

2000-3 Arapaho Road  
Construction Shop Drawings - 1999



# HUITT-ZOLLARS

Huitt-Zollars, Inc. / 3131 McKinney Avenue / Suite 600 / LB 105 / Dallas, Texas 75204-2489 / 214/871-3311 / FAX 214/871-0757

October 12, 1998

Mr. Robert D. Weber  
Ed Bell Construction  
10605 Harry Hines  
P.O. Box 540787  
Dallas, TX 75354-0787

RE: Arapaho Road - Addison, Texas

Dear Mr. Weber:

Concrete Mix Design # 8274 by TXI is approved for bollard construction on the Arapaho Road reconstruction project.

Concrete Mix Design # 9363 by Pioneer Concrete of Texas, Inc. is approved for bollard construction on the Arapaho Road reconstruction.

Please feel free to call if you have any questions.

Sincerely,

**HUITT-ZOLLARS, INC.**



Kenneth A. Roberts, P.E.  
Vice President

Copy: Jim Pierce, P.E., Town of Addison

H:\PROJ\01177201\EDBELL5.DOC



ORIGINAL

September 8, 1998

Dietz Construction  
P. O. Box 814  
Rockwall, TX 75087

CODE:

- 1. APPROVED
- 2. APPROVED AS NOTED (CORRECT AND RESUBMIT)
- 3. APPROVED AS NOTED (CONFIRM-RESUBMITTAL NOT REQUIRED)
- 4. DISAPPROVED (REVISE AND RESUBMIT)

Attn: Ms. Giselle Dietz

K. Adair REVIEWER 10-12-98 DATE

RE: Apraho Road-Bollards  
City of Addison

Hitt - Zeller, Inc. ORGANIZATION

8274

APPROVAL DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THESE SUBMITTALS AND FROM RESPONSIBILITY FOR COMPLYING WITH THE REQUIREMENTS OF THIS CONTRACT

The attached concrete mix design utilizing the appropriate ASTM C-33 or ASTM C-330 aggregate is proposed for use on the above referenced project for ready-mixed concrete to be furnished by TXI.

To ensure that the correct mix is delivered to your project, please order by the mix design number which appears in the upper left hand corner of the mix design.

Texas Industries certifies that the above mix design, when ordered by specified design identity, and delivered by TXI, will meet or exceed the indicated design strength at the designated age when tested in accordance with the applicable and current ASTM Standards C 31, C 39, C 78, C 172, C 293, applicable provisions of C 94, and evaluated in accordance with applicable provisions of the ACI 318 Building Code.

TXI would like to be included on your mailing list to receive all test reports. ASTM C 94 entitles a manufacturer to receive copies of all test reports when strength of concrete is used as a basis for acceptance.

Contact us if you have any questions or require any additional information. Please notify TXI of approval of the proposed mix design prior to its use. Failure to notify us prior to first placement shall constitute acceptance. To ensure that the proper mix design is ordered, please send a copy of this letter, after approval, to the above referenced project to be used by the person ordering the concrete for this job.

Sincerely,

TXI Operations, LP

Raymond W. Argersinger  
Customer Service Representative

ORIGINAL

Mix #: 8274  
Description: 6.00SK ADMIX/AEA 1"CS  
Strength: 4000 psi @ 28 Days

BOLLARDS

Maximum Coarse Aggregate: 1" - #4 CRUSHED STONE  
Maximum Water/Cement Ratio: 5.00 gal/sack or 0.443 lbs/lb  
Cement/Cementitious Content: 6.00 sacks (per cubic yard)  
Maximum Placement Slump: 4.00 inches  
Air Entraining Agent: ASTM C-260  
Admixture: ASTM C-494 Type A or D

MATERIAL QUANTITIES PER 1.0 CUBIC YARD AT S.S.D

564 lbs. ASTM C 150 TYPE I CEMENT  
1840 lbs. 1" - #4 CRUSHED STONE  
1294 lbs. CONCRETE SAND  
250 lbs. or 30.0 Gallons of Water  
2.0 to 4.0 oz/cwt of ASTM C-494 Type D  
Specified Air Content: 3.0% - 6.0%  
Placement Slump: 3.00 + or - 1.00 inches

#### PUMPING NOTES / RECOMMENDATIONS

1. 5" minimum diameter lines with no reduction to smaller lines.
2. Keep rubber hose to absolute minimum length and plan pipe with as few 90 degree angles as possible.
3. Samples for slump and strength tests should be taken @ discharge end of hose for strength guarantee to be valid.
4. To prime pump lines, a minimum of 8.0 sack grout should be used for lubrication. In the case of strength concrete, equivalent strength grout should be used if the grout remains in the placement.
5. Pump mixes are based on minimum cement content pumped at ground level. As pump line increases in length or height and/or layout configuration changes, additional cement may be required to assure strength and pumpability at additional cost to the contractor.
6. TXI cannot control, and is therefore not responsible for excessive loss of entrained air content when loss occurs as a result of boom configuration or free fall discharge from hose. To ensure minimum air loss when pumping, maintain a continuous flow of concrete through the entire length of pipe and do not subject concrete to free fall.

Unless otherwise indicated, when the concrete temperature at point of placement exceeds 90 degrees, TXI will guarantee the strength performance of the mix design(s) herein submitted up to a maximum placement temperature of 100 degrees using an ASTM C 494 Type D retarding water-reducer as long as the concrete is placed within 75 minutes from batch time.

We are enclosing all available back up data for the referenced mix design(s). If the strength information is not available, or is insufficient, confirmation tests may have to be conducted by your laboratory.

TEXAS INDUSTRIES  
CONCRETE DESIGN EVALUATION

Date: 09/08/98

\*\* Statistics Compiled From Independent Laboratory Test Specimens \*\*

Mix Number: 8274

Strength: 4000 psi @ 28 Days

28 Day Test Data

Test Number	Date	Plant Number	Temperature (Fahrenheit)		Placement Slump (in)	Percent of Air	28 Day			Cumulative Average	Moving Avg of 3	Range
			Ambient	Concrete			PSI 1	PSI 2	PSI Avg			
1	03/27/98			80	4.75	4.0%	5360	5160	5260	5260		200
2	03/27/98			80	3.75	3.6%	5350	5270	5310	5285		80
3	03/27/98			78	3.50	4.0%	5840	5740	5790	5453	5453	100
4	04/06/98	43	63	73	5.50	N/A	5180	5340	5260	5405	5453	160
5	04/20/98			82	5.50	N/A	4520	4500	4510	5226	5187	20
6	04/22/98	41	52	64	5.50	N/A	4580	4630	4605	5123	4792	50
7	04/23/98	43	72	79	5.75	N/A	4070	4140	4105	4977	4407	70
8	04/28/98	40	58	70	5.00	N/A	5150	5060	5105	4993	4605	90
9	04/28/98	40	52	60	4.75	N/A	5240	5030	5135	5009	4782	210
10	04/28/98	40	50	70	5.25	N/A	4760	4520	4640	4972	4960	240
11	04/28/98	40	56	64	4.50	N/A	5540	5590	5565	5026	5113	50
12	05/05/98	40	78	79	5.00	5.0%	4150	4280	4215	4958	4807	130
13	05/05/98	40	72	74	4.75	4.3%	4070	4000	4035	4887	4605	70
14	05/05/98	40	68	70	5.25	3.9%	4580	4660	4620	4868	4290	80
15	05/05/98	40	65	69	5.00	4.3%	4770	4860	4815	4865	4490	90
16	05/14/98	42	78	75	4.75	4.3%	5260	5380	5320	4893	4918	120
17	05/18/98	43	98	92	4.25	N/A	4160	4030	4095	4846	4743	130
18	05/19/98	40	92	84	5.00	N/A	4570	4760	4665	4836	4693	190
19	05/21/98	43	94	89	3.50	N/A	4610	4540	4575	4822	4445	70
20	05/29/98	42	96	82	5.25	2.0%	5060	4880	4970	4830	4737	180
21	06/01/98	43	98	92	5.50	N/A	5160	5080	5120	4844	4888	80
22	06/02/98	42	96	86	5.00	N/A	4530	4580	4555	4830	4882	50
23	06/03/98	42	98	83	5.00	4.2%	4350	4410	4380	4811	4685	60
24	06/04/98	42	90	84	5.00	4.0%	5160	5330	5245	4829	4727	170
25	06/08/98	43	88	92	3.50	N/A	4380	4410	4395	4812	4673	30
26	06/10/98			88	5.50	5.5%	4920	5050	4985	4818	4875	130
27	06/10/98			87	5.50	5.8%	4270	4410	4340	4801	4573	140
28	06/11/98	43	84	87	5.75	N/A	3660	3750	3705	4761	4343	90
29	06/15/98			91	4.50	N/A	5240	5290	5265	4779	4437	50
30	06/15/98	42	90	92	4.00	N/A	3950	4170	4060	4755	4343	220
*** Averages ***				78	80	4.86	4.2%					

COMMENTARY OF STATISTICAL EVALUATION OF CONCRETE DESIGN RESULTS

Mix Num: 8274

Strength: 4000 psi @ 28 Days

Paragraph 5.5 of ACI 318-89 provides that as data becomes available during construction, the amount by which ( $F'_{cr}$ ) must exceed the specified value of ( $F'_c$ ) may be reduced, provided:

- (a) 30 or more test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.1, or
- (b) 15 to 29 test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.2.

The required average compressive strength has been calculated using a standard deviation calculated in accordance with ACI 318-89 Section 5.3.1.1 or Section 5.3.1.2 and is the larger value of these calculations:

$$\begin{aligned} F'_{cr} &= F'_c + 1.34(SD) \\ &= 4000 + 1.34(517.2) \\ &= 4693 \\ F'_{cr} &= F'_c + 2.33(SD) - 500 \\ &= 4000 + 2.33(517.2) - 500 \\ &= 4705 \end{aligned}$$

**SUMMARY OF STATISTICAL ANALYSIS**  
**28 Day Test Data**

Number of Tests.....	30	
Maximum Value.....	5790	psi
Minimum Value.....	3705	psi
Range.....	2085	psi
Average Strength.....	4755	psi
Standard Deviation.....	517	psi
Required Average Strength to satisfy minimum probability conditions of ACI 318-89 Section 5.3.2.1.....	4705	psi
Design excess beyond code requirements...	50	psi



**SPECIFICATIONS**  
**Portland Cement**  
**Type I/II (Low Alkali)**  
**A.S.T.M. C150-97**

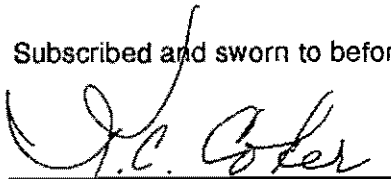
Bin Number		
Car Number		
Tons		
Date of Sampling	June 1998 Monthly Average	
	ASTM SPECIFICATION	TEST RESULTS
<b>CHEMICAL REQUIREMENTS</b>		
Silica Oxide, Minimum Percent	20.0	20.7
Alumina Oxide, Maximum Percent	6.0	4.1
Iron Oxide, Maximum Percent	6.0	3.9
Magnesia Oxide, Maximum Percent	6.0	1.2
SO3 (C3A less than 8%), Maximum Percent	*	3.4
Loss on Ignition, Maximum Percent	3.0	1.0
Insoluble residue, Maximum Percent	0.75	0.12
Tricalcium Aluminate, Maximum Percent	8	4
<b>OPTIONAL CHEMICAL REQUIREMENTS</b>		
Total Alkalies, Max. % (Na2O equiv.)	0.60	0.45
<b>PHYSICAL REQUIREMENTS</b>		
Specific surface, Blaine Minimum (M <sup>2</sup> /Kg)	280	340
Gillmore, Initial Set, Minimum (Minutes)	60	163
Gillmore, Final Set, Maximum (Minutes)	600	291
Vicat, Minimum (Minutes)	45	96
Initial Set, Maximum (Minutes)	375	
Air Content, Volume, Maximum Percent	12	6
Autoclave Expansion, Maximum Percent	0.80	0
3 Day Minimum Compressive Strength, MPa (psi)	12.0 (1740)	22.8 (3305)
7 Day Minimum Compressive Strength, MPa (psi)	19.0 (2760)	29.1 (4221)

STATE OF TEXAS

ELLIS COUNTY

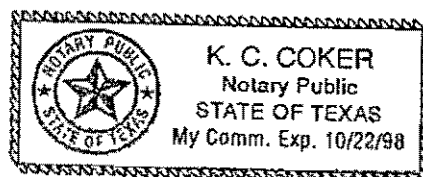
J.R. Owens, being duly sworn deposes and says; that he is Chief Chemist of TXI, Midlothian Cement Plant, who prepared the above report of tests and that the same is true and correct.

Subscribed and sworn to before me this 17th day of July, 1998.

  
 Notary Public

  
 Chief Chemist

\*See ASTM C150 Table 1, Footnote B.





**GRACE**

**Concrete Products**

W.R. Grace & Co.  
2001 East Randol Mill, Suite # 115  
Arlington, TX 76011

(817) 461-4101  
(817) 459-1084

January 8, 1998

Texas Industries, Inc.  
Dallas, Texas

Gentlemen:

This is to certify that DARATARD-17, a water-reducing set-retarding admixture, supplied by the Construction Products Division, W.R. Grace & Co.-Conn., is formulated to comply with Specifications for Chemical Admixtures for Concrete, ASTM Designation: C-494, as a Type B & D admixture; and the Standard Specifications of the Texas Highway Department.

No chlorides or halogens are added to DARATARD-17 as functional ingredients during manufacture.

Material supplied for the above referenced project is identical in all respects, including concentration, to the one originally submitted to and approved by the State of Texas, Dept. of Transportation.

The above is in addition to and not in substitution for our standard Conditions of Sale printed on the reverse side hereof.

Sincerely,

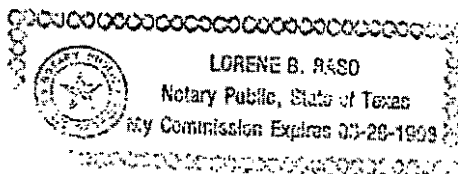


Tom C. Henson  
District Manager

Subscribed and sworn to, before me,  
this 8th day of January, 1998 A.D.



Lorene B. Raso, Notary Public  
In and For the State of Texas



**GRACE**

**Grace Construction Products**

W.R. Grace & Co. - Conn.  
4323 Crites Street  
P.O. Box 2585-77252  
Houston, TX 77003

March 6, 1997

Texas Industries, Inc.  
1341 W. Mockingbird Lane  
Dallas, TX 75247-6913

Gentlemen:

This is to certify that WRDA with HYCOL, a water-reducing admixture, as manufactured and supplied by the Construction Products Division, W.R. Grace & Co.-Conn., is formulated to comply with Specifications for Chemical Admixtures for Concrete, ASTM Designation: C-494, Type A (AASHTO M194, Type A).

No chlorides or halogens are added to WRDA with HYCOL as functional ingredients during manufacture.

Material supplied for the above referenced project is identical in all respects, including concentration, to the one originally submitted to and approved by the State of Texas, Dept. of Transportation.

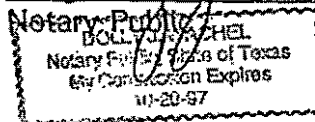
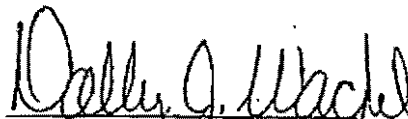
The above is in addition to and not in substitution for our standard Conditions of Sale printed on the reverse side hereof.

Sincerely,



Tom C. Henson  
District Manager

Subscribed and sworn to, before me,  
this 6th day of March, 1997 A.D.



# GRACE

Grace Construction Products

W.R. Grace & Co. - Conn  
4323 Crites Street  
P.O. Box 2585-77252  
Houston, TX 77003

August 18, 1998

Texas Industries, Inc.

Gentlemen:


This is to certify that Daravair 1000, an air-entraining admixture, as manufactured and supplied by the Construction Products Division, W.R. Grace & Co.-Conn., is formulated to comply with Specification for Air-Entraining Admixtures for Concrete, ASTM Designation: C260 (AASHTO M154).

Daravair 1000 does not contain calcium chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts contributed from the domestic water supply used during the manufacturing process.

Material supplied for the above referenced project is identical in all respects, including concentration, to the one originally submitted to and approved by the State of Texas, Dept. of Transportation.

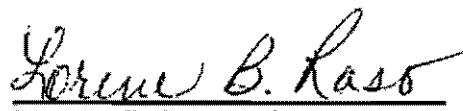
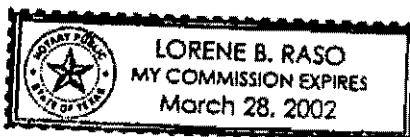
The foregoing is in addition to and not in substitution for our standard Conditions of Sales printed on the reverse side hereof.

Sincerely,



Tom C. Henson  
District Manager

Subscribed and sworn to, before me,  
this 18th day of August 1998, A.D.



Lorene B. Raso, Notary Public  
In and for the State of Texas



**GRACE**

**Concrete Products**

W.R. Grace & Co.  
2001 East Randol Mill, Suite # 115  
Arlington, TX 76011

January 8, 1998

(817) 461-4101  
(817) 459-1084

Texas Industries, Inc.  
Dallas, Texas

Gentlemen:

This is to certify that DARACEM-19, a high range water-reducing admixture; as manufactured and supplied by the Construction Products Division, W. R. Grace & Co.-Conn., is formulated to comply with Specifications for Chemical Admixtures for Concrete, ASTM Designation: C-494, Types A & F (AASHTO M 194, Types A & F).

DARACEM-19 does not contain calcium chloride or chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts contributed from the domestic water supply used during the manufacturing process.


The above is in addition to and not in substitution for our Standard Conditions of Sale printed on the reverse side hereof.

Sincerely,

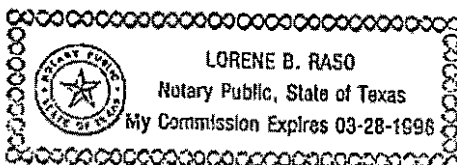


Tom C. Henson  
District Manager

Subscribed and sworn to, before me,  
this 8th day of January, 1998 A.D.



Lorene B. Raso, Notary Public  
In and For the State of Texas



**TEXAS INDUSTRIES  
QUALITY CONTROL DEPT.  
AGGREGATE SIEVE ANALYSIS**

Date: 07/15/98

Production Facility: BRIDGEPORT

Size: 57

Grading Designation: ASTM C-33 1" - #4.

Project: \*\*\*\*\*ALL TESTS\*\*\*\*\*

Sample Location:

SIEVE SIZE	CUMULATIVE WT. RETAINED	CUMULATIVE % RETAINED	CUMULATIVE % PASSING	REQUIRED % RETAINED	SPECIFICATION % PASSING
2.0"					
1.5"		0	100	0	100
1.0"		1.72	98.28	0 - 5	95 - 100
¾"		17.46	82.54		
½"		55.43	44.57	40 - 75	25 - 60
3/8"		79.30	20.70		
#4		97.20	2.80	90 - 100	0 - 10
#8		98.83	1.17	95 - 100	0 - 5
#10					
#16					
#30					
#40					
#50					
#100					
#200		99.13	0.87		
PAN WT.					

Decant .89%

100% of tests: 151 Size: 57 PLANT: BRIDGEPORT

Job: \*\*\*\*\*ALL JOBS\*\*\*\*\*

**TEXAS INDUSTRIES  
QUALITY CONTROL DEPT.  
AGGREGATE SIEVE ANALYSIS**

Date: 07/16/98

Production Facility: AMBROSE (LATTIMORE)

Size: 33

Grading Designation: ASTM C-33 FINE AGG.

Project: \*\*\*\*\*ALL TESTS\*\*\*\*\*

Sample Location:

SIEVE SIZE	CUMULATIVE WT. RETAINED	CUMULATIVE % RETAINED	CUMULATIVE % PASSING	REQUIRED % RETAINED	SPECIFICATION % PASSING
2.0"					
1.5"					
1.0"					
¾"					
½"					
3/8"					
#4		1.83	98.17	0 - 5	95 - 100
#8		12.62	87.38	0 - 20	80 - 100
#10					
#16		22.25	77.75	15 - 50	50 - 85
#30		45.85	54.15	40 - 75	25 - 60
#40					
#50		80.27	19.73	70 - 90	10 - 30
#100		97.74	2.26	90 - 98	2 - 10
#200		99.57	0.43	97-100	0 - 3
PAN WT.		2.61	Fineness Modulus		

**Decant:**

M.C. 5.3%

S. E. 95.2%

100% of tests: 129 Size: 33 PLANT: AMBROSE(LATTIMORE) Job: \*\*\*\*\*ALL JOBS\*\*\*\*\*



ORIGINAL

September 8, 1998

Dietz Construction  
P. O. Box 814  
Rockwall, TX 75087

CODE:

- 1. APPROVED
- 2. APPROVED AS NOTED (CORRECT AND RESUBMIT)
- 3. APPROVED AS NOTED (CONFIRM-RESUBMITTAL NOT REQUIRED)
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Attn: Ms. Giselle Dietz

Ken Roberts REVIEWER 10-12-98 DATE

RE: Apraho Road-Bollards  
City of Addison

Heitt-Zeller, Inc. ORGANIZATION

8274

APPROVAL DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THESE SUBMITTALS AND FROM RESPONSIBILITY FOR COMPLYING WITH THE REQUIREMENTS OF THIS CONTRACT

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TXI Operations, LP

Raymond W. Argersinger  
Customer Service Representative

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Strength: 4000 psi @ 28 Days

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Maximum Water/Cement Ratio: 5.00 gal/sack or 0.443 lbs/lb  
Cement/Cementitious Content: 6.00 sacks (per cubic yard)  
Maximum Placement Slump: 4.00 inches  
Air Entraining Agent: ASTM C-260  
Admixture: ASTM C-494 Type A or D

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564 lbs. ASTM C 150 TYPE I CEMENT  
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1294 lbs. CONCRETE SAND  
250 lbs. or 30.0 Gallons of Water  
2.0 to 4.0 oz/cwt of ASTM C-494 Type D  
Specified Air Content: 3.0% - 6.0%  
Placement Slump: 3.00 + or - 1.00 inches



#### PUMPING NOTES / RECOMMENDATIONS

1. 5" minimum diameter lines with no reduction to smaller lines.
2. Keep rubber hose to absolute minimum length and plan pipe with as few 90 degree angles as possible.
3. Samples for slump and strength tests should be taken @ discharge end of hose for strength guarantee to be valid.
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CONCRETE DESIGN EVALUATION

Date: 09/08/98

\*\* Statistics Compiled From Independent Laboratory Test Specimens \*\*

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Strength: 4000 psi @ 28 Days

28 Day Test Data

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2	03/27/98			80	3.75	3.6%	5350	5270	5310	5285		80
3	03/27/98			78	3.50	4.0%	5840	5740	5790	5453	5453	100
4	04/06/98	43	63	73	5.50	N/A	5180	5340	5260	5405	5453	160
5	04/20/98			82	5.50	N/A	4520	4500	4510	5226	5187	20
6	04/22/98	41	52	64	5.50	N/A	4580	4630	4605	5123	4792	50
7	04/23/98	43	72	79	5.75	N/A	4070	4140	4105	4977	4407	70
8	04/28/98	40	58	70	5.00	N/A	5150	5060	5105	4993	4605	90
9	04/28/98	40	52	60	4.75	N/A	5240	5030	5135	5009	4782	210
10	04/28/98	40	50	70	5.25	N/A	4760	4520	4640	4972	4960	240
11	04/28/98	40	56	64	4.50	N/A	5540	5590	5565	5026	5113	50
12	05/05/98	40	78	79	5.00	5.0%	4150	4280	4215	4958	4807	130
13	05/05/98	40	72	74	4.75	4.3%	4070	4000	4035	4887	4605	70
14	05/05/98	40	68	70	5.25	3.9%	4580	4660	4620	4868	4290	80
15	05/05/98	40	65	69	5.00	4.3%	4770	4860	4815	4865	4490	90
16	05/14/98	42	78	75	4.75	4.3%	5260	5380	5320	4893	4918	120
17	05/18/98	43	98	92	4.25	N/A	4160	4030	4095	4846	4743	130
18	05/19/98	40	92	84	5.00	N/A	4570	4760	4665	4836	4693	190
19	05/21/98	43	94	89	3.50	N/A	4610	4540	4575	4822	4445	70
20	05/29/98	42	96	82	5.25	2.0%	5060	4880	4970	4830	4737	180
21	06/01/98	43	98	92	5.50	N/A	5160	5080	5120	4844	4888	80
22	06/02/98	42	96	86	5.00	N/A	4530	4580	4555	4830	4882	50
23	06/03/98	42	98	83	5.00	4.2%	4350	4410	4380	4811	4685	60
24	06/04/98	42	90	84	5.00	4.0%	5160	5330	5245	4829	4727	170
25	06/08/98	43	88	92	3.50	N/A	4380	4410	4395	4812	4673	30
26	06/10/98			88	5.50	5.5%	4920	5050	4985	4818	4875	130
27	06/10/98			87	5.50	5.8%	4270	4410	4340	4801	4573	140
28	06/11/98	43	84	87	5.75	N/A	3660	3750	3705	4761	4343	90
29	06/15/98			91	4.50	N/A	5240	5290	5265	4779	4437	50
30	06/15/98	42	90	92	4.00	N/A	3950	4170	4060	4755	4343	220
*** Averages ***				78	80	4.86	4.2%					

COMMENTARY OF STATISTICAL EVALUATION OF CONCRETE DESIGN RESULTS

Mix Num: 8274

Strength: 4000 psi @ 28 Days

Paragraph 5.5 of ACI 318-89 provides that as data becomes available during construction, the amount by which (F'cr) must exceed the specified value of (F'c) may be reduced, provided:

- (a) 30 or more test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.1, or
- (b) 15 to 29 test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.2.

The required average compressive strength has been calculated using a standard deviation calculated in accordance with ACI 318-89 Section 5.3.1.1 or Section 5.3.1.2 and is the larger value of these calculations:

$$\begin{aligned} F'_{cr} &= F'c + 1.34(SD) \\ &= 4000 + 1.34(517.2) \\ &= 4693 \\ F'_{cr} &= F'c + 2.33(SD) - 500 \\ &= 4000 + 2.33(517.2) - 500 \\ &= 4705 \end{aligned}$$

**SUMMARY OF STATISTICAL ANALYSIS  
28 Day Test Data**

Number of Tests.....	30	
Maximum Value.....	5790	psi
Minimum Value.....	3705	psi
Range.....	2085	psi
Average Strength.....	4755	psi
Standard Deviation.....	517	psi
Required Average Strength to satisfy minimum probability conditions of ACI 318-89 Section 5.3.2.1.....	4705	psi
Design excess beyond code requirements...	50	psi



**SPECIFICATIONS**  
**Portland Cement**  
**Type I/II (Low Alkali)**  
**A.S.T.M. C150-97**

Bin Number		
Car Number		
Tons		
Date of Sampling	June 1998 Monthly Average	
	ASTM SPECIFICATION	TEST RESULTS
<b>CHEMICAL REQUIREMENTS</b>		
Silica Oxide, Minimum Percent	20.0	20.7
Alumina Oxide, Maximum Percent	6.0	4.1
Iron Oxide, Maximum Percent	6.0	3.9
Magnesia Oxide, Maximum Percent	6.0	1.2
SO3 (C3A less than 8%), Maximum Percent	*	3.4
Loss on Ignition, Maximum Percent	3.0	1.0
Insoluble residue, Maximum Percent	0.75	0.12
Tricalcium Aluminate, Maximum Percent	8	4
<b>OPTIONAL CHEMICAL REQUIREMENTS</b>		
Total Alkalies, Max. % (Na2O equiv.)	0.60	0.45
<b>PHYSICAL REQUIREMENTS</b>		
Specific surface, Blaine Minimum (M <sup>2</sup> /Kg)	280	340
Gillmore, Initial Set, Minimum (Minutes)	60	163
Gillmore, Final Set, Maximum (Minutes)	600	291
Vicat, Initial Set	Minimum (Minutes)	45
	Maximum (Minutes)	375
Air Content, Volume, Maximum Percent	12	6
Autoclave Expansion, Maximum Percent	0.80	0
3 Day Minimum Compressive Strength, MPa (psi)	12.0 (1740)	22.8 (3305)
7 Day Minimum Compressive Strength, MPa (psi)	19.0 (2760)	29.1 (4221)

STATE OF TEXAS

ELLIS COUNTY

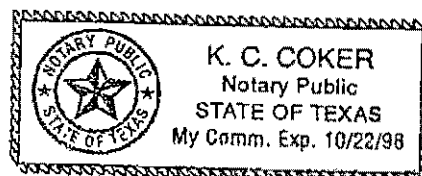
J.R. Owens, being duly sworn deposes and says; that he is Chief Chemist of TXI, Midlothian Cement Plant, who prepared the above report of tests and that the same is true and correct.

Subscribed and sworn to before me this 17th day of July, 1998.

  
 Notary Public

  
 Chief Chemist

\*See ASTM C150 Table 1, Footnote B.



**GRACE**

**Concrete Products**

W.R. Grace & Co.  
2001 East Randol Mill, Suite # 115  
Arlington, TX 76011

(817) 461-4101  
(817) 459-1084

January 8, 1998

Texas Industries, Inc.  
Dallas, Texas

Gentlemen:


This is to certify that DARATARD-17, a water-reducing set-retarding admixture, supplied by the Construction Products Division, W.R. Grace & Co.-Conn., is formulated to comply with Specifications for Chemical Admixtures for Concrete, ASTM Designation: C-494, as a Type B & D admixture; and the Standard Specifications of the Texas Highway Department.

No chlorides or halogens are added to DARATARD-17 as functional ingredients during manufacture.

Material supplied for the above referenced project is identical in all respects, including concentration, to the one originally submitted to and approved by the State of Texas, Dept. of Transportation.

The above is in addition to and not in substitution for our standard Conditions of Sale printed on the reverse side hereof.

Sincerely,

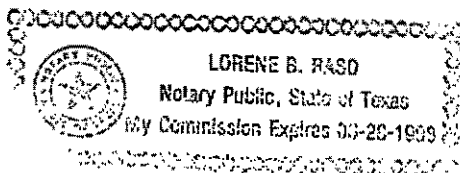


Tom C. Henson  
District Manager

Subscribed and sworn to, before me,  
this 8th day of January, 1998 A.D.



Lorene B. Raso, Notary Public  
In and For the State of Texas



**GRACE**

**Grace Construction Products**

W.R. Grace & Co. - Conn.  
4323 Crites Street  
P.O. Box 2585-77252  
Houston, TX 77003

March 6, 1997

Texas Industries, Inc.  
1341 W. Mockingbird Lane  
Dallas, TX 75247-6913

Gentlemen:

This is to certify that WRDA with HYCOL, a water-reducing admixture, as manufactured and supplied by the Construction Products Division, W.R. Grace & Co.-Conn., is formulated to comply with Specifications for Chemical Admixtures for Concrete, ASTM Designation: C-494, Type A (AASHTO M194, Type A).

