

# HARNISCHFEGER

4400 WEST NATIONAL AVENUE, MILWAUKEE 46, WIS., U.S.A.



## INVOICE

E.K.

KAISER STEEL FABRICATING DIV.  
13230 SAN BERNARDINO AVENUE  
FONTANA, CALIFORNIA 92335

KAISER STEEL FABRICATING  
FONTANA FABRICATING PLANT  
FONTANA, CALIFORNIA

### SPECIAL INSTRUCTIONS AND INFORMATION:

INVOICE NO. 4066

INVOICE DATE 3/27/70

CUSTOMER ORDER NO.

L-6829G-15

PLEASE REFER TO OUR ORDER NO.

CTL-23540

DATE ENTERED

1-17-70

SHIPMENT

MAR. 70

VIA

PROGRESSIVE TRANSPORTATION-3/24/70

SERIAL NO.

CTL-23540

PROPOSAL DATE

12-17-69

PROPOSAL NO.

LA-959D

F.O.B.

NORWALK, CALIFORNIA

PLANT

FREIGHT

COLLECT

SHIPPING WT.

DELIVERY TIME

TERMS

80% IN CASH UPON RECEIPT OF INVOICE AND B/L THE BALANCE OR  
20% IN CASH WITHIN THIRTY DAYS FROM DATE OF SHIPMENT.

REPRESENTATIVE-DISTRICT

NO.

REPRESENTATIVE-DISTRICT

NO.

REPRESENTATIVE-DISTRICT

NO.

CUSTOMER NO.

KOWALIK-LOS ANGELES

DESCRIPTION

QUANTITY

UNIT PRICE

EXTENSION

ONE (1) 10 TON CAPACITY, P&H STANDARD  
TORBEAM TYPE BRIDGE CRANE.....  
SPAN 71'-2" LIFT 38'-6"  
SPECIFICATION NO. LSP-6829-14

\$20,794.00

PLUS 5% USE TAX.....

1,039.70

\$21,833.70

The seller represents and certifies that the price or prices set forth herein are not in excess of any applicable ceiling price or prices established pursuant to any appropriate regulation or order issued by the Office of price Stabilization or any other authorized Government agency.

We hereby certify that these goods were produced in compliance with all applicable requirements of Section 6, 7 and 12 of the Fair Labor Standards Act, as amended, and of regulations and orders of the United States Department of Labor issued under Section 14 thereof.

Claims arising out of damage of material or shortages shipped via parcel post must be made to the Harnischfeger Corporation within fifteen (15) days after receipt of invoice.

FORM 0-025 PLEASE MAIL REMITTANCE PAYABLE TO HARNISCHFEGER CORPORATION DIRECT TO MILWAUKEE

Shipper's No. ....  
Agent's No. ....

**From HARNISCHFEGER CORPORATION**

At Norwalk, California March 24, 19 70

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own road or its own water line, other-wise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

Destination Fontana State of CALIFORNIA County of \_\_\_\_\_

Route.....

Delivering Carrier Progressiva Transportation Car Initial (1)                      Car No.                     

Special Instructions (3)

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

HARNISCHFEGER CORPORATION

Normalk, Calif.

(Signature of Consignor.)

If charges are to be prepaid, write or stamp here, "To be Prepaid."

Collect

Received \$ \_\_\_\_\_  
to apply in prepayment of the  
charges on the property described  
hereon.

(Agent or Cashier)

Per \_\_\_\_\_  
(The signature here acknowledges  
only the amount prepaid.)

**Charges advanced:**

**\$**.....

### Railroad Stamp

| (1)                                           | (2) | (3) | (4) | (5) |
|-----------------------------------------------|-----|-----|-----|-----|
|                                               |     |     |     |     |
| <b>Western Weighing and Inspection Bureau</b> |     |     |     |     |
|                                               |     |     |     |     |
|                                               |     |     |     |     |
|                                               |     |     |     |     |
|                                               |     |     |     |     |
|                                               |     |     |     |     |

Sworn Weighmaster

Sworn Weighmaster

**Your Order No.** L 68296-15

**Our Order No.** CTL-23540

\*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

Note — Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding \$..... per

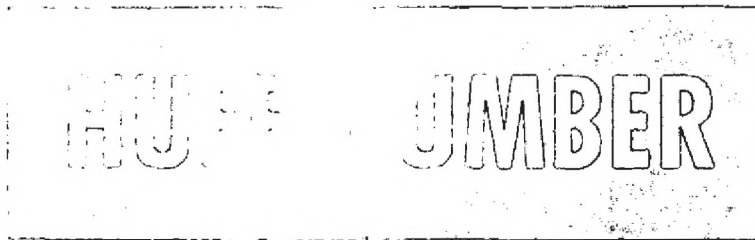
**HARNISCHFEGER CORPORATION, Shipper** per C. Holman Agent per No

Permanent postoffice address of shipper, 4400 W. National Ave., Milwaukee 14, Wis.

FORM 21-1344

PHM Leek 03974





2-24-70

13535 EAST ROSECRANS • SANTA FE SPRINGS, CALIFORNIA 90670  
(213) 521-1331 (213) SP. 3-4716 523-0194 (ORANGE COUNTY)

QTL 23540

ESTIMATED  
WEIGHTS

|                  |        |
|------------------|--------|
| 1 - TROLLEY      | 4,050  |
| 1 - FRONT GIRDER | 11,500 |
| 1 - REAR GIRDER  | 12,000 |
| 2 - END TRUCKS   | 2,900  |
|                  | <hr/>  |
|                  | 30,450 |

QUANTITY • DESCRIPTION • DIMENSION

Dr. Man  
Shoran

R. LAMARRE  
LOS ANGELES

6 G-13 DAVIN

DATE 1-19-70

TO: -

Material Control

TORREAN GIRDER PLATE MATERIAL ADVANCE ORDER

CRANE ORDER NO. - CT L-23540

CAPACITY - 10 TON

SPAN - 71'-2

SHIPPING DATE

PROD. WEEK # 21

REQUIRED @ C.P.

WEEK # ( 16 )

DWGS  
TO GIB  
1/21-70

R. W. BURGHARDT  
HOIST CRANE ENG.

DATE

REPORT FROM MATERIAL CONTROL

MATERIAL AVAILABLE (Check One)

1. From Ryerson Mill Rate Stock  
From Ryerson Warehouse  
From P&H Mill Stock

2. Will be delivered to Cudahy Plant ON or before:

DATE

PRODUCTION WEEK

3. Delivery to Cudahy Plant may be shortened ( ) weeks  
at an added cost of \$

PLATE MATERIAL ON ORDER

Top Plate: Dwg. No.

(4) 28E8164-D2

(2) 28E8164-D3

Weight

Web Plate: Dwg. No.

(4) 28E8170-D2

(2) 28E8170-D3

Girder Section: 304B122



HARNISCHFEGER CORPORATION  
PACKING LIST

CRANE: CTL-23540

DATE: March 24, 1970

CUSTOMER: Kaiser Steel

P.O. L68929G-15

VIA: Progressive Transportation

| ITEM | QUANTITY | DESCRIPTION                               |
|------|----------|-------------------------------------------|
|      |          | LOAD #1                                   |
|      |          | TRACTOR: 43                               |
|      |          | TRAILER: D11                              |
| 1    | 1        | Torbeam Crane w/trolley &<br>Bottom block |
| 2    | 1        | Wood Box                                  |



## CRA ELECTRICAL BILL OF MATERIAL

Date 1-23-70

Customer KAISER FABRICATING DIV.

Crane No. CTL-23540

Tons 10 Span 71'-2" Volts 460 A.C. Phase 3 Cycle 60 Floor control attached to Trolley

| Cage       | Service                             | INDOOR        | No. Req. | 6E Hoist                                         | No. Req. | BC-13 1/2 Bridge           | No. Req. | TT-9 Trolley               | No. Req. | Aux. Hoist or Closing | No. Req. | Magnet Drum |
|------------|-------------------------------------|---------------|----------|--------------------------------------------------|----------|----------------------------|----------|----------------------------|----------|-----------------------|----------|-------------|
| Motor      | Frame Size                          |               |          | HEH-364RX                                        |          |                            |          | REULAND                    | 1        | LENGTH #14-22 COND.   |          |             |
|            | Type                                |               |          | ENCL.                                            |          |                            |          | ENCL.                      |          | CABLE FOR PENDANT     |          |             |
|            | H.P. & R.P.M.                       | 9 1           |          | 20/6 1/2 1650/550                                |          | 1 1/2-1650                 |          | 1-1650                     |          | P.B. STA.             |          | LG.         |
|            | List No.                            |               | 1        | 114496-9                                         | 2        | 100F982-13                 | 1        | 53U19D24                   |          |                       |          |             |
|            | Finish Class                        | "C" Form      |          | A                                                |          |                            |          |                            | 1        | LENGTH #50S GALV.     |          |             |
| Brake      | Order No.                           |               |          | E5                                               |          | E17                        |          |                            |          | MACH. CHAIN           |          |             |
|            | Type & Size                         |               |          | CD-5                                             |          | CD-1 ADD.                  |          | REULAND                    |          | NOTE: SEE MECH. SPEC. |          |             |
|            | List No.                            |               |          |                                                  |          |                            |          |                            |          | FOR LENGTHS OF CABLE, |          |             |
|            | Brake Wheel Part No.                |               |          |                                                  |          |                            |          |                            |          | & CHAIN.              |          |             |
|            | Bracket List No.                    |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
|            | Brake Coil List No.                 |               |          |                                                  |          |                            |          |                            |          | TY-RAPTIES 32Z890D3   |          |             |
|            | Cover Part No.                      |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
| Controller | Cover Bracket Part No.              |               |          |                                                  |          |                            |          |                            | 2        | CORD GRIPS 85Z24D14   |          |             |
|            | Order No.                           |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
|            | Rectifier Assembly List No.         |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
|            | Type                                |               |          | P.B. TWO SPD.                                    |          | REL. RESISTOR TORQUE CONT. |          | REL. RESISTOR TORQUE CONT. |          |                       |          |             |
|            | List No.                            |               | 1        | 8-BUTTON                                         |          | PUSH BUTTON                |          | STA. LG 55107-33           |          | E40                   |          |             |
| Res.       | Blowout Coil List No.               |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
|            | Blowout Lead List No.               |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
|            | Wiring Diagram                      |               |          | COMPLETE WIRING DIAGRAM-                         |          |                            |          |                            |          |                       |          |             |
| Mag.       | Order No.                           |               |          | PUSH BUTTON                                      |          | COLOR CODE ELEC.           |          | 120 4                      |          |                       |          |             |
|            | Layout                              | REACTORS      |          |                                                  |          |                            | 2        | 100A5064-2                 | 2        | 100A5039-4            |          |             |
|            | List No.                            |               |          | 101E6480                                         |          | 101E6521                   |          | 101E6520                   |          |                       |          |             |
| Pro.       | Order No.                           | J/D 101E 6748 | 1        | ANODE TRANSFORMER                                |          | 75Z514D1                   |          |                            |          |                       |          |             |
|            | AMP. RATING                         |               |          | 60                                               |          | 15                         |          | 4                          |          |                       |          |             |
|            | PART #                              |               | 3        | 79Z754D18                                        | 3        | 79Z754D9                   | 3        | 79Z754D1                   |          |                       |          |             |
| Wire       | Res. List No.                       |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
|            | Order No.                           |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
|            | Fuse-Overload Relay Amp. Rating     |               | 1        | 80Z25D57                                         |          |                            |          |                            |          |                       |          |             |
| Conductors | Overload Relay List No.             |               | 1        | 80Z25D14                                         | 1        | 80Z25D9                    | 1        | 80Z25D1                    |          |                       |          |             |
|            | Overload Relay Coil No.             |               |          | N43 N37                                          |          | N28                        |          | N15                        |          |                       |          |             |
|            | Size Rub. Cov. Leads (Pri.)         |               |          | 13 10                                            |          | 12                         |          | 12                         |          |                       |          |             |
| Bridge     | Size of Rub. Cov. (Sec.-A-AL-RI-RX) |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
|            | Size of Rub. Cov. (Intermediate)    |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
|            | Res. Asb. Cov. (Intermediate)       |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
| Switch     | Leads Asb. Cov. (A-AL-RI-RX)        |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
|            | Motor Primary Bridge Cond.          |               | 1        | LENGTH 10 COND. #12 TYPE "SO" CORD (1.015" O.D.) |          |                            |          |                            |          | SEE MECH. SPEC.       |          |             |
|            | Motor Secondary Bridge Cond.        |               |          |                                                  |          |                            |          |                            |          | FOR CABLE PART        |          |             |
| Board      | Limit Switch Bridge Cond.           |               |          |                                                  |          |                            |          |                            |          |                       |          |             |
|            | Bridge Cond.                        |               | 2        | CORD GRIPS 85Z24D14                              |          |                            |          |                            |          |                       |          |             |

| Description                  | SUPPLY PANEL | HOIST PANEL            | BRIDGE PANEL                     | TROLLEY PANEL | COMPLETE ENCLOSURE         | 3-SAFETY BAR COLLECTORS ORDERED ON P.R. # 17620 |
|------------------------------|--------------|------------------------|----------------------------------|---------------|----------------------------|-------------------------------------------------|
| Height of Panel              | 27"          | 27"                    | 27"                              | 27"           | 30"                        | E13                                             |
| Width of Panel               | 9 1/2"       | 24 1/2"                | 11"                              | 11"           | 60"                        | COMPLETE                                        |
| Panel Dwg. No.               | 979E75-1     | 979E77-2               | 979F519-1                        | 979F519-1     |                            | CONTINOL                                        |
| Panel List No.               | 979E75-1     | 979E77-2               | 979F519-1                        | 979F519-1     | 14U39                      |                                                 |
| Order No.                    |              |                        | F25                              | LINE 25       |                            |                                                 |
| Total Width Prot. Panel      |              |                        | Main Line Rub. Cov. Leads #13 10 |               | Remarks:                   |                                                 |
| Sw. Bd. Dwg. No.             |              |                        | Total No. Bridge Cond. FASTONED  |               | 1-HANDLE ASSEMBLY 100E3539 |                                                 |
| M-Hst. Lim. Sw., Type & Size | 100E696-3    |                        | Total No. Runway Cond. 3         |               | 1-LATCH ASSEMBLY 987F1     |                                                 |
| 1-Hst. Lim. Sw., " "         | 79Z976D2     |                        | Push Button:                     |               | 3-NAMEPLATES 32H222        |                                                 |
| Electric Heater              |              | 3-MAIN LINE FUSETRONS  |                                  |               | 1-GASKET 20H3256           |                                                 |
| Heater Fuses                 |              | 60 AMP. 79Z754D18      |                                  |               | 1-TERM. BOARD 79Z726D4     |                                                 |
| Control Fuses                | 2-6 79Z96D5  | 1-MAIN LINE SAFETY SW. |                                  |               |                            |                                                 |
| Crane Wire & Conduit         | N.E.C.       | 79Z711D2               |                                  |               |                            |                                                 |

Written By: W.J.L.

TERM. BOARD  
ADDED  
W.D. ADD.  
2-9-70  
COLLECTORS  
ADDED

BY



Trans 10 Span 71'-2" Volts 460 A.C. Phase 3 Cycle 60 Floor control attached to Trolley

PHM Leek 03979



# PRICING — TAX — INVOICING — SHIPPING — LOADING DATA FOR OVERHEAD ELECTRIC CRANES

**SOLD TO** Kaiser Steel Fabricating Division  
13230 San Bernardino Avenue  
Fontana California 92335

CRANE NO. CTL-23540  
PROPOSAL NO. LA-959 D  
PROPOSAL DATE 12-17-69  
RELEASE DATE 1-17-70  
CRANE ERECTED BY: Purchaser  
INVOICE NO. \_\_\_\_\_  
INVOICE DATE \_\_\_\_\_

**INVOICE TO** Kaiser Steel Fabricating Division  
13230 San Bernardino Avenue  
Fontana , California 92335

**SHIP TO** Kaiser Steel  
Fontana Fabricating Plant  
Fontana, California

**TAX INFO:**

EXEMPTION NO. \_\_\_\_\_  
ADD TO INVOICE \_\_\_\_\_  
REFER CUST. ORDER \_\_\_\_\_

**F.O.B.** Norwalk California Plant, **FREIGHT** Collect

**SHIP VIA** Truck **SCHEDULED SHIPMENT** March 1970

**TERMS** 80% in cash upon receipt of invoice  
and B/L, the balance, or  
20% in cash within thirty days  
from date of shipment.

**REMARKS**

**EST. ERECTION DATA — AS ENGINEERED\***

FRONT GIRDER \_\_\_\_\_ #  
MACHINERY \_\_\_\_\_ #  
WALKWAY \_\_\_\_\_ #  
CONTROL \_\_\_\_\_ #  
CONDUCTORS \_\_\_\_\_ #  
\_\_\_\_\_ #  
**TOTAL FRONT GIRDER** \_\_\_\_\_ #

REAR GIRDER \_\_\_\_\_ #  
WALKWAY \_\_\_\_\_ #  
CONDUCTORS \_\_\_\_\_ #  
\_\_\_\_\_ #  
**TOTAL REAR GIRDER** \_\_\_\_\_ #

TROLLEY \_\_\_\_\_ #  
CAB \_\_\_\_\_ #  
\_\_\_\_\_ AUX. GIRDER \_\_\_\_\_ #  
\_\_\_\_\_ END TIES \_\_\_\_\_ #  
\_\_\_\_\_ END TRUCKS \_\_\_\_\_ #  
MISCELLANEOUS \_\_\_\_\_ #  
**TOTAL, NET WT.** \_\_\_\_\_ #  
**TOTAL SH. WT.** \_\_\_\_\_ # 33,000 #  
CRANE WHL. LOAD: \_\_\_\_\_ # @  
IS TROLLEY K/D FOR SHIPMENT? \_\_\_\_\_

| PRICING         |                                              |             |
|-----------------|----------------------------------------------|-------------|
| CUST. ORDER NO. | ITEM                                         | PRICE       |
|                 | CRANE CTL-23540                              | \$20,794.00 |
|                 | S-1 RUNWAY CONDUCTORS                        |             |
|                 | S-2 SPARES                                   |             |
|                 | S-3                                          |             |
|                 | S-4                                          |             |
|                 | ERECTION AND/OR<br>SERVICE ENGINEER Checkout | Incl.       |
|                 | FREIGHT                                      |             |
|                 | CONTRACT PRICE                               | \$20,794.00 |
|                 | STATE USE TAX                                |             |
|                 | LOCAL USE TAX                                |             |
|                 | GRAND TOTAL                                  |             |
| CRANE CODE      | A A B CRANE NO. CTL-23540                    |             |

| REPRESENTATIVE - DISTRICT | NO. | REPRESENTATIVE - DISTRICT | NO. | REPRESENTATIVE - DISTRICT | NO. |
|---------------------------|-----|---------------------------|-----|---------------------------|-----|
| KOWALIK - LOS ANGELES     |     |                           |     |                           |     |

\*UPON COMPLETION OF ENGINEERING, FORWARD TO SALES DEPT.



