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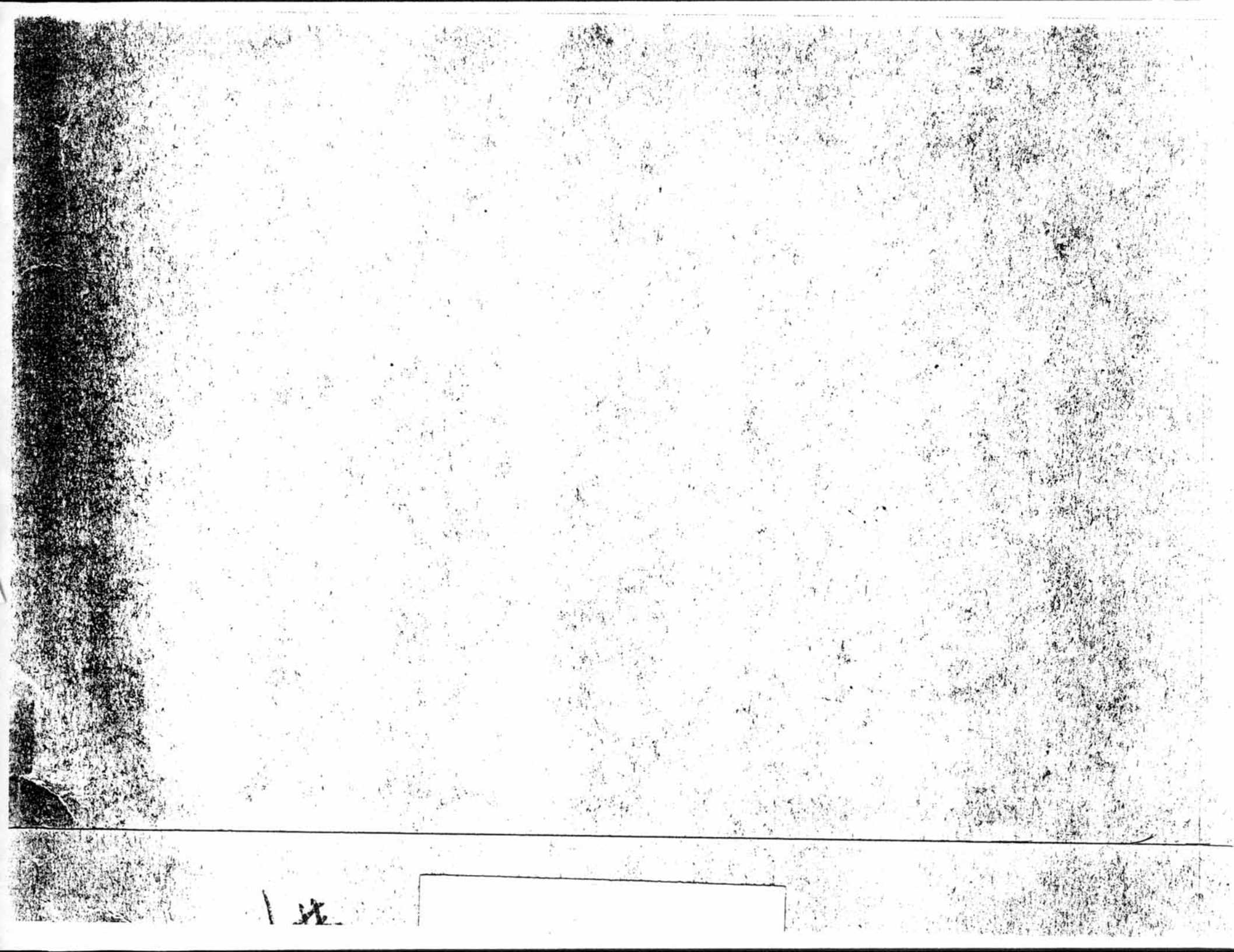


SBAMA

EQUIPMENT REMOVAL PLAN

ATLAS " F " SERIES SILO

REPORT NO. 692 - 02 - 65 - 8

DATED: 5 MARCH 1965

CONTRACT NO. AF04 (607) - 9649

REVISION SYMBOL

PACKAGE NO.

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692 - 02 - 65 - 8
	SCALE	RELEASED	SHEET
			DISTR

A2613 (REV. 6-63)

INTRODUCTION

SBAMA EQUIPMENT REMOVAL PLAN - ATLAS "F" SERIES SILO

SCOPE

This plan provides a controlling sequence of operations, and procedures for these operations, to remove all equipment from an Atlas "F" Series silo site, except the crib steel, facility elevator, sump pumps, and lights.

The entire package includes a flow chart, a procedure for each block on the flow chart, an equipment and materials list, and a cumulative list of manpower and material requirements. The plan has been designed, as requested, to suit existing USAF capabilities as much as practicable.

GENERAL EXPLANATION OF FLOW CHART

The flow chart shows the earliest time at which given operations may be performed safely. The principal flow is as follows:

The site is verified to be inactivated (1) according to the plan proofed at SAC Site 5, Altus AFB. If this has not been accomplished, it must be done (2). However, installation of vinyl covering and dessicants need not be accomplished as equipment will be removed from the silo.) Subject to the limitations called out in the individual block procedures, the following actions may then proceed simultaneously: Prepare Diesels for removal (3), drain fuel loading prefab (4), open and secure silo doors (5), bleed down GN2 and helium (3), prepare LCC and tunnel equipment for removal (7), dismantle cooling tower (11).

An important sequence following (4) and (5) is to drive the launch platform into the uplocks (9), modify the top of the launch platform as a staging platform (13), install horizontal crib shoring (14), and drive the L/P down to level 7 (16). Then the L/P is prepared for drive-up using the inching tool (17), (19), (23). Counterweight shoring can be installed (20), and the uplock area can be cleared (21) at this time. All Level 7 equipment is disconnected and removed (18) to the L/P staging platform for crane lift-out of the silo. Meanwhile, the silo hydraulic system is drained (24), the umbilicals (25), and MLS controls (48) are removed. The L/P is moved to Level 6 (28) and Level 6 equipment (27), (29), (49), except the Diesel D-61, is removed. This general operation proceeds through Levels 5,4,3,2, and 1 (30 thru 37).

Heavy rigging operations begin with door cylinder removal (39), and continue through dismantling and removal of the L/P (38), L/P drive mechanisms (40), (41), (42); missile enclosure area equipment from Level 8 (43); Diesels from Levels 5 and 6 (50); storage vessels from Level 8 (44).

Finally, the silo is secured (46), and the silo doors are closed, leaving the crib steel and minimum electrical circuits for pumps, facility elevator, and some lights.

REVISION SYMBOL

SAFETY PRECAUTIONS

These are general comments which are frequently amplified and repeated in context within the block procedures:

(1) Do not torch or flame cut any hydraulic, fuel, or lubricant lines.

(2) Verify that power is off before cutting or disconnecting electrical wiring or cabling.

(3) Prior to any flame cutting, local areas should be inspected for combustible fluid accumulation and cleaned up if any is found. A guard with CO2 extinguisher should be established where cutting is in progress. Asbestos blankets should be spread immediately below the cutting zone to catch cinders.

(4) Verify that pressure is bled from any pneumatic line or vessel before it is disconnected or cut. When disconnecting or cutting any such line, proceed cautiously, as though it might not be bled down.

(5) The Missile Enclosure Purge Unit (MEPU) can be used to ventilate the silo during welding operations or in the event that fumes may cause discomfort to personnel. Block 14, Install Horizontal Crib Shoring is a case in point where welding in the silo is required.

(6) Standard Air Force safety practices should be observed at all times.

ELECTRIC POWER

The source of electric power for operations during deactivation of a silo is a prime consideration of this plan. Electric power is to be provided by an APU or commercial source to run ventilating fans, lights and power equipment during the entire process of disassembly.

The updrive of the launch platform for modification and the drive-down into the down locks can be done by the following methods:

A. Drive the launch platform using commercial power. The steady-state updrive condition will feed 50 to 100 K.W. at unity power factor into the commercial power line and permission to operate in this mode must be obtained from the local power company. The down-drive of the modified launch platform will impose a peak demand of 200 to 225 K.W. at 0.9 to 1.0 power factor with the steady-state down-drive condition drawing approximately 100 K.W.

B. Drive the launch platform using a portable power unit on the silo cap. The down-drive of the platform will impose a step demand of 200 to 225 K.W. at 0.9 to 1.0 power factor with the steady-state down-drive condition drawing 100 K.W.

REVISION SYMBOL

The disassembly plan, as written, calls for removal of the Diesel switchgear on level 5 and the motor control centers on level 2. A portion of the non-essential motor control center will remain on level 2 and in the LCC and will be rewired as necessary to operate the personnel elevator, fans, pumps, and lights after the launch platform has been modified and driven into the down locks. Block 15 on the flow diagram (Jury Rig Lights, Fans, etc.) will accomplish this action.

EQUIPMENT AND TOOLS REQUIRED

Two listings of equipment and tools are included in this plan.

One listing gives the block-by-block requirements for removal of the largest single item within a particular work block. This information will be useful should the USAF select to remove a single equipment item from a silo picked at random. This list is entitled, "Special Tools And Equipment Listing."

The second listing gives the integrated requirements for a planned sequence of total equipment removal. This listing entitled "Consolidated Standard Tools, Rigging Components And Equipment Required" provides for the logical sequencing of the heaviest hoisting devices required at any point in time during total equipment removal operations.

REVISION SYMBOL

SPECIAL TOOLS AND EQUIPMENT REQUIRED

NOTE

The following list covers the specific requirements per block of the special tools and equipment, excluding the raw materials, needed to support the Atlas "F" Silo Equipment removal plan. The listing is by flow block number sequence and does not list standard tool kit items. It must be noted that the sizing of cranes, rigging, slings, hoists, etc called out is that minimum size required for isolated single item removal. To preclude collection/ purchase of each and every size item, a summarized consolidated list of special tools and equipment that will support the complete plan is attached.

BLOCK NUMBER	SPECIAL TOOLS AND EQUIPMENT REQUIRED
4	a) 1 each - 10 Gallon Bucket
	b) Vinyl
	c) Tape
	d) 1 each - CAP - AN 929-4C - FSN 4730-204-3492
5	a) 1 each - 1 Gallon Bucket
	b) Vinyl
	c) Tape
	d) 1 set - Support Strut (EID 9386) FSN 1450-516-6947AC (Set Composed of 2 Struts).
	e) 1 each - 200 Ft Lb Torque Wrench
3	a) Vinyl
	b) Tape
7	a) 1 each - Acetylene Cutting Torch
	b) 2 each - Heavy Duty Bolt Cutters
	c) 2 each - Air Operated Impact Wrench - 3/4" Drive With Sockets
	d) 1 each - Gas Driven Air Compressor
	e) Rope-Manilla, 50 Feet, 3/4"
	f) Scaffolding-Floating
	g) 2 Sections-100 Foot Air Hose
8	a) 1 each - 1 Gallon Bucket
	b) Vinyl
	c) Tape
	d) Wire Rope - 3/4", 20 Feet
	e) 8 each - Wire Rope Clamps
	f) 1 each - Acetylene Cutting Torch

REVISION SYMBOL

BLOCK NUMBER	SPECIAL TOOLS AND EQUIPMENT REQUIRED
9	a) 1 each - APU - 480 Volt, 3 ϕ , 225 minimum KW
	b) Tape measure - 10 Foot
6	a) Rope, Manilla, 100' 3/4"
11	a) Lifting Slings
	b) 1 each - 5 Ton Crane
13	a) Vinyl
	b) Tape
	c) Tags
	d) 1 each - Acetylene Cutting Torch
	e) 1 each - 30 Ton Crane
	f) Rigging (4 Leg Sling, 1 Ton Chain Fall, Hoisting Platform)
	g) 6 each - Rollers - 3" Heavy Pipe - 4' Lengths
	h) 1 each - Gas Driven Welder - 300 Amp
	i) 2 sets - L/P Ballast (EID 27-9821), FSN 1450-560-1444
	j) 1 set - Ballast Handling Equip (EID 27-9822), FSN 1450-560-1443
14	a) 1 each - Swinging Scaffolds
	b) 1 each - Gas Driven Welder - 300 AMP
10	a) 1 each - Acetylene Cutting Torch
12	a) Rope-Manilla 100 Ft - 3/4"
	b) 10 Feet - Wire Rope, 3/4"
	c) 10 each - Wire Rope Clamps
15	a) 1 each - Acetylene Cutting Torch
	b) 1 each - Missile Enclosure Purge Unit,FSN 1450-979-5315AC
16	a) 1 each - APU-480 Volt, 3 ϕ , 225 Minimum KW
17	a) MLS Locking Tool-EID 27-9398 - FSN 1450-076-8199AC
	b) Grease - MIL-G-7118-1 Qt
	c) 3 each - Driving Unit, 1/2 HP, 1200 RPM, 1/2" Drive Shaft (A Drill Motor may be used).
19	a) 1 each - Union - MS24392C4 - FSN 4730-684-6912
	b) Hydraulic Oil - MIL-H-5606 - 4 Qt
20	a) 1 each - 5 Ton Crane
21	a) 1 each - Acetylene Cutting Torch
	b) 1 each - Crane, 1 Ton
	c) 1 each - Cable Sling - 1 Ton
	d) Rope - 3/4" - 50 Ft - Manilla
22	a) Scaffolding with Block & Tackle
	b) Wire/Bolt Cutters
	c) Acetylene Cutting Torch
23	NONE
51	a) 1 Crane, 1 Ton
	b) Chokers
	c) Rigging

REVISION SYMBOL

BLOCK NUMBER	SPECIAL TOOLS AND EQUIPMENT REQUIRED
18	a) 1 each - 5 Ton Crane
	b) 2 each - 1 Ton Chain Hoists
	c) 2 each - 2 Ton Chain Hoists
	d) 1 each - Gas Driven Air Compresser
	e) 4 each - One Ton Cable Slings
	f) 4 each - 2 Ton Cable Slings
	g) 6 each Wire Rope Chokers (1/2" to 7/8")
	h) 1 each - Acetylene Cutting Torch
	i) 2 each - Fork Lifts
	j) 2 each - Steel Skips
	k) 4 each - 1 Ton Ratchet Hoists (Come-Along)
	l) 2 each - 1/2" Manilla Rope Block & Tackle Sets
	m) 2 each - 3/4 " Manilla Rope Block & Tackle Sets
	n) 2 each - 7/8" Manilla Rope Block & Tackle Sets
	o) 1 each - Heavy Bolt/ Wire Cutters
	p) 4 each - 2 Ton Jacks
	q) 4 each - Impack Wrenches
	r) Scaffolding
24	a) 6 each - 55 Gallon Drums
	b) Vinyl
	c) Tape
	d) "K" Bottle (nitrogen gas) with Regulator
	e) 15 Ft - Hose-MS28741-4-1800 Or Equiv. - FSN 4720-8037-666
	f) Rope - 3/4"-100 Ft Manilla
	g) 2 each - 10 Gallon Buckets
	h) Scaffolding
25	a) 1 each - RD4 Or Equiv Tractor
	b) Large Reels
	c) Rope - 100'-3/4"-Manilla
48	a) 1 each - RD4 Or Equiv Tractor
	b) 2 each - 3 Ton Chain Hoists
	c) 2 each - 1 Ton Chain Hoists
	d) 2 each - 3/4 Ton Come Along
	e) Large Cable Reels
	f) Sling
	g) 1 each - Crane 5 Ton
26	a) 1 each - 5 Ton Crane
	b) Sling
	c) Rope, Manilla, 3/4", 50 Feet
27	a) Sling
	b) 1 each - 1 Ton Crane
	c) 1 each - Acetylene Cutting Torch
28	a) 2 each - Chain Hoists, 5 Ton
	b) Wire Rope
	c) Wire Rope Clips

REVISION SYMBOL

BLOCK NUMBER	SPECIAL TOOLS AND EQUIPMENT REQUIRED
29	a) 1 each - Acetylene Cutting Torch
	b) 1 each - Chain Hoist - 1 Ton
	c) Rigging
	d) 1 each - Sling-ARMA PN 2-00043-359
	e) 1 each - Cables-ARMA PN 545A7
	f) 1 each - Sensing Platform Stoppage Container
	g) 1 each - 4 Wheel Hnad Track
	h) 1 each - Crane - 1 Ton
	i) 1 each - Wire Rope Choke
49	a) 1 each - 1 Ton Crane
	b) Sling
30	Same as 18
31	Same as 18
32	Same as 18
33	Same as 18
35	Same as 18
34	a) 2 each - 10 Ton Jacks
	b) 1 each - Acetylene Cutting Torch
	c) 2 each - 6 Ton Chain Hoists
	d) Rope
	e) 1 each - Crane
	f) Rigging-Slings & Chokes
36	a) Same as 18
	b) 1 each - 1 Ton Fork Lift
	c) 1 each - RD4 Or RD6 Tracter
	d) 1 each - Cable Reel
37	Same as Blk 18
39	a) 1 each - 10 Ton Crane
	b) 2 each - Support Straps (Tie-Bars) - EID 27-7403, FSN 1450-569-1779AC
	c) Sling
	d) Scaffold
38	a) 1 each - 75 Ton Crane
	b) 1 each - 7 1/2 Ton Hyster (Fork Lift)
	c) Ballast Handling Equipment - EID 20-9821- FSN 1450-560-1444 & EID 27-9822 FSN 1450-560-1443
	d) 1 each - Lifting Sling, 4 Leg, 50 Ton Minimum Lead
	e) 1 each - Cutting Torch
	f) 1" Manila Rope - 100 Ft
	g) Chain Hoists
	h) Come-A-Long
	i) Wire Rope
	j) Wire Rope Clamps

REVISION SYMBOL

BLOCK NUMBER	SPECIAL TOOLS AND EQUIPMENT REQUIRED
40	a) 1 each - RD4 Or RD6 Tractor
	b) 1 each - 5 Ton Crane
	c) 1 each - Acetylene Cutting Torch
	d) 1 each - 1 Ton Chain Hoist
	e) 1 each - 2 Ton Come Along Hoist
	f) 10 each - Cable Reels
	g) Sling
42	a) 1 each - 10 Ton Crane
	b) Scaffold
	c) Sling
	d) 1 each - Acetylene Cutting Torch
41	a) 1 each - 10 Ton Crane
	b) 1 each - Gas Driven Air Compresser
	c) 1 each - Impact Wrench
	d) Scaffold
	e) 1 each - 50 Gallon Drum
	f) 1 each - Acetylene Cutting Torch
	g) Sling
43	a) 1 each - Ten Ton Crane
	b) See Blk 18
50	a) 1 each - 75 Ton Crane
	b) 1 each - Acetylene Cutting Torch
	c) 1 each - Spider Elevator Scaffold
	d) 1 each - Gas Driven Air Compresser
	e) 1 each - Impact Wrench
	f) 1 each - 10 Ton Chain Hoist
	g) Wire Rope
	h) Wire Rope Clamps
	i) Slings
	j) Rigging
	k) 1 each - Gas Driven Welder - 300 AMP - Heavy Duty
	l) Scaffold
	m) 1 each - Safety Net
	n) 1 each - 20 Ton Heavy Duty Hydraulic Jack PN 291Z32 Or Equiv.
44	a) 4 Heavy Duty Roller Skid Dollies, 50 Ton Minimum Capacity Each, Macarco Cat. 2723Z4 Or Equivalent.
	b) 4 Ten Ton Spur Geared Chain Hoists, 12 Feet Minimum Lift
	c) 6 Six Ton Puller Hoists, 10 Feet Minimum Lift.
	d) 4 Double Leg Chain Slings, 1 Inch Chain, Oblong Link and 2 Grab Hooks, 12 Feet Reach (67,000 Lbs Working Loads Per Sling).
	e) 6 Single Leg Chain Slings, 1 Inch Chain, 10 Feet Reach, 1 Oblong Link and 1 Grab Hook. (38,700 Lbs Working Load Per Sling).
	f) 1 Seventy-five Ton Crane
	g) 100 Feet of 1 Inch Manilla Rope

REVISION SYMBOL

BLOCK NUMBER	SPECIAL TOOLS AND EQUIPMENT REQUIRED
46	a) 6 - 4' x 8' Sheets Plywood
	b) Heavy Safety Wire
47	a) 2 each - Cranes, 50 Ton
	b) Door Handling Equip - EID 27-9388 - FSN 1450-560-1442AC

REVISION SYMBOL

CONSOLIDATED STANDARD TOOLS, RIGGING
COMPONENT AND EQUIPMENT REQUIRED

NOTE

This list covers the minimum equipment required to support the Atlas "F" Series equipment removal. Combined with the raw material requirements, the vehicle list and the manpower requirements, the needs for the total task are complete.

A. WIRE ROPE SLINGS

a) 4 each - 1/4" 6 Part Flat Braided Construction Sling - 2 Ton Capacity* - 6 Feet Long
b) 4 each - 3/8" 6 Part Flat Braided Construction Sling - 5 Ton Capacity* - 6 Feet Long
c) 4 each - 3/8" 8 Part Round Braided Construction Sling - 7 Ton Capacity* - 8 Feet Long
d) 4 each - 1 1/4" Standard Wire Rope Sling - 6 x 37 Construction - 10 Ton Capacity* - 10 Feet Long

* The capacity shown is that rated for a single sling-vertical lift, a two sling - 30° spread, a 4 sling - 30° spread. The attached rigging chart shows use and capacity variations. It must be noted that the rated capacity is based upon sling condition and its intended use.

B. WIRE ROPE CHOKER

a) 4 each - 3/8" 7 x 37 Wire Rope Chokers - 1 Ton Capacity - 8 Feet Long
b) 4 each - 1/2" 7 x 37 Wire Rope Chokers - 3 Ton Capacity - 10 Feet Long
c) 4 each - 5/8" 7 x 37 Wire Rope Chokers - 5 Ton Capacity - 10 Feet Long
d) 4 each - 1" 7 x 37 Wire Rope Chokers - 10 Ton Capacity - 12 Feet Long

REVISION SYMBOL

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8	PACKAGE NO.
	SCALE	RELEASED	SHEET X	

A2613 (REV. 6-63) DISTR CODE

C. MOBILE EQUIPMENT (EXCLUDING TRUCKS)

a) 1 each - 25 Ton Crane With 40 Ft Boom
b) 1 each - 75 Ton Crane With 60 Ft Boom
c) 1 each - 2 Ton Stiff-Leg Mobile Tractor Crane
d) 1 each - RD4 Or RD6 Or Equiv With Wench - Crawler Tractor
e) 1 each - 50 Ton Crane With 60 Ft Boom
f) 2 each - Warehouse Hand Fork Lifts
g) 1 each - 4 Wheel Hand Truck
h) 1 each - 1 Ton Fork Lift
i) 1 each - 7 1/2 Ton Hyster (Fork Lift)

D. HOISTS, COME-ALONGS

a) 2 each - Standard 1 Ton Chain Hoists
b) 2 each - Standard 2 Ton Chain Hoists
c) 2 each - Standard 5 Ton Chain Hoists
d) 4 each - 10 Ton Spur Geared Chain Hoists - 12 Feet Minimum Lift
e) 2 each - Standard 1/2 Ton Ratchet Come-Along Hoists
f) 2 each - Standard 3/4 Ton Ratchet Come-Along Hoists
g) 2 each - Standard 2 Ton Ratchet Come-Along Hoists
h) 6 each - Standard 6 Ton Ratchet Come-Along Hoists

E. HEAVY DUTY RIGGING

a) 4 each - Heavy Duty Roller Skid Dollies, 50 Ton Minimum Capacity (Macharie Cat 272324 Or Equivalent)
b) 4 each - Double Leg Chain Slings, 1 Inch Oblong Link Chain With 2 Grab Hooks, 12 Foot Reach (67,000 Lbs Working Loads Per Sling).
c) 6 each - Single Leg Chain Slings, 1 Inch Chain, 10 Foot Reach, 1 Oblong Link And 1 Grab Hook (38,700 Lbs Working Lead Per Sling).
d) 1 each - Heavy Duty Hoisting Platform 6' x 6' With Pre-Attached Wire Slings
e) 10 each - Heavy Pipe Rollers, 3" Pipe, 4' Lengths
f) 4 each - 2 Ton Hydraulic Jacks
g) 2 each - 10 Ton Hydraulic Jacks
h) 1 each - 20 Ton Heavy Duty Hydraulic Jack Marcarce PN 291Z32 Or Equiv.

REVISION SYMBOL

F. SPECIAL TOOLS

a) 1 each - 200 Foot Lb Torque Wrench
b) 1 each - Cap - AN929-4C - FSN 4730-204-3492
c) Tape Measure
d) 1 each - Union - MS24392C4-FSN 4730-684-6912
e) 1 each - Nitrogen Gas "K" Bottle With Regulator
f) 15 Feet - Gas Hose (MS28741-4-1800 Or Equiv), FSN 4720-8037-666
g) 1 each - ARMA Sling - PN 2-00043-357
h) 1 each - Cable Set - ARMA PN 545A7
i) 1 each - Sensing Platform Storage Container
j) 1 each - Spider Elevator Scaffolding

G. EID'S

a) Support Struts (EID 27-9386) - FSN 1450-516-6947 AC (Set Composed of 2 Struts).
b) 1 each - APU - 480 Volt, 3 ϕ , 225 KW (Minimum) Output
c) 2 Sets - L/P Ballast (EID 27-9821), FSN 1450-560-1444
d) 1 Set - Ballast Handling Equipment (EID 27-9822), FSN 1450-560-1443
e) 1 each - Missile Enclosure Purge Unit (EID 27-9120), FSN 1450-979-5315AC
f) 1 each - MLS Locking Tool (EID 27-9398), FSN 1450-076-8199AC
g) 2 each - Support Straps (Tie Bars)(EID 27-9403), FSN 1450-569-1779AC
h) 1 each - Silo Door Handling Equipment (EID 27-9388), FSN 1450-560-1442AC

H. MISC

a) 5 each - 10 Gallon Bucket
b) 5 each - 1 Gallon Bucket
c) 2 Rolls Vinyl
d) 6 Rolls Green Tape
e) 4 each - Acetylene Cutting Torch
f) 4 each - Boswain Chair
g) 2 each - Heavy Duty Bolt Cutters
h) 2 each - Air Operated 3/4" Drive Impact Wrench With Sockets
i) 1 each - Gas Driven Air Compressor
j) 2 each - 100 Foot Sections, Air Hose
k) 2 each - 50 Foot Sections, Air Hose
l) 300 Feet - 3/4" Manilla Rope
m) 1 each - Scaffolding - Floating Type
n) 200 Feet - 3/4" Wire Rope
o) 100 each - 3/4" Wire Rope Clamps
p) 1 each - Gas Driven Welder - 300 AMP - Heavy Duty
q) 1 Qt - Grease - MIL-G-7118
r) 3 each - 1/2 HP, 1200 RPM, 1/2" Drive Shaft Driving Unit (A Drill May Be Used)

REVISION SYMBOL

H. MISC (Continued)

s) 4 Qt - Hydraulic Oil - MIL-H-5606
t) 10 each - 55 Gallon Drums
u) 20 each - Large Cable Reels
v) 100 feet - 1" Manilla Rope
w) 1 Roll Heavy Safety Wire
x) 200 feet - 1/2" Manilla Rope
y) 2 each - Tackle Blocks - 4" Double Shell - McMaster 3152 T Or Equiv.
z) 2 each - Tackle Blocks - 4" Triple Shell - McMaster 31U53 Or Equiv.

REVISION SYMBOL

RIGGING CHART

Wire Rope Slings

Macarco Wire Rope Slings

Be Sure To Specify Type Of Fitting Required When Ordering

SAFE LOADS OF WIRE ROPE SLINGS

When Ordering 6-Part or 8-Part Slings, State Wire Rope Size and Finished Body Diameter/

Size Wire Rope In.	Finished Body Diam. In. Width	Thick.	Approx. Breaking Strength Tons	SAFE LOAD IN TONS: 1 Sling Vertical	1 Sling Choker Hitch	1 Sling Basket Hitch	2 Slings 60°	2 Slings 45°	2 Slings 30°
6-PART FLAT BRAIDED CONSTRUCTION SLINGS									
1/4	1/2	1/4	2.2	.4	.3	.6	.7	.6	.4
5/16	5/8	3/8	2.9	.6	.4	.8	1.0	.8	.6
3/8	11/16	1/2	6.6	1.3	1.0	1.9	2.3	1.9	1.3
1/2	1 1/8	11/16	12.0	2.4	1.8	3.4	4.2	3.4	2.4
5/8	1 3/8	7/8	18.6	3.7	2.8	5.3	6.4	5.3	3.7
3/4	1 11/16	1	26.6	5.3	4.0	7.5	9.2	7.5	5.3
8-PART ROUND BRAIDED CONSTRUCTION SLINGS									
3/8	1/2		2.6	.5	.4	.7	.8	.7	.5
7/16	5/8		3.9	.8	.6	1.1	1.4	1.1	.8
1/2	11/16		8.7	1.8	1.3	2.6	3.0	2.6	1.8
5/8	1 1/8		16.0	3.2	2.4	4.6	5.5	4.6	3.2
3/4	1 3/8		24.8	5.0	3.7	7.1	8.6	7.1	5.0
7/8	1 11/16		35.5	7.1	5.3	10.0	12.3	10.0	7.1
STANDARD WIRE ROPE SLINGS . . . 6x37 CONSTRUCTION									
1 1/4			41.1	8.2	6.2	11.6	14.2	11.6	8.2
1 3/8			50.4	10.1	7.6	14.3	17.5	14.3	10.1
1 1/2			60.5	12.2	9.2	17.3	21.1	17.3	12.2
1 5/8			72.1	14.4	10.8	20.4	24.9	20.4	14.4
1 3/4			77.2	15.4	11.6	21.8	26.7	21.8	15.4
1 7/8			89.2	17.8	13.4	25.2	30.8	25.2	17.8
1 15/16			102.0	20.4	15.3	28.8	35.3	28.8	20.4
2			116.0	23.2	17.4	32.8	40.2	32.8	23.2
2 1/4			135.0	27.0	20.2	38.2	46.8	38.2	27.0
2 1/2			165.0	33.0	24.8	46.7	57.2	46.7	33.0

STANDARD WIRE ROPE SLINGS . . . 6x19 CONSTRUCTION

Dia. Wire Rope, In.	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2
Eye or Loop Sizes, In.	6	6	12	12	18	18	18	18	24	24	24
Safe Working Loads, Tons:											
Straight Pull	.54	1.2	2.1	3.3	4.7	6.4	8.3	10.5	12.9	15.5	18.4
Choker Hitch	.39	.85	1.5	2.3	3.2	4.2	5.4	6.6	7.6	9.1	10.0
Basket Hitch	1.0	2.5	3.9	6.1	8.5	11.0	14.0	18.0	20.0	24.0	28.0
Length of Sling, Ft.	NET EACH—Specify Straight Pull, Choker Hitch or Basket Hitch										
4	$ 2.28	$ 3.16	$ 4.71	$ 6.55	$ 8.52	$ ----	$ ----	$ ----	$ ----	$ ----	$ ----
6	2.52	3.48	5.10	7.05	9.06	12.30	16.93	----	----	----	----
8	2.76	3.80	5.49	7.56	10.68	13.22	20.10	25.80	31.98	----	----
10	3.00	4.12	5.88	8.18	11.40	14.14	21.20	27.21	33.68	38.84	51.52
12	3.24	4.44	6.28	8.58	12.12	15.16	22.34	28.60	35.38	40.84	53.85
14	3.48	4.74	6.67	9.08	12.84	15.97	23.48	30.12	37.18	42.84	56.20
16	3.73	5.06	7.10	9.58	13.56	16.88	24.61	31.43	38.86	44.84	58.52
18	3.97	5.38	7.48	10.10	14.28	17.81	25.74	32.84	40.52	46.84	60.85
20	4.21	5.71	7.84	10.60	15.00	18.72	28.88	34.24	42.22	48.84	63.18
25	4.83	6.49	8.82	11.88	16.80	21.00	29.72	37.76	46.48	53.84	69.15
30	5.42	7.29	9.80	13.13	18.60	23.29	32.56	41.28	50.76	58.81	74.85
35	6.10	8.10	10.78	14.40	20.40	25.57	35.46	44.80	55.13	63.81	80.09
40	6.84	8.88	11.76	15.88	22.20	28.20	38.24	48.32	59.32	68.80	86.55
45	7.26	9.68	12.74	16.93	24.00	30.14	41.18	51.84	63.87	73.79	92.35
50	7.86	10.46	13.72	18.20	25.80	32.44	43.02	55.36	67.85	93.11	98.20

NOTE: Hooks, Thimbles, Rings, Swivels and Accessories, Available with Slings, at Extra Cost.


6-PART FLAT BRAIDED


8-PART ROUND BRAIDED


STANDARD ROPE

GROMMET OR ENDLESS SLINGS

Size Inches	Safe Load (7x19) Tons Choker Hitch	Basket Hitch	Size Inches	Safe Load (7x37) Tons Choker Hitch	Basket Hitch
1/4	.09	1.8	1 1/4	15.0	30.0
3/8	1.8	3.6	1 3/8	18.0	36.0
1/2	3.0	6.0	1 1/2	21.5	43.0
5/8	5.0	10.0	1 5/8	25.5	51.0
3/4	7.0	14.0	1 3/4	230.	64.0
7/8	9.5	19.0	2	41.5	83.0
1	12.5	25.0	2 1/4	51.5	103.0

When ordering Grommet Slings specify circumference length as shown in Illustration.


CHOKER HITCH


BASKET HITCH

HOW TO ORDER SLINGS

WHEN ORDERING SLINGS SPECIFY THE FOLLOWING:

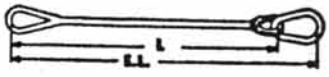
(1) Type No.

(2) Size Wire Rope as indicated in first column of safe load table.

(3) Whether 6-Part Flat Braided, 8-Part Round Braided, 6x19 or 6x37 Standard Wire Rope is desired.

(4) Length of sling in feet and inches. This length will be understood to be the bearing to bearing length "L" as indicated in illustration at right. If it is more convenient to show the extreme bearing to bearing length "E.L.", this fact should be indicated.

(5) Be sure to specify type of fitting required.



692-02-65-8

RAW MATERIAL LISTING

NOTE

The following is a listing of raw materials, over and above those special tools and equipment listed within each block, required to support the Atlas F Silo equipment removal plan. The block sequence is according to flow requirements.

BLOCK NUMBER	RAW MATERIAL REQUIRED
4	NONE
5	NONE
3	NONE
7	NONE
8	NONE
9	NONE
6	NONE
11	NONE
13	a) 2 each - 1/2" Steel Plate - 6' x 17' (ASTM A36 Steel) b) 1 each - 1/2" Steel Plate - 5' x 17' (ASTM A36 Steel) c) 1 each - Wide Flange Support Beam - 12WF40 x 15'10" (ASTM A36 Steel) d) 4 each - Wide Flange Support Beams - 12WF40 x 15'11" (ASTM A36 Steel) e) 1 each - Wide Flange Support Beam - 12WF40 x 15'2" (ASTM A36 Steel) f) 10 each - Wide Flange Support Beams - 8WF31 x 3'2" (ASTM A36 Steel) g) 2 each - Wide Flange Support Beams - 8WF31 x 42" (ASTM A36 Steel) h) 2 each - 1/2" Gusset Support Plates - 4" x 13.3" (ASTM A36 Steel) i) 1 each - 1/2" Support Plate - 15" x 18" (ASTM A36 Steel) j) 2 each - Channel Support Beams - 8 C 11.5 x 11' (ASTM A36 Steel) k) 2 each - Angles - 1/2" x 4" x 4" ∠ -10" (ASTM A36 Steel) l) 2 each - Angles - 1/2" x 4" x 4" ∠ -13'4" (ASTM A36 Steel) m) 2 each - 3/8" Support Plates 8" x 9" (ASTM A36 Steel) n) Welding Rods - Use Welding Rod MIL-E-22200/1 Class 7018
14	NOTE: Material to support shoring can be salvaged from the Cutoff L/P. a) 4 each - Support Beams - 8WF or Equiv-Approx 6" (ASTM A36 Steel) b) 12 each - 1/2" Plate to cover beam ends. c) 8 each - Support Beams - 10WF 33 or equiv x approx 24" (ASTM A36 Steel)
10	NONE
12	NONE
15	NONE
16	NONE
17	a) 1 each - 50 Gallon Drum b) 1 each - Valve Connection - Drum to 3/4" Garden Hose c) 25 feet Garden Hose d) 2 each - 3/4" Pipe Coupling e) 2 each - Connections - 3/4" Hose to 3/4" pipe f) 1 Foot 1/8" Tubing g) 1 - 3/4" Valve Gate

REVISION SYMBOL

GENERAL DYNAMICS
ASTRONAUTICS
SAN DIEGO, CALIFORNIA

CODE IDENT NO.	SIZE	DRAWING NO.
05342	A	692-02-65-8
SCALE	RELEASED	SHEET XV

PACKAGE NO.

A2613 (REV. 6-63) DISTR CODE

BLOCK NUMBER	RAW MATERIAL REQUIRED
19	NONE
20	72 pieces - 4" x 4" x 4' White Oak or better hardwood
21	NONE
22	NONE
23	NONE
51	NONE
18	NONE
24	NONE
25	a) 1 each - 12" SCH 40 Pipe 60" Long b) 1 each - 2" SCH 40 Pipe 64.5" Long c) 2 each - 1/4" x 13.8" Diameter Steel Plate - A36 Steel d) 1 each - 2" SCH 40 Pipe 72.0" Long e) 2 each - 4" @ 5.4 ⊏ 30.6" Long f) 2 each - 1 1/4" SCH 40 Pipe - 22.8" Long g) 2 each - 1/4 Taper Pin -2.75" Long h) 1 each - 6" @ 8.2 ⊏ - 62" Long i) 2 each - 1/4" Steel Plate 9" x 6" For Lifting Lugs j) 2 each - 6" @ 8.2 ⊏ - 48" Long k) 4 each - 3/8" Expansion Shields
48	NONE
26	NONE
27	NONE
28	NONE
29	NONE
49	NONE
30	NONE
31	NONE
32	NONE
33	1/4" x 3" x 3" Angle Stock for rectangular frame for logic and responder units - approximately 40 ft of stock for each unit (4 required)
35	NONE
34	NONE
36	NONE
37	NONE
39	NONE
38	NONE
40	1 each - Support Beam - 12 ⊔ 25 x 66" (ASTM A36 Steel) 10each - 1 1/2" Wire Rope Clips
42	NONE
41	NONE
43	NONE

REVISION SYMBOL A

PACKAGE NO.

GENERAL DYNAMICS
ASTRONAUTICS
SAN DIEGO, CALIFORNIA

CODE IDENT NO.	SIZE	DRAWING NO.
05342	A	692-02-65-8
SCALE	RELEASED	SHEET xvi

A2613 (REV. 6-63) DISTR

BLOCK NUMBER	RAW MATERIAL REQUIRED
50	a) 2 each - Support Beams - 10WF49 x 13' (ASTM A36 Steel) b) 2 each - Support Beams - 9 ⌴ 13.4 x 13' (ASTM A36 Steel) c) 1 each - Solid Bar - 3" x 12" x 6' (ASTM A36 Steel) d) 2 each - Lifting Bars - 4" DIA x 76" (ASTM A36 Steel) e) 4 each - Plates - 3/8" x 6" Diameter f) 2 each - 2 1/4" 8UNC-2A Nut - McM #7114F3 or equiv. g) 2 each - 2 1/4 Safety Hook - McM #3535Y or equiv - 44,000 Lb S.W.L h) 2 each - 2.312 Hole, 35 x 55 Clevis, Bow Size 2, Pin Dia 2 1/4, 70,000 Lb S.W.L. or equiv.
44	2 each - 4" x 10" x 18 feet Hardwood or Oregon Pine Timber
46	6 each 4' x 8' Plywood Sheets
47	NONE

REVISION SYMBOL A

GENERAL DYNAMICS
ASTRONAUTICS
SAN DIEGO, CALIFORNIA

CODE IDENT NO.	SIZE	DRAWING NO.
05342	A	692-02-65-8

SCALE	RELEASED	SHEET xvii

PACKAGE NO.

A2613 (REV. 6-63) DISTR CODE

VEHICLE REQUIREMENTS

BLOCK NUMBER	2 TON FLAT BED TRUCK	5 TON FLAT BED TRUCK	5 TON FLAT BED TRAILER	RD4 OR RD6 TRACTOR	FORK LIFT	44' X 12' 50 TON FLAT BED
11	1					
13		1				
18			2	1		
20	1					
25				1		
26			2	1		
27	1					
28			2	1		
30			2	1		
31			2	1		
32	1					
33			2	1		
34			2	1		
35			2	1		
36			2	1	1	
37			2	1		
38		1			1	
39		1				
40				1		
41			2	1		
42	1					
43			2	1		
44			2	1		1
45			1	1		
48				1		
50				1		1

NOTE: The requirement for ½ or ¼ ton pick-up trucks cannot be established because these vehicles are too versatile.

REVISION SYMBOL

PACKAGE NO.

GENERAL DYNAMICS
ASTRONAUTICS
SAN DIEGO, CALIFORNIA

CODE IDENT NO.	SIZE	DRAWING NO.
05342	A	692-02-65-8
SCALE	RELEASED	SHEET xviii

A2613 (REV. 6-63) DISTR CODE

BLOCK NUMBER: 3

BLOCK TITLE: Bleed down GN2 and helium

GENERAL DESCRIPTION OF BLOCK ACTION:

Vent all GN2 and Helium storage tanks to atmospheric pressure and vent trapped pressure in GN2 and Helium system lines to enable disassembly of system.

TIME REQUIRED: 4 hours

MANPOWER REQUIRED: 4 Pneumatics technicians

SPECIAL TOOLS & EQUIPMENT REQUIRED: None

TASK DETAILS:

1. Vent Silo 6000 psig GN2 systems as follows:

- WARNING -

In the following steps, high pressure nitrogen will be vented at the Silo Cap. Silo Cap area must be cleared of personnel. Failure to comply may result in injury and/or death to personnel.

a. Insure PSMR valve 25 is closed & open N-51 on Silo Cap.

b. Slowly open PSMR valve 25 & vent the ground pressure and routine use 6000 PSIG bottles.

c. Open PSMR 20A valve.

d. When PSMR gage 20 reads near zero, open PSMR valve 21, 22, 55 and 60. (Note: Excess gas venting from valve 22 indicates residual gas in the bottle and valve 22 should be left closed for an additional 1/2 hour and then opened.)

REVISION SYMBOL

TASK DETAILS, BLOCK NO. 3 (Continued)

2. Vent residual helium from the 6000 psig bottles:

   a. Insure PSMR valves 3 & 4, are closed.

   b. Close PSMR valves 23 & 24.

   c. Open H-2 & H-3 on the silo Cap.

   d. Open PSMR valves 1A & 2A.

   - WARNING -

   In the following step, 200 psi helium will be vented at the silo cap. The silo cap area must be cleared in the immediate area for personnel safety.

   e. Open PSMR valves 23 & 24 and vent residual bottle pressure to zero as read on PSMR gages 1 & 2.

   f. Open PSMR valves 16, 17, 18 & 19.

   g. Close PSMR valve 75.

   h. Remove PSMR calibration fitting W (gage 70). VENTING OCCURS AT PORT W IN THE FOLLOWING STEP

   i. Open PSMR valve 75.

   j. Insure PSC valves 105 & 106 are open.

   k. Open PSC valves 123, 124, 125 & 126.

   l. Open PSC valve 148 & 150.

   m. Open HCU valves 313, 302, 337, 339, 340, 342 & 343.

   n. Open PSC 142 filter handvalve.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 3 (Continued)

3. LN2 Prefab venting. Verify that the LN2 Prefab is depressurized, as indicated by gages 228 & 227 reading 0 psig. If the gages do not read zero, accomplish the following:

   a. Remove the seal from the NEX exhaust vent port on the silo cap.

   b. Open valve 216.

   c. Open Valve 203.

   d. When venting ceases, close valve 203 and reseal the NEX exhaust vent port on the silo cap.

NOTE

Refer to T.O. 21M-HGM16F-2-12 for figures referred to in the following steps.

4. Fuel Loading Prefab (Figure 1-4)

   a. Close valve NF-3 (25)

   b. Open valve F-6 (10)

   c. After pressure indicator PI-9 (24) drops to 0 PSIG and venting ceases, close valve F-6 (10).

   d. Leave valve NF-3 closed.

5. Pressurization Prefab & 4000 psig GN2 bottles (figures 1-1 and 6-1)

   a. Remove polyethylene and tape from 10" vent line OVP in PLS fill and vent shaft in quadrants II and III on silo cap (Figure 1-1).

   b. Notify personnel venting will be accomplished at PLS fill and vent shaft at silo cap.

   c. Open valve N-13 (27, Figure 6-1)

   d. Open valve O-5 (5)

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 3, NO. 5 (Continued)

e. Open valve N-44 (9)

f. Open valve N-49 (19), N-40 (16) & N-48 (14)

g. Open valve N-45 (23)

h. After pressure indicators PI-1 (7) and PI-3 (12) indicate 0 PSIG and venting ceases, close valves N-45 (23), N-49 (19), N-44 (9)

6. Launch Platform, Level 1 (Figure 1-1)

a. At the missile rise-off end of the LO2 fill and drain line, release the plunger on the cap installed on the end of the line.

REVISION SYMBOL A

BLOCK NUMBER: 4

BLOCK TITLE: Fuel prefab residual drain.

GENERAL DESCRIPTION OF BLOCK ACTION:

Drain fuel trapped in fuel loading prefab lines.

TIME REQUIRED: 1 hour

MANPOWER REQUIRED: 2 fuel technicians

SPECIAL TOOLS & EQUIPMENT REQUIRED: None

TASK DETAILS:

CAUTION

Fuel will be drained from the Fuel Prefab on Level 8 in the following steps. Use appropriate containers to prevent excessive fuel spillage.

1. At fuel pump F-11 on the Fuel Prefab, remove the drain plug from the bottom of the pump case and drain fuel into appropriate container. Approximately 4 to 5 gallons of fuel will drain at this point.
2. Reinstall drain plug.
3. Place an appropriate container under the flange connection where line FFM, (the 4" fuel line to the launch platform) attaches to the prefab.
4. Loosen flange bolts and drain fuel line. Approximately 5 to 6 gallons of fuel will drain at this point.
5. Do not retighten flange bolts since this line will be removed later.

CAUTION

Any spilled fuel must be cleaned up to eliminate fire hazards since torch cutting will be accomplished later, on the launch platform

REVISION SYMBOL

BLOCK NUMBER 5

BLOCK TITLE: Retract silo work platforms, open silo doors, and block with support struts

GENERAL DESCRIPTION OF BLOCK ACTION:

This procedure assumes that the overhead doors and work platforms are in the inactivation configuration (doors closed, crib locks unlocked, jumper installed to prevent actuation of vertical locks, work platforms extended, and MLS shutdown). It removes the hand pump and accessory equipment for Work Platform 1B (for use in Block 19) and activates MLS to retract work platforms, open silo doors, and install the overhead door support struts (EID 27-9386).

TIME REQUIRED: 5 hours

MANPOWER REQUIRED:

a. One 312x4D - BMAT
b. Two 541x0D - MFT
c. Three laborers
d. One mechanic

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

a. Support strut (EID 9386) FSN 1450-516-6947AC
b. Torque wrench - 200 foot-lbs.
c. 10 foot step ladder-for access to door plate

TASK DETAILS:

1. Remove hand pump and accessory equipment from stretch mechanism system on work platform 1B as follows:

NOTE

Level 1 work platforms should be in extended position.

a. Verify that the hand valve on the pump outlet port and the selector valve on the pump are open.

b. Disconnect the MS26759-4-0960 hose at the elbow mounted on the crib structure.

c. Depress the bleed valves at each stretch cylinder until hydraulic fluid stops draining from the broken connection.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 5 (Continued)

d. Remove two MS28759-4-0460 hases and retain for further use.

e. Disconnect the 27-99791-1 tube at the tee mounted on the hand pump reservoir. Cap the tee immediately with an AN929-4C cap.

f. Remove, pack and identify the following parts as assembled and retain for further use during modification of the MLS brake system (Block 19).

(1) 27-08302-3 pump assembly (1)
(2) 83-65900-058 gage (1)
(3) 27-99788-803 tube assy (1)
(4) MS24388c4 tee (1)
(5) MS24395c-4 tee (1)
(6) 27-99792-1 tube assy (1)
(7) AN806c4 plug (1)
(8) Connecting fittings, packings and nuts for the above items.

NOTE: Before proceeding with this block, remove vinyl from CSMOL, MLS MCC, MLS logic racks and verify that a jumper is installed between TB-2-8-15 and TB-2-6-53 on MLS logic unit A2.

2. Before proceeding with this block, verify/turn on missile lifting system motor control center circuit breaker on silo switchgear panel (silo level 5).

3. To retract silo work platforms, proceed with section 51 of T.O. 21M-HGM16F-3CL-1 with the following exceptions:

a. Page 51-1 - Time will be appriximately 2 hours.

b. Page 51-3 - After performing step 5 (under MLS MCC level 1) add a new step: Standby 1 H.P. pump running for a minimum of 30 minutes before proceeding . . . . . .Accomplished

c. Page 51-6 - Disregard note.

d. Page 51-9 - Disregard note.

e. Page 51-15 - Disregard note.

f. Pages 51-16A and 17 - Disregard pages.

4. Prior to opening silo doors, install clevis on the existing door plate and install clevis on existing silo cap plates of both doors (Ref. EID 27-9386). Torque all clevis bolts to 200 ft/lbs.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 5 (Continued)

5. To open silo overhead doors, proceed with section 33 of T.O. 21M-HGM16F-3CL-1 with the following exceptions:

   a. Page 33-1 - Time will be approximately 2 hours.

   b. Page 33-1 - Disregard note and caution.

   c. Page 33-1A - Disregard caution and warning.

   d. Page 33-5 - Change time in notes from/to:

      From 30 seconds - to approximately 1 minute

      From 5 minutes - to approximately 20 minutes

6. After "DOOR OPEN" indicator illuminates, turn 40 HP circuit breaker off.

7. To secure doors with support strut after they are open, proceed with the following:

   a. Lift the support rod by hand and guide rod into clevis ends.

   b. Adjust rod length and insert lock pins.

   c. Repeat steps a through b for both doors.

NOTE: Reference engineering installation Drawing 27-73870.

REVISION SYMBOL A

BLOCK NUMBER: 6

BLOCK TITLE: Prepare propellant loading system for removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

This section accomplishes electrical, pneumatic, piping, and tubing disconnects of the 4000 PSI GN2 vessels, LO2, topping tank, LO2 storage tank, topping control unit, pressurization prefab, LO2 fill prefab, LO2 control prefab, instrument air prefab, and the fuel prefab. Final structural disconnection is not accomplished at this time. Structural disconnection as well as non-prefab PLS pipe disconnection is accomplished on a level to level basis.

TIME REQUIRED: 8 hours

MANPOWER REQUIRED:

3 PLS Technician
1 Electrician

TASK DETAILS:

A. Prior to disassembly of any units, insure that the following preparations have been accomplished:

1. 28 VDC off on all LO2 and fuel tanking panels.

2. Circuit breakers for the defueling pump control system are open (Essential Motor Control Center).

3. Circuit breakers to the storage tank vacuum, pumps, instrument air prefab, and defueling pump have been opened at the non-essential motor control center.

4. Block 4, Fuel Prefab Residual Drain, has been accomplished.

- CAUTION -

Care must always be taken to ensure attaching piping is adequately supported before disconnecting flanges. In some cases it will be necessary to completely remove sections of pipe to free a prefab or tank for removal.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 6 (Continued)

B. PLS Equipment Preparation for Removal

1. LO2 Topping Tank

a. Electrically disconnect the vacuum pump from the facility wiring.

b. Disconnect the pneumatic line from the vacuum pump control system.

c. Disconnect instrument line OMU2 from the top of the topping tank.

d. Disconnect instrument line OML2 from the bottom of the topping tank.

e. Disconnect the LO2 fill line and the pressurization/vent line at the top of the topping tank.

2. LO2 Storage Tank

a. Electrically disconnect the vacuum pump from the facility wiring.

b. Disconnect the pneumatic line from the vacuum pump control system.

c. Disconnect instrument lines OMU1 and OML1 from the top and bottom of the storage tank respectively.

d. Disconnect the LO2 fill line and pressurization/vent line at the top of the storage tank.

3. 4000 PSI GN2 Bottles

a. Disconnect the GN2 supply bottles from the piping (one line per bottle).

REVISION SYMBOL

TASK DETAILS, BLOCK NO. 6 (Continued)

4. Instrument Air Prefab

   a. Disconnect electrical wiring and grounding strap entering prefab.

   b. Disconnect the air intake lines, water lines, and air outlet lines to the prefab.

   c. Disconnect the drain line to the silo sump (located in left rear of prefab as you face the compressors).

5. Topping Control Unit

   a. Disconnect electrical wiring and bonding strap entering the unit.

   b. Disconnect the LO2 and GN2 supply lines to and from the prefab.

   c. Disconnect the pneumatic supply line entering prefab from the bottom.

6. LO2 Control Prefab

   a. Disconnect electrical wiring and bonding strap entering the prefab.

   b. Disconnect the piping entering prefab.

   c. Disconnect the pneumatic line entering the prefab from under the grating.

   d. Disconnect the pneumatic line connecting the LO2 fill prefab with the LO2 control prefab .

7. LO2 Fill Prefab

   a. Disconnect the electrical wiring and bonding strap entering the prefab.

   b. Disconnect the box and GN2 lines entering the prefab.

REVISION SYMBOL

TASK DETAILS, BLOCK NO. 6 (Continued)

8. Pressurization Prefab

   a. Disconnect the electrical wiring and bonding strap entering the prefab.

   b. Disconnect the GN2 and vent piping entering the prefab.

   c. Disconnect the pneumatic line entering the bottom of the prefab.

   d. Disconnect instrumentation lines OMU1, OML1, OMU2, and OML2 entering the prefab.

   e. Disconnect GN2 piping entering prefab from under the grating.

9. Fuel Prefab

   a. Disconnect the electrical wiring and bonding strap entering the prefab.

   b. Disconnect the piping entering the prefab.

REVISION SYMBOL

BLOCK NUMBER: 7

BLOCK TITLE: Prepare LCC and tunnel equipment for removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Disconnect and prepare launch control center equipment for removal.

TIME REQUIRED: 4 days

MANPOWER REQUIRED:

a.	Plumbers (Pipefitters)	80 hours
b.	Iron workers	40 hours
c.	Electricians	138 hours
d.	Riggers	80 hours
e.	Welders	40 hours
f.	Mechanics	88 hours
g.	Sheet Metal workers	32 hours
h.	Laborers	80 hours
		438 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. 1 cutting torch
b. 2 heavy duty bolt and wire cutters
c. 2 impact wrenches (air operated)
d. 1 air compressor
e. Assorted wire rope, clamps, scaffolding, and manilla rope.

TASK DETAILS:

1. Equipment prepared for removal in the following steps may be left in place in the disconnected condition or moved to level 2 as space permits. Cabling and the CSMOL must not be disconnected until block 16 (Drive L/P down) and Block 23 (Retract Main Locks) are completed.

2. Cut the tunnel debris door into readily movable sections. (Note-Vestibule and tunnel blast doors are to remain functional and in place.)

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 7 (Continued)

3. Verify the following breakers are tripped prior to electrical disconnection: silo L/C Power Supply Panel except L/P Feed; LCC Lighting Panel A except lights; LCC Dist. Panel D except Panel A; LCC MCC except 45 kva transformer; 28VDC supply, 400 cycle M-G, and 5 kva control transformer breakers tripped at Silo EMCC. Sewage Pumps and control transformer breakers at LCC MCC and 5 kva breaker at EMCC may be closed after FRCP is disconnected.

4. Unbolt the cable blast plates.

5. Verify that the 6 inch angle valve in tunnel remains closed, shutting off silo utility water supply from water storage tanks.

6. Cut or disconnect plumbing, cabling, cable trays and support brackets in the tunnel into readily movable lengths and move clear of the tunnel. Do not remove utility water 6 inch line up stream of angle valve. Do not remove silo lighting control panel in tunnel. Do not disconnect or remove sewer pumps.

7. In the LCC, prepare for removal of the Launch Officer's Console (150 lbs), the Alternate Command Console (150 lbs), the Facility Remote Control Panel, the TV Monitors (200 lbs), and LO2 Tanking Panels, and the Fire Alarm Panel. (Note- Lighting Panels A and D and the 45 kva transformer remain installed and connected. Electrical conduit and wiring for lighting remain installed and connected)

   a. Disconnect or cut cable connectors at the equipment. Disconnect or cut electrical conduit and wiring at the equipment.

   b. Disconnect or cut equipment hold-down bolts to supporting structure.

8. Prepare communication and blast detection equipment for removal with on-the-spot technical guidance and supervision.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 7 (Continued)

9. Disassemble air handling unit into fan, coils, dampers and duct components for removal.

10. Disconnect from support structure as necessary for removal, all office, kitchen and mess equipment. (Note-toilet facilities and sewage pumps will remain in place and intact.)

11. Cut or disassemble into movable sections all ventilating and air conditioning ducting. (Note-Blast closures will remain in place.)

