PLAINTIFF'S
EXHIBIT
USX-288

491-0063-E/ ENSLEY -Open Hearth/491-0063

Change in Method of Mixing Mud Ball

FAIRFIELD WORKS

REQUEST FOR ENGINEERING SERVICES

491-0063
PROJECT IDENTIFICATION NO.

TITLE Refractory Mixer

FACILITY Open Hearth Dep't. No. 2 - [illegible] RESP. NO. 224260

REASON Change in Method of Mixing Ball Mud

CONTACT R. A. Parker FOR SPECIFIC DETAILS

I. REQUEST

SERVICES REQUESTED
Check one item only with "X"

___ Appropriation Request
X Eng. Study & Preliminary Estimate
X Detailed Drawings
___ Revise Drawings
Other:

BENEFITS TO BE OBTAINED
Check with "X" or "CI"

___ Manpower Reduction
X Process or Equipment Improvement
___ Replacement of Equipment
___ Safety

REQUESTED BY [signature] (Division Supt.) DATE 2-25-70

I. COST DATA

Preliminary Estimate of Annual Savings to be ..... $ ___ ___ Verifiable ___ Variance Reduction

___ Basic Data Being Prepared - Estimated Date to Accounting .....

X Basic Data Will be Prepared When Preliminary Estimate is Received

___ Basic Data Not Required

[signature] Division Industrial Engineer DATE 2-25-70

III. APPROVED BY ___ Asst. Gen. Supt. DATE ___ URGENT ___

IV. ENGINEERING ASSIGNMENT

To HGMS For ___

[signature] Chief Engineer DATE 2-26-70

V. RECOMMENDATION FOR FURTHER ACTION

VI. FINAL DISPOSITION

FORM 1151

USHO 001547

ELECTRICAL ESTIMATING NOTES

Sheet 1 of 2

Project No. 491-[illegible] (Rev. #[illegible]) Assigned to CCC Date [illegible]

Title REFACTORY [illegible] – OPEN HEARTH DEPT. [illegible]

CHANGE IN METHOD OF MIXING BALL MUD

References DWG E-12583-S, [illegible]

Quantity	Description	$
1	MOTOR, 1 [illegible], 250 [illegible], 3PH, [illegible] HZ, OPERATING	
	HOPPER GATE #1 ([illegible] GATE. 66.50 X 1.12)	74.[illegible]
1	STARTER, [illegible]	
	FULL [illegible], NEMA SIZE 1, WITH MOTOR	
	DISCONNECT SWITCH AND 30 AMP FUSE [illegible]	
	WITH [illegible] THERMAL OVERLOAD [illegible]	
	IN NEMA 4 (STAINLESS STEEL) ENCLOSURE	
	CLARK [illegible] 3123 OR EQUAL 287 x .85	245.[illegible]
	WIRING MATERIAL: 150' - 3/C #12 CABLE .30/FT	4[illegible]
	150' - 1/2" CONDUIT 60/FT	90.[illegible]
	1 - 30 A. SAF. SW.	20.[illegible]
	MISC FITTINGS	[illegible]
	TOTAL FOR 1 HOPPER GATE	504.43
	" " 3 " GATES	1513.44

Continued on next sheet ✓ Yes __ No

Notes released to estimating Date _____

By _____ Approved _____

USHO 001548

[illegible]
49-0063
[illegible]

