

# Pier 68-70 Shipyard Facility Condition Survey Mechanical Site Utilities



Prepared for:



Prepared by:



**A Joint Venture**

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M&N Job Number: 9590-06

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# 1. Executive Summary

The purpose of this report is to assess the capital condition of the existing on-site Mechanical utility systems performed by HRA Consulting Engineers. The Mechanical systems evaluated by HRA include: compressed air, steam distribution system, welding gas (oxygen-acetylene) distribution system and natural gas; The scope of assessment includes portions of Pier 70 previously operated by BAE Systems and more recently operated by Puglia Engineering, Inc. for Ship Maintenance & Repair activities and owned by the Port of San Francisco (SF Port). The assessment of existing conditions conducted by HRA included field investigations, interviews with former shipyard staff, and review of existing record drawings and reports. Equipment and service testing was not included in the scope of this assessment, all assessment is based on visual observation only.

## Mechanical Site Utilities Evaluated in the Report

- A) Compressed Air Distribution System
- B) Steam Distribution System
- C) Natural Gas Distribution System
- D) Welding Gas (Oxygen-Acetylene) Distribution System
- E) Site Pumps

## 2. Introduction

### 2.1 Purpose and Scope

The purpose of this report is to provide a general evaluation of the existing site's Mechanical utility systems, note deficiencies in the systems, and provide an assessment of its capabilities to support the activities of a fully operational shipyard. The purpose is also to inform future potential ship repair operators, interested in leasing the facility, of potential repairs and rehabilitation required to the system to bring the shipyard up to operational standards.

### 2.2 Methodology

Mechanical field surveys were conducted by HRA on June 21, 28, 29, and July 18, 2017. All HRA field surveys were visual only. No testing was performed as part of this report.

### 2.3. Condition Assessment

The Condition Assessment includes photos taken of existing mechanical utility systems and a general assessment of system's condition, reliability, and operability based on visual observations and discussions with former shipyard employees. There is also reference to Appendices that contain historic site plans of the various mechanical utility systems.

### 3. Mechanical Site Utilities

#### A. Compressed Air Distribution System

##### Condition Assessment

The site compressed air distribution system consists of two functional air compressors and distribution piping throughout the yard. The system is primarily used to provide air for air-powered tools, painting and blasting equipment, and other miscellaneous equipment. The only remaining in-service compressors are located in Building 107. These two compressors are labeled Compressor No. 1 & 2 on the 1982 record drawing of the compressed air system (Appendix B1). Compressors No. 3 & 4 in Building 103 were located and determined to be out of service. The historic compressors in Building 102 are also out of service and are no longer in the Shipyard's lease area. Based on interviews with former shipyard staff the two remaining compressors are adequate for the yard's needs.

Compressed air piping runs above ground, in trenches, and under decks of piers and wharfs. Based on the 1945 utility plans (Appendix B2) some of the air piping between the various buildings on land may predate 1945. The piping over the piers and wharfs is likely from when these structures were built, between the 1950's and 1970's. Within the current boundary of the shipyard lease the 1982 record drawing appears to be fairly accurate. It is assumed that air lines that are now outside the shipyard lease were capped or otherwise taken out of service.

The active compressor station in Building 107 feeds Buildings 36, 105, 108, 109, 111 and 251 via service trenches. The main 8" header to the over-water structures and dry docks runs in a service trench until it reaches a bulkhead wall, and then is primarily routed under the pier decks.

Site visit and interviews with former shipyard staff indicate the following: Cooling Tower No. 1 is operational and Cooling Tower No. 2 is non-operational, existing compressors in Building 107 work adequately and are reliable. Compressed air system is already at or nearing its useful service life and has several small leaks throughout.

Currently there is compressed air service at the following locations, with various hose hookups for tools and manifolds as well as connections to fixed equipment.

- Drydock No. 2
- Drydock Eureka
- High Water Platform
- Pier 3
- Pier 4
- Building 36 - Machine Shop
- Building 105 - Pipe and Plate Shop
- Building 108 - Carpenter Shop
- Building 109 - Tool Room and Paint Shop
- Building 111 - Administration Building
- Building 251 - Blast Booth

**Compressors No. 1 and No. 2 located in Building 107**

Building 107 has two 125 PSI air compressors and one air dryer that are operational. The piping runs in service trench. The compressors are water cooled and served by cooling tower No. 1. The Compressor Station Building 107 feeds Buildings 36, 105, 108, 109, 111 and 251 via service trenches.



Figure 1. Motor Nameplate

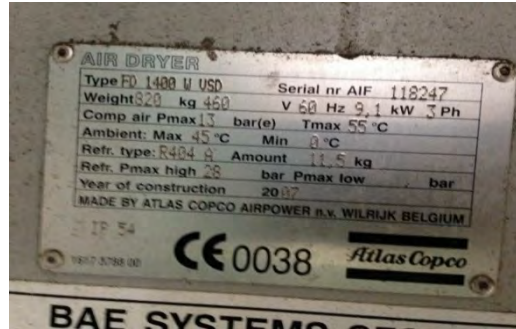


Figure 2. Air Dryer Nameplate

Building 107 has two cooling towers No. 1 and No. 2. Cooling tower No. 1 which serves compressors in Building 107 is operational. Cooling Tower No. 2 which serves compressors in Building 103 is non-operational. Each cooling tower has a 5 HP pump.



Figure 3. Cooling Towers in Building 107

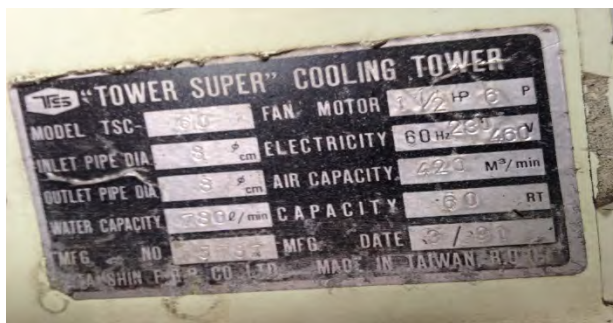


Figure 4. Cooling Tower Nameplate



Figure 5. Cooling Tower Pump Nameplate

**Compressors No. 3 and No. 4 located in Building 103**

Building 103 has two 125 PSI air compressors and one air dryer that are that have been non-operational since the 1980's and are out of service. These compressors were served by Cooling Tower No. 2 located in the adjacent Building 107. Cooling Tower No. 2 is also non-operational due to its own mechanical problems according to shipyard staff.



Figure 6. Compressors located in building 103



Figure 7. Compressor Motor Nameplate



Figure 8. Air Dryer Nameplate

**Building 36 – Machine Shop**

Main compressed air service line to the Building 36 Machine Shop is 2"



Figure 9. Compressed air and natural gas distribution



Figure 10. Compressed air and natural gas distribution



Figure 11. Compressed air main service valve



**Building 105 – Forging/Machine Shop**

Main compressed air service line is 2". Compressed air connections are available throughout the building.