12. Remove leveling cylinders and associated lines; Tank TK 100 and associated plumbing.

13. Remove toilet sinks, commodes, shower, hot water heater, etc. and cap all open lines.

REVISION SYMBOL A

BLOCK NUMBER: 8

BLOCK TITLE: Prepare diesels for removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Prepare the diesel engines on levels 5 and 6 for removal from the silo.

TIME REQUIRED: 2 days

MANPOWER REQUIRED:

a.	Plumbers	32 hours
b.	Iron Workers	8 hours
c.	Riggers	8 hours
d.	Welders	8 hours
e.	Electricians	16 hours
f.	Mechanics	16 hours
g.	Laborers	16 hours
		104 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. 1 acetylene cutting outfit
b. Wire rope and clamps

TASK DETAILS:

1. Verify that diesel breakers are tripped at switch gear.

2. Disconnect or cut the diesel fuel oil supply, the fuel oil drip return, and the fuel bypass return lines at the flex connection to the diesels. (Note-All fluid lines are drained during de-activation, but there may be residue.)

3. Disconnect or cut the dirty lube oil discharge and the clean lube oil inlet lines at the flex connections to the diesels.

4. Disconnect the diesels and Heat Recovery Silencers at the expansion joint. Provide temporary overhead hangars as required to support diesel exhaust system.

REVISION SYMBOL

TASK DETAILS, BLOCK NO. 8 (Continued)

5. Disconnect or cut the condenser water inlet at the flex connection to the intercooler. Disconnect or cut the condenser water outlet at the flex connection down stream of the lube oil cooler and heat exchanger.

6. Disconnect or cut the demineralized makeup water line to each diesel at the jacket water pump.

7. Disconnect the power cabling at the terminal box.

8. Disconnect the utility air supply line at the air starting solenoid control valve.

9. Disconnect or cut the holddown bolts at the vibration isolators.

REVISION SYMBOL

PACKAGE NO.

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8
	SCALE	RELEASED	SHEET 8-2

BLOCK NUMBER: 9

BLOCK TITLE: Drive launch platform up for modification

GENERAL DESCRIPTION OF BLOCK ACTION:

Drive empty launch platform to the up and locked position to allow the L/P to be modified to a staging platform.

TIME REQUIRED: 1/2 hour

MANPOWER REQUIRED: 3 MLS Technicians

SPECIAL TOOLS & EQUIPMENT REQUIRED: None

TASK DETAILS:

NOTE

If commercial power is not available the following unit may be used.

A.P.U. Rated 150 KW Minimum, 480 Volt, 3 PHASE a minimum of 100 KW being drawn by the sile equipment other than M.L.S. is necessary to avoid L/P drive motors pumping power back into system.

A.P.U. may be connected through the O2 - N2 Recharger receptical per GD/C in-activation plan.

1. At Level 5, place MLS circuit breaker on.

   At Level 1 - M.C.C, turn 1 HP standby pump on.

2. Perform T.O. 21SM65F-CL-3-1 section 77-1 thru 77-9 and 77-14 thru 77-15 except steps 1 and 2 on Page 77-14. (omit steps referencing covering of disconnects and intermediate steps. Omit reference to missile).

3. With L/P up and locked measure the distance between the counterweight at four corners and the sile floor and record as dimension "A". This data will be used to determine counterweight shoring height (SEE BLOCK 20)

REVISION SYMBOL A

BLOCK NUMBER: 10

BLOCK TITLE: Prepare Launch Control, missile logic units, GE and ARMA cabinets for removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Preparation of level 3 electrical cabinets for removal.

TIME REQUIRED: 3 days

MANPOWER REQUIRED:

a.	Iron Workers	40 hours
b.	Electricians	80 hours
c.	Welders	40 hours
d.	Laborers	80 hours
		240 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED: Cutting torches.

TASK DETAILS:

1. Trip all breakers on Launch Control Power Supply Panel except for L/P feeder and placard the panel. Trip breakers at Motor Control Center for 28 VDC power supply and 400 cycle motor generator and safety wire in the off position. Trip the 5 KVA control circuit breaker at the Motor Control Center and safety wire.

2. Disconnect two Launch Control logic units (1560 lbs each), two Launch Control Responder Units (2000 lbs each), two GE cabinets (500 lbs each), one Arma cabinet (500 lbs), and one Facility Interface cabinet.

   a. Disconnect cable connectors.
   b. Disconnect or cut air conditioning ducting at flex couplings to units.
   c. Disconnect or cut bolts attaching cabinets to floor beams.
   d. Cut false floor between Launch Control Logic and Responder units and remove flooring and cabling underneath so that units may be skidded across floor to the staging area.
   e. Remove safety wire and close 5 KVA control transformer breaker after FTC disconnected and wires taped.

REVISION SYMBOL

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8	PACKAGE NO
	SCALE	RELEASED	SHEET 10-1	

TASK DETAILS, BLOCK NO. 10. (Continued)

3. Disconnect DC Power Supply (1350 lbs), 400 Cycle Meter Generator (1320 lbs), Battery Storage rack, and associated Relay Box AC Power distribution:

   a. Disconnect or cut cable connectors. Disconnect or cut electrical conduit and conduit at terminal boxes.

   b. Disconnect or cut bolts attaching units to support structure and prepare for removal.

REVISION SYMBOL

BLOCK NUMBER: 11

BLOCK TITLE: Dismantle cooling tower.

GENERAL DESCRIPTION OF BLOCK ACTION:

Disassemble the water cooling tower.

TIME REQUIRED: 2 days

MANPOWER REQUIRED:

a.	Plumbers	16 hours
b.	Electricians	16 hours
c.	Riggers	16 hours
d.	Carpenters	16 hours
e.	Crane operator	8 hours
f.	Truck driver	8 hours
g.	Mechanics	16 hours
h.	Laborers	16 hours
		112 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. 1 five ton truck crane
b. 1 two ton flat bed truck

TASK DETAILS:

1. At the Essential Motor Control Center (EMMCC) on level 2, turn off breakers for the 5KVA control transformer.

2. Disconnect or cut the external water piping at the valve flanges. Cut sense lines to thermostat boxes. Remove motor operated temperature control valves and tape open wires. Remove thermostat boxes, hand operated gate valves, and piping. Plug underwater piping at grade entry.

3. Disconnect or cut and remove corrugated side panels and wooden louvers as required for access in the following steps.

4. Verify fan breaker tripped at Motor Control Center. Cut electrical conduit and wiring to the tower control panel. Remove the panel, fan control box, and transformer.

5. Disconnect fan belt and motor box attach bolts. Cut wiring to the box. Remove motor and box.

REVISION SYMBOL A

TASK DETAILS, BLOCK NUMBER 11 (Continued)

6. At the EMMCC, level 2, turn on breakers for the 5KVA control transformer.

7. Disconnect bolts securing the fan ring to tower roof. Remove guard screen as required.

8. Shackle lifting sling to fan lifting lugs. Using crane, lift fan clear of the tower and remove.

9. Dismantle remainder of tower to pad level in most expeditious manner.

REVISION SYMBOL A

PACKAGE NO.

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8	
	SCALE	RELEASED		SHEET 11-2

BLOCK NUMBER: 12

BLOCK TITLE: Prepare fans and pumps for removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Preparation of water systems, air conditioning and electrical equipment for removal on each level.

TIME REQUIRED: See note below

SPECIAL TOOLS & EQUIPMENT REQUIRED:

NOTE - Special tools and manpower estimates are included in the level by level equipment removal blocks. The disconnect activity commenced here will continue into the level by level equipment removal blocks.

TASK DETAILS:

- CAUTION -

Prior to any flame cutting, local areas should be inspected for combustible fluid accumulations and cleaned up if found. A CO2 guard should be established where cutting is in progress. Asbestos blankets should be spread immediately below cutting zone for cinder catchment.

- CAUTION -

In the following procedures, prior to removing any firestats, thermostats, motor operated valves, or associated wiring ensure the breakers on the EMCC (Silo Level 2) for the 5KVA control transformer are positioned to OFF until wiring is removed and taped.

1. On Level 1, prepare for removal of the Spray Pumps (100 lbs each), the demineralized Water Pump, and the Air Wash Dust Collectors (2300 lbs each).

   a. Disconnect or cut all water piping at the flanges at the edges of the skids. Disconnect interconnecting piping to facilitate removal.

   b. Verify equipment breakers are tripped at the non-essential motor control center, essential Motor

REVISION SYMBOL A

TASK DETAILS, BLOCK NUMBER 12 (Continued)

Control Centers and the 120 volt Control Power Panel "C". Disconnect or cut electrical conduit and wiring at the motor terminal boxes. Tape distribution side of cut wiring for safety.

c. Disconnect or cut hold down bolts at equipment.

d. Disconnect or cut dust collectors and fans ducting.

e. Level 1 equipment is removed in Block 37 after all disconnects have been completed.

2. On Level 3, prepare for removal of the Fan Coil Unit FC 10 (1200 lbs) and the GO2 Vent Fan (1000 lbs).

a. Rig supporting lines as necessary.

b. Disconnect or cut ducting at intake and exhaust plenum and at supply and return ducts as applicable.

c. Disconnect or cut piping to cooling coils on fan coil unit.

d. Verify breakers tripped at Motor Control Center. Cut or disconnect electrical conduit and cabling at the unit junction box.

e. Disconnect or cut support hangers to overhead.

f. Level 3 equipment is removed in Block 33.

3. On Level 4, prepare for removal of the Condenser Water Pumps (1000 lb each), the Utility Water Pump (200 lbs), the Hot Water Pumps (200 lbs), the Emergency Hot Water Pump (200 lbs), and the Chilled Water Pumps (300 lbs each); use disconnect procedures similar to those in preceeding paragraphs. Remove equipment in Block 33 which also repeats the disconnecting procedures.

4. On Level 6, disconnect the Dirty Lube Oil Pump (150 lbs). Use procedures in foregoing paragraphs. Equipment removal occurs in Block 28.

5. From Level 7, gain access to vacuum pumps on top of the cryogenic tanks, disconnect and lift to Level 7 for removal. Equipment removal from Level 7 occurs in Block 18.

REVISION SYMBOL A

TASK DETAILS, BLOCK NUMBER 12 (Continued)

6. On Level 8, disconnect cryogenic tanks' Vacuum Pumps.

7. At silo floor, the sump pumps will remain in place and will be used during dismantling. Electrical circuitry removal occurs in Block 15. Waste water plumbing will remain connected intact throughout the dismantling. Waste water plumbing at the different crib levels should be placarded accordingly.

8. Under Level 8 disconnect the launch platform exhaust and purge fans using procedures in proceding paragraphs.

9. Verify that all wiring exposed by disconnecting equipment in this procedure has been taped and verify that the breakers on the EMCC (Silo Level 2) for the 5 KVA Control transformers are positioned to ON.

REVISION SYMBOL A

BLOCK NUMBERS: 13

BLOCK TITLE: Modify L/P for equipment off loading

GENERAL DESCRIPTION OF BLOCK ACTION:

This block cuts off upper section of L/P in order to convert it to a staging platform.

TIME REQUIRED: 10 days

MANPOWER REQUIRED:

a.	Iron workers	80 hours
b.	Welders	80 hours
c.	Riggers	48 hours
d.	Laborers	80 hours
e.	Crane Operator	8 hours
f.	Truck driver	8 hours
g.	Electrician	8 hours
h.	Plumber	8 hours
		320 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. 1 thirty ton truck crane
b. 1 five ton flat bed truck
c. Arc welding equipment
d. Acetylene cutting equipment
e. Two sets of L/P ballast (EID 27-9821)-110,000 lbs.

TASK DETAILS:

- CAUTION -

Prior to any flame cutting, local areas should be inspected for combustible fluid accumulation and cleaned up if found. A CO2 guard should be established where cutting is in progress. Asbestos blankets should be spread immediately below cutting zone for cinder catchment.

A. L/P Equipment Removal

1. Disconnect missile umbilical cables (18 total) at the umbilical "J" box on level 2 of the L/P. (Maximum care must be taken to prevent damage to connectors or cabling as these are reusable on future programs). Seal connectors with polyethylene and tape. Pack and identify per applicable specifications.

TASK DETAILS, BLOCK NO. 13 (Continued)

2. Disconnect and remove all cabling, tubing, ducting and piping which runs between levels 1 and 2 of the L/P. Disconnect at level 2 if possible.

CAUTION

Do not disturb hydraulic or electrical lines of the L/P main and wedge locks, or the umbilical cable loop.

3. Establish and scribe a line at sta. 1009'-8 1/2" on both sides of the L/P.

4. Torch cut all members and plate at sta 1009'-8 1/2" except for the flame bucket and the four 10 WF 49 corner columns. Also cut the 1/8 inch blast deflector plate connecting the top of the flame bucket to level 1.

5. Attach a 30 ton crane with appropriate rigging to the launcher pedestals on top of the L/P. (Approx. weight to be removed is 60,000 lbs.)

6. Apply a take-up load of approximately 25 tons with the crane.

7. Torch cut the four 10 WF 49 corner columns.

8. Lift off the upper portion of the L/P. Place well away from silo cap area.

9. Attach the crane to the top of the L/P flame bucket (Approx. weight to be removed is 10,000 lbs)

10. Torch cut and remove the two 10 WF 21 columns with attached cross bracing that support the top of the flame bucket from level 2.

11. Scribe and cut the flame bucket at sta. 1008'-10".

12. Remove flame bucket upper portion with the crane and place beside the top portion of the L/P.

REVISION SYMBOL A

13. On Level 2 of the launch platform, remove the Interconnecting Box JEU-14/E, Interconnecting Box JEU-12/E, Remote Switching Control C3183/GSW and the Missile Battery Simulator Power Supply.

    a. Disconnect all electrical cables at the equipment.

    b. Disconnect or cut all hold down bolts.

    c. Shackle a four leg sling to equipment lifting lugs and chain fall. Lift clear of launch platform. For AGE without lifting lugs jack equipment clear of the floor and skid with rollers onto hoisting platform or on higher equipment, hand lift onto hoisting platform and lift clear of launch platform.

C. Ballast Placement

1. Weld the ballast support brackets to the sides of the flame bucket as shown in figures 13-1 and 13-2.

2. Using a crane place 2 sets of EID 27-9821 ballast (14 lead logs) into the flame bucket behind the ballast support brackets.

D. Staging Platform Construction

1. On a suitable level spot near the silo cap lay out the 1/2 inch plates necessary for the 17 feet by 17 feet platform deck and track weld the plates together. (If diamond plate is used, insure that the diamond side is facing down)

2. Lay out and scribe the two centerlines.

3. Place the six 12 WF 40 support beams on the 1/2 inch deck plate, position per figures 13-1 and 13-2 and tack weld.

4. Position the ten 8 WF 31 tie beams between the 12 WF 40 beams and tack weld to the 1/2 inch deck plate.

5. Continuous weld the 8 WF 31 tie beams to the 12 WF 40 beams per figure 13-1.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 13 (Continued)

D. (Continued)

6. Intermittent weld both sides of all the bottom beam flanges to the 1/2 inch deck plate per figure 13-1.

7. Using a crane and necessary rigging turn the platform over. (Platform weight is approx. 12,000 lbs).

8. Weld lifting lugs to enable the platform to be correctly mated with the L/P.

E. Staging Platform Installation

1. Install a temporary work platform at L/P sta 1005'-0" on the inside of and behind the flame bucket.

2. Install the platform support angles on both sides of the L/P with the top leg at sta 1008'-8½". Weld top and bottom of angles as shown on figure 13-1.

3. Pick up the staging platform with a crane and carefully place on the L/P support angles.

4. Weld the webs of the six 12 WF 40 support beams to the sides of the L/P per the sketch. The front beam must be attached with a splice plate which ties the 12 WF 40 to the modified 10 WF 49. Weld per figure 13-1.

5. Weld the underside of the 1/2 inch deck plate to the outside of the L/P and to the eight st 4 WF tees and also to the four L/P corner plates as shown.

6. Remove the temporary work platform at sta 1005'-0".

7. Install the two diagonal braces in the front of the L/P from the flame bucket-L/P side joint to the center of the staging platform. Weld per figure 13-1.

8. Remove the lifting lugs attached to the top of the staging platform.

NOTE: Salvage I beam material from this task to fabricate horizontal crib shoring (Block 14).

REVISION SYMBOL A

PAGE 30, FIGURE 13-1 IS A MODIFICATION DRAWING (D SIZE) AND IS ATTACHED SEPARATELY WITH THIS PACKAGE.

REVISION SYMBOL

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8	PACKAGE NO.
	SCALE	RELEASED	SHEET 13-5	
			DISTR	

A2613 (REV. 6-62)

PAGE 31, FIGURE 13-2 IS A MODIFICATION DRAWING (D SIZE) AND IS ATTACHED SEPARATELY WITH THIS PACKAGE.

REVISION SYMBOL

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8	PACKAGE NO.
	SCALE	RELEASED	SHEET 13-6	
			DISTR	

PAGE 32, FIGURE 13-3 IS A MODIFICATION DRAWING (D SIZE) AND IS ATTACHED SEPARATELY WITH THIS PACKAGE.

REVISION SYMBOL

ENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8	PACKAGE NO.
	SCALE	RELEASED	SHEET 13-7	

A2613 (REV. 6-63) DISTR CODE 32

BLOCK NUMBER: 14

BLOCK TITLE: Install horizontal criv shoring at levels 5 and 8.

GENERAL DESCRIPTION OF BLOCK ACTION:

Install shoring between the crib and the silo wall at levels 5 and 8.

TIME REQUIRED: 2 days

MANPOWER REQUIRED:

a.	Iron worker	24 hours
b.	Riggers	8 hours
c.	Welders	24 hours
d.	Laborers	16 hours
		72 manhours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. Arc welding equipment
b. 2 swinging scaffolds

TASK DETAILS:

NOTE

Use (I-Beam) material salvaged from the portion of the L/P being removed. (Block 13)

Cut and fit shoring between the crib shock strut bracket and the silo wall at level 5, typical 4 places. See fig. 14-2 for approximate size and location.

Cut and fit shoring between the Crib Steel and silo wall at level 8, typical 8 places. See fig 14-3 for approximate size and location.

1. Provide an access platform at each location.

2. Fit shoring to allow 1/8 inch to 1/2 inch gap at the wall. See figure 14-1 for plan view and figures 14-2 and 14-3 for level 8 and level 5 respectively.

3. Continuous weld shoring to crib.

REVISION SYMBOL A

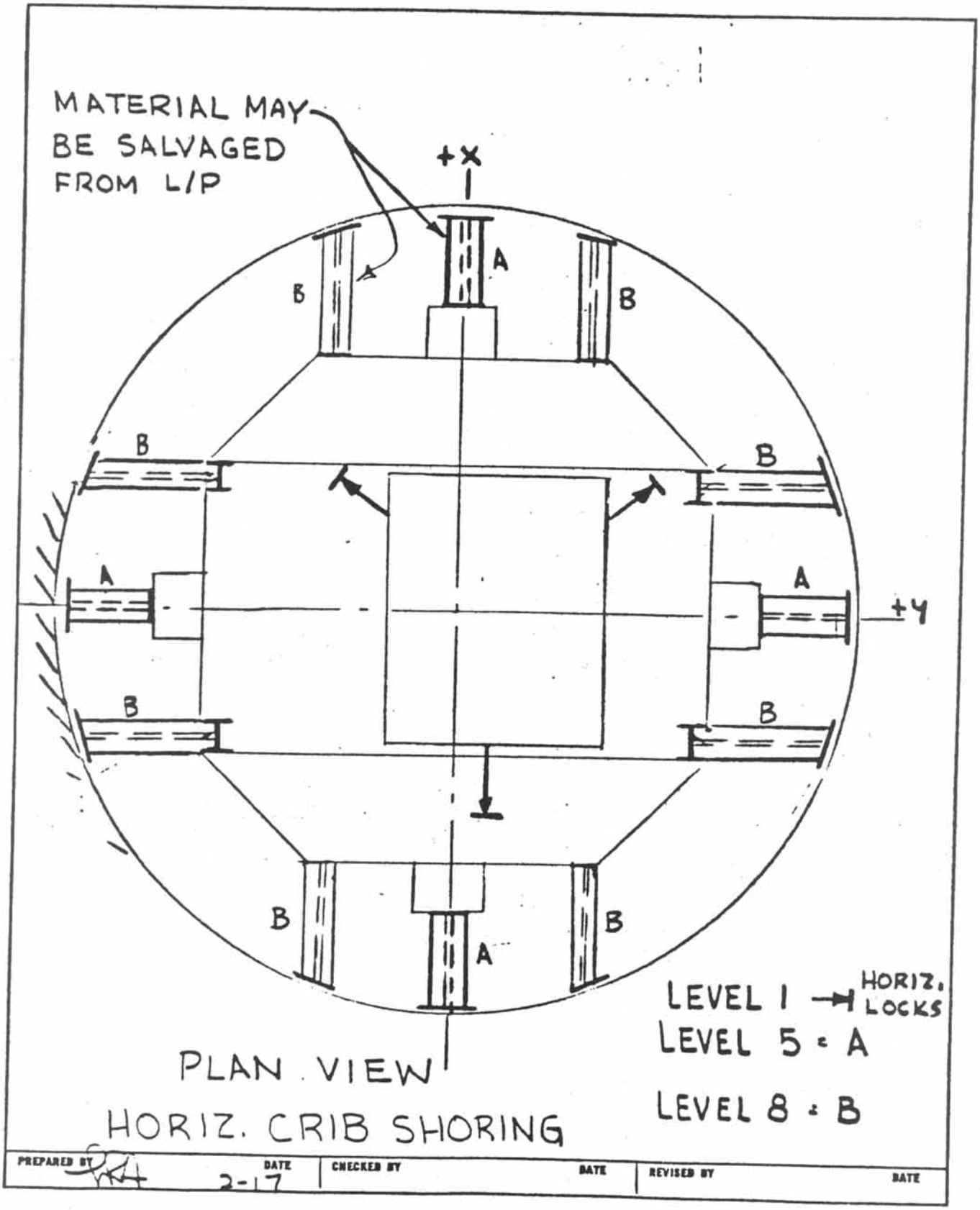
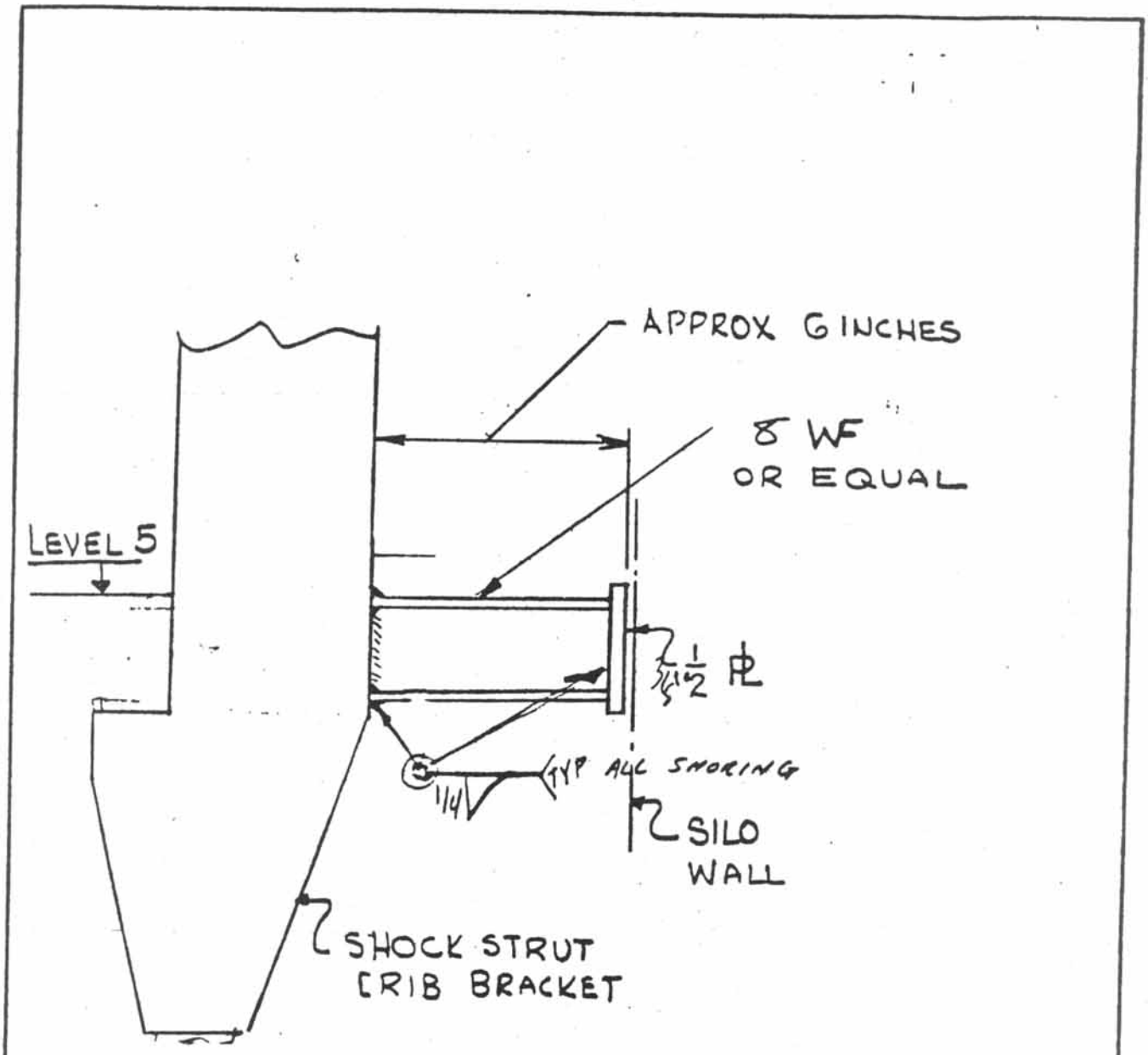

MATERIAL MAY BE SALVAGED FROM L/P
+X
+Y
A
B
LEVEL 1 → HORIZ. LOCKS
LEVEL 5 = A
LEVEL 8 = B
PLAN VIEW
HORIZ. CRIB SHORING
PREPARED BY
DATE 2-17
CHECKED BY
DATE
REVISED BY
DATE

FIGURE 14-1



LEVEL 5 SHORING
TYP. 4 PLACES

PREPARED BY	DATE	CHECKED BY	DATE	REVISED BY	DATE
	2-17				

FIGURE 14-2

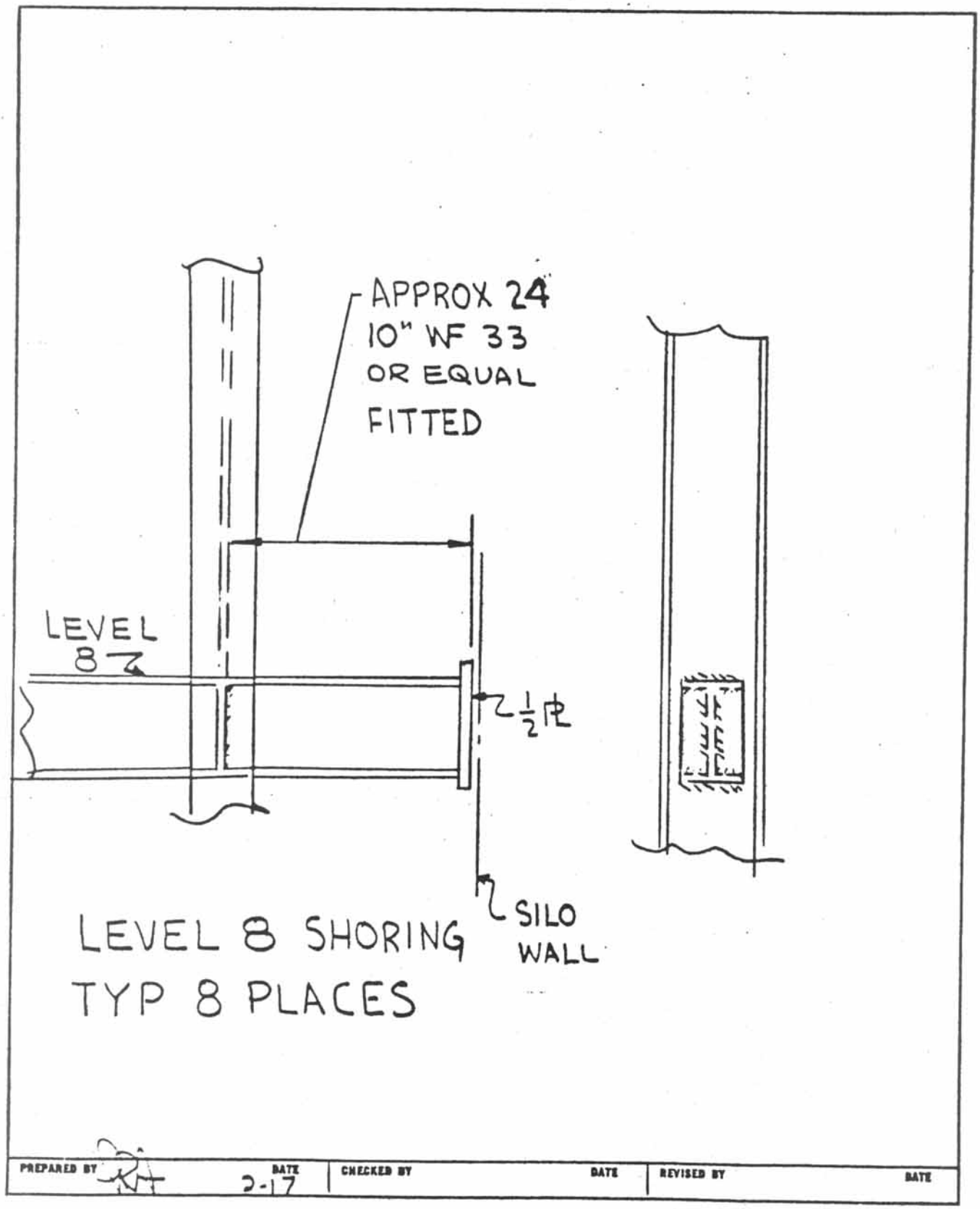

APPROX 24
10" WF 33
OR EQUAL
FITTED
LEVEL
8
℄
SILO
WALL
LEVEL 8 SHORING
TYP 8 PLACES
PREPARED BY
DATE
2-17
CHECKED BY
DATE
REVISED BY
DATE

FIGURE 14-3

BLOCK NUMBER: 15

BLOCK TITLE: Jury Rig Lights, Fans, Etc.

GENERAL DESCRIPTION OF BLOCK ACTION:

Provides an external electrical power source to Silo.

TIME REQUIRED: 3 Days

MANPOWER REQUIRED:

a.	Electrician	64 Manhours
b.	Welder	4 "
c.	Laborers	16 "
		84 Manhours

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

a. Acetylene Welding/cutting Set
b. Voltage test set
c. Electrician tool kit
d. Distribution Center (480V, 3 phase, 5 circuits, cabling and connectors as necessary between Motor Control Centers and transformers, elevator, and pumps).
e. Portable battery-operated lights
f. Missile Enclosure Purge Unit

TASK DETAILS:

Prior to any flame cutting, local areas should be inspected for combustible fluid accumulations and cleaned up if found. A CO2 guard should be established where cutting is in progress. Asbestos blankets should be spread immediately below cutting zone for cinder catchment.

1. The GD/A Plan for Silo Inactivation, Block 2, provides that 150 k va, 480 V ac, 3 phase power is supplied commercially or by APU at the silo cap. Connection to the silo electrical distribution is through the O_2-- N_2 recharger receptacle at the cap or directly to switchgear. Breakers at switchgear and MCCs are tripped except as necessary for lighting; EF30; SF 22; silo sump pumps; LCC sewage pumps; EC 20.

REVISION SYMBOL A

TASK DETAILS, BLOCK NUMBER 15 (Continued)

NOTE

Notify all personnel not envolved to evacuate silo during power change-over. When power change-over is complete and missile enclosure purge unit is in operation notify personnel silo may be re-entered.

2. Set-up portable, battery-operated lights on level 2 to illuminate the non-essential motor control center, and in LCC to illuminate lighting transformer and sewer pumps.

3. At the silo cap, open the commercial power disconnect or shut down the APU depending on which is supplying silo power.

4. Electrically isolate the end section (front and back) of the non-essential MCC from the other sections. - (The section which contains the sump pump breakers). ie. disconnect the bus-bars of this section from the other sections.

5.a. If commercial power is already routed into the silo, disconnect the main feeder cables from the disconnect switch on silo level 5 and reroute to level 2.

b. Connect the com'l power feeder cables to the bus bars of the isolated non-essential MCC sections.

6.a. If APU or com'l power is routed in through the O_2 - N_2 recharger receptacle, disconnect the feeder cables and route to silo level 2 through intake blast closure #2. Insure blast closure is blocked open with 4 x 4. Seal blast closure opening all around.

b. Connect the APU or com'l power feeder cables to the bus bars of the isolated non-essential MCC sections.

7.a. At the isolated sections of the non-essential MCC disconnect and remove all breakers, wiring and cabling except for the sump pump breakers.

b. Disconnect cables and remove the 30 KVA lighting transformer breakers from the non-isolated section and Facility Elevator of the MCC and install in the isolated section. Reroute 440V cables and assc. wiring for the transformer and elevator to the isolated section of the MCC and reconnect to their breakers.

REVISION SYMBOL A

TASK DETAILS, BLOCK NUMBER 15 (Continued)

8. At the LCC sewer pumps remove 440V and 120V supply wiring and cabling coming from LCC control center.

9. At the LCC remove 440V supply cable from the 45 KVA lighting transformer.

10. Remove three breakers from the non-isolated section of the non-essential motor control center and install in isolated section, and connect to LCC sewer pumps and transformer with approp. size cabling.

11. Using 120V recept. on silo level 2, route 120V to control circuits of LCC sewer pumps and silo sump pumps. Insure sump pump control wiring is disconnected from Panel "C" on the EMCC.

12.a. Turn on commercial power or APU disconnect on Silo cap.

b. Turn on all breakers on isolated MCC section.

c. Ensure correct phase rotation by observing shaft rotation on LCC sewer pump, and operation of sump pumps.

d. Depress silo light start push-button in tunnel.

REVISION SYMBOL A

BLOCK NUMBER: 16

BLOCK TITLE: Drive launch platform down (Level 7)

GENERAL DESCRIPTION OF BLOCK ACTION:

Drive launch platform from up and locked position to down and locked position after modification of the L/P to a staging platform.

TIME REQUIRED: 1 hour

MANPOWER REQUIRED: 4 MLS technicians

SPECIALS TOOLS & EQUIPMENT REQUIRED: None

TASK DETAILS:

NOTE

If commercial power is not available, the following unit may be used: A.P.U. rated 225 KW minimum, 480 volt, 3 phase. APU may be connected through the 02-N2 recharger receptical per the GD/C in-activation plan.

NOTE

The following steps will be necessary to assure L/P drive system will drive down. If a problem develops, depress the STOP and then the UP RUN button on CSMOL to bring the L/P up and locked for trouble shooting.

1. Verify or accomplish
   a. MLS feed circuit breaker on level 5 turned ON.
   b. MLS drive circuit breaker level 1 MCC turned ON.
   c. 40 HP pump circuit breaker level 1 MCC turned ON.
   d. 1 HP pump circuit breaker level 1 MCC turned ON.
   e. All logic circuit breakers are on.
   f. Position logic programmer key switch to on. (Ref T.O. 21M-HGM16F-3-1, Section 69)
   g. Verify test plugs in logic rack are not installed.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 16 (Continued)

2. On CSMOL depress 40 HP PUMP ON button. System pressure indicator illuminates green.

3. Notify all personnel that L/P will be driven. Position observes at drive base to observe cables and L/P motion.

4. On CSMOL, depress DOWN RUN button.

5. After L/P descends 5 feet from up and locked, depress STOP button on CSMOL.

6. Observe L/P stops and no movement of L/P occurs for 5 minutes.

7. Depress DOWN RUN button. L/P will descend at run speed.

8. When L/P staging platform is at top of Crib, observe all sides for clearance or possible interference.

9. Depress STOP button and observe drive for cable slippage or L/P motion for 5 minutes.

10. Depress DOWN RUN button.

11. L/P will descend to Down and Locked position.

12. Trip MLS drive breaker on MCC.

13. Turn off 40 HP pump at MCC.

REVISION SYMBOL A

BLOCK NUMBER: 17

BLOCK TITLE: Install MLS inching tool

GENERAL DESCRIPTION OF BLOCK ACTION:

Part A: Install inching tool to facilitate inching of L/P from level to level.
Part B: Provide instructions for repositioning L/P using inching tool and modified brake. **Part B to be used only when required to reposition the L/P.**

TIME REQUIRED: Part A: 2 hours
Part B: 5 hours per level

MANPOWER REQUIRED:

Part A: 2 MLS technicians
Part B: 4 MLS technicians

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

a. MLS locking tool, EID 27-9398
b. Cooling supply for L/P inching tools (see Figures 17-1, 17-2, and 17-3)

TASK DETAILS:

A. Installation of MLS Inching Tool

1. Verify the following prior to installation of inching tool:
   a. Cooling supply for L/P inching tool fabricated per Figures 17-1, 17-2, and 17-3 and available at the site.
   b. Cooling water supply is available.
   c. MLS locking tool (EID 27-9398) available at the silo. Reference GD/C procedure 27-47174.
   d. L/P is down and locked after modification.
2. Move the tool case to level 1 at L/P drive base. (Unit weight, 100 lbs.)
3. The cutout shifter coupling between the main gear box and the auxiliary gear box must be in the engaged position (low speed mode).
   a. If the shifter coupling is disengaged, remove the clevis bolt connecting the coupling shift arm to its hydraulic cylinder. Manually engage coupling by moving the coupling housing toward the low speed motor until the coupling gearing is aligned and fully engaged with that of the main gear box. NOTE: With coupling fully engaged, low speed motor shaft will not rotate.

REVISION SYMBOL A

4. Install the split collar furnished with the tool (GD/C Part #27-77852). Secure between main gear box and shifter coupling. (See Figure 17-4 for steps 4 through 9.)

5. Install the tool key (GD/C Part #27-77849) in the low speed motor shaft keyway at the flex coupling. NOTE: If coupling key extends to full length of keyway, use it in place of this key.

6. Assemble the two pieces of the worm gear (27-77845) on the low speed motor shaft and key against the flexible coupling. NOTE: Assemble the pieces with match marks aligned.

7. Loosen the three locking screws on the channel clamp, 27-77847, and remove the two collars on the frame assembly. NOTE: Steps 8 through 14 provide for clockwise rotation of worm to raise L/P.

8. Assemble the channel clamp on the drive base channel nearest east silo wall.

9. Loosen the locking lug, 27-77848, on frame assembly and slide away from hex drive.

10. Install the coolant supply unit on the frame assembly. (Figure 17-2)

11. Rotate hex drive as required to mesh gears and install frame assembly around worm wheel. Secure collars to frame. NOTE: Collars are match marked with frame.

12. Apply MIL-G-7118 grease, or equivalent, to the worm wheel teeth.

13. Final position the channel clamp. Tighten the horizontal positioning screw to lock clamp on the channel. Securely fasten the two swivel screws to lock the clamp vertically.

14. To transfer L/P load from brake to the tool, rotate the hex drive 3 to 4 turns counter clockwise (looking down). This will absorb back lash in the gear train.

B. Operating Procedure for Raising L/P from Level to Level

1. Verify the following prior to continuing with this procedure:

   a. The inching tool has been installed per Part A of this procedure.

   b. L/P main locks are fully retracted. (The main locks will be retracted and remain retracted per Block 23.)

   c. The MLS brake has been modified per Block 19.

REVISION SYMBOL A

d. A 1/2 HP, 1200 rpm, or equivalent, drive unit having a 1/2 inch drive shaft, rotating clockwise from motor end, must be available for use.

2. Install the hex drive socket on the tool. Insert 1/2 inch square drive shaft on the driving unit and lock.

3. Restrain drive unit from turning when actuated.

4. Connect power cable to electrical supply.

5. Verify the following:

a. Shifter coupling engaged, collar secured.

b. Channel clamp and frame secured.

c. MEA is clear of personnel.

6. Manually release the drive brake using the following procedure:

a. The following safety precautions must be observed:

1) The launch platform drive system brake is to be released just prior to operating the inching mechansim only.

2) The launch platform drive system brake shall be set at all times when the launch platform is not in motion.

3) The launch platform drive system brake hydraulic pressure shall be monitored by one man on the hand pump gage at all times when the launch platform is in motion. Pressure shall not be less than 2000 psig nor more than 2400 psig.

4) The selector valve on the hand pump shall be in open position at all times while the launch platform is in motion. In the event of failure of the inching mechanism the man stationed at the pump shall immediately open the hand valve on the pump outlet port to apply the brakes.

b. Releasing the brake:

1) Verify that the hand valve on the pump outlet port is open.

2) Move the pump selector valve to the closed position.

3) Apply 2300 ±100 psig pressure to the brake system with the hydraulic hand pump.

4) Close the hand valve on the pump outlet port then open the selector valve on the pump. Verify that the pressure in the brake system remains constant.

REVISION SYMBOL

7. Actuate the tool drive unit. Verify clockwise rotation of unit from motor end.

NOTE: The time required to move the L/P upward one foot will be approximately 10 minutes (1200 rpm drive). To move 15 feet will require 5 hours of continuous operation.

8. If the L/P is to be moved more than 5 feet, coolant must be turned on.

- CAUTION -

Monitor the following during drive:

a. Tool attachments secure
b. Coolant adequate
c. Lubrication on gears still adequate
d. Clearance between L/P and crib adequate

9. After L/P has reached the level required, disconnect the drive unit at power source.

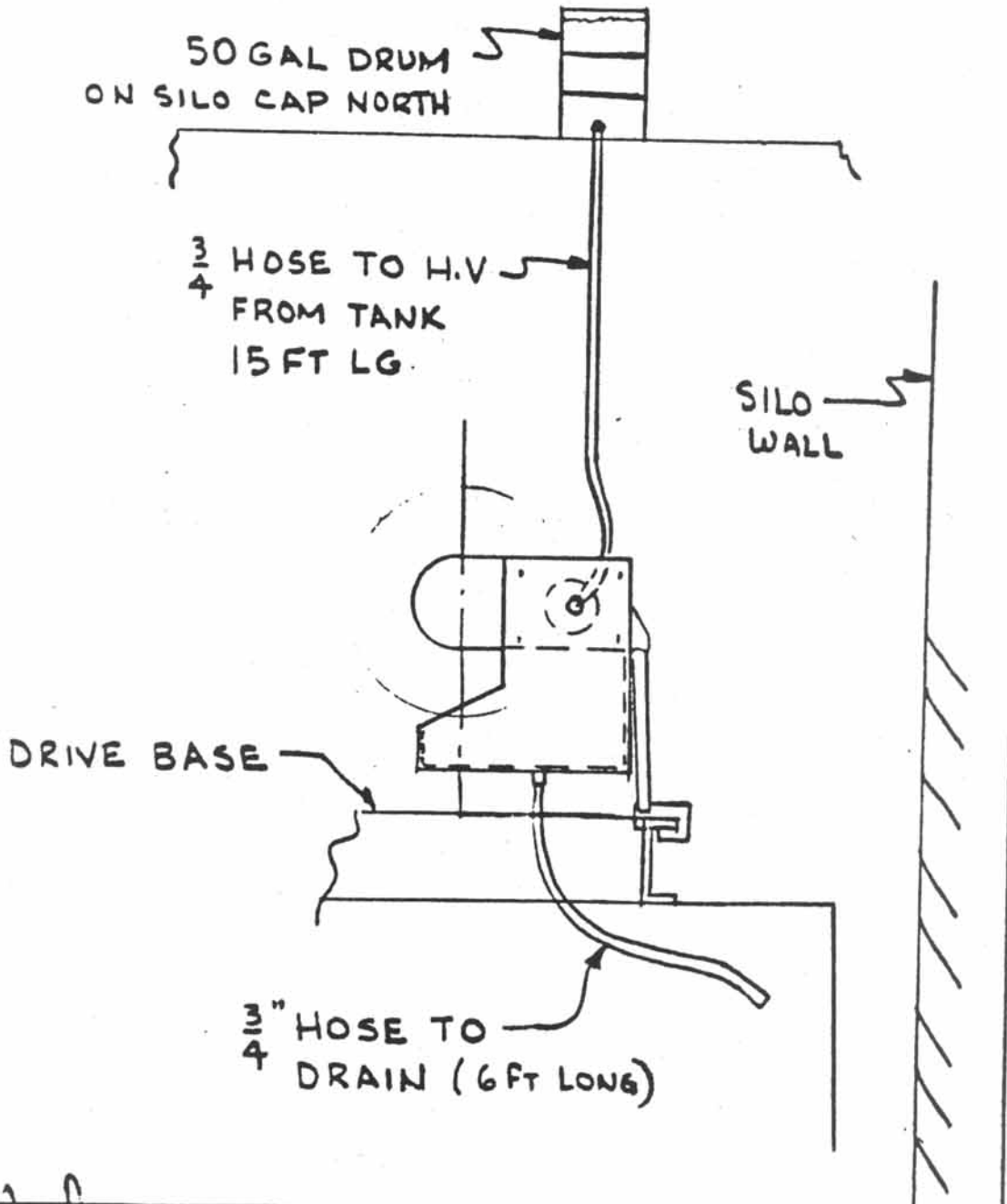
10. Manually set the MLS brake by opening the hand valve on the pump outlet port, releasing hydraulic pressure.

11. Inspect tool, re-lubricate, and turn off drive unit switch.

NOTE: If L/P is to be driven down with a clockwise rotating drive unit, the frame assembly and channel clamp must be installed toward the missile enclosure and anchored to inboard drive base channel.

REVISION SYMBOL

COOLING SUPPLY FOR L/P INCHING TOOL.



PREPARED BY	DATE	CHECKED BY	DATE	REVISED BY	DATE
[signature]	2-19-5				

FIGURE 17-1

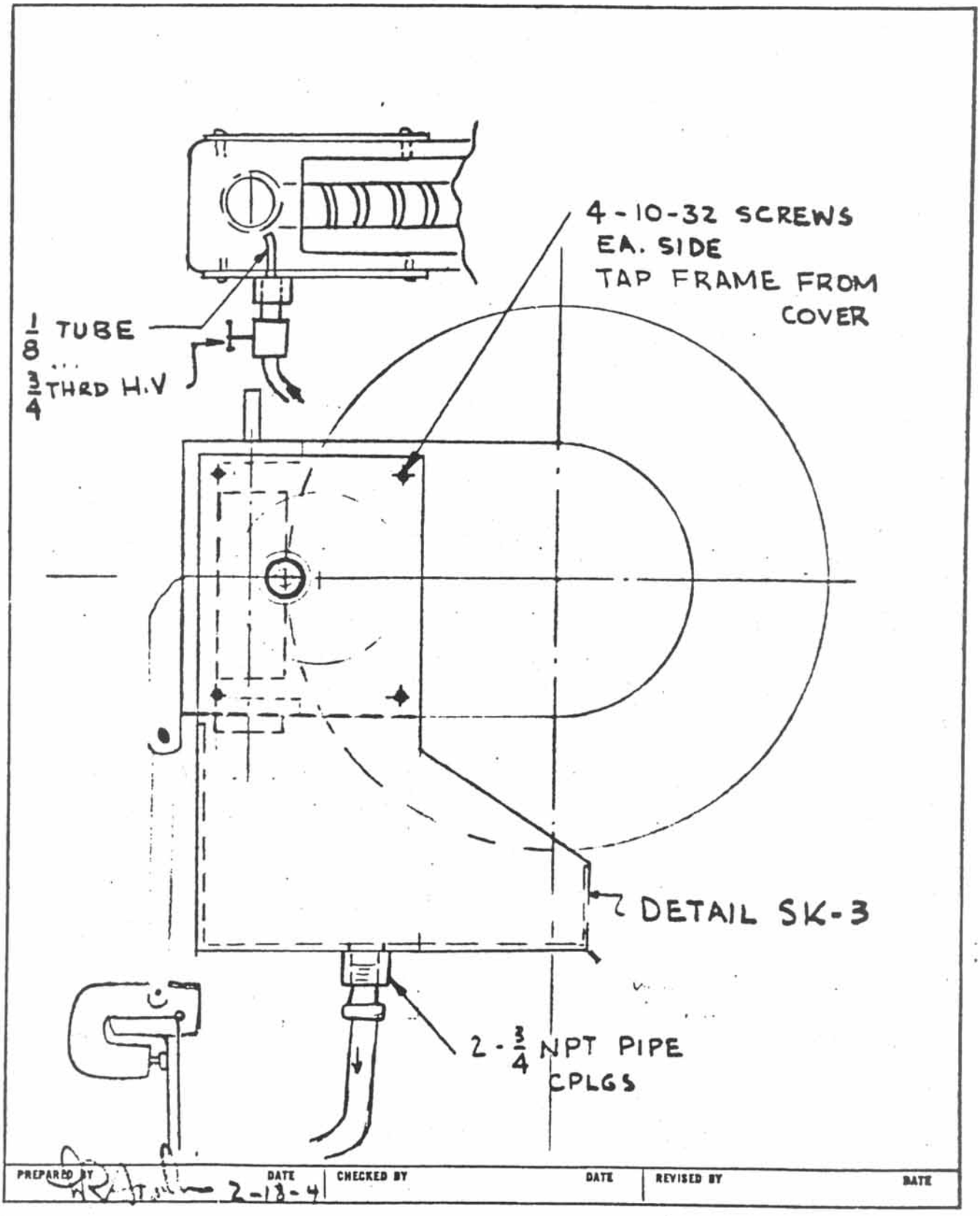

4-10-32 SCREWS
EA. SIDE
TAP FRAME FROM
COVER
1/8 TUBE
3/4 THRD H.V
DETAIL SK-3
2-3/4 NPT PIPE
CPLGS
PREPARED BY
DATE 2-18-4
CHECKED BY
DATE
REVISED BY
DATE

FIGURE 17-2

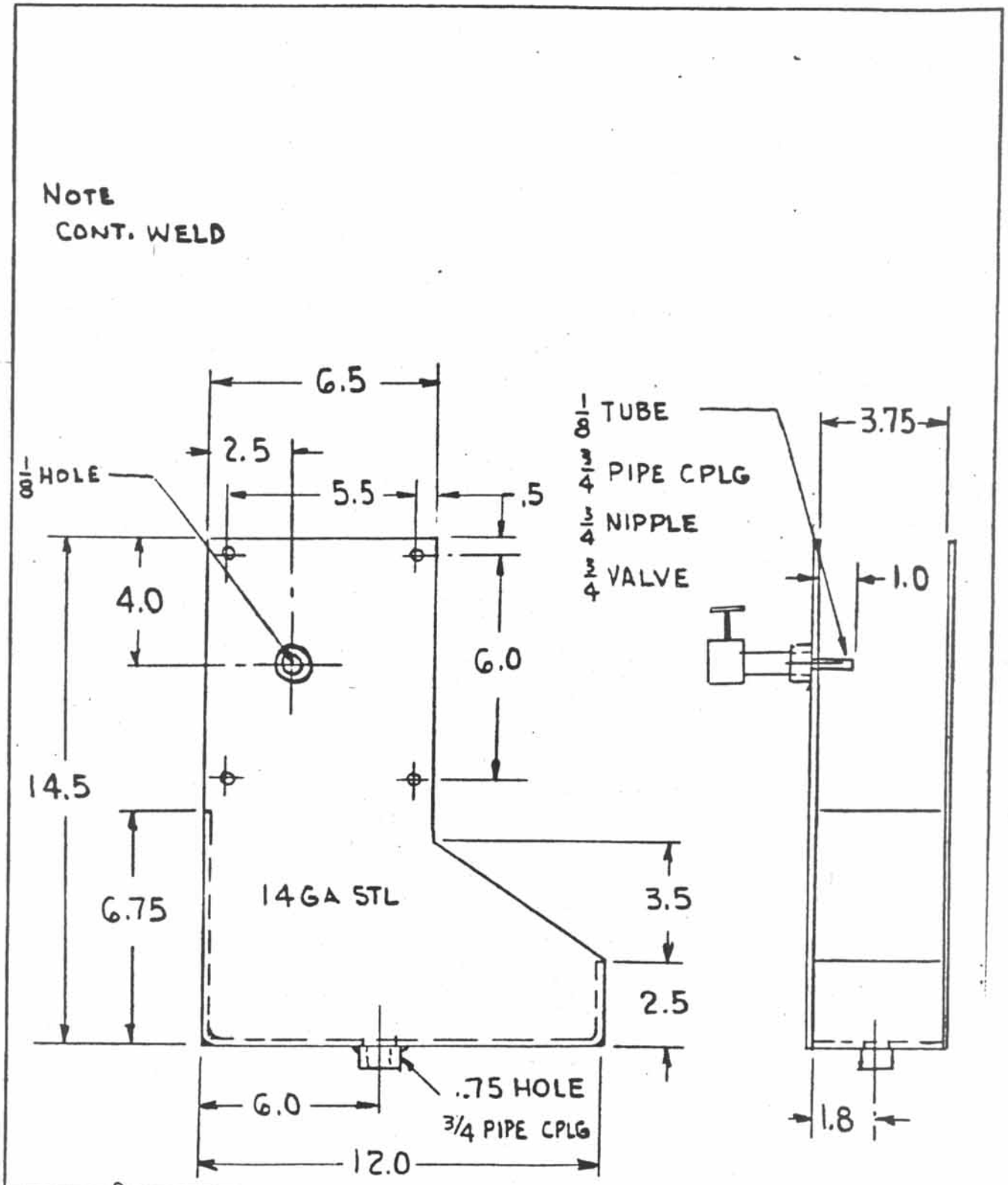


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FIGURE 17-3

BLOCK NUMBER: 18

BLOCK TITLE: Equipment, cables, piping, etc. disassembly and removal from level 7.

GENERAL DESCRIPTION OF BLOCK ACTION:

Removal of fuel, RP-1 and GO2 detector cabinets, instrument air prefab, LO2 fill prefab, LO2 control prefabs, and associated electrical wiring.

TIME REQUIRED: 5 days

MANPOWER REQUIRED:

a.	Plumbers (pipefitters)	68 hours
b.	Iron workers	4 hours
c.	Electricians	24 hours
d.	Riggers	164 hours
e.	Welders	40 hours
f.	Carpenters	40 hours
g.	Crane operator	40 hours
h.	Truck driver	40 hours
i.	Mechanics	44 hours
j.	Sheet Metal workers	40 hours
k.	Laborers	80 hours
		584 Man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. 1 five ton truck crane
b. 2 one ton chain hoists
c. 2 two ton chain hoists
d. 1 truck tractor
e. 2 flat bed truck trailers
f. 1 air compressor (gasoline motor driven)
g. 4 one ton cable slings
h. 4 two ton cable slings
i. 6 wire rope chokers (1/2 inch to 7/8 inch)
j. 1 acetelyne burning outfit
k. 2 warehouse hand trucks
l. 2 steel plate boats or skids
m. 4 one ton ratchet hoists (come-a-longs)
n. 2 1/2 inch manilla rope block and tackle sets
o. 2 3/4 inch manilla rope block and tackle sets
p. 2 7/8 inch manilla rope block and tackle sets

REVISION SYMBOL

SPECIAL TOOLS & EQUIPMENT REQUIRED, BLOCK NO. 18 (Continued)

q. 2 heavy duty metal cutters (bolt or wire cutters)
r. 4 two ton jacks
s. 4 impact wrenches with sockets (air operated)
t. Assorted shackles, rope beam clamps, wood blocking, wood planks, manilla rope tag lines, wood jackets, asbestos blankets, fire extinguishers, scaffolding, ladders, wire rope and accessories and snatch blocks.

TASK DETAILS

- CAUTION -

Prior to any flame cutting, local areas should be inspected for combustible fluid accumulation and cleaned up if found. A CO2 guard should be established where cutting is in progress. Asbestos blankets should be spread immediately below cutting zone for cinder catchment.

1. Remove diagonal bracing between Levels 6 and 7 between columns J-K.

2. Remove Diesel Fuel, RP 1, and GO2 Detector cabinets.

   a. Disconnect or cut electrical conduit and wiring at the cabinets.

   b. Disconnect or cut sense line tubing at the cabinets.

   c. Disconnect or cut mounting bolts.

   d. Skid the cabinets across the grating onto the staging platform.

   e. Lift out of the MEA by pallet.

3. Disconnect or cut and remove all electrical conduit and wiring except the lighting circuits. Lights are to remain in place.

4. Dismantle and remove to the staging platform the emergency shower and fire hose unit.

REVISION SYMBOL

TASK DETAILS, BLOCK NO. 18 (Continued)

5. Remove all piping disconnected in Block 6 to the staging platform.

6. Remove supply fan SF 22.

   a. Provide working access over the Instrument Air prefab to the fan.

   b. Disconnect or cut and remove ducting to the fan.

   c. Rig block and tackle (or chainfall) to support and lower the fan.

   d. Disconnect tie rods suspending fan from overhead.

   e. Disconnect or cut electrical conduit and wiring at the fan terminal box.

   f. By means of rigging installed in step 6 c, lower fan to floor clear of the Instrument Air prefab. Use tending lines as necessary.

   g. Use steel skid plate and come-along to move fan to staging platform. However, any materials handling technique is acceptable.

