

Internal
Memorandum

Attch
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Date **November 25, 1970** Letter No.

Kansas City, Missouri

To **Mr. B. W. Colston, Area Manager, AEG-KCAO (2)**

From [Redacted]

Subject **PROJECT DIRECTIVE MODIFICATION REQUEST FOR:
FINISHES DEVELOPMENT FACILITY, PR-107**

[Redacted]
Gur [Redacted]

copy

File 2

Modification to the subject Project Directive is requested for the purpose of increasing the funding to allow inclusion of additional fire protection provisions required to meet National Fire Protection Association Codes. Additional funds in the amount of \$7,500 are necessary to provide smoke and heat detectors and fire wall construction.

Attached are thirteen copies of revised pages 6B, 11, 13, 14, 15, 17, 19, and 21 to the subject proposal. These pages provide the necessary revisions to reflect the additions.

Please advise if additional information is required.

Original Signed by

[Redacted Signature]

Attachments: Revised Pages

- cc: [Redacted] w/Att.
- [Redacted] w/Att.
- [Redacted] w/Att.
- [Redacted] w/Att.
- [Redacted] w/Att.
- [Redacted] w/Att. ←

November 25, 1969

THIS PRELIMINARY PROPOSAL
HAS BEEN REVIEWED BY—

MANUFACTURING

 10/30/69

ENGINEERING DIVISION

 11/6/69
11/11/69

PRELIMINARY PROPOSAL
AND REQUEST FOR
FINISHES DEVELOPMENT
FACILITY

FACILITIES ENGINEERING

 10/30/69

HEALTH, SAFETY AND FIRE
PROTECTION

 11/19/69

RESOURCES AND PROGRAMMING

 11/24/69

November 25, 1969

TABLE OF CONTENTS

	<u>Page</u>
I. General Description of Work	3
II. Justification of Basic Need	4
III. Consideration Given to Existing Structures and Commercial - Industrial Sources	7
IV. Preliminary Plans	8
V. Outline Specifications	11
VI. Preliminary Estimate	13
VII. Operating Expense Costs	20
VIII. Proposed Starting and Completion Dates	21
IX. Proposed Method of Accomplishment	22

Revised December 29, 1969
Revised December 18, 1969
November 25, 1969

I. General Description of Work

A. Purpose of the Facility

The Finishes Development Area located in the north wing of main building requires an isolated area for aluminum plating operations. To provide this space it is necessary to install a 400 square foot prefabricated metal building adjacent to the main building structure complete with explosion proof features and a special fume exhaust system. This addition will permit the installation of new laboratory furniture and equipment and will release present space to permit rearrangement of existing area.

B. Water and Air Pollution Control

1. Water Pollution

Existing caustic-acid drain lines will be extended to both new and relocated plating equipment by the proposed project to receive small amounts of hydrochloric and sulfuric acids, and caustic reagents. These drain lines empty into existing acid and caustic drain pits. The drain pits and pumping stations, located inside the main building, pump the waste solutions to an existing industrial waste lagoon and are chemically treated and sampled before outfalling into the sanitary sewer.

Small quantities of low level radioactive nickel plating and rinse solutions will be collected in glass containers to prevent entry to the drain system and held for disposal by the Health and Safety Department.

2. Air Pollution

No special or unusual control measures will be required as a result of the proposed project. Fume hoods and a fume exhaust system will be installed to exhaust hydrochloric and sulfuric acid vapors and diethyl ether vapors produced to the atmosphere in small amounts well within standard industrial regulations.

II. Justification of Basic Need for Finishes Development Facility

Expansion of the Facility is required to isolate the aluminum plating project and to provide needed working area for finishes development projects. Aluminum plating should be isolated because it uses large quantities of diethyl ether, a very flammable and volatile liquid. The proposed facility will have an exhaust system that will prevent the accumulation of quantities of ether vapor, and it will be so constructed so that in the event of explosion or fire the damage will be limited, to the immediate area.

If an isolated facility with the proper explosion proof design and the proper ventilation is not provided the electrodeposition of aluminum and the thermal deposition of aluminum projects will not be able to operate at the scale necessary to meet program requirements because operating at that scale poses an undesirable hazard in the present facility and to the plant in general. Facilities to do this work do not exist elsewhere in the AEC complex. These projects require a Q-cleared facility. Also without this capability, the ability to perform the other projects satisfactorily with reasonable safety will be significantly impaired.

