

Concrete Test Report

DATE OF REPORT: 10/27/03

PROJECT: Fort Collins Zoo - Primate Habitat 1 BLDG. PERMIT NO.: Hegering International					PROJECT NUMBER: S91003-24 CYLINDER SET NO.: 1				
SAMPLING DATA					MIX DATA				
DATE SAMPLED: 02/28/03 TIME SAMPLED: 10:45-11:15 SAMPLED BY: Harvey NUMBER OF CYLINDERS MOLDED: 12 DATE CYLINDERS RECEIVED: 02/28/03 TRANSPORTED BY: TRUCK NUMBER: 103 TICKET NUMBER: 8342 TYPE OF INSPECTION: Ad3					SPEC. STRENGTH: 4000 PSI MIX DESIGNATION: 3000-C SIZE OF LOAD: 2 SUPPLIER: AJ-Mix TIME BATCHED: 10:15 AM FINISH TIME: 3:45 AM TESTING INSTRUCTIONS: used another WATER ADDED ON SITE: 12 ADDITIVE QUANTITY: Ad1				
LOCATION OF CONCRETE PLACED: Caisson A-3-1, plains regions animal habitat									
WEATHER CONDITIONS:					QUANTITY PLACED: AD4 CY				
PROPERTIES OF FRESH CONCRETE					SPECIFICATIONS				
AIR TEMPERATURE: 54° ° CONCRETE TEMPERATURE (ASTM C 1064): 82° ° SLUMP (ASTM C 143): 5.5 INCHES POST ADDITIVE SLUMP (ASTM C 143): 145 INCHES AIR CONTENT BY VOLUME (ASTM C 231): 2.3 %					CONCRETE TEMPERATURE (ASTM C 1064): 70-90° SLUMP (ASTM C 143): 5"-6" POST ADDITIVE SLUMP (ASTM C 143): 140-145 AIR CONTENT BY VOLUME (ASTM C 231): 6%-7%				
COMPRESSION TEST RESULTS									
CYLINDER NUMBER	TEST DATE	AGE (DAYS)	DIAM. (IN.)	AREA (SQ.IN.)	FAIL TYPE	MAXIMUM LOAD (LBS)	COMPRESSIVE STRENGTH (PSI)	CURING METHOD	UNIT WEIGHT (PCF)
123-1-2-9		hold			S9			LCB	116
123-1-2-2	3/7/03	7	6.00	28.27	S9	76,000	2690	LCB	111
123-1-2-3	3/7/03	7	6.00	28.27	S9	98,000	3470	LCB	112
123-1-2-4	3/28/03	28	6.00	28.27	S9	120,300	4250	LCB	113
123-1-2-5	3/28/03	28	6.00	28.27	S9	119,700	4230	LCB	114
123-1-2-6	3/28/03	28	6.00	28.27	S9	117,100	4140	LCB	B
Average 28 Day Strength							4210		

REMARKS: none
first cage broke
during placement


CYLINDERS PLACED IN A CURE BOX: YES NO

DISTRIBUTION:

CLIENT: Advanced Professional Eng.
ARCHITECT: Cage Construction
ENGINEER: Jungle Jazz Architects
CONTRACTOR: Newt Holdings
SUPPLIER: Major Mix
OTHER: City of Fort Collins

SUBMITTED BY: _____

NOTES:

Types of failure according to ASTM C 39: A = Cone, B = Cone and Split, C = Cone and Shear, D = Shear, E = Columnar, F = Other
Curing Methods: L - Lab Cure; F - Field Cure
N/A - Not Applicable -- Unknown
Cylinders tested in accordance with ASTM C 39. Cylinders molded in accordance with ASTM C 31 when sampled by  personnel.
Unit weight listed is for information only and assumes the sample is exactly 6" x 12", unless otherwise noted.

(This form is printed on letterhead)

Compressive Strength of Concrete Cylinder

Report Date: 11/4/03

Test Method: ASTM C 39, 6 in. Cylinder

Client: Harold Jenkins
Advanced Professional Eng.
363 West Drake, Suite 10
Fort Collins, CO 80526
123-456-7890

Project No.: S91003-24
Project Desc: Fort Collins Zoo - Primate Habitat 1
1222 Colorado St.
Fort Collins, CO 80525

Field Test Conditions and Results

Set Number:	1	Mix Design:	3000-C
Date Cast:	2/28/2003	Supplier:	AJ-Mix
Time Cast:	10:45-11:15	Specified Air (%):	123.4
Date Received:	2/28/2003	Specified Strength (psi):	4000
Measured Slump (in.): (AASHTO T 119)	5.5	Ticket Number:	8342
Measured Air (%):	2.3	Cylinders per Set:	12
Concrete Temp (°F):	82°	Cylinders Cast By:	Harvey
Air Temp (°F):	54°		
Liquid Added On Site:	12		
Sample Location:	Caisson A-3-1, plains regions animal habitat		

Compression Test Results

Sample No.	Field Cure (days)	Lab Cure (days)	Test Age (days)	Max Load (pounds)	Cylinder Diameter (inches)	Cylinder Area (in. ²)	Strength (psi)	Fracture Type	Capping Method*	Remarks Code(s)
123-1-2-9	0		hold					LC	116	D:
123-1-2-2	0	7	7	76000	6.00	28.27	2685	LC	111	E:
123-1-2-3	0	7	7	98000	6.00	28.27	3465	LC	112	J:
123-1-2-4	0	28	28	120300	6.00	28.27	4255	LC	113	
123-1-2-5	0	28	28	119700	6.00	28.27	4230	LC	114	
123-1-2-6	0	28	28	117100	6.00	28.27	4140	LC	B	

* Capping Method: N=ASTM C 1231, Unbonded Caps S=ASTM C 617, Sulfur Caps.

Break Remarks: D: The test result projects that the specified strength may not be met at the specified age according to a typical strength age relationship.

E: The average 7-day test projects the specified strength may not be met at the specified age according to a typical strength age relationship.

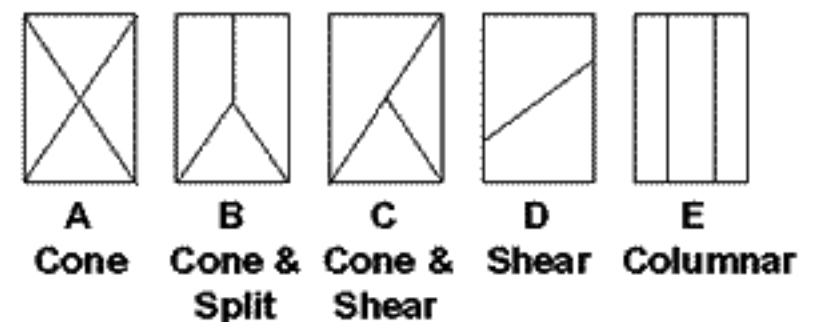
J: However the cylinder was field cured longer than recommended by ASTM C 31. Thus, the test results may not be indicative of the in-place concrete.

General Remarks: none

first cage broke

Copies to: Cage Construction
Jungle Jazz Architects
Newt Holdings
Major Mix
City of Fort Collins
Grandview Metropolitan
Loethew, Patterson, Smith, Inc.
Bandolier Consulting
Hightsong Park District
Intercity Savings and Loan

TYPES OF FRACTURE



Phillip J. Harcourt
Construction Services Manager

CONCRETE INSPECTION REPORT

Client Advanced Professional Eng.
363 West Drake, Suite 10
Fort Collins, CO 80526

Project Fort Collins Zoo - Primate Habitat 1
1222 Colorado St.
Fort Collins, CO 80525

Date Placed: 2/28/2003
Sampled By: Harvey
Concrete Mixture Designation: 3000-C
Tests performed according to: ASTM C 39

Project Number: S91003-24
Field Report Number: 1
Supplier: AJ-Mix

Design Strength (PSI): 4000 @ 28 DAYS
Design Unit Weight (PCF): 140-145

CEMENT: 575 LBS.
FINE AGGREGATE: 1195 LBS.
COARSE AGGREGATE: 1914 LBS.
WATER: 233 LBS.

WATER REDUCER: 16 OZ.
AIR ENTRAINING: 4.7 OZ.

FIELD DATA

Location of Placement: Caisson A-3-1, plains regions animal habitat

Slump (inches): 5.5
Air Content (%): 2.3

Concrete Temp (°F): 82°
Unit Weight (PCF): 145

Truck/Ticket No.: 103
Total Cubic Yards Placed: 2

Water Added: 12
Specimen Type: 6 Cylinder

Weather:

Specimen	Test Age (Days)	Total Force (Pounds)	Compressive Strength (PSI)	Design Strength (PSI)	Type of Fracture
123-1-2-2	7	76000	2685	2000	CONE
123-1-2-3	7	98000	3465	2000	SHEAR
123-1-2-4	28	120300	4255	4000	CONE
123-1-2-5	28	119700	4230	4000	SHEAR
123-1-2-6	28	117100	4140	4000	CONE
123-1-2-9	hold				

Remarks: first cage broke
setting, used another

CC: Cage Construction
Jungle Jazz Architects
Newt Holdings
Major Mix
City of Fort Collins
Grandview Metropolitan
Loethew, Patterson, Smith, Inc.
Bandolier Consulting

Project Engineer

CONCRETE TEST REPORT

PROJECT NO. S91003-24

CLIENT Advanced Professional Eng.

C.C. Cage Construction

Jungle Jazz Architects

Newt Holdings

Major Mix

City of Fort Collins

TO

Advanced Professional Eng.
363 West Drake, Suite 10
Fort Collins, CO 80526
123-456-7890

ATTN: Harold Jenkins

PROJECT Fort Collins Zoo - Primate Habitat 1
1222 Colorado St.