PHM Leek 03981



**TORBEAM STOCK COMPONENT CRANE**

ADDENDA TO PROPOSAL NO. CTL-23540  
LA-959-D

1. Crane as specified to be designed and fabricated in accordance with P&H published commercial standards for TORBEAM type cranes, qualified as specified herein.
2. Four (4) motor crane as specified to consist of a double girder TORBEAM type bridge with a two (2) motor top running trolley. Bridge to have two individual drives, one at each end of bridge, operating in parallel.
3. Crane to be pushbutton floor operated from:
  - ☒ A. Trolley between girders at drive end of trolley ("H" end) as shown on Clearance Drawing 3104E1007. (Standard)
  - ☐ B. Bridge (Fixed Position) as indicated. (Price Addition)
  - ☐ C. Pushbutton pendant station to be suspended from a festooned flexible cable messenger system suspended from anti-friction bearing trolleys operating on a rigid track supported from crane bridge. (Price Addition)
  - ☐ D. Job Engineered Location. (Price Addition)

4. **MOTORS:**

P&H totally enclosed motors with anti-friction bearings rated 30 minute, 75° rise above ambient temperatures of 40°C.

- ☐ A. Hoist to be furnished with a single winding squirrel cage type motor. Trolley and dual bridge drives to be provided with single winding squirrel cage type motors 220/440V. (Standard)
- ☒ B. Hoist to be furnished with a dual winding squirrel cage type motor. (Price Addition)  
Trolley and dual bridge drives to be provided with single winding squirrel cage type motors, 220/440V.

5. **BRAKES:**

Hoist and dual bridge motors to be furnished with P&H DC rectified brakes. Trolley motor to be furnished with an electric motor brake. In addition to the motor brake, hoist will be furnished with a Weston type mechanical load brake, operating in bath of oil. Bridge and trolley brakes to be of the adjustable torque type.

6. **CONTROL:**

- ☐ A. P&H full magnetic single speed control on hoist. (Standard)
- ☒ B. P&H full magnetic two speed control on hoist. (Price Addition)
- ☐ C. P&H Primary Reactor Hoist Control Bulletin 567. (Price Addition)
- ☒ D. P&H Primary Reactor ~~Hoist Control Bulletin 567~~ Bridge and Trolley Control Bulletin 566. (Price Addition)

Eight-button pendant station to contain "Start" "Stop" buttons for manual magnetic disconnect switch electrically operable from pendant or manually from control cabinet. Automatic reset type thermal overload relays to be provided. Control to be housed in hoist type NEMA III enclosures for indoor or outdoor operation. Control proper to be mounted on trolley as shown on clearance drawing.

7. **HOIST LIMIT SWITCH:**

Hoist to be furnished with a lever operated plugging type upper limit switch and a geared upper and lower limit switch both of the control circuit type.

8. **SPAN CONDUCTORS:**

Span conductors to consist of a festooned flexible cable messenger system suspended from anti-friction bearing trolleys on a rigid track supported from the crane bridge.

9. **BRIDGE GIRDERS:**

Bridge to be of double girder design with trolley operating on rails attached to top member. Girders to be of P&H TORBEAM (Torsional Beam) (U.S. Patent D202,718) design welded into a one piece frame consisting of two girders and two end trucks to enable one piece shipment and erection of bridge where jobsite conditions allow. Bridge to be provided:

- ☒ A. Without service platform, wherein Purchaser will make full provisions for servicing entire crane from portable or stationary equipment in building. (Standard)



## TORBEAM STOCK COMPONENT CRANE

ADDENDA TO PROPOSAL NO. CTL-23540 (Continued)

## LA-959 D

- ☐ B. A standard (10' - 0" long) trolley service platform located at ☐ Left; at ☐ Right; at ☐ both ends of bridge. (10' - 0" long) platforms not to be used when a pushbutton traveling control messenger system is furnished. (Price Addition)
- ☐ C. A short (4' - 0" long) trolley service platform located at ☐ Left; at Right ☐ ; at ☐ both ends of bridge. (4' - 0" long) platform to be used when a pushbutton traveling control messenger system is furnished. (Price Addition)
- ☐ D. Full length service platform. (Price Addition)
- All platforms to have checkered steel flooring.
- ☐ E. Full length handrail and walkspace on front girder. (Price Addition)
10. BRIDGE END TRUCKS:  
Crane bridge to be provided with two structural end trucks welded into TORBEAM girders for unitized construction as described under Item No. 9 MCB rotating axle design to be used. Bridge wheels to be high carbon (C-1070) forged steel, rim toughened and to be 3-1/2 inches diameter. Bridge End Trucks to be provided as follows: (Coupled Bridge Drives)
- ☐ A. One piece unitized construction for all cranes under 60' - 0" span, 7' - 0" trolley spread and 10' - 6" overall width (Y and Z) to permit one piece rail shipment. (Standard)
- ☐ B. End trucks having one splice to permit rail shipment for cranes over 60' - 0" span, over 10' - 6" overall width (Y and Z) to maintain proper span to wheel base ration but within limitation as shown under Table 6, Modification Sheet 217.02(101) Item 6, Part I. (Standard)
- ☐ C. Cranes normally having one piece unitized construction per Item A, but requiring one splice to reduce overall width for truck shipment or because of Purchaser's building restrictions. (Price Addition)
- ☐ D. A single or double end truck splice as required for spans beyond those covered by Modification Sheet 217.02 (101) Item 6, Part I. (Price Addition)
- x E. Bolted End Trucks.**
11. BRIDGE BUMPERS:  
☐ A. Bridge end trucks to be provided with solid strike plates at each of four corners to engage suitable end stops erected and furnished by Purchaser. (Standard)
- ☒ B. Bridge end trucks to be provided with rubber bumpers at each of four corners to engage suitable stops by Purchaser. ~~(Price Addition)~~
12. BRIDGE DRIVES:  
Individual bridge drives of the integral and coaxial type (U.S. Patent 3,252,586) provided at each end truck. Each drive to be provided with an individual flange mounted motor as specified as an integral part of the unitized drives, which drives will be operated in parallel by a common bridge control. Bridge gearing to be of the planetary type. (Coupled)
13. TROLLEY:  
Crane to be furnished with a unitized four wheel structural trolley with a P&H Balanced Design Hoist as specified built into frame. Single MCB rotating axle design to be used. Trolley wheels to be high carbon (C-1070) forged steel, rim toughened, and to be 9 inches in diameter. Unitized frame design to be based upon an impact absorbing torsional tube elastically supported from specified four trolley wheels. Hoist to be furnished with a standard P&H specified latch type safety hook.
14. TROLLEY DRIVE:  
A single helical worm speed reducer with a flange mounted motor as specified to be an integral part of complete trolley design.
15. BEARINGS:  
Anti-friction bearings to be provided throughout. A minimum of 5000 hours, 75%, B-10 bearing life to be furnished for entire crane.





## TORBEAM STOCK COMPONENT CRANE

ADDENDA TO PROPOSAL NO. CTL-23540 (Continued)  
LA-959-D

## 16. LUBRICATION:

All gearing except drum gear to be enclosed in oil tight gear cases and to be oil bath lubricated. All bearings not oil bath lubricated to be either of the lifetime lubrication type or to be provided with individual grease fittings (Alemite) for use with Purchaser's hand pump.

## 17. PAINTING:

- ☒ A. Two coats, finished in P&H TORBEAM yellow for entire crane, for indoor service. (Standard)  
☐ B. Special paint, colors, extra coats, etc. (Price Addition)  
☐ C. For outdoor service, rust inhibiting primer where specified. (Price Addition)

18. Crane will be assembled, wired, and tested without load in our shops after which it will be suitably match-marked and dismantled to the extent required for shipment. Machined surfaces will be suitably protected against corrosion. Erection, reassembly, and field wiring will be completed by Purchaser. Unitized construction will be used where jobsite shipment and erection conditions permit.

19. Four erection brackets to be provided with cranes.

20. Two complete sets of standardized parts books with all wearing parts listed and identified on individual isometric sketches for facility of identification and ordering through P&H nationwide parts facilities to be provided. Crane as specified being of stock component design, can be serviced from an immediate stock of spare parts available from manufacturer or duly authorized P&H parts source. (Standard)

☒ Extra parts books, special drawings, etc. ~~(Price Addition)~~

21. Two complete sets of erection drawings and erection manuals to be furnished before crane shipment. Where unitized bridge design is being used, erection drawings will so designate. (Standard)

☒ Additional drawings. ~~(Price Addition)~~

## 22. Added Engineered Parts - Mechanical and Electrical:

## A. Mechanical

1. ☒ Provide 3-pole Cleveland Safepowrbar collectors with staff for use  
☐ with Purchaser mainline conductor system.  
 2. ☒ CTL-23540 to operate on a 320'-0" long runway.  
☐  
☐  
☐  
☐

## B. Electrical

- Mainline conductor material and collectors. (Price Addition)  
 1. ☒ Control to be magnetic two speed hoist with mechanical load brake and  
☐ Bull. 566 primary reactor on bridge and trolley with all control mounted  
☐ on trolley.  
☐  
☐  
☐  
☐

23. The services of a P&H Service Engineer to be provided to check out cranes after erection.

24. One set of reproducible autositives of assembly drawings and wiring diagrams on P&H format to be furnished after completion of engineering for use by Purchaser for erection purposes and permanent records. No detail drawings of individual parts will be provided.

25. Five (5) sets of complete parts books and maintenance manuals to be provided. Furnish complete spare parts list.



# TORBEAM CRANE SALES ORDER

| Col.  | Specification                                                                                                                                                                                                                   | Code                                                                 | E.D.P. Data                                                                                                                                                                                                                                                                                                                                                 |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1-15  | Serial number .....                                                                                                                                                                                                             |                                                                      | <div style="display: flex; justify-content: space-between;"> <span>1</span><span>4</span><span>5</span><span>10</span><span>11</span><span>13</span> </div> <div style="display: flex; justify-content: space-between;"> <span>C T L</span><span>-</span><span>23540</span><span>-</span><span>+</span><span>Rev.</span><span>+</span><span>+</span> </div> |
| 16    | Quantity .....                                                                                                                                                                                                                  |                                                                      | <div style="display: flex; justify-content: space-between;"> <span>16</span><span>17</span><span>20</span><span>22</span><span>23</span> </div> <div style="display: flex; justify-content: space-between;"> <span>7</span><span>7</span><span>Ft. -2</span><span>-</span><span>1</span><span>/</span><span>1</span><span>In.</span> </div>                 |
| 17-23 | Crane span (to nearest 1/8") .....                                                                                                                                                                                              |                                                                      |                                                                                                                                                                                                                                                                                                                                                             |
| 24-27 | "Q" Rail to floor (to nearest 1") ..... exclusive of pit                                                                                                                                                                        |                                                                      | <div style="display: flex; justify-content: space-between;"> <span>24</span><span>26</span> </div> <div style="display: flex; justify-content: space-between;"> <span>27</span><span>Ft. -6</span><span>In.</span> </div>                                                                                                                                   |
| 28    | Stock Component Crane — S.C.C. ....<br>— Modified ...                                                                                                                                                                           | 1<br>2                                                               | <div style="display: flex; justify-content: space-between;"> <span>28</span> </div> <div style="display: flex; justify-content: space-between;"> <span>2</span> </div>                                                                                                                                                                                      |
| 30    | Service — indoor .....<br>— outdoor .....                                                                                                                                                                                       | 1<br>2                                                               | <div style="display: flex; justify-content: space-between;"> <span>30</span> </div> <div style="display: flex; justify-content: space-between;"> <span>1</span> </div>                                                                                                                                                                                      |
| 31-32 | Hoist unit— 4C 3T .....<br>— 4CA 5T .....<br>— 4D 5T .....<br>— 6D 7-1/2T .....<br>— 6D 10T .....<br>— 6D 15T .....<br>— 6E 10T .....<br>— 6E 15T .....<br>— 5E 20T .....<br>— 6F 20T .....<br>— 6F 25T .....<br>— 6F 30T ..... | 11<br>12<br>21<br>22<br>23<br>24<br>31<br>32<br>33<br>41<br>42<br>43 | <div style="display: flex; justify-content: space-between;"> <span>31</span> </div> <div style="display: flex; justify-content: space-between;"> <span>31</span> </div>                                                                                                                                                                                     |
| 33    | Hoist motor — single speed .....<br>(C&D hoist only)<br>— two speed .....<br>— magnetorque .....                                                                                                                                | 1<br>2<br>3                                                          | <div style="display: flex; justify-content: space-between;"> <span>33</span> </div> <div style="display: flex; justify-content: space-between;"> <span>2</span> </div>                                                                                                                                                                                      |
| 34    | Power supply — 220V, a-c, 3 ph, 60 cy .<br>— 440V, a-c, 3 ph, 60 cy .                                                                                                                                                           | 1<br>2                                                               | <div style="display: flex; justify-content: space-between;"> <span>34</span> </div> <div style="display: flex; justify-content: space-between;"> <span>2</span> </div>                                                                                                                                                                                      |
| 35    | Main line location — R.H. ....<br>— L.H. ....                                                                                                                                                                                   | 1<br>2                                                               | <div style="display: flex; justify-content: space-between;"> <span>35</span> </div> <div style="display: flex; justify-content: space-between;"> <span>2</span> </div>                                                                                                                                                                                      |
| 36    | Standard limit switches — upper, weight and geared; lower, geared only .....                                                                                                                                                    | 1                                                                    | <div style="display: flex; justify-content: space-between;"> <span>36</span> </div> <div style="display: flex; justify-content: space-between;"> <span>1</span> </div>                                                                                                                                                                                      |
| 37-39 | Control type-- P.B. on trolley .....<br>— P.B. on messenger .....<br>— P.B. fixed on bridge .....<br>— Cab masters .....<br>— Special (see addenda) ...                                                                         | 1<br>2<br>3<br>4<br>5                                                | <div style="display: flex; justify-content: space-between;"> <span>37</span> </div> <div style="display: flex; justify-content: space-between;"> <span>1</span> </div> <div style="display: flex; justify-content: space-between;"> <span>... Dim. from R.H. end, "J"=</span><span>38</span><span>Ft.</span> </div>                                         |

## TORBEAM CRANE SALES ORDER (CONTINUED)

QTL-23540

| Col.               | Specification                                                                                                                                                            | Code                  | E.D.P. Data                                                                                                                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40                 | Bridge bumper — standard strike plate . . .<br>— rubber bumpers . . . . .<br>— special (see addenda) . . .                                                               | 1<br>2<br>3           | <sup>40</sup><br><input checked="" type="checkbox"/>                                                                                                             |
| 41                 | Platforms — no platforms . . . . .<br>— R.H. platform only . . . . .<br>— L.H. platform only . . . . .<br>— two platforms . . . . .<br>— special (see addenda) . . . . . | 1<br>2<br>3<br>4<br>5 | <sup>41</sup><br><input checked="" type="checkbox"/>                                                                                                             |
| 42                 | Shipment type — integral bridge . . . . .<br>— spliced end trucks . . . . .<br>— double spliced trucks . . . . .                                                         | 1<br>2<br>3           | <sup>42</sup><br><input checked="" type="checkbox"/> BOLTED END TRUCKS                                                                                           |
| 43                 | Runway rail — standard . . . . .<br>— non standard . . . . .                                                                                                             | 1<br>2                | <sup>43</sup><br><input checked="" type="checkbox"/>                                                                                                             |
| 50                 | Painting — standard yellow . . . . .<br>— special (see addenda) . . . . .                                                                                                | 1<br>2                | <sup>50</sup><br><input checked="" type="checkbox"/>                                                                                                             |
| 51                 | Erection brackets — one set (standard) . . .<br>— one set for each crane . . . . .<br>— none required . . . . .                                                          | 1<br>2<br>3           | <sup>51</sup><br><input checked="" type="checkbox"/>                                                                                                             |
| 60-62              | Shipment date, week of . . . . .                                                                                                                                         |                       | <sup>60</sup><br><input checked="" type="checkbox"/> 21                                                                                                          |
| 63-68              | Order date . . . . .                                                                                                                                                     |                       | <sup>63</sup> <sup>65</sup> <sup>67</sup><br><input checked="" type="checkbox"/> 1 <input checked="" type="checkbox"/> 17 <input checked="" type="checkbox"/> 20 |
| 69                 | "S" Orders — required . . . . .<br>— not required . . . . .                                                                                                              | 1<br>2                | <sup>69</sup><br><input checked="" type="checkbox"/>                                                                                                             |
| 70                 | Engineered parts — required . . . . .<br>— not required . . . . .                                                                                                        | 1<br>2                | <sup>70</sup><br><input checked="" type="checkbox"/>                                                                                                             |
| Approved by: _____ |                                                                                                                                                                          |                       |                                                                                                                                                                  |





10 cord 12-99'  
3 Cord 10-99'

23540 DATE 3-19 LSW ✓  
GLSW ✓

MOT. AMPS

HOIST <sup>part 30/10</sup>

| RAISE           | LOW          | FPM             | RPM.         |
|-----------------|--------------|-----------------|--------------|
| LO <u>12.00</u> | LO <u>15</u> | LO <u>12.50</u> | LO <u>12</u> |
| H1 <u>5</u>     | H1 <u>5</u>  | H1 <u>36</u>    | H1 <u>33</u> |

BRAKES ✓

BR

| FWD         | REV         | <sup>175</sup> FPM |
|-------------|-------------|--------------------|
| <u>12.5</u> | <u>12.5</u> | <u>180</u>         |
| <u>52.5</u> | <u>52.5</u> |                    |

