

**CONSUMERS PUBLIC POWER DISTRICT
Cooper Nuclear Station
Project Laboratory**

COMPRESSION TEST OF CONCRETE

12-30-68
10-28-68
Report Date: 10-7-68

Lab No: 1005

Class: 4LA Contract No.: 68-19 Ticket No.: 230

Date Sampled: 9-30-68 Sampled By: NB/AC Time: 9:25A

Source: SOUTHWEST SECTION REACTOR FOUNDATION

MIX DATA

Cement: 384 lbs
 Sand: 1160 lbs Mo: 1.3 %*
 3/4" Rock: 1125 lbs Mo: 0.7 %*
 1 1/2" Rock: 1125 lbs Mo: -0.1 %*
 Admixture: 0.187 oz DARVAIR
 Admixture: 48.6 oz DARVAIR
 Water: 24.4 gals/yd

CONCRETE PROPERTIES

Slump: 2 1/2 inch
 Wet Weight/Cubic Foot: 157.6 pcf
 Air Content: 2.9 %
 Nominal Cement Factor: 4.09 sks/yd
 Actual Cement Factor: 4.17 sks/yd
 Water/Cement Ratio: 5.95 gal/sk
 Remarks: 70°

Batch: 8 yds
 Batch Water: 172
 Add Job Water: 0
 Agg. Water: 23
 Total Water: 195

COMPRESSION TEST

7 Day		28 Day		90 Day		Specified 28 Day Strength (psi)	
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)		
<u>118500</u>	<u>4220</u>	<u>166500</u>	<u>5930</u>	<u>188500</u>	<u>6710</u>		
<u>119250</u>	<u>4250</u>	<u>166750</u>	<u>5940</u>	<u>202500</u>	<u>7210</u>		
<u>115000</u>	<u>4090</u>	<u>172500</u>	<u>6140</u>	<u>192750</u>	<u>6860</u>		
Ave.	<u>4190</u>		<u>5970</u>		<u>6930</u>	<u>4000</u>	

*Aggregate weights saturated surface dry.
 Moisture excess over saturated surface dry.

Project Laboratory

By: Claude C. Plummer

05718

CONSUMERS PUBLIC POWER DISTRICT
Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

1-7-69
11-7-68

Lab No: 1030

Report Date: 10-17-68

Class: 4LA Contract No.: 68-19 Ticket No.: 632

Date Sampled: 10-9-68 Sampled By: NB/AC Time: 9:20A

Source: SOUTH EAST SECTION OF REACTOR FOUNDATION

MIX DATA

Cement: 384 lbs
Sand: 1160 lbs Mo: 1.5 %*
3/4" Rock: 1125 lbs Mo: 0.7 %*
1 1/2" Rock: 1125 lbs Mo: 0.4 %*
Admixture: 0.56 oz DARAVAIR
Admixture: 45 oz DARATARD
Water: 21.4 gals/yd

CONCRETE PROPERTIES

Slump: 3 inch
Wet Weight/Cubic Foot: 152.2 pcf
Air Content: 3.3 %
Nominal Cement Factor: 4.09 sks/yd
Actual Cement Factor: 4.21 sks/yd
Water/Cement Ratio: 5.24 gal/sk
Remarks: 590

Batch Water: 142
Batch: 8 yds Add Job Water: 0
Agg. Water: 29
Total Water: 171

COMPRESSION TEST

7 Day		28 Day		90 Day		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
124000	4410	178000	6340	185000	6590	
125000	4460	176500	6290	189250	6740	
128500	4580	179000	6370	190750	6790	
Ave.	4480		6330		6710	4000

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: [Signature]

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CONSUMERS PUBLIC POWER DISTRICT
Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

1-23-69
11-22-68

Lab No: 1051

Report Date: 10-31-68

Class: 4LA Contract No.: 68-19 Ticket No.: 981

Date Sampled: 10-23-68 Sampled By: NB Time: 9:00A

Source: NORTHWEST SECTION OF REACTOR FOUNDATION

MIX DATA

CONCRETE PROPERTIES

Cement: 384 lbs
Sand: 1160 lbs Mo: 2.0 %*
3/4" Rock: 1125 lbs Mo: 1.0 %*
1 1/2" Rock: 1125 lbs Mo: 0.0 %*
Admixture: 1.12 oz DORAYAIR
Admixture: 48.5 oz DORATARD
Water: 24.2 gals/yd

