APPROPRIATION

LOCATION MANVILLE B.P. APPROPRIATION NO. 040-IR-0325

FACTORY DEPT RIGID SHINGLES - 440 DATE OF REQUEST November 30, 196

STATE BRIEFLY WHAT YOU PROPOSE TO DO AND WHY

GENERAL DESCRIPTION

Provide Improved Dust Control Facilities at H Building.

PRESENT EQUIPMENT

Existing dust control equipment is inadequate. While dust collectors are systematicall cleaned and maintained, dust counts are above the allowable concentration and beyond local control

REASON FOR PROPOSED PROJECT

To protect safety and health of employees.

APPROXIMATE COST (Estimates are for two plans independent of each other.)

Provide Improved Dust Control at the following equipment. GPED Estimate BP-MAN	PLAN I Health Hazard Dust Only 2551-A	PLAN II Health Hazard & Visible Dust 2551
A. At Shingle Machines	$ 98,790	$124,650
B. At Punch Presses	41,440	32,480
C. At Scrap Grinding Equipment	25,650	21,720
D. At Corrugated Press	3,920	6,270
E. At Flexboard Machine	-	12,980
F. Pallet Cleaner & Blow-Off Booth	-	13,500
G. Engineering	9,100	11,300
Totals including 10% Contingency and 2% Escalation	$178,900	$222,900

SAVINGS & BENEFITS

1 - Depending upon production volume, improved protection against dust for 64 to 102 employees who are directly affected.
2 - Compliance with J-M Industrial Health Standards.
3 - Incidental savings, in Plan II, of $15,230 per annum.

DISTRIBUTION

0 - J. E. Donnelly
1 - R. S. Hammond
2 - J. H. Hanford
3 - J. W. Roberts
4 - W. F. Fischer
5 - A. C. Smith
6 - T. R. Smith
7 - G. W. Mather
8 - E. I. Merrill (2)
9 - J. P. Suk
10 - G. H. Winquist
11 - P. D. Frost
12 - A. G. Buck

Responsibility: GPED

A 1961 Budget Addition covering the expens portion Plan I $6,260
Plan II $6,950
of this A.R. is also requested.

Approval is based on Item No. 5 Chairman of the Board's Bulletin #90.

APPROVED BELOW BUT WITHHOLDS AN APPROPRIATE OF	PLAN I $178,900	PLAN $222

TITLE: H BLDG. IMPROVED DUST CONTROL FACILITIES

A.R. NO: 040-IR-0325

INCREASED CAPACITY

None

LABOR, UTILITY REQUIREMENTS

Plan I, none. Plan II, 60 h.p. additional.

REMARKS

Retirement No. 040-0326 covers dismantling expense of $4,800 and restoration of premises at $3,500 for $8,300 total.

Account Nos.

	PLAN I			PLAN II					
		6817				6817		In-	Equip.
Item	2341	331	201	2241	2341	331	201	Stalled	No.
A	$ 94,865	$450	$3,475		$119,950	$560	$4,140	1954	2936
B	40,210		1,230		31,250		1,230	1951	2991
C	24,865		785		21,050		670	1950	2905
D	3,920				6,270			1950	3200
E				$12,980					*
F				13,500					*
G	8,780	30	290	1,415	9,535	35	315		
Tot.	$172,640	$480	$5,780	$27,895	$188,055	$595	$6,355		

* New equipment number to be assigned.

Estimated Life: 15 Years

File No. 440-2-012
Work to be performed by outside contract.

RETIREMENT PROPOSAL

DATE OF REQUEST November 30, 196

RETIREMENT PROPOSAL NO 040-0326

REASONS FOR RETIREMENT REPLACED BY A.R. 040-IR-0325

EQUIPMENT INADEQUATE AND OBSOLETE

DISPOSITION TO BE MADE OF RETIRED EQUIPMENT Salvage or Scrap

EXPENDITURE NECESSARY	
DISMANTLING EXPENSE	$ 4,800
RESTORATION OF PREMISES	3,500
OTHER COSTS	
TOTAL	$ 8,300

ACCOUNT NO	ITEM NO	DESCRIPTION (SHOW DESCRIPTION OF ITEM, APPROPRIATION NUMBER ON WHICH ORIGINALLY PURCHASED AND "ESTIMATED LIFE" ASSIGNED AT TIME OF PURCHASE)	DATE INSTALLED	COST	DEPRECIATION	SALVAGE VALUE	PROFIT & LOSS
2241	1.	Pangborn Collector Type CC, Size #8, and Supports Asset: #2935 Appro: 555-4049, Code 9245 Est. Life: 9 years Transferred to fixed assets:	1938	$2,144.			
	2.	Ductwork to Pangborn Collector Asset: #2935 Appro: 555-4049, Code 9244 Est. Life: 7 years Transferred to fixed assets:	1938	$ 175.			

