SPECIFICATION

FOR

AREA "C"

MAINTENANCE OFFICE FACILITY

AT

PPG INDUSTRIES, INC.

LAKE CHARLES, LOUISIANA

P-474

I BB 0003566 I

Revised January 17, 1975
Revised March 3, 1975

SECTION 10

BUILT-UP ROOF, ROOF INSULATION, ROOF DECK AND ROOF SHEETMETAL

10.01 SCOPE

The work under this section includes all labor, material and equipment required to furnish and install roof insulation, built-up roofing and roof flashing.

10.02 GENERAL

The roofing, roof insulation and roof flashings shall be Johns Manville, or equal as specified below, or approved equal, applied in strict accordance with the manufacturer's specifications and the work shall be done by a Contractor approved by the manufacrurer.

10.03 ROOF DECK

See Section 12.

10.04 BUILT-UP ROOFING

10.04.1 Roof to be constructed as a twenty (20) year conventional built-up roof. Use a minimum of a 43# base felt and two (2) plies of 33# felt. Roofing to be hot mopped and topped with pea gravel.

10.04.2 Application is to be made by experienced workmen only and in a manner satisfactory to the Owner.

10.04.3 The laying of the felt shall commence at the roof edges. Apply the roofing so that the direction of the flow of water is over and not against the laps. Roll or broom all plies into hot pitch or asphalt and lay without wrinkles, buckles, or kinks so that the finished roof is free of pockets or blisters. All moppings must completely cover the area to which they are applied so that no part of the surface to be covered shows through the moppings. Felts shall be broomed in while the asphalt or pitch is still hot. Overlap ends of all connecting plies of felt not less than six inches.

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10.05 PREPARATION OF ROOF DECK SURFACES

10.05.1 Roof deck must be thoroughly dry before application of roofing.

10.05.2 All roof surfaces shall be reasonably smooth, free of loose material, and broomed clean.

10.05.3 The roof applicator shall inspect the roof surfaces for apparent defects that would injure the roofing felts, and shall notify the general contractor and the PPG representative of any defects. The roof applicator shall not proceed until all the defects have been corrected and he has been notified by the Owner's representative to proceed.

10.06 MATERIALS

10.06.1 Materials to be used shall be of the type and number specified. When material is specified by name or number, no substitutions will be permitted without written approval of the Owner.

10.06.2 All material to be used in built-up roofs shall be kept dry and free of dirt and other injurious matter before and during application. All roofing materials shall arrive on the job in the manufacturer's containers clearly labeled as to the contents.

10.06.3 Insulating material shall be used only when and as noted on the drawings, specified herein, or in the job specifications.

10.06.4 The roofing felts shall be rag felt, asbestos felt, or fiberglas felt.

Felts shall be in accordance with ASTM-D226 Asphalt Saturated Roofing Felt, ASTM-D227 Coal Tar Saturated Roofing Felt, ASTM-D250 and D655 Asphalt Saturated Asbestos Felt, Asphalt Saturated Porous Glass Mat as manufactured by Owens-Corning Fiberglas Felt Corporation, the Flinkote Company or Johns-Manville.

10.06.5 Asphalt shall be in accordance with ASTM-D312. Asphalt shall not be heated to exceed 450°F, or to exceed the manufacturer's recommendations.

10.06.6 Coal tar pitch shall be in accordance with ASTM-D450.

10.06.7 Surfacing

Gravel shall be $\frac{1}{4}$" to 5 /" in size.

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10.07 FLASHING

10.07.1 Flashings shall be installed according to good roofing practices to produce a water-tight joint and according to the requirements for a 20-year bonded roof.

10.07.2 Any type of flashing must extend up walls or vertical surfaces at least eight inches above the grade line of the roof deck.

10.07.3 Flashing details for roof, vents, drains, sleeves, etc., shall be as shown on the drawings.

10..07.4 Wood cants or nailing strips shall be used on concrete decks only when noted on the drawings or in the job specifications.

10.08 GRAVEL GUARDS

10.08.1 Metal gravel guards shall be installed as shown on the drawings.

10.08.2 Gravel guard shall be fabricated from 24 gauge stainless steel sheet metal. Surface flange shall be at least four inches wide and over-all stretch-out shall be nine inches. Edge of gravel guard on fascia shall be crimped at an angle of approximately 45°.