Slump: 2 1/2 inch
Wet Weight/Cubic Foot: 150.3 pcf
Air Content: 4.1 %
Nominal Cement Factor: 4.09 sks/yd
Actual Cement Factor: 4.12 sks/yd
Water/Cement Ratio: 5.91 gal/sk
Remarks: 58°

Batch: 8 yds
Batch Water: 160
Add Job Water: 0
Agg. Water: 33
Total Water: 193

COMPRESSION TEST

7 Day		28 Day		90 Day		Specified 28 Day Strength (psi)	
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)		
125750	4480	175250	6240	198750	7080		4000
123500	4400	172750	6150	190250	6770		
124250	4420	172000	6130	196750	7010		
Ave.	4430		6170		6950		

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: Claude C. Flemmer

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CONSUMERS PUBLIC POWER DISTRICT
Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

2-12-69

Lab No: 1081

Report Date: 12-13-68

Class: 4LA Contract No.: 68-19 Ticket No.: 1274
Date Sampled: 11-11-68 Sampled By: NB Time: 11:55AM
Source: NORTHEAST SECTION REACTOR FOUNDATION

MIX DATA

CONCRETE PROPERTIES

Cement: 384 lbs
Sand: 1260 lbs Mo: 2.3 %*
3/4" Rock: 1120 lbs Mo: 1.2 %*
1 1/2" Rock: 1120 lbs Mo: 6.2 %*
Admixture: 1.12 oz DARAVAIR
Admixture: 37 oz DARATARD
Water: 25.6 gals/yd

Slump: 1 1/2 inch
Wet Weight/Cubic Foot: 152.9 pcf
Air Content: 2.2 %
Nominal Cement Factor: 4.09 sks/yd
Actual Cement Factor: 4.09 sks/yd
Water/Cement Ratio: 6.27 gal/sk
Remarks: 49°

Batch: 8 yds
Batch Water: 157
Add Job Water: 5
Agg. Water: 43
Total Water: _____

COMPRESSION TEST

7 Day		28 Day		90 Day		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
121000	4310	161600	5730	176000	6270	4000
121000	4310	163500	5820	178750	6370	
116750	4160	159250	5670	190500		
Ave.	4260		5740		6320	

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: Charles C. Plummer

1081-185718

CONSUMERS PUBLIC POWER DISTRICT
Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

2-24-69

12-24-68

Report Date: 12-4-68

Lab No: 1105

Class: GROUT Contract No.: 68-19 Ticket No.: 1649

Date Sampled: 11-26-68 Sampled By: N.B Time: 3:30 pm

Source: SOUTHWEST REACTOR FOUNDATION WALL

MIX DATA

Cement: ¹³⁴⁰~~1128~~ lbs
Sand: 2185 lbs Mo: 1.8 %*
3/4" Rock: _____ lbs Mo: _____ %*
1 1/2" Rock: _____ lbs Mo: _____ %*
Admixture: _____ oz
Admixture: 108 oz DARATARD
Water: 54.0 gals/yd

CONCRETE PROPERTIES

Slump: 9 3/4 inch
Wet Weight/Cubic Foot: 141.9 pcf
Air Content: 3.3 %
Nominal Cement Factor: 12.0 sks/yd
Actual Cement Factor: 11.9 sks/yd
Water/Cement Ratio: 4.50 gal/sk
Remarks: _____

Batch: 4 yds
Batch Water: 185
Add Job Water: 12
Agg. Water: 19
Total Water: 216

COMPRESSION TEST

7 Day		28 Day		90 Day		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
196250	6990	270750	9640	290500	10340	4000
193000	6870	264000	9400	280250	10000	
188250	6700	266250	9480	279750	9960	
Ave.	6850		9510		10100	

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: David C. Fleming

05718

CONSUMERS PUBLIC POWER DISTRICT
Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

3-12-69

1-7-69

Report Date: 12-16-68

Lab No: 1125

Class: 4LA Contract No.: 68-19 Ticket No.: 1878

Date Sampled: 12-9-68 Sampled By: NB Time: 2:15pm

Source: NORTHWEST REACTOR FOUNDATION WALL

MIX DATA

CONCRETE PROPERTIES

Cement: 408 lbs
Sand: 1260 lbs Mo: 1.8 %*
3/4" Rock: 1120 lbs Mo: 1.1 %*
1 1/2" Rock: 1120 lbs Mo: 0.3 %*
Admixture: 1.3 oz DARVAIR
Admixture: 30 oz WRDA
Water: 26.2 gals/yd