Approval of this retirement is contingent upon approval of either Plan I or Plan II of Appropriation Request 040-IR-0325.

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7 - G. W. Mather
8 - E. I. Merrill (2)
9 - J. P. Suk
10 - G. E. Winquist
11 - P. D. Frost
12 - A. G. Buck
13 - S. Sargent
14 - E. J. Brundage

MANVILLE (PLANT) BUILDING PRODUCTS (DIVISION)

440 (DEPARTMENT) RIGID SHINGLES (PRODUCT)

APPROVAL BELOW WILL AUTHORIZE DISCARDING OF EQUIPMENT WHICH ORIGINALLY COST $ 2,319

AND A FURTHER EXPENSE TO BE INCURRED IN ITS DISPOSITION OF $ 8,300

1127

FORM E 7068 7-47 PRINTED IN U.S.A.

RETIRE PANGBORN COLLECTOR - Retirement Proposal 040-0326

INDUSTRIAL ENGINEERING DEPARTMENT

JOHNS-MANVILLE

MANVILLE FACTORY

Report No. 440-4-007

Page No. 1

Date November 30, 1960

SUBJECT: H BLDG. IMPROVED DUST CONTROL FACILITIES
A.R. No. 040-IR-0325
File No. 440-2-012

I PROJECT

Provide Improved Dust Control in the H Building forming centers to protect safety and health of employees.

II FACILITIES

A. Present

Existing dust control equipment is inadequate. While this equipment has a network of duct work and hoods, which are systematically cleaned and maintained, the collectors have not been modernized, nor have control hoods been improved, as required by J-M Standards. Dust control has become a fluid condition with the problem as a whole beyond local control.

The worst deficiencies are at the Shingle Forming Machines System, at the Shingle Punch Press System and at the Shingle Scrap Grinding System. Control is inadequate also at the Corrugated Press and at the Flexboard Forming Machine.

In the Shingle Forming Center, the Pangborn collector provides no dust control at all when it is shut down for cleaning. Cleaning of the Pangborn causes a cloud of dust which remains in the forming and punching centers for a considerable period of time. Also, during operation, the Pangborn lacks adequate capacity.

In the Punching and Scrap Grinding Centers, the collectors are self cleaning, but they lack adequate capacity.

In the Corrugated Transite forming center, dust control is inadequate.

Dust Control is non-existent except for one connection in the Flexboard forming center.

Dust counts at stations in these areas exceed the maximum allowable limit for concentration set by the Johns-Manville Industrial Hygiene Policy. Present conditions constitute potential health hazards at the stations listed in the following tabulation:

DISTRIBUTION
0 - J. E. Donnelly
1 - R. S. Hammond
2 - J. H. Hanford
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4 - W. F. Fischer
5 - A. C. Smith
6 - T. R. Smith
7 - G. W. Mather
8 - E. I. Merrill (2)
9 - J. P. Suk
10 - C. H. Winquist
11 - P. D. Frost
12 - A. G. Buck

PREPARED BY P. E. Ryder REQUESTED BY P. D. Frost APPROVED See Page 5.

Locations of Potential Health Hazard Conditions

(Ref: Quarterly Dust Abatement Program Reports)
For specific counts consult C. L. Sheckler.

