Florida Department of Environmental Regulation
Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400
Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

July 18, 1988

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. R. D. Herr
Production Manager
Armstrong World Industries, Inc.
P. O. Box 1991
Pensacola, Florida 32589

Dear Mr. Herr:

RE: Application for Permit Modification: AC 17-128287

This letter is in reply to your request for revision of the above referenced construction permit for Armstrong World's FMS manufacturing line.

It is understood that the following major scope changes for the project have been made:

1. Existing machining equipment will be relocated and used in the new board line rather than installing new machining equipment.
2. Existing scrubbers will be used instead of installing a bag collector for control of particulate emissions.
3. The production rate and associated emission rate will be reduced.

Though the equipment to be relocated is already operating under an existing DER permit, the project must be repermitted since the process conditions and emissions are different than before. Therefore, the following conditions of the construction permit are amended:

Specific Condition No. 1: Deleted

Specific Condition No. 3:

Present:

Compliance tests shall be performed at 90-100% of the maximum proposed process rate of 44,217 lbs/hr.

Amended:

Compliance tests shall be performed at 90-100% of the maximum proposed process rate of 30,756 lbs/hr.

Specific Condition No.4:

Present:

Compliance tests, in accordance with rule 17-2.700, FAC, shall be submitted to DER's NW District within 45 days after completion of the test.

Amended:

Compliance tests, in accordance with EPA Methods 5 and 9, as referenced in rule 17-2.700, FAC, shall be submitted to DER's NW District within 45 days after completion of the test.

Specific Condition No. 5: Deleted

Specific Condition No. 9:

Present:

Visible emissions from any part of the process shall not be greater than 5% opacity as demonstrated in accordance with DER Method 9, (Rule 17-2.700(6)(a)9., FAC).

Amended:

Visible emissions from any part of the process other than the "machine cell" shall not be greater than 5% opacity as demonstrated in accordance with DER Method 9, (Rule 17-2.700(6)(a)9., FAC).

Specific Condition No. 10:

Present:

Particulate matter emission rate shall not exceed 9.33 lbs/hr.

Amended:

Particulate matter and visible emission rates shall not exceed 7.89 lbs/hr and 20% opacity.

Specific Condition No. 11:

Present:

Total process input rate shall not exceed 44,217 lbs/hr.

Amended:

Total process input rate shall not exceed 30,756 lbs/hr.

Specific Condition No. 12:

Present:

The maximum natural gas consumption shall not exceed 4,000 scf/hr.

Amended:

The maximum natural gas consumption shall not exceed 8,000 scf/hr.

Expiration Date:

Present:

June 30, 1989

Amended:

June 30, 1990

BACT Determination:

Present:

Feeder/Machining Cell	Fabric Filter (baghouse) with maximum emissions rate not to exceed 0.015 gr/ACF.

Amended:

Feeder/Machining Cell	Scrubber with maximum emissions rate not to exceed 7.89 lb/hr (99.6% efficiency).

This amendment letter becomes Attachment No. 4 to your construction permit No. AC 17-128287.

Sincerely,

Dale Twachtmann
Secretary

DT/plm

cc: J. Preece - NW District
W. Aronson - EPA Region IV
T. Frey - Armstrong World

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☒ Show to whom delivered, date, and addressee's address. †(Extra charge)† 2. ☐ Restricted Delivery †(Extra charge)†

3. Article Addressed to:
Mr. R. D. Herr
Production Manager
Armstrong World Industries, Inc.
P. O. Box 1991
Pensacola, FL 32589

4. Article Number
P 702 177 455

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
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Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X

6. Signature — Agent
X

7. Date of Delivery

8. Addressee's Address (ONLY if requested and fee paid)

PS Form 3811, Mar. 1987 * U.S.G.P.O. 1987-178-268 DOMESTIC RETURN RECEIPT

P 702 177 455

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Mr. R. D. Herr, Armstrong World Ind., Inc.	
Street and No. P.O. Box 1991	
P.O., State and ZIP Code Pensacola, FL 32589	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 7-22-88 Permit: AC 17-128287	

PS Form 3800, June 1985

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

FOR ROUTING TO OTHER THAN THE ADDRESSEE

To: _____ Loctn: _____
To: _____ Loctn: _____
To: _____ Loctn: _____
From: _____ Date: _____

TO: Dale Twachtmann

FROM: Steve Smallwood WSS

SUBJ: Modification of Permit Conditions

DATE: July 18, 1988

Attached for your approval and signature is a letter that will lower the permitted production rate and emission limits for Armstrong World Industries' ceiling tile manufacturing plant in Pensacola.

