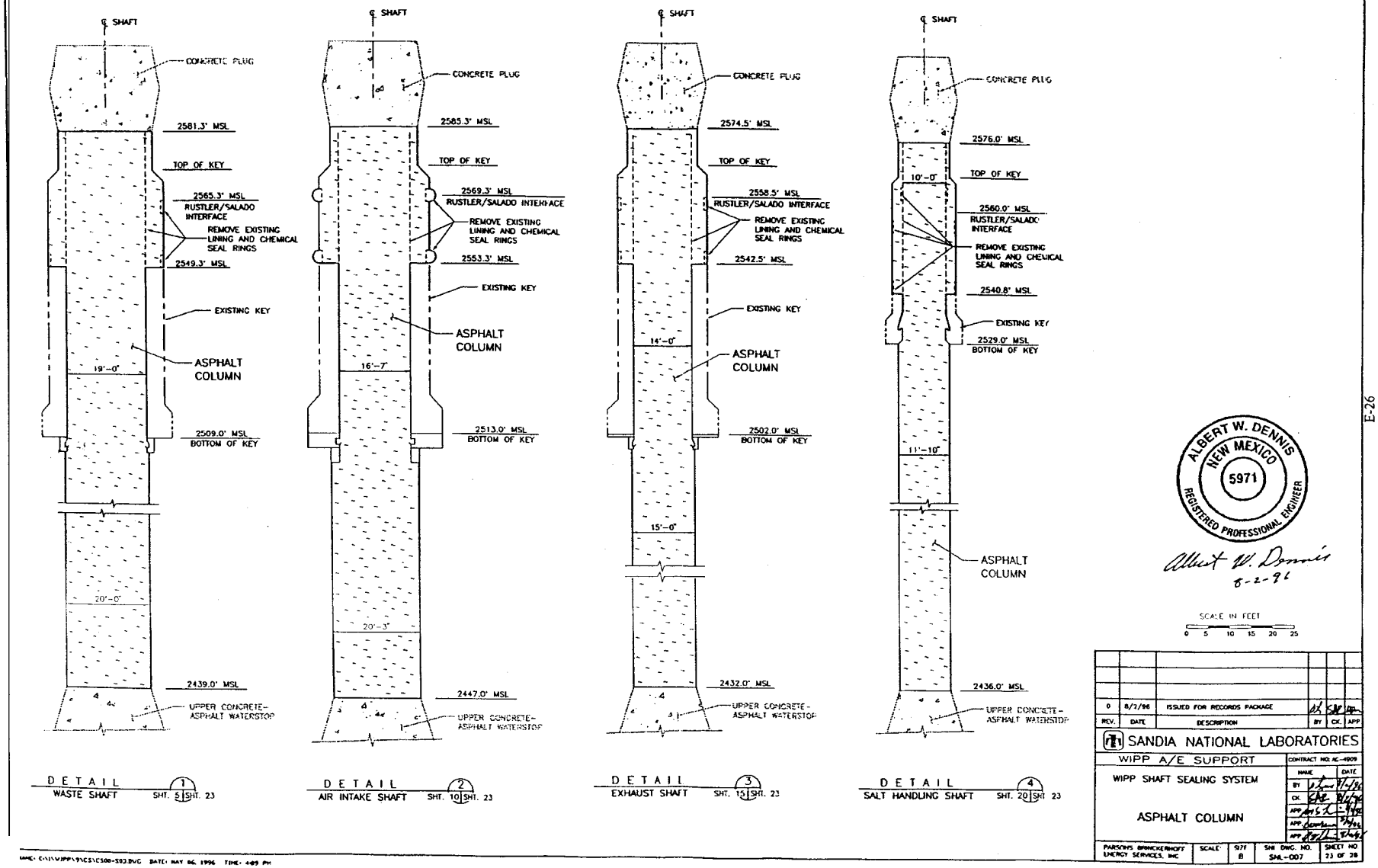


Near-Surface / Rustler Formations Salt Handling Shaft Stratigraphy and Sealing Subsystem Profile Sheet 19 of 28