A. Initial and Ultimate Planned Capacity

There are approximately 54 lineal feet of work surface in the present facility. About half of this surface is chemical-, fire-, and heat-resistant construction required for chemical work and most of it is 15 or more years old and badly deteriorated. Approximately 50 lineal feet of work surface is required for existing equipment and equipment that will be acquired in FY 70, leaving only 4 lineal feet of work surface available for the setting up and carrying out of projects. This is so undesirable that most projects are now being carried out on temporary benches. The proposed facility will contain 150 lineal feet of work surface, all of which will be chemical-, heat-, and fire resistant.

In order to provide storage for day-to-day chemicals, equipment and apparatus there are nine steel cabinets in the present facility using 135 square feet of area. The proposed facility contains drawer and cupboard space underneath virtually all 150 feet of work surface. This will permit the elimination of the storage cabinets releasing the space now occupied by them to working space.

Revised December 29, 1969
November 25, 1969

B. Development Operations, Materials, and Equipment

Projects currently in the facility are Stetson and Pillbox (Customer Order Nos. CM8-5869, CM9-6335, and CM9-6437), Electrodeposition of Aluminum (PDO 6984228), Rollamite (PDO 6984376), Plating Uniformity (PDO 6984636), Weldable Printed Circuits (PDO 6984347), Solderability of Gold Plating (PDO 6989035), Spray Gold Plating (PDO 6989046), 68 A.F. and F. Reflective Plating (EP 43381-00), Thermal Deposition of Aluminum (PDO 6984683), Barrel Chromium Plating for MC's 1996, 2118, and 2200 (PDO 6984061), and plating of radioactive nickel for the T446. Plating and cleaning solutions used in all of these projects require modern fume removal equipment.

Fume removal now is accomplished by a large walk-in hood and three conventional fume hoods, all of which are approximately twenty years old. The proposed exhaust system will adequately service all plating tanks while removing only ten percent as much air as the current exhaust system thus reducing the load on the air-conditioning and heating. Of the three existing conventional fume hoods, one is a small hood designed for working with perchloric acid, a capability not required. The other two fume hoods are old and should be replaced. None of the hoods is of the variety with the large vertical working area that is needed for the Thermal Deposition of Aluminum Project (PDO 6984683), that supports the Stetson and Pillbox projects. The proposed hood on the north end of the east wall of the layout is for this purpose. The hoods in the proposed facility are designed so that much of the air drawn through them is directly exhausted outside air reducing the load on the air-conditioning and heating equipment.

Except for the aluminum plating equipment and two acid cabinets all the equipment now in the Finishes Development Facility will be surplus or scrapped.

C. Operating Personnel

Four chemical engineers, chemists, and engineering technologists work in the facility full time, another four work there part time. They work on a wide variety of projects ranging in duration from a few days to a few years. Some of the projects are carried out primarily in the facility, others require support from it.

Revised January 12, 1970
Revised December 20, 1969
November 25, 1969

D. Fire, Explosion, Exposure and Radiation Risks

New flammable storage cabinets, acid and caustic storage cabinets and eye wash stations will provide additional safety measures for handling and storing hazardous chemicals. Explosion proof wiring, equipment and blow out panels will be installed to reduce explosion dangers during operations using significant quantities of diethyl ether. Fire protection will be provided by the extension of sprinkler branch piping and heads. An adequate ventilation and fume exhaust system will provide suitable environmental conditions for personnel in the area. Small quantities of radioactive nickel 65 solutions are used in plating operations, however, the radioactivity level is so low that no special protective shielding is necessary.

E. Telecommunication and Signals Systems

Normal plant communications such as telephone and public address systems are sufficient to meet requirements for the facility.

F. Material Accountability

Gold plating materials are presently being used in the area and will continue to be used in the expanded facility. Present established methods providing an accounting system for the use of precious metals will not be changed as a result of this project.

G. Security

The established in plant security measures will be sufficient for this facility to handle indicated future program work load.

