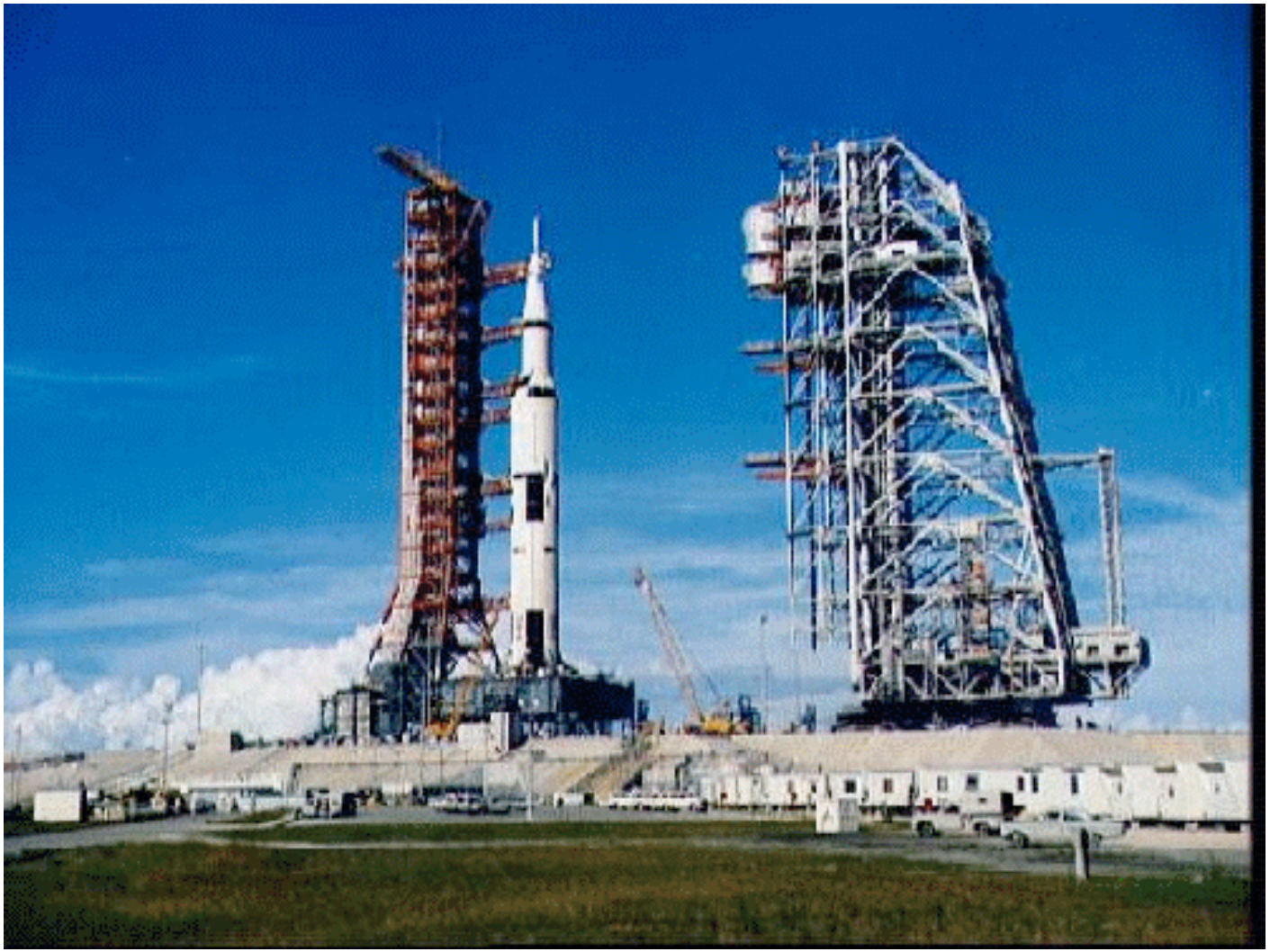
Ground Processing and Launch Facilities

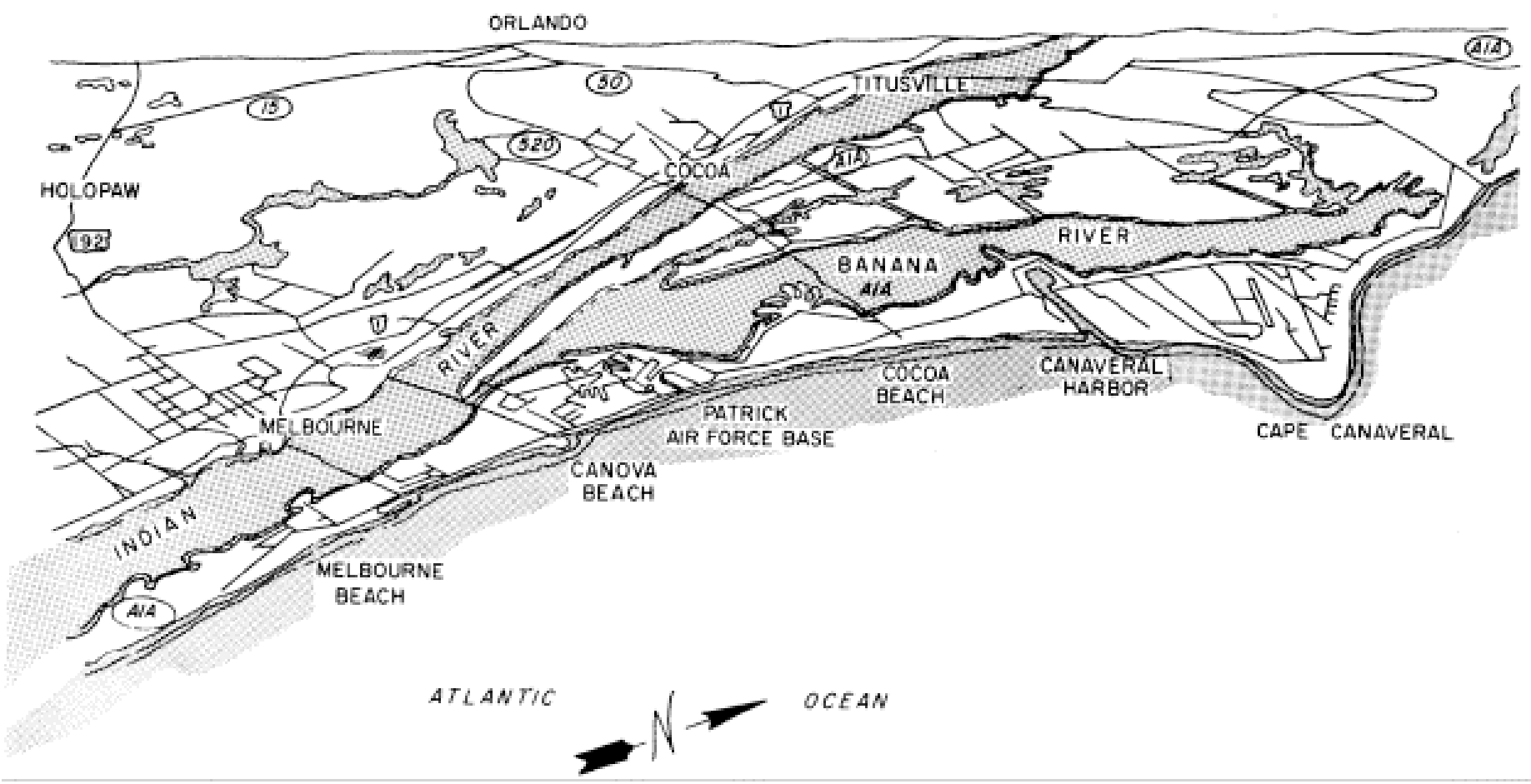
- Historical examples: Saturn I and V
- Modern example: Delta IV Heavy

Saturn V Launch Facility



Cape Canaveral circa 1950

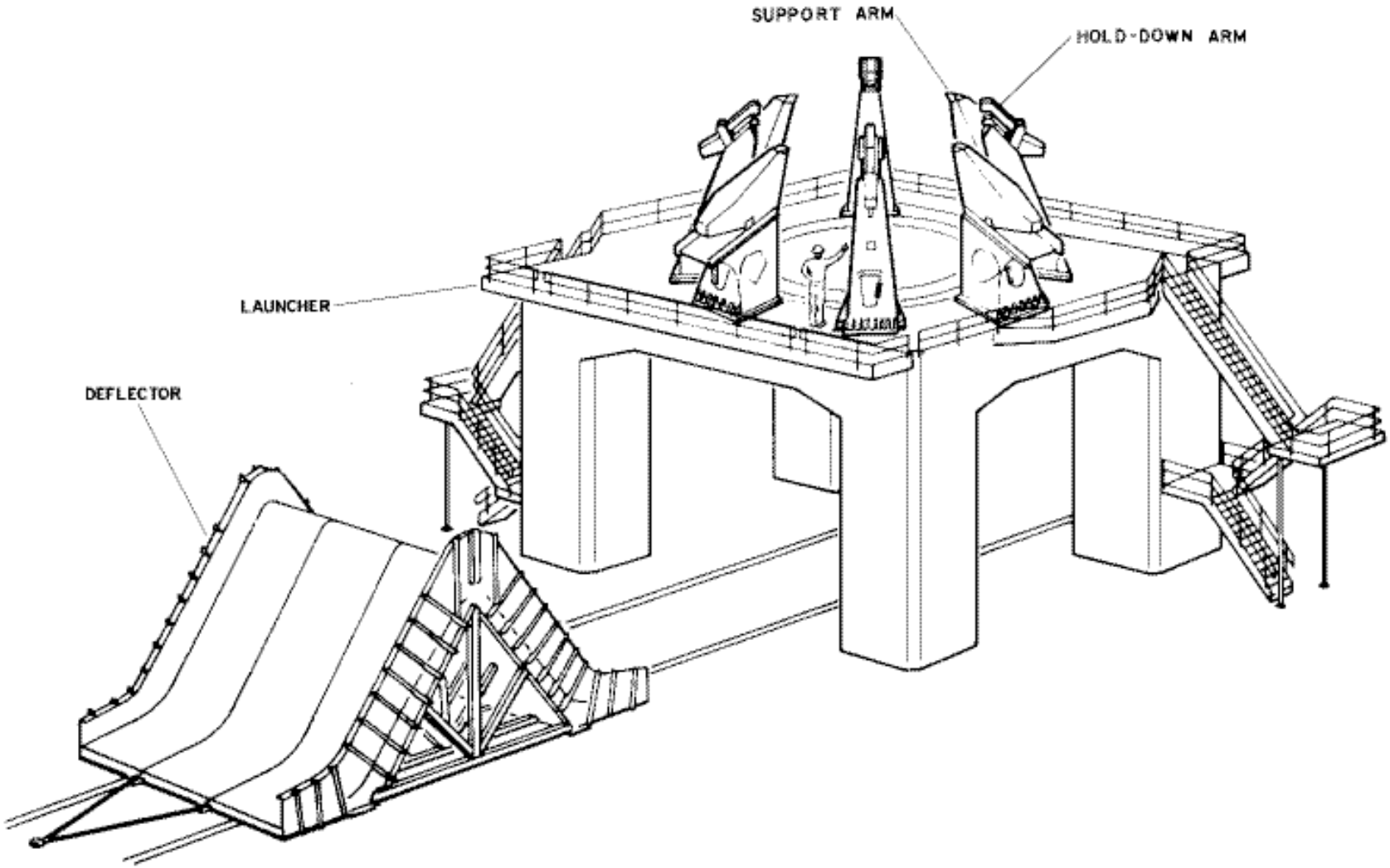
Map of Cape Canaveral



"ICBM Row"