Sample Station Number	Location	Year Quarter	Dust Counts 58 4	1959 1	1959 2	1959 3	1959 4	1960 1	1960 2	1960 3
S 3 H	#3 Shingle Machine: Vibrator Screen east side		Hi					Hi		
S 6 H	#2 Shingle Machine: Fluff Box, south end, west side		Hi		Hi	Hi		Hi		
S 7 H	#2 Shingle Machine: Charge Dry Mixer							Hi		
S 13 H	#2 Shingle Machine: Manual Take-Off, S.W. Corner							Hi		
S 15 H	#2 Shingle Machine: Manual Take-Off, N.W. Corner					Hi		Hi		
S 17 H	#3 Shingle Machine: 1st. Fluff Box, S.E. Corner (#50's)		Hi					Hi		
S 18 H	#3 Shingle Machine: 1st Fluff Box, N.E. Corner (#50's)		Hi		Hi			Hi		
S 19 H	#6 Punch Press: S.E. Corner at Feed		Hi					Hi		
S 21 H	#6 Punch Press: Take-Off, N.W. Corner		Hi					Hi		
S 28 H	#3 Shingle Machine: Manual Take-Off					Hi				
S 30 H	#4 Punch Press: S. W. Corner, Feed Press		Hi		Hi	Hi		Hi		
S 31 H	#4 Punch Press: Scrap falls to conveyor, west side		Hi		Hi			Hi		
S 32 H	Scrap Grinder: S.E. Corner, break & feed shingles							Hi		
S 33 H	Scrap Bucket: E. side, dust falls from grinder		Hi			Hi		Hi		
S 41 H	Corrugated Transite Press: Charge Dry Mixer		Hi			Hi				
S 42 H	#5 Punch Press: S.E. Corner at Feed							Hi		
S 43 H	#5 Punch Press: N.W. Corner at Take-Off		Hi					Hi		
S 44 H	#3 Punch Press: S.E. Corner at Feed							Hi		
S 60 H	#2 Shingle Machine: West side, between new 4-Bin Slate Hoppers and Control Panel						Hi			
S 63 H	#1 Punch Press: W. side of conveyor after sheets are punched							Hi		

Above the allowable for Asbestos Fibres as well as for silica particles.

II FACILITIES (CONT'D)

B. Proposed

Proposed is a complete, but conservative, revision of dust control systems in the Shingle, Corrugated Transite and Flexboard forming centers, and in the Punching and Scrap Grinding centers.

Revisions would include provision of a continuous self-cleaning collector to replace the existing Pangborn collector in the shingle forming section, additions to the capacities of the other collectors and increased hoods and duct work to effect the required control.

Dust control revisions are proposed in two separate plans.

Plan I. provides for improved control of Health Hazard Dust. However, the elimination of high dust counts in this plan will not guarantee the elimination of complaints or claims. If there is any visible dust escaping, we may still be judged liable regardless of the dust count reading.

Plan II provides for both Health Hazard and Visible Dust Control.

Present and proposed volumes, handled by the present and proposed systems, are summarized in the following tabulation:

COMPARISON OF PRESENT & PROPOSED DUST CONTROL VOLUMES (CUBIC FT. PER MIN.)

		Present	PLAN I (Add'l)	Present Plus PLAN I	PLAN II (Add'l)	Pres Plus PLAN
A.(1)	#2 Shingle Machine	12,000	4,000	16,000	8,700	20,
A.(2)	#3 Shingle Machine	19,200	2,200	21,400	4,900	24,
B.	Punch Presses	22.900	700	23.600	700	23,(
C.	Scrap Grinding	15,800	3,800	19,600	3,800	19,(
D.	Corr. Transite Press	8,500	600	9,100	600	9,:
E.	Flexboard Machine	-	-	-	4,200	4,:
F.	Baler, Slate Blender, Pallet Cleaner	9,100	(2,100)	7,000	9,900	19,(
	Total	87,500	9,200	96,700	32,800	120,:

(A detailed breakdown of volumes is shown in Table 1 of appendix.)

The existing systems are positive pressure systems. That is, the fans pick up the dust-laden air and then push it to the collectors.

The proposed systems would be negative pressure systems so that ducts and collectors would be under vacuum. This type system prevents discharging dust through holes, cracks or openings back into the operating areas.

III TYPE OF PROJECT

This is a project to protect safety and health of employees.

IV ESTIMATED EXPENDITURE FOR PROJECT

Summaries of GPED estimates follow. These particular estimates are for separate plans and present a choice; they are not consecutive so as to allow for doing Plan I now and the additional portion later.