No chlorides or halogens are added to WRDA with HYCOL as functional ingredients during manufacture.

Material supplied for the above referenced project is identical in all respects, including concentration, to the one originally submitted to and approved by the State of Texas, Dept. of Transportation.

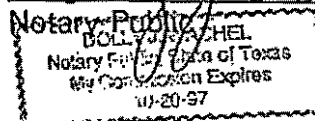
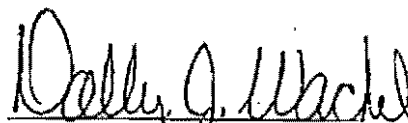
The above is in addition to and not in substitution for our standard Conditions of Sale printed on the reverse side hereof.

Sincerely,



Tom C. Henson  
District Manager

Subscribed and sworn to, before me,  
this 6th day of March, 1997 A.D.



# GRACE

Grace Construction Products

W.R. Grace & Co. - Conn  
4323 Crites Street  
P.O. Box 2585-77252  
Houston, TX 77003

August 18, 1998

Texas Industries, Inc.

Gentlemen:

This is to certify that Daravair 1000, an air-entraining admixture, as manufactured and supplied by the Construction Products Division, W.R. Grace & Co.-Conn., is formulated to comply with Specification for Air-Entraining Admixtures for Concrete, ASTM Designation: C260 (AASHTO M154).

Daravair 1000 does not contain calcium chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts contributed from the domestic water supply used during the manufacturing process.

Material supplied for the above referenced project is identical in all respects, including concentration, to the one originally submitted to and approved by the State of Texas, Dept. of Transportation.

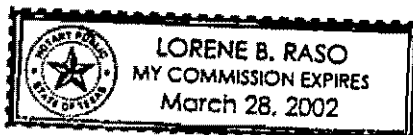
The foregoing is in addition to and not in substitution for our standard Conditions of Sales printed on the reverse side hereof.

Sincerely,



Tom C. Henson  
District Manager

Subscribed and sworn to, before me,  
this 18th day of August 1998, A.D.



Lorene B. Raso, Notary Public  
In and for the State of Texas



**GRACE**

**Concrete Products**

W.R. Grace & Co.  
2001 East Randol Mill, Suite # 115  
Arlington, TX 76011

(817) 461-4101  
(817) 459-1084

January 8, 1998

Texas Industries, Inc.  
Dallas, Texas

Gentlemen:

This is to certify that DARACEM-19, a high range water-reducing admixture, as manufactured and supplied by the Construction Products Division, W. R. Grace & Co.-Conn., is formulated to comply with Specifications for Chemical Admixtures for Concrete, ASTM Designation: C-494, Types A & F (AASHTO M 194, Types A & F).

DARACEM-19 does not contain calcium chloride or chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts contributed from the domestic water supply used during the manufacturing process.

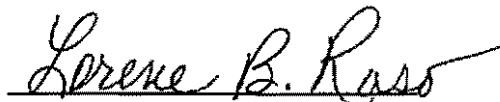
The above is in addition to and not in substitution for our Standard Conditions of Sale printed on the reverse side hereof.

Sincerely,

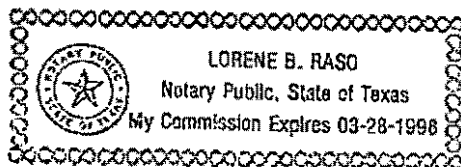


Tom C. Henson  
District Manager

Subscribed and sworn to, before me,  
this 8th day of January, 1998 A.D.



Lorene B. Raso, Notary Public  
In and For the State of Texas





**TEXAS INDUSTRIES  
QUALITY CONTROL DEPT.  
AGGREGATE SIEVE ANALYSIS**

Date: 07/15/98

Production Facility: BRIDGEPORT

Size: 57

Grading Designation: ASTM C-33 1" - #4.

Project: \*\*\*\*\*ALL TESTS\*\*\*\*\*

Sample Location:

SIEVE SIZE	CUMULATIVE WT. RETAINED	CUMULATIVE % RETAINED	CUMULATIVE % PASSING	REQUIRED % RETAINED	SPECIFICATION % PASSING
2.0"					
1.5"		0	100	0	100
1.0"		1.72	98.28	0 - 5	95 - 100
¾"		17.46	82.54		
½"		55.43	44.57	40 - 75	25 - 60
3/8"		79.30	20.70		
#4		97.20	2.80	90 - 100	0 - 10
#8		98.83	1.17	95 - 100	0 - 5
#10					
#16					
#30					
#40					
#50					
#100					
#200		99.13	0.87		
PAN WT.					

Decant .89%

100% of tests: 151 Size: 57 PLANT: BRIDGEPORT

Job: \*\*\*\*\*ALL JOBS\*\*\*\*\*

**TEXAS INDUSTRIES  
QUALITY CONTROL DEPT.  
AGGREGATE SIEVE ANALYSIS**

**Date:** 07/16/98                      **Production Facility:** AMBROSE (LATTIMORE)  
**Size:** 33                                      **Grading Designation:** ASTM C-33 FINE AGG.  
**Project:** \*\*\*\*\*ALL TESTS\*\*\*\*\*                      **Sample Location:**

SIEVE SIZE	CUMULATIVE WT. RETAINED	CUMULATIVE % RETAINED	CUMULATIVE % PASSING	REQUIRED % RETAINED	SPECIFICATION % PASSING
2.0"					
1.5"					
1.0"					
¾"					
½"					
3/8"					
#4		1.83	98.17	0 - 5	95 - 100
#8		12.62	87.38	0 - 20	80 - 100
#10					
#16		22.25	77.75	15 - 50	50 - 85
#30		45.85	54.15	40 - 75	25 - 60
#40					
#50		80.27	19.73	70 - 90	10 - 30
#100		97.74	2.26	90 - 98	2 - 10
#200		99.57	0.43	97-100	0 - 3
PAN WT.		2.61 Fineness Modulus			

**Decant:**  
**M.C.**            5.3%  
**S. E.**            95.2%  
100% of tests: 129    Size: 33    PLANT: AMBROSE(LATTIMORE)    Job: \*\*\*\*\*ALL JOBS\*\*\*\*\*

ORIGINAL

Date: 9/9/98

Contractor: **Dietz Construction**  
 Project: **Arapaho Road Bollards**

**MIX SPECIFICATIONS:**

Strength 4000 psi  
 Slump: 5" Max.  
 Air 3-6%  
 W/C Ratio: 5.04 (Gal/Sack)  
 W/C Ratio: 0.45 (Lb/Lb)  
 Maximum Temperature: 90

Design # 9363

- 1. APPROVED
- 2. APPROVED AS NOTED (CORRECT AND RESUBMIT)
- 3. APPROVED AS NOTED (CONFIRM-RESUBMITTAL NOT REQUIRED)
- 4. DISAPPROVED (REVISE AND RESUBMIT)

REVIEWER K. R. L. S. DATE 10-12-98  
 ORGANIZATION Hitt-Zellers Inc

Concrete must be sampled per ASTM C-172.

Test specimens must be made and cured per ASTM C-193.

APPROVAL DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR OMISSIONS IN THESE SUBMITTALS AND FROM RESPONSIBILITY FOR COMPLYING WITH THE REQUIREMENTS OF THIS CONTRACT

<u>MATERIALS</u>	<u>ASTM STANDARDS</u>	<u>WEIGHTS</u>
Cement	ASTM C-150 Type <u>I</u>	<u>564</u> lbs. Cement
Fly Ash	ASTM C-618 Type _____	_____ lbs. Fly Ash
Coarse Aggregate	ASTM C-33 <u>#57 1"</u>	<u>1840</u> lbs. C. A.
Coarse Aggregate	ASTM C-33 _____	_____ lbs. C. A.
Lightweight	ASTM C-330 _____	_____ lbs. Lt. Wt.
Fine Aggregate	ASTM C-33 _____	<u>1268</u> lbs. Sand
Fine Aggregate	ASTM C-33 _____	_____ lbs. Sand
Admixture	ASTM C-494 Type <u>A or D</u>	<u>16.9</u> oz. Admix
Admixture	ASTM C-494 Type _____	_____ oz. Admix
Admixture	ASTM C-260 _____	<u>3.7</u> oz. AEA
Admixture	_____	_____
Water		<u>252</u> lbs. Water

Quality Control Department  
 240 Singleton Blvd.  
 Dallas, Texas 75212

Phone: (214) 651-8020  
 Fax: (214) 651-1810

Quality Control Manager

Gary Q DePriest  
 Gary Q DePriest

Please send the test results from this job to the Quality Control Department.

ORIGINAL

Pioneer Concrete of Texas, Inc.

Mix No.: 9363  
 Strength: 4000  
 Agg. Size: 1"

Contractor: Various  
 Job: Various  
 Lab: Various

Cement: 564 lb.  
 Fly Ash: \_\_\_\_\_ lb.  
 Coarse Aggregate: 1840 lb.  
 Coarse Aggregate: \_\_\_\_\_ lb.  
 Fine Aggregate: 1255 lb.  
 Fine Aggregate: \_\_\_\_\_ lb.  
 Admixture: 16.9 oz.  
 Admixture: \_\_\_\_\_ oz.  
 AEA: 3.7 oz.  
 Water: 252 lb.

Standard Deviation: 443  
 Average Strength: 4836

ACI 5.3.2.1 Required average strength.

(1) 4593 psi  
 (2) 4532 psi

Date	Temp.	Slump	7 Day	7 Day	28 Day	28 Day	28 Day Average	3 Consecutive Average
11/11/97	71	4.5	3820	3740	5280	5110	5195	5028
11/21/97	59	4.5		4680	5160	5110	5135	5085
11/21/97	59	5		4040	4730	4740	4735	5022
11/21/97	59	5		4400	4770	4810	4790	4887
11/24/97	64	4	4890	4890	5110	5570	5340	4955
1/2/98	67	5.5		3910	4940	5120	5030	5053
1/16/98	55	4		3890	4900	4890	4895	5088
1/19/98	47	3.25		4220	5380	5390	5385	5103
1/30/98	66	5.25		3160	4170	4260	4215	4832
2/4/98	71	4.5	4430	4180	5640	4730	5185	4928
2/27/98	72	5		4080	5090	5010	5050	4817
3/4/98	68	4.5		3550	4630	4380	4505	4913
3/6/98	68	5	4770	4630	6350	6080	6215	5257
3/30/98	80	5	3560	3640	4650	4420	4535	5085
4/14/98	69	4.5		3470	4490	4450	4470	5073
4/14/98	70	5		3600	4310	4590	4450	4485
4/14/98	73	5		3200	4350	4470	4410	4443
4/20/98	70	5	4230	4210	4600	4640	4620	4493
4/20/98	70	5.5	3930	3900	4420	4530	4475	4502
4/20/98	75	5	4720	4760	5310	5370	5340	4812
4/20/98	78	5	4690	4770	5510	5650	5580	5132
4/23/98	93	5	3460	3680	4610	4770	4690	5203
4/27/98	80	5	4130	4010	5000	4860	4930	5067
4/28/98	71	6	3730	3880	4750	4680	4715	4778
4/29/98	64	5.25		3320	4460	4480	4470	4705
4/29/98	62	5.25		3310	4500	4410	4455	4547
4/30/98	73	5.25	3320	3610	4500	4490	4495	4473
4/30/98	68	5	3720	3860	4750	4640	4695	4548
5/1/98	80	4	3420	3320	4220	4380	4300	4497
5/4/98	83	4.75	3230	3330	4790	4730	4760	4585

ORIGINAL

Date: 9/9/98

Contractor: **Dietz Construction**  
 Project: **Arapaho Road Bollards**

**MIX SPECIFICATIONS:**

Strength **4000 psi**  
 Slump: **5" Max.**  
 Air **3-6%**  
 W/C Ratio: **5.04** (Gal/Sack)  
 W/C Ratio: **0.45** (Lb/Lb)  
 Maximum Temperature: **90**

~~CODE~~ Design # **9363**

- 1. APPROVED
- 2. APPROVED AS NOTED (CORRECT AND RESUBMIT)
- 3. APPROVED AS NOTED (CONFIRM-RESUBMITTAL NOT REQUIRED)
- 4. DISAPPROVED (REVISE AND RESUBMIT)

REVIEWER Ka Robert DATE 10-12-98  
 ORGANIZATION Huitt-Zoller Inc.

Concrete must be sampled per ASTM C-172.

Test specimens must be made and cured per

APPROVAL DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THESE SUBMITTALS AND FROM RESPONSIBILITY FOR COMPLYING WITH THE REQUIREMENTS OF THIS CONTRACT

<u>MATERIALS</u>	<u>ASTM STANDARDS</u>	<u>WEIGHTS</u>
Cement	ASTM C-150 Type <u>I</u>	<u>564</u> lbs. Cement
Fly Ash	ASTM C-618 Type _____	_____ lbs. Fly Ash
Coarse Aggregate	ASTM C-33 <u>#57 1"</u>	<u>1840</u> lbs. C. A.
Coarse Aggregate	ASTM C-33 _____	_____ lbs. C. A.
Lightweight	ASTM C-330 _____	_____ lbs. Lt. Wt.
Fine Aggregate	ASTM C-33 _____	<u>1268</u> lbs. Sand
Fine Aggregate	ASTM C-33 _____	_____ lbs. Sand
Admixture	ASTM C-494 Type <u>A or D</u>	<u>16.9</u> oz. Admix
Admixture	ASTM C-494 Type _____	_____ oz. Admix
Admixture	ASTM C-260 _____	<u>3.7</u> oz. AEA
Admixture	_____	_____
Water		<u>252</u> lbs. Water

Quality Control Department  
 240 Singleton Blvd.  
 Dallas, Texas 75212

Phone: (214) 651-8020  
 Fax: (214) 651-1810

Quality Control Manager

Gary C. DePriest  
 Gary C DePriest

Please send the test results from this job to the Quality Control Department.

ORIGINAL

Pioneer Concrete of Texas, Inc.

Mix No.: 9363  
 Strength: 4000  
 Agg. Size: 1"

Contractor: Various  
 Job: Various  
 Lab: Various

Cement: 564 lb.  
 Fly Ash:          lb.  
 Coarse Aggregate: 1840 lb.  
 Coarse Aggregate:          lb.  
 Fine Aggregate: 1255 lb.  
 Fine Aggregate:          lb.  
 Admixture: 16.9 oz.  
 Admixture:          oz.  
 AEA: 3.7 oz.  
 Water: 252 lb.

Standard Deviation: 443  
 Average Strength: 4836

ACI 5.3.2.1 Required average strength.

(1) 4593 psi  
 (2) 4532 psi

Date	Temp.	Slump	7 Day	7 Day	28 Day	28 Day	28 Day Average	3 Consecutive Average
11/11/97	71	4.5	3820	3740	5280	5110	5195	5028
11/21/97	59	4.5		4680	5160	5110	5135	5085
11/21/97	59	5		4040	4730	4740	4735	5022
11/21/97	59	5		4400	4770	4810	4790	4887
11/24/97	64	4	4890	4890	5110	5570	5340	4955
1/2/98	67	5.5		3910	4940	5120	5030	5053
1/16/98	55	4		3890	4900	4890	4895	5088
1/19/98	47	3.25		4220	5380	5390	5385	5103
1/30/98	66	5.25		3160	4170	4260	4215	4832
2/4/98	71	4.5	4430	4180	5640	4730	5185	4928
2/27/98	72	5		4080	5090	5010	5050	4817
3/4/98	68	4.5		3550	4630	4380	4505	4913
3/6/98	68	5	4770	4630	6350	6080	6215	5257
3/30/98	80	5	3560	3640	4650	4420	4535	5085
4/14/98	69	4.5		3470	4490	4450	4470	5073
4/14/98	70	5		3600	4310	4590	4450	4485
4/14/98	73	5		3200	4350	4470	4410	4443
4/20/98	70	5	4230	4210	4600	4640	4620	4493
4/20/98	70	5.5	3930	3900	4420	4530	4475	4502
4/20/98	75	5	4720	4760	5310	5370	5340	4812
4/20/98	78	5	4690	4770	5510	5650	5580	5132
4/23/98	93	5	3460	3680	4610	4770	4690	5203
4/27/98	80	5	4130	4010	5000	4860	4930	5067
4/28/98	71	6	3730	3880	4750	4680	4715	4778
4/29/98	64	5.25		3320	4460	4480	4470	4705
4/29/98	62	5.25		3310	4500	4410	4455	4547
4/30/98	73	5.25	3320	3610	4500	4490	4495	4473
4/30/98	68	5	3720	3860	4750	4640	4695	4548
5/1/98	80	4	3420	3320	4220	4380	4300	4497
5/4/98	83	4.75	3230	3330	4790	4730	4760	4585

# HUITT-ZOLLARS

Huitt-Zollars, Inc. / 3131 McKinney Avenue / Suite 600 / LB 105 / Dallas, Texas 75204-2489 / 214/871-3311 / FAX 214/871-0757

October 12, 1998

Mr. Robert D. Weber  
Ed Bell Construction  
10605 Harry Hines  
P.O. Box 540787  
Dallas, TX 75354-0787

RE: Arapaho Road - Addison, Texas

Dear Mr. Weber:


Concrete Mix Design # 9601 is approved for sidewalk construction on the Arapaho Road reconstruction project.

Concrete Mix Design # 8273 cannot be approved at this time due to a lack of test results for the mix. Please provide the appropriate test data for review and approval.

Please feel free to call if you have any questions.

Sincerely,

**HUITT-ZOLLARS, INC.**

  
Kenneth A. Roberts, P.E.  
Vice President

Copy: Jim Pierce, P.E., Town of Addison

H:\PROJ\01177201\EDBELL4.DOC

**ED BELL CONSTRUCTION COMPANY**

POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-0787

10605 HARRY HINES  
DALLAS, TEXAS 75220

September 30, 1998

Mr. James C. Pierce, Jr., P.E.  
Assistant City Engineer  
Town of Addison  
P.O. Box 144  
Addison, Texas 75001

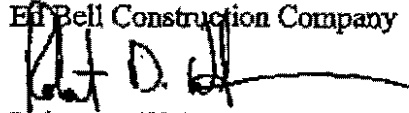
Re: Arapaho Road Reconstruction  
Addison Road to Dallas North Tollway  
Town of Addison

Dear Mr. Pierce:

Enclosed for you review and approval are our concrete batch designs from Texas Industries for 3000 psi (design # 9601) and 650 psi flex (design # 8273) concrete. Our specialty concrete subcontractor intends to utilize design # 9601 for the sidewalk and ADA ramps and design # 8273 for the concrete pavement with the sand blast finish. Please inform us of your decision regarding these designs.

If you have any questions regarding this information, don't hesitate to contact our office.

Sincerely,  
Ed Bell Construction Company

  
Robert D. Weber  
Project Engineer

CODE:

- 1. APPROVED
- 2. APPROVED AS NOTED (CORRECT AND RESUBMIT)
- 3. APPROVED AS NOTED (CONFIRM-RESUBMITTAL NOT REQUIRED)
- 4. DISAPPROVED (REVISE AND RESUBMIT)

Ken Rabot 10-12-98  
 REVIEWER DATE  
Hritz - Zolace Inc.  
 ORGANIZATION

APPROVAL DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THESE SUBMITTALS AND FROM RESPONSIBILITY FOR COMPLYING WITH THE REQUIREMENTS OF THIS CONTRACT





September 24, 1998

North Texas Bomanite  
11107 Morrison Lane  
Dallas, TX 75229-5608

Attn: Mr. Fred Bailey

RE: Arapaho Road Street Scape  
Addison

9501

The attached concrete mix design utilizing the appropriate ASTM C-33 or ASTM C-330 aggregate is proposed for use on the above referenced project for ready-mixed concrete to be furnished by TXI.

To ensure that the correct mix is delivered to your project, please order by the mix design number which appears in the upper left hand corner of the mix design.

Texas Industries certifies that the above mix design, when ordered by specified design identity, and delivered by TXI, will meet or exceed the indicated design strength at the designated age when tested in accordance with the applicable and current ASTM Standards C 31, C 39, C 78, C 172, C 293, applicable provisions of C 94, and evaluated in accordance with applicable provisions of the ACI 318 Building Code.

TXI would like to be included on your mailing list to receive all test reports. ASTM C 94 entitles a manufacturer to receive copies of all test reports when strength of concrete is used as a basis for acceptance.

Contact us if you have any questions or require any additional information. Please notify TXI of approval of the proposed mix design prior to its use. Failure to notify us prior to first placement shall constitute acceptance. To ensure that the proper mix design is ordered, please send a copy of this letter, after approval, to the above referenced project to be used by the person ordering the concrete for this job.

Sincerely,

TXI Operations, LP

Michael A. Calderone, P.E.  
Manager - Q.A. / Q.C.

Post-It Fax Note	7871	Date	9/24/98
From	TXI	To	Shari
Project	TXI	Phone	972-647-3367
Address	TXI	Fax	972-647-3777

*Need Test  
Data*

Mix #: 9273  
Description: 5.50SK ADMIX/AEA 1"CS  
Strength: 650 psi @ 28 Days

INTERSECTION PAVING (ASTM C295)

Maximum Coarse Aggregate: 1" #4 CRUSHED STONE  
Maximum Water/Cement Ratio: 5.64 gal/sack or 0.499 lbs/lb  
Cement/Cementitious Content: 5.50 sacks (per cubic yard)  
Maximum Placement Slump: 4.00 inches  
Air Entraining Agent: ASTM C-260  
Admixture: ASTM C-494 Type A or D

MATERIAL QUANTITIES PER 1.0 CUBIC YARD AT S.S.D

517 lbs. ASTM C 150 TYPE I CEMENT  
1840 lbs. 1" - #4 CRUSHED STONE  
1312 lbs. CONCRETE SAND  
258 lbs. or 31.0 Gallons of Water  
2.0 to 4.0 oz/cwt of ASTM C-494 Type A  
Specified Air Content: 3.0% - 6.0%  
Placement Slump: 3.00 + or - 1.00 inches

Mix #: 9601  
Description: 3.50SK ADMIX/AEA 1"CS 50/50 MIX  
Strength: 3000 psi @ 28 Days

SIDEWALKS

Maximum Coarse Aggregate: 1" - #4 CRUSHED STONE  
Maximum Water/Cement Ratio: 6.18 gal/sack or 0.547 lbs/lb  
Cement/Cementitious Content: 5.50 sacks (per cubic yard)  
Maximum Placement Slump: 5.00 inches  
Air Entraining Agent: ASTM C-260  
Admixture: ASTM C-494 Type A or D

MATERIAL QUANTITIES PER 1.0 CUBIC YARD AT S.S.D

517 lbs. ASTM C 150 TYPE I CEMENT  
1550 lbs. 1" - #4 CRUSHED STONE  
1535 lbs. CONCRETE SAND  
283 lbs. or 34.0 Gallons of Water  
2.0 to 4.0 oz/cwt of ASTM C-494 Type D  
Specified Air Content: 3.0% - 6.0%  
Placement Slump: 4.00 + or - 1.00 inches

#### PUMPING NOTES / RECOMMENDATIONS

1. 5" minimum diameter lines with no reduction to smaller lines.
2. Keep rubber hose to absolute minimum length and plan pipe with as few 90 degree angles as possible.
3. Samples for slump and strength tests should be taken @ discharge end of hose for strength guarantee to be valid.
4. To prime pump lines, a minimum of 8.0 sack grout should be used for lubrication. In the case of strength concrete, equivalent strength grout should be used if the grout remains in the placement.
5. Pump mixes are based on minimum cement content pumped at ground level. As pump line increases in length or height and/or layout configuration changes, additional cement may be required to assure strength and pumpability at additional cost to the contractor.
6. TXI cannot control, and is therefore not responsible for excessive loss of entrained air content when loss occurs as a result of boom configuration or free fall discharge from hose. To ensure minimum air loss when pumping, maintain a continuous flow of concrete through the entire length of pipe and do not subject concrete to free fall.

Unless otherwise indicated, when the concrete temperature at point of placement exceeds 90 degrees, TXI will guarantee the strength performance of the mix design(s) herein submitted up to a maximum placement temperature of 100 degrees using an ASTM C 494 Type D retarding water-reducer, as long as the concrete is placed within 75 minutes from batch time.

We are enclosing all available back up data for the referenced mix design(s). If the strength information is not available, or is insufficient, confirmation tests may have to be conducted by your laboratory.

TEXAS INDUSTRIES  
CONCRETE DESIGN EVALUATION

Date: 03/24/98

Statistics Compiled From Independent Laboratory Test Specimens

Mix Number: FSI1

Strength: 1000 psi @ 28 Days

28 Day Test Date

Test Number	Date	SIANK Number	Temperature (Fahrenheit)		Placement Slump (in)	Percent of Air	28 Day			Cumulative Average	Moving Avg. of 3	Range
			Ambient	Concrete			FSI 1	FSI 2	FSI Avg			
1	11/20/90	21		80	3.50	3.00	3830	4210	3970	3870		200
2	07/09/95	12	83	82	3.00	N/A	5320	6290	5250	4812		70
3	02/22/96	10	69	67	4.70	N/A	4040	4400	4300	4002	4002	80
4	02/16/96	21	76	70	5.00	N/A	5020	5480	5212	4830	5224	70
5	02/16/96	21	40	86	4.50	N/A	4040	4760	4800	4824	4840	80
6	03/03/96	31	82	70	2.50	4.00	4840	4770	4800	4821	5040	70
7	06/03/96	10	83	84	6.50	N/A	3540	3400	3470	3520	4350	140
8	07/06/97			50	5.00	4.00	4720	4810	4760	4640	4547	80
9	01/15/98			60	5.10	5.00	3820	3850	3880	4057	4030	10
10	06/02/98	31	80	83	2.00	0.30	3820	4200	4040	4000	4200	130
11	06/09/98	31	84	80	5.00	N/A	5200	5330	5310	4801	4612	30
12	06/20/98	31	80	83	4.00	N/A	5710	5200	5200	4870	5042	70
13	06/27/98	21		85	2.00	2.00	5150	5230	5190	4710	5017	80
Average			71	78	3.99	4.01						

COMMENTARY OF STATISTICAL EVALUATION OF CONCRETE DESIGN RESULTS

Mix Num: 9601

Strength: 3000 psi @ 28 Days

Paragraph 5.5 of ACI 318-89 provides that as data becomes available during construction, the amount by which ( $F'_{or}$ ) must exceed the specified value of ( $F'_c$ ) may be reduced, provided:

- (a) 30 or more test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.1, or
- (b) 15 to 29 test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.2.

\*\*\*\*\*  
\*  
\* Unable to calculate standard deviation due \*  
\*  
\* to the fact that less than 15 tests exist \*  
\*  
\*\*\*\*\*

**SUMMARY OF STATISTICAL ANALYSIS  
28 Day Test Data**

Number of Tests.....	13
Maximum Value.....	5745 psi
Minimum Value.....	3470 psi
Range.....	2275 psi
Average Strength.....	4718 psi
Required Average Strength to satisfy minimum probability conditions of ACI 318-89 Section 5.3.2.1.....	
Design excess beyond code requirements...	

**ED BELL CONSTRUCTION COMPANY**

POST OFFICE BOX 540787  
DALLAS, TEXAS 76354-0787

10605 HARRY HINES  
DALLAS, TEXAS 75220

September 30, 1998

Mr. James C. Pierce, Jr., P.E.  
Assistant City Engineer  
Town of Addison  
P.O. Box 144  
Addison, Texas 75001

Re: Arapaho Road Reconstruction  
Addison Road to Dallas North Tollway  
Town of Addison

Dear Mr. Pierce:

Enclosed for you review and approval are our concrete batch designs from Texas Industries for 3000 psi (design # 9601) and 650 psi flex (design # 8273) concrete. Our specialty concrete subcontractor intends to utilize design # 9601 for the sidewalk and ADA ramps and design # 8273 for the concrete pavement with the sand blast finish. Please inform us of your decision regarding these designs.

If you have any questions regarding this information, don't hesitate to contact our office.

Sincerely,  
Ed Bell Construction Company

  
Robert D. Weber  
Project Engineer

**CODE:**

- 1. APPROVED
- 2. APPROVED AS NOTED (CORRECT AND RESUBMIT)
- 3. APPROVED AS NOTED (CONFIRM-RESUBMITTAL NOT REQUIRED)
- 4. DISAPPROVED (REVISE AND RESUBMIT)

Ken Robert 10-12-98  
 REVIEWER DATE  
Hunt-Zellers, Inc.  
 ORGANIZATION

APPROVAL DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THESE SUBMITTALS AND FROM RESPONSIBILITY FOR COMPLYING WITH THE REQUIREMENTS OF THIS CONTRACT



September 24, 1998

North Texas Bomanite  
11107 Morrisson Lane  
Dallas, TX 75229-5608

Attn: Mr. Fred Bailey

RE: Arapaho Road Street Scape  
Addison

9501

The attached concrete mix design utilizing the appropriate ASTM C-33 or ASTM C-330 aggregate is proposed for use on the above referenced project for ready-mixed concrete to be furnished by TXI.

To ensure that the correct mix is delivered to your project, please order by the mix design number which appears in the upper left hand corner of the mix design.

Texas Industries certifies that the above mix design, when ordered by specified design identity, and delivered by TXI, will meet or exceed the indicated design strength at the designated age when tested in accordance with the applicable and current ASTM Standards C 31, C 39, C 78, C 172, C 293, applicable provisions of C 94, and evaluated in accordance with applicable provisions of the ACI 318 Building Code.

TXI would like to be included on your mailing list to receive all test reports. ASTM C 94 entitles a manufacturer to receive copies of all test reports when strength of concrete is used as a basis for acceptance.

Contact us if you have any questions or require any additional information. Please notify TXI of approval of the proposed mix design prior to its use. Failure to notify us prior to first placement shall constitute acceptance. To ensure that the proper mix design is ordered, please send a copy of this letter, after approval, to the above referenced project to be used by the person ordering the concrete for this job.

Sincerely,

TXI Operations, LP

Michael A. Calderone, P.E.  
Manager - Q.A. / Q.C.