I recommend that the modification be approved.

SS/aqm/jr

Attachment

CM # 947980

P M
6·14·88
Pensacola, FL

File Copy

Armstrong

June 13, 1988

Mr. Clair Fancy
Deputy Chief
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Dear Mr. Fancy:

As discussed with Mr. Reynolds, you wished to review the emission information for the revised scope of the FMS operation outlined in my letter of April 6, 1988 (Construction Permit #AC17-128287). Attached are Pages 4 and 5 of Form 17-1.202(1) that indicate the new data for FMS, as requested. Appendices #1, 2, and 3 show the supporting calculations.

The particulate emissions rate shown in section III.c is the estimated emission rate from the FMS operation through three (3) existing scrubbers. These scrubbers will continue to service other equipment within the plant (see Table #1).

I believe that this information will provide the Department with all the information required to continue with approval of our plans. If futher explanation is required, contact me at (904) 435-2252.

Very truly yours,

Terry L. Frey
Plant Engineering Manager

MBD

Enclosures

Copied: John Reynolds, CHF/BT, Ed Middleswart } 6.15.88

RECEIVED
JUN 15 1988
DER - BAQM

Armstrong World Industries, Inc.
P.O. Box 1991, Pensacola, FL 32589

Armstrong

CERTIFIED
No. 947980
MAIL

Mr. Clair Fancy
Deputy Chief
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Mineral Wool Boards	Particulate	Variable	28,080 lb/hr(max)	1
Paint	Particulate	42*	1,070.5 lb/hr(max)	2
Paint	Particulate	51*	1,605.7 lb/hr(max)	3

*Percent Solids in Paint

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 30,756.2 lb/hr (max)

2. Product Weight (lbs/hr): Variable - dependent upon product

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Particulate	7.89	31.8	17-2.610(1)**	19.54	7.89	31.8	2, 4, 5 75,76,77,78
Sulfur Dioxide	0.0048	0.02	NA	NA	0.0048	0.02	76, 78
Nitrogen Oxides	0.8	3.22	NA	NA	0.8	3.22	76, 78
Carbon Monoxide	0.16	0.64	NA	NA	0.16	0.64	76, 78
Volitile Organic Cmpds	0.064	0.26	NA	NA	0.064	0.26	76 78

[1]See Section V, Item 2.

** Process Weight table - $3.59\ P^{0.62}$

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Ducon UW4	Particulate	99.6%	Submicron	Manufacturer's data
Wet Scrubbers (3)				
Binks Dynaprecipitor water wash spray booth	Particulate	97%	Submicron	Manufacturer's Data

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Natural Gas (each dryer)	0.008	0.008	8.0

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: trace Percent Ash: trace

Density: - lbs/gal Typical Percent Nitrogen: trace

Heat Capacity: 1000 Btu/SCF BTU/lb _____ BTU/gal

Other Fuel Contaminents (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average N/A Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

Wastewater and solids are pumped to a treatment facility on site; liquids and solids are recycled.

Dust emissions on Crossgate
(FMS operation)

Based on grain loading method of calculations
- emissions = 0.025 grs/cf of air
  - emissions grain loading based on a maximum of 8 grains/acf inlet to scrubber and particle size of dust.
    (manufacturer's specification)
  - currently all three(3) scrubbers are operating below this level

Equalizer:
- 15,000 cfm
- emissions
  = 15,000 cfm x 0.025 grs/cf x 60 min/hr
    x 1/7000 grs/#
  = 3.21 #/hr

Tenoner:
- 19,500 cfm
- emissions
  = 19,500 cfm x 0.025 grs/cf x 60 min/hr
    x 1/7000 grs/#
  = 4.18 #/hr