Figure 12. Compressed air connections

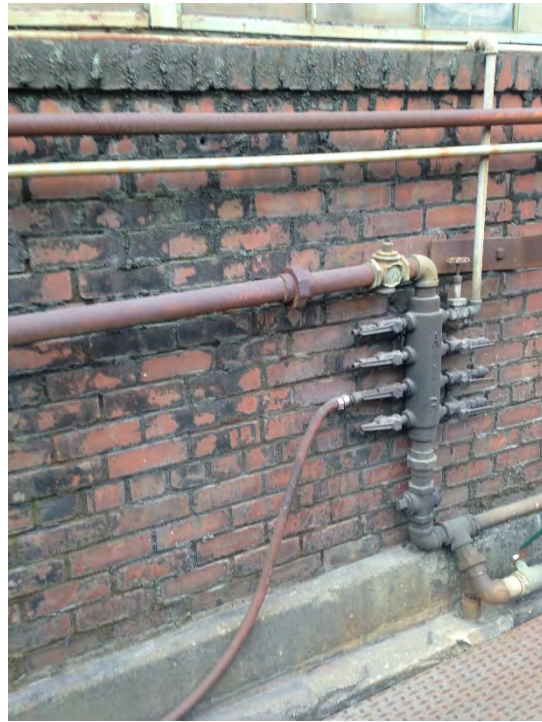


Figure 13. Exterior of building compressed air distribution system



Figure 14. Interior compressed air 2" service size



Figure 15. Exterior compressed air 2" service size

**Building 108 – Carpentry Shop & Storage**

Main compressed air service line is 2".



Figure 16. 2" compressed air service located at the exterior of building



Figure 17. 2" compressed air service valve located on 2<sup>nd</sup> floor adjacent to stairs

**Building 109 – Tool Room/Paint Booth/Sheet Metal**

Main compressed air service line is 6". Compressed air connections are available throughout the building.



Figure 18. Compressed air 6" service size valve



Figure 19. Compressed air 6" service size valve



Figure 20. Compressed air 6" service size valve



Figure 21 Compressed air 6" service size valve

**Building 111 – Administration Building**

Main compressed air service line is 2".



Figure 22. Compressed air 2" service size

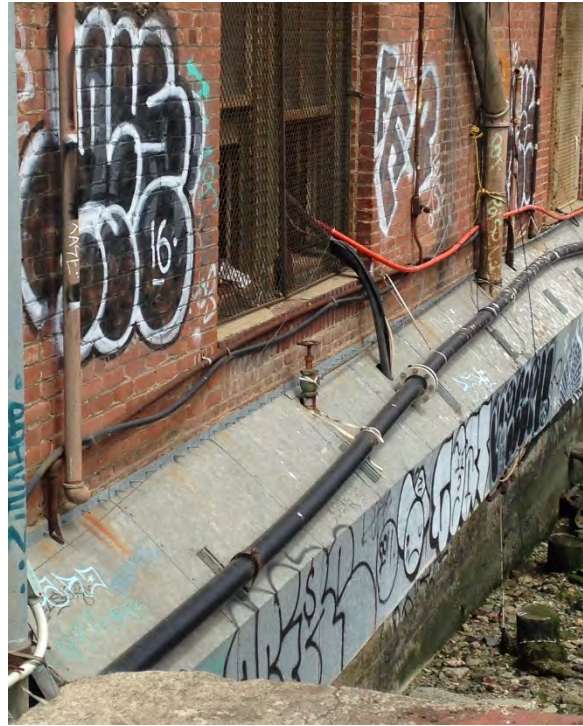


Figure 23. Compressed air 2" service valve behind building

**Building 251 – Blast Booth**

Main compressed air service line is 4" ..



*Figure 24. Compressed air 4" service valve size*



*Figure 25. Compressed air distribution system*

## B. Steam Distribution System

### Condition Assessment

The Site Steam System has been out of service since 1989 according to former shipyard employees. There is no steam powered equipment or heating in the yard. When ship repair and maintenance activities require steam service the shipyard typically rents portable boilers. The yard has also purchased a new skid mounted natural gas powered boiler manufactured by Superior Boiler Co, which is on site but not installed or connected to gas piping.

Per Mechanical Appendix C, Steam Site Plan dated 1982 there is 1.5" steam service to each building. The location of the 1.5" steam service in Building 102, and 105 could not be identified.

### Building 103 – Steam Powerhouse No. 2

Building 103 has two boilers for the steam system that are non-operational since 1989 and have been abandoned. Steam Station in Building 103 feeds Buildings 36, 102 and 105 via service trench.



Figure 26. Steam system boiler nameplate



Figure 27. Steam system boilers

**Building 36 – Machine Shop**

Main steam service line is 1.5". Non-operational since 1989.



*Figure 28. Steam service 1.5" service size*

## C. Natural Gas Distribution System

### Condition Assessment

The site natural gas service enters the yard through a 4" branch line off a header running along 20<sup>th</sup> Street. The PG&E gas meter for the yard is located behind Building 105. The meter number is 245G-40. Immediately after the meter, there is a branch line to the out-of-service boilers in Building 103 that is not shown on the 1977 plan. The main natural gas line enters the yard through Building 103 and branches out to service the rest of the yard.

During the on-site assessment, gas service was shut off at the meter. Yard staff stated that the gas system was shut off for safety and to minimize gas bills while the yard is not operational. During normal operations, the yard is not heavily dependent on natural gas service. The main use of natural gas is to power rental boilers to generate steam for certain ship repair and maintenance work. There are also a few gas-powered water heaters that service some buildings. None of the occupied buildings use natural gas for heating, and gas heaters in various shops have been out of service for many years according to former shipyard staff.

Currently there is natural gas service at the following locations:

- High Water Platform
- Pier 4
- Building 36 - Machine Shop
- Building 103 - Steam Plant - Boilers Permanently Out of Service
- Building 105 - Pipe and Plate Shop
- Building 109 - Tool Room and Paint Shop
- Building 111 - Administration Building

The shipyard site was formerly served by three separate gas services according to the 1977 drawings (Appendix D). The meter immediately behind Building 103 used to serve the boilers in Buildings 103, but has been re-purposed to serve areas outside the shipyard. There is now a branch line to the boilers behind the yard's remaining meter as previously mentioned. The drawings also show a meter near Building 102 that connected to the yard's natural gas distribution system, but this meter was not field verified.



**Behind Building 105 – PG&E Gas Meter**

PG&E gas meter behind Building 105 feeds one 4" pipe to serve the two steam boilers and one 4" pipe stubbed-out behind Building 103. PG&E gas meter feeds Buildings 36, 103, 105, 109 and 111.



Figure 29. PG&E gas meter 245G-40, primary gas service to the Shipyard

### Behind Building 103 – PG&E Gas Meter

PG&E gas meter behind Building 103 used to serve the Steam Plant directly, but piping was re-routed to another user outside of the shipyard. The steam plant is now served by the branch line off of the 4" meter.



Figure 30. PG&E gas meter behind Building 103

**Building 36 – Machine Shop**

Main natural gas service line is 1.5"



*Figure 31. Natural gas 1.5" service size*



*Figure 32. Natural gas 1.5" service size*

**Building 103 – Steam Powerhouse No. 2**

Main natural gas service line to the boilers is 4". Boilers are non-operational and natural gas is shut off to the boilers.