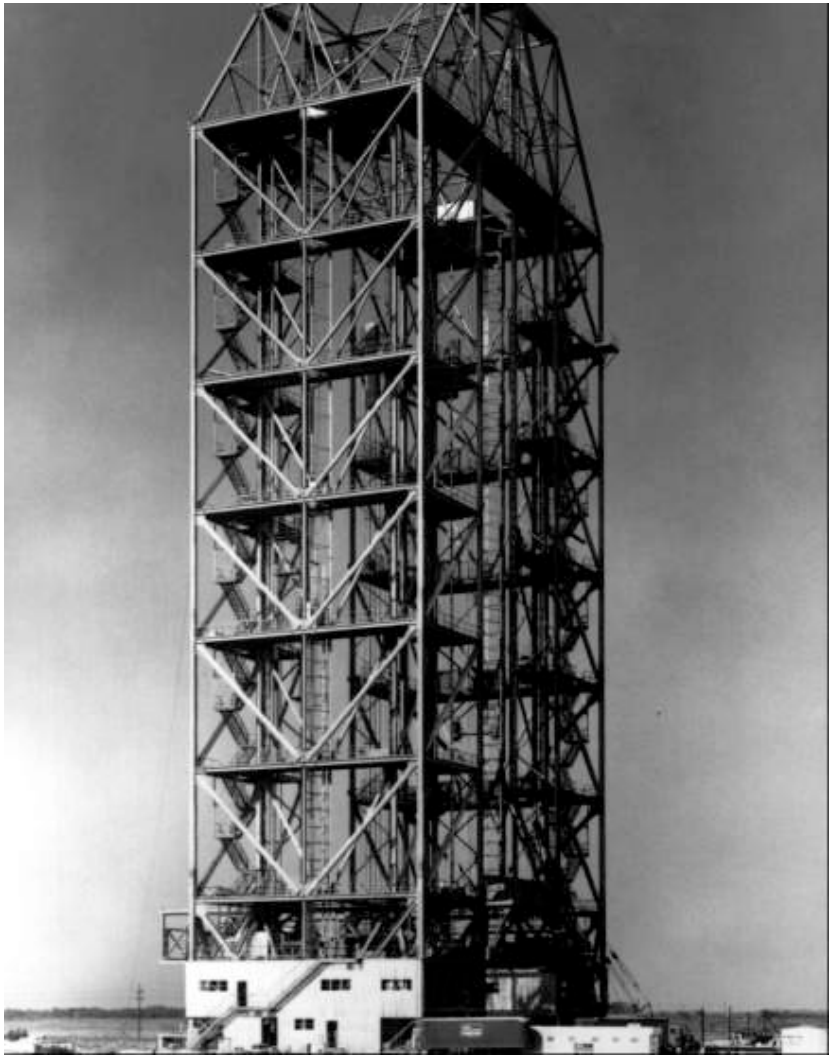
LC-34 Schematic

Saturn I Launch Pedestal



LC-34 Launch Pedestal Under Construction

LC-34 Service Structure



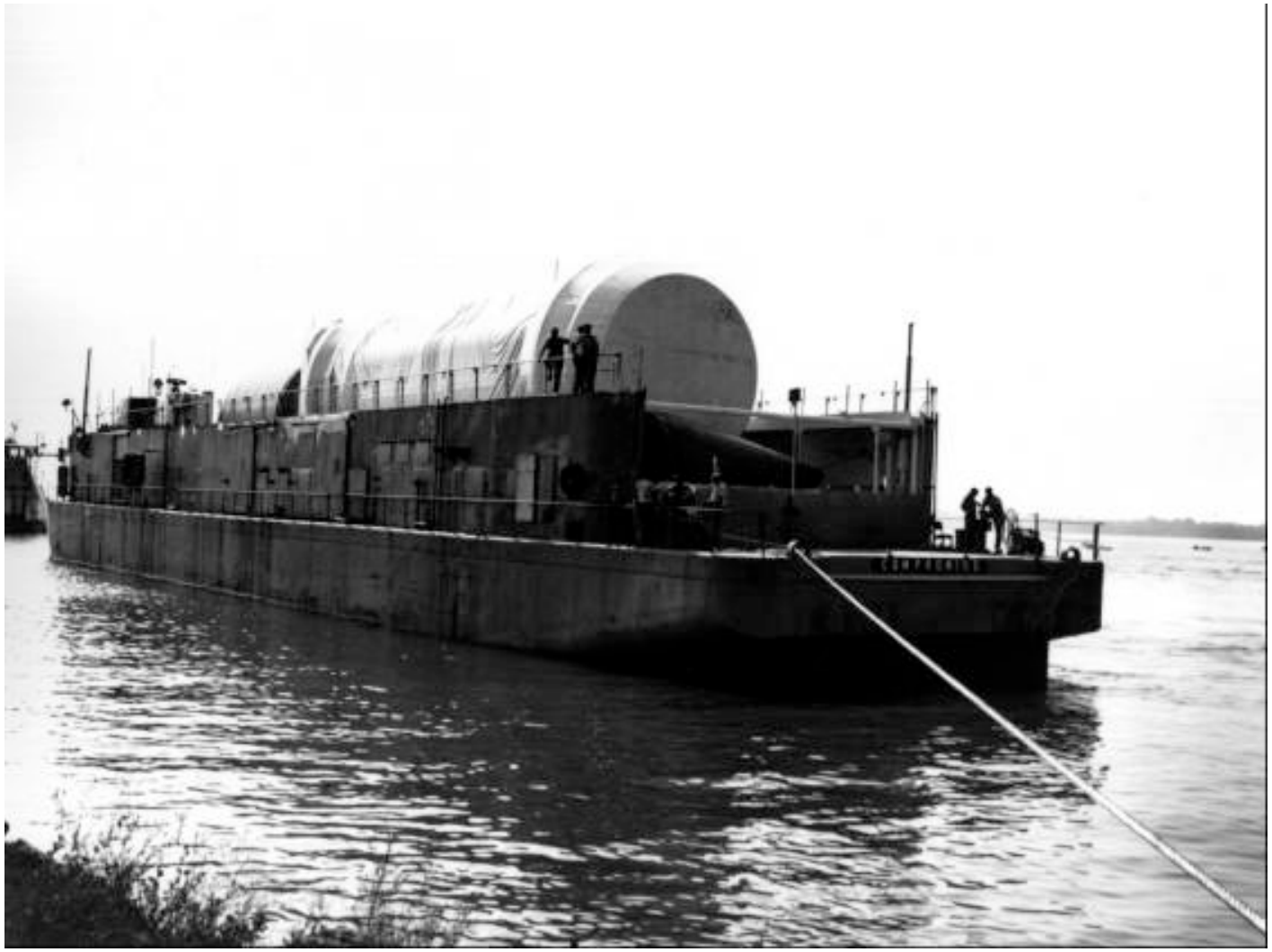
LC-34 Blockhouse

LC-34 Flame Deflector

Aerial View of LC-34

Aerial View of LC-34

Barge Transport of Launch Vehicle Stages

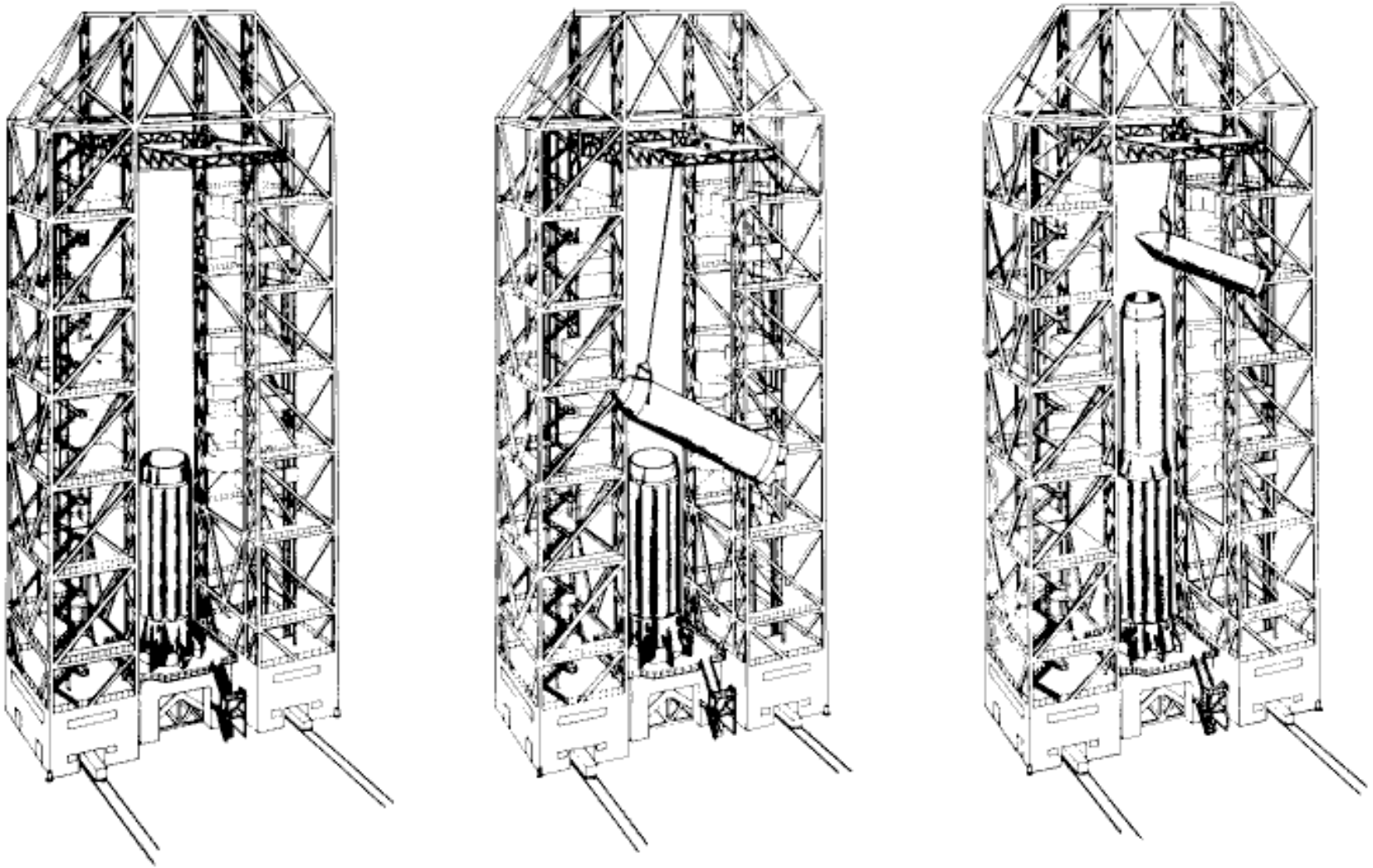


Aerial Transport of Stages

S-I Stage Rotation

S-I Stage Rotation

Saturn I Erection Process



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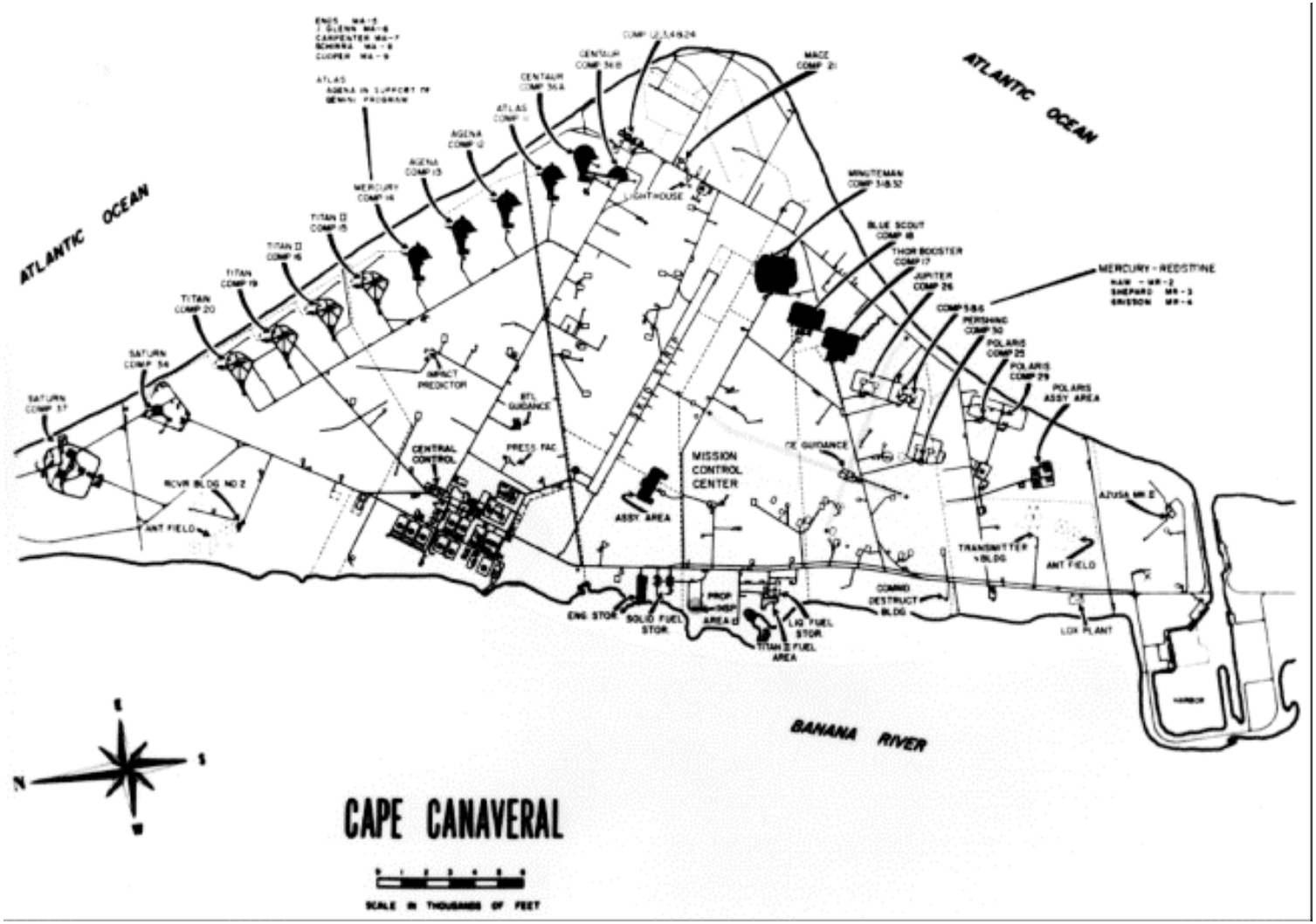
SA-201 Launch

Cape Canaveral Siting Map



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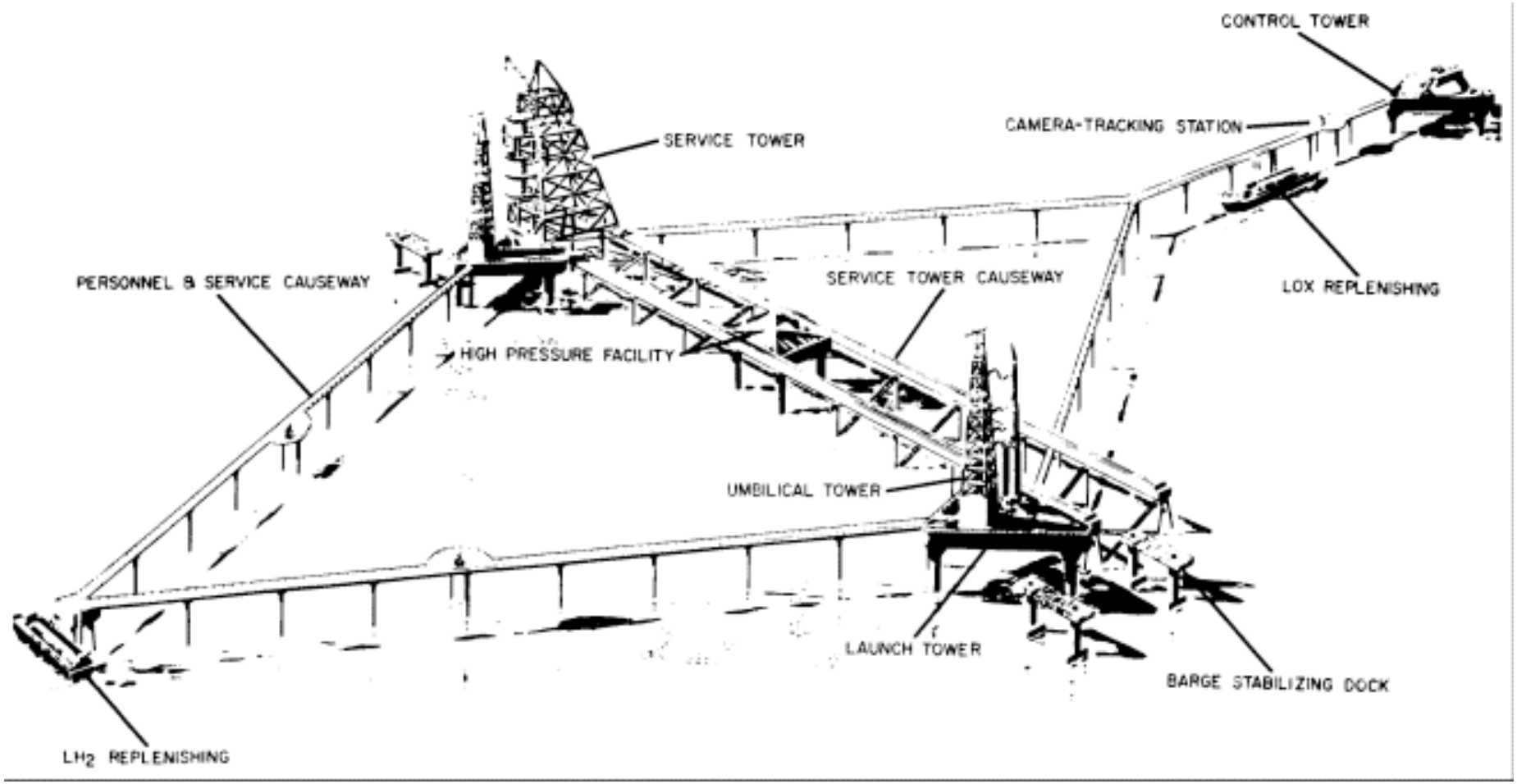
Ground Processing and Launch Facilities
Principles of Space Systems Design

Concept of an Off-Shore Launch Facility



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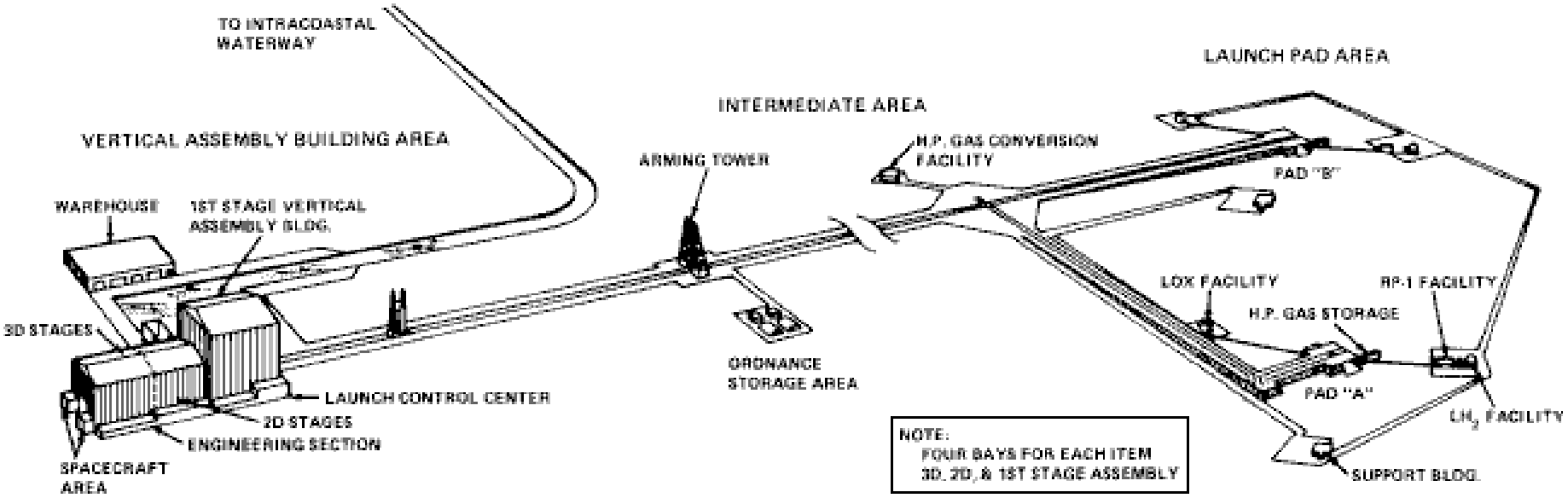
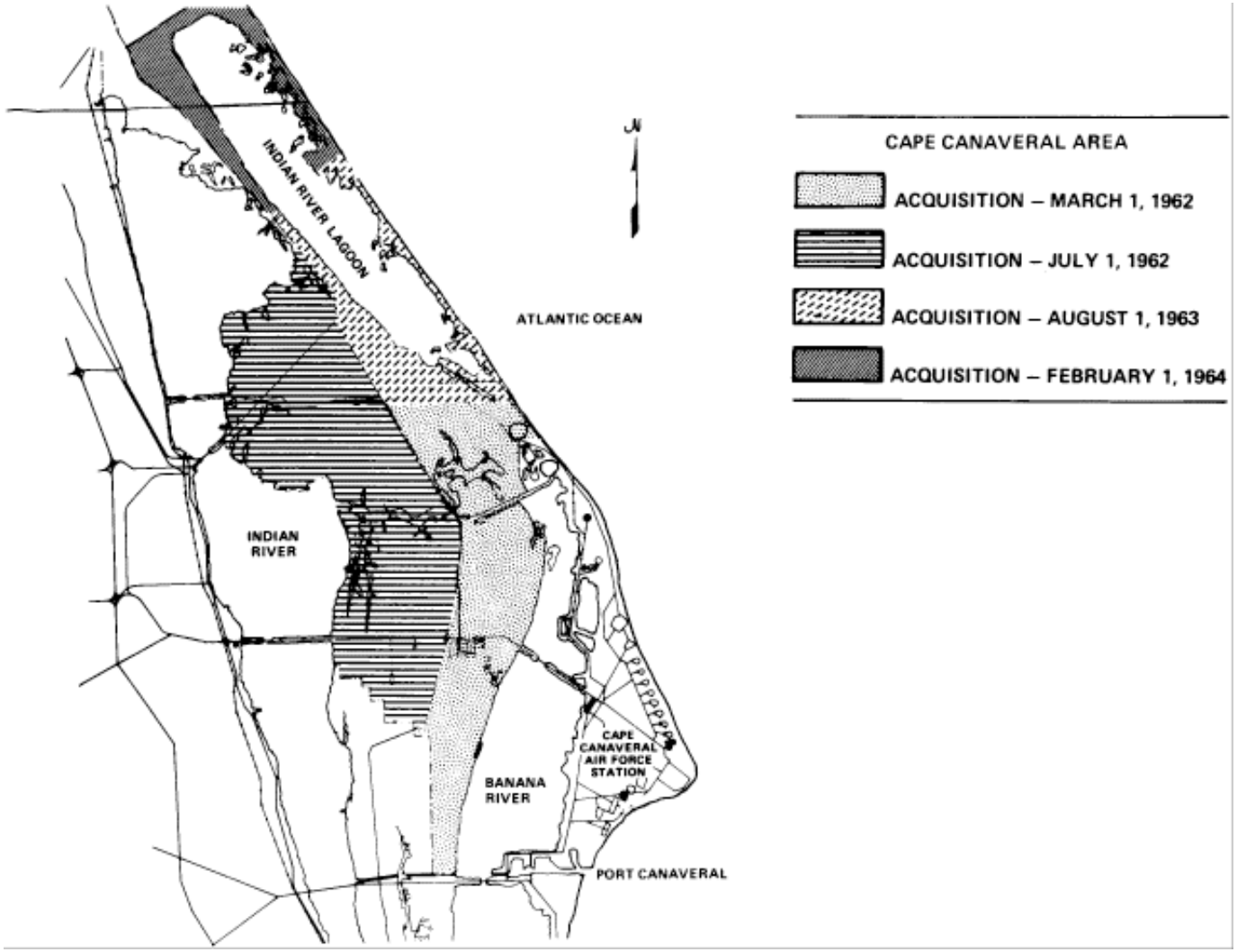
Early Mobile Launch Complex Concept



