

Morgan Heritage Study

Working Paper 2.

August 1980

MORGAN HERITAGE STUDY STEERING COMMITTEE

MORGAN HERITAGE STUDY

WORKING PAPER 2

Morgan Heritage Area, Section A.

The Railway and Wharf Reserve

ED. NOACK AND ASSOCIATES, LARGS BAY, SOUTH AUSTRALIA
in association with
HERITAGE INVESTIGATIONS

August, 1980

Introduction

This Working Paper puts forward the concept of a Heritage Area to take in the early transport, commercial and residential areas of Morgan. A Heritage Area should contain sites, buildings and structures which have a relationship and which have important historic meaning as a group.

The general Heritage Area is first defined and then a detailed assessment of the structures and buildings comprising the railway and wharf facilities is presented. The commercial and residential buildings and structures of early Morgan will be assessed in Working Paper 3.

PART 1. MORGAN HERITAGE AREA.

Historical Importance

In the historical summary of the Morgan district given in Working Paper 1, the areas of major historical interest were identified and the events which made them important were listed.

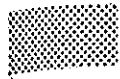
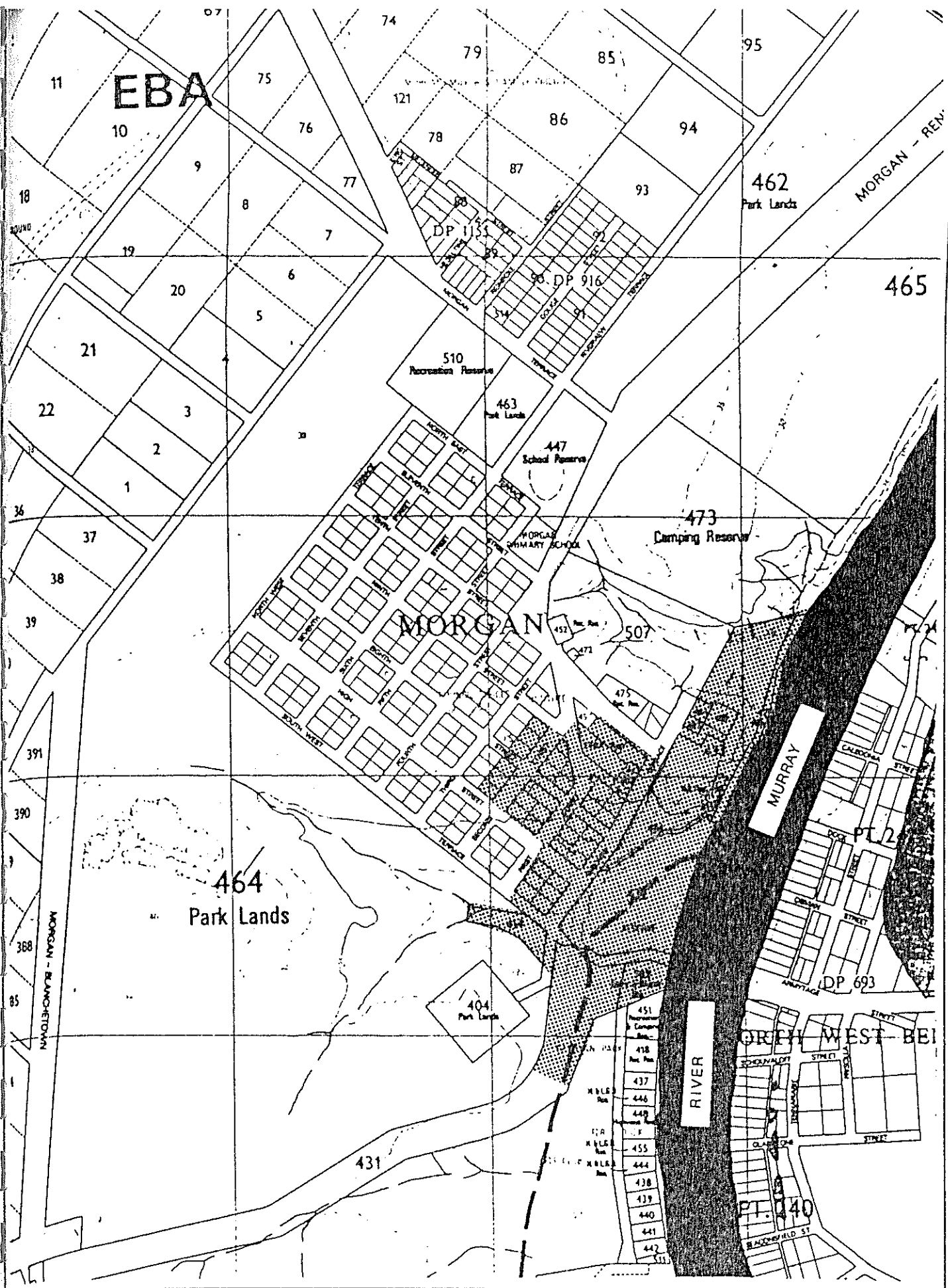
The Morgan Heritage Area did have some buildings prior to the development of the railway, wharf and township from 1877 on. James Symonds conducted his inn and post office on the river bank adjacent to the present west side ferry landing. He was first granted a wine licence in 1870 (6) and conducted the premises until transferring to the new Terminus Hotel in 1878, (7). The building was then taken over as the Police Station.

However, the main activity followed the completion of the railway and the first sections of the wharf in 1878. Morgan experienced a dramatic building boom during the period 1877-1880 and a large part of the township was established in a compact area around Railway Terrace, overlooking the railway and the river. Much of the construction was in local limestone or 'rubble' as it was then called, and the mellow, yellow of the stone has created a beautiful, harmonious landscape melding into the natural yellow colouring of the cliffs. The cut stone has also proven to be highly durable as the outer surface hardens when cut. The bustling port of Morgan grew to become the busiest inland port in Australia during the height of the steamer trade in the period 1880-1915. Many visitors to the town wrote of their memorable impressions and experiences and these, perhaps, best of all relate the importance of the port of Morgan.

A reporter from the *Observer* newspaper visited the infant settlement at the time of survey in January 1878 and wrote:

"At present there are three stores, a butcher's shop and public house on the flat which is a Government Reserve. The North West Bend promises to be a flourishing township." (4)

EBA



Proposed Morgan Heritage Area

Scale: 1:10000



MORGAN HERITAGE STUDY.

Ed. Hoack and Associates, Town Planners, Largs Bay, S.A. in association with Heritage Investigations. 1980.

A reporter from the *Observer* also accompanied the Chief Secretary Hon. W. Morgan on the first through train to North West Bend on September 13, 1878. He described the progress with the railway station and wharf and continued:

"Great improvements are going on in the newly sold township of Morgan -- two handsome two storey hotels are nearly completed, Mr. Landseer's fine store is rapidly being pushed on -- and quite a number of private dwellings are in course of erection on the various allotments. A very excellent luncheon was served at Mr. Symon's Terminus Hotel." (5)

Apparently Mr. Symon's also called his first hotel the 'Terminus' and transferred the licence later that year to the new building.

The *Observer* reporter conducted a detailed survey of the river trade in 1883 and gave particular prominence to activities at Morgan:

"Morgan like most of the other Lower Murray Ports is most remarkable for the picturesqueness of its situation".

"It has two hotels, both superior buildings, while the management of one fits it to rank with good city houses. The commercial community is represented by two or three stores, the same number of forwarding agencies, a wool scouring establishment, a Custom House and a branch of the Bank of Adelaide."

"The State School is a substantial building ----".
"Morgan contributed substantially to trade

1880 21,840 bales of wool were carried from Morgan to Port Adelaide.
1881 21,808 bales of wool were carried from Morgan to Port Adelaide.
1882 27,811 bales of wool were carried from Morgan to Port Adelaide.

"The Police Station is down on the flat near the side of the river at a considerable distance from the wharfs and the hotels."

"The Post and Telegraph Office is on the top of a hill on the opposite side of the township. Formerly the Custom House was situated near the Post Office but the present officer has turned the rather neat stone building into a private dwelling house and carries on his official duties in a weatherboard structure, in shape like an exaggerated sentry-box on the wharf." (8)

Mr. Kenneth Dunk worked on the staff of A.H. Landseer at Morgan and has researched some of the Company's activities. He found that:



To the Mildura and
Renmark Irrigation
Colonies.



The Steamer "GEM"

LEAVES MORGAN AFTER ARRIVAL OF ADELAIDE TRAIN*

(TUESDAYS).

	Arriving at	RETURN.				
		DECK.	CABIN.	DECK.	CABIN.	FREIGHT
RENMARK . . .	12 p.m., WEDNESDAY	15/-	30/-	25/-	50/-	15/-
WENTWORTH . . .	6 a.m., FRIDAY . . .	30/-	60/-	50/-	£5	30/-
MILDURA . . .	6 p.m., ,, . . .					

Leaves MILDURA . . . 9 a.m., SATURDAY.

,, WENTWORTH 4 p.m., ,,

Arriving in MORGAN in time to catch ADELAIDE TRAIN 5.55 a.m. MONDAYS.

TRAIN FARES . . . 1st, 17/4 . . . 2nd, 10/10

*TRAIN LEAVES ADELAIDE FOR MORGAN 12.15 p.m.

BRANCH OFFICES
AND STORES AT

PORT ADELAIDE,
PORT VICTOR,
GOOLWA,
MILARA,
MURRAY BRIDGE,
MORGAN.

AGENCIES AT

RENMARK,
WENTWORTH,
MILDURA,
MENZIE,
WILCANNIA.

A. H. LANDSEER,

LIMITED.

GRAIN AND GENERAL MERCHANTS,
SHIPPING, COMMISSION, & INSURANCE AGENTS,
OWNERS OF AND AGENTS FOR RIVER STEAMERS.

HEAD OFFICE: GRENFELL STREET, ADELAIDE.

Telephone, 235. Code, 5th Edition, A.B.C.

Steamers leave Murray Bridge Wednesdays; Morgan, Thursdays and Saturdays for Renmark, Wentworth, and Mildura.

Trips may be arranged for from 5 to 13 days.

At short intervals vessels are despatched for Wilcannia from South Australian Ports—rivers permitting.

Rates for carriage of Wool and Supplies. Quotations for Produce⁶ given upon application.

Station Requisites supplied
on Commission.

Steamers always available
for Pleasure Parties.

These advertisements appeared in the elaborate publicity manual published by the Chaffey Brothers in 1887, entitled "The Australian Irrigation Colonies on the River Murray in Victoria and South Australia." Author: J.E.M. Vincent.

"In 1883 the value of goods over the Morgan wharf was 238,453 pounds. Landseer and Dunk had a wool dump which was working 3 shifts when the river was running." (9)

Mr. Dunk also provided valuable information on the famous Gem Line of steamers operated by Captain Hugh King. The Line was established in the late 1880's and the fleet which was based at Morgan comprised many wellknown river boats such as *Gem*, *Marion*, *Ruby* and *Corowa*.

The record load of wool to come to Morgan was 1,750 bales in the barge *Echuca* towed by the *Wanera*. At the busiest time, four or five trains would leave Morgan daily for Adelaide loaded with wool and wheat. The port also handled large consignments of dried fruit from the irrigation settlements up river. The largest load to arrive at Morgan was 500 tons from Renmark on the barges *Moorara* and *Mallara*, towed by the steamer *Decoy*. (9)

Captain Diener built the paddle steamer *Merleat* Morgan and operated it from there with the *Kookaburra* as trading vessels. The mission boat *Etona* also operated out of Morgan and visited stations and settlements along the river to Renmark. Mail and supplies for stations and settlements on the river south of Morgan to Mannum were carried by J.T. Gibbs' steamer the *Federal*. Mr. Dunk also recalls a number of smaller steam fishing boats which consigned fish to Adelaide by rail from Morgan. (9)

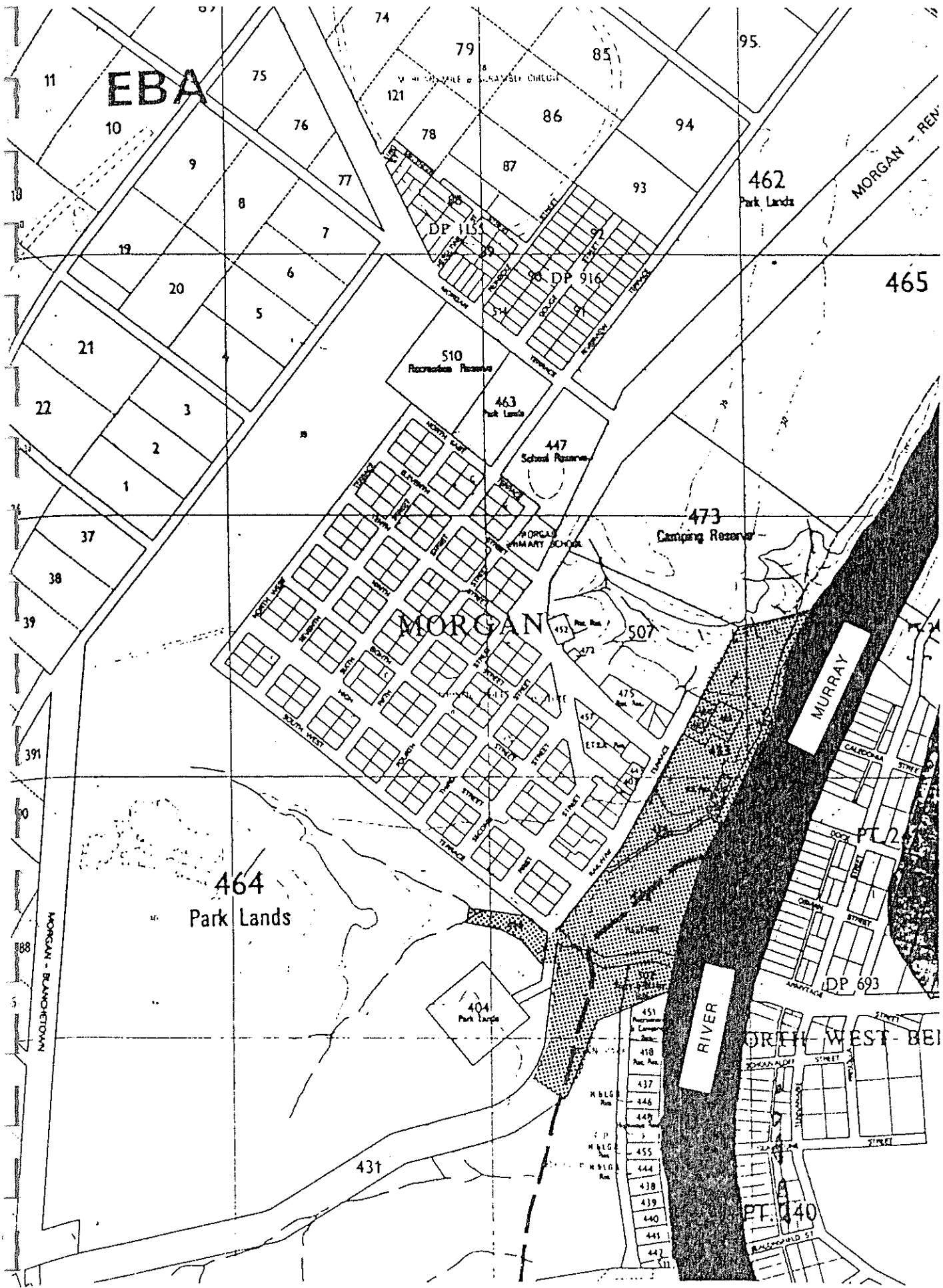
This bustling activity and the romance and dangers of the river boat crews has made this period of colonial history exciting to many later writers. Ernestine Hill, in her wellknown book *Water into Gold* when examining the river ports, wrote

"Morgan was the most advanced of all, with five cranes on the wharves working day and night, 33 men in the railway yards, hundreds all told of stevedores and tally clerks, a huge merchant warehouse, Landseer's, loading thousands of tons, and for its gaol, appropriately enough the little old *Grappler*. They volplaned the drunks down the chute and made them walk the plank in the morning." (10)

The importance of Morgan was also stressed in an historical review of country towns made by the weekly news, the *Chronicle* in 1961. It stated that:

"Morgan in its heyday was one of the busiest trading centres on the Murray."