Post-It Fax Pad	7571	DATE	9/24/98
TO	Fred Bailey	FROM	TXI
CC	John Baker	CO.	TXI
PROJECT	992-447-3702		
	972-647-3777		

*Need Test Results*

Mix #: 8273  
Description: 5.50SK ADMIX/AEA 1"CS  
Strength: 650 psi @ 28 Days

INTERSECTION PAVING (ASTM C293)

Maximum Coarse Aggregate: 1" - #4 CRUSHED STONE  
Maximum Water/Cement Ratio: 5.6 gal/sack or 0.499 lbs/lb  
Cement/Cementitious Content: 5.50 sacks (per cubic yard)  
Maximum Placement Slump: 4.00 inches  
Air Entraining Agent: ASTM C-260  
Admixture: ASTM C-494 Type A or D

MATERIAL QUANTITIES PER 1.0 CUBIC YARD AT S.S.D

517 lbs. ASTM C 150 TYPE I CEMENT  
1840 lbs. 1" - #4 CRUSHED STONE  
1312 lbs. CONCRETE SAND  
258 lbs. or 31.0 Gallons of Water  
2.0 to 4.0 oz/cwt of ASTM C-494 Type A  
Specified Air Content: 3.0% - 6.0%  
Placement Slump: 3.00 + or - 1.00 inches

Mix #: 9601  
Description: 5.50SK ADMIX/AEA 1"CS 50/50 MIX  
Strength: 3000 psi @ 28 Days

SIDEWALKS

Maximum Coarse Aggregate: 1" - #4 CRUSHED STONE  
Maximum Water/Cement Ratio: 6.18 gal/sack or 0.547 lbs/lb  
Cement/Cementitious Content: 5.50 sacks (per cubic yard)  
Maximum Placement Slump: 5.00 inches  
Air Entraining Agent: ASTM C-260  
Admixture: ASTM C-494 Type A or D

MATERIAL QUANTITIES PER 1.0 CUBIC YARD AT S.S.D

517 lbs. ASTM C 150 TYPE I CEMENT  
1550 lbs. 1" - #4 CRUSHED STONE  
1535 lbs. CONCRETE SAND  
283 lbs. or 34.0 Gallons of Water  
2.0 to 4.0 oz/cwt of ASTM C-494 Type D  
Specified Air Content: 3.0% - 6.0%  
Placement Slump: 4.00 + or - 1.00 inches



#### PUMPING NOTES / RECOMMENDATIONS

1. 5" minimum diameter lines with no reduction to smaller lines.
2. Keep rubber hose to absolute minimum length and plan pipe with as few 90 degree angles as possible.
3. Samples for slump and strength tests should be taken @ discharge end of hose for strength guarantee to be valid.
4. To prime pump lines, a minimum of 8.0 sack grout should be used for lubrication. In the case of strength concrete, equivalent strength grout should be used if the grout remains in the placement.
5. Pump mixes are based on minimum cement content pumped at ground level. As pump line increases in length or height and/or layout configuration changes, additional cement may be required to assure strength and pumpability at additional cost to the contractor.
6. TXI cannot control, and is therefore not responsible for excessive loss of entrained air content when loss occurs as a result of boom configuration or free fall discharge from hose. To ensure minimum air loss when pumping, maintain a continuous flow of concrete through the entire length of pipe and do not subject concrete to free fall.

Unless otherwise indicated, when the concrete temperature at point of placement exceeds 90 degrees, TXI will guarantee the strength performance of the mix design(s) herein submitted up to a maximum placement temperature of 100 degrees using an ASTM C 494 Type D retarding water-reducer, as long as the concrete is placed within 75 minutes from batch time.

We are enclosing all available back up data for the referenced mix design(s). If the strength information is not available, or is insufficient, confirmation tests may have to be conducted by your laboratory.

**TEXAS INDUSTRIES**  
**CONCRETE DESIGN EVALUATION**

Date: 03/24/98

\*\* Statistics Compiled From Independent Laboratory Test Specimens \*\*

Mix Number: 2801

Strength: 1800 psi @ 28 Days

28 Day Test Date

Test Number	Date	Plant Number	Temperature (Fahrenheit)		Placement Slump (in)	Percent of Air	28 Day			Cumulative Average	Flowing Avg of 3	Range
			Ambient	Concrete			FOI A	FOI 2	FOI Avg			
1	11/20/90	21		86	5.50	3.36	3030	4210	3575	2879		280
2	07/08/90	12	65	88	7.00	N/A	3320	5290	5335	4813		70
3	03/23/95	10	59	67	6.76	N/A	4840	4480	4780	4902	4001	80
4	02/16/96	31	76	70	5.00	N/A	4880	5480	5132	4838	5117	70
5	02/14/96	21	60	66	4.50	N/A	4840	4760	4800	4824	4845	80
6	03/02/96	31	82	70	5.50	4.28	4840	4770	4805	4822	5040	70
7	06/03/96	10	83	84	5.50	N/A	3540	3400	3470	4630	4358	140
8	07/06/97			58	5.00	4.09	4730	4610	4768	4645	4347	80
9	01/15/98			63	5.00	5.08	3820	3880	3988	4887	4030	10
10	06/03/98	31	80	83	5.00	6.38	3850	4220	4068	4880	4226	430
11	06/03/98	31	84	80	5.40	N/A	5300	5330	5315	4801	4613	30
12	06/10/98	31	80	84	4.80	N/A	5710	5760	5745	4870	5042	70
13	06/27/98	31		83	5.00	3.06	5150	5230	5190	4720	5017	80
*** Averages ***			71	78	5.68	4.91						

COMMENTARY OF STATISTICAL EVALUATION OF CONCRETE DESIGN RESULTS

Mix Num: 9601

Strength: 3000 psi @ 28 Days

Paragraph 5.5 of ACI 318-89 provides that as data becomes available during construction, the amount by which ( $F'_{or}$ ) must exceed the specified value of ( $F'_c$ ) may be reduced, provided:

- (a) 30 or more test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.1, or
- (b) 15 to 29 test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.2.

```
*****
*
*   Unable to calculate standard deviation due   *
*
*   to the fact that less than 15 tests exist   *
*
*****
```

**SUMMARY OF STATISTICAL ANALYSIS  
28 Day Test Data**

Number of Tests.....	13
Maximum Value.....	5745 psi
Minimum Value.....	3470 psi
Range.....	2275 psi
Average Strength.....	4718 psi
Required Average Strength to satisfy minimum probability conditions of ACI 318-89 section 5.3.2.1.....	
Design excess beyond code requirements...	

# ED BELL CONSTRUCTION COMPANY

POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-0787

10605 HARRY HINES BOULEVA  
DALLAS, TEXAS 75

## FAX

TO: Jim Pierce

AT: Addicks

FAX NUMBER: (972) 450-2834

FROM: Robert Weber

DATE: 30 Sep 98

PAGE: 1 OF 7

MESSAGE: \_\_\_\_\_

*Mailed to  
Ken Roberts  
9-30-98*

*Jim,*

*Please evaluate these designs.*

*Rob*

IF MESSAGE IS UNCLEAR PLEASE CONTACT OUR OFFICE AT  
(214) 358-8581  
THANK YOU!

**ED BELL CONSTRUCTION COMPANY**

POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-0787

10605 HARRY HINES  
DALLAS, TEXAS 75220

September 30, 1998

Mr. James C. Pierce, Jr., P.E.  
Assistant City Engineer  
Town of Addison  
P.O. Box 144  
Addison, Texas 75001

Re: Arapaho Road Reconstruction  
Addison Road to Dallas North Tollway  
Town of Addison

Dear Mr. Pierce:

Enclosed for you review and approval are our concrete batch designs from Texas Industries for 3000 psi (design # 9601) and 650 psi flex (design # 8273) concrete. Our specialty concrete subcontractor intends to utilize design # 9601 for the sidewalk and ADA ramps and design # 8273 for the concrete pavement with the sand blast finish. Please inform us of your decision regarding these designs.

If you have any questions regarding this information, don't hesitate to contact our office.

Sincerely,  
Ed Bell Construction Company



Robert D. Weber  
Project Engineer



September 24, 1998

North Texas Romanite  
11107 Morrison Lane  
Dallas, TX 75229-5608

Attn: Mr. Fred Bailey

RE: Arapaho Road Street Scaps  
Addison

9E01

The attached concrete mix design utilizing the appropriate ASTM C-33 or ASTM C-330 aggregate is proposed for use on the above referenced project for ready-mixed concrete to be furnished by TXI.

To ensure that the correct mix is delivered to your project, please order by the mix design number which appears in the upper left hand corner of the mix design.

Texas Industries certifies that the above mix design, when ordered by specified design identity, and delivered by TXI, will meet or exceed the indicated design strength at the designated age when tested in accordance with the applicable and current ASTM Standards C 31, C 39, C 78, C 172, C 293, applicable provisions of C 94, and evaluated in accordance with applicable provisions of the ACI 318 Building Code.

TXI would like to be included on your mailing list to receive all test reports. ASTM C 94 entitles a manufacturer to receive copies of all test reports when strength of concrete is used as a basis for acceptance.

Contact us if you have any questions or require any additional information. Please notify TXI of approval of the proposed mix design prior to its use. Failure to notify us prior to first placement shall constitute acceptance. To ensure that the proper mix design is ordered, please send a copy of this letter, after approval, to the above referenced project to be used by the person ordering the concrete for this job.

Sincerely,

TXI Operations, LP

*Michael A. Calderone*  
Michael A. Calderone, P.E.  
Manager - O.A. / Q.C.

Post-It Fax Pad	7571	9-24-98
<i>Fred Bailey</i>		11107 Morrison Lane
<i>Michael Calderone</i>		Addison TX
<i>Michael Calderone</i>		972-647-3362
<i>Michael Calderone</i>		972-647-3777

Mix #: 9273  
Description: S.50SK ADMIX/AEA 1\*CS  
Strength: 650 psi @ 28 Days

INTERSECTION PAVING (ASTM C293)

Maximum Coarse Aggregate: 1" - #4 CRUSHED STONE  
Maximum Water/Cement Ratio: 5.64 gal/sack or 0.499 lbs/lb  
Cement/Cementitious Content: 5.50 sacks (per cubic yard)  
Maximum Placement Slump: 4.00 inches  
Air Entraining Agent: ASTM C-260  
Admixture: ASTM C-494 Type A or D

MATERIAL QUANTITIES PER 1.0 CUBIC YARD AT S.S.D

517 lbs. ASTM C 150 TYPE I CEMENT  
1840 lbs. 1" - #4 CRUSHED STONE  
1312 lbs. CONCRETE SAND  
258 lbs. or 31.0 Gallons of Water  
2.0 to 4.0 oz/cwt of ASTM C-494 Type A  
Specified Air Content: 3.0% - 6.0%  
Placement Slump: 3.00 + or - 1.00 inches

Mix #: 9601  
Description: S.50SK ADMIX/AEA 1\*CS 50/50 MIX  
Strength: 3000 psi @ 28 Days

SIDEWALKS

Maximum Coarse Aggregate: 1" - #4 CRUSHED STONE  
Maximum Water/Cement Ratio: 6.18 gal/sack or 0.547 lbs/lb  
Cement/Cementitious Content: 5.50 sacks (per cubic yard)  
Maximum Placement Slump: 5.00 inches  
Air Entraining Agent: ASTM C-260  
Admixture: ASTM C-494 Type A or D

MATERIAL QUANTITIES PER 1.0 CUBIC YARD AT S.S.D

517 lbs. ASTM C 150 TYPE I CEMENT  
1550 lbs. 1" - #4 CRUSHED STONE  
1535 lbs. CONCRETE SAND  
283 lbs. or 34.0 Gallons of Water  
3.0 to 4.0 oz/cwt of ASTM C-494 Type D  
Specified Air Content: 3.0% - 6.0%  
Placement Slump: 4.00 + or - 1.00 inches

# TXI Policy -

## PUMPING NOTES / RECOMMENDATIONS

1. 5" minimum diameter lines with no reduction to smaller lines.
2. Keep rubber hose to absolute minimum length and plan pipe with as few 90 degree angles as possible.
3. Samples for slump and strength tests should be taken @ discharge end of hose for strength guarantee to be valid.
4. To prime pump lines, a minimum of 8.0 sack grout should be used for lubrication. In the case of strength concrete, equivalent strength grout should be used if the grout remains in the placement.
5. Pump mixes are based on minimum cement content pumped at ground level. As pump line increases in length or height and/or layout configuration changes, additional cement may be required to assure strength and pumpability at additional cost to the contractor.
6. TXI cannot control, and is therefore not responsible for excessive loss of entrained air content when loss occurs as a result of boom configuration or free fall discharge from hose. To ensure minimum air loss when pumping, maintain a continuous flow of concrete through the entire length of pipe and do not subject concrete to free fall.

Unless otherwise indicated, when the concrete temperature at point of placement exceeds 90 degrees, TXI will guarantee the strength performance of the mix design(s) herein submitted up to a maximum placement temperature of 100 degrees using an ASTM C 494 Type D retarding water-reducer, as long as the concrete is placed within 75 minutes from batch time.

We are enclosing all available back up data for the referenced mix design(s). If the strength information is not available, or is insufficient, confirmation tests may have to be conducted by your laboratory.

As per TXI, the most important factor is the 75 minutes. After the 75 minutes, the concrete can lose "placeability" or "workability" and <sup>lose</sup> slumps very rapidly. If this happens, water should not be used to re-temper the concrete.

Jed 10-5-98



**TEXAS INDUSTRIES  
CONCRETE DESIGN EVALUATION**

Date: 05/24/88

\*\* Statistics Compiled From Independent Laboratory Test Specimens \*\*

Mix Number: 2501

Strength: 1000 psi @ 28 Days

28 Day Test Date

Test Number	Date	Plant Number	Temperature (Fahrenheit)		Placement Slump (in)	Percent of Air	28 Day			Cumulative Average	Flowing Avg of 3	Range
			Ambient	Concrete			SOI 1	SOI 2	SOI Avg			
1	11/20/80	31	80	80	5.50	3.0%	3810	4110	3970	3870	280	
2	07/08/83	33	83	88	3.00	N/A	3220	3290	3230	3212	70	
3	02/21/85	18	69	69	4.70	N/A	4840	4630	4730	4602	80	
4	02/16/86	21	76	76	5.00	N/A	3680	3480	3515	3438	70	
5	02/16/86	21	80	80	4.50	N/A	4840	4790	4800	4824	60	
6	03/03/86	31	53	70	8.50	4.8%	4840	4790	4806	4821	5040	70
7	06/03/86	32	83	84	5.50	N/A	3540	3400	3470	3430	140	
8	07/05/87			84	5.00	4.0%	4720	4510	4720	4645	1327	90
9	01/13/88			69	5.20	5.0%	3860	3880	3880	3887	4030	10
10	04/02/88	32	80	83	5.00	4.3%	3890	4060	4060	4008	4228	130
11	06/09/88	31	84	80	5.00	N/A	3900	3530	3515	3502	30	
12	06/10/88	32	80	83	4.00	N/A	5710	5780	5780	4870	5042	70
13	06/27/88	31	87	85	5.00	2.0%	5130	5230	5190	4710	5617	80
*** Averages ***			73	78	5.07	4.0%						

COMMENTARY OF STATISTICAL EVALUATION OF CONCRETE DESIGN RESULTS

Mix Num: 9601

Strength: 3000 psi @ 28 Days

Paragraph 5.5 of ACI 318-89 provides that as data becomes available during construction, the amount by which ( $F'_{or}$ ) must exceed the specified value of ( $F'_c$ ) may be reduced, provided:

- (a) 30 or more test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.1, or
- (b) 15 to 29 test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.2.

\*\*\*\*\*  
\*  
\* Unable to calculate standard deviation due \*  
\* \*  
\* to the fact that less than 15 tests exist \*  
\* \*  
\*\*\*\*\*

**SUMMARY OF STATISTICAL ANALYSIS  
28 Day Test Data**

Number of Tests.....	13
Maximum Value.....	5745 psi
Minimum Value.....	3470 psi
Range.....	2275 psi
Average Strength.....	4718 psi
Required Average Strength to satisfy minimum probability conditions of ACI 318-89 Section 5.3.2.1.....	
Design excess beyond code requirements...	

**ED BELL CONSTRUCTION COMPANY**POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-078710605 HARRY HINES  
DALLAS, TEXAS 75220

September 30, 1998

Mr. James C. Pierce, Jr., P.E.  
Assistant City Engineer  
Town of Addison  
P.O. Box 144  
Addison, Texas 75001Re: Arapaho Road Reconstruction  
Addison Road to Dallas North Tollway  
Town of Addison

Dear Mr. Pierce:

Enclosed for you review and approval are our concrete batch designs from Texas Industries for 3000 psi (design # 9601) and 650 psi flex (design # 8273) concrete. Our specialty concrete subcontractor intends to utilize design # 9601 for the sidewalk and ADA ramps and design # 8273 for the concrete pavement with the sand blast finish. Please inform us of your decision regarding these designs.

If you have any questions regarding this information, don't hesitate to contact our office.

Sincerely,

Ed Bell Construction Company

Robert D. Weber  
Project Engineer



September 24, 1998

North Texas Bomanite  
11107 Morrison Lane  
Dallas, TX 75229-5608

Attn: Mr. Fred Bailey

RE: Arapaho Road Street Scape  
Addison

9601

The attached concrete mix design utilizing the appropriate ASTM C-33 or ASTM C-330 aggregate is proposed for use on the above referenced project for ready-mixed concrete to be furnished by TXI.

To ensure that the correct mix is delivered to your project, please order by the mix design number which appears in the upper left hand corner of the mix design.

Texas Industries certifies that the above mix design, when ordered by specified design identity, and delivered by TXI, will meet or exceed the indicated design strength at the designated age when tested in accordance with the applicable and current ASTM Standards C 31, C 39, C 78, C 172, C 293, applicable provisions of C 94, and evaluated in accordance with applicable provisions of the ACI 318 Building Code.

TXI would like to be included on your mailing list to receive all test reports. ASTM C 94 entitles a manufacturer to receive copies of all test reports when strength of concrete is used as a basis for acceptance.

Contact us if you have any questions or require any additional information. Please notify TXI of approval of the proposed mix design prior to its use. Failure to notify us prior to first placement shall constitute acceptance. To ensure that the proper mix design is ordered, please send a copy of this letter, after approval, to the above referenced project to be used by the person ordering the concrete for this job.

Sincerely,

TXI Operations, LP

*Michael A. Caldaroni*

Michael A. Caldaroni, P.E.  
Manager - Q.A. / Q.C.

Post-it Fax Note	7871	Date	9-24-98	# of pages	5
To	Fred Bailey	From	Shari		
Company	North Texas Bomanite	Co.	TXI		
Phone #	972-647-3362				
	972-647-3377				

Mix #: 8273  
Description: 5.50SK ADMIX/AEA 1"CS  
Strength: 650 psi @ 28 Days

INTERSECTION PAVING (ASTM C293)

Maximum Coarse Aggregate: 1" - #4 CRUSHED STONE  
Maximum Water/Cement Ratio: 5.64 gal/sack or 0.499 lbs/lb  
Cement/Cementitious Content: 5.50 sacks (per cubic yard)  
Maximum Placement Slump: 4.00 inches  
Air Entraining Agent: ASTM C-260  
Admixture: ASTM C-494 Type A or D

MATERIAL QUANTITIES PER 1.0 CUBIC YARD AT S.S.D

517 lbs. ASTM C 150 TYPE I CEMENT  
1840 lbs. 1" - #4 CRUSHED STONE  
1312 lbs. CONCRETE SAND  
258 lbs. or 31.0 Gallons of Water  
2.0 to 4.0 oz/cwt of ASTM C-494 Type A  
Specified Air Content: 3.0% - 6.0%  
Placement Slump: 3.00 + or - 1.00 inches

Mix #: 9601  
Description: 5.50SK ADMIX/AEA 1"CS 50/50 MIX  
Strength: 3000 psi @ 28 Days

SIDEWALKS

Maximum Coarse Aggregate: 1" - #4 CRUSHED STONE  
Maximum Water/Cement Ratio: 6.18 gal/sack or 0.547 lbs/lb  
Cement/Cementitious Content: 5.50 sacks (per cubic yard)  
Maximum Placement Slump: 5.00 inches  
Air Entraining Agent: ASTM C-260  
Admixture: ASTM C-494 Type A or D

MATERIAL QUANTITIES PER 1.0 CUBIC YARD AT S.S.D

517 lbs. ASTM C 150 TYPE I CEMENT  
1550 lbs. 1" - #4 CRUSHED STONE  
1535 lbs. CONCRETE SAND  
283 lbs. or 34.0 Gallons of Water  
2.0 to 4.0 oz/cwt of ASTM C-494 Type D  
Specified Air Content: 3.0% - 6.0%  
Placement Slump: 4.00 + or - 1.00 inches

#### PUMPING NOTES / RECOMMENDATIONS

1. 5" minimum diameter lines with no reduction to smaller lines.
2. Keep rubber hose to absolute minimum length and plan pipe with as few 90 degree angles as possible.
3. Samples for slump and strength tests should be taken @ discharge end of hose for strength guarantee to be valid.
4. To prime pump lines, a minimum of 8.0 sack grout should be used for lubrication. In the case of strength concrete, equivalent strength grout should be used if the grout remains in the placement.
5. Pump mixes are based on minimum cement content pumped at ground level. As pump line increases in length or height and/or layout configuration changes, additional cement may be required to assure strength and pumpability at additional cost to the contractor.
6. TXI cannot control, and is therefore not responsible for excessive loss of entrained air content when loss occurs as a result of boom configuration or free fall discharge from hose. To ensure minimum air loss when pumping, maintain a continuous flow of concrete through the entire length of pipe and do not subject concrete to free fall.

Unless otherwise indicated, when the concrete temperature at point of placement exceeds 90 degrees, TXI will guarantee the strength performance of the mix design(s) herein submitted up to a maximum placement temperature of 100 degrees using an ASTM C 494 Type D retarding water-reducer, as long as the concrete is placed within 75 minutes from batch time.

We are enclosing all available back up data for the referenced mix design(s). If the strength information is not available, or is insufficient, confirmation tests may have to be conducted by your laboratory.

TEXAS INDUSTRIES  
CONCRETE DESIGN EVALUATION

Date: 05/24/98

\*\* Statistics Compiled From Independent Laboratory Test Specimens \*\*

Mix Number: 9601

Strength: 3000 psi @ 28 Days

28 Day Test Data

Test Number	Date	Plant Number	Temperature (Fahrenheit)		Placement Slump (in)	Percent of Air	28 Day			Cumulative Average	Moving Avg of 3	Range
			Ambient	Concrete			PSI 1	PSI 2	PSI Avg			
1	11/20/90	31		80	5.50	3.8%	3830	4110	3970	2970		280
2	07/08/93	12	85	88	3.00	N/A	5220	5290	5255	4611		70
3	03/31/95	18	69	67	4.70	N/A	4510	4620	4560	4602	4002	80
4	02/16/96	31	76	70	5.00	N/A	8680	8480	8512	4410	5117	70
5	02/16/96	31	40	66	4.50	N/A	4840	4760	4800	4834	4865	80
6	03/03/96	31	52	70	5.50	4.0%	4840	4770	4805	4821	5040	70
7	05/03/96	12	83	84	6.50	N/A	3510	3400	3470	4620	4358	140
8	07/06/97			88	5.00	4.0%	4720	4610	4765	4645	4347	90
9	01/15/98		52		5.50	5.0%	3860	3880	3865	4827	4030	10
10	06/03/98	31	90	83	5.00	4.3%	3850	4280	4065	4508	4228	430
11	06/09/98	31	84	80	5.00	N/A	5300	5330	5315	4681	4412	30
12	06/10/98	31	80	84	6.00	N/A	5710	5780	5745	4678	5042	70
13	06/17/98	31	87	85	5.00	3.0%	5150	5230	5190	4718	5417	80
*** Averages ***			73	78	5.89	4.0%						

COMMENTARY OF STATISTICAL EVALUATION OF CONCRETE DESIGN RESULTS

Mix Num: 9601

Strength: 3000 psi @ 28 Days

Paragraph 5.5 of ACI 318-89 provides that as data becomes available during construction, the amount by which ( $F'_{cr}$ ) must exceed the specified value of ( $F'_c$ ) may be reduced, provided:

- (a) 30 or more test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.1, or
- (b) 15 to 29 test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.2.

```
*****
*
*   Unable to calculate standard deviation due
*
*   to the fact that less than 15 tests exist
*
*****
```

**SUMMARY OF STATISTICAL ANALYSIS**  
**28 Day Test Data**

Number of Tests.....	13
Maximum Value.....	5745 psi
Minimum Value.....	3470 psi
Range.....	2275 psi
Average Strength.....	4718 psi
Required Average Strength to satisfy minimum probability conditions of ACI 318-89 Section 5.3.2.1.....	
Design excess beyond code requirements...	



**ED BELL CONSTRUCTION COMPANY**

POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-0787

10605 HARRY HINES  
DALLAS, TEXAS 75220

September 29, 1998

Mr. James C. Pierce, Jr., P.E.  
Assistant City Engineer  
Town of Addison  
P.O. Box 144  
Addison, Texas 75001

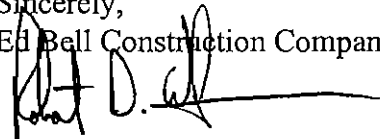
Re: Arapaho Road Reconstruction  
Addison Road to Dallas North Tollway  
Town of Addison

Dear Mr. Pierce:

Enclosed for you review and approval are our concrete batch designs from Pioneer Concrete of Texas, Inc. and Texas Industries for 4000 psi concrete. Our electrical subcontractor intends to utilize concrete based upon these designs to construct the concrete bollards for the project. Due to the recent concrete supply problems, we submitted designs from two suppliers to ensure that concrete is available. Please inform us of your decision regarding these designs.

If you have any questions regarding this information, don't hesitate to contact our office.

Sincerely,  
Ed Bell Construction Company



Robert D. Weber  
Project Engineer

*Ken Roberts  
Please review/approve  
Jim  
10-2-98*

Pioneer Concrete of Texas, Inc.  
 240 Singleton Boulevard  
 Dallas, Texas 75212

COPY

Date: 9/9/98

Contractor: Dietz Construction  
 Project: Arapaho Road Bollards

MIX SPECIFICATIONS:

Mix Design # 9363

Strength 4000 psi

Slump: 5" Max.

Air 3-6%

W/C Ratio: 5.04 (Gal/Sack)

W/C Ratio: 0.45 (Lb/Lb)

Maximum Temperature: 90

Concrete must be sampled per ASTM C-172.

Test specimens must be made and cured per ASTM C-31.

<u>MATERIALS</u>	<u>ASTM STANDARDS</u>	<u>WEIGHTS</u>
Cement	ASTM C-150 Type <u>I</u>	<u>564</u> lbs. Cement
Fly Ash	ASTM C-618 Type _____	_____ lbs. Fly Ash
Coarse Aggregate	ASTM C-33 <u>#57 1"</u>	<u>1840</u> lbs. C. A.
Coarse Aggregate	ASTM C-33 _____	_____ lbs. C. A.
Lightweight	ASTM C-330 _____	_____ lbs. Lt. Wt.
Fine Aggregate	ASTM C-33 _____	<u>1268</u> lbs. Sand
Fine Aggregate	ASTM C-33 _____	_____ lbs. Sand
Admixture	ASTM C-494 Type <u>A or D</u>	<u>16.9</u> oz. Admix
Admixture	ASTM C-494 Type _____	_____ oz. Admix
Admixture	ASTM C-260 _____	<u>3.7</u> oz. AEA
Admixture	_____	_____
Water		<u>252</u> lbs. Water

Quality Control Department  
 240 Singleton Blvd.  
 Dallas, Texas 75212

Quality Control Manager

*Gary Q DePriest*  
 Gary Q DePriest

Phone: (214) 651-8020  
 Fax: (214) 651-1810

Please send the test results from this job to the Quality Control Department.

COPY

Pioneer Concrete of Texas, Inc.

Mix No.: 9363  
 Strength: 4000  
 Agg. Size: 1"

Contractor: Various  
 Job: Various  
 Lab: Various

Cement: 564 lb.  
 Fly Ash:          lb.  
 Coarse Aggregate: 1840 lb.  
 Coarse Aggregate:          lb.  
 Fine Aggregate: 1255 lb.  
 Fine Aggregate:          lb.  
 Admixture: 16.9 oz.  
 Admixture:          oz.  
 AEA: 3.7 oz.  
 Water: 252 lb.

Standard Deviation: 443  
 Average Strength: 4836

ACI 5.3.2.1 Required average strength.

(1) 4593 psi  
 (2) 4532 psi

Date	Temp.	Slump	7 Day	7 Day	28 Day	28 Day	28 Day Average	3 Consecutive Average
11/11/97	71	4.5	3820	3740	5280	5110	5195	5028
11/21/97	59	4.5		4680	5160	5110	5135	5085
11/21/97	59	5		4040	4730	4740	4735	5022
11/21/97	59	5		4400	4770	4810	4790	4887
11/24/97	64	4	4890	4890	5110	5570	5340	4955
1/2/98	67	5.5		3910	4940	5120	5030	5053
1/16/98	55	4		3890	4900	4890	4895	5088
1/19/98	47	3.25		4220	5380	5390	5385	5103
1/30/98	66	5.25		3160	4170	4260	4215	4832
2/4/98	71	4.5	4430	4180	5640	4730	5185	4928
2/27/98	72	5		4080	5090	5010	5050	4817
3/4/98	68	4.5		3550	4630	4380	4505	4913
3/6/98	68	5	4770	4630	6350	6080	6215	5257
3/30/98	80	5	3560	3640	4650	4420	4535	5085
4/14/98	69	4.5		3470	4490	4450	4470	5073
4/14/98	70	5		3600	4310	4590	4450	4485
4/14/98	73	5		3200	4350	4470	4410	4443
4/20/98	70	5	4230	4210	4600	4640	4620	4493
4/20/98	70	5.5	3930	3900	4420	4530	4475	4502
4/20/98	75	5	4720	4760	5310	5370	5340	4812
4/20/98	78	5	4690	4770	5510	5650	5580	5132
4/23/98	93	5	3460	3680	4610	4770	4690	5203
4/27/98	80	5	4130	4010	5000	4860	4930	5067
4/28/98	71	6	3730	3880	4750	4680	4715	4778
4/29/98	64	5.25		3320	4460	4480	4470	4705
4/29/98	62	5.25		3310	4500	4410	4455	4547
4/30/98	73	5.25	3320	3610	4500	4490	4495	4473
4/30/98	68	5	3720	3860	4750	4640	4695	4548
5/1/98	80	4	3420	3320	4220	4380	4300	4497
5/4/98	83	4.75	3230	3330	4790	4730	4760	4585



COPY

1341 West Mockingbird Lane • Dallas, Texas 75247 • 972.647.6700 • www.txi.com

September 8, 1998

Dietz Construction  
P. O. Box 814  
Rockwall, TX 75087

Attn: Ms. Giselle Dietz

RE: Apraho Road-Bollards  
City of Addison

8274

The attached concrete mix design utilizing the appropriate ASTM C-33 or ASTM C-330 aggregate is proposed for use on the above referenced project for ready-mixed concrete to be furnished by TXI.

To ensure that the correct mix is delivered to your project, please order by the mix design number which appears in the upper left hand corner of the mix design.