SET NO. 1 NUMBER OF CYLINDERS MOLDED 12 DATE RECEIVED 2/28/2003 DATE CAST 2/28/2003

SPECIMEN NUMBER	DATE TESTED	AGE AT TEST (DAYS)	AVERAGE DIAMETER (inch)	AVERAGE LENGTH (inch)	MAXIMUM LOAD (lb)	AVERAGE AREA (inch ²)	COMPRESSIVE STRENGTH (PSI)	FAILURE TYPE		
123-1-2		hold		12.00				S	A	
123-1-2	Mar 7	7	6.00	12.00	76000	28.27	2685	S	B	
123-1-2	Mar 7	7	6.00	12.00	98000	28.27	3465	S	C	
123-1-2	Mar 28	28	6.00	12.00	120300	28.27	4255	S	D	
123-1-2	Mar 28	28	6.00	12.00	119700	28.27	4230	S	E	
123-1-2	Mar 28	28	6.00	12.00	117100	28.27	4140	S	F	

SPEC STRENGTH 4000psi @ 28 DAYS (AASHTO T 23)

CEMENT CONTENT CC lbs/yd³ TYPE CT

POZZOLAN CONTENT PC lbs/yd³ TYPE PT

MAXIMUM SIZE AGGREGATE MAS inch

BATCH TIME 10:15 AM

ADMIXTURES Ad1
Ad2
10/27/2003
AD4
Ad5

SUPPLIER AJ-Mix

MIX NO 3000-C

TRUCK NO 103 TICKET NO 8342

LOAD VOL. 2 yd³ CUM. VOL. CV yd³

WATER ADDED 12 gal AUTH. BY 6 in.

CONCRETE TEMPERATURE 82° °F (ASTM C 39)

MEASURED SLUMP 5.5 inch (AASHTO T 141)

MEASURED AIR 2.3 % (AASHTO T 119)

PLASTIC DENSITY 123.4 lb/ft³ (AASHTO T 152)

CAST TIME 10:45-11:15

CURING CONDITIONS 39159B

INITIAL CURING TEMP. MAXIMUM 99 °F

AIR TEMPERATURE 54° °F

SPECIFIED SLUMP 5" - 6" inch

SPECIFIED AIR 6% - 7% %

HARDENED DENSITY 145 lb/ft³

CAST BY Harvey

MOLD TYPE MT

MINIMUM 88 °F

LOCATION Caisson A-3-1, plains regions animal habitat
loc3

COMMENTS
none
first cage broke
during placement
used another

PER. _____

Oct 27, 2003

Advanced Professional Eng.
 Attn: Harold Jenkins
 363 West Drake, Suite 10
 Fort Collins, CO 80526

Report Date: 10/14/03

Report of Compressive Strength Tests

Project Name: Fort Collins Zoo - Primate Habitat 1 Weather:
 Project Location: 1222 Colorado St. Ambient Air Temp (°F): 54°
 Client: Advanced Professional Eng. Sampled By: Harvey
 Project Number: S91003-24 Concrete Supplier: AJ-Mix

Placement Properties

Sample Date: 6/14/2003 Truck Number: 103 Ticket Number: 8342
 Time Batched: 10:15 AM Time Sampled: 3:45 AM Unit Weight (pcf): 145
 Slump (in.): 5.5 Air Content (%): 2.3 Concrete Temp (°F): 82°
 Set: 1 of 12 Specimens Quantity of Concrete: 2 of CV Total cy
 Design Strength: 4000 Mix Strength on Ticket: 123.4 Mix Number: 3000-C
 Placement Location: Ad3
 78
 92

Compressive Strength

6x12 cylinder

Compressive Tests Performance (ASTM C39, C109)								
Cylinder ID	Ave. Diameter (in)	Cross Sectional Area (sq in)	Date Tested	Maximum Load (lbs)	Unit Load (psi)	Age (days)	Percent of Design	Fracture Type
123-1-1	6.00	28.27	3/7/2003	84000	2970	7	148%	S9
123-1-2	6.00	28.27	3/7/2003	76000	2685	7	134%	S9
123-1-3	6.00	28.27	3/7/2003	89000	3145	7	157%	S9
123-1-4			3/28/2003			28		S9
123-1-5			3/28/2003			28		S9
123-1-6			3/28/2003			28		S9
123-1-7			4/25/2003			56		S9
123-1-8			4/25/2003			56		S9
123-1-9			4/25/2003			56		S9
123-1-10						HOLD		S9

Remarks: Cloudy, breezy, no precip
 first cage broke setting, used another
 consolidated to 4 foot depth
 using low rpm vibrator



Respectfully submitted: _____
 Garrett Green

REPORT OF CONCRETE STRENGTH TEST

Licensee Company Name

Fort Collins Zoo - Primate Habitat 1

Report Date: 11/4/03

Project Number: S91003-24 Report Number: 1
 Project: Fort Collins Zoo - Primate Habitat 1
 Client: Advanced Professional Eng.
 Address: 363 West Drake, Suite 10
 Fort Collins, CO 80526
 Attn: Harold Jenkins

FIELD TEST CONDITIONS AND RESULTS

Date Sampled: 2/28/2003 Time Sampled: 3:45 AM
 Date Placed: 2/28/2003 Field Data By: Harvey
 Location of Sample: Caisson A-3-1, plains regions animal habitat
 Supplier: AJ-Mix Ticket Number: 8342
 Truck Number: 103
 Mix Number: 3000-C
 Design Strength: 4000 Time Placed: 10:45-11:15
 Time Batched: 10:15 AM Water Added: 12
 Batch Size: 2 Air Content: 2.3
 Slump: 5.5 Ambient Temp: 54°
 Concrete Temp: 82°

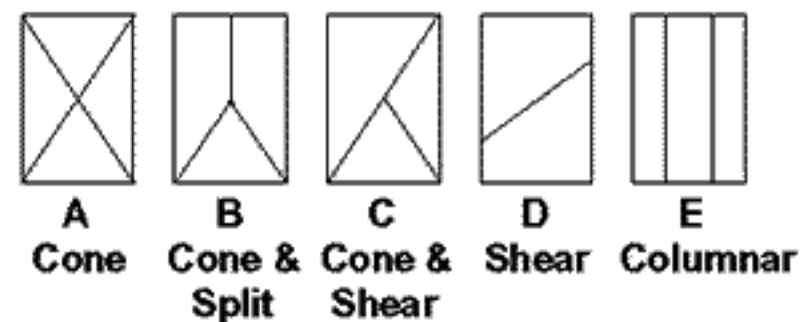
COMPRESSION TEST RESULTS

Specimen	Test Date	Age	Load	Diameter	Area	Strength	Percent of Design	Type of Fracture
123-1-2-9		hold						D:
123-1-2-2	3/7/2003	7	76000	6.00	28.27	2685	134%	E:
123-1-2-3	3/7/2003	7	98000	6.00	28.27	3465	173%	J:
123-1-2-4	3/28/2003	28	120300	6.00	28.27	4255	106%	B
123-1-2-5	3/28/2003	28	119700	6.00	28.27	4230	106%	B
123-1-2-6	3/28/2003	28	117100	6.00	28.27	4140	104%	B

Remarks: none
 first cage broke
 during placement
 used another

Copies to:
 Cage Construction
 Jungle Jazz Architects
 Newt Holdings
 Major Mix
 City of Fort Collins
 Grandview Metropolitan

TYPES OF FRACTURE



Reported by: _____

Report of Compression Test Results

Client: Advanced Professional Eng.
 363 West Drake, Suite 10
 Fort Collins, CO 80526
 123-456-7890
 Mr. Joe Smith
 Attn: Harold Jenkins

Date of Report: October 27, 2003
 Project #: S91003-24
 Project Name: Fort Collins Zoo - Primate Habitat 1
 Project Address: 1222 Colorado St.
 Building Permit: Fort Collins, CO 80525
 Project Mgr: Pmr.
 Architect: Sanger & Peltion, Inc.
 Engineer: DDD FFF NNN
 Contractor: DDD AAA NNN

Specimen Type: CONCRETE ASTM C 39
 Sampling and Curing performed in substantial accordance with: ASTM C 172 and C 31/31M

Mix and Field Data

Sample ID Number: 1
 Report Number: Ad5
 Date Cast: 2/28/2003
 Date Received: 2/28/2003
 Placement: 10/27/2003
 AD4
 Strength (fc): 4000 psi @ 28 days
 Mix I.D. No.: 3000-C
 Supplier: AJ-Mix
 Load #: IDID
 Truck #: 103
 Ticket #: 8342
 Plant #: CV
 Batch size: 2
 Water: 12
 Admixtures: Ad1
 Ad2

Inspector: Harvey	Actual	Specs.
Slump (inches) ASTM C 143:	5.5	5"-6"
Air Content (%) ASTM C 231:	2.3	6%-7%
Unit Weight (pcf) ASTM C 138:	145	140-145
Concrete Temp. (°F) ASTM C 1064:	82°	70-90°
Ambient Temp. (°F):	54°	N/A
Weather:		

Remarks: none
 first cage broke
 during placement
 used another

Time
 Batch Time: 10:15 AM
 Sample Time: 3:45 AM
 Finish Time: MT

Test Result

Sample ID	Specimen	Date Cast	Date Tested	Age (days)	Nominal Specimen Size	Actual Area (sq in)	Compressive Strength (lbs)	Strength (psi)	Type of Fracture	% of Required
1	123-1-2-9	2/28/03		hold					S910	
1	123-1-2-2	2/28/03	3/7/03	7	6.00	28.27	76000	2690	S910	134%
1	123-1-2-3	2/28/03	3/7/03	7	6.00	28.27	98000	3470	S910	174%
1	123-1-2-4	2/28/03	3/28/03	28	6.00	28.27	120300	4250	S910	106%
1	123-1-2-5	2/28/03	3/28/03	28	6.00	28.27	119700	4230	S910	106%
1	123-1-2-6	2/28/03	3/28/03	28	6.00	28.27	117100	4140	S910	104%