"Said to have been the largest inland port in its heyday, Morgan once boasted 400 feet of wharf and extensive loading and repair facilities. Steamers at times were lined up for more than a quarter of a mile waiting to unload." (11)



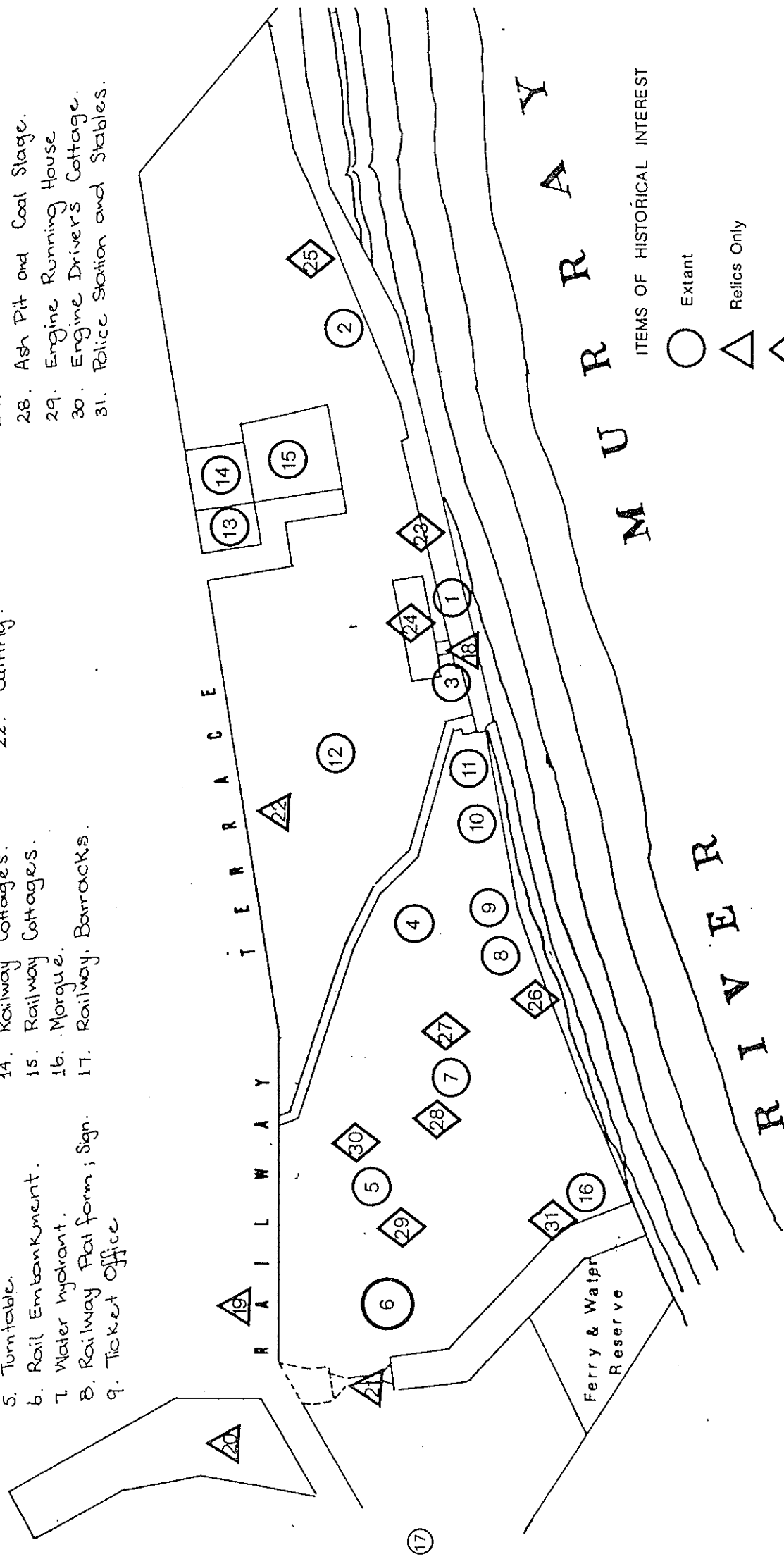
Area examined in detail in Working Paper 2.

Scale: 1:10000



MORGAN HERITAGE STUDY.

- | | | | |
|----------------------------|--------------------------------|---------------------------|---------------------------------|
| 1. Wharf. | 10. Fendle's Rooms. | 18. Steam Cranes. | Good Shed. |
| 2. Powder Magazine. | 11. Goods Shed. | 19. Railway line - track. | 24. Boiler House etc. |
| 3. Hydraulic Crane | 12. Covered Reservoir. | 20. Triangular turntable. | 25. Stockyards. |
| 4. Station and Residence. | 13. Master Mechanic's Cottage. | 21. Railway Bridge. | 26. Pump House.. |
| 5. Turntable. | 14. Railway Cottages. | 22. Cutting. | 27. Loco. Examination Shed. |
| 6. Rail Embankment. | 15. Railway Cottages. | | 28. Ash Pit and Coal Stage. |
| 7. Water hydrant. | 16. Morgue. | | 29. Engine Running House |
| 8. Railway Pat form; Sign. | 17. Railway Barracks. | | 30. Engine Drivers Cottage. |
| 9. Ticket office | | | 31. Police Station and Stables. |



ITEMS OF HISTORICAL INTEREST

○ Extant

△ Relics Only

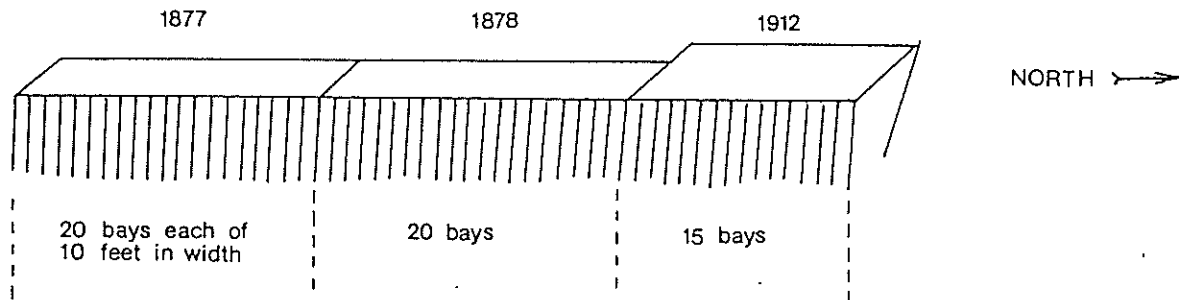
◇ Demolished

THE WHARF & ASSOCIATED STRUCTURES

PART 2.

The Wharf

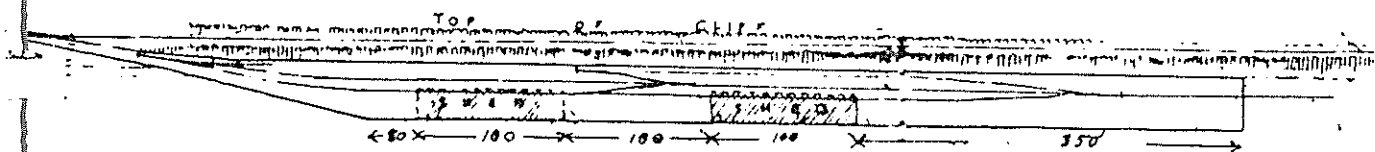
The wharf is the most significant of the remaining structures in the Heritage Area due both to its physical dimensions and to its historic and current functions. The main wharf structure was built in three stages and is 168 metres (550 feet) in length.



The wharf has previously been nominated for inclusion on the State Heritage Register and is currently on the Second Interim List.

As substantial restoration work is required on the early sections, this study documents the gradual development of the structure with original design drawings and specifications as an aid to restoration work. These details also show that the wharf was more than just a timber loading platform - it was in the prime of its working life, a complex of four steam cranes with associated piping, gearing and drive shafts linked to the steam boiler house and engine house. The rear section of platform carried a railway line and an extensive part of the platform was covered with a large goods shed. A network of stairways, ladders and decking descended through the massive timber piers and girders to provide service to landing stages at lower levels.

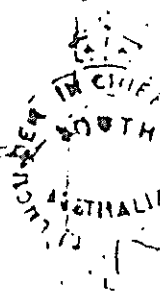
The first estimates of cost were prepared in 1876 and 10,000 pounds was allocated under the *Railway Loan Act* of 1876. (1) The estimates were based on the concept sketches shown on the following page. Mr. R. Hickson, the Engineer of Harbors and Jetties visited North West Bend in February 1877 to inspect the site for the proposed wharf and railway terminus. (2). Work proceeded rapidly thereafter with detailed design and the contract for constructing the first 200 foot length of wharf was let on June 18, 1877.



R I V E R M U R R A Y

The above Drawing represents the Design for Wharf
 for which the Estimate is based, but is subject to
 modification in detail and arrangement as circumstances
 may render expedient.

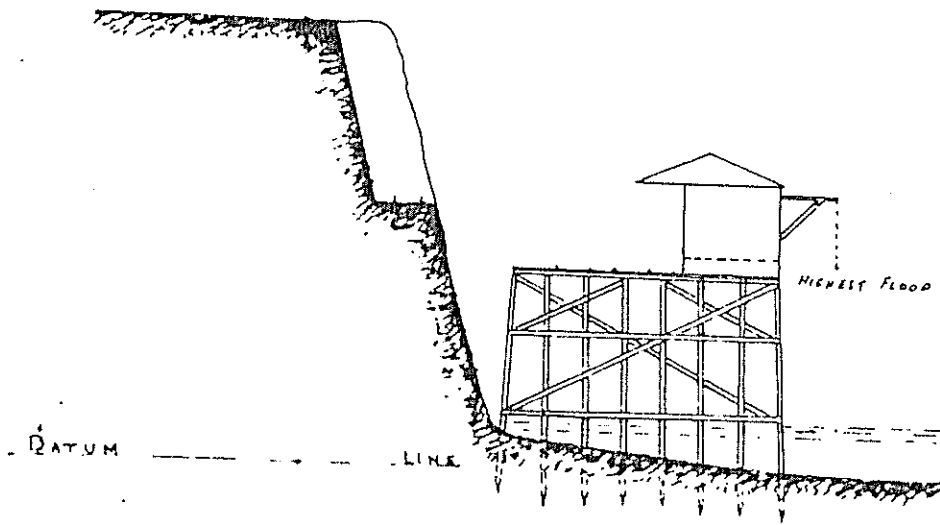
[Signature]
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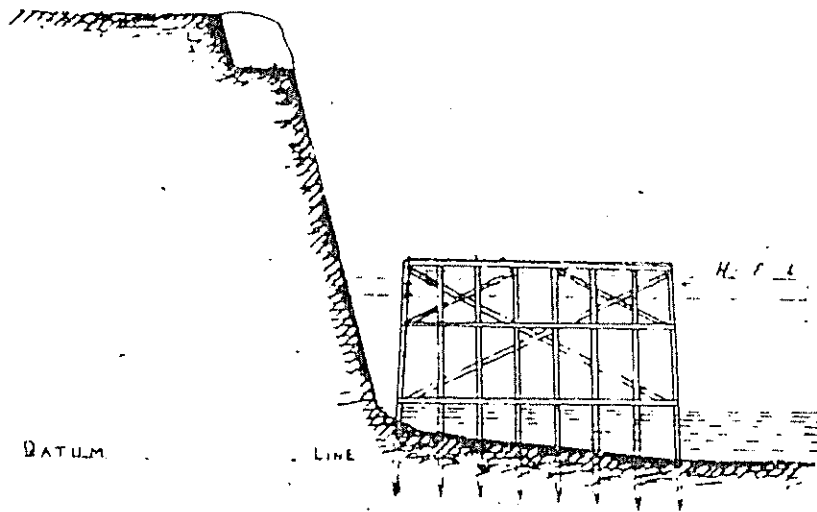
Primary Drawings for purpose of Estimates.
 October 5th, 1876.

**WHARF
 NORTH-WEST BEND**

Plans from Dept. of Marine and Harbors Drawing, 3053/71



SECTION ON LINE C-C



SECTION ON LINE D-D

Preliminary Drawings for purpose of Estimates.

October 5th, 1876.

Extracts from Dept. of Marine and Harbors Drawing, 3053/71

WHARF

NORTH-WEST BEND

MORGAN HERITAGE STUDY.

Moack and Associates, Town Planners, Largs Bay, SA in association with Heritage Investigations 1980

Wharf Section 1. (1877)

Name of Job: Specification for North West Bend Wharf.
Contract 27.

Contract let by: Engineer of Harbors and Jetties, South
Australia.

Contract let to: Duncan Grant, Contractor, Adelaide.

Date of Contract: June 18, 1877.

Contract Price: 6,875 pounds.

Job Description: "The contract referred to in this
specification includes the provision of
all tools, labour and materials necessary
for the complete and satisfactory
execution of a wharf at North West Bend
on the River Murray for a length of
200 feet or 20 bays of 10 feet opening
from centre to centre and for a width of
24 feet across the decking and the
filling up of the space in the rear of
the same in accordance with this
specification and the accompanying
drawing."

Materials: Timber All timber used throughout the work unless
otherwise specified shall be of red gum
or jarrah well seasoned free from dead
knots, pipes, sap, gum veins, shakes and
all other defects to an injurious degree
in the estimation of the Engineer of
Harbors and Jetties --- It shall be well
seasoned and hewn square and satisfactory
in all particulars."

Iron Work "The ironwork is to be of B.B.H.
Staffordshire or of any other brand of
equal quality --- The bolts and nuts are
to be screwed with Whitworths thread,
head and nuts of bolts are to be square
and provided with washers of wrought iron
2½" x 2½" x ½" thick. All iron work where
it is practicable is to be heated to a
dull red heat and plunged into a bath of
boiled linseed oil and immediately
afterwards into one of coal tar."

Detailed Specifications Other matters included in the specification
are: Workmanship, piles, land tie piles,
sheet piling, braces, walings, planking
(blue gum), bollards, stairs, landing
stages, ladders (wrought iron), filling in
(limestone), tarring (two coats of coal tar).

Section 1. (1877) Contd.

Detailed costs
(examples)

- a) Red gum or jarrah timber in piles, including iron work, 6 shilling and 3 pence per cubic foot.
- b) Red gum or jarrah timber in braces and walings including iron work, 6 shillings per cubic foot.
- c) Blue gum timber in deck planking including ironwork, tarring and fixing. 6 shillings per cubic foot.

Documentation:

Department of Marine and Harbors, Port Adelaide.

- a) Contract 27.
- b) Drawing No. 3054/71.

Current Condition:

The superstructure remains - some piles and girders need replacing where rotted or attacked by termites. The deck has been largely removed - needs to be replaced.

Other references:

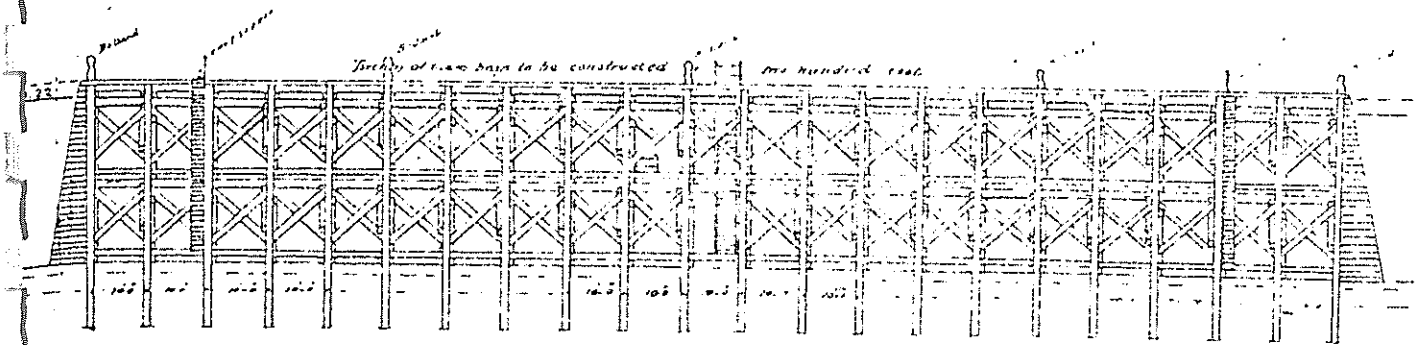
The South Australian Register reported on March 27, 1878 that the wharf was nearly completed - the due date for completion was March 28. The structure was described as "neat and substantial." Steamers were already calling at North West Bend. Those calling in that week included *Queen*, *Gem*, *Lady Daly* (railway sleepers), *Clara*, *Wilcannia*, *Blanche*. (3)

Some delays in construction were experienced because the contractor was, as the report stated, "put to much trouble and delay by the suicidal Victorian export duty on timber". (4).

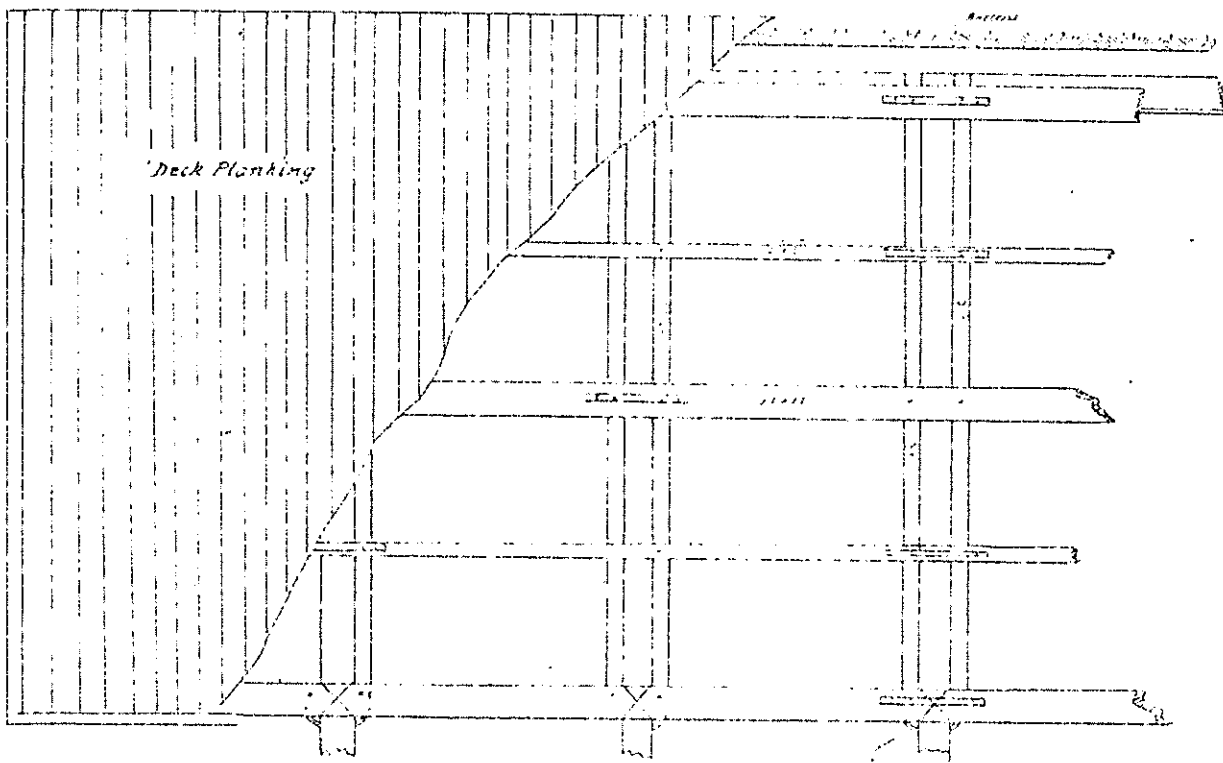
The original plans did not allow for crane facilities for transferring goods from steamer to train or train to steamer. This was a serious drawback to the early operation of the wharf as the distance from deck to water was generally about 10 metres. (5).