Figure 33. Natural gas Boiler # 1 - 4" service size



Figure 34. Natural gas Boiler # 2 - 4" service size



Figure 35. Boiler # 1 natural gas 2" distribution to each chamber

**Building 105 – Forging/Machine Shop**

Main natural gas service line is 2". Unit heaters are non-operational.



*Figure 36. Building 105 gas heater*



*Figure 37. Natural gas 2" service size from 4" main*

### Building 109 - Tool Room/Paint Booth/Sheet Metal

Per the more recent 1977 site plan in Appendix D, Building 109 has natural gas service via 1.5" branch line from Building 52. However it also appears that natural gas lines shown in the 1945 site plan in Appendix E and assumed removed in the 1977 drawings are still present in the building. Natural gas connections are available throughout the building but functionality was not verified. Recommend additional investigation before restoring natural gas service to Building 109.



Figure 38. Natural gas 1/2" regulator, may be main service



Figure 39. Location of regulator in Figure 38



Figure 40. Natural gas distribution piping

**Building 111 – Administration Building**

Natural gas service via ½" line.



*Figure 41. Natural gas ½" service size (behind Building 111)*

## **D. Welding Gas (Oxygen/Acetylene) Distribution System**

### **Condition Assessment**

The site welding gas distribution system consists of vendor maintained tanks and shipyard maintained distribution piping. Currently, oxygen is supplied by Matheson Tri-Gas in to a single 1,625-gallon tank located west of Building 38. While the record drawings and field piping are labeled “acetylene”, propylene is currently used for fuel gas, and is supplied by Western International in to four tanks south of Building 38. Tanks appear to be 1,000 gallons each but labels were not located during site visit.

At the time of the site assessment the welding gas system was disconnected and the fuel gas vendor had been requested to remove tanks from the yard. This was purely for safety reasons while the yard was shut down. Prior to disconnecting the welding gas system was adequate and worked reliably according to shipyard staff.

Currently there is welding gas service at the following locations:

- Drydock No. 2
- Drydock Eureka
- High Water Platform
- Pier 3
- Pier 4
- Building 105 - Pipe and Plate Shop

The 1982 drawing show a welding gas station north of Building 36 and welding gas service to Building 36, 105 and 109. That welding gas station to Building 36 and 109 no longer exists. These buildings were field verified to have disconnected welding gas piping. Restoring welding gas service to Building 36 and 109 will require verifying that there is piping from the current welding gas tanks to these buildings and that the piping is in serviceable condition.



### Adjacent to Building 38 – Oxygen Tank

1625-gallon oxygen tank is located west of Building 38.



Figure 42. Oxygen tank



Figure 43. Oxygen tank nameplate

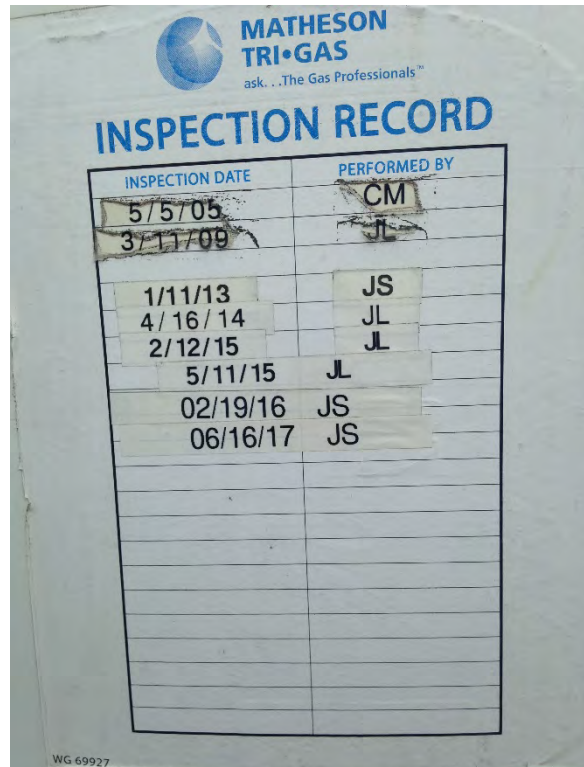


Figure 44. Oxygen tank inspection record

**Adjacent to Building 38 – Acetylene Tank**

Acetylene was replaced with propylene in 1989. 4 propylene tanks are located south of Building 38.



Figure 44. Propylene tanks



Figure 45. Propylene tanks

**Building 36 – Machine Shop**

1" service size. Oxygen/Acetylene Welding gas connections are supplied throughout the building. The Oxygen/Acetylene Welding gas is disconnected, time of disconnect is unknown.



*Figure 46. Oxygen/Acetylene Welding gas 1" service size*

**Building 105 – Forging/Machine Shop**

2" service size. Oxygen/Acetylene Welding gas connections are supplied throughout the building. The Oxygen/Acetylene Welding gas is disconnected in Building 105, date of disconnect is unknown.



*Figure 47. Welding gas (Oxygen/Acetylene) disconnect*



*Figure 48. Oxygen/Acetylene Welding gas service size is 2"*

**Building 109 – Tool Room/Paint Booth/Sheet Metal**

Oxygen/Acetylene Welding gas 1" service size. Mechanical Appendix E indicated the Oxygen/Acetylene distribution to building. The Oxygen/Acetylene Welding gas is disconnected in Building 109, date of disconnect is unknown.



*Figure 49. Disconnected Oxygen/Acetylene 1" service size*

## **E. Site Pumps**

These pumps are part of the Civil Site Utilities and evaluation of these systems is in a separate report by AGS. HRA evaluated the following individual pumps:

1. Sewer Pumps (2 CHT pumps)
  - CHT Pump #1 (CHTP1) - southeast of Building 109
  - CHT Pump #2 (CHTP2) - underneath wharf at Building 127
2. Fresh Water (Booster pump)
3. Salt Water (2 salt water pumps, 2 salt water cooling pump)
  - Pier 3 Salt Water Pump (P3SWP)
  - Pier 4 Salt Water Pump (P4SWP)
  - Salt Water Auxiliary Cooling Pump #1 (SWACP1) - east pump
  - Salt Water Cooling Pump #2 (SWACP1) - west pump

### **Condition Assessment**

All accessible site pumps were installed in 2002. Existing site pump systems have another 10-15 years useful service life.

CHT sewer pumps near Buildings 109 and 127 were not accessible at HRA site visits.

**Site Pumps – Sewer Pumps (2 CHT Pumps)**

- CHT Pump #1 (CHTP1) Southeast of Building 109 - Two pumps, one pump works well, the other requires service. (Located underneath the wharf. HRA was unable to gain access to and inspect this pump)
- CHT Pump #2 (CHTP2) underneath wharf at Building 127 – (Located underneath the wharf. HRA was unable to gain access to and inspect this pump)



*Figure 50. Sewer system CHT Pump located underneath the wharf*

**Site Pumps – Fresh Water Booster Pump**

- Fresh Water Booster Pump – Installed in 2002.