Texas Industries certifies that the above mix design, when ordered by specified design identity, and delivered by TXI, will meet or exceed the indicated design strength at the designated age when tested in accordance with the applicable and current ASTM Standards C 31, C 39, C 78, C 172, C 293, applicable provisions of C 94, and evaluated in accordance with applicable provisions of the ACI 318 Building Code.

TXI would like to be included on your mailing list to receive all test reports. ASTM C 94 entitles a manufacturer to receive copies of all test reports when strength of concrete is used as a basis for acceptance.

Contact us if you have any questions or require any additional information. Please notify TXI of approval of the proposed mix design prior to its use. Failure to notify us prior to first placement shall constitute acceptance. To ensure that the proper mix design is ordered, please send a copy of this letter, after approval, to the above referenced project to be used by the person ordering the concrete for this job.

Sincerely,

TXI Operations, LP

  
Raymond W. Argersinger  
Customer Service Representative

Mix #: 8274  
Description: 6.00SK ADMIX/AEA 1"CS  
Strength: 4000 psi @ 28 Days

BOLLARDS

Maximum Coarse Aggregate: 1" - #4 CRUSHED STONE  
Maximum Water/Cement Ratio: 5.00 gal/sack or 0.443 lbs/lb  
Cement/Cementitious Content: 6.00 sacks (per cubic yard)  
Maximum Placement Slump: 4.00 inches  
Air Entraining Agent: ASTM C-260  
Admixture: ASTM C-494 Type A or D

MATERIAL QUANTITIES PER 1.0 CUBIC YARD AT S.S.D

564 lbs. ASTM C 150 TYPE I CEMENT  
1840 lbs. 1" - #4 CRUSHED STONE  
1294 lbs. CONCRETE SAND  
250 lbs. or 30.0 Gallons of Water  
2.0 to 4.0 oz/cwt of ASTM C-494 Type D  
Specified Air Content: 3.0% - 6.0%  
Placement Slump: 3.00 + or - 1.00 inches

#### PUMPING NOTES / RECOMMENDATIONS

1. 5" minimum diameter lines with no reduction to smaller lines.
2. Keep rubber hose to absolute minimum length and plan pipe with as few 90 degree angles as possible.
3. Samples for slump and strength tests should be taken @ discharge end of hose for strength guarantee to be valid.
4. To prime pump lines, a minimum of 8.0 sack grout should be used for lubrication. In the case of strength concrete, equivalent strength grout should be used if the grout remains in the placement.
5. Pump mixes are based on minimum cement content pumped at ground level. As pump line increases in length or height and/or layout configuration changes, additional cement may be required to assure strength and pumpability at additional cost to the contractor.
6. TXI cannot control, and is therefore not responsible for excessive loss of entrained air content when loss occurs as a result of boom configuration or free fall discharge from hose. To ensure minimum air loss when pumping, maintain a continuous flow of concrete through the entire length of pipe and do not subject concrete to free fall.

Unless otherwise indicated, when the concrete temperature at point of placement exceeds 90 degrees, TXI will guarantee the strength performance of the mix design(s) herein submitted up to a maximum placement temperature of 100 degrees using an ASTM C 494 Type D retarding water-reducer as long as the concrete is placed within 75 minutes from batch time.

We are enclosing all available back up data for the referenced mix design(s). If the strength information is not available, or is insufficient, confirmation tests may have to be conducted by your laboratory.

TEXAS INDUSTRIES  
CONCRETE DESIGN EVALUATION

Date: 09/08/98

\*\* Statistics Compiled From Independent Laboratory Test Specimens \*\*

Mix Number: 8274

Strength: 4000 psi @ 28 Days

28 Day Test Data

Test Number	Date	Plant Number	Temperature (Fahrenheit)		Placement Slump (in)	Percent of Air	28 Day			Cumulative Average	Moving Avg of 3	Range
			Ambient	Concrete			PSI 1	PSI 2	PSI Avg			
1	03/27/98			80	4.75	4.0%	5360	5160	5260	5260		200
2	03/27/98			80	3.75	3.6%	5350	5270	5310	5285		80
3	03/27/98			78	3.50	4.0%	5840	5740	5790	5453	5453	100
4	04/06/98	43	63	73	5.50	N/A	5180	5340	5260	5405	5453	160
5	04/20/98			82	5.50	N/A	4520	4500	4510	5226	5187	20
6	04/22/98	41	52	64	5.50	N/A	4580	4630	4605	5123	4792	50
7	04/23/98	43	72	79	5.75	N/A	4070	4140	4105	4977	4407	70
8	04/28/98	40	58	70	5.00	N/A	5150	5060	5105	4993	4605	90
9	04/28/98	40	52	60	4.75	N/A	5240	5030	5135	5009	4782	210
10	04/28/98	40	50	70	5.25	N/A	4760	4520	4640	4972	4960	240
11	04/28/98	40	56	64	4.50	N/A	5540	5590	5565	5026	5113	50
12	05/05/98	40	78	79	5.00	5.0%	4150	4280	4215	4958	4807	130
13	05/05/98	40	72	74	4.75	4.3%	4070	4000	4035	4887	4605	70
14	05/05/98	40	68	70	5.25	3.9%	4580	4660	4620	4868	4290	80
15	05/05/98	40	65	69	5.00	4.3%	4770	4860	4815	4865	4490	90
16	05/14/98	42	78	75	4.75	4.3%	5260	5380	5320	4893	4918	120
17	05/18/98	43	98	92	4.25	N/A	4160	4030	4095	4846	4743	130
18	05/19/98	40	92	84	5.00	N/A	4570	4760	4665	4836	4693	190
19	05/21/98	43	94	89	3.50	N/A	4610	4540	4575	4822	4445	70
20	05/29/98	42	96	82	5.25	2.0%	5060	4880	4970	4830	4737	180
21	06/01/98	43	98	92	5.50	N/A	5160	5080	5120	4844	4888	80
22	06/02/98	42	96	86	5.00	N/A	4530	4580	4555	4830	4882	50
23	06/03/98	42	98	83	5.00	4.2%	4350	4410	4380	4811	4685	60
24	06/04/98	42	90	84	5.00	4.0%	5160	5330	5245	4829	4727	170
25	06/08/98	43	88	92	3.50	N/A	4380	4410	4395	4812	4673	30
26	06/10/98			88	5.50	5.5%	4920	5050	4985	4818	4875	130
27	06/10/98			87	5.50	5.8%	4270	4410	4340	4801	4573	140
28	06/11/98	43	84	87	5.75	N/A	3660	3750	3705	4761	4343	90
29	06/15/98			91	4.50	N/A	5240	5290	5265	4779	4437	50
30	06/15/98	42	90	92	4.00	N/A	3950	4170	4060	4755	4343	220
*** Averages ***				78	80	4.86	4.2%					

COMMENTARY OF STATISTICAL EVALUATION OF CONCRETE DESIGN RESULTS

Mix Num: 8274

Strength: 4000 psi @ 28 Days

Paragraph 5.5 of ACI 318-89 provides that as data becomes available during construction, the amount by which (F'cr) must exceed the specified value of (F'c) may be reduced, provided:

- (a) 30 or more test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.1, or
- (b) 15 to 29 test results are available and average of test results exceeds that required by Section 5.3.2.1, using a standard deviation calculated in accordance with Section 5.3.1.2.

The required average compressive strength has been calculated using a standard deviation calculated in accordance with ACI 318-89 Section 5.3.1.1 or Section 5.3.1.2 and is the larger value of these calculations:

$$\begin{aligned} F'cr &= F'c + 1.34(SD) \\ &= 4000 + 1.34(517.2) \\ &= 4693 \\ \\ F'cr &= F'c + 2.33(SD) - 500 \\ &= 4000 + 2.33(517.2) - 500 \\ &= 4705 \end{aligned}$$

**SUMMARY OF STATISTICAL ANALYSIS**  
28 Day Test Data

Number of Tests.....	30	
Maximum Value.....	5790	psi
Minimum Value.....	3705	psi
Range.....	2085	psi
Average Strength.....	4755	psi
Standard Deviation.....	517	psi
Required Average Strength to satisfy minimum probability conditions of ACI 318-89 Section 5.3.2.1.....	4705	psi
Design excess beyond code requirements...	50	psi





MIDLOTHIAN CEMENT PLANT • 245 Ward Road • Midlothian, Texas 76065 • www.txi.com

**SPECIFICATIONS**  
**Portland Cement**  
**Type I/II (Low Alkali)**  
**A.S.T.M. C150-97**

Bin Number		
Car Number		
Tons		
Date of Sampling	June 1998 Monthly Average	
	ASTM SPECIFICATION	TEST RESULTS
<b>CHEMICAL REQUIREMENTS</b>		
Silica Oxide, Minimum Percent	20.0	20.7
Alumina Oxide, Maximum Percent	6.0	4.1
Iron Oxide, Maximum Percent	6.0	3.9
Magnesia Oxide, Maximum Percent	6.0	1.2
SO3 (C3A less than 8%), Maximum Percent	*	3.4
Loss on Ignition, Maximum Percent	3.0	1.0
Insoluble residue, Maximum Percent	0.75	0.12
Tricalcium Aluminate, Maximum Percent	8	4
<b>OPTIONAL CHEMICAL REQUIREMENTS</b>		
Total Alkalies, Max. % (Na2O equiv.)	0.60	0.45
<b>PHYSICAL REQUIREMENTS</b>		
Specific surface, Blaine Minimum (M <sup>2</sup> /Kg)	280	340
Gillmore, Initial Set, Minimum (Minutes)	60	163
Gillmore, Final Set, Maximum (Minutes)	600	291
Vicat, Initial Set	Minimum (Minutes)	45
	Maximum (Minutes)	375
Air Content, Volume, Maximum Percent	12	6
Autoclave Expansion, Maximum Percent	0.80	0
3 Day Minimum Compressive Strength, MPa (psi)	12.0 (1740)	22.8 (3305)
7 Day Minimum Compressive Strength, MPa (psi)	19.0 (2760)	29.1 (4221)

STATE OF TEXAS

ELLIS COUNTY

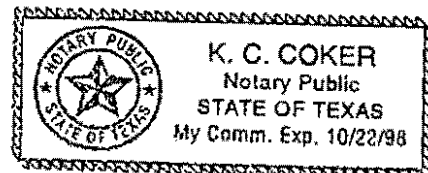
J.R. Owens, being duly sworn deposes and says; that he is Chief Chemist of TXI, Midlothian Cement Plant, who prepared the above report of tests and that the same is true and correct.

Subscribed and sworn to before me this 17th day of July, 1998.

K.C. Coker  
 Notary Public

J.R. Owens  
 Chief Chemist

\*See ASTM C150 Table 1, Footnote B.



**GRACE**

**Concrete Products**

W.R. Grace & Co.  
2001 East Randol Mill, Suite # 115  
Arlington, TX 76011

(817) 461-4101  
(817) 459-1084

January 8, 1998

Texas Industries, Inc.  
Dallas, Texas

Gentlemen:

This is to certify that DARATARD-17, a water-reducing set-retarding admixture, supplied by the Construction Products Division, W.R. Grace & Co.-Conn., is formulated to comply with Specifications for Chemical Admixtures for Concrete, ASTM Designation: C-494, as a Type B & D admixture; and the Standard Specifications of the Texas Highway Department.

No chlorides or halogens are added to DARATARD-17 as functional ingredients during manufacture.

Material supplied for the above referenced project is identical in all respects, including concentration, to the one originally submitted to and approved by the State of Texas, Dept. of Transportation.


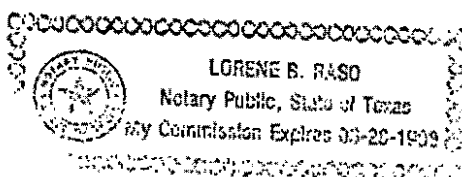
The above is in addition to and not in substitution for our standard Conditions of Sale printed on the reverse side hereof.

Sincerely,



Tom C. Henson  
District Manager

Subscribed and sworn to, before me,  
this 8th day of January, 1998 A.D.

  
Lorene B. Raso, Notary Public  
In and For the State of Texas

**GRACE**

Grace Construction Products

W.R. Grace & Co. - Conn.  
4323 Criles Street  
P.O. Box 2585-77252  
Houston, TX 77003

March 6, 1997

Texas Industries, Inc.  
1341 W. Mockingbird Lane  
Dallas, TX 75247-6913

Gentlemen:

This is to certify that WRDA with HYCOL, a water-reducing admixture, as manufactured and supplied by the Construction Products Division, W.R. Grace & Co.-Conn., is formulated to comply with Specifications for Chemical Admixtures for Concrete, ASTM Designation: C-494, Type A (AASHTO M194, Type A).

No chlorides or halogens are added to WRDA with HYCOL as functional ingredients during manufacture.

Material supplied for the above referenced project is identical in all respects, including concentration, to the one originally submitted to and approved by the State of Texas, Dept. of Transportation.

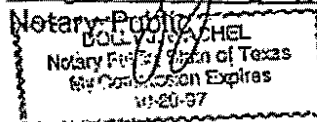
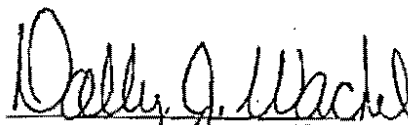
The above is in addition to and not in substitution for our standard Conditions of Sale printed on the reverse side hereof.

Sincerely,



Tom C. Henson  
District Manager

Subscribed and sworn to, before me,  
this 6th day of March, 1997 A.D.



**GRACE**

**Grace Construction Products**

W.R. Grace & Co. - Conn  
4323 Crites Street  
P.O. Box 2585-77252  
Houston, TX 77003

August 18, 1998

Texas Industries, Inc.

Gentlemen:

This is to certify that Daravair 1000, an air-entraining admixture, as manufactured and supplied by the Construction Products Division, W.R. Grace & Co.-Conn., is formulated to comply with Specification for Air-Entraining Admixtures for Concrete, ASTM Designation: C260 (AASHTO M154).

Daravair 1000 does not contain calcium chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts contributed from the domestic water supply used during the manufacturing process.

Material supplied for the above referenced project is identical in all respects, including concentration, to the one originally submitted to and approved by the State of Texas, Dept. of Transportation:

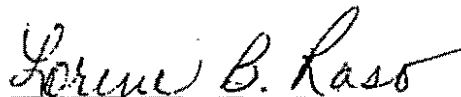
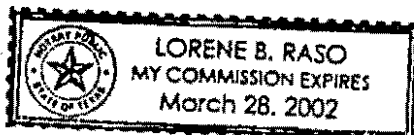
The foregoing is in addition to and not in substitution for our standard Conditions of Sales printed on the reverse side hereof.

Sincerely,



Tom C. Henson  
District Manager

Subscribed and sworn to, before me,  
this 18th day of August 1998, A.D.



Lorene B. Raso, Notary Public  
In and for the State of Texas



**GRACE**

**Concrete Products**

W.R. Grace & Co.  
2001 East Randol Mill, Suite # 115  
Arlington, TX 76011

(817) 461-4101  
(817) 459-1084

January 8, 1998

Texas Industries, Inc.  
Dallas, Texas

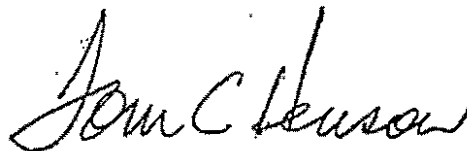
Gentlemen:

This is to certify that DARACEM-19, a high range water-reducing admixture; as manufactured and supplied by the Construction Products Division, W. R. Grace & Co.-Conn., is formulated to comply with Specifications for Chemical Admixtures for Concrete, ASTM Designation: C-494, Types A & F (AASHTO M.194, Types A & F).

DARACEM-19 does not contain calcium chloride or chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts contributed from the domestic water supply used during the manufacturing process.

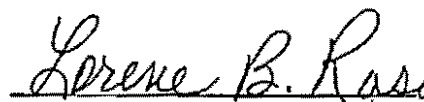
The above is in addition to and not in substitution for our Standard Conditions of Sale printed on the reverse side hereof.

Sincerely,

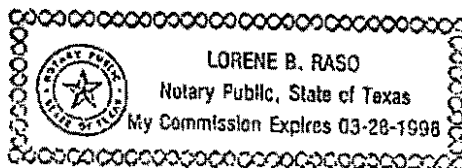


Tom C. Henson  
District Manager

Subscribed and sworn to, before me,  
this 8th day of January, 1998 A.D.



Lorene B. Raso, Notary Public  
In and For the State of Texas



**TEXAS INDUSTRIES  
QUALITY CONTROL DEPT.  
AGGREGATE SIEVE ANALYSIS**

Date: 07/15/98

Production Facility: BRIDGEPORT

Size: 57

Grading Designation: ASTM C-33 1" - #4.

Project: \*\*\*\*\*ALL TESTS\*\*\*\*\*

Sample Location:

SIEVE SIZE	CUMULATIVE WT. RETAINED	CUMULATIVE % RETAINED	CUMULATIVE % PASSING	REQUIRED % RETAINED	SPECIFICATION % PASSING
2.0"					
1.5"		0	100	0	100
1.0"		1.72	98.28	0 - 5	95 - 100
¾"		17.46	82.54		
½"		55.43	44.57	40 - 75	25 - 60
3/8"		79.30	20.70		
#4		97.20	2.80	90 - 100	0 - 10
#8		98.83	1.17	95 - 100	-0 - 5
#10					
#16					
#30					
#40					
#50					
#100					
#200		99.13	0.87		
PAN WT.					

Decant .89%

100% of tests: 151 Size: 57 PLANT: BRIDGEPORT

Job: \*\*\*\*\*ALL JOBS\*\*\*\*\*

**TEXAS INDUSTRIES  
QUALITY CONTROL DEPT.  
AGGREGATE SIEVE ANALYSIS**

Date: 07/16/98

Production Facility: AMBROSE (LATTIMORE)

Size: 33

Grading Designation: ASTM C-33 FINE AGG.

Project: \*\*\*\*\*ALL TESTS\*\*\*\*\*

Sample Location:

SIEVE SIZE	CUMULATIVE WT. RETAINED	CUMULATIVE % RETAINED	CUMULATIVE % PASSING	REQUIRED % RETAINED	SPECIFICATION % PASSING
2.0"					
1.5"					
1.0"					
¾"					
½"					
3/8"					
#4		1.83	98.17	0 - 5	95 - 100
#8		12.62	87.38	0 - 20	80 - 100
#10					
#16		22.25	77.75	15 - 50	50 - 85
#30		45.85	54.15	40 - 75	25 - 60
#40					
#50		80.27	19.73	70 - 90	10 - 30
#100		97.74	2.26	90 - 98	2 - 10
#200		99.57	0.43	97-100	0 - 3
PAN WT.		2.61 Fineness Modulus			

Decant:

M.C. 5.3%

S. E. 95.2%

100% of tests: 129 Size: 33 PLANT: AMBROSE(LATTIMORE) Job: \*\*\*\*\*ALL JOBS\*\*\*\*\*

HUITT-ZOLLARS, INC.  
 3131 McKinney Avenue, Suite 600  
 DALLAS, TEXAS 75204

LETTER OF TRANSMITTAL

(214) 871-3311

DATE	9-1-98	JOB NO.	01-1772-01
ATTENTION	Jim Pierce, P.E.		
RE:	Arroyo Rd Addison, TX		

TO Town of Addison - Public Works  
P.O. Box 144  
Addison, TX 75001

WE ARE SENDING YOU  Attached  Under separate cover via Mail the following items:

- Shop drawings     Prints     Plans     Samples     Specifications  
 Copy of letter     Change order     \_\_\_\_\_

COPIES	DATE	NO.	DESCRIPTION
1			Mix Design Letter

THESE ARE TRANSMITTED as checked below:

- For approval     Approved as submitted     Resubmit \_\_\_\_\_ copies for approval  
 For your use     Approved as noted     Submit \_\_\_\_\_ copies for distribution  
 As requested     Returned for corrections     Return \_\_\_\_\_ corrected prints  
 For review and comment     \_\_\_\_\_  
 FOR BIDS DUE \_\_\_\_\_ 19 \_\_\_\_\_  PRINTS RETURNED AFTER LOAN TO US

REMARKS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
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 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

COPY TO \_\_\_\_\_ SIGNED: Ken Robert



**ED BELL CONSTRUCTION COMPANY**

POST OFFICE BOX 540767  
DALLAS, TEXAS 75354-0767

10605 HARRY HINES  
DALLAS, TEXAS 75220

August 31, 1998

Mr. Kenneth A. Roberts, P.E.  
Vice President  
Huitt-Zollars, Inc.  
3131 McKinney Avenue, Suite 600  
Dallas, Texas 75204

Re: Arapaho Road Reconstruction  
Addison Road to Dallas North Tollway  
Town of Addison

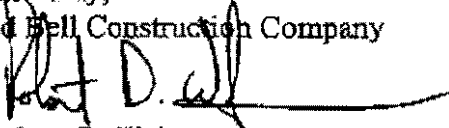
Dear Mr. Roberts:

We are in receipt of your approval of our batch design for concrete that we intend to produce with our concrete batch plant. It is our understanding that the design has been approved for machine work only.

In order to comply with the NCTCOG specifications for hand finished concrete, we propose utilizing the same batch design and increasing the cement content to 564 pounds (6 sacks) per cubic yard of concrete for concrete that will be hand finished. Increasing the cement content to 564 pounds produces a design that is very similar to Lattimore mix design #42, which has a satisfactory strength history and has already been approved for utilization. We are confident that adding a sack of cement to our machine finish design will produce concrete that complies with the NCTCOG specifications.

Please inform us of your decision regarding this proposal. If you have any questions regarding this information, don't hesitate to contact our office.

Sincerely,  
Ed Bell Construction Company

  
Robert D. Weber  
Project Engineer

CODE:

- 1. APPROVED
- 2. APPROVED AS NOTED (CORRECT AND RESUBMIT)
- 3. APPROVED AS NOTED (CONFIRM-RESUBMITTAL NOT REQUIRED)
- 4. DISAPPROVED (REVISE AND RESUBMIT)

Ken Roberts                      9-1-98  
REVIEWER                                      DATE  
Huitt-Zollars, Inc.  
ORGANIZATION

APPROVAL DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THESE SUBMITTALS AND FROM RESPONSIBILITY FOR COMPLYING WITH THE REQUIREMENTS OF THIS CONTRACT



**ED BELL CONSTRUCTION COMPANY**

POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-0787

10605 HARRY HINES  
DALLAS, TEXAS 75220

August 14, 1998

Mr. James C. Pierce, Jr., P.E.  
Assistant City Engineer  
Town of Addison  
P.O. Box 144  
Addison, Texas 75001

Re: Arapaho Road Reconstruction  
Addison Road to Dallas North Tollway  
Town of Addison

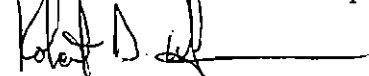
Dear Mr. Pierce:

As we have discussed on earlier occasions, EBCC is exploring the option of erecting our concrete batch plant to produce concrete for a portion of the referenced project. Enclosed for your review and approval is our concrete batch design developed by Maxim Technologies, Inc. for 650 psi (flex) concrete for paving. Please inform us of your decision regarding this design.

If you have any questions regarding this information, don't hesitate to contact our office.

Sincerely,

Ed Bell Construction Company



Robert D. Weber  
Project Engineer

## Portland Cement Concrete Mix Design Report

**Client:** Ed Bell Construction  
 10605 Harry Hines Blvd.  
 Dallas, Texas 75220  
 Attn: Robert Webber

**Project:** Concrete Mix Design

**Project No.:** 9863997  
**Report No.:** 136040  
**Service Date:** 08/07/98  
**Page 1 of 1**

**Identification:** Flexural mix with air / 650psi

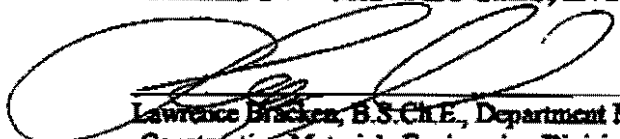
Requirements	Design	Specification
Flexural Strength (psi / days)	650 psi	NA
Cement Content (sack)	5.0	NA
Slump (inches)	4.0 max	NA
Water Cement Ratio (lbs/lbs)	0.50	NA
Entrained Air Content (%)	4.5	NA

Materials	Source	Size or Type	Specific Gravity
Cement	Normal Portland	Type I	3.15
Fly Ash	Normal Fly Ash	Type C	2.74
Coarse Aggregate	1 1/2" - #4	Crushed Stone	2.66
Fine Aggregate	#4 - 0	Natural Sand	2.62
Admixture #1	Water Reducer	ASTM C494	NA
Admixture #2	Air Entrainment	ASTM C263	NA

Proportions One Cubic Yard SSD Basis	Weight (lbs)	Absolute Volume (cubic Feet)
Cement	470	2.39
Fly Ash	0	0.00
Coarse Aggregate	1922	11.56
Fine Aggregate	1327	8.10
Water	233	3.73
Admixture #1	14.1	NA
Admixture #2	2.4	1.22
<b>Totals</b>	<b>3952</b>	<b>27.00</b>

**Unit Weight of Fresh Concrete(lb/cubic foot):** 146.4  
 Adjust water to maintain 4" slump.  
 Adjust air entraining agent to maintain 4.5% air content.  
 Weights are S.S.D.- Moisture Correction Required.

**MAXIM TECHNOLOGIES, INC.**



Lawrence Bracken, B.S.Ch.E., Department Manager  
 Construction Materials Engineering Division

Our letters and reports are for the exclusive use of the client to whom they are addressed and shall not be reproduced except in full without the approval of the testing laboratory. The use of our name must receive written approval. Our letters and reports apply only to the sample tested and/or inspected, and are not indicative of the quantities of apparently identical or similar products.



**Maxim Technologies Inc.**  
 2575 Lone Star Dr. • P.O. Box 224227  
 Dallas, Texas 75222  
 Telephone: (214) 831-2700  
 FAX: (214) 920-1891

**REPORT OF  
 CONCRETE FLEXURAL STRENGTH**

**CLIENT:** ED BELL CONSTRUCTION  
 10605 HARRY HINES BLVD  
 ATTN: ROBERT WEBBER  
 DALLAS, TX 75220

PAGE 1 OF 2

**PROJECT NO.:** 9863997  
**REPORT NO.:** 136040  
**DATE OF SERVICE:** 7/10/98  
**AUTHORIZATION:**  
**REPORT DATE:** 8/07/98

**PROJECT:** MIX DESIGNS

**SERVICES:** Test flexural strength specimens prepared to confirm strength properties of the mix design.

**PROJECT DATA**

**CONTRACTOR:** ED BELL CONSTRUCTION  
**CONCRETE SUPPLIER:** N/A  
**PLANT:** N/A  
**SPECIFICATION REQUIREMENTS**  
 STRENGTH: 650psi @ 28 DAYS  
 SLUMP: 4"Max. AIR: 3-6  
**METHOD OF TEST**  
 SAMPLING: ASTM C172  
 MOLDING & CURING: ASTM C31  
 SLUMP: ASTM C143  
 TEMPERATURE: ASTM C1064  
 AIR CONTENT: ASTM C231  
 UNIT WEIGHT: ASTM C138  
 TESTING: ASTM C78

**CLASS OF CONCRETE:** In-lab design  
**DATE OF PLACEMENT:** 7/10/98  
**TIME SAMPLED:** 05:00PM **BY:** Michael Marlar, CET  
**TEMPERATURE (DegF) - AIR:** 72 **CONCRETE:** 81  
**TRUCK NO:** N/A **TICKET NO:** N/A  
**MEASURED SLUMP (in.):** 3.25  
**AIR CONTENT(%):** 4.8 **UNIT WEIGHT(pcf):** 145.6  
**LOCATION OF PLACEMENT:**  
 In lab mix design.

**REPORT OF TESTS**

**CONCRETE FLEXURAL STRENGTH - 6 X 6 BEAMS**

BEAM SET	MARKED NO.	DATE TESTED	AGE (days)	BEAM DIMENSION (in.)			SPECIMEN MOISTURE CONDITION	BEARING CONTACT	MAXIMUM LOAD (lbs. force)	MODULUS OF RUPTURE (psi)	REMARKS
				WIDTH	DEPTH	LENGTH					
1	1	7/17/98	7	6.20	6.00	18	WET	GRND/SHIMMED	7140	575	
1	2	7/17/98	7	6.10	6.00	18	WET	GRND/SHIMMED	7260	595	
1	3	7/17/98	7	6.10	6.00	18	WET	GRND/SHIMMED	6960	570	
1	4	8/07/98	28	6.00	6.10	18	WET	GRND/SHIMMED	10140	820	
1	5	8/07/98	28	6.00	6.10	18	WET	GRND/SHIMMED	9120	735	
1	6	8/07/98	28	6.10	6.10	18	WET	GRND/SHIMMED	9000	715	

Report Of Tests Continued On Page 2

Our letters and reports are for the exclusive use of the client to whom they are addressed and shall not be reproduced except in full without the approval of the testing laboratory. The use of our name must receive our written approval. Our letters and reports apply only to the sample tested and/or inspected, and are not indicative of the quantities of apparently identical or similar products.

AUG 7 1998

**REPORT OF  
COARSE AND FINE AGGREGATE TESTING**

**CLIENT:** ED BELL CONSTRUCTION  
10605 HARRY HINES BLVD  
ATTN: ROBERT WEBBER  
DALLAS, TX 75220

PROJECT NO.: 9863997  
REPORT NO.: 135856  
DATE OF SERVICE: 6/25/98  
AUTHORIZATION:  
REPORT DATE: 7/29/98

**PROJECT:** MIX DESIGNS

**SERVICES:** Coarse and Fine Aggregate Testing.

**REPORT OF TESTS**

Sieve Analysis of Coarse Aggregate - ASTM C-33  
Size #467

Sieve Size	Actual Percent Passing	Required Percent Retained
1 1/2"	98	95-100
3/4	42	35-70
3/8	20	10-30
#4	3	0-5

Report Of Tests Continued On Page 2



ED BELL CONSTRUCTION  
PROJECT NO. 9863997  
DATE OF SERVICE: 6/25/98

REPORT NO. 135856  
PAGE 2 OF 2

**REPORT OF TESTS** (Continued)

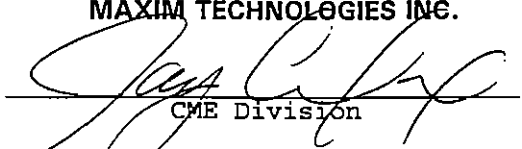
Sieve Analysis of Fine Aggregates - ASTM C-33

Sieve Size	Percent Passing	Percent Required *
3/8"	100	100
#4	97	95-100
#8	88	80-100
#16	78	50-85
#30	61*	25-60
#50	26	10-30
#100	5	2-10

**Technician:** Vince Mosakowski

**Report Distribution:**  
(1) ED BELL CONSTRUCTION

**MAXIM TECHNOLOGIES INC.**

  
CME Division

MODE = TRANSMISSION

START=08-21 09:12AM

END=08-21 09:16AM

NO.	COM	SPEED NO	STATION NAME/ TELEPHONE NO.	PAGES
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-Addison Svc Ctr -Upstairs-



# HUITT-ZOLLARS

Huitt-Zollars, Inc. / 3131 McKinney Avenue / Suite 600 / LB 105 / Dallas, Texas 75204-2489 / 214/871-3311 / FAX 214/871-0757

August 20, 1998

Mr. Robert D. Weber  
Ed Bell Construction  
10605 Harry Hines  
P.O. Box 540787  
Dallas, TX 75354-0787

RE: Arapaho Road - Addison, Texas

Dear Mr. Weber:

Attached is the concrete mix design to be produced by your batch plant for the Arapaho Road Project. The mix is approved for use when the concrete is to be machine finished in accordance with NCTCOG Specification 5.8.2.h.1. For concrete that is to be hand finished, NCTCOG Specification 5.8.2.h.2 requires the addition of one sack of cement per cubic yard. A mix design for hand finished concrete with appropriate tests results needs to be submitted for review. Please feel free to call if you have additional questions.

