

APPENDIX B

Launch Complex 39

1. Vehicle (Vertical) Assembly Building (VAB)

Area: 32 500 sq m (8 acres).

Dimensions: 218 × 158 m, 160 m tall. Compare to Statue of Liberty, 93 m tall.

Volume: 3 665 000 cu m. Compare to Pentagon, 2 181 000 cu m.

Features: 4 high bays for assembly and checkout of launch vehicles with spacecraft, low bays for checkout of individual stages. 4 high bay doors, opening height 139 m. 71 lifting devices. 2 bridge cranes of 227-metric-ton capacity. 9070 metric tons of air conditioning, 125 ventilators.

Construction: 89 400 metric tons of steel, 49 700 cu m of concrete. 4225 open-end steel pipe piles, 0.4 m diameter, driven to depth of 49 m. Siding of 100 800 sq m of insulated aluminum panels and 6500 sq m of plastic panels.

Cost of construction: \$117 000 000.

2. Launch Control Center (LCC)

The 4-story, electronic brain of LC-39, the LCC was built adjacent to the VAB and 5.6 km from pad A. During launch, 62 TV cameras provided closed-circuit pictures to 100 monitor screens in the LCC. The LCC was connected to the mobile launchers by a high-speed data link.

1st floor: offices, cafeteria, shops.

2d floor: telemetry, RF and tracking equipment, instrumentation, data reduction and evaluation equipment.

3d floor: 4 firing rooms, one for each of the high bays in the VAB. Each active room had 470 sets of control and monitoring equipment.

4th floor: conference and display rooms, offices, mechanical equipment.

Cost of construction: \$10 000 000.

3. Mobile Launchers (3)

Weight: 5715 metric tons, with unfueled vehicle.

Height (on pedestals): 136 m to top of crane.

Launch platform: 2-story steel structure 49×41 m, 7.6 m high. Exhaust hole 14 m square. 4 hold-down arms, each 18 100 kg, held rocket vertical during thrust buildup, approximately 8.9 seconds to reach 95% of total thrust. Platform supported by 6 steel pedestals 7 meters high when in VAB or on pad. 4 additional extensible columns used at pad, to stiffen platform during firing.

Umbilical tower, mounted on platform, 18 levels, 2 elevators. 9 swing (service) arms for personnel access, propellant, electrical, pneumatic, and instrumentation lines. Arms weighed 15 900–23 600 kg, length 13.7–18.3 m. Top arm (9) used by astronauts to enter spacecraft. 4 arms retracted before liftoff, 5 at T–0.

Cost of construction: \$33 963 000.

4. *Transporters (2)*

Used to move mobile launcher, with assembled space vehicle, from VAB to pad, also to move mobile service structure to and from pad.

Weight: 2720 metric tons, largest tracked vehicle known.

Dimensions: 35×40 m, with top deck about size of baseball infield; height, 6–8 m.

4 double-tracked crawlers each 3 m high, 12 m long. 8 tracks per transporter, 57 shoes per track. Each tread shoe (or link in the track) weighed 0.9 metric ton.

Power: 16 traction motors powered by four 1000-kw generators, driven by 2 diesel engines; two 750-kw generators, driven by 2 diesel engines for jacking, steering, lighting, ventilating; two 150-kw generators for power to the mobile launcher.

Maximum speed: 1.6 km/hr loaded, 3.2 unloaded. Pad-to-VAB trip time, loaded, 7 hrs.

Levelling: top of space vehicle kept vertical within $\pm 10'$ of arc, including negotiation of 5% grade leading up to pad.

Cost of construction: \$13 600 000.

5. *Mobile Service Structure (1)*

Weight: 4760 metric tons.

Height: 125 m.

Elevators: 2 for personnel and equipment in tower, 1 from ground to base work area.

Work platforms: 2 self-propelled, 3 fixed. Top 3 platforms served spacecraft, bottom 2 served Saturn V.

Parking position during launch: 2100 m from pad A.

Cost of construction: \$11 600 000.

6. *Crawlerway*

Length: VAB to pad A, 5500 m; VAB to pad B, 6800 m.

Width: 2 lanes, each 12 m, separated by 15 m median.

Depth: average 2 m.

Cost of construction: \$7 500 000.

7. *Launch Pads (2)*

Construction: 52 000 cu m of concrete, roughly octagonal in shape. 2 pads are virtually identical, 2660 m apart.

Flame trench: 13 m deep, 18 m wide, 137 m long.

Flame deflector: 635 metric tons, 12 m high, 15 m wide, 23 m long.

Lighting: 40 xenon high-intensity searchlights in 5 clusters around perimeter.

Emergency Egress System: 61-m escape tube from mobile launcher platform to blast-resistant room 12 m below pad, which contained survival supplies for 20 persons for 24 hours. Also, cab on slidewire from 98-m level to revetment 763 m away.