Telegram

Painesdale, Michigan
July 21, 1942

The W. S. Tyler Company
Cleveland, Ohio

Please wire quick approximate weights complete per your proposals of

May 26th of Primary Screen, Seconday Screens and closed Circuit Screens.

Information required for estimating purposes.

Copper Range Company

11:15 A.M.

Screen Required to Handle 1200 Tons Per Hour

(Equals 700 Tons New Feed Plus 500 Tons Circulating Load)

Base on Stephens and Adamson

Formula $S = \frac{K \times T}{W \times Q}$

S = Area of deck in square feet.

K = Opening factor; 20 for square openings; 13.0 for oblong openings.

T = Rate of feed in T.P.H.

W = Weight of material in pounds per cubic feet = 100#/cu. ft.

Q = Size of square openings or width of oblong openings in inches.

	Number Required 5' x 10'		Number Required 5' x 12'	
	Square	Oblong	Square	Oblong
3/8"	12.8	8.3	10.66	6.94
5/16"	15.3	9.95	12.8	8.3
1/4"	19.2	12.5	16.0	10.4
3/16"	25.6	16.6	21.3	13.8
1/8"	38.2	24.9	32.0	20.8

Adams Township, MI

W.J.! 7/21/42

Clevel, Ohi

Rettl On [illegible] 26 \ 6 x 10

7 800 2y- Rock [illegible]

12000# \ 5 x 10 Single surface

7 600 [illegible] 8000# 9 \

5 x 10 Single surface 7 600

[illegible] 8500# 9 \

Wts % [illegible], drive, screen cloth

7. \

~~[illegible]~~

The W S Tyler [illegible] \

500 [illegible]

2-6'x14'
Typ. F-900
Ty-Rock.
1300 tons.

Ty. Rock Screens with

Rod-deck screen ahead of 7 ft standard cone at Morenci

is 6'x14' using 1¼" rods and spaced 1¼"

Crusher set with 5/8" opening to produce 3/4" max size Product.

Typ

Rod-deck screen ahead of 7 ft short head cone at Morenci.

Typ for F-600 Ty Rock screens.

or 2 - 5'x10' using ½" dia rods and spaced 11/16" opening screen

inclination 20½°.

6x14 = 84 sq ft of screen with rods spaced 1¼" handles 1300 tons per hour

or 15.5 tons per sq ft

10x10 = 100 sq ft of screen with rods ½" Rods spaced 11/16" handles $\frac{1300}{2}$ ton per hour.

650 tons ÷ 100 = 6.5 tons per sq ft.

∴ a 5'x10' screen of 50 sq ft x 15.5 ton = 775 tons per hour for Primary

and a 5'x10" of 50 sq ft. x 6.5 = 325 ton per hour x 2 screen = 650 Ton.

If Mill capacity is 8400 ton per 24 hours. and we crush this in 12 hours

then hourly rate is $\frac{8400}{12.}$ = 700 tons. and screens probably can

handle this tonnage.

Ty-Rock Screens with 2 - 6' x 14' Type F - 900 Ty-Rock
1300 Tons

Tod-deck screen ahead of 7 ft. standard cone at Morenci is 6' x 14' using $1\frac{1}{4}$" rods and spaced $1\frac{1}{4}$"

Crusher set with 5/8" openings to produce 3/4" maximum size product.

Rod-deck screen ahead of 7 ft. short head cone at Morenci or 2 - 5' x 10' Type F-600 Ty-rock screens using 1/2" dia. rods and spaced 11/16" opening screen inclinateion $20\frac{1}{2}^{0}$.

6 x 14 = 84 sq. ft. of screen with rods spaced $1\frac{1}{4}$" handle 1300 tons per hour or 15.5 tons per sq. ft.

10 x 10 = 100 sq. ft. screen with rods $\frac{1}{2}$". Rods spaced 11/16" handle $\frac{1300}{2}$ T. per hr.

650 ÷ 100 = 6.5 tons per sq. ft.