November 25, 1969

III. Consideration Given to Existing Structures and Commercial - Industrial Sources

Existing facilities some of which were installed about fifteen years ago have been evaluated and verified to be in need of upgrading. The equipment is substandard as a result of wear and obsolescence. Commercial sources have also been evaluated and have two disadvantages--
(1) Ability to designate and monitor specific development processes
and (2) Production of classified products.

November 25, 1969

IV. Preliminary Plans

A. Preliminary Plans included in this section--

- | | |
|------------------|-------------|
| 1. Location Plan | Exhibit -A- |
| 2. Layout Plan | Exhibit -B- |

VI. Preliminary Estimate of Costs

Below is a summary of preliminary costs for the Finishes Development Facility.

<u>Item</u>	<u>Description</u>	<u>Construction Funds</u>	<u>Expense Funds</u>	<u>Total</u>
1.	Engineering and Design	3,000.	500.	3,500.
2.	Construction			
	A. Improvements to Land		--Not Applicable--	
	B. New Building Construction or Remodeling	49,000.	6,000.	55,000.
	C. Other Structures		--Not Applicable--	
	D. Special Facilities		--Not Applicable--	
	E. Utilities		--Not Applicable--	
3.	Standard Equipment	23,000.	1,000.	24,000.
4.	Contingencies	7,500.	1,000.	8,500.
5.	Indirect Costs		--Not Applicable--	
6.	Total Project Estimate	82,500.	8,500.	91,000.

Note--The above estimate prepared by the BKC Facilities Engineering Department is based on preliminary design studies.

November 25, 1969

V. Outline Specifications

The following is an outline of minimum work required to expand the Finishes Development Facility.

- A. Excavate an outside 460 square foot area for the installation of a reinforced concrete floor, a support pad and a walkway.
- B. Remove an existing window sectioned and framed wall and fill this space with a 12 inch thick ceiling high concrete block wall.
- C. Provide and install a 400 square foot by 11 foot high pre-fabricated metal building with insulated walls and roof, and a 60 square foot by 11 foot high prefabricated metal passageway.
- D. Provide and install a grounding system for the new building and a conductive chemical resistant floor topping.
- E. Install insulated spring loaded blow-out panels in sections of the new metal building and passageways for explosion hazards.
- F. Remodel one existing and install three new hollow metal doors with emergency hardware.
- G. Provide and install an explosion proof distribution panel, explosion proof electrical service and outlets, and explosion proof fluorescent lighting fixtures.
- H. Provide and install natural gas, nitrogen, compressed air and vent piping for exhausted work stations, insulated hot and cold water piping for sinks and safety eye wash units, deionized water piping, and floor entrenched caustic and acid drains for chemical wastes.
- I. Purchase and install an explosion proof 10 ton air conditioning unit outside the main building. Install a fabricated metal housing and support frame for this unit.
- J. Remove deteriorated exhaust fans and ducts, and install a new explosion proof fan and support frame, drain stack, and branch exhaust duct for plating fume removal.
- K. Extend sprinkler branch lines from an existing main into the new building and install six new sprinkler heads to meet fire regulations.

VI. Preliminary Estimate of Costs

Below is a summary of preliminary costs for the Finishes Development Facility.

<u>Item</u>	<u>Description</u>	<u>Construction Funds</u>	<u>Expense Funds</u>	<u>Total</u>
1.	Engineering and Design	3,500.	500.	3,500.
2.	Construction			
	A. Improvements to Land		--Not Applicable--	
	B. New Building Construction or Remodeling	55,500.	6,000.	61,500.
	C. Other Structures		--Not Applicable--	
	D. Special Facilities		--Not Applicable--	
	E. Utilities		--Not Applicable--	
3.	Standard Equipment	23,000.	1,000.	24,000.
4.	Contingencies	6,200.	1,000.	7,200.
5.	Indirect Costs		--Not Applicable--	
6.	Total Project Estimate	90,000.	6,500.	96,500.

Note--The above estimate prepared by the BKC Facilities Engineering Department is based on preliminary design studies.