	Health Hazard Dust Control Only	Both Health Hazard & Visible Dust Control
GPED Estimate No: BP-MAN Appropriation Request	2551-A Plan I	2551 Plan II
Provide Improved Dust Control at the following equipment:		
A. Shingle Machines	$ 88,200	$111,300
B. Punch Presses	37,000	29,000
C. Scrap Grinding Equipment	22,900	19,400
D. Corrugated Transite Press	3,500	5,600
E. Flexboard Machine	-	11,600
F. Pallet Cleaner & Blow-Off Booth	-	12,000
Sub Total	$151,600	$188,900
Contingency 10%	15,200	18,900
Engineering 6%	9,100	11,300
Escalation 2%	3,000	3,800
Totals	$178,900	$222,900

Estimated Life: 15 Years
(Detailed breakdowns of estimates are shown in Tables #2 and #3 of appendix.)

V OTHER INVESTMENT

None

VI BENEFITS & SAVINGS

1 - Improved compliance with dust concentration limits, as specified by the J-M Industrial Health Standards, will be attained.

2 - Improved protection of health through dust control, and improvement in sub-standard working conditions will be effected for from 64 to 102 employees depending upon production volume.

3 - Incidental cost reduction, net annual, for Plan II is $15,230 based on reduced material losses resulting from a negative pressure system and improved control.

VII TIME TO COMPLETE PROJECT

Estimated time to complete project, nine months.

VIII RECOMMENDATIONS

Both of the proposed plans are conservative but strategic. Accomplishing of dust control in the forming centers, at points of origin, would also minimize need to clean up dust which spreads through the rest of the building. Proposed facilities are only those deemed feasible to install at this time to obtain good dust control and yet not interfere with forming machine operation.

Early consideration for approval is recommended to secure benefits of Section VI, especially of Plan II for control of both Health Hazard and Visible Dust. In any event, the Pangborn intermittent collector (Item A. 1. of Shingle Machine Dust Control System, Tables #2 and #3) requires replacement.

APPROVALS

Approval by the Department Superintendent indicates belief in the improvement set forth and requests the Factory Manager's approval.

DEPARTMENT SUPERINTENDENT

Approval by the Industrial Engineering Supervisor certifies the savings and benefits set forth are as represented, and that the proposal is sound by all standards which can be applied.

INDUSTRIAL ENGINEERING SUPERVISOR

CALCULATION OF SAVINGS

FACTORY Manville B.P.

PROJECT # 040-IR-0325 PLAN II

DEPT 440 - Rigid Shingles

PROJECT TITLE H BLDG, IMPROVED DUST CONTROL FACILITIES

DATE November 30, 1960

BASIS Operation 5 days per week, to meet the sales forecast.

UNIT LB.

	GROSS ANNUAL SAVINGS	COST TO OBTAIN SAVINGS	SCHEDULE REFERENCE
A – MATERIAL			
1-PRICE (DEL'D)			
2-INCREASE IN MAT USAGE			
3-DECREASE IN MAT USAGE	$20,675		A-3
4-SUBSTITUTION			
5-PROCESSING LOSS			
TOTAL MATERIALS	$20,675		
B – DIRECT LABOR			
1-DIRECT LABOR			
2-SHIFT DIFFERENTIAL			
3-SOC SEC & TAXES			
TOTAL DIRECT LABOR			
C – DEPT MFG EXPENSE			
1-EXPENSE LABOR			
A) EXPENSE LABOR			
B) SHIFT DIFFERENTIAL			
C) SOC SEC & TAXES			
TOTAL EXPENSE LABOR			
2-SERVICE DEPT CHARGES			
A) STEAM			
B) HEAT			
C) POWER		$1,593	C-2-C
D) WATER			
E) E & R LABOR			
F) INSPECTION			
G) REC & SHIPPING			
H) OTHERS (EXPLAIN) Maintenance		533	C-2-H
TOTAL SER CHGES		$2,126	
3-EXP MAT & OTHER CHARGES			
A) FUEL			
B) REP & MAINT MATL			
C) GEN SUPPLIES			
D) WEARABLE PROD SUPPLIES			
E) OTHERS (EXPLAIN)			
TOTAL EXP MATL			
D – DEPRECIATION		$2,886	D
E – FINANCE OFFICE			
F – FACTORY GENERAL		$ 433	F
G – ROYALTIES			
TOTAL	$20,675	$5,445	