Scale to General Drawings 1/8" = 1' 0"

Scale to Detail Drawings 1/4" = 1' 0"



GENERAL ELEVATION



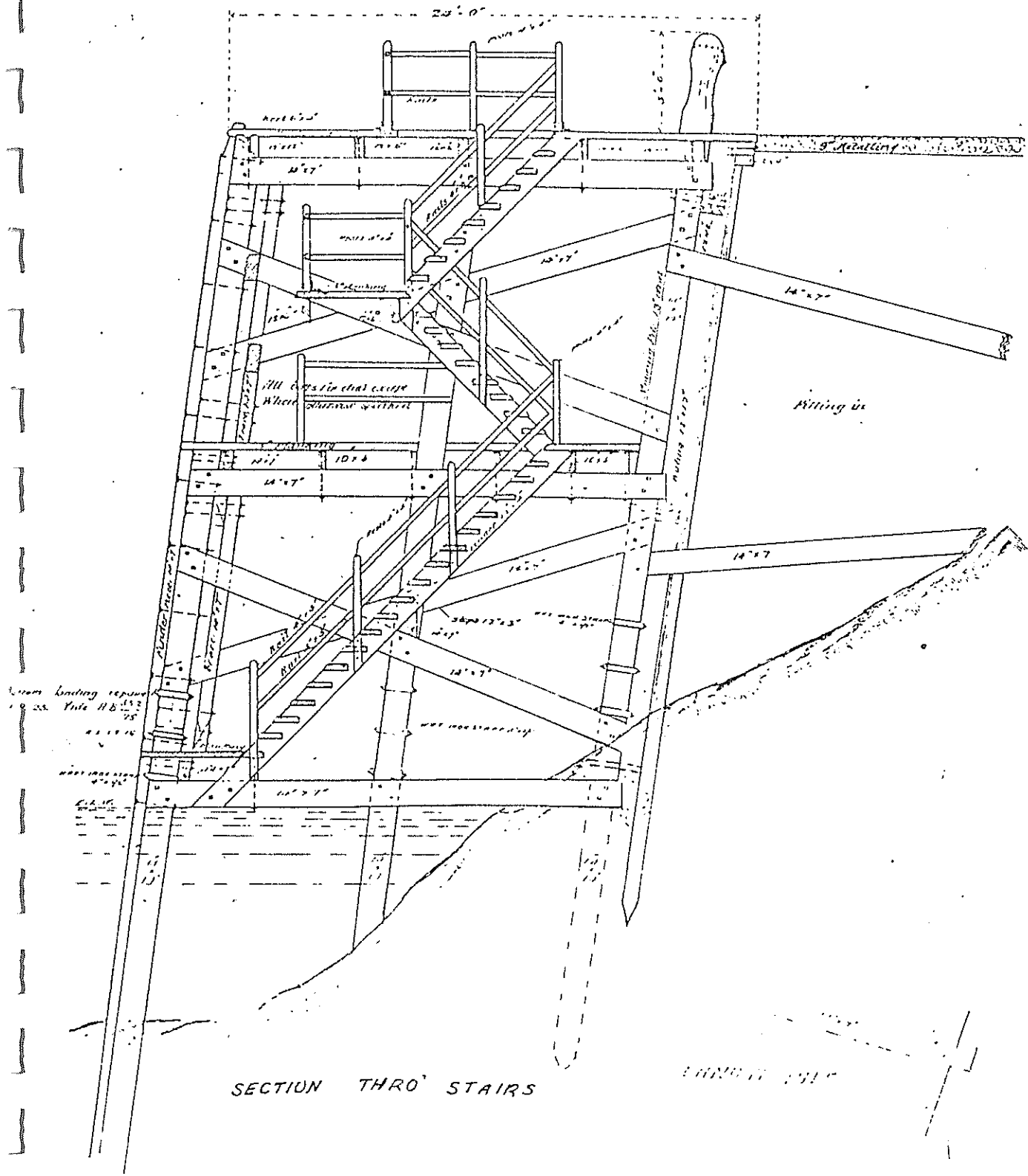
PART PLAN

Design Drawings prepared in April, 1877.
Building Contractor: Duncan Grant
Extract from Department of Marine and
Harbors Drawing No. 3054/71

WHARF, N.W. BEND.

MORGAN HERITAGE STUDY.

Ed. Hoack and Associates Town Planners, Largs Bay S.A. in association with Heritage Investigations. 1980

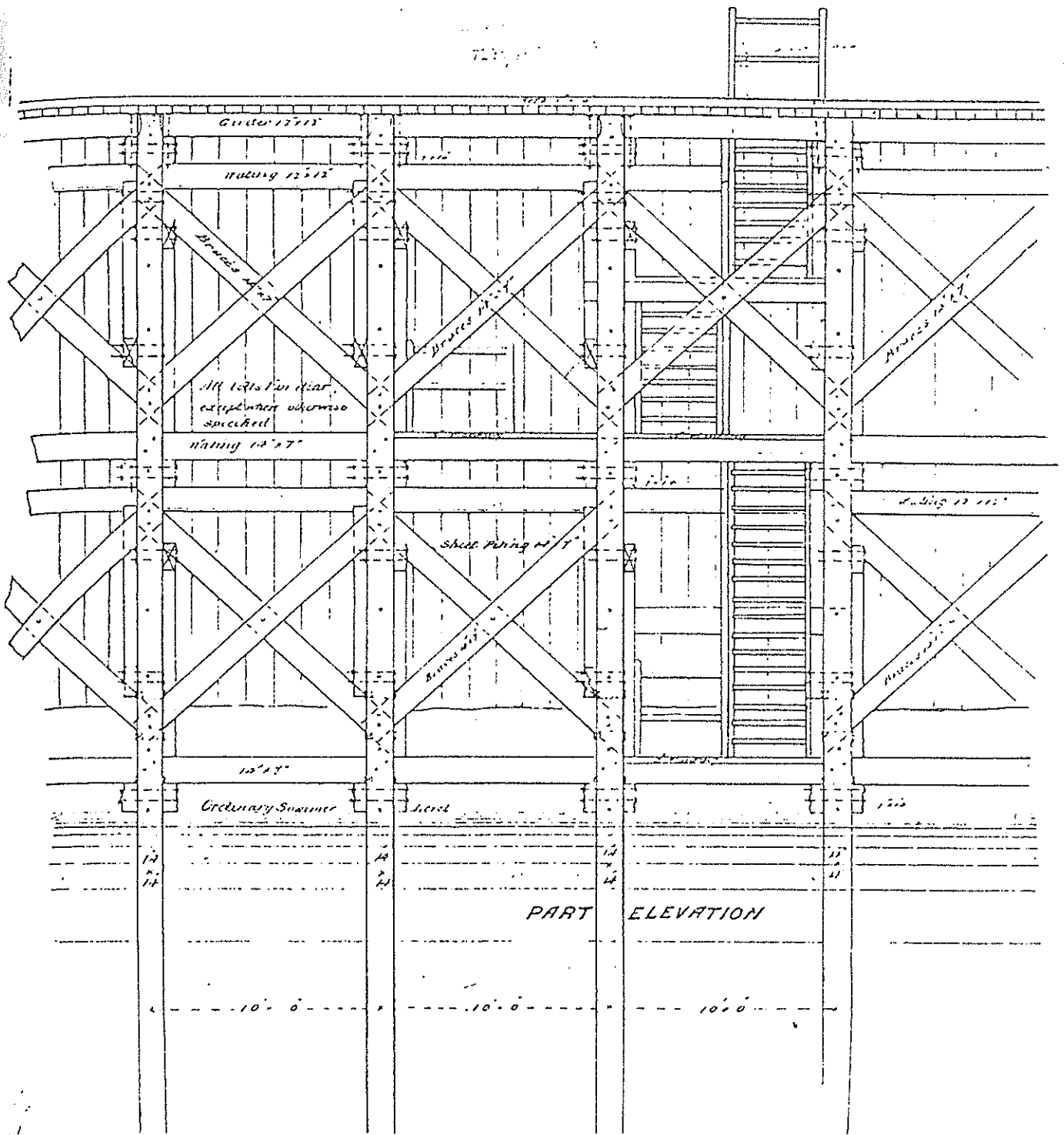


SECTION THRO' STAIRS

Design Drawings prepared in April, 1877.
 Building Contractor: Duncan Grant.
 Extract from Department of Marine and
 Harbors Drawing No. 3054/71.

WHARF, N.W. BEND.

MORGAN HERITAGE STUDY.



Design Drawings prepared in April, 1877.
 Building Contractor: Duncan Grant
 Extract from Department of Marine and
 Harbors Drawing No. 3054/71.

WHARF, N.W. BEND.

Wharf Section 2. (1878)

Name of Job: North West Bend Wharf Extension.
Contract 39.

Contract let by: Engineer of Harbors and Jetties, South
Australia.

Contract let to: Thomas Cain and Coy., South Yarra,
Victoria.

Date of Contract: July 30, 1878.

Contract Price: 5,860 pounds.

Job Description: "The contract referred to in this
specification includes the provision of all
tools, labor and material for the
complete and satisfactory execution of an
extension of the wharf at North West Bend,
River Murray for a length of 200 feet
and to a width of 24 feet across the
decking and the complete construction of a
timber staying at the back of the wharf
in accordance with this specification
and the accompanying drawings."

Materials: Timber "All timber used throughout the work
unless otherwise specified shall be of
Red Gum or Jarrah - well seasoned, free
from dead knots, pipes, gum veins, shakes
and all other injurious defects .."

Ironwork "The Ironwork is to be made from the
best B.B.H. Staffordshire or other approved
brand of equal quality ---. The bolts
and nuts are to be screwed to Whitworths
thread - heads and nuts to be square and
provided with washers of wrought iron
3" x 3" x $\frac{1}{4}$ " thick. All ironwork where
practicable is to be heated to a dull red
heat and plunged into a bath of boiled
linseed oil and immediately afterwards into
one of coal tar."

Detailed
Specifications: Other matters included in the specification
are: Workmanship, piles, walings, braces,
girders, decking (blue gum), kerbing (blue
gum), mooring rings, ladders, tarring (two
coats of coal tar).

Section 2. (Contd.)

Detailed Costs:
(examples)

- a) Red Gum or Jarrah timber in piles 14" x 14" including driving, tarring and ironwork. 5 shillings and 3 pence per cubic foot.
- b) Red Gum or Jarrah timber in walings, beams etc. including fixing, ironwork and tarring. 4 shillings and 6 pence per cubic foot.
- c) Blue Gum timber in deck planking, including fixing and tarring. 4 shillings and 1½ pence per cubic foot.

Documentation:

Department of Marine and Harbors, Port Adelaide.

- a) Contract 39.
- b) Drawing No. 3057/71; 3057A/71.

Current Condition:

The structure is still complete - some timbers need replacing and the decking requires some repair.

Other References:

- a) Tenders for construction were called on July 11, 1878. (20)

Steam Cranes (1878)

Name of Job: Four 3 Ton Cranes, Gearing, Engine, Boiler and Engine House for North West Bend Wharf Extension.
Contract 44.

Contract let by: Engineer of Harbors and Jetties, South Australia.

Contract let to: Forwood, Down and Co., Engineers and Founders, Hindley Street, Adelaide.

Date of Contract: August 30, 1878.

Contract Price: 2,928 pounds and 2 shillings.

Job Description: "The contract to which this specification refers is for the erection and construction of 4-3 ton Cranes with Gearing, 1-14 H.P. Engine, 1 Boiler and Engine House at North West Bend, River Murray, in accordance with this specification and accompanying drawings".

Materials: Cranes Cast iron crane posts and gearing frames, plus braking, clutch and hoisting gear systems. Wrought iron fixings. Details in specification.

Engine and Boiler "Are of 'Tangye's' (Size J) High Pressure Steam Engines with feed pump attached".

"A Cornish Boiler -- to be of the following dimensions, length 16'0", diameter 4'6", Flue 2'4", to be made of the best Staffordshire plate 3/8" thick - the ends 1/2 inch plate, with a plate of Lowmoor Iron over the grate bars and three-3- Galloway Tubes fire grate 5 feet long and a Baileys patent fusible plug over fire bars and to be furnished with mountings as follows viz - Safety Valve, Stop Valve, Check Valve, Pressure Gauge, Water Gauge, Gauge Cocks, Blow off Cock, Cast Iron Plate for attaching Blow off Cock and Furnace front double wrought iron doors - Dead Plate fire bars and bridge with steam piping as required between Engine and Boiler - and to be tested up to 130 lbs. per square inch."

Driving Shaft From Engine House "shall be enclosed in a box of red gum 12" x 4" inches".

Engine House Timbers used included red gum or jarrah where hardwoods were specified and other timbers of Baltic red fir. Walls were of local limestone (rubble stone).

Steam Cranes (1878) Contd.

Materials: Chimney Height 60 feet. The specification allowed
(Contd.) construction either in stone or brick.

Detailed
Costs:
(examples)

- a) For supplying Engine, Boiler, Cranes and Gearing and fixing same. 1976 pounds and 2 shillings.
- b) Engine House and Chimney, 947 pounds.
- c) Cranes, each 150 pounds.
- d) Stone Masonry, 59 shillings per cubic yard.
- e) Brickwork, 83 shillings per cubic yard.
- f) Plastering, 3 shillings and 6 pence per cubic yard.
- g) Red gum timber, fixed, 12 shillings and 6 pence per cubic foot.
- h) Baltic timber in flooring etc., 62 shillings per square of 100 feet.
- i) Galvanised, corrugated iron fixed, 80 shillings per square of 100 feet.

Documentation:

Department of Marine and Harbors, Port Adelaide.

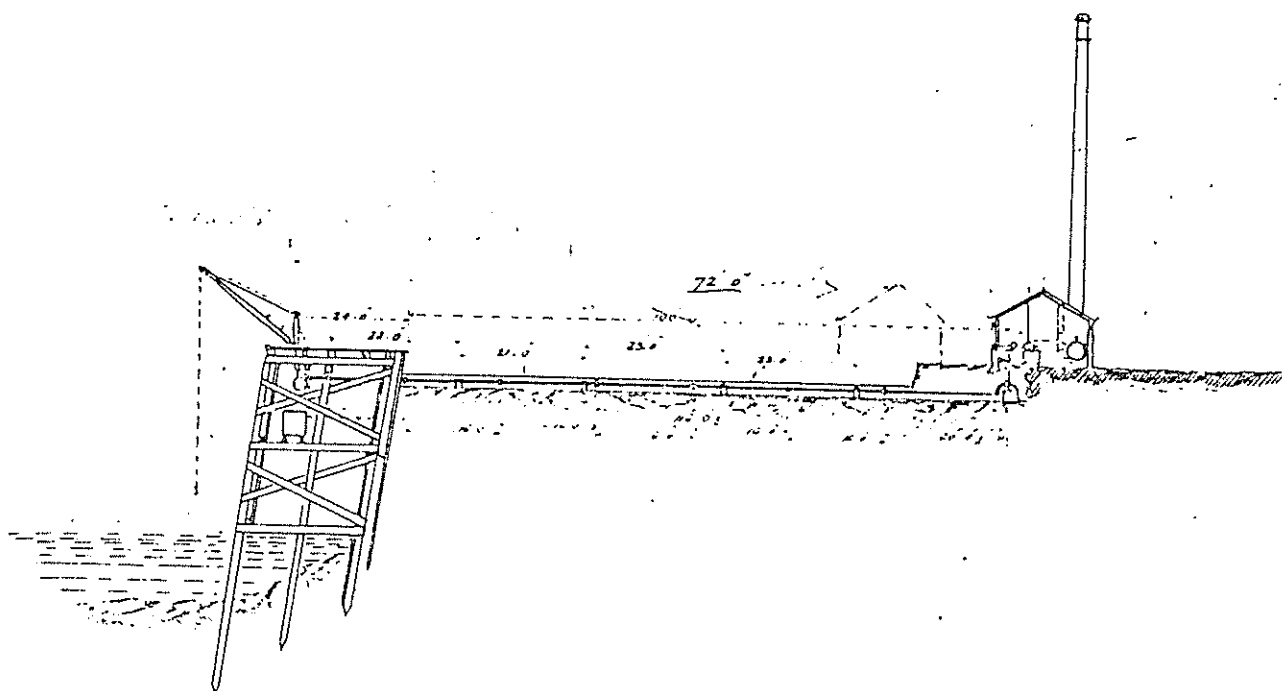
- a) Contract No. 44.
- b) Drawing Nos. 3056/71; 3202/14.

Current Condition:

Demolished.
There are some remnants of the iron fixings and shafts on the wharf structure.

Other References:

- a) Tenders for construction were called on August 8, 1878 (20)



— END ELEVATION —

Design Drawings, 1878 for Four 3-ton Cranes.

Gearing, Engine, Boiler and Engine House.

Extract from Dept. of Marine and Harbors Drawing 3056/71.