THE BENDIX CORPORATION
 KANSAS CITY DIVISION
 PRELIMINARY ESTIMATE OF COSTS FOR
 FINISHES DEVELOPMENT FACILITY

November 25, 1969
 PAGE 15
 SCHEDULE VI

ITEM	DESCRIPTION	UNIT	QTY	LABOR		MATERIAL		SC P & OH		TOTAL	
				CONST	OPER	CONST	OPER	CONST	OPER	CONST	OPER
6.	Install explosion blow-out wall and roof panels.	LS		350.		580.		470.		1400.	
7.	Install 3 foot X 7 foot hollow metal doors and emergency exit hardware.	EA	3	370.		420.		410.		1200.	
8.	Lighting and Electrical										
a.	Install explosion proof electrical service outlets and distribution panel.	LS		1080.		1520.		1300.		3900.	
b.	Install explosion proof fluorescent lighting fixtures	EA	24	1200.		5350.		3250.		9800.	
c.	Extend and connect existing electrical services	LS			1620.		430.		1350.		3400.
	Sub Total Lighting and Electrical			2280.	1620.	6870.	430.	4550.	1350.	13700.	3400.
9.	Utility Piping and Equipment										
a.	Install natural gas, nitrogen, compressed air and vent piping.	LS		1240.		360.		800.		2400.	
b.	Install insulated hot and cold water piping.	LS		1100.		300.		700.		2100.	

THE BENDIX CORPORATION
 KANSAS CITY DIVISION
 PRELIMINARY ESTIMATE OF COSTS FOR
 FINISHES DEVELOPMENT FACILITY

November 25, 1969
 PAGE 16
 SCHEDULE VI

ITEM	DESCRIPTION	UNIT	QTY	LABOR		MATERIAL		SC P & OH		TOTAL	
				CONST	OPER	CONST	OPER	CONST	OPER	CONST	OPER
	c. Install deionized water and floor entrenched caustic-acid drain piping.	LS		1450.		1820.		1730.		5000.	
	d. Purchase and install safety eyewash stations.	EA	2	300.		350.		350.		1000.	
	Sub Total Utility Piping and Equipment			4090.		2830.		3580.		10500.	
	10. Environmental Control										
	a. Purchase and install explosion proof 10 ton air conditioner	EA	1	360.		2750.		490.		3600.	
	b. Fabricate and install metal housing and access door for A.C. Unit.	EA	1	420.		160.		320.		900.	
	Sub Total Environmental Control			780.		2910.		810.		4500.	
	11. Exhaust System										
	a. Remove existing fan, exhaust duct, outside stack and fume hoods.	LS			300.		50.		150.		500.
	b. Purchase and install explosion proof exhaust fan and fabricate support frame.	EA	1	190.		480.		330.		1000.	

THE BENDIX CORPORATION
 KANSAS CITY DIVISION
 PRELIMINARY ESTIMATE OF COSTS FOR
 FINISHES DEVELOPMENT FACILITY

November 25, 1969
 PAGE 17
 SCHEDULE VI

ITEM	DESCRIPTION	UNIT	QTY	LABOR		MATERIAL		SC P & OH		TOTAL	
				CONST	OPER	CONST	OPER	CONST	OPER	CONST	OPER
	c. Install new ductwork and out-drain stack.	LS		440.		360.		400.		1200.	
	Sub Total Exhaust System			630.	300.	840.	50.	730.	150.	2200.	500.
	12. Extend sprinkler piping and install six sprinkler heads.	LS		520.		240.		440.		1200.	
	13. Paint new and disturbed construction	LS		1050.		350.		700.		2100.	
	Total - New Building Construction or Remodeling			14430.	2970.	19450.	830.	15120.	2200.	49000.	6000.
	C. Other Structures --Not Applicable--										
	D. Special Facilities --Not Applicable--										
	E. Utilities --Not Applicable--										
3.	Standard Equipment										
	A. Relocated Equipment										
	1. Remove existing shop furniture, lab equipment and utilities.	LS		590.		110.		-0-		700.	
	2. Relocate 2 existing glove boxes.	EA	2	150.		50.		-0-		200.	