10.08.3 Gravel guards shall be bedded in plastic cement and over all felt plies, nailed and double felt stripped. Felt strips shall be at least nine inches and 18 inches in width respectively, thoroughly mopped together and to the guard. Under no circumstances are gravel guards to be installed under or between plies of felt.

10.08.4 All gravel guard joints shall be lapped at least five inches and shall be bedded in plastic cement.

10.08.5 Gravel guards shall be securely fastened with galvanized flat-head nails, or approved equal, spaced on nine-inch centers. In fastening to concrete, care shall be taken to avoid spalling or other damage to concrete. If damage does occur, it shall be repaired to the satisfaction of the Owner.

10.09 GUTTERS - EAVE

The building shall be furnished with 5" x 4" box gutters of 20 gauge stainless steel and with necessary supporting stainless brackets on 4'-0" spacing. Gutters shall be welded at all joints.

10.10 DOWNSPOUTS

| BB 0003569 |

3" x 4" 20 gauge stainless steel downspouts shall be furnished as indicated on the drawings. These downspouts shall extend to the same grade as the bottom of the columns and have a 45 degree elbow to throw water away from the foundation of the building.

(50% FEED - PAINTED)

JOB NO. F-202 SUBJECT 200 LB/HR CAUSTIC
BY ASH PORATOR
DATE 2-22-71 HEAT EXCH. SHEET NO. 1
FILE 10 HEADERS

DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		
			MATERIAL	LABOR	MATERIAL	LABOR	TOTAL
3" V-137B		4	281.00	29.82	1124	119	1243
2" V-137B		3	152.00	29.82	456	89	545
1/2" V-136B		3	56.00	9.18	168	28	196
4"-150# LAP JT. FLG.		1	9.62	32.12	10	32	42
3" -DO-		8	7.15	27.53	57	220	277
2" -DO-		14	5.10	20.65	71	289	360
3" SCH. 10 316 S.S. L.R. 90° ELL		10	19.35	71.58	194	716	910
2" -DO-		26	9.75	53.68	254	1396	1650
3" SCH. 10 316 S.S. TEE		3	56.60	98.41	170	295	465
2" -DO-		2	30.40	80.52	61	161	222
4" SCH. 10 316 S.S. STUB-END		1	35.70	41.76	36	42	78
3" -DO-		8	22.75	35.79	182	286	468
2" -DO-		9	13.35	26.85	120	242	362
3" SCH. 10 316 S.S. PIPE		80'	6.35	5.14	508	411	919
2" -DO-		400'	.3.85	~~3.99~~ 3.19	1540	~~1276~~ 1276	~~3816~~ 3816
CARBON ASBESTOS SHOES 2"ø		35	5.47	3.68	191	129	320
PAINTING					3144	3406	6550
2x1 1/2 VD. SS. PUMP 60GPM @ 55' TDH. 5HP		1			1697	210	1907
					9983	9467	19450

BB 0003571

(175# STEAM - INSULATED)