Paint booths:
- airborne overspray is 1.3% of total usage
- intermediate paint is 42% solids
- finish paint is 51% solids
- paint booth water wash system is 97% efficient
- intermediate booth
  = 1070.5 x 0.42 x 0.013 x 0.03
  = 0.175 #/hr
- finish booth:
  = 1605.7 x 0.51 x 0.013 x 0.03
  = 0.32 #/hr

TOTAL EMISSIONS FROM THE FMS EQUIPMENT
= 3.21 + 4.18 + 0.18 + 0.32
= 7.89 #/hr

Appendix #1

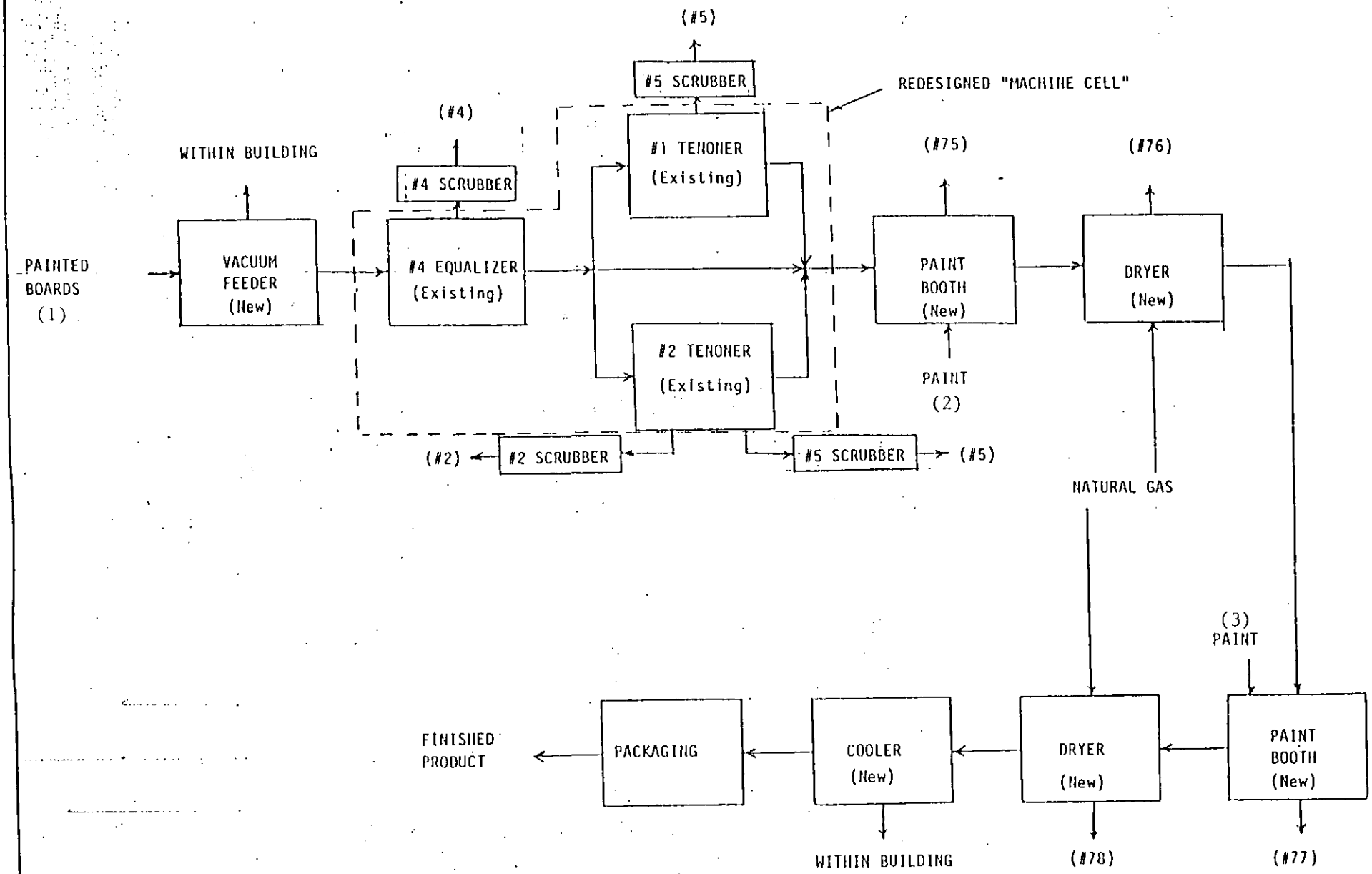
(#5)
#5 SCRUBBER
REDESIGNED "MACHINE CELL"
(#4)
WITHIN BUILDING
#4 SCRUBBER
#1 TENONER
(Existing)
(#75)
(#76)
PAINTED
BOARDS
(1)
VACUUM
FEEDER
(New)
#4 EQUALIZER
(Existing)
PAINT
BOOTH
(New)
DRYER
(New)
#2 TENONER
(Existing)
PAINT
(2)
(#2)
#2 SCRUBBER
#5 SCRUBBER
(#5)
NATURAL GAS
(3)
PAINT
FINISHED
PRODUCT
PACKAGING
COOLER
(New)
DRYER
(New)
PAINT
BOOTH
(New)
WITHIN BUILDING
(#78)
(#77)

