A0001073

ROUTING OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE FOR APPROVAL

(Used to route ENG Form 4025 with items attached. Not to become a part of the Contractor's record.)

	TO:	FROM:	DATE
1	C/Construction Division	A/E, New Orleans	8/4/93

The attached items listed on ENG Form 4025 are forwarded for approval action.

CONTRACT NUMBER	CONTRACTOR
DACW29-93-C-0081	Pittman Construction Co
TRANSMITTAL NUMBERS	**PROJECT TITLE AND LOCATION**
Concrete Submittals	17th Street Canal East Cappings

COMMENTS *(Attach additional sheet, if necessary.)*
Request your office review the attached concrete submittals and furnish NOAO any comments by COB 13 Aug 93

NO. OF INCL.	TYPED NAME AND TITLE	SIGNATURE
1	Dennis Duhon Supv Civ Engr	

	TO:	FROM:	DATE
2	C/Engr Div ATTN: ED-FM	C/Const Div ATTN: AL Schick x2806	AUG - 4 1993 8/5/93

COMMENTS *(Attach additional sheet, if necessary.)*
Your review + comments are requested ASAP but NLT 13 Aug 93.

NO. OF INCL.	TYPED NAME AND TITLE	SIGNATURE
	RICHARD T. HILL	

	TO:	FROM:	DATE
3	C/Const. Div	C/Engr. Div	12 Aug 93

COMMENTS *(Attach additional sheet, if necessary.)*
See Attachment. SM RQB 8/12

NO. OF INCL.	TYPED NAME AND TITLE	SIGNATURE
1	W. Eugene Tickner Chief, Engr. Div.	

	TO:	FROM:	DATE
4			

The following action codes are given to items listed on ENG Form 4025:

ACTION CODES

A - APPROVED AS SUBMITTED.

B - APPROVED, EXCEPT AS NOTED ON DRAWINGS. RESUBMISSION NOT REQUIRED.

C - APPROVED, EXCEPT AS NOTED ON DRAWINGS. REFER TO ATTACHED SHEET. RESUBMISSION REQUIRED.

D - WILL BE RETURNED BY SEPARATE CORRESPONDENCE.

E - DISAPPROVED (SEE ATTACHED)

F - RECEIPT ACKNOWLEDGED

G - OTHER *(specify)*

ACTION CODES TO BE INSERTED IN COLUMN G, SECTION I, ENG FORM 4025 *(Attach sheets, when required.)*

ITEM NO. *(Taken from ENG Form 4025)*								
CODE GIVEN								

REMARKS

NO. OF INCL.	TYPED NAME AND TITLE	SIGNATURE

ENG FORM 4026 1 NOV 74 EDITION OF NOV 66 MAY BE USED.

☆U.S. G.P.O. 1980-621-246/593

8/12

Lake Pont. & Vic. 17th Canal East Capping
DACW 29-93-C-0081
Transmittal Number 1
12 Aug 93

ITEM	DISCRIPTION	SPEC. PARA.	RECOMMENDATION
14	Mix Design 3000 psi	C3D-5.1.1	No objection provided the specified strenghts is obtained in the field.
	2500 psi		Disapproved. Note that spec. does not specify 2500 psi strength.
15	Cement	C3D-5.1.2	Approved.
15	Pozzolan	C3D-5.1.2	No objection provided the fly ash meets the uniformity requirements of Tables 2 and 2A of ASTM C 618-89a.
16	Aggregates	C3D-5.1.3	No objection provided the producer uses a pit from the list in spec. para. H-23.
17	Water	C3D-5.1.4	Approved.
19	Air-Entraining Admixture	C3D-5.2.2	Approved.
20	Chemical Admixture	C3D-5.2.3	Approved.
22	Batch Plant	C3D-5.3.1	No objection provided it conforms to the all requirements of C3D-8.2 and its sub-paragraphs.
23	Mixers	C3D-5.3.2	NO objection provided truck mixes comply with spec. para C3D-8.3.3 which requires the mixers to conform to ASTM C 94-90.
24	Conveying Equipment	C3D-5.3.3	No obection provided bucket or pump meet all requirements of spec. para. C3D-9.
27	Cold-Weather requirements	C3D-5.3.6	Disapproved. A specific plan needs to be submitted prior to placing in cold weather months.
28	Hot-weather requirements	C3D-5.3.7	Disapproved. A specific plan needs to be submitted prior to placing in hot weather months.
29	Placing	C3D-5.3.4	No objection provided all the equipment and methods conform to the requirements of spec. para. C3D-11.
26	Curing	C3D-5.3.5	Approved. Note the concrete must be kept moist by addition of external water as stated in spec. para. C3D-13.2.

SA

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE

(Read instructions on the reverse side prior to initiating this form)

DATE: July 21, 1993

TRANSMITTAL NO: 1

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO: U. S. CORP of ENGINEERS
NEW ORLEANS AREA OFFICE

FROM: PITTMAN CONSTRUCTION CO.

CONTRACT NO.: DACW-29-93-C-0081

CHECK ONE:
- [x] THIS IS A NEW TRANSMITTAL
- [ ] THIS IS A RESUBMITTAL OF TRANSMITTAL _____

SPECIFICATION SEC. NO. (Cover only one section with each transmittal): C3 D

PROJECT TITLE AND LOCATION: 17 th Street Canal Floodwall Orleans Parish, Louisiana

ITEM NO. a.	DESCRIPTION OF ITEM SUBMITTED (Type size, model number/etc.) b.	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. (See instruction no. 8) c.	NO. OF COPIES d.	CONTRACT REFERENCE DOCUMENT: SPEC. PARA. NO. e.	CONTRACT REFERENCE DOCUMENT: DRAWING SHEET NO. f.	FOR CONTRACTOR USE CODE g.	VARIATION (See instruction No. 6) h.	FOR CE USE CODE i.
14	Concrete Mix Proportions		3	5.1.1				
15	Cement & Pozzolan		3	5.1.2				
16	Aggregates		3	5.1.3				
17	Water		3	5.1.4				
19	Air-Entraining Admixture		3	5.2.2				
20	Chemical Admixture		3	5.2.3				
22	Batch Plant		3	5.3.1				
23	Mixers		3	5.3.2				
24	Conveying Equipment		3	5.3.3				
27	Cold-Weather Requirements		3	5.3.6				

REMARKS

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as other wise stated.