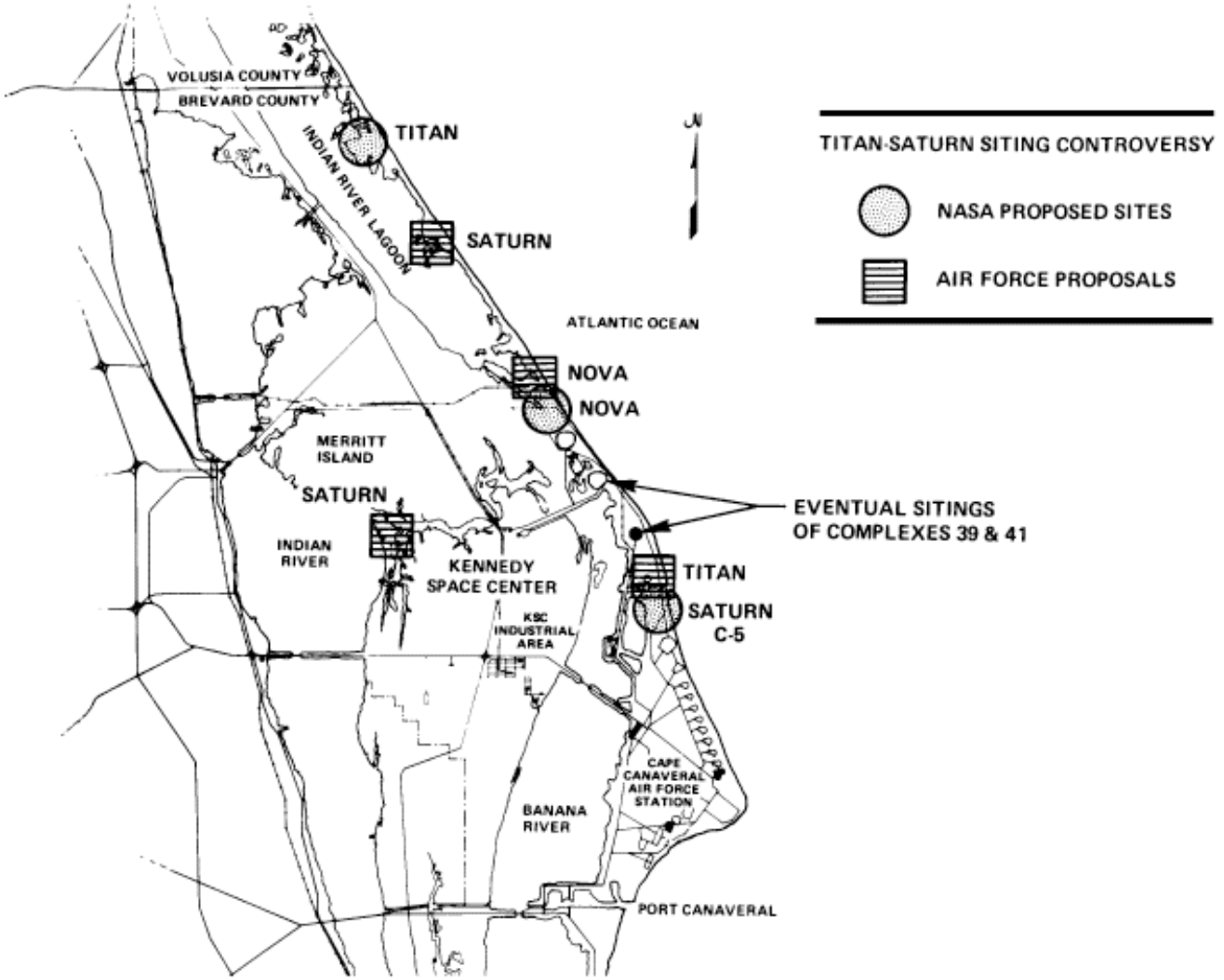
Launch Sites Considered for Apollo

- Cape Canaveral
- Offshore from Cape Canaveral
- Mayaguana Island in the Bahamas
- Cumberland Island, Georgia
- A mainland site near Brownsville, Texas
- White Sands Missile Range in New Mexico
- Christmas Island in the mid-Pacific south of Hawaii
- South Point on the island of Hawaii

Merritt Island Launch Area (MILA)



Competition for MILA Launch Sites



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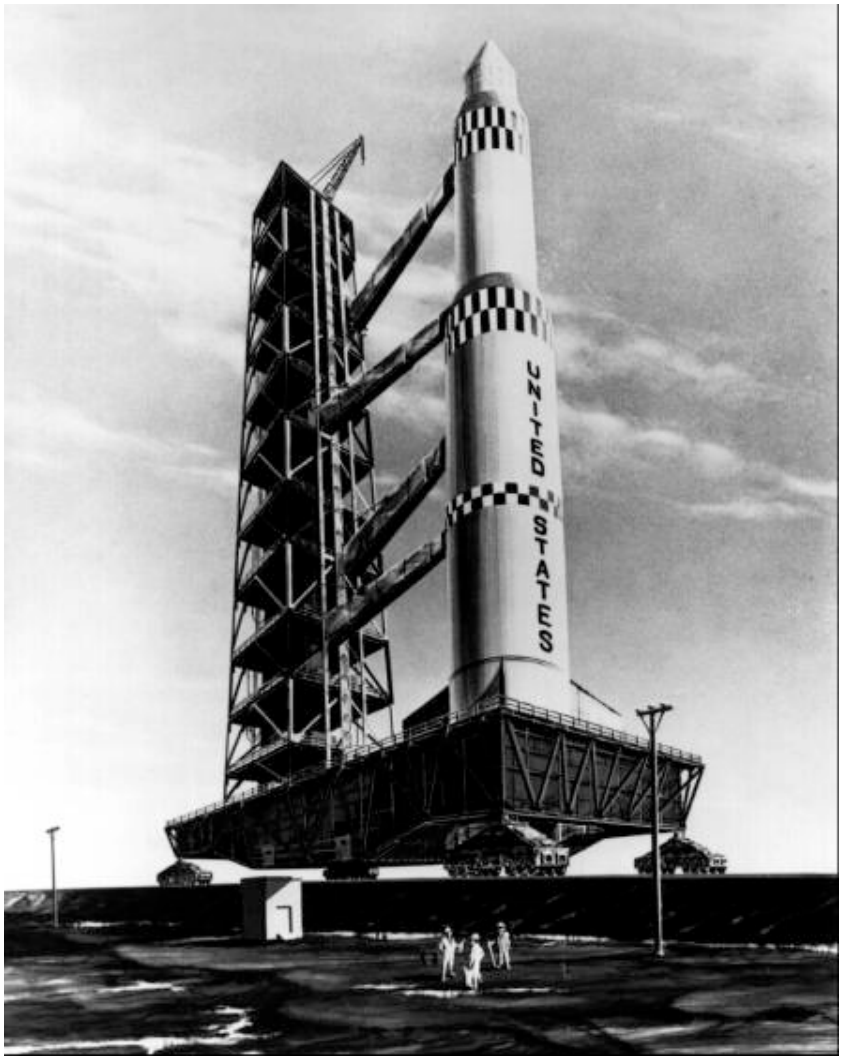
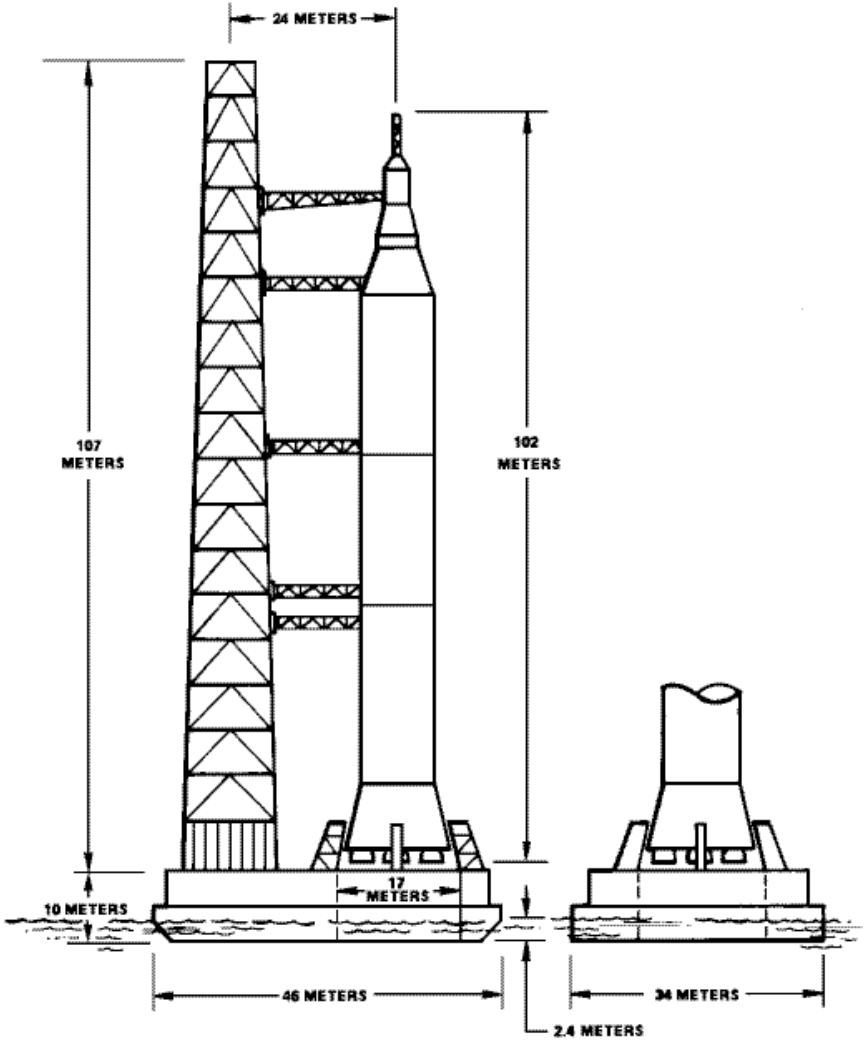
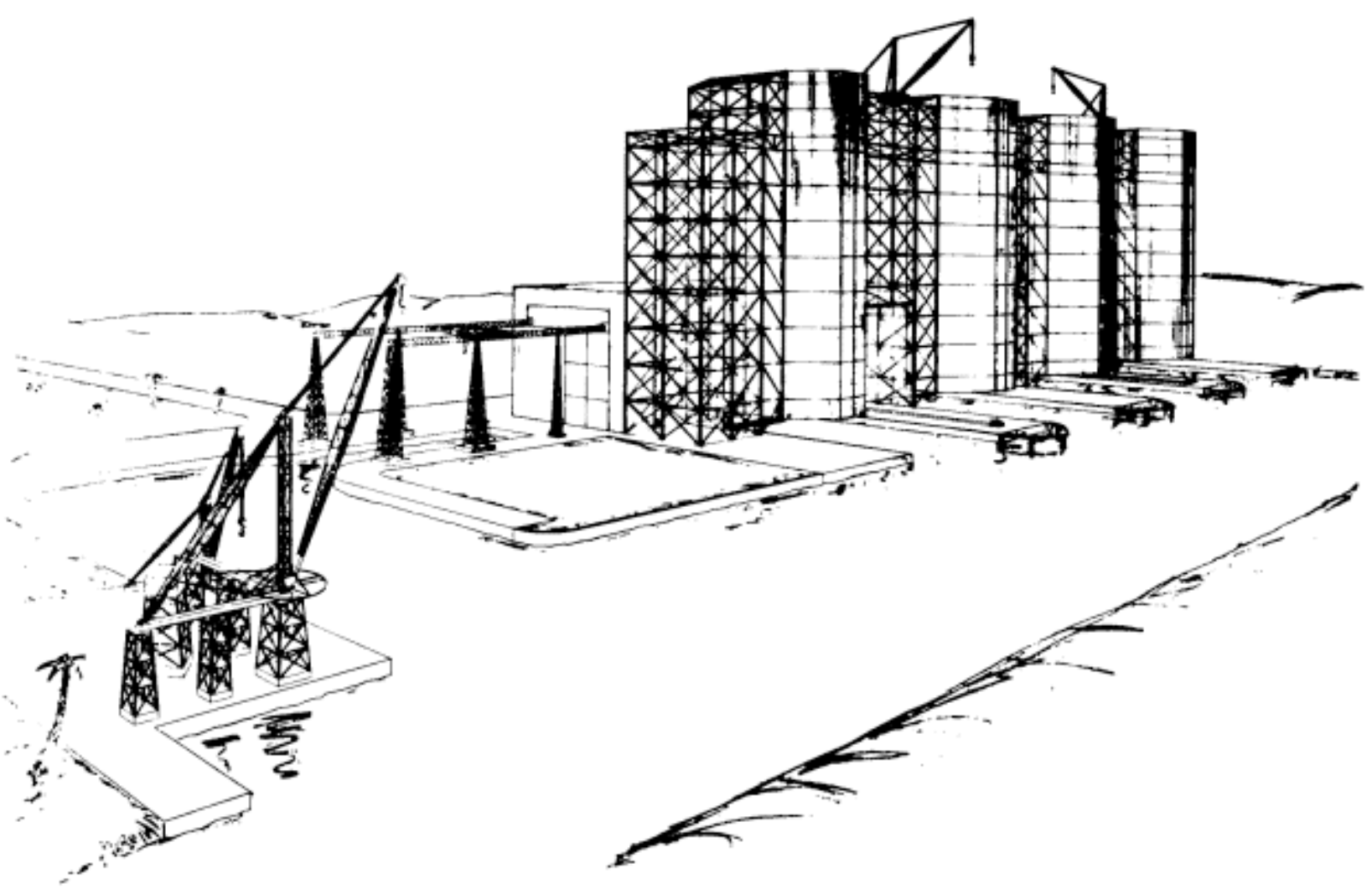
Rail-Based Nova Launch Concept