TR

| LEFT       | RIGHT      | <sup>125</sup> FPM |
|------------|------------|--------------------|
| <u>1.5</u> | <u>1.5</u> | <u>150</u>         |
| <u>5.5</u> | <u>5.5</u> |                    |



|                                                                                                                                                      |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <b>Sold to</b> Mosher Steel Company<br><b>User</b> Mosher Steel Company<br><b>Plant Site</b> Houston, Texas<br><b>Crane No.</b> C(H)L-23419 (c) & S1 |                           |                           |                                  | <b>FOR LOS ANGELES SHIPMENTS ONLY</b>                                                                                                                                                                                                          |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
|                                                                                                                                                      |                           |                           |                                  | Trolley wired in Milwaukee for direct shipment to Customer<br>Trolley to be wired and tested in L.A. Plant                                                                                                                                     |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>Spec. Date</b> <b>Prop. No.</b> D-3260 - R1                                                                                                       |                           |                           |                                  | Customer Project                      Main Spec. <input type="checkbox"/><br>Specs. Released to:                      Eng. Service <input type="checkbox"/><br>Inspection Dept. <input type="checkbox"/> Elect. Engr. <input type="checkbox"/> |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| Engr. Specs. Released by:                      Estimator                      Spec. Writer CRS                      Sales Desk CES                   |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>QUANTITY</b><br>ONE (1)                                                                                                                           | <b>CAPACITY</b><br>10 Ton | <b>SPAN</b><br>77'-5 1/2" | <b>SHIP. WT. LBS.</b><br>58,300# | <b>CLEAR. SKETCH</b><br>10DT77R1                                                                                                                                                                                                               | <b>SERVICE</b> <del>XXXX</del> (OUT) DOOR<br>Receiving & Storage Area |                               |             |                                                                                                                                                                                                                    |        |
| <b>TROLLEY DATA</b>                                                                                                                                  |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>TYPE OF TROLLEY FRAME</b>                                                                                                                         |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>CAPACITY</b>                                                                                                                                      |                           | <b>LIFT</b>               | <b>DRUM DIA.</b>                 | <b>REEVING</b>                                                                                                                                                                                                                                 | <b>BRAKING</b>                                                        | <b>TYPE HOIST</b>             |             |                                                                                                                                                                                                                    |        |
| 5 Ton                                                                                                                                                |                           | 40'-0" (Max)              | 15"                              | 4 @ 1/2 2PD                                                                                                                                                                                                                                    | Mech. Load                                                            | 2T402-15                      |             |                                                                                                                                                                                                                    |        |
| 5 Ton                                                                                                                                                |                           | 40'-0" (Max)              | 15"                              | X 193'-0"                                                                                                                                                                                                                                      | Mech. Load                                                            |                               |             |                                                                                                                                                                                                                    |        |
| <b>TYPE OF TROLLEY DRIVE</b> T-12 STD <b>WHEELS</b> 12" <b>TYPE</b> F.S.R.T. <b>SPREAD</b> 6'-6"                                                     |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>BRIDGE DATA</b>                                                                                                                                   |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>TYPE OF SPAN CONDUCTORS</b>                                                                                                                       |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| Angle Iron (See Addenda)                                                                                                                             |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>TYPE DRIVE</b>                                                                                                                                    |                           | <b>WHEELS</b>             |                                  | <b>DIAMETER &amp; NUMBER</b>                                                                                                                                                                                                                   |                                                                       | <b>TYPE</b>                   |             |                                                                                                                                                                                                                    |        |
| BR - 18                                                                                                                                              |                           |                           |                                  | 18"                      4                                                                                                                                                                                                                     |                                                                       | F.S.R.T. - T.D.               |             |                                                                                                                                                                                                                    |        |
| <b>FRONT PLATFORM</b>                                                                                                                                |                           | <b>TYPE OF GIRDERS</b>    |                                  | (2) Welded Box                                                                                                                                                                                                                                 |                                                                       | <b>TR. RAIL</b>               | <b>LBS.</b> |                                                                                                                                                                                                                    |        |
| Full length Checkered Steel                                                                                                                          |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       | 30                            |             |                                                                                                                                                                                                                    |        |
| <b>REAR PLATFORM</b>                                                                                                                                 |                           | <b>OUTRIGGER</b>          |                                  | Trussed Handrail                                                                                                                                                                                                                               |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| None                                                                                                                                                 |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>ELECTRICAL DATA</b> <b>POWER SUPPLY</b> 460 <b>VOLTS AC</b> 3 PHASE 60 <b>CYCLE</b>                                                               |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
|                                                                                                                                                      |                           | <b>SPEED</b>              |                                  |                                                                                                                                                                                                                                                |                                                                       | <b>MAKE &amp; TYPE BRAKES</b> |             | <b>MAKE &amp; TYPE LIMIT SWITCH</b>                                                                                                                                                                                |        |
|                                                                                                                                                      |                           | <b>FT. PER MIN.</b>       |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
|                                                                                                                                                      |                           | <b>MOTOR DATA</b>         |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
|                                                                                                                                                      |                           | <b>MFR.</b>               | <b>FRAME</b>                     | <b>HP</b>                                                                                                                                                                                                                                      | <b>RPM</b>                                                            |                               |             |                                                                                                                                                                                                                    |        |
| MAIN HOIST                                                                                                                                           |                           | 70                        | P&H                              | HEW364RX                                                                                                                                                                                                                                       | 30                                                                    | 1150                          | P&H CRR     |                                                                                                                                                                                                                    | P&H HB |
| AUX. HOIST                                                                                                                                           |                           | 70                        | P&H                              | HEW364RX                                                                                                                                                                                                                                       | 30                                                                    | 1150                          | P&H CDR     |                                                                                                                                                                                                                    | P&H HB |
| TROLLEYS (2)                                                                                                                                         |                           | 150                       | P&H                              | HEW213S                                                                                                                                                                                                                                        | (2) 2                                                                 | 1675                          | P&H CDR     |                                                                                                                                                                                                                    |        |
| BRIDGE                                                                                                                                               |                           | 350                       | P&H                              | HEW326RX                                                                                                                                                                                                                                       | 20                                                                    | 1145                          | P&H HYD.    |                                                                                                                                                                                                                    |        |
| MAKE TYPE <del>XXXX</del> (FLY) (FLOOR) CAB <del>XXXX</del> (ENCL.) (RH) (LH) (CENTER) CAB ATTACH. TO (BRIDGE) <del>XXXX</del>                       |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>CONTROL</b> P&H 5-step V.S. all motions.                                                                                                          |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>RUNWAY DATA</b>                                                                                                                                   |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>RAIL SIZE</b> 60 <b>LBS.</b>                                                                                                                      |                           | <b>LENGTH</b> 328'-0"     |                                  | <b>RAIL TO ROOF</b> -                                                                                                                                                                                                                          |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>COLLECTORS</b> Gravity Shoe                                                                                                                       |                           | <b>FURNISHED BY</b> P&H   |                                  | <b>RAIL TO FLOOR</b> 25'-6"                                                                                                                                                                                                                    |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>COND. TYPE</b> Angle Iron                                                                                                                         |                           |                           |                                  | <b>FURNISHED BY</b> See Addenda                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>Remarks:</b> See attached Addenda<br><br>Crane to be similar to C(H)-20400 - 1 except as noted in Item #23 of Addenda.                            |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             | <b>SUPPLEMENTAL EQUIPMENT SUPPLIED WITH CRANE</b><br>Runway Conductors <input checked="" type="checkbox"/><br>Spares <input type="checkbox"/><br>Runway Stops <input type="checkbox"/><br><input type="checkbox"/> |        |
| PAINT: Special (See Addenda)                      T2-BR Los Angeles                                                                                  |                           |                           |                                  |                                                                                                                                                                                                                                                |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| MAIN HOIST ASSEM. 100A502-B                                                                                                                          |                           | #2                        |                                  | AUX. HOIST ASSEM. 100A502-S                                                                                                                                                                                                                    |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| TROLLEY ASSEM. 3100E1054-F                                                                                                                           |                           |                           |                                  | BRIDGE ASSEM. 914E231-S                                                                                                                                                                                                                        |                                                                       |                               |             |                                                                                                                                                                                                                    |        |
| <b>ORDER</b>                                                                                                                                         |                           | <b>RECORDED</b>           |                                  | <b>INSPECTION REQUIRED</b>                                                                                                                                                                                                                     |                                                                       | <b>DATE SHIPPED</b>           |             | <b>CRANE NO.</b> C(H)L-23419(c) & S1                                                                                                                                                                               |        |
|                                                                                                                                                      |                           |                           |                                  | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>                                                                                                                                                                            |                                                                       |                               |             |                                                                                                                                                                                                                    |        |



## CRANE ELECTRICAL BILL OF MATERIAL

Date 1-23-70

Customer KAISER FABRICATING DIV.

Crane No. CTL-23540

Tons 10 Span 71'-2" Volts 460 A.C. Phase 3 Cycle 60 Floor control attached to Trolley

| Cage                    | Service                         | No. Req. | 6E Hoist           | No. Req.                                         | BC-13 1/2 Bridge          | No. Req.                     | TT-9 Trolley              | No. Req. | Aux. Hbist or Closing | No. Req. | Magnet Drum |
|-------------------------|---------------------------------|----------|--------------------|--------------------------------------------------|---------------------------|------------------------------|---------------------------|----------|-----------------------|----------|-------------|
| Motor                   | Frame Size                      |          | HEH-364RX          |                                                  |                           |                              | REULAND                   | 1        | LENGTH #14-22 COND.   |          |             |
|                         | Type                            |          | ENCL.              |                                                  |                           |                              | ENCL.                     |          | CABLE FOR PENDANT     |          |             |
|                         | H.P. & R.P.M.                   |          | 20/16 3/4 1650/550 |                                                  | 1 1/2-1650                |                              | 1-1650                    |          | P.B. STA.             |          | LG.         |
|                         | List No.                        |          | 1 114436-9         | 2                                                | 100F982-13                | 1                            | 53U19D24                  |          |                       |          |             |
|                         | Finish Class                    | "C" Form |                    | A                                                |                           |                              |                           | 1        | LENGTH #50S GALV.     |          |             |
| Brake                   | Order No.                       |          | E5                 |                                                  | E17                       |                              |                           |          | MACH. CHAIN           |          |             |
|                         | Type & Size                     |          | CD-5               |                                                  | CD-1 ADJ.                 |                              | REULAND                   |          | NOTE: SEE MECH. SPEC. |          |             |
|                         | List No.                        |          |                    |                                                  |                           |                              |                           |          | FOR LENGTHS OF CABLE, |          |             |
|                         | Brake Wheel Part No.            |          |                    |                                                  |                           |                              |                           |          | & CHAIN.              |          |             |
|                         | Bracket List No.                |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Brake Coil List No.             |          |                    |                                                  |                           |                              |                           |          | TY-RAPTIES 32Z890D3   |          |             |
|                         | Cover Part No.                  |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
| Controller              | Cover Bracket Part No.          |          |                    |                                                  |                           |                              |                           | 2        | CORD GRIPS 85Z24D14   |          |             |
|                         | Order No.                       |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Rectifier Assembly List No.     |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Type                            |          | P.B. TWO SPD.      |                                                  | PEL. REACTOR TORQUE CONT. |                              | PRI. REACTOR TORQUE CONT. |          |                       |          |             |
| P.B.                    | List No.                        |          | 1                  | 8-BUTTON                                         |                           | PUSH BUTTON STA. L #55107-33 |                           | E40      |                       |          |             |
|                         | Blowout Coil List No.           |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Blowout Lead List No.           |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Wiring Diagram                  |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
| Main                    | Order No.                       |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Layout                          | REACTORS |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | List No.                        |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Order No.                       |          | 1                  | ANODE TRANSFORMER                                |                           | 75Z514D1                     |                           |          |                       |          |             |
| Pro-ter                 | AMP. RATING                     |          | 60                 |                                                  | 15                        |                              | 4                         |          |                       |          |             |
|                         | PART #                          |          | 3                  | 79Z754D18                                        | 3                         | 79Z754D9                     | 3                         | 79Z754D1 |                       |          |             |
|                         | Res. List No.                   |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Order No.                       |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
| Wires                   | Fuse-Overload Relay Amp. Rating |          | 1                  | 80Z25D57                                         |                           |                              |                           |          |                       |          |             |
|                         | Overload Relay List No.         |          | 1                  | 80Z25D14                                         | 1                         | 80Z25D9                      | 1                         | 80Z25D1  |                       |          |             |
|                         | Overload Relay Coil No.         |          |                    | N43 N37                                          |                           | N28                          |                           | N15      |                       |          |             |
|                         | Size Rub. Cov. Leads (Pri.)     |          |                    | 12                                               |                           | 12                           |                           | 12       |                       |          |             |
| Bridge Conductors       | Size                            |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Rub. Cov. (Sec. A-AL-RI-RX)     |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Rub. Cov. (Intermediate)        |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Res. Ash. Cov. (Intermediate)   |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
| M-3                     | Leads                           |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Res. Ash. Cov. (A-AL-RI-RX)     |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Motor Primary Bridge Cond.      |          | 1                  | LENGTH 10 COND. #12 TYPE "50" CORD (1.015" O.D.) |                           |                              |                           |          |                       |          |             |
|                         | Motor Secondary Bridge Cond.    |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
| Description             | Limit Switch Bridge Cond.       |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Bridge Cond.                    |          | 2                  | CORD GRIPS 85Z24D14                              |                           |                              |                           |          |                       |          |             |
|                         | Supply Panel                    |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Hoist Panel                     |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
| Height of Panel         | Width of Panel                  |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Panel Dwg No.                   |          | 979E75-1           | 979E77-2                                         | 979F519-1                 | 979F519-1                    |                           |          |                       |          |             |
|                         | Panel List No.                  |          | 979E75-1           | 979E77-2                                         | 979F519-1                 | 979F519-1                    |                           |          |                       |          |             |
|                         | Order No.                       |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
| Total Width Prof. Panel | Sw. Bt Dwg No.                  |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         | M-Hst Lim Sw., Type & Size      |          | 100E696-3          |                                                  |                           |                              |                           |          |                       |          |             |
|                         | M-Hst Lim Sw.,                  |          | 79Z976D2           |                                                  |                           |                              |                           |          |                       |          |             |
|                         | Elect. Heater                   |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
| Heater, Fuses           | Control Fuses                   |          | 2-6                | 79Z96D5                                          |                           |                              |                           |          |                       |          |             |
|                         | Cable Wire & Conduit            |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         |                                 |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         |                                 |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
| Remarks:                |                                 |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         |                                 |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         |                                 |          |                    |                                                  |                           |                              |                           |          |                       |          |             |
|                         |                                 |          |                    |                                                  |                           |                              |                           |          |                       |          |             |

Written By: W.J.L.



ITEMS CHECKED BELOW WILL BE REQUIRED FOR ORDER NO. *CTL-23540*

ELECTRICAL

ELECTRICAL

| ✓ |     |                              | LIST NO. | STK. ORD. NO. | ✓ |     |                       |
|---|-----|------------------------------|----------|---------------|---|-----|-----------------------|
| ✓ | E   | Electrical Material          |          |               | ✓ | E52 | Trolley Wiring        |
|   | E1  | Trolley Motor                |          |               |   | E53 | Cab Wiring            |
|   | E2  | Trolley Controller           |          |               |   | E54 | "K" Cabinet & Support |
|   | E3  | Trolley Resistance           |          |               |   |     |                       |
|   | E4  | Trolley Brake Coil           |          |               |   |     |                       |
|   | E5  | Hoist Motor                  |          |               |   |     |                       |
|   | E6  | Hoist Controller             |          |               |   |     |                       |
|   | E7  | Hoist Resistance             |          |               |   |     |                       |
|   | E8  | Hoist Brake Coil             |          |               |   |     |                       |
|   | E9  | Aux. Hoist Motor             |          |               |   |     |                       |
|   | E10 | Aux. Hoist Contr.            |          |               |   |     |                       |
|   | E11 | Aux. Hoist Resis.            |          |               |   |     |                       |
|   | E12 | Aux. Hoist Brake             |          |               |   |     |                       |
| ✓ | E13 | Switchboard or Comp. Control |          |               |   |     |                       |
|   | E14 | Line Contactor               |          |               |   |     |                       |
|   | E15 | Forcing Resistor             |          |               |   |     |                       |
|   | E16 | Forcing Resistor             |          |               |   |     |                       |
|   | E17 | Bridge Motor                 |          |               |   |     |                       |
|   | E18 | Bridge Controller            |          |               |   |     |                       |
|   | E19 | Bridge Resistance            |          |               |   |     |                       |
|   | E20 | Bridge Brake Coil            |          |               |   |     |                       |
|   | E21 | Limit Switch, Main Hoist     |          |               |   |     |                       |
|   | E22 | Relay Panel                  |          |               |   |     |                       |
|   | E23 | Hoist Panel                  |          |               |   |     |                       |
|   | E24 | Aux. Hoist Panel             |          |               |   |     |                       |
| ✓ | E25 | Bridge Panel                 |          | 2             |   |     |                       |
|   | E26 | Trolley Panel <i>WIE 25</i>  |          |               |   |     |                       |
|   | E27 | Enclosure, Main Hoist        |          |               |   |     |                       |
|   | E28 | Magnetorque, M. Hoist        |          |               |   |     |                       |
|   | E29 | Complete Control             |          |               |   |     |                       |
|   | E30 | Magnetorque, A. Hoist        |          |               |   |     |                       |
|   | E31 | Enclosure, A. Hoist          |          |               |   |     |                       |
|   | E32 | Enclosure, Trolley           |          |               |   |     |                       |
|   | E33 | Enclosure, Bridge            |          |               |   |     |                       |
|   | E34 | Reactor, M. Hoist            |          |               |   |     |                       |
|   | E35 | Reactor, A. Hoist            |          |               |   |     |                       |
|   | E36 | Reactor, Trolley             |          |               |   |     |                       |
|   | E37 | Reactor, Bridge              |          |               |   |     |                       |
|   | E38 | Limit Switch, A. Hoist       |          |               |   |     |                       |
|   | E39 | Supply Panel                 |          |               |   |     |                       |
| ✓ | E40 | Push Button Assembly & Cable |          |               |   |     |                       |
|   | E41 | Joy Stick Assembly           |          |               |   |     |                       |
|   | E42 | Rectifier Assembly           |          |               |   |     |                       |
|   | E43 | Rectifier Assembly           |          |               |   |     |                       |
|   | E44 | Magnetorque Resistor         |          |               |   |     |                       |
|   | E45 | D. D. Resistor               |          |               |   |     |                       |
|   | E46 | Rotating Hook Motor          |          |               |   |     |                       |
|   | E47 | Rotate Panel                 |          |               |   |     |                       |
|   | E48 |                              |          |               |   |     |                       |
|   | E49 |                              |          |               |   |     |                       |
|   | E50 |                              |          |               |   |     |                       |
| ✓ | E51 | Bridge Wiring                |          |               |   |     |                       |

ISSUED BY

DATE

Sheet 1 of 2

ORDER NO.