Figure 2

FMS CONTROL DEVICES

CONTROL DEVICE	EQUIPMENT SERVICED BY DEVICE
#2 SCRUBBER	#2 TENONER (FMS) #3 EQUALIZER #3 TENONER
#4 SCRUBBER	#4 EQUALIZER (FMS) #1 PL FEEDER #2 PL FEEDER
#5 SCRUBBER	#1 TENONER (FMS) #2 TENONER (FMS) KILN FEEDER
PAINT BOOTHS (2)	INTERMEDIATE (FMS) FINISH (FMS)

Note: only those pieces of equipment indicated with "(FMS)", are part of the FMS operation. All other euqipment is existing and permitted for use within the plant.

TABLE #1

Input to scrubbers on Crossgate product
(FMS operation)

Density:
- 1.7 #/board ft (raw board)
- 14 grms bottom paint @ 50% solids per ft^2 of board = 7 gms/ft^2
- 19 grms top paint @ 48% solids per ft^2 of board = 9.1 gms/ft^2

= 1.7 #/board ft + 16.1 grms / 454 =
= 1.735 #/board ft
= 20.8 #/ft^3

Maximum production:
- six(6) 4' x 6' boards through equalizer
- thirty-five(35) 2' x 2' pieces through tenoner

Equalizer dust generation:
- removes 0.0778 ft^3/board
= 0.0778 ft^3/board x 6 boards x 20.8 #/ft^3 x 60 min/hr
= 582.6 #/hr

Tenoner dust generation:
- removes 0.036 ft^3/piece
= 0.036 ft^3/piece x 35 pieces x 20.8 #/ft^3 x 60 min/hr
= 1572.5 #/hr

TOTAL INPUT TO SCRUBBERS FROM FMS = 2,155.1 #/HR

OVERALL SCRUBBER EFFICIENCY = (2155.1 - 7.89) / 2155.1

= 99.6%

Appendix #3

Derivations of process weight rate

Unfinished boards:

Maximum line speed = 90 fpm
Maximum width = 4 ft
Maximum thickness = 3/4 inch
Material density = 20.8 lb/ft^3
Process weight = 90 fpm x 4 ft x 0.0625 ft x 20.8 $\#/ft^3$ x 60 min/hr = 28,080 #/hr

Paint usage:

Intermediate paint

16-18 $grms/ft^2$ applied to service
Overspray is approximately 20%
Actual max. paint usage = 18 g/ft^2 / (1 - .2) = = 22.5 g/ft^2
Max. line speed = 90 fpm
Max. line width = 4 ft
Max. paint usage = 90 fpm x 4 ft x 22.5 g/ft^2 x 1/454 g/ft^2 x 60 min/hr = 1070.5 #/hr

