

DOE Fire Safety Workshop

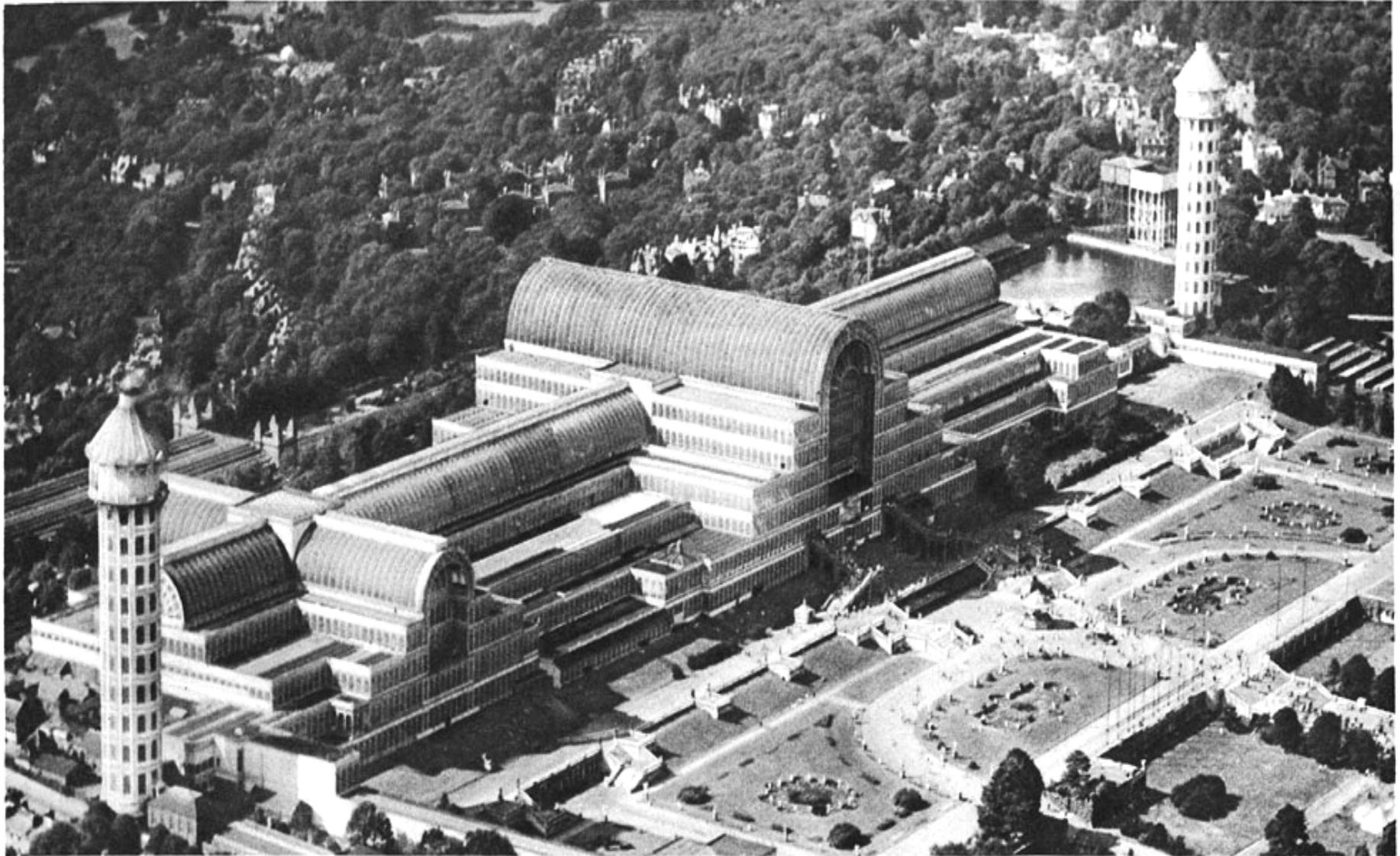
Ronald L. Lynn, Building Official
Clark County, Nevada



1936 Crystal Palace

South London, England

1936 Crystal Palace, South London, England



BEFORE THE FIRE : A PANORAMIC AIR VIEW OF THE CRYSTAL PALACE—A HUGE STRUCTURE OF IRON AND GLASS COVERING 25 ACRES ; SHOWING THE SOUTH TOWER (PARTLY OCCUPIED BY THE BAIRD TELEVISION COMPANY) ON THE LEFT, THE NORTH TOWER ON THE RIGHT, AND THE GARDENS ON THE EASTERN SIDE.

1936 Crystal Palace, South London, England



1936 Crystal Palace, South London, England



1936 Crystal Palace, South London, England

THE ILLUSTRATED LONDON NEWS

The World Copyright of all the Editorial Matter, both Illustrations and Letterpress, is Strictly Reserved in Great Britain, the British Dominions and Colonies, Europe, and the United States of America.

SATURDAY, DECEMBER 5, 1936.



THE DESTRUCTION OF ONE OF THE WORLD'S LANDMARKS: THE DRAMA OF THE CRYSTAL PALACE FIRE AT ITS HEIGHT—WATER JETS PLAYING NEAR THE SOUTH TOWER, WHICH THREATENED TO COLLAPSE.

The Crystal Palace on Sydenham Hill, a landmark famous not only to Londoners but throughout the world, was destroyed by fire on the night of November 30. Only the two great towers, 212 ft. high, one at each end, were eventually left standing above the ruins of the huge structure, which covered 25 acres.

The fire broke out about 8 p.m. and spread with astonishing rapidity. Some 500 firemen were engaged, with over ninety fire-fighting appliances—a record for a London fire. At one time it was feared the South Tower might collapse into streets crowded with spectators. Further photographs appear on later pages.

1936 Crystal Palace, South London, England



1936 Crystal Palace, South London, England



AFTER THE FIRE: AN AIR PHOTOGRAPH, FROM THE SAME POINT OF VIEW, SHOWING THE VAST MASS OF WRECKAGE AFTER THE BULK OF THE CRYSTAL PALACE HAD CRASHED, AND ONLY THE TWO TOWERS (THE SOUTH ONE HERE SEEN ON THE LEFT) REMAINED STANDING.

1936 Crystal Palace, South London, England





**1982 K-Mart Distribution
Center Pennsylvania**

1982 K-Mart Distribution Center Pennsylvania



● **1.2 million square feet**

1982 K-Mart Distribution Center Pennsylvania



1982 K-Mart Distribution Center Pennsylvania



1982 K-Mart Distribution Center Pennsylvania



1982 K-Mart Distribution Center Pennsylvania



US Hotels & Resorts

Hotel	Rooms	Hotel	Rooms
1 MGM Grand	5,034	6 Flamingo Hilton	3,565
2 Luxor	4,407	7 Mandalay Bay	3,215
3 Venetian	4,049	8 Las Vegas Hilton	3,174
4 Excalibur	3,991	9 Mirage	3,044
5 Circus Circus	3,770	10 Bellagio	3,005

Source: Las Vegas Convention & Visitors Authority

U.S. Hotels & Resorts

Hotel	Rooms	Hotel	Rooms
11 Monte Carlo	3,002	16 Treasure Island	2,665
12 Paris Las Vegas	2,916	17 Harrah's Las Vegas	2,579
13 Opryland USA, Tennessee	2,884	18 Aladdin Casino	2,567
14 Bally's Las Vegas	2,814	19 Rio Suite Hotel	2,563
15 Imperial Palace	2,700	20 Hilton Hawaiian Village	2,555