Slump: 3 inch
Wet Weight/Cubic Foot: 147.5 pcf
Air Content: 5.0 %

Nominal Cement Factor: 4.34 sks/yd
Actual Cement Factor: 4.18 sks/yd
Water/Cement Ratio: 6.0 gal/sk
Remarks: 52°

Batch: 8 yds
Batch Water: 173
Add Job Water: 0
Agg. Water: 37
Total Water: 210

COMPRESSION TEST

7 Day		28 Day		90 Day		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
100250	3570	148000	5270	161500	5750	4000
99000	3520	147500	5250	162500	5790	
99250	3530	145250	5170	162500	5790	
Ave.	3540		5230		5780	

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: Claude C. Plummer

05718
1829

CONSUMERS PUBLIC POWER DISTRICT
Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

3-20-69
1-17-69

Lab No: 1144

Report Date: 12-27-68

Class: 4LA Contract No.: 68-19 Ticket No.: 2063

Date Sampled: 12-19-68 Sampled By: NB Time: 11:15 pm

Source: WEST CLOSURE WALL - REACTOR BLDG.

MIX DATA

CONCRETE PROPERTIES

Cement: 408 lbs
Sand: 1260 lbs Mo: 3.0 %*
3/4" Rock: 1120 lbs Mo: 2.1 %*
1 1/2" Rock: 1120 lbs Mo: 0.7 %*
Admixture: 1.7 oz DBRYAIR
Admixture: 30 oz WRDA
Water: 27.7 gals/yd

Slump: 3 inch
Wet Weight/Cubic Foot: 148.7 pcf
Air Content: 4.9 %
Nominal Cement Factor: 4.34 sks/yd
Actual Cement Factor: 4.15 sks/yd
Water/Cement Ratio: 6.38 gal/sk
Remarks: 52°

Batch: 8 yds
Batch Water: 156
Add Job Water: 0
Agg. Water: 66
Total Water: 222

COMPRESSION TEST

7 Day		28 Day		90 Day		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
130000	4630	175000	6230	193000	6870	4000
137500	4900	167500	5960	192500	6840	
141750	5050	171500	6110	197000	7020	
Ave.	4860		6100		6910	

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: David C. Plummer

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CONSUMERS PUBLIC POWER DISTRICT
Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

4-21-69
2-17-69

Lab No: 1178

Report Date: 1-27-69

Class: 4LA Contract No.: 68-19 Ticket No.: 2527

Date Sampled: 1-20-69 Sampled By: NB Time: 12:30 pm

Source: SOUTHEAST REACTOR FOUNDATION WALL

MIX DATA

Cement: 408 lbs
Sand: 1260 lbs Mo: 2.8 %*
3/4" Rock: 1120 lbs Mo: 1.5 %*
1 1/2" Rock: 1120 lbs Mo: 0.3 %*
Admixture: 1.12 oz DARBYAIR
Admixture: 30 oz WRDA
Water: 26.4 gals/yd

CONCRETE PROPERTIES

Slump: 2 3/4 inch
Wet Weight/Cubic Foot: 150.4 pcf
Air Content: 3.9 %
Nominal Cement Factor: 4.34 sks/yd
Actual Cement Factor: 4.23 sks/yd
Water/Cement Ratio: 6.08 gal/sk
Remarks: 52°

Batch: 8 yds
Batch Water: 152
Add Job Water: 5
Agg. Water: 54
Total Water: 211

COMPRESSION TEST

7 Day		28 Day		90 Day		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
102500	3650	151500	5390	170500	6070	4000
110750	3940	153500	5470	166000	5910	
107750	3840	155750	5550	160500	5720	
Ave.	3810		5470		5900	

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: Charles C. Plummer

05718
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CONSUMERS PUBLIC POWER DISTRICT

Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

6-9-69

4-7-69

Lab No: 1232

Report Date: 9-17-69

Class: 4LA Contract No.: 88-19 Ticket No.: 2938

Date Sampled: 3-10-69 Sampled By: CK Time: 4:05pm

Source: N.E. REACTOR FOUNDATION WALLS

MIX DATA

CONCRETE PROPERTIES

CEMENT: 431 LBS
 SAND: 1300 LBS MO: 2.5 %*
 3/4" ROCK: 1120 LBS MO: 1.0 %*
 1 1/2" ROCK: 915 LBS MO: 0.2 %*
 ADMIXTURE: 1.9 OZ DARVAIR
 ADMIXTURE: 32 OZ WRDA
 WATER: 24.9 GALS/YD

SLUMP: 2 3/4 INCH
 WET WEIGHT/CUBIC FOOT: 148.5 PCF
 AIR CONTENT: 4.9 %

NOMINAL CEMENT FACTOR: 4.58 SKS/YD
 ACTUAL CEMENT FACTOR: 4.58 SKS/YD
 WATER/CEMENT RATIO: 5.44 GAL/YD

REMARKS: 58°

BATCH WATER: 147
 ADD JOB WATER: 8
 AGG. WATER: 44
 TOTAL WATER: 199

BATCH: 8 YDS

COMPRESSION TEST

7 DAY		28 DAY		90 DAY		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
133000	4740	149500		183000	6520	4000
130000	4630	167500	5960	183000	6520	
135500	4820	170500	6070	183750	6540	
Avc	4730		6020		6530	

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: Charles C. Plummer
Lab. Manager

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CONSUMERS PUBLIC POWER DISTRICT

Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

6-24-69

4-23-69

Lab No: 1255

Report Date: 4-2-69

Class: 4LA Contract No.: 68-19 Ticket No.: 3211

Date Sampled: 3-26-69 Sampled By: NB/AC Time: 9:45AM

Source: EAST CLOSURE WALL - REACTOR BUILDING

MIX DATA

CONCRETE PROPERTIES

CEMENT: 431 LBS
 SAND: 1300 LBS MO: 3.6 %*
 3/4" ROCK: 1120 LBS MO: 1.4 %*
 1 1/2" ROCK: 915 LBS MO: 0.1 %*
 ADMIXTURE: 1.38 OZ DREXCEM
 ADMIXTURE: 32 OZ WRDA
 WATER: 252.0 GALS/YD

SLUMP: 2 1/2 INCH
 WET WEIGHT/CUBIC FOOT: 148.4 PCF
 AIR CONTENT: 4.7 %
 NOMINAL CEMENT FACTOR: 4.58 SKS/YD
 ACTUAL CEMENT FACTOR: 4.58 SKS/YD
 WATER/CEMENT RATIO: 5.45 GAL/YD
 REMARKS: 60°

BATCH: 8 YDS
 BATCH WATER: 139
 ADD JOB WATER: 0
 AGG. WATER: 61
 TOTAL WATER: 200

COMPRESSION TEST

7 DAY		28 DAY		90 DAY		Specified 28 Day Strength (psi)	
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)		
117250	4180	159500	5680	177500	6330		4000
118750	4230	163750	5830	180500	6430		
118500	4220	169500	6040	176750	6290		
Avg	4210		5850		6350		

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: Claude C. Fleming
Lab. Manager

05718

CONSUMERS PUBLIC POWER DISTRICT

Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

7-3-69

5-2-69

Lab No: 1274

Report Date: 4-7-69

Class: 4LA Contract No.: 68-19 Ticket No.: 3423

Date Sampled: 4-4-69 Sampled By: HB/HH Time: 12:30 pm

Source: NORTH CLOSURE WALL - REACTOR FOUNDATION

MIX DATA

CONCRETE PROPERTIES

CEMENT: 431 LBS
 SAND: 1300 LBS MO: 3.6 %*
 3/4" ROCK: 1120 LBS MO: 2.1 %*
 1/2" ROCK: 915 LBS MO: 1.0 %*
 ADMIXTURE: 1.12 OZ DARVONAIR
 ADMIXTURE: 32 OZ WRPA
 WATER: 264 GALS/YD

SLUMP: 2 3/4 INCH
 WET WEIGHT/CUBIC FOOT: 150.5 PCF
 AIR CONTENT: 4.1 %
 NOMINAL CEMENT FACTOR: 4.58 SKS/YD
 ACTUAL CEMENT FACTOR: 4.58 SKS/YD
 WATER/CEMENT RATIO: 5.76 GAL/YD
 REMARKS: 78°