Sheet 2 of 3

Quantity	Description	$
1	MOTOR [illegible] 3 PHASE 60 Hz	
	OPERATING ONE SCREW CONVEYOR	
	1200 RPM FR 286T, TEFC, HIGH TORQUE	
	DESIGN [illegible] ON CONVEYOR, 545 x 1.12	610.[illegible]
1	STARTER COMBINATION, REVERSING,	
	ACROSS-THE-LINE FULL VOLTAGE NEMA	
	SIZE 3 [illegible] MOTOR DISCONNECT	
	SWITCH [illegible] 400 AMP FUSE [illegible]	
	[illegible] MEANS ALLOW THERMAL	
	OVERLOAD RELAYS, IN NEMA 4	
	(STAINLESS STEEL) ENCLOSURE	
	CLASS 38WA 332 [illegible] OR EQUAL 844 x .85	717.[illegible]
	WIRING MATERIAL: 50'-3/C #4 CABLE .75/FT	37.50
	50'-1½" CONDUIT .60/FT	30.00
	1-400 A SAF. SW.	150.00
	MISC. FITTINGS + PULL BOXES	75.00
	TOTAL 1 CONVEYOR	1620.30
	TOTAL FOR 4 CONVEYORS	6481.20

Continued on next sheet X Yes __ No

USHO 001550

Quantity	Description	$
1	FEEDER FROM 600KVA TRANSF STATION	
	200 [illegible] #4/0-3/C CABLE [illegible]	500.00
	200 [illegible] 3" CONDUIT 1.65/FT	330.00
	2-400A [illegible] NEMA 4 CH H430 [illegible]	1150.00
	1-8FT x [illegible] STEEL PANEL FOR MOUNTING [illegible]	600.00
	MISC FITTING & PULL BOXES	300.00
	TOTAL	2880
	TOTAL MATERIAL EQUIPMENT (1513.44+6[illegible]) [illegible]	$10,874.00
	LABOR, ELECTRICAL EST. 1200 MAN HOURS @ 6 [illegible]	7200.00
	TOTAL	18,074.00
	NOTE: THIS IS BASED ON USING	
	2[illegible] 3 PH. 60 HZ POWER FROM	
	[illegible] BOTTOM HOUSE	
	TRANSFORMER STATION AT THE [illegible]	
	END OF THE OLD BESSEMER CONVERTOR	
	BOTTOM HOUSE.	

Continued on next sheet ___ Yes X No

FAIRFIELD WORKS

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491-0063
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Other:

REQUESTED BY [signature] (Division Supt.) DATE 2-25-70

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[signature] Division Industrial Engineer DATE 2-25-70

III. APPROVED BY ___ Asst. Gen. Supt. DATE ___ URGENT ___

IV. ENGINEERING ASSIGNMENT

To HGMS For ___

[signature] Chief Engineer DATE 2-26-70

V. RECOMMENDATION FOR FURTHER ACTION

VI. FINAL DISPOSITION

FORM 1151

USHO 001553

SUBJECT: ELECTRICAL ENGG.

No.	Description	No. Required	Mark	Weight Each	S. I.	S. C.	S. F.	Str. S.	Brac.	Cost

SHEETS 11 O. K. _____ CHIEF DRAUGHTSMAN _____ O. K. _____ ASST. CHIEF ENGINEER _____

USHO 001554

DRAWING ROOM ESTIMATE No. DR.

SHEET No. [illegible] 11

SUBJECT

SIGNED [illegible] 7-13-70

Drawing No.	Description	No. Required	Mark	Weight Each	C. I.	S. C.	S. F.	Str. S.	Brass	Cost
	AND [illegible]	[illegible]		CONVEY	[illegible]	TRAVELING				
	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]			
	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
	[illegible] A THI[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]			
	[illegible]	[illegible]		[illegible]	FOR	[illegible]	[illegible]	[illegible]		
	[illegible]	[illegible]			COV[illegible]	[illegible]				
	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]				

TOTAL SHEETS 11 O. K. CHIEF DRAFTSMAN O. K. ASST. CHIEF ENGINEER

USHO 001555

DRAWING ROOM LOCATION NO. [illegible]

SHEET No. [illegible]

SUBJECT

[illegible]