*B. A. R.*

*2-2-70*

*CTL-23540*

23-1259-3

VAR. 7-68

PHM Leek 03991



Doc 33

| TROLLEY MECHANICAL |     |                                    | TROLLEY MECHANICAL |     |                                      |
|--------------------|-----|------------------------------------|--------------------|-----|--------------------------------------|
| ✓                  |     |                                    | ✓                  |     |                                      |
| ✓                  | T   | TROLLEY                            |                    | T52 | SECOND AUX. HOIST DRUM               |
|                    | T1  | CAGE                               |                    | T53 | SECOND AUX. HOIST BOTT. BLOCK        |
|                    | T2  | M.H. BOTTOM BLOCK                  |                    | T54 | SECOND AUX. HOIST UPPER BLOCK        |
|                    | T3  | M.H. DRUM AND SHAFT                |                    | T55 | SECOND AUX. HOIST LIMIT SWITCH APPL. |
|                    | T4  | A.H. DRUM AND SHAFT                |                    | T56 | AUX. HOIST CABLE REEL APPL.          |
|                    | T5  | P&H CABLE REEL AND CABLE           |                    | T57 | BEAM GUIDE MAST AND ROLLER ASSEM.    |
|                    | T6  | CHOCKS AND BUMPERS                 | ✓                  | T58 | REACTOR SUPPORT                      |
|                    | T7  | LIFTING BEAM OR GRAPPLE            | ✓                  | T63 | TR. FRAME HOIST ASSEM.               |
|                    | T8  | A.H. BOTTOM BLOCK                  |                    |     | BRIDGE MECHANICAL                    |
|                    | T9  | M.H. LIMIT SWITCH APPL.            |                    |     |                                      |
|                    | T10 | TROLLEY FRAME                      | ✓                  | B   | BRIDGE                               |
|                    | T11 | CAB AND CONTROL SUPPORT            |                    | B1  | CAGE                                 |
|                    | T12 | M.H. UPPER BLOCK                   | ✓                  | B2  | GIRDERS                              |
|                    | T13 | M.H. GEAR CASE AND COUPLING        | ✓                  | B3  | TRUCKS                               |
|                    | T14 | A.H. GEAR CASE AND COUPLING        |                    | B4  | FRONT PLATFORM                       |
|                    | T15 | TROLL DRIVE GEAR CASE AND COUPLING | ✓                  | B5  | BUMPERS                              |
|                    | T16 | TROLL WHEEL AND AXLE               |                    | B6  | CHOCKS                               |
|                    | T17 | PUSHER ARM (MESSENGER)             |                    | B7  | BRIDGE CONDUCTORS                    |
|                    | T18 | A.H. UPPER BLOCK                   |                    | B8  | AUX. GIRDER (TRUSS)                  |
|                    | T19 | A.H. LIMIT SWITCH APPL.            |                    | B9  | REAR PLATFORM                        |
|                    | T20 | MISC. STRUCT. MATL.                |                    | B10 | CROSS SHAFTING AND COUPLINGS         |
|                    | T21 | STRUCT. WITHOUT DRAWINGS           |                    | B11 | TRUCK MACHINERY ASSEM.               |
|                    | T22 | TROLL COVER                        |                    | B12 | BRIDGE GEAR CASE AND COUPLING        |
|                    | T23 | CONTROL AND CAB SUPPORT            |                    | B13 | END TIE AND TRUCK LINK               |
|                    | T24 | TROLL LUBE SYSTEM                  |                    | B14 | SADDLES AND PINS                     |
|                    | T25 | TROLL COLLECTOR                    |                    | B15 | GANTRY LEGS                          |
|                    | T26 | TRAILING TROLLEY                   |                    | B16 | GANTRY SILLS                         |
|                    | T27 | TROLL DRIVE LIMIT SWITCH APPL.     | ✓                  | B17 | MESSENGER SYSTEM (BR. COND.)         |
|                    | T28 | AIR CONDITIONER                    |                    | B18 |                                      |
|                    | T29 | TORQUE REEL APPL.                  |                    | B19 | CONDUCTOR SUPPORT                    |
|                    | T30 | TRUCKS AND PINS                    | ✓                  | B20 | MISC. STRUCT. MATL.                  |
|                    | T31 | RIGID MAST ASSEM.                  |                    | B21 | STRUCT. WITHOUT DRAWINGS             |
|                    | T32 | INTERM. MAST ASSEM.                | ✓                  | B22 | PAINTING                             |
|                    | T33 | CARRIAGE ASSEM.                    | ✓                  | B23 | LOADING                              |
|                    | T34 | FORK ATTACHMENT                    |                    | B24 | BRIDGE LUBE SYSTEM                   |
|                    | T35 | STACKER BEAM                       | ✓                  | B25 | BRIDGE COLLECTOR                     |
|                    | T36 | ROTATION DRIVE                     |                    | B26 | BRIDGE LIMIT SWITCH APPL.            |
|                    | T37 | TURNTABLE                          |                    | B27 | MESSENGER SYSTEM (P. BUTTON)         |
|                    | T38 | TURNTABLE COND. AND COLL.          |                    | B28 | AIR CONDITIONER                      |
|                    | T39 | HYDRAULIC SYSTEM ARRANGEMENT       |                    | B29 | TORQUE REEL APPL.                    |
|                    | T40 | UPPER WIRE CABLE ASSEM.            |                    | B30 |                                      |
|                    | T41 | LOWER WIRE CABLE ASSEM.            |                    | B31 | SIDE ROLLER ASSEM.                   |
|                    | T42 | CAB HOIST                          |                    | B32 | SECOND BRIDGE GEAR CASE              |
|                    | T43 | CAB CARRIAGE                       |                    | B33 | SECOND END TIE                       |
|                    | T44 | CAB MAST                           |                    | B34 | GIRDER SADDLE AND PINS               |
|                    | T45 | CAB SUPPORT ASSEM.                 |                    | B35 | SECOND GANTRY LEG                    |
|                    | T46 | M.H. CABLE REEL APPL.              |                    | B36 | SECOND GANTRY SILL                   |
|                    | T47 | WEIGHING ARRANGEMENT               |                    | S1  | RUNWAY COND. MAT'L                   |
|                    | T48 | BROKEN ROPE SAFETY DEVICE          |                    | S2  | SPARE PARTS                          |
|                    | T49 | GUIDE ROLLER ASSEM.                |                    | S3  | MISC. MATERIAL                       |
|                    | T50 |                                    |                    | S4  | RUNWAY STOPS                         |
|                    | T51 | SECOND AUX. HOIST GEAR CASE        |                    | S5  |                                      |

|           |         |              |           |
|-----------|---------|--------------|-----------|
| ISSUED BY | DATE    | SHEET 2 OF 2 | ORDER NO. |
| J.P.C.    | 1-29-70 |              | CTL-23540 |



| TROLLEY MECHANICAL |     |                                     | TROLLEY MECHANICAL |     |                                      |
|--------------------|-----|-------------------------------------|--------------------|-----|--------------------------------------|
| V                  |     |                                     | V                  |     |                                      |
| ✓                  | T   | TROLLEY                             |                    | T52 | SECOND AUX. HOIST DRUM               |
|                    | T1  | CAGE                                |                    | T53 | SECOND AUX. HOIST BOTT. BLOCK        |
|                    | T2  | M.H. BOTTOM BLOCK                   |                    | T54 | SECOND AUX. HOIST UPPER BLOCK        |
|                    | T3  | M.H. DRUM AND SHAFT                 |                    | T55 | SECOND AUX. HOIST LIMIT SWITCH APPL. |
|                    | T4  | A.H. DRUM AND SHAFT                 |                    | T56 | AUX. HOIST CABLE REEL APPL.          |
|                    | T5  | P&H CABLE REEL AND CABLE            |                    | T57 | BEAM GUIDE MAST AND ROLLER ASSEM.    |
|                    | T6  | CHOCKS AND BUMPERS                  | ✓                  | T58 | REACTOR SUPPORT                      |
|                    | T7  | LIFTING BEAM OR GRAPPLE             | ✓                  | T63 | TR. FRAME & HST. ASSEM.              |
|                    | T8  | A.H. BOTTOM BLOCK                   |                    |     | BRIDGE MECHANICAL                    |
|                    | T9  | M.H. LIMIT SWITCH APPL.             |                    |     |                                      |
|                    | T10 | TROLLEY FRAME                       | ✓                  | B   | BRIDGE                               |
|                    | T11 | CAB AND CONTROL SUPPORT             |                    | B1  | CAGE                                 |
|                    | T12 | M.H. UPPER BLOCK                    | ✓                  | B2  | GIRDERS                              |
|                    | T13 | M.H. GEAR CASE AND COUPLING         | ✓                  | B3  | TRUCKS                               |
|                    | T14 | A.H. GEAR CASE AND COUPLING         |                    | B4  | FRONT PLATFORM                       |
|                    | T15 | TROLL. DRIVE GEAR CASE AND COUPLING | ✓                  | B5  | BUMPERS                              |
|                    | T16 | TROLL. WHEEL AND AXLE               |                    | B6  | CHOCKS                               |
|                    | T17 | PUSHER ARM (MESSENGER)              |                    | B7  | BRIDGE CONDUCTORS                    |
|                    | T18 | A.H. UPPER BLOCK                    |                    | B8  | AUX. GIRDER (TRUSS)                  |
|                    | T19 | A.H. LIMIT SWITCH APPL.             |                    | B9  | REAR PLATFORM                        |
|                    | T20 | MISC. STRUCT. MATL.                 |                    | B10 | CROSS SHAFTING AND COUPLINGS         |
|                    | T21 | STRUCT. WITHOUT DRAWINGS            |                    | B11 | TRUCK MACHINERY ASSEM.               |
|                    | T22 | TROLL. COVER                        |                    | B12 | BRIDGE GEAR CASE AND COUPLING        |
|                    | T23 | CONTROL AND CAB SUPPORT             |                    | B13 | END TIE AND TRUCK LINK               |
|                    | T24 | TROLL. LUBE SYSTEM                  |                    | B14 | SADDLES AND PINS                     |
|                    | T25 | TROLL. COLLECTOR                    |                    | B15 | GANTRY LEGS                          |
|                    | T26 | TRAILING TROLLEY                    |                    | B16 | GANTRY SILLS                         |
|                    | T27 | TROLL. DRIVE LIMIT SWITCH APPL.     | ✓                  | B17 | MESSENGER SYSTEM (BR. COND.)         |
|                    | T28 | AIR CONDITIONER                     |                    | B18 |                                      |
|                    | T29 | TORQUE REEL APPL.                   |                    | B19 | CONDUCTOR SUPPORT                    |
|                    | T30 | TRUCKS AND PINS                     | ✓                  | B20 | MISC. STRUCT. MATL.                  |
|                    | T31 | RIGID MAST ASSEM.                   |                    | B21 | STRUCT. WITHOUT DRAWINGS             |
|                    | T32 | INTERM. MAST ASSEM.                 | ✓                  | B22 | PAINTING                             |
|                    | T33 | CARRIAGE ASSEM.                     | ✓                  | B23 | LOADING                              |
|                    | T34 | FORK ATTACHMENT                     |                    | B24 | BRIDGE LUBE SYSTEM                   |
|                    | T35 | STACKER BEAM                        | ✓                  | B25 | BRIDGE COLLECTOR                     |
|                    | T36 | ROTATION DRIVE                      |                    | B26 | BRIDGE LIMIT SWITCH APPL.            |
|                    | T37 | TURNTABLE                           |                    | B27 | MESSENGER SYSTEM (P. BUTTON)         |
|                    | T38 | TURNTABLE COND. AND COLL.           |                    | B28 | AIR CONDITIONER                      |
|                    | T39 | HYDRAULIC SYSTEM ARRANGEMENT        |                    | B29 | TORQUE REEL APPL.                    |
|                    | T40 | UPPER WIRE CABLE ASSEM.             |                    | B30 |                                      |
|                    | T41 | LOWER WIRE CABLE ASSEM.             |                    | B31 | SIDE ROLLER ASSEM.                   |
|                    | T42 | CAB HOIST                           |                    | B32 | SECOND BRIDGE GEAR CASE              |
|                    | T43 | CAB CARRIAGE                        |                    | B33 | SECOND END TIE                       |
|                    | T44 | CAB MAST                            |                    | B34 | GIRDER SADDLE AND PINS               |
|                    | T45 | CAB SUPPORT ASSEM.                  |                    | B35 | SECOND GANTRY LEG                    |
|                    | T46 | M.H. CABLE REEL APPL.               |                    | B36 | SECOND GANTRY SILL                   |
|                    | T47 | WEIGHING ARRANGEMENT                |                    | S1  | RUNWAY COND. MAT'L                   |
|                    | T48 | BROKEN ROPE SAFETY DEVICE           |                    | S2  | SPARE PARTS                          |
|                    | T49 | GUIDE ROLLER ASSEM.                 |                    | S3  | MISC. MATERIAL                       |
|                    | T50 |                                     |                    | S4  | RUNWAY STOPS                         |
|                    | T51 | SECOND AUX. HOIST GEAR CASE         |                    | S5  |                                      |

ISSUED BY

J.P.C.

DATE

1-29-70

SHEET 2 OF 2

ORDER NO.

CTL-23540



## CRANE ELECTRICAL BILL OF MATERIAL

Date 1-23-70

Customer KAISER FABRICATING DIV.

Crane No. CTL-23540

Tons 10 Span 71'-2" Volts 460 A.C. Phase 3 Cycle 60 Floor control attached to Trolley

| Ca                |                                     | No. Req.      | 6E Hoist               | No. Req.                                         | BC-13 1/2 Bridge            | No. Req.           | TT-9 Trolley              | No. Req. | Aux. Hoist or Closing | No. Req.         | Magnet Drum                      |
|-------------------|-------------------------------------|---------------|------------------------|--------------------------------------------------|-----------------------------|--------------------|---------------------------|----------|-----------------------|------------------|----------------------------------|
| Motor             | Frame Size                          |               | HEH-364RX              |                                                  |                             |                    | REULAND                   | 1        | LENGTH #14-22 COND.   |                  |                                  |
|                   | Type                                |               | ENCL.                  |                                                  |                             |                    | ENCL.                     |          | CABLE FOR PENDANT     |                  |                                  |
|                   | H.P. & R.P.M.                       |               | 20/16 1/2 1650/550     |                                                  | 1 1/2-1650                  |                    | 1-1650                    |          | P.B. STA.             |                  | LG.                              |
|                   | List No.                            |               | 1 114496-9             | 2                                                | 100F982-13                  | 1                  | 53U19D24                  |          |                       |                  |                                  |
| Brake             | Finish Class                        | "C" Form      | A.                     |                                                  |                             |                    |                           | 1        | LENGTH #505 GALV.     |                  |                                  |
|                   | Order No.                           |               | E5                     |                                                  | E17                         |                    |                           |          | MACH. CHAIN           |                  |                                  |
|                   | Type & Size                         |               | CD-5                   |                                                  | CD-1 ADJ.                   |                    | REULAND                   |          | NOTE: SEE MECH. SPEC. |                  |                                  |
|                   | List No.                            |               |                        |                                                  |                             |                    |                           |          | FOR LENGTHS OF CABLE, |                  |                                  |
|                   | Brake Wheel Part No.                |               |                        |                                                  |                             |                    |                           |          | & CHAIN.              |                  |                                  |
|                   | Bracket List No.                    |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Brake Coil List No.                 |               |                        |                                                  |                             |                    |                           |          | TY-RAPTIES 32Z890D3   |                  |                                  |
|                   | Cover Part No.                      |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Cover Bracket Part No.              |               |                        |                                                  |                             |                    |                           | 2        | CORD GRIPS 85Z24D14   |                  |                                  |
|                   | Order No.                           |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
| Controller        | Rectifier Assembly List No.         |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Type                                |               | P.B. TWO SPD.          |                                                  | PRI. REACTOR TORQUE CONT.   |                    | PRI. REACTOR TORQUE CONT. |          |                       |                  |                                  |
|                   | List No.                            |               | 1 8-BUTTON             |                                                  | PUSH BUTTON STA. L#55107-33 |                    | E40                       |          |                       |                  |                                  |
|                   | Blowout Coil List No.               |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
| Res.              | Blowout Lead List No.               |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Wiring Diagram                      |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Order No.                           |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Layout                              | REACTORS      |                        |                                                  | 2 100A5064-2                | 2                  | 100A5039-4                |          |                       |                  |                                  |
| Magnet            | List No.                            |               | 101E6480               |                                                  | 101E6521                    |                    | 101E6520                  |          |                       |                  |                                  |
|                   | Order No.                           | J/D 101E 6748 | 1                      | ANODE TRANSFORMER                                |                             | 75Z514D1           |                           |          |                       |                  |                                  |
|                   | AMP. RATING                         |               | 60                     |                                                  | 15                          |                    | 4                         |          |                       |                  |                                  |
|                   | PART #                              |               | 3 79Z754D18            | 3                                                | 79Z754D9                    | 3                  | 79Z754D1                  |          |                       |                  |                                  |
| Pro-tection       | Res. List No.                       |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Order No.                           |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Fuse-Overload Relay Amp. Rating     |               | 1 80Z25D57             |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Overload Relay List No.             |               | 1 80Z25D14             | 1                                                | 80Z25D9                     | 1                  | 80Z25D1                   |          |                       |                  |                                  |
| Wire Sizes        | Overload Relay Coil No.             |               | N43 N37                |                                                  | N28                         |                    | N15                       |          |                       |                  |                                  |
|                   | Size Rub. Cov. Leads (Pri.)         |               | 12                     |                                                  | 12                          |                    | 12                        |          |                       |                  |                                  |
|                   | Size of Rub. Cov. (Sec.-A-AL-RI-RX) |               | —                      |                                                  | —                           |                    | —                         |          |                       |                  |                                  |
|                   | Res. of Rub. Cov. (Intermediate)    |               | —                      |                                                  | —                           |                    | —                         |          |                       |                  |                                  |
| Bridge Conductors | Res. of Asb. Cov. (Intermediate)    |               | —                      |                                                  | —                           |                    | —                         |          |                       |                  |                                  |
|                   | Leads of Asb. Cov. (A-AL-RI-RX)     |               | —                      |                                                  | —                           |                    | —                         |          |                       |                  |                                  |
|                   | Motor Primary Bridge Cond.          |               | 1                      | LENGTH 10 COND. #12 TYPE "50" CORD (1.015" O.D.) |                             |                    |                           |          |                       |                  | SEE MECH. SPEC. FOR CABLE PART # |
|                   | Motor Secondary Bridge Cond.        |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
| Switch Board      | Limit Switch Bridge Cond.           |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Bridge Cond.                        |               | 2                      | CORD GRIPS 85Z24D14                              |                             |                    |                           |          |                       |                  |                                  |
|                   | Description                         | SUPPLY PANEL  | HOIST PANEL            | BRIDGE PANEL                                     | TROLLEY PANEL               | COMPLETE ENCLOSURE |                           |          |                       |                  |                                  |
|                   | Height of Panel                     | 27"           | 27"                    | 27"                                              | 27"                         | 30"                |                           |          |                       | E13              |                                  |
| M-H               | Width of Panel                      | 9 1/2"        | 24 1/2"                | 11"                                              | 11"                         | 60"                |                           |          |                       | COMPLETE CONTROL |                                  |
|                   | Panel Dwg. No.                      | 979E75-1      | 979E77-2               | 979F519-1                                        | 979F519-1                   |                    |                           |          |                       |                  |                                  |
|                   | Panel List No.                      | 979E75-1      | 979E77-2               | 979F519-1                                        | 979F519-1                   | 14U39              |                           |          |                       |                  |                                  |
|                   | Order No.                           |               |                        | E25                                              | W1E25                       |                    |                           |          |                       |                  |                                  |
| TERM. BOARD       | Total Width Prot. Panel             |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Sw. Bd. Dwg. No.                    |               |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | M-Hst. Lim. Sw., Type & Size        | 100E696-3     |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | M-Hst. Lim. Sw., " " "              | 79Z976D2      |                        |                                                  |                             |                    |                           |          |                       |                  |                                  |
| W. J. L.          | Electric Heater                     |               | 3-MAIN LINE FUSETRONS  |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Heater Fuses                        |               | 60 AMP. 79Z754D18      |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Control Fuses                       | 2-6 79Z96D5   | 1-MAIN LINE SAFETY SW. |                                                  |                             |                    |                           |          |                       |                  |                                  |
|                   | Crane Wire & Conduit                | N.E.C.        | 79Z711D2               |                                                  |                             |                    |                           |          |                       |                  |                                  |

Written By: W.J.L.



3104E1007 S

TO KAISER FAB DIV

CLEARANCE SKETCH NO. 107875

PROPOSAL NO. LA-959-D

Capacity 10 Tons

Runway rail 60 lbs/yd.