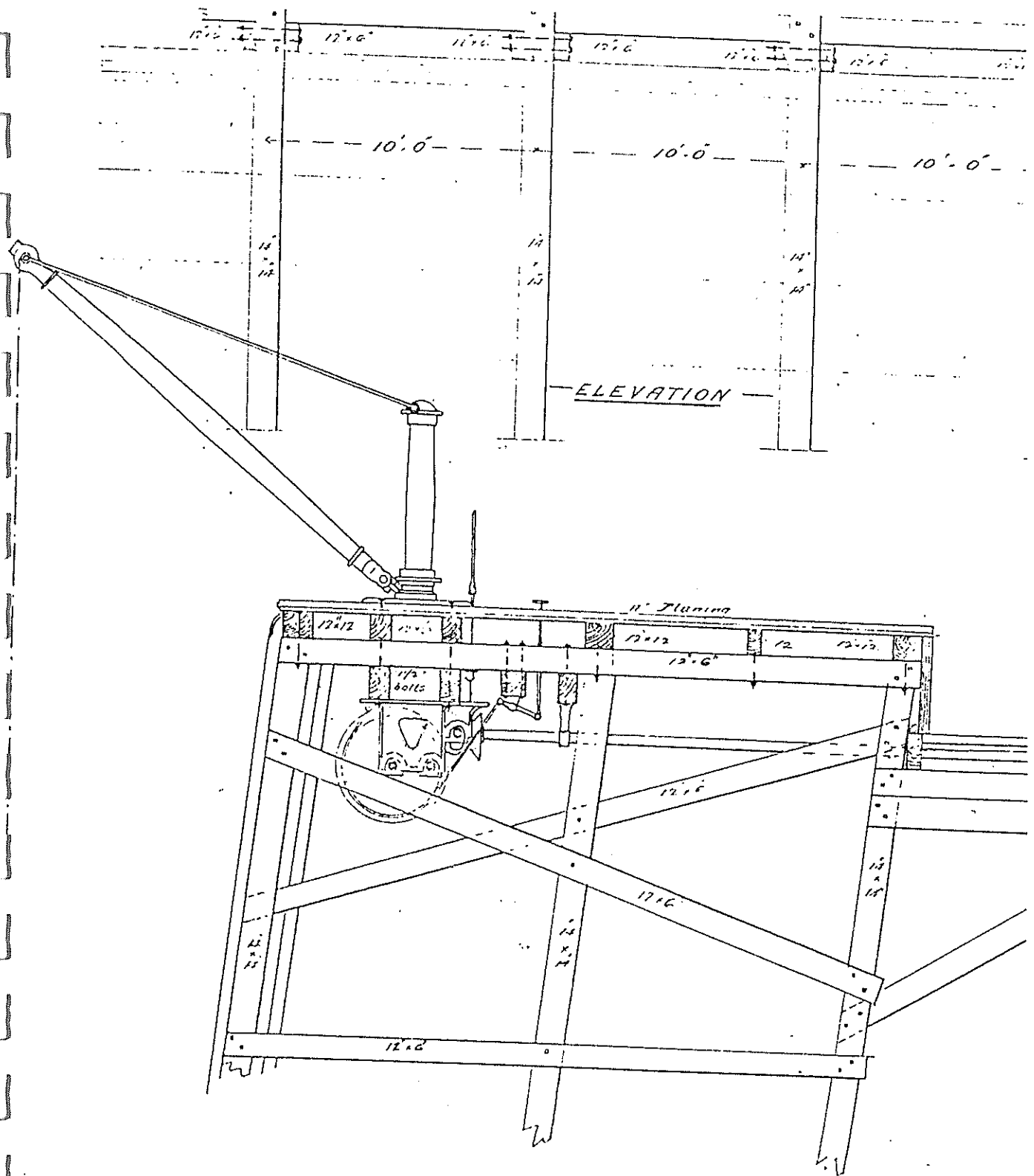
STEAM CRANES

MORGAN WHARF

Demolished

MORGAN HERITAGE STUDY.

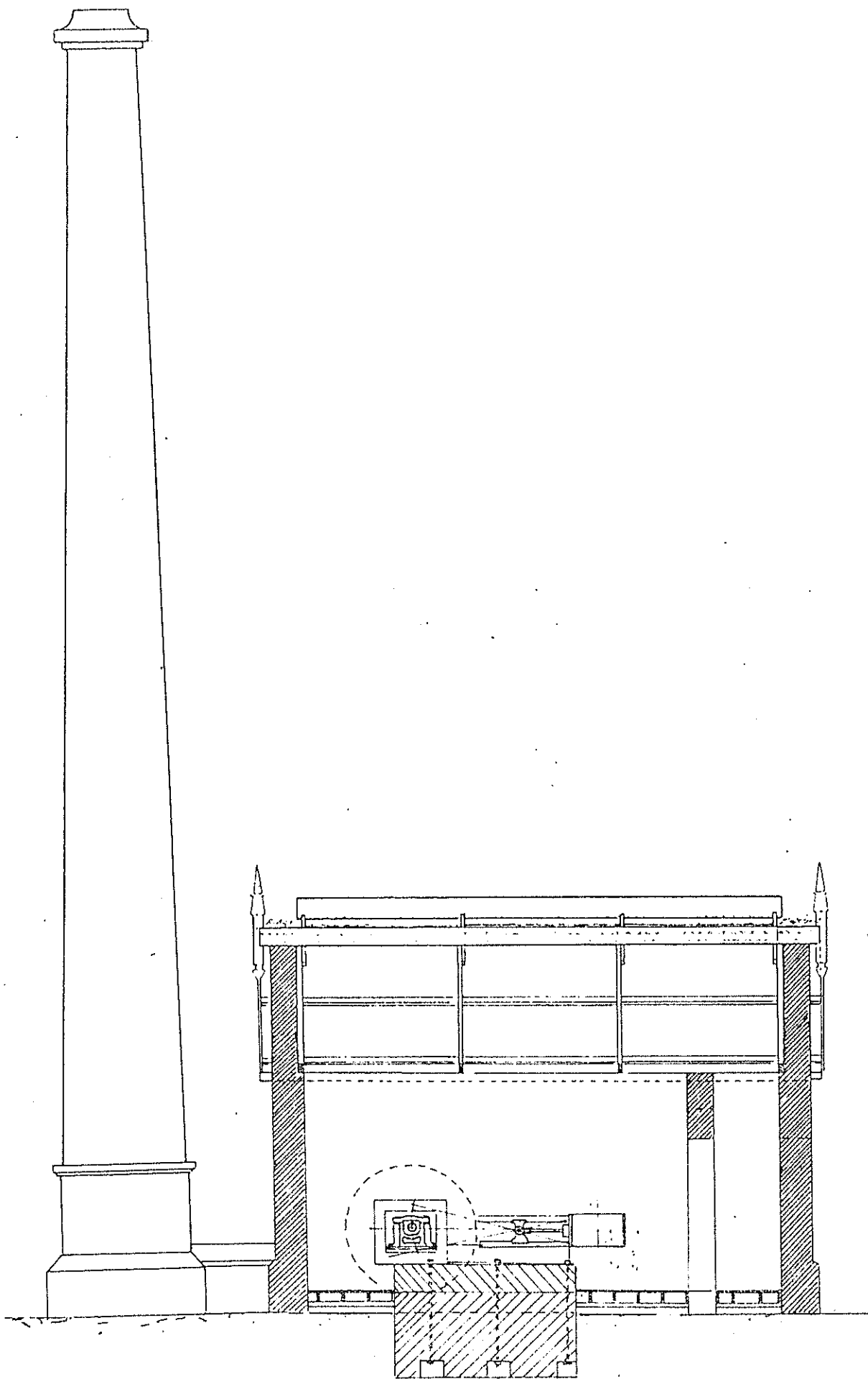
Ed. Hoack and Associates, Town Planners, Largs Bay, S.A. in association with Heritage Investigations. 1980.



Design Drawings, 1878 for Four 3-ton Cranes,
 for Spring, Engine, Boiler and Engine House
 Extract from Dept. of Marine and Harbors Drawing 3056/71.

STEAM CRANES
MORGAN WHARF
 Demolished

MORGAN HERITAGE STUDY.



Design Drawings, 1878 for Four 3-ton Cranes.

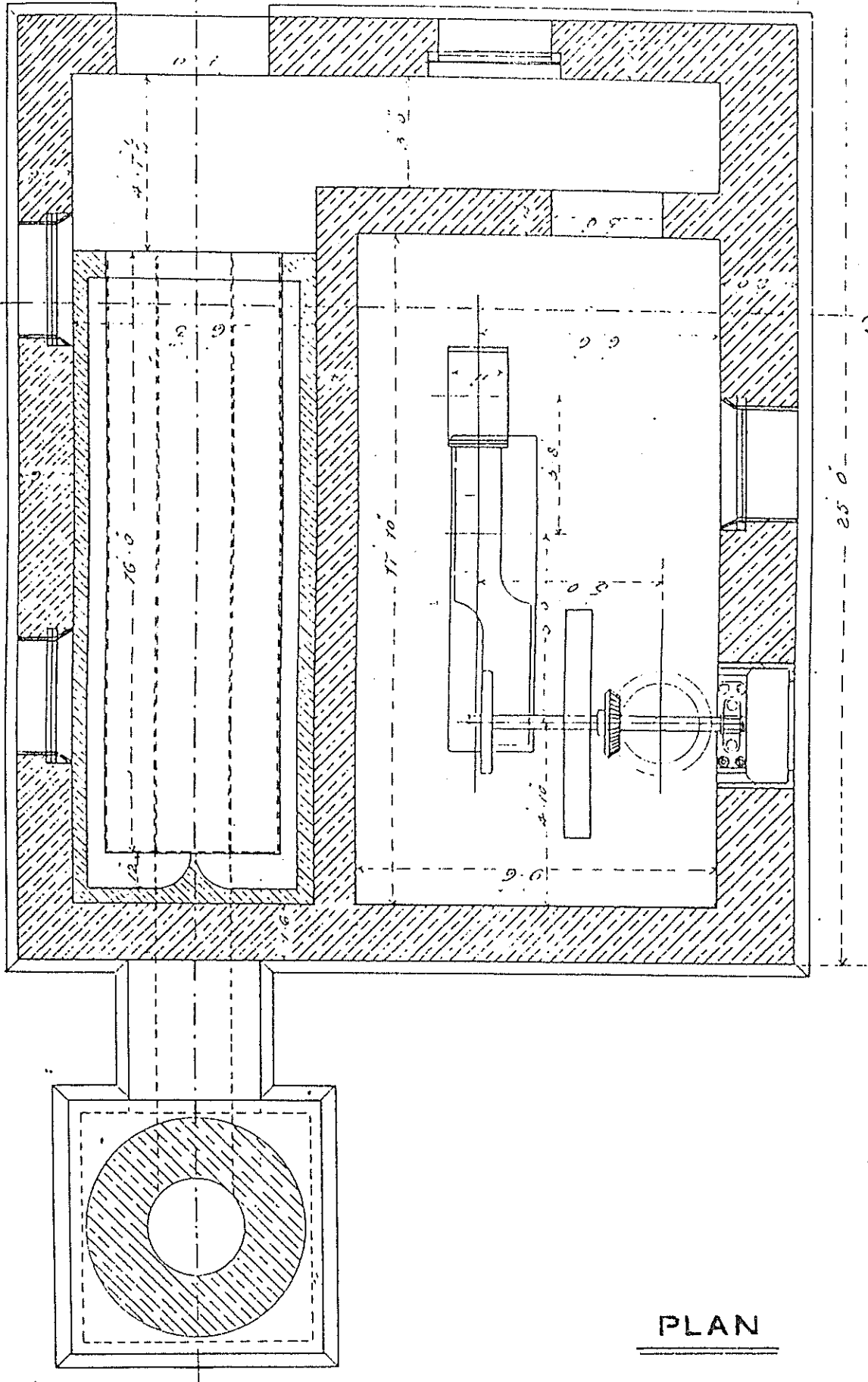
Leaving Engine, Boiler and Engine House.

Extract from Dept. of Marine and Harbors Drawing No. 3202/14

ENGINE HOUSE
MORGAN WHARF
 Demolished

MORGAN HERITAGE STUDY.

Hoock and Associates, Town Planners, Largs Bay, S.A. in association with Heritage Investigations. 1980.



PLAN

Design Drawings, 1878 for Four 3-ton Cranes,
 Lifting Engine, Boiler and Engine House.

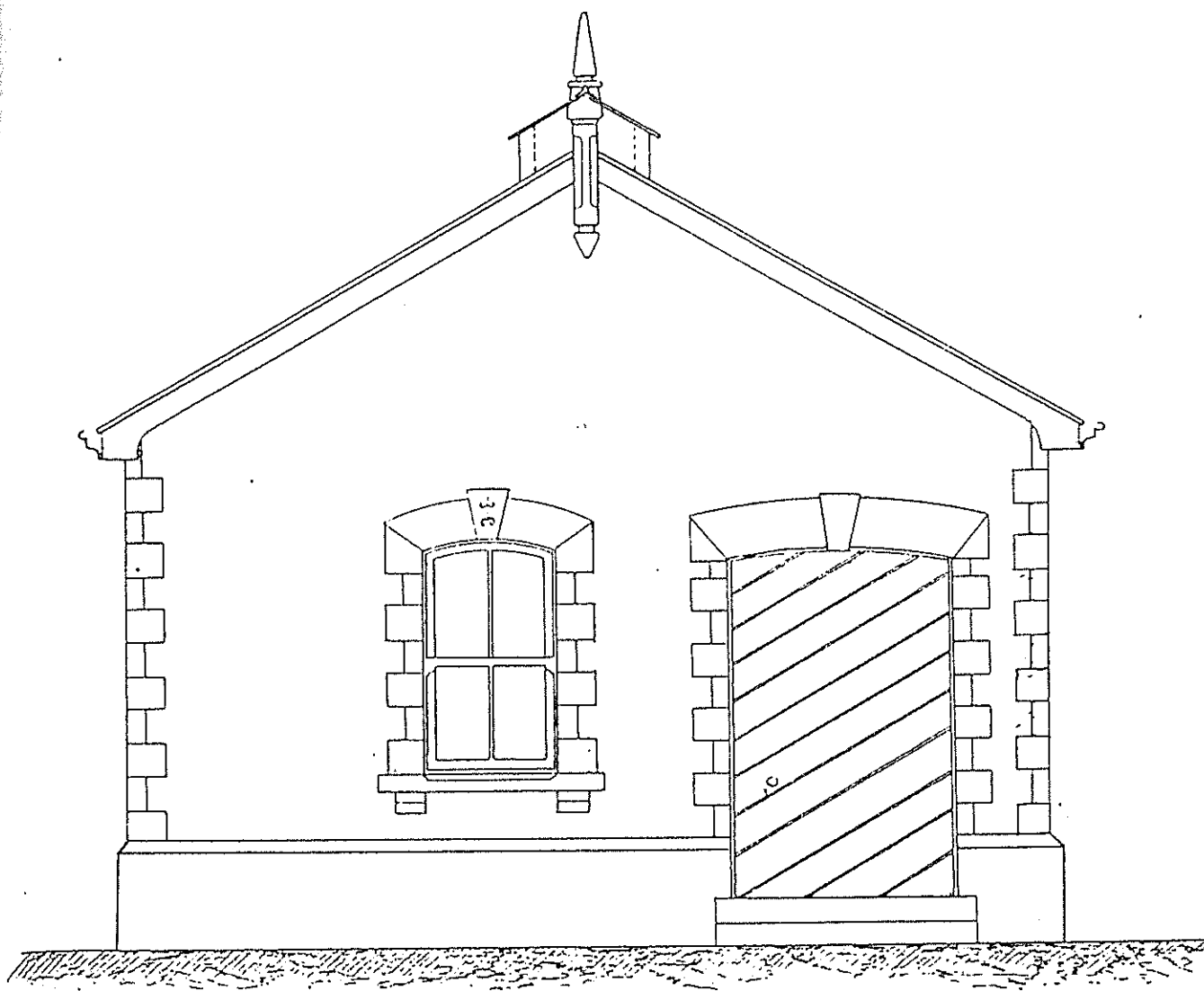
Extract from Dept. of Marine and Harbors Drawing No. 3202/14

**ENGINE HOUSE
 MORGAN WHARF**

Demolished

MORGAN HERITAGE STUDY.

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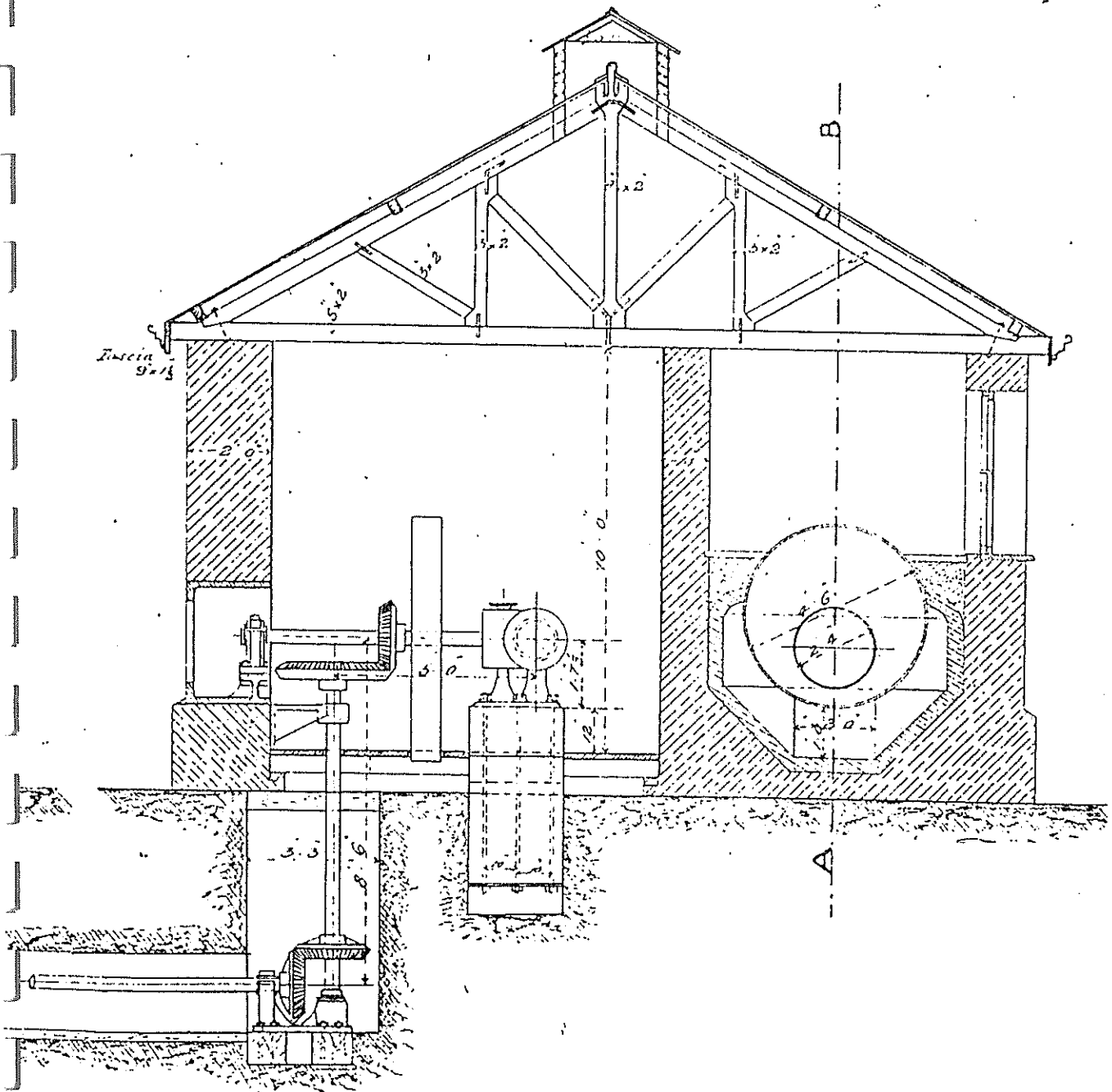


END ELEVATION

Design Drawings, 1878 for Four 3-ton Cranes,
Gearing, Engine, Boiler and Engine House.
Extract from Dept of Marine and Harbors Drawing No 3202/14

ENGINE HOUSE
MORGAN WHARF
Demolished

SECTION ON LINE C.D.



