The Art of Concrete, Part 3

ACI Spring 2012 Convention
March 18 – 21, Dallas, TX

The Team

Design Team
- Architect - HKS
- MEP Engineer – M-E Engineers, Inc.
- Structural Engineer of Record- Walter P. Moore
- Code Consultant – FP&C Consultants
- Civil Engineer – Graham Associates, Inc.
- Food Service – Ricca Newmark Design
- A/V Consultant – WJHW, Inc.
- Graphics – Selbert Perkins Design

DALLAS COWBOYS STADIUM

The Team

- Dallas Cowboys Football Club
- City of Arlington, TX

- City Funds – Taxes, Parking Fees, Locker Room Taxes - $325 million
- County Funds - $25 million
- Cowboys Funds - Remainder

Over 8 million total man hours
2,200 workers per day at peak production
62 Manhattan staff members on site
**Schedule**

- **Milestone Dates**
  - November 2, 2004: City of Arlington votes
  - March 2006: Ground Breaking
  - June 2009: Substantial Completion
  - June 6, 2009: Opening Night - Concert
  - August 2009: First Home Game

- **40 Month Construction Schedule**

---

**STATISTICS**

- **153 Acres Total Site Area**
- **83 Acres of Parking – 10,000 Spaces**
- **640,000 SF Stadium Footprint**
- **Field Level – 54’ Below Grade**
- **2.8 Million SF Total Useable Area**
- **Stadium Height – 220’ From Grade**
- **Stadium Height - 274’ From Field**
- **1.4 Million CF Building Volume**

---

**STATISTICS**

- **375 Suites**
- **2,900 Televisions**
- **200,000 SF Club Space**
- **400+ Points of Sale**
- **18 Elevators – 22 Escalators**
- **12+ Miles of Handrail**
- **3,000+ Doors**
- **325 Security Cameras**

---

**STATISTICS**

- **1,370 Toilets – 509 Urinals**
- **48 Drinking Fountains**
- **1,125 Lavatories - 100 Showers**
- **10,370 Tons of Cooling Capacity**
- **Power - 25 Megawatts at 4,160 Volts**
- **10 Million LF Copper Wire**
- **41,000 Light Fixtures**
- **3.5 Million LF Fiber Optic at Cat 6A AV and Data Wiring**

---

- **Excavation and Retention System**
  - 1,600,000 CY Excavation
  - 200,000 SF Retention Wall
  - 8,500 Soil Nails
  - Playing Surface – 54’ below grade

The stadium foundation has 783 piers with a total drill length of 21,220 LF.
The project team placed 250,000 yards of concrete.

Installed 22,000 tons of reinforcing.

3,124 pieces of precast installed in seating bowl.

At peak, 19 conventional cranes - 6 tower cranes.

The twin arch trusses soar 292 feet above the playing field and weigh 5 million pounds each.

Each arch spans 1,225 feet to create the longest single-span roof structure.
Each arch truss is 17 feet wide by 35 feet deep and was fabricated using grade 65 steel from Luxembourg.

The 660,000 square foot roof is the largest domed sports structure in the world.

Structural Steel Arches

The 660,000 square foot roof is the largest domed sports structure in the world.

Structural Steel Arches

The 660,000 square foot roof is the largest domed sports structure in the world.

Structural Steel Arches

The 660,000 square foot roof is the largest domed sports structure in the world.

Structural Steel Arches

The 660,000 square foot roof is the largest domed sports structure in the world.
2 Scoreboards 180’ x 50’
2 Scoreboards 96’ x 27’
Total Weight – 275 Tons
36 Million LED’s
High Definition Video
3,700 LF Ribbon Board

THE ART OF CONCRETE

ABUTMENT FOUNDATIONS

STATISTICS
• 18’ Wide – 176’ Long – 71’ Deep
• Each Abutment Resists 19 Million Pounds of Thrust
• 3,400 CY 6,000 psi Concrete Each
• Tested Actual Field Conditions Prior to Installation
Total Weight – 41 Tons
#11 Vertical at 12" ocef
#10 Horizontal at 16" ocef
70 foot tall
26 foot wide
3 foot deep
Grade 75
Threaded Couplers at Splices
Questions?