Chad Fricker

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on the reverse side prior to initiating this form)*	DATE	TRANSMITTAL NO
		1

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE:
U. S. CORP of ENGINEERS NEW ORLEANS AREA OFFICE	PITTMAN CONSTRUCTION CO.	DACW-29-93-C-0081	☑ THIS IS A NEW TRANSMITTAL ☐ THIS IS A RESUBMITTAL OF TRANSMITTAL _____

SPECIFICATION SEC. NO. (Cover only one section with each transmittal)	PROJECT TITLE AND LOCATION
C3D	17 th Street Canal Floodwall Orleans Parish, Louisiana

ITEM NO. a.	DESCRIPTION OF ITEM SUBMITTED *(Type size, model number/etc.)* b.	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. *(See instruction no. 8)* c.	NO. OF COPIES d.	CONTRACT REFERENCE DOCUMENT: SPEC. PARA. NO. e.	CONTRACT REFERENCE DOCUMENT: DRAWING SHEET NO. f.	FOR CONTRACTOR USE CODE g.	VARIATION *(See Instruction No. 6)* h.	FOR CE USE CODE i.
28	Hot- Weather Requirements		3	5.3.7				
25	Placing Equipment		3	5.3.4				
26	Curing		3	5.3.5				

REMARKS

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as other wise stated.

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

ENG FORM 4025, Mar 94 (EP 415-1-101) PREVIOUS EDITIONS ARE OBSOLETE. SHEET ____ OF ____ (Proponent: CEMP-CE)

LOUISIANA INDUSTRIES

121 BROOKHOLLOW ESPLANADE POST OFFICE BOX 23522
HARAHAN, LOUISIANA 70123
TELEPHONE 504-733-7730

July 13, 1993

PITTMAN CONSTRUCTION CO.
110 VETERANS BLVD.
METAIRIE, LA 70005

Attention MR. AL PITTMAN

RE: 17th ST.CANAL DACW2993B0025
9102 9103

Gentlemen:

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 mix concrete to be furnished by Louisiana Industries.

Louisiana Industries certifies that the above mix design, when ordered by specified design identity, will meet or exceed the indicated design strength at a 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.

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.

We are enclosing all available back up data for the above referenced mix design. If the strength information is not available or is not sufficient, conformation cylinders may have to be made by your testing laboratory.

Please contact us if you have any questions or require any additional information. Please notify Louisiana Industries of approval of the proposed mix designs prior to their use. To ensure that the proper mix designs are 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,

LOUISIANA INDUSTRIES

SIDNEY P. LANDRY
CUSTOMER SERVICE REPRESENTATIVE

3000psi CR
No obj prov the specified strength is obtained in the field

MIX # 9102 2500 PSI @ 28 DAYS I 2500 PSI @ 28 Days

AS REQUIRED

not correct CR

Maximum Coarse Aggregate Size: ASTM C 33
Maximum Water/Cement Ratio: 6.49 gal/sk .574 lb/lb
Minimum Cement Content per Cubic Yard: 4.25 sacks
Maximum Placement Slump: 5.0 inches
Admixture ASTM C-494: Type A or D
Air Entraining Agent ASTM C-260: 3% - 6%

(C3D-7.2.1) Specs only call for 3,000 psi. w/c max (C3D-7.2.2) = .58 CR

MATERIAL QUANTITIES PER 1 CUBIC YARD AT S.S.D.

300 lbs. or 3.19 sacks ASTM C 150 Type I Cement
100 lbs. or 1.06 sacks ASTM C 618 Fly Ash
1850 lbs. ASTM C 33 3/4" Gravel
1350 lbs. ASTM C 33 Concrete Sand
230 lbs. or 27.6 gallons of Water
2.0 to 4.0 oz/cwt of ASTM C-494 Type A - Water Reducer
Specified Air Content: 3% - 6%
Placement Slump: 4.0 + or - 1 inches

MIX # 9103 3000 PSI @ 28 DAYS I 3000 PSI @ 28 Days

not correct CR

Maximum Coarse Aggregate Size: ASTM C 33
Maximum Water/Cement Ratio: 5.60 gal/sk .496 lb/lb
Minimum Cement Content per Cubic Yard: 5.00 sacks
Maximum Placement Slump: 5.0 inches
Admixture ASTM C-494: Type A or D
Air Entraining Agent ASTM C-260: 3% - 6%

MATERIAL QUANTITIES PER 1 CUBIC YARD AT S.S.D.

376 lbs. or 4.00 sacks ASTM C 150 Type I Cement
94 lbs. or 1.00 sacks ASTM C 618 Fly Ash
1775 lbs. ASTM C 33 3/4" Gravel
1318 lbs. ASTM C 33 Concrete Sand
233 lbs. or 28.0 gallons of Water
2.0 to 4.0 oz/cwt of ASTM C-494 Type A - Water Reducer
Specified Air Content: 3% - 6%
Placement Slump: 4.0 + or - 1 inches

S .53 Seems ok by ACI

ACI = .53 for 3515 psi CR

2,500 psi
Need to check drawings & find out if amendment added this for perhaps a stab. slab. If not, answer should be more like DISAPPROVED. CR

LOUISIANA INDUSTRIES
CONCRETE DESIGN EVALUATION

Date: 07/15/93 ** Statistics Compiled From Independent Laboratory Test Specimens **