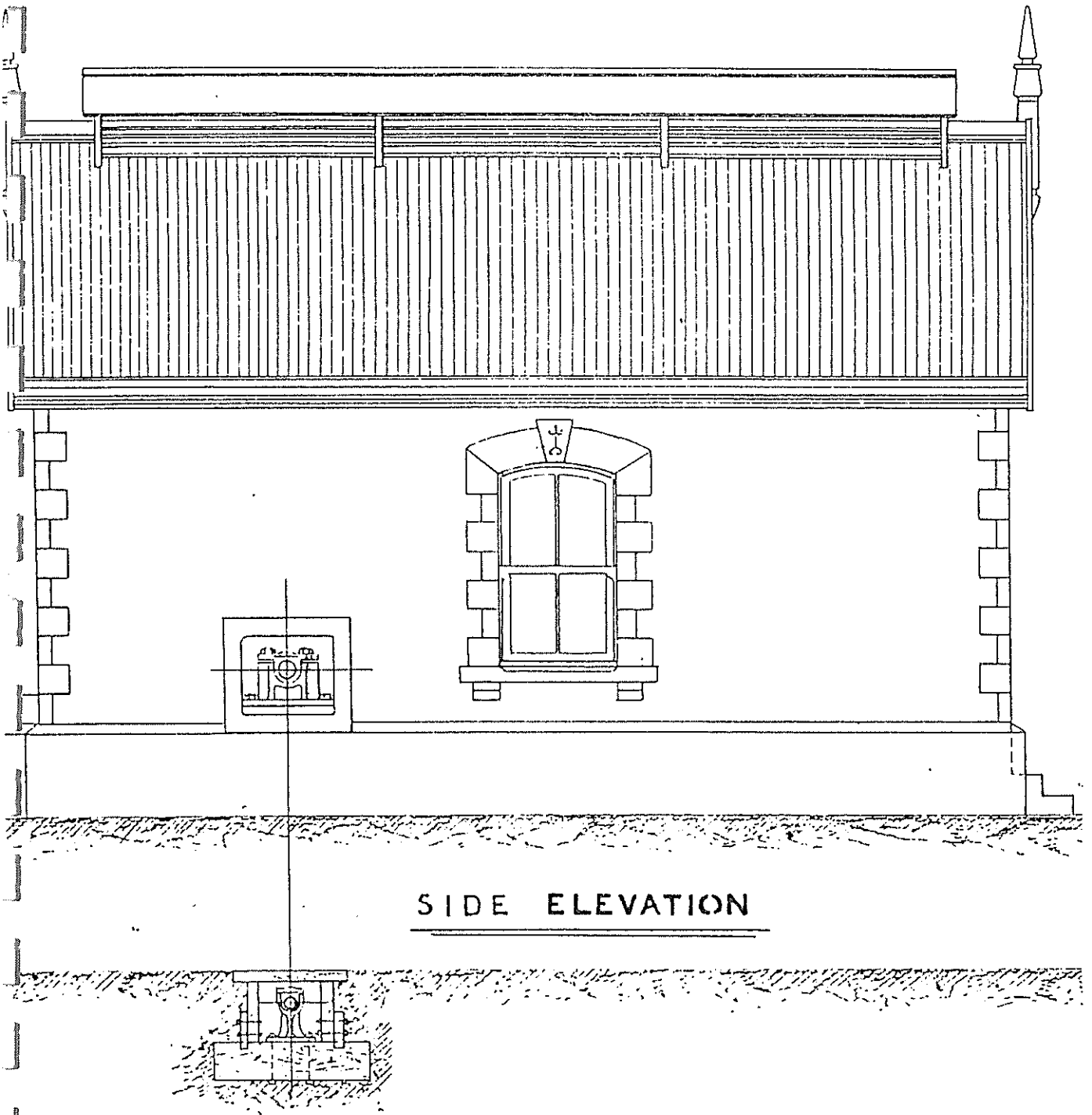
Sign Drawings, 1878 for Four 3-ton Cranes,
 carrying Engine, Boiler and Engine House.
 Extract from Dept. of Marine and Harbors Drawing No. 3202/14

**ENGINE HOUSE
 MORGAN WHARF**

Demolished

MORGAN HERITAGE STUDY.

Noack and Associates, Town Planners, Largs Bay, S.A. in association with Heritage Investigations. 1980.



SIDE ELEVATION

Design Drawings, 1878 for Four 3-ton Cranes.

Original Drawing, Engine, Boiler and Engine House.

Extract from Dept. of Marine and Harbors Drawing No. 3202/14.

**ENGINE HOUSE
MORGAN WHARF**

Demolished

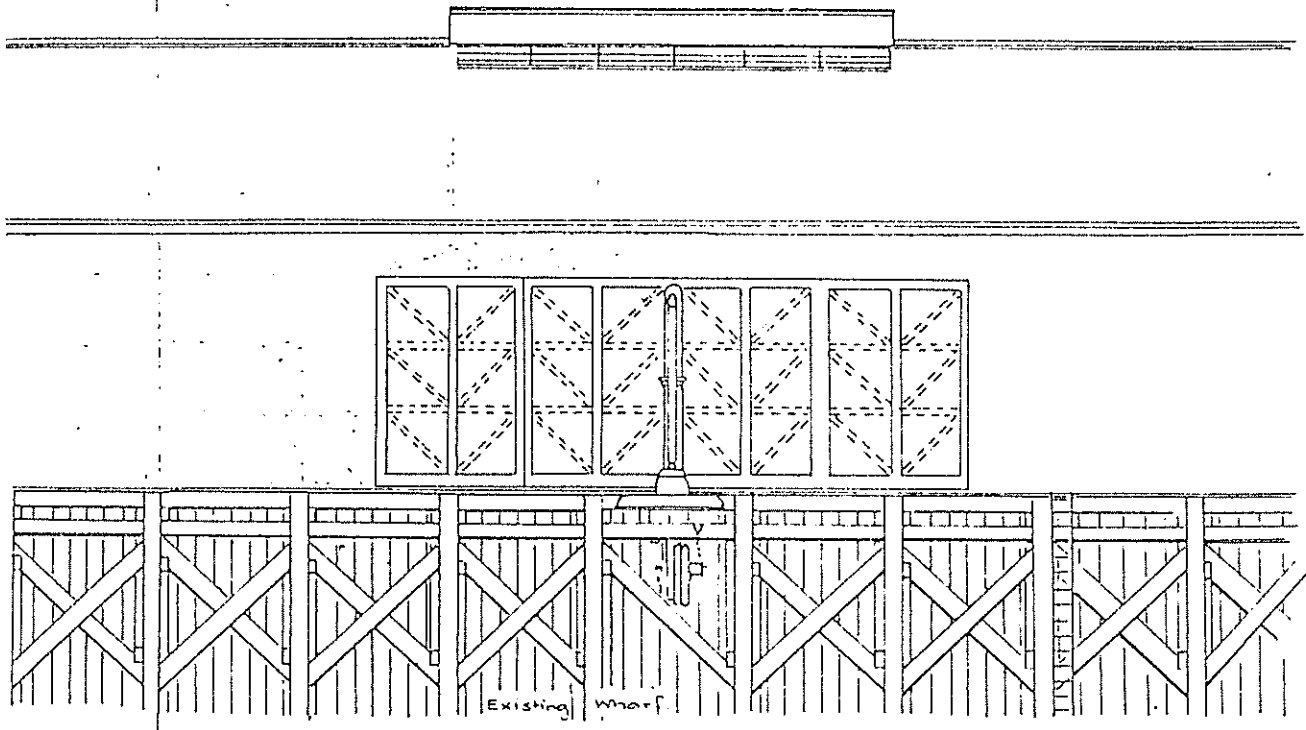
MORGAN HERITAGE STUDY.

Hoock and Associates, Town Planners, Largs Bay, S.A. in association with Heritage Investigations. 1980.

Goods Shed (1878)

Name of Job: Goods Shed at North West Bend Wharf.
Contract let by: Engineer in Chief, South Australia.
Contract let to: J. Wishart, Buxton Street, North Adelaide.
Date of Contract: September 24, 1878.
Documentation: Department of Marine and Harbors, Port Adelaide.
a) Contract
b) Drawing No. 3057/71.
Current Condition: Demolished.
Other References: a) Noted in Report to Parliament. (23)

— Scale 8 Feet per Inch. —



Design Drawings, Sept. 1878 for a goods

shed to be built over the wharf.

Extract from Dept. of Marine and Harbors Drawing 3178/13B

**GOODS SHED
MORGAN WHARF**

Demolished

MORGAN HERITAGE STUDY.

Noack and Associates, Town Planners, Largs Bay, S.A. in association with Heritage Investigations, 1980.

Hydraulic Equipment (1880-1882)

The cranes installed initially did not prove satisfactory. (22) (24). Therefore, improvements were made to the cranes and to goods handling generally with the installation of equipment manufactured by Sir William Armstrong of Newcastle on Tyne.

The contracts for the work are not available but there is information on plans held by the State Transport Authority and the Department of Marine and Harbors:

- a) Sketch plan showing the hydraulic cranes with Accumulator, Pumps etc. (S.A.R. Plan DR 344 - Plan by Sir Wm. Armstrong). Drawn September 16, 1880.
- b) Hydraulic Traverser for Morgan Station Yard (S.A.R. Plan DR 344 - Plan by Sir Wm. Armstrong). Drawn June 8, 1882.
- c) Arrangement for force pump and accumulator, Morgan Wharf. (S.A.R. Plan DR 344 - Plan by Sir Wm. Armstrong). Drawn November 13, 1880.
- d) Double action lifting pump - showing pump and piping on wharf. (S.A.R. Plan DR 344 - Plan by Sir Wm. Armstrong). Drawn November 18, 1880.
- e) Double powered hydraulic crane to lift 3 tons through 15 feet. (S.A.R. Plan DR 344 - Plan by Sir Wm. Armstrong). Drawn November 18, 1880.
- f) Arrangement of hydraulic machinery and pipes. (S.A.R. Plan DR 344 - Plan by Sir Wm. Armstrong). Drawn November 13, 1880.
- g) Hydraulic traverser, capstan etc. (S.A.R. Plan DR 344 - Plan by Sir Wm. Armstrong). Drawn March 22, 1882.
- h) "The old cranes worked by spur wheels have been replaced by new hydraulic cranes manufactured by Sir William Armstrong viz. One 5 ton crane 20'0" radius
One 3 ton crane 18'6" radius
Two 3 ton cranes 17'0" radius."

Note on Department of Marine and Harbors, Drawing No. 3056/71. Note dated December, 1881.

Current Condition:

All of the equipment has been dismantled apart from one crane which was used to load rail wagons from the loading platform at the rear of the wharf. Some relics of the ironwork do remain on the wharf structure and on the ground and water beneath it.

Wharf Section 3 and Goods Shed Extension (1912)

Name of Job: Extension of Wharf and Goods Shed at Morgan.

Contract let by: Chief Engineer for Railways Department, South Australia.

Contract let to: Arthur Townsend, Exeter, South Australia.

Contract Price: 6,421 pounds and 16 shillings.

Job Description: An extension of a 150'0" length to the existing wharf and goods shed at Morgan.

Materials: Wharf "All timbers shall be West Australian jarrah for piles and for other timber work jarrah or South Australian red gum, grown in approved districts and shall be straight, sound and well seasoned, free from bark, sap, shakes, gum-veins, large, loose or dead knots, cross grain, pipes or other defects sawn or hewn square without wavey edges, and shall hold full to the dimensions specified."
Timbers

Shed Timber frame with corrugated galvanised iron roof and walls.

Detailed Specifications: Department of Marine and Harbors, Port Adelaide.

a) Contract No. 119/1912.

b) Drawing Nos. 3060/71; 3061/71; 3062/71; 3063/71.

Current Condition: a) Wharf Section - both the structure and the decking are in good condition.

b) Goods Shed - demolished.

Shed for Hydraulic Machinery (1913)

Name of Job: Morgan, Shed for hydraulic machinery,
B. & W. Boiler.

Contract let by: Chief Engineer for Railways, South Australia.

Contract let to:

Date of Contract:

Contract Price:

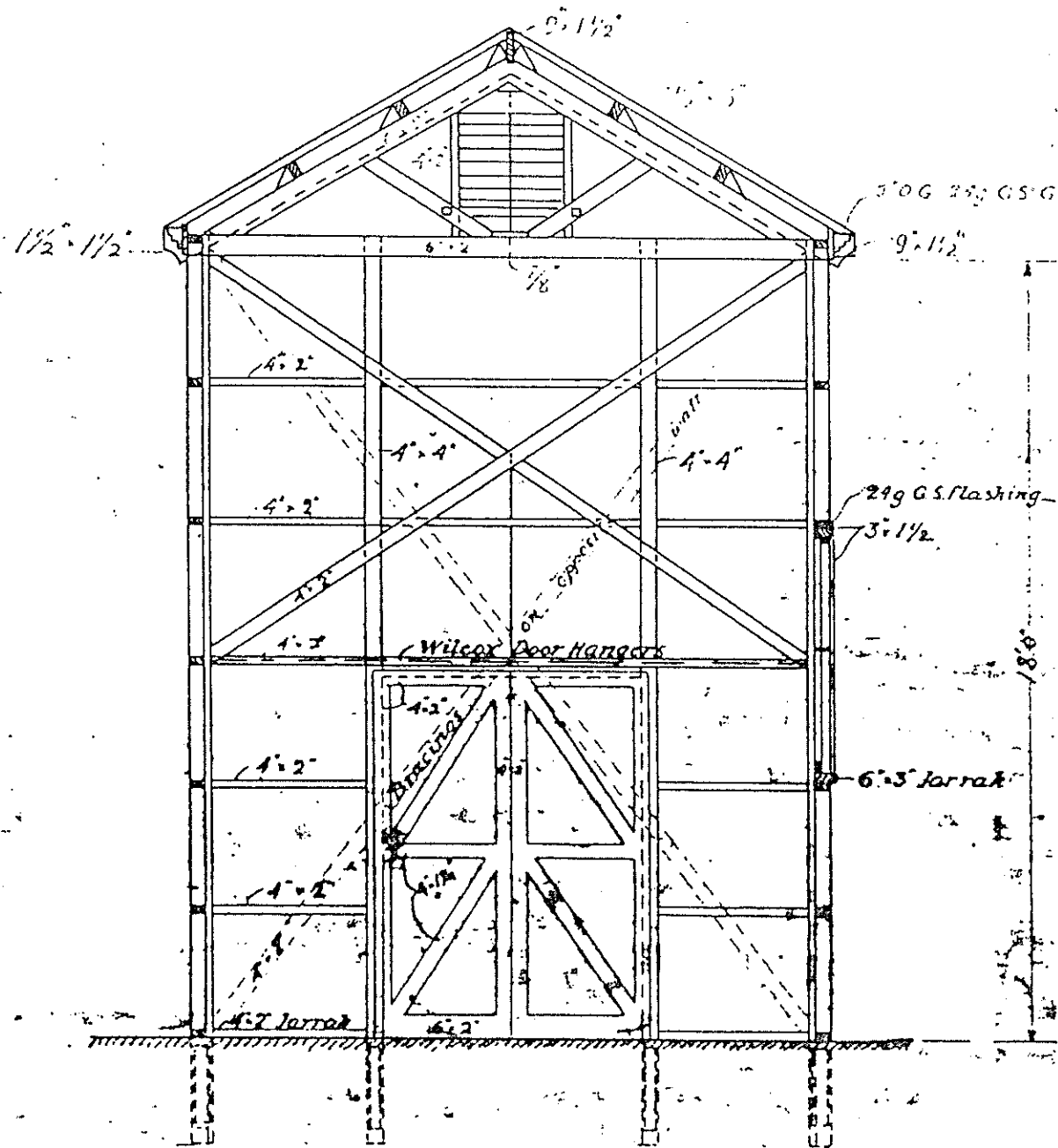
Job Description:

Materials: Timber structure, corrugated galvanised
iron roof and walls.

