

ETHYL ETHER HYDRATION PLANT NO. 1

15,000 POUNDS PER DAY

PART II

SERVICE LINES AND MISCELLANEOUS SPECIFICATIONS

ENGINEERING DEPARTMENT

CARBIDE & CARBON CHEMICALS CORP.

SO. CHARLESTON, W. VA.

OCTOBER 12, 1934

PLAINTIFF'S
EXHIBIT

76012.00

UCASB02053884

WV-17816

ETHYL ETHER HYDRATION PLANT NO. 1

15,000 POUNDS PER DAY

PART II

SERVICE LINES AND MISCELLANEOUS SPECIFICATIONS

FOREWORD:

This report is divided into the following sections:

- (1) Service Lines
- (2) Paint Schedule
- (3) Building Accessories
- (4) Safety Equipment
- (5) Insulation
- (6) Miscellaneous Operating Equipment

Written by R. V. Wallin October 9 - 10, 1934 Row

Checked by I. L. Murray

12 11

I - SERVICE LINES

L. P. 15-LB. STEAM

Provide 4" header to Ether Hydration Unit in accordance with Pipe Specification No. 2.

H. P. 150-LB. STEAM

Provide 3" header to Ether Hydration Unit in accordance with Pipe Specification No. 3.

RIVER WATER

Provide 4" header to Ether Hydration Unit in accordance with Pipe Specification No. 1.

PROCESS WATER

Provide 2" line to P - 111 -2" in Ether Hydration System.

FUEL GAS

Provide 2" line to FG - 101 -2" in Ether Hydration System.

AIR

Provide 1" line to the Ether Hydration Unit for air-operated control instruments.

CITY WATER

Extend 1-1/2" city water line to Ether Hydration Unit.

SEWER

Provide 6" sewer from Ether Hydration Unit. Sewer is to connect into sewer main at the Ethanol Generator Building.

II - PAINT SCHEDULE

PRIMING COATS

Iron and Steel

All iron and steel must be given a priming coat of #85 Red Lead as soon as erected, with the following exceptions:

- (a) The inside surface of tanks shall not be painted unless by special order.
- (b) Beams to be buried in concrete or to receive concrete fireproofing shall not be painted.
- (c) The bottoms of all tanks shall be given one heavy coat of black asphaltum paint before being lowered to foundations, regardless of what primer has been previously applied.

Two coats of #85 Red Lead are required by all iron and steel which is to be insulated; the time between coats is to be not less than 48 hours of dry weather.

No. 85 Red Lead is to be used for the shop coat on all iron and steel delivered primed. Such equipment is to be retouched before a finish coat is applied.

If more than three months has elapsed since the initial priming, the entire surface shall be covered again with No. 85 Red Lead.

Other Metals

Brass, copper, Everdur, or similar metals will require no priming coat.

Wood

Wood is to be primed with a coat of the finishing paint thinned with a one-to-one mixture of linseed oil and turpentine. For average work, one part thinner to two parts paint is satisfactory. Knots and pitchy spots should first be shellacked.

Miscellaneous

Plaster walls and ceilings must receive one coat of Vinyloid Brushing Concrete and Plaster Sealer, No. 96.

Tar Paper (roofing paper) covering insulation need not be painted.

Canvas covering on magnesia insulation must receive a coat of glue sizing before paint is applied.

Concrete to be painted, must be primed with one coat of Concrete Sealer, No. 96.

Machinery to be painted, must first have iron filler applied to blow holes, chips, etc. to produce a reasonably smooth surface before painting.

The above specifications apply to the materials named, regardless of the form in which they are used; tanks, framework, pipe lines, etc.

FINISH COATS

<u>Outside Equipment</u>	<u>No. Coats</u>	<u>Paint Specification</u>
<u>Structural Steel</u>		
Uninsulated	1	#56 Black
Buried in concrete		No Paint
<u>Machinery</u>		
Small motors, pumps, etc. (cold surfaces)	2	#60 Black Engine Enamel
Turbines, hot surfaces of light machinery	1	#61 Black Hot Engine Polish
<u>Tanks</u>		
Insulated		No paint on weatherproof insulation.
Uninsulated	2	#51 Aluminum
<u>Furnaces</u>		
Cold steel, sheet and framework, below 550°F.	2	#56 Black
Stacks, hot surfaces over 550°F.	1	#73 Light Grey Stack Paint (applied after stack has been heated at least once.)