GROSS ANNUAL SAVINGS $20,675

COST TO OBTAIN SAVINGS 5,445

NET ANNUAL SAVINGS = $15,230

SUPPORTING SCHEDULE

Savings Anticipated From Plan II Installation

SCHEDULE A-3: Decrease In Material Usage

	Shingles	Corrugated Transite	Flexboard	Total
Pounds of furnish used per yr.	87,187,734	12,358,240	19,453,016	
Loss conservatively estimated at 1.25%* because of lack of negative system & proper dust control	1,089,847	154,478	243,163	
Value of furnish at shingle furnish cost, $/lb.	.0139	.0139	.0139	
Material savings per yr.	$15,149	$2,147	$3,379	$20,675

* In study of similar positive pressure dust system in I Building, Transite Pipe Division, dust loss was found to be approximately 1.6%.

SCHEDULE C-2-C: Power

HP x KW/HP x Hrs./year x $/KWH = Annual Cost
60 x .746 x 4000 x $.0089 = $1,593 Additional Cost

SCHEDULE C-2-H: Maintenance

Average annual maintenance on forming center collectors, $2133
Est. additional maintenance 25%
$2,133 @ 25% = $533.

SCHEDULE D: Depreciation

$215,940 - $172,650 = $43,290
$43,290 @ 15 yr. life = $ 2,886

SCHEDULE F: Factory General

Additional portion of project cost $43,290
$43,290 @ 1% = $433.

APPENDIX - TABLE 1
DUST CONTROL VOLUMES - in Cubic Feet per Minute (C.F.M.)

A(1) #2 SHINGLE MACHINE HOODS

		Present	PLAN I (Add'l)	Present Plus PLAN I	PLAN II (Add'l)	Present Plus PLAN II
1.	Cement Bin	400	200	600	200	600
2.	Weigh Hopper	400	200	600	200	600
3.	Bag Dumper	900	-	900	-	900
4.	Elev. to Primary Mixer	-	600	600	600	600
5.	Primary Mixer	600	-	600	-	600
6.	Secondary Mixer	1,200	(600)	600	(600)	600
7.	Feed Elevator	400	200	600	200	600
8.	Sand Hopper	900	900	1,800	900	1,800
9.	Magnetic Pulley	-	900	900	900	900
10.	Fluff Box	1,600	-	1,600	-	1,600
11.	Veneer Applicator	1,800	700	2,500	700	2,500
12.	Grain Roll	-	-	-	2,000	2,000
13.	Belt End After Grain Roll	-	-	-	900	900
14.	Belt End Before Grain Roll	-	-	-	900	900
15.	Belt Scraper Before Grain Roll	-	-	-	900	900
16.	Veneer Mixer	1,600	-	1,600	-	1,600
17.	Veneer Elevator	600	-	600	-	600
18.	Scrap Bin	1,600	(700)	900	(700)	900
19.	Scrap Bucket	-	1,600	1,600	1,600	1,600
		12,000	4,000	16,000	8,700	20,700

A(2) #3 SHINGLE MACHINE HOODS

1.	Cement Bin	600	-	600	-	600
2.	Silex Bin	600	-	600	-	600
3.	Weigh Hopper	500	100	600	100	600
4.	Bag Dumper	-	900	900	900	900
5.	Mixer	1,600	(1,000)	600	(1,000)	600
6.	Willow Elevator	-	600	600	600	600
7.	Feed Elevator	600	-	600	-	600
8.	Transfer - Top Belt to Lower Belt	5,400	(4,500)	900	(4,500)	900
9.	Lower Belt to #1 Fluff Box	-	900	900	900	900
10.	Sand Box	900	900	1,800	900	1,800
11.	Magnetic Pulley	-	900	900	900	900
12.	Fluff Box #1	1,600	-	1,600	-	1,600
13.	Lower Belt Clean Off - #1	-	900	900	900	900
14.	Lower Belt Clean Off - #2	-	900	900	900	900
15.	Lower Belt to #2 Fluff Box	900	-	900	-	900
16.	Magnetic Pulley	-	900	900	900	900
17.	Fluff Box #2	1,600	-	1,600	-	1,600
18.	Veneer Applicator	1,800	700	2,500	700	2,500
19.	Belt End After Grain Roll	-	-	-	900	900
20.	Belt End Before Grain Roll	-	-	-	900	900
21.	Belt Scraper Before Grain Roll	-	-	-	900	900
22.	Veneer Mixer	900	700	1,600	700	1,600
23.	Veneer Elevator	600	-	600	-	600
24.	Scrap Bin	1,600	(700)	900	(700)	900
		19,200	2,200	21,400	4,000	23,100