Documentation: Department of Marine and Harbors, Port
Adelaide.

a) Drawing No. 3201/14.

Current Condition: Demolished.



sign Drawing, 1913, for a new shed adjoining
 existing boiler house.

tract from Dept. of Marine and Harbors Drawing 3201/14.

SHED FOR HYDRAULIC MACHINERY

Demolished

MORGAN HERITAGE STUDY.

Hoack and Associates, Town Planners, Largs Bay, S.A. in association with Heritage Investigations. 1980.

Handrail (1914)

Name of Job: Hand railway for protecting Gangway of Wharf Extension, Morgan.

Contract let by: Chief Engineer for Railways, South Australia.

Contract let to: Not known.

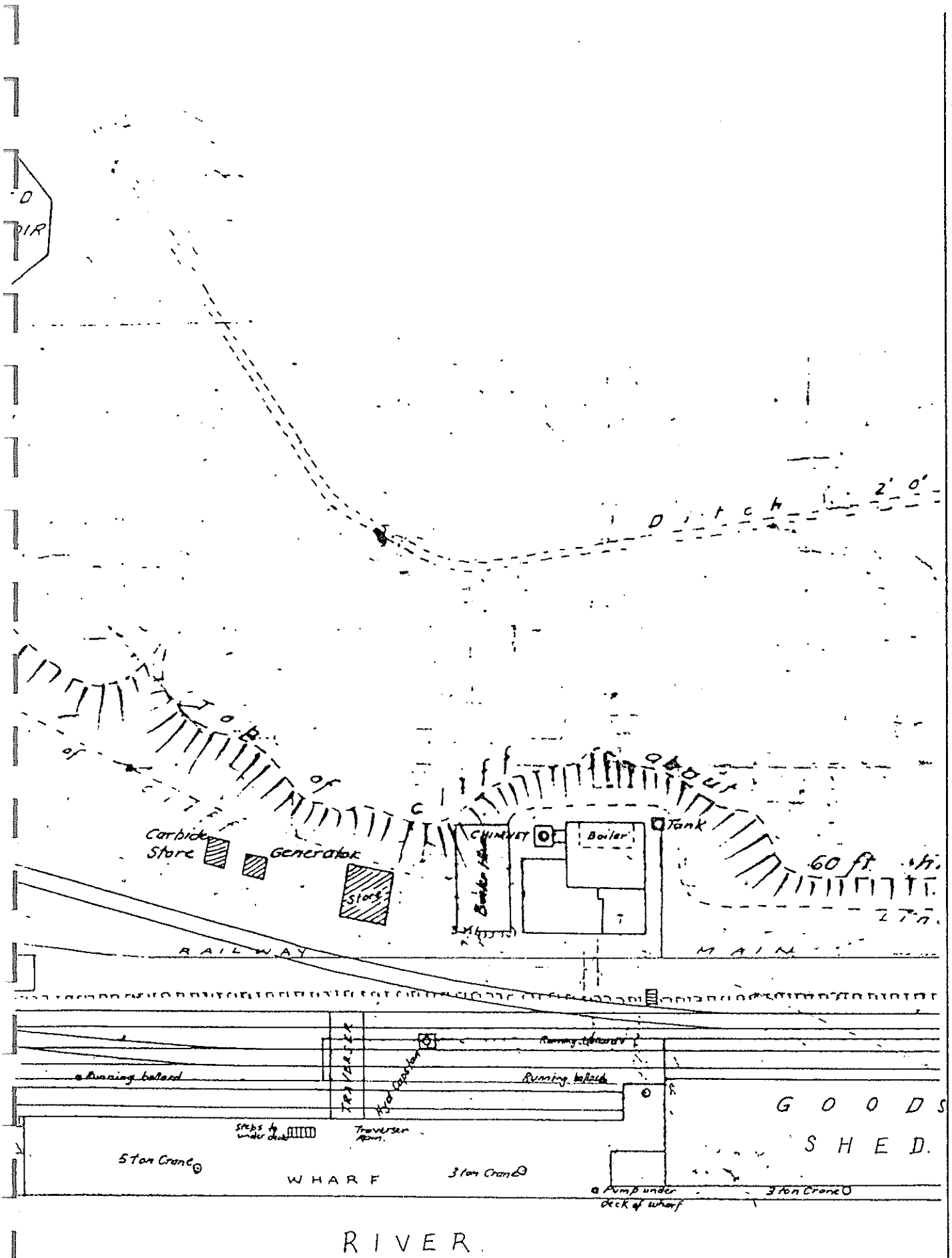
Date of Contract: Work carried out in May, 1914.

Contract Price: Not known.

Materials: Dressed jarrah posts, Rails, part 1½" pipe, part chain.

Documentation: Department of Marine and Harbors, Port Adelaide.

a) Plan No. 3059/71.



Plan prepared to show improvements on Railway Reserve.
 Extract from Dept. of Marine and Harbors Drawing 3064/71.
 Scale: 40ft to 1 inch.

**STRUCTURES IN THE
 WHARF AREA
 1915**

MORGAN HERITAGE STUDY.

Hoack and Associates, Town Planners, Largs Bay, S.A. in association with Heritage Investigations. 1980.

Post (1915)

Since 1915, the wharf area has received only minor repairs and suffered substantial demolition work.

1926. Repairs were made to the platform which carried the rail track south of the main wharf.
Department of Marine and Harbors Drawing No. 352/25.
1939. Repairs were made to the wharf.
Department of Marine and Harbors Drawing No. 3059/71.
1952. A contract was let to W.G. Hinton, 51 Payneham Road, St. Peters, South Australia; for "Removal of portion of cargo shed and timber platform, Morgan, S.A."
Department of Marine and Harbors, Contract 37/51 and Drawing No. 11922/71.
1960. A contract was let to K. Klement, 132 Irish Harp Road, Enfield, S.A., for "Purchase and Removal of Buildings, Brick Smoke Stack, Steam and Hydraulic Plant, including Cranes, at Morgan, S.A."
Department of Marine and Harbors, Contract 7/60.
1964. A contract was let to Benoco Manufacturing Co. of Burra North for "The Purchase and Removal of Cargo Shed on Wharf, Morgan, S.A."
Department of Marine and Harbors, Contract 18/64 and Drawing No. 11922/71.
1965. Repairs were made to the northern end of the wharf. Access steps to lower landing stage were constructed.
Note on Department of Marine and Harbors Drawing No. 3064/71.
- Girders and decking were removed from the southern portion of the wharf and a wire mesh fence was constructed.
Note on Department of Marine and Harbors Drawing No. 3064/71.

RAILWAY BUILDINGS & STRUCTURES

Landing Stage and Tramway (1877)

The red gum sleepers for the Kapunda to North West Bend Railway were transported to North West Bend by river steamer. The contractors, Overend and Robb, constructed a temporary landing stage on the river bank with a tramway running up the bank to connect with the rail track - in this way, the sleepers were conveyed from steamer to rail wagon. (12).

Current Condition: Demolished.

Rail Track and Embankment (1877)

The Contractors for the rail construction project were Overend and Robb, who at the height of the job employed 600 men and 120 horse teams. (4) The contract was awarded on April 7, 1877. (21).

Works at the North West Bend included a stone and earth embankment to carry the railway from the bridge at the southern entrance of the railway yards to the wharf. The *Register* described it as:

"a large retaining wall of packed stone, in places over 30 feet high .." (13)

The embankment was completed by March 1878 (3). Red gum sleepers were supplied from sawmills at Tungkillo, Williamstown and Echuca. (14)

The first train to travel from Eudunda to North West Bend was on September 13, 1878, the line having been completed two days previous. (5).

The railway was formally opened on October 18, 1878, by the Governor, Sir William Jervois. (15).

Tender Notices:

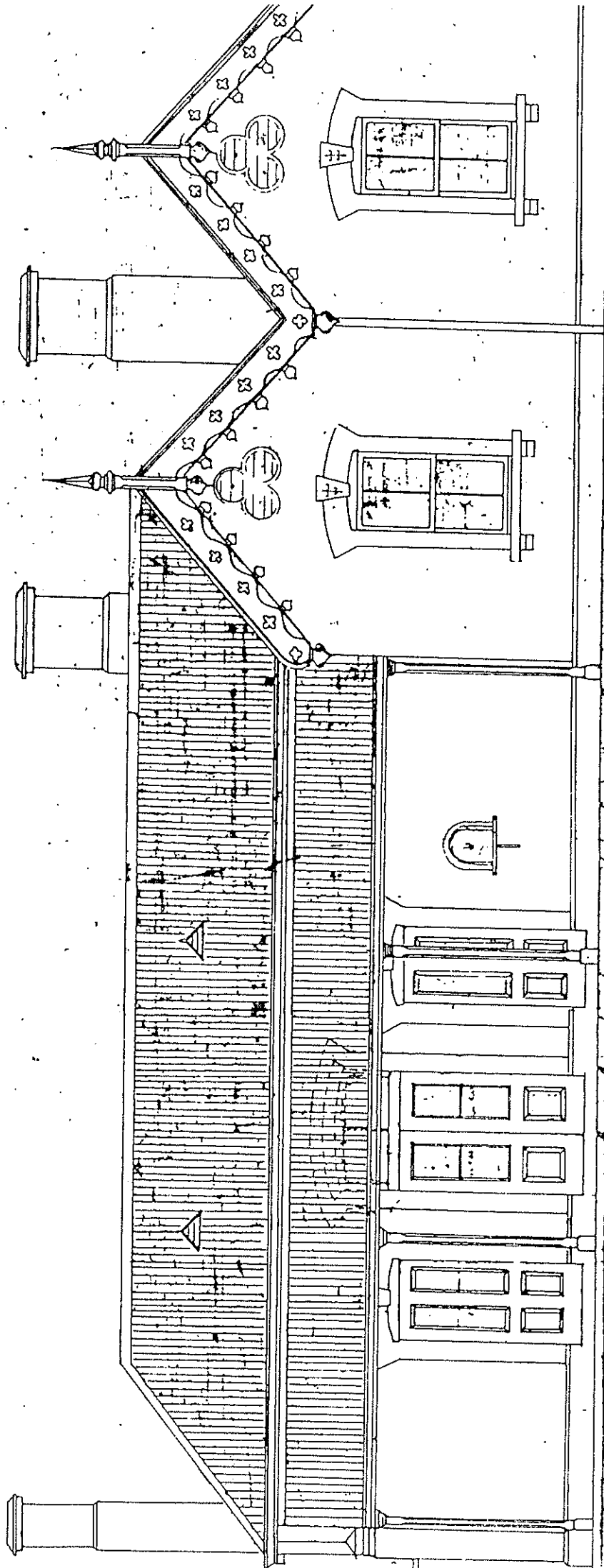
- a) Tenders called January 18, 1877, for construction of railway. (20).

Current Condition:

Relics of the rail track remain on existing roads and in Allotment 414. It is recommended that these be retained as the only physical manifestation of the former existence of a railway. The embankment remains but in a modified form.

Station and Residence (1877)

- Name of Job: Construction of a Passenger Station and Residence for the Station Master at North West Bend.
- Contract let by: Engineer-in-Chief.
- Contract let to: Overend and Robb.
- Date of Contract: August 29, 1877.
- Contract Price: 890 pounds.
- Materials: Dressed stone walls of local 'flat bedded rubble', corrugated iron roof. Hardwoods are jarrah or red gum; other timber Baltic red fir.
- Documentation: State Transport Authority, Adelaide.
- a) S.A.R. Contract 26/1877
 - b) S.A.R. Drawing No. DR 214/2121A
- Current Condition: The building is structurally sound but requires immediate attention to the roof and guttering to prevent water from running down the walls. Water also needs to be drained away from the foot of the walls. The building was transferred to the ownership of the District Council of Morgan on July 27, 1971.
- Other References:
- a) The *Register* reported that the station house was nearly complete in March, 1878, and presented a "neat appearance." (3)
 - b) The *Observer* reported that the station is being erected on a hillside at a distance of 132 feet from the centre of the line - and that earthwork is required to form a proper station yard. (4)
 - c) The reporter from the *Observer* who travelled on the first train from Eudunda to North West Bend in September 1878, observed that:
"The Station, a pretty substantial building, stands back a considerable distance from the line and has a hollow between.
 - d) The station is visible on a photograph taken about 1879. (19).
 - e) The first Station Master, T.W. Tapp, commenced service on October 28, 1878. (25)



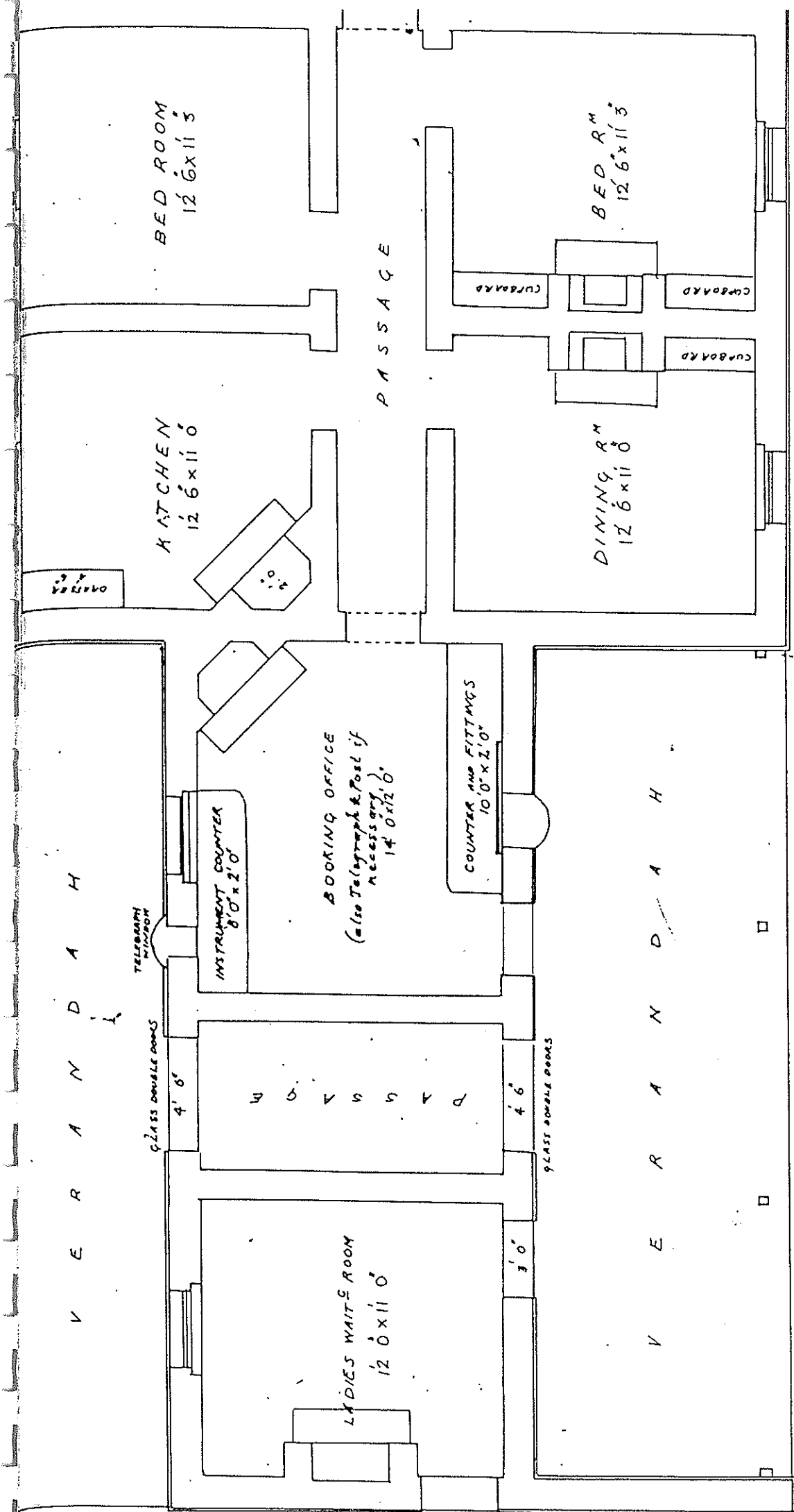
AA - SURFACE SECTION OF RAILWAY

ELEVATION.

Design Drawings for Station and Station Master's
 Residence, prepared July, 1877
 Extract from S.A. Railways Drawing DR 214/2121

STATION, 1877

MORGAN HERITAGE STUDY.
 Ed. Hoack and Associates, Town Planners, Largo Bay, S.A. in association with Heritage Investigations. 1980.



PLAN

Redrawn from S.A. Railways Drawing DR 214/2121.

STATION 1877

Morgan Heritage Study, 1980.

Railway Bridge (1877)

The Railway Bridge at the entrance to the Railway Station Yard at Morgan was constructed as part of the overall rail construction program by Overend and Robb in 1877. The original plans showed a double five foot culvert and work on this commenced but was altered during construction to a masonry bridge with a twenty foot opening.