Inside Equipment

<u>Structural Steel</u>	<u>No. Coats</u>	<u>Paint Specifications</u>
Uninsulated	1	#56 Black, containing 1 qt. #99 Varnish per gallon of black
Insulated		No Paint
<u>Concrete</u>		
Foundations, etc.	1	#81 Maroon
<u>Tanks</u>		
Steel, insulated and uninsulated	1	#72 Light Grey
<u>Machinery</u>		
Small motors, pumps, etc. (cold surfaces)	2	#60 Black Engine Enamel
Turbines, hot surfaces of light machinery	1	#61 Black Hot Enamel Polish

Building

Exterior

Doors, Windows, and Trim	1	#75 Bottle Green
--------------------------	---	------------------

Interior

Doors, Windows, and Trim	1	#72 Light Grey
--------------------------	---	----------------

<u>Building (Continued)</u>	<u>No. Coats</u>	<u>Paint Specifications</u>
<u>Interior (Continued)</u>		
Walls, Ceiling, Insulated Building Steel		
Dado Line, 2-1/2" wide 5' above floor	2	#56 Black, containing 1 qt. #99 Varnish per gallon of Black
Walls below Dado line	1	#96 Vinylloid Brushing Sealer
	1	#71 Vinylloid Brushing Wall Finish, Grey
Walls above Dado line and ceilings	1	#96 Vinylloid Brushing Sealer
	1	#94 Vinylloid Brushing Wall Finish, White
Uninsulated Building Steel, Handrails, etc.	1	#56 Black, containing 1 qt. #99 Varnish per gallon of Black
Concrete, Foundations, etc.	1	#81 Maroon

Pipe Lines

<u>Inside</u>	<u>No. Coats</u>	<u>Paint Specification</u>	
		<u>Pipe</u>	<u>Fittings</u>
H.P.Steam	1	#89 Signal Red	Same
L.P.Steam	1	#80 Maroon	Same
River Water	1	#72 Light Grey	Same

Pipe Lines (Continued)

Inside (Continued)

Paint Specifications

	<u>No. Coats</u>	<u>Pipe</u>	<u>Fittings</u>
City Water	1	#72 Light Grey	#80 Maroon
Process Water	1	#72 Light Grey	#56 Black, containing 1 qt. #99 Varnish per gallon of Black
Compressed Air	1	#92 White	Same
Fire Lines	1	#72 Light Grey	#89 Bright Red
Fuel Gas	1	#72 Light Grey	#51 Aluminum
Unfinished Alcohol	1	#87 Dark Red	Same
Ether	1	#82 Orange	Same

Outside

Same as inside, except:

H.P.Steam	2	#56 Black	Same*
L.P.Steam	2	#56 Black	Same*
Fuel Gas	2	#56 Black	Same*
Dowtherm	1	#73 Light Grey Stack Paint	Same

*Pipe lines to be striped with paint specified for fittings on inside lines handling same material.

III - BUILDING ACCESSORIES

1. HEATING AND VENTILATING

The building is to be heated and ventilated with motor-driven York Heat-Diffusing Units sufficient in size and number to maintain a comfortable working atmosphere. These units should be provided with outside air-intakes and dampers. 1/2" Armstrong No. 111 steam traps are to be used.

2. LIGHTING

Lights are to be provided so that all instruments, meters, weirs, etc. are adequately illuminated for efficient operation at night. Outdoor walkways, tank gauge-boards, etc. must be properly lighted.

3. DRINKING FOUNTAINS

A drinking fountain is to be provided on operating level.

4. TOILETS AND WASHBOWLS

One toilet and a washbowl fitted with soap and paper-towel dispensers are to be supplied.

5. HOSE OUTLETS

Hose outlets are to be provided in the building as follows:

- 2 - 1" air outlets
- 2 - 1" water outlets
- 2 - 1" L.P. Steam Outlets

IV - SAFETY EQUIPMENT

1. FIRE-FIGHTING EQUIPMENT

Inside

The high pressure fire line is to be extended within the building, and hoses are to be provided near the doors. These hoses are to be 100 feet of 2-1/2 inch Standard Underwriters' labeled unlined linen hose with 2-1/2" x 15" aluminum-painted iron nozzle, installed according to Drawing No. C - 33544. 2-1/2 gallon Foamite Extinguishers, model CA, are to be provided adjacent to each fire hose, and are to be hung on wall racks constructed according to Drawing No. C - 33543.

A 40 gallon Foamite engine is to be supplied and will be located outside the building convenient to a suitable ramp so that the engine may be easily rolled inside.

Two gallon, model 7-1/2 Alfite Extinguishers are to be provided accessible to all electric motors.