THE BENDIX CORPORATION
 KANSAS CITY DIVISION
 PRELIMINARY ESTIMATE OF COSTS FOR
 FINISHES DEVELOPMENT FACILITY

November 25, 1969
 PAGE 18
 SCHEDULE VI

ITEM	DESCRIPTION	UNIT	QTY	LABOR		MATERIAL		SC P & OH		TOTAL	
				CONST	OPER	CONST	OPER	CONST	OPER	CONST	OPER
	3. Relocate existing bench mounted oven.	Ea.	1		70.		30.		-0-		100.
	Sub Total Relocated Equipment				810.		190.		-0-		1000.
	B. Purchased Equipment										
	1. Purchase and install lab cupboard units.	Ea.	18	80.	3920.				-0-		4000.
	2. Purchase and install lab tables.	Ea.	5	50.		450		-0-			500.
	3. Purchase and install acid storage unit.	Ea.	1	20.		160		-0-			180.
	4. Purchase and install assorted sink assemblies.	Ea.	6	760.		3380		-0-			4140.
	5. Purchase and install exhaust fume hoods.	Ea.	3	1680.		8080		-0-			9760.
	6. Purchase and install flammables storage cabinets.	Ea.	2	140.		560		-0-			700.
	7. Purchase and install storage cabinet.	Ea.	1	20.		200		-0-			220.
	8. Purchase and install assorted lab drawer units.	Ea.	21	80.		3120		-0-			3200.
	9. Purchase and install 6.7 cu. ft. refrigerator.	Ea.	1	20.		280		-0-			300.
	Sub Total Purchased Equipment			2850.		20150.		-0-		23000.	-0-

THE BENDIX CORPORATION
 KANSAS CITY DIVISION
 PRELIMINARY ESTIMATE OF COSTS FOR
 FINISHES DEVELOPMENT FACILITY

November 25, 1969
 PAGE 19
 SCHEDULE VI

ITEM	DESCRIPTION	UNIT	QTY	LABOR		MATERIAL		SC P & OH		TOTAL	
				CONST	OPER	CONST	OPER	CONST	OPER	CONST	OPER
	Total Standard Equipment			2850.	810.	20150.	190.	-0-	-0-	23000.	1000.
	Total Construction			14430.	2970.	19450.	830.	15120.	1900.	49000.	6000.
	Contingency Allowance at 10% of Total Cost									7500.	1000.
	Indirect Costs --Not Applicable--										
	Total Project Estimate									82500.	8500.

November 25, 1969

VII. Operating Expense Costs

These costs as presented in the preliminary estimate section are incurred as result of the removal and relocation of existing standard equipment required in order to provide space for general construction and the installation of new equipment. Included in this expense work is the removal of obsolete electrical, utility and exhaust services for the old equipment and the installation of these services for the relocated equipment.

Revised December 29, 1969
November 25, 1969

VIII. Proposed Starting and Completion Dates

	Date
A. <u>Design and Specifications</u>	
1. Start	February 9, 1970
2. Complete	April 3, 1970
B. <u>Procurement of Equipment</u>	
1. Start	February 9, 1970
2. Complete	June 12, 1970
C. <u>Request for Bids</u>	
1. Start	April 6, 1970
2. Complete	April 24, 1970
D. <u>Subcontract Approvals</u>	
1. Start	April 27, 1970
2. Complete	May 8, 1970
E. <u>Construction</u>	
1. Start	May 11, 1970
2. Complete	July 17, 1970
F. <u>Equipment Relocation</u>	
1. Start	May 4, 1970
2. Complete	July 31, 1970
G. <u>New Equipment Installation</u>	
1. Start	July 17, 1970
2. Complete	August 14, 1970

November 25, 1969

IX. Proposed Method of Accomplishment

- A. Contractual breakdown and scope by participants will be as follows--
1. Engineering and design for construction and area preparation within the main complex will be performed by Bendix Facilities Engineering.
 2. Procurement of lab and shop equipment will be performed by the Bendix Purchasing Department.
 3. Construction will be by fixed price subcontract awarded after competitive bidding.
 4. Standard equipment removal, relocation and installation will be performed by Bendix Facilities Maintenance.

Revised November 12, 1970
Revised April 20, 1970
Revised January 12, 1970
Revised December 20, 1969
November 20, 1969

They work on a wide variety of projects ranging in duration from a few days to a few years. Some of the projects are carried out primarily in the facility, others require support from it.