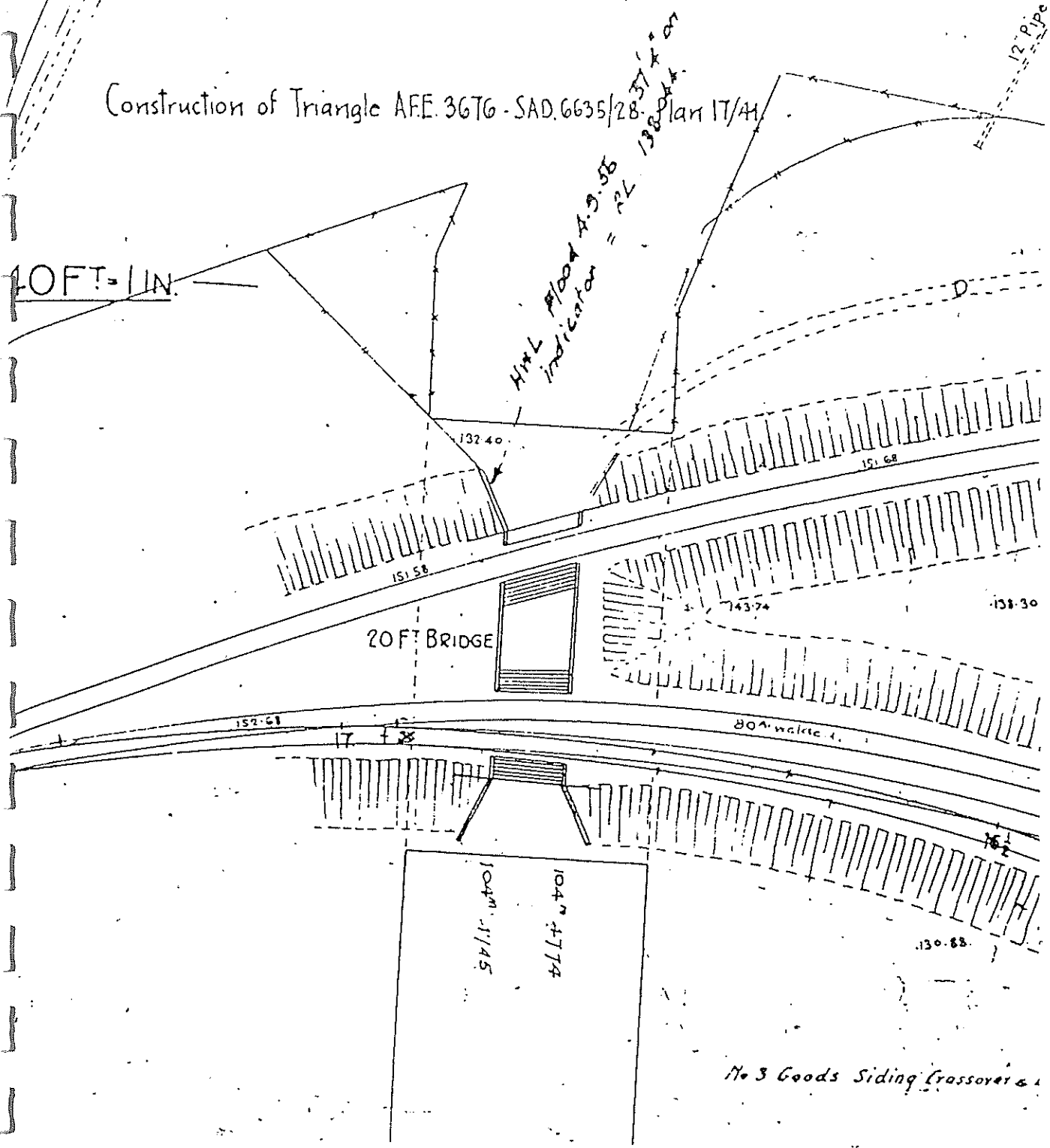
The *Register* reported in March 1878 that the bridge "is now nearly completed and being built with large blocks of stones it presents a fine and massive appearance." (13)

Current Condition: The bridge itself has been demolished but the southern pier and retaining wall still remain and provide a good example of stone masonry worthy of retaining.

Construction of Triangle AFE. 3GTG - SAD. 6635/28. Plan 17/41

10 FT = 1 IN.

Handwritten note: H/L Floor A. 9. 56
Indicator = PL 138. 844



Scale, 1 inch : 40 feet.
Extract from SA Railways Drawing No. 17/37. (1922)

RAILWAY BRIDGE
MORGAN
Partly Demolished

Platforms (1878)

Name of Job: Construction of Goods and Passenger
Platforms at Morgan.

Contract let by: Commissioner of Railways.

Contract let to: J. Wishart, North Adelaide.

Date of Contract: November 11, 1878.

Contract Price: 475 pounds.

Documentation: State Transport Authority, Adelaide.

a) South Australian Railways Contract
55/1878.

Current Condition: The platforms remain in a modified condition.

Other References: a) Tenders for construction were called
on October 24, 1878. (20).

b) Noted in report to Parliament. (23)

Engine Running Shed (1878)

Name of Job: Construction of an Engine Running Shed at North West Bend Station.

Contract let by: Commissioner of Railways.

Contract let to: John Wishart, North Adelaide.

Date of Contract: October 9, 1878.

Contract Price: 950 pounds.

Documentation: State Transport Authority, Adelaide.

a) South Australian Railways Contract 30/1878.

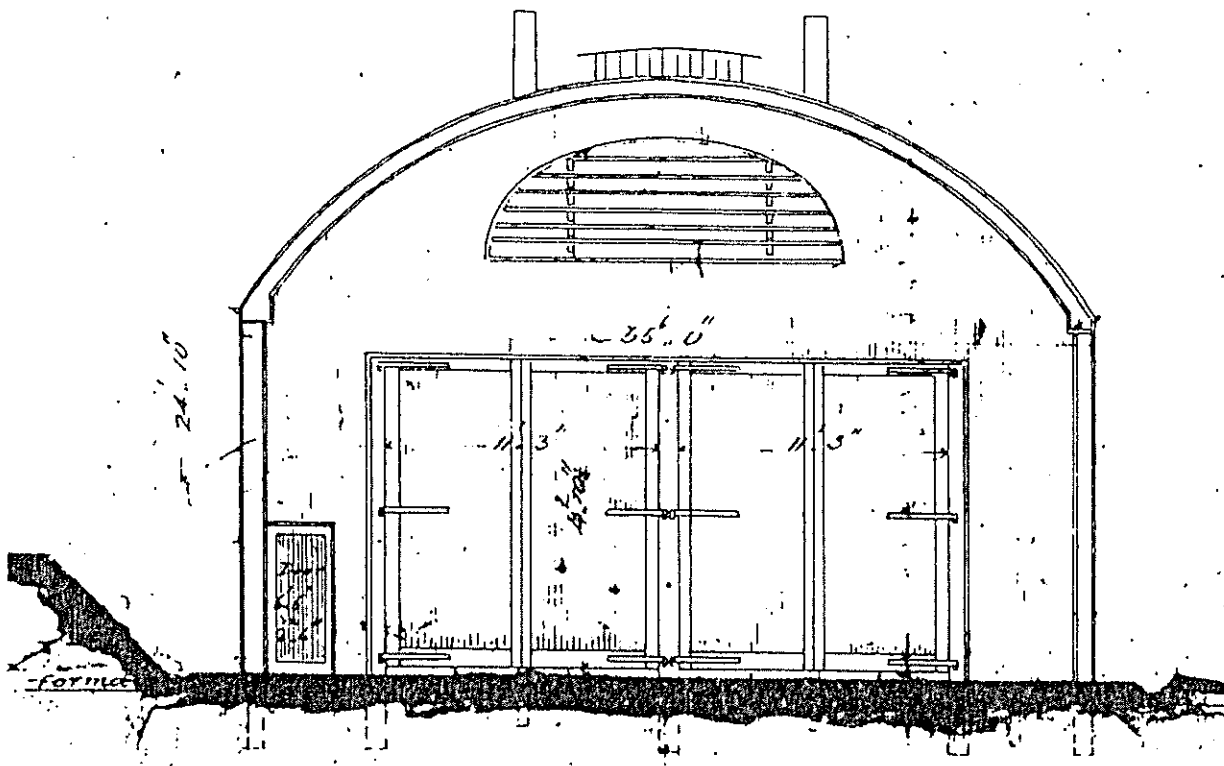
b) South Australian Railways Drawing No. DR 255/2770.

Current Condition: Demolished.

Other References: a) The shed is visible on a photograph taken about 1879. (19)

b) Tenders for construction were called on September 5, 1878. (20)

c) Noted in report to Parliament. (23)



END ELEVATION

35.0"
x 60.0" long

Design Drawings prepared September, 1978.
Scale: 1" to 8 ft.
Extract from S.A Railways Drawing DR 255/2770

**ENGINE RUNNING
SHED.**
Demolished

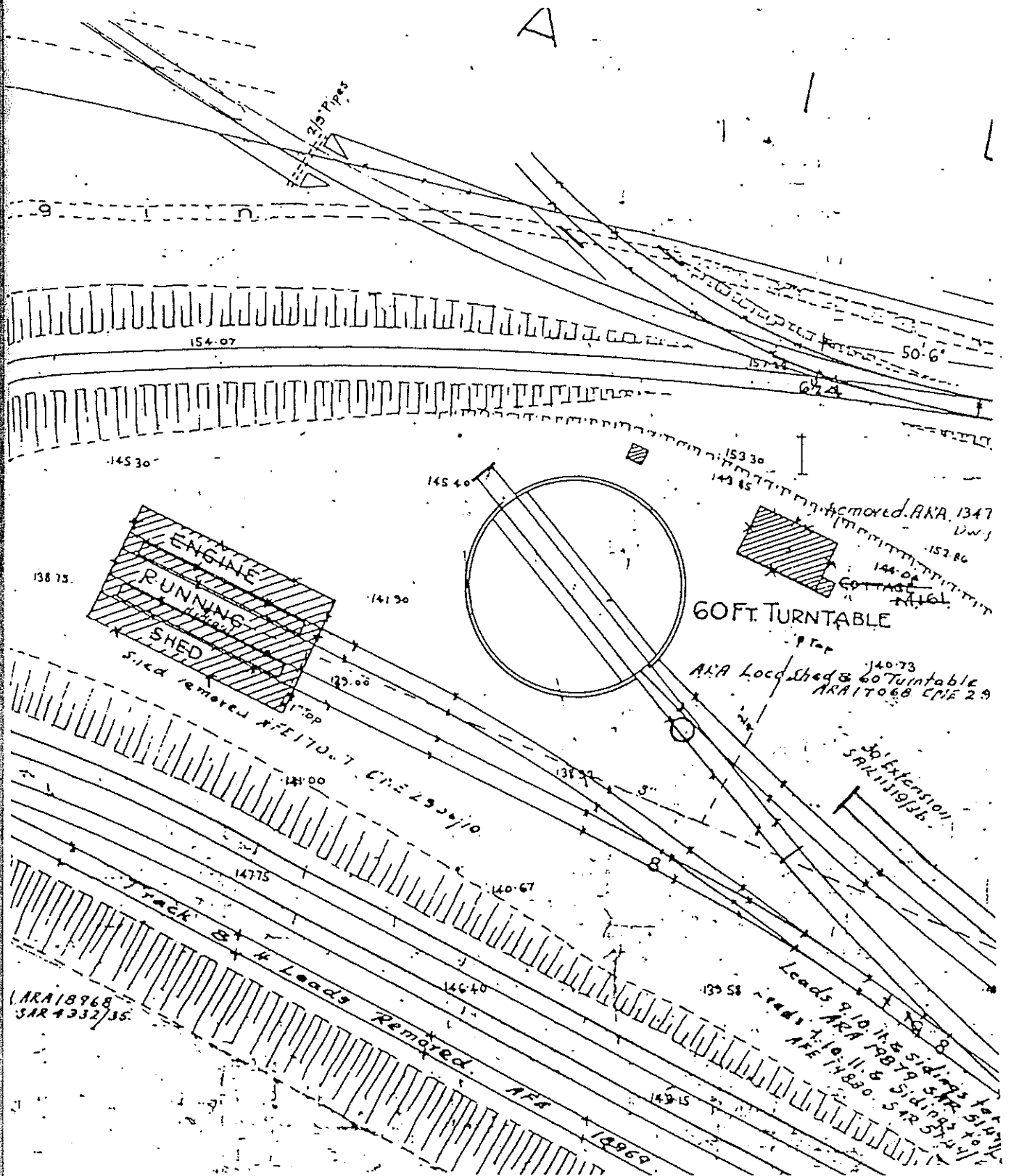
Turntable (1878)

The contract and specifications for this job are not available. A generalised design drawing for a 60 foot turntable as used by the South Australian Railways is held by the State Transport Authority. (S.A.R. Drawing DR 305).

Current Condition: The turntable structure itself is in good condition and requires a general clean-up and lubrication to bring it back into working order. The stone border wall requires some replacement of stonework and mortar to restore it to original condition.

Other References: The reported from the *Observer* who travelled on the first train from Eudunda to North West Bend in September 1878, observed that:

"The Station yard is all at different levels, the turntable for some inscrutable reason being placed in a hole." (5)



Scale, 1" = 40 feet.

Extract from S.A. Railways Drawing No. 17/37 (1922)

TURNTABLE
MORGAN

MORGAN HERITAGE STUDY.

Ed. Noack and Associates, Town Planners, Largs Bay, S.A. in association with Heritage Investigations. 1980.

Police Station (1878) and Stables (1879)

A. Police Station.

Records indicate that a Police Station was established in the hotel building on the river flat vacated by James Symons in 1878.

In 1879, the builders Dunk and Chidzney won the contract to repair the Police Station and to construct new cells and water closet. (17) (22). Tenders for the job had been called on October 9, 1879. (20).

A photograph in the S.A. Archives has the inscription on the back:

"Morgan Police Station 1879 to 1889, taken about 1886/7 - on the bank of the Murray, formerly an eating house or accommodation house, taken over when the railway was opened 1878." (18)

Apparently the building was used by the Engineer-in-Chief's Department as a site office and for accommodation between the time it was vacated by James Symons and handed over to the Police. (23)

In September, 1879, the paddle steamer *Grappler* was towed from Goolwa to Morgan to act as a gaol boat. (26)

Current Condition: Demolished. Relics of the foundations still exist.

B. Stables.

Name of Job: Part of a job for "Construction of a Residence for a Master Mechanic, a Driver's Cabin, a Stable and Fodder Room and Storage Tank etc. at Morgan."

Contract let by: Engineer-in-Chief.

Contract let to: H.F. Ruthven, Adelaide.

Date of Contract: August 18, 1879.

Contract Price: 141 pounds and 13 shillings.

Materials: Dressed stone walls and corrugated iron roof.

Documentation: State Transport Authority, Adelaide.

a) South Australian Railways Contract 42/1879.

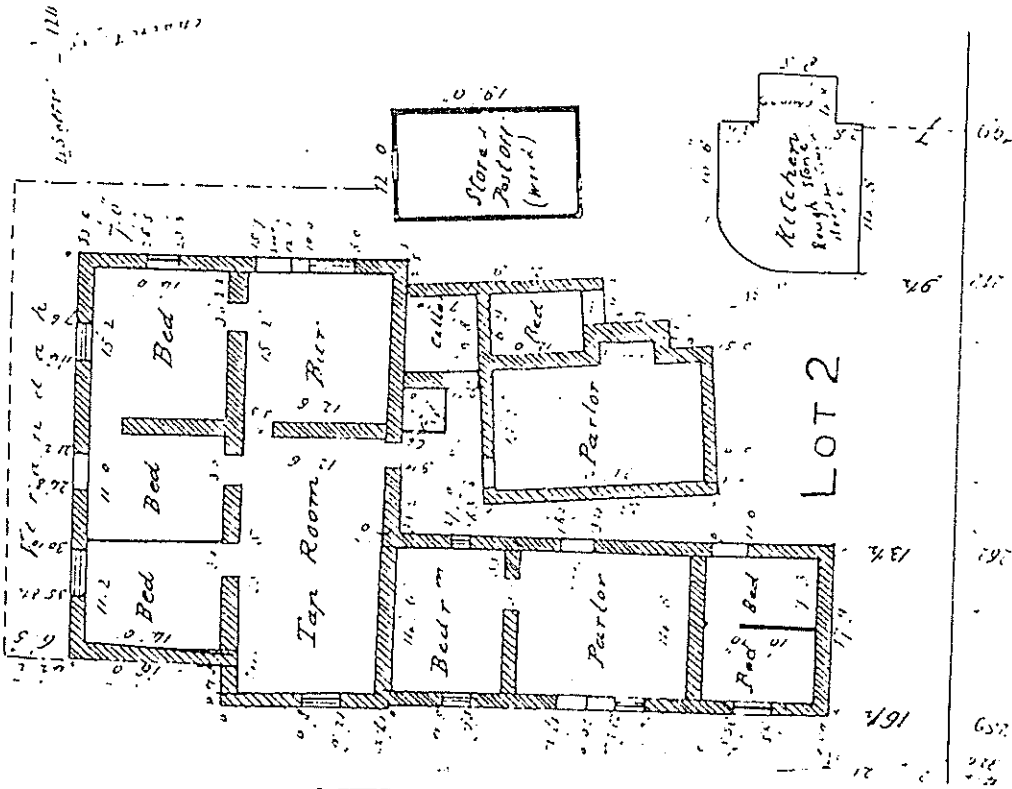
b) South Australian Railways Drawing No. DR 271/2987.

Current Condition: Demolished.

