CUI

ATTENTION

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Controlled by: CELRP-CT, CELRP-OPT-M
CUI Category: CTI
Limited Dissemination Control: FED ONLY
POC: Paul Amicucci, (412) 500-6872

ATTENTION

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Standard Form 901 (11-18)
Prescribed by GSA/ISOO | 32 CFR 2002

CUI

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CORPS OF ENGINEERS

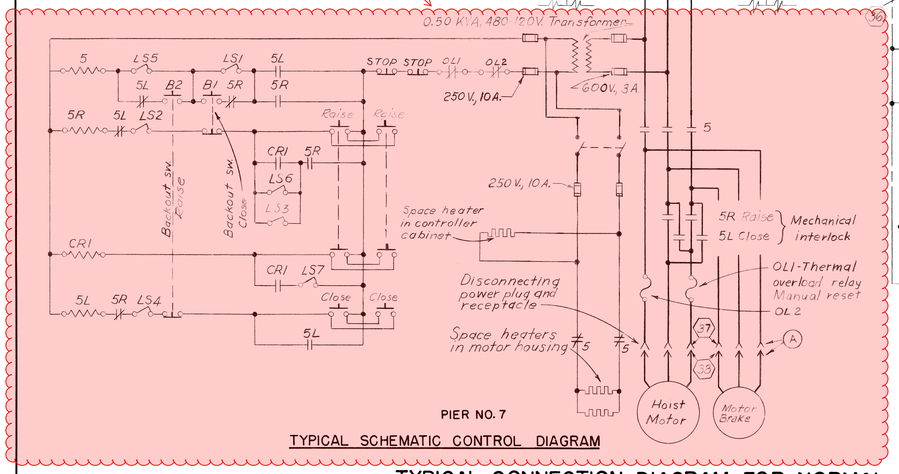
U. S. ARMY

GATE OPERATING SEQUENCE

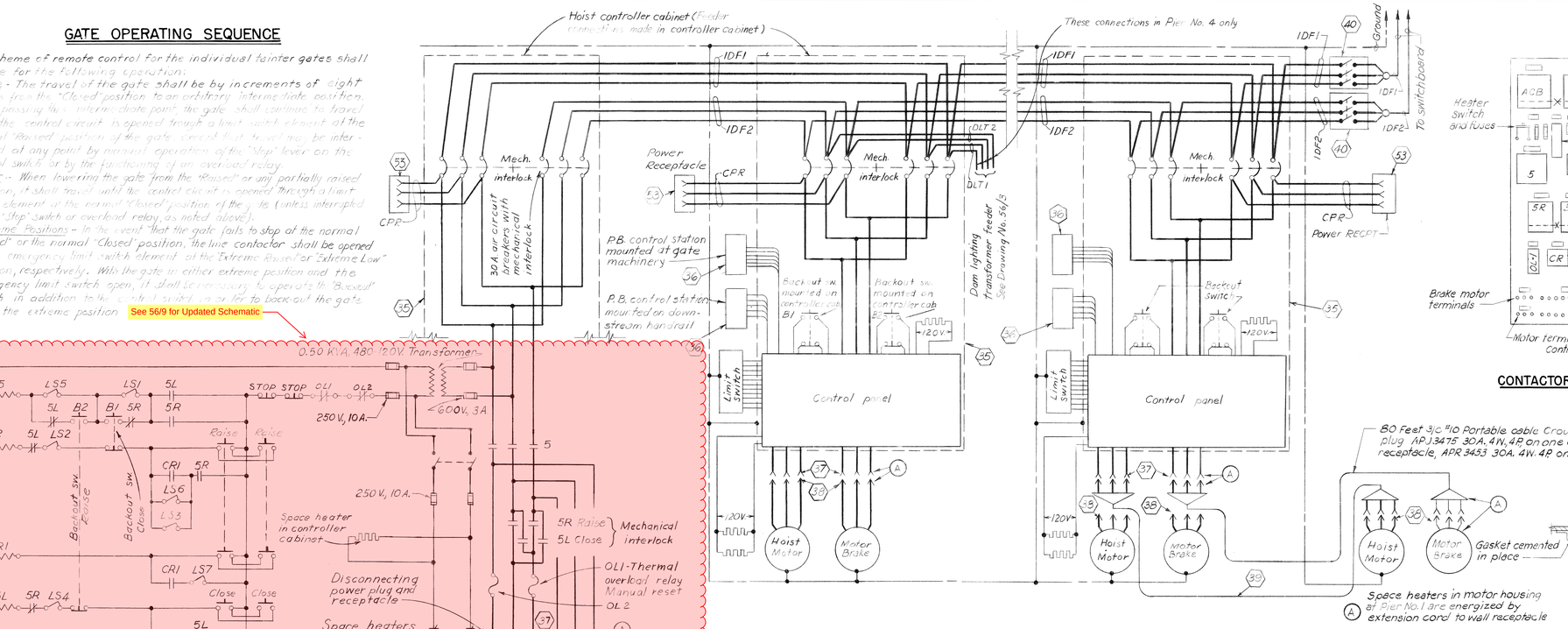
The scheme of remote control for the individual tainter gates shall provide for the following operation:

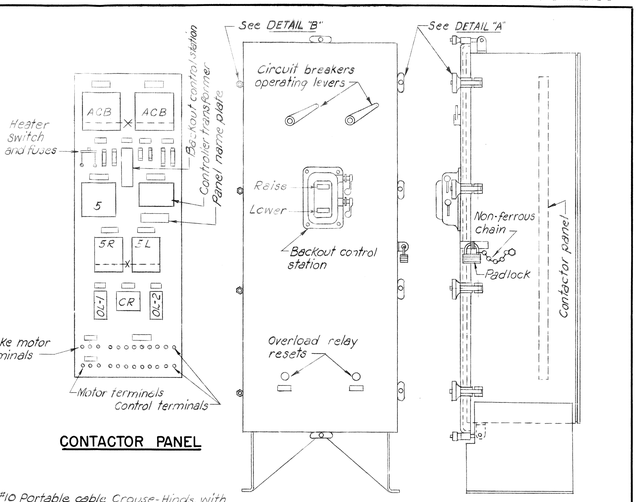
1. Raise - The travel of the gate shall be by increments of eight inches from the "Closed" position to an arbitrary intermediate position. After passing this intermediate point the gate shall continue to travel until the control circuit is opened through a limit switch element at the normal "Raised" position of the gate, except that travel may be interrupted at any point by manual operation of the "Stop" lever on the control switch or by the functioning of an overload relay.
2. Lower - When lowering the gate from the "Raised" or any partially raised position, it shall travel until the control circuit is opened through a limit switch element at the normal "Closed" position of the gate (unless interrupted by the "Stop" switch or overload relay as noted above).
3. Extreme Positions - In the event that the gate fails to stop at the normal "Raised" or the normal "Closed" position, the line contactor shall be opened by an emergency limit switch element at the "Extreme Raised or Extreme Low" position, respectively. With the gate in either extreme position and the emergency limit switch open, it shall be necessary to operate the "Backout" switch in addition to the control switch in order to back-out the gate from the extreme position.