D. Injury, Fire, Explosion, Exposure and Radiation Risks

New flammables storage cabinets, acid and caustic storage cabinets, and safety shower and eye wash stations will be installed for the handling and storage of hazardous chemicals. A new lean-to metal building will be constructed, complete with a common 12 inch thick, pressure resistant wall, and exterior walls and roof with built in, spring loaded, explosion release panels (for 20 lbs. pressure relief) to house aluminum plating operations. The new building will have explosion proof wiring, sprinkler heads and branch piping extended from existing mains, and a separate ventilation and fume exhaust system that will provide safe environmental conditions for area personnel and eliminate interconnecting duct systems to the main building. Smoke and heat detectors will be installed in the lean-to metal building.

Small quantities of radioactive Nickel-63 solutions are used in plating operations, however, the radioactivity level is so low that no special protective shielding will be necessary.

E. Telecommunication and Signals Systems

Normal plant communications such as telephone and public address systems are sufficient to meet requirements for the facility.

F. Material Accountability

Gold plating materials are presently being used in the area and will continue to be used in the expanded facility. Present established methods providing an accounting system for the use of precious metals will not be changed as a result of this project.

V. Outline Specifications

The following is an outline of minimum work required to expand the Finishes Development Facility.

- A. Excavate an outside 460 square foot area for the installation of a reinforced concrete floor, a support pad and a walkway.
- B. Remove an existing window sectioned and framed wall and fill this space with a 12 inch thick ceiling high four hour rated concrete block wall.
- C. Provide and install a 400 square foot by 11 foot high pre-fabricated metal building with fire retardant insulated walls and roof, and a 60 square foot by 11 foot high pre-fabricated metal passageway.
- D. Provide and install a grounding system for the new building and a conductive chemical resistant floor topping.
- E. Install fire retardant, insulated spring loaded blow-out panels in sections of the new metal building and passageways for explosion hazards.
- F. Remodel one existing and install three new hollow metal doors with emergency hardware and one three hour rated fire door.
- G. Provide and install an explosion proof distribution panel, explosion proof electrical service and outlets, explosion proof fluorescent lighting fixtures, and smoke and heat detectors.
- H. Provide and install natural gas, nitrogen, compressed air and vent piping for exhausted work stations, insulated hot and cold water piping for sinks and safety eye wash units, deionized water piping, and floor entrenched caustic and acid drains for chemical wastes.
- I. Purchase and install an explosion proof 10 ton air conditioning unit outside the main building. Install a fabricated metal housing and support frame for this unit.
- J. Remove deteriorated exhaust fans and ducts, and install a new explosion proof fan and support frame, drain stack, and branch exhaust duct for plating fume removal.
- K. Extend sprinkler branch lines from an existing main into the new building and install six new sprinkler heads to meet fire regulations.

THE BENDIX CORPORATION
KANSAS CITY DIVISION
PRELIMINARY ESTIMATE OF COSTS FOR
FINISHES DEVELOPMENT FACILITY

November 25, 1969
PAGE 14
SCHEDULE VI

ITEM	DESCRIPTION	UNIT	QTY	LABOR		MATERIAL		SC P & OH		TOTAL	
				CONST	OPER	CONST	OPER	CONST	OPER	CONST	OPER
1.	Engineering, design and inspection will be performed by BKC Facilities Engineering at 5% of total cost less purchase cost of standard equipment and contingency allowance.									3000.	500.
2.	Construction										
	A. Improvement to Land --Not Applicable--										
	B. New Building Construction or Remodeling										
	1. Excavate for concrete floor, walkway and pad.	SF	460	150		50.		100.		300.	
	2. Install reinforced concrete floor, walkway and E.C. support pad	SF	460	490.		500.		510.		1500.	
	3. Replace existing frame glass sections with a 12 inch x 12 foot high concrete block wall.	LF	34	620.		320.		460.		1400.	
	4. Provide and install 18 foot X 22 foot X 11 foot high prefabricated metal building.	EA	1	3600.		1800.		2700.		8100.	
	5. Install 460 sq. ft. conductive flooring and grounding system.	LS		550.		2090.		360.		3000.	