Figure 51. 75 HP Fresh Water Booster Pump



Figure 52. 75 HP Fresh Water Booster Pump nameplate (2 pictures)



**Site Pumps – Salt Water (2 salt water fire pumps, 2 salt water cooling pumps)**

- Pier 3 Salt Water Pump (P3SWP) - Split-case pump replaced previous deep well pump – Installed in 2002
- Pier 4 Salt Water Pump (P4SWP)-Split-case pump replaced previous deep well pump - Installed in 2002
- Salt Water Auxiliary Cooling Pump #1 (SWACP1) - east pump- Installed in 2002
- Salt Water Cooling Pump #2 (SWACP1) - west pump- Installed in 2002



Figure 53. 250 HP Pier 3 Salt Water Pump (P3SWP)



Figure 54. 250 HP Pier 3 Salt Water Pump (P3SWP) nameplates (2 pictures)



Figure 55. 100 HP Pier 4 Salt Water Pump (P4SWP)



Figure 56. 125 HP Salt Water Auxiliary Cooling Pump #1 (SWACP1) - east pump- Installed in 2002  
125 HP Salt Water Cooling Pump #2 (SWACP1) - west pump- Installed in 2002

## Appendices

# Appendix A

## Pier 68-70 Mechanical Site Utilities: Location, Capacity, Age and Manufacturer

### Compressed Air Distribution System

Equipment	Location	Capacity	Voltage	Age	Motor Manufacturer	Compressor Manufacturer	Pressure	RPM	Water Capacity	In Service
Compressors (2)	Bldg 103	400 HP	4.160KV	1954	Reliance	Sullair	125 PSI	1780		No
Air Dryers (1)	Bldg 103	15 HP	480V	1981	Zurn General Air					No
Compressors (2)	Bldg 107	400 HP	4.160KV	1980	General Electric	Sullair	125 PSI	1770		Yes
Air Dryers (1)	Bldg 107	15 HP	480V	2007	Atlas Copco		188 PSI			Yes
Cooling Towers (2)	Bldg 107	1.5 HP	208V/480V	1980	RSD Cooling Towers				780L/Min	1 out of 2
Cooling Towers Pump	Bldg 107	5 HP	208V/480V	1980	Baldor Reliance			3450		1 out of 2

### Compressed Air Service Locations

Building / Pier / Dry Dock	Service Size
36	2" Service from 10" Main
105	2" Service from 10" Main
108	2" Service from 3" Main
109	6" Service from 8" Main
111	2" Service from 3" Main
251	4" Service
Pier 3	4" Service from 8" Main
Pier 4	6" Service from 8" Main
Dry Dock Eureka	4" Service from 8" Main
Dry Dock No. 2	6" Service from 8" Main

### Steam Distribution System

Equipment	Location	Capacity	Age	Manufacturer	In Service
Gas Boilers (2)	Bldg 103	80 LB Design Pressure	1954	Babcock & Wilcox	No

### Steam Service Locations

Building / Pier / Dry Dock	Service Size
None, out of service since 1980's	N/A

### Natural Gas Distribution System

Equipment	Location	Capacity	In Service
PG&E Gas Meter (425 G-40 Firm industrial)	Behind Bldg 105	Feeds one 4" pipe to serve the two steam boilers and one 4" pipe stubbed-out behind building 103	Service shut off for shipyard closure

### Natural Gas Service Locations

Building / Pier / Dry Dock	Service Size
36	1.5"
103	4"
105	2"
109	1.5" or 0.5"
111	0.5"
Pier 4	1"
HWP at Dry Dock No. 2	1"

# Appendix A

## Welding Gas

Equipment	Location	Capacity	Vendor / Equipment Owner	In Service
Oxygen Tank	Near by Bldg 38	1,625 gal	Matheson Liquid Oxygen	Yes
Propylene Tanks	Near by Bldg 38	Four tanks appear to be 1,000 gal each	Western International Gas and Cylinders	Service shut off for shipyard closure

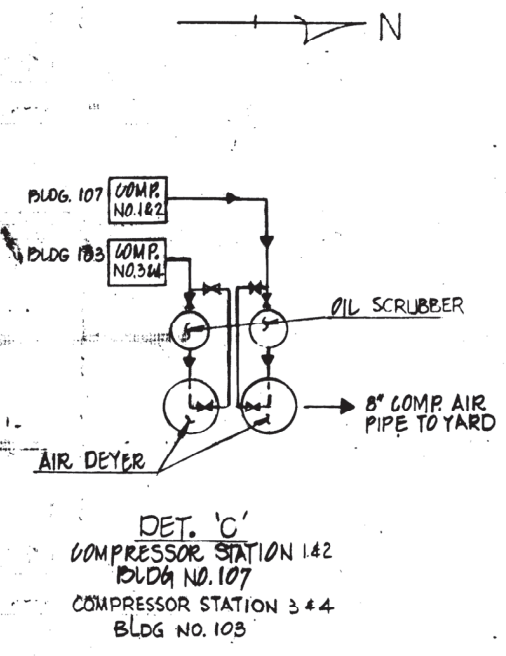
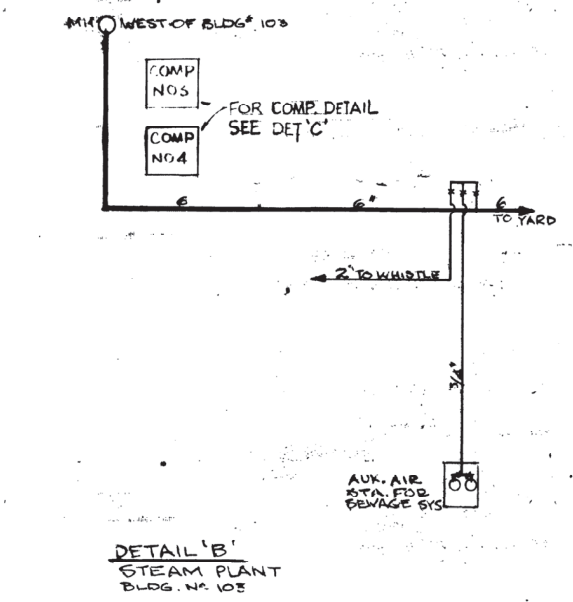
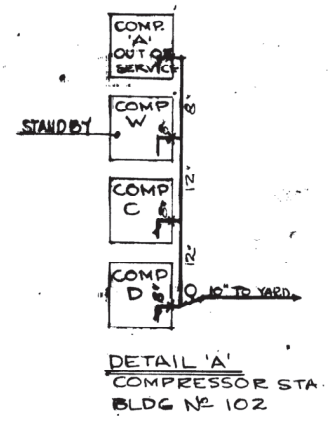
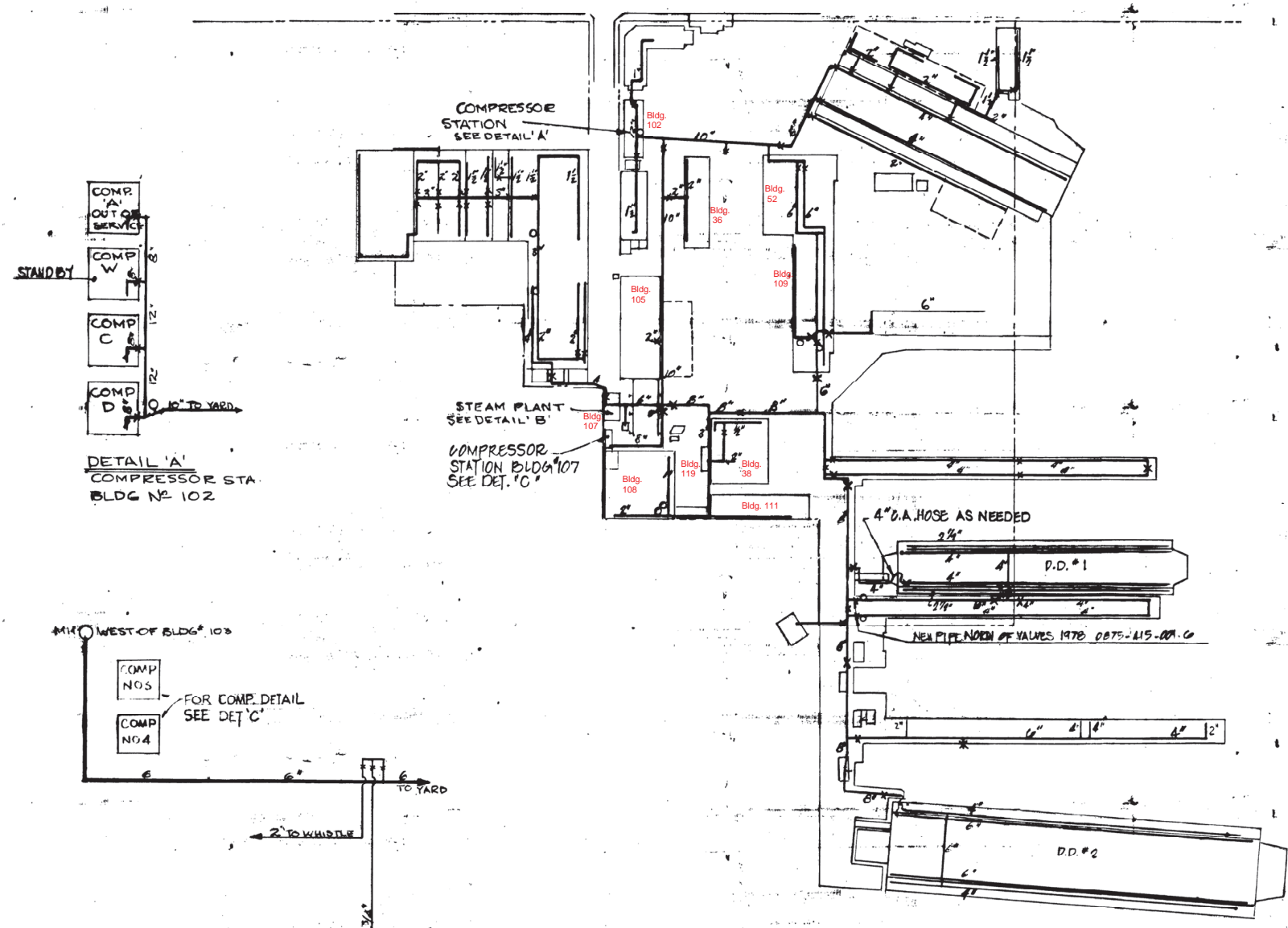
## Welding Gas Service Locations