Finish paint

17-27 $grms/ft^2$ applied to service
Overspray is approximately 20%
Actual max. paint usage = 27 g/ft^2 / (1 - .2) = = 33.75 g/ft^2
Max. line speed = 90 fpm
Max. line width = 4 ft
Max. paint usage = 90 fpm x 4 ft x 33.75 g/ft^2 x 1/454 g/ft^2 x 60 min/hr = 1605.7 #/hr

Total maximum paint usage = 2676.2 #/hr

TOTAL PROCESS INPUT RATE = 30,756.2 #/HR

File Copy

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

May 25, 1988

CERTIFIED MAIL - Return Receipt Requested

Mr. Terry L. Frey
Plant Engineering Manager
Armstrong World Industries, Inc.
Post Office Box 1991
Pensacola, Florida 32589

Dear Mr. Frey:

This is in response to your April 6, 1988, letter requesting substantial scope changes to your construction permit AC 17-128287. Since scrubbers will be used instead of a baghouse, we will have to complete another analysis of this project using revised estimates of particulate emission levels. Please submit a revised permit application incorporating all changes resulting from the revised scope of this project.

We will make every effort to minimize the time required for processing the revised application. No additional construction permit fee will be required.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/JR/s

cc: E. Middleswart, NW Dist.
John Reynolds 5/27/88 PBR
Reading

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Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
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3. Article Addressed to:
Terry L. Frey
Plant Engineering Manager
Armstrong World Industries, Inc.
Post Office Box 1991
Pensacola, Florida 32589

4. Article Number
P 702 175 490

Type of Service:
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☒ Certified ☐ COD
☐ Express Mail

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6. Signature — Agent
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7. Date of Delivery
MAY 31 1988

8. Addressee's Address (ONLY if requested and fee paid)

PS Form 3811, Mar. 1987 * U.S.G.P.O. 1987-178-268 DOMESTIC RETURN RECEIPT

P 702 175 490

RECEIPT FOR CERTIFIED MAIL
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(See Reverse)

Sent to Terry L. Frey	
Armstrong World Ind. P.O. Box 1991	
P.O., State and ZIP Code Pensacola, FL 32589	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date AC 17-128287 mailed: 5/27/88	

PS Form 3800, June 1985

CN947963

PM
4.7.88
Pensacola, FL

File Copy

Armstrong

RECEIVED April 6, 1988

APR 8 1988

DER - BAQM

Mr. Clair H. Fancy
Deputy Chief
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Fancy:

On July 9, 1987, Armstrong was issued Construction Permit #AC17-128287 for a new ceiling panel production operation (FMS). Due to internal reasons, no construction has begun on this project. In fact, we have re-evaluated the project and reduced the scope. Specifically, the "Machine Cell" in the original project, which consisted of a new "high-tech" equalizer and tenoner with connected baghouse (Figure #1), has been eliminated. This has been replaced with an equalizer and two (2) tenoners (Figure #2) that are existing, permitted pieces of equipment that will simply be relocated. The exhaust from this equipment will continue to be serviced by the existing abatement equipment. Additional scope changes include the elimination of two (2) paint booths and the addition of a cooling section.

To more clearly define our new plans, I have outlined our anticipated permitting needs on Table #1. This table details the equipment as well as the information on current permits. It also includes our anticipated permitting needs to begin construction and then operation of this project. Summarizing the table, we will need four (4) revisions to our current Construction Permit #AC17-128287:

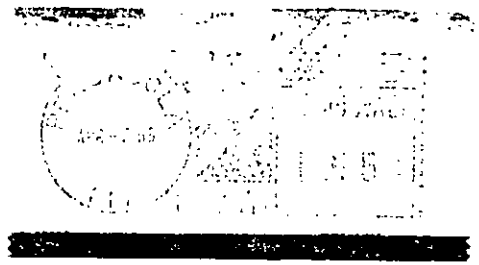
1. Specific Condition #12 - The maximum gas consumption allowed was 4,000 scf/hr. The permit application requested 4,000 scf/hr. for each dryer, i.e., 8,000 scf/hr. I request that the permit be corrected to reflect 8,000 scf/hr.