JOB NO. P-202 BY AAH. DATE 2-22-71 SUBJECT 250 T/D 73% CAUSTIC EVAPORATOR ELEC. EST. SHEET NO. 3 FILE MEADOWS

DESCRIPTION	UNIT	QUANTITY	UNIT COST MATERIAL	UNIT COST LABOR	TOTAL COST MATERIAL	TOTAL COST LABOR	TOTAL
3/4" V-24A		5	15.81	10.32	79	52	131
6" V-25A		4	215.14	73.41	861	294	1155
6" V-74A		1	387.79	96.35	388	96	484
6" 300# R.F.W.N. FLG.		13	27.28	55.06	355.	716	1071
6" 300# ORIFICE FLGS W/R.		1 PR.	61.98	110.12	62	110	172
6" STD WT. L.R. 90° ELL		9	13.44	91.76	121.	826	947
1" SCH 80 L.R. 90° ELL		16	2.08	32.12	21	321	342
6" STD WT. TEE		2	29.24	137.64	58	275	333
1" SCH 80 TEE		2	6.96	48.17	14	96	110
1½"x1½x1" SCH 80 RED. TEE		1	8.72	58.50	9	59	68
1½"x1" SCH. 80 RED		1	3.68	35.56	4	36	40
6" SADDLE FOR 10"Ø PIPE		1	—	68.82	—	69	69
1" 3000 SCRD UNION		4	4.90	11.47	20	46	66
6" SCH 40 A-53 PIPE		80'	2.57	6.19	206	495	701
1½" SCH. 80 A-106 PIPE		20'	.74	2.11	15	42	57
1" -DO-		20'	.48	1.70	10	34	44
HOT TAP 6"Ø LINE INTO 10"Ø LINE		1	—	312.60	—	313	313
PIPE SHOES - CARBON ASBESTOS	6"Ø	8 EA.	12.86	8.55	103	68	171
INSULATION		6.00			1547	CONTRACT	1547
					3873	3948	7821

BB 0003572

(HIGH PRESS. RIVER WATER)

DESCRIPTION	UNIT	QUANTITY	UNIT COST MATERIAL	UNIT COST LABOR	TOTAL COST MATERIAL	TOTAL COST LABOR	TOTAL COST TOTAL
2" V-6		2	44.73	29.82	89	60	149
14" V-15B		1	476.96	206.46	477	207	684
2" 150# W.N. FLG		4	6.00	20.65	24	83	107
8" -Do-		2	28.40	57.35	57.	115	172.
14" -Do-		2	93.50	114.70	187	229	416
14" 300# ORIFICE FLGS W/R.		1 PR.	372.09	229.40	372	229	601
2" STD WT L.R. 90° ELL		3	1.82	41.29	6	124	130
8" -Do-		8	24.78	114.70	198	918	1116
14" -Do.		6	108.52	229.40	651	1377	2028
2" STD WT. TEE		1	6.22	61.94	6	62	68
8" -Do-		1	54.76	172.05	55	172	227
14"x8" STD WT. CONC. RED.		1	72.84	206.46	73	206	279
2" SCH 40 A-53 PIPE		20'	.56	3.01	11	61	72
8" -Do-		40'	3.71	7.23	148	289	437
14" .375 WALL PIPE		140'	.7.40	12.39	1036	1735	2771
4" WF 13# PIPE SUPPORTS		60'					
	780#		.095	.385	74	300	374
PIPE SHOES 4"x10" LG. 4' WF @ 20#	250'	25					
	500#		.095	.385	48	193	241
					3512	6135	9647

JOB NO. F-202 SUBJECT 200 HP 73½ AUSTIC
BY AJH. +V PORATOR
DATE 2-22-71 EVS-EST.
FILE MEADOWS
SHEET NO.

BB 0003573

(CONDENSATE)

JOB NO. F-202 SUBJECT 250 LB 73% LAUSTIC
BY Hall PORATOR
DATE 2-22-71 ENG. EST.
SHEET NO. 3
FILE MEADOWS

DESCRIPTION	UNIT	QUANTITY	UNIT COST MATERIAL	UNIT COST LABOR	TOTAL COST MATERIAL	TOTAL COST LABOR	TOTAL
3" V-25A		2	104.78	29.82	210	60	270
3" V-74A		2	151.65	73.41	303	147	450
" 300# RFWN FLGS		13	10.56	32.12	137	418	555
3" 300# RATED STEAM STRAINER		1	306.00	29.82	306	30	336
3" 300# " STEAM TRAP.		1	208.00	29.82	208	30	238
3" STD WT. 90° ELL		20	3.28	55.06	66	110	176
3" STD WT. TEE		2	10.56	75.70	21	151	172
3" SCH 40 A-53 PIPE		360'	1.09	3.95	392	1422	1814
CARBON ASBESTOS SHOES, 3"Ø		30	6.12	4.82	184	1446	1630
					1827	3814	5641

BB 0003574

(CONDENSER TAIL PIPES)