Mix No. 9103 Strength 3000 psi @ 28 Days
28 Day Test Data

Test No.	Date	Plant No.	Temperature Amb	Temperature Con	Placement Slump	Percent of Air	28 Day PSI 1	28 Day PSI 2	28 Day PSI Avg	Cum Avg	Moving Avg of 3	Range
1	10/08/92	426	81	82	4.0	6.0	4780	4670	4725	4725	4725	110
2	10/16/92	426	71	82	5.0	6.3	3730	3780	3755	4240	4240	50
3	10/19/92	426	75	79	4.5	6.4	3960	3940	3950	4143	4143	20
4	10/20/92	426	77	81	4.5	5.9	3730	3780	3755	4046	3820	50
5	10/21/92	426	79	81	5.0	6.2	3540	3590	3565	3950	3757	50
6	10/22/92	426	82	84	5.5	6.4	3400	3480	3440	3865	3587	80
7	10/23/92	426	82	80	5.5	5.8	3640	3710	3675	3838	3560	70
8	10/26/92	426	82	84	4.5	5.8	3820	3870	3845	3839	3653	50
9	10/27/92	426	81	83	4.5	5.8	4160	4100	4130	3871	3883	60
10	10/28/92	426	81	82	4.5	6.0	4300	4350	4325	3917	4100	50
11	10/29/92	426	84	85	5.5	6.0	4210	4280	4245	3946	4233	70
12	11/02/92	426	75	78	5.0	5.6	3470	4100	3785	3933	4118	630
13	11/03/92	426	75	79	5.0	5.6	4630	4650	4640	3987	4223	20
14	11/05/92	426	53	67	5.0	6.3	3930	3870	3900	3981	4108	60
15	11/06/92	426	56	61	4.5	6.2	4300	4190	4245	3999	4262	110
16	11/09/92	426	62	64	5.0	6.3	4280	4400	4340	4020	4162	120
17	11/10/92	426	65	67	4.5	6.0	4240	4330	4285	4036	4290	90
18	11/13/92	426	60	62	5.0	5.8	3590	3500	3545	4008	4057	90
19	11/14/92	426	63	64	5.0	6.0	3630	3680	3655	3990	3828	50
20	11/16/92	426	63	67	4.0	6.0	4030	4090	4060	3993	3753	60
21	11/17/92	426	63	65	5.5	5.6	3660	3780	3720	3980	3812	120
22	11/18/92	426	71	74	4.0	6.0	3680	3800	3740	3969	3840	120
23	11/19/92	426	71	74	5.0	6.2	3590	3640	3615	3954	3692	50
24	11/21/92	426	74	77	5.0	6.0	3330	3400	3365	3929	3573	70
25	11/23/92	426	55	61	4.7	6.3	3960	4030	3995	3932	3658	70
26	02/04/93	426	58	66	4.0	5.9	4000	4070	4035	3936	3798	70
27	02/08/93	426	67	61	4.5	5.9	4370	4390	4380	3952	4137	20
28	02/09/93	426	65	63	5.5	6.9	3540	4070	3805	3947	4073	530
29	02/10/93	426	60	64	4.5	6.8	4700	4830	4765	3975	4317	130
30	02/11/93	426	65	66	5.0	6.1	3640	3660	3650	3965	4073	20
31	02/15/93	426	77	76	3.0	5.5	3520	3560	3540	3951	3985	40
32	02/16/93	426	68	70	5.0	5.9	3730	3780	3755	3945	3648	50
33	02/17/93	426	58	60	4.5	6.0	4160	4210	4185	3952	3827	50
34	02/18/93	426	52	54	4.5	6.0	4600	4530	4565	3970	4168	70
35	02/22/93	426	69	71	4.0	5.9	3450	3400	3425	3954	4058	50
36	02/24/93	426	60	61	4.0	6.2	3680	3960	3820	3951	3937	280
37	02/25/93	426	69	64	5.0	7.0	3930	4010	3970	3951	3738	80
38	02/26/93	426	55	63	5.5	5.7	4100	4280	4190	3958	3993	180
39	03/01/93	426	68	66	4.5	6.0	4170	4240	4205	3964	4122	70
40	03/03/93	426	60	65	5.0	5.8	3890	3960	3925	3963	4107	70

LOUISIANA INDUSTRIES
CONCRETE DESIGN EVALUATION

Date: 07/15/93 ** Statistics Compiled From Independent Laboratory Test Specimens **

Mix No. 9103 Strength 3000 psi @ 28 Days
28 Day Test Data

Test No.	Date	Plant No.	Temperature Amb	Con	Placement Slump	Percent of Air	28 Day PSI 1	28 Day PSI 2	28 Day PSI Avg	Cum Avg	Moving Avg of 3	Range
41	03/04/93	426	65	59	4.0	N/A	4240	4330	4285	3971	4138	90
42	03/05/93	426	61	67	5.0	6.2	3750	3960	3855	3968	4022	210
43	03/08/93	426	76	70	2.7	5.9	3570	3640	3605	3960	3915	70
44	03/09/93	426	77	78	4.0	N/A	3710	3660	3685	3953	3715	50
45	03/10/93	426	76	72	4.0	6.2	3780	3770	3775	3949	3688	10
46	03/11/93	426	60	66	5.0	5.5	3660	3710	3685	3944	3715	50
47	04/05/93	426	77	78	2.5	5.5	4140	4210	4175	3949	3878	70
48	04/06/93	426	73	74	4.0	5.8	4300	4170	4235	3954	4032	130
49	04/12/93	426	70	74	5.0	5.8	3890	4000	3945	3954	4118	110
50	04/14/93	426	74	78	5.0	6.4	4240	4300	4270	3961	4150	60
51	04/15/93	426	75	79	4.0	5.9	3960	4090	4025	3962	4080	130
52	04/20/93	426	79	82	3.5	5.8	4810	4880	4845	3979	4380	70
53	04/21/93	426	79	77	4.0	5.8	4950	5020	4985	3998	4618	70
54	04/22/93	426	70	70	5.0	5.7	3890	3980	3935	3997	4588	90
55	04/26/93	426	80	84	4.5	5.7	4320	4420	4370	4003	4430	100
56	04/27/93	426	81	84	4.0	5.5	4470	4560	4515	4013	4273	90
57	04/30/93	426	77	81	5.0	6.1	4670	4720	4695	4025	4527	50
58	05/05/93	426	73	81	5.5	5.9	4170	4230	4200	4028	4470	60
***	Averages	***	70	72	4.6	6.0						

COMMENTARY OF STATISTICAL EVALUATION OF CONCRETE DESIGN RESULTS

Mix No. 9103 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.

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

$$f'_{cr} = f'_c + 1.34(SD)$$
$$= 3000 + 1.34(00384)$$
$$= 3515$$

$$f'_{cr} = f'_c + 2.33(SD) - 500$$
$$= 3000 + 2.33(00384) - 500$$
$$= 3395$$

SUMMARY OF STATISTICAL ANALYSIS
28 Day Test Data

ACI w/Air

4000	.48
3515	X
3000	.59

X = .53

Number of Tests	58
Maximum Value	4985 psi
Minimum Value	3365 psi
Range	1620 psi
Average Strength	4028 psi
Standard Deviation	384 psi
Required Average Strength to satisfy minimum probability conditions of ACI 318-89 Section 5.3.2.1	3515 psi
Design excess beyond code requirements..	513 psi

2 out of 58 < 3515 psi

CR

Spec: C3D-5.1.3

To Ms. Beveley

LOUISIANA INDUSTRIES

No. 2 Gravel

ASTM C33 approved

MPLE NO. _____

UCK NAME & CODE: _____ STOCK PILE NO. _____

PE Stock Pile DATE 6-30-93

GNED BY Elbert TIME _____

NMS = 3/4"

1003.02

CREEN SIZE	WT RETAINED	% RETAINED	% PASSING	SPEC LDH	SPEC ASTM(67)
1''	0	0	100	100	100
3/4''	0	0	100	100	90-100
5/8''	25	.8	99.2	95-100	—
1/2''	4.36	14.0	86.0	60-90	—
3/8''	14.54	46.5	53.5	—	20-55
No.4''	30.11	96.4	3.6	0-10	0-10
No.8''	31.20	99.8	0.2	—	0-5
PAN	31.25				