Building / Pier / Dry Dock	O2 Service Size	Fuel Gas Service Size
36	1"	1"
105	2"	2"
109	1"	1"
Pier 3	1.5"	2"
Pier 4	1.5"	2"
Dry Dock No. 2	2"	2"

## Site Pumps

Equipment	Location	Capacity	Voltage	Age	Manufacturer	RPM	GPM	In Service
Fresh Water Booster Pump	Pier 3	75 HP	480V	2002	Paco Pumps	1775		Yes
Pier 3 Salt Water Pump (P3SWP)	Pier 3	250 HP	480V	2002	Paco Pumps	1780	1000	Yes
Pier 4 Salt Water Pump (P4SWP)	Pier 4	100 HP	480V	2002	Paco Pumps	1790	1000	Yes
Salt Water Cooling Water Pump #1	Near DD2	125 HP	480V	2002	Paco Pumps	1780		Yes
Salt Water Cooling Water Pump #2	Near DD2	125 HP	480V	2002	Paco Pumps	1790		Yes
CHT Pump #1 (CHTP1)	Southeast of Bldg 109 - Located underground, not accessible.							
CHT Pump #2 (CHTP2)	Located underneath the Wharf at Bldg 127, not accessible.							

# Appendix B1: Compressed Air Site Plan 1982



COMP'R	CFM* RATED	H.P. MOTOR	MFR	YEAR	PSIG
W	2700	500	C.P.	1942	80-90
1 & 2	1500	400	SULLAIR	1972	120
3 & 4	1500	400	SULLAIR	1969	120