Break Types - (Cn) Cone, (CSp) Cone Split, (CSh) Cone Shear, (Sh) Shear, (Co) Columnar

Reviewed by: _____

Distribution Harold Jenkins Cage Construction Jungle JazzNewt Holdings Major Mix

REPORT OF CONCRETE CYLINDER COMPRESSION TESTS

PROJECT NO.: S91003-24 DATE CAST: 2/28/2003
 PROJECT: Fort Collins Zoo - Primate Habitat 1
 CLIENT: Advanced Professional Eng.
 CONTRACTOR: Atlas Construction
 SUPPLIER: AJ-Mix

MIX DATA

DESIGN STRENGTH (Project Plans): 4000 UNIT WEIGHT: 140-145
 DESIGN SLUMP (Project Plans): 5"-6" TYPE OF MORTAR: 3000C
 ADMIXTURES: _____
 DESIGN STRENGTH (Delivery Ticket): 3000 WATER: _____
 DESIGN SLUMP (Delivery Ticket): 5 CEMENT: _____
 DESIGN MIX CODE (Delivery Ticket): 3000-C FINE AGGREGATE: Sand
 COARSE AGGREGATE: ASTM C67

CYLINDER DATA

LOCATION OF POUR: Caisson A-3-1, plains regions animal habitat
 WEATHER: _____ CYLINDER SIZE: 6
 TRUCK NO./TICKET NO.: 103 SLUMP: 5.5
 DRUM REVO. AT ARRIVAL: 78 AIR CONTENT: 2.3
 DRUM REVO. AFTER WATER: 92 CONCRETE TEMP.: 82°
 DISP./TEST TIME: 11:24 am UNIT WEIGHT: 145
 CYLINDERS MADE BY: Harvey PICKED UP BY: Ad2

CYL NO.	AGE, DAYS	LABORATORY NUMBER	DATE RECD	DATE OF TEST	CRUSHING, LOAD LBS.	PSI	FRACTURE	REPORT DATE
123-1-2-1	7	S91003-24 2-28	6/14/2003	3/7/2003	84,000	2,970	116	LCB
123-1-2-2	7	S91003-24 2-28	6/14/2003	3/7/2003	76,000	2,690	111	LCB
123-1-2-3	7	S91003-24 2-28	6/14/2003	3/7/2003	89,000	3,150	112	LCB
123-1-2-4	28	S91003-24 2-28	6/14/2003	3/28/2003				LCB
123-1-2-5	28	S91003-24 2-28	6/14/2003	3/28/2003				LCB
123-1-2-6	28	S91003-24 2-28	6/14/2003	3/28/2003				LCB
123-1-2-7	56	S91003-24 2-28	6/14/2003	4/25/2003				
123-1-2-8	56	S91003-24 2-28	6/14/2003	4/25/2003				
123-1-2-9	56	S91003-24 2-28	6/14/2003	4/25/2003				
123-1-2-10	HOLD	S91003-24 2-28	6/14/2003					

FRACTURE CODE: C-CONE, CSP-CONE & SPLIT, CSH-CONE & SHEAR, S-SHEAR, COL-COLUMNAR

CC: Cage Construction
 Jungle Jazz Architects
 Newt Holdings
 Major Mix
 City of Fort Collins

ORIGINAL SIGNED BY: _____

REMARKS: Cloudy, breezy, no precip
 first cage broke setting, used another
 consolidated to 4 foot depth
 using low rpm vibrator

**REPORT OF CONCRETE SPECIMEN
TEST DATA**
REPORT DATE: 10/24/03

PROJECT DATA

Job No.:	S91003-24	<i>Field testing and laboratory curing performed by [redacted] is in accordance with one or more of the following ASTM procedures: C31, C142, C172, C173, C231 and C1064. Compressive strength testing of standard size cylinders performed by [redacted] in accordance with one or more of the following ASTM procedures: C39, C617 and C1231</i>
Project:	Fort Collins Zoo - Primate Habitat 1 1222 Colorado St.	
Client:	Advanced Professional Eng.	
Address:	363 West Drake, Suite 10 Fort Collins, CO 80526	
Attention:	Harold Jenkins	

FIELD TEST RESULTS

Date Sampled:	2/28/2003	Placement Method:	Pump <input type="checkbox"/>	Bucket/Crane <input checked="" type="checkbox"/>	
Sample Location:	Caisson A-3-1, plains reg		Truck Chute <input type="checkbox"/>	Wheelbarrow/Buggy <input checked="" type="checkbox"/>	
			Other <input type="checkbox"/>		
Sampled By:	Harvey	Number of Rev. on Truck Counter:	IDID		
Concrete Supplier:	AJ-Mix	Sampled From Mixer Truck:	First <input type="checkbox"/>	Middle <input checked="" type="checkbox"/>	End <input checked="" type="checkbox"/>
Truck No.:	103	Date Rec. a	2/28/2003		
Ticket No.:	8342	Units:	English <input checked="" type="checkbox"/>	SI <input type="checkbox"/>	
Mix Design Name:	3000-C	Total CY This Placement Date:	Ad3		
Design Strength:	4000	Plastic Unit Weight:	145		
Time Batched:	10:15 AM	Air Content:	2.3		
Time Sampled:	3:45 AM	Ambient Temp.:	54°		
Batch Size:	2	Required:	Plastic Unit Weight:	140-145	
Slump:	5.5		Slump:	5"-6"	
Concrete Temp:	82°		Air:	6%-7%	
Water Added Before Specimens Cast:	12		Concrete Temp.:	70-90°	
Water Added After Specimens Cast:	Ad1				

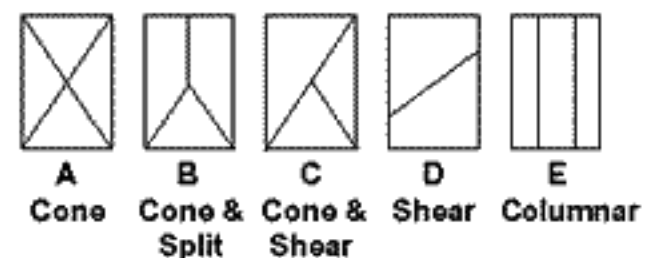
LABORATORY TEST RESULTS

Specimen ID	Test Date	Age (days)	Load	As Received Specimen Weight/Mass	Area	Compressive Strength	Percent of Design	Type of Fracture	Tested By
123-1-2-9		hold		116.0				S9	LCB
123-1-2-2	3/7/2003	7	76000	111.0	28.27	2685	134%	S9	LCB
123-1-2-3	3/7/2003	7	98000	112.0	28.27	3465	173%	S9	LCB
123-1-2-4	3/28/2003	28	120300	113.0	28.27	4255	106%	S9	LCB
123-1-2-5	3/28/2003	28	119700	114.0	28.27	4230	106%	S9	LCB
123-1-2-6	3/28/2003	28	117100		B 28.27	4140	104%	S9	LCB

Remarks: none
first cage broke during placement
used another

Copies To:
Cage Construction
Jungle Jazz Architects
Newt Holdings
Major Mix
City of Fort Collins
Sixth CC

TYPES OF FRACTURE



Reported by: _____

REPORT DATE: 10/27/2003
FIELD/LABORATORY DATA
COMPRESSIVE STRENGTH TESTS
Concrete

CLIENT: Advanced Professional Eng.		JOB NO: S91003-24
PROJECT: Fort Collins Zoo - Primate Habitat 1		LAB NO: 1
ADDRESS: 363 West Drake, Suite 10		
LOCATION IN STRUCTURE: Caisson A-3-1, plains regions animal habitat		
SOURCE OF SAMPLES:		
CONTRACTOR: Hegering International		TICKET NO: 8342
ARCH/ENGINEER: Ad5		MEASURED SLUMP: 5.5 in. (AASHTO T 119)
MATERIAL SUPPLIER: AJ-Mix		AIR CONTENT %: 2.3 (AASHTO T 152)
BATCH SIZE: 2	CUBIC YARDS: 123.4	AMBIENT AIR TEMP: 54° °F
MIX IDENTIFICATION: 3000-C		MATERIAL TEMP: 82° °F
DESIGN STRENGTH, PSI: 4000	DAYS: 28	PLASTIC UNIT WEIGHT, PCF: 145
NOMINAL SIZE AD4 AGGREGATE:	SOURCE:	NO. OF SPECIMENS MOLDED: 12
TIME SAMPLED: 3:45 AM		SPECIMEN SIZE: 6 in.
FIELD CURING CONDITIONS: ASTM C-3139/159B		
SAMPLED BY: Harvey	DATE: 2/28/2003	TIME IN MIXER: MT
SUBMITTED BY: 103	DATE: 2/28/2003	WATER ADDED ON JOB (GALLONS): 12
AUTHORIZED BY: CLIENT	DATE: 10:45-11:15	TEST PROCEDURE: (AASHTO T 23)
REMARKS: none first cage broke		

SPECIMEN I.D.	DATE TESTED	TEST AGE DAYS	MAXIMUM LOAD LBS/FORCE	COMPRESSIVE STRENGTH PSI	AREA IN ²	PERCENT OF DESIGN	TYPE FRACTURE (NOTE)	DEFECTS IN SPECIMENS OR CAPS	TESTED BY
123-1		hold					A	none	LCB
123-2	3/7/03	7	76000	2685	28.27	134%	A	none	LCB
123-3	3/7/03	7	98000	3465	28.27	173%	A	none	LCB
123-4	3/28/03	28	120300	4255	28.27	106%	A	none	LCB
123-5	3/28/03	28	119700	4230	28.27	106%	A	none	LCB
123-6	3/28/03	28	117100	4140	28.27	104%	B	none	LCB