Item No.	Description	No. Required	Mark	Weight Each	C. I.	S. C.	S. F.	Str. S.	Brass	Cost
	ITEM I — DISMANTLING AND [illegible] OF EXISTING EQUIPMENT									
	ITEM II — EXCAVATIONS [illegible] FOUNDATIONS									
	ITEM III — STRUCTURAL STEEL									
	ITEM IV — CONVEYING [illegible]									
	ITEM V — PIPING									
	ITEM VI — [illegible]									
	ITEM VII — ELECTRICAL									

TOTAL SHEETS 11 O. K. CHIEF DRAFTSMAN O. K. ASST. CHIEF ENGINEER

USHO 001556

DRAWING ROOM ESTIMATE NO. [illegible]

SHEET No. [illegible] 11

SUBJECT

SIGNED [illegible]

Item No.	Description	No. Required	Mark	Weight Each	C. I.	S. C.	S. F.	Str. S.	Brass	Cost
	ITEM II									
	[illegible]									
	ITEM II — [illegible]									
	ALLOW [illegible]									
	THROUGH [illegible]									
	EXCAVATION (REINF. CONC.) — [illegible]									
	[illegible]									
	[illegible]									
	FOUNDATION —									

TOTAL SHEETS 11 O. K. CHIEF DRAFTSMAN O. K. ASST. CHIEF ENGINEER

USHO 001557

DRAWING ROOM ESTIMATE No. DE.

SHEET No. [illegible]

SUBJECT

ENGINEER [illegible]

Description	No. Required	Mark	Weight Each	C. I.	S. C.	S. F.	Str. S.	Brass	Cast
BACKFILL				10	[illegible]	YDS			
[illegible]				[illegible]	[illegible]				
EMBEDDED STEEL				8	60 #				
[illegible]									
[illegible]									
EXCAVATION				8	CUBIC	YDS			
[illegible]				[illegible]	[illegible]	YDS			
REINF. STEEL				2,000 #					
[illegible]									
[illegible]				1	[illegible]				
BIN [illegible]									
[illegible]				[illegible]	[illegible]				
[illegible]									
EXCAVATION				[illegible]	[illegible]	[illegible]			
[illegible]				[illegible]	[illegible]	YDS			
REINF. STEEL				600 #					
ANCHOR BOLTS				[illegible]					

TOTAL SHEETS 11 O. K. CHIEF DRAFTSMAN O. K. ASST. CHIEF ENGINEER

USHO 001558

DRAWING ROOM ESTIMATE No. D[illegible]

SHEET No. [illegible]

SUBJECT

SIGNED [illegible]

Drawing No.	Description	No. Required	Mark	Weight Each	C. I.	S. C.	S. F.	Str. S.	Brass	Cost
	TRACK [illegible] SUPPORTS									
	[illegible]				[illegible]		[illegible]			
	[illegible]				8 [illegible]					
	[illegible]				[illegible]					
	[illegible]				[illegible]					
	ITEM [illegible] — STRUCTURAL STEEL									
	[illegible]									
	[illegible]					14½ TONS				
	[illegible]					12,000#				
	[illegible]					4800#				
	[illegible] CONVEYOR									
	[illegible]					[illegible]				
	CONVEYOR PIT									
	HANDRAILS					900#				
			CONT...							

TOTAL SHEETS 11 O. K. CHIEF DRAFTSMAN O. K. ASST. CHIEF ENGINEER

USHO 001559

DRAWING ROOM ESTIMATE NO. [illegible]

SHEET No. 7 OF 11

SUBJECT

ENGINEER LRK 7-13-70

Drawing No.	Description	No. Required	Mark	Weight Each	C. I.	S. C.	S. F.	Str. S.	Brass	Cost
	ITEM IV CONVEYING SYSTEM									
	[illegible]									
	ONE (1) 12" DIA. SCREW CONVEYOR WITH									
	HELICOID LEFT HAND SCREW - [illegible] LENGTH									
	INSIDE TROUGH [illegible] - 7[illegible]-0", COMPLETE									
	WITH THREE [illegible] FLANGED INLET [illegible]									
	AND ONE (1) FLANGED [illegible]									
	STANDARD "U" [illegible]									
	[illegible] FLANGES, [illegible] HANGERS, TROUGH									
	FLANGES [illegible], BOLTED COVER									
	CONVEYOR [illegible]									
	HARDENED COUPLINGS, DRIVE COMPLETE									
	WITH REDUCER, MOTOR ETC.									
			CONT...							