∴ A 5' x 10' screen of 50 sq. ft. x 15.5 tons = 775 tons per hour for primary.
and a 5' x 10' screen of 50 sq. ft. x 6.5 tons = 325 tons per hour x 2 screen = 650 tons.

If mill capacity is 8400 tons per 24 hours and we crush this in 72 hours, the hourly rate is $\frac{8400}{12}$ = 700 tons and screens probably can handle this tonnage.

THE W. S. TYLER COMPANY

MANUFACTURERS OF

WOVEN WIRE SCREENS AND
SCREENING EQUIPMENT

MAIN OFFICE 3615 SUPERIOR AVE. N.E.

CLEVELAND, OHIO

July 21, 1942

Copper Range Company,
Painesdale,
Michigan.

Gentlemen:

Replying to your telegram of today, we are pleased to itemize below the approximate weights of the Ty-Rock vibrating screens as shown in our quotation of May 26th.

6' x 10' single-surface Type F-800 Ty-Rock Primary Screen, including motor, drive and screen cloth covering..... 12,000 lb. Each

5' x 10' single-surface Type F-600 Ty-Rock Secondary Screen, including motor, drive and screen cloth covering..... 8,000 lb. Each

5' x 10' single-surface Type F-600 Ty-Rock Closed Circuit Screen, including motor, drive and screen cloth covering..... 8,500 lb. Each

As requested we gave you the above information today in a telegram reading as follows:

"Retel our quotation May 26th six by ten F800 Tyrock primary screen complete 12000 pounds. Five by ten single surface F600 secondary screens 8000 pounds each. Five by ten single surface F600 closed circuit screens 8500 pounds each. Weights include motor, drive and screen cloth covering"

If there is any further data which we may supply, please feel free to call on us.

Yours very truly,
THE W. S. TYLER COMPANY

Albert Reed

Vice President

A.E.Reed
RR

THE W. S. TYLER COMPANY

MANUFACTURERS OF

WOVEN WIRE SCREENS AND SCREENING EQUIPMENT

MAIN OFFICE 3615 SUPERIOR AVE. N.E.

CLEVELAND, OHIO

June 18, 1942

Mr. William H. Schacht, President,
Copper Range Company,
Painesdale, Michigan.

Dear Mr. Schacht:

Replying to your letter of June 5th, the decision as to whether Ty-Rock or Hum-mer Electric Screens should be used for the 1/8" separation will depend largely on two factors -- 1. The percentage of moisture present 2. The tonnage of oversize load.

If the moisture content at this point in your flowsheet will be 3% or higher we would favor the installation of the Hum-mer Screen. On the other hand, if the moisture will always be below 3% or if the oversize feed will be quite heavy, it would be well to study the problem quite carefully to determine which would be the most advantageous selection.

We are sending you a copy of our catalogue #63 describing the Hum-mer Electric Screen and would suggest that as soon as you come to a decision as to the point of separation and can give us the additional factors mentioned above we can then reexamine the matter and give you the benefit of our experience on similar operations.

Assuring you of our desire to cooperate with you in connection with your problem, we are,

Yours very truly,

THE W. S. TYLER COMPANY

A. E. Reed
Vice President

A.E.Reed
RR

June 5, 1942

The W. S. Tyler Company
3615 Superior Avenue
Cleveland, Ohio

Attention: Mr. A. E. Reed, Vice President

Dear Sir:

With reference to your letter of June 2nd, the information we have will serve our purpose for the time being.

We expect, however, to have more definite information as to the reduction we will be able to make after we complete an installation which will put in closed circuit with screens one of our impact crushers. This installation should be completed in about three weeks.

If in this test we find that we can easily reach a reduction all through 1/8", we would then be interested in using a screen of that size.

In the meantime, you may give us some further comparative information relative to the use of the Hum-mer Electric Screen as compared to the other type of screen.

I infer from your letter that the Hum-mer Electric Screen is more suitable for fine separation. If this is true, will you please give us information on the number of screens necessary of the Hum-mer type to handle our ore.