Price

LOUISIANA INDUSTRIES

Concrete Sand

ASTM C33 approved

SAMPLE NO. _____

CAR NO. _____ STOCK PILE NO. _____

TYPE Underbelt DATE 7-12-93

SIGNED BY Bzky TIME _____

1003.02

SCREEN SIZE	WT RETAINED	% RETAINED	% PASSING	SPEC LDH	SPEC ASTM
3/8	0	0	100	100	100
4	29.5	4.56	95.44	95-100	95-100
8	93.6	14.50	85.50	—	80-100
16	166.2	26.00	74.00	45-90	50-85
30	285.9	44.20	55.80	—	25-60
50	530.2	81.97	18.03	7-30	10-30
100	627.9	97.08	2.92	0-7	2-10
200	644.9	99.71	0.29	0-3	—
PAN	646.8				
FM		2.68			

RESOURCE MATERIALS TESTING, INC.

"Specialists in Fly Ash Testing"

DDC# 14

REPORT OF FLY ASH ANALYSIS

C30-5.1.2

REPORT TO: Holnam, Inc.
Attn:Mr. Glen Bollin
P.O. Box 122
Dundee, MI 48131

PROJECT NO.: RMT-005'
SAMPLE NO.: 4230
DATE REC.: 3-04-93
DATE REP.: 4-12-93

PROJECT NAME: White Bluff Plant Fly Ash QA Program
SAMPLE ID: Class C Fly Ash Unit 2 WB3440S2 split w/WB3442S2
Sampled 2-26-93 Feb '93 Composite

CHEMICAL ANALYSIS PARAMETER	RESULTS	ASTM C618 SPEC. F/C	
Silicon Dioxide, SiO2, %	34.46	----	
Aluminum Oxide, Al2O3, %	24.18	----	
Iron Oxide, Fe2O3, %	7.58	----	
Sum of SiO2, Al2O3 and Fe2O3, %	66.22	70/50	min
Calcium Oxide, CaO, %	24.39	---	
Magnesium Oxide, MgO, %	4.74	---	
Sodium Oxide, Na2O, %	---	---	
Potassium Oxide, K2O, %	---	---	
Sulfur Trioxide, SO3, %	2.26	5.0	max
Moisture Content, %	0.05	3.0	max
Loss on Ignition, %	0.13	6.0	max
Available Alkalies as Na2O, %*	1.49	1.5	max
PHYSICAL ANALYSIS			
Amount Retained on No. 325 Sieve, %	6.0	34	max
Strength Activity Index			
Portland Cement at 7 days, % of Control	99	75	min
Portland Cement at 28 days, % of Control	108	75	min
Water Requirement, % of Control	90	105	max
Autoclave Expansion, %	-0.01	0.8	max
Specific Gravity	2.64	---	
Increase of Drying Shrinkage, %*	-0.00	0.03	max
Reactivity with Cement Alkalies, %*	---	---	
Reduction of Mortar Expansion, %	---	---	
Mortar Expansion, %	---	0.020	max
Air Entrainment of Mortar, %*	0.21	---	

*Optional requirements applicable only when requested by the purchaser
This material meets the requirements of ASTM C618 for the parameters tested

Control PSI: 7d = 4570 28d = 6010

By Robert L Smith
Robert L. Smith, Ph.D.

5302 Cleveland Hwy, Suite 3 • Clermont, Georgia 30527 • (706) 983-1580 • FAX (706) 983-1582

GRACE · CONCRETE ADMIXTURES

C 260-5.2 2 Approved

DESCRIPTION:

DARAVAIR® is an aqueous solution of completely neutralized vinsol resin and is produced at a high concentration and low viscosity. DARAVAIR is a clear, dark brown liquid intended for use as supplied. One gallon weighs approximately 8.9 lbs.

USES:

DARAVAIR may be used wherever the purposeful entrainment of air is required by concrete specifications. It is particularly useful in mass concrete and in high cement factor, low slump paving mixes, which require efficient, effective air-entraining admixtures. DARAVAIR entrains air readily even under adverse conditions such as described above or when fly ash or manufactured sand is used in the concrete mix.

AIR ENTRAINING ACTION:

Air is incorporated into the concrete by the mechanics of mixing but stabilized into millions of discrete semi-microscopic bubbles in the presence of a specifically designed air-entraining admixture such as DARAVAIR.

These air bubbles act much like flexible ball bearings increasing the mobility, or plasticity and workability of the concrete. This permits a reduction in mixing water with no loss of slump. Placeability is improved. Bleeding, green shrinkage and segregation are minimized.

Through the purposeful entrainment of air, DARAVAIR markedly increases the durability of concrete to all exposures particularly to freezing and thawing. It has also demonstrated a remarkable ability to impart resistance to the action of frost and deicing salts as well as sulfate, sea and alkaline waters.

COMPATABILITY WITH OTHER ADMIXTURES:

DARAVAIR is fully effective and compatible in concrete with other admixtures and may be used with water-reducing admixtures, accelerators, and initial set retarders such as WRDA® with HYCOL™, WRDA®, DAREX® Set Accelerator and DARATARD®. EACH ADMIXTURE, HOWEVER, SHOULD BE ADDED TO THE CONCRETE SEPARATELY.

ADDITION RATE:

There is no standard addition rate for DARAVAIR. The amount to be used will depend upon the amount of air required for job conditions, usually in the range of 4 to 8%. Typical factors which might influence the amount of air-entraining admixture required are, temperature, cement, sand gradation, and the use of extra fine materials such as fly ash. Typical DARAVAIR addition rates range from ¾ to 3 fluid ounces per 100 lbs. of cement.

The air-entraining capacity of DARAVAIR is usually increased when other concrete admixtures are contained in the concrete, particularly water-reducing admixtures and water-reducing retarders. This may allow up to a two-thirds reduction in the amount of DARAVAIR required.

MIX ADJUSTMENT:

Entrained air will increase the volume of the concrete and, consequently, it is necessary to adjust the mix proportions to maintain the cement factor and yield. This is partly accomplished by the permissible reduction in water requirement and additionally by a reduction in the fine aggregate content.

DISPENSING EQUIPMENT:

A complete line of accurate automatic dispensing equipment is available. These dispensers can be located to discharge into the water line, the mixer, or on the sand.