2. As stated, only two (2) paint booths will be installed. I ask that this permit reflect this change.

3. The "Machine Cell" as it was originally designed will not be constructed. This will be replaced with existing equipment.

4. Since construction has been delayed, I request an extension of one (1) year on this permit; specifically, an expiration date of June 30, 1990.

As stated, existing, permitted equipment will replace the original "Machine Cell." All revisions to the existing permits are being handled through the Northwest District office.



Armstrong World Industries, Inc.
Post Office Box 1991
Pensacola, FL 32589

Armstrong

- Mr. Clair H. Fancy
  Deputy Chief
  Bureau of Air Quality Management
  Twin Towers Office Building
  2600 Blair Stone Road
  Tallahassee, FL 32399-2400

Form 1347

4-12-88

FAI

CERTIFIED
No. 947963
MAIL

I believe that these revisions to the construction permit will meet all Department requirements. This should allow us to continue with our plans for construction of the operation diagrammed in Figure #2. If in your efforts to make these revisions you require further explanation, or additional information, contact me at (904) 435-2252.

Very truly yours,

Terry L. Frey

Terry L. Frey
Plant Engineering Manager

VMS

Enclosure

Copied: John Reynolds
CHF/BT
Ed Middlewart
} 4.12.88

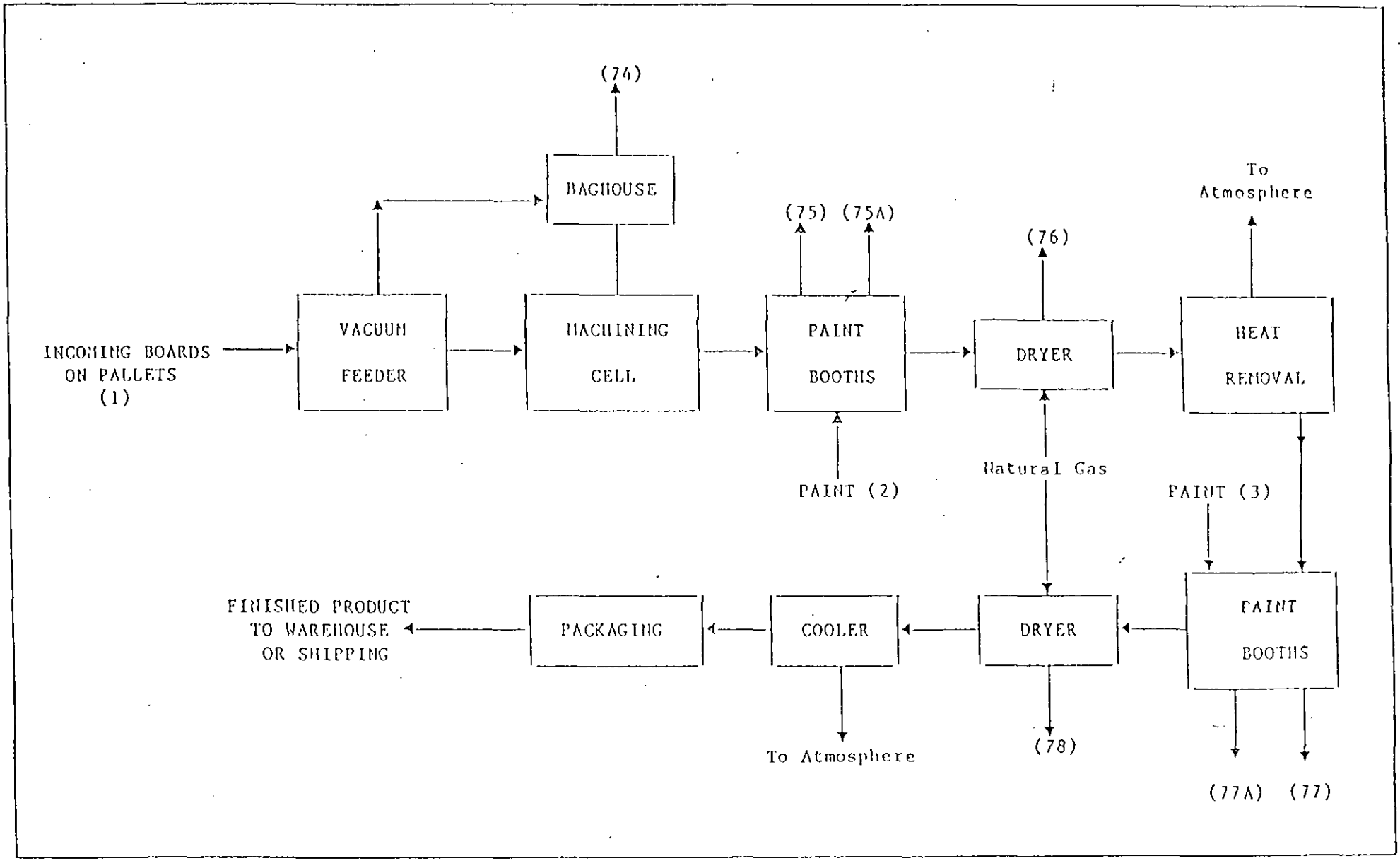

(74)
BAGHOUSE
To
Atmosphere
(75) (75A)
(76)
INCOMING BOARDS
ON PALLETS
(1)
VACUUM
FEEDER
MACHINING
CELL
PAINT
BOOTHS
DRYER
HEAT
REMOVAL
PAINT (2)
Natural Gas
PAINT (3)
FINISHED PRODUCT
TO WAREHOUSE
OR SHIPPING
PACKAGING
COOLER
DRYER
PAINT
BOOTHS
To Atmosphere
(78)
(77A) (77)