Sincerely,

**HUITT-ZOLLARS, INC.**



Kenneth A. Roberts, P.E.  
Vice President

Copy: Jim Pierce, P.E., Town of Addison

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**ED BELL CONSTRUCTION COMPANY**

POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-0787

10605 HARRY HINES  
DALLAS, TEXAS 75220

August 14, 1998

Mr. James C. Pierce, Jr., P.E.  
Assistant City Engineer  
Town of Addison  
P.O. Box 144  
Addison, Texas 75001

Re: Arapaho Road Reconstruction  
Addison Road to Dallas North Tollway  
Town of Addison

Dear Mr. Pierce:

As we have discussed on earlier occasions, EBCC is exploring the option of erecting our concrete batch plant to produce concrete for a portion of the referenced project. Enclosed for your review and approval is our concrete batch design developed by Maxim Technologies, Inc. for 650 psi (flex) concrete for paving. Please inform us of your decision regarding this design.

If you have any questions regarding this information, don't hesitate to contact our office.

Sincerely,

Ed Bell Construction Company



Robert D. Weber  
Project Engineer

## Portland Cement Concrete Mix Design Report

**Client:** Ed Bell Construction  
 10605 Harry Hines Blvd.  
 Dallas, Texas 75220  
 Attn: Robert Webber

**Project No.:** 9863997  
**Report No.:** 136040  
**Service Date:** 08/07/98  
**Page 1 of 1**

**Project:** Concrete Mix Design

**Identification:** Flexural mix with air / 650psi

Requirements	Design	Specification
Flexural Strength (psi / days)	650 psi	NA
Cement Content (sack)	5.0	NA
Slump (inches)	4.0 max	NA
Water Cement Ratio (lbs/lbs)	0.50	NA
Entrained Air Content (%)	4.5	NA

Materials	Source	Size or Type	Specific Gravity
Cement	Normal Portland	Type I	3.15
Fly Ash	Normal Fly Ash	Type C	2.74
Coarse Aggregate	1 1/2" - #4	Crushed Stone	2.66
Fine Aggregate	#4 - 0	Natural Sand	2.62
Admixture #1	Water Reducer	ASTM C494	NA
Admixture #2	Air Entrainment	ASTM C763	NA

Proportions One Cubic Yard SSD Basis	Weight (lbs)	Absolute Volume (cubic Foot)
Cement	470	2.39
Fly Ash	0	0.00
Coarse Aggregate	1922	11.56
Fine Aggregate	1327	8.10
Water	233	3.73
Admixture #1	14.1	NA
Admixture #2	2.4	1.22
<b>Totals</b>	<b>3952</b>	<b>27.00</b>

Unit Weight of Fresh Concrete (lb/cubic foot): 146.4

Adjust water to maintain 4" slump.

Adjust air entraining agent to maintain 4.5% air content.

Weights are S.S.D. - Moisture Correction Required.

**MAXIM TECHNOLOGIES, INC.**

  
 Lawrence Brackon, B.S. Ch.E., Department Manager  
 Construction Materials Engineering Division

**CODE:**

1. APPROVED

2. APPROVED AS NOTED (CORRECT AND RESUBMIT)

3. APPROVED AS NOTED (ORIGINAL RESUBMITTAL NOT REQUIRED) when they are addressed and shall not be re-submitted except in full without the approval of the testing laboratory. The use of our name must receive written approval. Our letters and reports apply only to the sample tested.

4. DISAPPROVED (REVISE AND RESUBMIT) and are not indicative of the quantities of apparently identical or similar products.

VIEWER: Robert DATE: 8/20/98  
 ORGANIZATION: Huff - Zoller Inc

APPROVAL DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THESE SUBMITTALS AND FROM RESPONSIBILITY FOR COMPLYING WITH THE REQUIREMENTS OF THIS CONTRACT

## REPORT OF CONCRETE FLEXURAL STRENGTH

CLIENT: ED BELL CONSTRUCTION  
 10605 HARRY HINES BLVD  
 ATTN: ROBERT WEBBER  
 DALLAS, TX 75220

PAGE 1 OF 2

PROJECT: MIX DESIGNS

PROJECT NO.: 9863997  
 REPORT NO.: 136040  
 DATE OF SERVICE: 7/10/98  
 AUTHORIZATION:  
 REPORT DATE: 8/07/98

SERVICES: Test flexural strength specimens prepared to confirm strength properties of the mix design.

### PROJECT DATA

CONTRACTOR: ED BELL CONSTRUCTION  
 CONCRETE SUPPLIER: N/A  
 PLANT: N/A  
 SPECIFICATION REQUIREMENTS  
 STRENGTH: 650psi @ 28 DAYS  
 SLUMP: 4"Max. AIR: 3-6

CLASS OF CONCRETE: In-lab design  
 DATE OF PLACEMENT: 7/10/98  
 TIME SAMPLED: 05:00PM BY: Michael Marlar, CET  
 TEMPERATURE (DegF) - AIR: 72 CONCRETE: 81  
 TRUCK NO: N/A TICKET NO: N/A  
 MEASURED SLUMP (in.): 3-25  
 AIR CONTENT(%): 4.8 UNIT WEIGHT(pcf): 145.6  
 LOCATION OF PLACEMENT:  
 In lab mix design.

METHOD OF TEST  
 SAMPLING: ASTM C172  
 MOLDING & CURING: ASTM C31  
 SLUMP: ASTM C143  
 TEMPERATURE: ASTM C1064  
 AIR CONTENT: ASTM C231  
 UNIT WEIGHT: ASTM C138  
 TESTING: ASTM C78

### REPORT OF TESTS

#### CONCRETE FLEXURAL STRENGTH - 6 X 6 BEAMS

BEAM MARKED SET	NO.	DATE TESTED	AGE (days)	BEAM DIMENSION (in.)			SPECIMEN MOISTURE CONDITION	BEARING CONTACT	MAXIMUM LOAD (lbs. force)	MODULUS OF RUPTURE (psi)	REMARKS
				WIDTH	DEPTH	LENGTH					
1	1	7/17/98	7	6.20	6.00	18	WET	GRND/SHIMMED	7140	575	
1	2	7/17/98	7	6.10	6.00	18	WET	GRND/SHIMMED	7260	595	
1	3	7/17/98	7	6.10	6.00	18	WET	GRND/SHIMMED	6960	570	
1	4	8/07/98	28	6.00	6.10	18	WET	GRND/SHIMMED	10140	820	
1	5	8/07/98	28	6.00	6.10	18	WET	GRND/SHIMMED	9120	735	
1	6	8/07/98	28	6.10	6.10	18	WET	GRND/SHIMMED	9000	715	

Report Of Tests Continued On Page 2

AUG 7 1998

Maxim Technologies Inc.  
2575 Lone Star Dr. • P.O. Box 224227  
Dallas, Texas 75222  
Telephone: (214) 831-2700  
FAX: (214) 920-1891

## REPORT OF COARSE AND FINE AGGREGATE TESTING

CLIENT: ED BELL CONSTRUCTION  
10605 HARRY HINES BLVD  
ATTN: ROBERT WEBBER  
DALLAS, TX 75220

PROJECT NO.: 9863997  
REPORT NO.: 135856  
DATE OF SERVICE: 6/25/98  
AUTHORIZATION:  
REPORT DATE: 7/29/98

PROJECT: MIX DESIGNS

SERVICES: Coarse and Fine Aggregate Testing.

## REPORT OF TESTS

Sieve Analysis of Coarse Aggregate - ASTM C-33  
Size #467

Sieve Size	Actual Percent Passing	Required Percent Retained
1 1/2"	98	95-100
3/4	42	35-70
3/8	20	10-30
#4	3	0-5

Report Of Tests Continued On Page 2

ED BELL CONSTRUCTION  
PROJECT NO. 9863997  
DATE OF SERVICE: 6/25/98

REPORT NO. 135856  
PAGE 2 OF 2

## REPORT OF TESTS (Continued)

### Sieve Analysis of Fine Aggregates - ASTM C-33

Sieve Size	Percent Passing	Percent Required *
3/8"	100	100
#4	97	95-100
#8	88	80-100
#16	78	50-85
#30	61*	25-60
#50	26	10-30
#100	5	2-10

Technician: Vince Mosakowski

Report Distribution:  
(1) ED BELL CONSTRUCTION

MAXIM TECHNOLOGIES INC.

  
CME Division

Our letters and reports are for the exclusive use of the client to whom they are addressed and shall not be reproduced except in full without the approval of the testing laboratory. The use of our name must receive our written approval. Our letters and reports apply only to the sample tested and/or inspected, and are not indicative of the quantities of apparently identical or similar products.

# HUITT-ZOLLARS

Huitt-Zollars, Inc. / 3131 McKinney Avenue / Suite 600 / LB 105 / Dallas, Texas 75204-2489 / 214/871-3311 / FAX 214/871-0757

May 11, 1998

Mr. Robert D. Weber  
Ed Bell Construction  
10605 Harry Hines  
P.O. Box 540787  
Dallas, TX 75354-0787

RE: Arapaho Road - Addison, Texas  
Concrete Mix Designs

Dear Mr. Weber:

The concrete mix designs you submitted for the Arapaho Road Project are approved. From your cover letter, it is our understanding that Mix No. 42 will be used for Class C concrete for the retaining wall as well as for the street pavement.

I will mail you original copies of the approval. Please feel free to call if you have any questions.

Sincerely,

**HUITT-ZOLLARS, INC.**

  
Kenneth A. Roberts, P.E.  
Vice President

Copy: Jim Pierce, P.E., Town of Addison

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# ED BELL CONSTRUCTION COMPANY

POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-0787

10805 HARRY HINES BOULEV  
DALLAS, TEXAS 75

## FAX

TO: Ken Roberts

AT: HARRY HINES

FAX NUMBER: 871-0757

FROM: Robert Weber

DATE: 8 May 98

PAGE: 1 OF 13

MESSAGE: Ken

Here are our mix designs for Ampulso Pond. We need approval on the 3600 psi and 4200 psi prior to 12 May 98. Thanks for your help.

Rob.

IF MESSAGE IS UNCLEAR PLEASE CONTACT OUR OFFICE AT  
(214) 358-6581  
THANK YOU!



**ED BELL CONSTRUCTION COMPANY**

POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-0787

10605 HARRY HINES  
DALLAS, TEXAS 75220

May 8, 1998

Mr. James C. Pierce, Jr., P.E.  
Assistant City Engineer  
Town of Addison  
P.O. Box 144  
Addison, Texas 75001

Re: Arapaho Road Reconstruction  
Addison Road to Dallas North Tollway  
Town of Addison

Dear Mr. Pierce:

Enclosed for you review and approval are our concrete batch designs from Lattimore Materials Company for 3000 psi (design # 38), 3600 psi (design # 40), and 4200 psi (design # 42) concrete. In addition to utilizing mix design # 42 to produce CL C concrete, it is our intent to utilize mix design # 42 to produce concrete for the paving on this project. Please inform us of your decision regarding these designs.

If you have any questions regarding this information, don't hesitate to contact our office.

Sincerely,  
Ed Bell Construction Company



Robert D. Weber  
Project Engineer

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556  
 MCKINNEY, TEXAS 75070-0556  
 (972) 569-4646 (972) 221-4646

**Client:** Ed Bell Construction Co. **Date:** 08-May-98

**Project:** Arspaho Road  
 Addison, Texas

**Materials:**  
 Cement: Type 1, ASTM C-150, Texas-LeHigh Cement  
 Flyash: ASTM C-818, Class C, Holnam  
 Coarse Agg.: ASTM C-33, 1"- #4 Lattimore Crushed Stone  
 Fine Agg.: ASTM C-33, Lattimore Concrete Sand  
 Admixtures: ASTM C-494, Sika  
 ASTM C-260, Sika

### 1 Cubic Yard By Weight - S&D

Mix No.	38	40	42
Strength @ 28 Days	3000	3600	4200 / 650 Flex
	Air	Air	Air
Cement, lbs	470	517	584
Fly Ash, lbs	0	0	0
C. Agg., lbs	1850	1850	1850
Sand, lbs	1437	1369	1332
Water, lbs	227	238	237
W/R, oz	18.8	20.7	22.6
AEA, oz	3.1	3.4	3.7
Total Weight	3984	3974	3983
Unit Wt, #CF	147.56	147.19	147.52
W/C Ratio, #/c	0.48	0.46	0.42
Fly Ash, %	0	0	0
Maximum Temp, deg.	95	95	95
Slump, inches	3-5	3-5	3-5
Air, % entrained	5-8	5-8	5-8

\* Admixture dosage subject to adjustment as needed (ASTM C-94, Note 7)

\*\* Air content per recommendations of ASTM C-94.7 (Table 3)

Lattimore Ready Mix guarantees the above mix design will achieve the specified strength when tested and evaluated in accordance with ASTM C-172, C-31, C-39 and C-94 and when the recommended procedures for placement and curing outlined in ACI 308/308R are followed.

In accordance with ASTM C-94, Lattimore Materials Co. requests that copies of all strength tests be forwarded to our Quality Control Department.

GH

- CODE  
 1. APPROVED  
 2. APPROVED AS NOTED (CORRECT AND RESUBMIT)  
 3. APPROVED AS NOTED (CONFIRM-RESUBMITTAL NOT REQUIRED)  
 4. DISAPPROVED (REVISE AND RESUBMIT)

REVIEWER

DATE

ORGANIZATION

APPROVAL DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THESE SUBMITTALS AND FROM RESPONSIBILITY FOR COMPLYING WITH THE REQUIREMENTS OF THIS CONTRACT (EXCEPT AS OTHERWISE PROVIDED UNDER GENERAL REVISIONS PARAGRAPHS 10 SPECIFICATIONS AND DRAWINGS)

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556  
 MCKINNEY, TEXAS 75070-0556  
 (972) 569-4646 (972) 221-4646

CONTRACTOR: Turner Construction Co.  
 MIX NO.: 38  
 PROJECT: North High School  
 Carrollton, Texas

LABORATORY: Maxim Technologies  
 DESIGN STRENGTH: 3000

Date	Slump	Air Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg/3	Range	7-28	Gain
1 08-May-97	2.75	4.0	80	3580	3580	4320	4080	4205		230	1.18	
2 03-Jun-97	4.50	4.4	79	3840	3840	4690	4770	4730		80	1.30	
3 06-Jun-97	4.00	5.3	84	3850	3850	4140		4140	4358	4140	1.08	
4 06-Aug-97	4.00	5.1	83	3240	3240	3680	3730	3705	4192	50	1.14	
5 12-Aug-97	3.50	5.0	80	3340	3340	3730	3990	3880	3902	260	1.16	
6 18-Aug-97	4.50	4.3	89	3100	3100	3900	4090	3995	3853	190	1.29	
7 19-Aug-97	4.75	3.0	84	3230	3230	3930	3850	3880	3915	80	1.20	
8 20-Aug-97	4.50	4.9	82	3180	3180	4020	4000	4010	3965	20	1.26	
9 22-Aug-97	4.00	5.3	91	3700	3700	4620	4700	4660	4187	80	1.28	
10 28-Aug-97	4.00	4.8	88	3220	3220	4730	3850	4290	4320	380	1.33	
11 28-Aug-97	4.00	4.5	94	4020	4020	4070	4520	4295	4415	450	1.07	
12 27-Aug-97	3.50	4.9	89	2950	2950	3650	3960	3806	4130	310	1.28	
13 02-Sep-97	3.00	4.7	90	3350	3350	4490	4590	4525	4208	70	1.35	
14 03-Sep-97	2.50	4.8	88	3530	3530	4190	4300	4245	4192	110	1.20	
15 04-Sep-97	3.50		84	3280	3280	4210	4360	4285	4352	150	1.31	
16 05-Sep-97	3.00	4.4	87	3800	3800	4600	4710	4605	4378	210	1.28	
17 12-Sep-97	3.50	5.1	90	3890	3890	4820	4800	4810	4567	20	1.30	
18 16-Sep-97	3.50	5.3	93	2980	2980	3980	3980	3970	4462	20	1.33	
19 17-Sep-97	3.50	5.3	94	3000	3000	3760	3800	3780	4187	40	1.26	
20 22-Sep-97	4.00	5.3	80	2670	2670	3370	3480	3415	3722	90	1.28	
21 23-Sep-97	3.50	5.1	84	3040	3040	3920	3880	3900	3898	40	1.28	
22 25-Sep-97	3.50	5.3	74	3590	3590	4590	4440	4515	3943	150	1.26	
23 01-Dec-97	4.00	4.2	81	3700	3700	4900	4880	4880	4432	40	1.32	
24 04-Dec-97	4.00	4.9	80	3780	3780	4150	4300	4225	4540	160	1.11	
25 05-Dec-97	3.75	5.4	52	3780	3780	4880	4940	4900	4688	80	1.30	
26 10-Dec-97	3.50	5.4	50	3470	3470	4980	4680	4810	4845	300	1.39	
27 12-Dec-97	2.50	4.8	52	3780	3780	4820	4730	4775	4828	90	1.26	
28 18-Dec-97	4.00	6.0	55	3220	3220	4500	4250	4375	4653	250	1.36	
29 18-Dec-97	3.00	5.8	59	4380	4380	4930	5150	6040	4730	220	1.15	
30 18-Dec-97	3.50	5.0	62	4190	4190	4980	4840	4910	4775	140	1.17	
31 18-Dec-97	4.00	4.5	52	3920	3920	5070	4690	4980	4977	180	1.27	
32 18-Dec-97	4.00	6.0	60	3540	3540	3870	4470	4170	4687	600	1.18	
33 18-Dec-97	4.00	5.5	62	3190	3190	3880	3910	3898	4348	30	1.22	
34 22-Dec-97	4.00	4.8	61	4150	4150	5290	5300	5295	4453	10	1.28	
35 30-Dec-97	4.00	5.9	55	3530	3530	4300	4630	4465	4552	330	1.26	
36 31-Dec-97	3.50	5.3	56	3580	3580	4280	4410	4345	4702	130	1.21	
37 31-Dec-97	4.00	5.7	55	3780	3780	4660	4620	4640	4483	40	1.23	
38 15-Jan-98	4.00	5.9	48	3240	3240	4630	4460	4545	4510	170	1.40	
39 15-Jan-98	4.00	5.4	51	3400	3400	4430	4330	4380	4522	100	1.29	
40 15-Jan-98	3.50	5.7	55	4320	4320	5230	5320	5275	4733	90	1.22	
41 15-Jan-98	4.00	6.2	59	2810	2810	4010	3940	3975	4543	70	1.41	
42 16-Jan-98	4.00	6.4	50	3690	3690	4900	4780	4840	4697	120	1.31	
43 16-Jan-98	3.75	5.7	51	3780	3780	4980	4650	4915	4577	130	1.30	
44 16-Jan-98	4.00	6.1	54	2770	2770	4070	3980	4015	4590	110	1.45	
45 17-Jan-98	3.25	5.5	60	4550	4550	5110	5180	5145	4682	70	1.13	
46 17-Jan-98	4.00	6.0	58	4150	4150	5130	4940	4885	4715	250	1.20	
	3.73	5.2	71		3532			4422		246	1.26	

STD. DEV.

460

ACI 318-5.3.1.2 REQUIREMENTS:

(5.1)  $f_{cr} = f_c + 1.34s$

3617

(5.2)  $f_{cr} = f_c + 2.33s - 500$

3572

# LATTIMORE MATERIALS COMPANY

P.O. BOX 566  
 MCKINNEY, TEXAS 75070-0566  
 (972) 569-4646 (972) 221-4646

CONTRACTOR: C.D. Henderson  
 MIX NO.: 40  
 PROJECT: Alliance Gateway #26 & #27  
 Ft. Worth, Texas

LABORATORY: HBC Engineering  
 DESIGN STRENGTH: 3800

	Date	Slump	Air Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg.±3	Range	Gain	
1	14-Feb-98	5.50	5.8	58	3340	3260	3300	4220	4220	4220	0	1.28	
2	14-Feb-98	6.00	7.0	58	3800	3730	3765	4690	4660	4675	30	1.24	
3	14-Feb-98	5.00	6.6	61	4020	4110	4085	4940	4880	4900	4598	80	1.21
4	14-Feb-98	6.75	6.0	62	2730	2820	2778	3600	3740	3670	4415	140	1.32
5	14-Feb-98	6.00	4.6	61	4050	4130	4090	5140	5060	5100	4657	80	1.25
6	14-Feb-98	5.50	3.8	62	3900	3800	3850	6040	5110	5075	4815	70	1.32
7	21-Feb-98	6.50	4.0	62	3620	3760	3640	5140	5070	5105	5093	70	1.40
8	21-Feb-98	7.50	3.5	62	3960	3740	3800	5160	5220	5190	5123	80	1.37
9	21-Feb-98	6.00	4.2	60	4690	4730	4710	5740	5820	5780	5358	80	1.23
10	21-Feb-98	6.50	3.5	60	4240	4330	4285	5620	5770	5695	5556	160	1.33
11	21-Feb-98	6.50	4.1	61	4370	4220	4295	5370	5450	5410	5628	80	1.26
12	21-Feb-98	6.50	4.2	61	4630	4770	4700	5520	5570	5605	5567	150	1.19
13	21-Feb-98	6.00	3.6	59	4080	4110	4100	5680	5810	5695	5833	30	1.44
14	04-Mar-98	6.00	1.3	61	3810	3770	3790	4840	4970	4905	5488	130	1.29
15	04-Mar-98	6.25	1.5	58	4370	4220	4295	5190	5030	5110	5303	160	1.19
16	04-Mar-98	5.00	2.2	56	3600	3730	3665	4490	4060	4275	4763	430	1.17
17	04-Mar-98	5.25	2.0	62	3690	3550	3620	4600	4560	4595	4690	10	1.27
18	04-Mar-98	6.25	2.5	62	4060	4130	4095	5110	5080	5085	4652	50	1.24
19	06-Mar-98	5.00	1.5	60	4390	4270	4330	5890	5850	5920	5200	140	1.37
20	06-Mar-98	5.00	1.6	60	4560	4720	4636	5890	5860	5770	5592	220	1.24
21	06-Mar-98	5.25	1.8	63	4580	4430	4505	5710	5480	5595	5762	230	1.24
22	06-Mar-98	5.50	1.6	62	4700	4820	4660	5910	6290	6550	5638	520	1.19
23	06-Mar-98	6.00	1.7	60	5070	5160	5115	5890	5870	5775	6540	210	1.13
24	06-Mar-98	6.60	2.0	57	4520	4370	4445	5690	5770	5630	5716	120	1.31
25	13-Mar-98	6.00	2.2	58	4150	4280	4205	5340	5280	5310	5638	60	1.26
26	13-Mar-98	6.50	2.0	55	4190	4080	4140	4480	4410	4445	5185	70	1.07
27	13-Mar-98	7.00	3.0	57	3740	3810	3775	4570	4820	4595	4783	50	1.22
28	13-Mar-98	7.50	2.8	58	3450	3280	3365	4350	4260	4305	4448	90	1.28
29	13-Mar-98	6.50	2.9	59	3970	3820	3895	5100	5210	5155	4885	110	1.32
30	13-Mar-98	6.25	2.9	56	4140	4020	4080	4830	4850	4860	4783	60	1.20
		6.00	3.2	60			4066			5114		123	1.26

STD. DEV.

580

ACI 318-5.3.1.2 REQUIREMENTS:

(5.1)  $f_{cr} = f_c + 1.34s$

4378

(5.2)  $f_{cr} = f_c + 2.33s - 500$

4452

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556  
 MCKINNEY, TEXAS 75070-0556  
 (972) 589-4846 (972) 221-4646

CONTRACTOR: HCB Contractors  
 MIX NO.: 42  
 PROJECT: Fujitsu Project C  
 Richardson, Texas

LABORATORY: HBC Engineering  
 DESIGN STRENGTH: 4200

													7-28
Date	Slump	Air Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg./3	Range	Gain		
1	10-Mar-97	6.00	8.9	68	3220	3170	3195	3990	4200	4095		210	1.28
2	10-Mar-97	5.00	3.6	74	3900	3860	3890	6280	5370	5310		120	1.37
3	11-Mar-97	5.00	4.5	74	3520	3370	3445	4650	5020	4935	4780	170	1.43
4	11-Mar-97	5.00	3.0	70	3510	3690	3750	5130	5210	5170	5158	60	1.38
5	12-Mar-97	4.80	8.1	65	6280	5070	5175	6280	6340	6310	6472	60	1.22
6	17-Mar-97	4.50	3.8	72	4200	4110	4165	5910	5960	5900	5763	160	1.42
7	17-Mar-97	5.00	3.7	72	4190	4080	4135	5420	5500	5460	5690	80	1.32
8	18-Mar-97	4.50	4.6	71	4600	4600	4650	5570	5770	5670	5677	200	1.25
9	18-Mar-97	5.00	3.7	69	4210	4170	4190	5650	5610	5630	5587	40	1.34
10	19-Mar-97	4.50	4.0	52	4300	4180	4230	5390	5490	5440	5580	100	1.29
11	19-Mar-97	5.00	4.3	63	4880	4720	4800	6010	6150	6080	5717	140	1.27
12	19-Mar-97	5.50	4.9	64	4280	4250	4295	6710	5540	5625	5715	170	1.32
13	19-Mar-97	5.00	4.3	64	4280	4140	4210	6010	5820	5915	5873	180	1.40
14	20-Mar-97	5.00	4.3	64	4230	4080	4145	5420	5510	5465	5668	80	1.32
15	21-Mar-97	5.00	3.4	65	4260	4380	4295	5630	5790	5710	5697	160	1.33
16	24-Mar-97	4.50	4.2	78	4330	4140	4235	6350	5520	5435	5537	170	1.28
17	25-Mar-97	4.50	4.0	60	4440	4350	4395	5750	5850	5800	5848	100	1.32
18	26-Mar-97	5.00	3.4	73	4040	3970	4005	4500	4510	4505	5247	10	1.12
19	27-Mar-97	4.00	4.2	74	3710	3570	3690	6060	4800	4930	5078	280	1.34
20	28-Mar-97	5.00	3.4	73	3580		3690	5150	5370	5260	4898	220	1.47
21	31-Mar-97	5.00	4.2	71	4250	4290	4270	5520	5660	5590	5260	140	1.31
22	01-Apr-97	4.00	5.9	66	3910	3830	3870	6000	5200	5100	5317	200	1.32
23	02-Apr-97	4.50	3.5	69	3790	3710	3790	6380	5280	5390	5340	100	1.43
24	03-Apr-97	5.00	4.2	79	4210	4170	4190	5910	5820	5888	5432	90	1.40
25	07-Apr-97	4.50	3.8	73	4110	4070	4090	4790	4850	4815	5337	70	1.18
26	08-Apr-97	5.00	5.0	74	3640	3590	3665	5020	4970	4995	5225	50	1.36
27	09-Apr-97	4.00	4.3	68	4830	4480	4555	5830	5820	5725	5178	160	1.26
28	09-Apr-97	6.00	4.7	69	4120	4080	4100	5890	5280	5475	5398	430	1.34
29	10-Apr-97	4.50	3.9	79	4320	4470	4395	5790	5670	5730	5843	120	1.30
30	14-Apr-97	4.00	3.5	64	4260	4140	4200	5780	5660	5720	5842	120	1.36
31	14-Apr-97	5.00	3.8	75	4080	3990	4025	5720	5890	5805	5752	170	1.44
32	15-Apr-97	4.00	4.0	75	4730	4630	4680	6060	6240	6150	6802	180	1.31
33	15-Apr-97	3.00		74	4870	4790	4830	5920	6010	5955	5873	90	1.23
34	16-Apr-97	4.50	3.4	76	4290	4170	4230	5080	4970	5025	5715	110	1.19
35	17-Apr-97	5.00	3.5	77	3790	3730	3760	5270	5160	5215	5402	110	1.39
36	18-Apr-97	4.50	4.0	73	4580	4270	4415	5920	6060	5990	5410	140	1.36
37	21-Apr-97	5.00	4.4	86	3750	3640	3695	5030	5080	5055	5420	50	1.37
38	21-Apr-97	5.00	4.0	85	3080	3060	3070	3820	4050	3985	6010	130	1.30
39	22-Apr-97	5.00	3.6	76	3630	3690	3760	5780	6440	5810	4883	340	1.49
40	25-Apr-97	4.00		66	5350	5170	5260	5710	5780	5745	5678	70	1.09
41	28-Apr-97	4.00	4.2	71	3160	3090	3080	4080	4260	4165	4965	190	1.35
42	29-Apr-97	6.00	5.1	77	3840	3960	3900	4700	4890	4795	4806	190	1.23
43	30-Apr-97	5.00	4.5	78	4010	3960	3965	6150	4980	5015	4665	270	1.26
44	30-Apr-97	4.50	4.0	78	4200	4220	4210	5350	5230	5290	5033	120	1.28
45	01-May-97	4.00	3.8	77	4810	4870	4740	6510	5530	5520	5275	20	1.16
46	05-May-97	4.00		84	4400	4290	4345	5360	5600	5480	5600	240	1.28
47	06-May-97	4.00	3.8	84	3300	3190	3245	3970	4080	4025	4783	110	1.24
48	07-May-97	4.00	3.8	76	3060	3120	3085	3900	3990	3895	4487	190	1.26
49	12-May-97	5.00	4.0	83	4180	4050	4100	5130	5210	5170	4363	80	1.28
50	13-May-97	5.00	4.0	83	3130	3210	3170	4160	4140	4150	4405	20	1.31
51	15-May-97	4.50	4.9	78	3340	3190	3288	4410	4210	4310	4543	200	1.32
52	16-May-97	4.50	5.0	81	3560	3420	3490	4550	4490	4520	4327	60	1.30
53	02-Jun-97	5.00	4.8	80	4070	4010	4040	5160	5050	5105	4845	110	1.26
54	02-Jun-97	5.00	5.0	80	4170	4190	4180	4780	4770	4775	4800	10	1.14

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556

McKINNEY, TEXAS 75070-0556

(972) 569-4646

(972) 221-4646

CONTRACTOR: HCB Contractors  
 MIX NO.: 42  
 PROJECT: Fujitsu Project C  
 Richardson, Texas

LABORATORY: HCB Engineering  
 DESIGN STRENGTH: 4200

	Date	Slump	Air Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg./3	Range	7-28	
55	02-Jun-97	5.50	4.3	82	4220	4160	4180	5220	5280	5240	5040	40	1.25
56	02-Jun-97	5.00	5.2	82	4290	4280	4275	5150	5030	5090	5035	120	1.19
57	02-Jun-97	5.00	5.0	82	3850	3570	3710	4550	4590	4620	4983	140	1.25
58	02-Jun-97	5.50	5.4	83	3790	3730	3760	4620	4660	4640	4783	40	1.23
59	02-Jun-97	5.80	5.0	84	3830	3550	3590	4570	4540	4555	4605	30	1.27
60	02-Jun-97	5.00	5.2	84	3900	4010	3955	5030	5180	5095	4763	130	1.29
81	02-Jun-97	5.00	3.9	84	3930	4020	3975	4870	5010	4940	4863	140	1.24
62	02-Jun-97	4.50	4.3	84	4410	4430	4420	5260	5170	5215	5083	90	1.18
63	02-Jun-97	5.50	3.6	84	4170	4070	4120	4740	4880	4810	4988	140	1.17
64	02-Jun-97	6.00	4.0	84	4240	4120	4180	5320	5110	5215	5080	210	1.25
65	02-Jun-97	5.00	6.0	85	3440	3070	3285	4350	4440	4395	4807	80	1.35
66	02-Jun-97	5.00	4.0	84	4170	4120	4145	4620	4680	4650	4753	60	1.12
67	11-Jul-97	5.00	4.3	86	3640	3820	3730	5610	5790	5700	5700	180	1.53
68	11-Jul-97	4.00	3.8	86	4330	4300	4315	5550	5850	5750	5725	400	1.33
69	11-Jul-97	5.00	4.0	86	3660	3970	3960	5030	5220	5125	5625	190	1.29
70	11-Jul-97	6.00	5.0	86	3770	3820	3795	5410	5650	5530	5488	240	1.46
71	11-Jul-97	6.00	5.1	89	3580	3610	3595	5060	5290	5175	5277	230	1.44
72	11-Jul-97	6.00	4.9	80	3640	3560	3600	5410	5170	5290	5332	240	1.47
73	11-Jul-97	6.00	5.2	90	4350	4100	4225	5350	5490	5420	5295	140	1.28
74	11-Jul-97	5.80	5.0	90	3760	3850	3805	4540	5010	4775	5162	470	1.25
		4.83	4.3	76			4007			5203		145	1.30

STD. DEV.