7. Disconnect or cut and remove all ducting between Levels 6 and 7. Reduce as necessary to size suitable for expeditious removal from the site.

8. Remove all prefabs.

   a. Verify that electrical and fluid disconnects have been made as required by Block 6.

   b. Disconnect or cut prefab clips or bolts to the support structure.

   c. Remove LO2 Fill prefab (1500 lbs).

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 18 (Continued)

1. Secure 2-ton chainfall to overhead beam with beam clamp.

2. Hook lifting sling to chainfall and to the four lifting lugs on the prefab. Attack tending lines as necessary to the lugs.

3. Lift the prefab clear of the support floor structure, cover the grating cutout with planking and rollers, and lower the prefab to rest on the rollers.

4. Manuever the prefab clear of the guide rail and MEA structure and onto the staging platform, using planking, rollers and come-along as necessary.

e. Use techniques similiar to the procedure in steps 8.c.1 through 8.c.4. and remove the LO2 Control prefab (3600 lbs); LN2 prefab (2800 lbs); Topping Control Unit prefab (1500 lbs); Pressurization prefab (8500 lbs); and the Instrument Air prefab (9400 lbs).

REVISION SYMBOL A

BLOCK NUMBER: 19

BLOCK TITLE: Modification of silo brake system.

GENERAL DESCRIPTION OF BLOCK ACTION:

Install and validate hydraulic hand pump system for operating launch platform drive system brake.

TIME REQUIRED: 8 hours

MANPOWER REQUIRED: 2 hydraulic technicians

SPECIAL TOOLS & EQUIPMENT REQUIRED:

Bucket, quart container, hydraulic fluid, rags, wrenches, plugs, cap (AN 929-4C, FSN 4730-204-3492), union (MS 24392C4, FSN 4730-684-6912), and stretch hand pump and accessory equip. (Block 5)

TASK DETAILS:

PRECAUTIONS

Place catch bucket or container under each connection to be broken prior to breaking that connection.

Wipe up all spillage immediately.

Maintain cleanlines of affected components and tubing during removal and installation by capping.

1. Modify the missile lift system hydraulic brake system as follows:

CAUTION

Verify that L/P is down and locked, that the missile lift hydraulic systems (primary and standby) are eff, and that the installation of the launch platform drive inching mechanism is complete.

a. At the launch platform dirve assembly on crib level 1 remove the 27-99739 cover from the lift drive system brake assembly.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 19 (Continued)

b. Inspect the brake actuators for evidence of leakage, damage or worn brake linings. Remove and replace any discrepant units.

c. Mount the stretch hand pump and accessories assembly removed in Block 5 to the floor grating approximately 4 to 6 feet from the brake. Ensure that the pump handle is free to move full stroke without interference.

d. Connect one hose assembly removed in step 1.d. of Block 5 to the outlet nipple of the gage mounting tee of the hand pump and accessories assembly. Couple the second hose to the other hose with an MS24392C4 union.

e. Remove the 27-87835-27 tube assembly located under the brake disk. Cap the floor mounted bulkhead untion immediately using an AN929-4c cap.

f. Connect the open end of the MS28759 hose to the open nipple of the MS24402 tee under the brake disk.

2. Bleed and validate the modified brake hydraulic system as follows:

a. Fill the hand pump reservoir at the filler plug with clean hydraulic oil per MIL-H-5606. Secure the filler plug after filling.

b. At each of the bleed valves for the brake units perform the following operation.

(1) Connect a bleed hose at the bleed valve and place the other end in a container.

(2) Depress the bleed valve and slowly pump hydraulic fluid with the hand pump until the flow of air bubbles has stopped.

(3) Release the bleed valve and disconnect the bleed hose. Fill the reservoir as required.

(4) Repeat the above operation at each bleed valve until all brake units have been bled.

c. Apply 2000 PSIG pressure to the brake units with the hand pump as observed on the hand pump gage. Close the hand valve on the outlet port of the hand pump.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 19 (Continued)

d. Inspect all lines, fittings, and brake units for evidence of leakage. Verify that the pressure in the system is maintained by observing the hand pump gage.

e. Verify that all brake cylinders are released by sliding thin shims between the brake disk and the brake lining.

f. Release brake pressure by opening the hand valve and selector valve on the pump.

CAUTION

Ensure that the hand valve and selector valves on the hand pump remain open at all times when the brakes are engaged.

g. Re-install the 27-99737 cover on the brake assembly.

NOTE

The operational procedure for the modified MLS brake system is contained in Part B of Block 17.

REVISION SYMBOL A

BLOCK NUMBER: 20

BLOCK TITLE: Install counterweight shoring

GENERAL DESCRIPTION OF BLOCK ACTION:

Provide support of counterweights by use of cribs constructed of hardwood shoring.

TIME REQUIRED: 1 day

MANPOWER REQUIRED:

a.	Riggers	16 hours
b.	Carpenters	16 hours
c.	Crane operator	8 hours
d.	Laborers	16 hours
		56 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. 1 five ton truck crane
b. 1 one ton flat bed truck
c. 72 pieces white oak or better STD 4 x 4, cut to 4 ft lengths.

TASK DETAILS:

1. On level 9, build up two cribs by arranging and locating shoring pieces as follows: (Ref. Fig 20-1)

   a. Locate each crib centerline approximately four feet inboard from the edge of end of the counterweight north-south axis.

   b. Build up each crib of shoring using 6 pieces to a layer, each piece evenly separated and each row placed in alternating direction maintaining a 4 foot base.

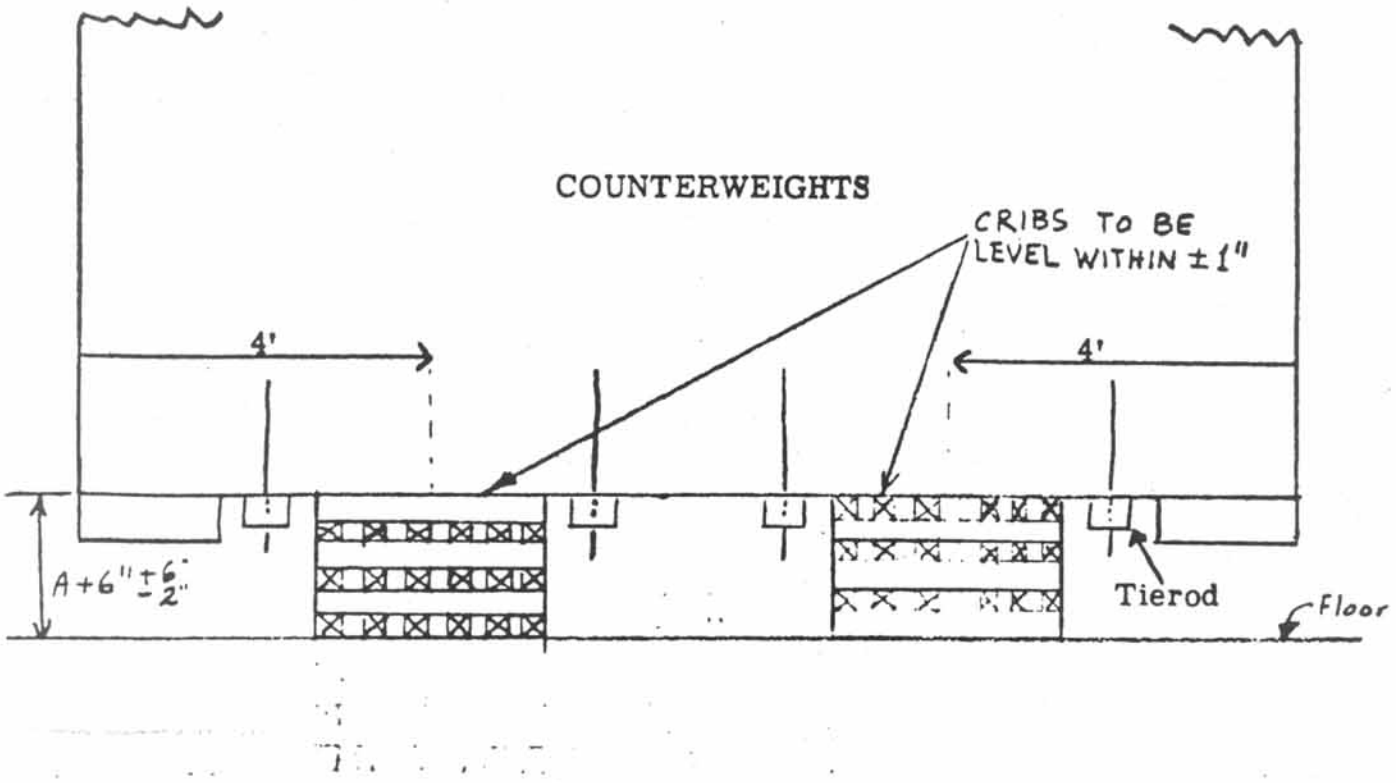
   c. Insure that the resultant shoring location does not interfere with the accessibility to the counterweight tie rod bolts.

   d. Build the cribs to a height of "A" + 6" $^{+6}_{-2}$. ("A" dimension to be determined during block 9 task).

   e. Verify that the cribs are level within $\pm$ 1 inch and centered between the counterweight guide rails.

   f. Counterweight unit weight is approximately 525,000 lbs.

REVISION SYMBOL A



crib (4' x 4')

⊠ = 4'' x 4'' x 4' Hardwood

Fig. 20-1

BLOCK NUMBER: 21

BLOCK TITLE: Uplock strikers, stub guide rail disassembly and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Removal of 4 uplock strikers and stub guide rail.

TIME REQUIRED: 1 day

MANPOWER REQUIRED:

a.	Iron workers	16 hours
b.	Riggers	16 hours
c.	Welders	8 hours
		40 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. Cutting torch
b. Cable sling (one ton)
c. Crane (one ton)

TASK DETAILS:

1. Use the L/P staging platform for access or position work platforms across the penthouse level for access to the four uplock strikers (300 lbs each).
2. Unterque or flame cut the striker attach bolts.
3. Install lifting eyes in striker holes provided. Attach a sling and take up slack.
4. Remove or flame cut bolts, lift with crane and slide striker off of mounting points. Guide with a tie line out of silo mouth.
5. Repeat the above steps for the remaining three strikers.
6. Attach sling to the stub rail (southside only). Position crane. (unit wt 200 lbs)
7. Using a cutting torch burn out stub rail inbed welds and attachments.
8. Lift out of silo mouth.

REVISION SYMBOL

BLOCK NUMBER: 22

BLOCK TITLE: Missile enclosure area insulation removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Removal of insulation material and wire mesh from MEA.

TIME REQUIRED: Dependent upon L/P progress.

MANPOWER REQUIRED:

a.	Iron workers	20 hours per level
b.	Mechanics	20 hours per level
		40 man hours per level

SPECIAL TOOLS & EQUIPMENT REQUIRED:

Hanging scaffold with two sets block and tackle.

TASK DETAILS:

1. Using the L/P as it progresses up from level 7, remove the MEA insulation and wire mesh at each level. Remove only on the west side and as necessary on the south and east sides. Scaffolding will be required at each level in order to remove insulation material.

2. Cut insulating taped joints with knife. The following types of attachments and removal methods exist at each level:

   a. Hooked wire through insulation to wire support to be cut with bolt cutters or torch cut.

   b. Torch cut or wrench remove weld studs with nut and washers.

   c. Chip off adhesive cementing insulation to steel structure.

   d. Wrench off or cut bolts where insulation in metal frame bolted to crib.

3. Insulation shall be removed as panels where possible, stacked on L/P and removed.

REVISION SYMBOL

TASK DETAILS, BLOCK NO. 22 (Continued)

4. After insulation is salvaged at each level supporting structure shall be removed as follows:

   a. Wire mesh (approximately 8 feet by 20 feet sections) welded to angles on crib openings shall be cut by torch or bolt cutters. Cut top and bottom first, then one end. Roll up when possible and cut opposite end. Stow on platform and lift from silo.

   b. Torch cut insulation support angles on crib structure.

5. After completion of one level, repeat process at the remaining levels.

6. Rip, tear away and remove the boot or membrane from crib to cap in order to provide access to the door actuators.

REVISION SYMBOL

BLOCK NUMBER: 23

BLOCK TITLE: RETRACT MAIN LOCKS

GENERAL DESCRIPTION OF BLOCK ACTION:

This block retracts the launch platform wedge and main locks and secures the missile lifting system (MLS) electrical power in preparation for MLS inching operation.

TIME REQUIRED: $\frac{1}{2}$ hour.

MANPOWER REQUIRED:

a. 312X4D - BMAT

b. 542XOD - Facility electrical technician.

SPECIAL TOOLS & EQUIPMENT REQUIRED: None

TASK DETAILS:

1. On silo switchgear, level 5, verify that feeder circuit breaker to missile lifting system motor control center is on.

2. On silo, level 1, verify that all circuit breakers on MLS logic units, chassis A3A1, are on.

3. Verify that test plugs are not installed.

4. Verify that the main I/P drive circuit breaker on MLS Motor Control Center is off. In the GE drive control cabinet, disconnect and tape back wire #58 on the Slow Motor (SM) contactor; also disconnect and tape back wire #68 on the Fast Motor (FM) contactor. On MLS Motor Control Center, turn the 40 HP pump circuit breaker on.

5. On CSMOL panel, turn reset programmer key switch to on.

6. On CSMOL panel, depress 40 HP pump on pushbutton.
NOTE: When system is at operating pressure, pressure indicator will illuminate green.

7. Verify that the following CSMOL indications exist:

   (a) Horizontal and vertical crib locks - green.

   (b) Silo doors open - green.

   (c) Pressure indicator - green.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 23 (Continued)

8. On silo, level 2, disconnect the brake solenoid cable. Secure placard to cable with the following: "WARNING - Missile lift brake cable - Do not connect this cable."

9. Jumper 2-pin shifter coupling limit switch to ensure engaged signal will operate.

- NOTE -

Coupling will be in the engaged position and held by locking tool.

10. On CSMOL panel, depress the uprun pushbutton.

11. Verify that wedge and main locks are fully retracted. Verify that the L/P does not move.

12. On CSMOL panel, depress the 40 HP pump off pushbutton.

13. On MLSMCC turn 40 HP pump circuit breaker off.

14. On silo switchgear, level 5, turn MLS motor control center feeder breaker to off.

REVISION SYMBOL A

BLOCK NUMBER: 24

BLOCK TITLE: Drain MLS hydraulic system

GENERAL DESCRIPTION OF BLOCK ACTION:

This block defines a method of draining the MLS hydraulic system of hydraulic fluid and establishes a sequence for dismantling the various elements of the hydraulic system.

TIME REQUIRED: 5 days

MANPOWER REQUIRED:

a. 1 electrician
b. 3 hydraulic technicians

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

a. Six 55 gallon drums
b. K bottle and 15 feet of hose (FSN 4730 80 37666, MS28741-4-1800 or equivalent)
c. Four 10 gallon cans

TASK DETAILS:

- CAUTION -

Do not flame or torch cut any hydraulic lines. Failure to comply may result in fire or explosion and injury or death to personnel.

A. Verify the following conditions.

1. L/P down
2. Inching tool installed (MLS)
3. Manual brake release system installed
4. L/P locks retracted
5. Horizontal and vertical locks retracted
6. Stanchions installed
7. Silo doors open and secured
8. All work platforms retracted
9. All electrical power to MLS off. Insure that both blocks 10 and 15 have been completed.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 24 (Continued)

B. Initial Drain

1. Verify that all pressure gages on the Local Control Hydraulic Panel indicate 0 psig.

2. Verify hydraulic reservoir level is below "MAX DRAIN LEVEL".

3. Open drain valves VM-143, VM-154, and VM-135 located on the HPU and reservoir.

4. Remove the following components from the hydraulic accumulator and GN2 pressure tank rack:
   Filters FR-501, FR-503, and FR-505;
   Valves VA-951, VA-965, and VA959; and
   Check Valves CK-982, CK-984, and CK-983.

NOTE: As hydraulic components are removed from the system, all ports should be capped with suitable protective closures.

5. Hook up pneumatic hose (FSN 4720 80 37666 or equivalent) from K bottle to the open line on the air side of each accumulator rack and apply 50 psig pneumatic pressure. Hold pressure until the reservoir oil level stabilizes.

6. Remove pneumatic charge and disconnect K bottle and hose. Cap air side of each accumulator assembly.

7. Open VM-404 on hydraulic reservoir and drain reservoir into a suitable container.

NOTE: As much as 200 gallons of hydraulic oil can be expected.

8. Open drain valve on FR-103 filter assembly and drain filter housing.

9. Remove calibration plug above GA-122 on LCHP and install hose from port into suitable container.

10. On the LCHP, open VM-172 and VM-173 to connect gage circuit.

11. Remove two bleed valves on rod end of door cylinders.

C. L/P and Umbilical Drain

1. Remove spreader bar located nearest to the bottom of the umbilical loop.

2. Position 55 gallon drums under the lowest point in each of the hydraulic hoses and shroud hoses with plastic sheets to control oil spray.

3. Cut the bottom side of each hose and drain.

REVISION SYMBOL A

4. When hoses have drained, disconnect hose from the L/P manifold and cap manifold ports.

5. Disconnect hoses from crib manifold, and lower hose onto L/P. Cap crib manifolds. L/P locks plumbing can now be removed up to crib level #2.

D. Crib System Drain

1. Vertical Crib Locks Drain

a. Position suitable container under the hose connections to the Quad II (north) vertical locking cylinder.

b. Disconnect the hoses to both sides of the locking cylinder, at the cylinder end, and drain system.

c. Disconnect the other three vertical locks in a similar fashion.

2. Work Platforms Drain

NOTE: Penetrate the MEA insulation panels as necessary to provide access to those missile work platform actuators not accessible from the staging platform. A crane operated platform may be used.

a. Position a suitable container under each actuating cylinder and disconnect supply hoses at the cylinder end.

b. Actuators and plumbing can then be removed.

NOTE: The work platform actuators will have been left in the extended position. Do not attempt to retract actuator rods. These actuators have an internal mechanism which can only be released by the application of hydraulic pressure. Rods should be protected by wrapping.

3. Door Cylinder Drain

a. Position a 55 gallon drum in close proximity to each of the door cylinders. Place a plastic shroud around the head end of the cylinders to direct the drainable flow into the container.

b. Remove the bleed valves from the lower end of each cylinder.

NOTE: Approximately 50 gallons of oil may be contained in each cylinder

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 24 (Continued)

c. After cylinders have drained, disconnect the supply hoses at the actuator manifolds and drain.

d. On level 2 disconnect the 27-87049-323 and -325 door purge lines at CK-164 and CK-165 and drain lines PDO and PDO_2.

e. The door actuators, ice breaker cylinders, and associated plumbing can now be removed.

4. Horizontal Lock Drain

a. On level 2, disconnect the 27-87049-275 line at the PHU line and drain into a suitable container.

b. Place a plastic shroud around the CK-187 valve, direct flow into container. Then break the 27-87049-299 flange connection at check valve 187.

c. On penthouse level, open the bleed valves on both ends of each horizontal locking cylinder until draining on level 2 stops.

d. The horizontal locks and associated plumbing can now be removed.

NOTE: Cylinders will still have oil in the rod end. When lines are disconnected from cylinders, cap all ports to prevent spillage.

5. Level 2 Drain

a. The remaining hydraulic lines on level 2 will still contain small quanities of oil which can be drained as each connection is broken.

All interconnecting plumbing in the power pack area should therefore be disassembled starting at the highest point and working down.

All ports in components, manifolds, and major assemblies should be provided with pressure caps to prevent unnecessary contamination of the units.

REVISION SYMBOL A

BLOCK NUMBER: 25

BLOCK TITLE: Disconnect and remove umbilicals.

GENERAL DESCRIPTION OF BLOCK ACTION:

Disconnect and remove the umbilical loop cables.

TIME REQUIRED: 2 days

MANPOWER REQUIRED:

a.	Plumbers (pipe fitters)	16 hours
b.	Electricians	16 hours
c.	Riggers	16 hours
d.	Tractor operater	16 hours
e.	Laborers	32 hours
		96 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. 1 hack saw or 2 inch cable cutter
b. RD4 or RD6 tractor
c. Reel for each umbilical cable and hose
d. Use existing sump pump to remove hydraulic fluid.
e. Water hose.
f. Crane, 10 ton to position & hold access platform Fig 25-1
g. Access platform to cable loop area Fig 25-1
h. Drum to roll cable over when removing from silo Fig 25-2
j. Cable reels as reqd for storage

TASK DETAILS:

1. Disconnect or cut umbilical cabling (8200 lbs, approximately ninety 1 to 2 1/2 inch cables) at the L/P umbilical junction box when the L/P is in the down position (in the inching configuration). Exercise care in disconnecting or cutting the hydraulic hose umbilicals. The lines will require draining. Block 24 covers hydraulic system drain.

NOTE

Attach a tie line to each Cable at L/P umbilical J. Box. Use this line to restrain cable and to lower the cable after disconnecting.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 25 (Continued)

2. Disconnect or cut clamps or restraints on the umbilical cables between L/P level 2 and level 3.below the umbilical J. Box.

3. Lower the cables and hoses to level 8 floor. Position cables on the floor so that minimum bind will occur when the loop is lifted out of the silo.

4. Set up the Drum Roller, tractor and sling arrangement on the silo cap See figure 25-1. Lower the sling over the drum to umbilical loop near level 3 of the crib.

5. Lower a crane mounted access platform to level 3 to attach sling and cut cables. figure 25-1

6. At a convenient place near the cable tray entrance near level 3 gang tie the outer cable row to the tractor sling. The approx. weight of one row is 4000 lbs. (Maximum) The length of each loop after cutting will be 130 ft.

7. Transfer the cable load to the tractor sling. Cut the row of cables above the sling attach point.

8. Lower the access platform to level 5.

9. Tie the umbilical loop to the crib to restain movement. Cut the cable grips at the Missile Enclosure wall.

10. Loosen restraints to allow the loop to hang in a static position.

11. Station personnel at Level 8 and on the silo cap. Establish communications.

12. Check rigging and clear the M.E.A.

13. Slowly pull the cable row up and out on the silo cap area with the tractor. Personnel at the drum roller will be required to guide the loop spreader bars over the drum.

14. When the cable row is clear of the work area disassemble the sling.

15. Repeat steps 1 through 14 for the remaining 3 cable rows.

16. Remove the spreader bars from each cable row and reel each cable on an appropriate size drum for storage.

REVISION SYMBOL A

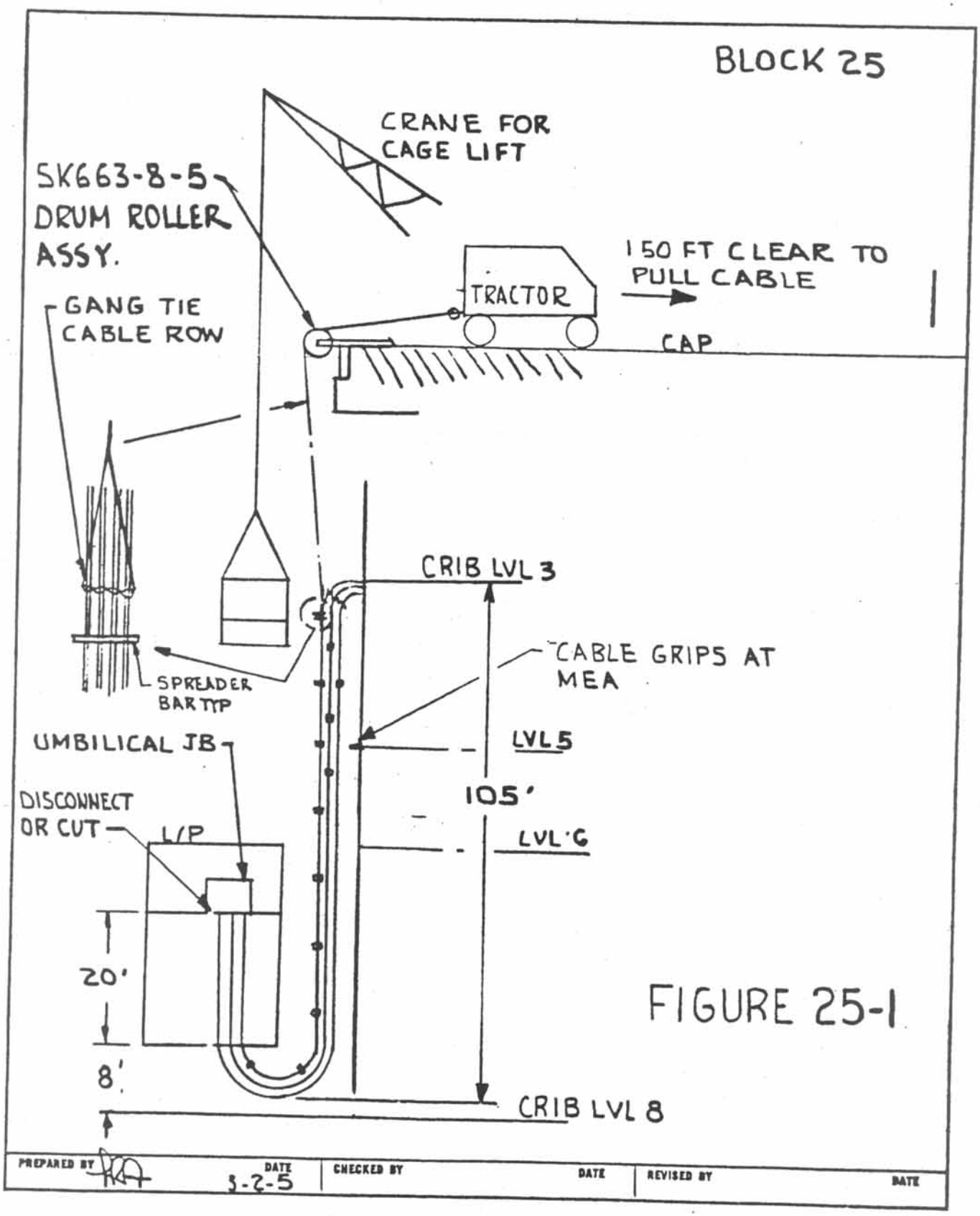
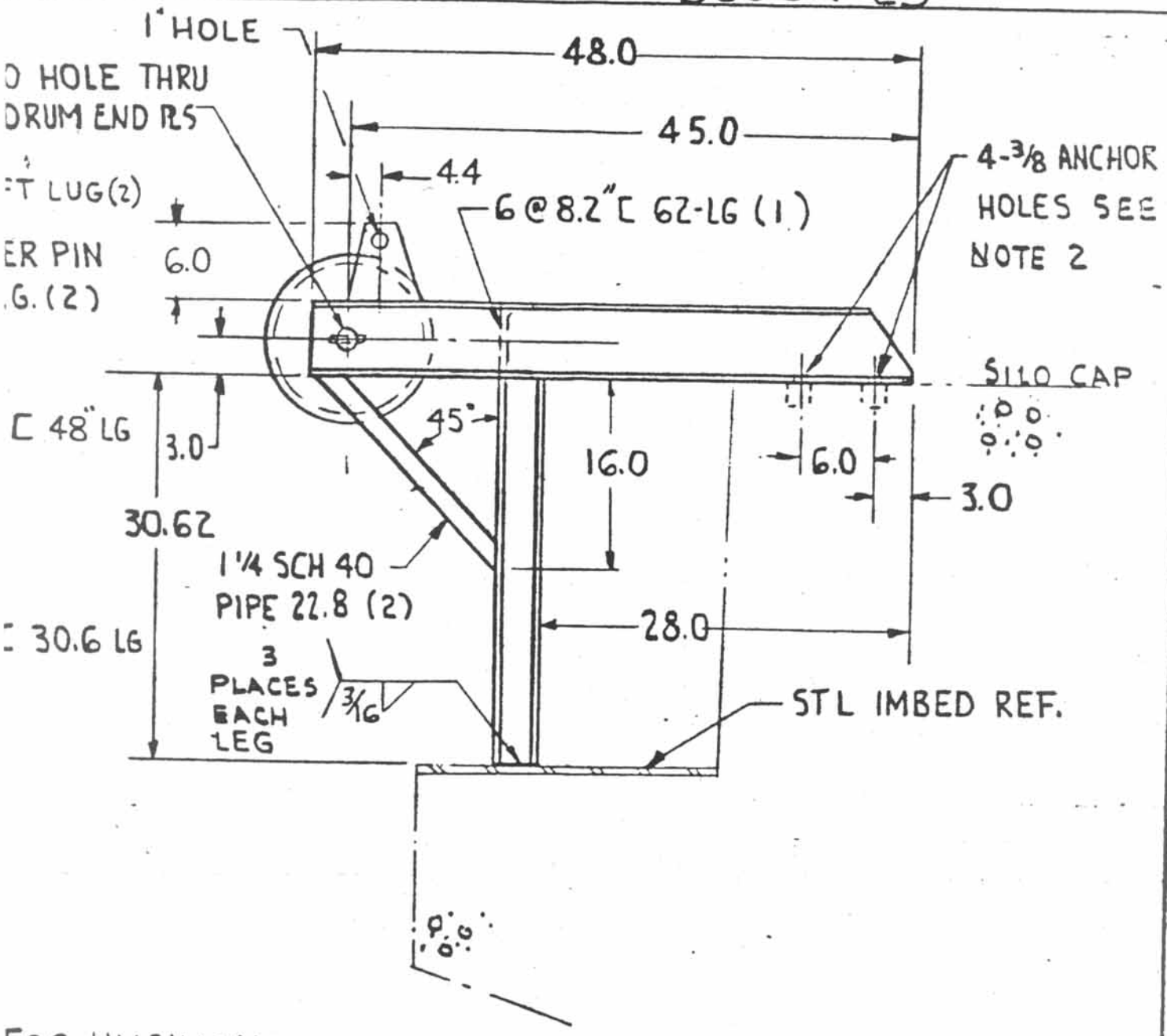

BLOCK 25
CRANE FOR CAGE LIFT
SK663-8-5 DRUM ROLLER ASSY.
150 FT CLEAR TO PULL CABLE
TRACTOR
GANG TIE CABLE ROW
CAP
CRIB LVL 3
CABLE GRIPS AT MEA
SPREADER BAR TYP
UMBILICAL JB
LVL 5
105'
DISCONNECT OR CUT
L/P
LVL 6
20'
8'
CRIB LVL 8
FIGURE 25-1
PREPARED BY
DATE 3-2-5
CHECKED BY
DATE
REVISED BY
DATE

FIGURE 25-1

BLOCK 25



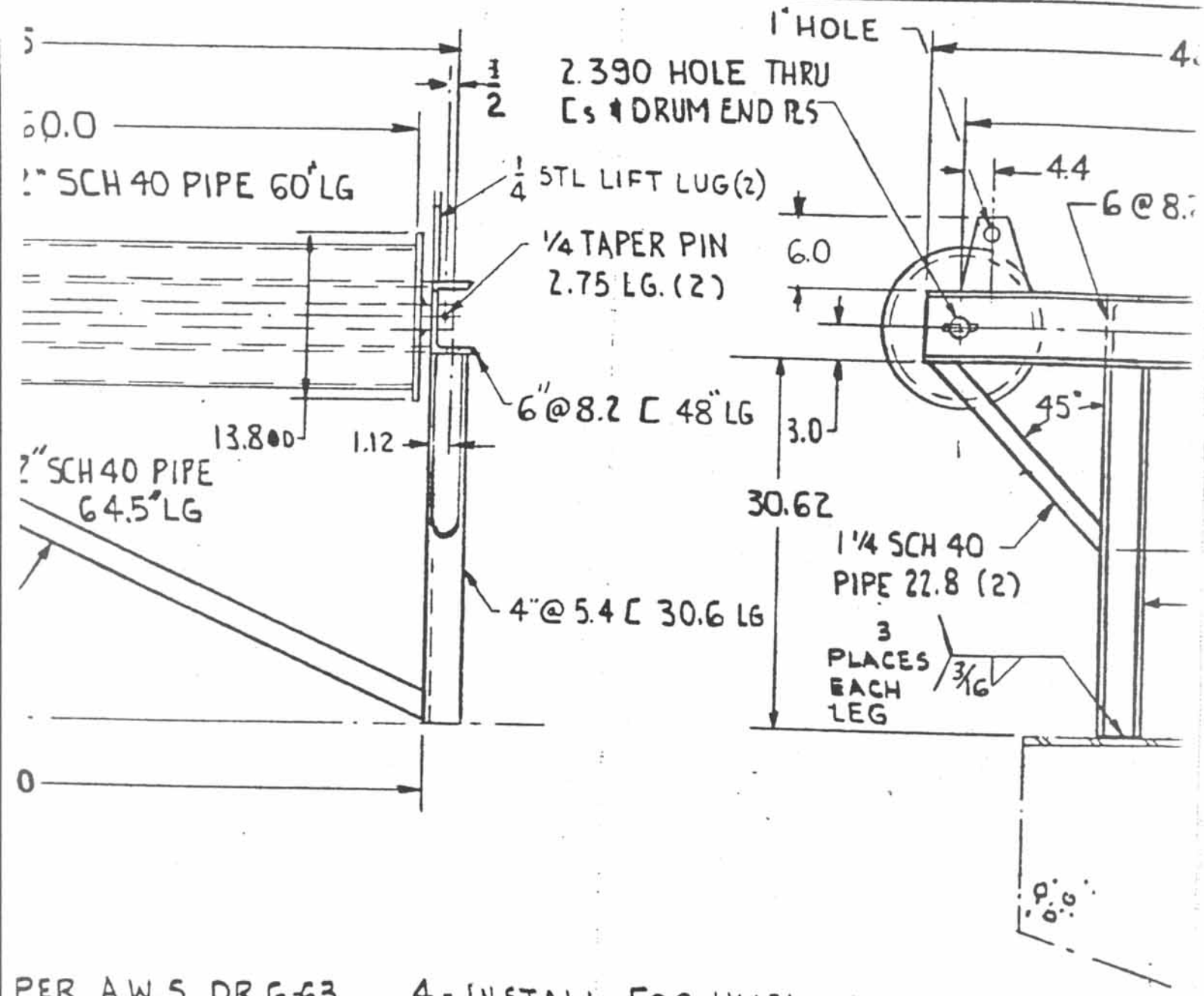
FOR UMBILICAL
ANDLING

IS 360 LBS

DRUM ROLLER ASS'Y
SK 663-8-5

PREPARED BY	DATE	CHECKED BY	DATE	REVISED BY	DATE
	3-4-5				

FIGURE 25-2



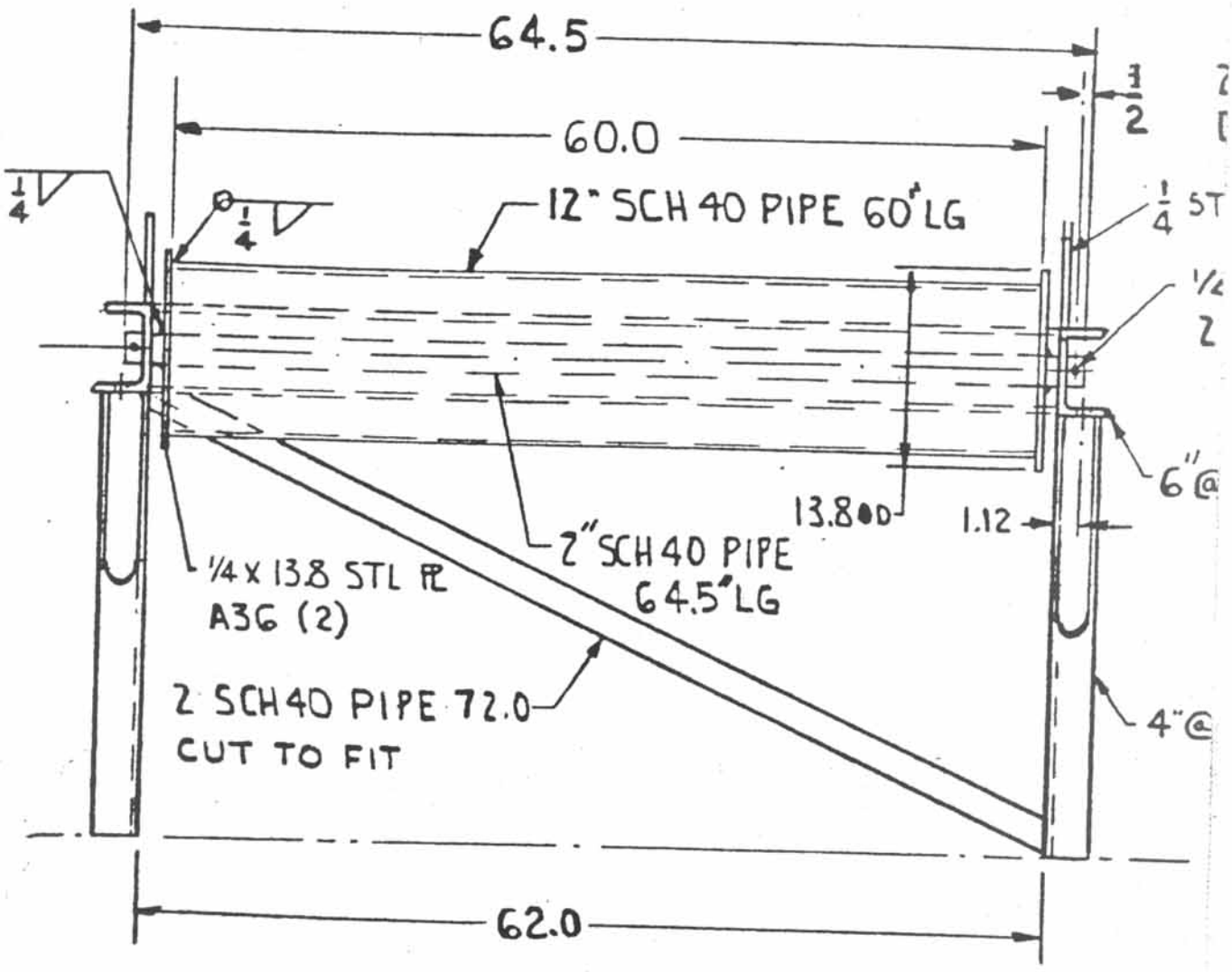
PER A.W.S DR G-63

4 - INSTALL FOR UMBILICAL CABLE HANDLING

5 - ASSY WT. IS 360 LBS

DRUM

PREPARED BY	DATE	CHECKED BY
	3-4-5	



NOTE

1- ALL WELDS CONTINUOUS PER A.W.S DR G-63

2- ANCHOR TO CAP CONCRETE WITH 3/8 EXPANSION SHIELDS

3- USE MIL E 22200-1 WELD ROD

4- INSTA
CABLI

5- ASSY

BLOCK NUMBER: 26

BLOCK TITLE: Missile work platforms disassembly and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Disassembly and removal of the work platforms at the various levels.

TIME REQUIRED: The elapsed time required is dependent upon L/P positioning.

MANPOWER REQUIRED: Same crew as required for level by level equipment removal.

SPECIAL TOOLS & EQUIPMENT REQUIRED: Same as block 18.

TASK DETAILS:

1. Position L/P to allow access or lower a cage access platform to position at the work platform to be removed.
2. Connect crane sling to each corner of the work platform through structure. (platform weight approx. 1500 lbs).
3. Restrain platform to crib structure temporarily to prevent horizontal movement.
4. Position work platform and remove platform hinge pins and actuator link connection. Transfer platform lead to crane. Swing link and actuator down.

NOTE

Hydraulic actuator may have been previously removed by block #24.

5. Re-Position cage platform out of work platform removal path.
6. Loosen restraints. Swing work platform out of silo with crane.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 26 (Continued)

7. After work platform removal, position cage access platform and attach crane sling to platform support structure.

- CAUTION -

To prevent excessive spillage of hydraulic fluid in silo, verify that the MLS hydraulic system has been drained in accordance with block 24 prior to disconnecting hydraulic lines.

8. Disconnect hydraulic lines from work platform actuator.

9. Temporarily secure structure to crib. Transfer load of structure to crane.

10. Remove attaching hardware. Move cage out of path.

11. Loosen restraints. Swing out of silo.

12. Repeat for work platforms at:

a) Level (2)	4 sections
b) Level (3)	1 section
c) Level (5)	5 sections
d) Level (6)	2 sections

NOTE

Remove platform and supports separately for ease of handling.

Work Platform at level 6 (south side) is connected to work platform at level 5 (south side) and will require lashing to crib.

REVISION SYMBOL

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8	PACKAGE NO.
	SCALE	RELEASED	SHEET 26-2	
		A2613 (REV. 6-63)	DISTR CODE	

BLOCK NUMBER: 27

BLOCK TITLE: AIG handling rail removal

GENERAL DESCRIPTION OF BLOCK ACTION:

Remove AIG hoist from silo

TIME REQUIRED: 1/2 day

MANPOWER REQUIRED

a.	Riggers	8 hours
b.	Welders	4 hours
c.	Laborers	8 hours
		20 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED: Same as block 18.

TASK DETAILS:

1. Position AIG hoist at missile end of monorail.
2. Tie hoist to lift crane sling (approx. weight 300 lbs).
3. Torch cut rail end stop as required to allow rolling the hoist off.
4. Take up slack in crane rope, roll hoist off rail and remove from silo.

REVISION SYMBOL A

BLOCK NUMBER: 28

BLOCK TITLE: L/P to level 6. Equipment, cables, piping, etc., disassembly and removal. (Except D-61 diesel)

GENERAL DESCRIPTION OF BLOCK ACTION:

Disassemble and remove level 6 equipment (except diesel) such as dirty lube oil pump, heat recovery silencer, and air start tank.

TIME REQUIRED: 2 days

MANPOWER REQUIRED:

a.	Plumbers	16 hours
b.	Iron workers	40 hours
c.	Electricians	8 hours
d.	Riggers	80 hours
e.	Welders	8 hours
f.	Crane Operator	32 hours
g.	Truck driver	32 hours
h.	Laborers	40 hours
		256 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED: Same as block 18.

TASK DETAILS:

1. Reposition L/P to level 6 per Part B of block 17.
2. Disassemble and remove MEA Support structure on west side, including AIC pod handling equipment and platforms on west and south sides.
3. Remove Dirty Lube Oil Pump.
4. Support both ends of heat recovery silencer from overhead structure. Unbolt at D-61 and exhaust riser. Lower to Level 6. Dissemble exhaust pipes at silencer and remove to L/P in 3 parts.
5. Support starting air tank from overhead. Disconnect and lower to floor. Remove to L/P.
6. Disassemble and remove Diesel enclosure.

NOTE

Diesel Generator D-61 will be removed after removal of the L/P.

REVISION SYMBOL A

BLOCK NUMBER: 29

BLOCK TITLE: Collimator and associated equipment - dismantle and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Removes collimator and both azimuth reference prisms from collimator room and removes to silo cap.

TIME REQUIRED: 2 days

MANPOWER REQUIRED:

a.	Iron workers	16 hours
b.	Welders	8 hours
c.	Crane operater	8 hours
d.	Riggers	16 hours
e.	Laborers	16 hours
		64 man hours

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

a. One acetylene cutting unit
b. Chain hoist (min. 1 ton)
c. Wire rope, cable clamps, wire rope slings, and rigging accessories

TASK DETAILS:

1. Verify that L/P is at level six to move equipment out of silo.

NOTE: The following ARMA accessories are used and stored at the MAMS for normal maintenance work and shall be moved to the Launch Complex to accomplish this block.

a. Three-leg sling, ARMA part no. 2-00043-359.
b. Cables, ARMA part no. 547A7.
c. Storage container for the sensing platform assembly.
d. Four-wheel hand truck.

2. Cut away collimator house panels as required for access to collimator system.

3. Attach a hoist (unit weight, 1600 lbs.) to the level 5 floor beam over the collimator house area. (Quad 2.)

4. Cover the collimator and two prisms prior to cutting roof - cut and remove the collimator roof panels as required for access to collimator. Panel weight approximately 100 lbs.

5. Position a hand truck at level 6 to handle collimator when removed.

6. In the collimator house unbolt the collimator base at the floor adapter plate (3 places).

7. Unplug all electrical connectors and stow.

REVISION SYMBOL A

8. Lock all collimator scope adjustments. Cover the assembly and tape padding over scope for protection.

9. Attach a sling to the three lifting eyes on the collimator assembly. (See Figure 29-1.) Collimator assembly weight is 1600 lbs.

10. Transfer load to the level 5 hoist.

11. Using tielines guide and lift the collimator assembly to the hand truck on level six.

NOTE: Exercise care and avoid jolting or bumping the assembly when removing.

12. Roll hand cart with collimator onto L/P staging platform.

13. Hoist collimator to silo cap (unit weight, 1600 lbs.).

14. Unbolt the floor adapter plate (3 places) attach level 5 hoist. Raise adapter plate to level 6 hand cart. Adapter plate weight is 150 lbs.

15. Unbolt the two azimuth reference prism assemblies (4 bolts on each), each unit weight is 85 lbs.

16. Tape protective cover to each unit.

17. Wrap sling around the unit, attach hoist and lift to level six hand truck

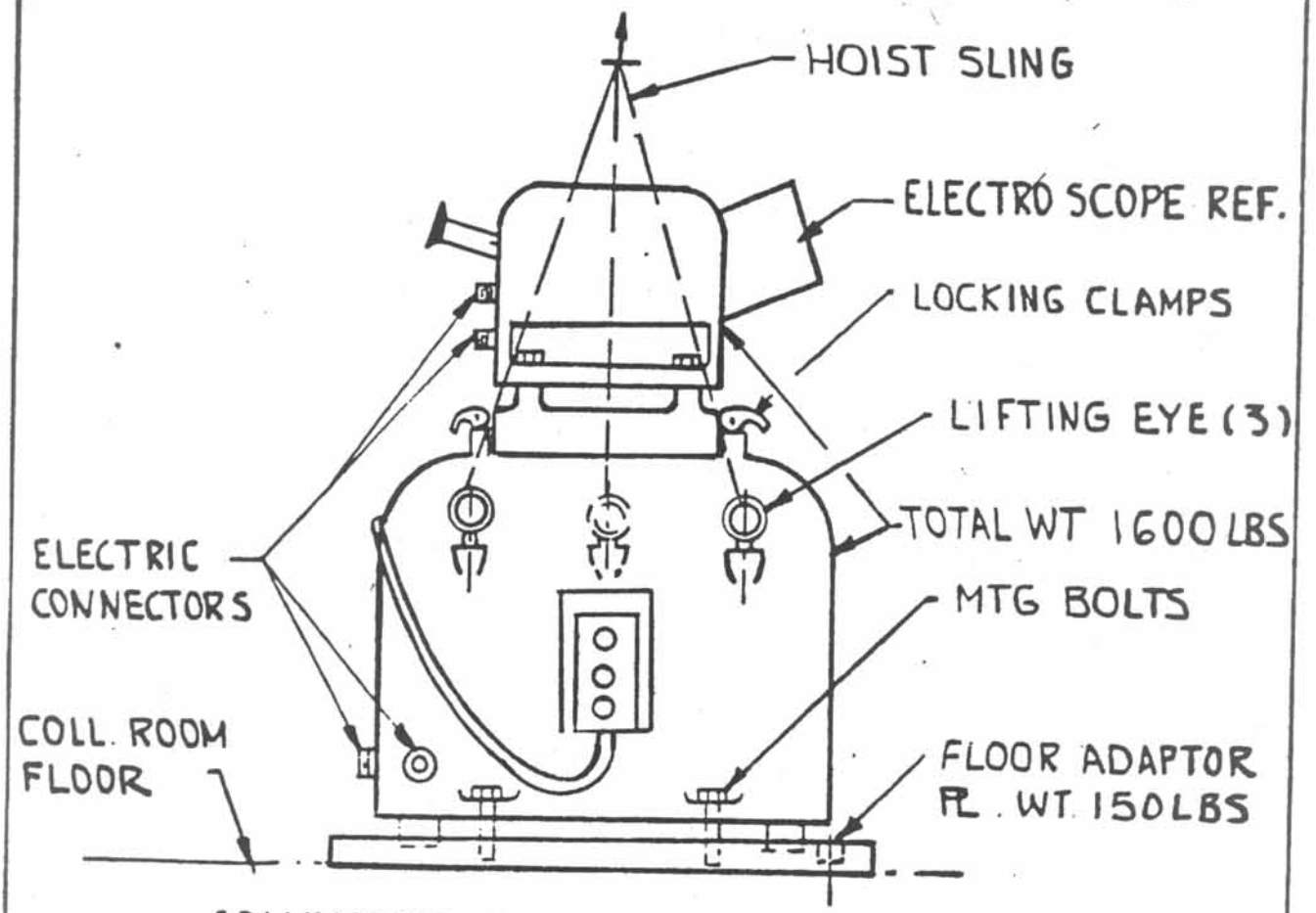
18. Roll hand cart with adaptor plate and both azimuth prisms onto L/P staging platform.

19. Hoist adaptor plate (unit weight, 150 lbs.) and both azimuth prisms to silo cap. (Unit weight, 85 lbs.)

NOTE: All guidance equipment should be immediately packed in their applicable containers for shipment to their destination, in accordance with applicable technical orders.

REVISION SYMBOL A

FIGURE 29-1



PREPARED BY	DATE	CHECKED BY	DATE	REVISED BY	DATE
	2-25-5				

FIGURE 29-1

BLOCK NUMBER: 30

BLOCK TITLE: L/P to level 5. Equipment, cables, piping, etc. disassembly and removal (Except D-60 diesel).

GENERAL DESCRIPTION OF BLOCK TITLE:

Removal of level 5 equipment such as clean and dirty lube oil tanks, heat recovery silencer, diesel switch gear, etc.

TIME REQUIRED: 3 days

MANPOWER REQUIRED:

a.	Plumbers	16 hours
b.	Iron workers	40 hours
c.	Electricians	16 hours
d.	Riggers	120 hours
e.	Welders	16 hours
f.	Crane operator	40 hours
g.	Truck driver	40 hours
h.	Laborers	40 hours
		328 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED: Same as block 18.

TASK DETAILS:

1. Reposition L/P to level 5 using part B of Block 17.
2. Support diesel fuel tank from overhead structure. Disconnect hangers and lower to floor.
3. Disassemble and remove MEA vertical support and diagonal braces from west and south sides.
4. Remove diesel fuel tank to L/P.
5. Remove Clean and Dirty Lube oil tanks per step 2 above.
6. Remove Heat recovery silencer per Block 28.
7. Disassemble and remove overhead air conditioning duct (south side).
8. Remove diesel switchgear cabinets. These may be unbolted from floor and transferred intact to a skid for removal, or disassembled and removed as 4 units.

NOTE: Diesel Generator D60 will be removed after removal of the L/P.

REVISION SYMBOL A

BLOCK NUMBER: 31

BLOCK TITLE: Launch Platform to level 4. Equipment, cables, piping, etc. disassembly and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Removal of water systems, equipment and electrical equipment from silo level 4.

TIME REQUIRED: 5 days

MANPOWER REQUIRED:

a.	Plumbers (pipe fitters)	120 hours
b.	Iron Workers	4 hours
c.	Electricians	48 hours
d.	Riggers	172 hours
e.	Welders	40 hours
f.	Carpenters	40 hours
g.	Crane operator	40 hours
h.	Truck Driver	40 hours
i.	Mechanics	28 hours
j.	Sheet metal workers	40 hours
k.	Laborers	80 hours
		652 Man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED: Same as block 18.

TASK DETAILS:

- CAUTION -

Prior to any flame cutting, local areas should be inspected for combustible fluid accumulation and cleaned up if found. A CO2 guard should be established where cutting is in progress. Asbestos blankets should be spread immediately below cutting zone for cinder catchment.

1. Reposition L/P to level 4 using part B of Block 17.

2. Cut or disconnect and remove the diagonal bracing between Levels 3 and 4.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 31 (Continued)

3. Disconnect at valve flanges (or cut if necessary) all water piping to allow access to equipment units on level 4. This includes the Chilled Water, Condenser Water and Hot Water lines interconnecting the Chilled Water Pumps, the Water Chillers, the Emergency Water Pump, the Condenser Water Pump, the Hot Water Pumps, the Hot Water Expansion Tank and the Utility Water Tank. Readily detachable instrumentation, such as gauges, should be carefully removed and collected for transport to the salvage area prior to disconnecting the lines. Valves in the piping interconnects need not be removed from the interconnects except as necessary to facilitate the dismantling and removal of the piping. Remove pipe insulation only for disconnecting.

4. Disconnect or cut and remove all electrical conduit and wiring except branch circuits for lighting (Note - The Lighting Panel at Column K is to remain in place. Lighting circuit conduit and wiring routed between Col J-K is to be re-routed. Light fixtures remain in Place).

5. Remove the Hot Water Expansion Tank (250 lbs).

   (a) Disconnect or cut tank saddle bolts or weldments to the support frame.

   (b) Skid the tank down inclined planking to staging platform using restraining lines.

   (c) Cut and remove the tank support frame.

6. Remove Hot Water Pumps (200 lbs each), Utility Water Pump (200 lbs), Chilled Water Pumps (300 lbs each), and Emergency Water Pump (200 lbs).

   (a) Disconnect or cut skid hold-down bolts.

   (b) Skid the disconnected pumps or planking or sheet skids across the grating to the staging platform.

REVISION SYMBOL A

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 602-02-65-8	PACKAGE NO.
	SCALE	RELEASED	SHEET 31-2	
	A2613 (REV. 6-63)		DISTR CODE	80

TASK DETAILS, BLOCK NO. 31 (Continued)

7. Remove the Condenser Water Pumps (1000 lbs each)

   (a) Attach a 1-ton chainfall by beam clamp or choker hitch to the floor beam overhead of one pump.

   (b) Disconnect or cut the bolts attaching the pump skid to the floor.

   (c) Attach a sling to the chainfall. Hook the sling to each corner of the skid. Rig tending lines as necessary.

   (d) Lift the pump unit and place planking and rollers over the floor cutout.

   (e) Manuever the unit onto the staging platform.

   (f) Repeat the procedure for the remaining Condenser Water Pump.

8. Remove the Water Chiller Units (5770 lbs each) by techniques similiar to step 7 above.

9. Remove all ducting between Levels 3 and 4.

10. Remove the Utility Water Tank (300 lbs).

   (a) Support the tank with a 1-ton chain fall and sling from an overhead beam. If there is insufficient room for the chainfall directly overhead of the tank, use a support platform under the tank, saddle and frame assembly. Suspend the support platform by hoists from the overhead floor beams.

   (b) Disconnect or cut the bolts or weldment holding the frame to the overhead structure.

   (c) Lower the tank, saddle and frame as an integral unit onto boards and rollers on the grating. Skid tank to the staging platform.

REVISION SYMBOL

BLOCK NUMBER: 32

BLOCK TITLE: GOX vent disassembly and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Disassemble and remove the GOX vent assembly from silo.

TIME REQUIRED: 1 day

MANPOWER REQUIRED:

a.	Riggers	16 hours
b.	Welders	4 hours
c.	Mechanics	8 hours
d.	Laborers	16 hours
		44 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED: Same as block 18.

TASK DETAILS:

1. Working from level 2, secure the GOX vent to the crib steel.

NOTE

The following steps should be accomplished when the L/P is at the appropriate levels.

2. Remove all counterweight slabs and stow on L/P (Approx. weight, 10 lbs each).

3. Attach lift crane sling to counterweight support structure. Disconnect cable pin end at the vent structure. Torch cut support structure welds at level 2 and lift structure out of silo.

4. Detach actuator cable pin at vent support level 2 and lower to hang over pivot point at level 7. Use 1/4 inch tie line.

5. At levels 6 and 7, detach (unbolt) cable sheave from crib and lead on platform with cable.

REVISION SYMBOL

TASK DETAILS, BLOCK NO. 32 (Continued)

6. At levels 7B and 8 tie a sling from the lift crane to the top support. Remove attach bolts at level 7B and intermediate beam. Lift assembly out of silo. (Approx. weight, 150 lbs).

7. At crib level 2, quad 2 remove bolts in GOX vent exhaust connection, and at crib attach points. (Approx. weight, 1500 lbs).

8. Attach crane sling to the vent structural base. Tie sling to vent pipe. Release securing lines.

9. Attach a guide line to the base. Using lift crane, slide GOX vent assembly into enclosure area. Guide up and lift out of silo.

REVISION SYMBOL

BLOCK NUMBER: 33

BLOCK TITLE: Launch platform to level 3. Equipment, cables, piping, &c. disassembly and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Disconnection and removal of GOX exhaust equipment and electronic equipment from silo level 3.

TIME REQUIRED: 5 days

MANPOWER REQUIRED:

a.	Plumbers (pipefitters)	16 hours
b.	Iron workers	16 hours
c.	Electricians	16 hours
d.	Riggers	160 hours
e.	Welders	16 hours
f.	Carpenters	16 hours
g.	Crane operater	40 hours
h.	Truck Driver	40 hours
i.	Mechanics	16 hours
j.	Laborers	80 hours
		408 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED: Same as block 18.