STRATIGRAPHY
(SEE NOTE 2)
DEPTH
(SEE NOTE 3)
SHAFT
TOP OF KEY
RUSTLER/SALADO INTERFACE
REMOVE EXIST. LINING & CHEMICAL SEAL RINGS.
BOTTOM OF KEY
ASPHALT COLUMN
UPPER CONCRETE-ASPHALT WATERSTOP
UPPER SALADO COMPACTED CLAY COLUMN
SALADO FORMATION
UPPER SALADO COMPACTED CLAY COLUMN
MIDDLE CONCRETE-ASPHALT WATERSTOP
COMPACTED SALT COLUMN
COMPACTED SALT COLUMN
LOWER CONCRETE-ASPHALT WATERSTOP
LOWER SALADO COMPACTED CLAY COLUMN
SHAFT STATION MONOLITH
1247.0' MSL STATION LEVEL
CONC. PAD
SMC FILL
SUMP
BASE OF SUMP
ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER
SCALE IN FEET
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.
SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
WIPP SHAFT SEALING SYSTEM
SALADO FORMATION
SALT HANDLING SHAFT
STRATIGRAPHY & SEALING
SUBSYSTEM PROFILE
PARSONS BRINCKERHOFF ENERGY SERVICES, INC
SHL-007
E-23

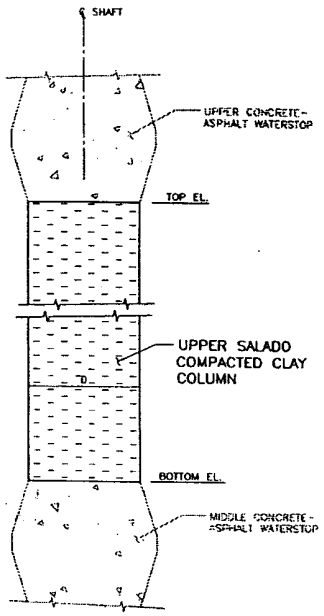

SHAFT
STRUCTURAL MASONRY BULKHEAD (TYP.)
33'-0"
33'-0"
4'-6"
5'-10"
3'-0"
3'-0"
1247.0' MSL
STATION LEVEL
SMC CONCRETE
SMC FILL
BASE OF SUMP
DETAIL
SHT. 20 SHT. 21
SCALE IN FEET
0 10 20 30 40 50
SHAFT
22'-6"
7'-6"
16'-0"
R=5'-11"
5'-10"
5'-10"
SECTION
SCALE IN FEET
0 5 10 15 20
33'-0"
33'-0"
R=20'
R=25'
E-0
S-90
W-30
SALT HANDLING SHAFT
N9687.23
E6894.89
SECTION
SCALE IN FEET
0 10 20 30 40 50
N
NOTES:
1. SEE SHT. 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER
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-4909
WIPP SHAFT SEALING SYSTEM
SALT HANDLING SHAFT
SHAFT STATION MONOLITH
NAME DATE
BY
CK.
APP
APP.
APP.
PARSONS BRINCKERHOFF ENERGY SERVICES, INC
SCALE
SIZE B
SHL DWG. NO. SHL-007
SHEET NO. 21 OF 28
E-24


SHAFT
UPPER PLUG 2439.0' MIDDLE PLUG 2037.5' LOWER PLUG 1432.0' MSL
UPPER PLUG 2389.0' MIDDLE PLUG 1987.5' LOWER PLUG 1382.0' MSL
10'-0"
3'-0"
4'-0"
2'-0"
1'-0"
ASPHALT WATERSTOP
SALT-SATURATED CONCRETE
20'-0" (MIN.)
DETAIL 1
WASTE SHAFT SHT. 5 SHT. 22
UPPER PLUG 2447.0' MIDDLE PLUG 2053.0' LOWER PLUG 1439.5' MSL
UPPER PLUG 2397.0' MIDDLE PLUG 2003.0' LOWER PLUG 1389.5' MSL
20'-3"
DETAIL 2
AIR INTAKE SHAFT SHT. 10 SHT. 22
VARIES
WATERSTOP
CENTER OF SHAFT
SECTION A
NO SCALE
UPPER PLUG 2432.0' MIDDLE PLUG 2042.0' LOWER PLUG 1433.0' MSL
UPPER PLUG 2382.0' MIDDLE PLUG 1992.0' LOWER PLUG 1383.0' MSL
7'-6"
15'-0" (MIN.)
DETAIL 3
EXHAUST SHAFT SHT. 15 SHT. 22
UPPER PLUG 2436.0' MIDDLE PLUG 2051.0' LOWER PLUG 1441.0' MSL
UPPER PLUG 2386.0' MIDDLE PLUG 2001.0' LOWER PLUG 1391.0' MSL
6'-0"
11'-10" (MIN.)
DETAIL 4
SALT HANDLING SHAFT SHT. 20 SHT. 22
ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER
9-2-96
SCALE IN FEET
0 5 10 15 20 25
0 8/2/96 ISSUED FOR RECORDS PACKAGE
REV. DATE DESCRIPTION BY CK. APP
SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
WIPP SHAFT SEALING SYSTEM
CONCRETE-ASPHALT WATERSTOP IN SALADO FORMATION
PARSONS BRINCKERHOFF ENERGY SERVICES, INC
SCALE:
SIZE B
SNL DWG. NO. SNL-007
SHEET NO. 22 OF 28
E-25