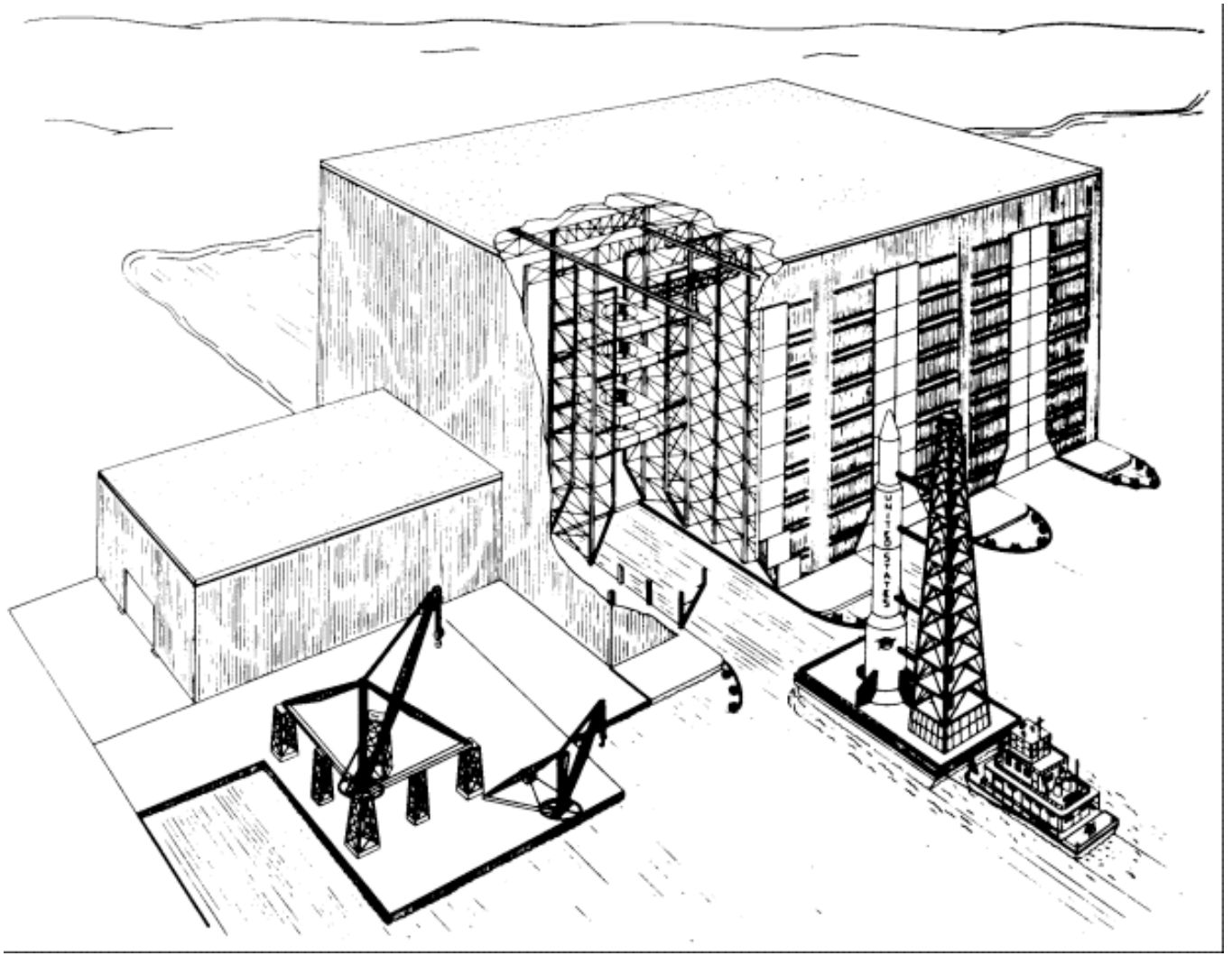
Barge-Based Saturn V Launch Concept



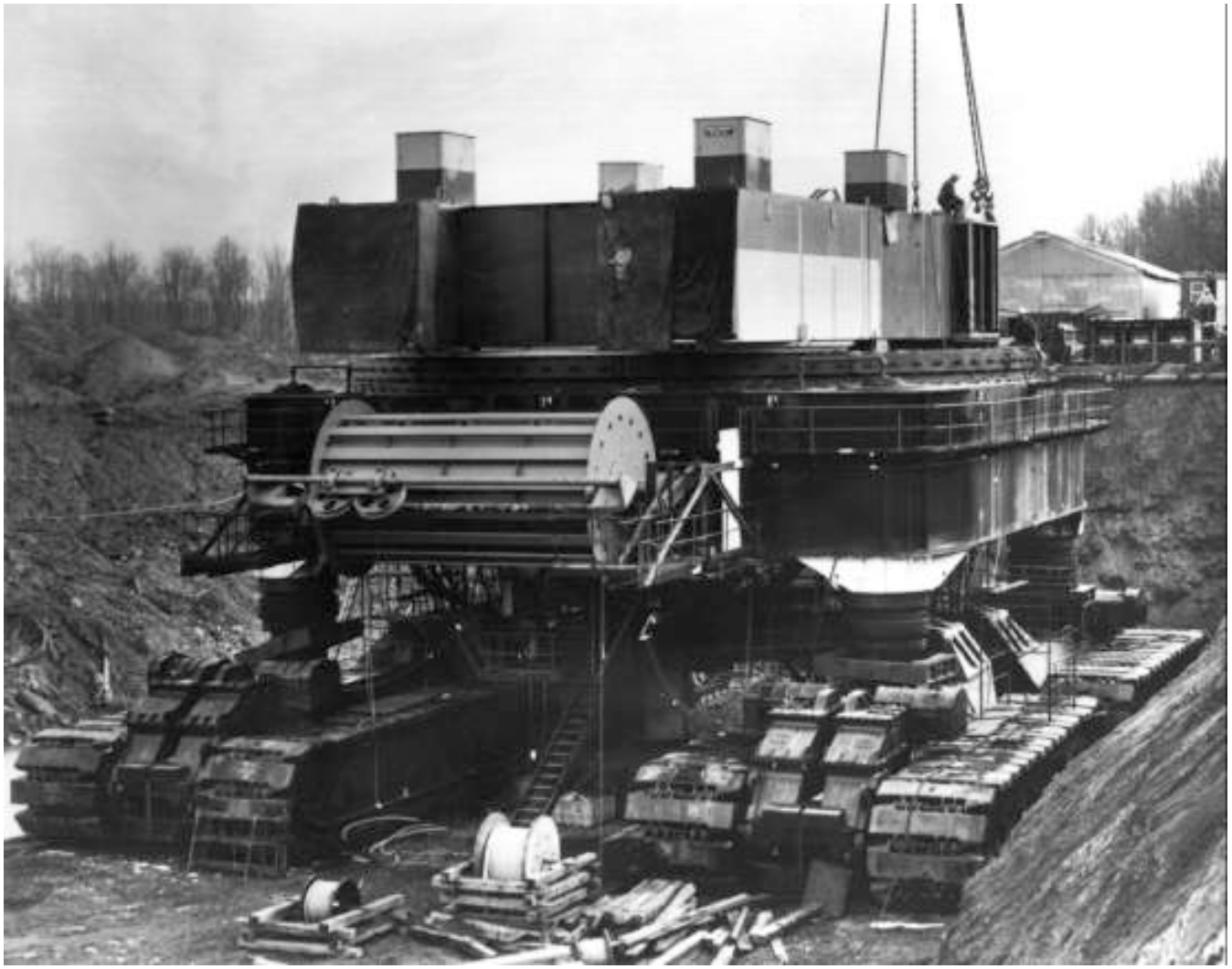
Barge-Based Vertical Assembly Building



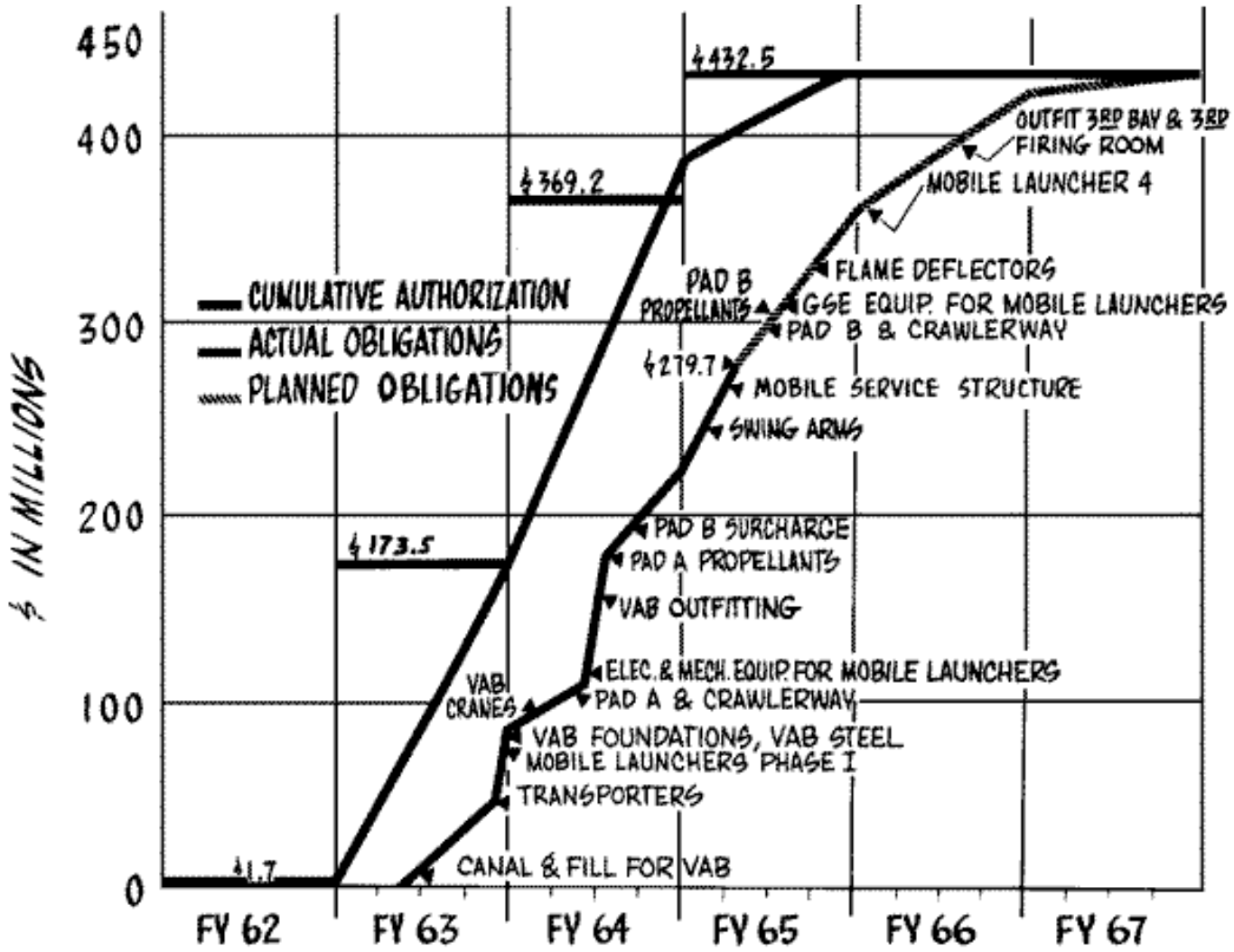
Barge-Based VAB (Enclosed)



West Virginia Strip-Mine Coal Shovel

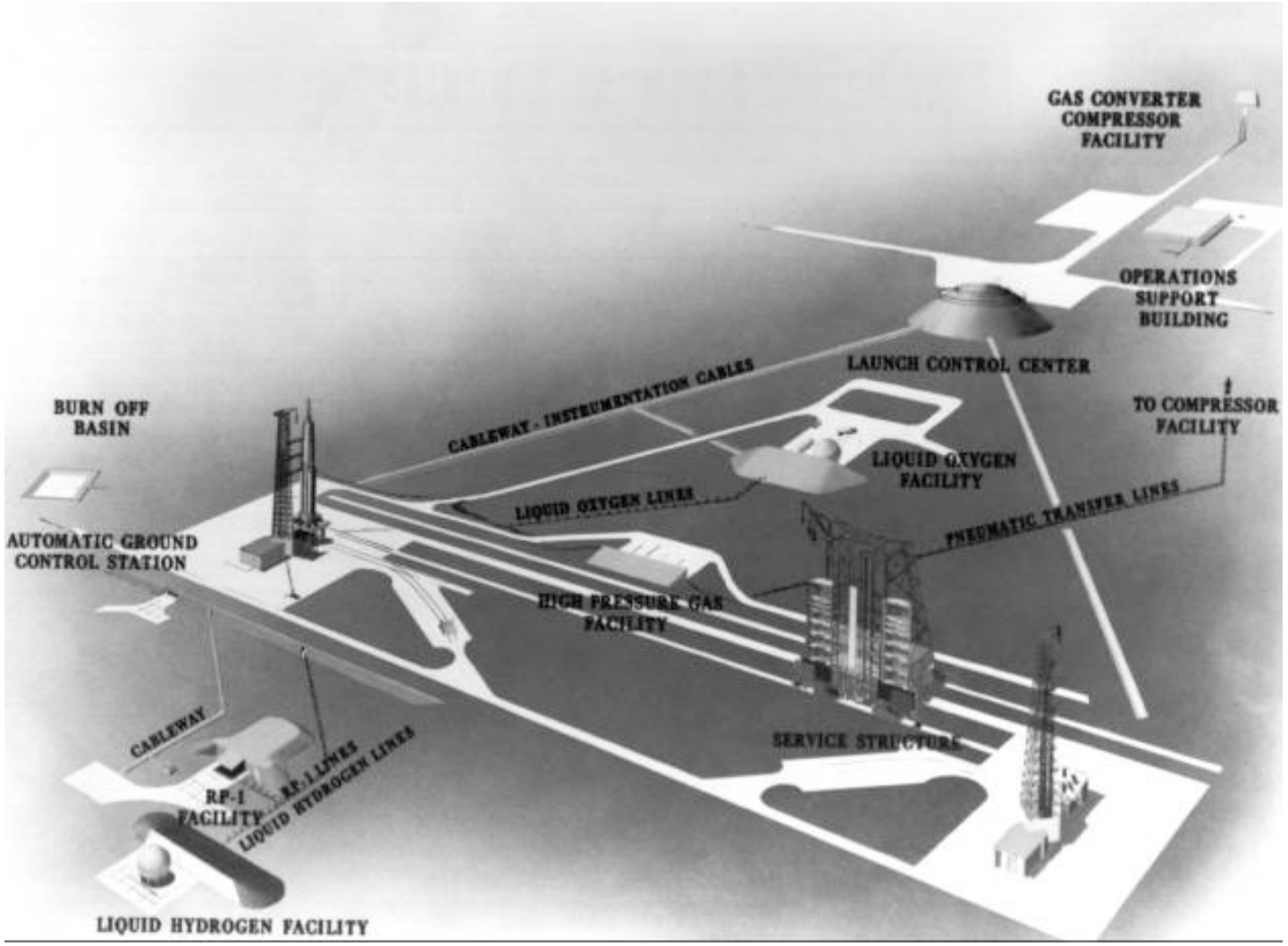


Expenditures for LC-39



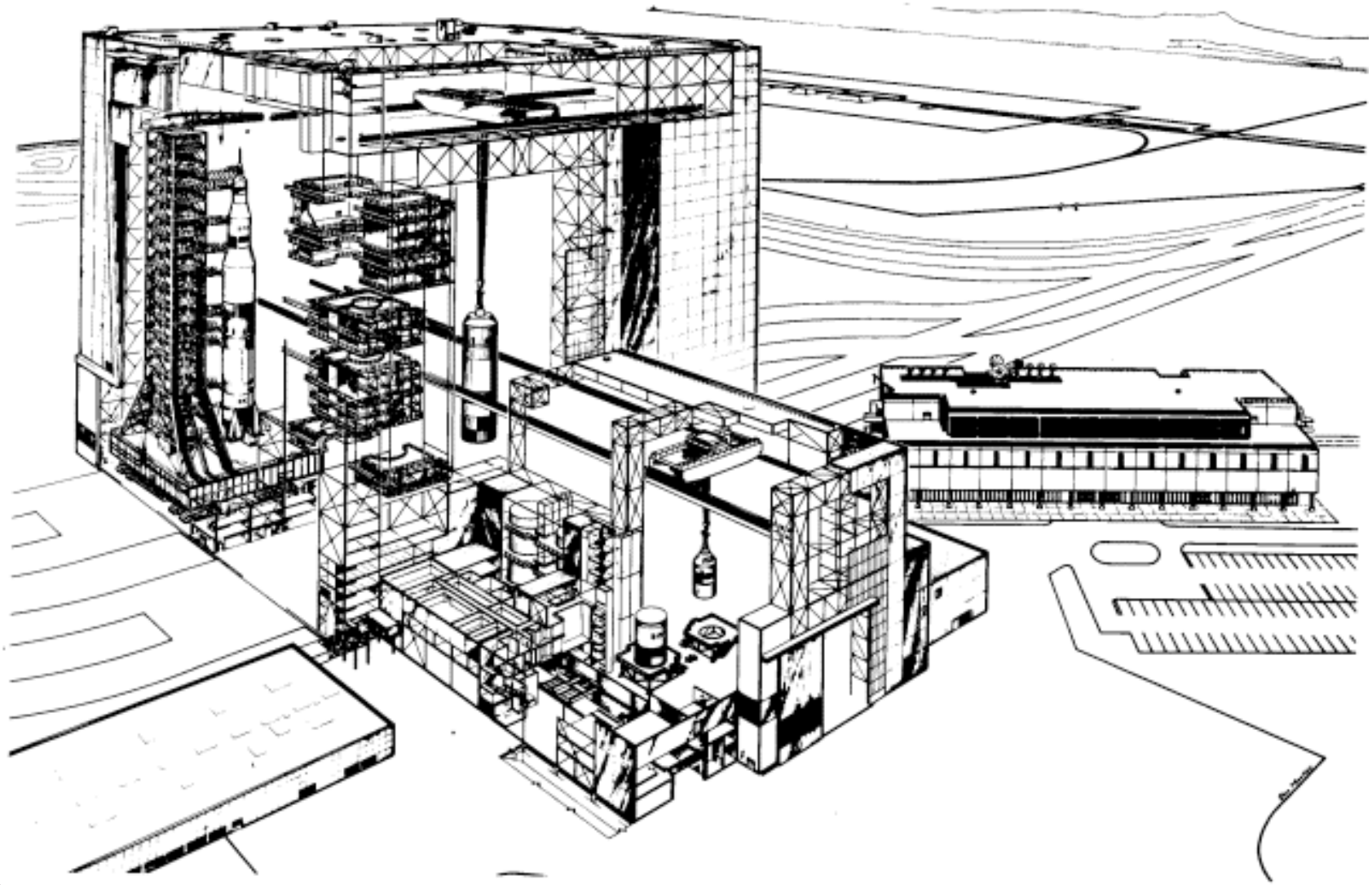
Aerial View of LC-34

LC-37 Concept



LC-37 Under Construction (1963)