BATCH WATER: 121
 ADD JOB WATER: 14
 AGG. WATER: 76
 TOTAL WATER: 211
 BATCH: 8 YDS

COMPRESSION TEST

7 DAY		28 DAY		90 DAY		Specified 28 Day Strength (psi)	
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)		
133250	4740	165000	5880	190500	6780		4000
135500	4830	177250	6310	197000	7020		
138500	4930	179000	6370	193750	6900		
Ave	4830		6190		6900		

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory
 By: Claude C. Fleming
 Lab. Manager

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CONSUMERS PUBLIC POWER DISTRICT

Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

8-27-69

6-26-69

Lab No: 1344

Report Date: 6-5-69

Class: 45A Contract No.: 68-19 Ticket No.: 4206

Date Sampled: 5-29-69 Sampled By: CK Time: 9:50A

Source: REACTOR BENT F-6

MIX DATA

CEMENT: ~~1295~~ * LBS
 SAND: 1295 LBS MO: 2.8 %*
 3/4" ROCK: 1945 LBS MO: 2.3 %*
 1 1/2" ROCK: _____ LBS MO: _____ %*
 ADMIXTURE: 0.94 OZ DARBYAIR
 ADMIXTURE: 55 OZ DARATARD
 WATER: 29.9 GALS/YD

BATCH WATER: 125
 ADD JOB WATER: 36
 AGG. WATER: 78
 TOTAL WATER: 239

BATCH: 8 YDS

CONCRETE PROPERTIES

SLUMP: 2 1/4 INCH
 WET WEIGHT/CUBIC FOOT: 150.0 PCF
 AIR CONTENT: 2.7 %

NOMINAL CEMENT FACTOR: ~~4.55~~ * SKS/YD
 ACTUAL CEMENT FACTOR: ~~4.55~~ * SKS/YD
 WATER/CEMENT RATIO: ~~0.18~~ * GAL/YD
 REMARKS: 77°

* Cement Scales overweighing (6-2-69)

COMPRESSION TEST

7 DAY		28 DAY		90 DAY		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
135500	4820	188000	6640	195000	6940	4000
140000	4990	187250	6670	198750	7080	
124500		184500	6570	208000	7410	
Ave	4900		6640		7140	

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: Charles E. Klumpp
Lab. Manager

2050
5718

CONSUMERS PUBLIC POWER DISTRICT

Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

9-8-69

7-7-69

Lab No: 1362

Report Date: 6-16-69

Class: 45A Contract No.: 68-19 Ticket No.: 4407

Date Sampled: 6-9-69 Sampled By: JB/NB Time: 12:10 pm

Source: REACTOR BENT F-5

MIX DATA

CONCRETE PROPERTIES

CEMENT: 452 LBS
 SAND: 1295 LBS MO: 1.7 %*
 3/4" ROCK: 1945 LBS MO: 2.1 %*
 1 1/2" ROCK: _____ LBS MO: _____ %*
 ADMIXTURE: 0.56 OZ DARVAIR
 ADMIXTURE: 57 OZ DARATOR
 WATER: 26.4 GALS/YD

SLUMP: 2 3/4 INCH
 WET WEIGHT/CUBIC FOOT: 149.5 PCF
 AIR CONTENT: 3.4 %
 NOMINAL CEMENT FACTOR: 4.81 SKS/YD
 ACTUAL CEMENT FACTOR: 4.34 SKS/YD
 WATER/CEMENT RATIO: 5.49 GAL/YD
 REMARKS: 74°

BATCH: _____
8 YDS BATCH WATER: 128
 ADD JOB WATER: 23
 AGG. WATER: 60
 TOTAL WATER: 211

COMPRESSION TEST

7 DAY		28 DAY		90 DAY		Specified 28 Day Strength (psi)	
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)		
157250	5600	207000	7370	222500	7920		
155500	5540	202250	7200	224250	7980		
161000	5730	208500	7420	210500			
Ave	5620		7330		7950	4000	

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: Claude C. Plummer
Lab. Manager