See 56/9 for Updated Schematic

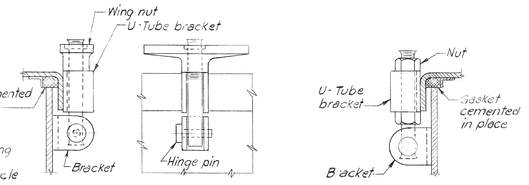


TYPICAL SCHEMATIC CONTROL DIAGRAM





CONTACTOR PANEL

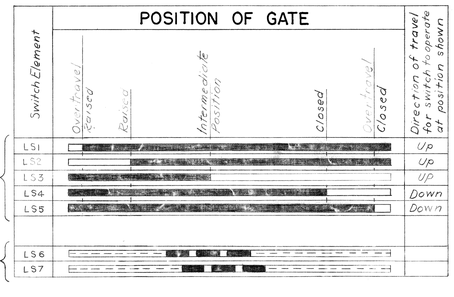


DETAIL "A"

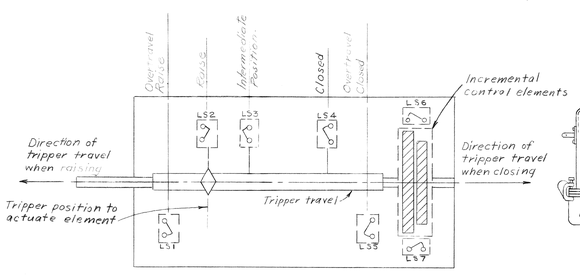
DETAIL "B"

MOTOR CONTROLLER

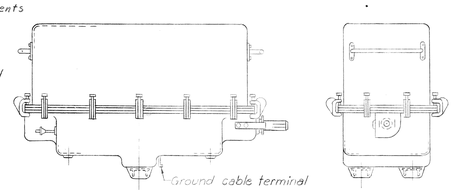
TYPICAL CONNECTION DIAGRAM FOR NORMAL OPERATION



LIMIT SWITCH SEQUENCE OF OPERATION



ARRANGEMENT OF ELEMENTS



ASSEMBLY

LIMIT SWITCH

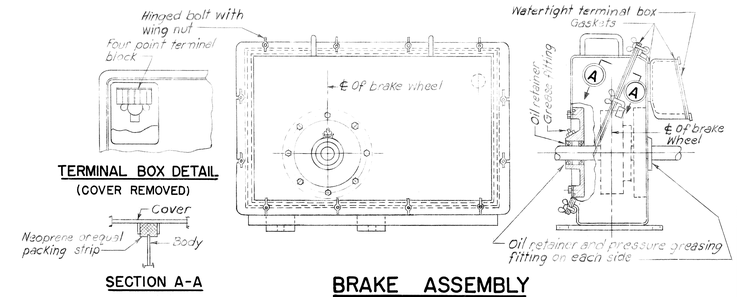
TYPICAL CONNECTION DIAGRAM FOR EMERGENCY OPERATION

CABINET NAME PLATE SCHEDULE

ITEM NO.	CABINET LOCATION	NAME PLATE LOCATION	INSCRIPTION LINE NO. 1	INSCRIPTION LINE NO. 2	NO. REQ'D.
X	Piers Nos. 2-7 incl.	Front of controller cabinet	Controller	Gate No. (Indicate gate number)	6
Y	Piers Nos. 2-7 incl.	Front of controller cabinet	Backout	Switch-Raise & Switch-Lower	6 each
Z	Piers Nos. 2-7 incl.	Front of controller cabinet	Overload	Reset	6

EQUIPMENT IN CONTROLLER CABINET AND NAME PLATE SCHEDULE

ITEM NO.	DESCRIPTION OF EQUIPMENT	NAME PLATE LINE NO. 1	NAME PLATE LINE NO. 2	NO. REQ'D.
A	40 amp., 3 pole, 600 volt air circuit breaker, externally operated	Feeder		6
B	40 amp., 3 pole, 600 volt air circuit breaker, externally operated	Feeder		6
C	Size 1, 3 pole, 440 volt contactor with 110 volt operating coil and 2 N.C. auxiliary contacts	Line-5		6
D	Size 1, 2 pole, 440 volt contactor with 110 volt operating coil and 2 N.O. and 2 N.C. auxiliary contacts	Raise-5R		6
E	Size 1, 2 pole, 440 volt contactor with 110 volt operating coil and 2 N.O. and 2 N.C. auxiliary contacts	Close -5L		6
F	2 element, 440 volt, inverse time, hand reset, thermal overload relay	Overload	Relay - OL1	6
G	2 pole, 110 volt contactor with 2 N.O. contacts, Size 1	Control	Relay - CR1	6
H	Heavy duty P.B. sta. for flush mtg. with 1 mom. contact button marked "Open"	See cabinet N.P. item Y		6
J	Heavy duty P.B. sta. for flush mtg. with 1 mom. contact button marked "Close"	See cabinet N.P. item Y		6
K	Ebony asbestos panel, size to suit			6
L	Control terminal studs, back connected			As Req'd.
M	3/8" cadmium plated brass stud with nuts & washers for motor & brake terminals			36
N	0.50 KVA, 1ø, 60~, 480-120V dry type transformer	Heater & Control	Transformer	6
O	30A, 600V, 2 pole fuse cutout			6
P	3A, 600V. Cartridge fuse			12
Q	10A, 250V. Cartridge fuse			12
R	30A, 250V., 2 pole, fuse cut out			6



BRAKE ASSEMBLY

GENERAL NOTES:
1. Numbers in hexagons refer to items listed on Dwg. 29/8.

REVISION	DATE	DESCRIPTION	BY
A	29 FEB 60	PIER NO. 1, MOTOR BRAKE, PORTABLE CABLE AND NOTE ADDED. PIERS NO. 2 TO 7, ITEMS 37 & 38 ADDED	EJS

GRAPHIC SCALE

TIPPETTS-ABBETT-McCARTHY-STRATTON
NEW YORK, N. Y.

CORPS OF ENGINEERS, U. S. ARMY
OFFICE OF THE DISTRICT ENGINEER
PITTSBURGH, PENNSYLVANIA

DRAWN BY: S.W.P
TRACED BY: M.S.
CHECKED BY: J.K.
SUBMITTED BY: W. J. Tippetts, PARTNER
APPROVAL RECOMMENDED: CHIEF ENGINEERING ASSISTANT
APPROVED FOR: DATE:

MONONGAHELA RIVER
HILDEBRAND LOCK AND DAM
DAM
ELECTRICAL SYSTEM
TAINTER GATE WIRING DIAGRAM

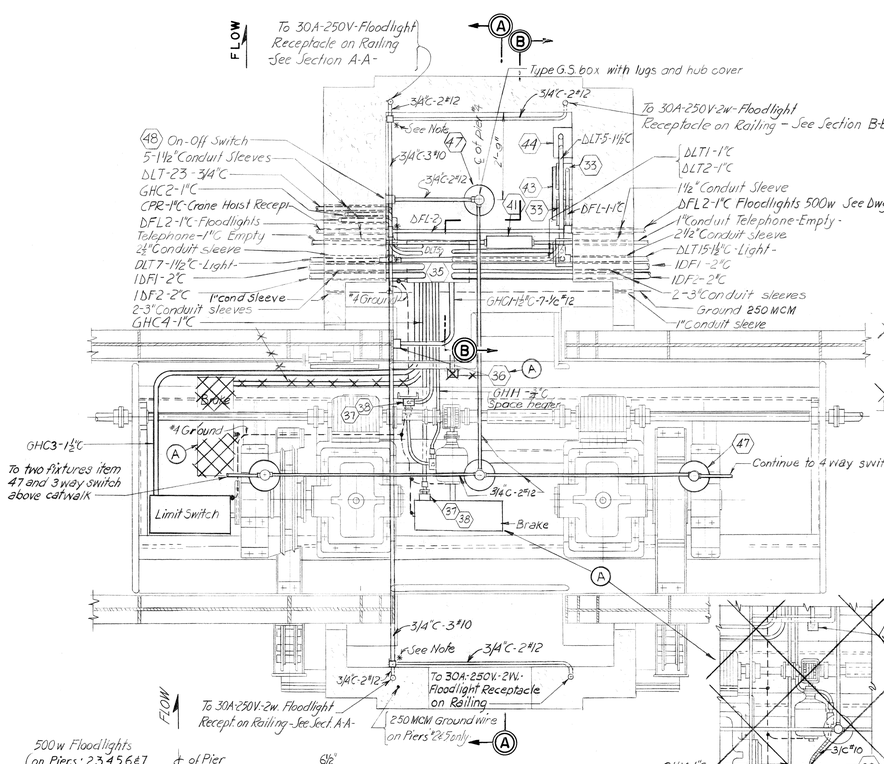
APPROVED: COLONEL, CORPS OF ENGINEERS, DISTRICT ENGINEER
DATE: 31 JAN 1956
SCALE: NO SCALE
SPEC. NO.:
DRAWING NUMBER 037-LHI-56/1.1
SHEET 1 OF 3

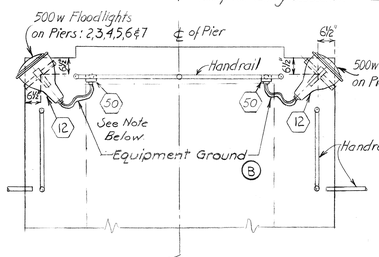
13-15

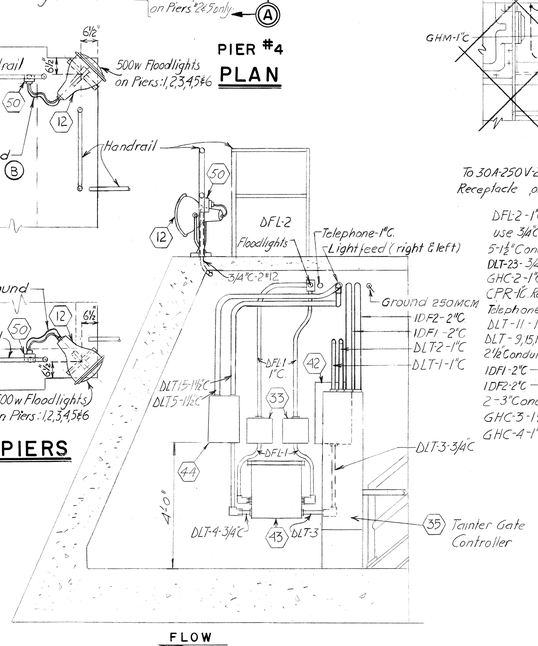
"AS BUILT" - 29 FEBRUARY 1960

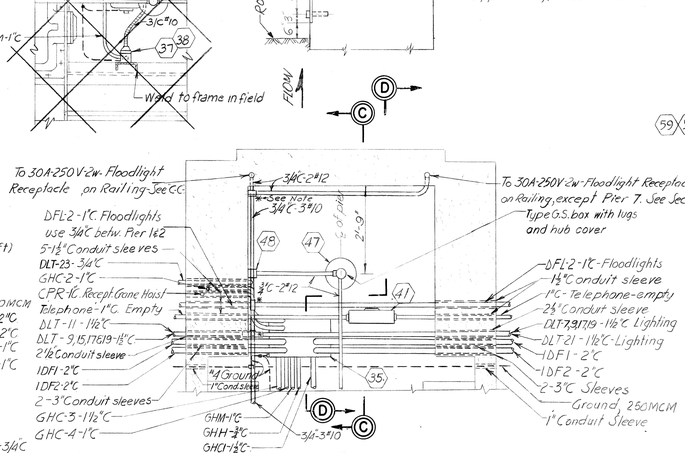
A. & B. SMITH CO., PGH., PA.
PR 2093-454

