

American Concrete Institute®
Advancing concrete knowledge

The Art of Concrete, Part 3

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

ACI
WEB SESSIONS


Craig Abbott, Project Manager, Manhattan Construction Company, Dallas, TX.

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DALLAS COWBOYS STADIUM

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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

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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
- AV Consultant - WJHW, Inc.
- Graphics - Selbert Perkins Design

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

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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

ACI WEB SESSIONS Manhattan Building excellence.

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

ACI WEB SESSIONS Manhattan Building excellence.

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

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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

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

ACI WEB SESSIONS Manhattan Building excellence. Excavation and Retention System



The stadium foundation has 783 piers with a total drill length of 21,220 LF.

ACI WEB SESSIONS Manhattan Building excellence. Foundations

The project team placed 250,000 yards of concrete.

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Structural Concrete

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Installed 22,000 tons of reinforcing

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Structural Concrete

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3,124 pieces of precast installed in seating bowl.

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Precast Concrete

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- At peak, 19 conventional cranes
- 6 tower cranes

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Cranes and Hoisting

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

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Structural Steel Arches

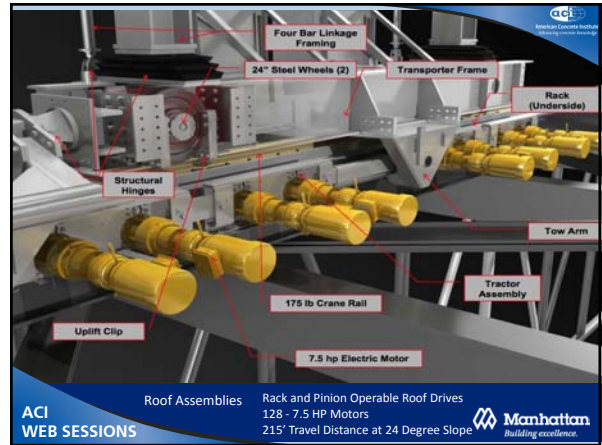
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Each arch spans 1,225 feet to create the longest single-span roof structure.

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Structural Steel Arches

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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

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THE ART OF CONCRETE



ABUTMENT FOUNDATIONS

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Arch Abutment Foundations Aerial Scale

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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

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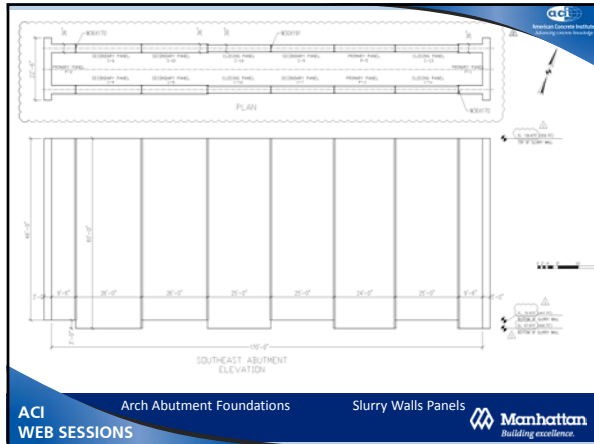
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Arch Abutment Foundations Slurry Wall Excavation

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ACI WEB SESSIONS Arch Abutment Foundations Slurry Walls Panels **Manhattan** Building excellence.



ACI WEB SESSIONS Arch Abutment Foundations Slurry Wall Excavation **Manhattan** Building excellence.



ACI WEB SESSIONS Arch Abutment Foundations Slurry Walls Shear Beams **Manhattan** Building excellence.



ACI WEB SESSIONS Arch Abutment Foundations Slurry Wall Cages **Manhattan** Building excellence.



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

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