- 



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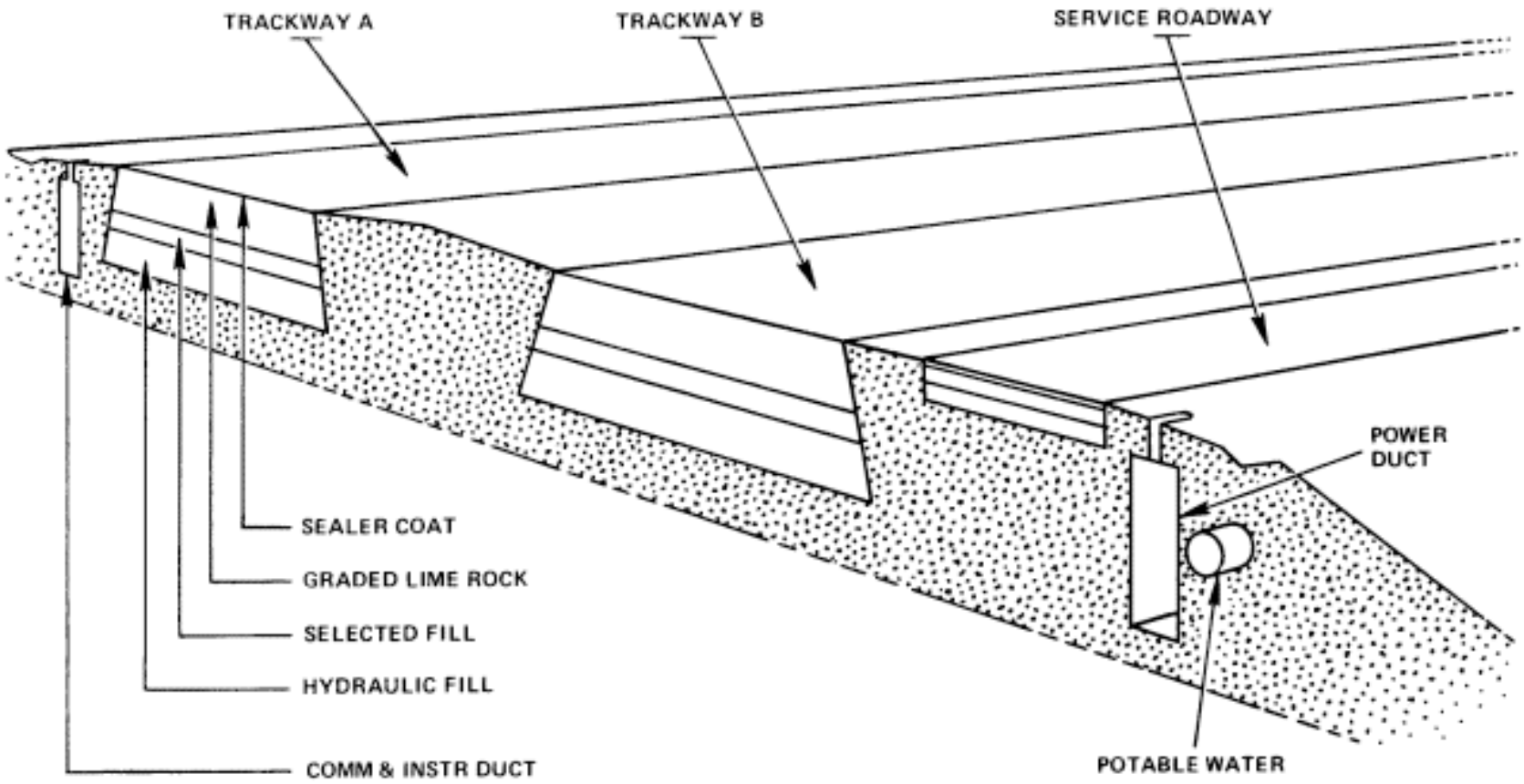
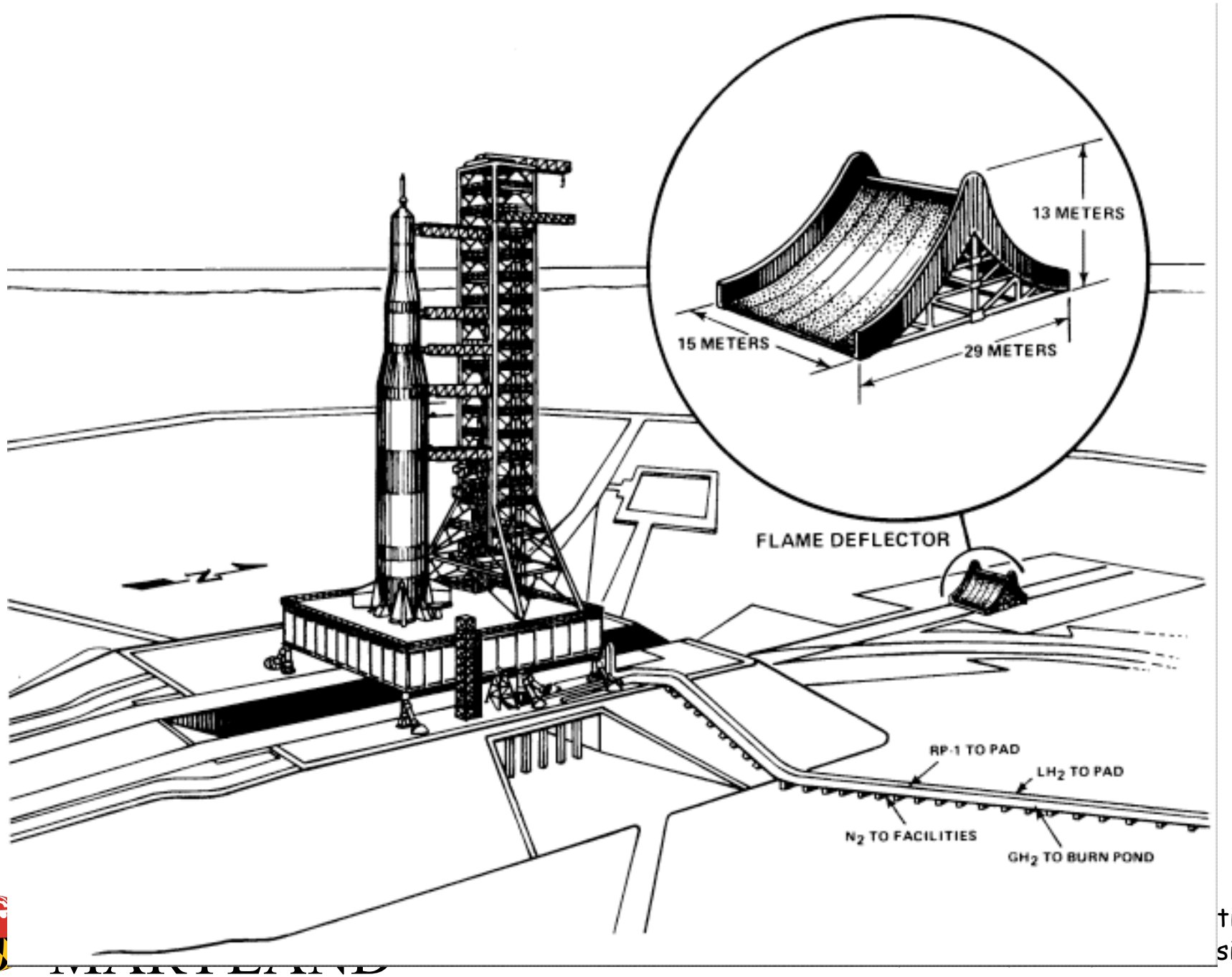
Ground Processing and Launch Facilities
Principles of Space Systems Design

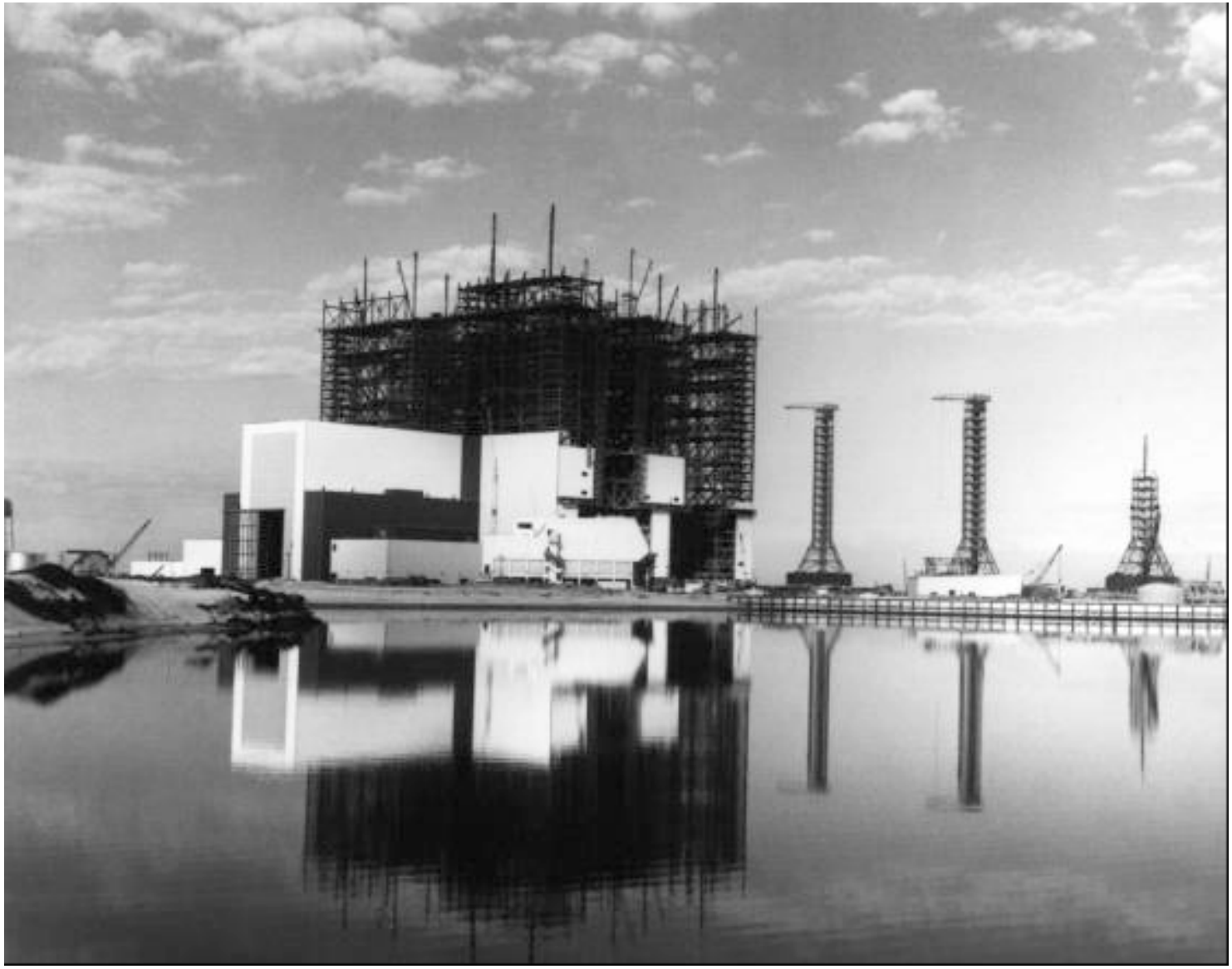
PROFILE OF TYPICAL CRAWLERWAY SECTION



(NOT TO SCALE)


13 METERS
15 METERS
29 METERS
FLAME DEFLECTOR
RP-1 TO PAD
LH_2 TO PAD
N_2 TO FACILITIES
GH_2 TO BURN POND

ties
sign



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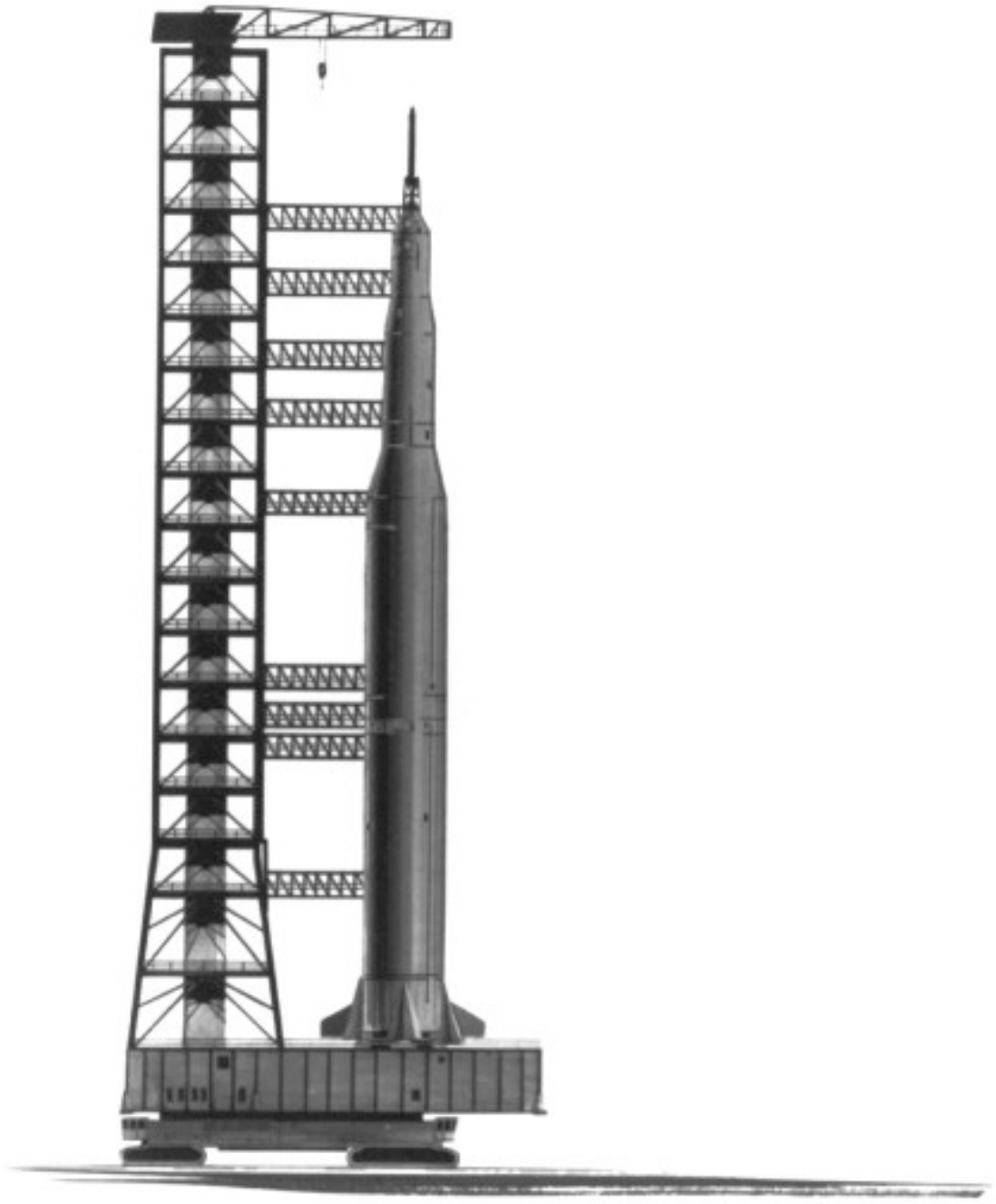