TOTAL SHEETS 11 O. K. CHIEF DRAFTSMAN O. K. ASST. CHIEF ENGINEER

USHO 001560

SHEET No. 8 OF 11

SUBJECT

CHECKED LMC 7-13-70

Drawing No.	DESCRIPTION	No. Required	Mark	Weight Each	C. I.	S. C.	S. F.	Str. S.	Brass	Cost

DRAWING ROOM ESTIMATES No. [illegible]

SHEET No. 9 OF 11

SUBJECT

ENGINEER [illegible] 7-13-70

Item No.	Description	No. Required	Mark	Weight Each	C. I.	S. C.	S. F.	Str. S.	Brass	Cost
	ONE (1) 12" DIA. HORIZONTAL SHAFT/CONVEYOR WITH HELICOID LEFT HAND SCREW/ WITH MIXING PADDLES - TOTAL LENGTH INSIDE TROUGH ENDS - 35'-0 - COMPLETE WITH ONE (1) FLANGED INLET OPENING AND ONE (1) FLANGED DISCHARGE OPENING - STA [illegible] "U" TROUGH SECTIONS, ANGLE TO FLANGES [illegible] HANGERS TROUGH [illegible] SAND BOLTED [illegible] COMPLETE [illegible] END [illegible] COUPLINGS, [illegible] CONSTRUCTION [illegible] REDUCER, MOTOR, ETC.									
			CONT...							

TOTAL SHEETS 11 O. K. CHIEF DRAFTSMAN O. K. ASST. CHIEF ENGINEER

USHO 001562

DRAWING ROOM ESTIMATE No. DE.

SHEET No. 10 OF 11

SUBJECT

SIGNED LRK 7-13-70

Drawing No.	Description	No. Required	Mark	Weight Each	C. I.	S. C.	S. F.	Str. S.	Brass	Cost
	THREE (3) FLAT SLIDE RACK AND									
	PINNION HOPPER GATES FOR									
	FLANGED INLET OPENING ON									
	12" DIA SUPPLY CONVEYOR									
	DESCRIPTION:									
	GATE SIZE - APPROX 15" 48"									

TOTAL SHEETS 11 O. K. CHIEF DRAFTSMAN O. K. ASST. CHIEF ENGINEER

USHO 001563

DRAWING ACCOMPLISHMENT NO. DR.

SHEET No. 11 OF 11

SUBJECT

SIGNED LRK 4-8-70

Dwg. No.	Description	No. Required	Mark	Weight Each	C. I.	S. C.	S. F.	Str. S.	Brass	Cost
	ITEM IV	WATER PIPING								
	100 LIN. FT 1½ SCH. 40 STL PIPE									
	25 MISC. 1½ PIPE FITTINGS									
	2 1½" GATE VALVES									
	20 LIN. FT. ¾ SCH. 40 PIPE									
	15 MISC. ¾" PIPE FITTINGS									
	ALLOW FOR INSTALLATION OF 1½ WATER PIPE AND ¾" WATER PIPING AT [illegible] 3 MAXIM - [illegible] CONN.									
	ITEM VII	ENGINEERING								
		900 HOURS								
	ITEM VIII	ELECTRICAL								
	ELECTRICAL ENGR. DEPT TO FURNISH COMPLETE ELECTRICAL ESTIMATE									

TOTAL SHEETS 11 O. K. CHIEF DRAFTSMAN O. K. ASST. CHIEF ENGINEER

USHO 001564