Source: Las Vegas Convention and Visitors Authority



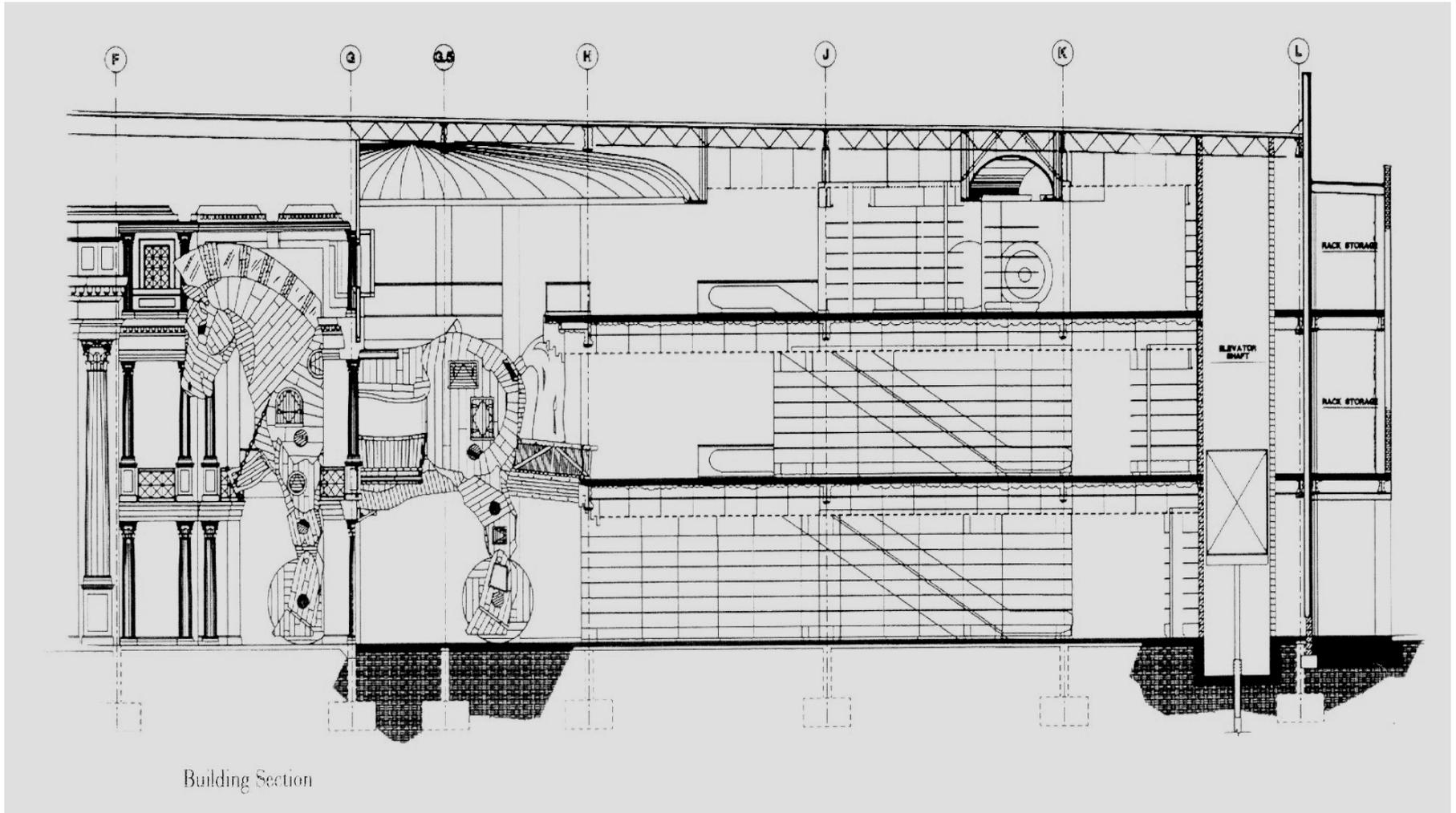


Excalibur Hotel 280 feet tall





Building Section





STRAW BALE HOUSING







Fireplace





MGM MONORAIL



MANDALAY BAY TRAM





BONNIE SPRINGS TRAIN



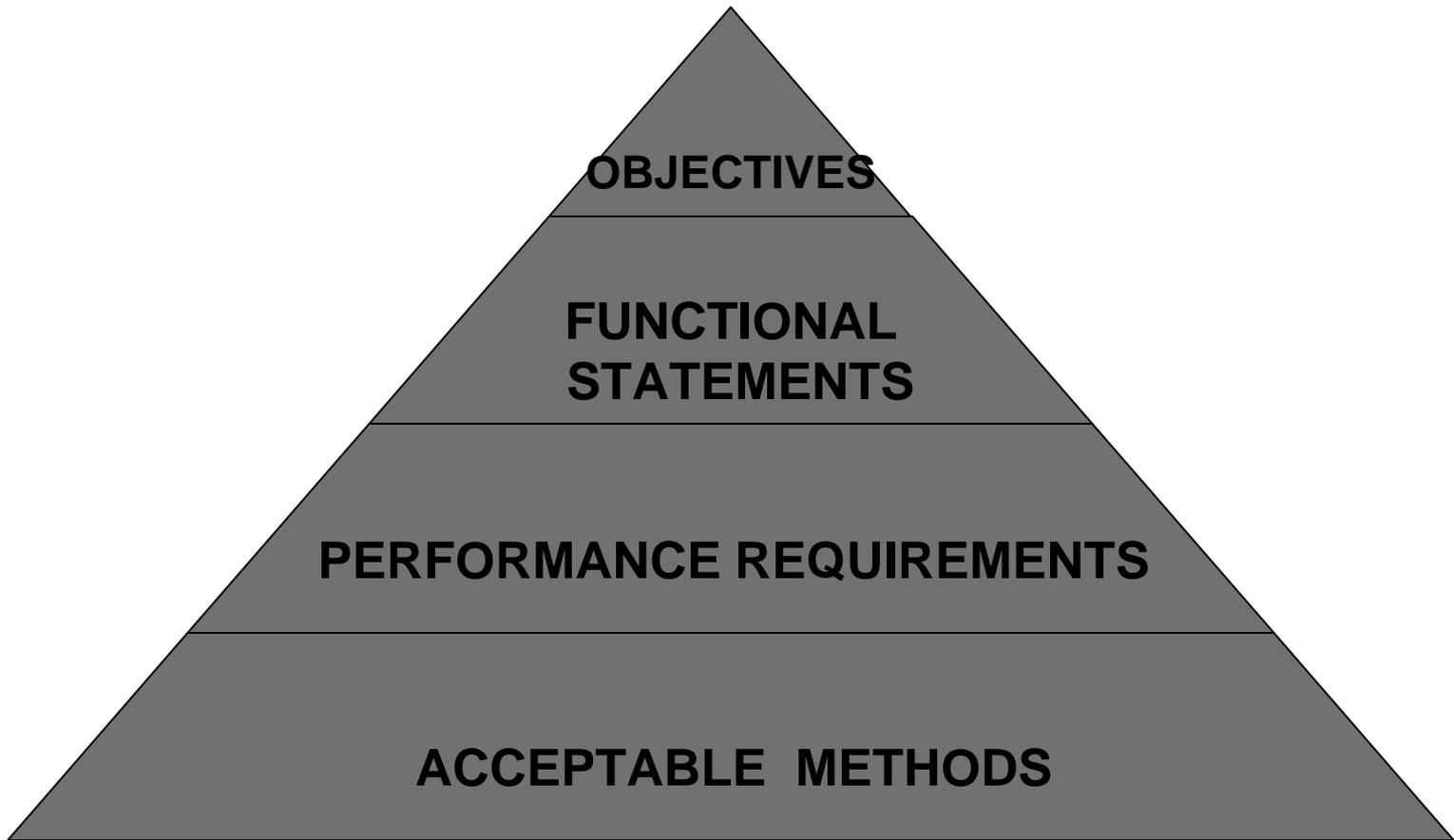
LAUGHLIN TRAIN

ICC Performance Code

for Buildings & Facilities

The Structure of Performance-based Codes

Performance based codes provide a set of objectives, functional statements and performance requirements for major topic areas that must be satisfied to meet the intent of the code.



1. Objectives

- Objectives state what is expected in terms of societal goals.

2. Functional Statements

- Functional statements explain what function the building must provide to meet the objective.

3. Performance Requirements

- Performance requirements state the requirements that are necessary to achieve the provision stated in the functional statements.

4. Acceptable Methods

- Acceptable methods include solutions to achieve the objectives, functional statements and performance requirements.