Very truly yours,

WHS/BCF

President

THE W. S. TYLER COMPANY

MANUFACTURERS OF

WOVEN WIRE SCREENS AND
SCREENING EQUIPMENT

MAIN OFFICE 3615 SUPERIOR AVE. N.E.

CLEVELAND, OHIO

June 2, 1942

Mr. William H. Schacht, President,
Copper Range Company,
Painesdale,
Michigan.

Dear Sir:

Referring to our letters of May 25th and May 26th in regard to the suggested equipment for your proposed screening operation, we are writing to inquire if the data given you in these letters is sufficient for your present requirements.

It occurs to us that if your ore is to be difficult screening and you are going to go as fine as 1/8" that you might want to consider an alternate recommendation of Hum-mer Electric Screens for this fine separation. In any event we should appreciate hearing from you as to whether there is any way in which we may be of further service at this time.

Yours very truly,

THE W. S. TYLER COMPANY

A. E. Reed
Vice President

A.E.Reed
RR

Proposal

TYLER

SCREENING EQUIPMENT

THE W. S. TYLER COMPANY
Manufacturers of Woven Wire Screens and Screening Equipment
CLEVELAND, OHIO

THE W. S. TYLER COMPANY

MANUFACTURERS OF

WOVEN WIRE SCREENS AND SCREENING EQUIPMENT

MAIN OFFICE 3615 SUPERIOR AVE. N. E.

CLEVELAND, OHIO

May 26, 1942

Mr. William H. Schacht, President,
Copper Range Company,
Painesdale,
Michigan.

Dear Sir:

With further reference to your inquiry of the 19th and our letter of May 25th, we are now attaching our proposal giving complete specifications, prices and delivery on the screening equipment as recommended. We believe you will find the specifications quite complete and self explanatory.

As we assume that your ore will be fairly abrasive we have included prices of Armorite tube covers for all machines.

If there are any further details you would like to receive in connection with either the equipment or its application to your problem please do not hesitate to call on us.

Yours very truly,

THE W. S. TYLER COMPANY

Albert Reed

Vice President

A.E.Reed
RR

Form 39-42

THE W. S. TYLER COMPANY

Cleveland, Ohio, U. S. A.

PROPOSAL

TO: Copper Range Company **DATE** May 26, 1942

Quantity		*Price Each*
	PRIMARY SCREEN	
One	6' x 10' single-surface Type F-800 Ty-Rock Screen, Full floating, open type construction. Positive circle-throw action produced by fully enclosed eccentric shaft equipped with sealed roller bearings. Complete with Rod-Deck screening surface - 1/2" diameter rods, set 1-3/4" center to center, for 1-1/4" separation. Without motor or drive.....	$ 3980.00 Each
One	6' Armorite Tube Cover, for Type F-800 Ty-Rock Screen.....	$ 50.90 Each
One	15 Horsepower High Torque, Open Type, 220 or 440 volt, 60 cycle, 3 phase, 1800 R.P.M. ball bearing motor, with sliding base.....	$ 161.00 Each
One	15 H.P. V-belt Drive, Complete with sheaves and ropes.....	$ 66.05 Each
One	Magnetic Starting Switch, with push button station, for use with 220 or 440 volt, 15 Horsepower electric motor.....	$ 32.00 Each

17,000 #*

$4289.95

* Heights including motors, drives and screen cloth covering.

F. O. B. Cleveland, Ohio

Delivery: 8 to 12 weeks, with preference rating of A-2 or higher.

Terms: 30 days net.

NOTE: Delivery promises are subject to our being able to obtain deliveries of the raw materials in time to meet our schedules.

The specifications of wire cloth screen sections recommended by The W. S. Tyler Company are based on field experience or tests made in the Company's laboratory.

Under plant conditions, it may be found necessary to change the screen cloth specifications as to opening, wire diameter or type of weave. It is therefore advisable to defer ordering screen cloth sections for stock until the specification has proven satisfactory under actual working conditions.

Screen cloth sections may not be returned for credit.