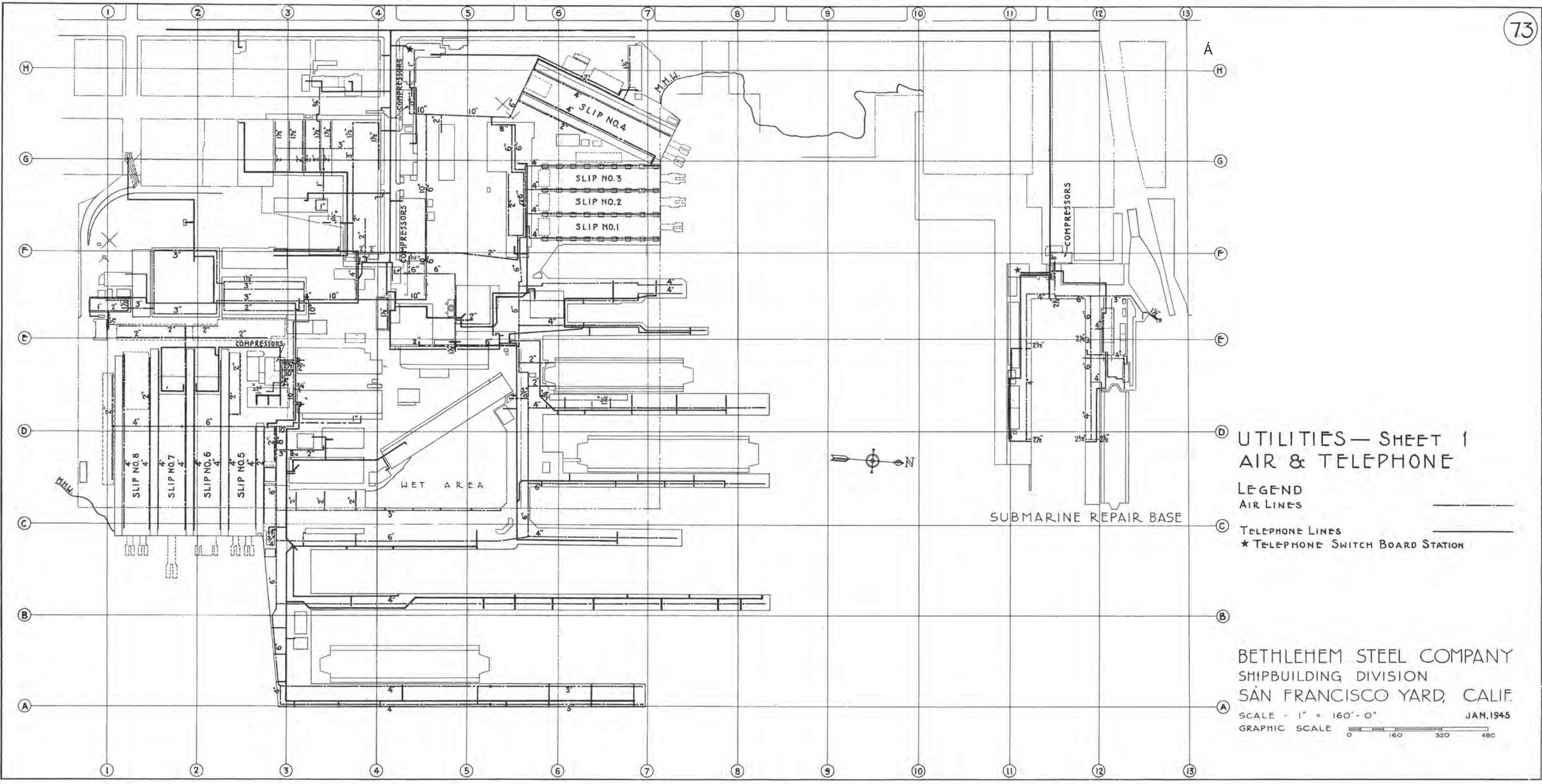
## UTILITIES — COMPRESSED AIR

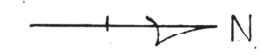
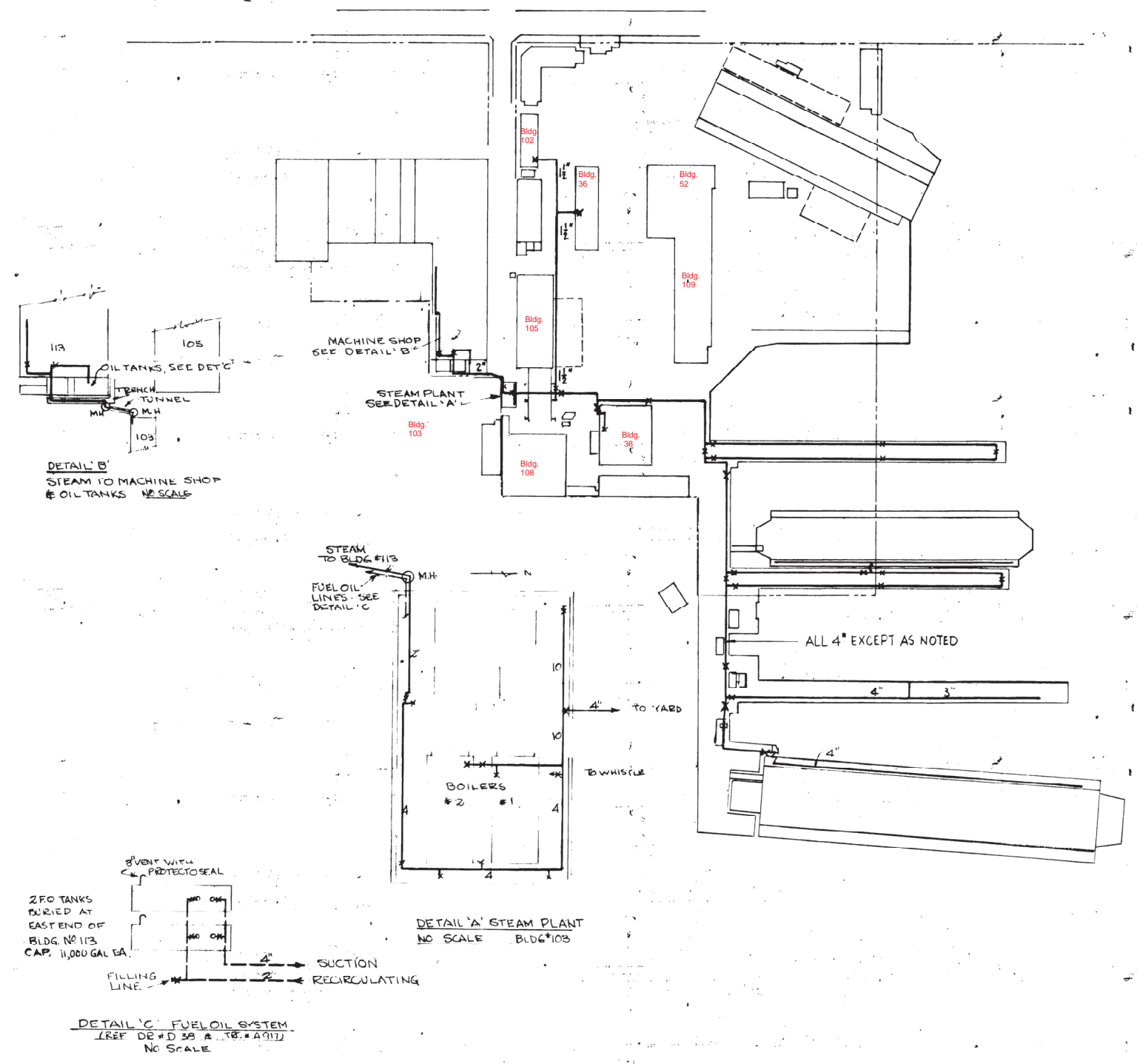
- LEGEND
- COMPRESSED AIRLINE
  - ⌋ CHECK VALVE
  - \* LINE VALVE
  - ⊖ MOISTURE SEPARATOR

BETHLEHEM STEEL  
SAN FRANCISCO YARD  
SCALE 1" = 160'  
GRAPHIC SCALE:

REV. FEB. 1971, 11-1-77, 8-18-76, 6-1-79, 4-13-82

These drawings are provided for informational purposes only, and Todd makes no representations or warranties whatsoever as to the accuracy or completeness of the contents thereof.