PACKAGING:

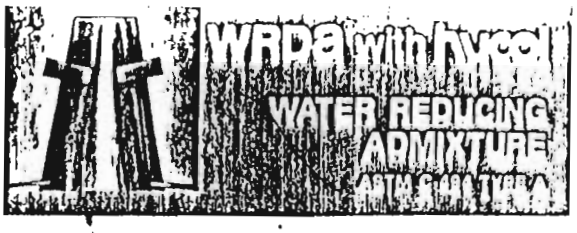
DARAVAIR is available in bulk, delivered by metered tank trucks and in 55-gallon drums. DARAVAIR contains no flammable ingredients. DARAVAIR WILL FREEZE AT ABOUT 30°F BUT ITS AIR-ENTRAINING PROPERTIES ARE COMPLETELY RESTORED BY THAWING AND THOROUGH AGITATION.

ARCHITECTS' SPECIFICATION FOR CONCRETE AIR ENTRAINING ADMIXTURE:

Concrete shall be air entrained concrete, containing 4 to 8% entrained air. The air contents in the concrete shall be determined by the pressure method (ASTM Designation C 231) or gravimetric method (ASTM Designation C 138). The air entraining admixture shall be a completely neutralized vinsol resin solution, such as DARAVAIR, as manufactured by the Construction Products Division of W. R. Grace & Co.–Conn., or equal, and comply with standard specification for air entraining admixtures (ASTM Designation C-260). The air entraining admixture shall be added at the concrete mixer or batching plant at approximately ¾ to 3 fluid ounces per 100 lbs. of cement, or in such quantities as to give the specified air contents.

GRACE
Construction Products

Printed in U.S.A. 4/89 FA/GPS 5000



GRACE · CONCRETE ADMIXTURES

C30-5.1.3 Approved

DESCRIPTION:

WRDA® with HYCOL™ admixture is an aqueous solution of complex organic compounds, one of which is HYCOL™, a patented portland cement hydration control agent. WRDA with HYCOL is a ready-to-use low viscosity liquid which is factory premixed in exact proportions to minimize handling, eliminate mistakes and guesswork.

WRDA with HYCOL contains no calcium chloride. One gallon weighs approximately 9.6 lbs.

USES:

WRDA with HYCOL produces a concrete with lower water content (typically 8 to 10% reduction), greater plasticity and higher strength. It is used in ready-mix plants, block and concrete products plants, in lightweight and prestressed work . . . wherever concrete is produced. It is also used by contractors in field equipment such as job-site plants and pavers.

ADVANTAGES:

Most *calcium-chloride-free* water reducing admixtures on the market today produce some significant degree of set retardation. Minimal extension of setting time has been experienced in field concrete containing WRDA with HYCOL. Under closely controlled laboratory conditions, the retardation observed with the addition of 3 fluid ounces of WRDA with HYCOL per 100 pounds of cement is in the range of 15 to 20 minutes, well within the limit of the accuracy of the method of test. It is through the action of the patented HYdration COntroL (HYCOL) agent in the admixture that its effect on the setting time of concrete is reduced to an insignificant degree.

The use of WRDA with HYCOL produces a plastic concrete that is more workable, easier to place, more pumpable, and has better finishability than plain or other admixtured concrete. In the hardened state, WRDA with HYCOL concrete has higher compressive and flexural strengths at all ages than untreated or conventionally admixtured concrete.

The greater degree of plasticity achieved, compared with conventional water reducing admixtures, allows improved finishability.

HYDRATION CONTROL:

HYCOL acts to optimize the rate and degree of hydration of the portland cement in the concrete. This optimization gives concrete strength advantages at all ages without appreciably altering its setting time.

WRDA with HYCOL also acts as a dispersing agent and lessens the natural interparticle attraction between cement grains in water. This reduces their tendency to clump together, making the mix more workable, placeable and finishable with less water.

The combination of water reduction and controlled hydration by HYCOL optimizes the rate of formation of the gel, the paste or binder that "glues" the concrete aggregates together. This controlled rate of gel formation adds to the water retention and internal cohesiveness of the mix, reducing the bleeding and segregation while increasing or improving the workability, placeablity and finishability of concrete.

FINISHABILITY:

Finishers have stated that the cement paste, or mortar, in WRDA with HYCOL admixtured concrete has improved trowelability. The influence of WRDA with HYCOL on the finishability of lean mixes has been particularly noticeable. Floating and troweling, by machine or hand, easily imparts a smooth, close tolerance surface with less machine time and labor.

ADDITION RATE:

Excellent results are obtained using an addition rate of 3 fluid ounces of WRDA with HYCOL per 100 pounds of cement. In some cases it may be necessary to slightly modify the addition rate due to variations in cement, aggregate or other job conditions.

DISPENSING EQUIPMENT:

A complete line of accurate dispensing equipment is available. WRDA with HYCOL may be introduced to the mix on the sand or in the water.

COMPATIBILITY WITH OTHER ADMIXTURES:

WRDA with HYCOL is compatible in concrete with all air entraining admixtures such as DAREX II AEA®. Due to a synergistic effect of WRDA with HYCOL, the quantity of DAREX II AEA admixtured in concrete may be reduced by about 25%. By combining the separate effects of air entrainment and dispersion, the water requirement of concrete may be reduced up to 15%. EACH ADMIXTURE SHOULD BE ADDED SEPARATELY. While WRDA with HYCOL contains no calcium chloride, it is compatible with calcium chloride in concrete mixes. Again, each should be added separately.

PACKAGING:

WRDA with HYCOL is available in bulk, delivered by metered tank trucks, and 55-gallon drums. WRDA with HYCOL contains no flammable ingredients. IT WILL FREEZE AT ABOUT 28°F, BUT WILL RETURN TO FULL STRENGTH AFTER THAWING AND THOROUGH AGITATION.

ARCHITECTS' SPECIFICATION FOR CONCRETE WATER REDUCING ADMIXTURE:

Concrete shall be designed in accordance with ACI Standard Recommended Practice for Selecting Proportions for Concrete (ACI 211.1-74).

The water reducing admixture shall be WRDA with HYCOL, as manufactured by the Construction Products Division of W. R. Grace & Co.-Conn., or equal. The admixture shall not contain calcium chloride. It shall be used in strict accordance with the manufacturer's recommendations. The admixture shall comply with ASTM Designation C494, Type A water reducing admixtures. Certification of compliance shall be made available upon request.

The admixture shall be considered as part of the total water. The admixture shall be delivered as a ready-to-use liquid product and shall require no mixing at the batching plant or job site.