Purchasers or users of Tyler Screening Equipment who desire the services of an experienced man to oversee the installation or operation of this equipment, may avail themselves of this service at a charge of $2.00 per hour, plus expenses. This applies to week days only and is based on an 8-hour day. For Saturdays, Sundays and holidays, and any overtime in excess of 8 hours, the rate will be $3.00 per hour plus expenses.

Printed in U. S. A.

THE W. S. TYLER COMPANY

Cleveland, Ohio, U. S. A.

PROPOSAL

TO: Copper Range Company DATE May 26, 1942

Quantity *Price Each*

SECONDARY SCREENS

8000 # each *

Two 5' x 10' single-surface Type F-600 Ty-Rock Screens. Full floating, open type construction. Positive circle-throw action produced by fully enclosed eccentric shaft equipped with sealed roller bearings. Complete with Tyler screen tensioning device and motor platform but without wire screen sections, motor or V-belt driving equipment..... $ 2050.00 Each

Two 5' Armorite Tube Cover, for Type F-600 Ty-Rock Screen..... $ 37.25 Each

Two 7½ Horsepower high torque, open type, 220 or 440 volt, 60 cycle, 3 phase, 1800 R.P.M. ball bearing motor, with sliding base..... $ 107.00 Each

Two 7½ H.P. V-belt Drive, Complete with sheaves and ropes..... $ 40.25 Each

Two Magnetic Starting Switch, with push button station, for use with 7½ horsepower 220 volt motor..... $ 32.00 Each

OR

Two Starting Switch, same as above, but for use with 440 volt motor..... $ 18.00 Each

Four 5' x 5' Sections #9325 Ty-Rod Screen, for separation at 1/2", Complete with Tyler reinforced edges..... $ 22.75 Each

F. O. B. Cleveland, Ohio

Delivery: 8 to 12 weeks, with preference rating of A-2 or higher.

Terms: 30 days net.

NOTE: Delivery promises are subject to our being able to obtain deliveries of the raw materials in time to meet our schedules.

The specifications of wire cloth screen sections recommended by The W. S. Tyler Company are based on field experience or tests made in the Company's laboratory.

Under plant conditions, it may be found necessary to change the screen cloth specifications as to opening, wire diameter or type of weave. It is therefore advisable to defer ordering screen cloth sections for stock until the specification has proven satisfactory under actual working conditions.

Screen cloth sections may not be returned for credit.

Purchasers or users of Tyler Screening Equipment who desire the services of an experienced man to oversee the installation or operation of this equipment, may avail themselves of this service at a charge of $2.00 per hour, plus expenses. This applies to week days only and is based on an 8-hour day. For Saturdays, Sundays and holidays, and any overtime in excess of 8 hours, the rate will be $3.00 per hour plus expenses.

Printed in U. S. A.

Form 39-42

THE W. S. TYLER COMPANY

Cleveland, Ohio, U. S. A.

PROPOSAL

TO: Copper Range Company **DATE** May 26, 1942

Quantity		*Price Each*
	CLOSED CIRCUIT SCREENS	
Eight	5' x 10' Type F-600 Ty-Rock Screens, Full floating, open type construction. Positive circle throw action produced by fully enclosed eccentric shaft equipped with sealed roller bearings. Arranged for step-deck application of two 5'x5' screen sections. Complete with rubber covered screen panels, but without wire screen sections, motor or V-belt drive.....	$ 2150.00 Each
Eight	5' Armorite Tube Cover, for Type F-600 Ty-Rock Screen.....	$ 37.25 Each
Eight	7½ Horsepower high torque, open type, 220 or 440 volt, 60 cycle, 3 phase, 1800 RPM. ball bearing motor, with sliding base.....	$ 107.00 Each
Eight	7½ H.P. V-belt Drive, Complete with sheaves and ropes.....	$ 40.25 Each
Eight	Magnetic Starting Switch, with push button station, for use with 7½ horsepower 220 volt motor.....	$ 32.00 Each
	OR	
Eight	Starting Switch, same as above, but for use with 440 volt motor.....	$ 18.00 Each
16	5' x 5' Sections #9396 Ty-Rod screen for 3/16" separation, Complete with Tyler reinforced edges.....	$ 19.00 Each

F. O. B. Cleveland, Ohio

Delivery: 8 to 12 weeks, with preference rating of A-2 or higher.