Outside

Two hydrants with 2-way standard 2-1/2" hose connections, 6" bottom connections, automatic drain cock to avoid freezing. One hydrant is to be spotted to the east of the building; the other, to the west of the building between the Dowtherm boilers and the building.

Each hydrant is to be equipped with two units consisting of 4 - 50 ft. lengths of standard 2-1/2", single-jacketed cotton, rubber-lined, mill-yard hose with standard 1-1/8" smooth bore nozzles. Hoses are to be stored in hose houses constructed according to Drawing No. B - 28385.

Hose houses are to be located close to hydrants and each is to contain 5 - 45 lb. cans of Foamite Generator Powder.

2. FIRST AID EQUIPMENT

One first aid cabinet is to be supplied. It is to be located inside the building near the door at the west end.

The cabinet is to contain the following:

- 2 - eye cups
- 1 gal. - 2% acetic acid solution
- 1 gal. - 5% boric acid solution
- 1 gal. - 5% sodium bicarbonate solution
- 1 gal. - mineral oil

V - INSULATION

Following is a list of equipment and pipe lines which are to be insulated. Thicknesses and insulation specifications are given.

APPARATUS LIST

Item No.	Location	Temperature	Thickness of Insulation	Material
101	Outside	Atmospheric	1"	Rockwool
102	Outside	Atmospheric	1"	Rockwool
103	Outside	Atmospheric	1"	Rockwool
107	Outside	90°C.	1-1/2"	Rockwool
108	Outside	90°C.	1"	Rockwool
118	Outside	300°C.	4"	Rockwool
123	Outside	300°C.	4"	Rockwool
153-A	Outside	300°C.	4"	Rockwool
153-B	Outside	300°C.	4"	Rockwool
154	Outside	300°C.	1"	Rockwool
156	Outside	300°C.	1"	Rockwool
190	Outside	300°C.	1"	Rockwool

PIPING LIST

Line No.	Location	Thickness of Insulation	Material
P-102	<i>From Items 101, 102, 103 to inside</i>		
P-104	Outside	1-1/2"	Rockwool
P-105	Outside	1-1/2"	Rockwool
P-106	Outside	3"	Rockwool
P-107	Outside	3"	Rockwool
D-101	Outside	4"	Rockwool
D-102	Outside	3"	Rockwool
IS-101	Outside	1-1/2"	Rockwool
IS-104	Outside	1-1/2"	Rockwool
HS-101	(Inside (Outside	(1-1/2" (1-1/2"	(Rockwool (Rockwool

Lines D-101 and D-102 should be insulated with low pressure steam lines.

VI - MISCELLANEOUS OPERATING EQUIPMENT

- (1) 1 - Log desk constructed according to Drawing No. B-46934.
- (2) 1 - Sample rack constructed according to Drawing No. C-33540.
- (3) 1 - Tool set containing the following items:
 - 1 - 10" Pipe wrench
 - 1 - 18" Pipe wrench
 - 1 - 24" Pipe wrench
 - 1 - 8" Crescent wrench
 - 2 - 10" Crescent wrenches
 - 1 - 15" Crescent wrench
 - 2 - 1/2" Spud wrenches
 - 2 - 5/8" Spud wrenches
 - 2 - 3/4" Spud wrenches
 - 1 - 8" Combination Pliers
 - 1 - 8" Screwdriver
 - 1 - 12" Screwdriver
 - 1 - 24" Dividers
 - 1 - Die stock with following dies:
1/4", 1/2", 3/4", 1", 1-1/2", 2"
 - 1 - Tinsnip, 14"
 - 1 - Center punch
 - 1 - Caulking chisel
 - 1 - Padlock and key

- (4) 1 - Tool box constructed according to Drawing No. C-33539.
- (5) 3 - Wilson-Jones No. 618, 11" x 8-1/2" aluminum sheet holders for log sheets.
- (6) 3 - 12-1/2" x 9" wood back "Globe Clip" boards.
- (7) 1 - Pencil sharpener.
- (8) 2 - Rubbish barrels
- (9) 2 - Ladders, one 12-foot, one 24-foot.
- (10) Rubber Hose
 - 2 - 50 ft. lengths 1/2" I. D. U. S. Giant Steam Hose
 - 2 - 50 ft. lengths 1/2" I. D. U. S. Mogul Air Hose
 - 2 - 50 ft. lengths 1" I. D. U. S. Rainbow Water Hose
 - 4 - pairs 1/2" U. S. Samson High Pressure Hose Couplings
 - 2 - pairs 1" U. S. Samson High Pressure Hose Couplings
- (11) 2 - 1 pt. capacity oil cans.

Prop. No. 6376-1766