Asphalt Column

Sheet 23 of 28



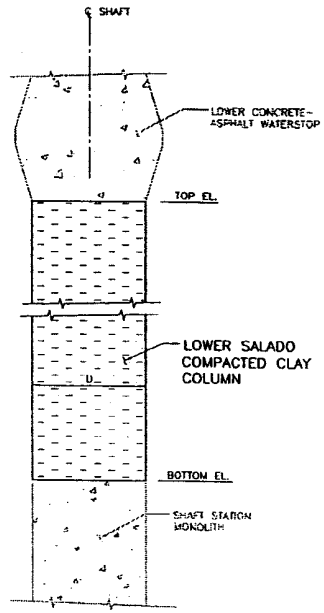


TABLE 1

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 1
SEE TABLE 1 FOR DETAILS
NO SCALE
SHT. 5 SHT. 24
SHT. 10
SHT. 15
SHT. 20

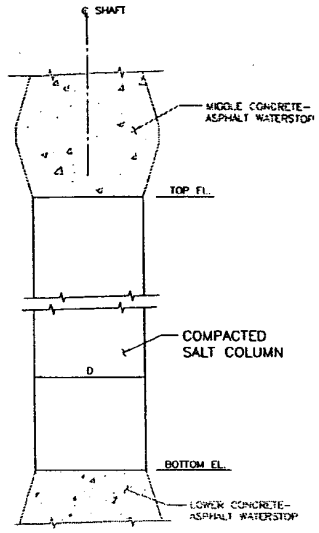
E-27

ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER
Albert 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. AC-9909
WIPP SHAFT SEALING SYSTEM
UPPER AND LOWER SALADO COMPACTED CLAY COLUMNS
NAME DATE
BY
CK.
APP.
APP.
APP.
PARSONS BRINCKERHOFF ENERGY SERVICES, INC
SCALE:
SIZE B
SNL DWG. NO. SNL-007
SHEET NO. 24 OF 28

NAME: C:\SNL\WIPP\SNCS\SNCS00-504.DWG DATE: MAY 06, 1996 TIME: 4:12 PM



DETAIL 1
SEE TABLE 1 FOR DETAILS
NO SCALE
SHT. 5 SHT. 25
SHT. 10
SHT. 15
SHT. 20

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

E-28

ALBERT W. DENNIS
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER

Albert W. Dennis
8-2-96

REV.	DATE	DESCRIPTION	BY	CK.	APP
0	8/2/96	ISSUED FOR RECORDS PACKAGE			

SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
CONTRACT NO. AC-1909
WIPP SHAFT SEALING SYSTEM
COMPACTED SALT COLUMN

	NAME	DATE
BY		
CK.		
APP		
APP		
APP		

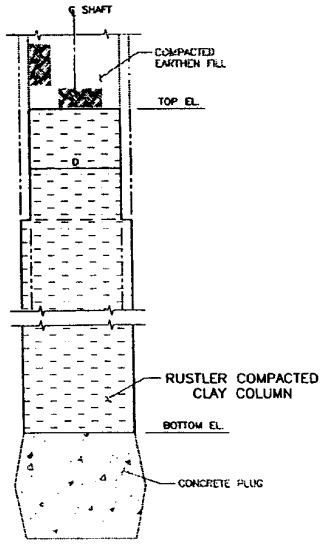
PARSONS BRINCKERHOFF ENERGY SERVICES, INC | SCALE: | SIZE B | SNL DWG. NO. SNL-007 | SHEET NO. 25 OF 28

DWG: C:\SNLWIPP\9\CS\CS00-585.DWG DATE: MAY 06, 1996 TIME: 4:14 PM

Compacted Salt Column Sheet 25 of 28

WIPP Shaft Sealing System Concrete Plug

Drawing SNL 007 26 of 28 not currently available. Drawing is not displayed in the Permit.