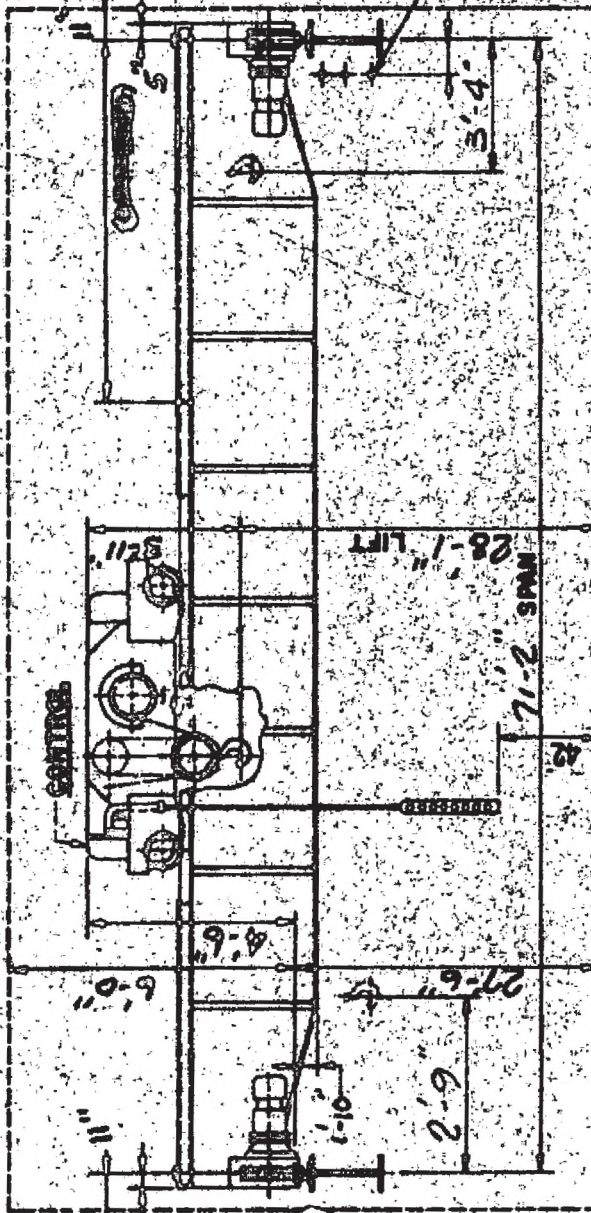
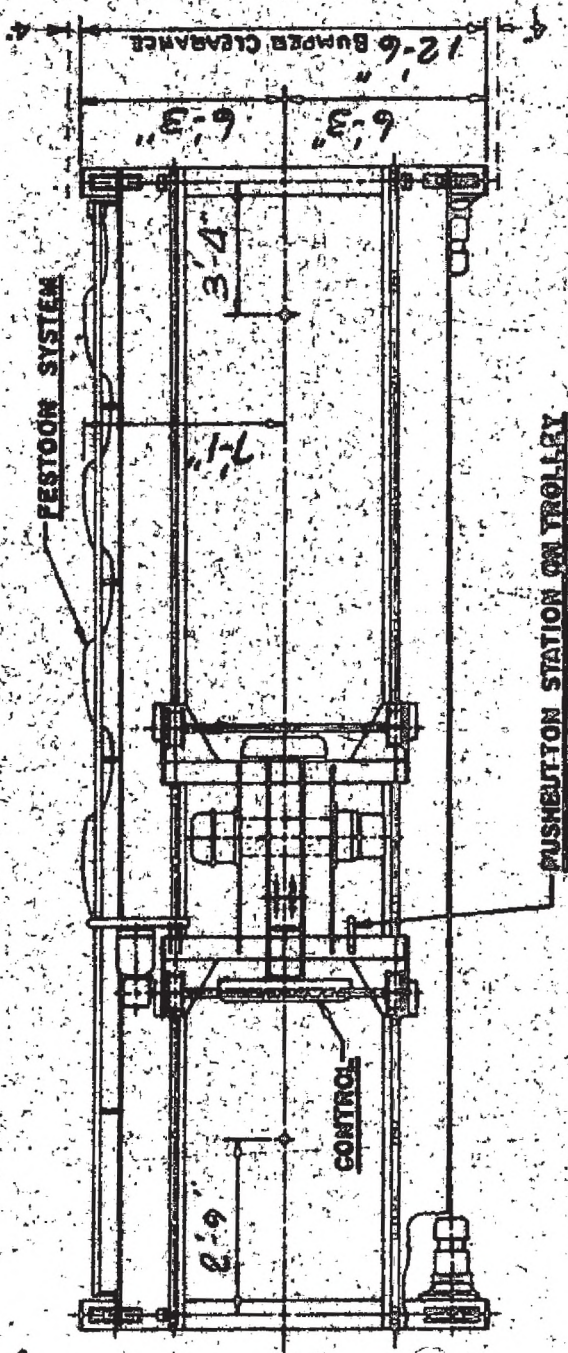
Max. wheel load 17,800 lbs.

Crane voltage 460-3-60

W



DETAIL  
CONSTRUCTION



INDICATE LOCATION OF  
MAIN LINE CONDUCTORS  
L.H. END

CTL 23540

|             |      |       |             |
|-------------|------|-------|-------------|
| PROJECT NO. | DATE | SCALE | DESIGNED BY |
| 3104E1007 S |      |       |             |
| CHECKED BY  | DATE | SCALE | DESIGNED BY |
|             |      |       |             |
| APPROVED BY | DATE | SCALE | DESIGNED BY |
|             |      |       |             |
| PROJECT NO. | DATE | SCALE | DESIGNED BY |
| 3104E1007 S |      |       |             |

NOTE: This sketch refers to dimensions - not construction.  
Consult Milwaukee for modifications for added optional equipment.



Customer KAISER FABRICATING DIV.-

Crane No. *CTL-23540*

Tons 10 Span 71'-2" Volts 460 A.C. Phase 3 Cycle 60        Floor        control attached to        Trolley       

| Cage                        | Service                          | INDOOR   | No. Req. | 6E Hoist          | No. Req. | BC-13 1/2 Bridge                                 | No. Req.            | TT-9 Trolley              | No. Req. | Aux. Hoist or Closing | No. Req. | Magnet Drum |
|-----------------------------|----------------------------------|----------|----------|-------------------|----------|--------------------------------------------------|---------------------|---------------------------|----------|-----------------------|----------|-------------|
| Motor                       | Frame Size                       |          |          | HEH-364RX         |          |                                                  |                     | REULAND                   | 1        | LENGTH #14-22 COND.   |          |             |
|                             | Type                             |          |          | ENCL.             |          |                                                  |                     | ENCL.                     |          | CABLE FOR PENDANT     |          |             |
|                             | H.P. & R.P.M.                    |          |          | 20/6 3/4 1650/550 |          | 1 1/2-1650                                       |                     | 1-1650                    |          | P.B. STA.             |          | LG.         |
|                             | List No.                         |          |          | 1 114496-9        | 2        | 100F982-13                                       | 1                   | 53U19D24                  |          |                       |          |             |
|                             | Finish Class                     | "C"      | Form     | A                 |          | E17                                              |                     |                           | 1        | LENGTH #50S GALV.     |          |             |
| Order No.                   |                                  |          | ES       |                   |          |                                                  |                     |                           |          | MACH. CHAIN           |          |             |
| Brake                       | Type & Size                      |          |          | CD-5              |          | CD-1 ADJ.                                        |                     | REULAND                   |          | NOTE: SEE MECH. SPEC. |          |             |
|                             | List No.                         |          |          |                   |          |                                                  |                     |                           |          | FOR LENGTHS OF CABLE, |          |             |
|                             | Brake Wheel Part No.             |          |          |                   |          |                                                  |                     |                           |          | & CHAIN.              |          |             |
|                             | Bracket List No.                 |          |          |                   |          |                                                  |                     |                           |          |                       |          |             |
|                             | Brake Coil List No.              |          |          |                   |          |                                                  |                     |                           |          | TY-RAPTIES 32Z890D3   |          |             |
|                             | Cover Part No.                   |          |          |                   |          |                                                  |                     |                           |          |                       |          |             |
|                             | Cover Bracket Part No.           |          |          |                   |          |                                                  |                     |                           |          | 2 CORD GRIPS 85Z24D14 |          |             |
| Order No.                   |                                  |          |          |                   |          |                                                  |                     |                           |          |                       |          |             |
| Rectifier Assembly List No. |                                  |          |          |                   |          |                                                  |                     |                           |          |                       |          |             |
| Controller                  | Type                             |          |          | P.B. TWO SPD.     |          | PRI. REACTOR TORQUE CONT.                        |                     | PRI. REACTOR TORQUE CONT. |          |                       |          |             |
|                             | List No.                         |          |          | 1                 |          | 8-BUTTON PUSH BUTTON STA. L #55107-33            |                     | E40                       |          |                       |          |             |
|                             | Blowout Coil List No.            |          |          |                   |          |                                                  |                     |                           |          |                       |          |             |
|                             | Blowout Lead List No.            |          |          |                   |          |                                                  |                     |                           |          |                       |          |             |
| Wiring Diagram              | Order No.                        |          |          |                   |          | COMPLETE WIRING DIAGRAM -                        |                     |                           |          |                       |          |             |
|                             |                                  |          |          |                   |          | PUSH BUTTON COLOR CODE ELEC.                     |                     |                           |          |                       |          |             |
|                             |                                  |          |          |                   |          |                                                  |                     |                           |          |                       |          |             |
| P.S.                        | Layout                           | REACTORS |          |                   |          | 2 100A5084-2                                     | 2                   | 100A5039-4                |          |                       |          |             |
|                             | Order No.                        |          |          | 1                 |          | ANODE TRANSFORMER                                |                     | 75Z514D1                  |          |                       |          |             |
|                             |                                  |          |          |                   |          |                                                  |                     |                           |          |                       |          |             |
| AMP. RATING                 | AMP. RATING                      |          |          | 60                |          | 15                                               |                     | 4                         |          |                       |          |             |
|                             | PART #                           |          |          | 3                 |          | 79Z754D18                                        | 3                   | 79Z754D9                  | 3        | 79Z754D1              |          |             |
|                             | Res. List No.                    |          |          |                   |          |                                                  |                     |                           |          |                       |          |             |
|                             | Order No.                        |          |          |                   |          |                                                  |                     |                           |          |                       |          |             |
| P.O. Part of                | Fuse Overload Relay Amp. Rating  |          |          | 1                 |          | 80Z25D57                                         |                     |                           |          |                       |          |             |
|                             | Overload Relay List No.          |          |          | 1                 |          | 80Z25D14                                         | 1                   | 80Z25D9                   | 1        | 80Z25D1               |          |             |
|                             | Overload Relay Coil No.          |          |          |                   |          | N43 N37                                          |                     | N28                       |          | N15                   |          |             |
| Wire Leads                  | Size Rub. Cov. Leads (Pri.)      |          |          | 12                |          | 12                                               |                     | 12                        |          |                       |          |             |
|                             | Size Rub. Cov. (Sec. A-AL-RI-RX) |          |          | —                 |          | —                                                |                     | —                         |          |                       |          |             |
|                             | Size Rub. Cov. (Intermediate)    |          |          | —                 |          | —                                                |                     | —                         |          |                       |          |             |
|                             | Size Ash. Cov. (Intermediate)    |          |          | —                 |          | —                                                |                     | —                         |          |                       |          |             |
|                             | Size Ash. Cov. (A-AL-RI-RX)      |          |          | —                 |          | —                                                |                     | —                         |          |                       |          |             |
| Bridge Conductors           | Motor Primary Bridge Cond.       |          |          | 1                 |          | LENGTH 10 COND. #12 TYPE "SO" CORD (1.015" O.D.) |                     |                           |          | SEE MECH. SPEC.       |          |             |
|                             | Motor Secondary Bridge Cond.     |          |          |                   |          |                                                  |                     |                           |          | FOR CABLE PART #      |          |             |
|                             | Limit Switch Bridge Cond.        |          |          |                   |          |                                                  |                     |                           |          |                       |          |             |
|                             | Bridge Cond.                     |          |          |                   | 2        |                                                  | CORD GRIPS 85Z24D14 |                           |          |                       |          |             |

| Description                 | SUPPLY<br>PANEL | HOIST<br>PANEL | BRIDGE<br>PANEL                         | TROLLEY<br>PANEL | COMPLETE<br>ENCLOSURE       |  |          |
|-----------------------------|-----------------|----------------|-----------------------------------------|------------------|-----------------------------|--|----------|
| Height of Panel             | 27"             | 27"            | 27"                                     | 27"              | 30"                         |  | E13      |
| Width of Panel              | 9 1/2"          | 24 1/2"        | 11"                                     | 11"              | 60"                         |  | COMPLETE |
| Panel Dwg. No.              | 979E75-1        | 979E77-2       | 979F519-1                               | 979F519-1        |                             |  | COMPLETE |
| Panel List No.              | 979E75-1        | 979E77-2       | 979F519-1                               | 979F519-1        | 14039                       |  | COMPLETE |
| Order No.                   |                 |                | E25                                     | 100E75           |                             |  |          |
| Width Prot. Panel           |                 |                | Main Line Rub. Cov. Leads #12           |                  | Remarks:                    |  |          |
| As. Bd. Dwg. No.            |                 |                | Total No. Bridge Cond. <b>FESTOONED</b> |                  | 1- HANDLE ASSEMBLY 100E3539 |  |          |
| M-Hst Lim. Sw., Type & Size | 100E696-3       |                | Total No. Runway Cond. <b>3</b>         |                  | 1- LATCH ASSEMBLY 987F1     |  |          |
| M-Hst Lim. Sw., " "         | 79Z976D2        |                | Push Button:                            |                  | 3- NAMEPLATES 32H222        |  |          |
| Electric Heater             |                 |                | 3- MAIN LINE FUSE TRONS                 |                  | 1- GASKET 20H3256           |  |          |
| Heater Fuses                |                 |                | 60 AMP. 79Z754D18                       |                  |                             |  |          |
| Control Fuses               | 2-6 79Z96D5     |                | 1- MAIN LINE SAFETY SW.                 |                  |                             |  |          |
| Wire & Conduit              | N.E.C. 79Z711D2 |                |                                         |                  |                             |  |          |

Written By: W.J.Z.

Written By: W.J.Z.



| Combination Used   |     |      |      |    |      |     |     |    |
|--------------------|-----|------|------|----|------|-----|-----|----|
| Start - Stop       | Yes | YES  | YES  | NO | YES  | YES | YES | NO |
| Hoist Motion       | SIR | V.S. | T.S. | —  | S.S. |     |     |    |
| Bridge Motion      | SIR | V.S. | SIR  | —  | V.S. |     |     |    |
| Trolley Motion     | SIR | V.S. | SIR  | —  | S.S. |     |     |    |
| Total No. of P.B.  | 8   | 6    | 8    | —  | 8    |     |     |    |
| No. Cond. in Cable | 22  | 22   | 22   | 10 | 16   |     |     |    |

| Conductor Color |    |              |        |        |        |        |        |        |
|-----------------|----|--------------|--------|--------|--------|--------|--------|--------|
| Green           | 4  | Ground       | GROUND | Ground | GROUND | GROUND | GROUND | GROUND |
| Red             | 3  | A            | A      | B      | INI    | B      |        |        |
| Orange          | 5  | C            | B      | C      | SY2    | C      |        |        |
| Blue            | 6  | B            | D      | A      | B      | A      |        |        |
| White           | 2  | Y2           | HL6    | Y2     | SPARE  | HR3    |        |        |
| Black           | 1  | Y3           | HR6    | Y3     | SPARE  | HL3    |        |        |
| Red-Black       | 8  | 3E23         | H36    | HR     | SPARE  | TL2    |        |        |
| White-Black     | 7  | 3E24         | H46    | HL     | SPARE  | TR2    |        |        |
| Green-Black     | 9  | SL3          | H56    | HHI    | SPARE  | BF     |        |        |
| Orange-Black    | 10 | SH3          | H66    | HLO    | SPARE  | BR     |        |        |
| Blue-Black      | 11 | 2E23         | TL5    | SL2    |        | B3     |        |        |
| Green-White     | 14 | 2E24         | TR5    | SR2    |        | B4     |        |        |
| Blue-White      | 15 | SL2          | T35    | 2E23   |        | B5     |        |        |
| Black-Red       | 16 | SR2          | T45    | 2E24   |        | B6     |        |        |
| Black-White     | 12 | 1E23         | T55    | SFI    |        | SPARE  |        |        |
| Red-White       | 13 | 1E24         | T65    | SR1    |        | SPARE  |        |        |
| White-Red       | 17 | SR1          | INCH   | 1E23   |        |        |        |        |
| Orange-Red      | 18 | SFI          | SPARE  | 1E24   |        |        |        |        |
| Blue-Red        | 19 | SPARE or LRI | SPARE  | SPARE  |        |        |        |        |
| Red-Green       | 20 | SPARE or SD3 | SPARE  | SPARE  |        |        |        |        |
| Orange-Green    | 21 | SPARE        | SPARE  | SPARE  |        |        |        |        |
| Black-White-Red | 22 | SPARE        | SPARE  | SPARE  |        |        |        |        |

DR. BY C.E.K.  
 CR. BY F.C.M.  
 APP. BY *[Signature]*

**HARNISCHFEGER CORPORATION**  
 ELECTRICAL DEPARTMENT

DATE 3-4-60 **FILE 1204**



3104E1007.3

TO KAISER FAB. DIV.

CLEARANCE SKETCH NO. 107B75

PROPOSAL NO. LA-959-D

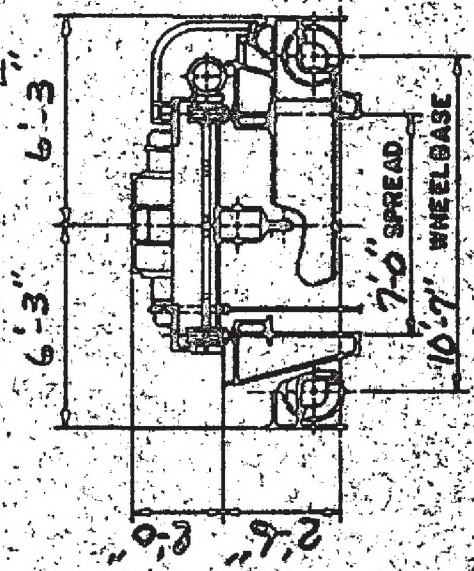
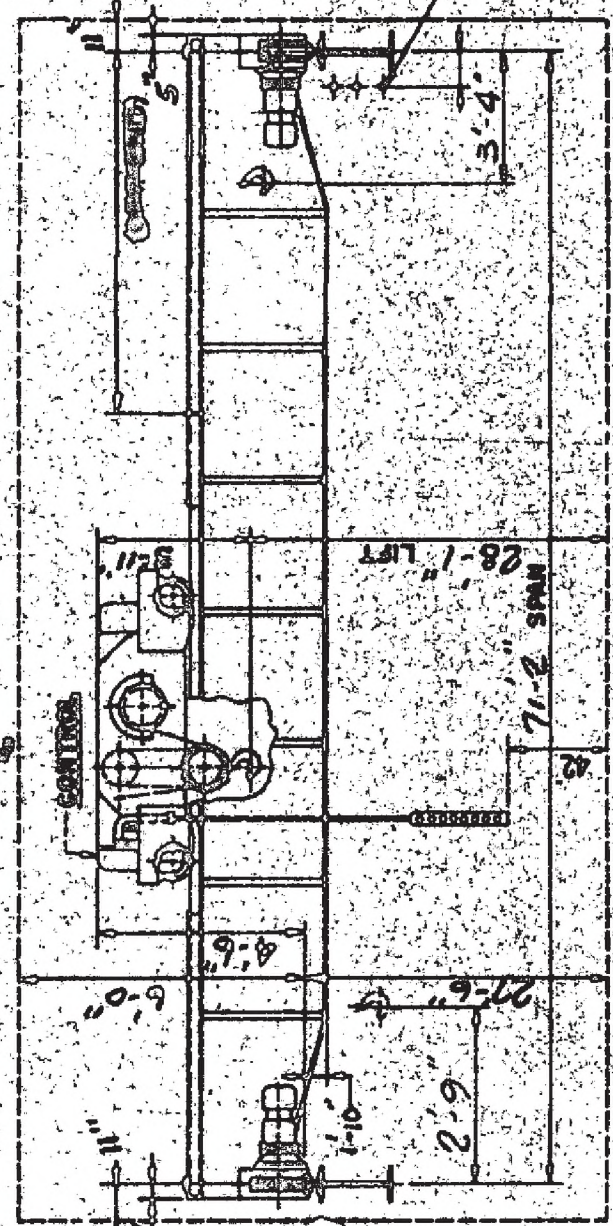
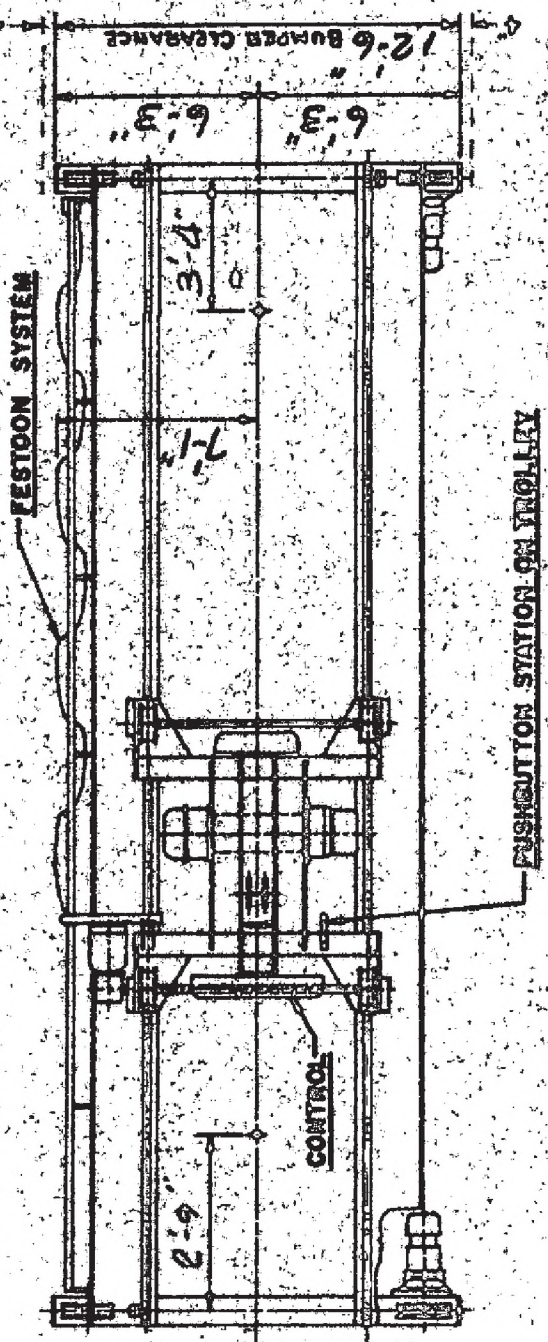
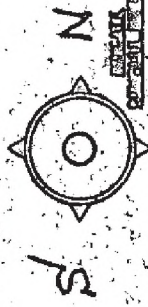
Capacity 10 Tons

Runway rail 60 lbs./yd.