GRACE
Construction Products

Printed in U.S.A. 1/89 FA/GPS/5000

Current is -92 (or later) by 1992 ASTM Book

TXI CEMENT COMPANY

Hunter Plant - Laboratory
7781 FMR 1102 • New Braunfels, TX 78132-3401
(512) 396-4244 • FAX (512) 396-7064

BAD -89 (Specs) ←

Meets Current ASTM C150 Specifications for Type I - Low Alkali Portland Cement
Meets Current AASHTO M85 Specifications for Type I - Low Alkali Portland Cement
Meets LDOT Specifications for Type I and Type IB - Low Alkali Portland Cement

Silo Number:
Production Date: Average for June 1993

Approved

STANDARD CHEMICAL REQUIREMENTS:				SPECIFICATION	TEST RESULT
Magnesium Oxide,	MgO,	max	%	6.0 %	1.1 %
Sulfur Trioxide,	SO3,	max	%	3.5 %	3.2 %
Loss on Ignition,	LOI,	max	%	3.0 % (3.0 is correct CR)	1.7 %
Insoluble Residue,	IR,	max	%	0.75 %	0.19 %
Tricalcium Aluminate,	C3A,	max	%	none	11.0 %

OPTIONAL CHEMICAL REQUIREMENTS:				SPECIFICATION	TEST RESULT
Total Alkalies,	Na2O eqiv.,	max	%	0.60 %	0.53 %

STANDARD PHYSICAL REQUIREMENTS:				SPECIFICATION	TEST RESULT
Specific Surface,	Wagner,	min	cm^2/g	1600	1938
Specific Surface,	Blaine,	min	cm^2/g	2800	3468
Gillmore Initial Set,	,	min	minutes	60	168
Gillmore Final Set,	,	max	minutes	600	291
Vicat Time of Setting,	,	min	minutes	45	104
Vicat Time of Setting,	,	max	minutes	375	230
Air Content,	volume,	max	%	12.0 %	6.9 %
Autoclave,	expansion,	max	%	0.800 %	0.044 %
3-day Compressive Strength,	cube,	min	psi	1800	3758
7-day Compressive Strength,	cube,	min	psi	2800	4806

OPTIONAL PHYSICAL REQUIREMENTS:				SPECIFICATION	TEST RESULT
False Set,	Final Penetration,	min	%	50 %	86 %
28-day Compressive Strength,	cube,	min	psi	4000	

Note: tests are done on mortar.

State of Texas County of Comal

Mike Davis, being duly sworn deposes and says: that he is Chief Chemist of TXI Cement Company who prepared the above tests and that the same is true and correct.

Subscribed and sworn to me this 7th day of July, 1993

NOTARY PUBLIC STATE OF TEXAS — SHARON G. KING — My Commission Expires June 11, 1996

Notary Public

Mike Davis

Chief Chemist

C3D—5.2.3

GRACE · CONCRETE ADMIXTURES

DESCRIPTION:

DARATARD® -17 admixture is a ready-to-use aqueous solution of hydroxylated organic compounds. Ingredients are factory premixed in exact proportions to minimize handling, eliminate mistakes and guesswork. One gallon weighs approximately 10.2 lbs.

USES:

DARATARD-17 retards the initial and final set of concrete. At the usual addition rate of 3 fl. oz./100 lbs. cement it will extend the initial setting time of portland cement concrete by 2 to 3 hours at 70°F. DARATARD-17 is used wherever a delay in setting time will insure sufficient delivery, placement, vibration or compaction time, such as in

- **Hot Weather Concreting**
- **Transit Mix Concrete**
- **Prestressed Concrete**

DARATARD-17 is also used in special applications, as in bridge decks where it extends plastic characteristics of the concrete until progressive deflection resulting from increasing loads is complete.

WATER REDUCING PROPERTIES:

Along with set retardation, DARATARD-17 provides water reduction (typically 8 to 10%) in a concrete mix. This water reducing action of DARATARD-17 produces greater plasticity and workability in the fresh concrete and the strength and permeability of the hardened concrete are measurably improved. DARATARD-17 is designed for use on jobs where high temperatures or extended setting times are the prime factors. It is recommended only when the primary purpose is to delay and control the setting time of concrete. When time and temperature are not major considerations, W.R. Grace's water reducing admixtures such as WRDA® with HYCOL™ should be used.

COMPATIBILITY WITH OTHER ADMIXTURES:

DARATARD-17 is compatible in concrete with all commercial air entraining admixtures, such as DARAVAIR®. Due to the slight air entraining properties of DARATARD-17, itself, the addition rate of DARAVAIR may be reduced by about 25%. By combining the separate effects of air entrainment and dispersion, the water requirement of concrete may be reduced up to 15%. EACH ADMIXTURE SHOULD BE ADDED SEPARATELY.

Approved

ADDITION RATES:

Addition rates for DARATARD-17 will range from 2 to 5 fluid ounces per 100 lbs. of cement. The amount to be used will depend upon the degree of retardation required under job conditions. Longer setting times or higher temperatures will require higher addition rates. Conversely, the addition rate will be lower for shorter extentions of time.

DISPENSING EQUIPMENT:

A complete line of accurate, automatic dispensing equipment is available. DARATARD-17 may be introduced to the mix with the sand or with the water.

PACKAGING:

DARATARD-17 is available in bulk, delivered by metered tank trucks, and 55-gallon drums. It contains no flammable ingredients. DARATARD-17 WILL FREEZE AT ABOUT 28°F, BUT WILL RETURN TO FULL STRENGTH AFTER THAWING AND THOROUGH AGITATION.

ARCHITECTS' SPECIFICATION FOR CONCRETE RETARDING ADMIXTURE:

Concrete shall be designed in accordance with ACI Standard Recommended Practice for Selecting Proportions for Concrete (ACI 211.1-81).

The set retarding/water reducing admixture shall comply with ASTM Designation C-494, Type D admixture, and shall be DARATARD-17, as manufactured by the Construction Products Division of W.R. Grace & Co.–Conn., or equal. Certification of compliance shall be made available on request. It shall be used in strict accordance with the manufacturer's recommendations.

The addition rate shall be adjusted to produce the specified retardation of the concrete mix at all temperatures.

GRACE
Concrete Products

Printed In U.S.A. 3/90 EA/GPS/5000

LOUISIANA INDUSTRIES

121 BROOKHOLLOW ESPLANADE POST OFFICE BOX 23522
HARAHAN, LOUISIANA 70123
TELEPHONE 504-733-7730

(txi)

July 13, 1993

Pittman Construction Co.
110 Veterans Blvd.
Suite 325
Metairie, La. 70005

Project: Floodwall 17th St. Outfall Canal - Corp of Engineers
DACW2993B0025

Gentlemen:

We offer the following information on our Ready-Mix Trucks and Batch Plants.