November 25, 1969

- L. Paint all new construction including ductwork, piping, walls ceilings and doors, and touch up any disturbed existing construction.
- M. Remove existing shop furniture, lab equipment and utilities to storage. Relocate two existing glove boxes and a bench mounted oven.
- N. Purchase and install laboratory cupboard and drawer units, acid storage units, a refrigerator, three fume exhaust hoods, sink assemblies, tables, and flammables storage cabinets to replace the obsolete equipment used in the present facility.

THE BENDIX CORPORATION
 KANSAS CITY DIVISION
 PRELIMINARY ESTIMATE OF COSTS FOR
 FINISHES DEVELOPMENT FACILITY

Revised November 12, 1970
 November 25, 1969
 PAGE 15
 SCHEDULE VI

ITEM	DESCRIPTION	UNITS	LABOR		MATERIAL		SC P & OH		TOTAL	
			CONST	OPER	CONST	OPER	CONST	OPER	CONST	OPER
	6. Install fire retardant, explosion blow-out wall and roof panels.	LS	450.		380.		670.		2100.	
	7. Install three 3 foot X 7 foot hollow metal doors with emergency exit hardware and one 3 foot X 7 foot three hour rated fire door.	LS	870.		670.		760.		2350.	
	8. Lighting and Electrical									
	a. Install explosion proof electrical service outlets and distribution panel.	LS	1600.		1520.		1300.		3000.	
	b. Install explosion proof fluorescent lighting fixtures.	EA	24	1200.	5350.		3250.		1000.	
	c. Extend and connect existing electrical services.	LS		1620.		430.	1350.			3400.
	d. Install Smoke and Heat Detectors.	LS	270.		200.		230.		700.	
	Sub Total Lighting and Electrical		2550.	1620.	7070.	430.	4780.	1350.	14400.	3400.
	9. Utility Piping and Equipment									
	a. Install natural gas, nitrogen, compressed air and vent piping.	LS	1240.		300.		500.		2400.	
	b. Install insulated hot and cold water piping.	LS	1100.		300.		700.		2100.	

THE BENDIX CORPORATION
KANSAS CITY DIVISION
PRELIMINARY ESTIMATE OF COSTS FOR
FINISHES DEVELOPMENT FACILITY

Revised November 12, 1970
November 25, 1969
PAGE 17
SCHEDULE VI

ITEM	DESCRIPTION	UNIT	QTY	LABOR		MATERIAL		SC P & OH		TOTAL	
				CONST	OPER	CONST	OPER	CONST	OPER	CONST	OPER
	c. Install new ductwork and out-drain stack.	LS		440.		360.		400.		1200.	
	Sub Total Exhaust System			630.	300.	840.	50.	730.	150.	2200.	500.
	12. Extend sprinkler piping and install six sprinkler heads.	LS		520.		240.		440.		1200.	
	13. Paint new and disturbed construction	LS			1050.		350.		700.		2100.
	Total - New Building Construction or Remodeling			16800.	2970.	21500.	830.	17200.	2200.	55500.	6000.
	C. Other Structures --Not Applicable--										
	D. Special Facilities --Not Applicable--										
	E. Utilities --Not Applicable--										
3.	Standard Equipment										
	A. Relocated Equipment										
	1. Remove existing shop furniture, lab equipment and utilities.	LS			590.		110.		-0-		700.
	2. Relocate 2 existing glove boxes.	EA	2		150.		50.		-0-		200.

Revised November 12, 1970
Revised April 20, 1970
Revised December 28, 1970
November 25, 1970

VIII Proposed Starting and Completion Dates

	Dates
A. <u>Design and Specifications</u>	
1. Start	6/ 1/70
2. Complete	12/18/70
B. <u>Procurement of Equipment</u>	
1. Start	11/ 2/70
2. Complete	1/2./71
C. <u>Request for Bids</u>	
1. Start	12/21/70
2. Complete	1/15/71
D. <u>Subcontract Approvals</u>	
1. Start	1/16/71
2. Complete	2/12/71
E. <u>Construction</u>	
1. Start	2/15/71
2. Complete	4/ 5/71
F. <u>Equipment Relocation</u>	
1. Start	3/2/71
2. Complete	4/23/71
G. <u>New Equipment Installation</u>	
1. Start	4/12/71
2. Complete	5/ 7/71