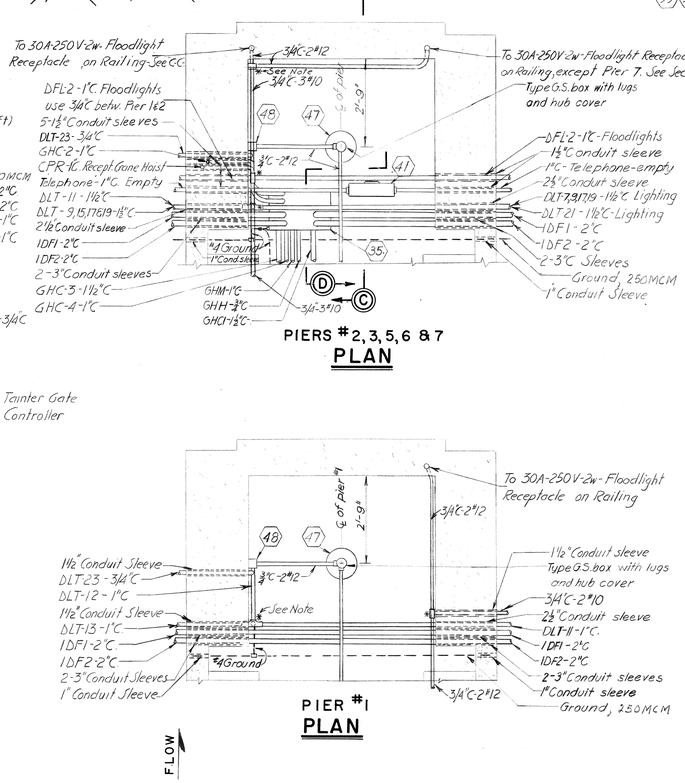
CUI

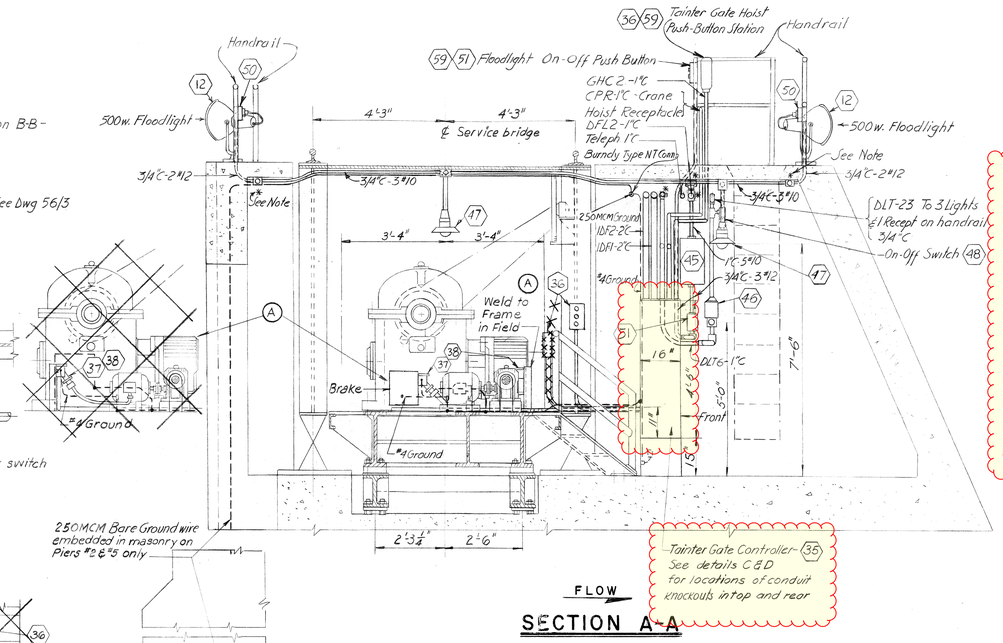


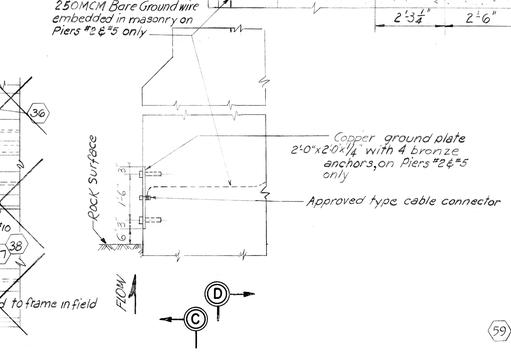


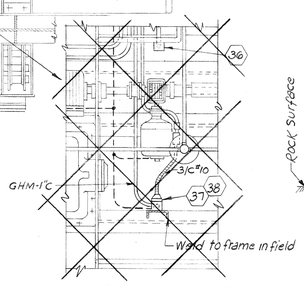


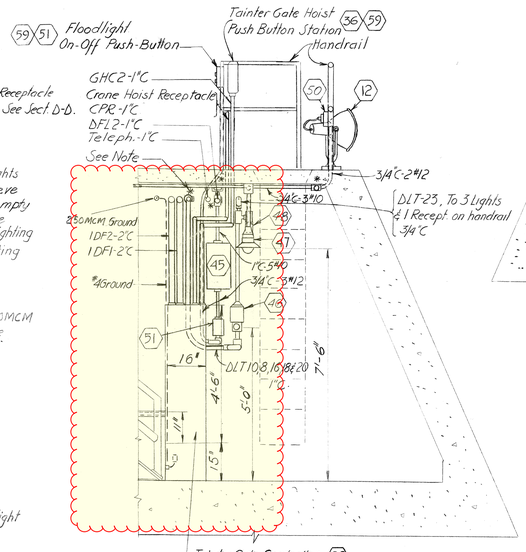


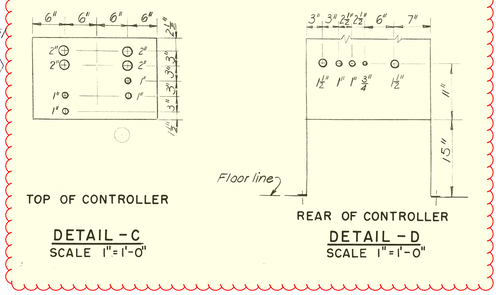


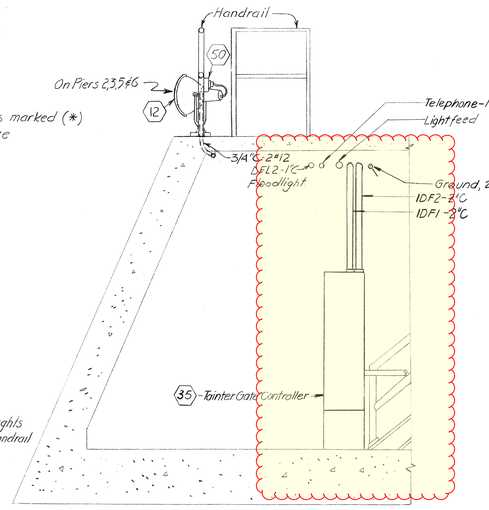












NOTE:
Conduit Fittings marked (*) are mogul size

NOTE:
(3A) Receptacle 10A-125V-A.C. Russelé Stoll Cat # 4791LP with Plug # 452

REVISION	DATE	DESCRIPTION	BY
B	29 FEB 60	TOP VIEW OF PIERS: EQUIPMENT GROUND ADDED.	ES
A	29 FEB 60	PIER #4: BRAKE, ITEMS 36, 37 & 38 RELOCATED.	ES

GRAPHIC SCALE
½" = 1'-0"
1" = 1'-0"

TIPPETTS-ABBETT-McCARTHY-STRATTON
NEW YORK, N. Y.

CORPS OF ENGINEERS, U.S. ARMY
OFFICE OF THE DISTRICT ENGINEER
PITTSBURGH, PENNSYLVANIA

DRAWN BY: I.L.
TRACED BY: M.S.
CHECKED BY: E.F
SUBMITTED BY: W. J. Tippetts PARTNER

MONONGAHELA RIVER
HILDEBRAND LOCK AND DAM
DAM
ELECTRICAL SYSTEM
TAINTER GATE EQUIPMENT INSTALLATION

APPROVAL RECOMMENDED: CHIEF ENGINEERING ASSISTANT
APPROVED: COLONEL, CORPS OF ENGINEERS, DISTRICT ENGINEER
DATE: 31 JAN 1956
APPROVED FOR:
DATE:
SCALE: AS NOTED
SPEC. NO.:
DRAWING NUMBER 037-LHI-56/21
SHEET 2 OF 3

12-15

"AS BUILT" - 29 FEBRUARY 1960

EUGENE DIETZGEN CO., PGH., PA.

CUI

480V, 3Ø, 60 HZ
EMERGENCY POWER 1 L1 1 L2 1 L3
NORMAL POWER 2L1 2L2 2L3
1CB
2CB
B1
B2
B3
BRAKE MOTOR
(PLUG AT MOTOR)
PCM
PCR
PCL
TOL
OVERCURRENT RELAY
HOIST MOTOR
1HR
6A
480V
120V
CABINET HEATER
MOTOR HEATER
BACKOUT LOWER
BACKOUT RAISE
STOP GATE
RAISE GATE
LOWER GATE
LSA
LSE
LSD
LSB
LSC
LSR-2
1CR
PCM1
PCR1
PCL1
EXISTING WIRING FROM MOTOR STARTER WIRING TO NEW TERMINAL BLOCKS AS SHOWN
THE CONTRACTOR SHALL RECONNECT THE EXISTING WIRING TO THE NEW TERMINAL BLOCKS AND RETAIN THE EXISTING TERMINAL BLOCK IDENTIFICATION
EXISTING T.B.'S
NEW T.B.'S
EXIST. T.B.'S
120 VAC
NEUTRAL
DI-1
DI-2
DI-3
DI-4

TYPICAL ALL TAINTER GATES
(6 GATES)