Max. wheel load 17,800 lbs.

Crane voltage 460-3-60

W



CTL-23540

|                    |                |            |
|--------------------|----------------|------------|
| DATE               | DESIGNED BY    | CHECKED BY |
|                    |                |            |
| FOOTING            | HARNISCHFEEGER | PAUL       |
| CLEARANCE DRAWINGS |                |            |
| FOR TORREY CRANE   |                |            |
| 3104E1007.3        |                |            |

NOTE: This sketch refers to dimensions - not construction.  
Consult Milwaukee for modifications for added optional equipment.



## CRANE ELECTRICAL BILL OF MATERIAL

Date 1-23-70

Customer KAISER FABRICATING DIV.

Crane No. CTL-23540

Tons 10 Span 71'-2" Volts 460 A.C. Phase 3 Cycle 60 Floor control attached to Trolley

| Cage              | Service                         | No. Req.                    | 6E Hoist                 | No. Req.                                        | BC-13 1/2 Bridge            | No. Req.                    | TT-9 Trolley              | No. Req. | Aux. Hoist or Closing | No. Req. | Magnet Drum |
|-------------------|---------------------------------|-----------------------------|--------------------------|-------------------------------------------------|-----------------------------|-----------------------------|---------------------------|----------|-----------------------|----------|-------------|
| Motor             | Frame Size                      |                             | HEH-364RX                |                                                 |                             |                             | REVLAND                   | 1        | LENGTH #14-22 COND.   |          |             |
|                   | Type                            |                             | ENCL.                    |                                                 |                             |                             | ENCL.                     |          | CABLE FOR PENDANT     |          |             |
|                   | H.P. & R.P.M.                   |                             | 20/6 1/2 1650/550        |                                                 | 1 1/2-1650                  |                             | 1-1650                    |          | P.B. STA.             |          | LG.         |
|                   | List No.                        |                             | 1 114496-9               | 2                                               | 100F982-13                  | 1                           | 53U19D24                  |          |                       |          |             |
|                   | Finish Class                    | "C" Form                    |                          | A                                               |                             |                             |                           | 1        | LENGTH #50S GALV.     |          |             |
|                   | Order No.                       |                             | ES                       |                                                 | E17                         |                             |                           |          | MACH. CHAIN           |          |             |
| Brake             | Type & Size                     |                             | CD-5                     |                                                 | CD-1 ADJ.                   |                             | REVLAND                   |          | NOTE: SEE MECH. SPEC. |          |             |
|                   | List No.                        |                             |                          |                                                 |                             |                             |                           |          | FOR LENGTHS OF CABLE, |          |             |
|                   | Brake Wheel Part No.            |                             |                          |                                                 |                             |                             |                           |          | & CHAIN.              |          |             |
|                   | Bracket List No.                |                             |                          |                                                 |                             |                             |                           |          |                       |          |             |
|                   | Brake Coil List No.             |                             |                          |                                                 |                             |                             |                           |          | TY-RAP TIES 32Z890D3  |          |             |
|                   | Cover Part No.                  |                             |                          |                                                 |                             |                             |                           |          |                       |          |             |
|                   | Cover Bracket Part No.          |                             |                          |                                                 |                             |                             |                           | 2        | CORD GRIPS 85Z24D14   |          |             |
| Controller        | Rectifier Assembly List No.     |                             |                          |                                                 |                             |                             |                           |          |                       |          |             |
|                   | Type                            |                             | P.B. Tab SPD.            |                                                 | PRI. REACTOR TORQUE CONT.   |                             | PRI. REACTOR TORQUE CONT. |          |                       |          |             |
|                   | List No.                        |                             | 1 8-BUTTON               |                                                 | PUSH BUTTON STA. L#55107-33 |                             | E40                       |          |                       |          |             |
|                   | Blowout Coil List No.           |                             |                          |                                                 |                             |                             |                           |          |                       |          |             |
|                   | Blowout Lead List No.           |                             |                          |                                                 |                             |                             |                           |          |                       |          |             |
| Res.              | Wiring Diagram                  |                             | COMPLETE WIRING DIAGRAM- |                                                 |                             |                             |                           |          |                       |          |             |
|                   | Order No.                       |                             | PUSH BUTTON              |                                                 | COLOR CODE ELEC. 120 4      |                             |                           |          |                       |          |             |
|                   | Layout                          | REACTORS                    |                          |                                                 |                             |                             |                           |          |                       |          |             |
| Mag.              | List No.                        |                             | 10IE 648B                |                                                 | 10IE 6521                   |                             | 10IE 6520                 |          |                       |          |             |
|                   | Order No.                       | J/D. 10IE 674B              | 1                        | ANODE TRANSFORMER                               |                             | 75Z514D1                    |                           |          |                       |          |             |
|                   | AMP. RATING                     |                             | 60                       |                                                 | 15                          |                             | 4                         |          |                       |          |             |
| Pro.              | PART #                          |                             | 3 79Z754D18              | 3                                               | 79Z754D9                    | 3                           | 79Z754D1                  |          |                       |          |             |
|                   | Res. List No.                   |                             |                          |                                                 |                             |                             |                           |          |                       |          |             |
|                   | Order No.                       |                             |                          |                                                 |                             |                             |                           |          |                       |          |             |
| Wire Sizes        | Fuse-Overload Relay Amp. Rating |                             | 1 80Z25D57               |                                                 |                             |                             |                           |          |                       |          |             |
|                   | Overload Relay List No.         |                             | 1 80Z25D14               | 1                                               | 80Z25D9                     | 1                           | 80Z25D1                   |          |                       |          |             |
|                   | Overload Relay Coil No.         |                             | N43 N37                  |                                                 | N28                         |                             | N15                       |          |                       |          |             |
| Bridge Conductors | Size Rub. Cov. Leads (Pri.)     |                             | 12                       |                                                 | 12                          |                             | 12                        |          |                       |          |             |
|                   | Size of Res.                    | Rub. Cov. (Sec.-A-AL-RI-RX) |                          |                                                 |                             |                             |                           |          |                       |          |             |
|                   | Leads                           | Rub. Cov. (Intermediate)    |                          |                                                 |                             |                             |                           |          |                       |          |             |
| Switch Board      | Res.                            | Asb. Cov. (Intermediate)    |                          |                                                 |                             |                             |                           |          |                       |          |             |
|                   | Leads                           | Asb. Cov. (A-AL-RI-RX)      |                          |                                                 |                             |                             |                           |          |                       |          |             |
|                   | Motor Primary Bridge Cond.      |                             | 1                        | LENGTH 10 COND. #12 TYPE "30" CORD (1.05" O.D.) |                             |                             |                           |          | SEE MECH. SPEC.       |          |             |
| Switch Board      | Motor Secondary Bridge Cond.    |                             |                          |                                                 |                             |                             |                           |          | FOR CABLE PART #      |          |             |
|                   | Limit Switch Bridge Cond.       |                             |                          |                                                 |                             |                             |                           |          |                       |          |             |
|                   | Bridge Cond.                    |                             | 2                        | CORD GRIPS 85Z24D14                             |                             |                             |                           |          |                       |          |             |
| Switch Board      | Description                     | SUPPLY PANEL                | HOIST PANEL              | BRIDGE PANEL                                    | TROLLEY PANEL               | COMPLETE ENCLOSURE          |                           |          |                       |          |             |
|                   | Height of Panel                 | 27"                         | 27"                      | 27"                                             | 27"                         | 30"                         |                           |          | E13                   |          |             |
|                   | Width of Panel                  | 9 1/2"                      | 24 1/2"                  | 11"                                             | 11"                         | 60"                         |                           |          | COMPLETE              |          |             |
|                   | Panel Dwg. No.                  | 979E75-1                    | 979E77-2                 | 979F519-1                                       | 979F519-1                   |                             |                           |          | CONTROL               |          |             |
|                   | Panel List No.                  | 979E75-1                    | 979E77-2                 | 979F519-1                                       | 979F519-1                   | 14U39                       |                           |          |                       |          |             |
| Switch Board      | Order No.                       |                             |                          | E25                                             | WE25                        |                             |                           |          |                       |          |             |
|                   | Total Width Prof. Panel         |                             |                          | Main Line Rub. Cov. Leads #12                   |                             | Remarks:                    |                           |          |                       |          |             |
|                   | Sw. Bd. Dwg. No.                |                             |                          | Total No. Bridge Cond. FASTONED                 |                             | 1- HANDLE ASSEMBLY 100E3539 |                           |          |                       |          |             |
|                   | M.Hst. Lim. Sw., Type & Size    | 100E696-3                   |                          | Total No. Runway Cond. 3                        |                             | 1- LATCH ASSEMBLY 987F1     |                           |          |                       |          |             |
|                   | Hst. Lim. Sw., " "              | 79Z976D2                    |                          | Push Button:                                    |                             | 3- NAMEPLATES 32H232        |                           |          |                       |          |             |
| Switch Board      | Electric Heater                 |                             |                          | 3- MAIN LINE FUSETRONS                          |                             | 1- GASKET 20H3256           |                           |          |                       |          |             |
|                   | Heater Fuses                    |                             |                          | 60 AMP. 79Z754D18                               |                             | 1- TERM. BOARD 79Z76D4      |                           |          |                       |          |             |
|                   | Control Fuses                   | 2-6 79Z96D5                 |                          | 1- MAIN LINE SAFETY SW.                         |                             |                             |                           |          |                       |          |             |
|                   | Crane Wire & Conduit            | N.E.C.                      |                          | 79Z711D2                                        |                             |                             |                           |          |                       |          |             |
|                   | TERM. BOARD                     | 100/D. ADD.                 |                          |                                                 |                             |                             |                           |          |                       |          |             |

Written By: W.U.L.

PHM Leek 03999



## CRANE ELECTRICAL BILL OF MATERIAL

Date 1-23-70

Customer KAISER FABRICATING DIV.

Crane No. CTL-23540

Tons 10 Span 71'-2" Volts 460 A.C. Phase 3 Cycle 60 Floor control attached to Trolley

| Cage                                   | Service                         | No. Req.                        | GE Hoist      | No. Req.                                         | BC-13 1/2 Bridge          | No. Req.           | TT-9 Trolley              | No. Req. | Aux. Hoist or Closing | No. Req. | Magnet Drum |
|----------------------------------------|---------------------------------|---------------------------------|---------------|--------------------------------------------------|---------------------------|--------------------|---------------------------|----------|-----------------------|----------|-------------|
| Motor                                  | Frame Size                      |                                 | HEH-364RX     |                                                  |                           |                    | REULAND                   | 1        | LENGTH #14-22 COND.   |          |             |
|                                        | Type                            |                                 | ENCL.         |                                                  |                           |                    | ENCL.                     |          | CABLE FOR PENDANT     |          |             |
|                                        | H.P. & R.P.M.                   |                                 | 20/6 1650/550 |                                                  | 1 1/2-1650                |                    | 1-1650                    |          | P.B. STA.             |          | LG.         |
|                                        | List No.                        |                                 | 1 114496-9    | 2                                                | 100F982-13                | 1                  | 53U19D24                  |          |                       |          |             |
|                                        | Finish Class                    | "C" Form                        |               | A                                                |                           |                    |                           | 1        | LENGTH #50S GALV.     |          |             |
|                                        | Order No.                       |                                 | E5            |                                                  | E17                       |                    |                           |          | MACH. CHAIN           |          |             |
| Brake                                  | Type & Size                     |                                 | CD-5          |                                                  | CD-1 ADJ.                 |                    | REULAND                   |          | NOTE: SEE MECH. SPEC. |          |             |
|                                        | List No.                        |                                 |               |                                                  |                           |                    |                           |          | FOR LENGTHS OF CABLE, |          |             |
|                                        | Brake Wheel Part No.            |                                 |               |                                                  |                           |                    |                           |          | & CHAIN.              |          |             |
|                                        | Bracket List No.                |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Brake Coil List No.             |                                 |               |                                                  |                           |                    |                           |          | TV-RAPTIES 32Z890D3   |          |             |
|                                        | Cover Part No.                  |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
| Controller                             | Cover Bracket Part No.          |                                 |               |                                                  |                           |                    |                           | 2        | CORD GRIPS 85Z24D14   |          |             |
|                                        | Order No.                       |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Rectifier Assembly List No.     |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Type                            |                                 | P.B. TWO SPD. |                                                  | PRI. REACTOR TORQUE CONT. |                    | PRI. REACTOR TORQUE CONT. |          |                       |          |             |
|                                        | List No.                        |                                 | 1             | 8-BUTTON PUSH BUTTON STA.                        |                           | 1                  | #55107-33 E40             |          |                       |          |             |
|                                        | Blowout Coil List No.           |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
| Res.                                   | Blowout Lead List No.           |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Wiring Diagram                  |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Order No.                       |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Layout                          | REACTORS                        |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | List No.                        |                                 | 10IE 6480     |                                                  | 10IE 6521                 |                    | 10IE 6520                 |          |                       |          |             |
|                                        | Order No.                       | J/D 10IE 674B                   | 1             | ANODE TRANSFORMER                                |                           | 75Z514D1           |                           |          |                       |          |             |
| Magas-                                 | AMP. RATING                     |                                 | 60            |                                                  | 15                        |                    | 4                         |          |                       |          |             |
|                                        | PART #                          |                                 | 3 79Z754D18   | 3                                                | 79Z754D9                  | 3                  | 79Z754D1                  |          |                       |          |             |
|                                        | Res. List No.                   |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Order No.                       |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Fuse-Overload Relay Amp. Rating |                                 | 1             | 80Z25D57                                         |                           |                    |                           |          |                       |          |             |
|                                        | Overload Relay List No.         |                                 | 1             | 80Z25D14                                         | 1                         | 80Z25D9            | 1                         | 80Z25D1  |                       |          |             |
| Pro-                                   | Overload Relay Coil No.         |                                 | N43 N37       |                                                  | N28                       |                    | N15                       |          |                       |          |             |
|                                        | Size Rub. Cov. Leads (Pri.)     |                                 | 12            |                                                  | 12                        |                    | 12                        |          |                       |          |             |
|                                        | Size of Res. Leads              |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Rub. Cov. (Sec. A-AL-RI-RX)     |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Rub. Cov. (Intermediate)        |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Ash. Cov. (Intermediate)        |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
| Bridge                                 | Ash. Cov. (A-AL-RI-RX)          |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Motor Primary Bridge Cond.      |                                 | 1             | LENGTH 10 COND. #12 TYPE "50" CORD (1.015" O.D.) |                           |                    |                           |          | SEE MECH. SPEC.       |          |             |
|                                        | Motor Secondary Bridge Cond.    |                                 |               |                                                  |                           |                    |                           |          | FOR CABLE PART #      |          |             |
|                                        | Limit Switch Bridge Cond.       |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
|                                        | Bridge Cond.                    |                                 | 2             | CORD GRIPS 85Z24D14                              |                           |                    |                           |          |                       |          |             |
|                                        |                                 |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |
| Switch Board                           | Description                     | SUPPLY PANEL                    | HOIST PANEL   | BRIDGE PANEL                                     | TROLLEY PANEL             | COMPLETE ENCLOSURE |                           |          |                       |          |             |
|                                        | Height of Panel                 | 27"                             | 27"           | 27"                                              | 27"                       | 30"                |                           |          | E13                   |          |             |
|                                        | Width of Panel                  | 9 1/2"                          | 24 1/2"       | 11"                                              | 11"                       | 60"                |                           |          | COMPLETE              |          |             |
|                                        | Panel Dwg. No.                  | 79E75-1                         | 79E77-2       | 79E519-1                                         | 79E519-1                  |                    |                           |          | CONTROL               |          |             |
|                                        | Panel List No.                  | 79E75-1                         | 79E77-2       | 79E519-1                                         | 79E519-1                  | 14U39              |                           |          |                       |          |             |
|                                        | Order No.                       |                                 |               | E25                                              | W25                       |                    |                           |          |                       |          |             |
| Total Width Prot. Panel                |                                 | Main Line Rub. Cov. Leads #12   |               | Remarks:                                         |                           |                    |                           |          |                       |          |             |
| Sw. Bd. Dwg. No.                       |                                 | Total No. Bridge Cond. RETURNED |               | 1- HANDLE ASSEMBLY 100E3539                      |                           |                    |                           |          |                       |          |             |
| M.Hct. Lim. Sw., Type & Size 100E496-B |                                 | Total No. Runway Cond. 3        |               | 1- LATCH ASSEMBLY 987F1                          |                           |                    |                           |          |                       |          |             |
| 1- Hat. Lim. Sw., " 79Z976D2           |                                 | Push Button:                    |               | 3- NAMEPLATES 32H222                             |                           |                    |                           |          |                       |          |             |
| Electric Heater                        |                                 | 3- MAIN LINE FUSE TRONS         |               | 1- GASKET 20H3256                                |                           |                    |                           |          |                       |          |             |
| Heater Fuses                           |                                 | 60 AMP. 79Z754D18               |               | 1- TERM. BOARD 79Z726D4                          |                           |                    |                           |          |                       |          |             |
| Control Fuses 2-6 79Z96D5              |                                 | 1- MAIN LINE SAFETY SW.         |               |                                                  |                           |                    |                           |          |                       |          |             |
| Crane Wire & Conduit N.E.C.            |                                 | 79Z711D2                        |               |                                                  |                           |                    |                           |          |                       |          |             |
| TERM. BOARD W/D. ADD.                  |                                 |                                 |               |                                                  |                           |                    |                           |          |                       |          |             |

Written By: W.J.L.