Three approaches to meet performance requirements:

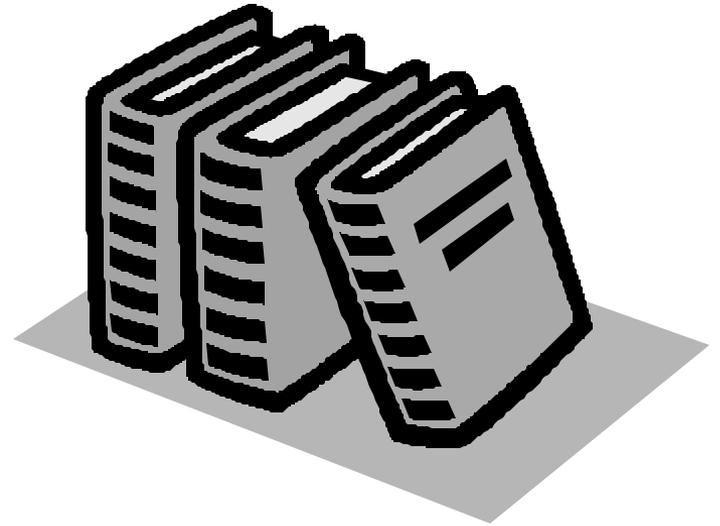
- **PERFORMANCE APPROACH**
- **PRESCRIPTIVE APPROACH**
(deemed to satisfy”)
- **COMBINATION OF PERFORMANCE & PRESCRIPTIVE APPROACHES**

Taking a performance approach allows the user to apply alternative solutions verified by one or more of the following:

- Laboratory Tests
- Computer Modeling
- Engineering design methods
(performance based design)

PERFORMANCE CODE

- Concept Report
- Design Report
- Operations & Maintenance
Manuals



Building

Section 101.2.1

To provide an acceptable level of health, safety and welfare, and to limit damage to property from events that are expected to impact buildings and structures. Accordingly, Part II of this code intends buildings and structures to provide for...

Concept Report

Section 103.3.4.2.1

Intended to document the preliminary details of the project

Design Report

Section 103.3.4.2.2

The criteria, parameters, inputs, assumptions, sensitivities and limitations involved in the analysis

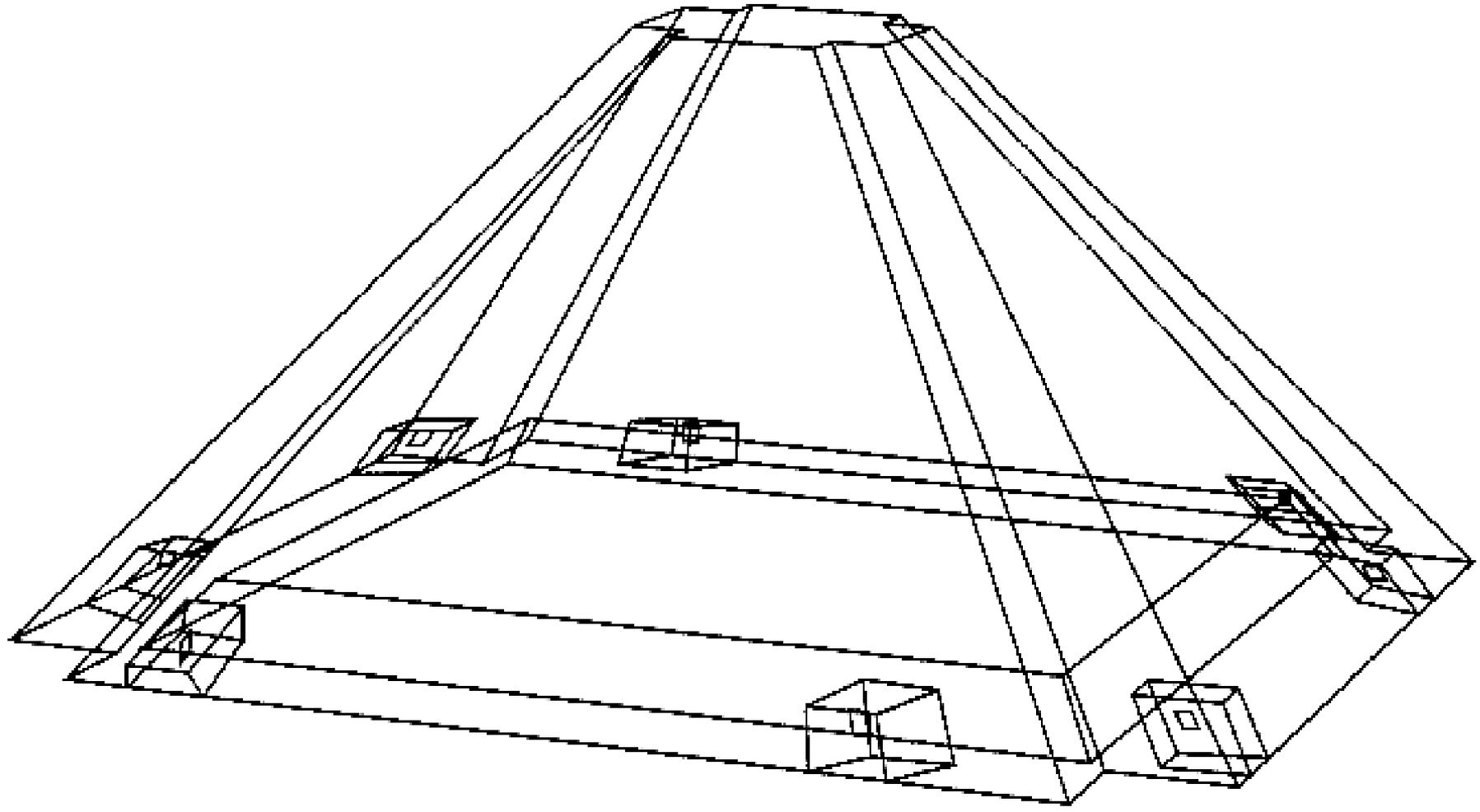
Operations & Maintenance Manual

Section 103.3.4.2.3

- Identifies system and component commissioning requirements
- Identifies for facility owner and/or facility operator actions that need to be performed on a regular basis
- Identifies restrictions or limitations placed upon the use and operation of the facility