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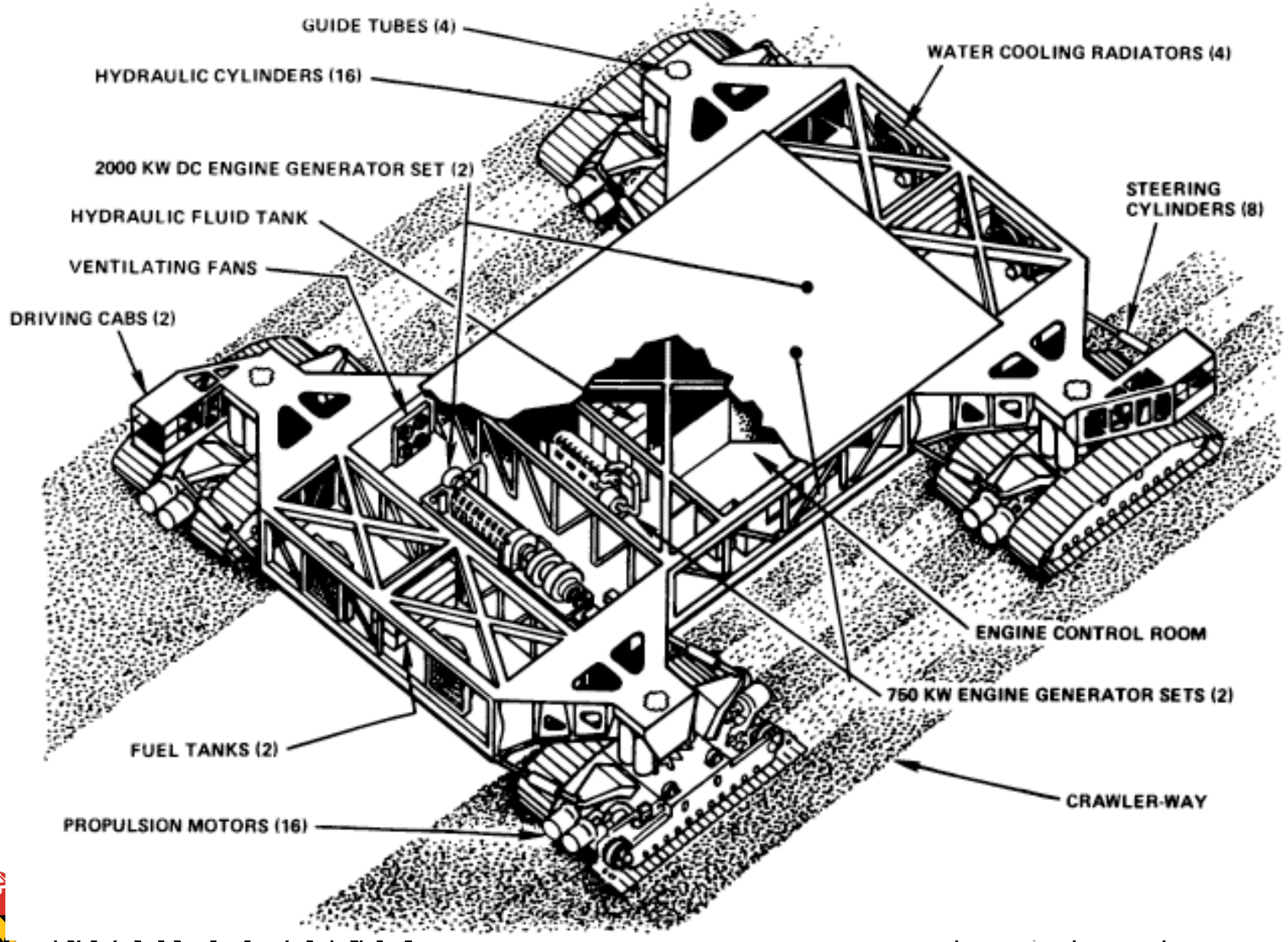
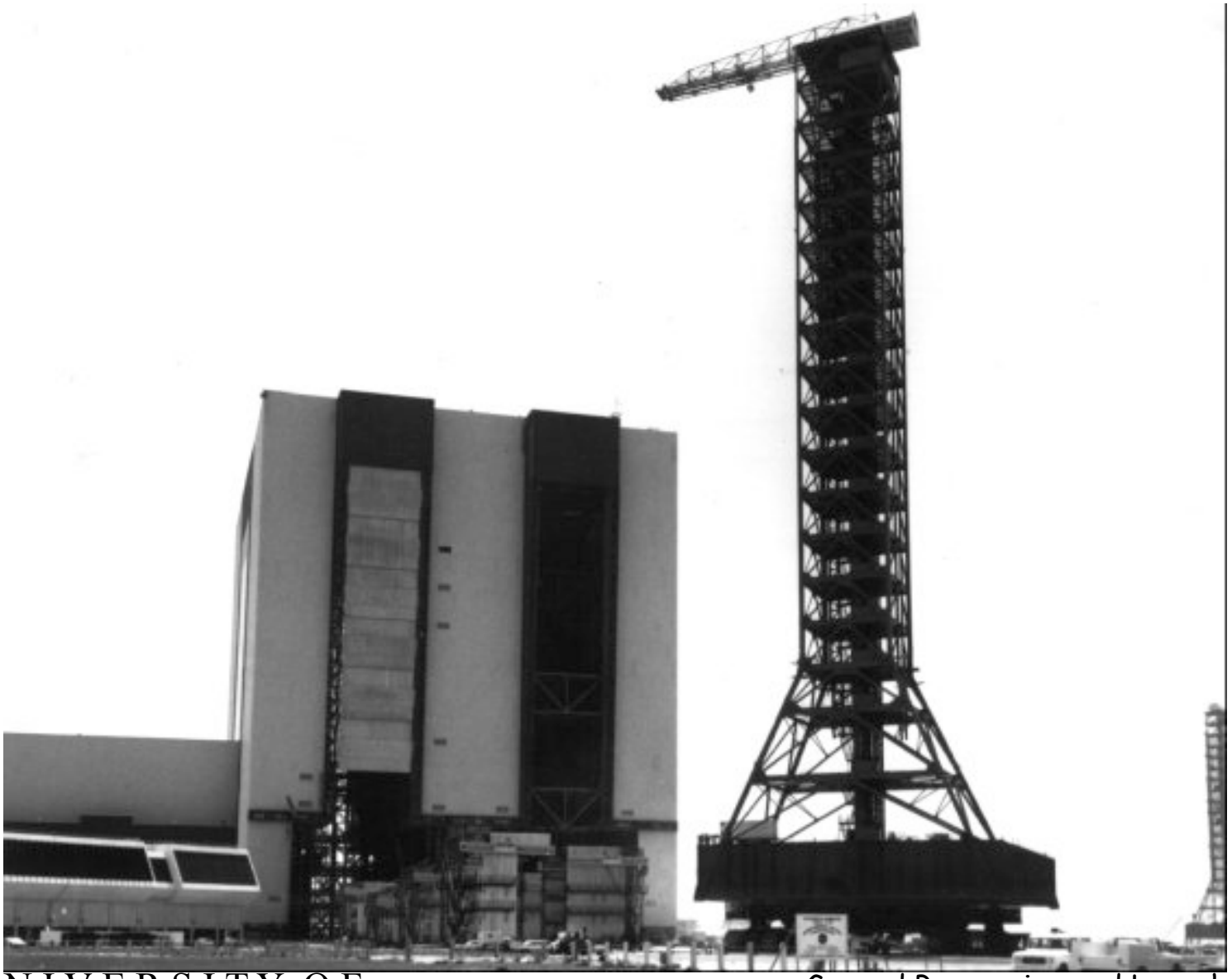
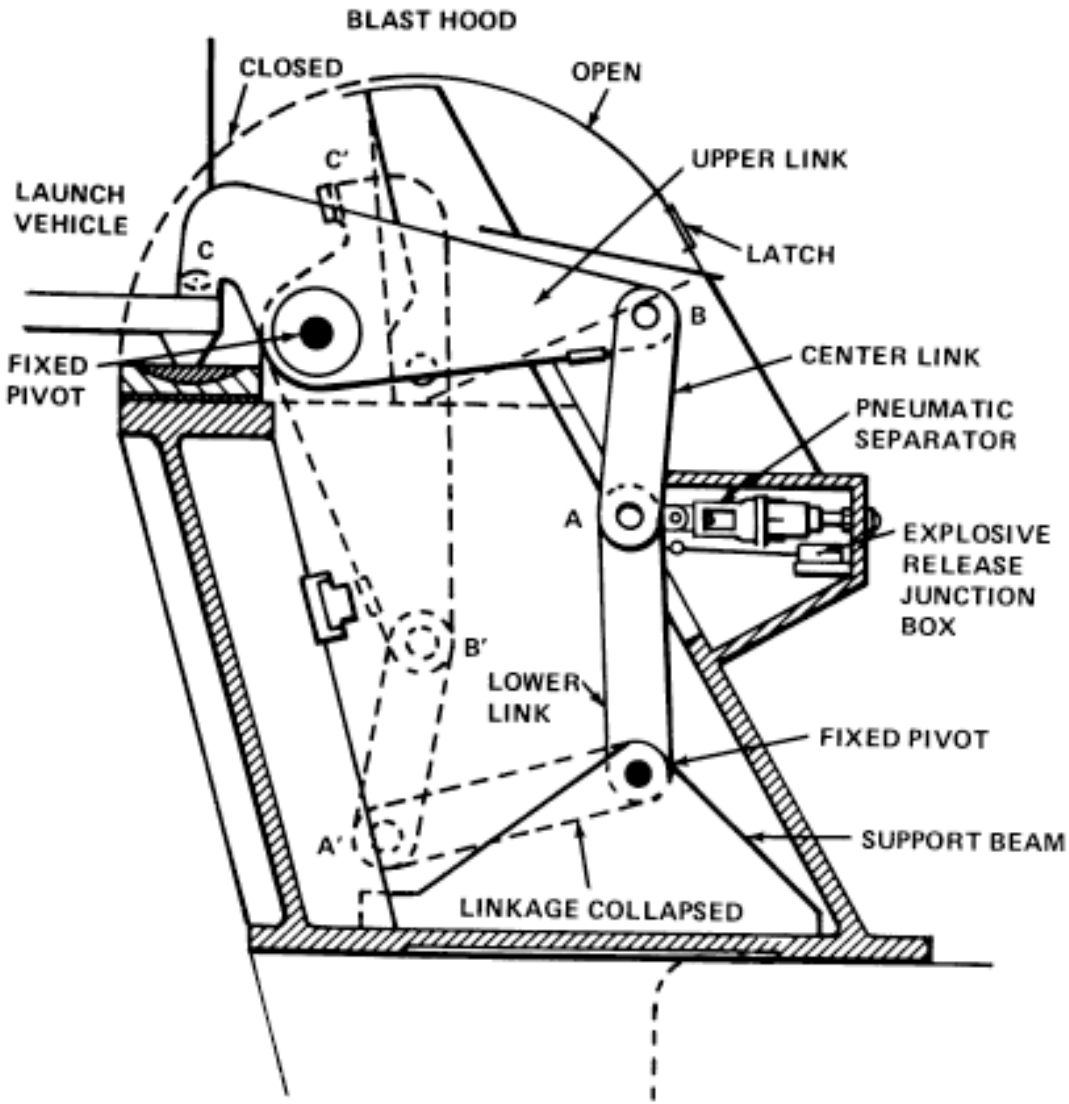
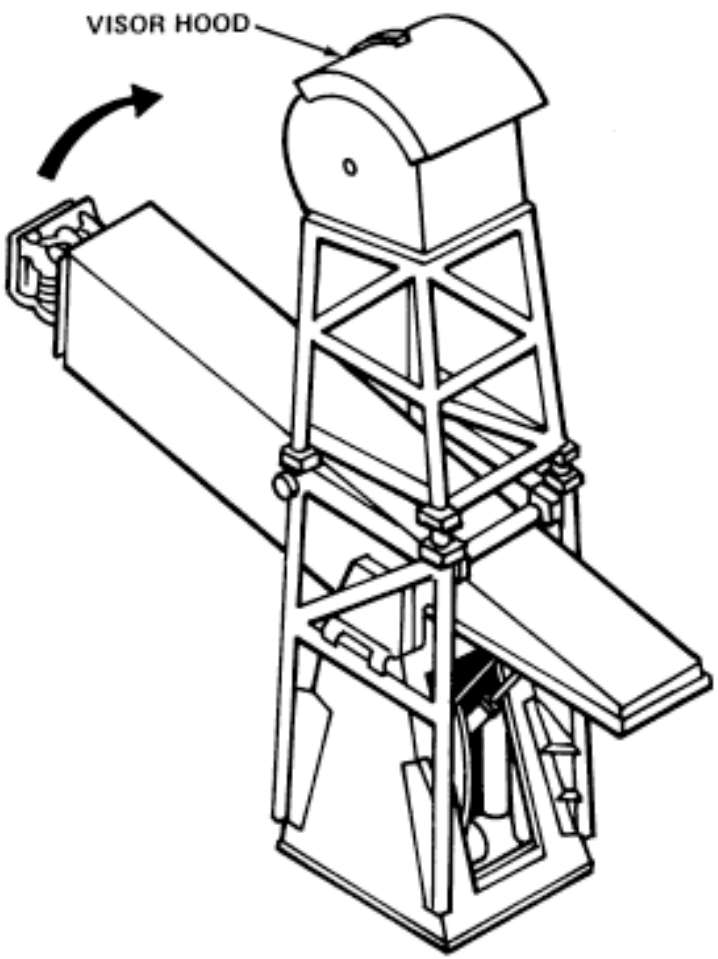
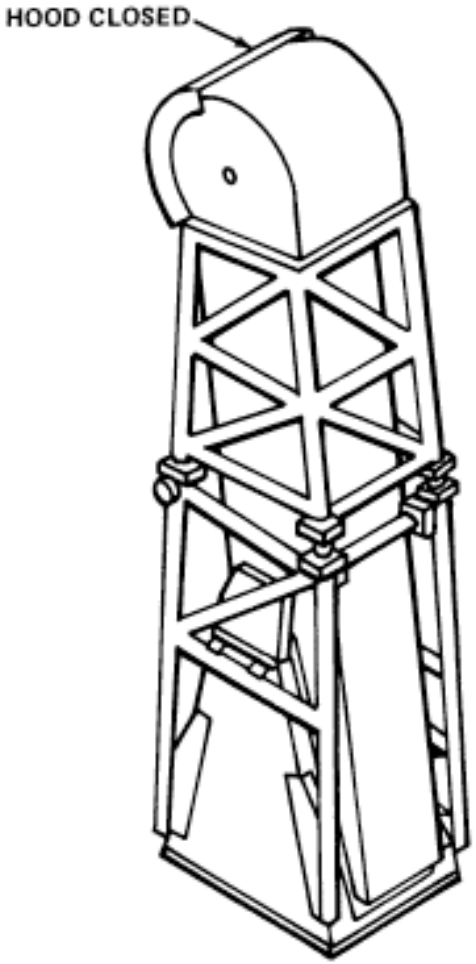
THE CRAWLER-TRANSPORTER






BLAST HOOD
CLOSED
OPEN
C'
UPPER LINK
LAUNCH VEHICLE
C
LATCH
B
FIXED PIVOT
CENTER LINK
PNEUMATIC SEPARATOR
A
EXPLOSIVE RELEASE JUNCTION BOX
B'
LOWER LINK
FIXED PIVOT
A'
SUPPORT BEAM
LINKAGE COLLAPSED





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Ground Processing and Launch Facilities
Principles of Space Systems Design

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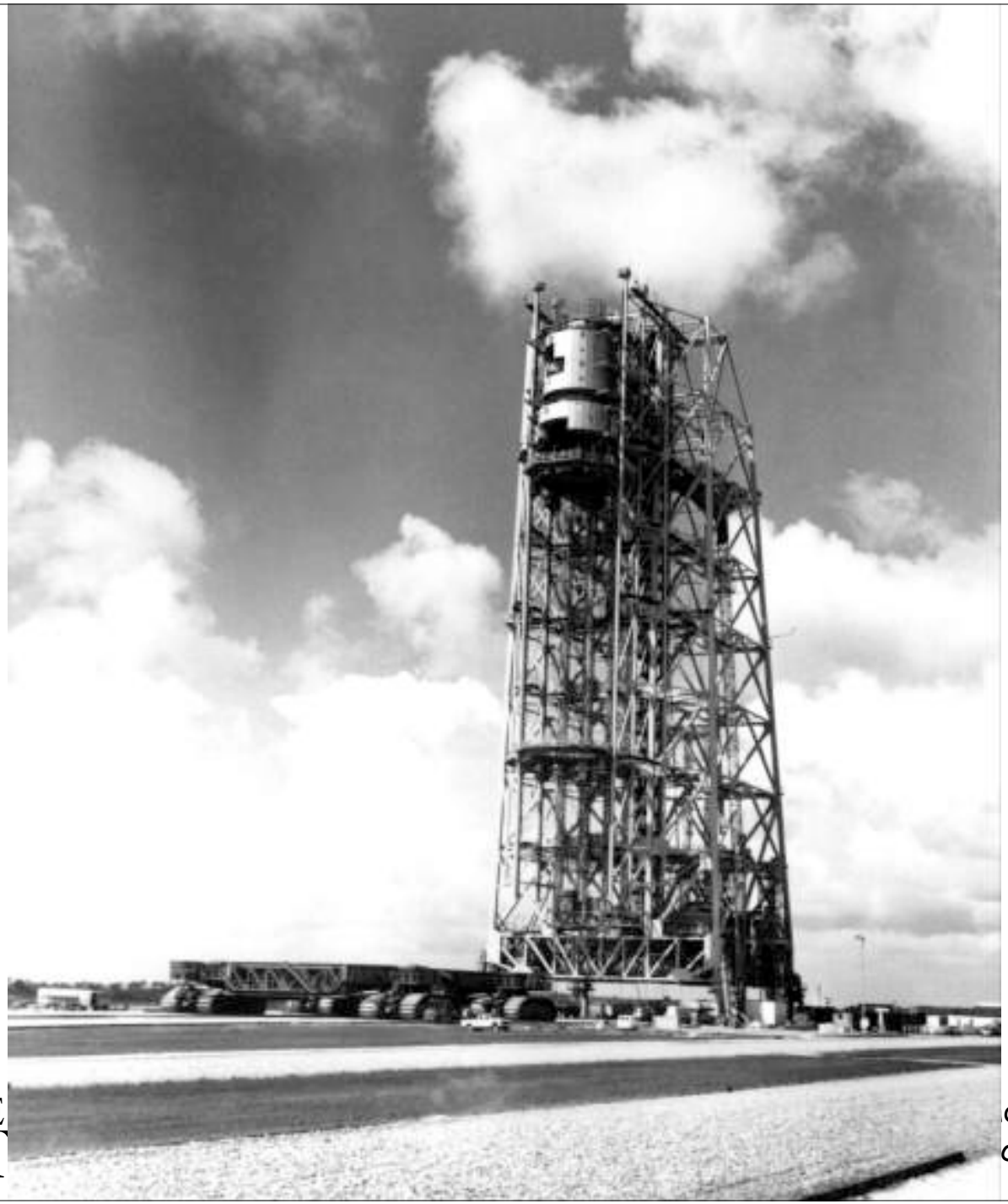