TASK DETAILS:

1. Reposition L/P to level 3 using part B of Block 17.
2. Disconnect or cut and remove diagonal bracing and secondary structure between columns J-K.
3. Disconnect or cut and remove GOX Exhaust ducting.
4. Remove GOX Exhaust Fan (200 lbs) (Note-GOX Blast Closure is to remain in place).
   a. Rig overhead chain fall support for Fan.
   b. Disconnect or cut electrical conduit and wiring to terminal box.
   c. Disconnect or cut tie rod supports to overhead.
   d. Lower fan and remove to staging platform.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 33 (Continued)

5. Disconnect and remove the Launch Control Power Panel.

6. Disconnect or cut and remove all electrical conduit and wiring except for the lighting circuits. (Note-The 30 kva transformer is to remain in place and connected to Lighting Panels LA and LB.)

7. Disconnect or cut and remove all water piping only as required to gain access to units.

8. Remove as units or cabinets the electronic cabinets disconnected in Block 11.

   a. The Logic and Responder Units were handled as units during Activation by means of shipping lift frames. The lift frame bolted to the top of the unit at string points in the unit frame.

   b. Since the shipping frames are not available, it is necessary to fabricate an approximation.

   c. Weld a rectangular frame of 3 X 3 X 1/4 inch (approx) angle stock. Field drill to match the holes in the top of the unit. Weld lift lugs to the frame. Use any available secondary structure from silo for frame.

   d. Bolt the frame to unit.

   e. Using chain fall and lifting shag, raise the unit clear of the grating and slide a steel boat over the floor under the unit.

   f. Skid the unit across the floor to the staging platform. Relocate the chain fall and sling to the overhead support as necessary during the moving operation to prevent the unit toppling.

9. Cut lashings securing the cables in the trays and remove cables.

REVISION SYMBOL A

BLOCK NUMBER: 34

BLOCK TITLE: HYDRAULIC EQUIPMENT (LEVEL 2) REMOVAL

GENERAL DESCRIPTION OF BLOCK ACTION:

This block describes the procedure for dismantling and removing the hydraulic pumping unit and interconnecting plumbing from level 2.

TIME REQUIRED: 5 days

MANPOWER REQUIRED:

a.	4 Mechanics	160 hours
b.	2 Riggers	80 hours
c.	1 Welder	40 hours
d.	1 Electrician	40 hours
e.	1 Crane Operater	40 hours
		360 manhours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. 10 Ton Jacks - (2)
b. Assorted Flanges and Tube Caps
c. Acetylene Cutting Unit
d. 6 Ton Puller Hoists - (2)
e. Manila Rope

TASK DETAILS:

- CAUTION -

Do not flame or torch cut any hydraulic lines. The residual hydraulic fluid might cause a fire or an explosion.

A. Preparations for Hydraulic Equipment Removal

1. Verify that the following conditions exist:

   a. Hydraulic system drained per Block 24.

   b. Launch platform at second level.

   c. All electrical power disconnected per Blocks 10 and 15.

REVISION SYMBOL A

PACKAGE NO.

TASK DETAILS, BLOCK NO. 34 (Continued)

- CAUTION -

Verify that all hydraulic and pneumatic pressure is released before disconnecting any equipment or plumbing.

B. Control Manifolds Removal

1. Remove plumbing across top of manifolds which interconnect between manifolds and first level equipment, hydraulic power pack and hydraulic accumulator rack.

   NOTE: Apply covers to the manifold as the plumbing is removed.

2. Remove the plumbing from bottom of the manifolds which interconnects with the lower silo levels.

3. Remove the manifolds from the wall mounting brackets and temporarily store by the accumulator racks.

4. Remove the insulation boards from between Column K and Column B.

5. Remove the vertical support channels between Column K and Column B, to form work access with the launch platform.

6. Slide the manifolds and loose plumbing through this access to the launch platform - remove from the silo.

C. Hydraulic Reservoir and Control Panel Assembly Removal

1. Inspect the assembly and ensure that all hydraulic plumbing and electrical connections have been disconnected.

2. Inspect the unit to ensure that all hydraulic ports have been capped.

3. Remove the holddown bolts. Jack one end of assembly and place I-beam (from B.5) under. Repeat at opposite end, bridging space to L/P.

4. Anchor 2-puller hoists to crib steel on north side and slide reservoir to L/P platform.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 34 (Continued)

D. Nitrogen Pressure Gage Assembly Removal (Column K)

1. Insure that pressure has been removed from the unit.

2. Disconnect the tubing to the unit.

3. Remove the unit from the silo.

E. Accumulator Rack Removal

1. Remove all interconnecting tubing and install covers over the fittings.

2. Remove holddown bolts and bolts holding the two accumulator racks together.

3. Jack one end of the inboard accumulator rack and place I-beam skid underneath. Repeat at opposite end.

4. Rig puller hoists (2) to north side crib steel and slide accumulator rack on to L/P platform. Rig restraining lines four places from top of rack, over level one structure and snub under level two floor structure to prevent tipping.

5. Repeat Steps 3 and 4 to remove second accumulator.

F. Control Panel Assembly Removal - 27-87179

1. Inspect to ensure that all of the wiring and tubing has been disconnected and tube ports are capped.

2. Remove the holddown bolts.

3. Slide the unit to the launch platform and hoist the unit from the silo.

G. Miscellaneous Equipment Removal

1. Remove the remaining plumbing connecting to level 1.

2. Remove the plumbing connecting to the lower levels.

REVISION SYMBOL A

BLOCK NUMBER: 35

BLOCK TITLE: Launch platform to level 2. Equipment, cables, piping, etc. disassembly and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Remove Meter Control Center cabinets and ventilation equipment from level 2.

TIME REQUIRED:

MANPOWER REQUIRED:

a.	Plumbers (pipe fitters)	120 hours
b.	Iron Workers	4 hours
c.	Electricians	48 hours
d.	Riggers	172 hours
e.	Welders	40 hours
f.	Carpenters	40 hours
g.	Crane operator	40 hours
h.	Truck Driver	40 hours
i.	Mechanics	28 hours
j.	Sheet Metal Workers	40 hours
k.	Laborers	80 hours
		652 hours

SPECIAL TOOLS & EQUIPMENT REQUIRED: Same as Block 18.

TASK DETAILS:

CAUTION

Prior to any flame cutting, local areas should be inspected for combustible fluid accumulations and cleaned up if found. A CO2 guard should be established where cutting is in progress. Asbestos blankets should be spread immediately below cutting zone for cinder catchment.

1. Reposition L/P to level 2 using part B of Block 17.

2. Disconnect or cut and remove the diagonal bracing and secondary structure between columns J-K.

3. Disconnect or cut and remove electrical conduit and wiring except for lighting circuits. (Note-Lighting Panels LD and LA and Lighting transformer 30 KVA remain connected and installed.)

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 35 (Continued)

4. Disconnect or cut water and instrument air lines as necessary to gain access to equipment. Carefully disconnect all instruments and remove to silo cap prior to disconnecting plumbing.

5. Remove Essential Motor Control Center (2400 lbs) and Non-Essential Motor Control Center (3200 lbs) except for that particular cabinet which is jury-rigged for lighting and pumps in accordance with Block 15.

   a. Verify all breakers tripped. Verify that diesel switchgear has been removed or that switchgear breakers have been tripped.

   b. Disconnect or cut incoming and outgoing power cabling at the pull boxes.

   c. Rig chainfalls from overhead beams to lift points at the top of the Motor Control Centers.

   d. Disconnect or cut floor attach bolts.

   e. Take up on hoists and lift Motor Control Centers clear of floor grating.

   f. Place planking under the load centers and lower load centers to rest on rollers.

   g. Skid Motor Control Centers to L/P. Keep overhead restraining lines rigged to the lift points at top of Motor Control Centers to prevent tipping.

6. Disconnect and remove the control air compressor (100 lbs), if installed.

7. Disconnect or cut away and remove all ventilation ducting including the exhaust Air Plenum and the diesel exhausts. (Note - The exhaust blast closures **are to remain installed.)**

8. Remove motor operated dampers.

9. Remove Missile Enclosure Fan (SF 40) and associated coils and ducting (1200 lbs) using overhead suspension for disconnecting and lowering.

10. Remove Main Exhaust Fan (2090 lbs).

REVISION SYMBOL A

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8	PACKAGE NO.
	SCALE	RELEASED	SHEET 35-2	
		A2613 (REV. 6-63)	DISTR CODE 90	

BLOCK NUMBER: 36

BLOCK TITLE: LCC equipment, cables, tubing, etc. disassembly and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Removal of LCC equipment.

TIME REQUIRED: 5 days

MANPOWER REQUIRED:

a.	Riggers	160 hours
b.	Crane Operator	40 hours
c.	Truck driver	40 hours
d.	Laborers	80 hours
e.	Tractor operator	40 hours
		360 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. Same as block 18.
b. 1 RD4 or RD6 tractor
c. 1 reel for each cable

TASK DETAILS:

1. Remove the LCC equipment disconnected in blocks 7 and 18. Move through the tunnel and silo level 2 to the Staging platform.

REVISION SYMBOL A

PACKAGE NO.

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8
	SCALE	RELEASED	SHEET 36-1

A2613 (REV. 6-63) DISTR CODE 91

BLOCK NUMBER: 37

BLOCK TITLE: LAUNCH PLATFORM TO LEVEL 1. EQUIPMENT, CABLES, PIPING, ETC. DISASSEMBLY AND REMOVAL.

GENERAL DESCRIPTION OF BLOCK ACTION:

Removal of water system, ventilation ducting, electrical equipment, and Air Wash Dust Collectors from silo level 1.

TIME REQUIRED: 3 days.

MANPOWER REQUIRED:

a.	Plumbers (Pipefitters)	80 hours
b.	Iron Workers	4 hours
c.	Electricians	80 hours
d.	Riggers	126 hours
e.	Welders	40 hours
f.	Carpenters	40 hours
g.	Crane Operator	40 hours
h.	Truck Driver	40 hours
i.	Mechanics	16 hours
j.	Sheet Metal Worker	16 hours
k.	Laborers	80 hours
		562 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED: Same as block 18.

TASK DETAILS:

- CAUTION -

Prior to any flame cutting, local areas should be inspected for combustible fluid accumulations and cleaned up if found. A CO_2 guard should be established where cutting is in progress. Asbestos blankets should be spread immediately below cutting zone for cinder catchment.

1. Reposition L/P to level 1 using part B of Block 17.

2. Verify that hydraulic piping and door actuator manifolds have been drained, (Block 24) and that equipment has been removed.

2a. Disconnect and remove horizontal crib locks (3 places) and associated tubing. Cap hydraulic ports.

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 37 (Continued)

3. Remove diagonal bracing and missile enclosure support structure between columns J -K and K-B1.

4. Disconnect at valve flanges and/or cut into manageable lengths and remove all water piping interconnects. Do not disconnect piping on equipment skid mounted units. Prior to disassembly of the piping, all readily detachable instruments such as gauges (not associated with the equipment units) should be carefully removed.

5. Disconnect or cut and remove all electrical conduit and wiring except lighting circuits and miscellaneous electrical equipment. (Note - The facility elevator with drive, motors, electrical controllers, counterweight and sheaves is not to be dismantled and all lights are to remain.

6. Disconnect or cut as feasible and remove all ventilation ducting and the intake air plenum including the flex connections to the air wash dust collectors. (Note - The blast closures are to remain installed).

7. Remove the Demineralized Water Tank (400 lbs), Chemical Pot Feeder Chilled Water Expansion Tank (200 lbs), Chilled Water Makeup Tank (200 lbs), and the Sand Settling Tank (2000 lbs).

8. Disassemble and remove Air Wash Dust Collectors.

   (a) Unbolt duct connections to fans (1300 lbs each).

   (b) Disconnect or cut fan support columns at base.

   (c) Remove fans to staging platform.

   (d) Remove each dust collector (4500 lbs each) as unit on its base.

REVISION SYMBOL A

BLOCK NUMBER: 38

BLOCK TITLE: Launch Platform Disassembly and Removal

GENERAL DESCRIPTION OF BLOCK ACTION:

Disassemble the launch platform and remove it from the site in three sections.

TIME REQUIRED: 5 Days

MANPOWER REQUIRED:

a.	Riggers	80 hours
b.	Welders	40 "
c.	Crane Operator	40 "
d.	Mechanics	60 "
e.	Electricians	20 "
f.	Fork Lift Opr.	20 "
g.	Laborers	40 "
		300 Manhours

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

a. 75 ton crane
b. 7½ ton hyster (fork lift)
c. EID 27-9821 ballast log trailer and handling sling
d. Lifting sling, 4 leg, 50 ton working load minimum
e. Cutting torches, oxygen and acetylene
f. 1 inch manila rope
g. Puller hoists

TASK DETAILS:

A. Preparation for Removal

1. Raise the launch platform using the inching procedure called out in Block 17 until the counter weights rests firmly on the shoring installed in Block 20.

CAUTION

Counterweight and shoring must be monitored during final portion of drive to assure proper settling of the counterweight.

NOTE: Refer to Figure 38-1 for the balance of this procedure.

CAUTION

Do not torch cut or flame cut any hydraulic lines. The residual hydraulic fluid might cause a fire or an explosion.

REVISION SYMBOL A

TASK DETAILS (CONTINUED):

B. Ballast Log Removal (8400 lbs. each, maximum)

NOTE: EID 27-9821 Ballast Log Trailer and Slings must be available on site.

1. Method #1:

a. Position the ballast log storage trailer near the launch platform flame deflector to receive the logs as they are unloaded.

b. Remove the two diagonal braces located in the mouth of the flame bucket for access to the logs.

c. Rig the ballast log sling across the forks of a 15,000 lb. capacity hyster (fork lift), as near the tips of the forks as possible.

d. Position the hyster to pick up the top log, nearest the back of the flame deflector. Attach the sling, and lift the log to clear the barrier at the flame deflector mouth.

e. Remove the log from the flame deflector and load directly on the transport trailer.

f. Repeat steps 3, 4 and 5 until all ballast logs have been removed from the flame deflector.

CAUTION

The ballast logs may be arranged in two or more tiers in the flame deflector. The top log nearest the rear of the bucket must be selected for removal in sequence. The possibility of logs rolling "downhill" inside the flame deflector must be avoided throughout the removal operation.

2. Alternate Method for Removal of Ballast Logs:

a. Remove a 16 x 7 foot section of the platform deck, leaving the main beam across the northside of the platform intact.

b. Position the crane on the north side of the silo cap to lift the ballast logs through the opening.

c. Attach the EID 27-9821 sling to the top, rearmost log (see CAUTION above). Attach restraining lines to each end of log. Lift log out with crane and unload on transport trailer.

d. Repeat steps 2 and 3 until all logs have been removed from the flame deflector.

REVISION SYMBOL

PACKAGE NO.

TASK DETAILS (CONTINUED):

C. First Section Removal (Station 1009'-9" to Station 993'-0"):

1. Disconnect all cable, tubing, ducting, and piping between the L/P levels 2 and 3. Do NOT flame cut hydraulic lines.

2. Flame cut all diagonal bracing at Station 993'-0" (just below the large gusset supports for Level 2). Insure that the stub guide rail rollers will clear the silo cap when L/P is removed.

3. Attach a 75 ton crane to the top of the L/P with appropriate rigging. (Weight of section to be removed is 100,000 lbs.).

4. Apply a take up load (approximately 90,000 lbs.) with the crane.

5. Flame cut the four 10 WF 49 corner columns at Station 993'-0".

6. Lift the disconnected upper L/P section out of the silo and place out of the way on the cap.

D. Second Section Removal (Station 993'-0" to 977' - 0"):

1. Disconnect and remove the NCU, HCU, and HPU from Level 3 of the L/P. (The maximum unit weight of the 3 units is 4,000 lbs. for the HPU).

2. With come-alongs and cables, lash the tension equalizer to crib columns J and K to prevent tilting of the L/P in a north-south direction.

3. With come-alongs and cables, lash Level 4 of the L/P to the east and west crib steel to prevent tilting of the L/P in an east-west direction.

4. Support the two sets of large guide rail rollers on Level 3 of the L/P with come-along. Remove by flame cutting, (west and south side).

5. Unbolt and remove the 1 inch stainless steel NCU line from the disconnect support bracket on L/P Level 4. Remove the disconnect support bracket by flame cutting.

6. Disconnect all cable, tubing, ducting, and piping between L/P Levels 3 and 4. DO NOT FLAME CUT HYDRAULIC LINES.

REVISION SYMBOL

TASK DETAILS (CONTINUED):

D. Second Section Removal (Continued):

7. Attach the crane to Level 3 of the L/P with appropriate rigging. (Weight of section to be removed is 40,000 lbs.).

8. Apply a take up load of approximately 30,000 lbs. with the crane.

9. Flame cut the four 10 WF 49 corner columns and diagonal brace gussets at Station 477' - 0" (just above the Level 4 deck so that the diagonal bracing is still attached to the 10 WF 49 columns being removed).

10. Lift the disconnected L/P section out of the silo and place beside the other removed section.

E. Third Section Removal (L/P Level 4):

1. Disconnect and remove the pod air conditioning unit from Level 4 (weight 6,500 lbs.).

2. Remove the south set of large guide rail rollers from Level 4 of the L/P per step D.4, (the east and west rollers may remain attached).

3. Using cables and come-alongs, tie the L/P drive cables to crib steel at four places beginning at a point above the center line of the idler sheaves. Route the cables downward to crib steel. (This will maintain the drive cable position when the lowest section of the L/P is removed).

4. Attach a crane to the east (small guide rail) side of the L/P with appropriate rigging, (weight of Level 4 is 25,000 lbs.).

5. Remove the east-west lashing installed in step D.3.

6. Rotate Level 4 into a vertical position with the crane, remove from silo, and place with previously removed portions of the L/P.

7. DO NOT REMOVE lashing from the tension equalizer or from the cables.

REVISION SYMBOL A

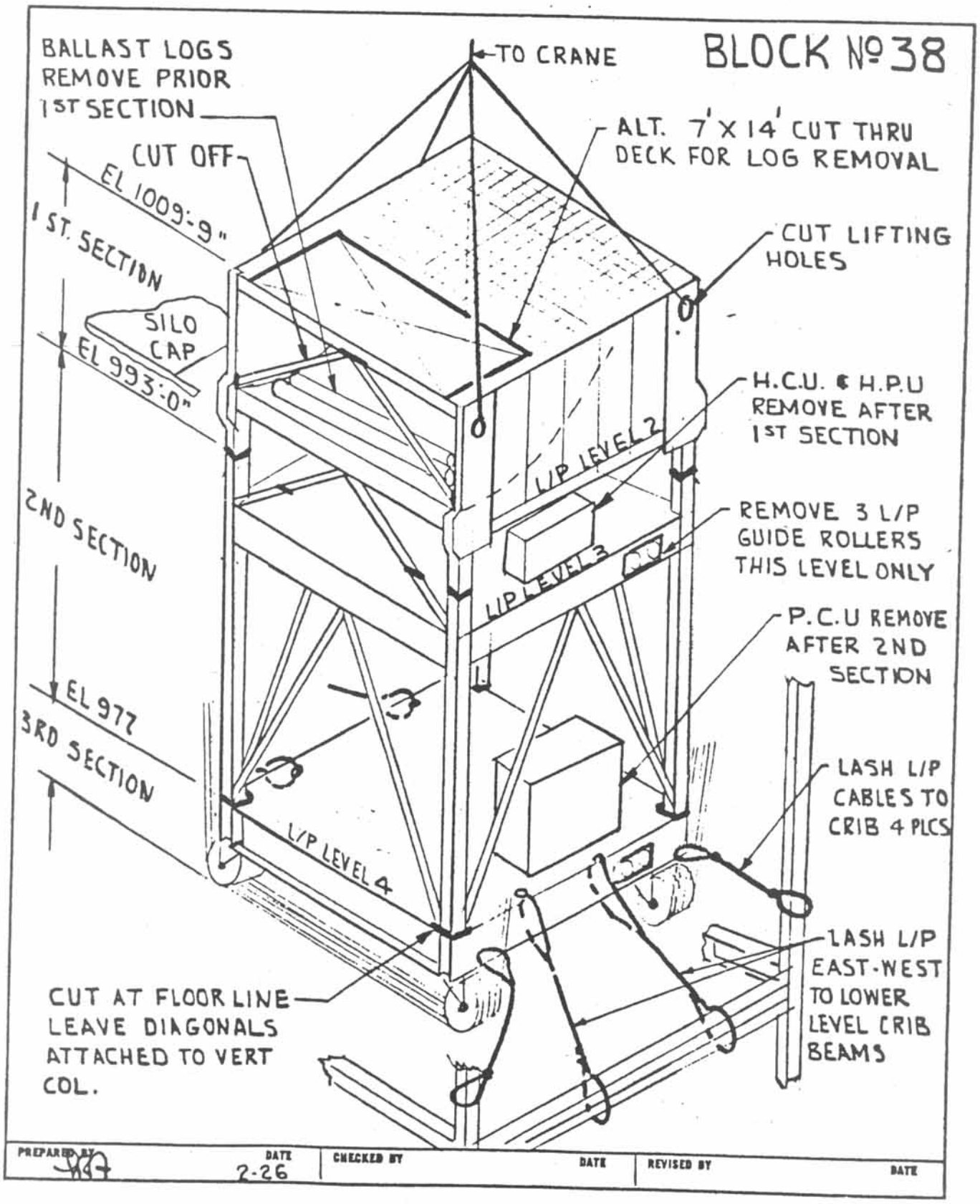

BLOCK Nº 38
BALLAST LOGS REMOVE PRIOR 1ST SECTION
TO CRANE
ALT. 7' X 14' CUT THRU DECK FOR LOG REMOVAL
CUT OFF EL 1009'-9"
1 ST. SECTION
SILO CAP EL 993'-0"
CUT LIFTING HOLES
H.C.U. & H.P.U REMOVE AFTER 1ST SECTION
L/P LEVEL 2
2ND SECTION
REMOVE 3 L/P GUIDE ROLLERS THIS LEVEL ONLY
L/P LEVEL 3
P.C.U REMOVE AFTER 2ND SECTION
EL 977
3RD SECTION
LASH L/P CABLES TO CRIB 4 PLCS
L/P LEVEL 4
LASH L/P EAST-WEST TO LOWER LEVEL CRIB BEAMS
CUT AT FLOOR LINE LEAVE DIAGONALS ATTACHED TO VERT COL.
PREPARED BY
DATE 2-26
CHECKED BY
DATE
REVISED BY
DATE

FIGURE 38-1

BLOCK NUMBER: 39

BLOCK TITLE: Silo door cylinder removal

GENERAL DESCRIPTION OF BLOCK ACTION:

Remove silo door hydraulic cylinders.

TIME REQUIRED: 1 day

MANPOWER REQUIRED:

a.	Plumber	4 hours
b.	Electrician	4 hours
c.	Riggers	16 hours
d.	Crane Operator	8 hours
e.	Truck driver	8 hours
f.	Mechanics	8 hours
g.	Laborers	16 hours
		64 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. 1 five ton crane
b. 2 tie bars per drawing 27-70269 EID 27-9403
c. Impact wrench and air compressor
d. 1 five ton truck
e. 1 swinging scaffold

TASK DETAILS:

CAUTION: Do not flare or torch cut hydraulic lines. Residual might cause a fire or an explosion.

1. Disconnect Hydraulic and Electrical connections to the door cylinders.

2. Install tie bars between the two trunnion bearing housing assemblies. (Ref. EID 27-9403)

3. Untorque attach bolts at silo wall bracket (Approx. 36 bolts. Leave (4) bolts secured).

4. Install a work platform on the door at the cylinder.

5. Attach a crane sling and lifting eye on cylinder rod end fitting. Transfer cylinder rod load to crane. (Approx. 1500 lbs)

6. Remove restraining plate and drive door pin assy out. Use care in handling pin (Weight 30 lb).

REVISION SYMBOL A

TASK DETAILS, BLOCK NO. 39 (Continued)

7. Lower crane hoist to allow cylinder to retract to closed position.

8. Restrain cylinder in Vertical position.

9. Attach spreader bar sling or alternate sling from crane to lifting eyes in door cylinder and trunnion bearing blocks.

10. Transfer cylinder assembly load to crane. (Unit weight approx. 13000 lbs).

11. Remove all bolts and slide assembly horizontally to free position. (use come alongs as required) Lift from silo.

12. Repeat steps 1 through 11 for the other cylinder.

13. At silo cap, four places, remove the four buffer cylinders. (Unit weight, approx. 50 lbs).

14. Remove door cylinder manifolds located on crib beam adjacent to door cylinder. (Unit weight, approx. 25 lbs)

REVISION SYMBOL

BLOCK NUMBER: 40

BLOCK TITLE: L/P hoist ropes disassembly and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Removal of L/P hoist cables after removing launch platform

TIME REQUIRED: 1 Day

MANPOWER REQUIRED:

a.	Riggers	16 hours
b.	Welders	8 "
c.	Crane Operator	8 "
d.	Mechanics	8 "
e.	Laborers	8 "
f.	Tractor Operator	8 "
		56 Manhours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. RD4 or RD6 tractor
b. 1 five ton truck crane
c. 1 acetylene cutting outfit
d. 1 one ton chain hoist
e. 1 two ton come-a-long hoist
f. Reel for each cable
g. 1 clamping bar (figure 40-1)

TASK DETAILS:

- CAUTION -

Cables (2,000 lbs. each) must be secured by guide lines at all times during handling. Weight differential will cause sudden load shifts. Cables should be dragged over traction sheaves. To assure no slippage, sheaves should not be rotated.

1. Verify that the tension equalizer is still lashed to crib columns J and K as accomplished during L/P disassembly and removal (Block 38).

2. Verify that the L/P drive cables are still tied to crib steel on the east and west side of the MEA as accomplished during L/P disassembly and removal (Block 38).

3. Remove sheave covers (200 lbs. each) from drive traction sheaves. Rig sheave covers and lift through silo mouth to cap.

REVISION SYMBOL A

TASK DETAILS (CONTINUED):

4. Verify cables are slack at counterweight. Install a hoist at Level 7 and remove counterweight sheave bearing seats and lower onto Level 9 of the silo.

5. Install the clamping bar Figure 40-1 on one set of cables (5) as they pass through the MLS drive base decking on the east side of the drive sheave to support the weight of the length of cable extending into the counterweight shaft.

6. Position a winch (or tractor) capable of 4,000 lb. pull 350 feet from silo cap. Attach a lifting line (4,000 lb. pull) from the winch to one cable on the tension equalizer below the cable socket.

7. At Level 1, transfer cable weight to the winch and remove the rod end pin through the cable socket. Verify all tie points are holding the cable prior to pulling the pin.

8. Maintaining the existing ties to crib steel (Ref. Step 2) on the balance of the cables, release the ties (both east and west) on the set of cables supported by the clamping bar.

9. Take up on power winch until weight of cable is taken off the clamping bar installed in Step 5. Remove the two compression clamps from the cable being removed.

10. Raise cable out of the silo mouth by the shortest exit distance using the power winch until approximately a six foot loop exists at the drive base dead end.

11. At the dead end, use a manilla tag line to secure the cable end to the drive base structure.

12. Remove dead end cable pin and lower, with the tag line, to the lift-out position. (Verify cable will not move prior to pin removal.)

13. Slowly raise cable with the winch until dead end socket is at Level 1 drive base. Raise cable with the winch using tieline to prevent cable from swinging loose. Use drive base hand rail for tie line control.

14. Repeat Steps 6 through 13 for each cable.

15. Repeat Steps 5 through 14 for the remaining set of five cables.

REVISION SYMBOL A

FIG. 40-1

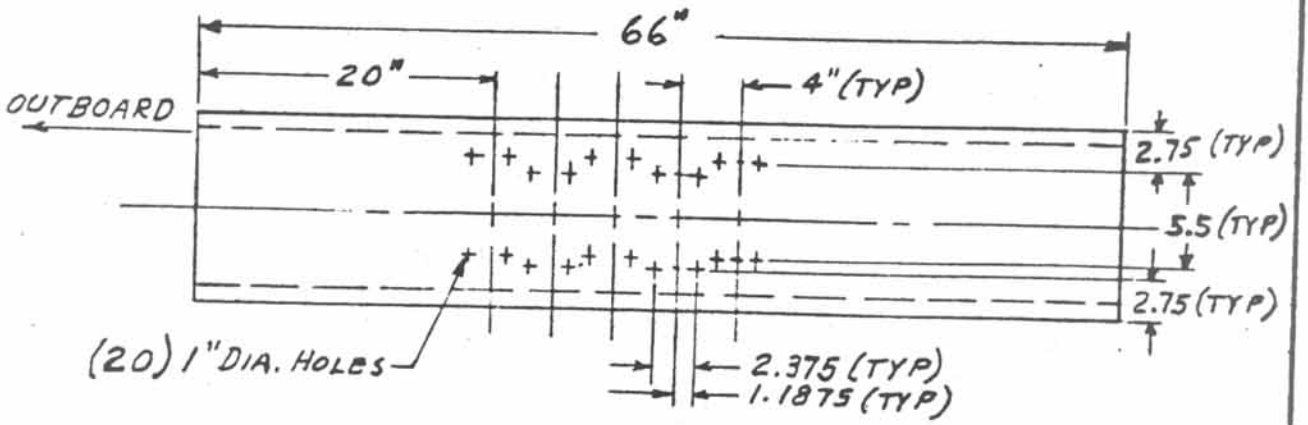
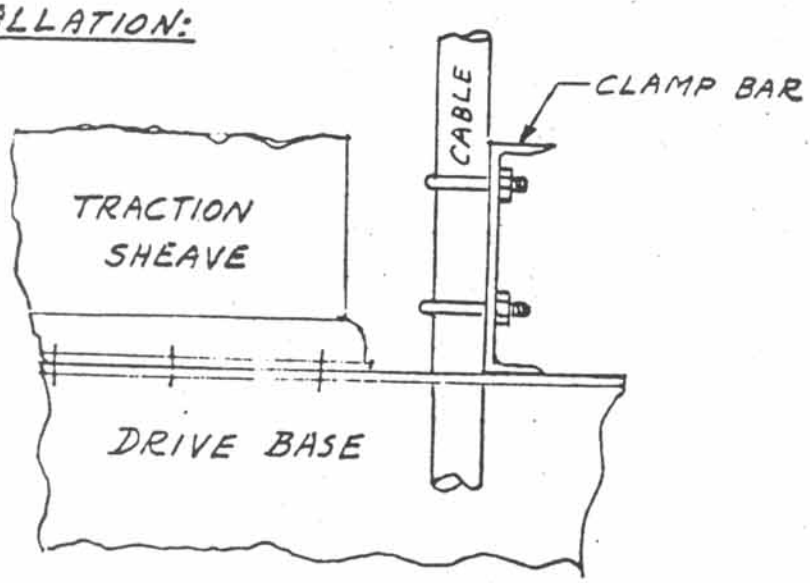


FIG. 40-1 CLAMPING BAR FOR L/P TRACTION CABLES

MATERIAL: 12 ⌴ 25 lb. - 66"
1½" WIRE ROPE CLIPS

INSTALLATION:



VIEW LOOKING NORTH

PREPARED BY	DATE	CHECKED BY	DATE	REVISED BY	DATE
B.J.A.	2/25/65				

FIGURE 40-1

BLOCK NUMBER: 41

BLOCK TITLE: Launch platform drive mechanism disassembly and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Remove drive system components.

TIME REQUIRED: 2 days

MANPOWER REQUIRED:

a.	Riggers	32 hours
b.	Crane operator	8 hours
c.	Mechanics	32 hours
d.	Laborers	32 hours
		104 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. 1 ten ton truck crane
b. Truck tractor
c. 2 flat bed trailers
d. Impact wrench (air operated)
e. Portable air compressor

TASK DETAILS:

1. Provide an access platform at level 1 M.E.A. to allow removal of parts and space to guide components out of the silo.

2. The Penthouse beam over the drive base area must be removed. (Beam weight, 1500 lbs)

   a. Remove cables, piping and J-Boxes mounted on the beam.

   b. Remove intermediate wall structure, if not previously removed, to allow full access to drive base.

3. Disconnect flex couplings, remove covers and grid members and stow grid members. (4 couplings, 2 couplings are fixed type and require unbolting).

3.1 Drain hydraulic oil from modified brake system and remove brake hand pump and associated equipment.

3.2 Remove EID 27-9398, MTS inching tool, and store in case.

4. Gear box lubricant may be drained or left as is. (approx. 50 gal of oil)

REVISION SYMBOL A

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 602-02-65-8	PACKAGE NO.
	SCALE	RELEASED	SHEET 41-1	
		A2613 (REV. 6-63)	DISTR CODE	

TASK DETAILS, BLOCK NO. 41 (Continued)

5. Unterque or cut all holddown bolt attachments (approx. 32 bolts.)

6. Remove the dummy shaft between brake and high speed motor. (Weight, 80 lbs)

7. Unbolt the four brake puck units and remove.

8. Move brake frame back and remove. (Unit weight 200 lbs)

9. Unbolt brake disc at main gear reducer and remove. (unit weight, 100 lbs)

10. Position crane to lift traction sheave (16,000 lbs).

11. Attach crane sling around sheave shaft and at flex coupling end of drive shaft.

12. Transfer load to crane and verify that sheave assembly is balanced for lift. Lift out of silo mouth to cap.

13. Repeat the above steps for the second traction sheave.

14. With traction sheaves removed, rig to main gear box and swing the box out from under the overhead door cylinder.

15. When gear box is clear, attach crane sling to lower lifting holes in the gear box and lift to silo cap. (weight, 6000 lbs).

16. Attach crane sling to lifting eyes in the high speed motor. Transfer load to crane and guide motor to clear area for vertical lift to cap. (unit weight 1500 lbs)

17. Repeat for low speed motor.

18. Attach crane sling to the auxiliary gear box lifting lugs. Transfer load to crane. Guide out to clear area for vertical lift to cap (unit weight 1100 lbs).

19. Remove shift coupling bracketry and all shim plates.

20. Under the drive base (using an access platform). Cut the dead end restraint device and remove.

21. Attach a line to the dead end from the drive base to secure it. Cut dead end off of shaft. Lower to access platform for removal. Typical 2 places. (Weight approx. 200lbs

REVISION SYMBOL

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8	PACKAGE NO.
	SCALE	RELEASED	SHEET 41-2	

A2613 (REV. 6-63) DISTR CODE

TASK DETAILS, BLOCK NO. 41 (Continued)

22. On drive base attach the crane sling to the dead end bearing and shaft. Lift out to silo cap (weight, 200 lbs)

NOTE

Tachometers may be removed from the motors prior to removal.

REVISION SYMBOL

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8	PACKAGE NO.
	SCALE	RELEASED	SHEET 41-3	

A2613 (REV. 6-63) DISTR CODE

BLOCK NUMBER: 42

BLOCK TITLE: L/P tension equalizer disassembly and removal

GENERAL DESCRIPTION OF BLOCK ACTION:

Disassemble and remove tension equalizer assembly.

TIME REQUIRED: 1 day

MANPOWER REQUIRED:

a.	Riggers	16 hours
b.	Crane operator	8 hours
c.	Truck driver	4 hours
d.	Mechanics	8 hours
		36 man hours

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

a. 1 five ton truck crane
b. 1 five ton flat bed truck
c. Special wrench to fit crib attach nuts
d. Swinging scaffold

TASK DETAILS:

1. Position a cage access platform at the tension equalizer.
2. Attach a crane sling to the ends of the equalizer bar. Tie the equalizer arms to the bar to prevent movement. Transfer equalizer load (10,000 lbs.) to the crane.
3. Remove or cut the crib-to-equalizer nuts at both ends of the assembly.
4. Slide the equalizer assembly horizontally to be free of crib bolts.
5. Lift the assembly to the cap area.

NOTE: Tension equalizer link may be jacked horizontally on each end pin to avoid binding during removal.

REVISION SYMBOL

BLOCK NUMBER: 43

BLOCK TITLE: MEA equipment, level 8, disassembly and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Remove from level 8 the ventilation equipment, fuel loading prefab, the PCU, the pneumatic Distribution Unit, and various other equipment.

TIME REQUIRED: 4 days

MANPOWER REQUIRED:

a.	Plumbers	24 hours
b.	Iron workers	24 hours
c.	Electricians	24 hours
d.	Riggers	120 hours
e.	Welders	24 hours
f.	Carpenters	24 hours
g.	Crane operator	24 hours
h.	Truck driver	24 hours
i.	Mechanic	24 hours
j.	Sheet metal worker	24 hours
k.	Laborers	48 hours
		348 hours

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

a. Same as Block 18.
b. 1 ten ton crane

TASK DETAILS:

CAUTION

Do not torch or flame cut any RP-1 fuel lines. Residual fuel might cause fire or explosion.

1. Disconnect or cut ducting to ventilation damper frames. Remove each frame, motor, and linkage with minimum disassembly. Lift to silo cap.

2. Disconnect or cut away all ventilation ducting and thrust section heater ducting. Lift to silo cap.

3. Disconnect thrust section heater fan (FH1) (200 lbs.), I/P exhaust fan (FE1)(250 lbs.), and I/P purge fan (FE2)(450 lbs.). Shackle directly to crane fall where possible and lift out of silo.

4. Disconnect the hot and cold disconnect panels and lift to the silo cap.

REVISION SYMBOL A

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 602-02-65-8
	SCALE	RELEASED	SHEET 43-1

A2613 (REV. 6-63) DISTR CODE

TASK DETAILS, BLOCK NO. 43 (Continued)

5. Remove the fuel loading prefab (11,400 lbs.), the pressurization control unit (4200 lbs.), the pneumatic distribution unit (4000 lbs.), and the LN_2 overflow evaporator (750 lbs).

   a. Disconnect all piping at flange couplings at the units or cut if necessary. Remove the interconnecting piping as is convenient.

   b. Disconnect or cut all hold down bolts.

   c. Disconnect or cut electrical conduit and electrical wiring at equipment junction boxes.

   d. Shackle 4-leg sling to equipment lifting lugs and crane fall. Lift clear of silo. For AGE without lifting lugs, jack equipment clear of floor and skid with rollers onto hoisting platform.

REVISION SYMBOL

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 682-02-65-8	PACKAGE NO.
	SCALE	RELEASED	SHEET 43-2	

A2613 (REV. 6-63) DISTR CODE

BLOCK NUMBER: 44

BLOCK TITLE: Cryogenic Tanks and Gas Storage Vessels, D&R

GENERAL DESCRIPTION OF BLOCK ACTION:

Dismantle all cryogenic tanks and gaseous storage tanks on level 8 and remove them to the silo cap.

TIME REQUIRED: 10 days

MANPOWER REQUIRED:

a.	Iron workers	32 hours
b.	Riggers	240 hours
c.	Welders	8 hours
d.	Crane Operator	40 hours
e.	Laborers	80 hours

SPECIAL TOOLS & EQUIPMENT REQUIRED:

a. 4 heavy duty roller skid dollies, 50 ton minimum capacity each, Macarco Cat. 272324 or equivalent.

b. 4 ten ton spur geared chain hoists, 12 feet minimum lift.

c. 6 six ton puller hoists, 10 feet minimum lift.

d. 4 double leg chain slings, 1 inch chain, oblong link and 2 grab hooks, 12 feet reach (67,000 lbs working loads per sling).

e. 6 single leg chain slings, 1 inch chain, 10 feet reach, 1 oblong link and 1 grab hook. (38,700 lbs working load per sling).

f. 1 seventy-five ton crane.

g. Two hardwood or Oregon pine timbers measuring 4 inches by 10 inches by 18 feet.

h. 100 feet of 1 inch manilla rope.

i. 2 diesel rails (see figure 50-1)

j. 1 spreader bar (see figure 50-2)

REVISION SYMBOL A

TASK DETAILS:

A. General Instructions:

Figure 44-1 shows the Level 7 floor beams designed to support the LO_2 storage and topping tanks, and to provide anchor points for the lateral bracing of all tanks at and on Level 8. Tanks are indexed for identification.

The procedures covering tank removal are numbered in the suggested order of removal. It is not mandatory that the indicated order be followed, except that the LO_2 topping tank must be lowered to Level 8 before Level 7 floor structure is removed. Also, the GN_2 storage tanks must be the last removed, whether they are vertical or horizontal tanks.

It is strongly recommended that professional riggers be employed to remove these tanks, as well as the two diesel generators.

Equipment for the transportation of these items should be in place on the cap as the tanks are removed to facilitate loading.

B. Tank and Storage Vessel Removal

1. LO_2 Topping Tank (20,000 lbs)

a. Place diesel rails (see Figure 50-1) on Level 8 floor under tank with south side of the south rail against the north side of Column K and legs under the LN_2 storage tank.

b. Remove suspense rods from two diametrically opposed lugs on tank and attach single leg chain slings. Remove rods from hangers on supporting structure and attach 10 ton chain hoists in their place.

c. Support tank with chain hoists and remove remaining suspension and lateral support rods.

d. Place 4 dollies on diesel rails to move tank eastward. Lower tank to dollies. Slack off hoists, but do not detach from tank.

e. Rig a second pair of hoists to overhead beams near Level 7 J-K beam and attach to chain slings on tank. Rig puller hoist to tank base and move tank eastward along rails until crane fall can be attached to lifting lugs without interfering with Level 7 J-K beam. Keep overhead rigging sufficiently tight to prevent tank from topping during lateral movement.

REVISION SYMBOL

TASK DETAILS: (Continued)

B. Tank and Storage Vessel Removal (Continued)

1. LO_2 Topping Tank (Continued)

f. Rig restraint lines to west side of tank base. Slowly raise tank with crane. Slack off tag lines until tank is suspended on crane falls without lateral movement. Hoist tank to cap.

2. LO_2 Storage Tank (101,000 lbs)

a) Place the two 18 ft timbers, 10 inch face on floor, under tank as far as possible, running east and west, west end over E-F floor beam, and east end extending east of J-K floor beam. Bolt together with scrap steel spreaders, located between inner faces of timbers, to prevent spreading under weight of tank.

b) Remove suspense rods in northeast and southwest guadrants of tank and install single leg 1 inch chain slings in their place. At level 6, rig chain anchors around column K and over E-F floor beam. Locate to retain radial angle of the suspense rods removed.

c) Support tank from the above rigging and remove remaining suspense and all lateral support rods.

d) Disassemble and remove all Level 7 floor structure from MEA west including J-K floor beam. Floor beams J-F, F-E, and E-K are to be left in place. (See figure 44-1)

e) Attach 1 inch chain slings to tank lifting lugs in northwest and southeast quadrants of tank and rig crane fall to these slings.

f) Provide restraint at bottom of tank to control excessive swing and lift tank about 3 feet with crane. Disconnect rigging to level 6 and remove tank from silo.

REVISION SYMBOL A

TASK DETAILS: (Continued)

B. Tank and Storage Vessel Removal (Continued)

3. . LN_2/Helium Heat Exchanger (14,000 lbs) and LN_2 Storage Tank (32,000 lbs)

NOTES

1. These tanks can be removed as an assembly, or individually, as desired. Lifting lugs were located on the supporting columns for each tank, but may have been removed at installation to clear interference with adjacent tanks.

2. Remove bolts holding support columns to floor just before lifting LN_2 storage tank from silo.

a) To remove as a unit: Disassemble and remove lateral support rods. Rig crane fall to top lifting lugs on the support columns and lift out. Restrain bottom of tank to prevent swing until clear of level 8 floor.

b) If individual tank removal is desired: Rig crane fall to top lugs per (a) above. Disconnect flanges in support legs below the Heat Exchanger. Cut through ladder on south side, and lift the Heat Exchanger from the silo. Lateral restraint is required at start of lift. Remove LN_2 storage by rigging crane fall to lifting lugs below flanges on support columns and remove LN_2 storage tank as above.

NOTE

If lifting lugs have been removed, use choker slings around support legs below flanges, or cut holes thru legs for slings or lifting hooks.

4. In-Flight Helium Tanks (2 @ 52,000 lbs ea.) and GN_2 ground Pressurization Tank (40,000 lbs)

NOTE

These tanks are located on the south side of the MEA. They are each mounted on 4 legs, which are bolted to the floor structure. Vertical stability is provided by 4 lateral guy rods per tank to the crib structure. Each of these tanks will be removed by the following procedure. The order of removal is optional.

REVISION SYMBOL

TASK DETAILS: (Continued)

B. Tank and Storage Vessel Removal (Continued)

4. In-Flight Helium Tanks (2 @52,000 lbs ea) and GN_2 Ground Pressurization Tank (40,000 lbs). (Continued)

a) Remove the lateral support rods.

b) Attach a single leg, 1 inch chain sling to each of the four tank lifting lugs.

c) Rig one 10 ton chain hoist to each of the chain slings and anchor to the overhead crib structure.

d) Remove the hold-down bolts from the tank legs and raise the tank about 2 feet above the floor.

e) Place the diesel rails (see Figure 50-1) (north and south) under the appropriate pairs of tank legs. Locate roller dollies on the tracks and lower the tank to the dollies.

f) Rig a puller hoist to the pair of tank legs on the south side of the tank. Anchor the hoist to level 8 K-A floor beam directly north of the tank.

g) Apply tension with the puller hoist to move the tank legs north, and slowly lower the 10 ton hoists until the crane falls can be attached to the chain slings.

h) Apply lift with the crane, using the puller hoist to restrain bottom of tank until the load is perpendicular.

i) Lift tank from the silo.

j) Repeat a thru i for the two remaining tanks.

REVISION SYMBOL

TASK DETAILS: (Continued)

B. Tank and Storage Vessel Removal (Continued)

5. GN_2 Storage Tanks (Vertical - 86,000 lbs each)
(See Part 6 for Alternate Procedure if Horizontal Tanks are installed)

NOTE

These three tanks are mounted on a common structural steel base resting on level 8. Each tank is equipped with 4 lifting lugs in addition to lugs for lateral support rods.

The tank on the west side should be removed first and the middle tank second. The following procedure will apply to each of these two tanks:

a) Clear two diametrically opposite lifting lugs and attach double leg, 1 inch chain slings.

b) Pick up these slings with the crane downfall.

c) Disconnect bolts holding tank legs to the base structure.

d) Provide restraining lines to bottom of the tank for lateral control until perpendicular under crane boom.

e) Raise tank to silo cap.

NOTE

The third (eastern-most) tank will have to be moved west while held in the vertical position for pickup by the crane. This translation is accomplished in following steps.

f) Attach single leg chain slings to each of the four lifting lugs.

g) Anchor four 10 ton hoists to overhead crib structure beams F-G and F-J, such that the hoists will translate the top of the tank, when lifted, at least half the distance to the center tank base structure. Raise the tank from its present base.

REVISION SYMBOL A

TASK DETAILS: (Continued)

B. Tank and Storage Vessel Removal (Continued)

5. GN_2 Storage Tanks (Vertical - 86,000 lbs each) (Continued)

h) Rig puller hoists to the tank legs and move the bottom of the tank westward while slowly lowering the overhead chain hoists until the tank legs match the support bases of the center tank. Use steel pins or spud-wrenches to align bolt holes.

i) Rig puller hoists to tip the top of the tank westward while further extending the overhead chain hoists until the tank rests on the center tank supports. Leave pins in place and remove rigging.

j) Remove tank per steps a thru c above.

6. GN_2 Storage Tanks (Horizontal- 37,200 lbs, 19 1/3 feet long each)

NOTE

This alternate procedure will apply for Schilling AFB Sites 1 through 9 (AFBMD designation) only. All other locations are equipped with three vertical tanks.

These tanks are mounted on vertical structural steel racks in silo Quad 11. They should be removed one at a time by the following procedure:

a) Attach the spreader-bar used with the diesel generators to the crane downfall.

b) Center the spreader bar longitudinally on the uppermost tank. Take a full turn around the circumference of the tank with each chain.

c) Cut the tank rack vertical members at the bottom of the tank (south side only).

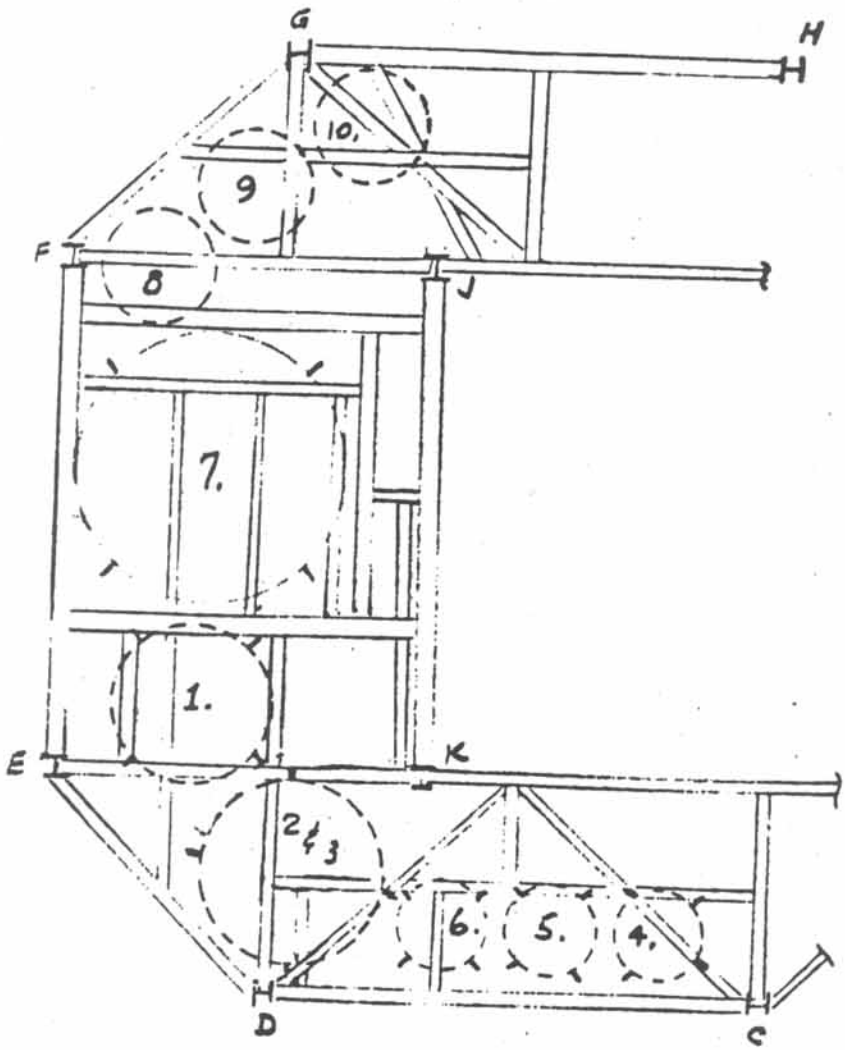
d) Rig restraint lines to tank and hoist from silo.

e) Repeat a through d for the remaining 6 tanks.

REVISION SYMBOL A

TANK INDEX:

1. LO_2 TOPPING
2. LN_2/He Heat Exchanger
3. LN_2 STORAGE (BELOW TK. 2)
4. IN-FLIGHT HELIUM
5. IN-FLIGHT HELIUM
6. GN_2 GROUND PRESSURE
7. LO_2 STORAGE
8-9-10 GN_2 STORAGE



FLOOR STRUCTURE - LEVEL 7

PREPARED BY	DATE	CHECKED BY	DATE	REVISED BY	DATE
[illegible]	7-22-64				

Figure 44-1

A706-1 (1-62)

BLOCK NUMBER: 46

BLOCK TITLE: Final securing of silo

GENERAL DESCRIPTION OF BLOCK ACTION:

This block accomplishes a final check/closeup of silo, closes and secures blast closures and covers intake and exhaust shafts and fill and vent shaft.

TIME REQUIRED: 4 hours

MANPOWER REQUIRED:

a. Two 541xOD - MFT
b. One 542xOD - FAC Elect

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

a. Six 4' x 8' sheets plywood
b. Heavy safety wire

TASK DETAILS:

1. Enter air intake shaft and remove 4 inch by 4 inch block from blast closure No. 2, and push closure shut.

   NOTE: See block 15, step 6.a. for possible exception regarding routing of electric power cable through this blast closure. If the power cable is in fact routed through this opening, it is not recommended that the 4 inch by 4 inch block be removed. It is suggested that the opening can be adequately covered using galvanized sheet metal which can be procured from a ventilation duct in the silo.

2. Repeat step 1 for exhaust blast closure No. 2.

   NOTE: It may be necessary to crack air lines to accomplish steps 1 and 2.

3. Cover air intake shaft, air exhaust shaft, and fill and vent shaft with weather resistant plywood, commercial grade and bolt or wire down to grill. Drill holes in the plywood for passage of wire.

4. On sump floor, check the operation of silo sumps by switching to local and back to automatic.

5. Perform a level by level check, checking and picking up loose tools, equipment, etc.

REVISION SYMBOL A

GENERAL DYNAMICS ASTRONAUTICS SAN DIEGO, CALIFORNIA	CODE IDENT NO. 05342	SIZE A	DRAWING NO. 692-02-65-8	PACKAGE NO.
	SCALE	RELEASED	SHEET 46-1	
A2613 (REV. 6-63)	DISTR CODE			

TASK DETAILS, BLOCK NO. 46 (Continued)

6. Secure lights before leaving silo.

NOTE: No entrance to silo from this time on is required, therefore the blast door into silo will be tack welded shut to prevent injury to any personnel.

- CAUTION -

Prior to any welding, local area should be inspected for combustible fluid accumulation and cleaned up if found. A CO_2 guard should be established when welding is in progress.

7. Tack weld silo blast door shut in approximately 5 places.

8. Check operation of LCC sewage pumps by switching to local and back to automatic.

9. Secure LCC lighting.

10. Close all blast and entrapment area doors.

11. Close and secure grade entry door.

REVISION SYMBOL A

BLOCK NUMBER: 47

BLOCK TITLE: Close silo doors

GENERAL DESCRIPTION OF BLOCK ACTION:

Close the silo overhead doors using two 50 ton cranes.

TIME REQUIRED: 1 day

MANPOWER REQUIRED:

a.	Riggers	8 hours
b.	Crane operator	16 hours
c.	Mechanics	8 hours
d.	Laborers	16 hours
		48 man hours

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

Two 50 ton cranes

TASK DETAILS:

Conditions:

1. Silo door cylinders removed.
2. Door support rod installed per procedure.
3. Door opening equipment EID 27-9388 (27-73872) on site.

1. Remove sling, equalizer bar, lifting lugs, and hardware from the 27-9388 pallet.
2. Position two 50 ton cranes on silo cap at the lower door (west side) to control door movement from fully open to fully closed position.
3. Install the door lifting lugs on each side of the support strut door imbed. Torque attach bolts to 500 to 600 foot pounds.
4. Assemble the sling, equalizer bar and eyebolts and attach equalizer bars to cranes. Raise into position and attach eyebolts to door lifting lugs. (Unit weight, 150 lbs.)

- CAUTION -

Door weight is approximately 240,000 lbs. Cranes must be positioned to equalize and control the door as it is brought over center. Maximum loads occur when the door is approximately 10° from closing and increases as door closes.

5. Transfer door load to cranes. Remove support strut connection at the cap.
6. Direct cranes to slowly raise door over center and hold.

REVISION SYMBOL

7. Direct cranes to slowly lower, equalizing loads to door close position.
8. Disconnect cranes and re-position. Remove lugs on the west door and install on the east door for closing.
9. Repeat steps 2 through 7 for upper (east) door.
10. Stow equipment.

REVISION SYMBOL

BLOCK NUMBER: 48

BLOCK TITLE: MLS drive cabinets, CSMOL, etc. disassembly and removal

GENERAL DESCRIPTION OF BLOCK ACTION:

Remove missile lift system electrical equipment.

TIME REQUIRED: 2 days

MANPOWER REQUIRED:

a.	Iron workers	8 hours
b.	Electricians	48 hours
c.	Riggers	48 hours
d.	Sheet metal worker	8 hours
e.	Laborers	24 hours
f.	Tractor operator	8 hours
		144 man hours

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

a. 1 RD 4 tractor
b. Two 3 ton chain hoists
c. Two 1 ton chain hoists
d. Two 3/4 ton come-alongs
e. Cable reels

TASK DETAILS:

A. Cabinet Removal

1. Using ladders or scaffold from level 2, disconnect all cable connectors at the bottom of the L/P logic rack, drive control, and motor control interfaces.
2. Cut or remove all holddown bolts in these units.
3. At level 1 disconnect all interconnecting cables between cabinets.
4. At level 1 quad 3 main J-Box, disconnect all cables.
5. Rig J-Box to penthouse beam and remove its attach bolts. Lower it to the floor for removal. (Unit weight, 150 lbs.)
6. Disconnect all cables to the CSMOL. Remove attach bolts and lower to the floor for removal. (Unit weight, 75 lbs.)
7. Cut and remove the tie rods and any intermediate structure between level 1 and the penthouse beam for equipment access and removal. Remove ducting over the drive control cabinet area.

REVISION SYMBOL

8. Attach a sling to the logic rack and transfer load to hoist. Swing cabinet to a skid and slide out to L/P for removal to cap. (Unit weight, 2000 lbs., 2 feet by 6 feet by 8 feet)

9. Attach a sling to the Motor Control Center Cabinet (verify interconnect cables are loose). Transfer load to hoist and slide cabinet to skid for transfer to L/P. (Unit weight, 3500 lbs., 2 feet by 6 feet by 8 feet)

10. Attach sling to Drive Control Cabinet. Transfer load to hoist and slide unit to skid for transfer to L/P. (Unit weight, 6000 lbs., 3 feet by 6 feet by 8 feet)

B. Cable Removal

1. Cables are attached to the crib structure or J-Boxes in the following manner:

   a. Cable clamped to weld stud

   b. Cable clamped by unistrut clamps

   c. Cable tied to a cable ladder or tray

   d. J-Box terminal or Cannon plug

2. There are approximately 16 junction boxes located on crib levels. (Average weight, 25 lbs.)

3. There are approximately five 37 conductor cables which run from the interface J-Box on level 5 to level 1 and around the crib to the drive motors. (Average weight, 800 lbs. per cable) Attach each cable to a hoist for pulling up cable ladder to level 1 or from level 1 cable trap to guide out of silo.