DETAIL
SEE TABLE 1 FOR DETAILS
NO SCALE

1
SHT. 4 | SHT. 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
NEW MEXICO
5971
REGISTERED PROFESSIONAL ENGINEER

Albert W. Dennis
8-2-96

E-30

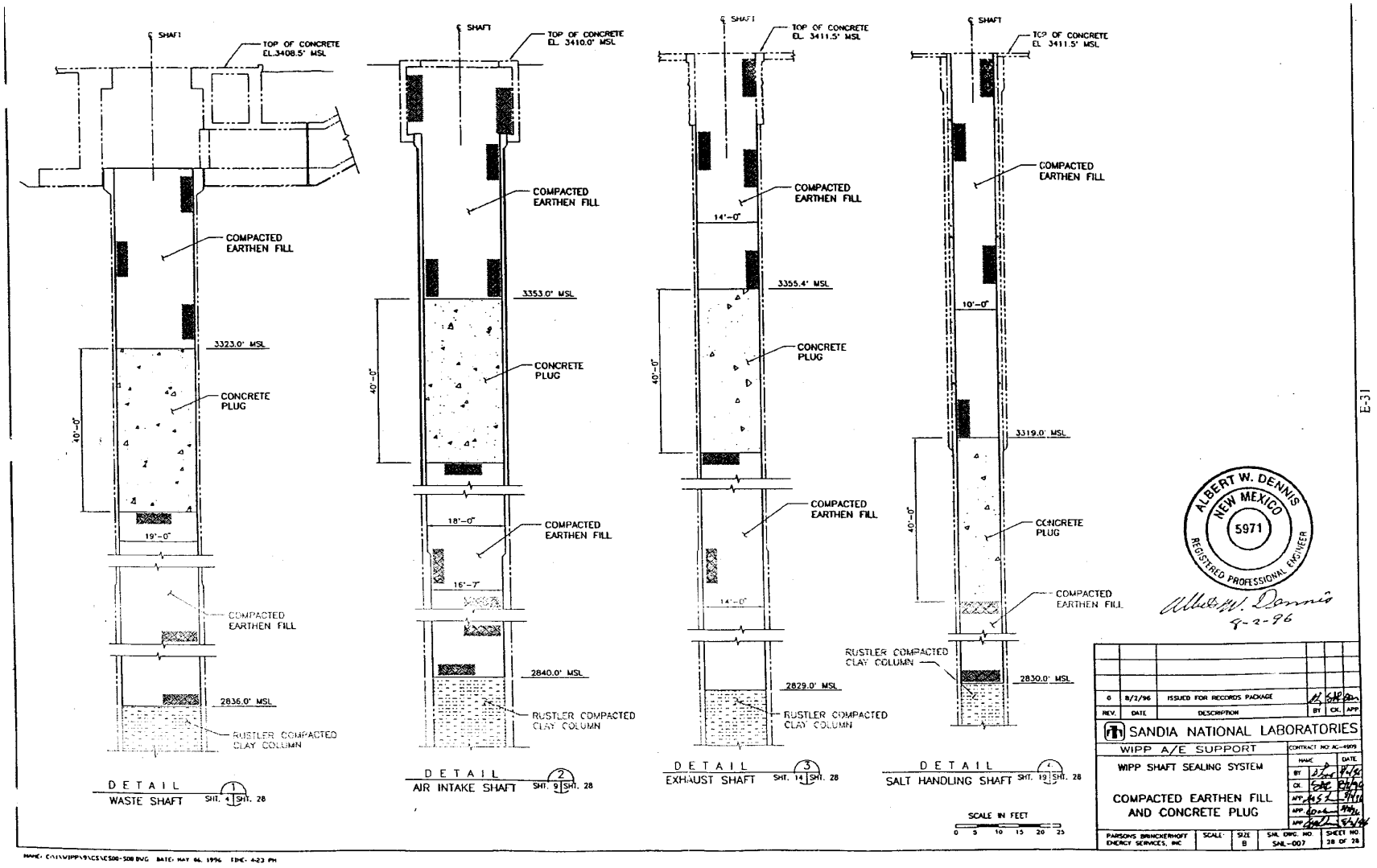
REV.	DATE	DESCRIPTION	BY	CK.	APP
0	8/2/96	ISSUED FOR RECORDS PACKAGE			

SANDIA NATIONAL LABORATORIES
WIPP A/E SUPPORT
CONTRACT NO: AC-4908
WIPP SHAFT SEALING SYSTEM
RUSTLER COMPACTED CLAY COLUMN

	NAME	DATE
BY		
CK.		
APP.		
APP.		
APP.		