COMPRESSIVE STRENGTH TEST REPORT

CLIENT: Advanced Professional Eng.
363 West Drake, Suite 10
Fort Collins, CO 80526

PROJECT NAME: Fort Collins Zoo - Prima
1222 Colorado St.
Fort Collins, CO 80525
DDD FFF NNN

PROJECT NO.: S91003-24
DATE CAST: 2/28/2003
TECHNICIAN: Harvey

SAMPLE LOCATION: Caisson A-3-1, plains regions animal habitat

SAMPLE NUMBER	DATE TESTED	AGE (Days)	LOAD (lbs)	AREA (sq. in.)	STRENGTH (psi)	% OF DESIGN	FACTURE TYPE
123-1-2-9		hold					S9100
123-1-2-2	3/7/03	7	76000	28.27	2685	134%	S9100
123-1-2-3	3/7/03	7	98000	28.27	3465	173%	S9100
123-1-2-4	3/28/03	28	120300	28.27	4255	106%	S9100
123-1-2-5	3/28/03	28	119700	28.27	4230	106%	S9100
123-1-2-6	3/28/03	28	117100	28.27	4140	104%	S9100

NOTE: Some information on this test report provided by others. Testing and reporting was conducted in general accordance with the following applicable A.S.T.M. references: C31, C109, C138, C143, C172, C173, C231, C495, C1019 & C1064

Supplier: AJ-Mix
Truck No.: 103
Ticket No.: 8342
Design Str.: 4000 psi
Product No.: 3000-C

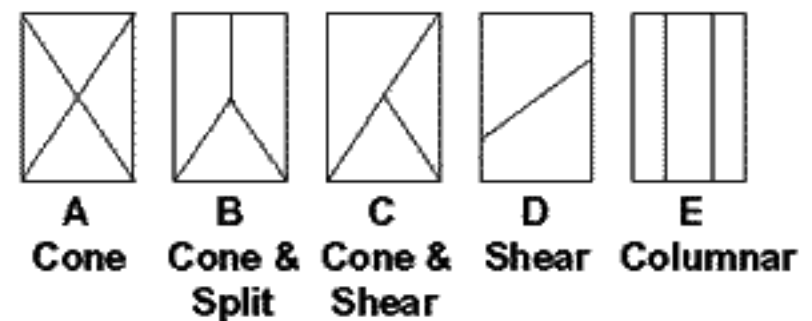
Batch Time: 10:15 AM
Sample Time: 3:45 AM
Concrete Temp.: 82° °F
Ambient Temp.: 54° °F
Slump: 5.5 in.

Air Content: 2.3 %
Unit Weight: 145 pcf
Field Cured: 2 day(s)
Sample Type: Cylinder
Sample Size: 6 in. dia.

REMARKS: none
first cage broke
during placement
used another

Copies To:
Cage Construction
Jungle Jazz Architects
Newt Holdings
Major Mix
City of Fort Collins
Grandview Metropolitan

TYPES OF FRACTURE



By: _____

Assignment No. 1

NOTICE: [Redacted] considers the data and information contained in this report to be proprietary. This information is intended only for the use of the recipient(s) named herein. Test results presented herein relate only to those items tested. This document and any information contained herein shall not be disclosed and shall not be duplicated or used in whole or in part for any purpose other than to validate test results without written approval from [Redacted].

Compressive Strength Report

PROJECT

Client: Advanced Professional Eng.
363 West Drake, Suite 10
Fort Collins, CO 80526

 Attn: Harold Jenkins

Project: Fort Collins Zoo - Primate Habitat
 Contractor: Dolittle and Bucksworth, Inc.
 Technician: Harvey
 Project No: S91003-24
 Report No: 1
 Report Date: 2/6/04

MATERIAL

Mix Design Specifications
 Mix I.D.: 3000-C
 Cement, lbs.: _____
 Fly Ash, lbs.: _____
 Coarse Aggregate, lbs.: _____
 Coarse Aggregate, lbs.: _____
 Sand, lbs.: _____
 Water, lbs.: Z
 Admixtures, lbs.: Z
 AEA, oz/cwt: Z

Material: high slump concrete
 Design Strength at 7 days 2000 psi
 Date Received: 3/28/2000
 Material Supplier: AJ-Mix
 Delivery Ticket No.: 8342 Truck No.: 103
 Sample Date: 2-28-00 Sample Time: 11:00 AM
 Comments: used chute
to tremie funnel
and 10 ft long 8" dia rubber tube
tremie

FIELD TESTS

Test	Slump, in.	Air Content, %	Material Temperature, °F	Ambient Temperature, °F	Plastic Unit Weight, pcf
Result:	<u>5.5</u>	<u>2.3</u>	<u>82°</u>	<u>54°</u>	<u>145</u>
Specification:	<u>5-6 in</u>	<u>6-7%</u>	<u>85°</u>		<u>140-145 pcf</u>

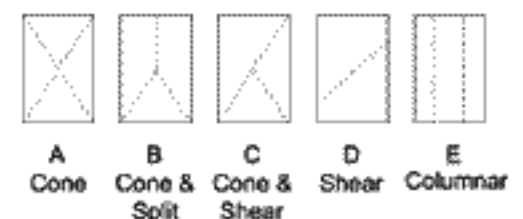
Placement Area: Caisson A-3-1
plains regions animal habitat
exterior wall

LAB TESTS

Specimen	Test Date	Age	Load	Diameter	Area	Strength	Percent of Design	Type of Fracture
123-1-2-1	3/6/00	7	77500	6.00	28.27	2740	137%	C
123-1-2-2	3/6/00	7	76000	6.00	28.27	2690	134%	A
123-1-2-3	3/27/00	28	98000	6.00	28.27	3470	116%	A
123-1-2-4	3/27/00	28	95500	6.00	28.27	3380	113%	A
123-1-2-5	3/27/00	28	101000	6.00	28.27	3570	119%	A
123-1-2-6		hold						

Comments: Cloudy, breezy, no precip
first cage broke setting, used another

TYPES OF FRACTURES



Distribution: Cage Construction
Jungle Jazz Architects
Newt Holdings
Major Mix

Reviewed by: _____
 Sam Purfii
 Materials Manager

Harold Jenkins **UNIFIED SCHOOL DISTRICT Fort Collins, CO 80526**

- CONCRETE GROUT SHOTCRETE
 MORTAR PRISM LIGHTWEIGHT CONCRETE

COMPRESSION STRENGTH TEST RESULTS

PROJECT DATA								
PROJECT NAME: Fort Collins Zoo - Primate Habitat 1						PROJECT NO: S91003-24		
PROJECT ADDRESS: 363 West Drake, Suite 10, Fort Collins, CO 80526								
CLIENT: Advanced Professional Eng.								
REPRESENTATIVE: Pmr.								
GENERAL CONTRACTOR: DBPN								
POUR DATA								
DATE OF POUR: 02/28/03			TIME OF DAY: 9:00 am			MIXING TIME:		
LOCATION OF POUR: Monkey platform								
DATE OF PICKUP: 02/28/03								
DESIGN DATA				FIELD DATA				
MIX NO: BM-3		CEMENT TYPE:		WEATHER CONDITIONS:				
ADMIXTURES:				APPROX. YARDS PLACED AT TIME OF SAMPLING: 1cy				
SUPPLIER: on site mix		FLOW (inch):		TRUCK NO:		TICKET NO:		
DESIGN STRENGTH (psi): 3000				AIR CONTENT (%): 2		FLOW (inch): 1		
FIELD TECHNICIAN/SPECIAL INSPECTOR: Sue Purtek				GROUT TEMP (degree F): 3				
MARK OF SPECIMEN: 9				WATER ADDED (gal):		NO. OF SPECIMEN: 6		
LABORATORY DATA (ASTM C 109)								
SPECIMEN NO.	DATE OF TEST	AGE OF SPECIMEN (day)	SPECIMEN DIMENSIONS (avg. in.)		GROUT DENSITY (pcf)	COMPRESSIVE STRENGTH		TYPE OF FRACTURE
			AVG. SIDE X AVG. SIDE	AREA SQ IN		TOTAL LOAD LBS.	LBS SQ IN (psi)	
123-1-8-8	3/7/03	7	2x2	4.00	114	15,000	3750	Fiel
123-1-8-12	3/7/03	7	2x2	4.00	113	16,000	4000	Lab
123-1-8-10	3/28/03	28		.00	111			Fiel
123-1-8-11	3/28/03	28		.00	112			Lab
Average 28 Day Strength								
<input type="checkbox"/> Yes Sampling and testing were conducted in accordance with the requirements of the DSA approved plans and documents <input checked="" type="checkbox"/> No								
<input type="checkbox"/> Yes I performed inspection on this project for the dates and time shown herein, and I have found the materials inspected and tested in conformance with DSA approved plans and specifications. <input checked="" type="checkbox"/> No								
REMARKS: r1 r2								
REVIEWED BY:								

N/A = NOT AVAILABLE

FRACTURE TYPE

(A) Conical

(B) Cone & Split

(C) Cone & Shear

(D) Shear

(E) Columnar

C.C. = Cage Construction, Jungle Jazz Architects, Newt Holdings, Major Mix, City of Fort Collins, SEVENTH CC

- _____ _____ _____

REPORT OF CONCRETE CYLINDER TEST

Project Number: S91003-24 Report Number: 1
Project: Fort Collins Zoo - Primate Habitat 1
Client: Advanced Professional Eng. Concrete Contractor: Hegering International
General Contractor: Sanger & Peltion, Inc. Concrete Supplier: AJ-Mix

FIELD TEST CONDITIONS AND RESULTS (AASHTO T 23)

Date Placed: 2/28/2003

Location of Sample: Caisson A-3-1, plains regions animal habitat

loc3

Truck Number: 103 Ticket Number: 8342
Design Strength: 4000
Cement content: CC Water: PC Fine Agg: z Coarse Agg: z
Other:
Admixtures: Admix 1 90123456789012 Admix 2 90123456789012
Time Batched: 10:15 AM Time Placed: 10:45-11:15
Batch Size: 2 Pour Quantity: 6 in.
Slump: 5.5 (AASHTO T 119) Air Content: 2.3 (AASHTO T 152)
Concrete Temp: 82° Ambient Temp: 54°
Water Added: 39159B Technician: Harvey

On-Site Curing Box: Not Available: X Available: Insulated: X Heated: Cooled: Max/Min Thermometer:
Laboratory curing in accordance with ASTM C31. Unless noted otherwise, test cylinders are 6" x 12" (28.27 sq. in.)