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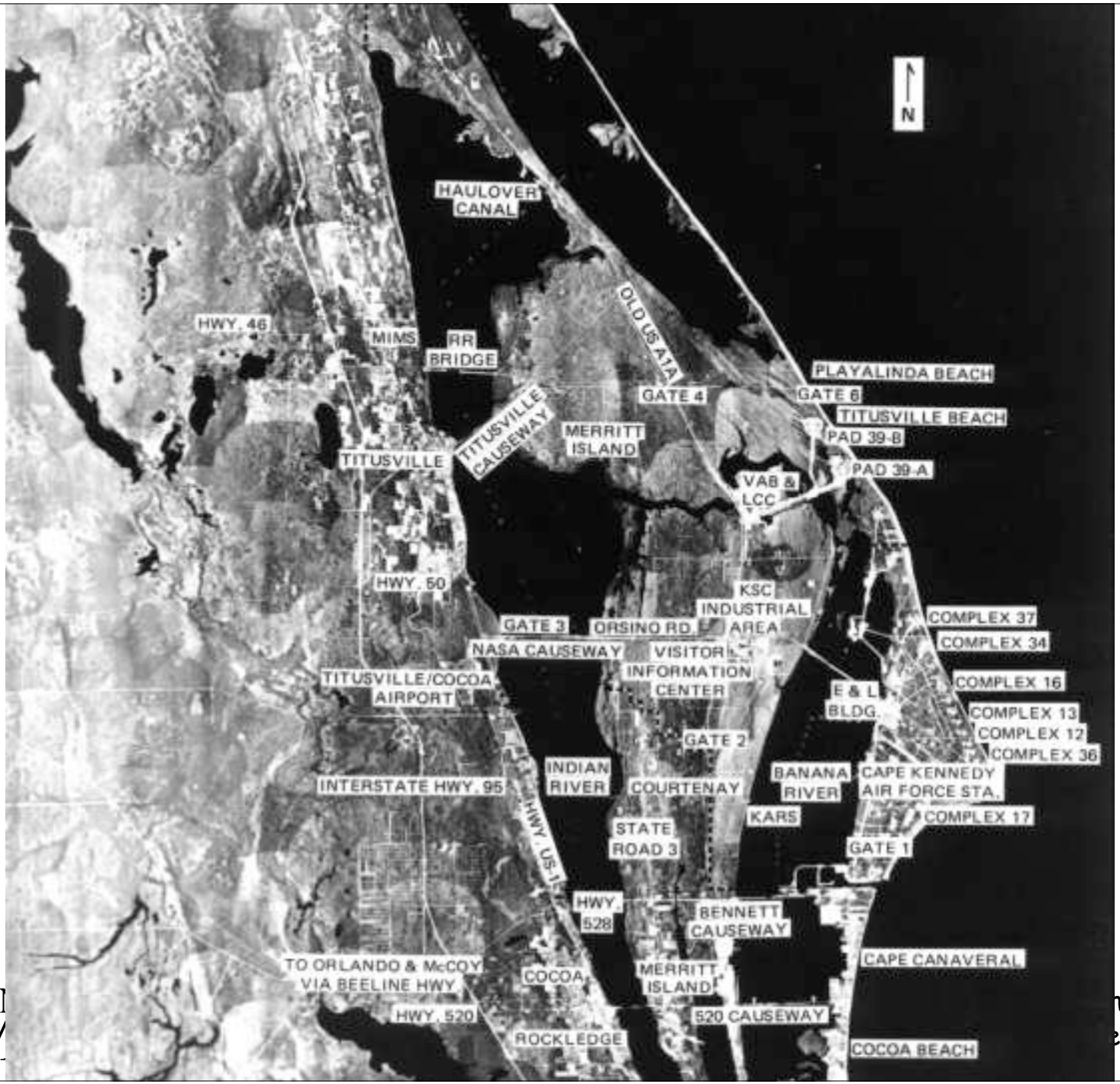
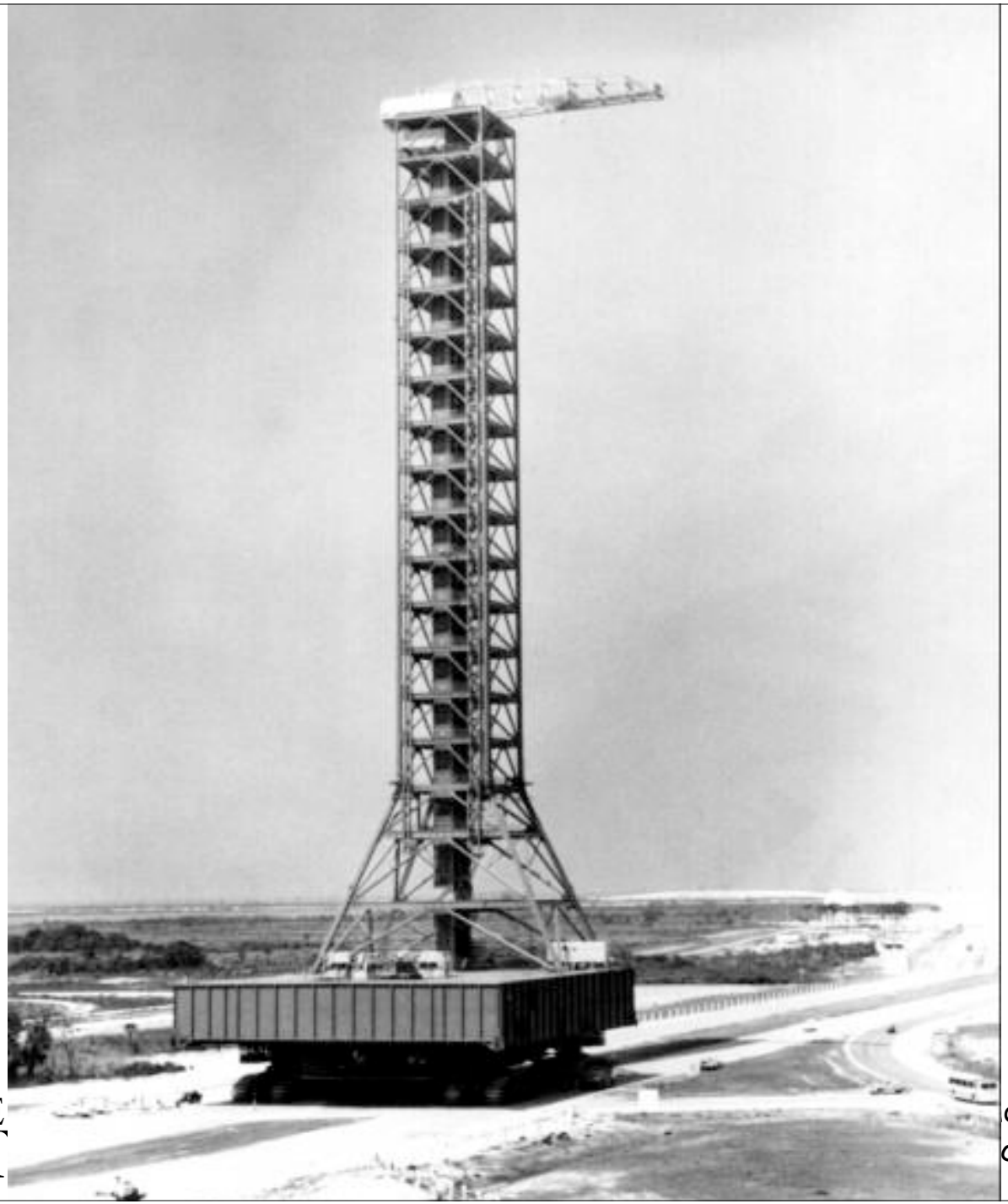

N
HAULOVER CANAL
OLD US A1A
HWY. 46
MIMS
RR BRIDGE
GATE 4
PLAYALINDA BEACH
GATE 6
TITUSVILLE BEACH
PAD 39-B
PAD 39-A
TITUSVILLE CAUSEWAY
MERRITT ISLAND
TITUSVILLE
VAB & LCC
HWY. 50
KSC INDUSTRIAL AREA
GATE 3
ORSINO RD.
COMPLEX 37
COMPLEX 34
NASA CAUSEWAY
VISITOR INFORMATION CENTER
COMPLEX 16
TITUSVILLE/COCOA AIRPORT
E & L BLDG.
COMPLEX 13
COMPLEX 12
COMPLEX 36
GATE 2
INDIAN RIVER
BANANA RIVER
CAPE KENNEDY AIR FORCE STA.
INTERSTATE HWY. 95
COURTENAY
KARS
COMPLEX 17
STATE ROAD 3
GATE 1
HWY. US-1
HWY. 528
BENNETT CAUSEWAY
CAPE CANAVERAL
TO ORLANDO & McCOY VIA BEELINE HWY
COCOA
MERRITT ISLAND
HWY. 520
520 CAUSEWAY
ROCKLEDGE
COCOA BEACH



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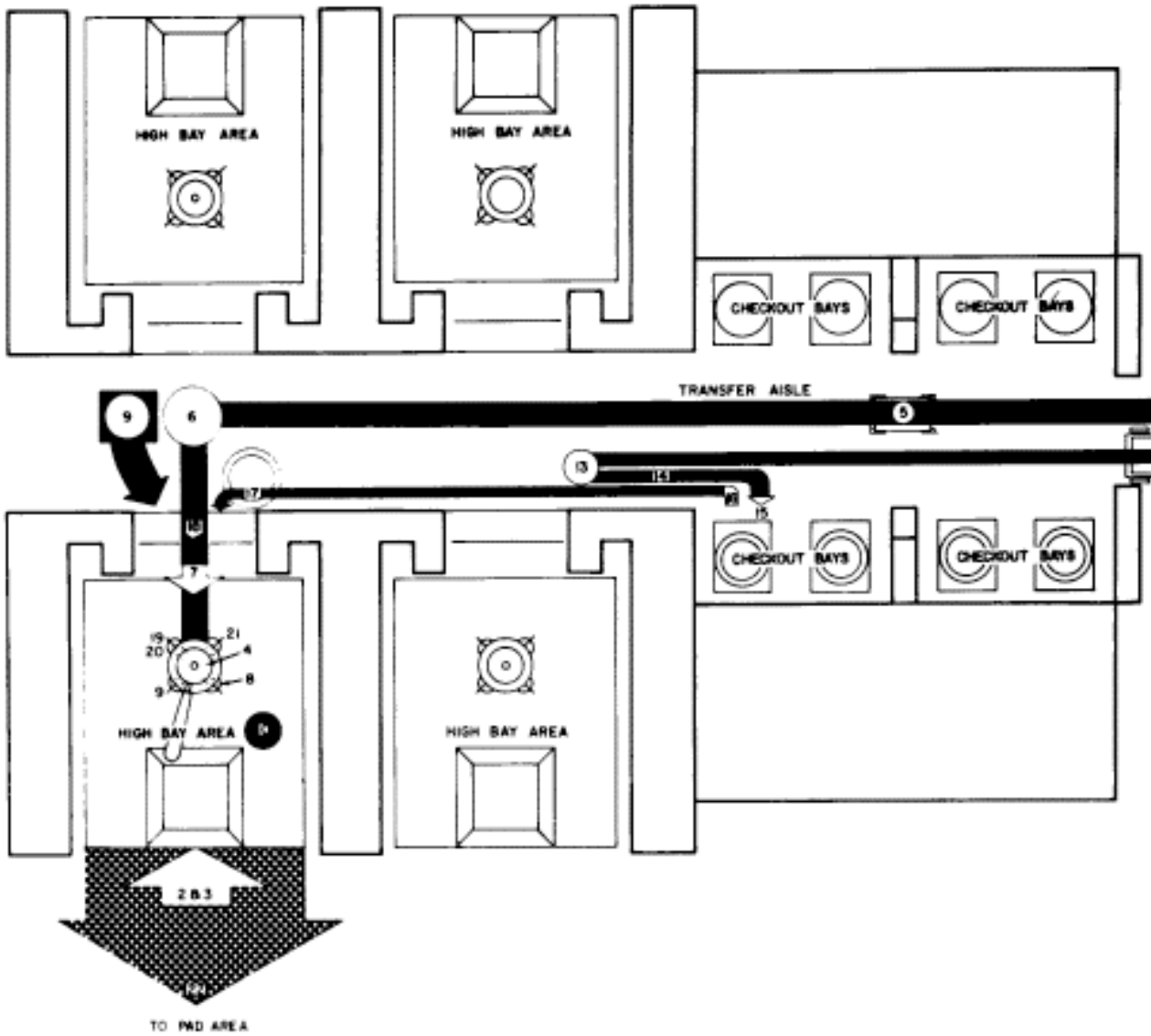
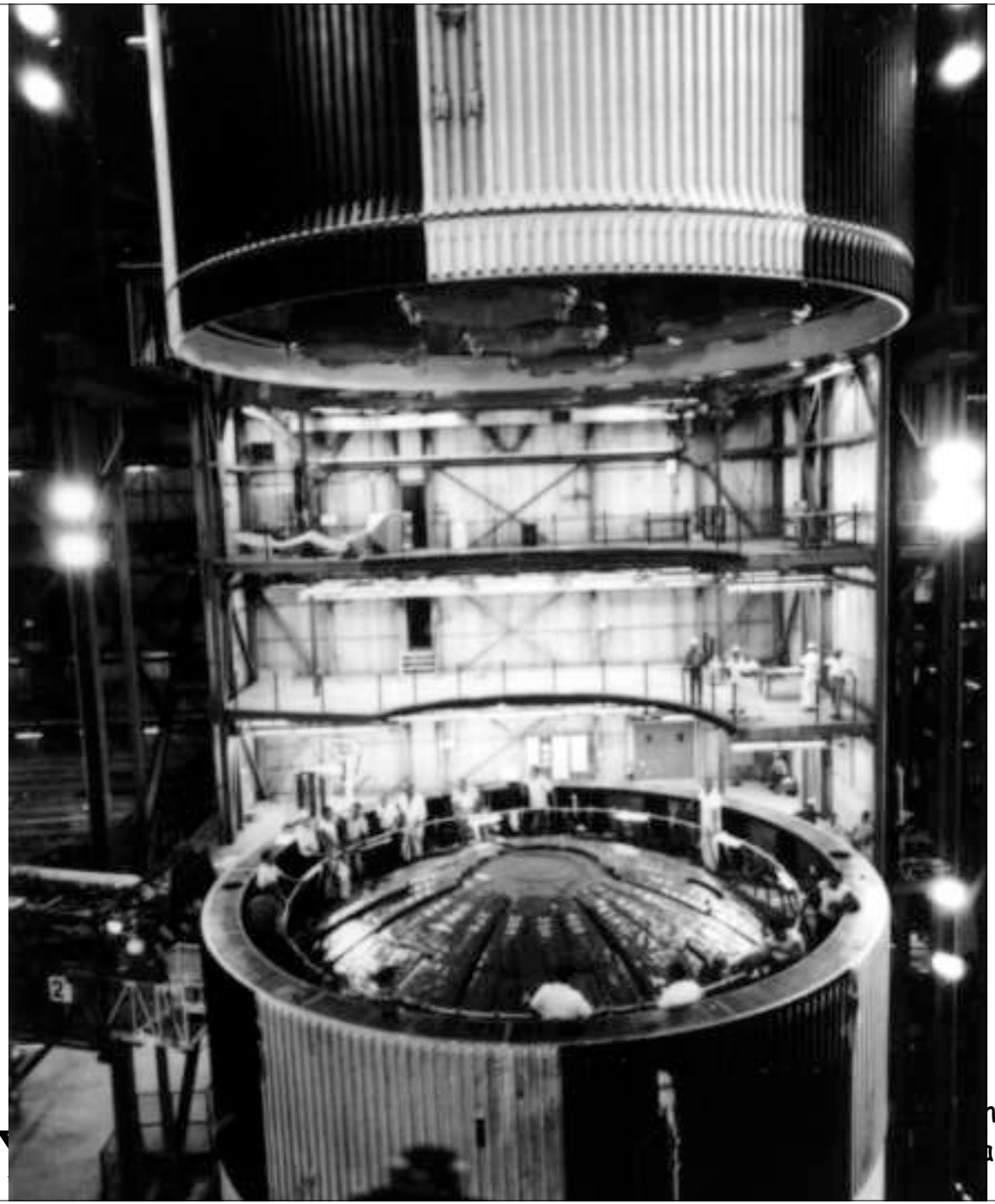
VERTICAL ASSEMBLY BUILDING