LEGEND
NEW WORK
EXISTING WORK
RECONNECT WIRES
STATION
DOOR

EXISTING 2/C•12 WITH •12 GND, ¾" CONDUIT TO LIGHTING PANEL.
120 VAC
LOCAL GATE CONTROL STATION
DOOR SWITCH
THERMOSTAT
HEATER
POWER SUPPLY
CPU MODULE
FSK/LEASE LINE MODEM MODULE
ANALOG I/O MODULE
DIGITAL I/O MODULE
DO-1
DO-2
DO-3
DO-4
DO-5
DO-6
DI-1
DI-2
DI-3
DI-4
DI-5
DI-6
TRANSIENT SURGE SUPPRESSOR/LINE CONDITIONER
PANEL POWER
10 AMPS
POWER ON
10.7
DIGITAL DISPLAY
COMM. FAULT
OVERLOAD
LAMP TEST
LOCAL ON
LOCAL REMOTE
DOOR MOUNTED DEVICES
POWER SUPPLY
REUSE EXISTING WIRING TO GATE POSITION SENSOR
REMOVE EXIST. T.B.'S
3/C •18 SHIELDED WIRE
EXISTING 2 CONDUCTOR WITH SHIELD
EXISTING GATE POSITION SENSOR TO REMAIN
25W

NOTES:
1. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF THE EXISTING TERMINAL BLOCKS TO INSURE THAT WIRING DESIGNATED TO BE REUSED WILL REACH THE NEW TERMINAL BLOCK LOCATION.
2. EXISTING LOCAL CONTROL PANELS SHALL BE REMOVED.
3. SYSTEM SHALL OPERATE IDENTICAL TO PRESENT SYSTEM.

← NEW ENCLOSURE W/EQUIPMENT SUBPANEL FIBERGLASS NEMA 4X, WALL MOUNT TYPE 48"Hx24"Wx12"D

AS-BUILT DRAWING
CERTIFIED AS CORRECT
BY Donald S. Kite 12-6-07
NAME DATE

REVISION	DATE	DESCRIPTION	BY

GRAPHIC SCALE

U.S. ARMY ENGINEER DISTRICT, PITTSBURGH
CORPS OF ENGINEERS
OFFICE OF THE DISTRICT ENGINEER
PITTSBURGH, PENNSYLVANIA

MONONGAHELA RIVER
HILDEBRAND LOCK AND DAM
DAM
UPGRADING REMOTE CONTROL SYSTEM-DAM GATES
ELECTRICAL SYSTEM
TAINTER GATES
LOCAL CONTROL PANEL DIAGRAM