4. Cables mounted on L/P guide rails and work platforms will be removed during level by level removals. (Approximately 35 cables, average weight, 50 lbs.)

5. J-Box interconnect cables (approximately 20), remove from crib attachments at various levels. Remove through LCC or L/P. (Unit weight, 100 lbs.)

6. Remove vertical crib lock cables (8), horizontal crib lock cables (6), L/P locks (24). (Average unit weight, 30 lbs.)

7. Remove tachometer cables (2), overspeed cable (1), door cylinder control cables (16), brake and solenoid cables on level 2 (12), 40 HP and 1 HP pumps on level 2 (2), and accumulator rack cables on level 2 (10).

REVISION SYMBOL

BLOCK NUMBERS: 49

BLOCK TITLE: Collimator sight tube (level 6) disassembly and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Removal of the Arma collimator sight tube to be accomplished concurrently with block 28.

TIME REQUIRED: 1/2 day

MANPOWER REQUIRED:

a.	Crane operator	4 hours
b.	Rigger	4 hours
c.	Mechanic	4 hours
		12 man hours

SPECIAL TOOLS & EQUIPMENT REQUIRED: 1 ton crane.

TASK DETAILS:

1. With L/P at level 6 or using a cage access platform lowered to the collimator tube mounting base (approx. level 6), connect a lift crane sling to sight tube support.
   approx WT of unit 600 LBS

2. Secure collimator tube (600 lbs) to sling to prevent rotation.

3. Transfer load to the lift crane and remove the attach bolts. Balance crane load to avoid shift of tube when released.

REVISION SYMBOL

BLOCK NUMBER: 50

BLOCK TITLE: Diesel engines, levels 5 and 6, disassembly and removal.

GENERAL DESCRIPTION OF BLOCK ACTION:

Removes west launch platform guide rail and removes both diesel engines.

TIME REQUIRED: 4 days

MANPOWER REQUIRED:

a.	Iron workers	40 hours
b.	Riggers	64 hours
c.	Welders	40 hours
d.	Crane operator	32 hours
e.	Laborers	64 hours
		240 man hours

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

a. One 75 ton truck crane
b. One acetylene cutting unit
c. One spider elevator scaffold
d. One truck tractor and 20 ton trailer
e. One impact wrench (air operated)
f. One air compressor
g. One 10 ton chain hoist
h. Wire rope, cable clamps, wire rope slings, and rigging accessories.
i. One arc welding machine
j. One Marcarco 20 ton heavy duty hydraulic jack, part no. 291Z32 or equivalent.

TASK DETAILS:

A. West Side L/P Guide Rail Removal

1. Verify the following has been accomplished.

   a. Stanchions installed

   b. L/P removed

   c. Missile enclosure removed, west and south sides

   d. Work platforms removed

2. Provide a temporary work platform to skirt the guide rail. The platform must be capable of vertical positioning for access to all sides of guide rail and crib attachment points at level 4 and below.

REVISION SYMBOL

TASK DETAILS, BLOCK NO. 50 (Continued)

2. (Continued)

Personnel and welding equipment will be on the platform plus misc. tools. Ref.: Spider elevator commercially available.

3. Position a crane over the rail location on the cap. Attach a sling through the rail wel 12" below location start (cut a 3-4" hole in the rail web) for rail removal lift.
Ref. Unit weight, approximately 15 lbs/ft maximum.

4. Attach the top and bottom ends of the section of rail being removed to the crib structure to prevent vertical and horizontal motion. Using temporary slings orwelded blocking.

5. Position W/P to provide access to the west rail at bottom of level 4 floor beam.

6. Burn through rail below attachment to crib at level 4.

7. Attach crane cable to sling in rail.

8. Burn through rail at floor level, level 6.

9. Remove crib to rail brackets, level 5. Restrain rail horizontally and vertically.

10. Remove rail section, level 4 to floor of level 6.

NOTE: Remove diesel generators per Part II before performing step 11.

11. Repeat steps 2 and 3 at level 6.

12. Burn through crib to rail bracket at level 6.

13. Cut through remaining crib brackets on level 7 and below. Rail end will be loose. Verify rigging prior to weld removal.

14. Remove rail from silo.

B. Removal of Diesel Generators, Levels 5 and 6.

1. Rig safety net in MEA at next lower floor level.

2. Establish 2-way communication with crane operator.

3. D & R air cleaner from diesel. Remove bolts holding diesel base to vibration dampers. Cut out and remove floor grating from diesel base to J-K floor beam. Center of removed grating at center of vibration damper location, width to receive track.

REVISION SYMBOL

TASK DETAIIS, BLOCK NO. 50 (Continued)

4. Raise one end of the diesel using the 20 ton hydraulic jack and place (Figure 50-1) track on floor structure. Extend east end 16-18 inches into MEA (east of J-K floor beam). Weld track to floor structure. Place dollies on the track under the diesel base and lower diesel to the dollies.

5. Repeat step 4 at opposite end of diesel.

6. Install Figure 50-2 lifting sling on diesel. Anchor 10 ton chain hoist to overhead E-F floor beam with 1" chain sling. Attach single leg chain sling to hoist hook. Rig this assembly to lower block of crane hoist such that block can be restrained over center of diesel.

7. Attach puller hoists to north and south ends of diesel base and anchor to floor beams east of Cols. J-K. Attach ropes to west side of diesel base at north and south ends, pass under WF beam west of J-K floor beam, with loose ends on floor.

8. Position crane boom so that hoist rope is about 1 foot from west side of door opening and centered opposite diesel.

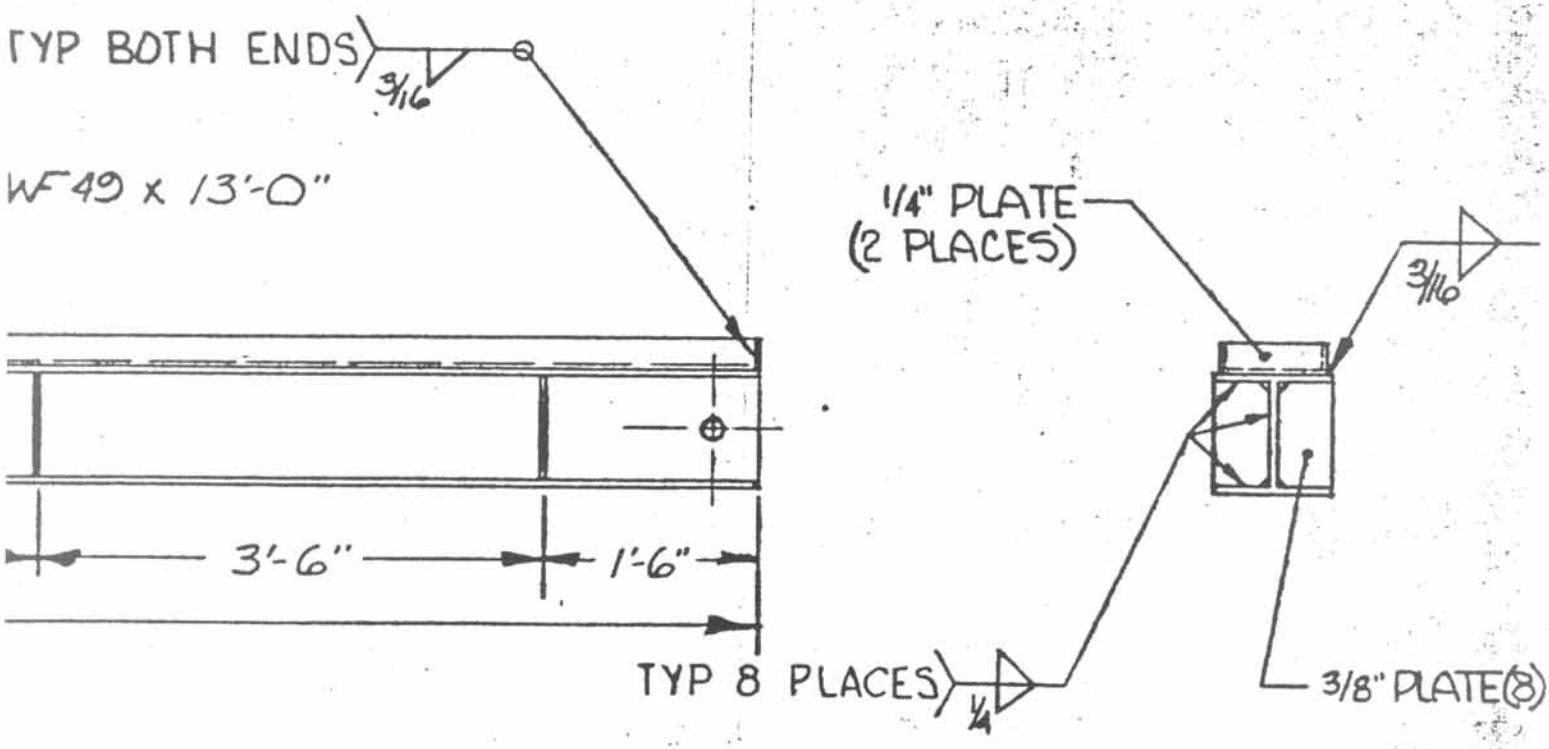
9. Move diesel with puller hoists to east end of track. Pick up slowly with crane until diesel clears dollies. Remove dollies. Adjust length of sling legs until diesel hangs level before final lift.

10. Snub restraining lines under floor structure and slowly remove diesel from silo. Use 10 ton chain hoist to prevent lateral motion before hoisting. When diesel is stable, unhook chain from chain hoist; remove from crane hook after diesel is out of the silo.

NOTE: A suitable truck or trailer should be positioned on the cap so that diesel can be loaded directly for transport. (20 ton minimum capacity required.)

REVISION SYMBOL

692-0^-65-B
FIG. 50-1
DETAIL DIESEL RAIL
SCALE: 3/4"=1'-0"
PAGE: 50-4



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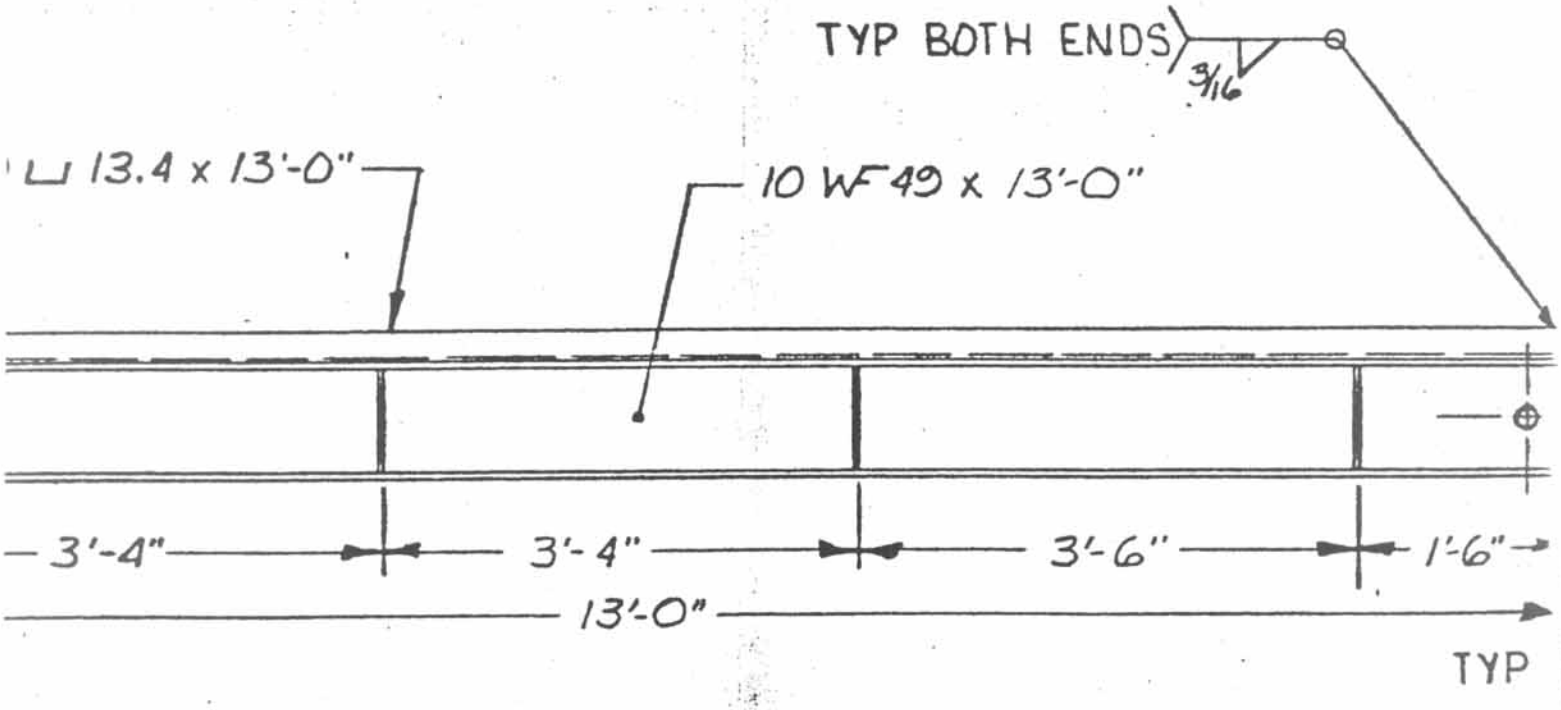
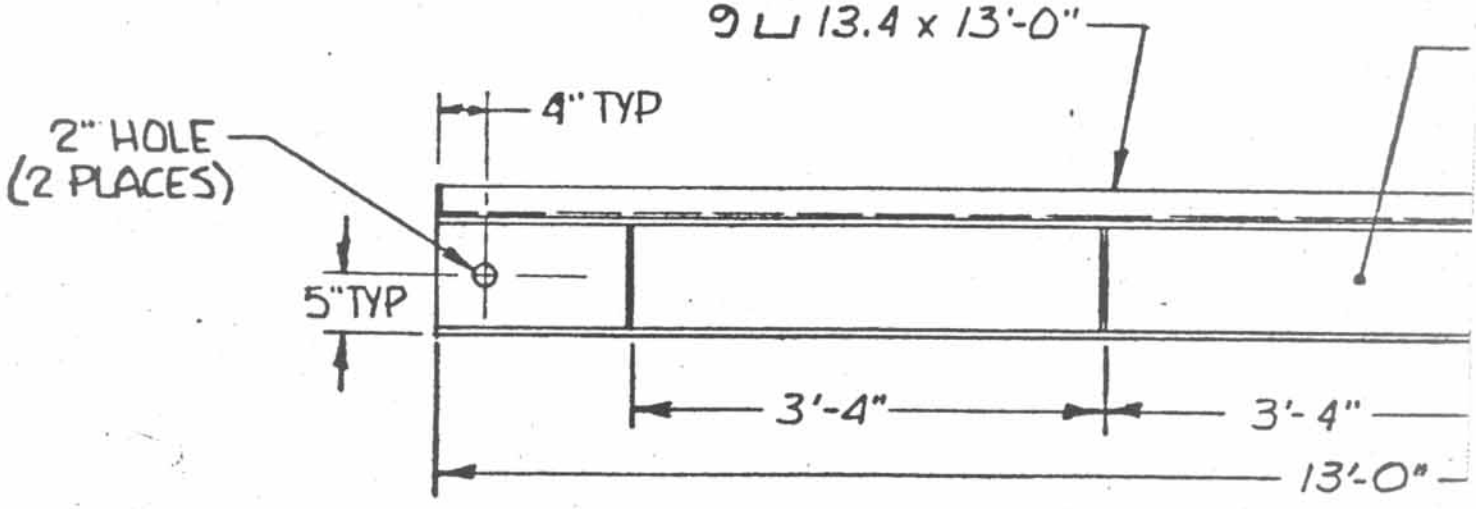
TO BE:
CLASS 7018

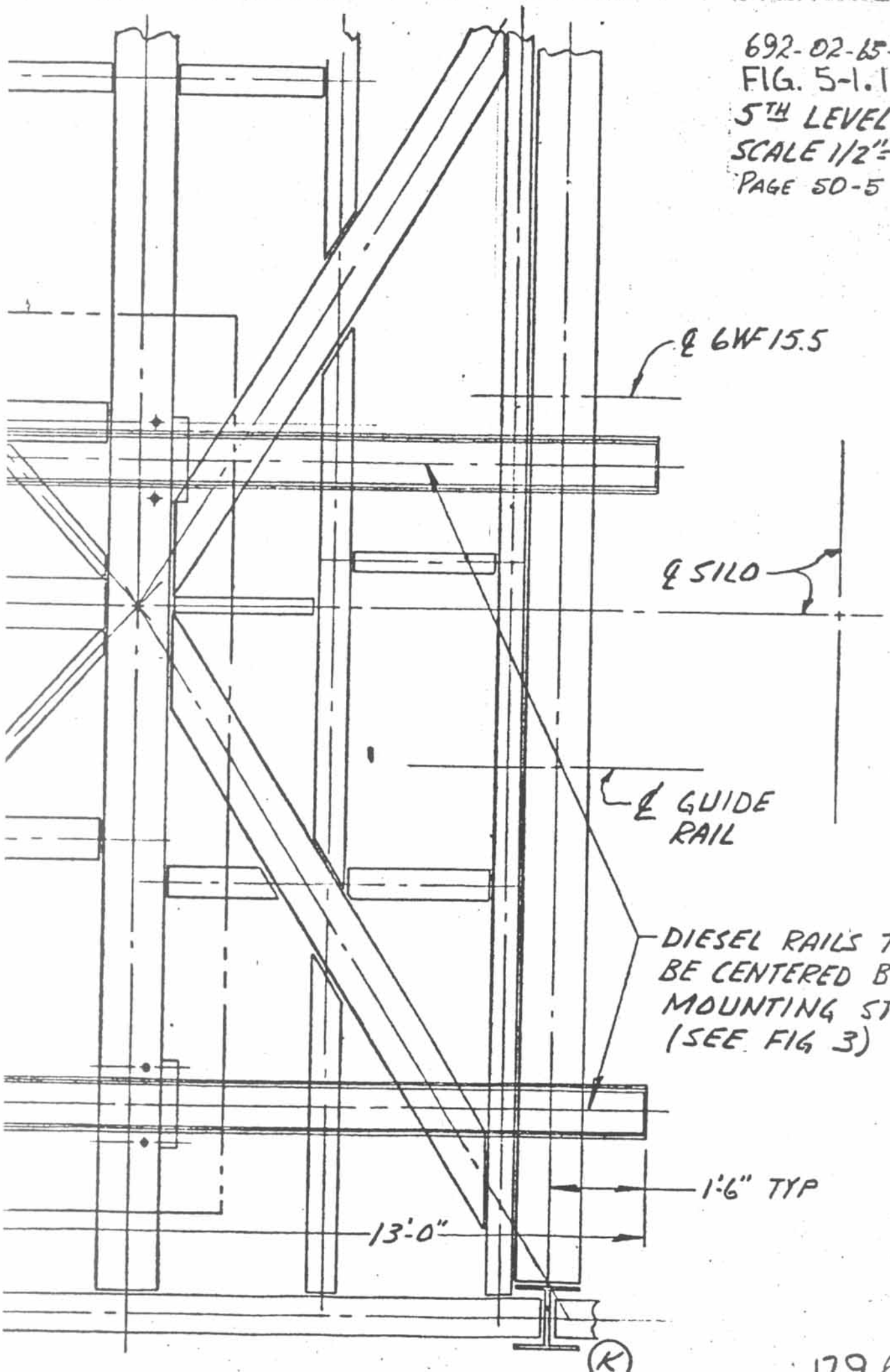


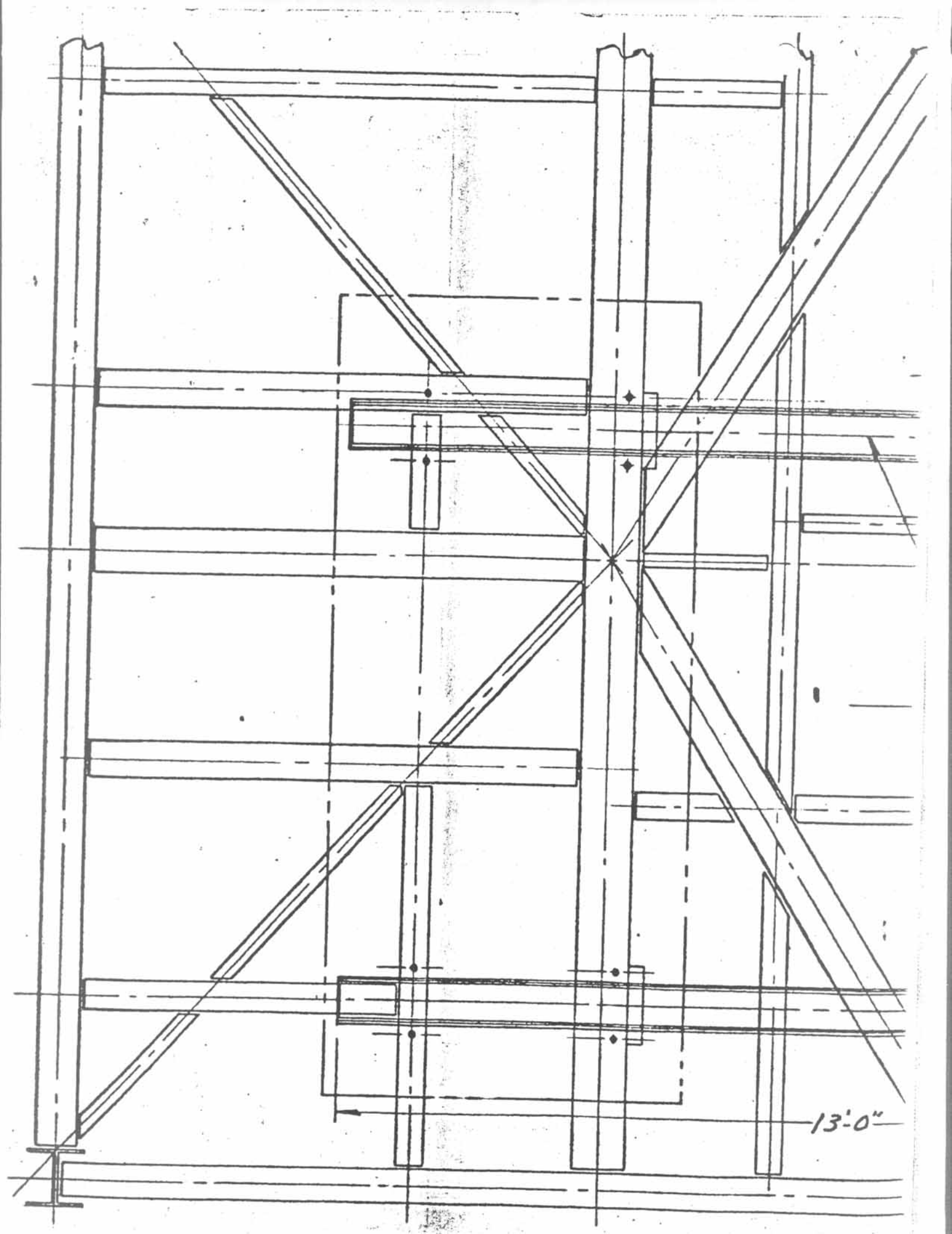
DETAIL DIESEL RAIL
WELD ELECTRODE TO BE:
MIL-E-22200/1 CLASS 7018

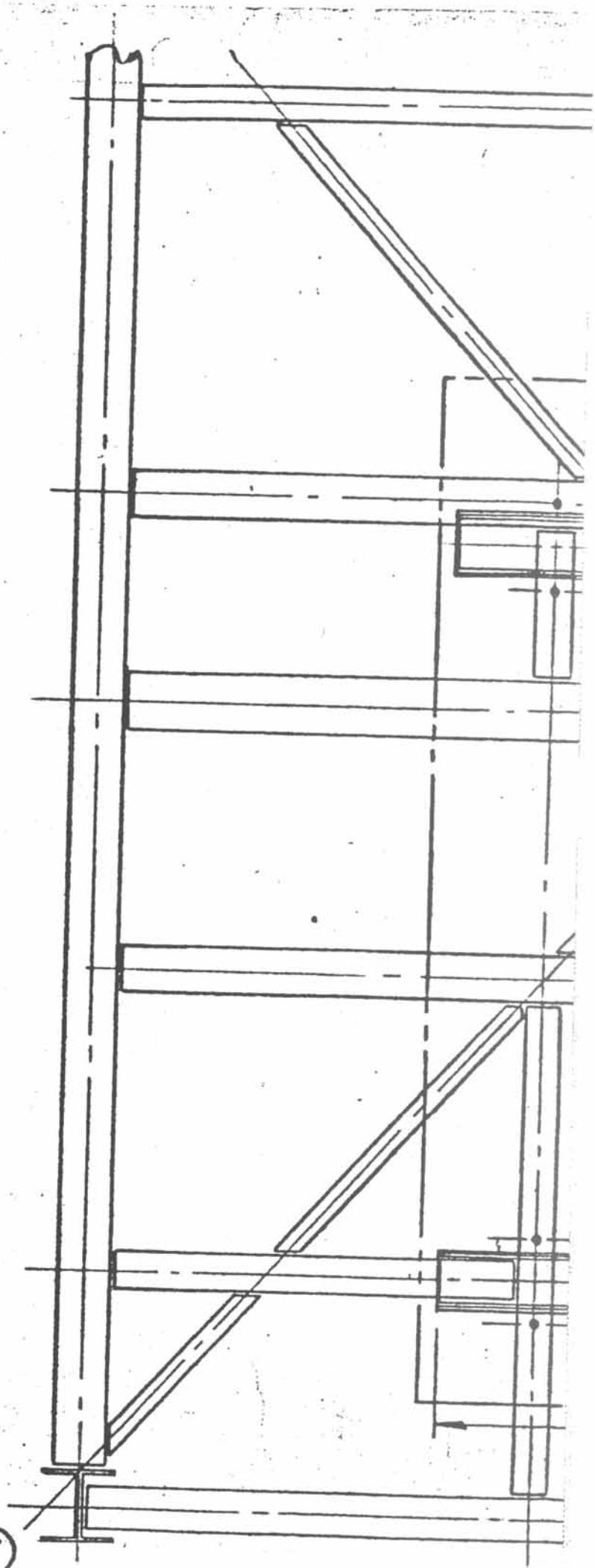


DETAIL DIESEL
WELD ELECTROD
MIL-E-22200/

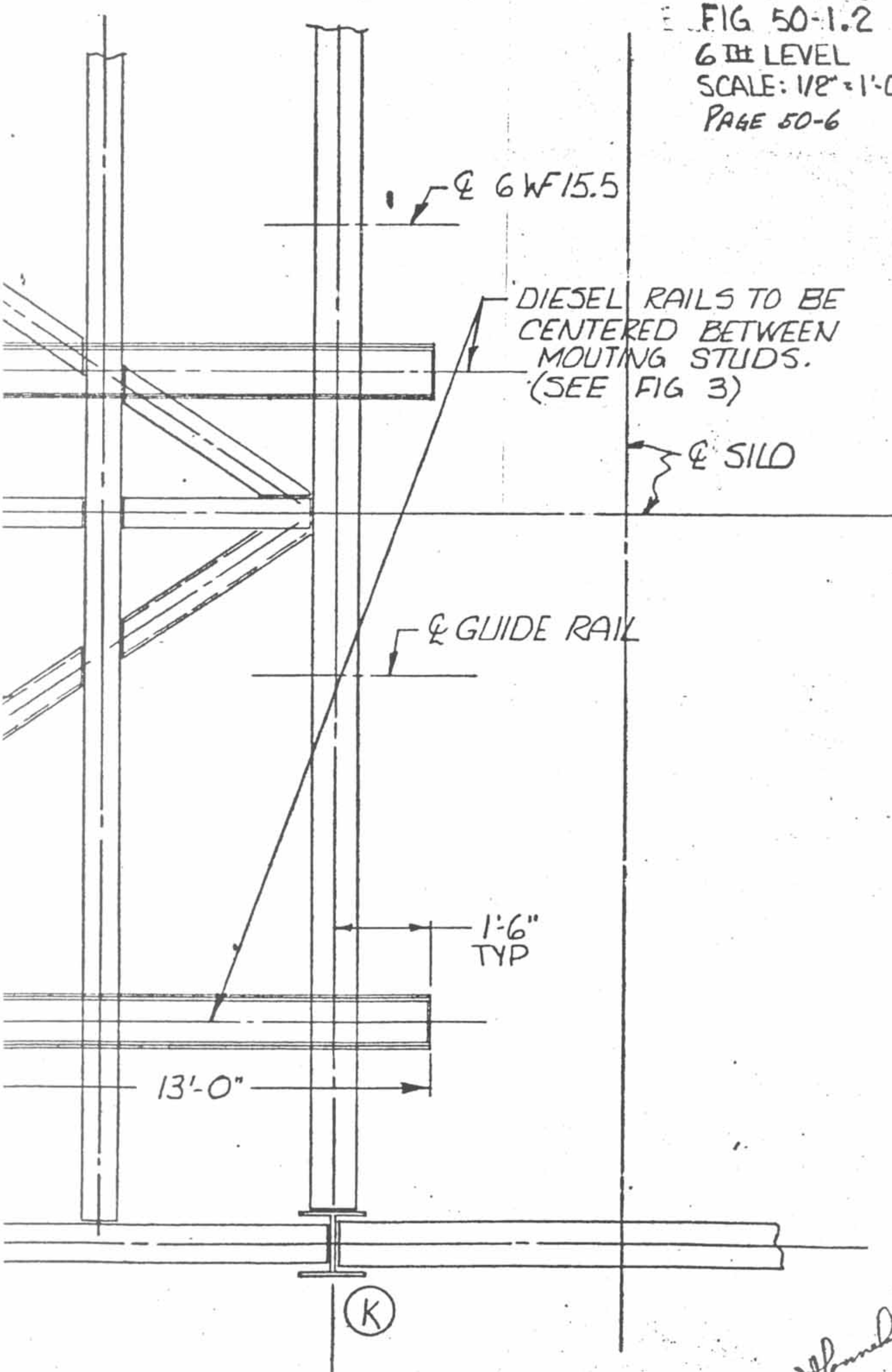
692-02-65-8
FIG. 5-1.1
5TH LEVEL
SCALE 1/2" = 1'-0"
PAGE 50-5

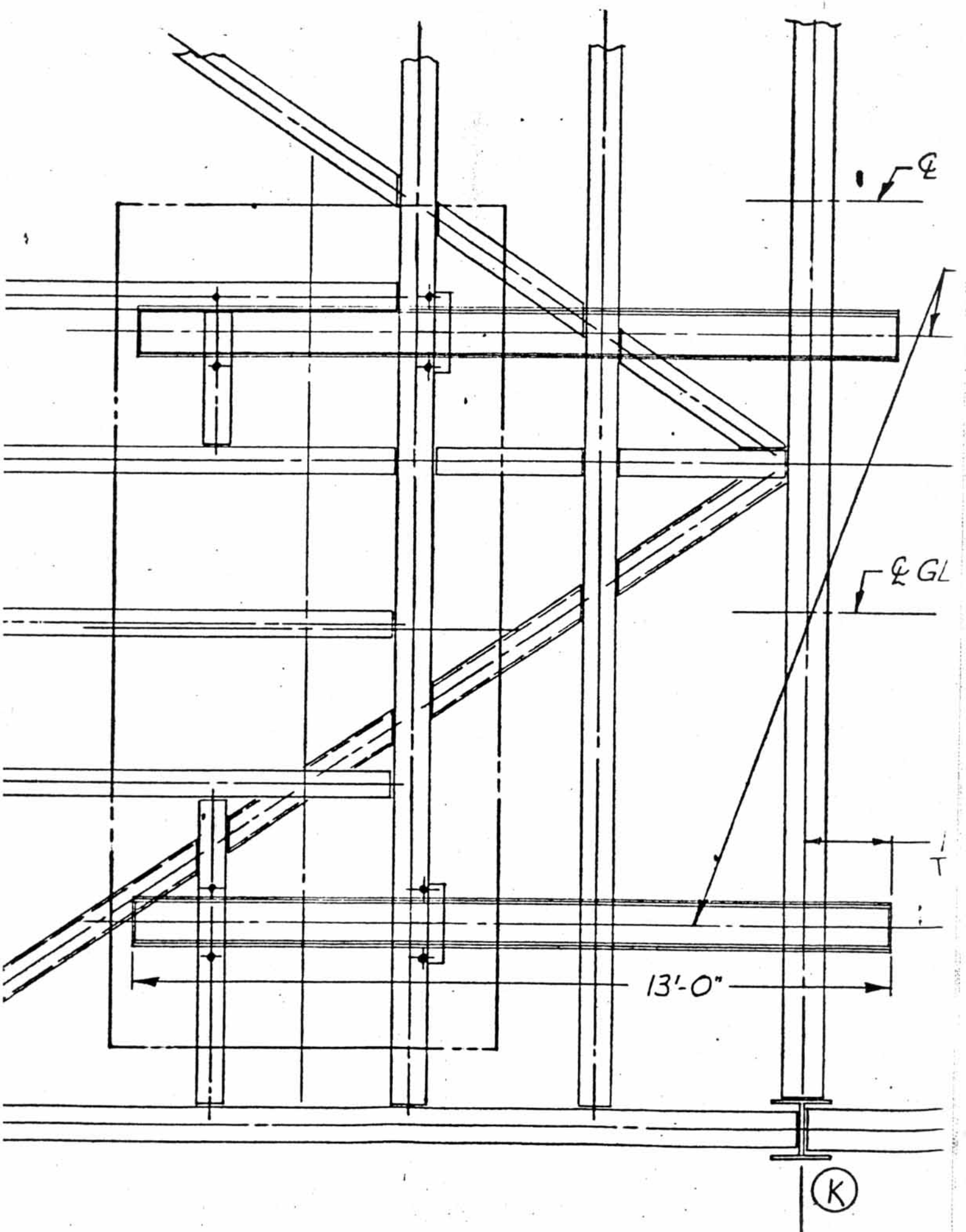



13'-0"


E

692-02-65-8
FIG 50-1.2
6TH LEVEL
SCALE: 1/2" = 1'-0"
PAGE 50-6




℄
℄ GL
13'-0"
K

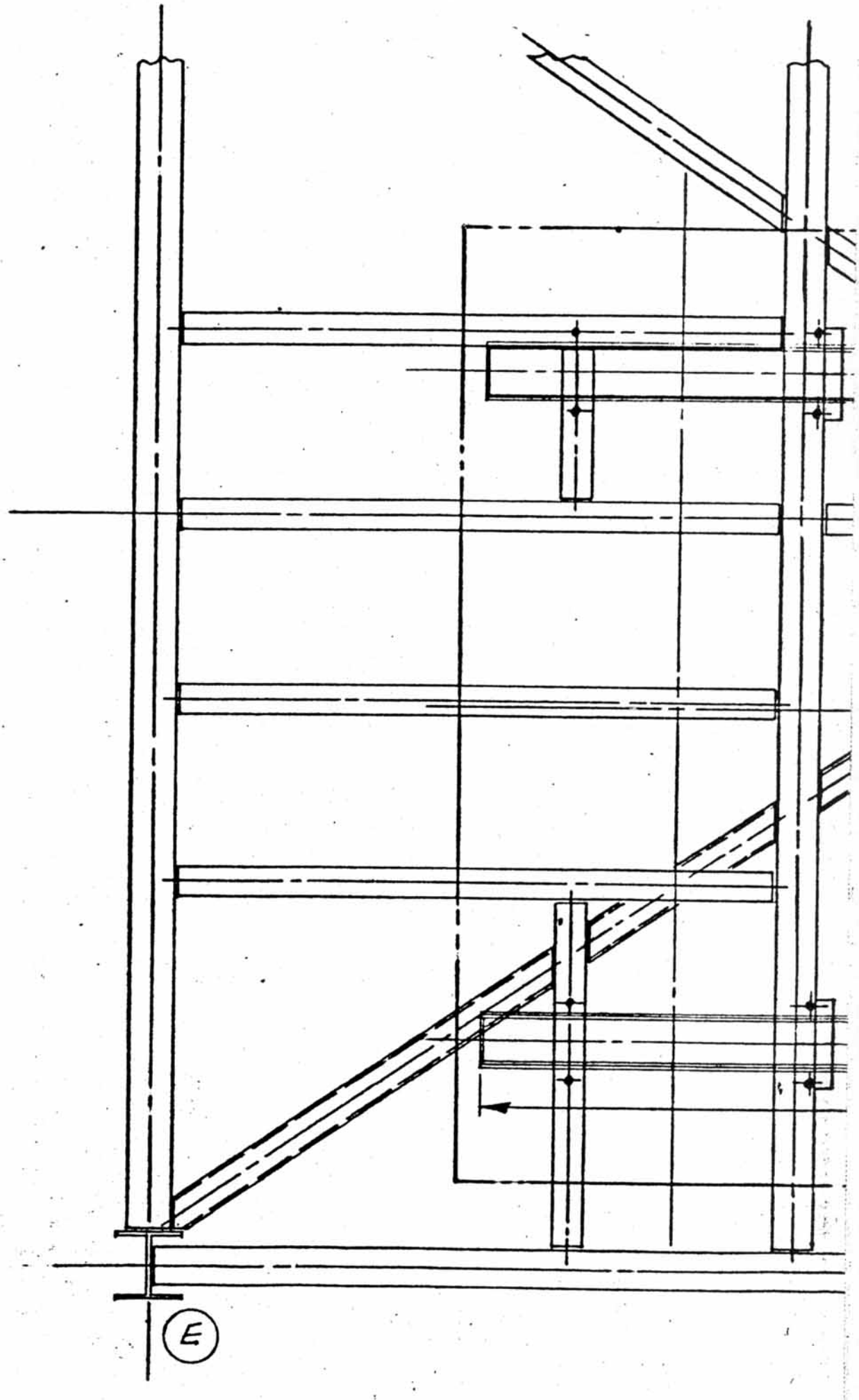

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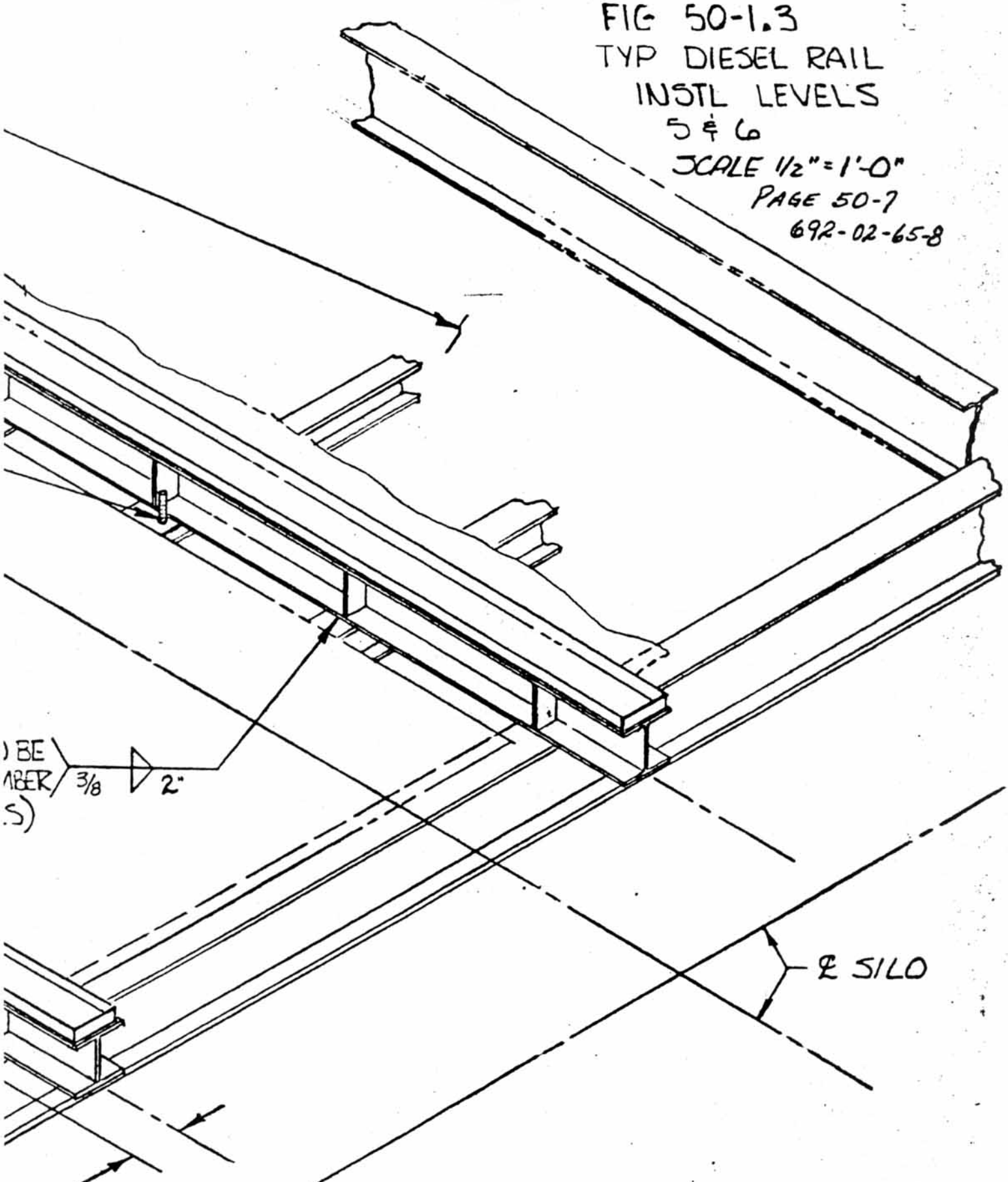
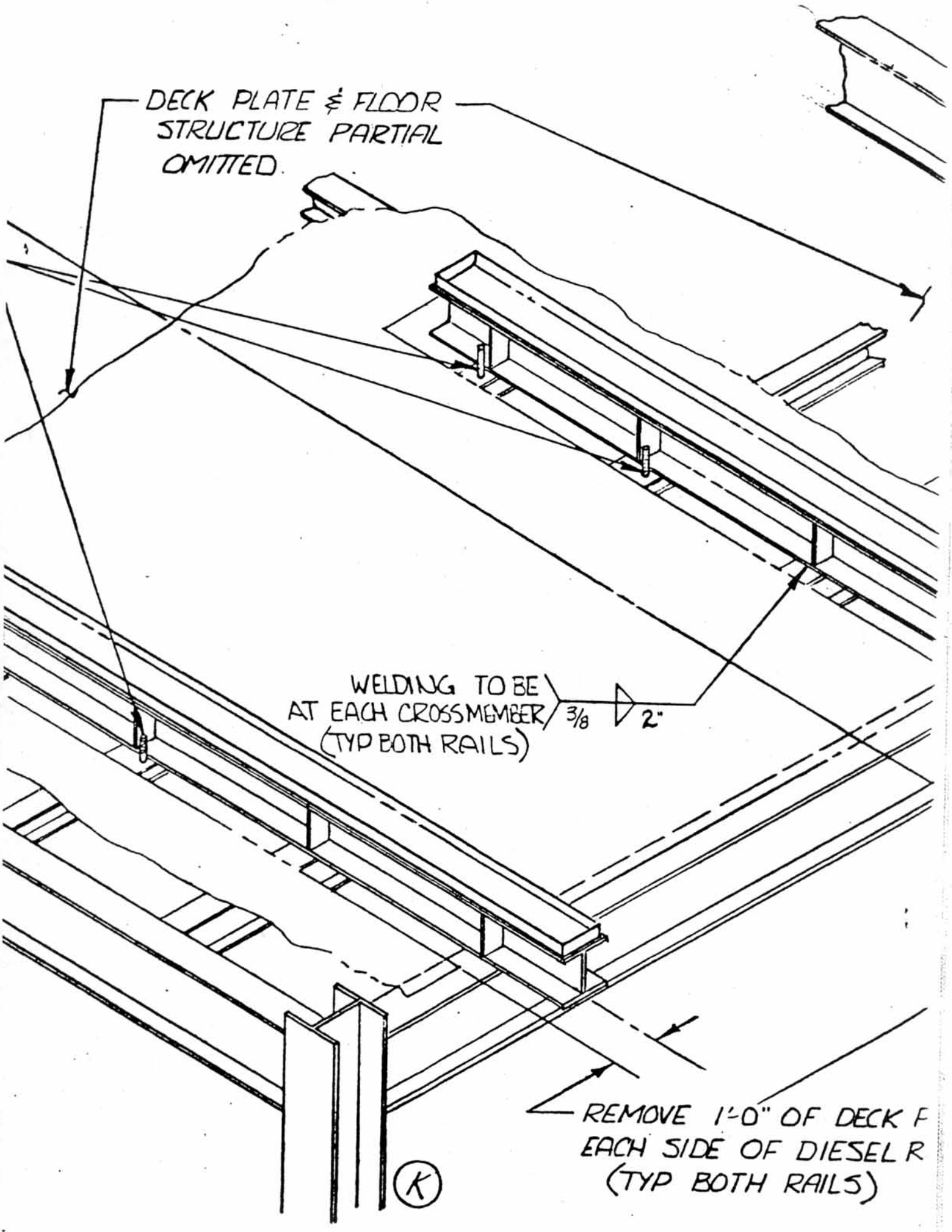
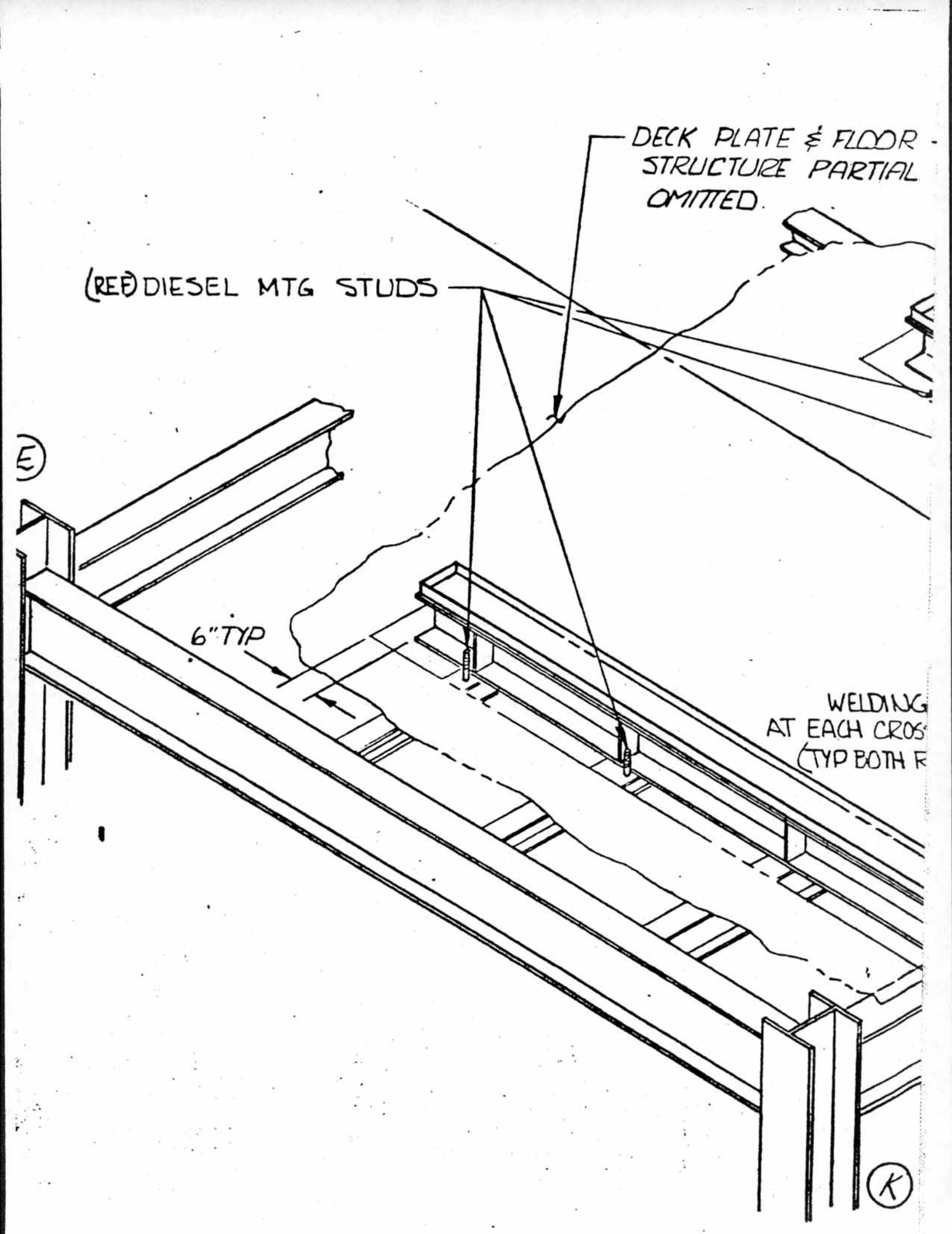
FIG 50-1.3
TYP DIESEL RAIL
INSTL LEVELS
5 & 6
SCALE 1/2" = 1'-0"
PAGE 50-7
692-02-65-8



2-23-5


DECK PLATE & FLOOR STRUCTURE PARTIAL OMITTED.
WELDING TO BE AT EACH CROSSMEMBER (TYP BOTH RAILS)
3/8
2"
REMOVE 1'-0" OF DECK F EACH SIDE OF DIESEL R (TYP BOTH RAILS)
K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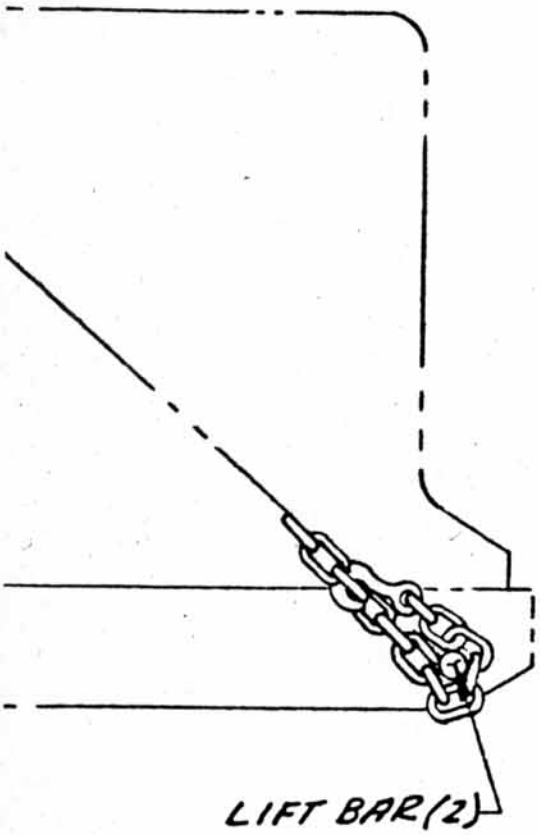
(REF) DIESEL MTG STUDS
E
6" TYP
WELDING
AT EACH CROS
(TYP BOTH F
K

692-02-65-8
FIG. 50-2
DETAIL DIESEL SLING
SCALE 1/2" 1'-0"
PAGE 50-8

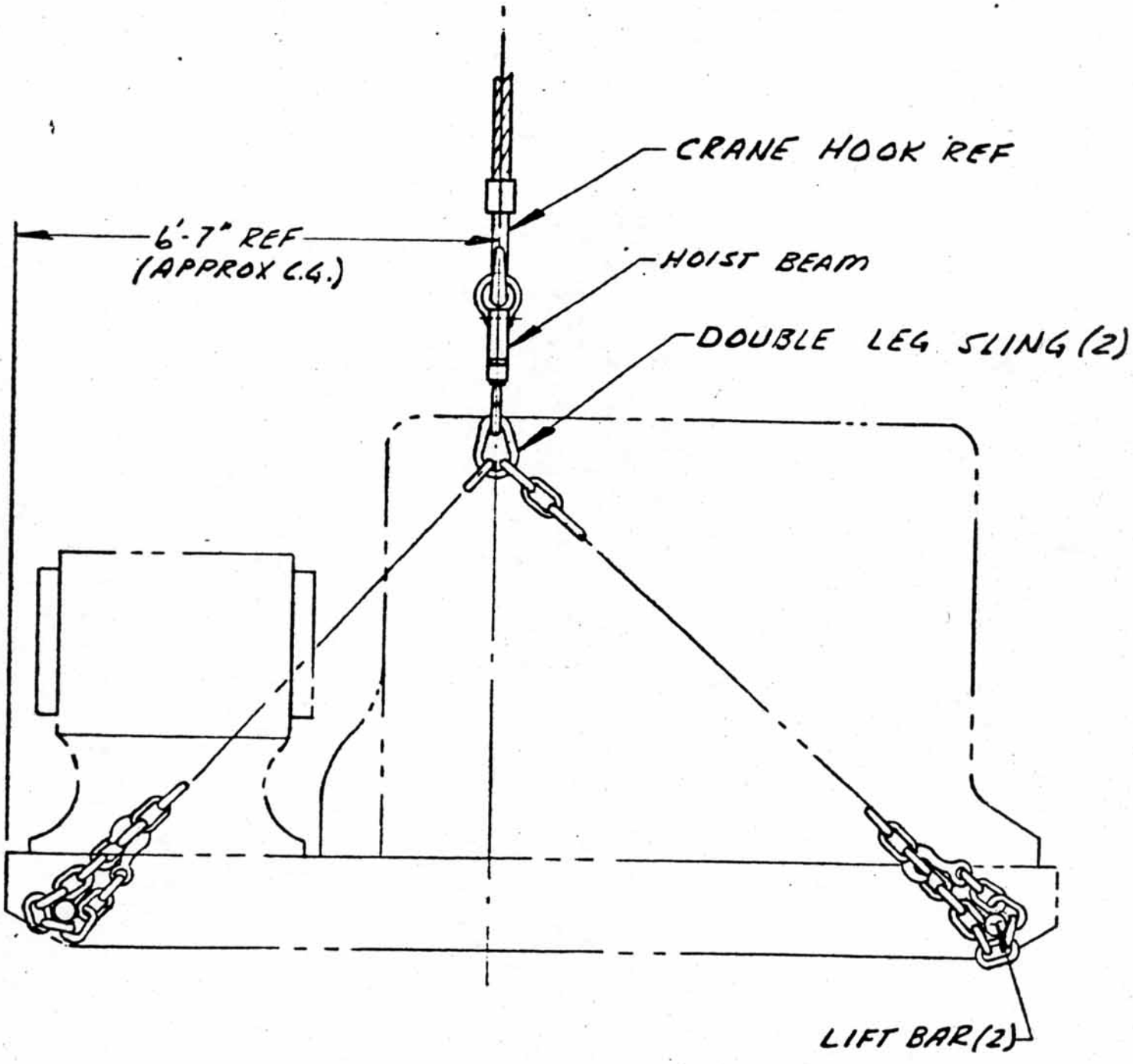
CRANE HOOK REF

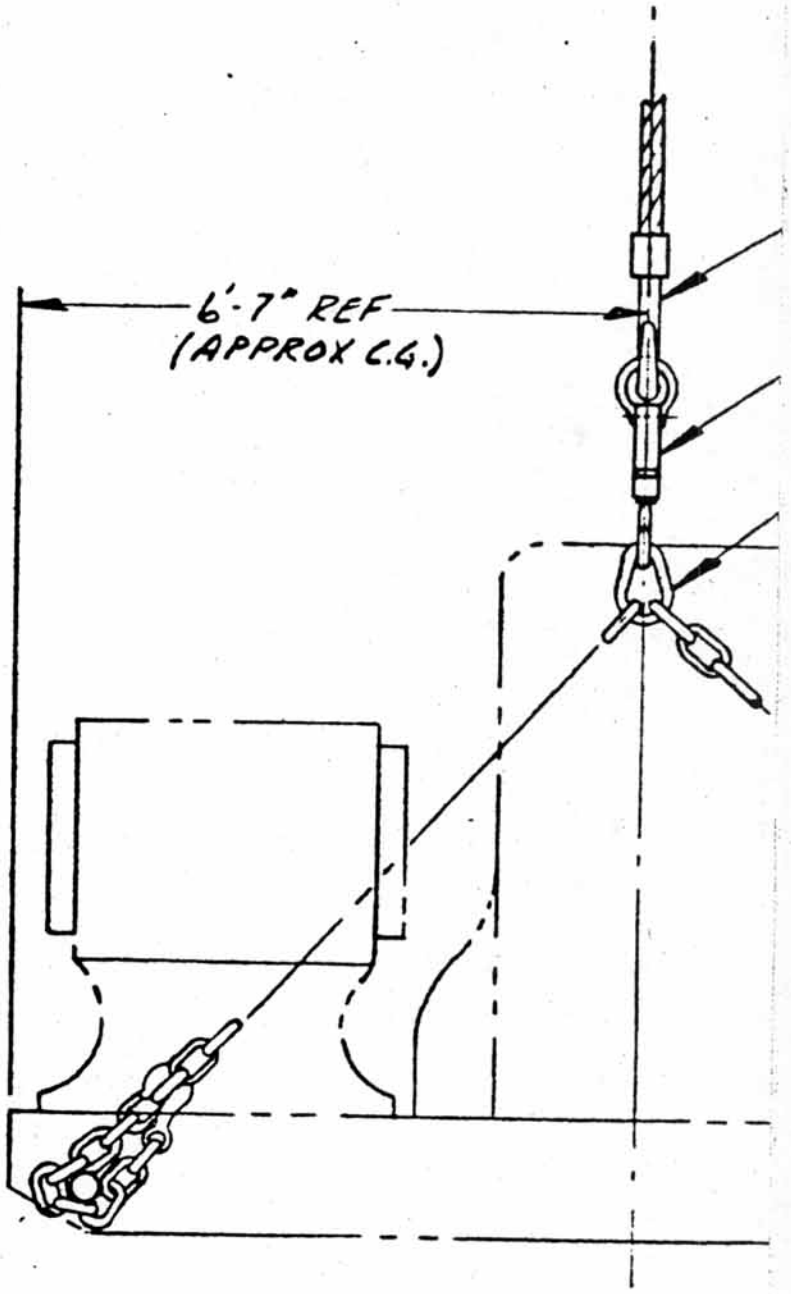
HOIST BEAM

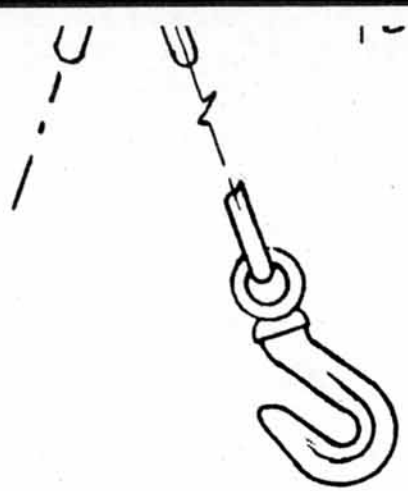
DOUBLE LEG SLING (2)



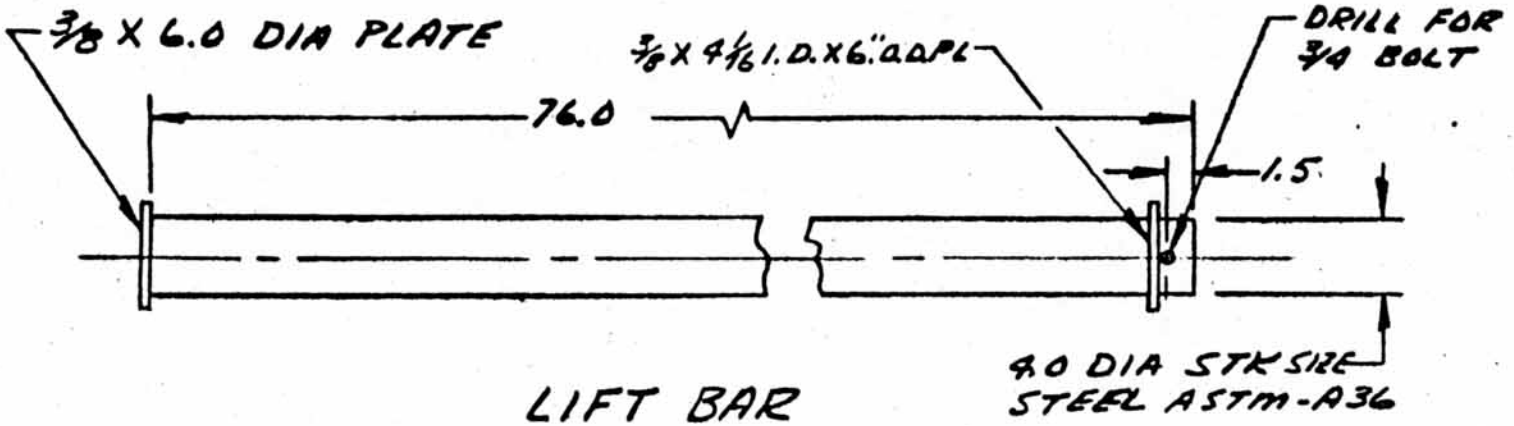
SILAS 2/25/15


CRANE HOOK REF
6'-7" REF
(APPROX C.G.)
HOIST BEAM
DOUBLE LEG SLING (2)
LIFT BAR (2)


6'-7" REF
(APPROX C.G.)