PARSONS BRINCKERHOFF ENERGY SERVICES, INC | SCALE: | SIZE B | SNL DWG. NO SNL-007 | SHEET NO. 27 OF 28

NAME: C:\\WIPP\9\CS\CS00-S07.DWG DATE: MAY 06, 1996 TIME: 4:21 PM



Compacted Earthen Fill and Concrete Plug

Sheet 28 of 28

WASTE ISOLATION PILOT PLANT

CARLSBAD, NM

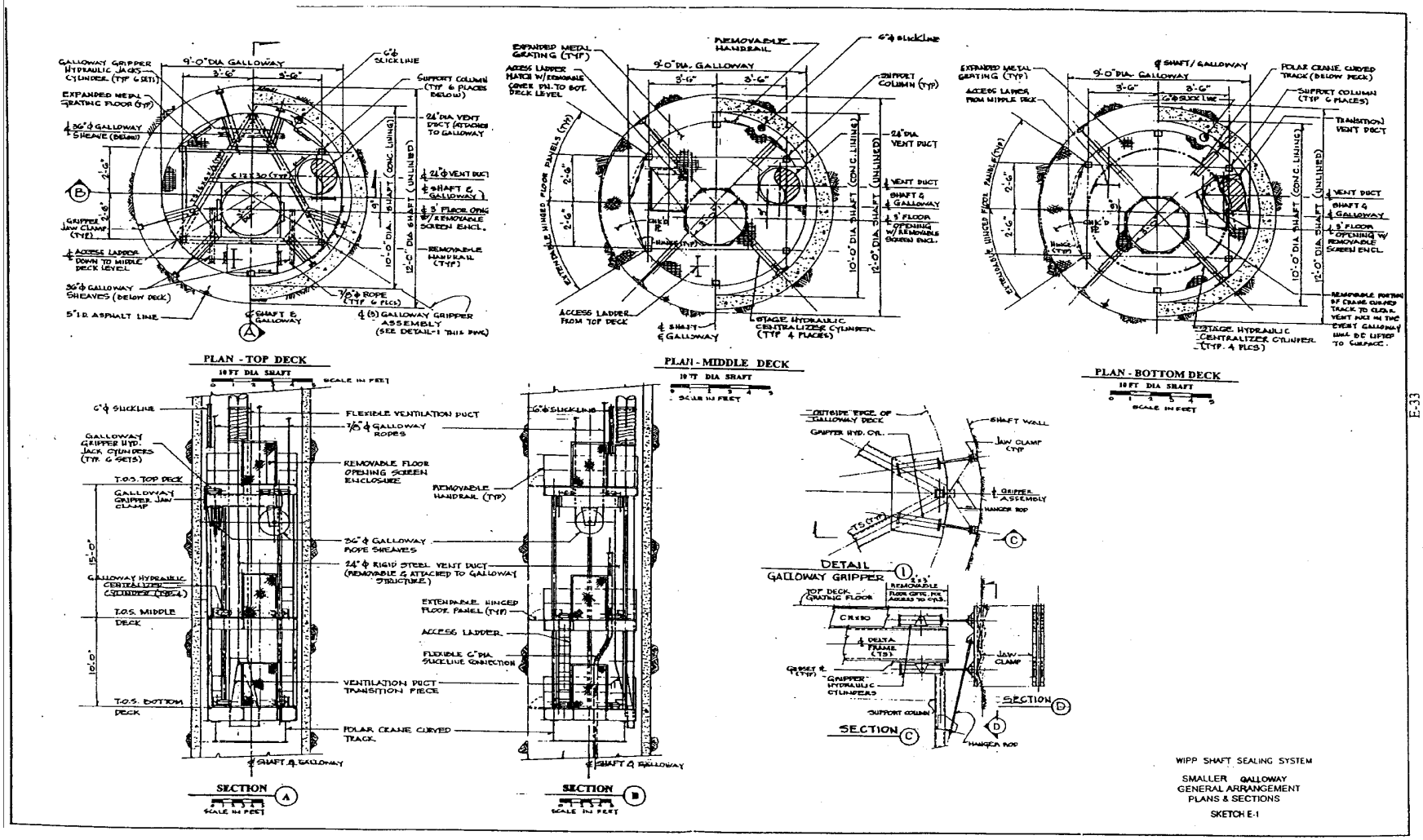
SHAFT SEALING SYSTEM DESIGN

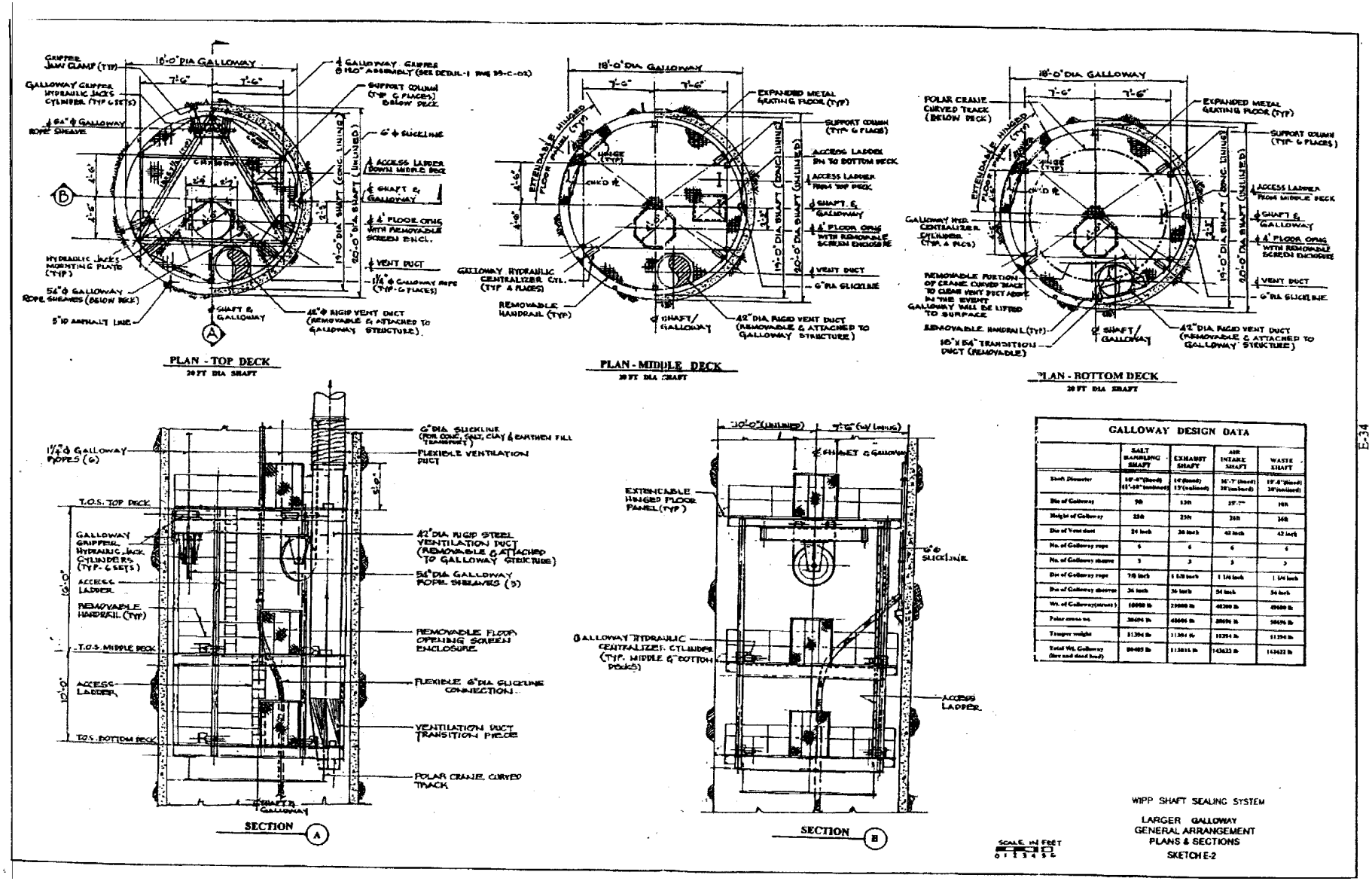
EQUIPMENT AND CONSTRUCTION SKETCHES

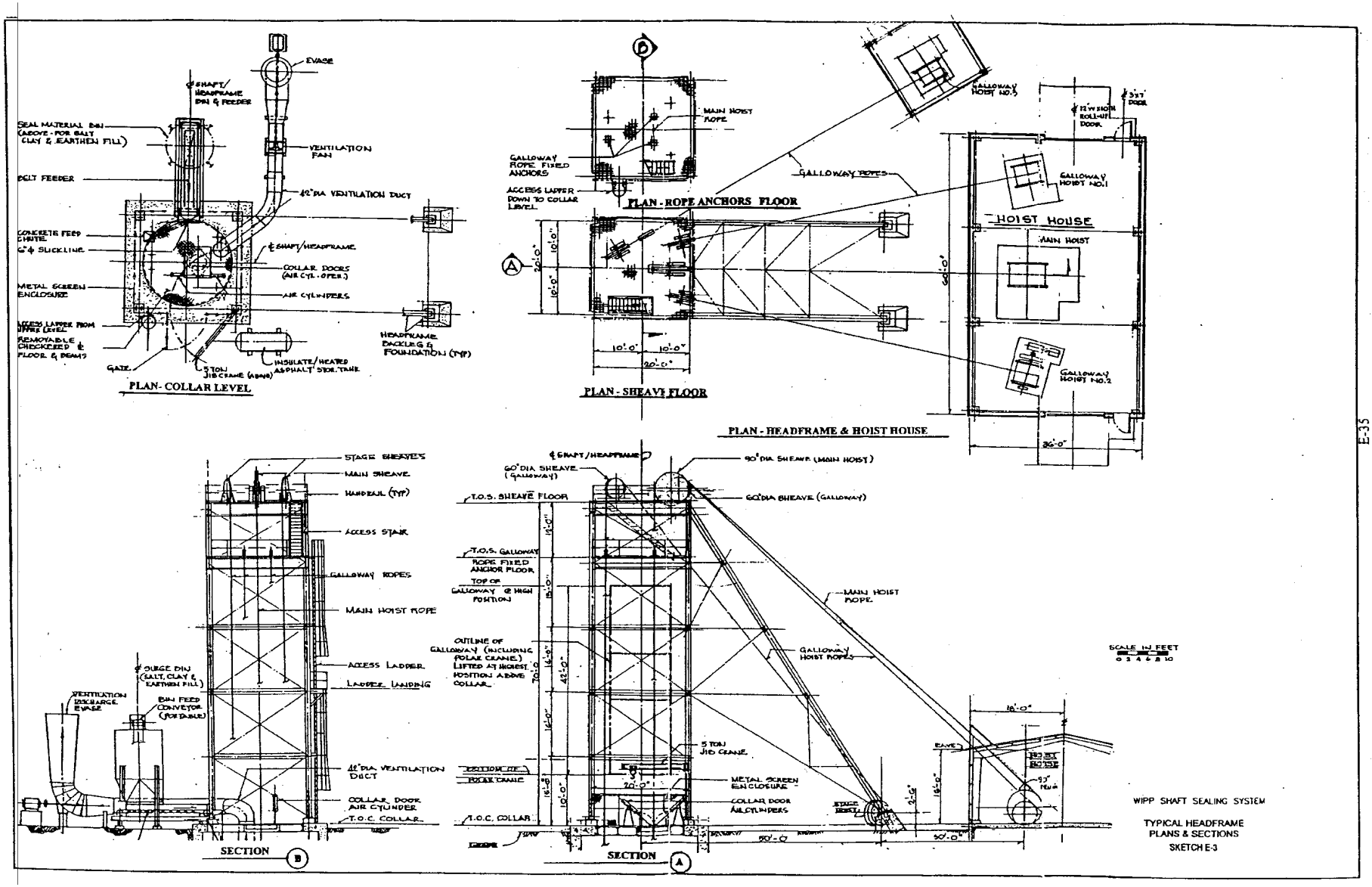