APPENDIX - TABLE 1 (CONT'D)

	Present	PLAN I (Add'l)	Present Plus Plan I	PLAN II (Add'l)	Present Plus Plan II
HOODS FOR PUNCH PRESSES					
Press #1	3,600	-	3,600	-	3,600
Press #2	3,600	-	3,600	-	3,600
Press #3	3,600	-	3,600	-	3,600
Press #4	3,600	-	3,600	-	3,600
Press #5	3,600	-	3,600	-	3,600
Press #6	3,600	-	3,600	-	3,600
Scrap Box	1,300	700	2,000	700	2,000
	22,900	700	23,600	700	23,600
HOODS FOR SCRAP GRINDING SYSTEM					
Prebreaker Hopper	900	-	900	-	900
Mill Capacity Hopper	-	900	900	900	900
Bucket Elevator	-	600	600	600	600
Fibre Handling	14,000	-	14,000	-	14,000
Crusher Pit	900	2,300	3,200	2,300	3,200
	15,800	3,800	19,600	3,800	19,600
HOODS FOR CORRUGATED TRANSITE PRESS					
Cement Bin	600	-	600	-	600
Silex Bin	600	-	600	-	600
Skip Hoist	2,500	-	2,500	-	2,500
Dry Mixers	3,600	-	3,600	-	3,600
Weigh Hoppers	-	600	600	600	600
Secondary Dry Mixers	1,200	-	1,200	-	1,200
	8,500	600	9,100	600	9,100
HOODS FOR FLEXBOARD MACHINE					
Cement Bin	-	-	-	600	600
Silex Bin	-	-	-	600	600
Weigh Hopper	-	-	-	600	600
Bucket Elevator	-	-	-	600	600
Mixer	-	-	-	900	900
Bag Dumper	-	-	-	900	900
	-	-	-	4,200	4,200
HOODS FOR BALER, SLATE BLENDER, PALLET CLEANER					
Paper Baler	2,500	-	2,500	-	2,500
Slate Blender	5,000	(2,600)	2,400	(2,600)	2,400
Wet Scrap Elevator Boot	-	600	600	600	600
Wet Scrap Elevator	-	600	600	600	600
Wet Scrap Storage Hopper	1,600	(700)	900	(700)	900
Blow-Off Booth (Personnel)	-	-	-	4,000	4,000
Blow-Off Booth (Pallets)	-	-	-	4,000	4,000
Blow-Off Booth (Personnel)	-	-	-	4,000	4,000
	9,100	(2,100)	7,000	9,900	19,000
Totals	87,500	9,200	96,700	32,600	120,300

[illegible] Detailed Breakdown. (Plan I of A.R.)

TABLE 2.