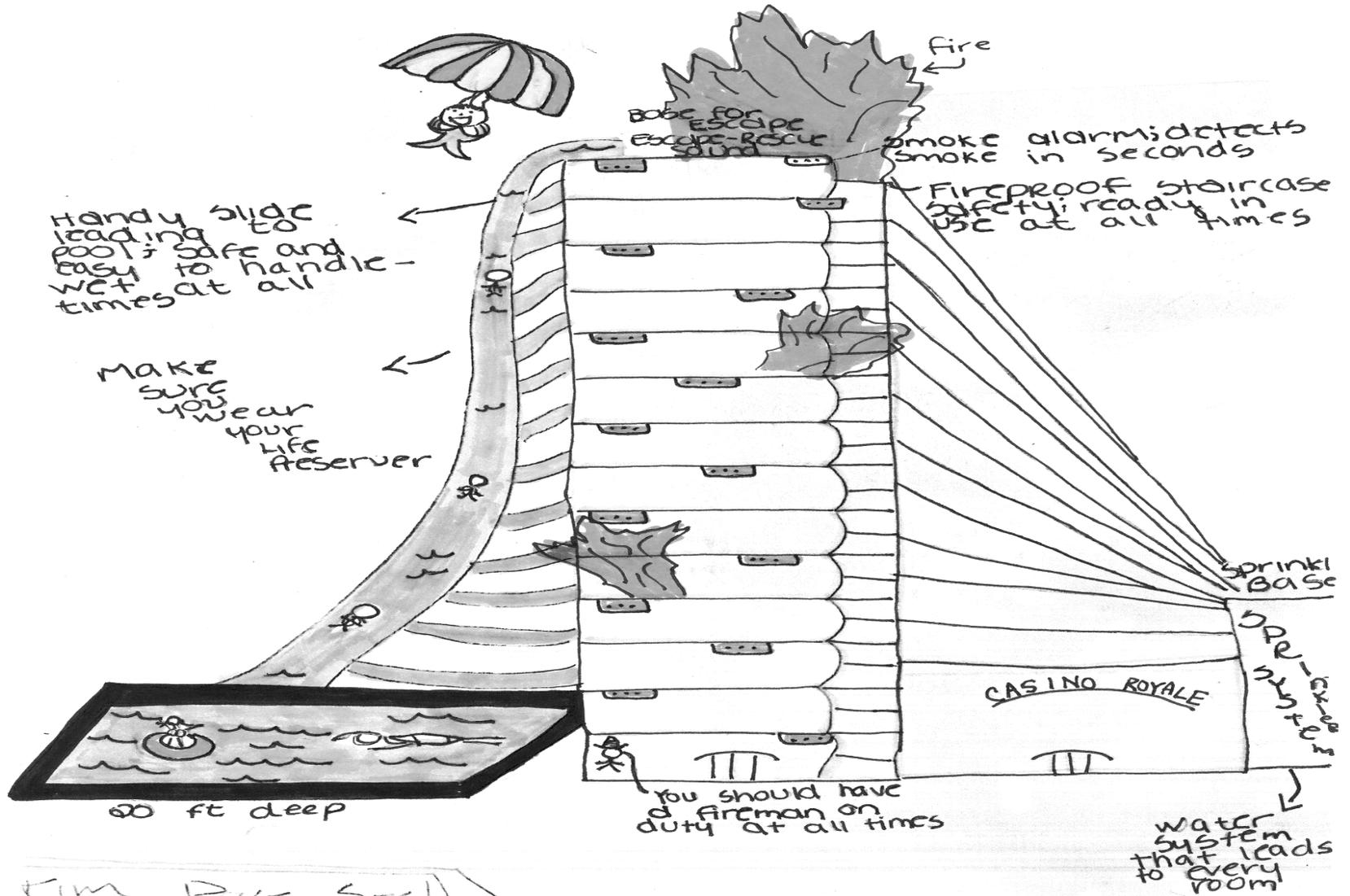








High Rise Fire Safety Proposal



Kim Price Scott

SPECIAL PROJECTS



MGM LION







CTE NEVADA, INC. INSPECTION, TESTING, CERTIFICATION
 LAS VEGAS • HENDERSON • BOBLETTS • GARDEN • SPANISH • BEATLES

CTE JOB NO: 80-00000
 MATERIAL: 4800 CDA RTX 250
 SPEC: ARTM 18
 BASE 30

DATE: 12/09/07
 PANEL CAST DATE: 12/09/07

TENSILE STRENGTH:

SAMPLE #	ACTUAL SIZE
12-19-07-1	1.490" X 2.24"
12-19-07-2	1.490" X 2.24"
12-19-07-3	1.487" X 2.24"

TEST SERIES:

REQUIREMENTS: 25,000

ACTUAL LOAD (LB)	LOAD (%)
22,600	46,820
32,100	56,504
11,300	23,206

YIELD STRENGTH:

SAMPLE #	ACTUAL SIZE
#1	1.490" X 2.24"
#2	1.490" X 2.24"
#3	1.487" X 2.24"

REQUIREMENTS: 15,000

ACTUAL LOAD (LB)	LOAD (%)
7,000	14,501
8,200	14,434
10,600	16,350

ELONGATION:

SAMPLE #	IN-8-IN	PERCENT
	1.510	18.875%

REQUIREMENTS: 20 %

SAMPLE #	IN-8-IN	PERCENT
	1.25"	1.562%

MODULUS OF ELASTICITY:

SAMPLE #	VALUE
	37,342,837

REQUIREMENTS: 15,000,000

SAMPLE #	VALUE
	8,371,000

Mark G. Wingraf, P.E.

60 S. Valley View • Suite

(702) 795-2278 • FAX (702) 795-



CTE NEVADA, INC. INSPECTION, TESTING, CERTIFICATION
 LAS VEGAS • HENDERSON • BOBLETTS • GARDEN • SPANISH • BEATLES

CTE JOB NO: 800000 MUM LION SCULPTURE

MATERIAL: 4800 CDA RTX 250

SPEC: ARTM 18

BASE 30

TENSILE STRENGTH:

SAMPLE #	ACTUAL SIZE
12-15-07-1	1.490" X 2.24"
12-15-07-2	1.500" X 2.24"
12-15-07-3	1.504" X 2.24"

YIELD STRENGTH:

SAMPLE #	ACTUAL SIZE
#1	1.490" X 2.24"
#2	1.500" X 2.24"
#3	1.504" X 2.24"

ELONGATION:

SAMPLE #	IN-8-IN	PERCENT
	2.82"	3.53%

MODULUS OF ELASTICITY:

SAMPLE #	VALUE
	1,141,000

Wingraf, P.E.

60 S. Valley View • Suite A-3

12-15

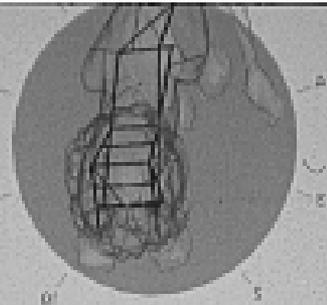
12-15

W

[Handwritten signature]