1. BOOSTER ENTERS LOW BAY
2. ENGINE SERVICE PLATFORM IS MOVED TO HIGH BAY
3. L/UT IS MOVED INTO HIGH BAY
4. ESP POSITIONED IN HIGH BAY
5. BOOSTER ARRIVES ON TRANSPORTER
6. BOOSTER RAISED TO VERTICAL POSITION
7. BOOSTER TRANSFERRED TO ERECTION BAY & ERECTED ON L/UT
8. BOOSTER FINS, ENGINE SHROUDS & ENGINE NOZZLE EXTENSIONS ATTACHED
9. I/U ARRIVES IN TRANSFER AISLE
10. I/U PLACED ON PLATFORM IN HIGH BAY
11. BOOSTER CHECK OUT PERFORMED WITH I/U
12. S-II STAGE ARRIVES ON TRANSPORTER
13. S-II STAGE RAISED TO VERTICAL POSITION
14. S-II STAGE ERECTED ON DOLLY & MOVED INTO CHECKOUT BAY
15. S-II STAGE IS CHECKED OUT
16. S-II STAGE MOVED OUT OF CHECKOUT BAY TO TRANSFER AISLE
17. S-II STAGE MOVED UP TRANSFER AISLE TO HIGH BAY
18. S-II STAGE TRANSFERRED TO ERECTION BAY & MATED WITH PRECEEDING STAGE
19. S-IVB STAGE IS MATED TO PRECEEDING STAGE
20. I/U IS MATED TO UPPER STAGE S-IVB
21. ASSEMBLED VEHICLE IS CHECKED OUT
22. VEHICLE ASSEMBLY PROCEEDS TO LAUNCH PAD

MARYLAND

FLOW CHART



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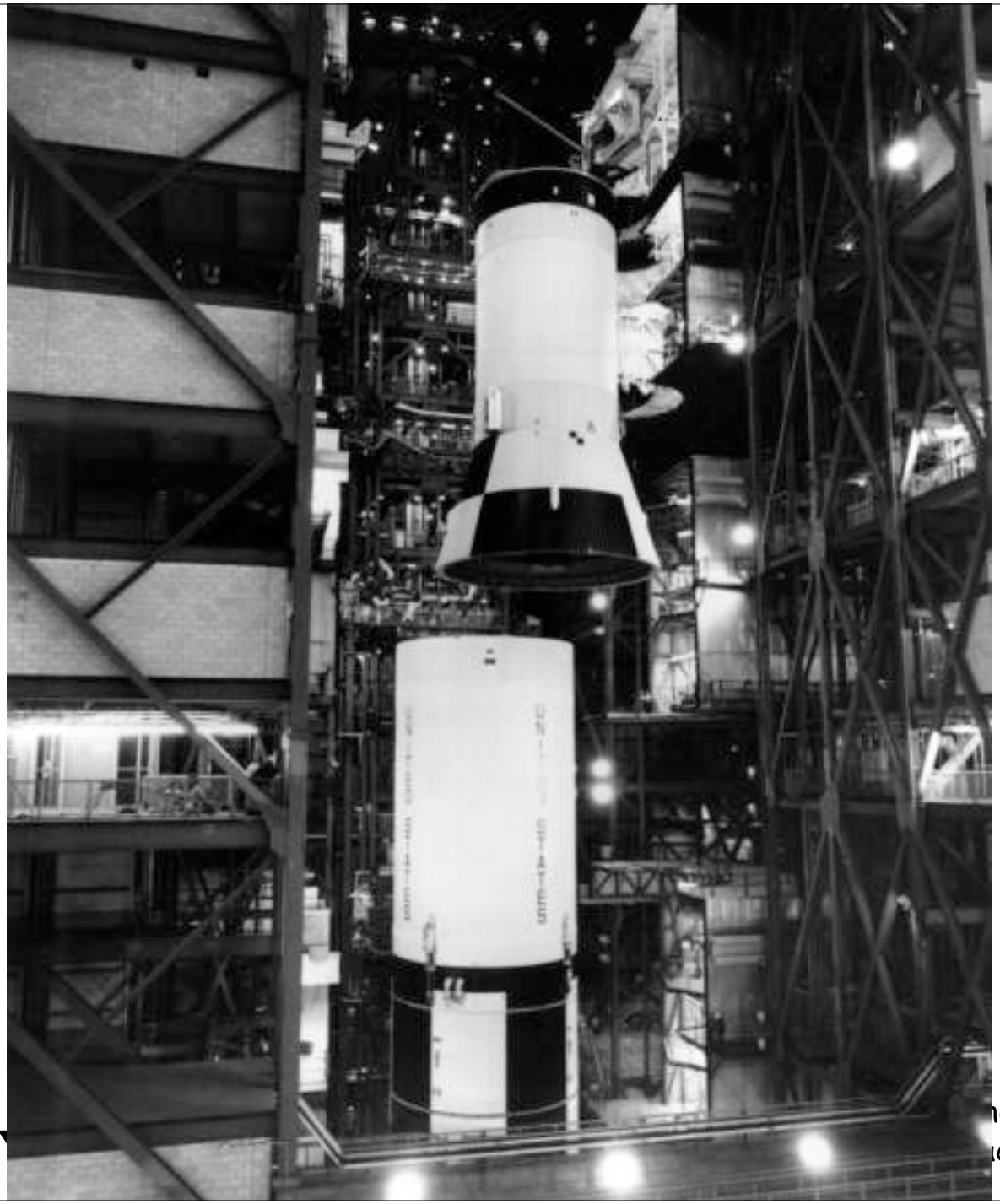

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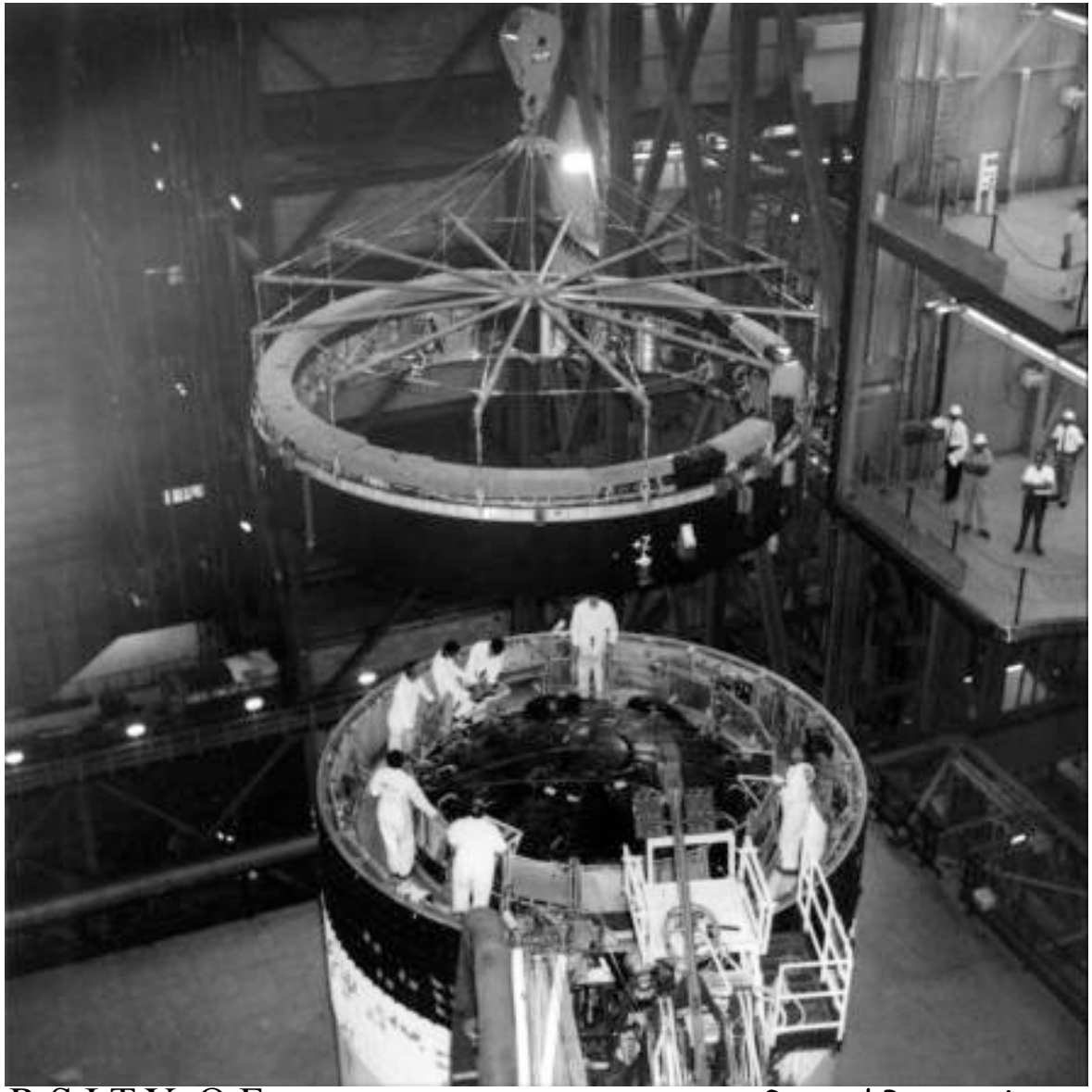

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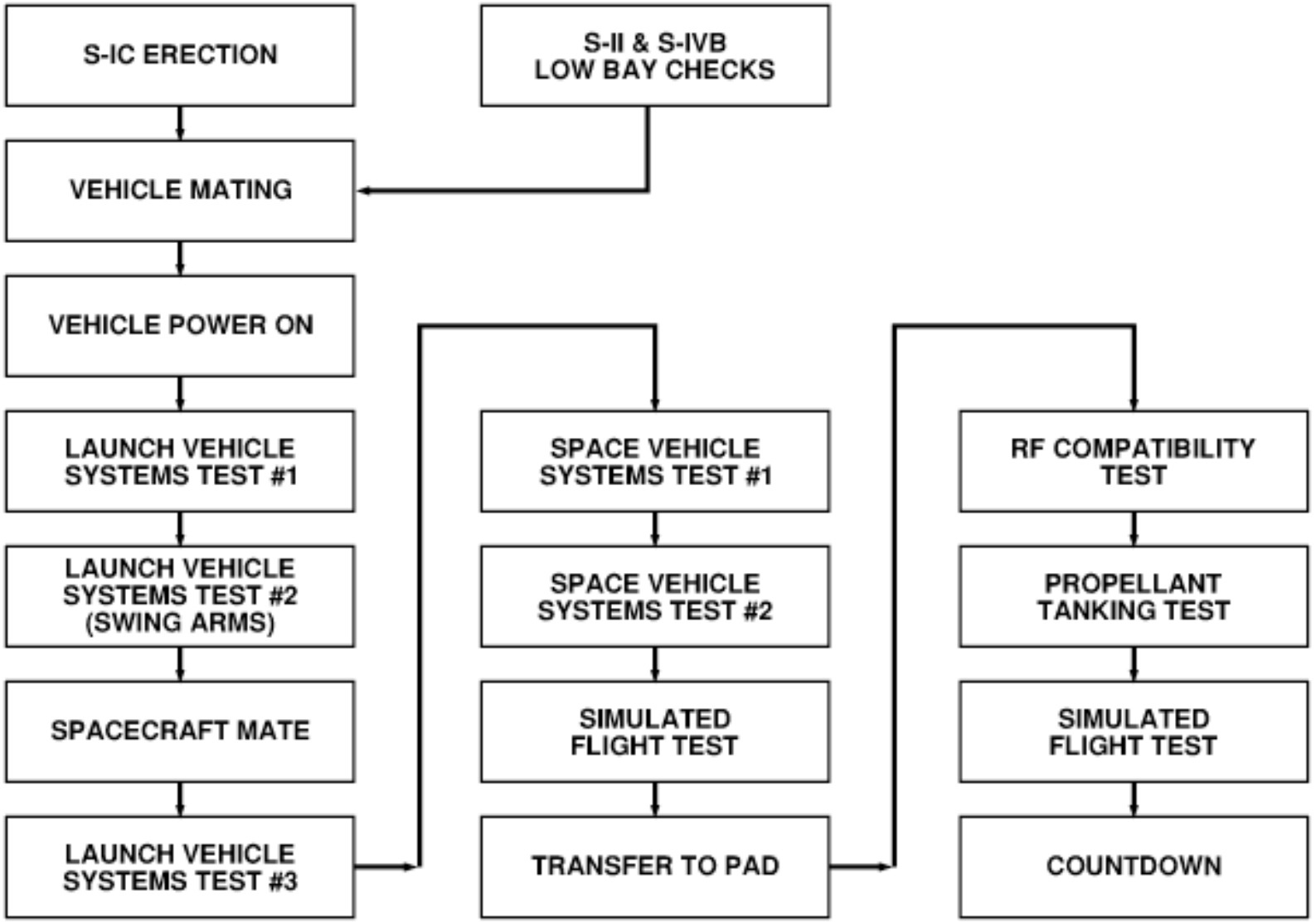
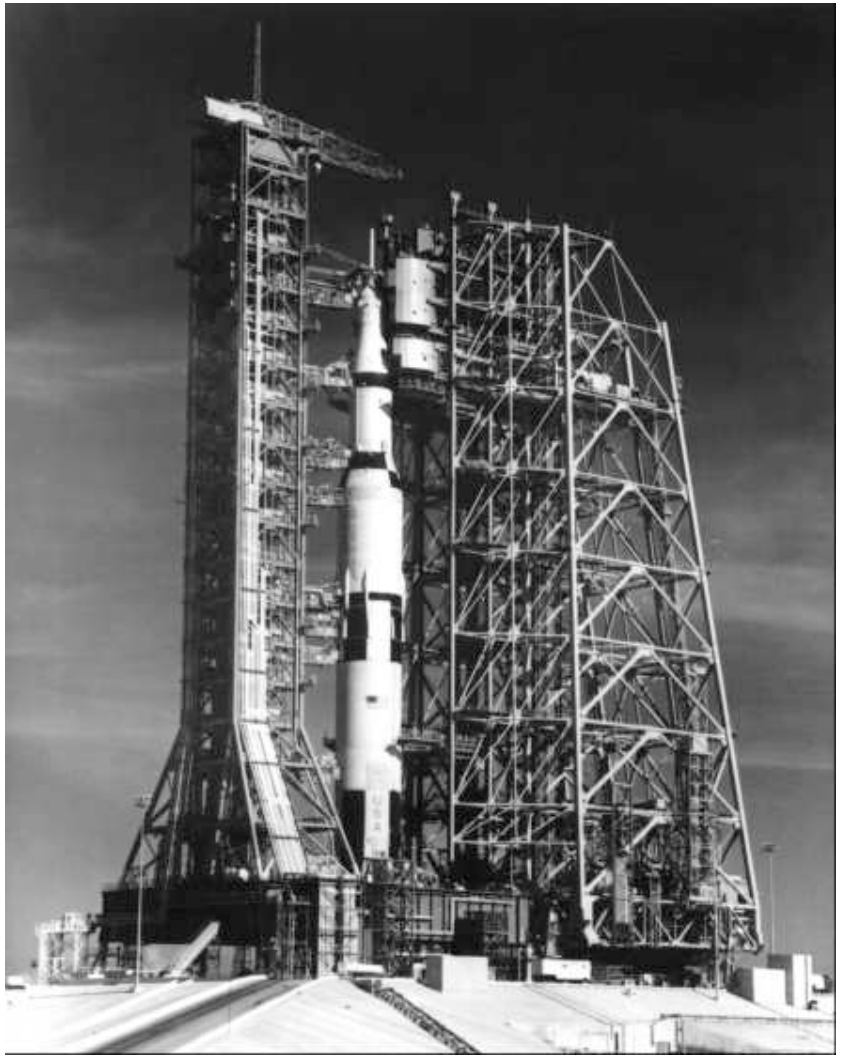
SATURN V CHECKOUT SCHEDULE MILESTONES



SA-501 at LC-39A



Delta IVH Horizontal Integation Facility

Delta IV Heavy Transporter

Delta IV Heavy at LC34 Blockhouse

Delta IV Heavy Arrives at LC-34

Delta IV Heavy Module Interconnects

Delta IV Heavy at Pad

Delta IV Heavy Rotation

Delta IV Heavy Rotation

Delta IV Heavy at Pad