## TORBEAM PRELIMINARY SCHEDULE

January 20, 1970

TO: E. JAGODZINSKI T. HERTEL C. SMAIDA  
A. RUTKOWSKI B. BLANKENBURG L. KOCHNOWICZ  
B. TEWS S. LANCOURT G. REARICK  
J. KAUFMAN ~~B. EVANS~~ (Cudahy) B. BRATBERG (Cudahy)  
G. GANTZ R. VALDEZ H. DAVIES  
D. HECKER (Cudahy) G. HENES A. KORE  
R. BOYD D. COYLE A. JESKE  
R. NESSLER

|                                  |            |
|----------------------------------|------------|
| KAISER FABRICATING DIV.          | CTL-23540  |
| ELECTRICAL ENGINEERING           | 1-26       |
| MECHANICAL ENGINEERING           | 1-28       |
| ELECTRICAL SPECS                 | 1-28       |
| MECHANICAL SPECS                 | 1-30       |
| SHIP CRANES PARTS TO LOS ANGELES | 3-5-70     |
| SHIP CRANES FROM LOS ANGELES     | March 1970 |

One Torbeam - Los Angeles

Part of Order CTL-23534 - 38 and CTL-23540.

Cranes urgently required. Please hold or improve all dates. Primary reactor bridge and trolley control (Stock) and coupled bridge drives (Stock). Please advance all stock material including L.A. Structural's immediately.

Charles E. Schafer  
Overhead Traveling Crane Division

CES/jz

CC: Bob LaMarre - Los Angeles  
Gib Davelaar - Los Angeles  
Bill Leupold - Crane Estimating (Hours 900)  
Ray Kuhn - Service (Checkout \$300.00 - total 6 cranes).  
Tim Hucke - Elec. Prod. (Spare Parts List)



# PRICING — TAX — INVOICING — SHIPPING — LOADING DATA FOR OVERHEAD ELECTRIC CRANES

**SOLD TO** Kaiser Steel Fabricating Division  
13230 San Bernardino Avenue  
Fontana California 92335

CRANE NO. CTL-23540

PROPOSAL NO. LA-959 D

PROPOSAL DATE 12-17-69

RELEASE DATE 1-17-70

CRANE ERECTED BY: Purchaser

INVOICE NO. \_\_\_\_\_

INVOICE DATE \_\_\_\_\_

**INVOICE TO** Kaiser Steel Fabricating Division  
13230 San Bernardino Avenue  
Fontana, California 92335

**SHIP TO** Kaiser Steel  
Fontana Fabricating Plant  
Fontana, California

**TAX INFO:**

EXEMPTION NO. \_\_\_\_\_

ADD TO INVOICE \_\_\_\_\_

REFER CUST. ORDER \_\_\_\_\_

**F.O.B.** Norwalk California Plant

**FREIGHT** Collect

**SHIP VIA** Truck

**SCHEDULED SHIPMENT** March 1970

**TERMS** 80% in cash upon receipt of invoice  
and B/L, the balance, or  
20% in cash within thirty days  
from date of shipment.

**REMARKS**

PRELIMINARY ONLY

**EST. ERECTION DATA — AS ENGINEERED\***

FRONT GIRDER \_\_\_\_\_ #  
MACHINERY \_\_\_\_\_ #  
WALKWAY \_\_\_\_\_ #  
CONTROL \_\_\_\_\_ #  
CONDUCTORS \_\_\_\_\_ #  
\_\_\_\_\_ #

**TOTAL FRONT GIRDER** \_\_\_\_\_ #

REAR GIRDER \_\_\_\_\_ #  
WALKWAY \_\_\_\_\_ #  
CONDUCTORS \_\_\_\_\_ #  
\_\_\_\_\_ #

**TOTAL REAR GIRDER** \_\_\_\_\_ #

TROLLEY \_\_\_\_\_ #  
CAB \_\_\_\_\_ #  
\_\_\_\_\_ #  
AUX. GIRDER \_\_\_\_\_ #  
END TIES \_\_\_\_\_ #  
END TRUCKS \_\_\_\_\_ #  
MISCELLANEOUS \_\_\_\_\_ #

**TOTAL NET WT.** \_\_\_\_\_ #  
**TOTAL SH. WT.** \_\_\_\_\_ # 33,000 #  
**CRANE WHL. LOAD:** \_\_\_\_\_ # @  
**IS TROLLEY K/D FOR SHIPMENT?** \_\_\_\_\_

| PRICING                 |                                              |                    |
|-------------------------|----------------------------------------------|--------------------|
| CUST. ORDER NO.         | ITEM                                         | PRICE              |
|                         | CRANE <b>CTL-23540</b>                       | <b>\$20,794.00</b> |
|                         | S-1 RUNWAY CONDUCTORS                        |                    |
|                         | S-2 SPARES                                   |                    |
|                         | S-3                                          |                    |
|                         | S-4                                          |                    |
|                         | PROTECTION AND BOX SERVICE ENGINEER Checkout | Incl.              |
|                         | FREIGHT                                      |                    |
|                         | CONTRACT PRICE                               | <b>\$20,794.00</b> |
|                         | STATE USE TAX                                |                    |
|                         | LOCAL USE TAX                                |                    |
|                         | GRAND TOTAL                                  |                    |
| CRANE CODE <b>A A B</b> | CRANE NO. <b>CTL-23540</b>                   |                    |

|                                                    |     |                           |     |                           |     |
|----------------------------------------------------|-----|---------------------------|-----|---------------------------|-----|
| REPRESENTATIVE - DISTRICT<br>KOWALIK - LOS ANGELES | NO. | REPRESENTATIVE - DISTRICT | NO. | REPRESENTATIVE - DISTRICT | NO. |
|----------------------------------------------------|-----|---------------------------|-----|---------------------------|-----|

\*UPON COMPLETION OF ENGINEERING, FORWARD TO SALES DEPT.



PHM Leek 04003



**TORBEAM STOCK COMPONENT CRANE**
**ADDENDA TO PROPOSAL NO. CTL-23540**  
**LA-959-D**

1. Crane as specified to be designed and fabricated in accordance with P&H published commercial standards for TORBEAM type cranes, qualified as specified herein.
2. Four (4) motor crane as specified to consist of a double girder TORBEAM type bridge with a two (2) motor top running trolley. Bridge to have two individual drives, one at each end of bridge, operating in parallel.
3. Crane to be pushbutton floor operated from:
  - ☒ A. Trolley between girders at drive end of trolley ("H" end) as shown on Clearance Drawing 3104E1007. (Standard)
  - ☐ B. Bridge (Fixed Position) as indicated. (Price Addition)
  - ☐ C. Pushbutton pendant station to be suspended from a festooned flexible cable messenger system suspended from anti-friction bearing trolleys operating on a rigid track supported from crane bridge. (Price Addition)
  - ☐ D. Job Engineered Location. (Price Addition)

4. **MOTORS:**

P&H totally enclosed motors with anti-friction bearings rated 30 minute, 75° rise above ambient temperatures of 40°C.

- ☐ A. Hoist to be furnished with a single winding squirrel cage type motor. Trolley and dual bridge drives to be provided with single winding squirrel cage type motors 220/440V. (Standard)
- ☒ B. Hoist to be furnished with a dual winding squirrel cage type motor. (Price Addition)  
Trolley and dual bridge drives to be provided with single winding squirrel cage type motors, 220/440V.

5. **BRAKES:**

Hoist and dual bridge motors to be furnished with P&H DC rectified brakes. Trolley motor to be furnished with an electric motor brake. In addition to the motor brake, hoist will be furnished with a Weston type mechanical load brake, operating in bath of oil. Bridge and trolley brakes to be of the adjustable torque type.

6. **CONTROL:**

- ☐ A. P&H full magnetic single speed control on hoist. (Standard)
- ☒ B. P&H full magnetic two speed control on hoist. (Price Addition)
- ☐ C. P&H Primary Reactor Hoist Control Bulletin 567. (Price Addition)
- ☒ D. P&H Primary Reactor ~~Hoist Control Bulletin 567~~ Bridge and Trolley Control Bulletin 566. (Price Addition)

Eight-button pendant station to contain "Start" "Stop" buttons for manual magnetic disconnect switch electrically operable from pendant or manually from control cabinet. Automatic reset type thermal overload relays to be provided. Control to be housed in hoist type NEMA III enclosures for indoor or outdoor operation. Control proper to be mounted on trolley as shown on clearance drawing.

7. **HOIST LIMIT SWITCH:**

Hoist to be furnished with a lever operated plugging type upper limit switch and a geared upper and lower limit switch both of the control circuit type.

8. **SPAN CONDUCTORS:**

Span conductors to consist of a festooned flexible cable messenger system suspended from anti-friction bearing trolleys on a rigid track supported from the crane bridge.

9. **BRIDGE GIRDERS:**

Bridge to be of double girder design with trolley operating on rails attached to top member. Girders to be of P&H TORBEAM (Torsional Beam) (U.S. Patent D202,718) design welded into a one piece frame consisting of two girders and two end trucks to enable one piece shipment and erection of bridge where jobsite conditions allow. Bridge to be provided:

- ☒ A. Without service platform, wherein Purchaser will make full provisions for servicing entire crane from portable or stationary equipment in building. (Standard)



## TORBEAM STOCK COMPONENT CRANE

ADDENDA TO PROPOSAL NO. CTL-23540 (Continued)

## LA-959 D

- ☐ B. A standard (10' - 0" long) trolley service platform located at ☐ Left; at ☐ Right; at ☐ both ends of bridge. (10' - 0" long) platforms **not to be used** when a pushbutton traveling control messenger system is furnished. (Price Addition)
- ☐ C. A short (4' - 0" long) trolley service platform located at ☐ Left; at Right ☐ ; at ☐ both ends of bridge. (4' - 0" long) platform **to be used** when a pushbutton traveling control messenger system is furnished. (Price Addition)
- ☐ D. Full length service platform. (Price Addition)  
All platforms to have checkered steel flooring.
- ☐ E. Full length handrail and walkspace on front girder. (Price Addition)
10. BRIDGE END TRUCKS:  
Crane bridge to be provided with two structural end trucks welded into TORBEAM girders for unitized construction as described under Item No. 9 MCB rotating axle design to be used. Bridge wheels to be high carbon (C-1070) forged steel, rim toughened and to be 13-<sup>1</sup>/<sub>2</sub> inches diameter. Bridge End Trucks to be provided as follows: (Coupled Bridge Drives)
- ☐ A. One piece unitized construction for all cranes under 60' - 0" span, 7' - 0" trolley spread and 10' - 6" overall width (Y and Z) to permit one piece rail shipment. (Standard)
- ☐ B. End trucks having one splice to permit rail shipment for cranes over 60' - 0" span, over 10' - 6" overall width (Y and Z) to maintain proper span to wheel base ration but within limitation as shown under Table 6, Modification Sheet 217.02(101) Item 6, Part I. (Standard)
- ☐ C. Cranes normally having one piece unitized construction per Item A, but requiring one splice to reduce overall width for truck shipment or because of Purchaser's building restrictions. (Price Addition)
- ☐ D. A single or double end truck splice as required for spans beyond those covered by Modification Sheet 217.02 (101) Item 6, Part I. (Price Addition)
- ☒ E. Bolted End Trucks.
11. BRIDGE BUMPERS:
- ☐ A. Bridge end trucks to be provided with solid strike plates at each of four corners to engage suitable end stops erected and furnished by Purchaser. (Standard)
- ☒ B. Bridge end trucks to be provided with rubber bumpers at each of four corners to engage suitable stops by Purchaser. ~~(Price Addition)~~
12. BRIDGE DRIVES:  
Individual bridge drives of the integral and coaxial type (U.S. Patent 3,252,586) provided at each end truck. Each drive to be provided with an individual flange mounted motor as specified as an integral part of the unitized drives, which drives will be operated in parallel by a common bridge control. Bridge gearing to be of the planetary type. (Coupled)
13. TROLLEY:  
Crane to be furnished with a unitized four wheel structural trolley with a P&H Balanced Design Hoist as specified built into frame. Single MCB rotating axle design to be used. Trolley wheels to be high carbon (C-1070) forged steel, rim toughened, and to be 9 inches in diameter. Unitized frame design to be based upon an impact absorbing torsional tube elastically supported from specified four trolley wheels. Hoist to be furnished with a standard P&H specified latch type safety hook.
14. TROLLEY DRIVE:  
A single helical worm speed reducer with a flange mounted motor as specified to be an integral part of complete trolley design.
15. BEARINGS:  
Anti-friction bearings to be provided throughout. A minimum of 5000 hours, 75%, B-10 bearing life to be furnished for entire crane.





## TORBEAM STOCK COMPONENT CRANE

ADDENDA TO PROPOSAL NO. CTL-23540 (Continued)  
LA-959-D

## 16. LUBRICATION:

All gearing except drum gear to be enclosed in oil tight gear cases and to be oil bath lubricated. All bearings not oil bath lubricated to be either of the lifetime lubrication type or to be provided with individual grease fittings (Alemite) for use with Purchaser's hand pump.

## 17. PAINTING:

- ☒ A. Two coats, finished in P&H TORBEAM yellow for entire crane, for indoor service. (Standard)  
☐ B. Special paint, colors, extra coats, etc. (Price Addition)  
☐ C. For outdoor service, rust inhibiting primer where specified. (Price Addition)

18. Crane will be assembled, wired, and tested without load in our shops after which it will be suitably match-marked and dismantled to the extent required for shipment. Machined surfaces will be suitably protected against corrosion. Erection, reassembly, and field wiring will be completed by Purchaser. Unitized construction will be used where jobsite shipment and erection conditions permit.

19. Four erection brackets to be provided with crane.

20. Two complete sets of standardized parts books with all wearing parts listed and identified on individual isometric sketches for facility of identification and ordering through P&H nationwide parts facilities to be provided. Crane as specified being of stock component design, can be serviced from an immediate stock of spare parts available from manufacturer or duly authorized P&H parts source. (Standard)

☒ Extra parts books, special drawings, etc. ~~(Price Addition)~~

21. Two complete sets of erection drawings and erection manuals to be furnished before crane shipment. Where unitized bridge design is being used, erection drawings will so designate. (Standard)

☒ Additional drawings. ~~(Price Addition)~~

22. Added Engineered Parts - Mechanical and Electrical:

## A. Mechanical

1. ☒ Provide 3-pole Cleveland Saffowbar collectors with staff for use  
☐ with Purchaser mainline conductor system.  
 2. ☒ CTL-23540 to operate on a 320'-0" long runway.  
☐  
☐  
☐  
☐

## B. Electrical

- Mainline conductor material and collectors. (Price Addition)  
 1. ☒ Control to be magnetic two speed hoist with mechanical load brake and  
☐ Bull. 566 primary reactor on bridge and trolley with all control mounted  
☐ on trolley.  
☐  
☐  
☐  
☐

23. The services of a P&H Service Engineer to be provided to check out cranes after erection.  
 24. One set of reproducible autositives of assembly drawings and wiring diagrams on P&H format to be furnished after completion of engineering for use by Purchaser for erection purposes and permanent records. No detail drawings of individual parts will be provided.  
 25. Five (5) sets of complete parts books and maintenance manuals to be provided. Furnish complete spare parts list.



# TORBEAM CRANE SALES ORDER

| Col.  | Specification                                                                                                                                                                                                                   | Code                                                                 | E.D.P. Data                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1-15  | Serial number .....                                                                                                                                                                                                             |                                                                      | <div style="display: flex; justify-content: space-between;"> <span>1</span><span>4</span><span>5</span><span>10</span><span>11</span><span>13</span> </div> <div style="display: flex; justify-content: space-between;"> <span>CT</span><span>4</span><span>-</span><span>23540</span><span>-</span><span>+</span><span>+</span> </div> <div style="display: flex; justify-content: space-between;"> <span>Rev.</span><span>+</span><span>+</span> </div>              |
| 16    | Quantity .....                                                                                                                                                                                                                  |                                                                      | <div style="display: flex; justify-content: space-between;"> <span>16</span><span>17</span><span>20</span><span>22</span><span>23</span> </div> <div style="display: flex; justify-content: space-between;"> <span>7</span><span>77</span><span>Ft.</span><span>-</span><span>2</span><span>-</span><span>+</span><span>/</span><span>+</span> </div> <div style="display: flex; justify-content: space-between;"> <span>In.</span><span>+</span><span>+</span> </div> |
| 17-23 | Crane span (to nearest 1/8") .....                                                                                                                                                                                              |                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 24-27 | "Q" Rail to floor (to nearest 1") .....<br>exclusive of pit                                                                                                                                                                     |                                                                      | <div style="display: flex; justify-content: space-between;"> <span>24</span><span>26</span> </div> <div style="display: flex; justify-content: space-between;"> <span>27</span><span>Ft.</span><span>-</span><span>6</span><span>In.</span> </div>                                                                                                                                                                                                                     |
| 28    | Stock Component Crane — S.C.C. ....<br>— Modified ...                                                                                                                                                                           | 1<br>2                                                               | <div style="display: flex; justify-content: space-between;"> <span>28</span> </div> <div style="display: flex; justify-content: space-between;"> <span>+</span> </div>                                                                                                                                                                                                                                                                                                 |
| 30    | Service — indoor .....<br>— outdoor .....                                                                                                                                                                                       | 1<br>2                                                               | <div style="display: flex; justify-content: space-between;"> <span>30</span> </div> <div style="display: flex; justify-content: space-between;"> <span>1</span> </div>                                                                                                                                                                                                                                                                                                 |
| 31-32 | Hoist unit— 4C 3T .....<br>— 4CA 5T .....<br>— 4D 5T .....<br>— 6D 7-1/2T .....<br>— 6D 10T .....<br>— 6D 15T .....<br>— 6E 10T .....<br>— 6E 15T .....<br>— 5E 20T .....<br>— 6F 20T .....<br>— 6F 25T .....<br>— 6F 30T ..... | 11<br>12<br>21<br>22<br>23<br>24<br>31<br>32<br>33<br>41<br>42<br>43 | <div style="display: flex; justify-content: space-between;"> <span>31</span> </div> <div style="display: flex; justify-content: space-between;"> <span>31</span> </div>                                                                                                                                                                                                                                                                                                |
| 33    | Hoist motor — single speed .....<br>(C&D hoist only)<br>— two speed .....<br>— magnetorque .....                                                                                                                                | 1<br>2<br>3                                                          | <div style="display: flex; justify-content: space-between;"> <span>33</span> </div> <div style="display: flex; justify-content: space-between;"> <span>2</span> </div>                                                                                                                                                                                                                                                                                                 |
| 34    | Power supply — 220V, a-c, 3 ph, 60 cy .<br>— 440V, a-c, 3 ph, 60 cy .                                                                                                                                                           | 1<br>2                                                               | <div style="display: flex; justify-content: space-between;"> <span>34</span> </div> <div style="display: flex; justify-content: space-between;"> <span>2</span> </div>                                                                                                                                                                                                                                                                                                 |
| 35    | Main line location — R.H. ....<br>— L.H. ....                                                                                                                                                                                   | 1<br>2                                                               | <div style="display: flex; justify-content: space-between;"> <span>35</span> </div> <div style="display: flex; justify-content: space-between;"> <span>+</span> </div>                                                                                                                                                                                                                                                                                                 |
| 36    | Standard limit switches — upper, weight<br>and geared; lower, geared only .....                                                                                                                                                 | 1                                                                    | <div style="display: flex; justify-content: space-between;"> <span>36</span> </div> <div style="display: flex; justify-content: space-between;"> <span>1</span> </div>                                                                                                                                                                                                                                                                                                 |
| 37-39 | Control type— P.B. on trolley .....<br>— P.B. on messenger .....<br>— P.B. fixed on bridge .....<br>— Cab masters .....<br>— Special (see addenda) ...                                                                          | 1<br>2<br>3<br>4<br>5                                                | <div style="display: flex; justify-content: space-between;"> <span>37</span> </div> <div style="display: flex; justify-content: space-between;"> <span>1</span> </div> <div style="display: flex; justify-content: space-between;"> <span>... Dim. from R.H. end, "J"=</span><span>38</span><span>Ft.</span> </div>                                                                                                                                                    |