PRODUCTION EQUIPMENT

Plant Capacity & Location

Two plants located at 3801 Euphorsine St., New Orleans, La. Certified by LOTD.

(1) Main plant 150 cubic yards per hour
(2) Backup plant 90 cubic yards per hour

BATCHING EQUIPMENT

(1) Automatic computer batching system (both plants)
(2) Cement and Fly Ash (Pozzolan) cumulatively same weigh batcher*
(3) Fine and coarse aggregate cumulatively same weigh batcher*

* Each individual item recorded on printer tape automatically.

SCALES

Scales are checked and calibrated by an outside certified technician every 90 days in accordance with LOTD requirements, however they are checked daily by plant operator as to condition and workability.

TOLERANCES

The batching tolerances are checked on each load. First by computer then by certified batch operator.

BATCH PLANT QUALITY CONTROL

(1) Daily aggregate test (fine & coarse)
(2) Daily moistures - Beginning plus as needed due to weather and or material conditions.
(3) Daily slump, air and temperature checks.

READY-MIX TRUCK CAPACITIES

11 Crane Carriers	10 cu. yd. mixer 12.25 cu. yd. agitator
13 Mack	10 cu. yd. mixer 12.25 cu. yd. agitator

All mixers are equipped with single counter which counts both agitating and mixing revolutions cumulatively.

Sidney Landry
Customer Service Representative

LOUISIANA INDUSTRIES
121 BROOKHOLLOW ESPLANADE POST OFFICE BOX 23522
HARAHAN, LOUISIANA 70123
TELEPHONE 504-733-7730

txi

READY MIX CONCRETE · CEMENT · CONCRETE PIPE · AGGREGATES · LIGHTWEIGHT BLOCKS · BRICKS · CONCRETE PR...

July 13, 1993

old list

MATERIAL SOURCES

Cement - TXI Cement Co. - New Braunfels, Texas

Sand - Louisiana Industries - Isabell, La.

Same as Sun, LA Price pit according to Jerome

Gravel - Louisiana Industries - Isabell, La.

Agg. Source NO objection provided The aggregates are from the approved list

H_2O - City Tap → name?

3801 Euphrosine, NO, LA

Safe to conclude N.O. S&WB

Admixtures - W. R. Grace Co.

Fly Ash - Holnam, Inc. - Type C

BATCH PLANT QUALITY CONTROL

We will perform the necessary test on the following:

Fine Aggregate
Coarse Aggregate
Moisture Content
Weighing Accuracy
Batching & Recording Accuracy

PIT LOCATIONS & MANAGER

Homer Jenkins

Isabell, La. - Sun, La., Price, La.
North Hwy. 16 & 1074 Junction

Perhaps he means Sun, La, Price plant

Telephone 1-800-551-9181

TRUCK MIXINGS SPEED

Mixing - 6-18 RPM
Agitation 2-6 RPM

This does not contrary to any spec (or std) requir. ? performed when time permits. Check ASTM C94.

Placing Concrete

Concrete will be placed with a lifting crane and 1½ c.y. concrete bucket or a swing model BPL-1200 HDR-KVM 32/38 concrete pump with a capacity of 150 c.y./hr.

Cold-Weather Requirements

Concrete will not be placed under cold weather conditions. Should the temperature fall below 32°F before expiration of the curing period, our Quality Control team will make the necessary arrangements to insure compliance with contract documents.

Hot-Weather Requirements

Concrete will not be placed under hot weather conditions. Should we experience hot weather conditions before expiration of the curing period, our Quality Control team will make the necessary arrangements to insure compliance with contract documents.

Curing

Concrete will be moist-cured. Vertical and horizontal surfaces will be cured by using soaker hoses, fog sprayers or sprinklers. Burlap will be used to assist in the moist curing process. Water for the curing process will be obtained from city taps.

INDUSTRIES INC.
P.O. Box 3188 New Orleans, La. 70177 / 4500 N. Dorgenois St., N.O. La. 70117 (504)947-1002 / 947-2714

Building Specialty of New Orleans
P. O. Box 51778
New Orleans, LA 70151

Via Fax: 895-0366

Attn.: Mike

Dear Mike:

In reference to the quotation on 15' x 150' 10 oz. burlap cloths, please be advised that this material meets or exceeds the U. S. Government specifications for **10 oz. burlap.**

Should you require any further information on this product please advise. Thank you for the opportunity to quote.

Sincerely

Rene` Gaudet
President

he is fulfilling to submit spec req. to mtls. used.

LA. INDUSTRIES

PROJECT: 17TH STREET CANAL

COMMENT:

DATE	X1	X2	X1+X2/2 (X)	(X-AVG)**2 (VARIANCE)	X**2
10-08-92	4780	4670	4725	580,835	22,325,625
10-16-92	3730	3780	3755	43,212	14,100,025
10-19-92	3960	3940	3950	166	15,602,500
10-20-92	3730	3780	3755	43,212	14,100,025
10-21-92	3540	3590	3565	158,305	12,709,225
10-22-92	3400	3480	3440	273,398	11,833,600
10-23-92	3640	3710	3675	82,872	13,505,625
10-26-92	3820	3870	3845	13,895	14,784,025
10-27-92	4160	4100	4130	27,931	17,056,900
10-28-92	4300	4350	4325	131,135	18,705,625
10-29-92	4210	4280	4245	79,595	18,020,025
11-02-92	3470	4100	3785	31,640	14,326,225
11-03-92	4630	4650	4640	458,498	21,529,600
11-05-92	3930	3870	3900	3,953	15,210,000
11-06-92	4300	4190	4245	79,595	18,020,025
11-09-92	4280	4400	4340	142,223	18,835,600
11-10-92	4240	4330	4285	103,765	18,361,225
11-13-92	3590	3500	3545	174,620	12,567,025
11-14-92	3630	3680	3655	94,787	13,359,025
11-16-92	4030	4090	4060	9,433	16,483,600
11-17-92	3660	3780	3720	58,988	13,838,400
11-18-92	3680	3800	3740	49,673	13,987,600
11-19-92	3590	3640	3615	121,017	13,068,225
11-21-92	3330	3400	3365	357,455	11,323,225
11-23-92	3960	4030	3995	1,032	15,960,025
02-04-93	4000	4070	4035	5,202	16,281,225
02-08-93	4370	4390	4380	173,993	19,184,400
02-09-93	3540	4070	3805	24,925	14,478,025
02-10-93	4700	4830	4765	643,405	22,705,225
02-11-93	3640	3660	3650	97,891	13,322,500
02-15-93	3520	3560	3540	178,823	12,531,600
02-16-93	3730	3780	3755	43,212	14,100,025
02-17-93	4160	4210	4185	49,340	17,514,225
02-18-93	4600	4530	4565	362,555	20,839,225
02-22-93	3450	3400	3425	289,310	11,730,625
02-24-93	3680	3960	3820	20,413	14,592,400
02-25-93	3930	4010	3970	51	15,760,900
02-26-93	4100	4280	4190	51,586	17,556,100
03-01-93	4170	4240	4205	58,625	17,682,025
03-03-93	3890	3960	3925	1,435	15,405,625