JOB NO P-202
BY A.B.L.
DATE 2-22-71
SUBJECT 250 T/D 73% CAUSTIC EVAPORATOR EST. ENG. EST.
SHEET NO 6
FILE MEADOWS

DESCRIPTION	UNIT	QUANTITY	UNIT COST MATERIAL	UNIT COST LABOR	TOTAL COST MATERIAL	TOTAL COST LABOR	TOTAL
8"-150# R.F S/O FLGS		2	18.86	66.53	38	133	171
2" STD WT. 45° ELLS		2	1.66	41.29	33	83	116
8" -DO-		4	18.58	114.20	74	459	533
2" SCH 40 A-53 PIPE		40'	.56	3.07	23.	123	146
8" -DO-		80'	3.71	7.23	297	578	875
					465	1376	1841

BB 0003575

JOB NO. P-202 SUBJECT 250 T/D 73% CAUSTIC
BY ABH. Tie PORATOR
DATE 2-22-71 Misc. C.S.T.
SHEET NO. 7
FILE 10 FEATURES

DESCRIPTION	UNIT	QUANTITY	UNIT COST MATERIAL	UNIT COST LABOR	TOTAL COST MATERIAL	TOTAL COST LABOR	TOTAL COST TOTAL
CONCRETE DOTWELL -							
19 YDS³ EXC. & REMOVE		19 YDS³	1.90		36	-	36
CONC. FORM & POUR		5 YDS³	52.00	63.00	260	315	575
DRILLED FOOTERS 24"Ø x 60°Ø BELL 15' DEEP		13 YDS³	65	76.00	845	988	1833
MANHOLE - EXC. & REMOVE		5.6 YDS³	1.90		11	-	11
CONC. FORM & POUR		2.5 YDS³			130	158	288
REPAIR - CONC. ROAD		31.5 Sq. Yds.	15.00/Sq. Yd.		475	-	475
1"Ø R. CONC. PIPE INSTALL 6 x P	60'		12.85	15.00	771	900	
STRUCTURAL STEEL -							
STRUCT STEEL FAB & ERECT		9 TS					
1½" GRATING		200 Ft²	3.25	1.10	650	220	870
½" CHECKER PL @ 20.20.# 1.52 T/S WT	3030#	150 Ft²					
		10.52 T/S	720 cwt		7575	ERECTED	7575
					10,753	2581	13,334

BB 0003576

NO. F-202 SUBJECT 200 LB 73% CAUSTIC

DATE 2-22-71 — Asst. Supt. Evaporator Engg. Est. — FILE 10 LEADERS — SHEET NO.

DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		
			MATERIAL	LABOR	MATERIAL	LABOR	TOTAL
3" V-121		2	335.10	29.82	670	60	730
2" V-121		9	210.50	29.82	1895	268	2163
1/2" V-214		3	38.55	9.18	116	28	144
1/2" V-212		1	21.40	10.32	21	10	31
3"-150# A.S.A. LAP JT. FLG.		6	7.15	27.53	43	165	208
2" -Do-		25	5.10	20.65	128	516	644
3" SCH. 10 Ni L.R. 90° ELL		2	44.60	82.59	89	165	254
2" -Do-		30	22.60	61.94	672	1858	2530
3" SCH. 10 Ni TEE		1	121.00	113.55	121	114	235
2" -Do-		6	66.00	92.91	396	557	953
3" SCH 10 Ni STUD END		6	56.80	41.30	340	248	588
2" -Do-		25	34.65	30.98	866	775	1641
3"x1/2"SCH Ni REDUCER		1	39.80	79.14	40	79	119
2x1 -Do-		1	23.00	56.78	23	57	80
3" SCH 10 Ni PIPE		30'	13.12	5.93	394	178	572
2" -Do-		220'	8.11	4.61	1784	1014	2798
3" SCH. 40 Ni PIPE		40'	22.68	5.93			
HOT INSULATION -3"Ø FOAMGLAS		30'	3.05		92	CONTRACT	92
HOT INSULATION -2"Ø "		160'	2.70		432	"	432
STEAM TRACING FOR 3"Ø PIPE		35'	7.21		252	CONTRACT	252
STEAM TRACING FOR 2"Ø PIPE		160'	5.35		856	"	856
4"x10" LG PIPE SHOES FROM	200'	20 EA					
4" IN F 20#	4000#	.095	.385		380	1540	1920
					9610	7632	17,242

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