LABORATORY TEST RESULTS (ASTM C 39)

Specimen	Test Date	Age	Curing	Load	Diameter	Area	Strength
123-1		hold	S91003				
123-1	3/7/2003	7	S91003	76000	6.00	28.27	2685
123-1	3/7/2003	7	S91003	98000	6.00	28.27	3465
123-1	3/28/2003	28	S91003	120300	6.00	28.27	4255
123-1	3/28/2003	28	S91003	119700	6.00	28.27	4230
123-1	3/28/2003	28	S91003	117100	6.00	28.27	4140

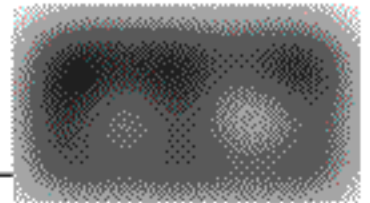
Remarks: none
first cage broke

(fracture is std. cone unless noted otherwise)

Copies to:

Cage Construction
Jungle Jazz Architects
Newt Holdings
Major Mix
City of Fort Collins
Grandview Metropolitan

Reported by: _____



REPORT OF CONCRETE CYLINDER TEST

Fort Collins Zoo - Primate Habitat 1

Report Date: 11/4/03

Project Number: S91003-24
Project: Fort Collins Zoo - Primate Habitat 1
Client: Advanced Professional Eng.
Address: 363 West Drake, Suite 10
 Fort Collins, CO 80526
Attn: Harold Jenkins

Report Number: 1

FIELD TEST CONDITIONS AND RESULTS (AASHTO T 23)

Date Placed: 2/28/2003
Time Sampled: 3:45 AM
Supplier: AJ-Mix
Location of Sample: Caisson A-3-1, plains regions animal habitat
Truck Number: 103
Mix Number: 3000-C
Design Strength: 4000
Time Batched: 10:15 AM
Batch Size: 2
Slump: 5.5 (AASHTO T 119)
Concrete Temp: 82°
Water Added: 12

Plasticized
 Cast by [REDACTED]
 Cast by other
Ticket Number: 8342

Time Placed: 10:45-11:15

Air Content: 2.3 (AASHTO T 152)
Ambient Temp: 54°
Technician: Harvey

LABORATORY TEST RESULTS (ASTM C 39)

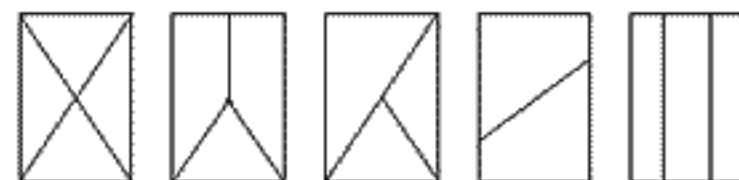
Specimen	Test Date	Age	Load	Diameter	Area	Strength	Percent of Design	Type of Fracture
123-1-2-9		hold						D:
123-1-2-2	3/7/2003	7	76000	6.00	28.27	2685	134%	E:
123-1-2-3	3/7/2003	7	98000	6.00	28.27	3465	173%	J:
123-1-2-4	3/28/2003	28	120300	6.00	28.27	4255	106%	B
123-1-2-5	3/28/2003	28	119700	6.00	28.27	4230	106%	B
123-1-2-6	3/28/2003	28	117100	6.00	28.27	4140	104%	B

Lab Technician:

Remarks: none
 first cage broke
 during placement
 used another

Copies to:
 Cage Construction
 Jungle Jazz Architects
 Newt Holdings
 Major Mix
 City of Fort Collins
 Grandview Metropolitan

TYPES OF FRACTURE



A Cone
B Cone & Split
C Cone & Shear
D Shear
E Columnar

Reported by:

Report Note 2

COMPRESSION TEST REPORT ASTM C 39

Report to:	Advanced Professional Eng.	Date: 10/27/03
ATTN:	Harold Jenkins	
	363 West Drake, Suite 10	Project No.: S91003-24
	Fort Collins, CO 80526	
	123-456-7890	

Project Name:	Fort Collins Zoo - Primate Habitat	Mix Design No.: 3000-C
	1222 Colorado St.	
	Fort Collins, CO 80525	Supplier: AJ-Mix
	DDD FFF NNN	

Design Strength: 4,000 psi

Location in Structure:
Caisson A-3-1, plains regions animal habitat

Specimen: CONCRETE

loc3

Air Content: 2.3 %

AASHTO T106

Mix Temp. 82° °F

Air Temp. 54° °F

Measured Slump: 5.5 in.

AASHTO T97

SPECIMEN LAB NO.	123-1-2-9	123-1-2-2	123-1-2-3	123-1-2-4	123-1-2-5
Date Cast	2/28/03	2/28/03	2/28/03	2/28/03	2/28/03
Date Received	2/28/03	2/28/03	2/28/03	2/28/03	2/28/03
Date Tested		3/7/03	3/7/03	3/28/03	3/28/03
Age at Test, days	hold	7	7	28	28
Diameter, in.		6.00	6.00	6.00	6.00
Height, in.	12	12	12	12	12
Area, sq. inches		28.274	28.274	28.274	28.274
Ult. Load, lbs.		76000	98000	120300	119700
Comp. Str., psi		2690	3470	4250	4230
Fracture Type	S910	S910	S910	S910	S910

Meets 28 day strength req.

Fails to Meet 28 day str. req.

No strength req. given

Cast by

Cast by others

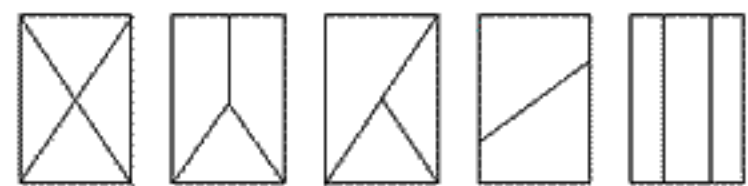
Remarks: none

first cage broke during placement used another

Copies to:

Cage Construction
Jungle Jazz Architects
Newt Holdings
Major Mix
City of Fort Collins
Grandview Metropolitan
Loethew, Patterson, Smith, Inc.

TYPES OF FRACTURE



A
Cone
B
Cone & Split
C
Cone & Shear
D
Shear
E
Columnar

Reviewed by: _____

Client: Harold Jenkins
Advanced Professional Eng.
363 West Drake, Suite 10
Fort Collins, CO 80526

Report Date: 11/4/03
Project No: S91003-24
Report No: 1

Project: Fort Collins Zoo - Primate Habitat 1
Contractor: Sanger & Peltion, Inc.

CONCRETE REPORT

General

Placement Date: 2/28/2003

Technician: Harvey

Weather:

Mix Number: 3000-C

Specifications Strength: 4000 psi@ 28 days
Concrete Temp: 70-90°

Slump: 5"-6"
Air: 6%-7%

Services: none
first cage broke
during placement
used another

Placement Information

Sample Location: Caisson A-3-1, plains regions animal habitat

Concrete Supplier: AJ-Mix

Truck Number: 103

Ticket Number: 8342

Slump: 5.5 inches (AASHTO T 119)

Air Temp: 54° °F

Concrete Temp: 82° °F

Air Content: 2.3 % (AASHTO T 152)

Unit Weight: 145 pcf (AASHTO T 152)

Time Sampled: 3:45 AM

Compressive Strength Results (ASTM C 39)

Cylinder ID	Age, days	Test Date	Diameter, in	Maximum Load, lbs	Failure Code	Compressive Strength, psi
123-1-2-9	hold				D:	
123-1-2-2	7	3/7/2003	6.00	76000	E:	2685
123-1-2-3	7	3/7/2003	6.00	98000	J:	3465
123-1-2-4	28	3/28/2003	6.00	120300	B	4255
123-1-2-5	28	3/28/2003	6.00	119700	B	4230
123-1-2-6	28	3/28/2003	6.00	117100	B	4140

Copy To:

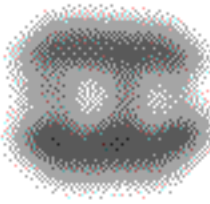
Cage Construction
Jungle Jazz Architects
Newt Holdings
Major Mix
City of Fort Collins
Grandview Metropolitan
Loethew, Patterson, Smith, Inc.

Comments:

The average 28 day strength is 4205 psi which

Failure Code a) cone; b) cone & split; c) cone & shear; d) shear; e) columnar

Our reports are for the exclusive use of the client to whom they are addressed and apply to the samples tested.
Results are not necessarily indicative of the quality of apparently identical or similar samples.