Terms: 30 days net.

NOTE: Delivery promises are subject to our being able to obtain deliveries of the raw materials in time to meet our schedules.

The specifications of wire cloth screen sections recommended by The W. S. Tyler Company are based on field experience or tests made in the Company's laboratory.

Under plant conditions, it may be found necessary to change the screen cloth specifications as to opening, wire diameter or type of weave. It is therefore advisable to defer ordering screen cloth sections for stock until the specification has proven satisfactory under actual working conditions.

Screen cloth sections may not be returned for credit.

Purchasers or users of Tyler Screening Equipment who desire the services of an experienced man to oversee the installation or operation of this equipment, may avail themselves of this service at a charge of $2.00 per hour, plus expenses. This applies to week days only and is based on an 8-hour day. For Saturdays, Sundays and holidays, and any overtime in excess of 8 hours, the rate will be $3.00 per hour plus expenses.

Printed in U. S. A.

THE W. S. TYLER COMPANY

MANUFACTURERS OF

WOVEN WIRE SCREENS AND
SCREENING EQUIPMENT

MAIN OFFICE 3615 SUPERIOR AVE. N.E.

CLEVELAND, OHIO

May 25, 1942

Mr. William H. Schacht, President,
Copper Range Company,
Painesdale, Michigan.

Dear Sir:

Referring to your letters of May 18th, 19th and your telegram of the 20th, we have given careful consideration to the screening problems as outlined and are pleased to submit the following recommendations for your consideration:

PRIMARY SCREEN -- Feed 700 tons per hour, minus 6" lumps.
Separation -- 1-1/4"

Recommendation -- One 6' x 10' Type F-800 single surface Ty-Rock Screen, with rod-deck for 1-1/4" separation.

SECONDARY SCREENS -- Feed 700 tons per hour, minus 1¼" ore.
Separation -- 1/2 ".

Recommendation Two 5' x 10' Type F-600 single surface Ty-Rock Screens, equipped with heavy steel Ty-Rod screen cloth for 1/2" separation.

CLOSED CIRCUIT SCREENS Initial Feed - 700 tons per hour,
Circulating load 500 tons per hour --
Total feed 1200 tons per hour.
Separation -- 3/16"
(alternate) - 1/4" or 1/8".

Recommendation
For 3/16" Separation
Eight 5' x 10' Type F-600 Ty-Rock Screens, Step-Deck Construction, each unit equipped with two 5' x 5' Ty-Rod screen sections.

All of the above recommendations are based on reasonably dry and free screening ore, containing not more than 3% moisture. If the moisture in the ore is greater than this, or if the ore is inclined to be sticky and difficult screening the areas will have to be increased. On the other hand, if the

THE W. S. TYLER COMPANY

MANUFACTURERS OF

WOVEN WIRE SCREENS AND

SCREENING EQUIPMENT

MAIN OFFICE 3615 SUPERIOR AVE. N.E.

CLEVELAND, OHIO

May 25, 1942

Copper Range Company #2

final separation is made with water the areas can be decreased.

If the final separation is made at 1/4" we estimate that seven units can be employed instead of eight. On the other hand, if the separation is required at 1/8" this would mean increasing the number of units for the final separation to ten instead of eight.

With reference to the matter of rod-decks versus Ty-Rod screen sections, rod decks have proven very successful for coarse scalping separations such as your primary screening operation. However for the medium and finer separations they do not have the versitility of the Ty-Rod sections, and based on our experience so far we would strongly recommend that you use Ty-Rod for both the 1/2" and 3/16" separations. On these separations it may be necessary to change the opening or wire diameter from time to time to suit conditions of the ore or to better balance the crushing operation. This can be very easily and quickly done with Ty-Rod screen sections whereas it is rather difficult to accomplish this with the rod-deck.