↑
↑

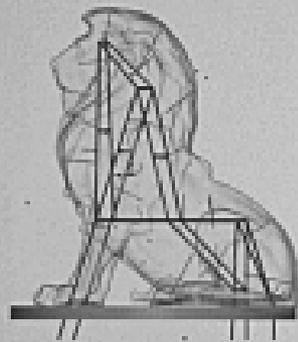




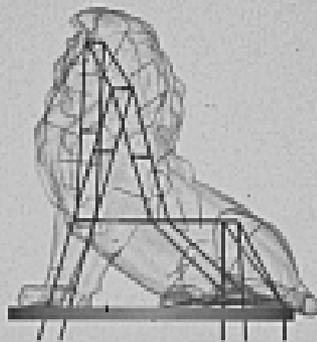
Wireframe Model - CHAIRS MODEL



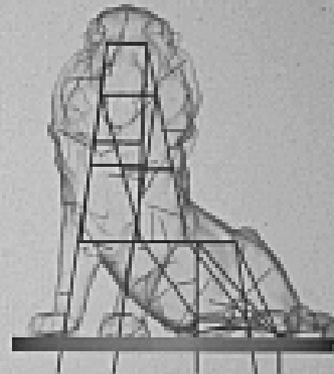
0 - waIV



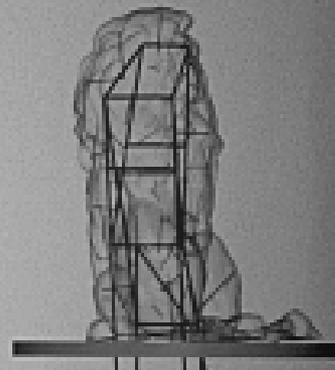
1 - waIV



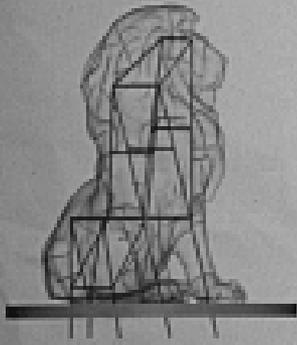
E - waIV



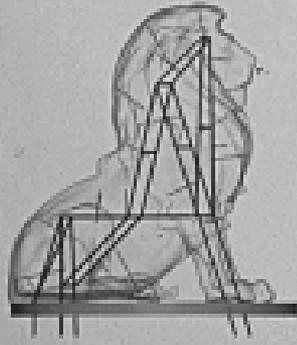
S - waIV



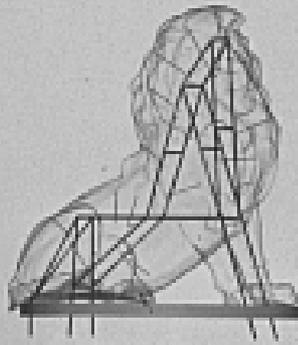
I - waIV



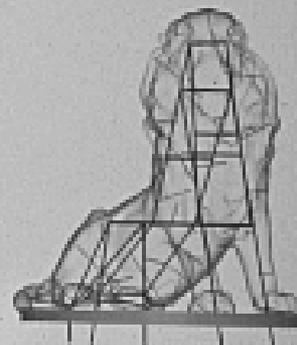
0I - waIV



0 - waIV



0 - waIV



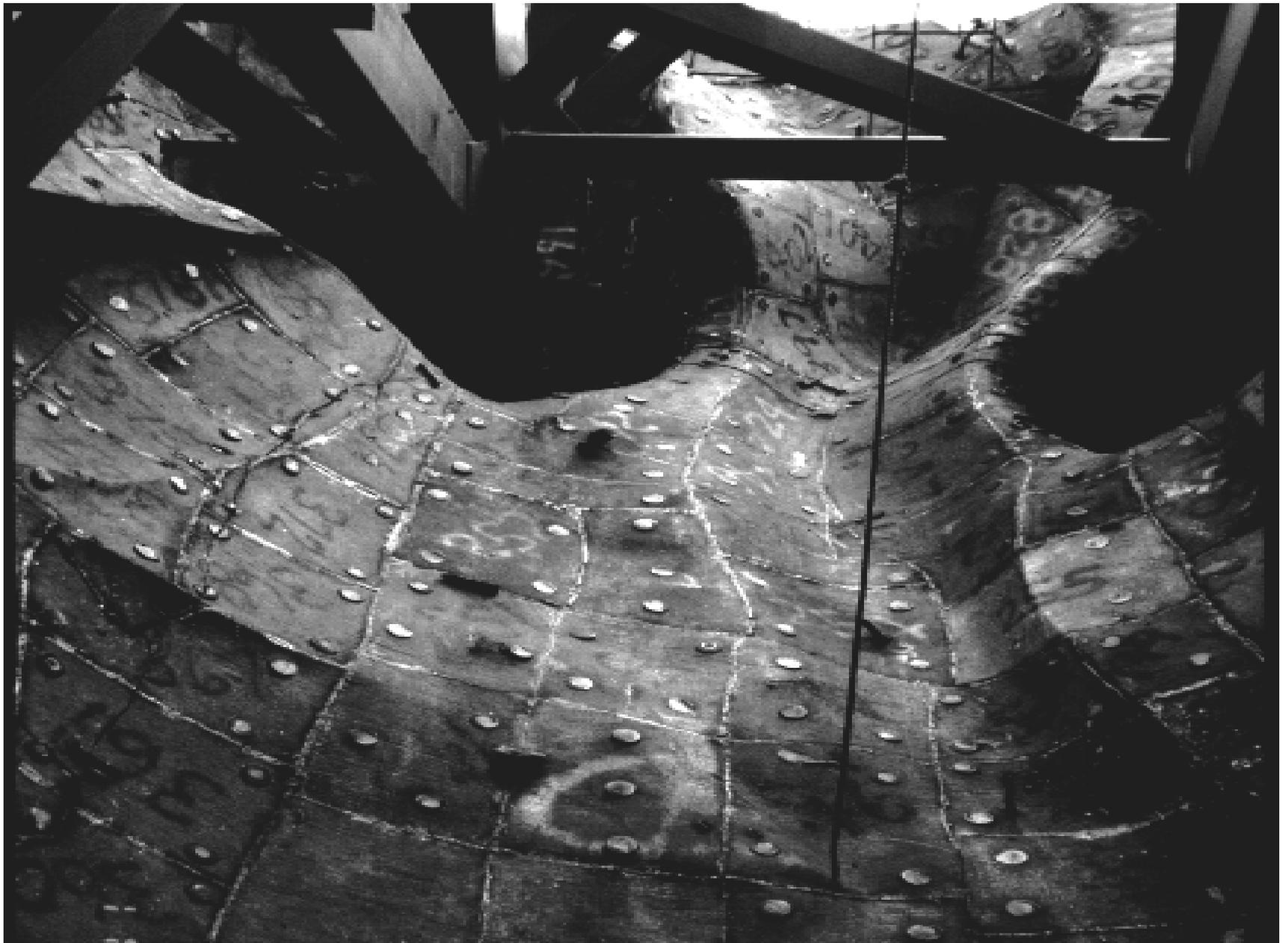