Figure 1

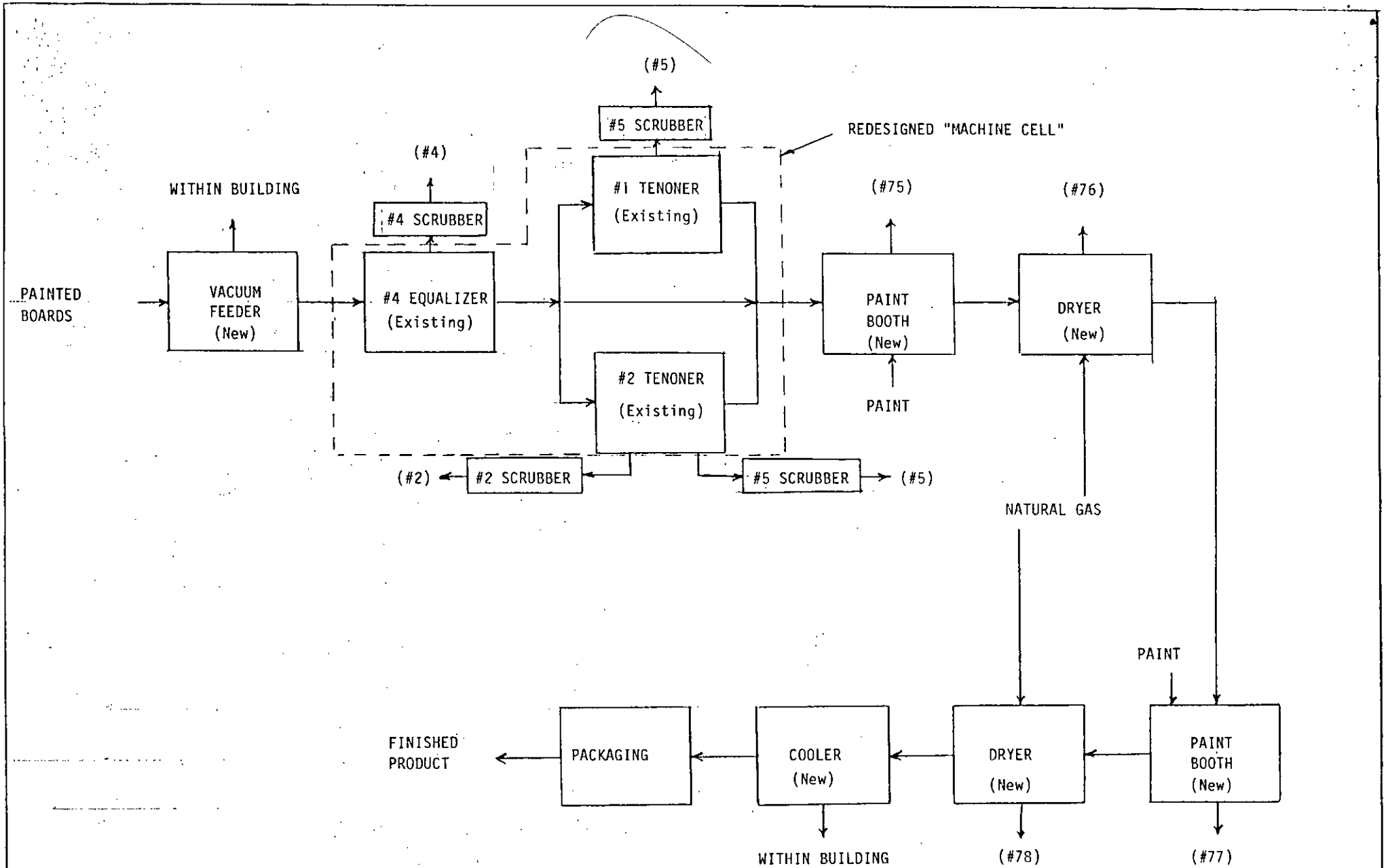

(#5)
#5 SCRUBBER
REDESIGNED "MACHINE CELL"
(#4)
WITHIN BUILDING
#4 SCRUBBER
#1 TENONER
(Existing)
(#75)
(#76)
PAINTED
BOARDS
VACUUM
FEEDER
(New)
#4 EQUALIZER
(Existing)
PAINT
BOOTH
(New)
DRYER
(New)
#2 TENONER
(Existing)
PAINT
(#2)
#2 SCRUBBER
#5 SCRUBBER
(#5)
NATURAL GAS
PAINT
FINISHED
PRODUCT
PACKAGING
COOLER
(New)
DRYER
(New)
PAINT
BOOTH
(New)
WITHIN BUILDING
(#78)
(#77)

Figure 2

ANTICIPATED PERMITTING NEEDS

MACHINE NAME	NEW / EXISTING	OPERATING PERMIT	CONSTRUCTION PERMIT	STACK NO.	ANTICIPATED PERMITTING NEEDS
Board Feeder	new	-	-	-	This will not be exhausted outside of the building. We anticipate no construction or operating permit will be required.
#4 Equalizer	existing	AO17-122132	-	#4	The operating rate will be 160,000 t/yr. The emissions will increase, but will not exceed the permitted level of 7.0 #/hr. We anticipate no need for a construction permit and no need to revise our existing operating permit.
#1 Tenoner	existing	AO17-143825		#5	The operating rate will be 49,000 t/yr. The emissions will increase, but will not exceed the permitted level of 8.5 #/hr. We anticipate no need for a construction permit and no need to revise our existing operating permit.
#2 Tenoner	existing	AO17-138623 AO17-143825	- -	#2 #5	The permitting plans for stack #5 are the same as stated under #1 Tenoner. For stack #2, the operating rate will be 110,000 t/yr. The emissions will increase, but will not exceed the permitted level of 11.18 #/hr. The maximum operating rate listed in specific condition #15 will need to be increased from 6.25 t/hr to 14.0 t/hr.
Paint Booth	new	-	AC17-128287	75	This construction permit allows for the installation of this equipment. Four(4) revisions will be required. First, specific condition # 12, the gas consumption needs to be corrected from 4,000 scf/hr to 8,000 scf/hr as originally stated in the construcion application. Second, only two(2) paint booths will be required. Third, the Machine Cell" in figure #1 will not be constructed. Fourth, we request an extention of One(1) year.
Dryer	new	-	AC17-128287	76	
Paint Booth	new	-	AC17-128287	77	
Dryer	new	-	AC17-128287	78	
Cooler	new	-	-	-	This will not be exhausted outside of the building. We anticipate no construction or operating permit will be required.

TABLE #1