2060
5718

CONSUMERS PUBLIC POWER DISTRICT

Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

9-11-69

7-11-69

Lab No: 1369

Report Date: 6-20-69

Class: 45A Contract No.: 68-19 Ticket No.: 4463

Date Sampled: 6-13-69 Sampled By: JB/NB Time: 3:50 pm

Source: REACTOR BENT F-3

MIX DATA

CEMENT: 428 LBS
 SAND: 1295 LBS MO: 3.2 %*
 3/4" ROCK: 1945 LBS MO: 1.1 %*
 1 1/2" ROCK: _____ LBS MO: _____ %*
 ADMIXTURE: 1.0 OZ DAROVAIR
 ADMIXTURE: 55 OZ DAROTARD
 WATER: 25.0 GALS/YD

CONCRETE PROPERTIES

SLUMP: 2 3/4 INCH
 WET WEIGHT/CUBIC FOOT: 140.5 PCF
 AIR CONTENT: 3.6 %
 NOMINAL CEMENT FACTOR: 4.55 SKS/YD
 ACTUAL CEMENT FACTOR: 4.72 SKS/YD
 WATER/CEMENT RATIO: 5.49 GAL/YD
 REMARKS: 78°

BATCH: _____
8 YDS BATCH WATER: 140
 ADD JOB WATER: 0
 AGG. WATER: 60
 TOTAL WATER: 200

COMPRESSION TEST

7 DAY		28 DAY		90 DAY		Specified 28 Day Strength (psi)	
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)		
131000	4660	176500	6280	201500	7180		4000
130500	4650	175750	6260	201750	7180		
135000	4810	177000	6300	197500	7030		
Ave	4710		6280		7130		

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: Charles C. Plummer
Lab. Manager

2075
5718

CONSUMERS PUBLIC POWER DISTRICT
Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

9-18-69
 7-18-69

Lab No: 1393

Report Date: 6-27-69

Class: 45A Contract No.: 68-19 Ticket No.: 4735

Date Sampled: 6-20-69 Sampled By: CK Time: 3:25pm

Source: REACTOR BENT F-2

MIX DATA

CONCRETE PROPERTIES

CEMENT: 428 LBS
 SAND: 1295 LBS MO: 1.8 %*
 3/4" ROCK: 1945 LBS MO: 1.6 %*
 1 1/2" ROCK: _____ LBS MO: _____ %*
 ADMIXTURE: 0.38 OZ DARADAR
 ADMIXTURE: 55 OZ DARADAR
 WATER: 25.4 GALS/YD

SLUMP: 4 INCH
 WET WEIGHT/CUBIC FOOT: _____ PCF
 AIR CONTENT: 3.7 %
 NOMINAL CEMENT FACTOR: 4.55 SKS/YD
 ACTUAL CEMENT FACTOR: 4.64 SKS/YD
 WATER/CEMENT RATIO: 6.24 GAL/YD
 REMARKS: 72°

BATCH: _____
8 YDS BATCH WATER: 160
 ADD JOB WATER: 15
 AGG. WATER: 52
 TOTAL WATER: 227

COMPRESSION TEST

7 DAY		28 DAY		90 DAY		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
146750	5230	201500	7180	218000	7760	4000
142750	5080	205500	7320	193500		
144750	5150	202750	7220	216500	7710	
Ave	5150		7240		7740	

*Aggregate weights saturated surface dry.
 Moisture excess over saturated surface dry.

Project Laboratory

By: Charles E. Plummer
 Lab. Manager

J 5718 2099

CONSUMERS PUBLIC POWER DISTRICT

Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

9-19-69

7-14-69

Lab No: 1398

Report Date: 6-30-69

Class: PREPARED GROUT Contract No.: 68-19 Ticket No.:

Date Sampled: 6-21-69 Sampled By: DT/CK Time: 1:30 pm

Source: WEST REACTOR FOUNDATION WALL - 15' to 20' S. of N Wall
1'-2' ABOVE MAT

MIX DATA

CONCRETE PROPERTIES

CEMENT: _____ LBS
SAND: _____ LBS MO: _____ %*
3/4" ROCK: _____ LBS MO: _____ %*
1 1/2" ROCK: _____ LBS MO: _____ %*
ADMIXTURE: _____ OZ
ADMIXTURE: _____ OZ
WATER: _____ GALS/YD

SLUMP: _____ INCH
WET WEIGHT/CUBIC FOOT: _____ PCF
AIR CONTENT: _____ %
NOMINAL CEMENT FACTOR: _____ SKS/YD
ACTUAL CEMENT FACTOR: _____ SKS/YD
WATER/CEMENT RATIO: _____ GAL/YD