REPORT OF CONCRETE CYLINDER TEST

Project Number: S91003-24 Contract Number: 1
 Project: Fort Collins Zoo - Primate Habitat 1
 Client: Advanced Professional Eng.
 Address: 363 West Drake, Suite 10
 Fort Collins, CO 80526
 Attn: Harold Jenkins

FIELD TEST CONDITIONS AND RESULTS (AASHTO T 23)

Date Placed: 2/28/2003
 Time Sampled: 3:45 AM
 Location of Sample: Caisson A-3-1, plains regions animal habitat
 Supplier: AJ-Mix
 Truck Number: 103 Ticket Number: 8342
 Mix Number: 3000-C Admixture: Ad1
 Design Strength: 4000 psi Specimen Size: AB
 Slump: 5.5 in. (AASHTO T 119) Air Content: 2.3 % (AASHTO T 152)
 Concrete Temp: 82° °F Ambient Temp: 54° °F
 Water Added: 12 gal. Technician: Harvey

LABORATORY TEST RESULTS (ASTM C 39)

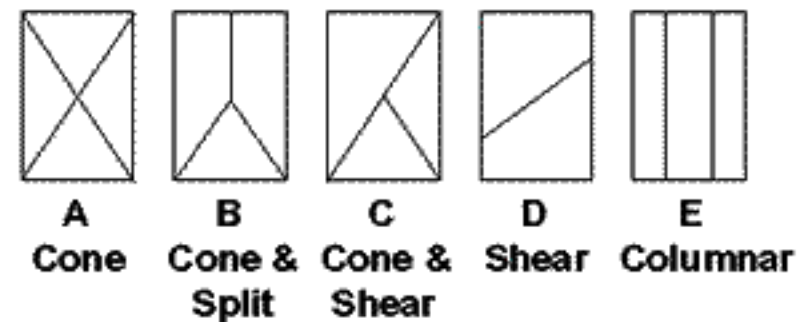
Specimen	Test Date	Age	Load	Diameter	Area	Strength	Percent of Design	Type of Fracture
123-1-2-9		hold						
123-1-2-2	3/7/2003	7	76000	6.00	28.27	2685	134%	A
123-1-2-3	3/7/2003	7	98000	6.00	28.27	3465	173%	B
123-1-2-4	3/28/2003	28	120300	6.00	28.27	4255	106%	C
123-1-2-5	3/28/2003	28	119700	6.00	28.27	4230	106%	B
123-1-2-6	3/28/2003	28	117100	6.00	28.27	4140	104%	B

Meets Specified Strength: Yes No
 Meets DOH Approval Documents: Yes No

28-day Average Strength: 4205

Remarks: Cloudy, breezy, no precip
 first cage broke setting, used another
 3rd remark
 4th remark

TYPES OF FRACTURE



Copies to:
 Cage Construction
 Jungle Jazz Architects
 Newt Holdings
 Major Mix
 City of Fort Collins
 Sixth CC

Reported by: _____

Concrete Laboratory Supervisor

- CONCRETE GROUT SHOTCRETE
 MORTAR PRISM LIGHTWEIGHT CONCRETE

-

COMPRESSION STRENGTH TEST RESULTS

PROJECT DATA								
PROJECT NAME: Fort Collins Zoo - Primate Habitat 1					PROJECT NO: S91003-24			
PROJECT ADDRESS: 363 West Drake, Suite 10, Fort Collins, CO 80526								
CLIENT: Advanced Professional Eng.								
REPRESENTATIVE: Pmr.								
GENERAL CONTRACTOR: DBPN								
POUR DATA								
DATE OF POUR: 02/28/03			TIME OF DAY: 10:45-11:15			MIXING TIME: MT		
LOCATION OF POUR: Caisson A-3-1, plains regions animal habitat								
DATE OF PICKUP: 02/28/03								
DESIGN DATA				FIELD DATA				
MIX NO: 3000-C		CEMENT TYPE: 3000C		WEATHER CONDITIONS:				
ADMIXTURES:				APPROX. YARDS PLACED AT TIME OF SAMPLING: 2				
SUPPLIER: AJ-Mix				TRUCK NO: 103		TICKET NO: 8342		
DESIGN STRENGTH (psi): 4000				AIR CONTENT (%): 2.3		SLUMP (inch): 5.5		
FIELD TECHNICIAN/SPECIAL INSPECTOR: Harvey				CONCRETE TEMP (degree F): 82°				
MARK OF SPECIMEN: 1				WATER ADDED (gal): 12		NO. OF SPECIMEN: 12		
LABORATORY DATA (ASTM C 39)								
SPECIMEN NO.	DATE OF TEST	AGE OF SPECIMEN (day)	SPECIMEN DIMENSIONS (avg. in.)		CONCRETE DENSITY (pcf)	COMPRESSIVE STRENGTH		TYPE OF FRACTURE
			AVG. DIA. X AVG. HGT.	AREA SQ IN		TOTAL LOAD LBS.	LBS SQ IN (psi)	
123-1-2-9		hold			116			
123-1-2-2	3/7/03	7	6x12	28.27	111	76,000	2690	A
123-1-2-3	3/7/03	7	6x12	28.27	112	98,000	3470	B
123-1-2-4	3/28/03	28	6x12	28.27	113	120,300	4250	C
123-1-2-5	3/28/03	28	6x12	28.27	114	119,700	4230	B
123-1-2-6	3/28/03	28		28.27		117,100	4140	B
Average 28 Day Strength							4210	
REMARKS: Cloudy, breezy, no precip first cage broke setting, used another								
REVIEWED BY:								

CC: Cage Construction
 Jungle Jazz Architects
 Newt Holdings
 Major Mix
 City of Fort Collins
 Sixth CC
 SEVENTH CC

N/A = NOT AVAILABLE

FRACTURE TYPE

- (A) Conical (B) Cone & Split
 (C) Cone & Shear (D) Shear
 (E) Columnar

CONCRETE DATA AND TEST REPORT

Client: Advanced Professional Eng. Project No: S91003-24
Contract No: DDD AAA NNN Set No.: 1

Project: Fort Collins Zoo - Primate Habitat 1
Contractor: DBPN

PLACEMENT IDENTIFICATION

Structure:
Location: Caisson A-3-1, plains regions animal habitat

Sample Location: loc3
Total Cubic Yards Placed: 2 Yards at Time of Sampling: IDID

CONCRETE MIX DATA

Supplier: AJ-Mix
Truck/Ticket Number: 103 Time Batched: 10:15 AM
Concrete Mix Design: 3000-C Type of Cement: CT
Cement Content: CC Aggregate Size: PT
Admixtures: Ad1 Water Added: 12

Design Strength: 4000 PSI at 28 Days

TEST RESULTS

Sample Date: 02/28/03 Sample Time: 3:45 AM
Sampled By: Harvey (AASHTO T 141)
Slump: 5.5 Inches (AASHTO T 119) Air Content: 2.3 % (AASHTO T 152)
Temperature> Air: 54° F Concrete: 82° F (ASTM C1064)
Field Curing: Days Field Cure Temp.: Max 99 F, Min 88 F

COMPRESSIVE STRENGTH (ASTM C 39)

Specimen No.	Test Date	Age Days	Load Lbs	Diameter, Inches	Area Sq.In.	Strength PSI	Type of Failure
123-1-2-9		hold					S9
123-1-2-2	03/07/03	7	76000	6.00	28.27	2680	S9
123-1-2-3	03/07/03	7	98000	6.00	28.27	3460	S9
123-1-2-4	03/28/03	28	120300	6.00	28.27	4250	S9
123-1-2-5	03/28/03	28	119700	6.00	28.27	4230	S9
123-1-2-6	03/28/03	28	117100	6.00	28.27	4140	S9

Defects in Specimens: none
Remarks: first cage broke during placement

Reported by: _____
Gregory N. Chant
Operations Manager

Dist:
Cage Construction Major Mix
Jungle Jazz Architects City of Fort Collins
Newt Holdings Sixth CC

Conforms to Specifications

Does Not Conform to Specifications

**LABORATORY TEST REPORT
 COMPRESSIVE STRENGTH of CYLINDRICAL CONCRETE SPECIMENS
 AASHTO T 22**

CLIENT: Advanced Professional Eng.
 363 West Drake, Suite 10
 Fort Collins, CO 80526
 ATTN: Harold Jenkins

REPORT DATE: 10/24/03
 PROJECT: Fort Collins Zoo - Primate Habitat 1
 1222 Colorado St.
 PROJECT NO.: S91003-24

SAMPLE INFORMATION

Set No.: 1	Water Added: 12 gallons	Slump, (ASTM C 143), in.: 5.5
Date Sampled: 2/28/2003	Ticket No.: 8342	Unit Wt., , pcf: 145
Sampled By: Harvey	Truck No.: 103	Dry Unit Wt., , pcf: 39159B
Date Received: 2/28/2003	Batch Size: 2 cy. yds.	Relative Yield., : 123.4
Submitted By: 10:45-11:15	Time Batched: 10:15 AM	Air Content, , %: 99
Contractor: Hegering International	Time Sampled: 3:45 AM	Air Content, (ASTM C 173), %: 2.3
Governing Entity:	Time in Mixer: MT min.	Mix Temp., , F: 82°
		Ambient Temp., , F: 54°