τ - waIV

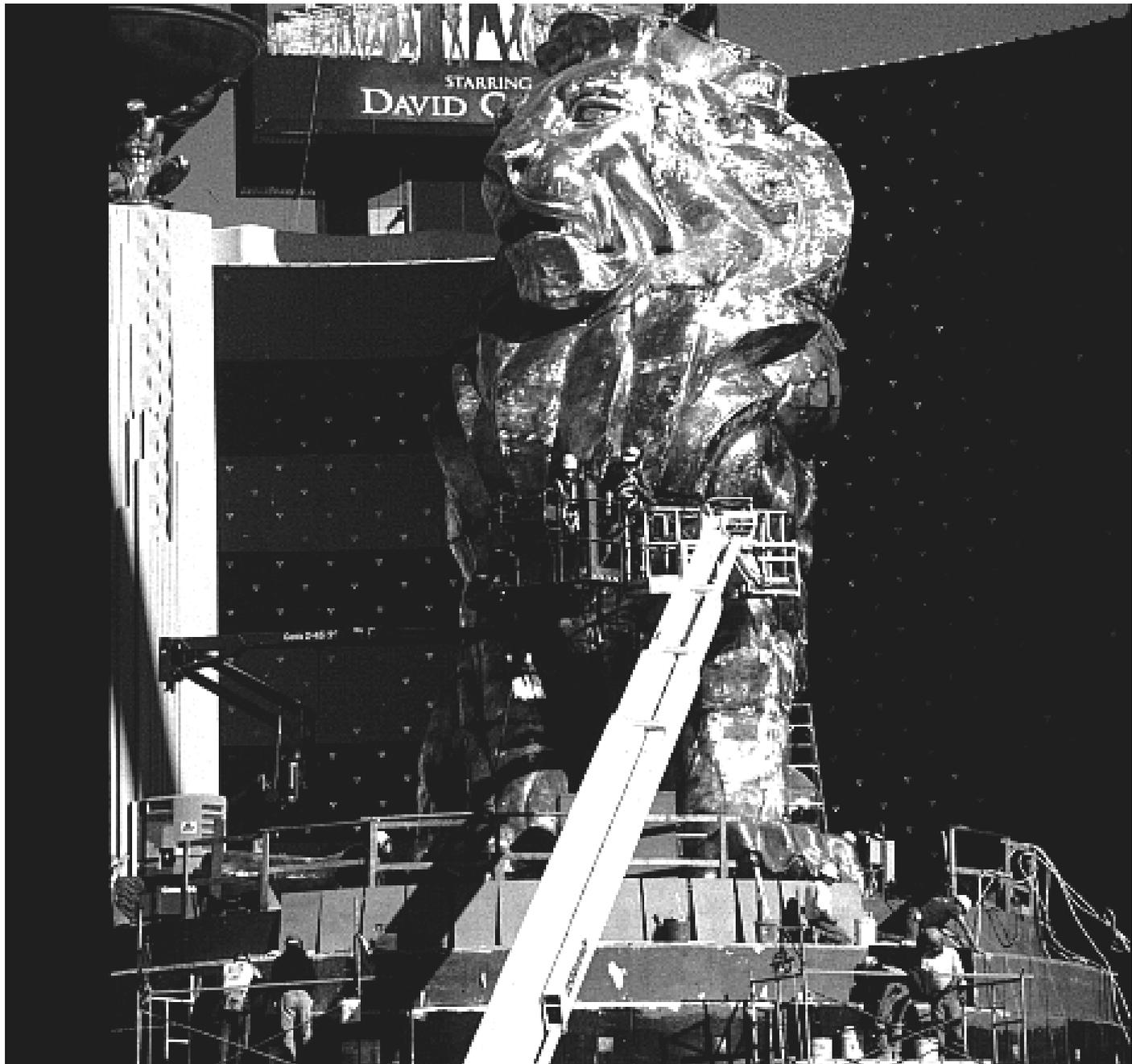


0 - waIV











Monte Carlo

Ray & Ross Airport
Ray & Ross Airport

5767



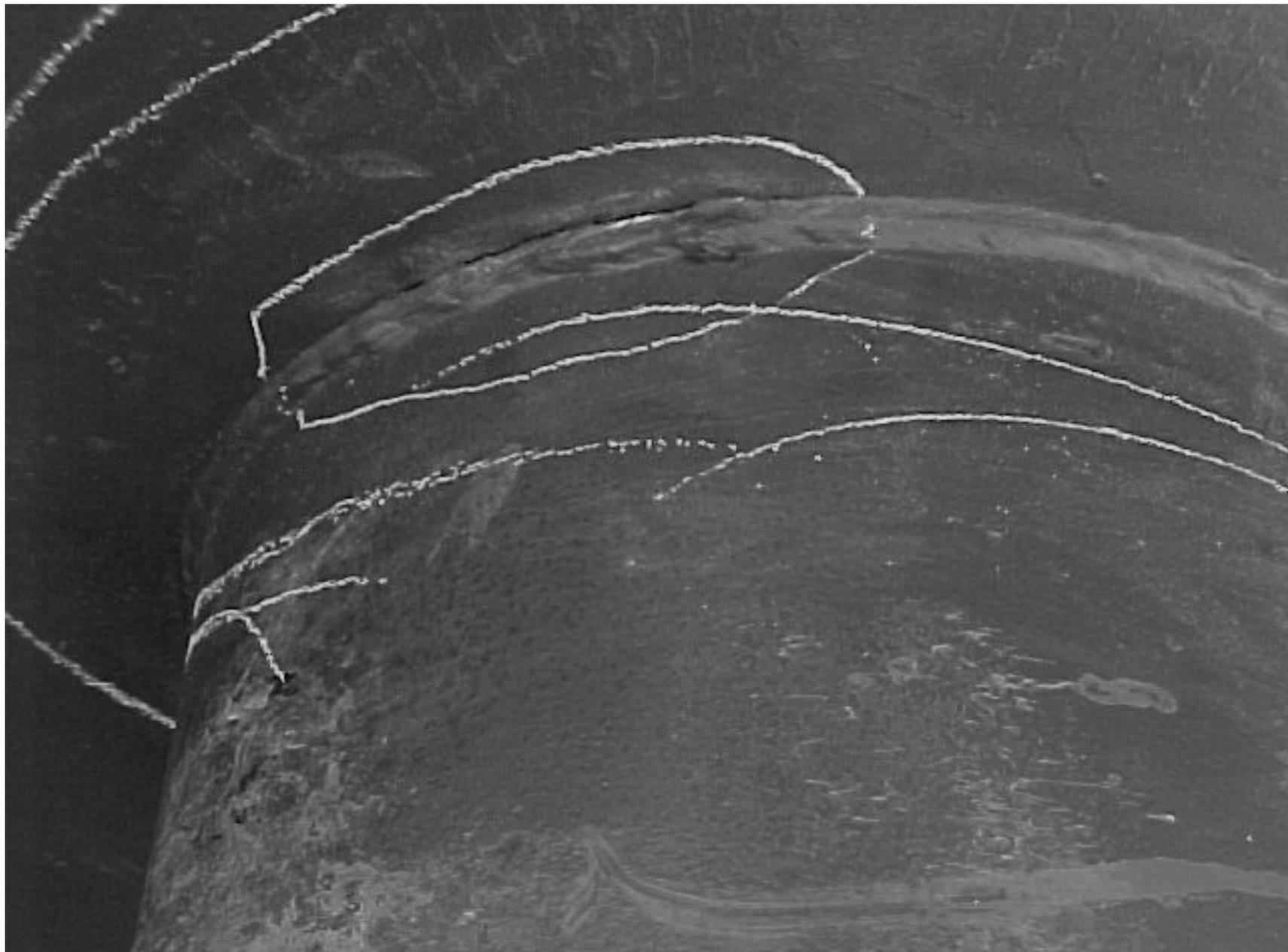
Manhattan Express



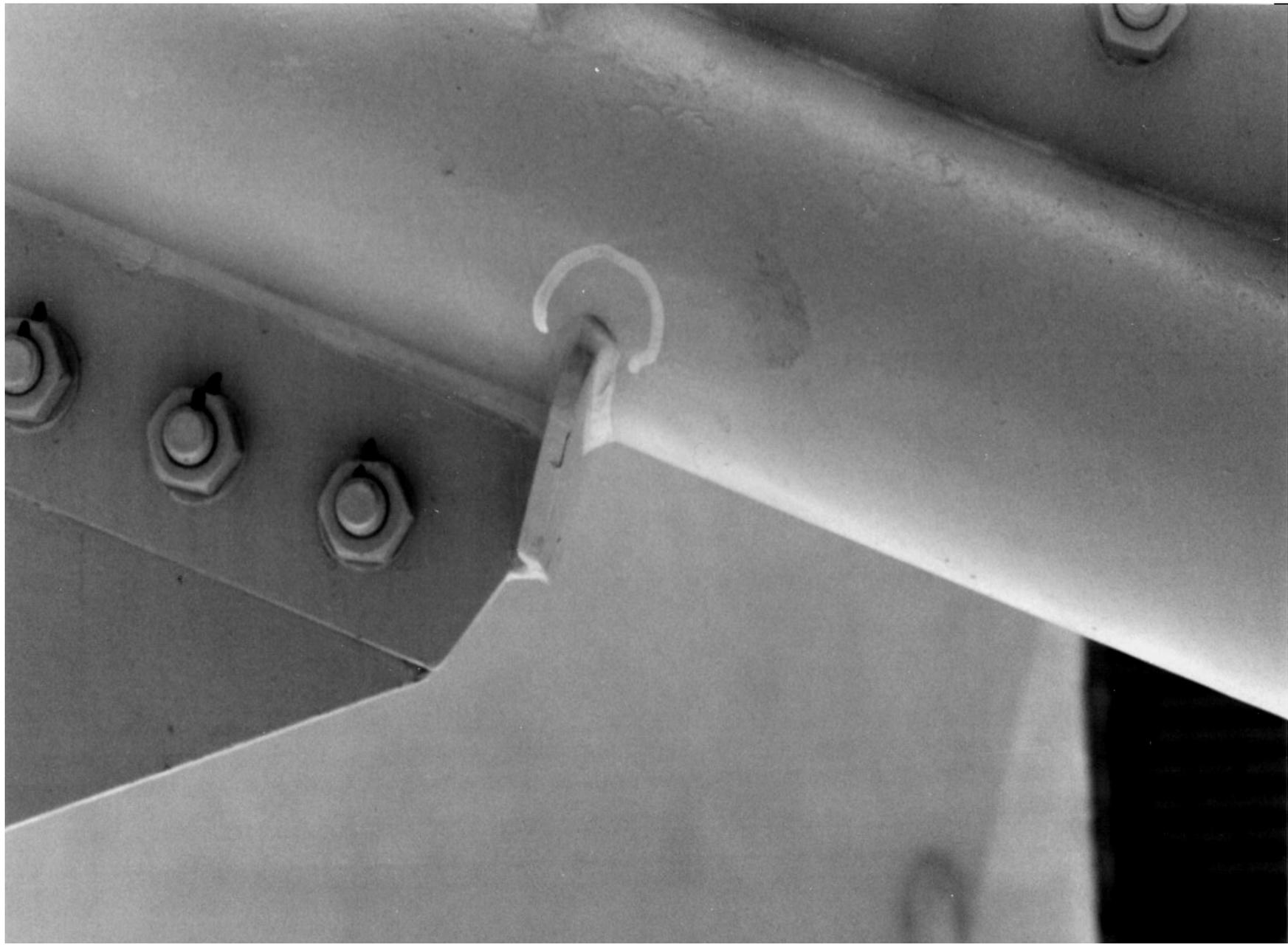
Rail Failure - Manhattan Express















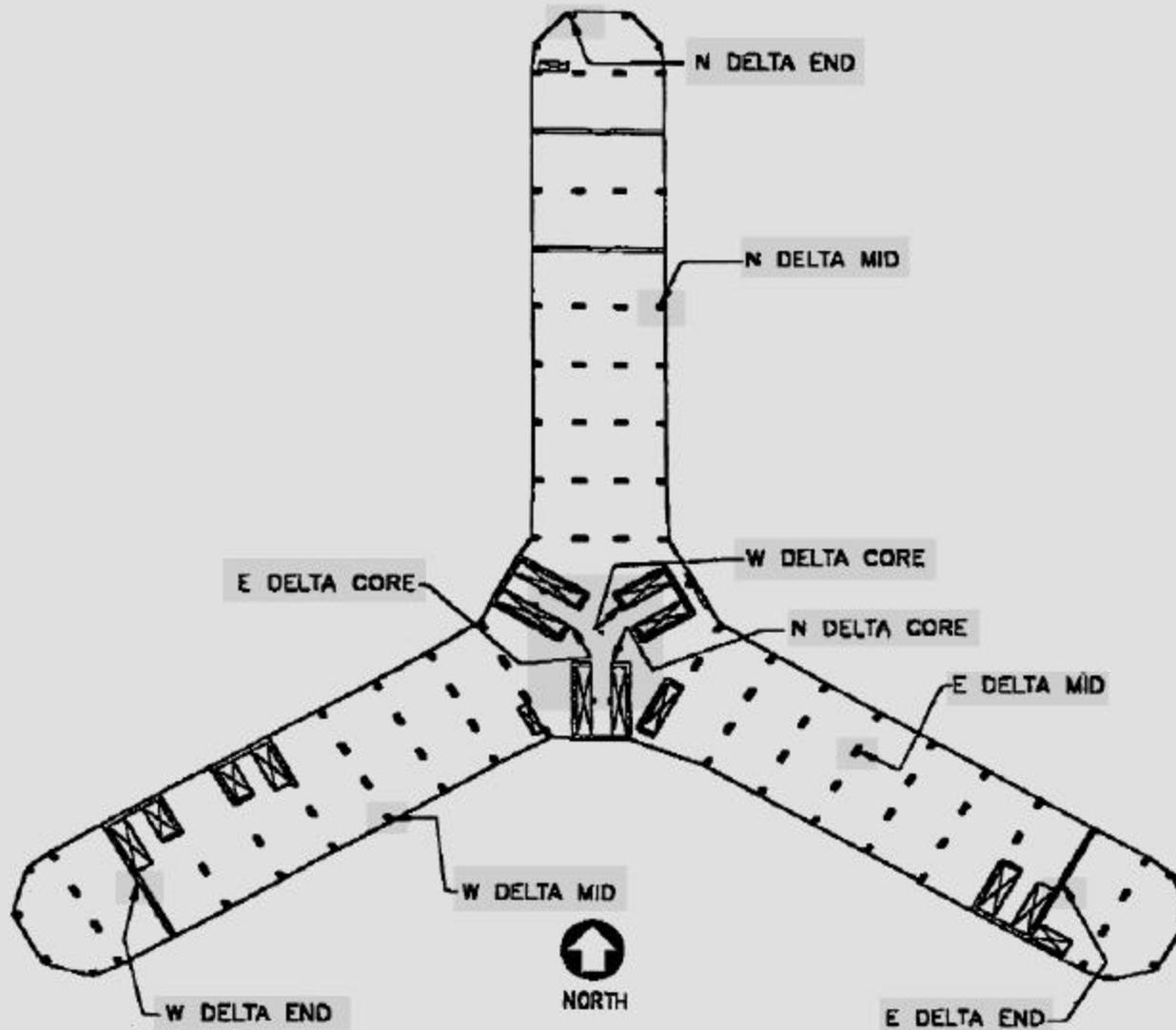
Desperado Coaster - Primm, NV



MANDALAY BAY



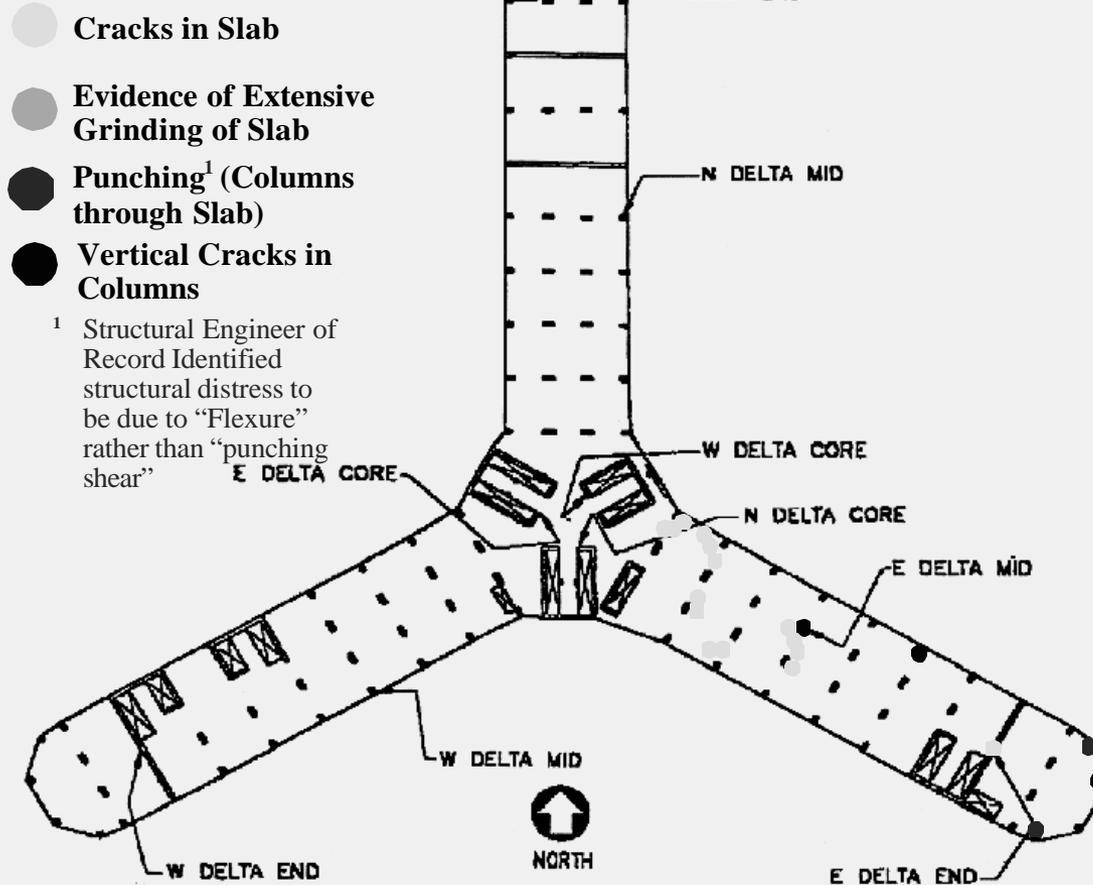
SURVEY MONUMENTS



Mandalay Bay Tower

CRACK SURVEY - CASINO LEVEL

Report Date