DESIGNED	DRAWN	CHECKED	DATE	SCALE	DWG. NO.
JJF/AJZ	JJF	jjf	9 June 1998	AS SHOWN	037-LHI- 56/9

SUBMITTED: John E. Witte, SECTION CHIEF
F&AO. DACW59
SHEET OF

08-JUN-1998 eneal f:*remote control dam gates*elec*lhi5609.dgn AS-48 PLOT @ 4:1

CUI

CABLE NO.	FROM	TO	FOR	NO. COND.	MCM OR AWG	CIRCUIT VOLTAGE
M F	Main Power Supply	Switchboard-Panel No.2	Switchboard Power Supply	3-1/c	3/0	600 V.
E F	Stand-by Unit	Switchboard-Panel No.1	Switchboard Emergency Feeder	3-1/c	3/0	600 V.
POP1	Switchboard-Panel No.3	Oil Pump No.1	Power-Oil Pump No.1	3-1/c	8	600 V.
POP2	Switchboard-Panel No.3	Oil Pump No. 2	Power-Oil Pump No.2	3-1/c	8	600 V.
POP3	Switchboard-Panel No.3	Oil Pump No. 3	Power-Oil Pump No.3	3-1/c	8	600 V.
P R W	Switchboard-Panel No.4	Service Water Pump Motor	Power-Service Water Pump	3-1/c	8	600 V.
P A C	Switchboard-Panel No.4	Air Compressor Motor	Power-Air Compressor	3-1/c	8	600 V.
C A C	Switchboard-Panel No.4	Air Compressor Unloader	Control-Air Compressor	2-1/c	12	600 V.
P P H	Switchboard-Panel No.3	Pressure Holding Pump Motor	Power-Pressure Holding Pump	3-1/c	10	600 V.
P F W	Switchboard-Panel No.4	Domestic Water Pump Motor	Power-Domestic Water Pump	3-1/c	10	600 V.
P R	Switchboard-Panel No.5	Power Receptacles	Power Receptacles	3/c	6	600 V.
T F 1	Switchboard-Panel No.5	Lighting Transformer No.1	Lighting Transformer No.1 Feeder	2-1/c	8	600 V.
T F 2	Switchboard-Panel No.5	Lighting Transformer No. 2	Lighting Transformer No.2 Feeder	2-1/c	8	600 V.
L T 1	Lighting Transformer No.1	Switchboard-Panel No.5	Transformer Transfer Switch	3-1/c	4	600 V.
L T 2	Lighting Transformer No.2	Switchboard-Panel No.5	Transformer Transfer Switch	3-1/c	4	600 V.
E D	Switchboard-Panel No.5	Emergency Dam	Power-Emergency Dam	3/c	#6	600 V.
U G L	Switchboard-Panel No.6	Upper Guide Wall Lights J.B.#162	Upper Guide Wall Lights	3/c	#6	600 V.
U G L1	Upper Guide Wall Lights J.B. #2	Upper Guide Wall Lights J.B. #3	Upper Guide Wall Lights	2/c	#6	600 V.
U G L 2	Upper Guide Wall Lights Junction Boxes	Upper Guide Wall Lights	Upper Guide Wall Lights	2/c	#12	600 V.
L W L	Switchboard-Panel No.6	Lock Wall Lights J.B. #100 & #101	Lock Wall Lights	3/c	#2	600 V.
L W L1	Lock Wall Lights J.B. #100 & #101	Land Wall Lights J.B. # 88 #13	Land Wall Lights	3/c	#8	600 V.
L W L 2	Land Wall Lights J.B. #4,5,6,7 & 8	Land Wall Lights	Land Wall Lights	2/c	#12	600 V.
R W L1	Lock Wall Lights J.B. #101	River Wall Lights J.B. #13	River Wall Lights	3/c	#8	600 V.
R W L 2	River Wall Lights J.B. #9,10,11,12 & 13	River Wall Lights J.B. #13	River Wall Lights	2/c	#12	600 V.
G H	Switchboard-Panel No.6	Gage House J.B. #27	Gage House Light & Receptacle	2/c	# 8	600 V.
G H1	Gage House J.B. #27	Gage House Light & Receptacle	Gage House Light & Receptacle	2/c	#12	600 V.
G L	Switchboard-Panel No.6	Lock Gate Lights J.B. #102 & #16	Lock Gate Lights	3/c	#6	600 V.
G L 1	Lock Gate Lights J.B. #16	Lock Gate Lights J.B. #17	Lock Gate Lights	2/c	#6	600 V.
G L 2	Lock Gate Lights J.B. #102	Lock Gate Lights J.B. # 14 & 15	Lock Gate Lights	2/c	#8	600 V.
G L 3	Junction Boxes	Lock Gate Lights	Lock Gate Lights	2/c	#12	600 V.
L G L	Switchboard-Panel No.6	Lower Guide Wall Lights J.B. #18 & 19	Lower Guide Wall Lights	3/c	#6	600 V.
L G L1	Lower Guide Wall Lights J.B. #19	Lower Guide Wall Lights J.B. #20	Lower Guide Wall Lights	2/c	#6	600 V.
L G L 2	Junction Boxes #18,19 & 20	Lower Guide Wall Lights	Lower Guide Wall Lights	2/c	#12	600 V.
N A L	Switchboard-Panel No.6	Navigation Lights J Boxes	Navigation Lights	2/c	#8	600 V.
N A L1	Navigation Lights Junction Boxes	Navigation Lights	Navigation Lights	2/c	#14	600 V.
G R R	Switchboard-Panel No.6	Gate Recess Receptacles J.B. #105, 106, 107	Gate Recess Receptacles	2/c	#6	600 V.
G R R1	Gate Recess Receptacle Junction Boxes	Gate Recess Receptacles	Gate Recess Receptacles	2/c	#8	600 V.
F L	Switchboard-Panel No.6	Flood Lights J.B. #32 & 34	Flood Lights	2/c	#6	600 V.
F L 1	Junction Box #32	Junction Box #33	Flood Lights	2/c	#8	600 V.
F L 2	Flood Lights Junction Boxes	Flood Lights	Flood Lights	2/c	#12	600 V.
F L B	Junction Box #34	Emergency Dam Structure	Flood Lights	2/c	#8	600 V.
T T	Switchboard-Panel No.6	Tell-Tale Panel	Approach Lights	2-1/c	#10	600 V.
T T 1	Upstream Control Station	T.B. #301	Approach Lights	5/c	#12	600 V.
T T 2	T.B. #301	Tell-Tale Panel	Approach Lights	5/c	#10	600 V.
T T 3	Approach Lights No.1	Tell-Tale Panel	Approach Lights	3/c	#6	600 V.
T T 4	Approach Lights No.2	Tell Tale Panel	Approach Lights	3/c	#6	600 V.
T T 5	Tell-Tale Panel	Pneumatic Timing Relay	Approach Lights	4-1/c	#12	600 V.
V 1	J.B. # 28	T.B. #200	Land Wall Emptying Valve Limit Sw.	5/c	#10	600 V.
V 2	J.B # 29	T.B. #202	Land Wall Filling Valve Limit Sw.	5/c	#10	600 V.
V 3	J.B #30	T.B #204	River Wall Emptying Valve Limit Sw.	5/c	#10	600 V.
V 4	J.B. #31	T.B. #204	River Wall Filling Valve Limit Sw.	5/c	#10	600 V.
V 5	T.B. #204	T.B #202	River Wall Valves Limit Switches	12/c	#10	600 V.
V 6	T.B. #200	T.B #202	Valve Limit Switches	7/c	#10	600 V.
V 7	T.B. #200	T.B. #202	Valve Limit Switches	12/c	#10	600 V.
V 8	T.B #200	Downstream Control Station	Valve Limit Switches	7/c	#12	600 V.
V 9	T.B #200	Downstream Control Station	Valve Limit Switches	12/c	#12	600 V.
V 10	T.B. #202	Upstream Control Station	Valve Limit Switches	7/c	#12	600 V.
V 11	T.B. #202	Upstream Control Station	Valve Limit Switches	12/c	#12	600 V.
V 12	Junction Boxes	Valve Limit Switches	Valve Limit Switches	5/c	#12	600 V.
L C	Switchboard-Panel No.6	Lighting Panel LC2	Operation Building Lighting	3-1/c	# 6	600 V.
L P1	T.B. #201	Downstream Control Station	Light & Pump Controls	12/c	#12	600 V.
L P2	T.B. #203	Upstream Control Station	Light & Pump Controls	12/c	#12	600 V.
C 1	Switchboard-Panel No.4	T.B. #201	Air Compressor Control	5/c	#10	600 V.
C 2	Switchboard-Panel No.4	T.B. #203	Air Compressor Control	5/c	#10	600 V.
L 1	Switchboard-Panel No.6	T.B. #201	Light Controls	12/c	#10	600 V.
L 2	Switchboard-Panel No.6	T.B. #203	Light Controls	12/c	#10	600 V.
P 1	Switchboard-Panel No.3	T.B. #201	Oil Pump Controls	12/c	#10	600 V.
P 2	Switchboard-Panel No.3	T.B. #203	Oil Pump Controls	12/c	#10	600 V.
X Y	Switchboard-Panel No.6	T.B. #202	Valve Position Indication	2/c	#8	600 V.
V T	Switchboard-Panel No.7	T.B. #300	Visual Traffic System	12/c	#10	600 V.
V T1	Switchboard-Panel No.7	T.B. #300	Visual Traffic System	5/c	#10	600 V.
V T 2	T.B. #300	J.B. # 42	Visual Traffic System	2/c	#10	600 V.
V T 3	T.B. #300	Downstream Land Wall Gate Switch	Visual Traffic System	2/c	#12	600 V.
V T 4	T.B. #300	Downstream Traffic Light	Visual Traffic System	5/c	#12	600 V.
V T 5	T.B. #300	Downstream Control Station	Visual Traffic System	9/c	#12	600 V.
V T 6	T.B. #300	Downstream Control Station	Visual Traffic System	9/c	#12	600 V.
V T 7	J.B. #37	Downstream River Wall Gate Switch	Visual Traffic System	2/c	#12	600 V.
V T 8	Switchboard-Panel No.7	T.B. #301	Visual Traffic System	12/c	#10	600 V.
V T 9	Switchboard-Panel No.7	T.B. #301	Visual Traffic System	5/c	#10	600 V.
V T 10	T.B. #301	J.B. # 43	Visual Traffic System	2/c	#12	600 V.
V T 11	T.B. #301	Upstream Land Wall Gate Switch	Visual Traffic System	2/c	#12	600 V.
V T 12	T.B. #301	Upstream Traffic Light (On emerg. dam Struct)	Visual Traffic System	5/c	#12	600 V.
V T 13	T.B. #301	Upstream Control Station	Visual Traffic System	9/c	#12	600 V.
V T 14	T.B. #301	Upstream Control Station	Visual Traffic System	9/c	#12	600 V.
V T 15	J.B. #38	Upstream River Wall Gate Switch	Visual Traffic System	2/c	#12	600 V.
D F 1	Switchboard-Panel No.5	Water Tight Safety Switch No 1	Service Bridge Feeder No 1	3/c	#2	600 V.
D F 2	Switchboard-Panel No.5	Water Tight Safety Switch No 2	Service Bridge Feeder No 2	3/c	#2	600 V.
I D F 1	Water Tight Safety Switch No 1	Controller Cabinet	Gate Hoist	3-1/c	#2	600 V.
I D F 2	Water Tight Safety Switch No 2	Controller Cabinet	Gate Hoist	3-1/c	#2	600 V.
G H M	Controller Cabinet	Gate Hoist Motor	Gate Hoist	3-1/c	#10	600 V.
G H C1	Controller Cabinet	P.B. Control Station At Machinery	Control-Gate Hoist	7-1/c	#12	600 V.
G H C2	Controller Cabinet	P.B. Control Station At Handrail	Control-Gate Hoist	5-1/c	#12	600 V.
G H C3	Controller Cabinet	Limit Switch	Control-Gate Hoist	12-1/c	#12	600 V.
G H C4	Controller Cabinet	Gate Hoist Motor Brake	Gate Hoist	3-1/c	#10	600 V.
G H H	Controller Cabinet	Hoist Motor Space Heater	Motor Space Heater	2-1/c	#12	600 V.
C P R	Controller Cabinet	Power Receptacle	Crane Hoist	3-1/c	#10	600 V.
D L T1	Controller Cabinet No. 4	D.P.D.T. Safety Switch	Lighting Transformer	2-1/c	# 8	600 V.
D L T 2	Controller Cabinet No 4	D.P.D.T. Safety Switch	Lighting Transformer	2-1/c	# 8	600 V.
D L T 3	D.P.D.T. Safety Switch	Lighting Transformer	Spillway Lighting	2-1/c	# 8	600 V.
D L T 4	Lighting Transformer	Lighting Contactor	Spillway Lighting	3-1/c	#10	600V
D L T 5	Lighting Contactor	Splice Box-Pier No.4-Left	Spillway Lighting	7-1/c	#10	600V.
D L T 6	SpliceBox-Pier No.4-Left	Fuse Box-Pier No.4	Spillway Lighting	3-1/c	#10	600V
D L T 7	SpliceBox-Pier No.4	SpliceBox-Pier No.3	Spillway Lighting	7-1/c	#10	600V