UTILITIES —  
STEAM & FUEL OIL

LEGEND

- STEAM LINE
- FUEL OIL LINE
- LINE VALVE
- STEAM RISER TO DRY DOCK

BETHLEHEM STEEL  
SAN FRANCISCO YARD

SCALE: 1" = 160'  
GRAPHIC SCALE

REV. FEB. 1971, 11-1-77, 4-13-82

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DETAIL 'B'  
STEAM TO MACHINE SHOP  
& OIL TANKS  
NO SCALE

STEAM TO BLDG #113  
FUEL OIL LINES - SEE  
DETAIL 'C'

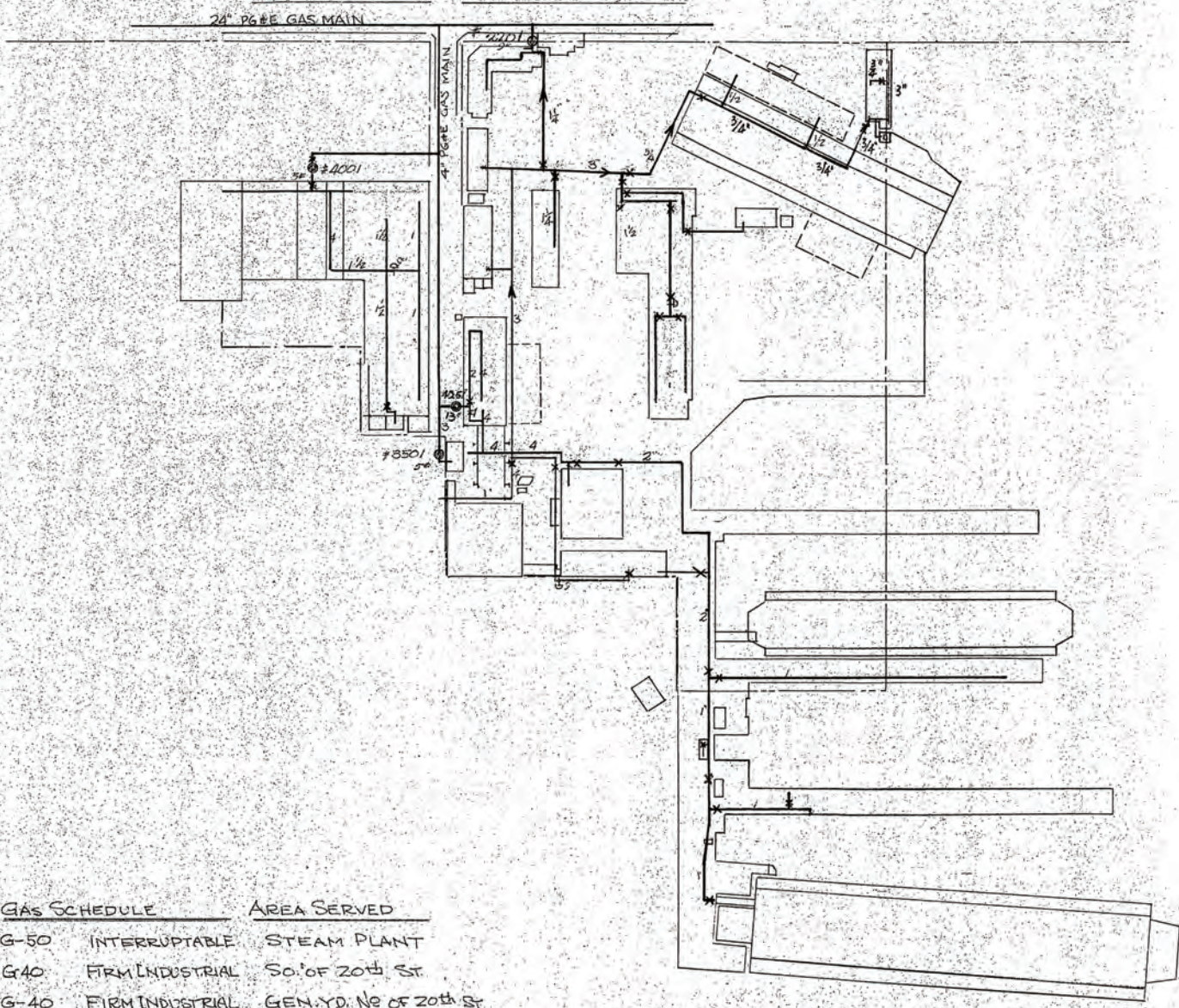
ALL 4" EXCEPT AS NOTED

DETAIL 'A' STEAM PLANT  
NO SCALE BLDG #103

2 FO TANKS BURIED AT EAST END OF BLDG. NO 113 CAP. 11,000 GAL EA.  
DETAIL 'C' FUEL OIL SYSTEM (REF. DE # D 38 & T 8-A 911) NO SCALE



# Appendix D: Natural Gas Air Site Plan 1977



ACCT. #	GAS SCHEDULE	AREA SERVED
3501	G-50 INTERRUPTABLE	STEAM PLANT
4001	G-40 FIRM INDUSTRIAL	SO. OF 20th ST.
4251	G-40 FIRM INDUSTRIAL	GEN. YD. NE OF 20th ST.
2201	G-1 GENERAL	KITCHEN, BLDG. 101

## UTILITIES — NATURAL GAS

### LEGEND

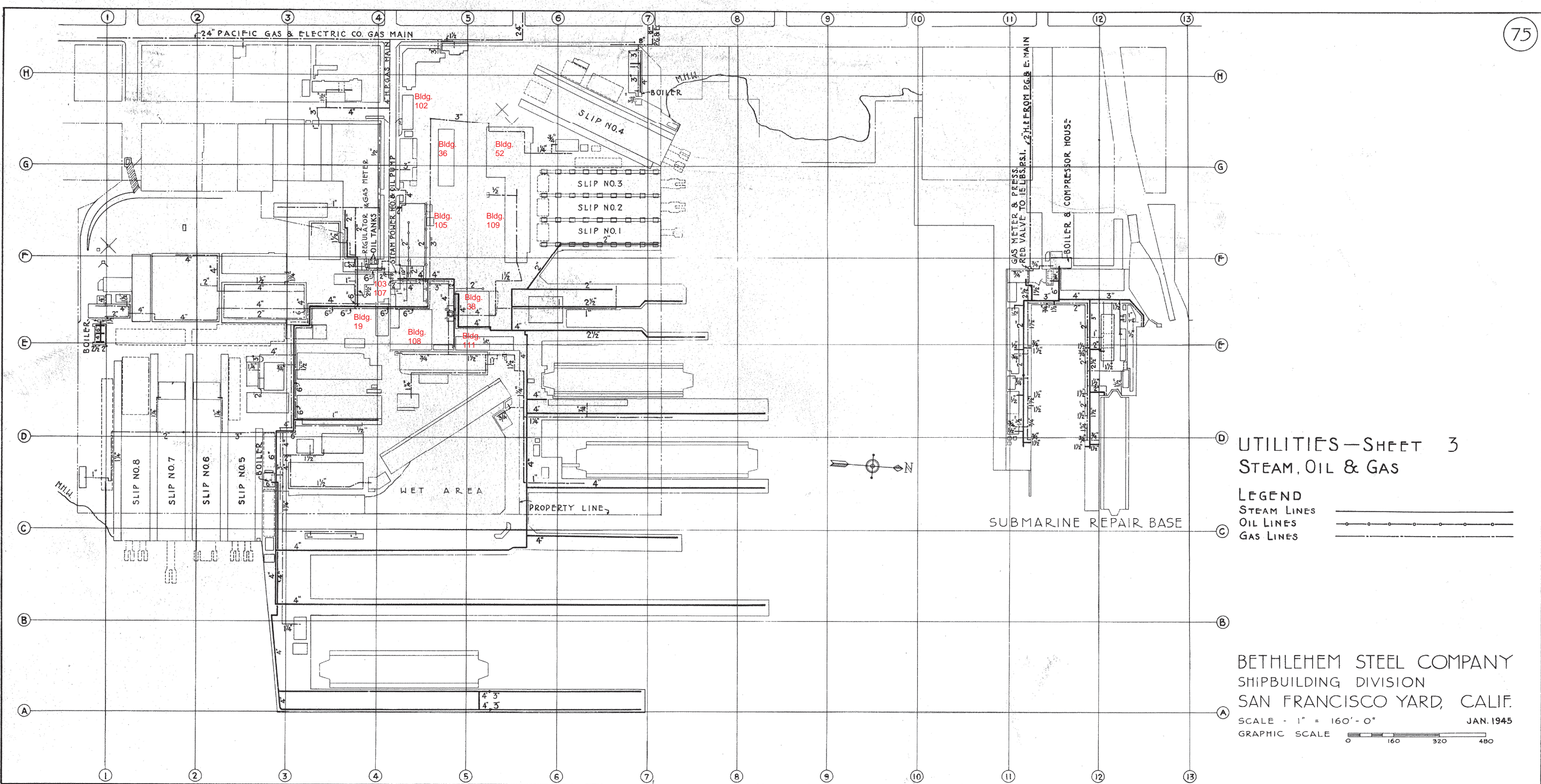
- NAT. GAS LINE —————
- LINE VALVE — X —
- GAS METER & ACCT. NO. — (M) —
- REGULATOR & DOWNSTREAM PRESSURE — (R) —