E-32

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

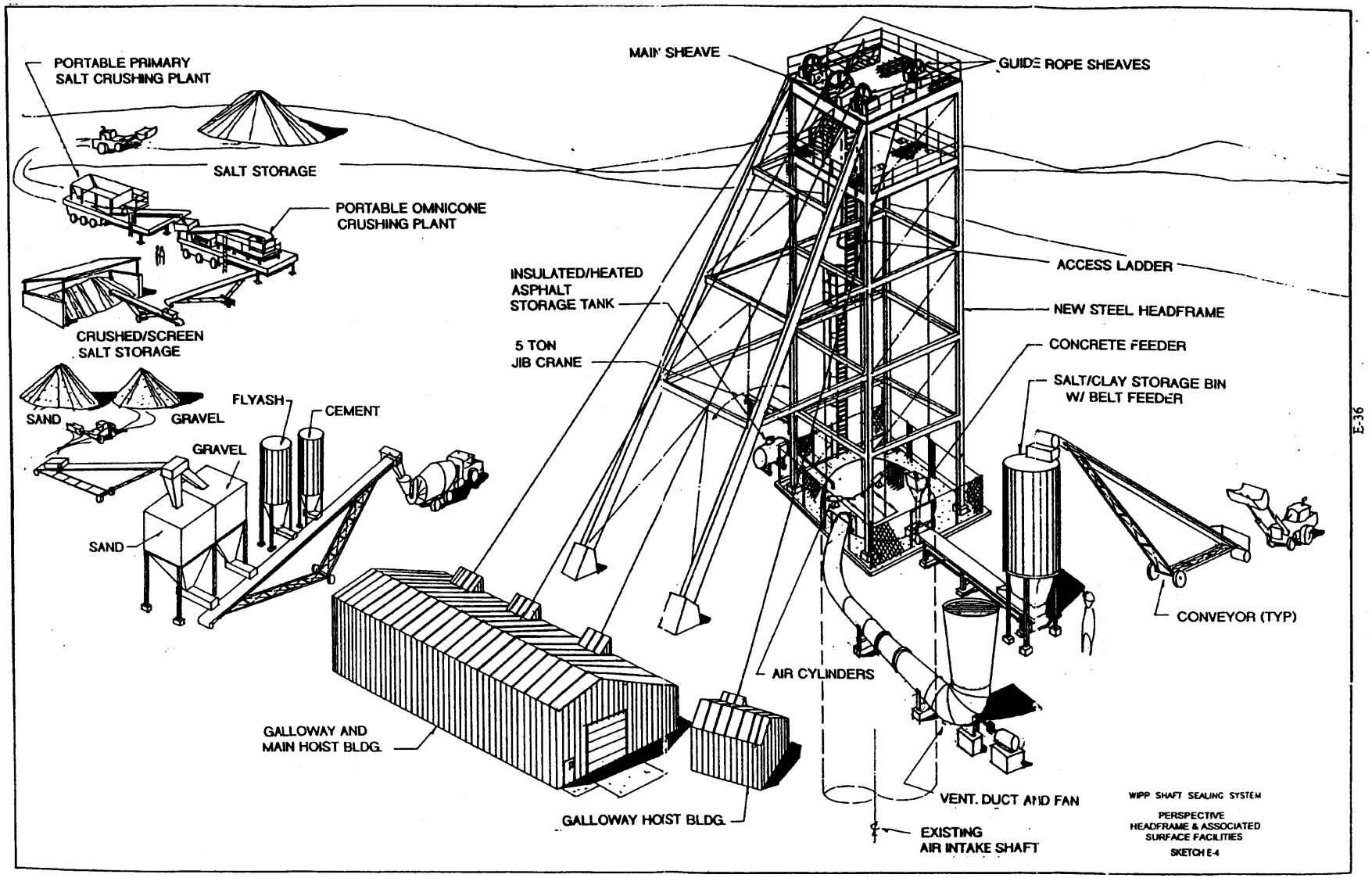
List of Sketches


PLAN - TOP DECK
PLAN - MIDDLE DEPTH
PLAN - BOTTOM DECK
SECTION A
SECTION B
SECTION C
SECTION D
DETAIL 1
GALLOWAY GRIPPER
9'-0" DIA GALLOWAY
10 FT DIA SHAFT
SCALE IN FEET
FLEXIBLE VENTILATION DUCT
GALLOWAY ROPES
REMOVABLE FLOOR OPENING SCREEN ENCLOSURE
REMOVABLE HANDRAIL (TYP)
36" ϕ GALLOWAY ROPE SHEAVES