$f_c = f'_c + 1.34S$

$= 2500 + 1.34(362) = 2985$ psi

SUM OF X**2	633,297,125
SUM OF X	158,515
NO OF TESTS	40
AVERAGE OF X	3963
SUM OF VARIANCES	5,121,994
STD. DEV.	362
MOD. FACTOR	1.00
MOD. STD. DEV.	362

$f_c = f'_c + 1.34S$

$= 3000 + 1.34(362)$

$= 3485$ psi

< 505

Project: 17th Canal East Capping Date: 10 Aug 93

Transmittal #: 1 Computed by: S. Holley

Steps coincide with those found in ACI 211.1.

1. Maximum slump 1-4 in. (See spec para C3D-7.2.5)
2. Maximum size aggregate (MSA) 3/4 in. (See spec para C3D-7.2.3)
3. Air entrained? 3-6 % (See Submittal)

Water 305-55 = 250 #/yd^3 (from Table 5.3.3 found in ACI 211.1)

WRA? 4 oz Water reduced by _____ % Adjusted water 250 #/yd^3

4. Design strength 2500 psi in 28 days (See spec para _____)

Required strength 2985 psi in _____ days (See spec para _____)

Water-Cement ratio (W/C) 0.67 (from Table 5.3.4.a found in ACI 211.1)

5. Contractor submitted values of Water-Cement Ratios.

	W/C 0.77		0.67
Weight of Cement = wt of water / W/C	230 / 0.77 = 300 + 100 #/yd^3	_____ #/yd^3	250 / 0.67 = 373 #/yd^3

6. Fineness modulus (FM)

Sieve Size	3/8"	#4	#8	#16	#30	#50	#100	Total	
% Retained	(0 + ____	+ ____	+ ____	+ ____	+ ____	+ ____	= ____)	÷ 100 = FM = ____	assume 2.40

Volume of Coarse Agg. / Vol. of Concrete = $V_{C.A.}/V_{conc}$ = 0.66 (from Table 5.3.6)

Dry rodded unit wt. of coarse agg. ($\gamma_{C.A.}$) 100 #/ft^3 (See Submittal or *)

Coarse Aggregate (C.A.) = $\frac{V_{C.A.}}{V_{conc}}$ ($\gamma_{C.A.}$) 27 = 0.66(100)27 = 1782 #/yd^3 ACI Contractor

7. Fine Aggregate (F.A.) by Absolute Volume

$$\text{Vol} = \frac{1\ \text{yd}^3\ (x\ \#/\text{yd}^3)}{SG\ (62.4\ \#/\text{ft}^3)}$$

		W/C =		W/C =		W/C =	
Material	Specific Gravity	#/yd^3	Vol (ft^3)	#/yd^3	Vol (ft^3)	#/yd^3	Vol (ft^3)
Water	1.0	230	3.7			250	4.01
Cement	3.15	300	1.53			373	1.89
Flyash	2.60	100	0.62			100	0.62
C.A.	2.53	1850	11.72			1782	11.28
Air	--	5 %	1.35	%		5 %	1.35
Total			18.92				19.15
Vol. Req.			27.0000		27.0000		27.0000
F.A.	2.62	1320	8.08			1283	7.85

* ASSUMED (SG: Cement 3.15; CA 2.53; F.A. 2.62) ($\gamma_{C.A.}$ = 100 #/ft^3)

Project: 17th Canal capping Date: 10 Aug 93

Transmittal #: 1 Computed by: S. Holly

Steps coincide with those found in ACI 211.1.

1. Maximum slump 1-4 in. (See spec para CSD-7.2.5)
2. Maximum size aggregate (MSA) 3/4 in. (See spec para CSD-7.2.3)
3. Air entrained? 3-6 (See Submittal)

Water 305-55 = 250 #/yd^3 (from Table 5.3.3 found in ACI 211.1)

WRA? yes Water reduced by _____ % Adjusted water 250 #/yd^3

4. Design strength 3000 psi in 28 days (See spec para _____)

Required strength 3485 psi in 28 days (See spec para _____)

Water-Cement ratio (W/C) _____ (from Table 5.3.4.a found in ACI 211.1)

5. Contractor submitted values of Water-Cement Ratios. ACI

	W/C 0.62		0.55
Weight of Cement = wt of water / W/C =	233 / 0.62 = 376 #/yd^3	_____ #/yd^3	250 / 0.55 = 424 #/yd^3

6. Fineness modulus (FM)

Sieve Size	3/8"	#4	#8	#16	#30	#50	#100	Total
% Retained	(0 + ____	+ ____	+ ____	+ ____	+ ____	+ ____	= ____)	÷ 100 = FM = 240

Volume of Coarse Agg. / Vol. of Concrete = $V_{C.A.}/V_{conc}$ = 0.66 (from Table 5.3.6)

Dry rodded unit wt. of coarse agg. ($\gamma_{C.A.}$) 100 #/ft^3 (See Submittal or *)

Coarse Aggregate (C.A.) = $\frac{V_{C.A.}}{V_{conc}}$ ($\gamma_{C.A.}$) 27 = .66(100)27 = 1782 #/yd^3

ACI

7. Fine Aggregate (F.A.) by Absolute Volume

Vol = $\frac{1\ yd^3\ (x\ \#/yd^3)}{SG\ (62.4\ \#/ft^3)}$

		W/C =		W/C =		W/C =	
Material	Specific Gravity	#/yd^3	Vol (ft^3)	#/yd^3	Vol (ft^3)	#/yd^3	Vol (ft^3)
Water	1.0	233	3.73			250	4.01
Cement	3.15	376	1.91			424	2.15
Flyash	2.60	94	.024			94	.024
C.A.	2.53	1775	11.24			1782	11.28
Air	--	5 %	1.35	%		5 %	1.35
Total			18.25				18.82
Vol. Req.			27.0000		27.0000		27.0000
F.A.	2.62	1430	8.74			1337	8.17

* ASSUMED (SG: Cement 3.15; CA 2.53; F.A. 2.62) ($\gamma_{C.A.}$ = 100 #/ft^3)