## BETHLEHEM STEEL SAN FRANCISCO YARD

SCALE: 1" = 160'  
GRAPHIC SCALE —————

REV. FEB. 1971, W11, U-1-77

# Appendix E: Steam and Natural Gas Site Plan 1945



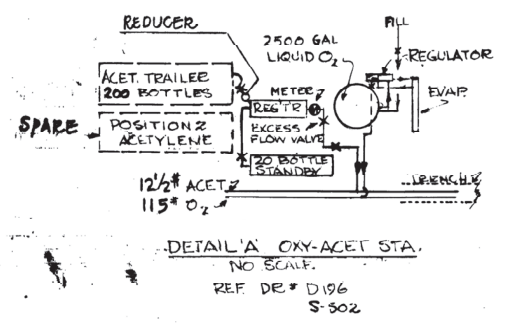
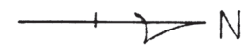
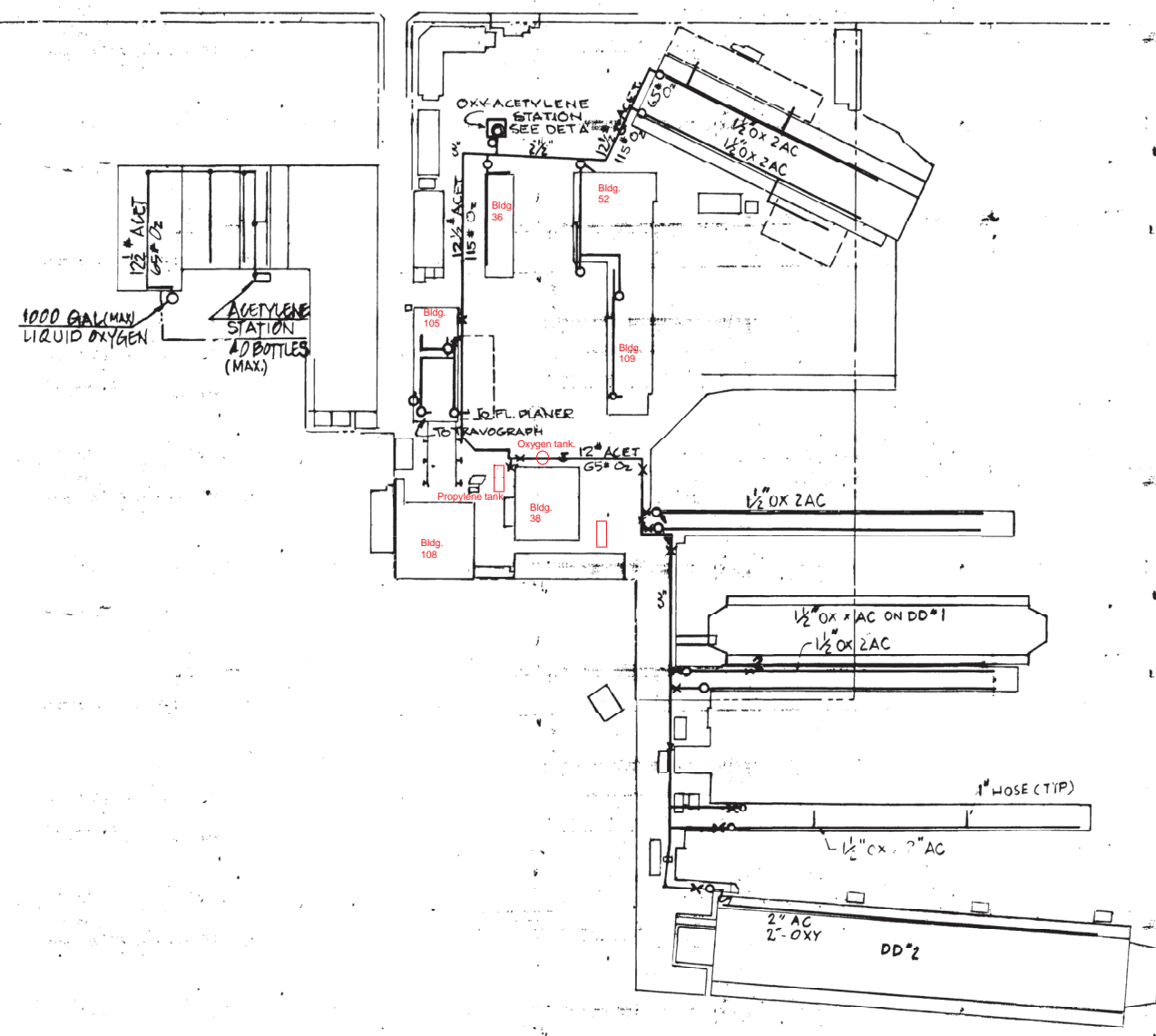
UTILITIES—SHEET 3  
STEAM, OIL & GAS

LEGEND  
 STEAM LINES ————  
 OIL LINES —●—●—●—●—  
 GAS LINES ————

BETHLEHEM STEEL COMPANY  
 SHIPBUILDING DIVISION  
 SAN FRANCISCO YARD, CALIF.  
 SCALE - 1" = 160'-0"  
 GRAPHIC SCALE 0 160 320 480  
 JAN. 1945

# Appendix F: Welding Gas Site Plan 1982

9



## UTILITIES — OXYGEN & ACETYLENE

- LEGEND
- OXY-ACETYLENE LINES
  - LINE VALVE
  - ACETYLENE FLASHBACK ARRESTER
  - ⊗ OXYGEN PRESSURE REGULATOR
  - OXYGEN STORAGE TANK
  - ↙ FLEXIBLE HOSE RISER
  - ⊥ ACETYLENE BURSTING DISC

BETHLEHEM STEEL  
SAN FRANCISCO YARD  
SCALE: 1" = 160'  
GRAPHIC SCALE: 0 160 320 480

*These drawings are provided for informational purposes only, and Todd makes no representations or warranties whatever as to the accuracy or completeness of the contents thereof.*

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