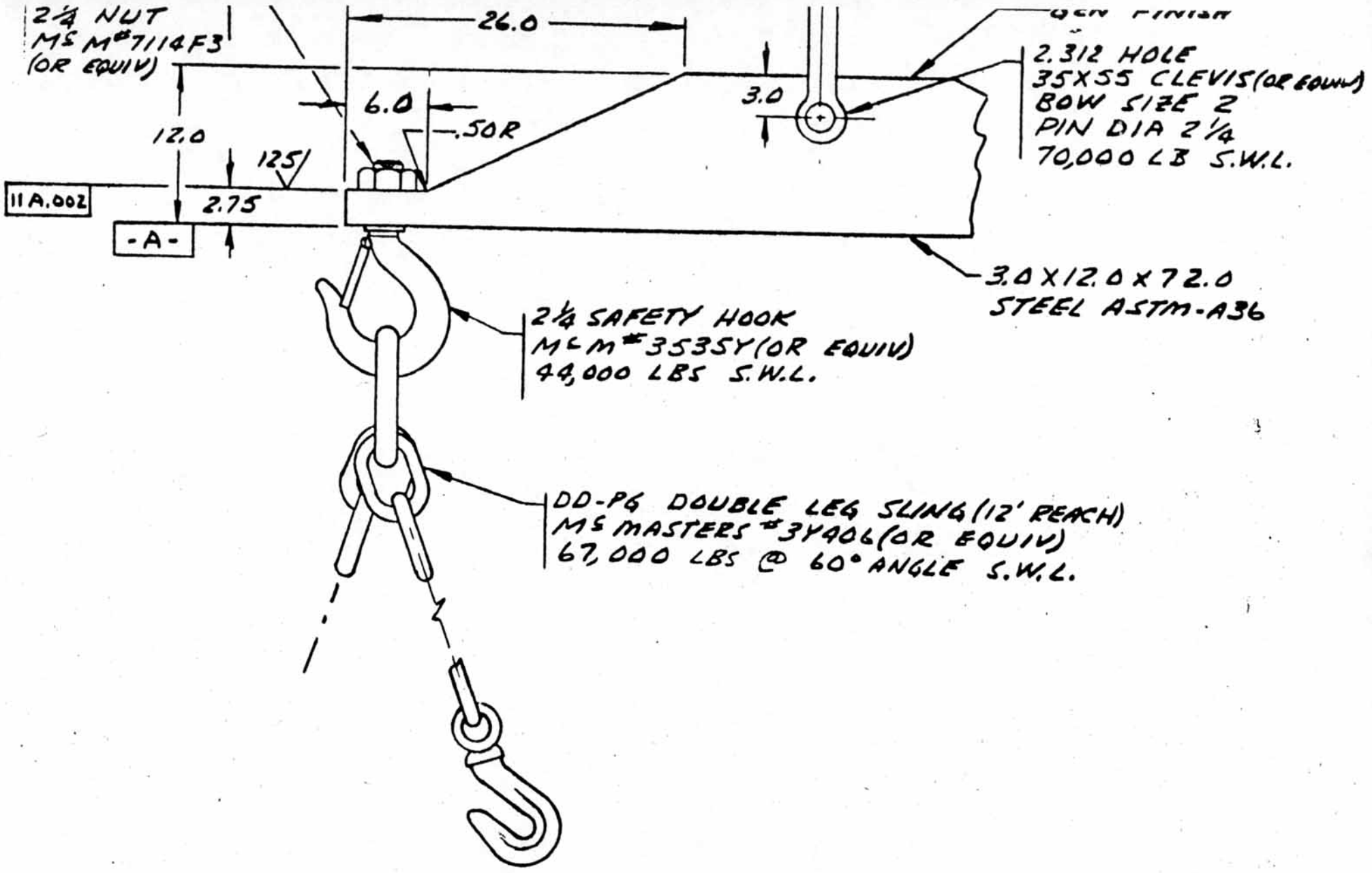
DIESEL HOIST BEAM



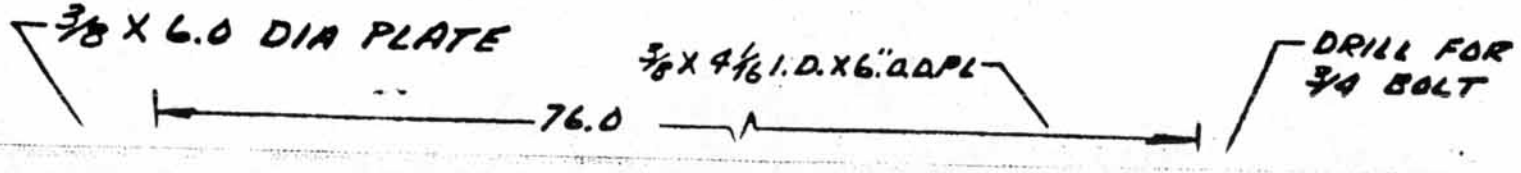
LIFT BAR
2 REQUIRED

192-02-65-8
FIG SD-2.1
DETAIL DIESEL SLING
SCALE 1/10
PAGE 60-9

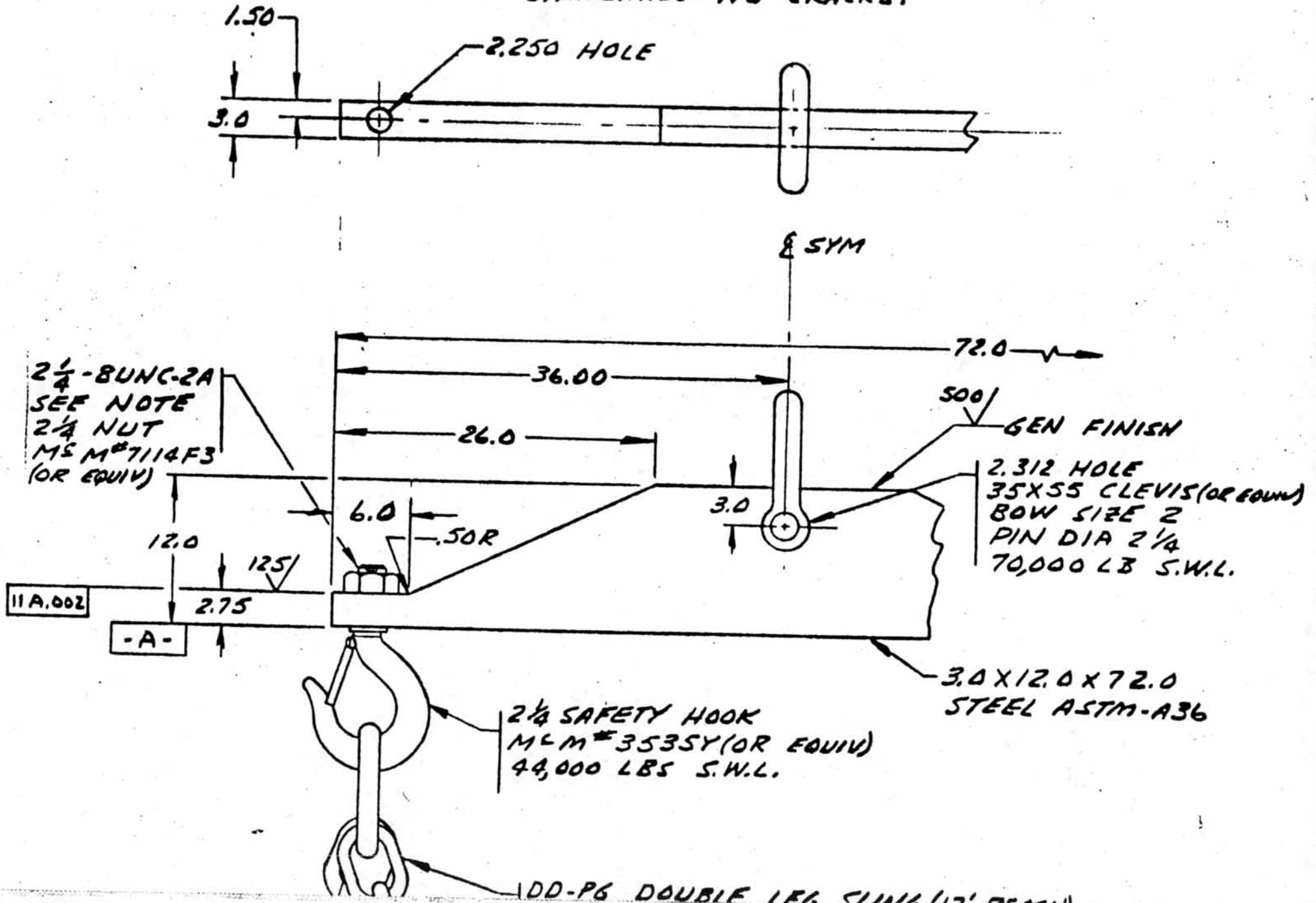
133



DIESEL HOIST BEAM



NOTE:
THREADS TO BE PER MIL-S-7742. MAG PARTICLE INSPECT PER MIL-I-6868 AFTER THREADS HAVE BEEN MACHINED. ACCEPTANCE STANDARDS - NO CRACKS.



BLOCK NUMBER: 51

BLOCK TITLE: Fill and vent shaft piping disassembly and removal

GENERAL DESCRIPTION OF BLOCK ACTION:

Removes all piping from the fill and vent shaft.

TIME REQUIRED: 2 days

MANPOWER REQUIRED:

a.	Crane operator	16 hours
b.	Mechanics	32 hours
c.	Riggers	32 hours
		80 man hours

SPECIAL TOOLS AND EQUIPMENT REQUIRED:

a. 1 crane with chokers and rigging accessories
b. 2 parachute harness or equivalent
c. 1 portable oxygen analyzer
d. 2 portable breathing apparatus
e. 1 portable blower

TASK DETAILS:

1. Remove protective cover from fill and vent shaft.
2. Remove grating and open all manual valves in fill lines.
3. Remove all vent line "goose necks" at flange just below grade level.

- WARNING -

Prior to working in shaft, oxygen content of shaft must be checked. If oxygen content is below safe level, shaft must be purged using a portable blower, or breathing apparatus must be worn while working in shaft.

4. Using a suitable hoist, lower a man equipped with a portable breathing apparatus and oxygen analyzer into the fill and vent shaft and check oxygen content.

- WARNING -

If pneumatically powered tools are used to disconnect piping, air and not nitrogen must be used for power source.

NOTE: If a large enough crane is available, each of the vertical pipe runs may be removed as one piece, approximately 45 feet long. If necessary, pipes may be removed in sections.

REVISION SYMBOL

5. Disconnect lowest flange in each vertical pipe run or section to be removed.

6. Working from the bottom up, remove all anchors and guides above the disconnected flange, except the top guide.

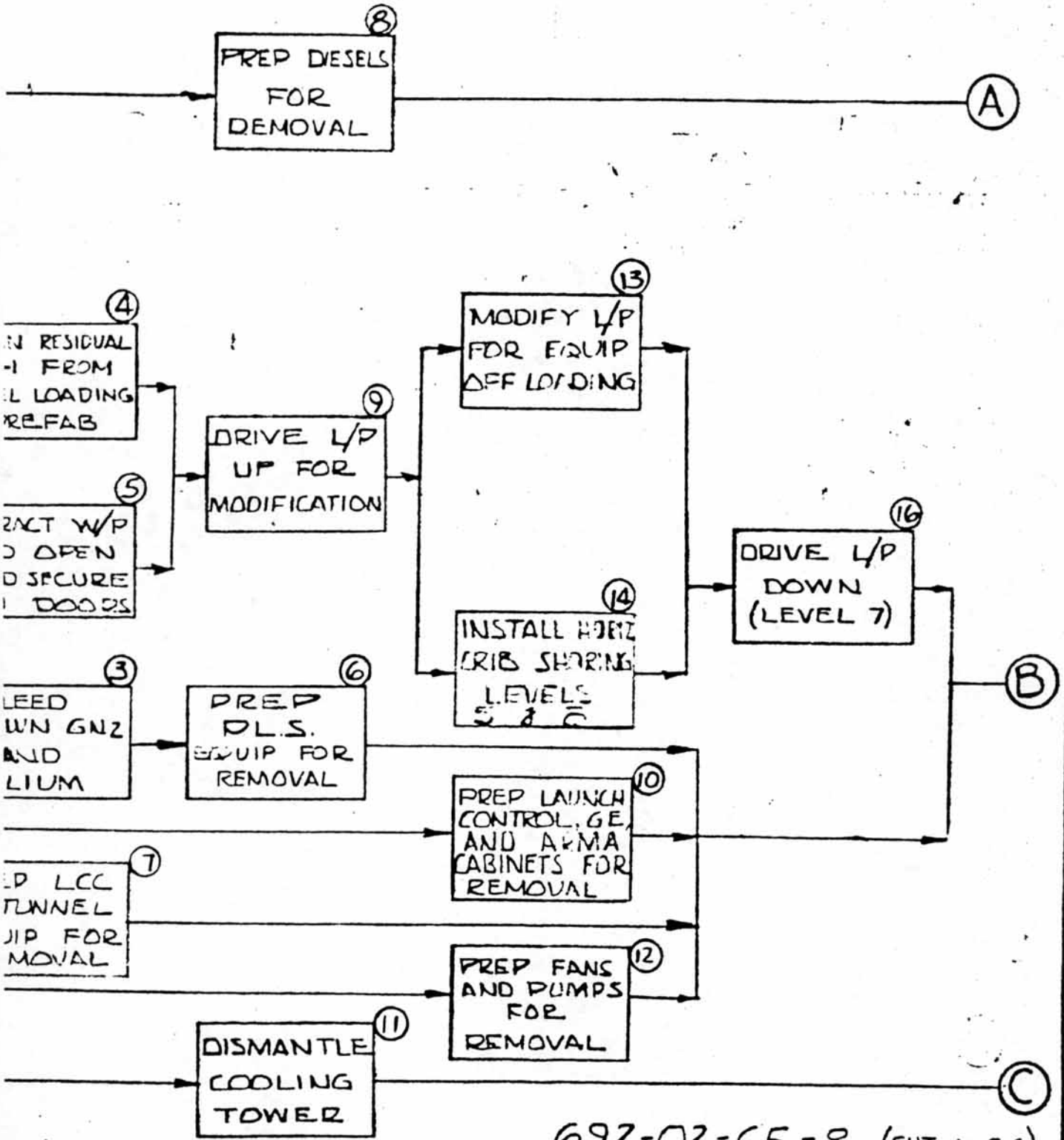
7. Attach crane to pipe to be removed, remove pipe guide, and lift pipe out of shaft.

8. If pipe is being removed in sections, remove all sections of pipe at the same level before removing any pipe sections below that level.

9. Disconnect each remaining pipe at the flange next to the blast plate.

10. Remove remaining pipe guides and pipe in any sequence that permits the easiest removal.

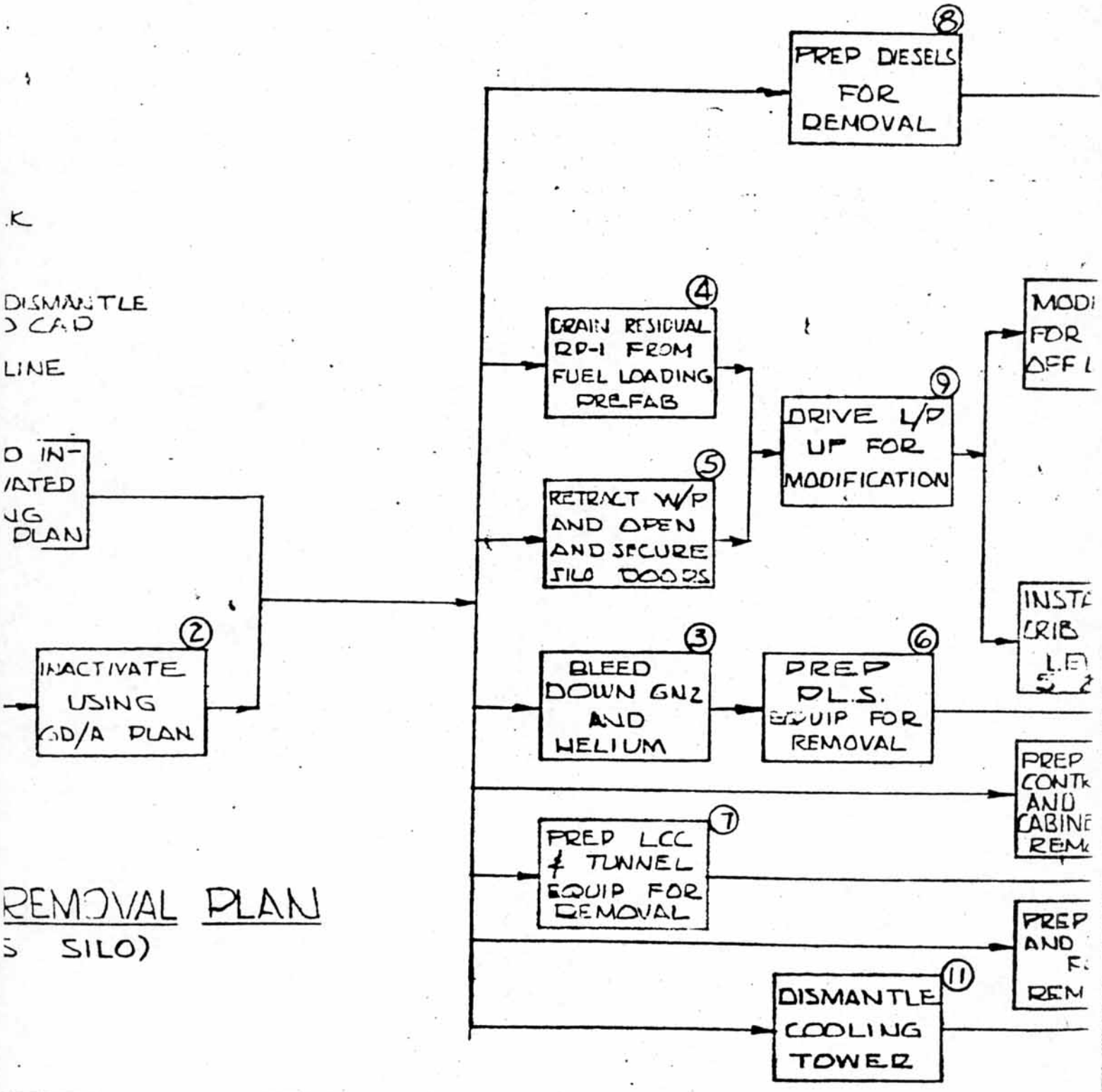
REVISION SYMBOL



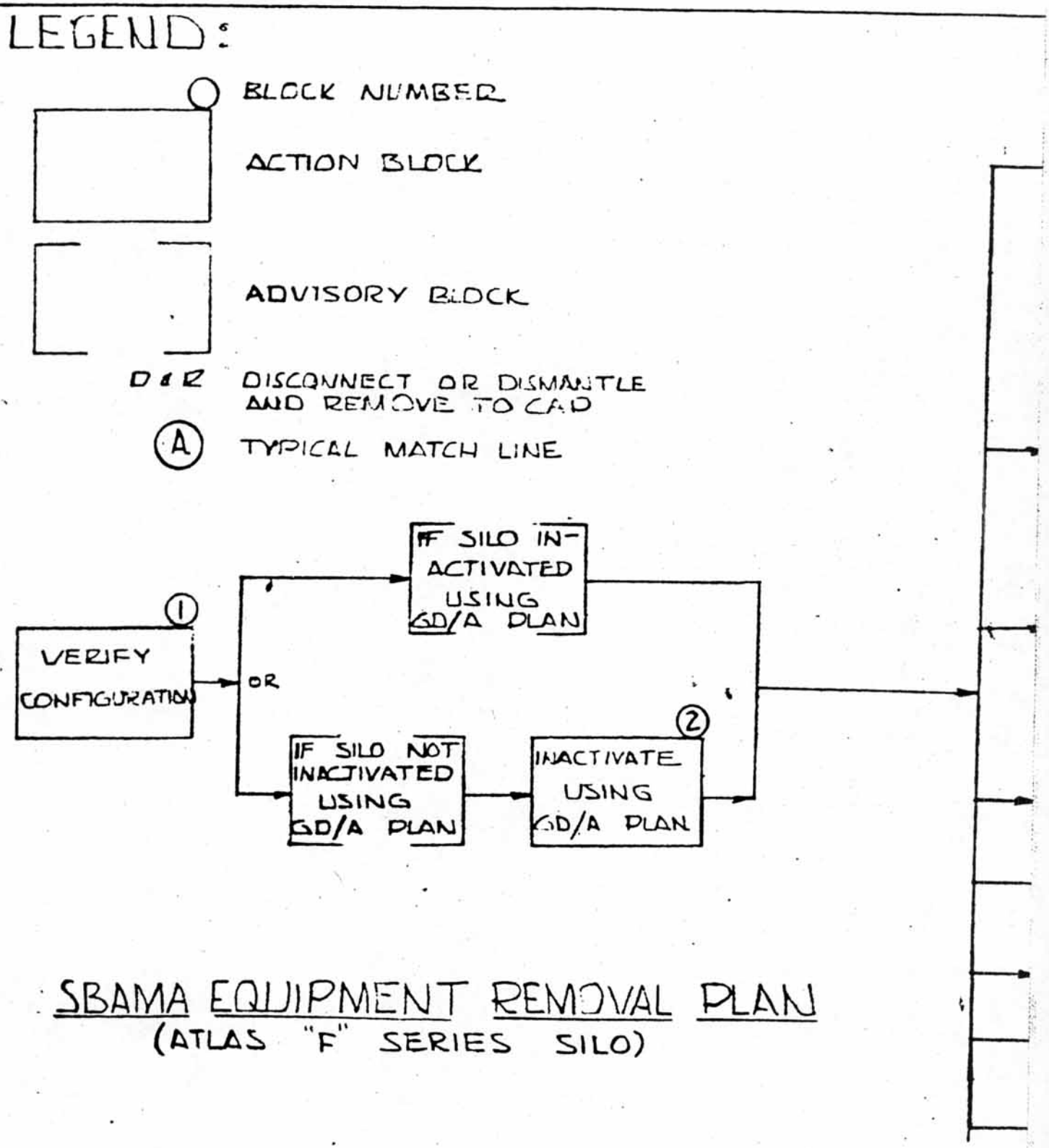
692-02-65-8 (SHT 1 OF 4)

PREPARED BY	DATE	CHECKED BY	DATE	REVISED BY	DATE
	2-11-65			(A) DHS	2-16-65 (ALL SHTS)

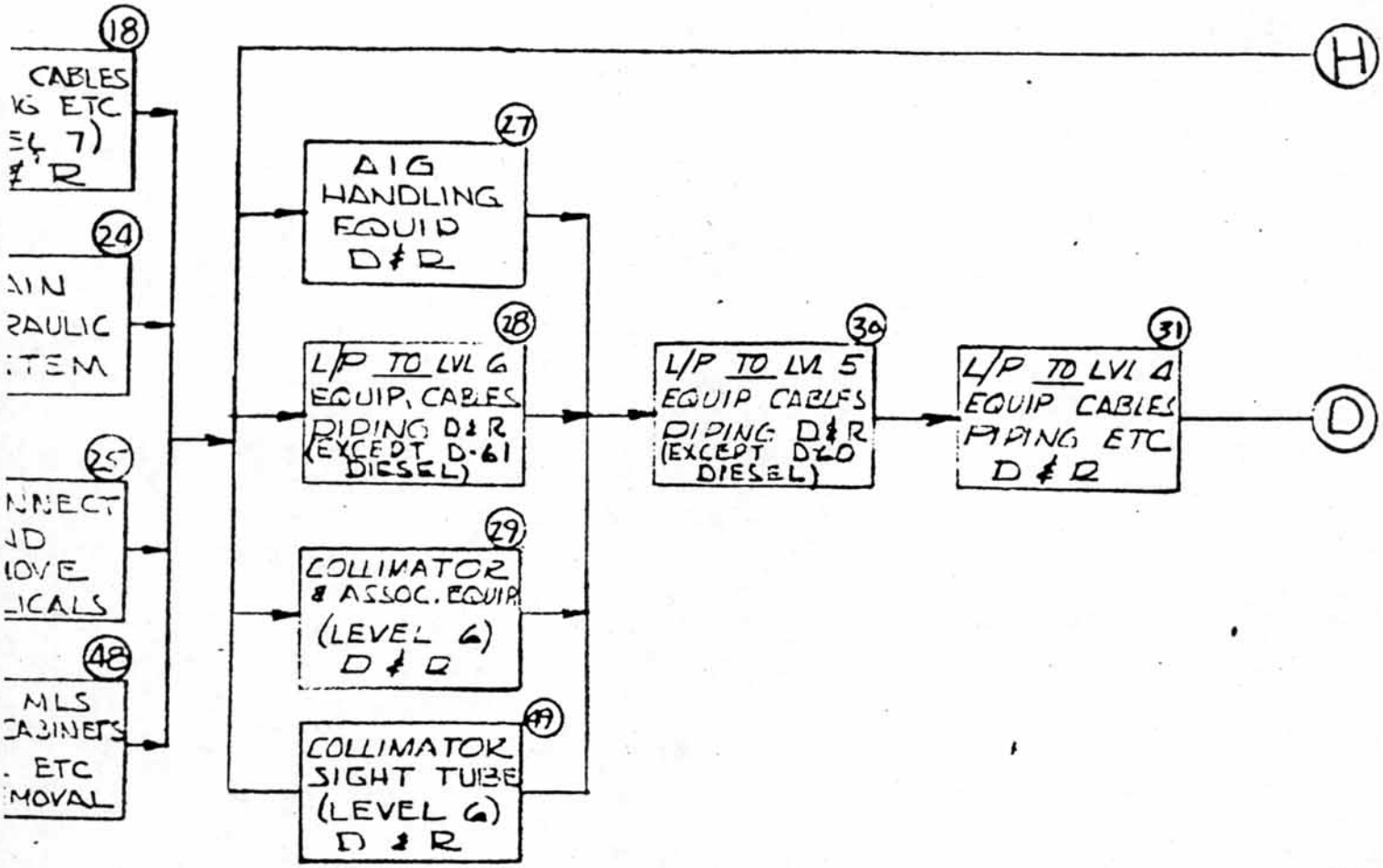
(B) DHS - 2-18-65 (SHTS 1 & 2)
(C) DHS - 2-19-65 (ALL SHTS)
(D) DHS - 2-25-65 (SHTS 1 & 4)
(E) DHS - 3-4-65 (ALL SHEETS)



PREPARED BY	DATE	CHECKED BY
	2-11-65	



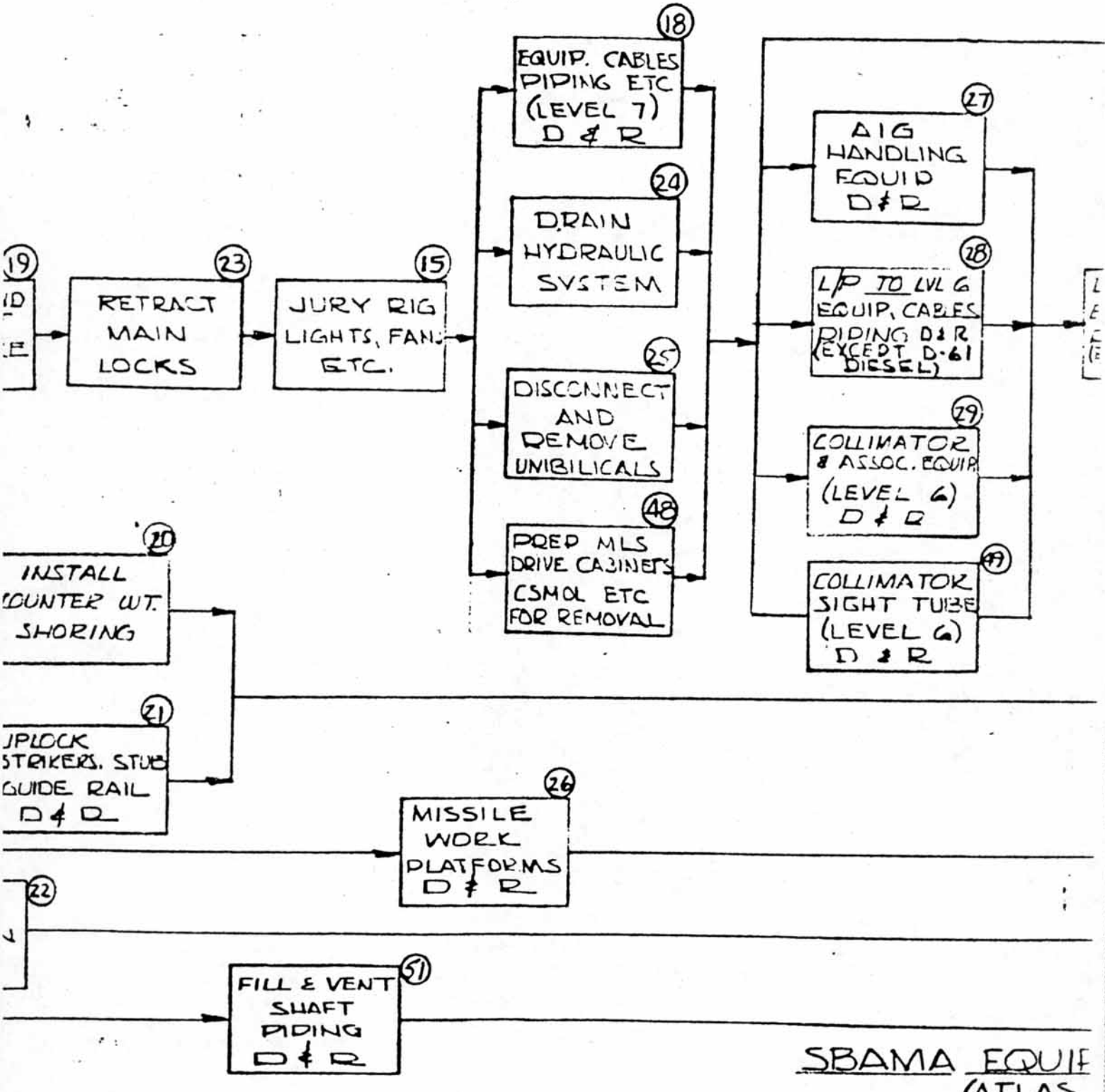
SBAMA EQUIPMENT REMOVAL PLAN
(ATLAS "F" SERIES SILO)



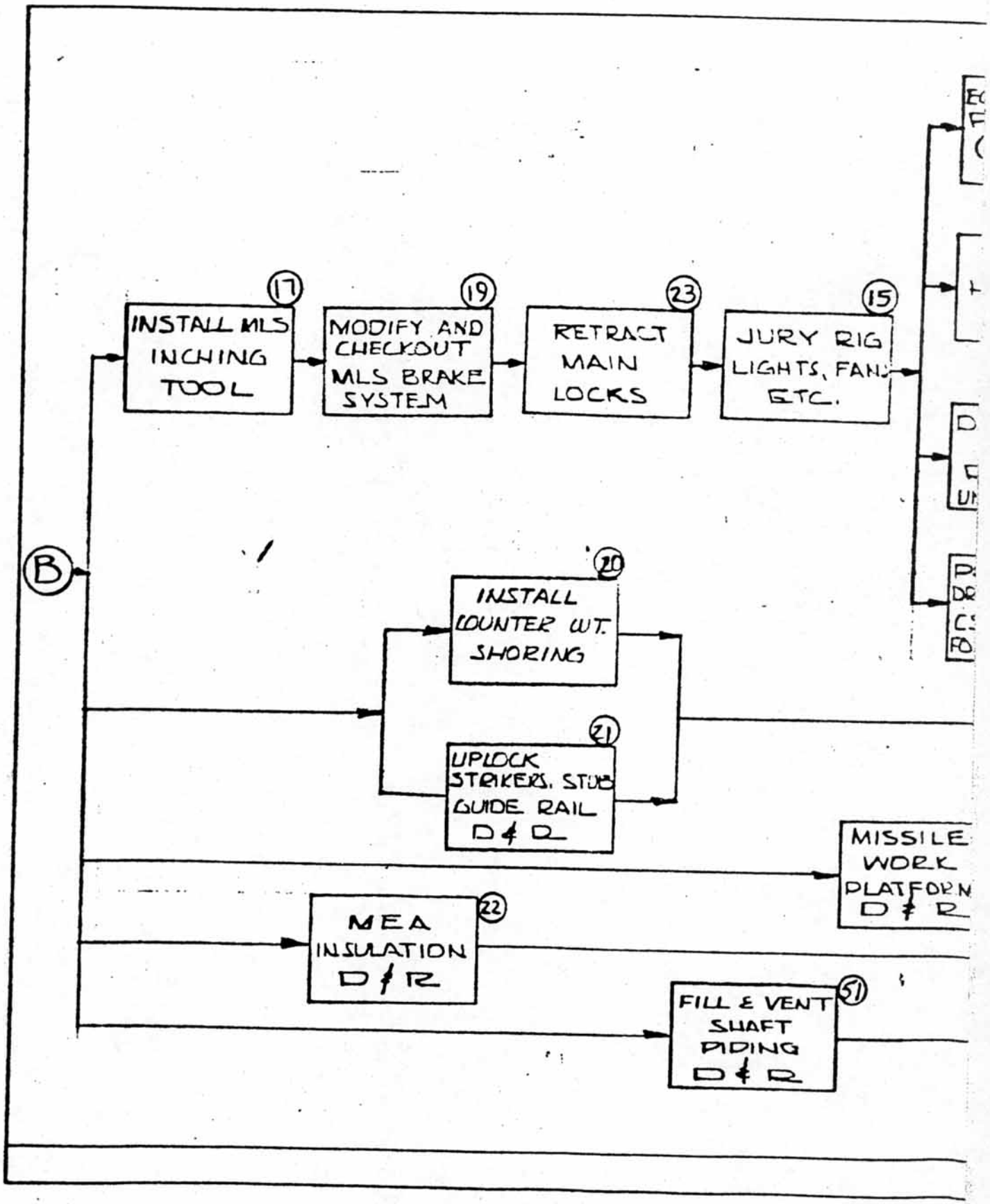
SBAMA EQUIPMENT REMOVAL PLAN
(ATLAS F SERIES SILO)

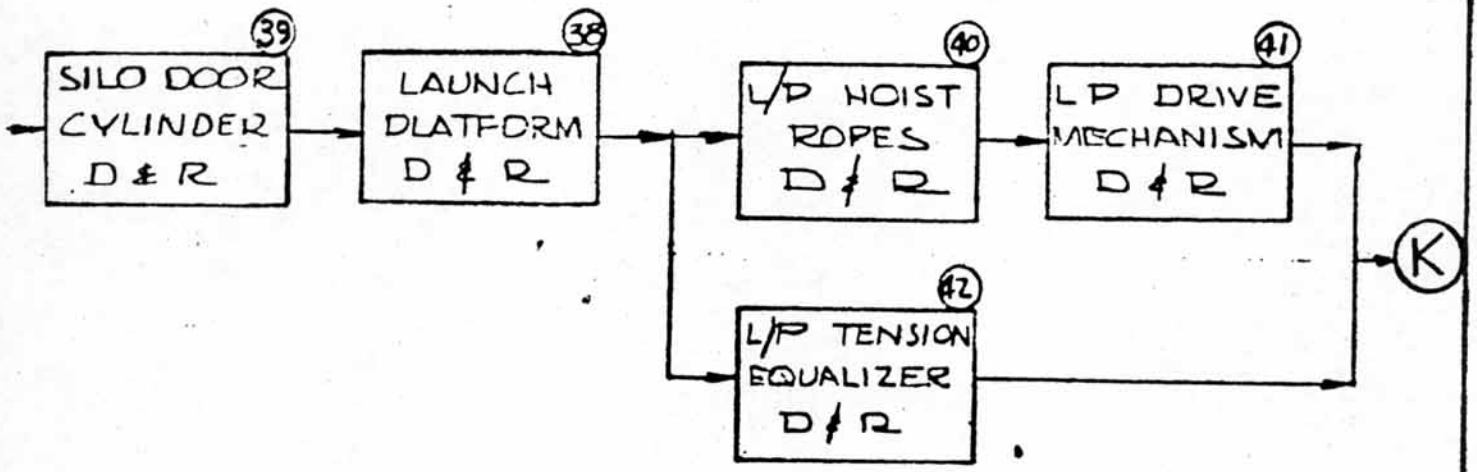
692-02-65-8 (SHEET 2 OF 4)

PREPARED BY	DATE	CHECKED BY	DATE	REVISED BY	DATE
				(A) DHS - 2-16-65	
				(B) DHS - 2-17-65	
				(C) DHS - 2-19-65	
				(D) DHS - 2-25-65	
				(E) DHS - 3-1-65	



PREPARED BY	DATE	CHECKED

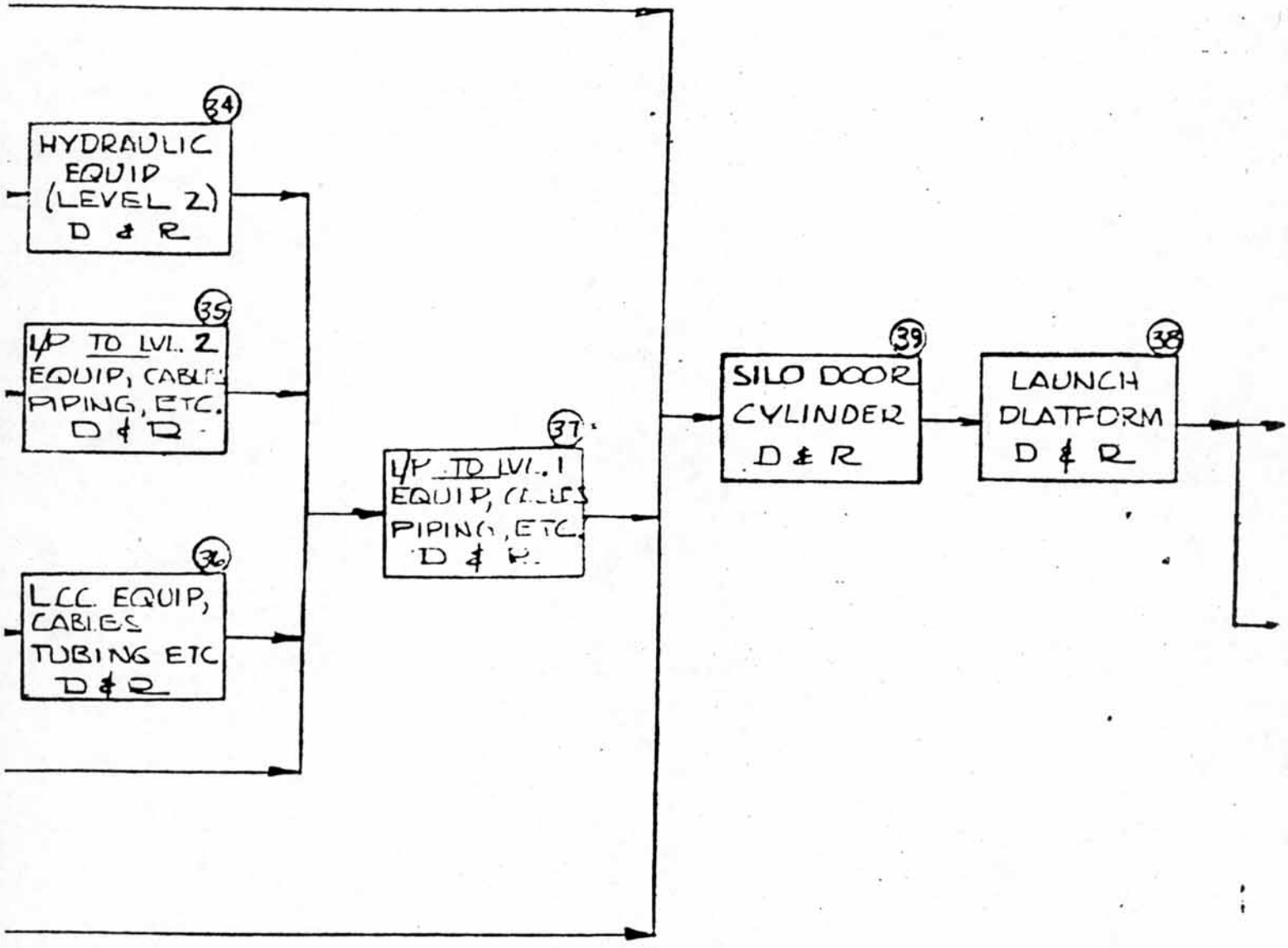

17
INSTALL MLS INCHING TOOL
19
MODIFY AND CHECKOUT MLS BRAKE SYSTEM
23
RETRACT MAIN LOCKS
15
JURY RIG LIGHTS, FAN, ETC.
B
20
INSTALL COUNTER WT. SHORING
21
UPLOCK STRIKERS, STUB GUIDE RAIL D & R
MISSILE WORK PLATFORM D & R
22
MEA INSULATION D & R
51
FILL & VENT SHAFT PIPING D & R



SBAMA EQUIPMENT REMOVAL PLAN
(ATLAS "F" SERIES SILO)

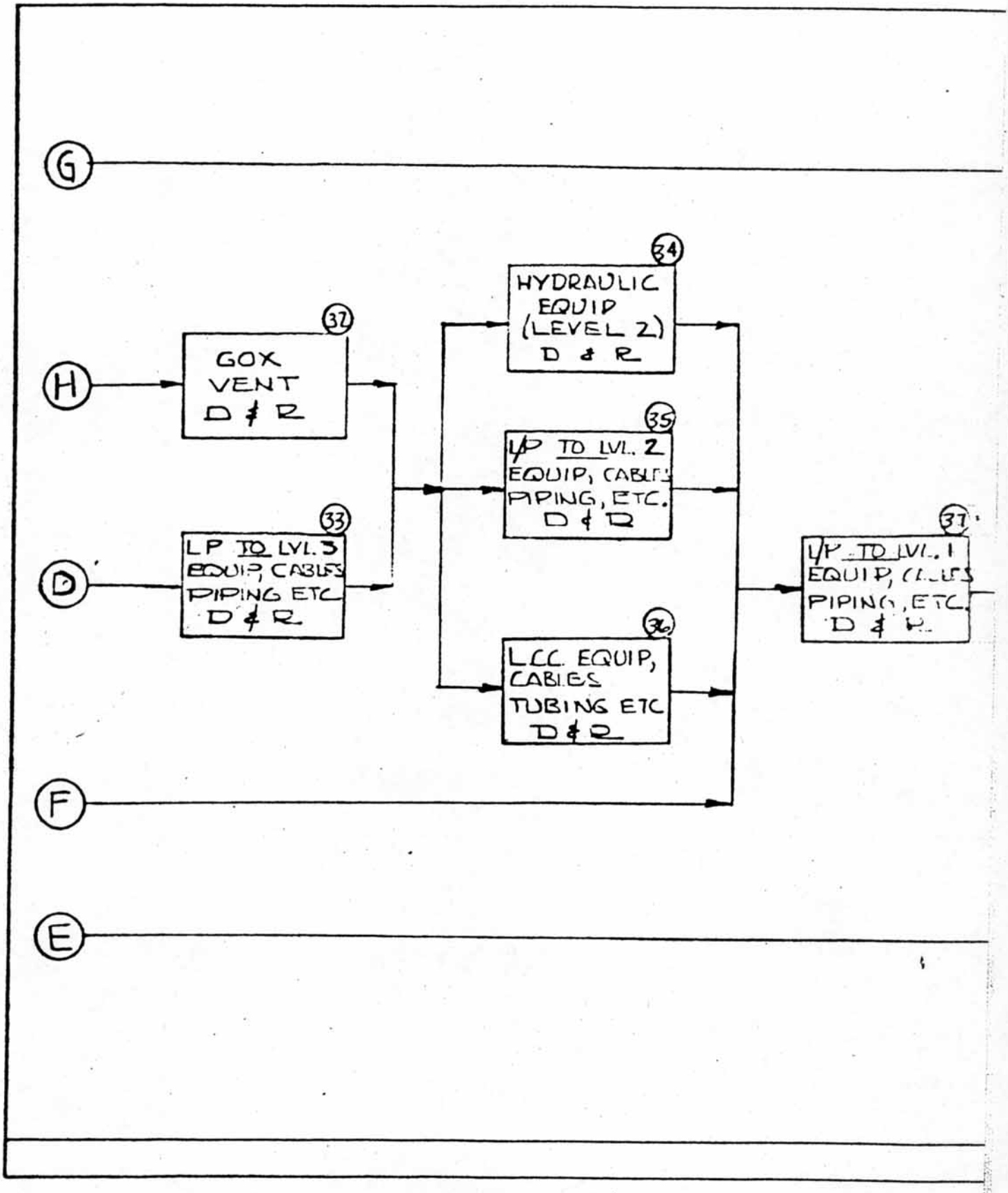
692-02-65-8 (SHT 3 OF 4)

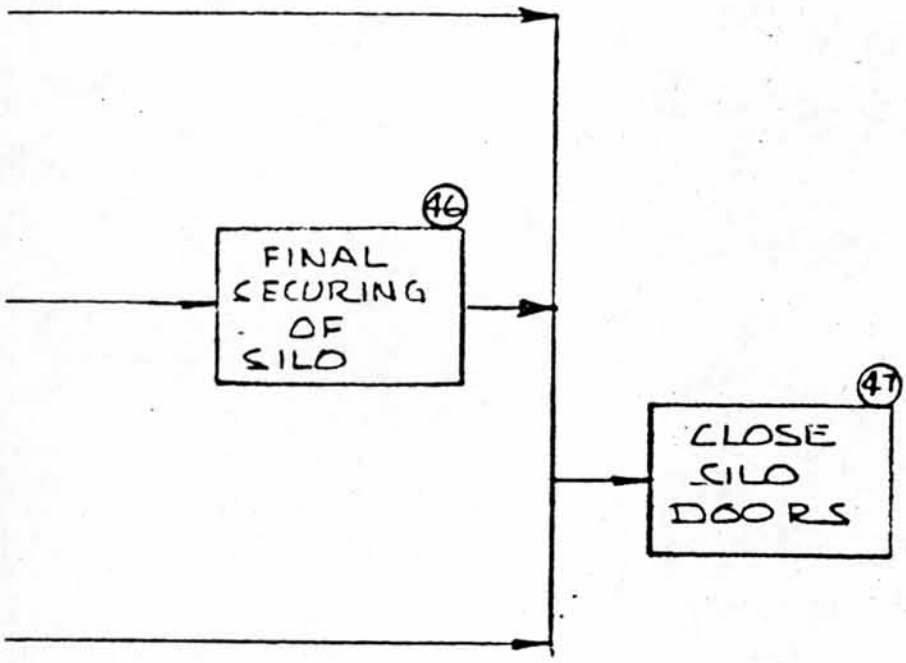
PREPARED BY	DATE	CHECKED BY	DATE	REVISED BY	DATE
	2-11-65			(A) DHS	2-16-65
				(C) DHS	2-19-65
				(E) DHS	3-4-65



SBAMA EQUI
(ATLAS

PREPARED BY	DATE	CHECKED BY
	2-11-65	

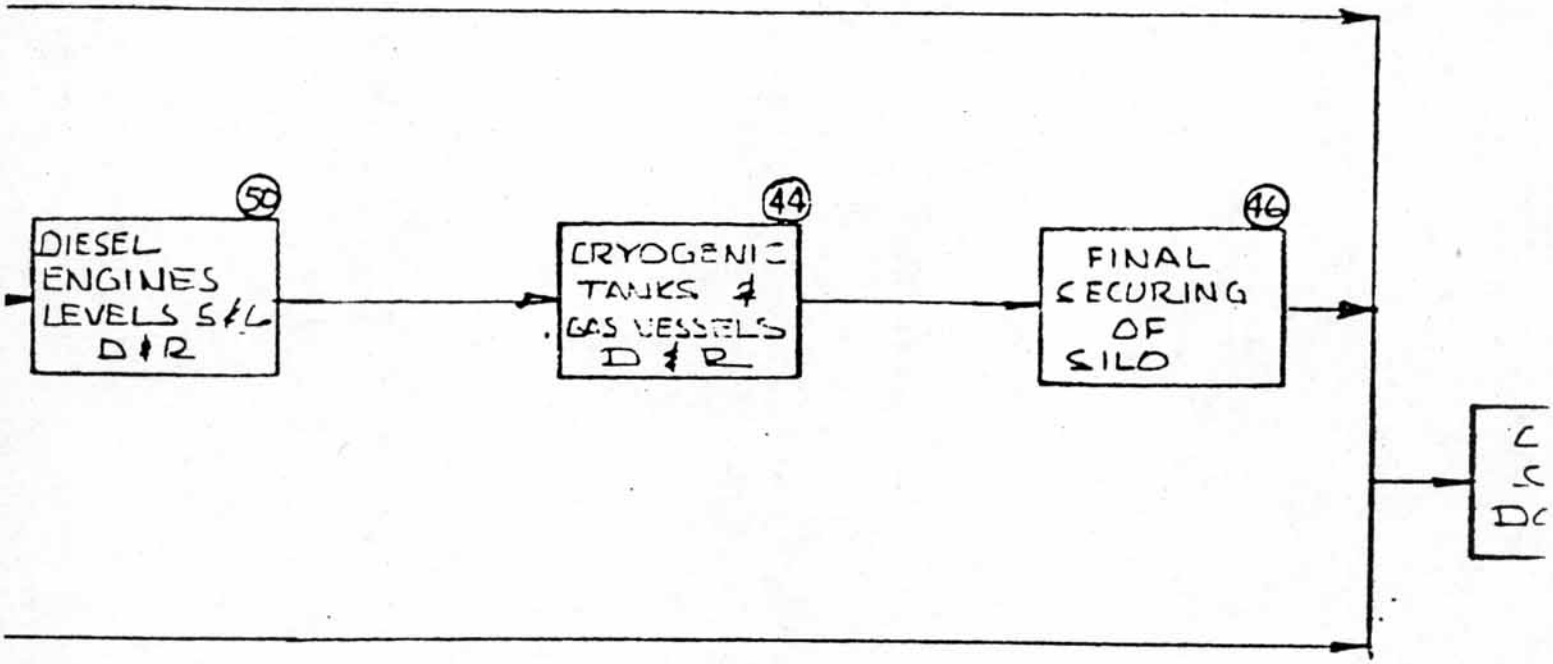

G
H
D
F
E
32
GOX VENT D & R
33
LP TO LVL. 3 EQUIP, CABLES PIPING ETC D & R
34
HYDRAULIC EQUIP (LEVEL 2) D & R
35
LP TO LVL. 2 EQUIP, CABLES PIPING, ETC. D & R
36
LCC. EQUIP, CABLES TUBING ETC D & R
37
LP TO LVL. 1 EQUIP, CABLES PIPING, ETC. D & R



SBAMA EQUIPMENT REMOVAL PLAN
(ATLAS "F" SERIES SILO)