CABLE NO.	FROM	TO	FOR	NO. COND.	MCM OR AWG	CIRCUIT VOLTAGE
D L T 8	Splice Box-Pier No.3	Fuse Box-Pier No.3	Spillway Lighting	3-1/c	#10	600V
D L T 9	Splice Box-Pier No.3	Splice Box-Pier No.2	Spillway Lighting	7-1/c	#10	600 V.
D L T 10	Splice Box-Pier No.2	Fuse Box-Pier No.2	Spillway Lighting	3-1/c	#10	600 V.
D L T 11	Splice Box-Pier No.2	Splice Box-Pier No.1	Spillway Lighting	5-1/c	#10	600 V.
D L T 12	SpliceBox-Pier No.1	Fuse Box-Pier No.1	Spillway Lighting	3-1/c	#10	600 V.
D L T 13	SpliceBox-Pier No.1	Fuse Box-Pier A	Spillway Lighting	5-1/c	#10	600 V.
D L T 14	FuseBox-Pier A	Push Button Stations-Pier A	Spillway Lighting	3-1/c	#10	600 V.
D L T 15	Lighting Contactor	SpliceBox-Pier No.5	Spillway Lighting	7-1/c	#10	600 V.
D L T 16	SpliceBox-Pier No.5	Fuse Box-Pier No.5	Spillway Lighting	3-1/c	#10	600 V.
D L T 17	SpliceBox-Pier No.5	Splice Box-Pier No.6	Spillway Lighting	7-1/c	#10	600V.
D L T 18	Splice Box-Pier No.6	Fuse Box-Pier No.6	Spillway Lighting	3-1/c	#10	600V.
D L T 19	Splice Box-Pier No.6	Splice Box-Pier No.7	Spillway Lighting	7-1/c	#10	600V.
D L T 20	Splice Box-Pier No.7	Fuse Box-Pier No.7	Spillway Lighting	3-1/c	#10	600V.
D L T 21	Splice Box-Pier No.7	Fuse Box-Pier B	Spillway Lighting	5-1/c	#10	600V.
D L T 22	Fuse Box-Pier B	Push Button Stations-Pier B	Spillway Lighting	3-1/c	#10	600V.
D L T 23	Fuse Box At All Piers	Spillway Lights & Receptacles	Spillway Lighting	3-1/c	#12	600V.
P F 1	Oil Pump No.1 Motor	Capacitor No.1	Power Factor Correction	3-1/c	#10	600V.
P F 2	Oil Pump No.2 Motor	Capacitor No.2	Power Factor Correction	3-1/c	#10	600V.
P F 3	Oil Pump No.3 Motor	Capacitor No.3	Power Factor Correction	3-1/c	#10	600V.
M B	Switchboard-Panel No.6	Mooring Bitts Lights Junction Boxes	Mooring Bitts Lights	2/c	#10	600V.
M B1	Mooring Bitts Lights Junction Boxes	Mooring Bitts Lights	Mooring Bitts Lights	2/c	#12	600V.
C P1	Term. Box #201	Downstream Control Station	Compressor & Pump Controls	12/c	#12	600V.
C P2	Term. Box #203	Upstream Control Station	Compressor & Pump Controls	12/c	#12	600V.
W L R	Operation Building - Office	Gage House	Water Level Recorder	7/c	#10	600V.
P S	Press Switch-Domestic Water Tank	Switchboard - Panel No.4	Control-Domestic Water Pump	2-1/c	#12	600V.
D F L1	15 KVA Lighting Transformer	Floodlight Circuit Breakers	Service Bridge Floodlights	3-1/c	#8	600V.
D F L 2	Floodlight Circuit Breaker	Splice Boxes	Service Bridge Floodlights	3-1/c	#8	600V.
E X	Stand-By Unit	Switchboard-Panel No.1	Generator Excitation	5-1/c	#12	600V.