BATCH: _____ YDS
BATCH WATER: _____
ADD JOB WATER: _____
AGG. WATER: _____
TOTAL WATER: _____

REMARKS:
Cement 3ybs (Ash Grove)
Fly Ash 1sh (Walter Handy Co)
Sand 251# (Western Sand - 40)
Fluidizer 2#100g (Dor-Aid)

COMPRESSION TEST

7 DAY		28 DAY		90 DAY		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
96500	3400	165000	5880	195000	6940	
<u>Ave</u>	<u>3400</u>		<u>5880</u>		<u>6940</u>	<u>4000</u>

* Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: David C. Plummer
Lab. Manager

05718 2104

CONSUMERS PUBLIC POWER DISTRICT

Cooper Nuclear Station
Project Laboratory

00641530

COMPRESSION TEST OF CONCRETE

9-22-69

7-21-69

Lab No: 1399

Report Date: 6-30-69

Class: PREPLACED GROUT Contract No.: 68-19 Ticket No.: _____

Date Sampled: 6-23-69 Sampled By: DT Time: 11:45 A

Source: E. WALL OF HPCI - W. WALL OF REACTOR FOUNDATION

MIX DATA

CONCRETE PROPERTIES

CEMENT: _____ LBS
SAND: _____ LBS MO: _____ %*
3/4" ROCK: _____ LBS MO: _____ %*
1 1/2" ROCK: X _____ LBS MO: _____ %*
ADMIXTURE: _____ OZ
ADMIXTURE: _____ OZ
WATER: _____ GALS/YD

SLUMP: _____ INCH
WET WEIGHT/CUBIC FOOT: _____ PCF
AIR CONTENT: _____ %
NOMINAL CEMENT FACTOR: _____ SKS/YD
ACTUAL CEMENT FACTOR: _____ SKS/YD
WATER/CEMENT RATIO: _____ GAL/YD

BATCH: _____ YDS
BATCH WATER: _____
ADD JOB WATER: _____
AGG. WATER: _____
TOTAL WATER: _____

REMARKS: *
Cement 3525 (C. Bon Grove)
Fly Ash 1 1/2% (Weather Ready Co.)
Sand 3 5/8% (Western Sand - 45)
Fluidizer 2 1/2% (C. Intec - D.O.)

COMPRESSION TEST

7 DAY		28 DAY		90 DAY		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
99500	3520	160000	5700	205000	7300	
102500	3620	157750	5620	206000	7340	
	3570		5660		7320	4000

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory
By: Claude C. Plimmer
Lab. Manager

05718 2105

CONSUMERS PUBLIC POWER DISTRICT

Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

Lab No: 1407

Report Date: 7-26-69
7-3-69

Class: 45A Contract No.: 68-19 Ticket No.: 4816

Date Sampled: 6-28-69 Sampled By: R/NB Time: 2:40AM

Source: REACTOR BENT F-4

MIX DATA

CONCRETE PROPERTIES

CEMENT: 428 LBS
SAND: 1295 LBS MO: 2.3 %*
3/4" ROCK: 1945 LBS MO: 2.7 %*
1 1/2" ROCK: _____ LBS MO: _____ %*
ADMIXTURE: 0.50 OZ DARADIR
ADMIXTURE: 55 OZ DARADIR
WATER: 25.1 GALS/YD

SLUMP: 3 INCH
WET WEIGHT/CUBIC FOOT: 149.2 PCF
AIR CONTENT: 4.7 %
NOMINAL CEMENT FACTOR: 4.55 SKS/YD
ACTUAL CEMENT FACTOR: 4.67 SKS/YD
WATER/CEMENT RATIO: 5.52 GAL/YD
REMARKS: 76°

BATCH: 8 YDS
BATCH WATER: 140
ADD JOB WATER: 0
AGG. WATER: 61
TOTAL WATER: 201

JOB CORE

COMPRESSION TEST

5 DAY		28 DAY		___ DAY		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
111500	3970	175500	6250			4000
118500	4220	179250	6380			
119500	4260	179500	6390			
Ave	4150		6340			

*Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory

By: Claude C. Plummer
Lab. Manager

05718 2114

CONSUMERS PUBLIC POWER DISTRICT

Cooper Nuclear Station
Project Laboratory

COMPRESSION TEST OF CONCRETE

4-28-70

7-28-70

Lab No: 1960

Report Date: 7-7-70

Class: 45A Contract No.: 68-55 Ticket No.: 10679

Date Sampled: 6-30-70 Sampled By: NB DH Time: 8³⁰ pm

Source: REACTOR BLDG. 4th QUAD 1st LIFT CONTAINMENT WALL

Bent 2-4 875-884

MIX DATA

CONCRETE PROPERTIES

CEMENT: 428 LBS
 SAND: 1390 LBS MO: 1.3 %*
 3/4" ROCK: 1964 LBS MO: 0.56 %*
 1 1/2" ROCK: _____ LBS MO: _____ %*
 ADMIXTURE: 0.38 OZ DARAVAIR
 ADMIXTURE: 55 OZ DARATARD
 WATER: 26.5 GALS/YD

SLUMP: 2 3/4 INCH
 WET WEIGHT/CUBIC FOOT: 148.3 PCF
 AIR CONTENT: 5.0 %
 NOMINAL CEMENT FACTOR: 4.55 SKS/YD
 ACTUAL CEMENT FACTOR: 4.50 SKS/YD
 WATER/CEMENT RATIO: 5.82 GAL/YD
 REMARKS: 70°

BATCH: _____
8 YDS BATCH WATER: 180
 ADD JOB WATER: 5
 AGG. WATER: 27
 TOTAL WATER: 212

COMPRESSION TEST

7 DAY		28 DAY		90 DAY		Specified 28 Day Strength (psi)	
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)		
125750	4480	185750	6610	206000	7340		4070
129000	4590	187500	6680	205250	7310		
130500	4650	188250	6700	195500	6960		
Ave	4570		6660		7200		

* Aggregate weights saturated surface dry.
Moisture excess over saturated surface dry.

Project Laboratory
 By: Claude C. Plummer
 Lab. Manager

05719 0109

NEBRASKA PUBLIC POWER DISTRICT

Cooper Nuclear Station

Project Laboratory

COMPRESSION TEST OF CONCRETE

Lab No: 2453

Report Date: 5-5-71 6-1-71

Class: 5-STAR GROUT Contract No.: 29-4 Ticket No.: —

Date Sampled: 5-4-71 Sampled By: ED Time: 10:15 AM

Source: Reactor Bldg. Ring Guide RPV Pedestal

MIX DATA

CONCRETE PROPERTIES

CEMENT: _____ LBS
 SAND: _____ LBS MO: _____ %*
 3/4" ROCK: _____ LBS MO: _____ %*
 1/2" ROCK: _____ LBS MO: _____ %*
 ADMIXTURE: _____ OZ
 ADMIXTURE: _____ OZ
 WATER: 9 gal per 100 lbs 5-STAR GROUT GAL/YD

SLUMP: _____ INCH
 WET WEIGHT/CUBIC FOOT: _____ PCF
 AIR CONTENT: _____ %
 NOMINAL CEMENT FACTOR: _____ SKS/YD
 ACTUAL CEMENT FACTOR: _____ SKS/YD
 WATER/CEMENT RATIO: _____ GAL/YD
 REMARKS: _____

BATCH: _____ YDS
 BATCH WATER: _____
 ADD JOB WATER: _____
 AGG. WATER: _____
 TOTAL WATER: _____

COMPRESSION TEST

7 DAY 24 hrs.		28 DAY 7 DAY		28 DAY 28 DAY		Specified 28 Day Strength (psi)
Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	Max. Load lbs.	Comp. Strength (psi)	
<u>10:45 AM</u> <u>5600</u>	<u>1400</u>	<u>1600</u>	<u>4000</u>	<u>23,050</u>	<u>5760</u>	
<u>12:45 PM</u> <u>12000</u>	<u>3000</u>	<u>24700</u>	<u>6170</u>	<u>24,100</u>	<u>6020</u>	
<u>1:15 PM</u> <u>9100</u>	<u>2270</u>	<u>14200</u>	<u>3550</u>	<u>27,550</u>	<u>6870</u>	
<u>Ave.</u>	<u>2223</u>		<u>4570</u>		<u>6220</u>	

*Aggregate weights saturated surface dry.
 Moisture excess over saturated surface dry.

Project Laboratory

By: D. McLean
 Lab. Manager

05719 0671