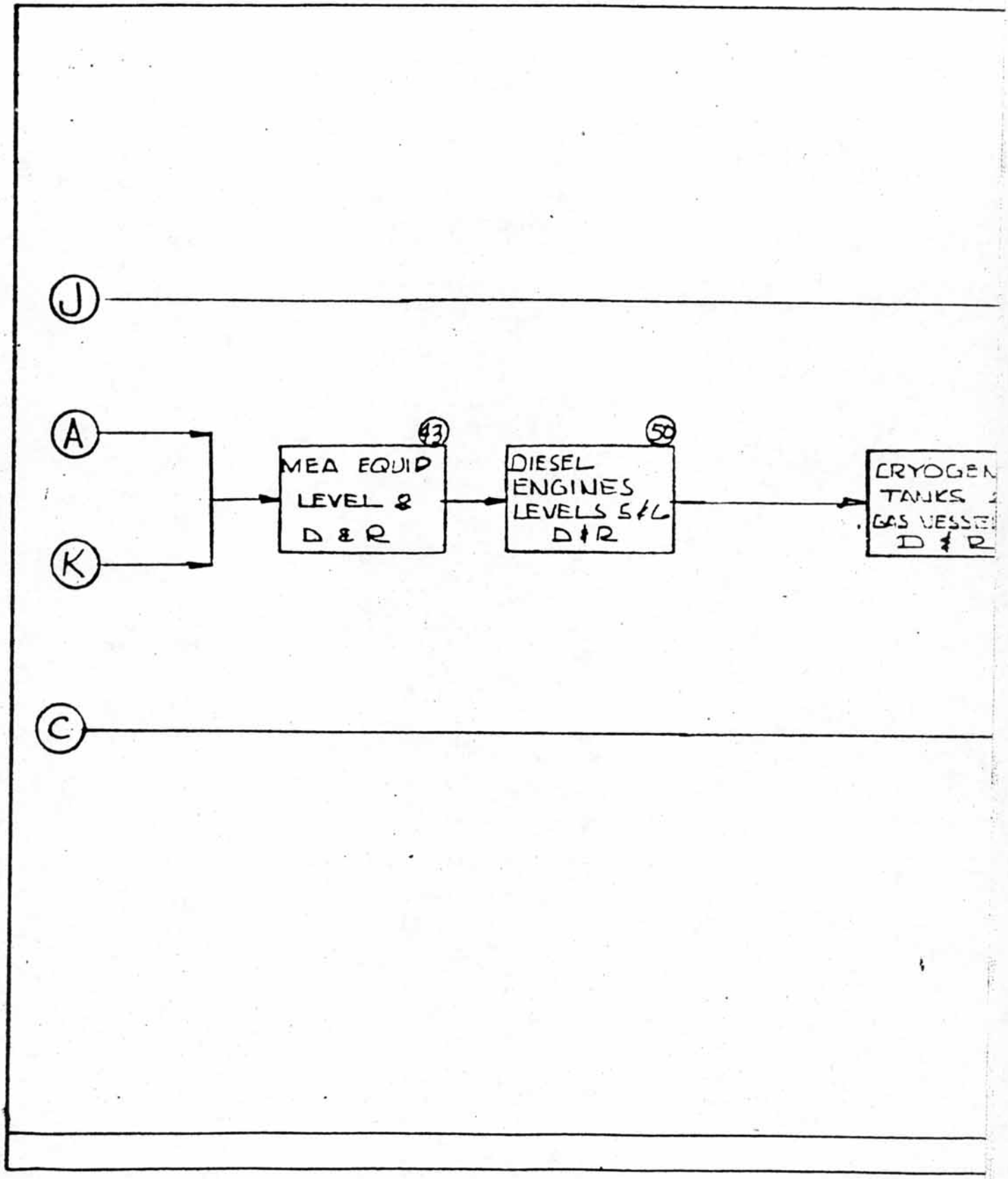
692-02-65-8 (SHT 4 OF 4)

PREPARED BY	DATE	CHECKED BY	DATE	REVISED BY	DATE
MNH	2-11-65			(A) DHS 2-16-65	
				(C) DHS 2-A-65	
				(D) DHS 2-25-65	
				(E) DHS 3-4-65	



SBAMA EQUIP
(ATLAS "

PREPARED BY	DATE	CHECKED BY
[illegible] 3-11-65		


J
A
K
C
43
MEA EQUIP
LEVEL 8
D & R
50
DIESEL
ENGINES
LEVELS 5 & 6
D & R
CRYOGEN
TANKS
GAS VESSE
D & R

Mech	Carpenter	MLS Tech.		Fork Lift	Operators Tractor	Truck	Crane	Rigger	Laborer
3		1							
15/15		5/5							3
									15/55
3									
88/102								3	3
1								80/80	80/95
16/139								1	1
								8/88	16/111
		2							
		2/7							
1	1				1	1	1	1	1
8/32	16/16				8/8	8/8	16/101	16/147	
							1	1	
					8/16	8/16	48/152	80/207	
							1	1	
							8/160	16/223	
								3	
								80/303	
								1	
								16/319	
		1							
		4/11							
		Note 5							
		2	4						
		4/15	120						
	2								
	16/32						1	2	3
							8/24	16/176	16/335
								2	
								16/192	
5									
120/255									
		1							
		1/16							

140

Fuel PLS Techn.	Electr.	Plumber	Iron Worker	Sheet Metal	Welder	Mech	Carpen-tor	MLS Techn.		Fork Lift
2										
2/2										
						3		1		
						15/15		5/5		
	5	3	2	1		3				
	138/138	80/80	40/40	32/32	40/40	88/103				
	1	2	1		1	1				
	16/154	32/112	8/48		8/48	16/119				
								1		
								2/7		
3	1									
24/26	8/162									
	1	1				1	1			
	16/178	16/128				16/135	16/16			
	1	1	1							
	8/186	8/136	80/128		80/128					
			2							
			24/152		24/152					
	4		2							
	80/266		40/192		40/192					
		3								
		64/200			4/56					
								4		
								4/11		
								2 Note 5	4	
								4/15	120	
							2			
							16/32			
			2							
			16/208		8/64					
			5			5				
			120/328			120/255				
	1							1		
	1/267							1/16		

Block Number & Title		Job Time (HRS)	Hydr. Pneu. Techs.	Fuel PLS Techn.	Electr.	Plumber	Iron Worker	Sheet Metal	W.
4	(Note 1)	1		2					
Drain & Remove RP1				2/2					
5		5							
Open Silo Door									
3		4	4						
Bleed down GN_2			16/16						
7		32			5	3	2	1	
Prepare LCC, Tunnel					138/138	80/80	40/40	32/32	40
8		16			1	2	1		
Prep Diesels					16/154	32/112	8/48		8
9		1							
L/P up for Mod.									
6		8		3	1				
Prep PLS				24/26	8/162				
11		16			1	1			
Cooling Tower					16/178	16/128			
13		80			1	1	1		
L/P Mod					8/186	8/136	80/128		80
14		16					2		
Horiz. Crib Shoring							24/152		24
10		24			4		2		
Prep L/C, GE, Arma					80/266		40/192		40
12	(Note 4)								
Prep. Fans & Pumps									
15		24				3			
Jump Rig Light & Pumps						64/200			40
16		1							
L/P Down to Lev. 7									
17		2 + 24							
Instl Docking Tool									
19		8	2						
Mod: Brake & Check			16/32						
20		8							
C/W Shoring									
21		8					2		
Uplock Striker D&R							16/208		8
22	(Note 6)	24	38				5		
Mod Insul. D&R							120/328		
23		1			1				
Retract Main Locks					1/267				

Mech.	Carpenter	MLS Techn.		Fork Lift	Operators: Tractor	Truck	Crane	Rigger	Laborer	
2							1/0	2		
32/287							16/40	32/224		
2	1					1	1	5	2	
44/331	40/72					40/56	40/80	160/388	80/443	
1										
					1			1	2	
					16/16			16/404	32/447	
								3	3	
								48/452	24/471	
							2	3	3	
							40/120	72/522	72/543	
								2	2	
								8/530	8/551	
1						2	2	5	3	
8/339						32/88	32/152	80/610	40/591	
							1	1	1	
							8/160	16/626	16/605	
1							1	1		
4/343							4/164	4/630		
						2	2	5	2	
						40/128	40/204	120/750	40/645	
1	1					1	1	5	2	
28/371	40/112					40/168	40/244	172/922	80/725	
1								2	2	
8/379								16/938	16/741	
1	1					1	1	4	2	
16/395	16/138					40/208	40/284	160/1098	80/821	
1	1					1	1	5	2	
28/423	40/168					40/248	40/324	172/1170	80/901	
4							1	2		
160/583							40/364	80/1250		
				1	1	1	1	4	2	
				40/40	40/56	40/288	40/404	160/1410	80/981	
1	2					2	2	6	4	
16/599	40/208					40/328	40/444	126/1530	80/1061	
1						1	1	2	2	
8/607						8/336	8/452	16/1552	16/1077	
2				1			1	3	1	
60/667				20/60			40/492	80/1672	40/1117	
1				1			1	2	1	
8/675				8/68			8/500	16/1688	8/1125	

Fuel PLS Techn.	Electr.	Plumber	Iron Worker	Sheet Metal	Welder	Mech.	Carpenter	MLS Techn.		Fork Lift
						2				
						32/287				
	1	2	1	1	1	2	1			
	24/291	68/268	4/332	40/72	40/ 44	44/331	40/72			
	1									
	40/331									
	1	1								
	16/347	16/284								
	3		1	1						
	48/395		8/340	8/80						
	1	1	2		2					
	16/411	16/300	40/380		30/ 74					
					1					
					4/ 78					
		1	1	3		1				
		8/303	16/396	40/120		8/339				
			1		1					
			16/412		8/ 86					
						1				
						4/343				
	1	1	2		1					
	16/427	16/324	40/452		16/ 102					
	2	3	1	1	1	1	1			
	48/475	120/444	8/456	40/160	40/ 42	28/371	40/112			
					1	1				
					4/ 46	8/379				
	1	1	1		1	1	1			
	16/491	16/460	16/472		16/ 62	16/395	16/138			
	2	3	1	1	1	1	1			
	48/539	120/580	4/476	40/200	40/ 02	28/423	40/168			
	1				1	4				
	40/579				40/ 42	160/583				
										1
										40/40
	4	4	1	1	2	1	2			
	80/659	80/660	4/480	16/216	40/ 62	16/599	40/208			
	1	1				1				
	4/663	4/664				8/607				
	1					2				1
	20/683				40/ 82	60/667				20/60
						1				
						8/675				

Block Number & Title	Job Time	Hydr. Piping Techn.	Fuel PLS Techn.	Electr.	Plumber	Iron Worker	Sheet Metal	We
51	16							
Fill Shaft Piping								
28	40			1	2	1	1	
Level 7 D&R				24/291	68/268	4/332	40/72	40
24	40	3		1				
Drain Hdr. Syst.		120/158		40/331				
25	16			1	1			
Umbilical L/P				16/347	16/284			
48	16			3		1	1	
MLS & OSMOL Prep.				48/395		8/340	8/80	
26	24			1	1	2		
Work Platf. D&R				16/411	16/300	40/380		30
27	4							
AIG Mono Rail D&R								
28	16				1	1	3	
L/P to Level 6, D&R					8/303	16/396	40/120	
29	16					1		
Collimator D&R						16/412		8
49	4							
Sight Tube D&R								
30	24			1	1	2		
L/P to Level 5 D&R				16/427	16/324	40/452		16
31	40			2	3	1	1	
L/P to Level 4 D&R				48/475	120/444	8/456	40/160	40
32	8							
Gox Vent D&R								
33	40			1	1	1		
L/P to Level 3 D&R				16/491	16/460	16/472		16
35	40			2	3	1	1	
L/P Level 2, D&R				48/539	120/580	4/476	40/200	40
34	40			1				
Hydraulics at 2				40/579				40
36	40							
ECC Eqpt. D&R								
37	24			4	4	1	1	2
L/P to Level 1, D&R				80/659	80/660	4/480	16/236	40
39	8			1	1			
Door Cyl. D&R				4/663	4/664			
38	40			1				
L/P D&R				20/683				40
40	8							
L/P Holding & Ropes								

Mech	Carpenter	MLS Techs.	Fork Lift	Tractor	Operators Truck	Crane	Rigger	Laborer
1					1	1	2	
8/653					4/340	8/508	16/1704	
1						1	4	2
32/715						8/518	32/1736	32/1157
1	1				1	1	3	2
24/739	24/232				24/364	24/540	120/1856	48/1305
						1	2	2
						32/572	64/1920	64/1269
						1	3	1
						40/612	240/2160	80/1349
1								
4/743								
1						2	1	2
8/751						16/638	8/2168	16
751	232	16	60	64	364	628	2168	1349

have to stay on this particular job full time. See manhours in skill column.

use some blocks had to be rescheduled. The original numbers have been retained for

people, 5 hrs. each. = 20 manhours per level.

uel / LS / echa.	Electr.	Plumber	Iron Worker	Sheet Metal	Welder	Meen	Carpenter	MLS Techs.		Fork Lift	T
						1					
						3/683					
						1					
						32/715					
	1	1	1	1	1	1	1				
	24/707	24/688	24/504	24/240	24/	24/739	24/232				
			2		2						
			40/544		40/						
			1		1						
			32/576								
	1					1					
	4/711					4/743					
						1					
						8/751					
26	711	688	676	240	60	751	232	16		60	

complete the job; the skills called out do not necessarily have to stay on this particular job full time. So

of people needed, not necessarily full time.

required by their trade for the block.

manhours through block flow sequence.

is in accordance with flow sequence (not numerical because some blocks had to be rescheduled. The orig

cluded in the level by level D&R estimates.

s, 2 people. To move L/P from level to level requires 4 people, 5 hrs. each = 20 manhours per level.

rs. per level.

Block Number & Title	Job Time	Hydr. Pneu. Techn.	Fuel PLS Techn.	Electr.	Plumber	Iron Worker	Sheet Metal	Wel
42	8							
Tension Equalizer								
41	16							
MLS Drive Mech.								
43	32			1	1	1	1	1
Mech. Level 6				24/707	24/688	24/504	24/240	24/
50	32					2		2
Diesels 5&6						40/544		40/
44	80					1		1
Cryo & Brass Vessels						32/576		8/
15								
(Deleted)								
46	4			1				
Final Securing				4/711				
47	8							
Close Doors								
TOTAL		158	26	711	688	676	240	64

NOTES:

1. Job time - an estimated time to complete the job: the skills called out do not neces
2. Skill column has 3 figures:
   (a) Left hand top: number of people needed, not necessarily full time.
   (b) Left below: manhours required by their trade for the block.
   (c) Right: accumulative manhours through block flow sequence.
3. The block sequence on this list is in accordance with flow sequence (not numerical editing purposes.
4. Estimates for this block are included in the level by level D&R estimates.
5. Inching tool installation-2 hours, 2 people. To move L/P from level to level requ
6. Block 22 = approximately 20 hrs. per level.

STOCK SIZE	MATERIAL SPECIFICATION	INITIAL COND OR HT TR	FINAL KSI
8 C 11.5 x 17		—	—
1/2 X 17 X 17 SEE NOTE	STEEL ASTM A36	—	—
		—	—
3/8 x 8" x 9"		—	—
1/2 x 4 x 4 L 0'-10"		—	—
1/2 x 4 x 4 L x 13'-4"		—	—
8 WF 31 x 3'-2"		—	—
12 WF 40 x 15'-2"		—	—
12 WF 40 x 15'-11"		—	—
12 WF 40 x 15'-10"	STEEL ASTM A36	—	—
		—	—

DWG NO. | SM | REV B

LIST OF MATERIALS

ND USAGE DATA SEE DOCUMENT SAME NUMBER PREFIXED **PL**

GENERAL DYNAMICS | ASTRONAUTICS
SAN DIEGO, CALIFORNIA

[illegible]	2-25-65
B. R	2/17/65
Bock	2/17/65

L/P STAGING PLATFORM MODIFICATION

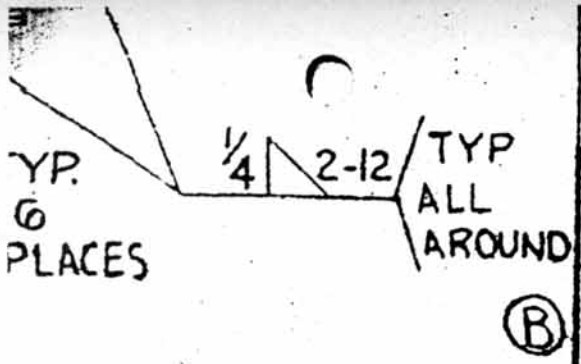
PACKAGE NO.

APPROVAL

CODE IDENT NO.	SIZE	DRAWING NO.
05342	D	SK 663-8-2

SCALE 3/8 = 1'-0" | RELEASED | SHEET 1 OF 3

65-8 (PAGE 30) A 2691 (4-63) DISTR CODE FIGURE 13



/
TYP
\

REF

NOTE NO.	~~FIND~~ ITEM NO.	~~OPP~~ ~~DASH NO.~~	~~SHN~~ QTY	DESCRIPTION	STOCK SI
	11		2	CHANNEL	8 C 11.5
	10		1	PLATE	1/2 X 17 X SEE NOT
	8		2	PLATE	3/8 x 8" x
	7		2	ANGLE	1/2 x 4 x 0'-10'
	6		2	ANGLE	1/2 x 4 x x 13'-4'
	5		10	BEAM	8 WF 3 x 3'-2
	4		1	BEAM	12 WF 4 x 15'-2
	3		4	BEAM	12 WF 4 x 15'-11
	2		1	BEAM	12 WF 4 x 15'-10
	1		X	PLATFORM	

LIST OF

FOR PARTS LIST AND USAGE DATA SEE

~~FOR INTERPRETATION OF DRAWING SEE 0-70900~~
~~UNLESS OTHERWISE SPECIFIED~~
DIMENSIONS ARE IN INCHES
TOLERANCES
X .XX .XXX
.1 ± .03 ± .010
ANGULAR PER 0-70902
ALL MACHINED SURFACES
√

INTERCHANGEABILITY REQD
—
REPLACEABILITY REQD
—
BY

MATL
TOOLING

CHECK		
STRESS	W. A. Addison	2-25-65
GR ENGR		
DESIGN	E. H. B. R	2/17/65
DRAWN	E H. Bock	2/17/65
CONTRACT NO.		
ASTRONAUTICS APPROVAL		

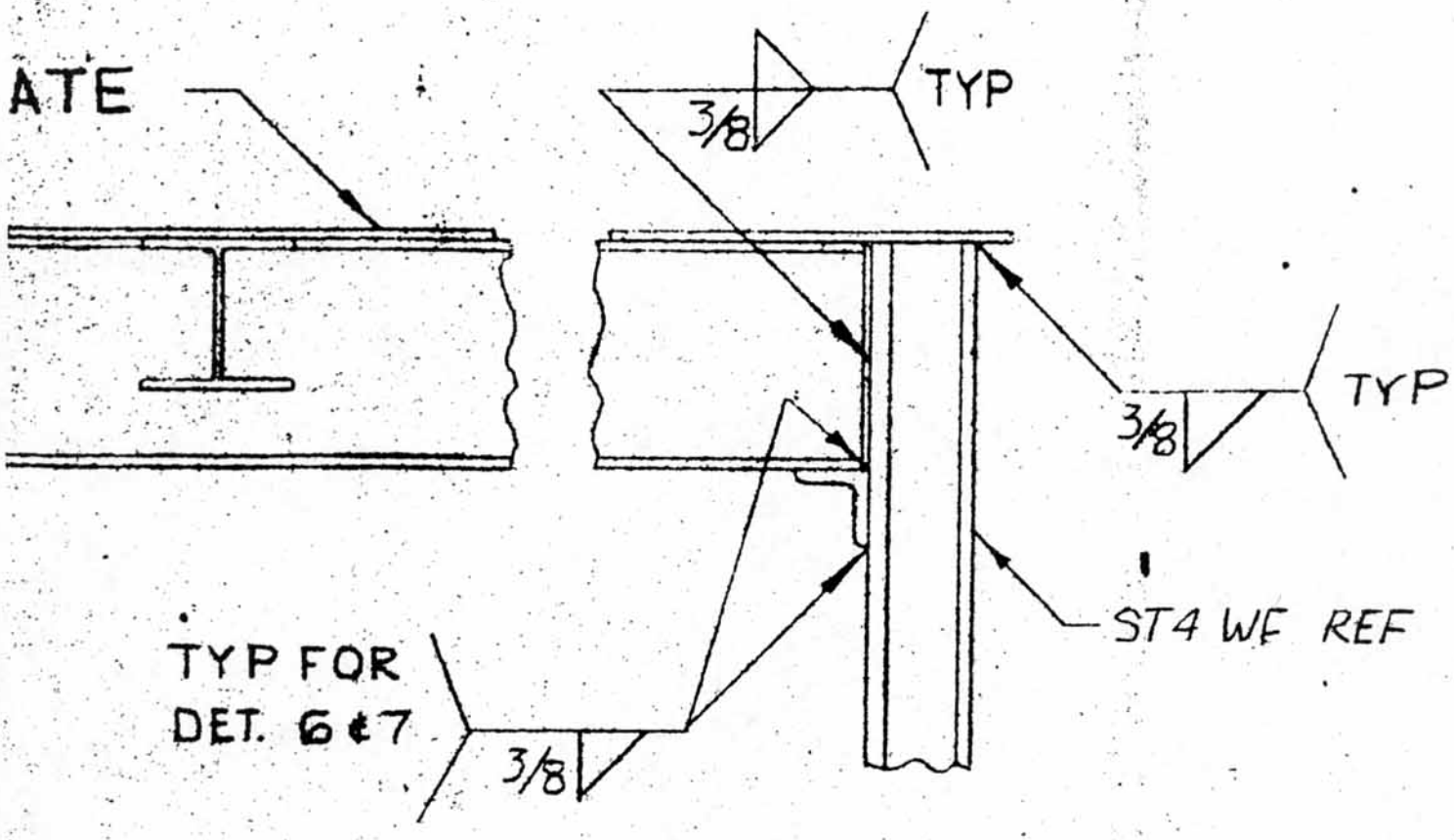
692-02-65-8

E SHT. 3 FOR
ATFORM ASSY

VIEW A-A

3/8 TYP. 16 PLACES

ATE

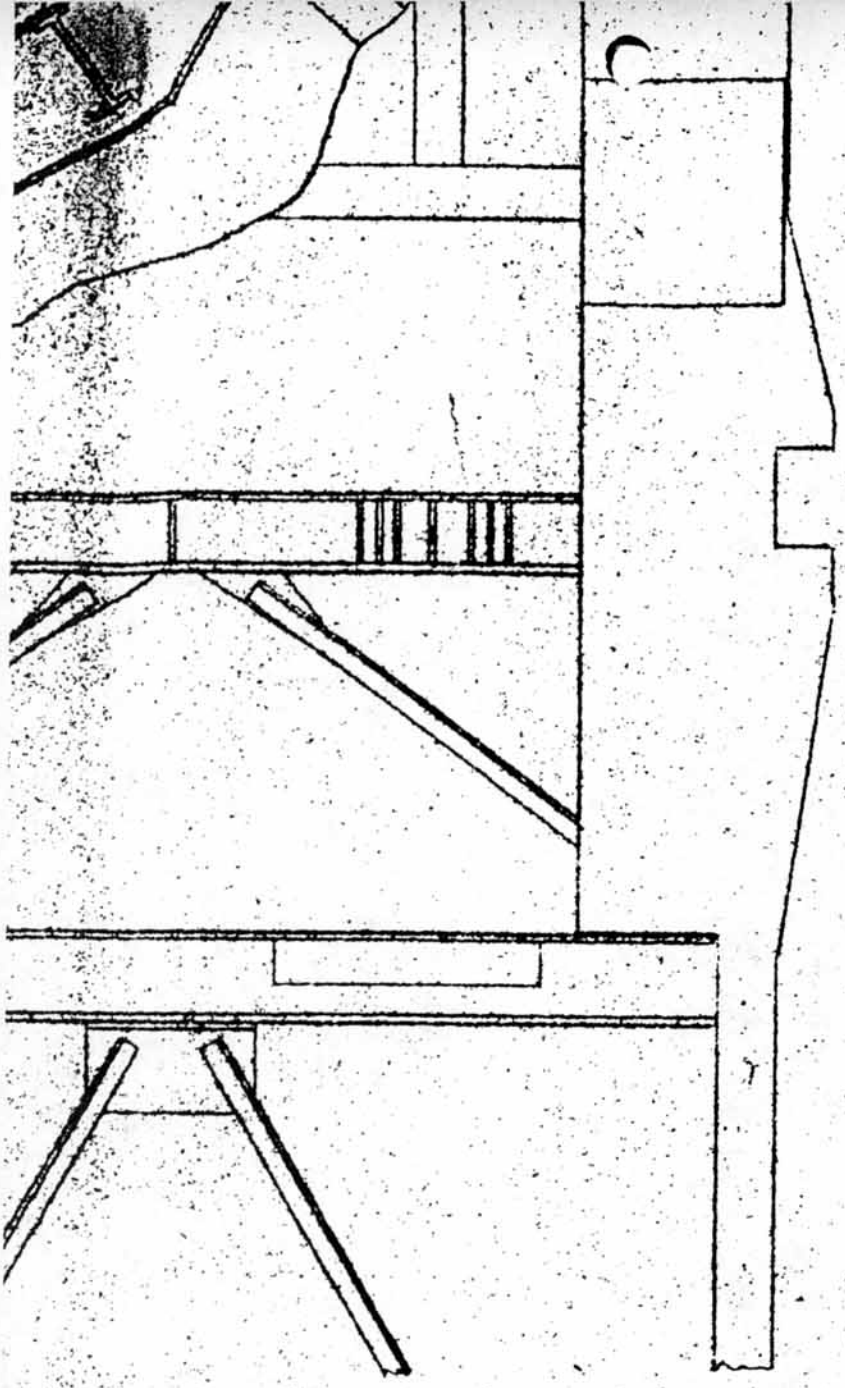


SECTION B-B
SCALE 1/10

ING SOCIETY
HIGHWAY &
COMPLIED

1.6 WELDS NOTED SHALL BE SUBJECTED TO MAGNETIC PARTICLE INSPECTION ON THE FIRST & LAST PASS

FOR INTEF DRAWING
UNLESS OTHI
DIMENSIONS
TOLERANCES .X .XX .XX ± .1 ± .03 ± .0 ANGULAR PER 0-70902

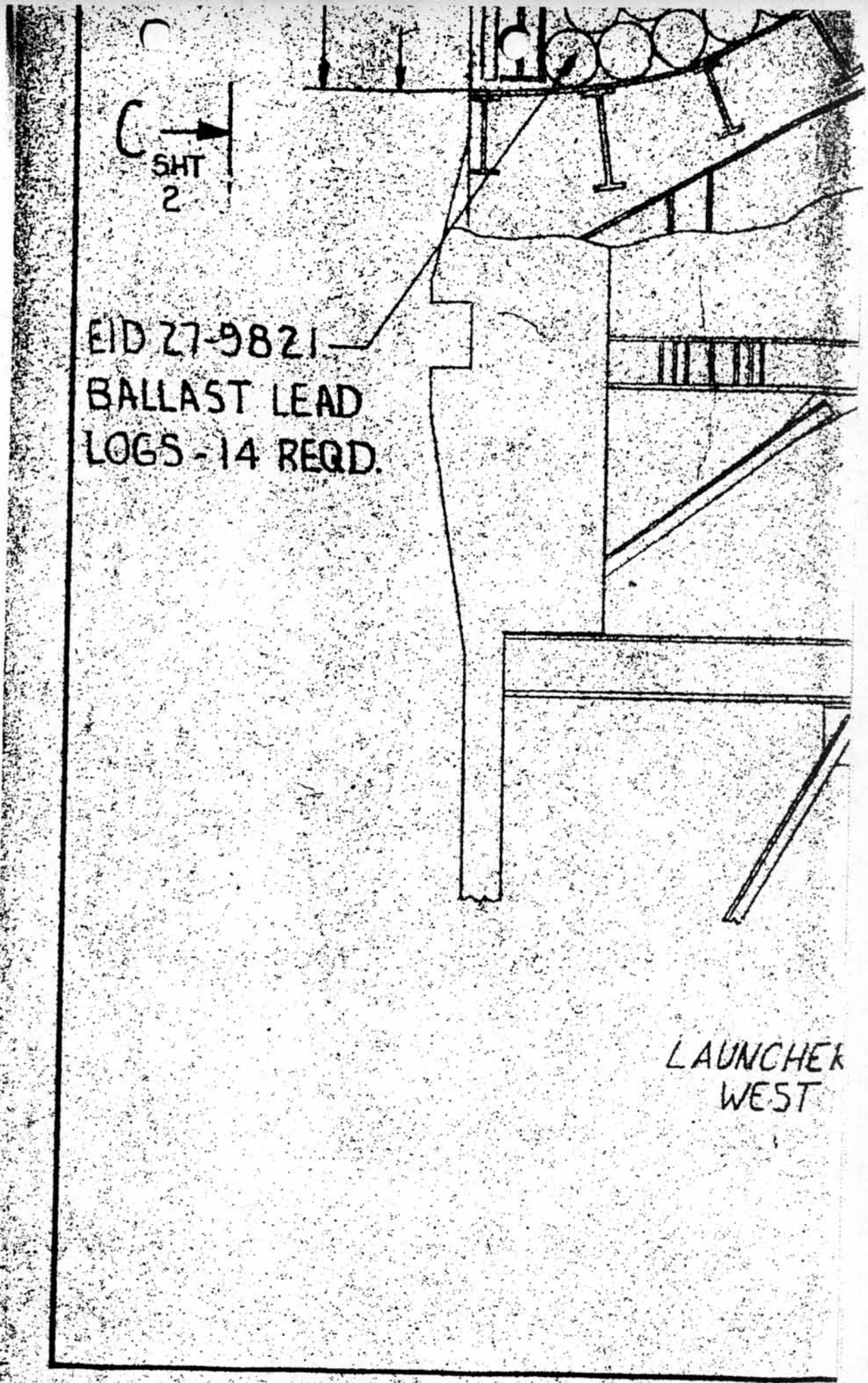


CHER PLATFORM
ST SIDE

Ⓑ

NOTES

1.5 - THE AMERICAN WELDING SO
AWS D 2.6-63 FOR HIGHV
BRIDGES SHALL BE COMI
WITH.


C
C
SHT
2
EID 27-9821
BALLAST LEAD
LOGS - 14 REQD.
LAUNCHER
WEST

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	DWG NO WAS 663-8-1 ADDED SHT. 2 & 3 L/M ADD 11 THRU 14 AND ITEM 2 STK LGTH WAS 15'-4"		
B	REMOVE ITEM 9 ADD WELD NOTE 1.5 & 1.6. H Fowler 3-5-5		

CES)

.

SOCKETS MAY BE ADDED TO FIT WORK
HANDRAILS STORED IN THE SILO.

ATE USE (2) 6 FT x 17' & (1) 5 FT x 17' STOCK

E SKETCH ON SHT. 3

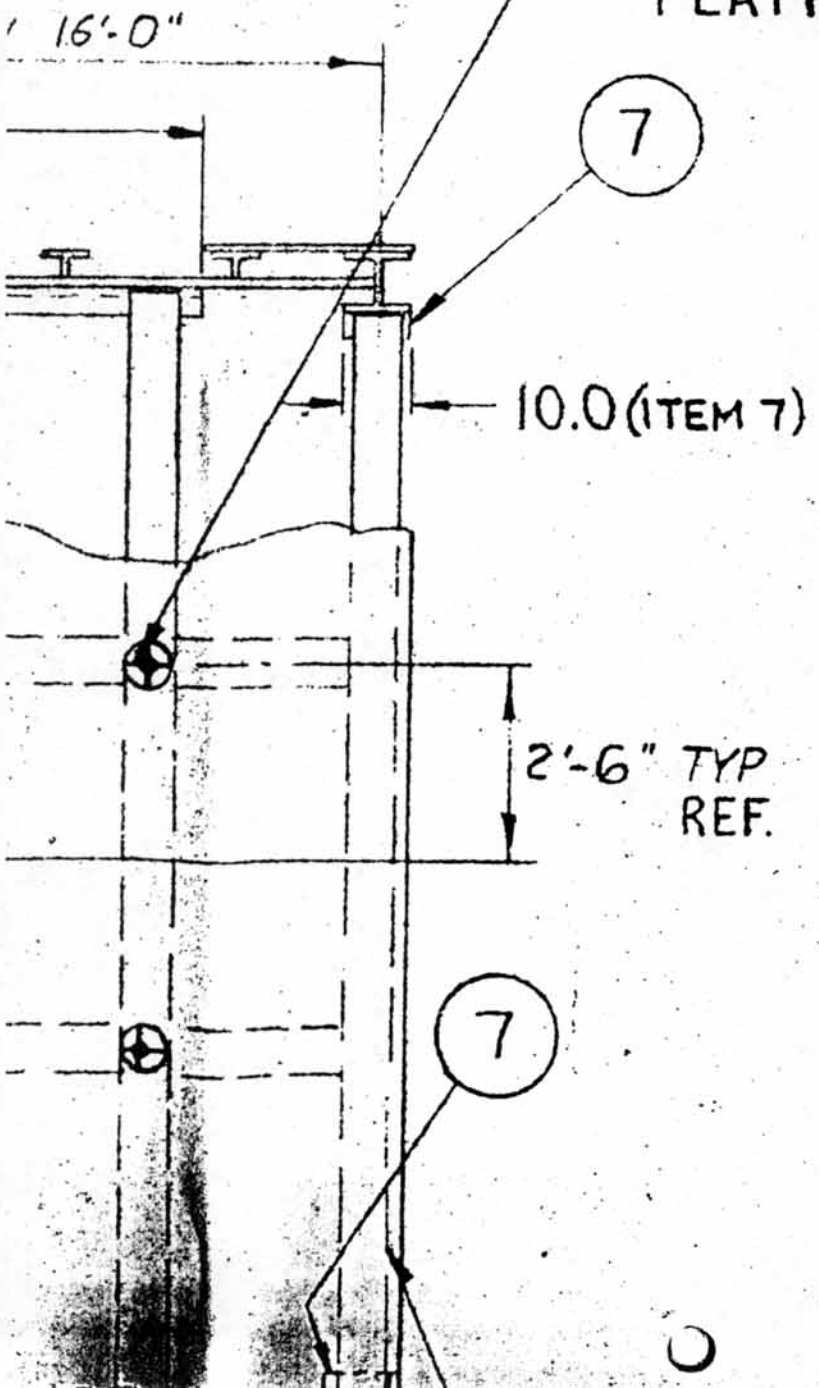
) ROD MIL-E-22200/1 CLASS 7018

TTING, THE TOP OF L/P SHALL BE
L PLANE WITHIN 1/4 INCH

M	8 WF 31 x 42"	STEEL ASTM A36	—	—
E	1/2 x 15" x 18"		—	—
ET	1/2 x 4" x 13 3"			

DWG NO.

FOR INSTALLATION LOCATE
TEMP. LIFTING LUGS (4 PLACES
PLATFORM WT. 12000 LBS.



NOTES :

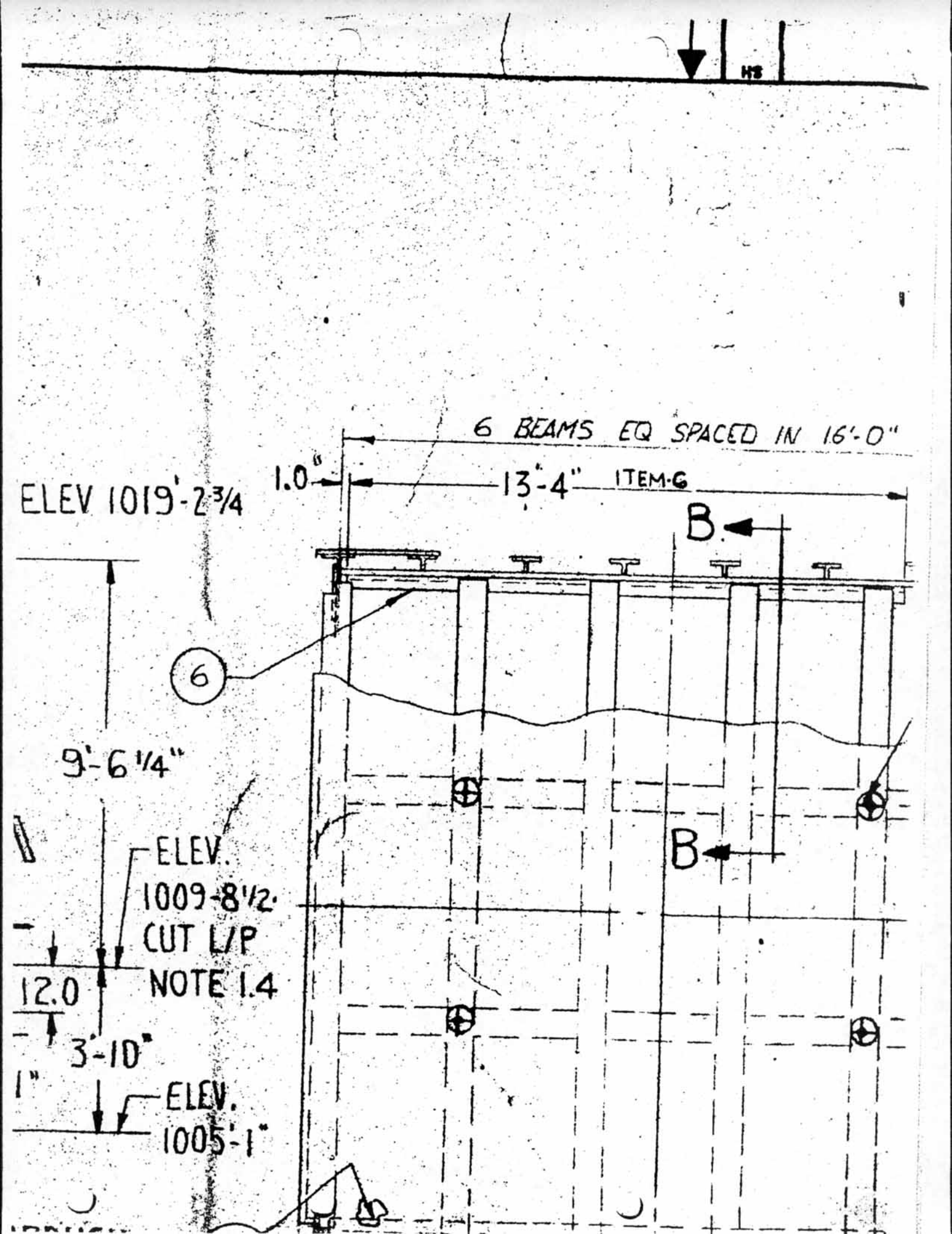
1.1 HAND RAIL SC
PLATFORM HA

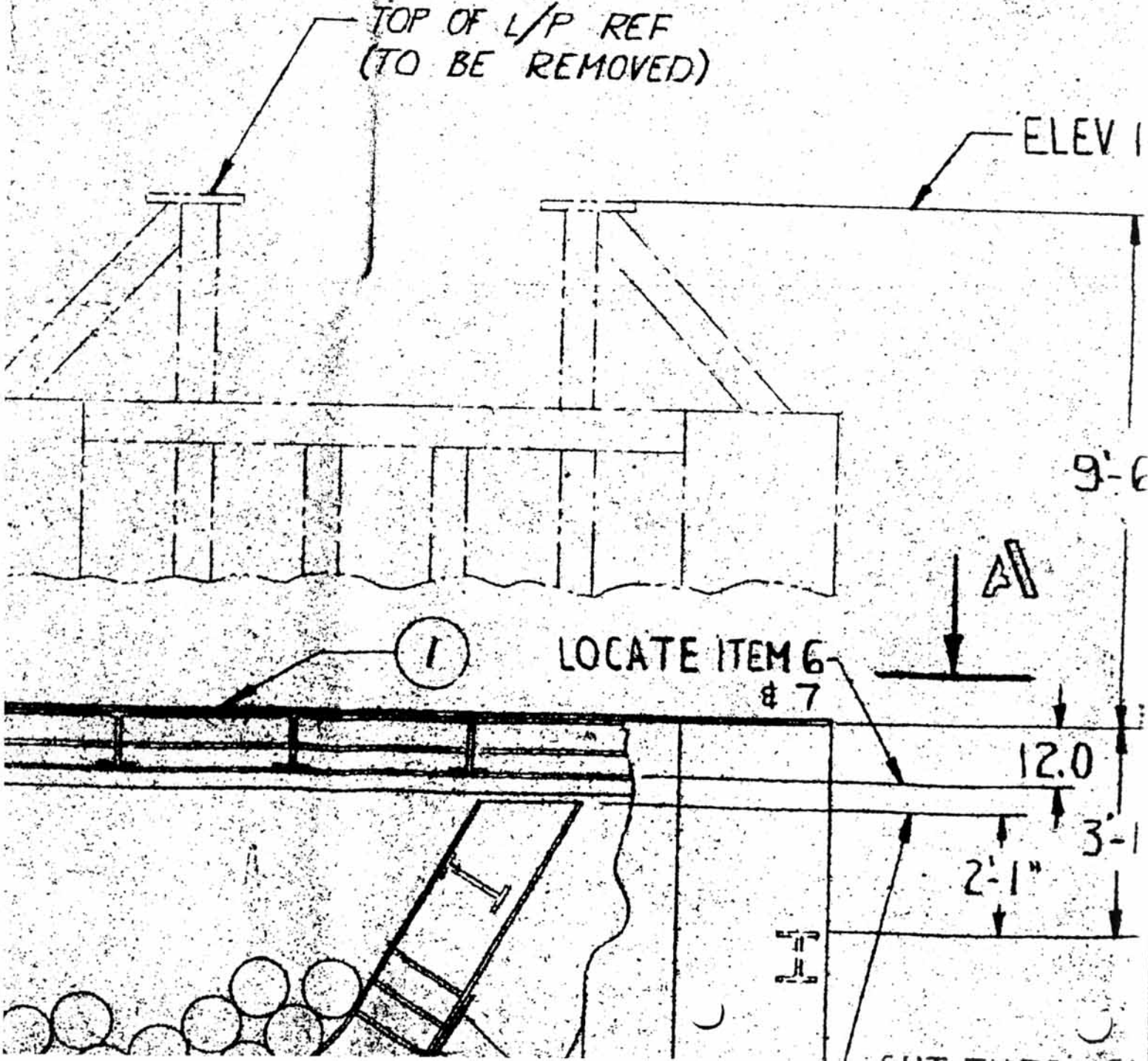
1.2 FLOOR PLATE
SIZES. SEE S

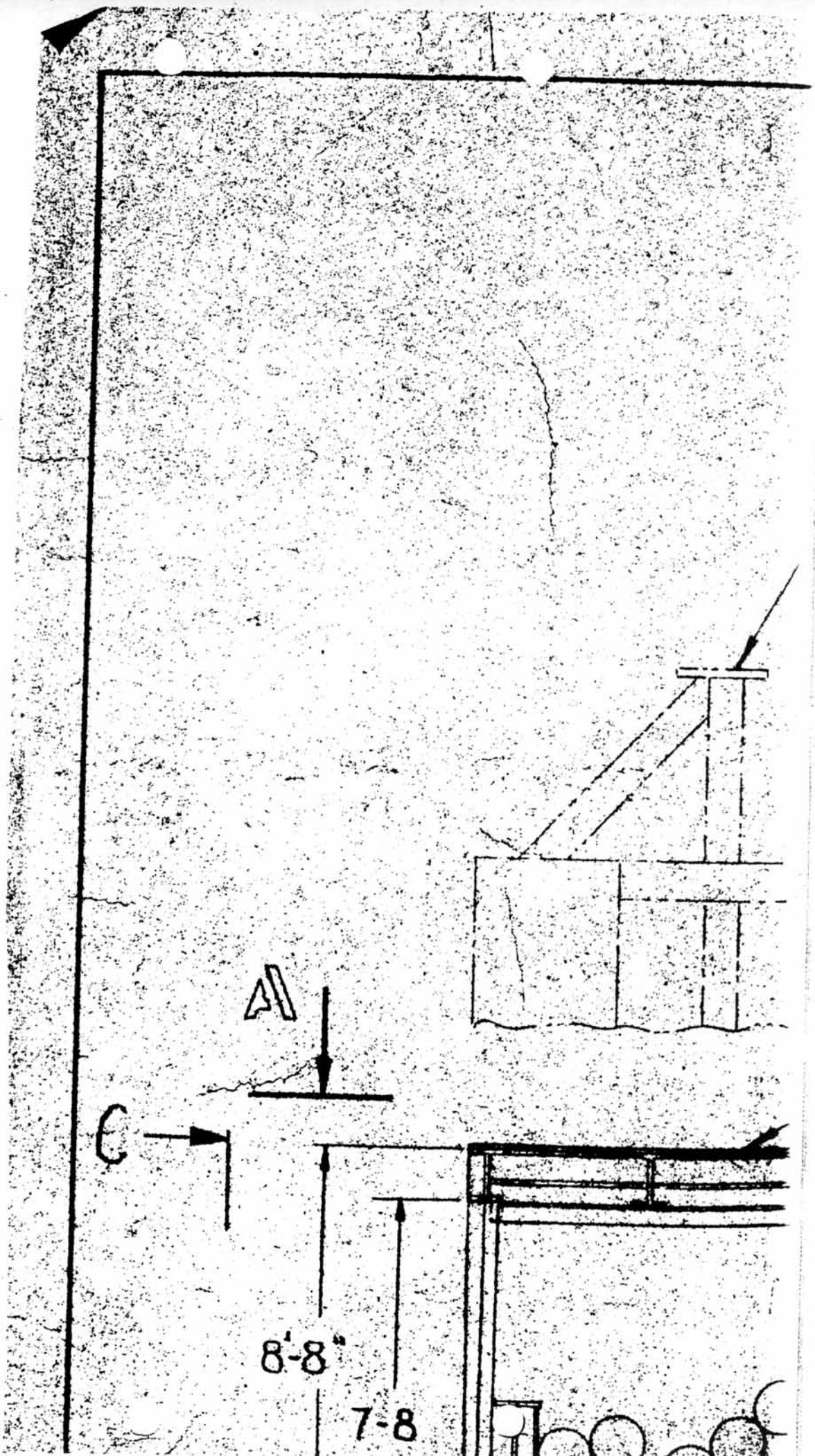
1.3 USE WELD F

1.4 AFTER CUTT
IN A LEVEL

	14		2	BEAM
	13		4	PLATE


6 BEAMS EQ SPACED IN 16'-0"
1.0"
13'-4" ITEM-6
ELEV 1019'-2 3/4
B
B
6
9'-6 1/4"
ELEV.
1009-8 1/2
CUT L/P
NOTE 1.4
12.0
3'-10"
1"
ELEV.
1005'-1"


TOP OF L/P REF
(TO BE REMOVED)
ELEV
9'-6
A
A
1
LOCATE ITEM 6
& 7
12.0
3'-
2'-1"


A
C
8'-8"
7-8

1.5 THRU 1.9 FOR WELD REQMTS
ROD MIL-E-22200/1 CLASS 7018

	STOCK SIZE	MATERIAL SPECIFICATION	INITIAL COND OR HT TR KSI	FINAL

LIST OF MATERIALS

AND USAGE DATA SEE DOCUMENT SAME NUMBER PREFIXED PL

GENERAL DYNAMICS | ASTRONAUTICS
SAN DIEGO, CALIFORNIA

Functional 2-24-65

Tooling 2/21/65

L/P STAGING PLATFORM MODIFICATION

APPROVAL

CODE IDENT NO.	SIZE	DRAWING NO.
05342	D	SK663-8-2

SCALE 3/4 = 12 | RELEASED | SHEET 2

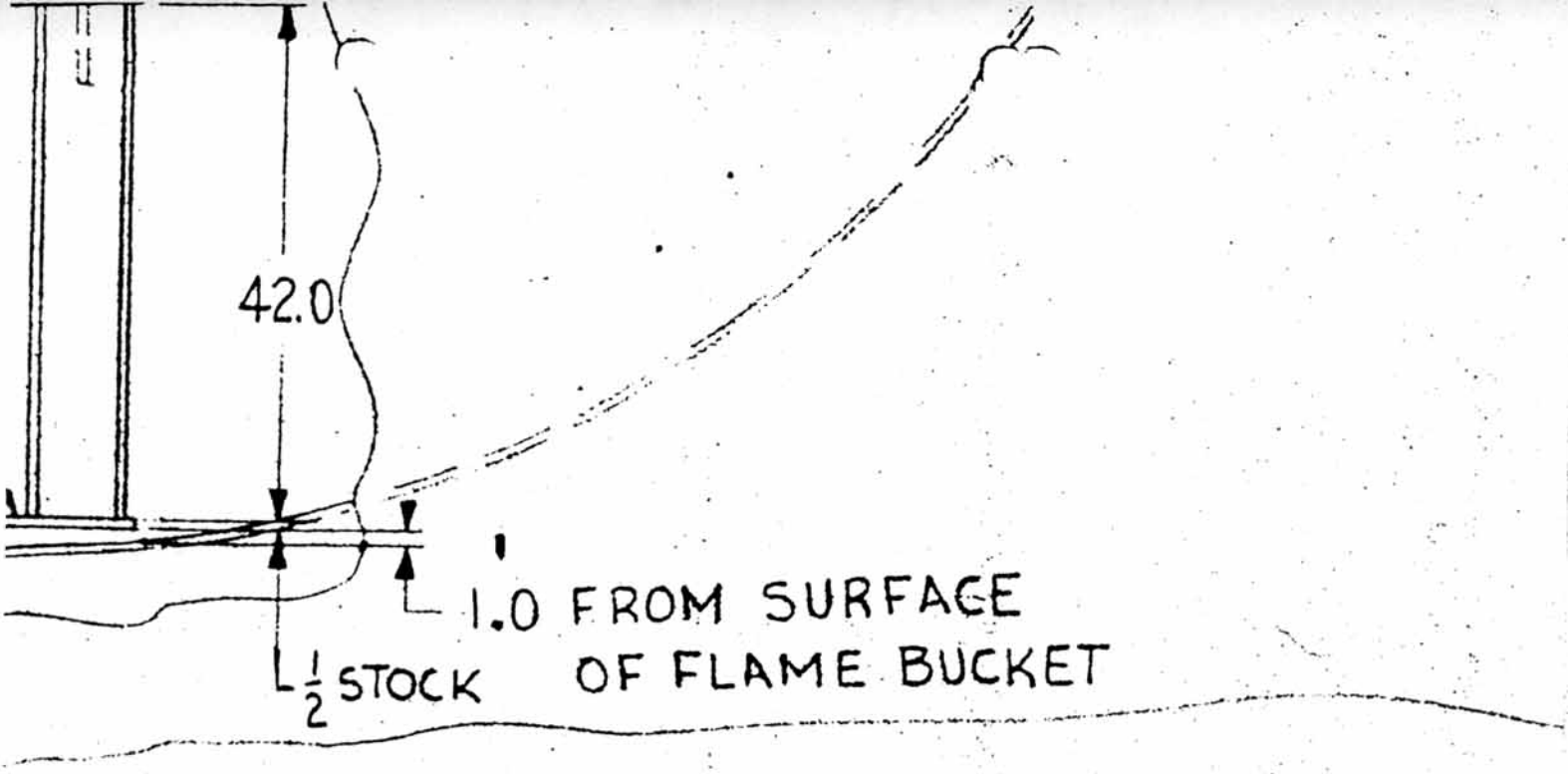
PACKAGE NO.

DWG NO. | SH | REV

-65-8 (PAGE 31)

DISTR

14+



PARTIAL SECT E-E

Ⓐ SEE NOTE 1.5 THRU 1

NOTE: USE WELDING ROD MIL-E

NOTE NO.	FIND NO.	OPP	SHN	DESCRIPTION	STOCK SIZ
		DASH NO.			

LIST OF M

FOR PARTS LIST AND USAGE DATA SEE

FOR INTERPRETATION OF DRAWING SEE 0-70900

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES

TOLERANCES
.XX .XXX
1 ± .03 ± .010
NGULAR PER 0-70902

ALL MACHINED SURFACES
√

INTERCHANGEABILITY REQD

REPLACEABILITY REQD

BY

MATL

TOOLING

CHECK

STRESS W. H. Fowler 2-24-65

GR ENGR

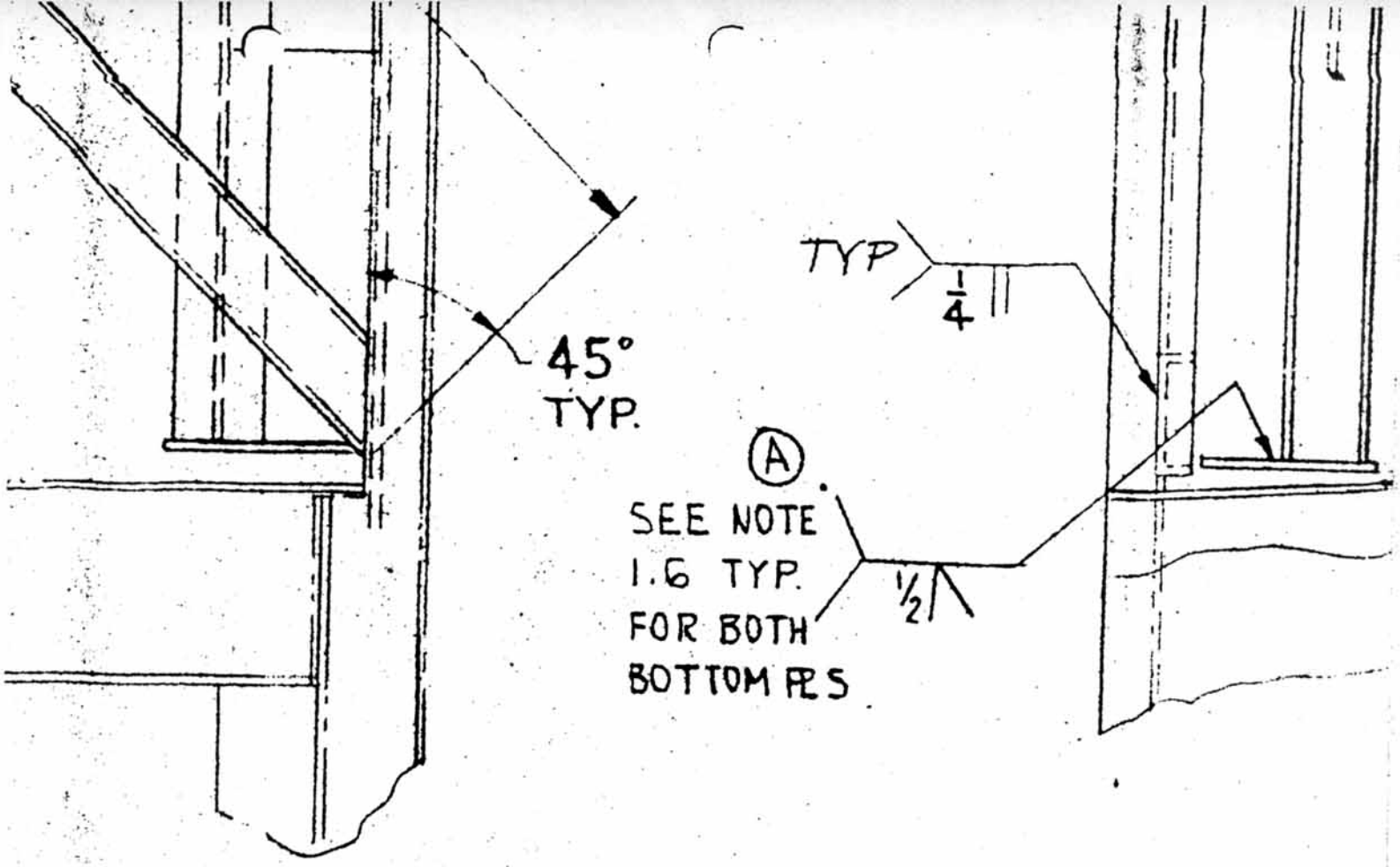
DESIGN

DRAWN W. H. Fowler 2/21/65

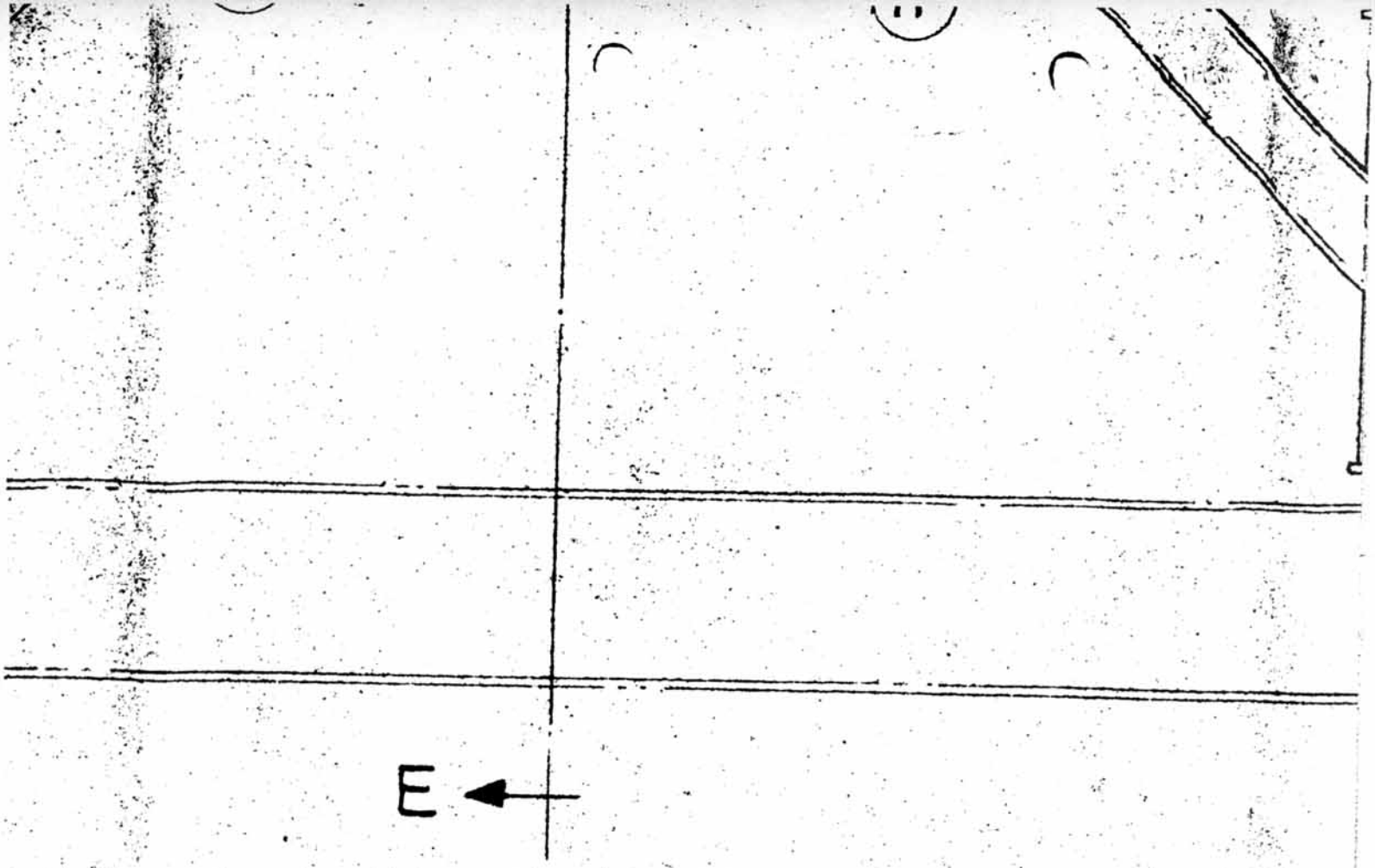
CONTRACT NO.