## TORBEAM CRANE SALES ORDER (CONTINUED)

CTL-23540

| Col.               | Specification                                                                                                                                                            | Code                  | E.D.P. Data                                                                                                                                                     |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40                 | Bridge bumper — standard strike plate . . .<br>— rubber bumpers . . . . .<br>— special (see addenda) . . .                                                               | 1<br>2<br>3           | <sup>40</sup><br><input checked="" type="checkbox"/>                                                                                                            |
| 41                 | Platforms — no platforms . . . . .<br>— R.H. platform only . . . . .<br>— L.H. platform only . . . . .<br>— two platforms . . . . .<br>— special (see addenda) . . . . . | 1<br>2<br>3<br>4<br>5 | <sup>41</sup><br><input checked="" type="checkbox"/>                                                                                                            |
| 42                 | Shipment type — integral bridge . . . . .<br>— spliced end trucks . . . . .<br>— double spliced trucks . . . . .                                                         | 1<br>2<br>3           | <sup>42</sup><br><input checked="" type="checkbox"/> BOLTED END TRUCKS                                                                                          |
| 43                 | Runway rail — standard . . . . .<br>— non standard . . . . .                                                                                                             | 1<br>2                | <sup>43</sup><br><input checked="" type="checkbox"/>                                                                                                            |
| 50                 | Painting — standard yellow . . . . .<br>— special (see addenda) . . . . .                                                                                                | 1<br>2                | <sup>50</sup><br><input checked="" type="checkbox"/>                                                                                                            |
| 51                 | Erection brackets — one set (standard) . . .<br>— one set for each crane . . . . .<br>— none required . . . . .                                                          | 1<br>2<br>3           | <sup>51</sup><br><input checked="" type="checkbox"/>                                                                                                            |
| 60-62              | Shipment date, week of . . . . .                                                                                                                                         |                       | <sup>60</sup><br><input checked="" type="checkbox"/> 21                                                                                                         |
| 63-68              | Order date . . . . .                                                                                                                                                     |                       | <sup>63</sup> <sup>65</sup> <sup>67</sup><br><input checked="" type="checkbox"/> 1 <input checked="" type="checkbox"/> 7 <input checked="" type="checkbox"/> 20 |
| 69                 | "S" Orders — required . . . . .<br>— not required . . . . .                                                                                                              | 1<br>2                | <sup>69</sup><br><input checked="" type="checkbox"/> 2                                                                                                          |
| 70                 | Engineered parts — required . . . . .<br>— not required . . . . .                                                                                                        | 1<br>2                | <sup>70</sup><br><input checked="" type="checkbox"/>                                                                                                            |
| Approved by: _____ |                                                                                                                                                                          |                       |                                                                                                                                                                 |



ITEMS CHECKED BELOW WILL BE REQUIRED FOR ORDER NO. *CTL-23540*

ELECTRICAL

ELECTRICAL

| V |     |                              | LIST NO. | STK. ORD. NO. | V |     |                       |
|---|-----|------------------------------|----------|---------------|---|-----|-----------------------|
| ✓ | E   | Electrical Material          |          |               | ✓ | E52 | Trolley Wiring        |
|   | E1  | Trolley Motor                |          |               |   | E53 | Cab Wiring            |
|   | E2  | Trolley Controller           |          |               |   | E54 | "K" Cabinet & Support |
|   | E3  | Trolley Resistance           |          |               |   |     |                       |
|   | E4  | Trolley Brake Coil           |          |               |   |     |                       |
|   | E5  | Hoist Motor                  |          |               |   |     |                       |
|   | E6  | Hoist Controller             |          |               |   |     |                       |
|   | E7  | Hoist Resistance             |          |               |   |     |                       |
|   | E8  | Hoist Brake Coil             |          |               |   |     |                       |
|   | E9  | Aux. Hoist Motor             |          |               |   |     |                       |
|   | E10 | Aux. Hoist Contr.            |          |               |   |     |                       |
|   | E11 | Aux. Hoist Resis.            |          |               |   |     |                       |
|   | E12 | Aux. Hoist Brake             |          |               |   |     |                       |
| ✓ | E13 | Switchboard or Comp. Control |          |               |   |     |                       |
|   | E14 | Line Contactor               |          |               |   |     |                       |
|   | E15 | Forcing Resistor             |          |               |   |     |                       |
|   | E16 | Forcing Resistor             |          |               |   |     |                       |
|   | E17 | Bridge Motor                 |          |               |   |     |                       |
|   | E18 | Bridge Controller            |          |               |   |     |                       |
|   | E19 | Bridge Resistance            |          |               |   |     |                       |
|   | E20 | Bridge Brake Coil            |          |               |   |     |                       |
|   | E21 | Limit Switch, Main Hoist     |          |               |   |     |                       |
|   | E22 | Relay Panel                  |          |               |   |     |                       |
|   | E23 | Hoist Panel                  |          |               |   |     |                       |
|   | E24 | Aux. Hoist Panel             |          |               |   |     |                       |
| ✓ | E25 | Bridge Panel                 |          | 2             |   |     |                       |
|   | E26 | Trolley Panel <i>WIE 25</i>  |          |               |   |     |                       |
|   | E27 | Enclosure, Main Hoist        |          |               |   |     |                       |
|   | E28 | Magnetorque, M. Hoist        |          |               |   |     |                       |
|   | E29 | Complete Control             |          |               |   |     |                       |
|   | E30 | Magnetorque, A. Hoist        |          |               |   |     |                       |
|   | E31 | Enclosure, A. Hoist          |          |               |   |     |                       |
|   | E32 | Enclosure, Trolley           |          |               |   |     |                       |
|   | E33 | Enclosure, Bridge            |          |               |   |     |                       |
|   | E34 | Reactor, M. Hoist            |          |               |   |     |                       |
|   | E35 | Reactor, A. Hoist            |          |               |   |     |                       |
|   | E36 | Reactor, Trolley             |          |               |   |     |                       |
|   | E37 | Reactor, Bridge              |          |               |   |     |                       |
|   | E38 | Limit Switch, A. Hoist       |          |               |   |     |                       |
|   | E39 | Supply Panel                 |          |               |   |     |                       |
| ✓ | E40 | Push Button Assembly & Cable |          |               |   |     |                       |
|   | E41 | Joy Stick Assembly           |          |               |   |     |                       |
|   | E42 | Rectifier Assembly           |          |               |   |     |                       |
|   | E43 | Rectifier Assembly           |          |               |   |     |                       |
|   | E44 | Magnetorque Resistor         |          |               |   |     |                       |
|   | E45 | D. D. Resistor               |          |               |   |     |                       |
|   | E46 | Rotating Hook Motor          |          |               |   |     |                       |
|   | E47 | Rotate Panel                 |          |               |   |     |                       |
|   | E48 |                              |          |               |   |     |                       |
|   | E49 |                              |          |               |   |     |                       |
|   | E50 |                              |          |               |   |     |                       |
| ✓ | E51 | Bridge Wiring                |          |               |   |     |                       |

SUBD BY *B.A.R.*

DATE *2-2-70*

Sheet 1 of 2

ORDER NO. *CTL-23540*

23-1269-3

VAR. 7-68

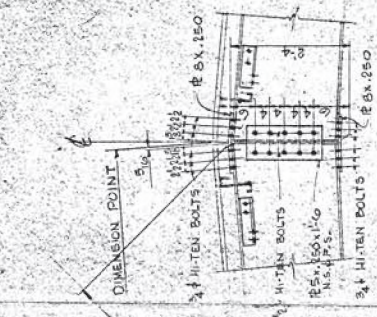
PHM Leek 04009



THIS DRAWING  
NOT TO BE USED  
FOR CONSTRUCTION

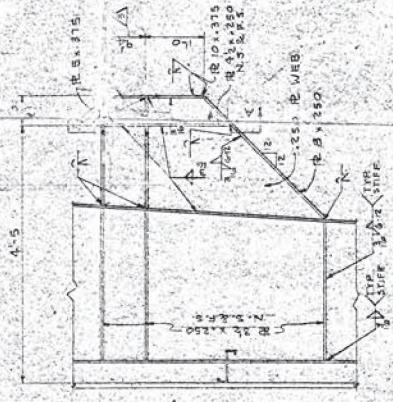
# REVISED DRAWING VOID PREVIOUS PRINTS

DATE BY



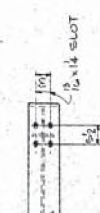
## RIDGE DETAIL

DATE BY



## CRANE BRACKET DETAIL

AT COLL. LINE 'D' THRU MA



CRANE BRACKET  
HOLE LAYOUT  
FOR CRANE TEAMS



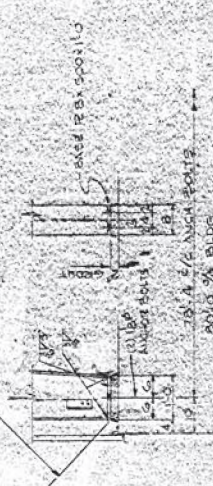
KAISER STEEL

## RIGID FRAME DETAIL

20' 0\"/>

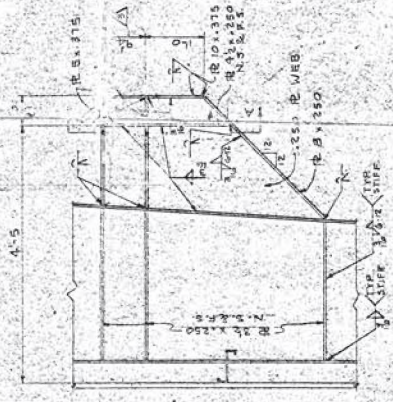
## BASE DETAIL

20' 0\"/>

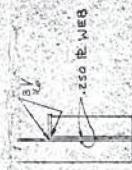


## CRANE BRACKET DETAIL

AT COLL. LINE 'C'



## SECTION A-A



NOTE:  
FOR GENERAL NOTES  
SEE DWG. S-1A-1



KAISER STEEL

U.S.P. FACILITY

CUSTOMER

LOCATION

DATE

SCALE

PROJECT

DESIGN

DRAWN

CHECKED

APPROVED

DATE

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PROJECT



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FOR CONSTRUCTION

**REVISED  
DRAWING**  
VOID PREVIOUS PRINTS

DATE \_\_\_\_\_ BY \_\_\_\_\_

NOTE:  
FOR GENERAL NOTES  
SEE DWG S-1A-1



|           |                 |
|-----------|-----------------|
| STRUCTURE | L.S.P. FACILITY |
| CUSTOMER  |                 |
| LOCATION  |                 |
| DATE      | 10-1-60         |
| BY        | S-1C-1          |
| CHKD      |                 |
| APP'D     |                 |

**KAISER STEEL CORPORATION**  
FABRICATION DIVISION  
FONTANA, NAPA, CALIFORNIA

|       |         |
|-------|---------|
| DATE  | 10-1-60 |
| BY    | S-1C-1  |
| CHKD  |         |
| APP'D |         |

**RIGID FRAME DETAIL**  
AT COL. LINES 2, 3, 4, 5, 6, 7 TO 31

**EXT. COLUMN BASE DETAIL**

**INT. COLUMN BASE DETAIL**

**SECTION AA**  
CRANE BRACKET  
HOLE LAYOUT



|         |         |
|---------|---------|
| SECTION | AA      |
| DATE    | 10-1-60 |
| BY      | S-1C-1  |
| CHKD    |         |
| APP'D   |         |



DETAIL "B"

BACK STAY BASE DETAIL

CRANE BEAM SUPPORT DETAIL  
COLS: A-14, A-16, B-14 & B-16

DETAIL "A"

DETAIL "C"

COLUMN BASE DETAIL

PRELIMINARY  
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FOR CONSTRUCTION

REVISED  
DRAWING  
VOID PREVIOUS PRINTS

DATE \_\_\_\_\_ BY \_\_\_\_\_

**KAISER  
STEEL**

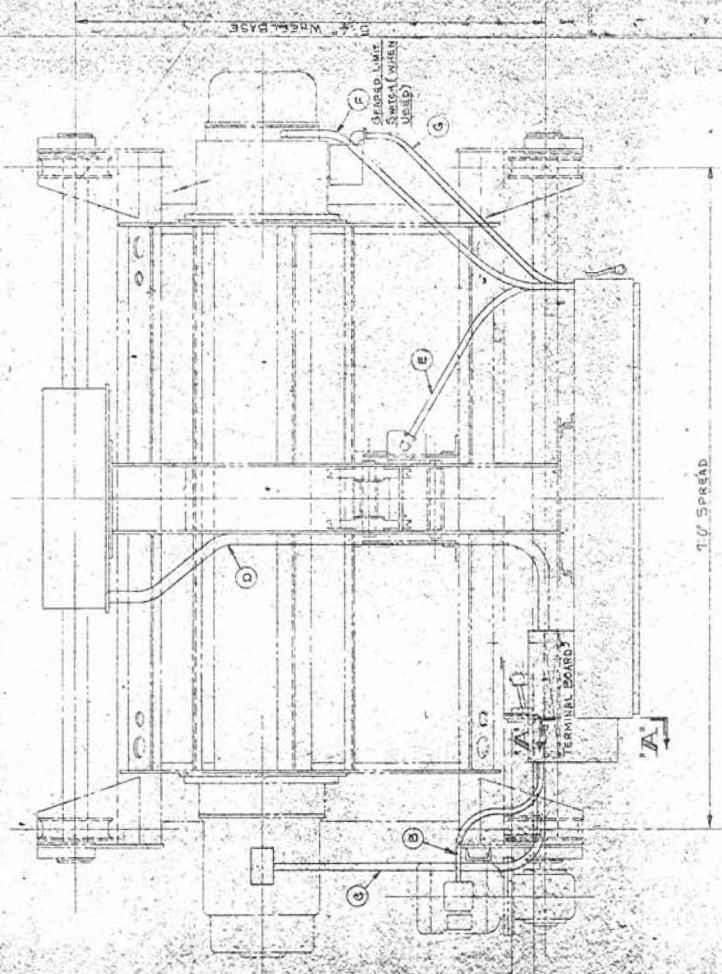
| REVISIONS |          |         |                             | BLUE PRINT RECORD |      |            |            | BLUE PRINT RECORD |            |            |           | DRAWN |                         | DATE |                          | BOLTS<br>RIVETS |  | UNLESS<br>NOTED |  |
|-----------|----------|---------|-----------------------------|-------------------|------|------------|------------|-------------------|------------|------------|-----------|-------|-------------------------|------|--------------------------|-----------------|--|-----------------|--|
| REV. NO.  | DATE     | MADE BY | DESCRIPTION                 | REASON            | DATE | NO. PRINTS | FOR REVIEW | DATE              | NO. PRINTS | FOR REVIEW | CHECKED   | DATE  | HOLES                   |      |                          |                 |  |                 |  |
| 1         | 07-15-68 | BY JH   | GENERAL REVISION            |                   |      |            |            |                   |            |            |           |       |                         |      |                          |                 |  |                 |  |
| 2         | 11-15-68 | BY JH   | DOWN TO 30" DIA BEAMS COUNT |                   |      |            |            |                   |            |            |           |       |                         |      |                          |                 |  |                 |  |
| 3         | 12-01-68 | BY JH   | CRANE BEAM HEIGHT           |                   |      |            |            |                   |            |            |           |       |                         |      |                          |                 |  |                 |  |
|           |          |         |                             |                   |      |            |            |                   |            |            | IN CHARGE |       | PAINTED SHOP CT. GOLDEN |      | TAN ZINC CHROMATE PRIMER |                 |  |                 |  |

**KAISER STEEL CORPORATION**  
FABRICATION DIVISION    FONTANA - NAPA, CALIFORNIA

STRUCTURE L.S.P. FACILITY  
CUSTOMER \_\_\_\_\_  
LOCATION \_\_\_\_\_  
DRWG. TITLE "A" - FRAME DETAIL BLDGB

JOB NO. PJ-600  
DRG. REF. NO.  
SH. S-1B-2 REV. 3





SECTION A-A

| ITEM NO. | QUANTITY | DESCRIPTION               | UNIT        |
|----------|----------|---------------------------|-------------|
| 1        | 1        | JUNCTION BOX              | 3H637-F1    |
| 2        | 1        | TERMINAL BOX              | 152-105-D15 |
| 3        | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 4        | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 5        | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 6        | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 7        | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 8        | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 9        | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 10       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 11       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 12       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 13       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 14       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 15       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 16       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 17       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 18       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 19       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 20       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 21       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 22       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 23       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 24       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 25       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 26       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 27       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 28       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 29       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 30       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 31       | 1        | 1/2" TYPE EF SEAMLESS COP |             |
| 32       | 1        | 1/2" TYPE EF SEAMLESS COP |             |

| CONDUIT | DESCRIPTION    | NUMBER | TYPE OF WIRE IN CONDUIT |
|---------|----------------|--------|-------------------------|
| A       | 2 1/2" CONDUIT | 1      | 1-#10 TYPE T1W WIRE     |
| B       | 1/2" SEAMLESS  | 1      | 1-#12 TYPE T1W WIRE     |
| C       | 1/4" CONDUIT   | 1      | 1-#12 TYPE T1W WIRE     |
| D       | 1/4" SEAMLESS  | 1      | 1-#12 TYPE T1W WIRE     |
| E       | 1/2" SEAMLESS  | 1      | 1-#12 TYPE T1W WIRE     |
| F       | 1/2" SEAMLESS  | 1      | 1-#12 TYPE T1W WIRE     |
| G       | 1/2" SEAMLESS  | 1      | 1-#12 TYPE T1W WIRE     |
| H       | 3" PIPE        | 1      | 1-#12 TYPE T1W WIRE     |

|         |                           |
|---------|---------------------------|
| FIG. 1  | 1/2" TYPE EF SEAMLESS COP |
| FIG. 2  | 1/2" TYPE EF SEAMLESS COP |
| FIG. 3  | 1/2" TYPE EF SEAMLESS COP |
| FIG. 4  | 1/2" TYPE EF SEAMLESS COP |
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