Sample Location: Caisson A-3-1, plains regions animal habitat

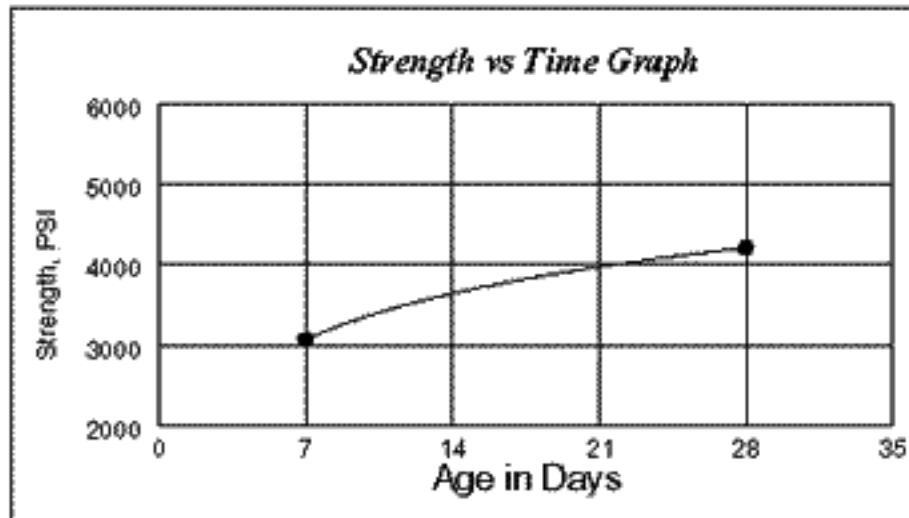
MIX INFORMATION

Supplier: AJ-Mix	Admixtures:
Mix Number: 3000-C	Cement Factor:
Max. Agg. Size: 3000C	Design Strength: 4000 in 28 days

LABORATORY TEST RESULTS

Specimen ID	Date Tested	Age, days	Diameter, in.	Height, in.	Area sq. in.	Maximum Load, lbs	Compressive Strength, psi	Compressive Strength, MPa	% of Required
123-1-2-9		hold		12					
123-1-2-2	3/7/03	7	6.00	12	28.27	76000	2685	18.5	134%
123-1-2-3	3/7/03	7	6.00	12	28.27	98000	3465	23.9	173%
123-1-2-4	3/28/03	28	6.00	12	28.27	120300	4255	29.3	106%
123-1-2-5	3/28/03	28	6.00	12	28.27	119700	4230	29.2	106%
123-1-2-6	3/28/03	28	6.00		28.27	117100	4140	28.5	104%

Average 28 day strength: 4205 psi
 Average 28 day strength: 29.0 MPa



Comments: none
 first cage broke during placement used another

Reviewed by: _____

Construction Operations Manager

Laboratory test results represent the area tested at the time of sampling. This report is not considered to be a guarantee, certificate, or an acceptance document of any kind. _____ has performed testing in accordance with the above referenced test method(s)

REPORT OF CONCRETE CYLINDER TEST (AASHTO T 23)

Client: Advanced Professional Eng.
Address: 363 West Drake, Suite 10
 Fort Collins, CO 80526
Project: Fort Collins Zoo - Primate Habitat 1
 1222 Colorado St.
Project No.: S91003-24

Sample Location: Caisson A-3-1, plains regions animal habitat

Sample Date: 2/28/2003
Sampled By: Harvey

Curing method/notes: 39159B

Supplier: AJ-Mix
Truck/Ticket No.: 103

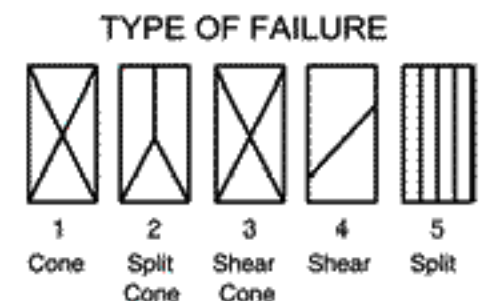
Design Strength: 4000 psi at 28 Days

Slump: 5.5 inches **Entrained Air:** 2.3
Temperature: Air: 54° °F **Concrete:** 82° °F

Specimen	Test Date	Age	Load lbs.	Area in. ²	Strength psi	Type of Failure
123-1-2-9		hold				S9
123-1-2-2	3/7/2003	7	76000	28.27	2690	S9
123-1-2-3	3/7/2003	7	98000	28.27	3470	S9
123-1-2-4	3/28/2003	28	120300	28.27	4250	S9
123-1-2-5	3/28/2003	28	119700	28.27	4230	S9
123-1-2-6	3/28/2003	28	117100	28.27	4140	S9

Remarks: none
 first cage broke
 during placement
 used another

Associate Test Methods: (ASTM C 39)



Copies to: Cage Construction
 Jungle Jazz Architects
 Newt Holdings
 Major Mix
 City of Fort Collins
 Grandview Metropolitan

This report and/or any portion shall not be reproduced without written approval of [redacted]
 All documents shall remain the property of [redacted] as detailed in contract provisions. Results only related to items tested.

CONCRETE INSPECTION AND TEST REPORT

ASTM C 39-93A

Advanced Professional Eng.
 363 West Drake, Suite 10
 Fort Collins, CO 80526
 ATTN: Harold Jenkins

Project: Fort Collins Zoo - Primate Habitat 1
 Lab Number: 1
 Project No: S91003-24
 Sample Location: Caisson A-3-1, plains regions animal habitat

Sample Date: 2/28/2003
 Tech: Harvey
 Number of Specimens: 12
 Cu. Yd. Placed: 2

Contractor: Hegering International
 Concrete Provider: AJ-Mix
 Truck/Ticket Number: 103
 Time Sampled: 3:45 AM

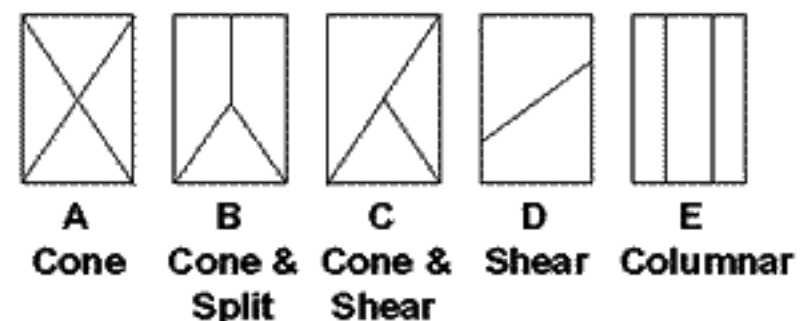
Concrete Mix Design: 3000-C
 Design Strength: 4000
 Slump: 5.5
 Air Content: 2.3 ASTM C 173
 Ambient Temp: 54°
 Concrete Temp: 82° ASTM C 1094
 Laboratory Procedure: ASTM C 39
 Capping System:

Specimen	Test Date	Age	Load	Diameter	Area	Strength	Percent of Design	Type of Fracture
123-1-2-9		hold						S9
123-1-2-2	3/7/2003	7	76000	6.00	28.27	2685	134%	S9
123-1-2-3	3/7/2003	7	98000	6.00	28.27	3465	173%	S9
123-1-2-4	3/28/2003	28	120300	6.00	28.27	4255	106%	S9
123-1-2-5	3/28/2003	28	119700	6.00	28.27	4230	106%	S9
123-1-2-6	3/28/2003	28	117100	6.00	28.27	4140	104%	S9

Remarks: none
 first cage broke
 during placement

Copies to:
 Cage Construction
 Jungle Jazz Architects
 Newt Holdings
 Major Mix

TYPES OF FRACTURE



Reported by: _____

The samples tested Do Do Not
 comply with project specifications.

REPORT OF CONCRETE BEAM TEST

Licensee Company Name
Fort Collins Zoo - Primate Habitat 1

Project Number: S91003-24
Project: Fort Collins Zoo - Primate Habitat 1
Client: Advanced Professional Eng.
Address: 363 West Drake, Suite 10
Fort Collins, CO 80526
Attn: Harold Jenkins

Report Date: 10/14/03
Report Number: 2

FIELD TEST CONDITIONS AND RESULTS (ASTM C 31)

Date Placed: 2/28/2003
Time Sampled: 10:42 AM
Location of Sample: Pachyderm paddock
Supplier: Slow Creek Ready-Mix
Design Strength: 3000
Technician: Jake Break

Truck Number: 103
Ticket Number: 8342
Slump: 5 (ASTM C 143)
Air Content: 6 (AASHTO T 152)
Concrete Temp: 70
Ambient Temp: 50

LABORATORY TEST RESULTS (AASHTO T 97)

Specimen	Test Date	Age	Load	Width	Depth	Span	Outside of Center	Modulus of Rupture	Percent of Design
123-2-3-1	3/7/2003	7	6500	6.00	6.00	18.00	28.27	540	108%
Notes: lab cure									
123-2-3-2	3/7/2003	7	6600	6.00	6.00	18.00	28.27	550	110%
Notes: lab cure, leather shims used, damp									
123-2-3-3	3/28/2003	28							
Notes: lab cure									
123-2-3-4	3/28/2003	28							
Notes: lab cure									
123-2-3-5	3/28/2003	28							
Notes: lab cure									
123-2-3-7	4/25/2003	56							
Notes: lab cure									
123-2-3-8	4/25/2003	56							
Notes: lab cure									
123-2-3-9	4/25/2003	56							
Notes: lab cure									
123-2-3-10		HOLD							
123-2-3-11		HOLD							
123-2-3-12		HOLD							

Remarks: All beams were cast in 24" long molds

Copies to:
Cage Construction
Jungle Jazz Architects
Newt Holdings
Major Mix
City of Fort Collins

Reported by: _____

Laboratory Manager

Cylinder Compressive Strength

6 in.

Client: Advanced Professional Eng.
Project: Fort Collins Zoo - Primate Habitat 1
Contractor: Sanger & Peltion, Inc.