ASTRONAUTICS APPROVAL

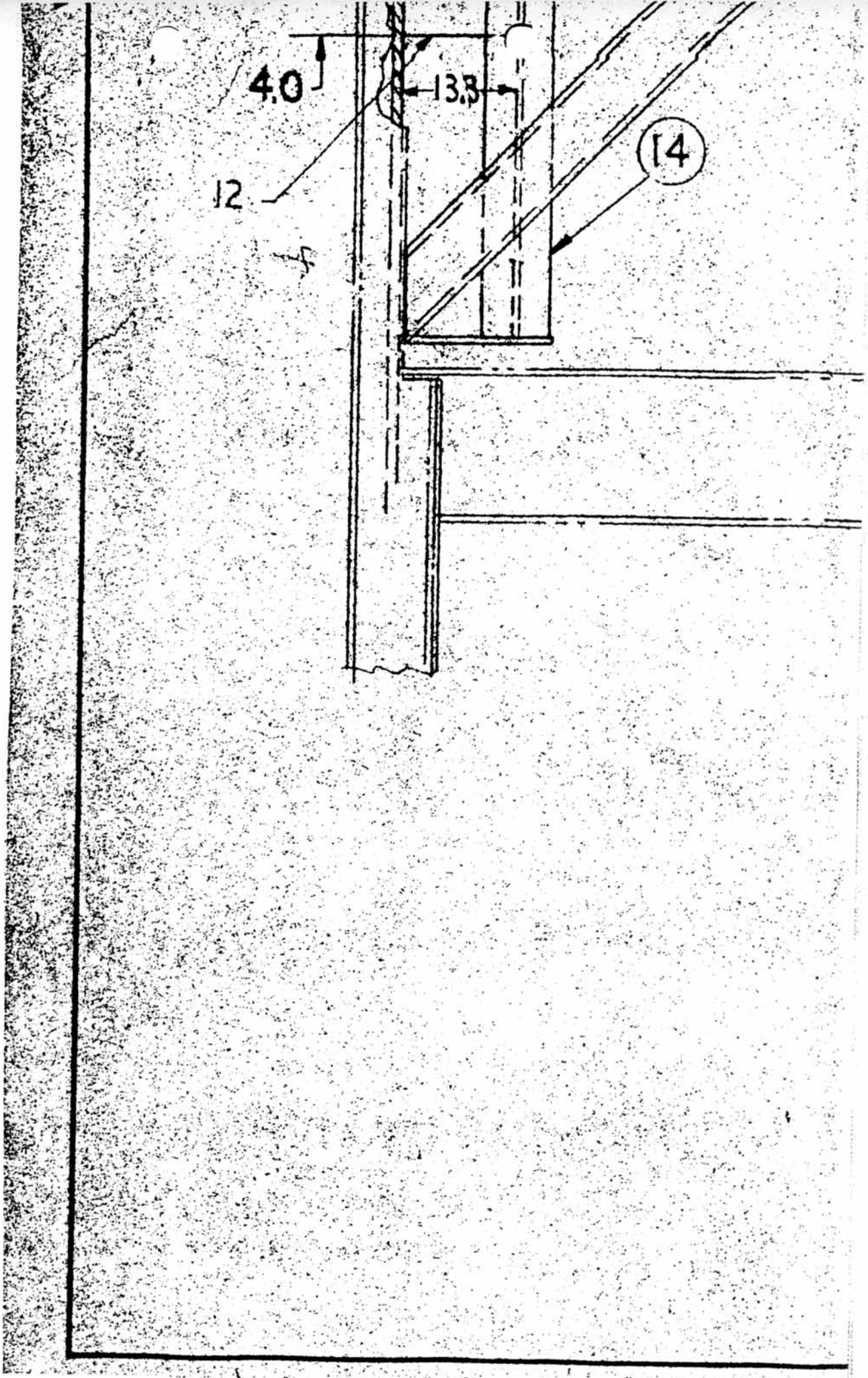
692-02-65-8



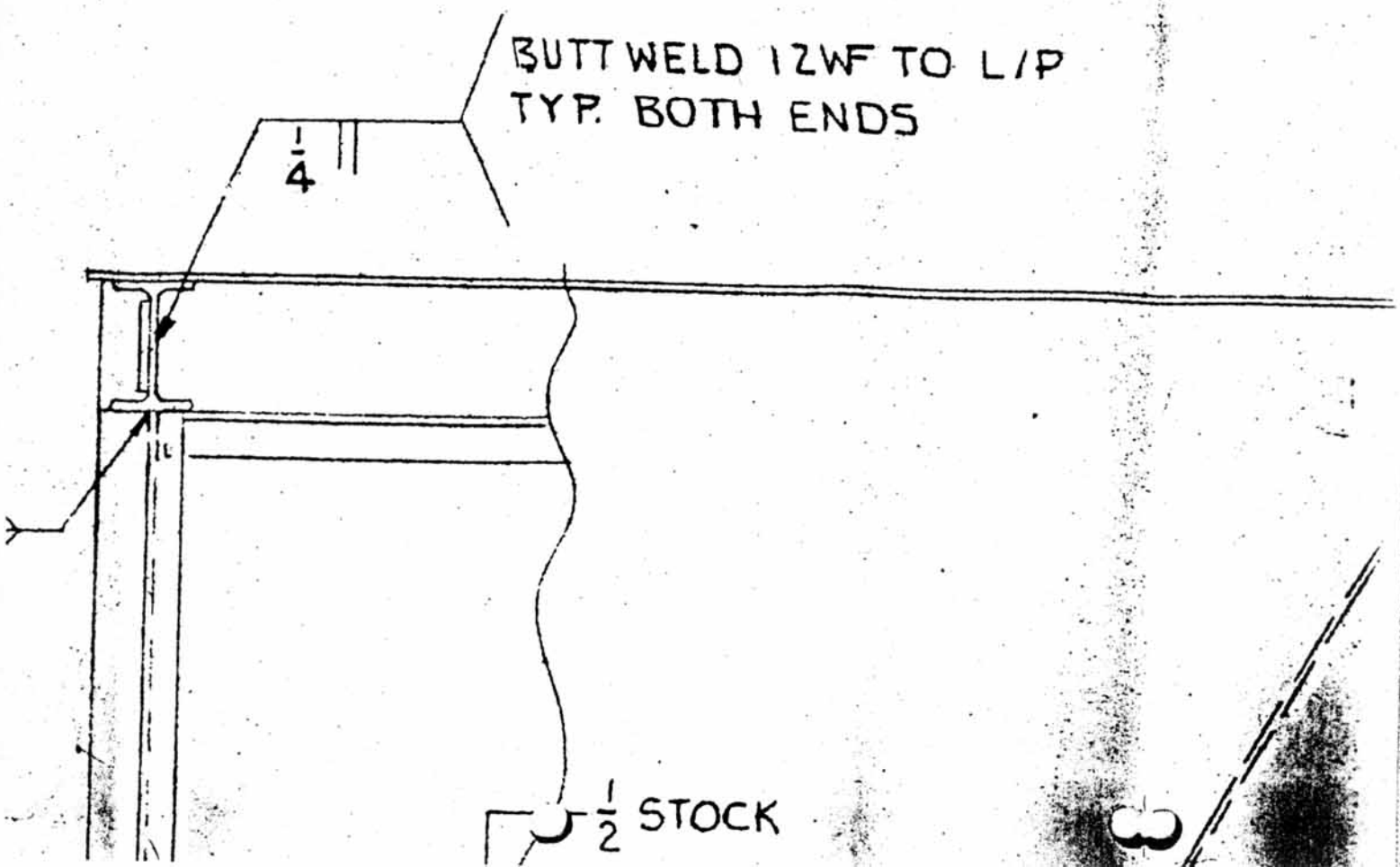
FOR IN DRAW
UNLESS O
DIMENSIOI
TOLERANCI .X .XX ± .1 ± .03 ±
ANGULAR P 0-70902

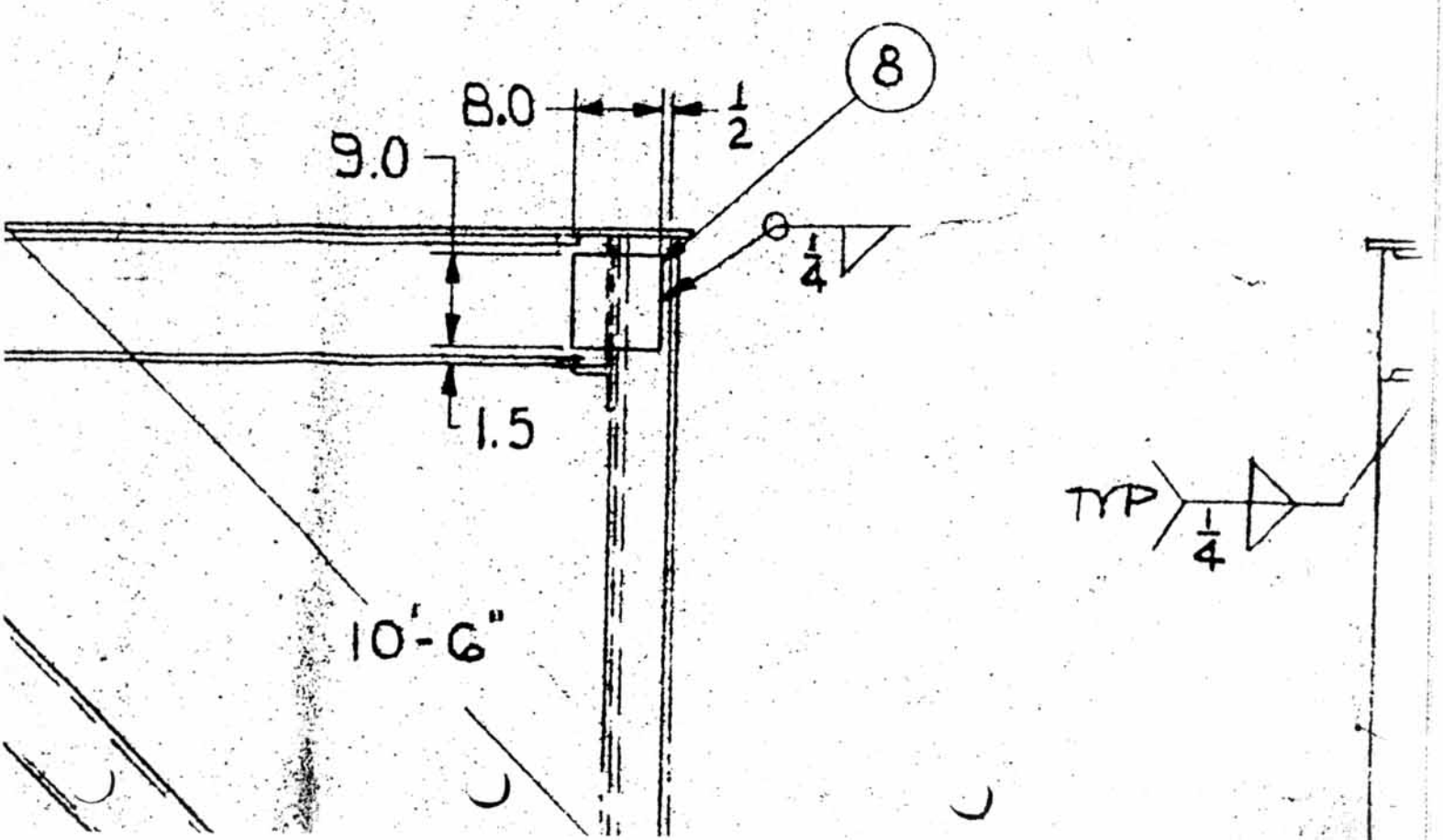


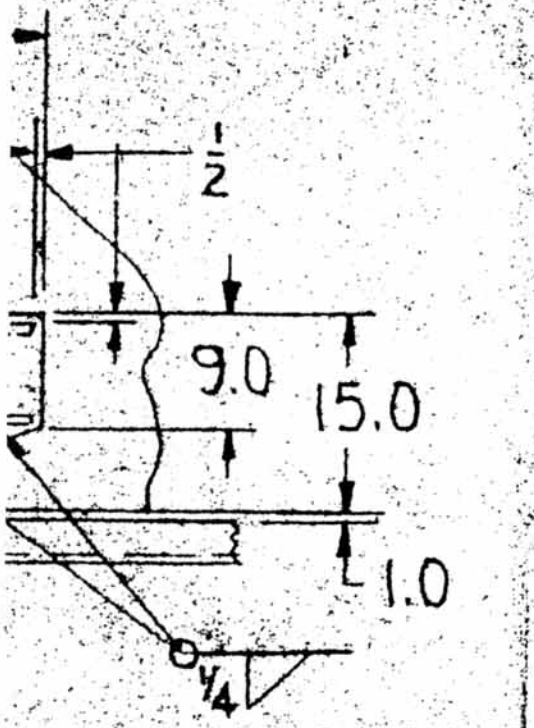
VIEW C-C
SCALE 3/4 - 12


4.0
13.3
12
14

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	NOTES ADDED JRT 3-4-5		


BUTT WELD 12WF TO L/P
TYP. BOTH ENDS
1/4
1/2 STOCK


8.0
1/2
9.0
8
1/4
1.5
10'-6"
TYP
1/4



D-D

8

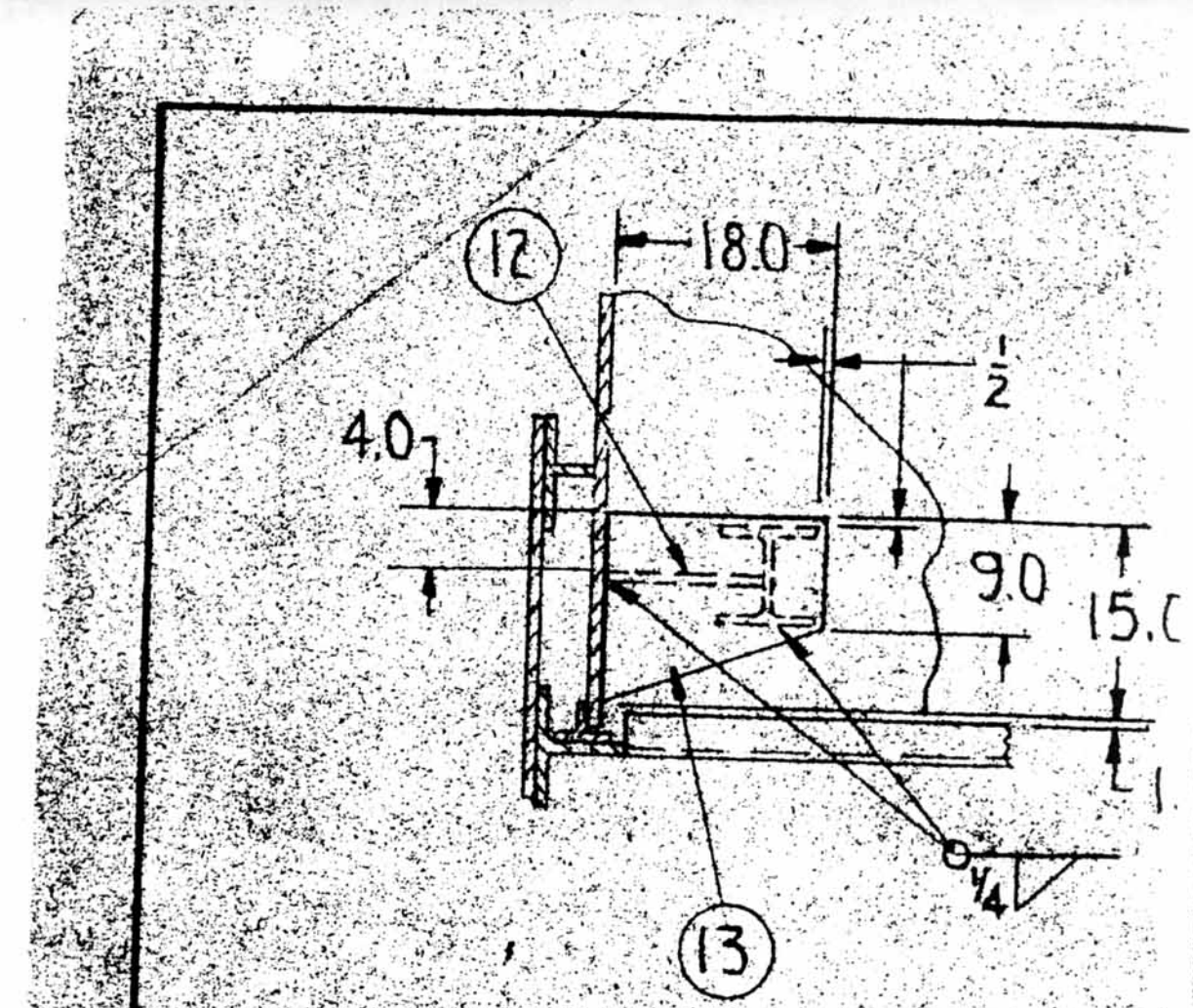
E

AME BUCKET WALL PL

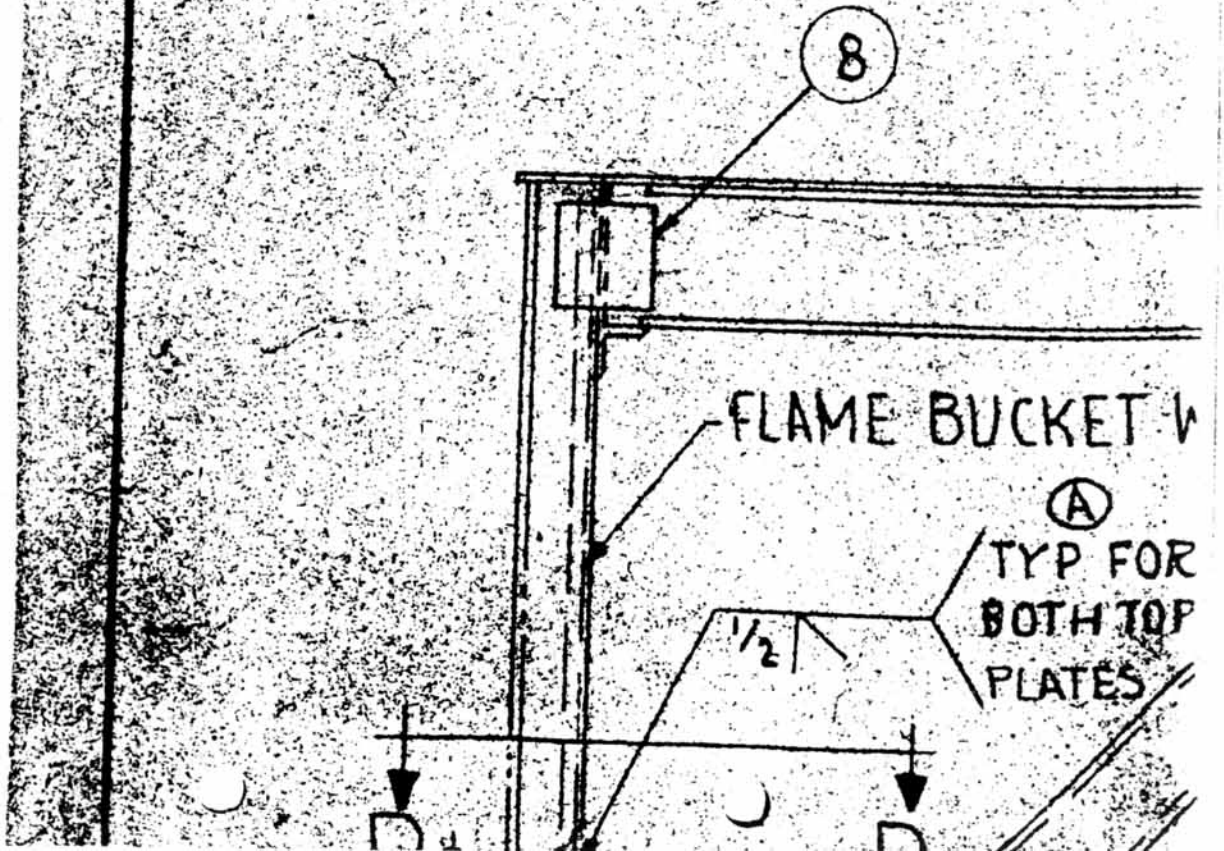
A

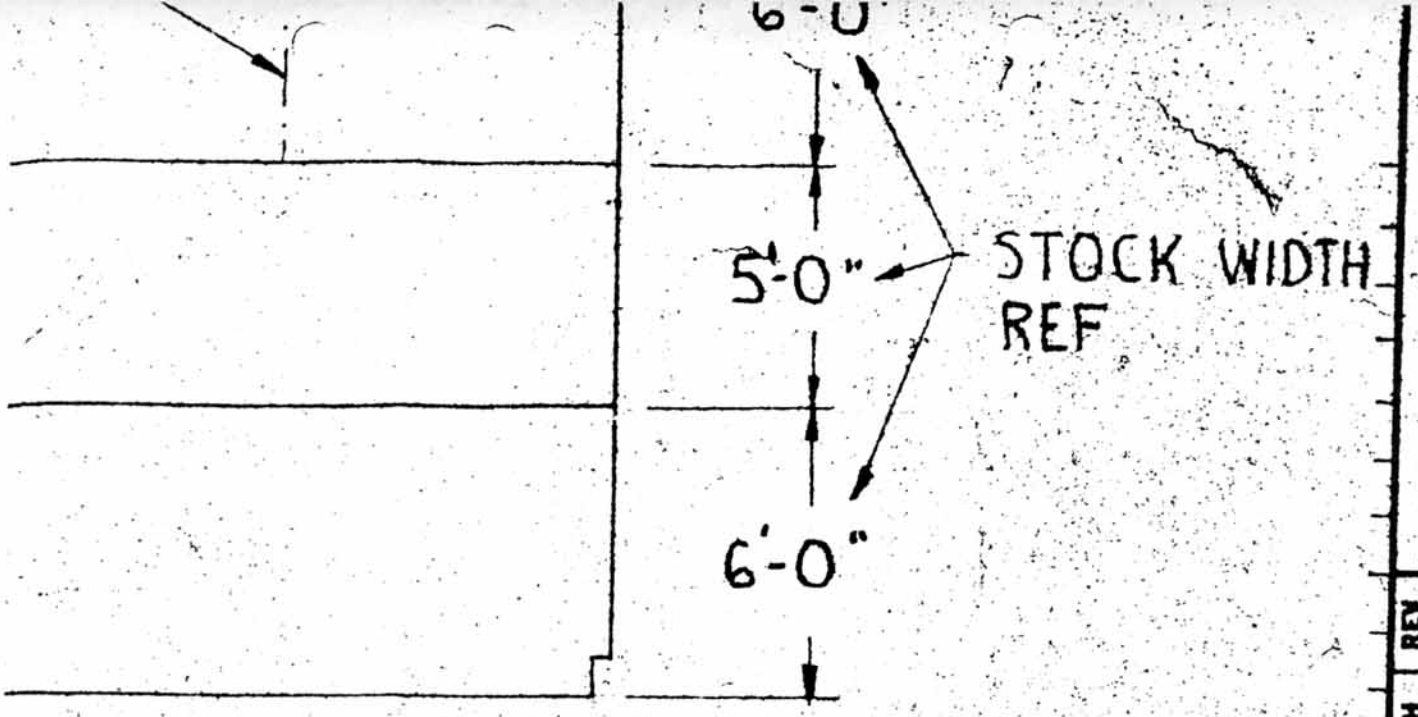
TYP FOR BOTH TOP PLATES

6.0
TYP.


12
18.0
1/2
4.0
9.0
15.0
1/4
13

SECT. D-D


8
FLAME BUCKET W
A
TYP FOR
BOTH TOP
PLATES
1/2



REV

SH

:H OF FLOOR PLATE LAYOUT

5 THRU 1.9 FOR WELD REQMTS
)D MIL-E-22200/1 CLASS 7018

ON	STOCK SIZE	MATERIAL SPECIFICATION	INITIAL COND OR HT TR KSI	FINAL	DWG NO.

LIST OF MATERIALS

IT AND USAGE DATA SEE DOCUMENT SAME NUMBER PREFIXED PL

GENERAL DYNAMICS | ASTRONAUTICS
SAN DIEGO, CALIFORNIA

E. Anderson 2-24-65

Fowler 2-24-65

NO.

L/P STAGING PLATFORM MODIFICATION

ICS APPROVAL

CODE IDENT NO.	SIZE	DRAWING NO.
05342	D	SK 663-8-2

SCALE	RELEASED	SHEET
	3/4" = 12"	3

PACKAGE NO.

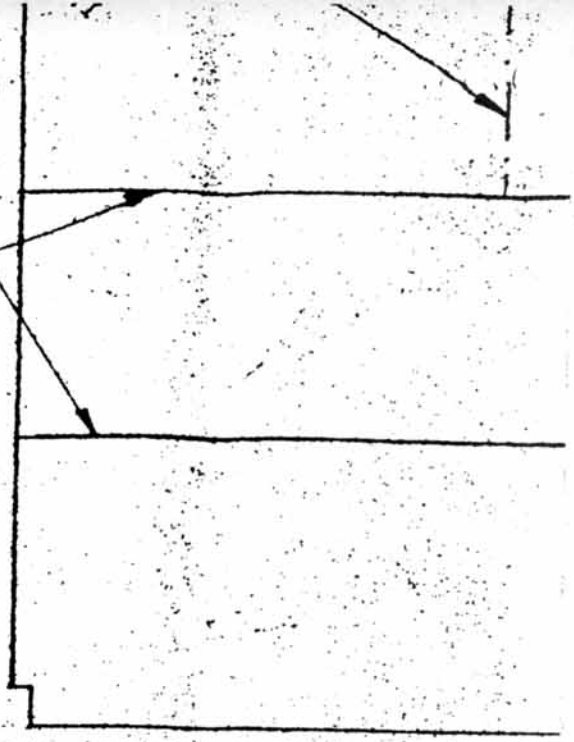
-02-65-8 (PAGE 32) A 2601 (4-63)

DISTR CODE

FIGURE 13-3

145

℄ WEB IF USED



1/4 | 2-12

SKETCH OF FL(

Ⓐ SEE NOTE 1.5 THRU 1.9

NOTE: USE WELD ROD MIL-E-2

L

5"

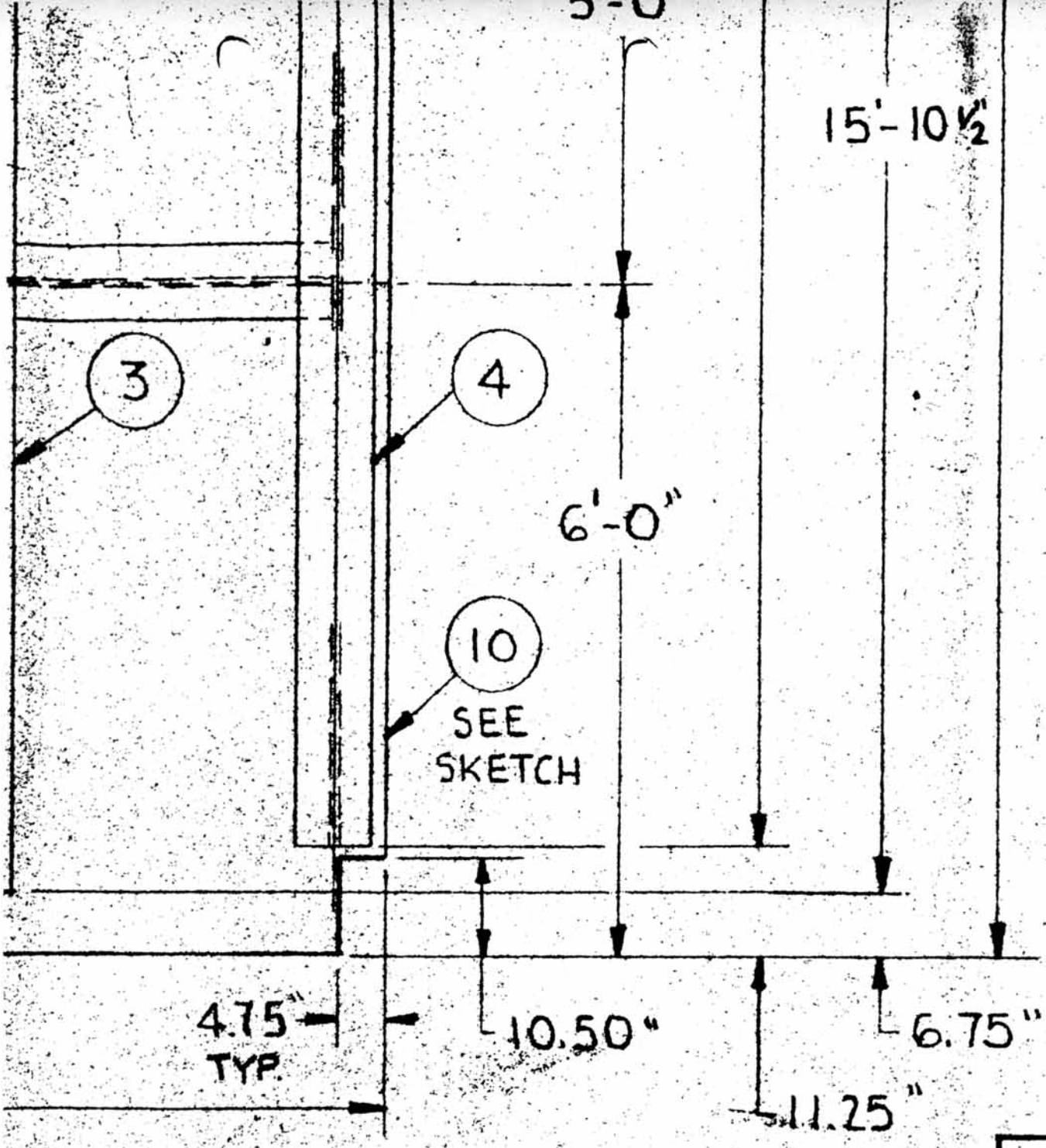
NOTE NO.	FIND NO.	OPP DASH NO.	SHN	DESCRIPTION	STOCK

LIST OF

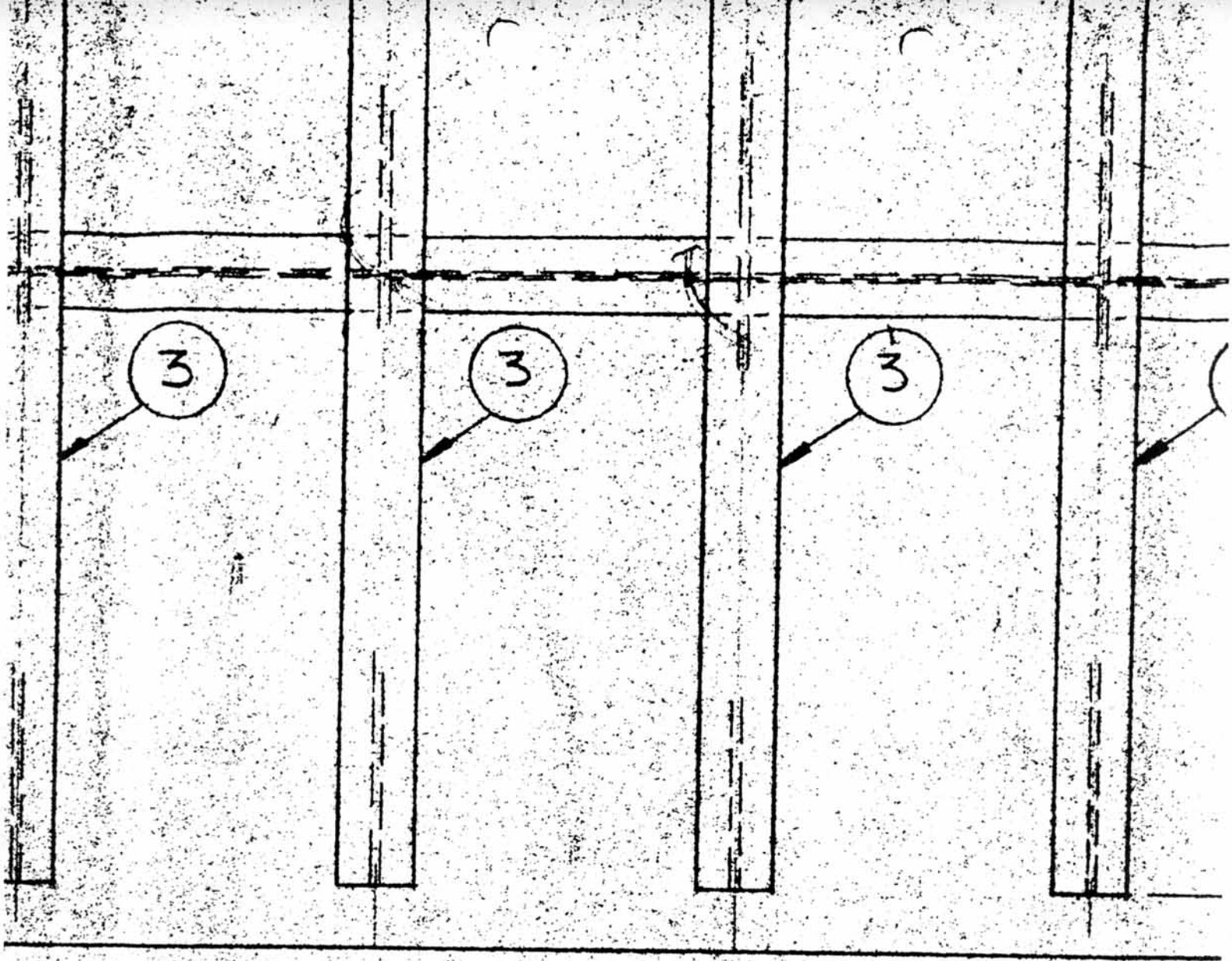
FOR PARTS LIST AND USAGE DATA

FOR INTERPRETATION OF DRAWING SEE 0-70900	INTERCHANGEABILITY REQD ☐	CHECK
UNLESS OTHERWISE SPECIFIED	REPLACEABILITY REQD ☐	STRESS M.R. Anderson 2-24-
DIMENSIONS ARE IN INCHES	BY	GR ENGR
TOLERANCES X .XX .XXX ± .1 ± .03 ± .010 ANGULAR PER 0-70902	ALL MACHINED SURFACES ✓	DESIGN DRAWN R.A. Dowden 2-24
1	MATL	CONTRACT NO.
	TOOLING	ASTRONAUTICS APPROVAL

692-02-65-

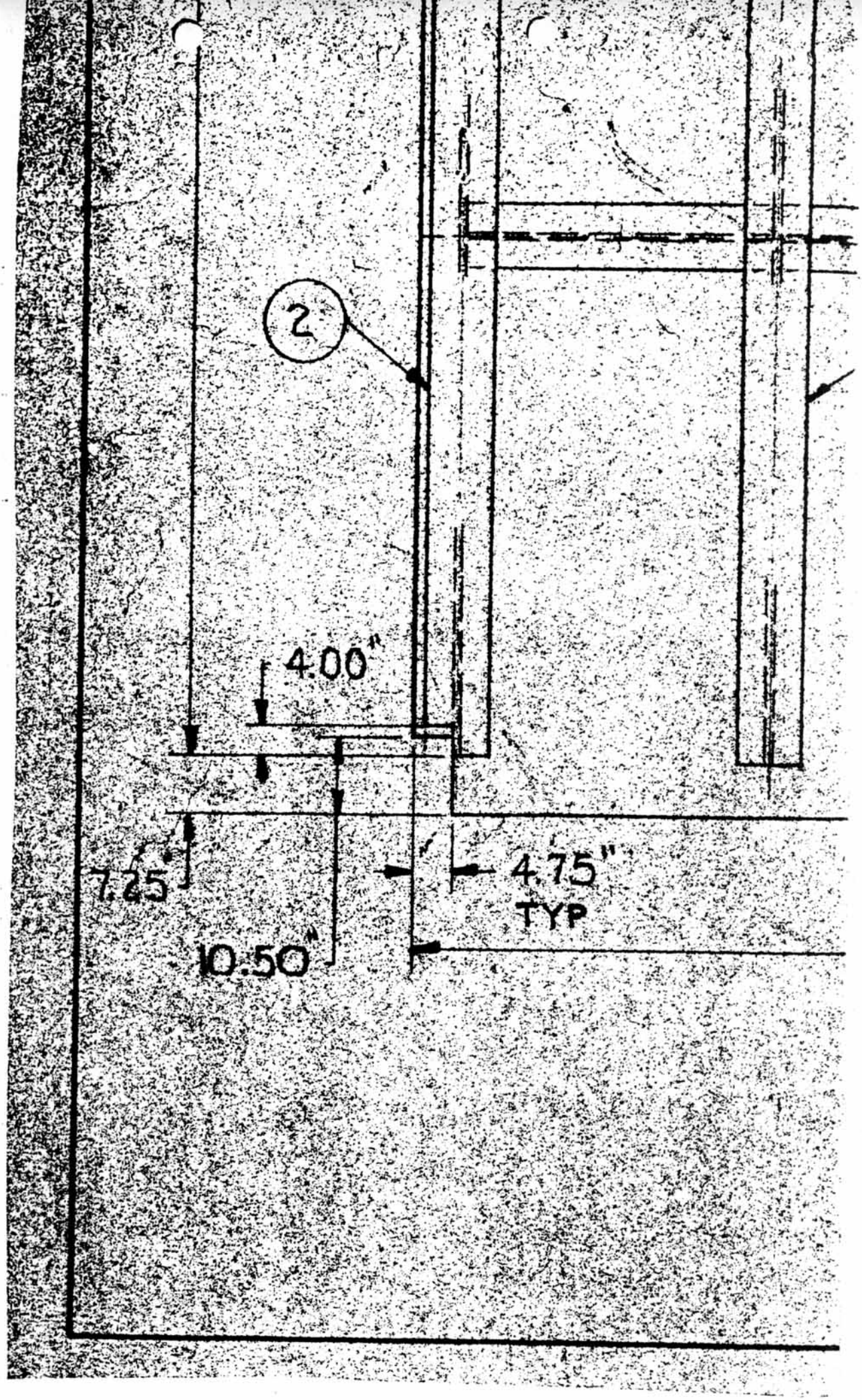


FOR INTERPR	
DRAWING SI	
UNLESS OTHERW	
DIMENSIONS AR	
TOLERANCES	
X	XX XXX
± .1	± .03 ± .010
ANGULAR PER	
0-70902	
1	

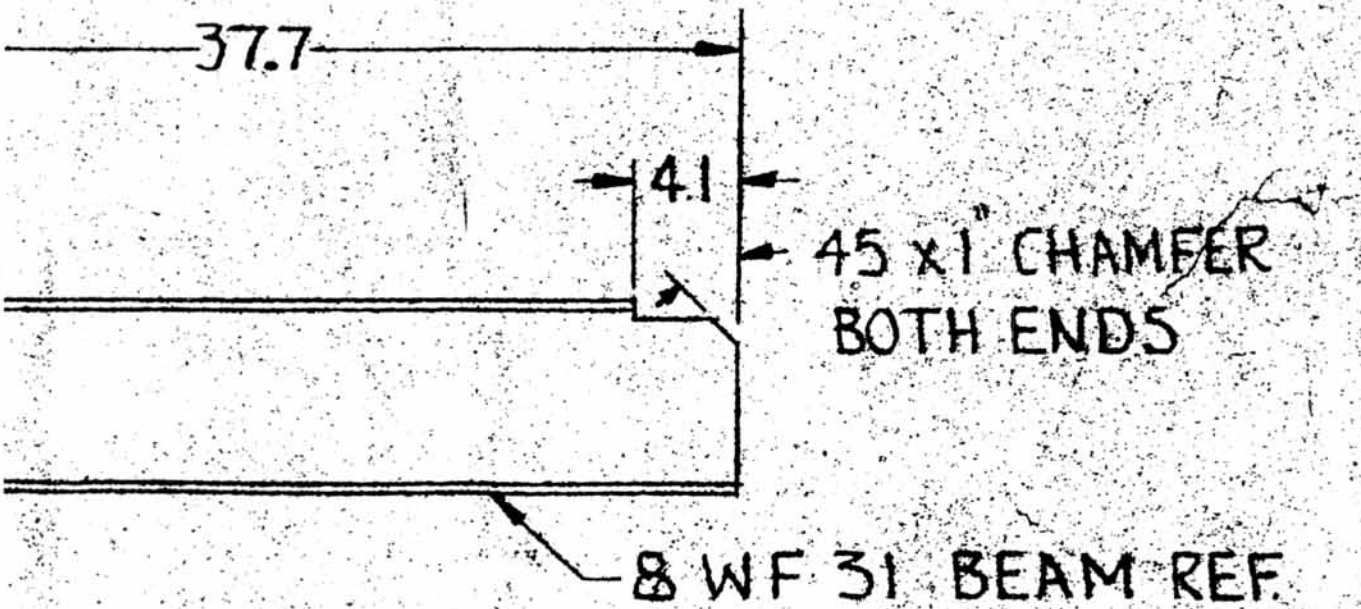


17'-0"

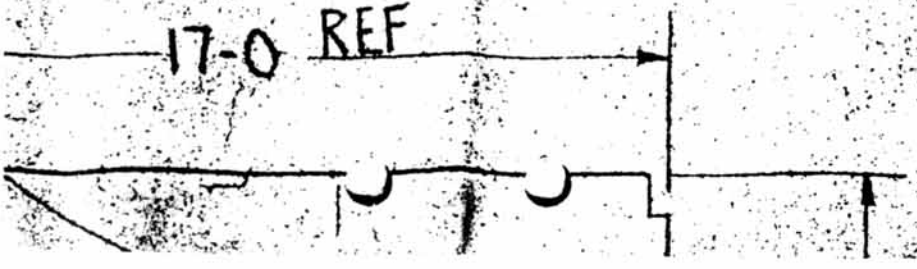
DETAIL OF PLATFORM ASS'Y


2
4.00"
7.25"
10.50"
4.75"
TYP

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	NOTE ADDED ~~DRA~~ 3-4-5		

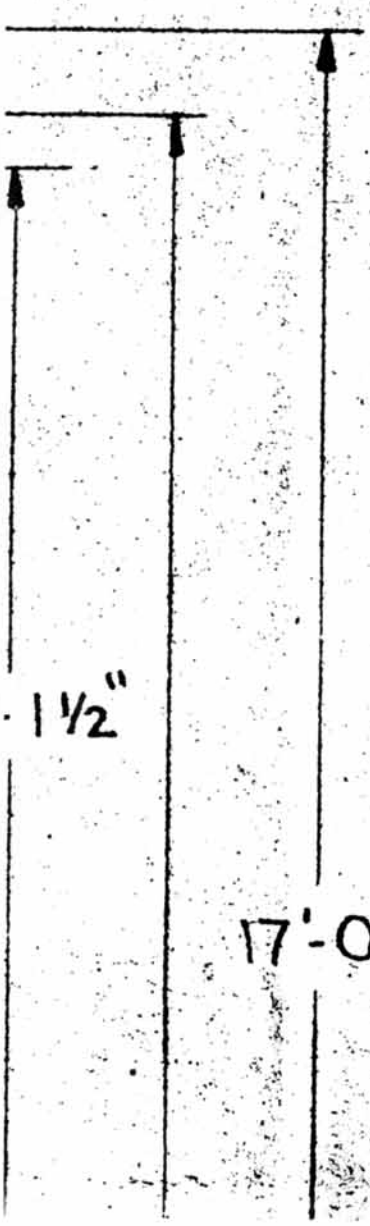


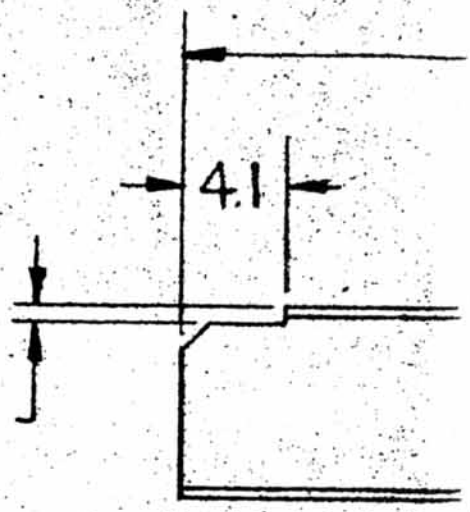
DETAIL (5)
10-REQD



LATE TREAD

E

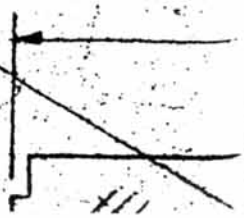


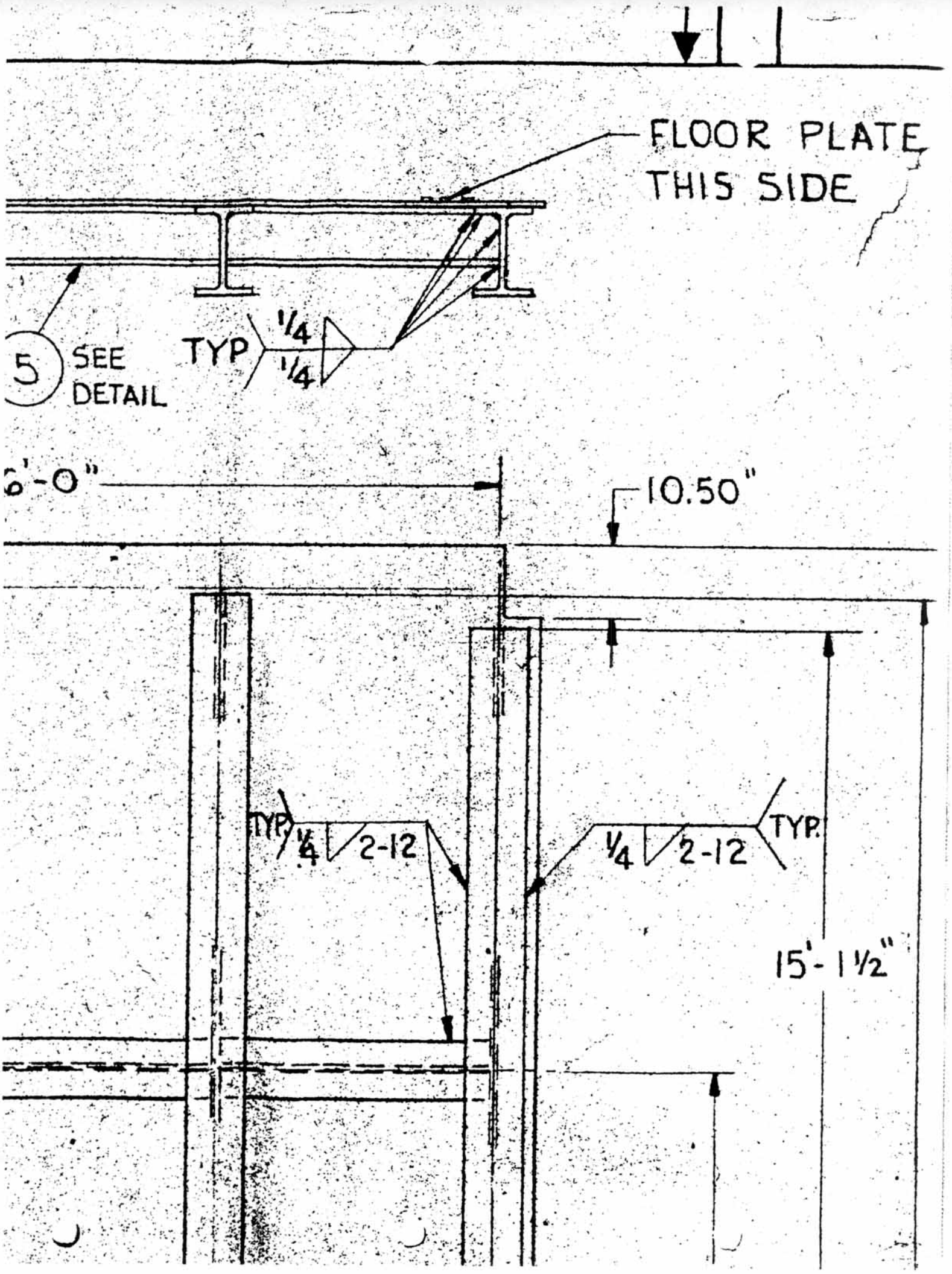


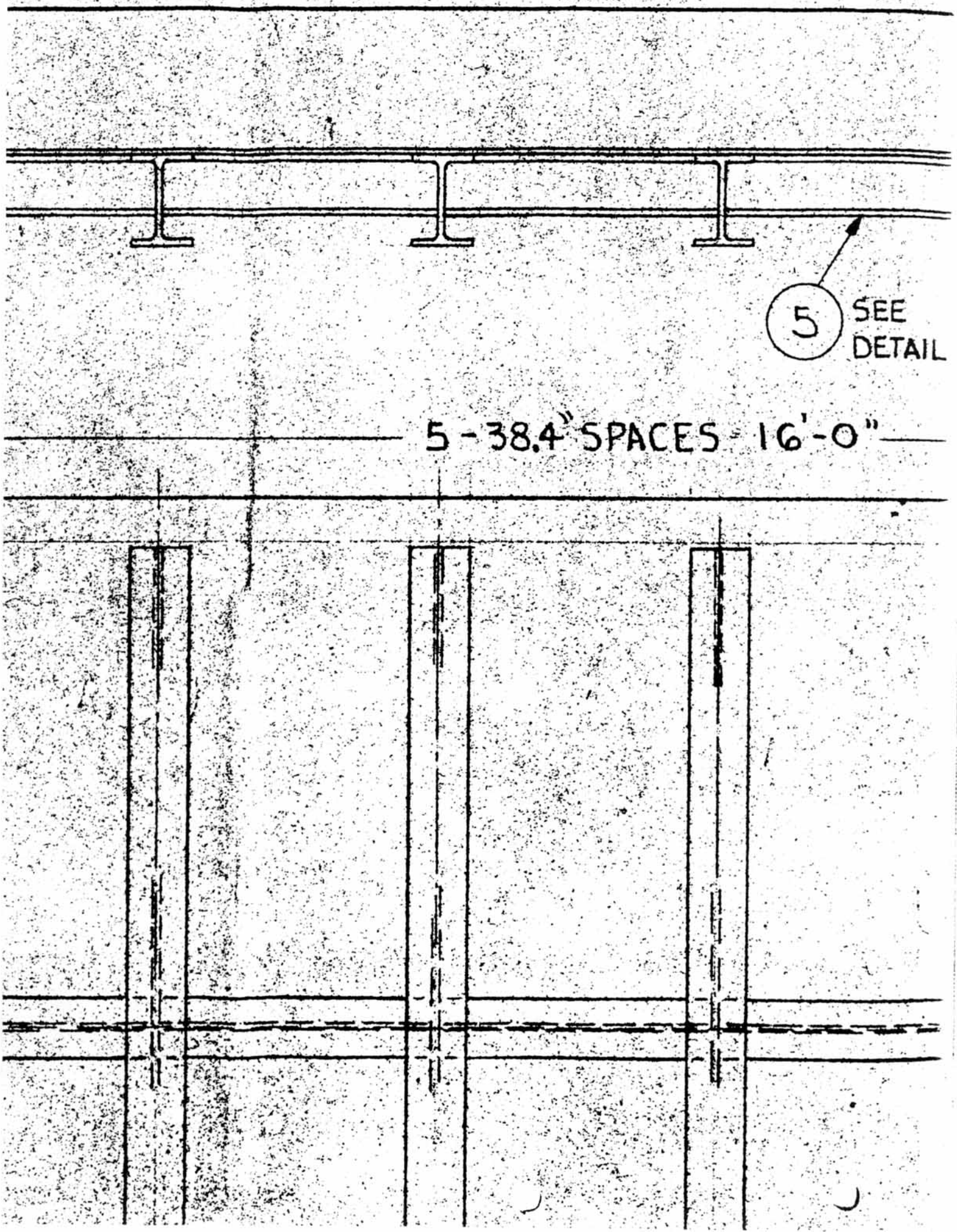
DE

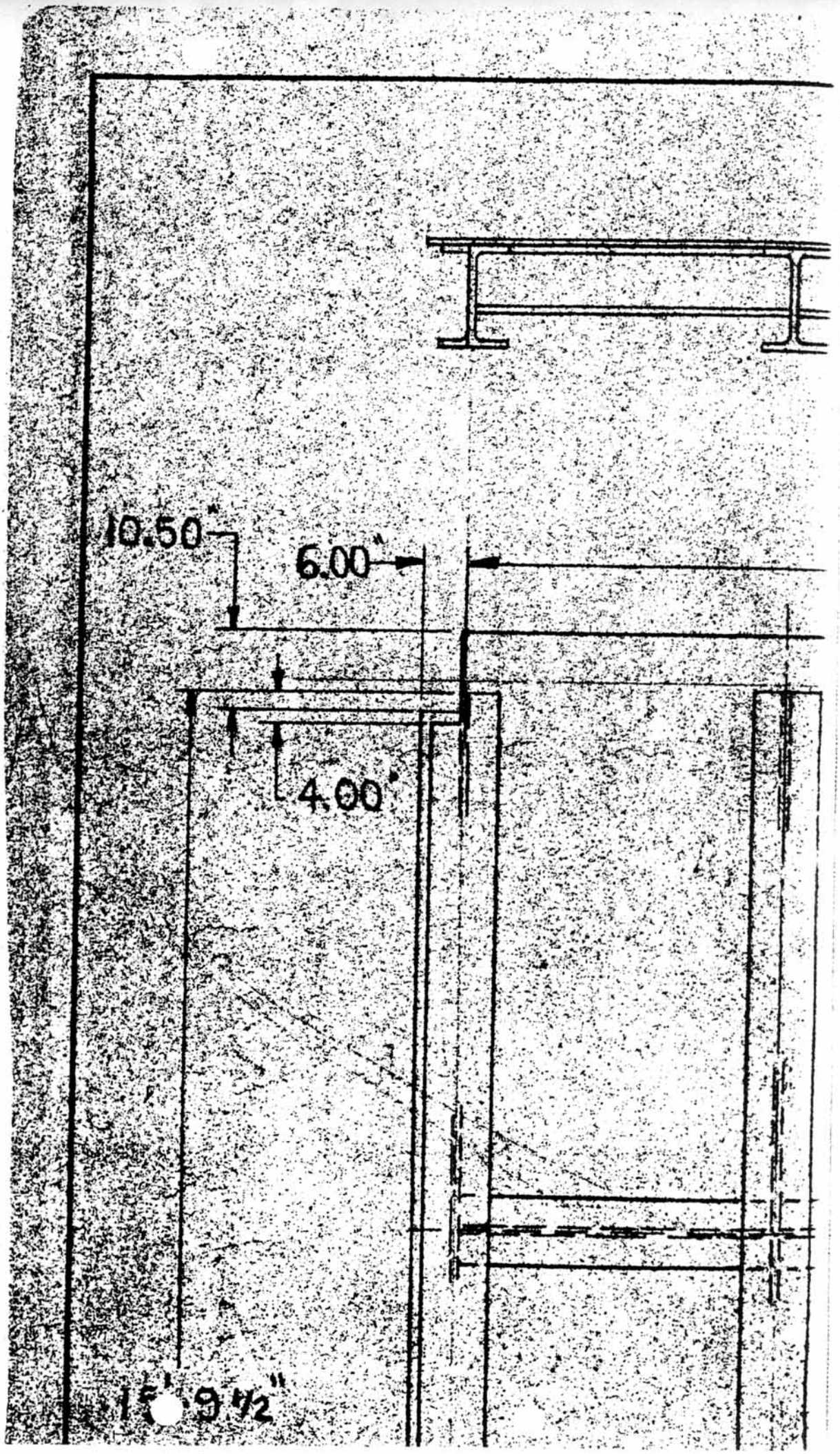
IC

ALTERNATE SPLICES IN FLOOR PLATE SHALL BE LOCATED ON BEAM




FLOOR PLATE
THIS SIDE
5
SEE
DETAIL
TYP
1/4
1/4
6'-0"
10.50"
TYP
1/4
2-12
1/4
2-12
TYP.
15'-1 1/2"


5
SEE
DETAIL
5 - 38.4" SPACES = 16'-0"


10.50"
6.00"
4.00"
15'-9 1/2"