BB- Mr. Johnson
BBR- Mr. Adams
BBQ- Mr. Homan
MP- Mr. Heim

Martinez- Mr. Koopmann
" - Mr. Costa
MG- Mr. Emerson
BBA- Mr. Smith
MB-PB-PBL
MJ-PJ-PJL
MK-PK-PKL
MS-PS-PSL

PRODUCT DEVELOPMENT PROGRESS REPORT

BUILDING MATERIALS DIVISION
BIRD & SON, inc.

PLAINTIFF'S EXHIBIT
BIR-774

Project No. 012

Report No. 1

Date 4/20/71

Project Title: **ROOFING CEMENTS & COATINGS**

Object:

1. To re-formulate certain of the Bird-produced cements and coatings to meet the appropriate Federal Specifications for use in built-up roofing.

2. To check the availability of certain other cements and coatings produced by others for Bird and also meeting the appropriate Federal Specifications.

RESULTS:

1. An asphalt primer meeting interim Federal Specification SS-A-00701a has been formulated. AC estimates that production of a primer of this formulation would affect raw material costs as follows:

	Per 100 gallons	Projected 1971 Volume
a. FB, FJ	$0.80 increase	$119.20 total increase
b. FK	$1.00 increase	$ 2.95 total increase
c. FS	$1.10 decrease	$ 1.82 total decrease

2. A plastic cement meeting interim Federal Specification SS-C-00153A, Type I, Amendment-2 has been formulated. AC estimates that production of a plastic cement of this formulation would affect raw material costs as follows:

	Per 100 gallons	Projected 1971 Volume
a. FB	$4.40 increase	$3815 total increase
b. FJ	$2.50 increase	$0.75 total increase
c. FK	$7.80 increase	$215 total increase
d. FS	$0.50 decrease	$108 total decrease

3. A fibrated roof coating meeting interim Federal Specification SS-A-00694c has been formulated. AC estimates that production of a roof coating of this formulation would affect raw material costs as follows:

	Per 100 gallons	Projected 1971 Volume
a. FB	$1.90 increase	$1214 total increase
b. FJ	$3.40 increase	$35 total increase
c. FK	$2.60 increase	$100 total increase
d. FS	$4.90 increase	$412 total increase

4. The Pacific Division has available #56 Roof Coating which meets SS-A-00694c, when so ordered. Also available are four cements which meet SS-C-153, Type I but can probably, in time, be ordered to meet SS-C-00153A, Type I, Amendment-2. Their #1099 Concrete Primer meets SS-A-701 but will probably, eventually, be available, on order, to meet SS-A-00701a.

5. Bird "Waterdyke" Asphalt Emulsion can be supplied on order to meet ASTM D 1227-59 Type I and/or MIL-R-3472 at FB, FJ, FK, and FS. An equivalent product (#187 Asphalt Emulsion, Fibred) is available at the West Coast plants.

RECOMMENDATIONS:

1. That FB, FJ, FK, FS mill laboratories adjust the basic formulas to accommodate their raw materials, making certain that the performance requirements and Federal Specifications are met for this cement, primer, and coating, using BBH recommended formulations as a starting point.

2. That the mills convert all of their production of these cements and coatings to meet the appropriate Federal Specification.

3. If implementation of Recommendation #2 appears economically or otherwise impracticable that the mills be prepared to turn out compounds meeting Federal Specifications on special order. This will necessitate acting on Recommendation #1 to be certain the proper formulation for each division is on hand.

DISCUSSION:

At increasingly frequent intervals, there has been a demand for certain cements and coatings which will meet Federal Specifications. This is especially true of those coatings and cements which are used in built-up roofing. With the company's widening involvement in built-up roofing, it was deemed expedient to re-formulate these compounds so that they would meet the latest specifications.

At the same time, it was considered desirable to introduce some degree of uniformity of formulation among the mills which produce their own cements and coatings. Accordingly, the prototype formulations were undertaken at BBH. The ingredients available at FB were those used for this project. For this reason, it may be found that each mill laboratory has to make minor changes in the so-called "starting" formulas in order to produce a compound which conforms in all respects to the restrictive specifications.

Formulations: The following are the suggested starting formulations.

Asphalt Primer (Meets SS-A-00701a)(BBH Reference #124-18)

		% by Wt.
a. For FB:	#21 Asphalt	40
	#18 Asphalt	10
	Mineral Spirits	50
b. For FK:	#530 Asphalt Cutback	72.5
	Varsol #2	27.5

		% by Wt.
c. For FS:	#14 Asphalt	40
	#18 Asphalt	10
	Stoddard Naphtha	50

Characteristics of lab-made prototype:	Actual	Required by SS-A-00701a
Saybolt-Furol Visc. @ 77°F.	39 sec.	25-75 sec.
Distillation: 1. % by vol. to 437°F.	44%	Min. 35%
2. % by vol. to 680°F.	56.5%	Max. 65%
Residue from Distillation @ 680°F.:		
Penetration @ 77°F. (100 g, 5 sec.)	41.1	20-50
Solubility in CS_2	99.6%	Min. 99%
Specific gravity @ 77°F.	0.8856g/ml or 7.38 lb./gal.	-

Plastic Cement (Meets SS-C-00153A, Type I)(BBH Reference #124-47) Ammendment-2

		% by Wt.
a. For FB:	#21 Asphalt	51.0
	7R Asbestos	14.0
	#36 EMTal	6.5
	FBW Dust	6.5
	#2 Fuel Oil	3.5
	Mineral Spirits	18.5
b. For FJ:	40/50 Asphalt Cutback	72.9
	7R Asbestos	14.0
	#36 EMTal	6.5
	Limestone Filler	6.5
	Kerosene	0.1
c. For FK:	#530 Asphalt Cutback	74.0
	7R Asbestos	14.0
	#36 EMTal	6.0
	FKW Dust	6.0
d. For FS:	#14 Asphalt	51.0
	7R Asbestos	14.0
	Georgia Talc	6.5
	Glenwood Filler	6.5
	Kerosene	3.5
	Stoddard Naphtha	18.5

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Characteristics of lab-made prototype:

	Actual	Required by SS-C-00153A, Type I Summer Grade	Winter
Non-volatile	78%	Min. 70%	Min. 62%
Solvent, flashpoint	Min. 100°F.	Min. 80°F.	
Filler: % total mix	27%	15-45%	12-40%
% asbestos	52%	50%	
Spreadability - room	Good, no pull	Good, no pull	
40°F.	" " "	-	
Vertical Sag 5 hrs. @ 140°F.:			
Metal	None	1/4"	
Old Reliable	1/8"	1/4"	
Sat. Felt	None	1/4"	
Blistering on metal - 5 hrs. @ 140°F.	None	None	
Bending on metal 1 hr. @ 32°F.:			
Cracking	None	None	
Separation	None	None	
Schutte Visc. (3/4" orifice @ 77°F.)	1-4 sec.	-	
Specific gravity @ 77°F.	1.072 g/ml or 8.93 lb./gal.	-	

Liquid Roof Coating (Fibrated) (Meets SS-A-00694C)(BBH Reference #124-40)

		% by Wt.
a. For FB:	#21 Asphalt	50.0
	7R Asbestos	12.0
	Mineral Spirits	38.0
b. For FJ:	40/50 Asphalt Cutback	71.5
	7R Asbestos	12.0
	Mineral Spirits	16.5
c. For FK	#530 Asphalt Cutback	72.5
	7R Asbestos	12.0
	Varsol #2	15.5
d. For FS:	#14 Asphalt	50.0
	7R Asbestos	12.0
	Stoddard Naphtha	38.0

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