We are sending you under separate cover dimension prints of all of the three screens mentioned above. We regret that we have not been able to prepare the final quotation on this equipment due to the pressure of work in the office. However we wanted to get away the recommendations and prints so that you would have them at the earliest possible moment, and we will forward the quotation you require for estimating purposes the early part of the coming week.

We gather from your letter that you have had an opportunity to see the Ty-Rock equipment which we supplied for the Morenci Mill, and therefore you are quite familiar with its ruggedness of construction, smoothness of operation and its ability to handle large tonnages and make efficient separations.

We trust that you will find the information we have given you in this letter to be what you require for the moment,

THE W. S. TYLER COMPANY

MANUFACTURERS OF

WOVEN WIRE SCREENS AND

SCREENING EQUIPMENT

MAIN OFFICE 3615 SUPERIOR AVE N.E.

CLEVELAND, OHIO

May 25, 1942

Copper Range Company #3

and that you can provide us with any additional information in regard to the screenability of the ore, moisture content or anticipated analyses of the feed to the screens, so that we can adjust the figures which may be necessary.

Yours very truly,

THE W. S. TYLER COMPANY

Vice President

A.E.Reed
RR

Telegram

May 20, 1942

The W. S. Tyler Company
3615 Superior Avenue
Cleveland, Ohio

Reference 4th paragraph my letter May 19th. 700 tons per hour does not include circulating load. Add 500 tons per hour for circulating load.

Copper Range Company
William H. Schacht

1:45 P.M.

May 19, 1942

Final

Air Mail

The W. S. Tyler Company
3615 Superior Avenue
Cleveland, Ohio

Gentlemen:

We have a screening problem on which we would like some advice. The material is a mixture of about one-half shale and about one-half sandstone which will be reduced by a jaw crusher underground to a minus six-inch lump. This to be fed to a 5½ ft. Symons cone crusher and the -1¼" screened out to by-pass the crusher and join the crushed product at the screens ahead of the secondary or short-head cone crushers. In other words, a similar arrangement as is used at Morenci except that the tonnage to be handled is to be about 700 tons per hour total making the same size product as they do in each stage.

Will three (3) 5 x 10 screens do this work if one is used ahead of the standard cone crusher and one each ahead of each of the short-head cone crushers? I understand that Morenci at present is handling 1300 tons per hour.

We have in mind using the 1/2" rod deck on the screens ahead of the short-head cone crushers and 1¼" rod deck on the screens ahead of the standard cone crusher. The product from the short-head cone crushers is not in closed circuit with this crusher but will go to screens which will be in closed circuit with two impact crushers that will take the oversize from the screens in this circuit.

We do not know at this time the extent of the reduction that can be made by the impact crushers but indications are a -1/8" product may be possible. In that event we would require the necessary screens to handle 700 tons per hour of that size product. If, however, we can not reach that fineness and only a -3/16" product can be produced, we should like to know the number of screens necessary to handle that tonnage to this size, and should we only be able to produc a -1/4" product, we should like to know the number of screens necessary to handle the tonnage for this size product.

What type of screen is best suited to handle the size products above mentioned and can it be satisfactorily screened down to -1/8 mesh.

What size screens and how many are required to handle 700 tons per hour when making a -1/4" mesh product, and second, when making a -3/16" mesh product, and third, when making a -1/8" mesh product.

Will you kindly send me dimension prints of the screens that you would recommend for the coarse screening as well as the fine screening. Qoute your prices and delivery on these machines.

I understand Morenci is using a rod deck on their screens ahead of the standard and short-head cone crushers. Does this mean that they are using rods instead of your Ty-rod decks and if so, what advantage is there in this. I also understand that the long way of the openings between the rods are at right angles to the flow of the material. Does this improve screening?

Would you advise a rod deck, a Ty-Rod screen or a square mesh screen for our fine screening problem and what reduction in screening capacity would be possible for the different reductions if the rod deck or Ty-Rod screen were used instead of the square mesh screen.

Will you kindly disregard my letter dated May 18th, 1942.

Very truly yours,

WHS/BGF

President