Mix Number: 3000-C **Specified Strength:** 4,000 Lbs/Sq.In. @ 28 Days

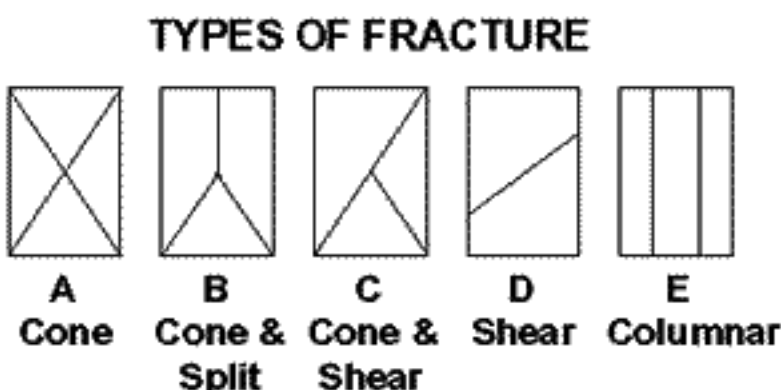
Set No. 1	Time Batched: 10:15 AM	Ticket No.: 8342
Date Sampled: 2/28/2003	Time Sampled: 3:45 AM	Truck No.: 103
Slump: 5.5 in.	Conc. Temp: 82° °F	Days in Field:
Air Content: 2.3 %	Air Temp: 54° °F	Sampled By: Harvey
Location: Caisson A-3-1, plains regions animal habitat		Weather Cond.:

Spec. No.	Date Tested	Age, Days	Dia., In.	Area, In. ²	Max. Load, Lbs.	Compressive Strength, Psi	Frac. Type	Remarks
123-1-2-9		hold					LCB	S91003-24 2-28 1
123-1-2-2	3/7/2003	7	6.00	28.27	76,000	2,680	LCB	S91003-24 2-28 1
123-1-2-3	3/7/2003	7	6.00	28.27	98,000	3,460	LCB	S91003-24 2-28 1
123-1-2-4	3/28/2003	28	6.00	28.27	120,300	4,250	LCB	S91003-24 2-28 1
123-1-2-5	3/28/2003	28	6.00	28.27	119,700	4,230	LCB	S91003-24 2-28 1
123-1-2-6	3/28/2003	28	6.00	28.27	117,100	4,140	LCB	S91003-24 2-28 1

Results Comply Do not comply with specifications Acceptable under ACI 318-02, Section 5.6.3.3

Notes:
 Concrete sampled according to (AASHTO T 23)
 Test specimens cast and stored according to ASTM C 31-00 or 192-00
 Temp of concrete measured according to (AASHTO T 141)
 Air content measured according to (AASHTO T 119)
 Slump measured according to (AASHTO T 152)
 Concrete tested in accordance with
 Specimens capped in accordance with

General Remarks: none
 first cage broke during placement
Distribution: Cage Construction
 Jungle Jazz Architects
 Newt Holdings
 Major Mix
 City of Fort Collins
 Grandview Metropolitan
 Loethew, Patterson, Smith, Inc.
 Bandolier Consulting
 Hightsong Park District
 Intercity Savings and Loan
 Rev. 2 - 03/07/2003



Authorized Signature: _____
 Concrete Laboratory Supervisor

CLIENT Waterling Construction, Inc.
 ADDRESS 2630 Wiseman Lane
 Appleton, IL 66666
 PROJECT ADM Truck Loadout Facility
 Pearville
 CONCRETE SUPPLIER
 CONTRACTOR Waterling Construction, Inc.

ARCHITECT OR ENGINEER

REPORT OF CONCRETE TEST DATA

LOCATION OF PLACEMENT West Wall

QUANTITY REPRESENTED - CUBIC YARDS _____ REPORT NO. 4
 DESIGN STRENGTH 4000 P.S.I. @ 28 DAYS DATE PLACED 11/30/2004 TIME _____
 PLANT READY MIX _____ TRANSIT MIX _____ JOB MIX _____ MIX I.D. _____ SKS _____ PER YARD GALS. PER SK. _____

	LBS.	SOURCE	DESCRIPTION	MOISTURE
CEMENT TYPE _____	_____	_____	_____	_____
FINE AGGREGATE _____	_____	_____	_____	_____
FINE AGGREGATE _____	_____	_____	_____	_____
COARSE AGGREGATE _____	_____	_____	_____	_____
COARSE AGGREGATE _____	_____	_____	_____	_____
AD MIX _____	_____	_____	% AIR _____	_____
WATER _____	_____	_____	SLUMP _____	_____

WATER IN AGGREGATE _____ WATER ADDED ON JOB _____ TOTAL WATER _____
 CURING: JOB 10 Days LABORATORY 4 Days COMMENT _____
 WEATHER _____ AIR TEMP _____ CONC. TEMP _____

IDENTIFICATION	DATE RECD	DATE TESTED	AGE	UNIT STR. P.S.I.	REMARKS
04-2228	12/10/05	12/14/04	14	4320	a

TEST SPECIMENS MADE BY: Client

TESTED BY: J. Sick,


 President

(this form is printed on letterhead)

REPORT OF CONCRETE COMPRESSIVE STRENGTH TEST

REPORT TO: Harold Jenkins
Advanced Professional Eng.
363 West Drake, Suite 10
Fort Collins, CO 80526

Date: 10/27/03

PROJECT: Fort Collins Zoo - Primate
1222 Colorado St.
Fort Collins, CO 80525

JOB NO: S91003-24
INVOICE NO: Ad3

LOCATION: Caisson A-3-1, plains regio
loc3

MATERIALS AND BATCH INFORMATION

PROVIDED BY CONCRETE SUPPLIER

SUPPLIER: AJ-Mix
TIME BATCHED: 10:15 AM
BATCH VOLUME (cy): 2
ADMIXTURES: Ad1

MIX ID: 3000-C
SACKS PER CY: 123.4
CEMENT: 123
AGG. SOURCE:

REQUIRED STRENGTH:
7 DAY: 2000
28 DAY: 4000

FIELD TEST DATA

FIELD TEST BY: Harvey
TIME CAST: 3:45 AM
CURING: 39159B
FIELD CURE TEMP. (°F)

DATE RECEIVED: 2/28/2003
AIR CONTENT: 2.3
SLUMP (IN): 5.5
HIGH: 99 LOW: 88

TRUCK NUMBER: 103
AIR TEMPERATURE (°F): 54°
CONCRETE TEMPERATURE (°F): 82°

LABORATORY CYLINDER NUMBER	CAST DATE	AGE (DAYS)	DATE TESTED	MAXIMUM LOAD (LBS-FORCE)	AREA (IN ²)	COMPRESSIVE STRENGTH
123-1-2-9	2/28/03	hold				
123-1-2-2	2/28/03	7	3/7/03	76000	28.27	2685
123-1-2-3	2/28/03	7	3/7/03	98000	28.27	3465
123-1-2-4	2/28/03	28	3/28/03	120300	28.27	4255
123-1-2-5	2/28/03	28	3/28/03	119700	28.27	4230
123-1-2-6	2/28/03	28	3/28/03	117100	28.27	4140

Remarks: none
first cage broke
during placement
used another

Copy to: Cage Construction
Jungle Jazz Architects
Newt Holdings
Major Mix
City of Fort Collins

Reviewed By: _____

CONCRETE TEST REPORT

1

Project: Fort Collins Zoo - Primate Habitat 1
 Project Number: S91003-24
 Client: Advanced Professional Eng.

Sample Location: Caisson A-3-1, plains regions animal habitat

Date Sampled:	2/28/2003	Date Received:	2/28/2003
Sampled By:	Harvey		
No. of Specimens:	12		
Supplier:	AJ-Mix		
Truck No.:	103	Ticket No.:	8342
Batch Time:	10:15 AM		
Sample Time:	3:45 AM		

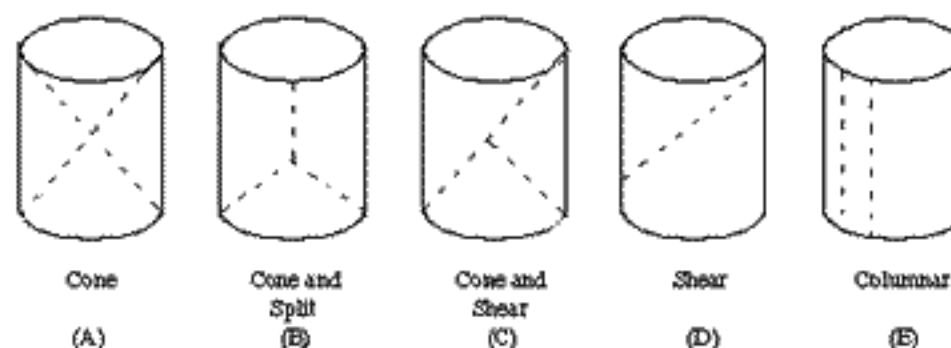
Concrete Mix Design:	3000-C	Design Strength:	4,000 psi
Actual Slump:	5.5 in.	Specified Slump:	5"-6"
Actual Air Content:	2.3 %	Specified Air Content:	6%-7%
Air Temperature:	54° °F	Conc. Temperature:	82° °F
Unit Weight:	145 pcf		
Admixtures:	Ad1		
Gallons Water Added On Site:	12		

Sample	Test Date	Age	Load (lbs)	Dia. (in.)	Area (sq. in.)	Strength (psi)	Type of Fracture
123-1-2-9		hold					
123-1-2-2	3/7/2003	7	76,000	6.00	28.27	2,690	A
123-1-2-3	3/7/2003	7	98,000	6.00	28.27	3,470	B
123-1-2-4	3/28/2003	28	120,300	6.00	28.27	4,250	C
123-1-2-5	3/28/2003	28	119,700	6.00	28.27	4,230	B
123-1-2-6	3/28/2003	28	117,100	6.00	28.27	4,140	B

Remarks: Cloudy, breezy, no precip
 first cage broke setting, used another
 3rd remark
 4th remark

Reported by: _____

Copies to:
 Cage Construction
 Jungle Jazz Architects
 Newt Holdings
 Major Mix
 City of Fort Collins
 Sixth CC



ASTM C39