558

ACI 318-5.3.1.2 REQUIREMENTS:

(5.1)  $f_{cr} = f_c + 1.34s$ 

4848

(5.2)  $f_{cr} = f_c + 2.33s - 500$ 

5000

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556

MCKINNEY, TEXAS 75070-0556

(972) 589-4646

(972) 221-4646

CONTRACTOR: Turner Construction

MIX NO.: 42

LABORATORY: Maxim Technologies, Inc.

PROJECT: Carrollton/Farmers Branch ISD  
North High School - Carrollton, Texas

DESIGN STRENGTH: 650 Fiac'

\*Center-Point Loading

Date	Slump	Air Temp	7 Day		Avg.	28 Day		Avg.	Avg./3	Range	7-28	
			7 Day	7 Day		28 Day	28 Day				Gain	Gain
1 02-Mar-97	4.75	4.4	82	830	820	865	830	858			55	1.06
2 05-Mar-97	4.00	4.0	85	845	845	900	845	903		115		1.07
3 05-Mar-97	4.75	5.8	82	740	740	780	780	770	843	20		1.04
4 07-Mar-97	3.75	4.7	85	760	760	835	875	855	849	40		1.13
5 07-Mar-97	4.00	5.0	84	710	710	840	895	866	831	55		1.22
6 19-Mar-97	3.25	4.5	80	830	830	892	935	914	879	43		0.98
7 21-Mar-97	4.00	5.9	78	780	780	855	820	838	873	35		1.10
8 27-Mar-97	3.80	4.7	78	755	755	795	825	810	854	30		1.07
9 27-Mar-97		4.9	72	705	705	795	870	833	827	78		1.18
10 09-Apr-97	4.00	5.1	73	770	770	815	765	790	790	50		1.03
11 28-May-97	3.50	4.7	78	786	765	775	680	728	789	86		0.95
12 13-Jun-97	5.00	4.9	87	875	875	755	775	755	761	20		1.13
13 29-Jul-97	5.00	4.0	95	850	850	770	700	735	748	70		1.13
14 31-Jul-97	4.00	4.7	93	845	845	750	685	718	739	66		1.11
15 31-Jul-97	4.00	4.2	92	630	630	765	890	798	750	65		1.27
16 01-Aug-97	4.00	4.9	95	695	695	825	750	786	758	75		1.13
17 12-Aug-97	3.50	4.8	94	705	705	980	885	938	841	105		1.33
18 13-Aug-97	7.50	3.0	91	720	720	750	810	780	835	60		1.08
	4.25	4.7	78		738			816		60		1.11

ATC Associates, Inc.  
11356 Mathis  
Dallas, Texas 75229  
972/556-2204

**PROJECT INSPECTION  
REPORT**

page 1 of 2

PROJECT: Latimore - Aggregate Testing

Job No.: 25-02-96-00559.50e

CLIENT: Latimore Materials

Date: 2/04/98

REMARKS: Sample #634 - 1" Bridgeport Aggregate

**Sieve Analysis  
Test Method (ASTM C-136)**

Sieve Size	% Passing	Specifying Requirement
1 1/2"	100	100
1"	97.5	95-100
1/2"	56.7	25-60
#4	9.9	0-10
#8	0.3	0-5

**Specific Gravity (ASTM C-127)**

Saturated Surface Dry	2.68
Bulk	2.67
Absorption (%)	0.65

**Unit Weight - Dry Rodded (ASTM C-29)**

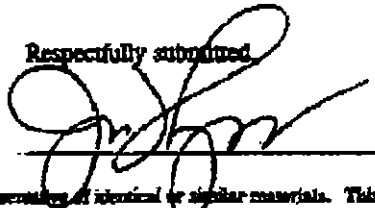
Unit Weight (Pcf) Average of 3	102.4
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**Decant**

% Passing #200 Sieve	0.28
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ATC REPRESENTATIVE: J. Thompson

Respectfully submitted,



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# Hooper Engineering Laboratories, Inc.

## Construction Materials Testing

### REPORT OF ANALYSIS OF CONCRETE AGGREGATES

CLIENT: Lattimore Materials Co.

DATE: 5 November 1997

PROJECT: General Use

SAMPLES: Submitted to Hooper Engineering Laboratories, Inc. on 11/5/97  
by Lattimore Materials Co.

SUPPLIER: Thackerville

#### RETAINED ON SIEVE SIZE

#### NATURAL SAND 0 - #4

#### ASTM C33 REQUIREMENTS

1-1/2"		
1"		
3/4"		
1/2"		
3/8"	0%	0
No. 4	1	0-5
No. 8	9	0-20
No. 16	32	15-50
No. 30	52	40-75
No. 50	83	70-90
No. 100	95	90-98

FINENESS MODULUS

2.72

2.30 to 3.10

SPECIFIC GRAVITY

2.59

FINER THAN NO. 200 SIEVE

3.9%

5.0% Max.

DRY RODDED WEIGHT, PCF

103.7

TECHNICIAN: LS

DISTRIBUTION: (2) Lattimore Materials Co., Curtis Lee



# Sika AEA-15

## Air Entraining Admixture

ISO 9000

### DESCRIPTION

Sika AEA-15 admixture is a liquid solution of concentrated organic materials. It has been formulated and manufactured specifically to provide stable and predictable air contents in concrete, with uniform air bubble spacing throughout the concrete matrix.

Sika AEA-15 meets the requirements of ASTM C-260 for air entraining admixtures and AASHTO M-154.

### APPLICATIONS

Sika AEA-15 can be used whenever air entrained concrete is desired. Ready-mix, precast and block producers can all achieve optimum entrained air contents, even where harsh mixes are used or fly-ash is added to the mix.

### ADVANTAGES

Air entrainment is recognized as the most effective prevention against concrete scaling in exposed environments. Air entrained concrete delivers particular benefits in the form of increased concrete durability. This is important in colder climates where frost and freeze-thaw cycles can cause scaling and damage to the concrete surface.

Air entraining agents help to prevent scaling by creating millions of microscopic airvoids, allowing water trapped in the concrete to expand when the concrete freezes, thus preventing cracks caused by natural expansion. Entrained air voids in the concrete will also increase durability in harsh environments where concrete is exposed to deicing salts, marine salts and sulfates.

Workability and placeability are also improved by the lubricating action of the microscopic bubbles in the concrete. Concrete will flow better, and bleeding and shrinkage will be reduced because less water is needed to obtain the desired workability.

### HOW TO USE

#### DOSEAGE

Addition rates will vary depending on the air content required for a particular project. Typically air contents will be specified in the range of 4 to 8 percent by volume. Other factors that may affect the amount of air entrained into the concrete include, but are not limited to, cement content and type, sand gradation, temperature and water content. Sika recommends that trial mixes be tested whenever material or any other changes are made that may affect the amount of entrained air.

Dosage rates for Sika AEA-15 will typically fall between 1/4 and 1 fl. oz. /100 lbs. (16 - 65 ml/100 kg) of cement to entrain between 4 and 8 percent air. Higher air contents may be obtained by increasing the dosage rate.

Combination with other admixtures, particularly water reducers and retarders, will tend to increase the amount of entrained air in the mix. Air contents should be checked with an air-meter after batching and dosage adjustments made at the concrete plant.

#### MIXING

Measure the required quantity per batch manually or with automatic dispenser equipment. Add Sika AEA-15 to mixing water or sand. Do not mix with dry cement. When used in combination with other

admixtures, care must be taken to dispense each admixture separately into the mix.

#### PACKAGING

Sika AEA-15 is supplied in 55 gallon (208 liter) drums and bulk delivery.

#### STORAGE AND SHELF LIFE

Sika AEA-15 should be stored at above 35°F (2°C). If frozen, thaw and agitate thoroughly to return to its normal state before use.

Shelf life when stored in dry warehouse conditions between 50°F and 80°F (10°C - 27°C) is 1 year minimum.

### CAUTION

Skin and eye irritant; avoid contact. The use of NIOSH/MSHA approved respirator, safety goggles and rubber gloves is recommended. Avoid breathing product. Use with adequate ventilation. Remove contaminated clothing.

#### FIRST AID

Wash skin with soap and water. In case of eye contact, flush with water for 15 minutes; contact a physician. Wash clothing before re-use.

#### CLEAN UP

Contain and collect with absorbent material. Dispose of in accordance with local, state and federal regulations.

<b>ASTM CERTIFICATION</b>	C-260 Air Entraining Admixtures
<b>COLOR</b>	Brown
<b>SPECIFIC GRAVITY<sub>g/ml</sub></b>	1.02 ± 0.02
<b>pH</b>	> 8
<b>CHLORIDES %</b>	< 0.1

## Plastocrete 161

### Water Reducing Admixture (Type A)



#### DESCRIPTION

Plastocrete 161 is a polymer-type water-reducing admixture. Plastocrete 161 contains no chlorides.

Plastocrete 161 meets the requirements of ASTM C-494 Type A and AASHTO M194 Type A.

#### APPLICATIONS

Plastocrete 161 is recommended for use in all applications where high quality concrete with superior workability and normal setting times is required.

#### HOW IT WORKS

Plastocrete 161 water reducing admixture provides an economical and highly effective means of reducing the amount of mixing water required to produce concrete of a certain slump by acting as a dispersant for the cement particles in the mix.

Through this dispersing action more of the surface area of the cement particles is available for early hydration. The more cement particles hydrated by contact with the mixing water, the greater the compressive strength of the concrete.

#### ADVANTAGES

Plastocrete 161 is formulated as a Type A water reducer to allow 7 - 10% water reduction and maximize the benefits of increased hydration in both the hardened and plastic states.

#### BENEFITS

- ▲ Reduced water content required to achieve desired slump, increases compressive and flexural strengths and allows the use of more economical mixes.
- ▲ Improved paste quality makes concrete easier to pump and finish.

▲ Consistent normal setting times throughout the recommended dosage.

▲ Lower water cement ratios provide decreased permeability and increased durability.

**Combination with other Admixtures:**  
Plastocrete 161 works effectively as a single admixture or in combination with other admixtures in the Sika System. When air entrained concrete is specified, Sika recommends the use of Sika air entraining agents.

#### HOW TO USE

##### DOSAGE

Addition rates of 3 - 6 fl. oz./100 lbs. (195 - 390 ml/100 kg) of cement are recommended for general concrete applications where normal setting characteristics are desired.

##### MIXING

Plastocrete 161 is added at the concrete plant. Measure required quantity manually or by automated dispenser. Add into the sand at the weigh hopper or into the water line at the batch plant.

When used in combination with other admixtures, care must be taken to dispense each admixture separately into the mix. Do not mix with dry cement.

#### PACKAGING

Plastocrete 161 is supplied in 55 gallon (208 liter) drums and bulk delivery.

#### STORAGE AND SHELF-LIFE

Plastocrete 161 should be stored at above 35°F (2°C). If frozen, thaw and agitate thoroughly to return to normal state before use.

Shelf life when stored in dry warehouse conditions between 50°F and 80°F (10°C - 27°C) is one year minimum.

#### CAUTION

Skin and eye irritant; avoid contact. The use of NIOSH/MSHA approved respirator, safety goggles and rubber gloves is recommended. Avoid breathing product. Use with adequate ventilation. Remove contaminated clothing.

#### FIRST AID

Wash skin with soap and water. In case of eye contact, flush with water for 15 minutes; contact a physician. Wash clothing before re-use.

#### CLEAN UP

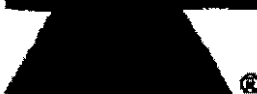
Contain and collect with absorbent material. Dispose of in accordance with local, state and federal regulations.

Physical and Chemical Properties	
<b>ASTM CERTIFICATION</b>	ASTM C-494 Type A
<b>COLOR</b>	Brown
<b>SPECIFIC GRAVITY g/ml</b>	1.17 ± 0.05
<b>pH</b>	>8
<b>CHLORIDES %</b>	<0.1

# Plastiment

## Water Reducing and Retarding Admixture (Types B & D)

ISO 9000



### DESCRIPTION

Plastiment is a water-reducing and retarding admixture. Plastiment contains no calcium chloride or any other intentionally added chlorides.

Plastiment meets the requirements of ASTM C-494 Types B and D and AASHTO M184 Types B and D.

### APPLICATIONS

Plastiment is recommended for use whenever high quality concrete with predictable and controlled set times is desired. Use in flatwork and horizontal or vertical slipform placements where a superior surface finish is required.

### ADVANTAGES

Plastiment is highly effective in hot weather concreting to offset the accelerating effects of high ambient temperatures by controlling the heat of hydration. Concrete workability is enhanced and a superior surface finish is obtained.

### BENEFITS

- ▲ In mass concrete pours Plastiment controls temperature rise and reduces the risk of thermal cracking.
- ▲ Initial set times are delayed, allowing time for proper placement and finishing without cold joints in hot weather conditions.
- ▲ Plastiment increases concrete density and delivers increased early and ultimate, compressive and flexural strengths.

▲ For flatwork applications Plastiment acts as a finishing aid, workability is improved, bleeding is controlled and a superior surface finish is obtained.

▲ Lower water cement ratios provide decreased permeability and increased durability.

**Combination with other Admixtures:** Plastiment works effectively as a single admixture or in combination with other admixtures in the Sika System.

### HOW TO USE

#### DOSAGE

Addition rates of 2 - 4 fl. oz./100 lbs. (130-260 ml/100 kg) cement are recommended for general concrete applications. Where extended retardation is required dosage may be increased. Please contact your local Sika Representative for information and assistance.

#### MIXING

Add Plastiment at the concrete plant. Measure required quantity manually or by automated dispenser. Add into the sand at the weigh hopper or into the water line at the batch plant.

When used in combination with other admixtures, care must be taken to dispense each admixture separately into the mix. Do not mix with dry cement.

### PACKAGING

Plastiment is supplied in 55 gallon (208 liter) drums and bulk delivery.

### STORAGE AND SHELF-LIFE

Plastiment should be stored at above 30°F (-1°C). If frozen, thaw and agitate thoroughly to return to normal state before use.

Shelf life when stored in dry warehouse conditions between 50°F and 80°F (10°C-27°C) is one year minimum.

### CAUTION

Skin and eye irritant; avoid contact. The use of NIOSH/MSHA approved respirator, safety goggles and rubber gloves is recommended. Avoid breathing product. Use with adequate ventilation. Remove contaminated clothing.

### FIRST AID

Wash skin with soap and water. In case of eye contact, flush with water for 15 minutes; contact a physician. Wash clothing before re-use.

### CLEAN UP

Contain and collect with absorbent material. Dispose of in accordance with local, state and federal regulations.

TEST DATA	
<b>ASTM CERTIFICATION</b>	ASTM C-494 Types B and D
<b>COLOR</b>	Yellow/Green
<b>SPECIFIC GRAVITY g/ml</b>	1.16 ± 0.0
<b>pH</b>	> 8
<b>CHLORIDES %</b>	< 0.1

# ED BELL CONSTRUCTION COMPANY

POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-0787

10805 HARRY HINES BOULEV.  
DALLAS, TEXAS 75229

## FAX

TO: Ken Roberts

AT: HEITT TOWERS

FAX NUMBER: 871-0757

FROM: Robert Weber

DATE: 8 Mar 98

PAGE: 1 OF 13

MESSAGE: Ken

Here are our final designs for Ampulso Road. We need approval on the 3600 psi and 4200 psi prior to 12 May 98. Thanks for your help.

Rob.

IF MESSAGE IS UNCLEAR PLEASE CONTACT OUR OFFICE AT  
(214) 358-6581  
THANK YOU!

**ED BELL CONSTRUCTION COMPANY**

POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-0787

10605 HARRY HINES  
DALLAS, TEXAS 75220

May 8, 1998

Mr. James C. Pierce, Jr., P.E.  
Assistant City Engineer  
Town of Addison  
P.O. Box 144  
Addison, Texas 75001

Re: Arapaho Road Reconstruction  
Addison Road to Dallas North Tollway  
Town of Addison

Dear Mr. Pierce:

Enclosed for you review and approval are our concrete batch designs from Lattimore Materials Company for 3000 psi (design # 38), 3600 psi (design # 40), and 4200 psi (design # 42) concrete. In addition to utilizing mix design # 42 to produce CL C concrete, it is our intent to utilize mix design # 42 to produce concrete for the paving on this project. Please inform us of your decision regarding these designs.

If you have any questions regarding this information, don't hesitate to contact our office.

Sincerely,

Ed Bell Construction Company



Robert D. Weber  
Project Engineer

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556  
 MCKINNEY, TEXAS 75070-0556  
 (972) 569-4646 (972) 221-4646

**Client:** Ed Ball Construction Co. **Date:** 08-May-98

**Project:** Arapaho Road  
 Addison, Texas

**Materials:**  
 Cement: Type 1, ASTM C-150, Texas-LeHigh Cement  
 Flyash: ASTM C-818, Class C, Holnam  
 Coarse Agg.: ASTM C-33, 1" #4 Lattimore Crushed Stone  
 Fine Agg.: ASTM C-33, Lattimore Concrete Sand  
 Admixtures: ASTM C-494, Sika  
 ASTM C-260, Sika

**1 Cubic Yard By Weight - \$60**

Mix No.	38	40	42
Strength @ 28 Days	3000	3600	4200 / 650 Flex
	Air	Air	Air
Cement, lbs	470	517	564
Fly Ash, lbs	0	0	0
C. Agg., lbs	1850	1850	1850
Sand, lbs	1437	1369	1332
Water, lbs	227	238	237
W/R, oz	18.8	20.7	22.6
AEA, oz	3.1	3.4	3.7
Total Weight	3984	3974	3983
Unit Wt, #/CF	147.56	147.19	147.52
W/C Ratio, # #	0.48	0.46	0.42
Fly Ash, %	0	0	0
Maximum Temp, deg.	95	95	95
Slump, inches	3-5	3-5	3-5
Air, % entrained	5-8	5-8	5-8

- \* Admixture dosage subject to adjustment as needed (ASTM C-94, Note 7)
- \*\* Air content per recommendations of ASTM C-94.7 (Table 3)

Lattimore Ready Mix guarantees the above mix design will achieve the specified strength when tested and evaluated in accordance with ASTM C-172, C-31, C-39 and C-94 and when the recommended procedures for placement and curing outlined in ACI 308/308 are followed.

In accordance with ASTM C-94, Lattimore Materials Co. requests that copies of all strength tests be forwarded to our Quality Control Department.

GH

CODE

1. APPROVED

2. APPROVED AS NOTED (CORRECT AND RESUBMIT)

3. APPROVED AS NOTED (CONFIRM-RESUBMITTAL NOT REQUIRED)

4. DISAPPROVED (REVISE AND RESUBMIT)

REVIEWER: K. Roloff DATE: 5-11-98

ORGANIZATION: Hitt-Zollars Inc

APPROVAL DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THESE SUBMITTALS AND FROM RESPONSIBILITY FOR COMPLYING WITH THE REQUIREMENTS OF THIS CONTRACT (EXCEPT AS OTHERWISE PROVIDED UNDER GENERAL REVISIONS)

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556  
 MCKINNEY, TEXAS 75070-0556  
 (972) 569-4646 (972) 221-4646

CONTRACTOR: Turner Construction Co.  
 MIX NO.: 38  
 PROJECT: North High School  
 Carrollton, Texas

LABORATORY: Maxim Technologies  
 DESIGN STRENGTH: 3000

Date	Slump	Air Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg./3	Range	7-28	Gain
1 08-May-97	2.75	4.0	80	3580	3580	4320	4050	4205		230	1.18	
2 03-Jun-97	4.50	4.4	78	3840	3840	4680	4770	4730		80	1.30	
3 08-Jun-97	4.00	5.3	84	3850	3850	4140		4140	4358	4140	1.08	
4 06-Aug-97	4.00	5.1	93	3240	3240	3680	3730	3705	4192	50	1.14	
5 12-Aug-97	3.50	5.0	90	3340	3340	3730	3890	3890	3902	260	1.16	
6 18-Aug-97	4.50	4.3	89	3100	3100	3900	4090	3995	3853	190	1.29	
7 19-Aug-97	4.75	3.0	84	3230	3230	3930	3850	3890	3915	80	1.20	
8 20-Aug-97	4.50	4.9	92	3180	3180	4020	4000	4010	3985	20	1.26	
9 22-Aug-97	4.00	5.3	91	3700	3700	4620	4700	4660	4187	80	1.28	
10 25-Aug-97	4.00	4.8	88	3220	3220	4730	3850	4290	4320	880	1.33	
11 26-Aug-97	4.00	4.6	94	4020	4020	4070	4520	4295	4415	450	1.07	
12 27-Aug-97	3.50	4.9	89	2950	2950	3650	3960	3805	4130	310	1.29	
13 02-Sep-97	3.00	4.7	90	3350	3350	4490	4560	4525	4208	70	1.35	
14 03-Sep-97	2.50	4.8	88	3530	3530	4190	4300	4245	4192	110	1.20	
15 04-Sep-97	3.50		84	3260	3260	4210	4360	4285	4352	150	1.31	
16 06-Sep-97	3.00	4.4	87	3600	3600	4600	4710	4605	4378	210	1.28	
17 12-Sep-97	3.50	5.1	90	3690	3690	4820	4800	4910	4587	20	1.30	
18 16-Sep-97	3.50	5.3	93	2980	2980	3960	3980	3970	4462	20	1.33	
19 17-Sep-97	3.50	5.3	94	3000	3000	3760	3800	3760	4187	40	1.28	
20 22-Sep-97	4.00	5.3	80	2670	2670	3370	3480	3415	3722	90	1.28	
21 23-Sep-97	3.50	5.1	84	3040	3040	3920	3880	3900	3898	40	1.28	
22 25-Sep-97	3.50	5.3	74	3590	3590	4590	4440	4515	3843	150	1.26	
23 01-Dec-97	4.00	4.2	61	3700	3700	4900	4860	4880	4432	40	1.32	
24 04-Dec-97	4.00	4.9	50	3790	3790	4150	4300	4225	4540	150	1.11	
25 05-Dec-97	3.75	5.4	52	3780	3780	4860	4940	4900	4868	80	1.30	
26 10-Dec-97	3.50	5.4	50	3470	3470	4980	4680	4810	4845	300	1.39	
27 12-Dec-97	2.50	4.8	52	3780	3780	4820	4730	4775	4828	90	1.26	
28 16-Dec-97	4.00	6.0	55	3220	3220	4500	4250	4375	4683	250	1.36	
29 16-Dec-97	3.00	5.8	59	4380	4380	4930	5150	5040	4730	220	1.15	
30 16-Dec-97	3.50	5.0	62	4190	4190	4980	4840	4910	4775	140	1.17	
31 18-Dec-97	4.00	4.5	52	3930	3930	5070	4690	4980	4977	180	1.27	
32 18-Dec-97	4.00	5.0	60	3540	3540	3870	4470	4170	4697	600	1.18	
33 18-Dec-97	4.00	5.5	62	3190	3190	3880	3610	3895	4348	30	1.22	
34 22-Dec-97	4.00	4.8	61	4150	4150	5290	5300	5295	4453	10	1.28	
35 30-Dec-97	4.00	5.9	55	3530	3530	4300	4630	4465	4582	330	1.26	
36 31-Dec-97	3.50	5.3	58	3580	3580	4280	4410	4345	4702	130	1.21	
37 31-Dec-97	4.00	5.7	55	3780	3780	4680	4620	4840	4483	40	1.23	
38 15-Jan-98	4.00	5.9	48	3240	3240	4630	4460	4548	4510	170	1.40	
39 15-Jan-98	4.00	5.4	51	3400	3400	4430	4330	4380	4522	100	1.29	
40 15-Jan-98	3.50	5.7	55	4320	4320	5230	5320	5275	4733	90	1.22	
41 15-Jan-98	4.00	6.2	58	2810	2810	4010	3940	3975	4543	70	1.41	
42 16-Jan-98	4.00	6.4	50	3690	3690	4900	4780	4840	4697	120	1.31	
43 16-Jan-98	3.75	5.7	51	3780	3780	4980	4850	4915	4577	130	1.30	
44 16-Jan-98	4.00	6.1	54	2770	2770	4070	3960	4015	4590	110	1.45	
45 17-Jan-98	3.25	5.5	60	4550	4550	5110	5180	5145	4692	70	1.13	
46 17-Jan-98	4.00	6.0	58	4150	4150	5130	4940	4985	4715	290	1.20	
	3.73	5.2	71		3532			4422		248	1.26	

STD. DEV.

460

ACI 318-5.3.1.2 REQUIREMENTS:

(5.1)  $f_{cr} = f_c + 1.34s$

(5.2)  $f_{cr} = f_c + 2.33s - 500$

3917

3572



# LATTIMORE MATERIALS COMPANY

P.O. BOX 556  
 MCKINNEY, TEXAS 75070-0556  
 (972) 569-4646 (972) 221-4646

CONTRACTOR: C.D. Henderson  
 MIX NO.: 40  
 PROJECT: Alliance Gateway #26 & #27  
 Ft. Worth, Texas

LABORATORY: HBC Engineering  
 DESIGN STRENGTH: 3800

	Date	Slump	Air Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg./S	Range	Gain	
1	14-Feb-98	5.50	5.8	58	3340	3280	3300	4220	4220	4220	0	1.28	
2	14-Feb-98	6.00	7.0	58	3800	3730	3765	4690	4660	4675	30	1.24	
3	14-Feb-98	5.00	5.8	61	4020	4110	4065	4840	4880	4900	80	1.21	
4	14-Feb-98	5.75	6.0	62	2730	2820	2775	3600	3740	3670	140	1.32	
5	14-Feb-98	5.00	4.6	61	4050	4130	4090	5140	5060	5100	80	1.25	
6	14-Feb-98	5.50	3.8	62	3900	3800	3850	6040	5110	5075	70	1.32	
7	21-Feb-98	6.50	4.0	62	3620	3760	3640	5140	5070	5105	60	1.40	
8	21-Feb-98	7.50	3.5	62	3660	3740	3800	5160	5220	5190	80	1.37	
9	21-Feb-98	6.00	4.2	60	4680	4730	4710	5740	5820	5780	80	1.23	
10	21-Feb-98	6.50	3.5	60	4240	4330	4285	5620	5770	5695	150	1.33	
11	21-Feb-98	6.50	4.1	61	4370	4220	4295	5370	5450	5410	80	1.28	
12	21-Feb-98	6.50	4.2	61	4630	4770	4700	5520	5670	5695	150	1.19	
13	21-Feb-98	6.00	3.6	59	4080	4110	4100	5880	5810	5895	30	1.44	
14	04-Mar-98	6.00	1.3	61	3810	3770	3790	4840	4970	4905	130	1.29	
15	04-Mar-98	6.25	1.5	58	4370	4220	4295	5190	5030	5110	160	1.19	
16	04-Mar-98	6.00	2.2	56	3600	3730	3665	4490	4050	4275	430	1.17	
17	04-Mar-98	5.25	2.0	62	3690	3550	3620	4600	4580	4595	10	1.27	
18	04-Mar-98	6.25	2.5	62	4060	4130	4095	5110	5080	5085	50	1.24	
19	06-Mar-98	5.00	1.5	60	4380	4270	4320	5890	5850	5920	140	1.37	
20	06-Mar-98	5.00	1.8	60	4550	4720	4635	5880	5880	5770	220	1.24	
21	06-Mar-98	5.25	1.8	63	4580	4430	4505	5710	5480	5595	230	1.24	
22	06-Mar-98	5.50	1.6	62	4700	4820	4680	5810	5290	5550	520	1.19	
23	06-Mar-98	6.00	1.7	60	5070	5160	5115	5890	5870	5775	640	1.13	
24	06-Mar-98	6.60	2.0	57	4620	4370	4445	5890	5770	5830	5716	120	1.31
25	13-Mar-98	6.00	2.2	58	4150	4280	4208	5340	5280	5310	5638	60	1.28
26	13-Mar-98	6.50	2.0	56	4190	4080	4140	4480	4410	4445	5185	70	1.07
27	13-Mar-98	7.00	3.0	57	3740	3810	3775	4570	4820	4595	4783	50	1.22
28	13-Mar-98	7.50	2.8	58	3450	3280	3365	4350	4250	4305	4448	90	1.28
29	13-Mar-98	6.50	2.9	59	3970	3820	3895	5100	5210	5155	4855	110	1.32
30	13-Mar-98	6.25	2.9	58	4140	4020	4080	4930	4850	4890	4783	60	1.20
		6.00	3.2	60			4098			5114	123	1.26	

STD. DEV.