March 26, 2001



Survey Conducted on 10/5/98 thru. 10/8/98 of Casino, 2nd, & 3rd levels.
MOST OF THE STRUCTURAL ELEMENTS WERE NOT ACCESSIBLE-COVERED,
OBSTRUCTIONS, etc.

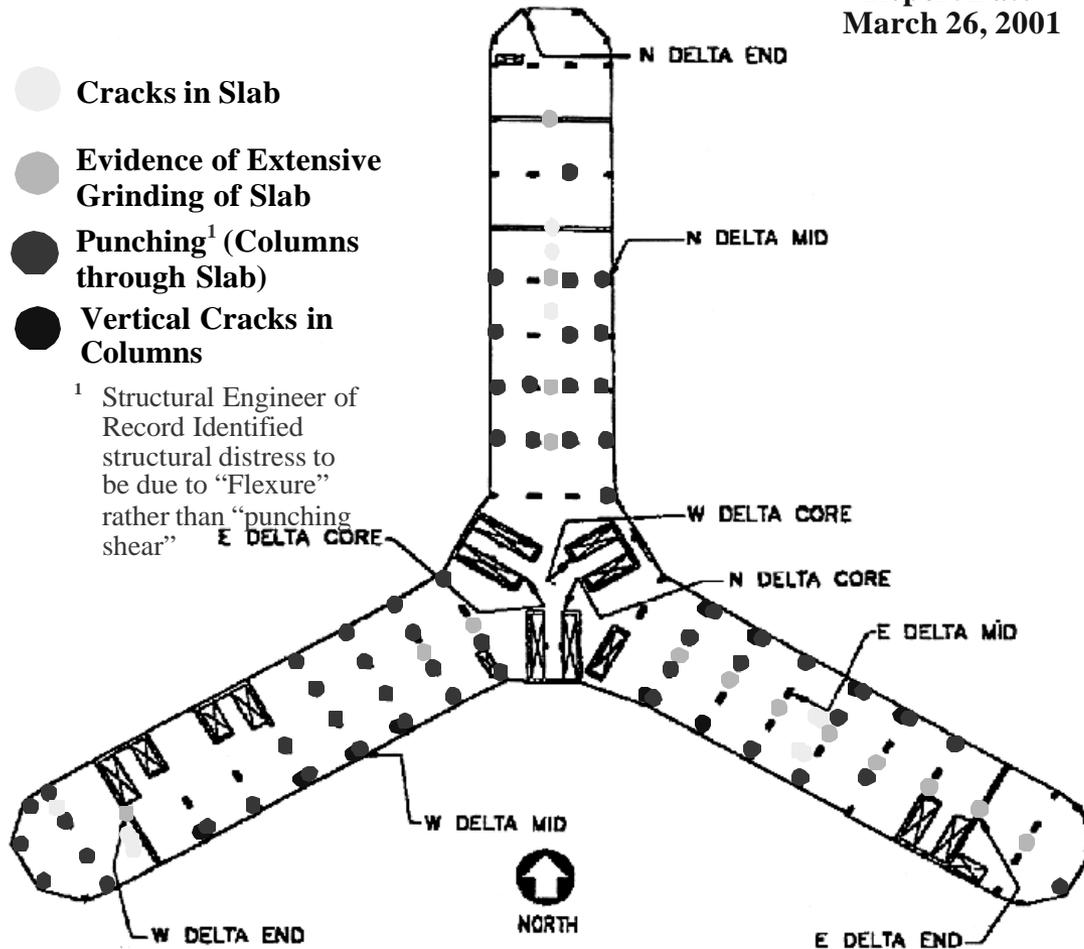
Not to Scale

Wings are approx. 292.5'(L) X 73' (W)

Mandalay Bay Tower

CRACK SURVEY - LEVEL 3

Report Date
March 26, 2001



Survey Conducted on 10/5/98 thru. 10/8/98 of Casino, 2nd, & 3rd levels.
 MOST OF THE STRUCTURAL ELEMENTS WERE NOT ACCESSIBLE-COVERED,
 OBSTRUCTIONS, etc.