LIST OF EQUIPMENT

ITEM	DESCRIPTION
1	Receptacle, 60 A., 440 V.- Crouse-Hinds, ARH0681 Housing and AR5648 Receptacle or Equal.
2	Plug-Crouse-Hinds Cat. # APJ 6485- For Item 1, furnish two
3	Receptacle, 30 A., 110 V. Crouse-Hinds, Cat. # ARH0681 and AR 5338 or equal.
4	Plug-Crouse-Hinds Cat. # APJ 3383- For Item 3, and Item 50 on service bridge-furnish six.
5	Plug & Socket For 2/c #12 Joy Manufacturing Co. - Furnish with Required Cable Length & Male Seal
6	Plug & Socket For 5/c #12 Joy Manufacturing Co. - Furnish with Required Cable Length & Male Seal
7	Plug & Socket For 9/c #12 Joy Manufacturing Co. - Furnish with Required Cable Length & Male Seal
8	Plug & Socket for 12/c #12 Joy Manufacturing Co. - Furnish with Required Cable Length & Male Seal
9	Combination Fuse Box, Recept. & Switch, Crouse-Hinds, Cat. # ZF304 Complete with #DS128 V.P. Cover #FAR 338 Recept. Hub Plates 2 P. 30 A. Cutout, 2-15 A. Fuses & Hubbell #2971 S.P. Switch, or Equal
10	Switch & Receptacle, Russell & Stoll #478 L.P. or Equal.
11	Plug-Russell & Stoll No. 452 or Equal, For Item #10
12	Flood Light, 500 W., Crouse Hinds Cat. # 42739 or Equal
13	Traffic Signal Light-Crouse Hinds, Cat. # TSV-113 DT or Equal
14	Traffic Signal Light Pole Clamp-Crouse-Hinds Type TL Single Hub or Equal
15	Fuse Box-Crouse-Hinds Cat # YAC 2302 or Equal
16	Limit Switch (Gate) G.E Co. Cat. # CR 5896, Form A1.P.2 or Equal
17	Limit Switch, (Valve) 4 Element- Push Pull Operation-Cutler-Hammer-As Described in Specifications
18	Junction Boxes #1 to 60 as per Detail #18 Dwg. 29/10
19	Junction Boxes #100 to 103 Russell & Stoll-Detail #19 Dwg. 29/10
20	Terminal Box #200-G.& W. Electric Specialties Co. Type X Detail #20 Dwg. 29/10
21	Terminal Box #201 & 203-G.& W. Electric Specialties Co. Type X Detail #21 Dwg. 29/10
22	Terminal Box #202-G.& W. Electric Specialties Co. Type X Detail #22 Dwg. 29/10
23	Terminal Box #300-G.& W. Electric Specialties Co. Type X Detail #23 Dwg. 29/10
24	Terminal Box #301-G.& W. Electric Specialties Co. Type X Detail #24 Dwg. 29/10
25	Terminal Box #204-G.& W. Electric Specialties Co. Type X Detail #25 Dwg. 29/10
26	Water Tight Glands, Russell & Stoll, Type M.C. As Described in Specifications.
27	Navigation Light Standard with One Red Light as per Details Dwg. 29/4 & 77/1. (Upper Guide wall on Gage House)
28	Navigation Light Standard with Two Green Lights as per Detail Dwg. 29/4 (Lower Guard Wall)
29	Navigation Light Standard with Three Green Lights as per Detail Dwg. 29/4 (Upper Guard Wall)
30	Lighting Standard-Thompson-Hubbard Aluminum Pole Cat # THHRAIT 2506 (For all wall standards except Guard Wall Nav. Lights)
30a	Plugs and Sockets, Joy Mfg. Co. Cat. # 231 F46 (without plug) and two plugs Cat. # 231M with 2/c #14 type SO cable (Lower Guard Wall Nav. Lights)
31	Lock Light Fixture Westingh.-500W. IES Type III Style 1565011 for Lockwalls, IES Type I Style 1565002 for Guide Walls, or equal.
32	Plug & Socket 7/c #12 Joy Manufacturing Co. Furnish with Required Cable Length & Male Seal
33	Air Circuit Breaker 40A., 3P. S.N. 240V. A.C., Mounted in Watertight Enclosure
35	Watertight Tainter Gate Controller Complete with Equipment as per Specifications and Dwgs 56/1 & 56/2
36	Watertight P.B. Station-Raise-Lower-Stop-with Lockout Provision on Stop Button as per Dwgs 56/1 & 56/2
36a	Plugs and Sockets, Joy Mfg. Co. Cat # 231 F45 (without plug) and three plugs Cat. # 231 M with 3/c #14 type SO cable (Upper Guard Wall Nav. Lights)
37	Receptacle, Crouse-Hinds # ARDF 33 Housing & AR 337 Recept. or Equal
38	Plug, Crouse-Hinds, # APJ 3373 For Item 37
39	3/c #10 Portable Cable with Plug, Crouse-Hinds, # APJ 3373 on One End and Receptacle, Crouse-Hinds, APR 3353 on Other End
40	Watertight Safety Switch 3 P. 3 T. 100 A., 600 V.
41	Pull Box, Hot Dipped, Galvanized, Thomas & Betts Cat. # 10885 or Equal
42	Watertight Safety Switch 2 P. Double Throw 60 A., 600 V. with 40 A Fuses
43	Lighting Transformer, 15 KVA., 60 Cycle, 460-230/115 V. Dry Type-For Outdoors, Westinghouse Elec. Co. style No. 1722203
44	Air Circuit Breaker 30 A. 3 P. S.N. 240 V. A.C. Westinghouse A.B Deion Type and 2 P. 250 V. Remote Control Switch, Elec. Operated & Mech. Held Automatic Sw. Co # 9101 or Equal in Water Tight Enclosure
45	Same as ITEM 44 exept Circuit Breaker shall be rated at 15 Amps. (Dam Flood Lights)
46	Combination Fuse Box and Receptacle, Crouse-Hinds, # ZF 5530 2 with 2 P. 30 A Cutout, 2-15 A Fuses and # FAR 338 Receptacle, or Equal
47	V.P. Fixture With Shallow Dome Reflector-Crouse-Hinds # VDA 2957- or Equal
48	Switch, Hubbell # 2973 or # 2974 as shown on the drawings, with Crouse-Hinds # DS 128 cover in type FD box, or equal.
49	Walkway Light, Holophane, Spec. # 4847 M, Dwg. 5-3187 or Equal, furnished by the Government and installed by Contractor
50	Receptacle Crouse-Hinds Cat. # ARRH Housing and AR 338 Receptacle or Equal, provide plug APJ 3383 for each floodlight
51	Watertight P.B. Station With On-Off Buttons
52	V.P. Fixture with Guard, Crouse-Hinds, # VJ 2289 or Equal
53	Watertight Receptacle, Crouse-Hinds, 30A, 600V, ARE 3483 or Equal (Hoist), provide two plugs APJ 3485
54	V.P. Fixture with Guard, Crouse-Hinds, # VD 2289 or Equal
55	Conduit Fitting-Crouse-Hinds, Condulet G525 or Equal
56	Lamp Receptacle-Crouse-Hinds, GS 59 or Equal
57	Conduit Fitting-Crouse-Hinds, Condulet LRB27 or Equal
58	Connector-Crouse-Hinds-CGB For Use with Item 57
59	O.Z. MFG. Co. Type YW (Watertight) C.I. Box or Equal
60	Watertight Combination Reversing Starter Size 2 with 110V. Control Transformer (Emerg. Dam)
61	Watertight 40A-3P.-600V. A.C. Breaker in NEMA 4 Enclosure. (Emerg. Dam)
62	Watertight P.B. Station-Up-Down-Stop-with Lock on Stop in OZ. MFG. Co. Type YW Watertight C.I. Box (Emerg. Dam)
63	Safety Switch 3P, 30A., Fused 460 Volts (Oil Pump Motors)
64	Capacitors 3 Phase 460 Volts (Oil Pump Motors)
65	Fuse Box-O.Z. MFG. Co. # YU 080404 with Conduit Bosses as indicated and Buttons for Mounting 1P, 30A Fuse Block (Parking Area Lighting Standard)
66	Lighting Standard-Thompson-Hubbard Aluminum Pole Cat # HRAIT 2512 (Parking Area)
67	Lighting Fixture 500 Watt I.E.S. Type II, Westinghouse Style 1565008 (Parking Area Lighting Standard)

GENERAL NOTES

Catalog references in the LIST OF EQUIPMENT are for descriptive purposes only, materials furnished shall be as described or approved equal

REVISION	DATE	DESCRIPTION	BY
		GRAPHIC SCALE	

TIPPETTS-ABBETT-McCARTHY-STRATTON
NEW YORK, N. Y.

CORPS OF ENGINEERS, U.S. ARMY
OFFICE OF THE DISTRICT ENGINEER
PITTSBURGH, PENNSYLVANIA

DRAWN BY: J. K.
TRACED BY: M. S.
CHECKED BY: E. F
SUBMITTED BY: [signature] DATE:
APPROVAL RECOMMENDED: [signature] CHIEF ENGINEERING ASSISTANT
APPROVED FOR: DATE:
APPROVED: [signature] COLONEL, CORPS OF ENGINEERS, DISTRICT ENGINEER
DATE: 31 JAN 1956
SCALE: NONE
SPEC. NO.:

MONONGAHELA RIVER
HILDEBRAND LOCK AND DAM
ELECTRICAL SYSTEM
CABLE AND EQUIPEMENT SCHEDULE

DRAWING NUMBER
037-LHI-29/8
SHEET 8 OF 12

"AS BUILT" 29 FEBRUARY 1960

EUGENE DIETZGEN CO., PGH., PA.