580

ACI 318-5.3.1.2 REQUIREMENTS:

(5.1)  $f_{cr} = f_c + 1.34s$

4376

(5.2)  $f_{cr} = f_c + 2.33s - 500$

4452

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556

McKINNEY, TEXAS 75070-0556

(972) 569-4646

(972) 221-4646

CONTRACTOR: HCB Contractors  
 MIX NO.: 42  
 PROJECT: Fujitsu Project C  
 Richardson, Texas

LABORATORY: HBC Engineering  
 DESIGN STRENGTH: 4200

													7-28
Date	Slump	Air Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg./3	Range	Gain		
1	10-Mar-97	5.00	5.9	68	3220	3170	3195	3890	4200	4095		210	1.28
2	10-Mar-97	5.00	3.6	74	3900	3860	3880	8280	5370	5310		120	1.37
3	11-Mar-97	5.00	4.5	74	3520	3370	3445	4850	5020	4935	4780	170	1.43
4	11-Mar-97	5.00	3.0	70	3610	3690	3750	5130	5210	5170	5198	80	1.38
5	12-Mar-97	4.50	6.1	65	5280	5070	5175	6280	6340	6310	6472	60	1.22
6	17-Mar-97	4.50	3.8	72	4200	4110	4155	5810	5960	5900	5763	180	1.42
7	17-Mar-97	5.00	3.7	72	4190	4080	4135	5420	5500	5460	5890	80	1.32
8	18-Mar-97	4.50	4.6	71	4600	4500	4550	5670	5770	5670	5677	200	1.25
9	18-Mar-97	5.00	3.7	69	4210	4170	4190	5650	5610	5630	5587	40	1.34
10	19-Mar-97	4.50	4.0	52	4300	4160	4230	5390	5490	5440	5590	100	1.29
11	19-Mar-97	5.00	4.3	53	4860	4720	4800	6010	6160	6080	5717	140	1.27
12	19-Mar-97	5.50	4.9	54	4280	4250	4265	5710	5640	5625	5716	170	1.32
13	19-Mar-97	5.00	4.3	64	4280	4140	4210	6010	5820	5915	5873	190	1.40
14	20-Mar-97	5.00	4.3	64	4230	4080	4145	5420	5510	5465	5668	90	1.32
15	21-Mar-97	5.00	3.4	85	4260	4330	4295	3630	5790	5710	5667	160	1.33
16	24-Mar-97	4.50	4.2	78	4330	4140	4235	6350	5520	5436	5537	170	1.28
17	25-Mar-97	4.50	4.0	60	4440	4350	4395	5750	5860	5800	5848	100	1.32
18	26-Mar-97	5.00	3.4	73	4040	3970	4005	4500	4510	4505	5247	10	1.12
19	27-Mar-97	4.00	4.2	74	3710	3670	3690	6060	4800	4930	5078	280	1.34
20	28-Mar-97	5.00	3.4	73	3680		3680	5150	5370	5260	4898	220	1.47
21	31-Mar-97	5.00	4.2	71	4250	4290	4270	5520	5660	5590	5260	140	1.31
22	01-Apr-97	4.00	5.9	68	3910	3830	3870	8000	5200	5100	5317	200	1.32
23	02-Apr-97	4.50	3.5	69	3750	3710	3790	6380	5280	5390	6340	100	1.43
24	03-Apr-97	5.00	4.2	79	4210	4170	4190	5910	5820	5868	6432	90	1.40
25	07-Apr-97	4.50	3.6	73	4110	4070	4090	4780	4850	4818	5337	70	1.18
26	08-Apr-97	5.00	5.0	74	3640	3590	3665	5020	4970	4995	6225	50	1.36
27	08-Apr-97	4.00	4.3	68	4830	4480	4556	5830	5820	5725	5178	160	1.26
28	09-Apr-97	5.00	4.7	69	4120	4080	4100	5890	5280	5475	5398	430	1.34
29	10-Apr-97	4.50	3.9	78	4320	4470	4395	5790	5670	5730	5643	120	1.30
30	14-Apr-97	4.00	3.5	84	4260	4140	4200	5780	5660	5720	5942	120	1.36
31	14-Apr-97	5.00	3.8	75	4060	3990	4025	5720	5890	5805	5752	170	1.44
32	15-Apr-97	4.00	4.0	78	4730	4820	4680	6060	6240	6150	5882	180	1.31
33	15-Apr-97	3.00		74	4870	4790	4830	8920	6010	5955	6973	90	1.23
34	16-Apr-97	4.50	3.4	76	4290	4170	4230	6080	4970	5025	5715	110	1.19
35	17-Apr-97	5.00	3.5	77	3790	3730	3780	5270	5160	5215	5402	110	1.39
36	18-Apr-97	4.50	4.0	73	4580	4270	4415	5920	6060	5990	5410	140	1.36
37	21-Apr-97	5.00	4.4	86	3750	3640	3695	5030	5080	5055	5420	50	1.37
38	21-Apr-97	5.00	4.0	85	3080	3060	3070	3920	4050	3985	6010	130	1.30
39	22-Apr-97	5.00	3.6	75	3830	3690	3760	5760	6440	5910	4883	340	1.49
40	25-Apr-97	4.00		66	5350	5170	5260	5710	5780	5745	5678	70	1.09
41	28-Apr-97	4.00	4.2	71	3180	3000	3080	4080	4280	4168	4965	190	1.35
42	29-Apr-97	6.00	5.1	77	3840	3990	3900	4700	4890	4795	4908	160	1.23
43	30-Apr-97	5.00	4.5	78	4010	3960	3965	5150	4880	5015	4865	270	1.26
44	30-Apr-97	4.50	4.0	78	4200	4220	4210	5350	5230	5290	5033	120	1.28
45	01-May-97	4.00	3.8	77	4810	4670	4740	5610	5530	5520	5275	20	1.16
46	05-May-97	4.00		84	4400	4290	4345	5360	5600	5480	5500	240	1.28
47	06-May-97	4.00	3.8	84	3300	3190	3245	3970	4080	4025	4783	110	1.24
48	07-May-97	4.00	3.8	76	3050	3120	3085	3800	3890	3895	4487	180	1.26
49	12-May-97	5.00	4.0	83	4180	4050	4100	5130	5210	5170	4363	80	1.28
50	13-May-97	5.00	4.0	83	3130	3210	3170	4160	4140	4150	4405	20	1.31
51	15-May-97	4.50	4.9	78	3340	3190	3285	4410	4210	4310	4543	200	1.32
52	16-May-97	4.50	5.0	81	3560	3420	3490	4550	4490	4520	4327	60	1.30
53	02-Jun-97	5.00	4.8	80	4070	4010	4040	5180	5050	5105	4846	110	1.26
54	02-Jun-97	5.00	5.0	80	4170	4190	4180	4780	4770	4775	4800	10	1.14

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556  
 MCKINNEY, TEXAS 75070-0556  
 (972) 569-4646 (972) 221-4646

CONTRACTOR: HCB Contractors  
 MIX NO.: 42  
 PROJECT: Fujitsu Project C  
 Richardson, Texas

LABORATORY: HBC Engineering  
 DESIGN STRENGTH: 4200

	Date	Slump	Air Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg./S	Range	7-28	Gain
55	02-Jun-97	5.60	4.3	82	4220	4160	4180	5220	5280	5240	5040	40	1.25
56	02-Jun-97	5.00	5.2	82	4290	4280	4275	5150	5030	5090	5035	120	1.18
57	02-Jun-97	5.00	5.0	82	3850	3570	3710	4650	4690	4620	4983	140	1.25
58	02-Jun-97	5.50	5.4	83	3790	3730	3760	4620	4690	4640	4783	40	1.23
59	02-Jun-97	5.50	5.0	84	3630	3550	3590	4570	4540	4555	4605	30	1.27
60	02-Jun-97	5.00	5.2	84	3600	4010	3955	5030	5180	5095	4763	130	1.29
61	02-Jun-97	5.00	3.9	84	3630	4020	3975	4870	5010	4940	4893	140	1.24
62	02-Jun-97	4.50	4.3	84	4410	4430	4420	5260	5170	5215	5083	90	1.18
63	02-Jun-97	5.50	3.5	84	4170	4070	4120	4740	4890	4810	4988	140	1.17
64	02-Jun-97	6.00	4.0	84	4240	4120	4180	5320	5110	5215	5080	210	1.25
65	02-Jun-97	5.00	5.0	85	3440	3070	3255	4350	4440	4395	4807	80	1.35
66	02-Jun-97	5.00	4.0	84	4170	4120	4145	4820	4680	4850	4753	80	1.12
67	11-Jul-97	5.00	4.3	88	3640	3620	3730	5610	5790	5700	5700	180	1.53
68	11-Jul-97	4.00	3.8	88	4330	4300	4315	5550	5950	5750	5725	400	1.33
69	11-Jul-97	5.00	4.0	86	3950	3970	3980	5030	5220	5125	5525	190	1.29
70	11-Jul-97	6.00	5.0	86	3770	3820	3795	5410	5650	5530	5458	240	1.46
71	11-Jul-97	6.00	5.1	89	3580	3610	3595	5060	5280	5175	5277	230	1.44
72	11-Jul-97	6.00	4.9	80	3640	3580	3600	5410	5170	5290	5332	240	1.47
73	11-Jul-97	5.00	5.2	90	4350	4100	4225	5350	5480	5420	5295	140	1.28
74	11-Jul-97	5.60	5.0	90	3760	3860	3805	4540	5010	4775	5182	470	1.25
		4.83	4.3	78			4007			5203		148	1.30

STD. DEV.

558

ACI 318-5.3.1.2 REQUIREMENTS:

(5.1)  $f_{cr} = f_c + 1.34s$

4848

(5.2)  $f_{cr} = f_c + 2.33s - 500$

5000

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556  
 MCKINNEY, TEXAS 75070-0556  
 (972) 569-4646 (972) 221-4646

CONTRACTOR: Turner Construction

MIX NO.: 42

PROJECT: Carrollton/Farmers Branch ISD  
 North High School - Carrollton, Texas

LABORATORY: Maxim Technologies, Inc.

DESIGN STRENGTH: 650 Flex\*  
 \*Center-Point Loading

Date	Slump	Air Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg./3	Range	7-28	Gain
1 05-Mar-97	4.75	4.4	82	820	820	885	830	858			55	1.05
2 05-Mar-97	4.00	4.0	85	845	845	980	845	903			115	1.07
3 05-Mar-97	4.75	5.8	82	740	740	780	780	770	843	20	1.04	
4 07-Mar-97	3.75	4.7	85	760	760	835	875	855	843	40	1.13	
5 07-Mar-97	4.00	5.0	84	710	710	840	895	868	831	55	1.22	
6 10-Mar-97	3.25	4.5	80	830	830	892	935	914	878	43	0.98	
7 21-Mar-97	4.00	5.9	78	780	780	855	820	838	873	35	1.10	
8 27-Mar-97	3.80	4.7	78	755	755	795	825	810	854	30	1.07	
9 27-Mar-97		4.9	72	705	705	795	870	833	827	78	1.18	
10 09-Apr-97	4.00	5.1	73	770	770	815	785	790	790	50	1.03	
11 29-May-97	3.50	4.7	76	785	785	775	680	728	789	86	0.95	
12 13-Jun-97	5.00	4.9	87	875	875	755	775	765	781	20	1.13	
13 29-Jul-97	5.00	4.0	96	850	850	770	700	735	748	70	1.13	
14 31-Jul-97	4.00	4.7	83	845	845	750	685	718	739	66	1.11	
15 31-Jul-97	4.00	4.2	82	830	830	765	830	798	750	85	1.27	
16 01-Aug-97	4.00	4.9	86	895	895	825	750	788	768	75	1.13	
17 12-Aug-97	3.50	4.8	84	705	705	990	885	938	841	105	1.33	
18 13-Aug-97	7.50	3.0	81	720	720	750	810	780	835	60	1.08	
	4.25	4.7	78		738			816		80	1.11	

ATC Associates, Inc.  
 11356 Mathis  
 Dallas, Texas 75229  
 972/556-2204

**PROJECT INSPECTION  
 REPORT**

page 1 of 2

PROJECT: Lantimore - Aggregate Testing

Job No.: 25-02-96-00559.50e

CLIENT: Lantimore Materials

Date: 2/04/98

REMARKS: Sample #634 - 1" Bridgeport Aggregate

**Sieve Analysis  
 Test Method (ASTM C-136)**

Sieve Size	Percent Retained	Percent Passing
1 1/2"	100	100
1"	97.5	95-100
1/2"	56.7	25-60
#4	9.9	0-10
#8	0.3	0-5

**Specific Gravity (ASTM C-127)**

Saturated Surface Dry	2.68
Bulk	2.67
Absorption (%)	0.65

**Unit Weight - Dry Rodded (ASTM C-29)**

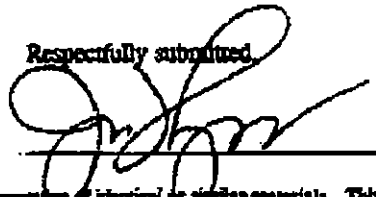
Unit Weight (Pcf) Average of 3	102.4
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**Density**

% Passing #200 Sieve	0.28
----------------------	------

ATC REPRESENTATIVE: J. Thompson

Respectfully submitted,



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# Hooper Engineering Laboratories, Inc.

## Construction Materials Testing

### REPORT OF ANALYSIS OF CONCRETE AGGREGATES

CLIENT: Lattimore Materials Co.

DATE: 5 November 1997

PROJECT: General Use

SAMPLES: Submitted to Hooper Engineering Laboratories, Inc. on 11/5/97  
by Lattimore Materials Co.

SUPPLIER: Thackerville

RETAINED ON SIEVE SIZE	NATURAL SAND 0 - #4	ASTM C33 REQUIREMENTS
1-1/2"		
1"		
3/4"		
1/2"		
3/8"	0%	0
No. 4	1	0 - 5
No. 8	9	0 - 20
No. 16	32	15 - 50
No. 30	52	40 - 75
No. 50	63	70 - 90
No. 100	85	90 - 98
FINENESS MODULUS	2.72	2.30 to 3.10
SPECIFIC GRAVITY	2.59	
FINER THAN NO. 200 SIEVE DRY RODDED WEIGHT, PCF	3.9%	5.0% Max.
	103.7	

TECHNICIAN: LS

DISTRIBUTION: (2) Lattimore Materials Co., Curtis Lee



## Sika AEA-15

## Air Entraining Admixture

ISO 9000

®

**DESCRIPTION**

Sika AEA-15 admixture is a liquid solution of concentrated organic materials. It has been formulated and manufactured specifically to provide stable and predictable air contents in concrete, with uniform air bubble spacing throughout the concrete matrix.

Sika AEA-15 meets the requirements of ASTM C-260 for air entraining admixtures and AASHTO M-154.

**APPLICATIONS**

Sika AEA-15 can be used whenever air entrained concrete is desired. Ready-mix, precast and block producers can all achieve optimum entrained air contents, even where harsh mixes are used or fly-ash is added to the mix.

**ADVANTAGES**

Air entrainment is recognized as the most effective prevention against concrete scaling in exposed environments. Air entrained concrete delivers particular benefits in the form of increased concrete durability. This is important in colder climates where frost and freeze-thaw cycles can cause scaling and damage to the concrete surface.

Air entraining agents help to prevent scaling by creating millions of microscopic airvoids, allowing water trapped in the concrete to expand when the concrete freezes, thus preventing cracks caused by natural expansion. Entrained air voids in the concrete will also increase durability in harsh environments where concrete is exposed to deicing salts, marine salts and sulfates.

Workability and placeability are also improved by the lubricating action of the microscopic bubbles in the concrete. Concrete will flow better, and bleeding and shrinkage will be reduced because less water is needed to obtain the desired workability.

**HOW TO USE****DOSEAGE**

Addition rates will vary depending on the air content required for a particular project. Typically air contents will be specified in the range of 4 to 8 percent by volume. Other factors that may affect the amount of air entrained into the concrete include, but are not limited to, cement content and type, sand gradation, temperature and water content. Sika recommends that trial mixes be tested whenever material or any other changes are made that may affect the amount of entrained air.

Dosage rates for Sika AEA-15 will typically fall between 1/4 and 1 fl. oz. /100 lbs. (16 - 86 ml/100 kg) of cement to entrain between 4 and 8 percent air. Higher air contents may be obtained by increasing the dosage rate.

Combination with other admixtures, particularly water reducers and retarders, will tend to increase the amount of entrained air in the mix. Air contents should be checked with an air-meter after batching and dosage adjustments made at the concrete plant.

**MIXING**

Measure the required quantity per batch manually or with automatic dispenser equipment. Add Sika AEA-15 to mixing water or sand. Do not mix with dry cement. When used in combination with other

admixtures, care must be taken to dispense each admixture separately into the mix.

**PACKAGING**

Sika AEA-15 is supplied in 55 gallon (208 liter) drums and bulk delivery.

**STORAGE AND SHELF LIFE**

Sika AEA-15 should be stored at above 35°F (2°C). If frozen, thaw and agitate thoroughly to return to its normal state before use.

Shelf life when stored in dry warehouse conditions between 50°F and 80°F (10°C - 27°C) is 1 year minimum.

**CAUTION**

Skin and eye irritant; avoid contact. The use of NIOSH/MSHA approved respirator, safety goggles and rubber gloves is recommended. Avoid breathing product. Use with adequate ventilation. Remove contaminated clothing.

**FIRST AID**

Wash skin with soap and water. In case of eye contact, flush with water for 15 minutes; contact a physician. Wash clothing before re-use.

**CLEAN UP**

Contain and collect with absorbent material. Dispose of in accordance with local, state and federal regulations.

TECHNICAL DATA FOR Sika AEA-15	
<b>ASTM CERTIFICATION</b>	C-260 Air Entraining Admixtures
<b>COLOR</b>	Brown
<b>SPECIFIC GRAVITY<sub>g/ml</sub></b>	1.02 ± 0.02
<b>pH</b>	> 8
<b>CHLORIDES %</b>	< 0.1

## Water Reducing Admixture (Type A)

150 9000

### DESCRIPTION

Plastocrete 161 is a polymer-type water-reducing admixture. Plastocrete 161 contains no chlorides.

Plastocrete 161 meets the requirements of ASTM C-494 Type A and AASHTO M194 Type A.

### APPLICATIONS

Plastocrete 161 is recommended for use in all applications where high quality concrete with superior workability and normal setting times is required.

### HOW IT WORKS

Plastocrete 161 water reducing admixture provides an economical and highly effective means of reducing the amount of mixing water required to produce concrete of a certain slump by acting as a dispersant for the cement particles in the mix.

Through this dispersing action more of the surface area of the cement particles is available for early hydration. The more cement particles hydrated by contact with the mixing water, the greater the compressive strength of the concrete.

### ADVANTAGES

Plastocrete 161 is formulated as a Type A water reducer to allow 7 - 10% water reduction and maximize the benefits of increased hydration in both the hardened and plastic states.

### BENEFITS

- ▲ Reduced water content required to achieve desired slump, increases compressive and flexural strengths and allows the use of more economical mixes.
- ▲ Improved paste quality makes concrete easier to pump and finish.

▲ Consistent normal setting times throughout the recommended dosage.

▲ Lower water cement ratios provide decreased permeability and increased durability.

**Combination with other Admixtures:** Plastocrete 161 works effectively as a single admixture or in combination with other admixtures in the Sika System. When air entrained concrete is specified, Sika recommends the use of Sika air entraining agents.

### HOW TO USE

#### DOSEAGE

Addition rates of 2 - 6 fl. oz./100 lbs. (95 - 390 ml/100 kg) of cement are recommended for general concrete applications where normal setting characteristics are desired.

#### MIXING

Plastocrete 161 is added at the concrete plant. Measures required quantity manually or by automated dispenser. Add into the sand at the weigh hopper or into the water line at the batch plant.

When used in combination with other admixtures, care must be taken to dispense each admixture separately into the mix. Do not mix with dry cement.

### PACKAGING

Plastocrete 161 is supplied in 55 gallon (208 liter) drums and bulk delivery.

### STORAGE AND SHELF-LIFE

Plastocrete 161 should be stored at above 35°F (2°C). If frozen, thaw and agitate thoroughly to return to normal state before use.

Shelf life when stored in dry warehouse conditions between 50°F and 80°F (10°C-27°C) is one year minimum.

### CAUTION

Skin and eye irritant; avoid contact. The use of NIOSH/MSHA approved respirator, safety goggles and rubber gloves is recommended. Avoid breathing product. Use with adequate ventilation. Remove contaminated clothing.

### FIRST AID

Wash skin with soap and water. In case of eye contact, flush with water for 15 minutes; contact a physician. Wash clothing before re-use.

### CLEAN UP

Contain and collect with absorbent material. Dispose of in accordance with local, state and federal regulations.

TEST RESULTS	
<b>ASTM CERTIFICATION</b>	ASTM C-494 Type A
<b>COLOR</b>	Brown
<b>SPECIFIC GRAVITY g/ml</b>	1.17 ± 0.05
<b>pH</b>	>8
<b>CHLORIDES %</b>	<0.1



# Plastiment

ISO 9000

## Water Reducing and Retarding Admixture (Types B & D)

### DESCRIPTION

Plastiment is a water-reducing and retarding admixture. Plastiment contains no calcium chloride or any other intentionally added chlorides.

Plastiment meets the requirements of ASTM C-494 Types B and D and AASHTO M194 Types B and D.

### APPLICATIONS

Plastiment is recommended for use whenever high quality concrete with predictable and controlled set times is desired. Use in flatwork and horizontal or vertical slipform placements where a superior surface finish is required.

### ADVANTAGES

Plastiment is highly effective in hot weather concreting to offset the accelerating effects of high ambient temperatures by controlling the heat of hydration. Concrete workability is enhanced and a superior surface finish is obtained.

### BENEFITS

- ▲ In mass concrete pours Plastiment controls temperature rise and reduces the risk of thermal cracking.
- ▲ Initial set times are delayed, allowing time for proper placement and finishing without cold joints in hot weather conditions.
- ▲ Plastiment increases concrete density and delivers increased early and ultimate, compressive and flexural strengths.

▲ For flatwork applications Plastiment acts as a finishing aid, workability is improved, bleeding is controlled and a superior surface finish is obtained.

▲ Lower water cement ratios provide decreased permeability and increased durability.

**Combination with other Admixtures:** Plastiment works effectively as a single admixture or in combination with other admixtures in the Sika System.

### HOW TO USE

#### DOSEAGE

Addition rates of 2 - 4 fl. oz./100 lbs. (130-260 ml/100 kg) cement are recommended for general concrete applications. Where extended retardation is required dosage may be increased. Please contact your local Sika Representative for information and assistance.

#### MIXING

Add Plastiment at the concrete plant. Measure required quantity manually or by automated dispenser. Add into the sand at the weigh hopper or into the water line at the batch plant.

When used in combination with other admixtures, care must be taken to dispense each admixture separately into the mix. Do not mix with dry cement.

### PACKAGING

Plastiment is supplied in 55 gallon (208 liter) drums and bulk delivery.

### STORAGE AND SHELF-LIFE

Plastiment should be stored at above 30°F (-1°C). If frozen, thaw and agitate thoroughly to return to normal state before use.

Shelf life when stored in dry warehouse conditions between 50°F and 80°F (10°C-27°C) is one year minimum.

### CAUTION

Skin and eye irritant; avoid contact. The use of NIOSH/MSHA approved respirator, safety goggles and rubber gloves is recommended. Avoid breathing product. Use with adequate ventilation. Remove contaminated clothing.

### FIRST AID

Wash skin with soap and water. In case of eye contact, flush with water for 15 minutes; contact a physician. Wash clothing before re-use.

### CLEAN UP

Contain and collect with absorbent material. Dispose of in accordance with local, state and federal regulations.

PHYSICAL AND CHEMICAL PROPERTIES	
ASTM CERTIFICATION	ASTM C-494 Types B and D
COLOR	Yellow/Green
SPECIFIC GRAVITY <sub>g/ml</sub>	1.18 ± 0.0
pH	>8
CHLORIDES %	<0.1

# ED BELL CONSTRUCTION COMPANY

POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-0787

10505 HARRY HINES BOULEVARD  
DALLAS, TEXAS 75219

## FAX

TO: JIM PIERCE

AT: ADDISON

FAX NUMBER: (972) 450-2824

FROM: ROBERT WEBER

DATE: 8 May 98

PAGE: 1 OF 13

MESSAGE:

JIM,

Here are our concrete batch designs for Arapahoe. I have faxed a copy to Ken and asked for approval on the 3600psi and 4200psi designs before 12 May 98.

Rob

IF MESSAGE IS UNCLEAR PLEASE CONTACT OUR OFFICE AT  
(214) 358-6581  
THANK YOU!

**ED BELL CONSTRUCTION COMPANY**

POST OFFICE BOX 540787  
DALLAS, TEXAS 75354-0787

10605 HARRY HINES  
DALLAS, TEXAS 75220

May 8, 1998

Mr. James C. Pierce, Jr., P.E.  
Assistant City Engineer  
Town of Addison  
P.O. Box 144  
Addison, Texas 75001

Re: Arapaho Road Reconstruction  
Addison Road to Dallas North Tollway  
Town of Addison

Dear Mr. Pierce:

Enclosed for you review and approval are our concrete batch designs from Lattimore Materials Company for 3000 psi (design # 38), 3600 psi (design # 40), and 4200 psi (design # 42) concrete. In addition to utilizing mix design # 42 to produce CL C concrete, it is our intent to utilize mix design # 42 to produce concrete for the paving on this project. Please inform us of your decision regarding these designs.

If you have any questions regarding this information, don't hesitate to contact our office.

Sincerely,  
Ed Bell Construction Company



Robert D. Weber  
Project Engineer

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556  
McKINNEY, TEXAS 75070-0556  
(972) 569-4646 (972) 221-4646

**Client:** Ed Bell Construction Co. **Date:** 08-May-98

**Project:** Arapaho Road  
Addison, Texas

**Materials:**

Cement: Type 1, ASTM C-150, Texas-LeHigh Cement  
Flyash: ASTM C-618, Class C, Holnam  
Coarse Agg.: ASTM C-33, 1"- #4 Lattimore Crushed Stone  
Fine Agg.: ASTM C-33, Lattimore Concrete Sand  
Admixtures: ASTM C-494, Sika  
ASTM C-260, Sika

### 1 Cubic Yard By Weight - SSD

Mix No.	38	40	42
Strength @ 28 Days	3000	3600	4200 / 650 Flex
	Air	Air	Air
Cement, lbs	470	517	564
Fly Ash, lbs	0	0	0
C. Agg., lbs	1850	1850	1850
Sand, lbs	1437	1369	3182 } 1332
Water, lbs	227	238	237
W/R, oz	18.8	20.7	22.6
AEA, oz	3.1	3.4	3.7
Total Weight	3984	3974	3983
Unit Wt, #/CF	147.56	147.19	147.52
W/C Ratio, # #	0.48	0.46	0.42
Fly Ash, %	0	0	0
Maximum Temp, deg.	95	95	95
Slump, inches	3-5	3-5	3-5
Air, % entrained	5-8	5-8	5-8

\* Admixture dosage subject to adjustment as needed (ASTM C-94, Note 7)

\*\* Air content per recommendations of ASTM C-94.7 (Table 3)

Lattimore Ready Mix guarantees the above mix design will achieve the specified strength when tested and evaluated in accordance with ASTM C-172, C-31, C-39 and C-94 and when the recommended procedures for placement and curing outlined in ACI 305/306 are followed.

In accordance with ASTM C-94, Lattimore Materials Co. requests that copies of all strength tests be forwarded to our Quality Control Department.

GH

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556

McKINNEY, TEXAS 75070-0556

(972) 569-4646

(972) 221-4646

CONTRACTOR: Turner Construction Co.

MIX NO.: 38

PROJECT: North High School  
Carrollton, Texas

LABORATORY: Maxim Technologies

DESIGN STRENGTH: 3000

	Date	Slump	Air	Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg./3	Range	Gain
1	08-May-97	2.75	4.0	80	3580		3560	4320	4090	4205		230	1.18
2	03-Jun-97	4.50	4.4	79	3640		3840	4690	4770	4730		80	1.30
3	06-Jun-97	4.00	5.3	84	3850		3850	4140		4140	4358	4140	1.08
4	06-Aug-97	4.00	5.1	93	3240		3240	3680	3730	3705	4192	50	1.14
5	12-Aug-97	3.50	5.0	90	3340		3340	3730	3990	3880	3902	260	1.16
6	18-Aug-97	4.50	4.3	89	3100		3100	3900	4090	3995	3853	190	1.29
7	19-Aug-97	4.76	3.0	84	3230		3230	3930	3850	3890	3915	80	1.20
8	20-Aug-97	4.50	4.9	92	3180		3180	4020	4000	4010	3985	20	1.26
9	22-Aug-97	4.00	5.3	91	3700		3700	4620	4700	4660	4187	80	1.28
10	26-Aug-97	4.00	4.8	88	3220		3220	4730	3850	4290	4320	880	1.33
11	26-Aug-97	4.00	4.6	94	4020		4020	4070	4520	4295	4415	450	1.07
12	27-Aug-97	3.50	4.9	89	2950		2950	3650	3960	3805	4130	310	1.29
13	02-Sep-97	3.00	4.7	90	3350		3350	4490	4560	4525	4208	70	1.35
14	03-Sep-97	2.50	4.8	89	3530		3530	4190	4300	4245	4192	110	1.20
15	04-Sep-97	3.50		84	3260		3260	4210	4360	4285	4352	150	1.31
16	05-Sep-97	3.00	4.4	87	3600		3600	4500	4710	4605	4378	210	1.28
17	12-Sep-97	3.50	5.1	90	3890		3890	4820	4800	4810	4567	20	1.30
18	16-Sep-97	3.50	5.3	93	2980		2980	3960	3980	3970	4462	20	1.33
19	17-Sep-97	3.50	5.3	94	3000		3000	3760	3800	3780	4187	40	1.26
20	22-Sep-97	4.00	5.3	80	2670		2670	3370	3450	3415	3722	90	1.28
21	23-Sep-97	3.50	5.1	84	3040		3040	3920	3880	3900	3698	40	1.28
22	25-Sep-97	3.50	5.3	74	3590		3590	4590	4440	4515	3943	150	1.26
23	01-Dec-97	4.00	4.2	61	3700		3700	4900	4660	4880	4432	40	1.32
24	04-Dec-97	4.00	4.9	60	3780		3780	4150	4300	4225	4540	150	1.11
25	05-Dec-97	3.75	5.4	52	3780		3780	4860	4940	4800	4668	80	1.30
26	10-Dec-97	3.50	5.4	50	3470		3470	4960	4660	4810	4645	300	1.39
27	12-Dec-97	2.50	4.8	52	3780		3780	4820	4730	4775	4828	90	1.26
28	18-Dec-97	4.00	6.0	55	3220		3220	4500	4250	4375	4653	250	1.36
29	18-Dec-97	3.00	5.8	59	4380		4380	4930	5150	5040	4730	220	1.15
30	18-Dec-97	3.50	5.0	62	4180		4180	4980	4840	4810	4775	140	1.17
31	18-Dec-97	4.00	4.5	52	3930		3930	5070	4890	4980	4977	180	1.27
32	18-Dec-97	4.00	5.0	60	3540		3540	3870	4470	4170	4687	600	1.18
33	18-Dec-97	4.00	5.5	62	3190		3190	3880	3910	3895	4348	30	1.22
34	22-Dec-97	4.00	4.8	61	4150		4150	5290	5300	5295	4453	10	1.28
35	30-Dec-97	4.00	5.9	55	3530		3530	4300	4630	4465	4652	330	1.26
36	31-Dec-97	3.50	5.3	56	3580		3580	4280	4410	4345	4702	130	1.21
37	31-Dec-97	4.00	5.7	55	3780		3780	4860	4820	4640	4483	40	1.23
38	15-Jan-98	4.00	5.9	48	3240		3240	4630	4450	4645	4510	170	1.40
39	15-Jan-98	4.00	5.4	51	3400		3400	4430	4330	4380	4522	100	1.29
40	15-Jan-98	3.50	5.7	55	4320		4320	5230	5320	5275	4733	90	1.22
41	15-Jan-98	4.00	6.2	59	2810		2810	4010	3940	3975	4543	70	1.41
42	16-Jan-98	4.00	6.4	50	3690		3690	4900	4780	4840	4697	120	1.31
43	16-Jan-98	3.75	5.7	51	3780		3780	4980	4850	4915	4577	130	1.30
44	16-Jan-98	4.00	6.1	54	2770		2770	4070	3960	4015	4590	110	1.45
45	17-Jan-98	3.25	5.5	60	4550		4550	5110	5180	5145	4892	70	1.13
46	17-Jan-98	4.00	6.0	56	4150		4150	5130	4840	4985	4715	290	1.20
		3.73	5.2	71			3532			4422		248	1.26

STD. DEV.