Not to Scale

Wings are approx. 292.5'(L) X 73' (W)

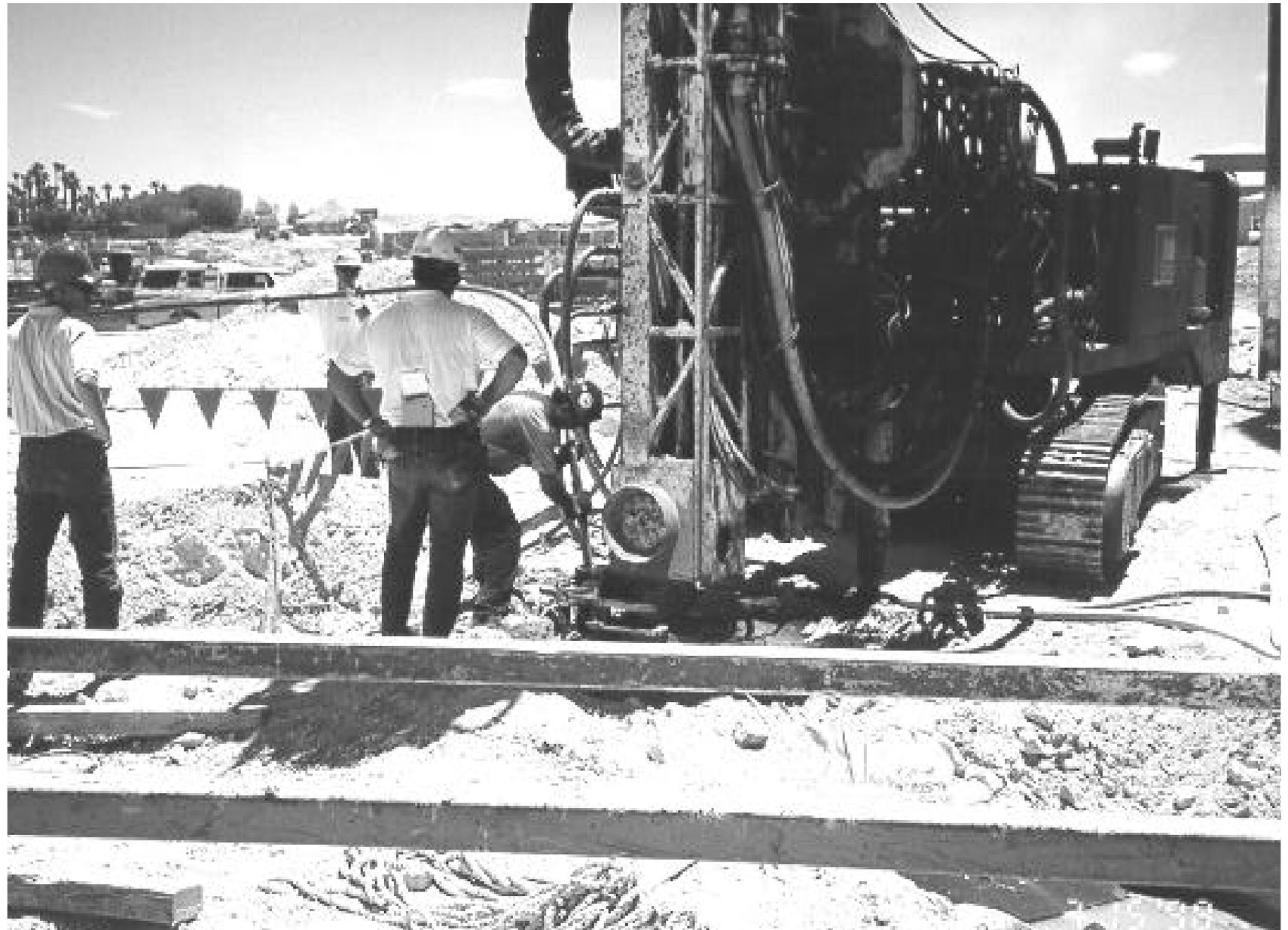






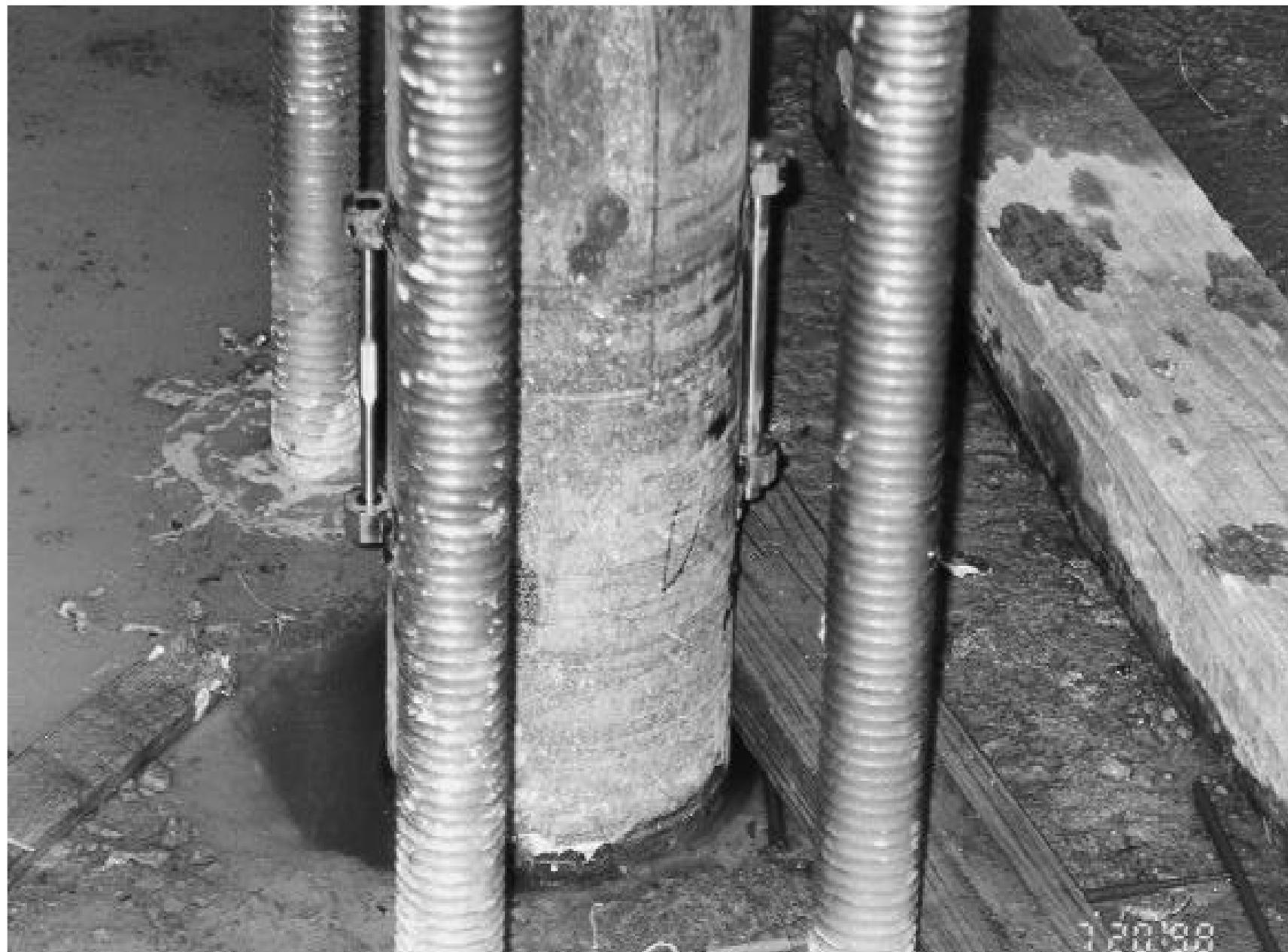












January 2003



**SUNRISE WEST HOSPITAL
TOP-OFF PARTY**