For Health Hazard Control Only

	Capital Mat'l.	Capital Labor	Capital Total	Expense Mat'l.	Expense Labor	Expense Total	PLAN I Over-All Totals
A. Rigid Shingle Machines Dust Control System							
1. Purchase & Erect Automatic -Continuous Dust Coll.	$26,000	$12,500	$38,500	$100	$ 500	$ 600	$39,100
2. Purchase & Erect Main Exhaust Fan	10,000	800	10,800	-	-	-	10,800
3. Fabricate & Erect Hoods & Ductwork	5,900	24,900	30,800	-	300	300	31,100
4. Switch Over to New Exhaust Fan & Ductwork	300	1,300	1,600	300	1,400	1,700	3,300
5. Connect New Ductwork to New Collector	1,000	2,000	3,000	-	900	900	3,900
Totals	$43,200	$41,500	$84,700	$400	$3,100	$3,500	$88,200
B. Punch Press Dust Control System							
1. Increase Dust Collector Cloth Area by 5,150 sq. ft.	$ 9,900	$ 5,800	$15,700	-	-	-	$15,700
2. Purchase & Erect Main Exhaust Fan	2,500	1,000	3,500	-	-	-	3,500
3. Sheet Metal Work	3,300	12,800	16,100	-	$ 200	$ 200	16,300
4. Switch Over to New Ducts & Fan	100	500	600	-	900	900	1,500
Totals	$15,800	$20,100	$35,900	-	$1,100	$1,100	$37,000
C. Scrap Handling Dust Control System							
1. Increase Dust Collector Cloth Area by 4,450 sq.ft.	$ 8,900	$ 5,800	$14,700	-	-	-	$14,700
2. Purchase & Erect Main Exhaust Fan	2,500	1,000	3,500	-	-	-	3,500
3. Sheet Metal Work	750	2,850	3,600	-	-	-	3,600
4. Switch Over to New Ducts & Fan	100	300	400	-	$ 700	$ 700	1,100
Totals	$12,250	$ 9,950	$22,200	-	$ 700	$ 700	$22,900
D. Corr. Press Dust Control System							
Sheet Metal Work	$ 700	$ 2,800	$ 3,500	-	-	-	$ 3,500
Grand Totals	$71,950	$74,350	$146,300	$400	$4,900	$5,300	$151,600
Contingency (10%)							15,200
Engineering (6%)							9,100
Escalation (2%)							3,000
PLAN I Total A.R.							$178,900

TABLE 3.

GPED ESTIMATE BP-MAN-2551. Detailed Breakdown. (Plan II of A.R.)

For Both Health Hazard & Visible Dust Control

	Capital Mat'l.	Capital Labor	Capital Total	Expense Mat'l.	Expense Labor	Expense Total	PLAN II Over-All Totals
A. Dust Control for Shingle Machines & Transite Press							
1. Purchase & Erect Automatic-Continuous Dust Coll.	$38,000	$16,000	$54,000	$200	$ 800	$1,000	$55,000
2. Purchase & Erect Main Exhaust Fan	13,000	1,000	14,000	-	-	-	14,000
3. Fabricate & Erect Hoods & Ductwork (Includes Personnel Blow-Off Booth)	8,100	26,300	34,400	-	-	-	34,400
4. Switch Over to New Exhaust Fan & Ductwork	300	1,400	1,700	300	2,000	2,300	4,000
5. Connect New Ductwork to New Collector	1,000	2,000	3,000	-	900	900	3,900
Totals	$60,400	$46,700	$107,100	$500	$3,700	$4,200	$111,300
B. Dust Control For Punch Presses							
1. Increase Dust Collector Cloth Area by 2400 sq.ft.	$ 6,000	$ 5,000	$11,000	-	-	-	$11,000
2. Purchase & Erect Main Exhaust Fan	1,300	600	1,900	-	$ 100	$ 100	2,000
3. Sheet Metal Work	2,900	11,500	14,400	-	100	100	14,500
4. Switch Over to New Ducts & Fan	100	500	600	-	900	900	1,500
Totals	$10,300	$17,600	$27,900	-	$1,100	$1,100	$29,000
C. Dust Control for Scrap Grinding System							
1. Increase Dust Collector Cloth Area by 3450 sq.ft.	$ 8,000	$ 5,000	$13,000	-	-	-	$13,000
2. Purchase & Erect Main Exhaust Fan	2,500	1000	3,500	-	-	-	3,500
3. Sheet Metal Work (Includes Blow-Off Booth)	800	1,100	1,900	-	-	-	1,900
4. Switch Over to New Ducts & Fan	100	300	400	-	$ 600	$ 600	1,000
Totals	$11,400	$ 7,400	$18,800	-	$ 600	$ 600	$19,400
D. Corr. Press Dust Control System							
Ductwork and Hoods	$ 1,900	$ 3,700	$ 5,600	-	-	-	$ 5,600
E. Dust Control for Flexboard Dept.							
Ductwork and hoods at forming equipment (Includes Bag Dumper).	$ 4,700	$ 6,900	$11,600	-	-	-	$11,600
F. Pallet Cleaner & Blow-Off Booth	$ 9,000	$ 3,000	$12,000	-	-	-	$12,000
Grand Totals	$97,700	$85,300	$183,000	$500	$5,400	$5,900	$188,900
Contingency (10%)							18,900
Engineering (6%)							11,300
Escalation (2%)							
PLAN II Total & P							