24" ϕ RIGID STEEL VENT DUCT (REMOVABLE & ATTACHED TO GALLOWAY STRUCTURE)
EXTENDABLE HINGED FLOOR PANEL (TYP)
ACCESS LADDER
FLEXIBLE 6" DIA SLICKLINE CONNECTION
VENTILATION DUCT TRANSITION PIECE
POLAR CRANE CURVED TRACK
T.O.S. TOP DECK
T.O.S. MIDDLE DECK
T.O.S. BOTTOM DECK
GALLOWAY GRIPPER JAW CLAMP
GALLOWAY HYDRAULIC CENTRALIZER CYLINDER (TYP 4)
SHAFT & GALLOWAY
SHAFT WALL
JAW CLAMP (TYP)
GRIPPER ASSEMBLY
HANGER ROD
SUPPORT COLUMN
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
WIPP SHAFT SEALING SYSTEM
LARGER GALLOWAY
GENERAL ARRANGEMENT
PLANS & SECTIONS
SKETCH E-2
SCALE IN FEET


PLAN- COLLAR LEVEL
PLAN - ROPE ANCHORS FLOOR
PLAN - SHEAVE FLOOR
PLAN - HEADFRAME & HOIST HOUSE
HOIST HOUSE
SECTION
SECTION
SCALE IN FEET
WIPP SHAFT SEALING SYSTEM
TYPICAL HEADFRAME
PLANS & SECTIONS
SKETCH E-3

E-35



WIPP Shaft Sealing System Typical Headframe and Associated Surface Faclities