460

ACI 318-5.3.1.2 REQUIREMENTS:

(5.1)  $f_{cr} = f_c + 1.34s$ 

3617

(5.2)  $f_{cr} = f_c + 2.33s - 500$ 

3572

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556

McKINNEY, TEXAS 75070-0556

(972) 569-4646

(972) 221-4646

CONTRACTOR: C.D. Henderson

MIX NO.: 40

PROJECT: Alliance Gateway #26 & #27  
Ft. Worth, Texas

LABORATORY: HBC Engineering

DESIGN STRENGTH: 3600

													7-28
Date	Slump	Air	Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg./3	Range	Gain	
1	14-Feb-98	5.50	5.8	58	3340	3280	3300	4220	4220	4220		0	1.28
2	14-Feb-98	6.00	7.0	58	3800	3730	3765	4690	4660	4675		30	1.24
3	14-Feb-98	5.00	5.6	61	4020	4110	4065	4940	4860	4900	4598	80	1.21
4	14-Feb-98	5.75	8.0	62	2730	2820	2775	3800	3740	3670	4415	140	1.32
5	14-Feb-98	6.00	4.6	61	4050	4130	4090	5140	5060	5100	4657	80	1.26
6	14-Feb-98	5.50	3.8	62	3900	3800	3850	5040	5110	5075	4615	70	1.32
7	21-Feb-98	6.60	4.0	62	3520	3760	3640	5140	5070	5105	5093	70	1.40
8	21-Feb-98	7.50	3.5	62	3860	3740	3800	5160	5220	5190	5123	60	1.37
9	21-Feb-98	6.00	4.2	60	4690	4730	4710	5740	5820	5780	5358	80	1.23
10	21-Feb-98	6.50	3.5	60	4240	4330	4285	5620	5770	5695	5555	150	1.33
11	21-Feb-98	6.50	4.1	61	4370	4220	4295	5370	5450	5410	5628	80	1.26
12	21-Feb-98	6.50	4.2	61	4630	4770	4700	5520	5670	5595	5567	150	1.19
13	21-Feb-98	6.00	3.6	59	4090	4110	4100	5880	5910	5895	5833	30	1.44
14	04-Mar-98	6.00	1.3	61	3810	3770	3790	4840	4970	4905	5485	130	1.29
15	04-Mar-98	6.25	1.5	58	4370	4220	4295	5190	5030	5110	5303	160	1.19
16	04-Mar-98	5.00	2.2	56	3600	3730	3665	4490	4060	4275	4763	430	1.17
17	04-Mar-98	5.25	2.0	62	3690	3560	3620	4600	4690	4595	4680	10	1.27
18	04-Mar-98	6.25	2.5	62	4060	4130	4095	5110	5060	5085	4652	50	1.24
19	06-Mar-98	5.00	1.5	60	4390	4270	4330	5930	6850	5920	6200	140	1.37
20	06-Mar-98	5.00	1.6	60	4550	4720	4636	5880	5680	5770	5692	220	1.24
21	06-Mar-98	5.25	1.8	63	4580	4430	4505	5710	5480	5695	5762	230	1.24
22	06-Mar-98	5.50	1.6	62	4700	4620	4660	5810	5290	6560	5838	520	1.19
23	06-Mar-98	6.00	1.7	60	5070	5160	5115	5890	6870	5775	5640	210	1.13
24	06-Mar-98	6.50	2.0	57	4520	4370	4445	5890	5770	5830	6718	120	1.31
25	13-Mar-98	6.00	2.2	58	4150	4280	4205	5340	5280	5310	5638	60	1.26
26	13-Mar-98	6.50	2.0	55	4190	4090	4140	4480	4410	4445	5195	70	1.07
27	13-Mar-98	7.00	3.0	57	3740	3810	3775	4570	4620	4595	4783	50	1.22
28	13-Mar-98	7.50	2.8	58	3450	3280	3365	4360	4260	4305	4448	90	1.28
29	13-Mar-98	5.50	2.9	59	3970	3820	3895	5100	5210	5165	4685	110	1.32
30	13-Mar-98	6.25	2.9	56	4140	4020	4080	4930	4860	4890	4783	80	1.20
		6.00	3.2	60			4066			5114		123	1.26

STD. DEV.

580

ACI 318-5.3.1.2 REQUIREMENTS:

(5.1)  $f_{cr} = f_c + 1.34s$ 

4378

(5.2)  $f_{cr} = f_c + 2.33s - 500$ 

4452

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556

McKINNEY, TEXAS 75070-0556

(972) 569-4646

(972) 221-4646

CONTRACTOR: HCB Contractors

MIX NO.: 42

PROJECT: Fujitsu Project C  
Richardson, Texas

LABORATORY:

DESIGN STRENGTH:

HBC Engineering

4200

													7-28
Date	Slump	Air	Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg./3	Range	Gain	
1	10-Mar-97	6.00	6.9	68	3220	3170	3195	3990	4200	4095	210	1.28	
2	10-Mar-97	5.00	3.6	74	3900	3860	3880	5250	5370	5310	120	1.37	
3	11-Mar-97	5.00	4.5	74	3520	3370	3445	4850	5020	4935	4780	170	1.43
4	11-Mar-97	5.00	3.0	70	3810	3690	3750	5130	5210	5170	5138	80	1.38
5	12-Mar-97	4.50	6.1	65	5280	5070	5175	6280	6340	6310	5472	60	1.22
6	17-Mar-97	4.50	3.8	72	4200	4110	4155	5810	5990	5900	5793	180	1.42
7	17-Mar-97	5.00	3.7	72	4190	4080	4135	5420	5500	5480	5890	80	1.32
8	18-Mar-97	4.50	4.6	71	4600	4500	4550	5570	5770	5670	5677	200	1.25
9	18-Mar-97	5.00	3.7	69	4210	4170	4190	5650	5610	5630	5587	40	1.34
10	19-Mar-97	4.50	4.0	52	4300	4160	4230	5390	5490	5440	5580	100	1.29
11	19-Mar-97	5.00	4.3	53	4880	4720	4800	6010	6150	6080	5717	140	1.27
12	19-Mar-97	5.50	4.9	64	4280	4250	4265	5710	5540	5625	5715	170	1.32
13	19-Mar-97	5.00	4.3	64	4280	4140	4210	6010	5820	5915	5873	190	1.40
14	20-Mar-97	5.00	4.3	64	4230	4060	4145	5420	5510	5465	5668	90	1.32
15	21-Mar-97	5.00	3.4	85	4290	4330	4295	5630	5790	5710	5697	180	1.33
16	24-Mar-97	4.50	4.2	78	4330	4140	4235	5350	5520	5435	5537	170	1.28
17	25-Mar-97	4.50	4.0	60	4440	4350	4395	5750	5850	5800	5648	100	1.32
18	26-Mar-97	5.00	3.4	73	4040	3970	4005	4500	4510	4505	5247	10	1.12
19	27-Mar-97	4.00	4.2	74	3710	3670	3690	5060	4900	4930	5078	260	1.34
20	28-Mar-97	5.00	3.4	73	3680		3680	5150	5370	5260	4898	220	1.47
21	31-Mar-97	5.00	4.2	71	4250	4290	4270	5520	5660	5590	5260	140	1.31
22	01-Apr-97	4.00	5.9	68	3910	3830	3870	6000	5200	5100	5317	200	1.32
23	02-Apr-97	4.50	3.5	69	3750	3710	3730	5360	5260	5330	5340	100	1.43
24	03-Apr-97	5.00	4.2	79	4210	4170	4190	5610	5820	5685	5432	90	1.40
25	07-Apr-97	4.50	3.6	73	4110	4070	4090	4780	4850	4815	5337	70	1.18
26	08-Apr-97	5.00	5.0	74	3640	3690	3665	5020	4970	4995	5225	50	1.36
27	09-Apr-97	4.00	4.3	68	4830	4480	4555	5630	5820	5725	5178	190	1.26
28	09-Apr-97	5.00	4.7	69	4120	4080	4100	5690	5260	5475	5398	430	1.34
29	10-Apr-97	4.50	3.9	79	4320	4470	4395	5790	5670	5730	5643	120	1.30
30	14-Apr-97	4.00	3.5	64	4260	4140	4200	5780	5660	5720	5642	120	1.36
31	14-Apr-97	5.00	3.8	75	4060	3990	4025	5720	5890	5805	5752	170	1.44
32	15-Apr-97	4.00	4.0	76	4730	4630	4680	6060	6240	6150	5892	180	1.31
33	15-Apr-97	3.00		74	4870	4790	4830	5920	6010	5965	6973	90	1.23
34	18-Apr-97	4.50	3.4	76	4290	4170	4230	5080	4970	5025	5713	110	1.19
35	17-Apr-97	5.00	3.5	77	3790	3730	3760	5270	5160	5215	5402	110	1.39
36	18-Apr-97	4.50	4.0	73	4580	4270	4415	5920	6060	5990	5410	140	1.36
37	21-Apr-97	5.00	4.4	86	3750	3640	3695	5030	5080	5055	5420	50	1.37
38	21-Apr-97	5.00	4.0	85	3080	3060	3070	3920	4050	3985	5010	130	1.30
39	22-Apr-97	5.00	3.6	75	3630	3690	3760	5780	5440	5810	4883	340	1.49
40	25-Apr-97	4.00		65	5350	5170	5260	5710	5780	5745	5678	70	1.09
41	28-Apr-97	4.00	4.2	71	3160	3000	3080	4090	4280	4185	4965	190	1.36
42	29-Apr-97	6.00	5.1	77	3840	3960	3900	4700	4890	4795	4908	190	1.23
43	30-Apr-97	5.00	4.5	78	4010	3960	3985	5150	4860	5015	4685	270	1.26
44	30-Apr-97	4.50	4.0	78	4200	4220	4210	5350	5230	5290	5033	120	1.28
45	01-May-97	4.00	3.8	77	4810	4670	4740	5510	5530	5520	5275	20	1.16
46	05-May-97	4.00		84	4400	4290	4345	5360	5600	5480	5500	240	1.26
47	06-May-97	4.00	3.8	84	3300	3190	3245	3970	4080	4025	4753	110	1.24
48	07-May-97	4.00	3.8	76	3050	3120	3085	3800	3990	3895	4467	190	1.26
49	12-May-97	5.00	4.0	83	4150	4050	4100	5130	5210	5170	4363	80	1.28
50	13-May-97	5.00	4.0	83	3130	3210	3170	4160	4140	4150	4405	20	1.31
51	15-May-97	4.50	4.9	79	3340	3190	3285	4410	4210	4310	4543	200	1.32
52	16-May-97	4.50	5.0	81	3580	3420	3490	4550	4490	4520	4327	60	1.30
53	02-Jun-97	5.00	4.8	80	4070	4010	4040	5160	5050	5105	4645	110	1.26
54	02-Jun-97	5.00	5.0	80	4170	4190	4180	4780	4770	4775	4800	10	1.14

# LATTIMORE MATERIALS COMPANY

P.O. BOX 556

McKINNEY, TEXAS 75070-0556

(972) 569-4646

(972) 221-4646

CONTRACTOR: HCB Contractors

MIX NO.: 42

PROJECT: Fujitsu Project C  
Richardson, Texas

LABORATORY:

DESIGN STRENGTH:

HBC Engineering

4200

7-28

Date	Slump	Air	Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg./3	Range	Gain	
55	02-Jun-97	5.50	4.3	82	4220	4160	4190	5220	5260	5240	5040	40	1.25
56	02-Jun-97	5.00	5.2	82	4290	4280	4275	5150	5030	5090	5035	120	1.19
57	02-Jun-97	5.00	5.0	82	3850	3570	3710	4550	4690	4620	4983	140	1.25
58	02-Jun-97	5.50	5.4	83	3790	3730	3760	4620	4660	4640	4783	40	1.23
59	02-Jun-97	5.50	5.0	84	3630	3550	3590	4570	4540	4555	4605	30	1.27
60	02-Jun-97	5.00	5.2	84	3900	4010	3955	5030	5160	5095	4763	130	1.29
61	02-Jun-97	5.00	3.9	84	3930	4020	3975	4870	5010	4940	4863	140	1.24
62	02-Jun-97	4.50	4.3	84	4410	4430	4420	5260	5170	5215	5083	90	1.18
63	02-Jun-97	5.50	3.5	84	4170	4070	4120	4740	4880	4810	4988	140	1.17
64	02-Jun-97	5.00	4.0	84	4240	4120	4180	5320	5110	5215	5080	210	1.25
65	02-Jun-97	5.00	5.0	85	3440	3070	3255	4350	4440	4395	4807	90	1.35
66	02-Jun-97	5.00	4.0	84	4170	4120	4145	4620	4680	4650	4753	60	1.12
67	11-Jul-97	5.00	4.3	86	3640	3820	3730	5610	5790	5700	5700	180	1.53
68	11-Jul-97	4.00	3.8	86	4330	4300	4315	5550	5950	5760	5725	400	1.33
69	11-Jul-97	5.00	4.0	86	3950	3970	3960	5030	5220	5125	5525	190	1.29
70	11-Jul-97	6.00	5.0	88	3770	3820	3795	5410	5650	5530	5468	240	1.46
71	11-Jul-97	6.00	5.1	89	3580	3610	3595	5080	5280	5175	5277	230	1.44
72	11-Jul-97	6.00	4.9	90	3640	3560	3600	5410	5170	5290	5332	240	1.47
73	11-Jul-97	5.00	5.2	90	4350	4100	4225	5360	5490	5420	5295	140	1.28
74	11-Jul-97	5.50	5.0	90	3760	3850	3805	4540	5010	4776	5162	470	1.25
		4.83	4.3	76			4007			5203		148	1.30

STD. DEV.

558

ACI 318-5.3.1.2 REQUIREMENTS:

(5.1)  $f_{cr} = f_c + 1.34s$ 

4948

(5.2)  $f_{cr} = f_c + 2.33s - 500$ 

5000



# LATTIMORE MATERIALS COMPANY

P.O. BOX 556

McKINNEY, TEXAS 75070-0556

(972) 569-4646

(972) 221-4646

**CONTRACTOR:** Turner Construction

**MIX NO.:** 42

**PROJECT:** Carrollton/Farmers Branch ISD  
North High School - Carrollton, Texas

**LABORATORY:** Maxim Technologies, Inc.

**DESIGN STRENGTH:** 850 Flex\*

\*Center-Point Loading

7-28

Date	Slump	Air Temp	7 Day	7 Day	Avg.	28 Day	28 Day	Avg.	Avg./3	Range	Gain
1 05-Mar-97	4.75	4.4	82	820	820	885	830	858		55	1.05
2 05-Mar-97	4.00	4.0	65	845	845	980	845	903		115	1.07
3 05-Mar-97	4.75	5.8	62	740	740	760	780	770	843	20	1.04
4 07-Mar-97	3.75	4.7	85	760	760	835	875	855	843	40	1.13
5 07-Mar-97	4.00	5.0	84	710	710	840	895	858	831	55	1.22
6 19-Mar-97	3.25	4.5	60	930	830	892	935	914	879	43	0.98
7 21-Mar-97	4.00	5.9	78	760	760	855	820	838	873	35	1.10
8 27-Mar-97	3.50	4.7	76	755	755	795	825	810	854	30	1.07
9 27-Mar-97		4.9	72	705	705	795	870	833	827	75	1.18
10 09-Apr-97	4.00	5.1	73	770	770	815	765	790	790	50	1.03
11 29-May-97	3.50	4.7	76	765	765	775	680	728	759	95	0.95
12 13-Jun-97	5.00	4.9	87	675	675	755	775	765	761	20	1.13
13 29-Jul-97	5.00	4.0	96	650	650	770	700	735	743	70	1.13
14 31-Jul-97	4.00	4.7	93	645	645	750	685	718	739	65	1.11
15 31-Jul-97	4.00	4.2	82	630	630	765	830	798	750	65	1.27
16 01-Aug-97	4.00	4.9	95	695	695	825	750	788	788	75	1.13
17 12-Aug-97	3.50	4.8	94	705	705	890	885	938	841	105	1.33
18 13-Aug-97	7.50	3.0	91	720	720	750	810	780	835	60	1.08
	4.25	4.7	78		738			816		60	1.11

ATC Associates, Inc.  
11356 Mathis  
Dallas, Texas 75229  
972/556-2204

**PROJECT INSPECTION  
REPORT**

page 1 of 2

**PROJECT:** Latimore - Aggregate Testing

**Job No.:** 25-02-96-00559.50e

**CLIENT:** Latimore Materials

**Date:** 2/04/98

**REMARKS:** Sample #634 - 1" Bridgeport Aggregate

**Sieve Analysis  
Test Method (ASTM C-136)**

Sieve Size	% Passing	% Passing Required
1 1/2"	100	100
1"	97.5	95-100
1/2"	56.7	25-60
#4	9.9	0-10
#8	0.3	0-5

**Specific Gravity (ASTM C-127)**

Saturated Surface Dry	2.68
Bulk	2.67
Absorption (%)	0.65

**Unit Weight - Dry Rodded (ASTM C-29)**

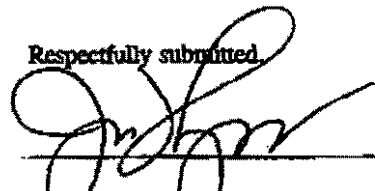
Unit Weight (Pcf) Average of 3	102.4
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**Decant**

% Passing #200 Sieve	0.28
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**ATC REPRESENTATIVE:** J. Thompson

Respectfully submitted,



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# Hooper Engineering Laboratories, Inc.

## Construction Materials Testing

### REPORT OF ANALYSIS OF CONCRETE AGGREGATES

CLIENT: Lattimore Materials Co.

DATE: 5 November 1997

PROJECT: General Use

SAMPLES: Submitted to Hooper Engineering Laboratories, Inc. on 11/5/97  
by Lattimore Materials Co.

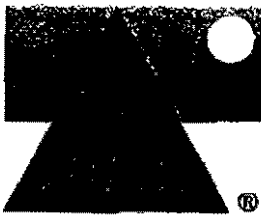
SUPPLIER: Thackerville

RETAINED ON SIEVE SIZE	NATURAL SAND 0 - #4	ASTM C33 REQUIREMENTS
1-1/2"		
1"		
3/4"		
1/2"		
3/8"	0%	0
No. 4	1	0 - 5
No. 8	9	0 - 20
No. 16	32	15 - 50
No. 30	52	40 - 75
No. 50	83	70 - 90
No. 100	95	90 - 98
FINENESS MODULUS	2.72	2.30 to 3.10
SPECIFIC GRAVITY	2.59	
FINER THAN NO. 200 SIEVE DRY RODDED WEIGHT, PCF	3.9%	5.0% Max.
	103.7	

TECHNICIAN: LS

DISTRIBUTION: (2) Lattimore Materials Co., Curtis Lee





Sika AEA-15

ISO 9000

## Air Entraining Admixture

### DESCRIPTION

Sika AEA-15 admixture is a liquid solution of concentrated organic materials. It has been formulated and manufactured specifically to provide stable and predictable air contents in concrete, with uniform air bubble spacing throughout the concrete matrix.

Sika AEA-15 meets the requirements of ASTM C-260 for air entraining admixtures and AASHTO M-154

### APPLICATIONS

Sika AEA-15 can be used whenever air entrained concrete is desired. Ready-mix, precast and block producers can all achieve optimum entrained air contents, even where harsh mixes are used or fly-ash is added to the mix.

### ADVANTAGES

Air entrainment is recognized as the most effective prevention against concrete scaling in exposed environments. Air entrained concrete delivers particular benefits in the form of increased concrete durability. This is important in colder climates where frost and freeze-thaw cycles can cause scaling and damage to the concrete surface.

Air entraining agents help to prevent scaling by creating millions of microscopic airvoids, allowing water trapped in the concrete to expand when the concrete freezes, thus preventing cracks caused by natural expansion. Entrained air voids in the concrete will also increase durability in harsh environments where concrete is exposed to deicing salts, marine salts and sulfates.

Workability and placeability are also improved by the lubricating action of the microscopic bubbles in the concrete. Concrete will flow better, and bleeding and shrinkage will be reduced because less water is needed to obtain the desired workability.

### HOW TO USE

#### DOSAGE

Addition rates will vary depending on the air content required for a particular project. Typically air contents will be specified in the range of 4 to 8 percent by volume. Other factors that may affect the amount of air entrained into the concrete include, but are not limited to, cement content and type, sand gradation, temperature and water content. Sika recommends that trial mixes be tested whenever material or any other changes are made that may affect the amount of entrained air.

Dosage rates for Sika AEA-15 will typically fall between 1/4 and 1 fl. oz. /100 lbs. (16 - 65 ml/100 kg) of cement to entrain between 4 and 6 percent air. Higher air contents may be obtained by increasing the dosage rate.

Combination with other admixtures, particularly water reducers and retarders, will tend to increase the amount of entrained air in the mix. Air contents should be checked with an air-meter after batching and dosage adjustments made at the concrete plant.

#### MIXING

Measure the required quantity per batch manually or with automatic dispenser equipment. Add Sika AEA-15 to mixing water or sand. Do not mix with dry cement. When used in combination with other

admixtures, care must be taken to dispense each admixture separately into the mix.

#### PACKAGING

Sika AEA-15 is supplied in 55 gallon (208 liter) drums and bulk delivery.

#### STORAGE AND SHELF LIFE

Sika AEA-15 should be stored at above 35°F (2°C). If frozen, thaw and agitate thoroughly to return to its normal state before use.

Shelf life when stored in dry warehouse conditions between 50°F and 80°F (10°C - 27°C) is 1 year minimum.

### CAUTION

Skin and eye irritant; avoid contact. The use of NIOSH/MSHA approved respirator, safety goggles and rubber gloves is recommended. Avoid breathing product. Use with adequate ventilation. Remove contaminated clothing.

#### FIRST AID

Wash skin with soap and water. In case of eye contact, flush with water for 15 minutes; contact a physician. Wash clothing before re-use.

#### CLEAN UP

Contain and collect with absorbent material. Dispose of in accordance with local, state and federal regulations.

#### TYPICAL DATA FOR SIK AEA-15

<b>ASTM CERTIFICATION</b>	C-260 Air Entraining Admixtures
<b>COLOR</b>	Brown
<b>SPECIFIC GRAVITY g/ml</b>	1.02 ± 0.02
<b>pH</b>	> 8
<b>CHLORIDES %</b>	< 0.1

# Plastocrete 161

ISO 9000

## Water Reducing Admixture (Type A)

### DESCRIPTION

Plastocrete 161 is a polymer-type water-reducing admixture. Plastocrete 161 contains no chlorides.

Plastocrete 161 meets the requirements of ASTM C-494 Type A and AASHTO M 194 Type A.

### APPLICATIONS

Plastocrete 161 is recommended for use in all applications where high quality concrete with superior workability and normal setting times is required.

### HOW IT WORKS

Plastocrete 161 water reducing admixture provides an economical and highly effective means of reducing the amount of mixing water required to produce concrete of a certain slump by acting as a dispersant for the cement particles in the mix.

Through this dispersing action more of the surface area of the cement particles is available for early hydration. The more cement particles hydrated by contact with the mixing water, the greater the compressive strength of the concrete.

### ADVANTAGES

Plastocrete 161 is formulated as a Type A water reducer to allow 7 - 10% water reduction and maximize the benefits of increased hydration in both the hardened and plastic states.

### BENEFITS

- ▲ Reduced water content required to achieve desired slump, increases compressive and flexural strengths and allows the use of more economical mixes.
- ▲ Improved paste quality makes concrete easier to pump and finish.

▲ Consistent normal setting times throughout the recommended dosage.

▲ Lower water cement ratios provide decreased permeability and increased durability.

**Combination with other Admixtures:** Plastocrete 161 works effectively as a single admixture or in combination with other admixtures in the Sika System. When air entrained concrete is specified, Sika recommends the use of Sika air entraining agents.

### HOW TO USE

#### DOSAGE

Addition rates of 3 - 6 fl. oz./100 lbs. (195 - 390 ml/100 kg) of cement are recommended for general concrete applications where normal setting characteristics are desired.

#### MIXING

Plastocrete 161 is added at the concrete plant. Measure required quantity manually or by automated dispenser. Add into the sand at the weigh hopper or into the water line at the batch plant.

When used in combination with other admixtures, care must be taken to dispense each admixture separately into the mix. Do not mix with dry cement.

### PACKAGING

Plastocrete 161 is supplied in 55 gallon (208 liter) drums and bulk delivery.

### STORAGE AND SHELF-LIFE

Plastocrete 161 should be stored at above 35°F (2°C). If frozen, thaw and agitate thoroughly to return to normal state before use.

Shelf life when stored in dry warehouse conditions between 50°F and 80°F (10°C-27°C) is one year minimum.

### CAUTION

Skin and eye irritant; avoid contact. The use of NIOSH/MSHA approved respirator, safety goggles and rubber gloves is recommended. Avoid breathing product. Use with adequate ventilation. Remove contaminated clothing.

### FIRST AID

Wash skin with soap and water. In case of eye contact, flush with water for 15 minutes; contact a physician. Wash clothing before re-use.

### CLEAN UP

Contain and collect with absorbent material. Dispose of in accordance with local, state and federal regulations.

### TYPICAL DATA FOR PLASTOCRETE 161

<b>ASTM CERTIFICATION</b>	ASTM C-494 Type A
<b>COLOR</b>	Brown
<b>SPECIFIC GRAVITY g/ml</b>	1.17 ± 0.05
<b>pH</b>	>8
<b>CHLORIDES %</b>	<0.1



ISO 9000

## Water Reducing and Retarding Admixture (Types B & D)

### DESCRIPTION

Plastiment is a water-reducing and retarding admixture. Plastiment contains no calcium chloride or any other intentionally added chlorides.

Plastiment meets the requirements of ASTM C-494 Types B and D and AASHTO M194 Types B and D.

### APPLICATIONS

Plastiment is recommended for use whenever high quality concrete with predictable and controlled set times is desired. Use in flatwork and horizontal or vertical slipform placements where a superior surface finish is required.

### ADVANTAGES

Plastiment is highly effective in hot weather concreting to offset the accelerating effects of high ambient temperatures by controlling the heat of hydration. Concrete workability is enhanced and a superior surface finish is obtained.

### BENEFITS

- ▲ In mass concrete pours Plastiment controls temperature rise and reduces the risk of thermal cracking.
- ▲ Initial set times are delayed, allowing time for proper placement and finishing without cold joints in hot weather conditions.
- ▲ Plastiment increases concrete density and delivers increased early and ultimate, compressive and flexural strengths.

▲ For flatwork applications Plastiment acts as a finishing aid, workability is improved, bleeding is controlled and a superior surface finish is obtained.

▲ Lower water cement ratios provide decreased permeability and increased durability.

**Combination with other Admixtures:** Plastiment works effectively as a single admixture or in combination with other admixtures in the Sika System.

### PACKAGING

Plastiment is supplied in 55 gallon (208 liter) drums and bulk delivery.

### STORAGE AND SHELF-LIFE

Plastiment should be stored at above 30°F (-1°C). If frozen, thaw and agitate thoroughly to return to normal state before use.

Shelf life when stored in dry warehouse conditions between 50°F and 80°F (10°C-27°C) is one year minimum.

## HOW TO USE

### DOSEAGE

Addition rates of 2 - 4 fl. oz./100 lbs. (130-260 ml/100 kg) cement are recommended for general concrete applications. Where extended retardation is required dosage may be increased. Please contact your local Sika Representative for information and assistance.

### MIXING

Add Plastiment at the concrete plant. Measure required quantity manually or by automated dispenser. Add into the sand at the weigh hopper or into the water line at the batch plant.

When used in combination with other admixtures, care must be taken to dispense each admixture separately into the mix. Do not mix with dry cement.

## CAUTION

Skin and eye irritant; avoid contact. The use of NIOSH/MSHA approved respirator, safety goggles and rubber gloves is recommended. Avoid breathing product. Use with adequate ventilation. Remove contaminated clothing.

### FIRST AID

Wash skin with soap and water. In case of eye contact, flush with water for 15 minutes; contact a physician. Wash clothing before re-use.

### CLEANUP

Contain and collect with absorbent material. Dispose of in accordance with local, state and federal regulations.

TYPICAL DATA FOR PLASTIMENT	
ASTM CERTIFICATION	ASTM C-494 Types B and D
COLOR	Yellow/Green
SPECIFIC GRAVITY g/ml	1.16 ± 0.5
pH	> 8
CHLORIDES %	< 0.1