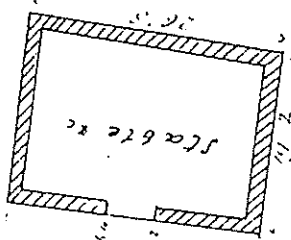
Other References: a) Tenders for construction were called on July 10, 1879. (20)

- SYMONS HOTEL -
- 20ft. x 12ft. -

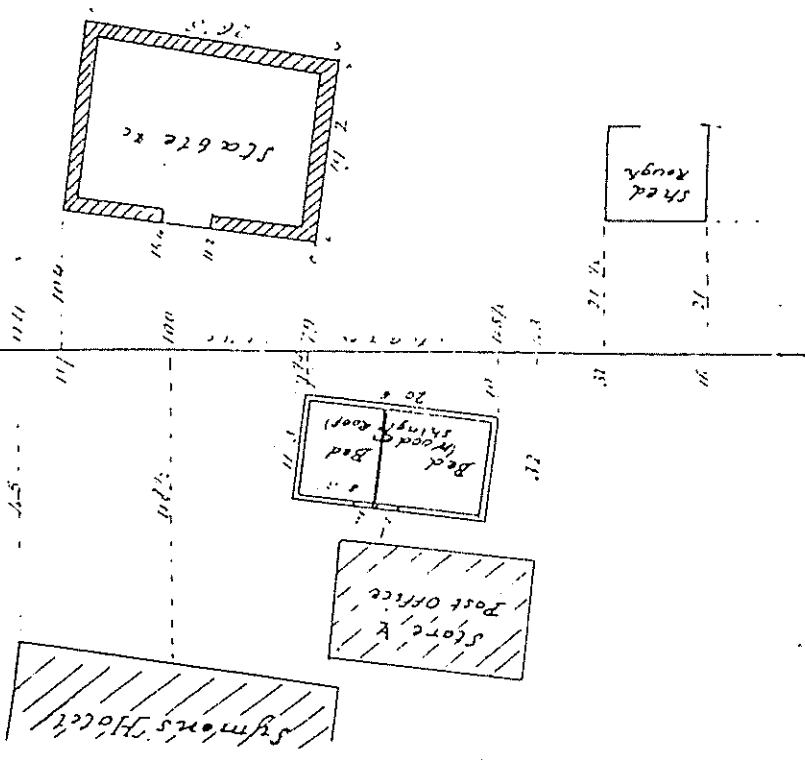
AB Dimensions in feet. Chain lines and
corners in chains - links
all buildings of stone unless otherwise
indicated



LOT 1



LOT 2



RIVER MURRAY

Diston tree believed to
be M. I. 1 & M. L. 2 enlarged
change sockets in timber
Buildings in red & black

Extract from the Field Book of Surveyor
Charles W. Smith, June 1878
Applied by S.A. Surveyor-General's Office.

SYMON'S HOTEL
NORTH-WEST BEND
1878



Engine Driver's Cabin (1879).

Name of Job: Part of job for "Construction of a Residence for a Master Mechanic, a Driver's Cabin, a Stable and Fodder Room and Storage Tank etc. at Morgan.

Contract let by: Engineer-in-Chief.

Contract let to: H.F. Ruthven, Adelaide.

Date of Contract: August 18, 1879.

Contract Price: 134 pounds and 1 shilling.

Materials: Dressed stone walls and corrugated iron roof.

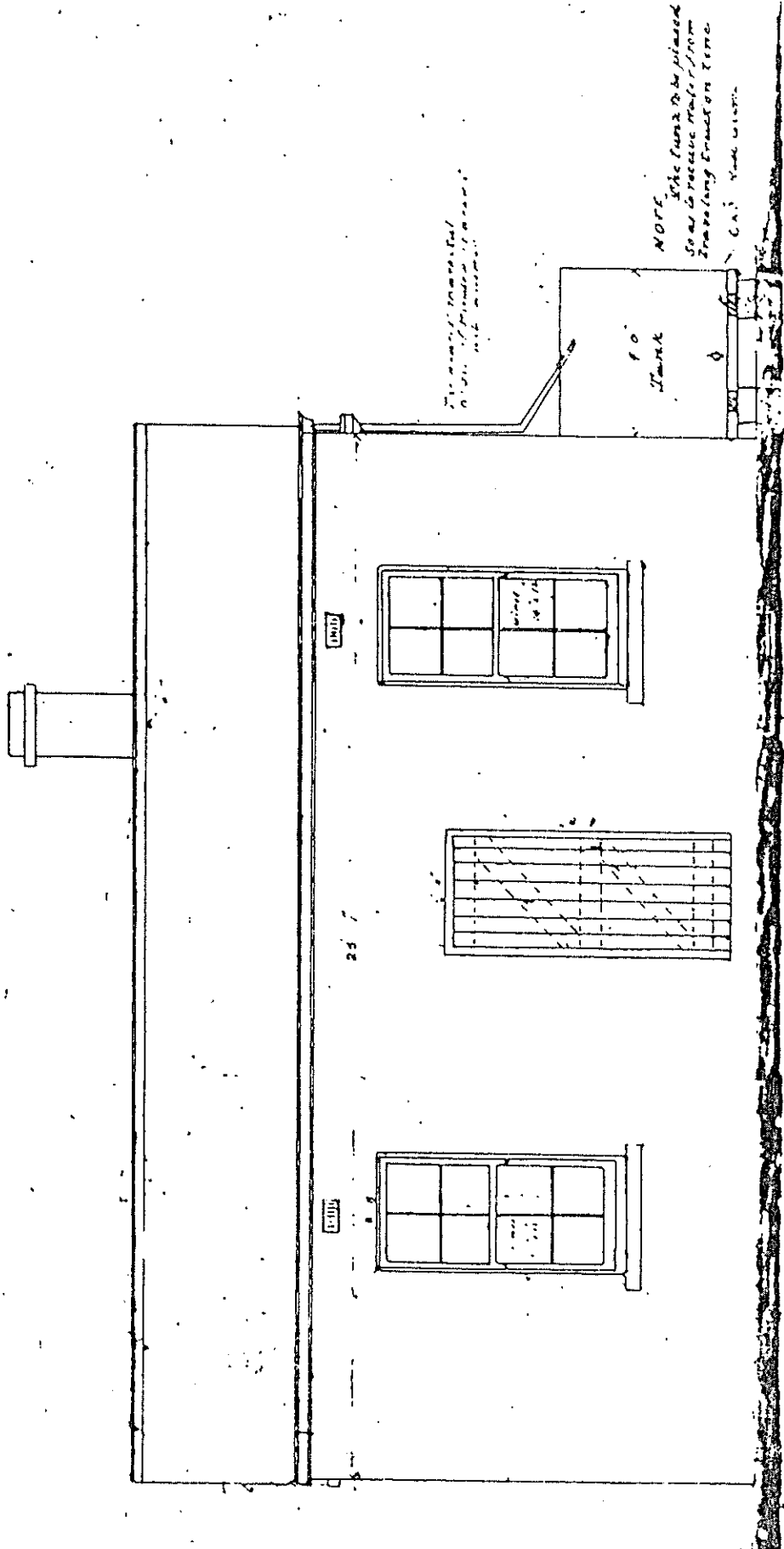
Documentation: State Transport Authority, Adelaide.

a) South Australian Railways Contract 42/1879.

b) South Australian Railways Drawing No. DR 271/2987.

Current Condition: Demolished, 1950. (Note on S.A.R. Drawing).

Other References: a) Tenders for construction were called on July 10, 1879. (20)



ENGINE DRIVERS CABIN

Design Drawings prepared August, 1879

Scale: 1" to 4ft.

Extract from S.A. Railways Drawing DR 271/2987.

ENGINE DRIVERS CABIN.

Demolished

MORGAN HERITAGE STUDY.

Mechanics Residence (1879)

Name of Job: Part of job for "Complete construction of a Residence for a Master Mechanic, a Drivers Cabin, a Stable and Fodder Room and Storage tank etc. at Morgan."

Contract let by: Engineer-in-Chief.

Contract let to: H.F. Ruthven, Adelaide.

Date of Contract: August 18, 1879.

Contract Price: 294 pounds and 12 shillings.

Documentation: State Transport Authority, Adelaide.
a) South Australian Railways Contract 42/1879.

Materials: Dressed stone walls, corrugated iron roof.

Current Condition: Structurally good and generally well maintained.

Other References: a) Tenders for construction were called on July 10, 1879. (20)

Note: As this house appears in the same contract as the Engine Drivers Cabin, is about double the price and no individual plans are available, it is assumed that the house is a double of the Cabin. That would place it as the house on Billygoat Hill fronting onto Railway Terrace, Allotment 483.

Covered Reservoir (1879)

The contract and specifications for this job are not available. However, design drawings were prepared in October 1879 for the roof to cover the 33 ft. diameter tank. (South Australian Railways Drawing DR 312/4487).

Current Condition: The tank is in good structural condition having suffered no cracking in the walls. The roof iron and frame are in sound condition and some small replacement where timber and iron are missing will restore the structure to original condition.

Stockyards (c.1880)

The stockyards are first mentioned in the report of the Engineer-in-Chief to Parliament in 1881. (24). The report notes the completion of the sheep drafting race.

Current Condition: Demolished.

Powder Magazine (1881)

Name of Job: Construction of powder magazines at Morgan, Kapunda, Farrell's Flat, Terowie."

Contract let by: Engineer-in-Chief:

Contract let to: John Chapman, Whitmore Square, Adelaide.

Date of Contract: March 5, 1881.

Contract Price: For Morgan: 197 pounds and 5 shillings.

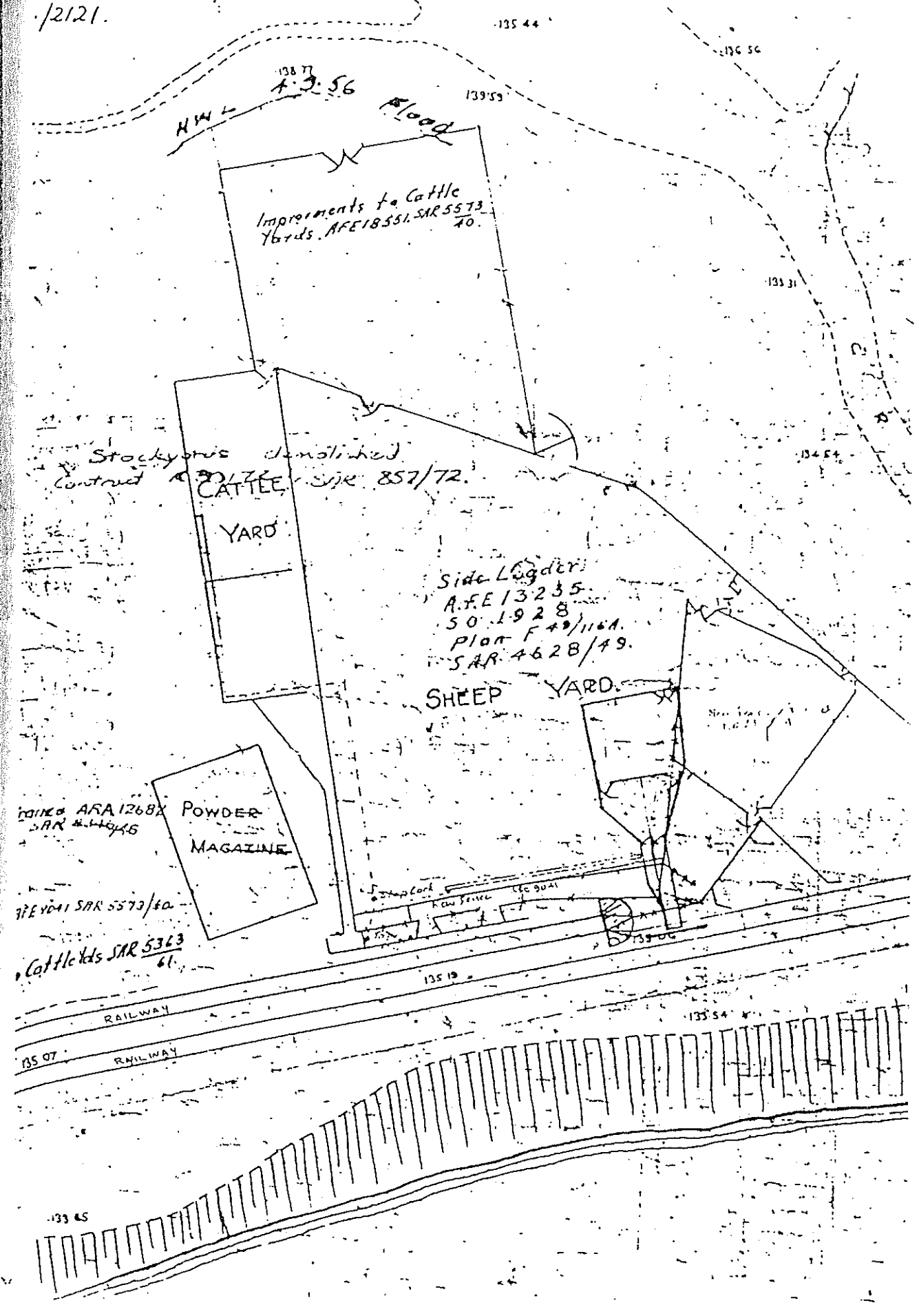
Materials: Concrete foundations, walls, benches, floors, stairs and covering over arch.
Whole of outside walls to be rendered with cement.
Any timber to be of Baltic red deal.
The roof to be formed of brickwork arches set in cement and backed with concrete.
Inside walls to be lime washed.

Documentation: State Transport Authority, Adelaide.
a) South Australian Railways Contract 2/1881.

Current Condition: The building is in good structural condition but requires a new door.

Other References: a) Noted in Report to Parliament. (24)

/2121.



Scale 1 inch = 40 feet.

Extract from S.A. Railways Drawing No. 17/37 (1922)

STOCKYARDS MORGAN

Demolished

MORGAN HERITAGE STUDY.

Morgue (1886)

The morgue was built in 1886 adjacent to the then Police Stables. (18)

The "*Record Book of Public Buildings*" shows the following entry in Volume 1, page 931. (26)

"Morgan Dead House.
1886. May. Erection of a Dead House on Police Reserve 108 pounds."

Current Condition: The stone work of the walls is generally in good condition apart from sections along the top of the wall which require attention. The morgue is the only building on the lower river flat to have withstood the ravages of a number of floods. Restoration work should take into account its flood prone location.

Barracks (1912)

Name of Job: Part of job "Construction of Locomotive Barracks, Ticket Office, Luggage Room, Porter's Room, Sanitary Accommodation, fencing and convenience, to Station Master's Residence at Morgan."

Contract let by: South Australian Railways Chief Engineer.

Contract let to: Details not given.

Date of Contract: 1912.

Contract Price: Not given.

Documentation: State Transport Authority, Adelaide.
a) South Australian Railways Contract 92/1912.

Materials: Timber frame, corrugated iron roof and walls.

Current Condition: The building could be returned to serviceable use for accommodation purposes but with substantial improvement required.

Ticket Office and Luggage Room (1912)

Name of Job: Part of job "Construction of Locomotive Barracks, Ticket Office, Luggage Room, Porter's Room, Sanitary Accommodation, fencing and Conveniences to Station Master's Residence at Morgan."

Contract let by: South Australian Railways, Chief Engineer.

Contract let to: Details not given.

Date of Contract: Not given.

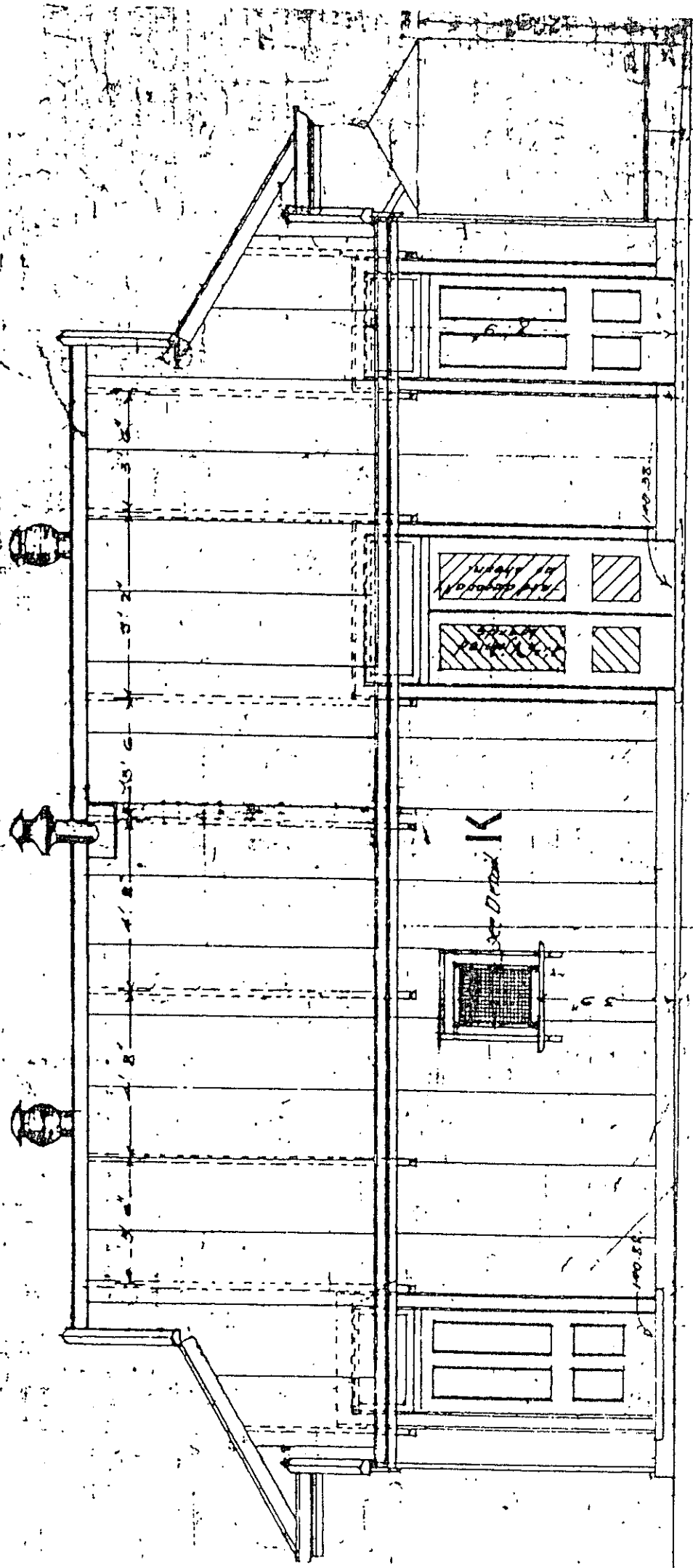
Documentation: State Transport Authority, Adelaide.

a) South Australian Railways Contract 92/1912

b) Drawing Nos. DR 214/27043-7
DR 271/27044

Materials: Corrugated iron roof and outer walls, timber frame.

Current Condition: Timbers in the frame need replacing where eaten out by termites. The walls and roof are in good condition.



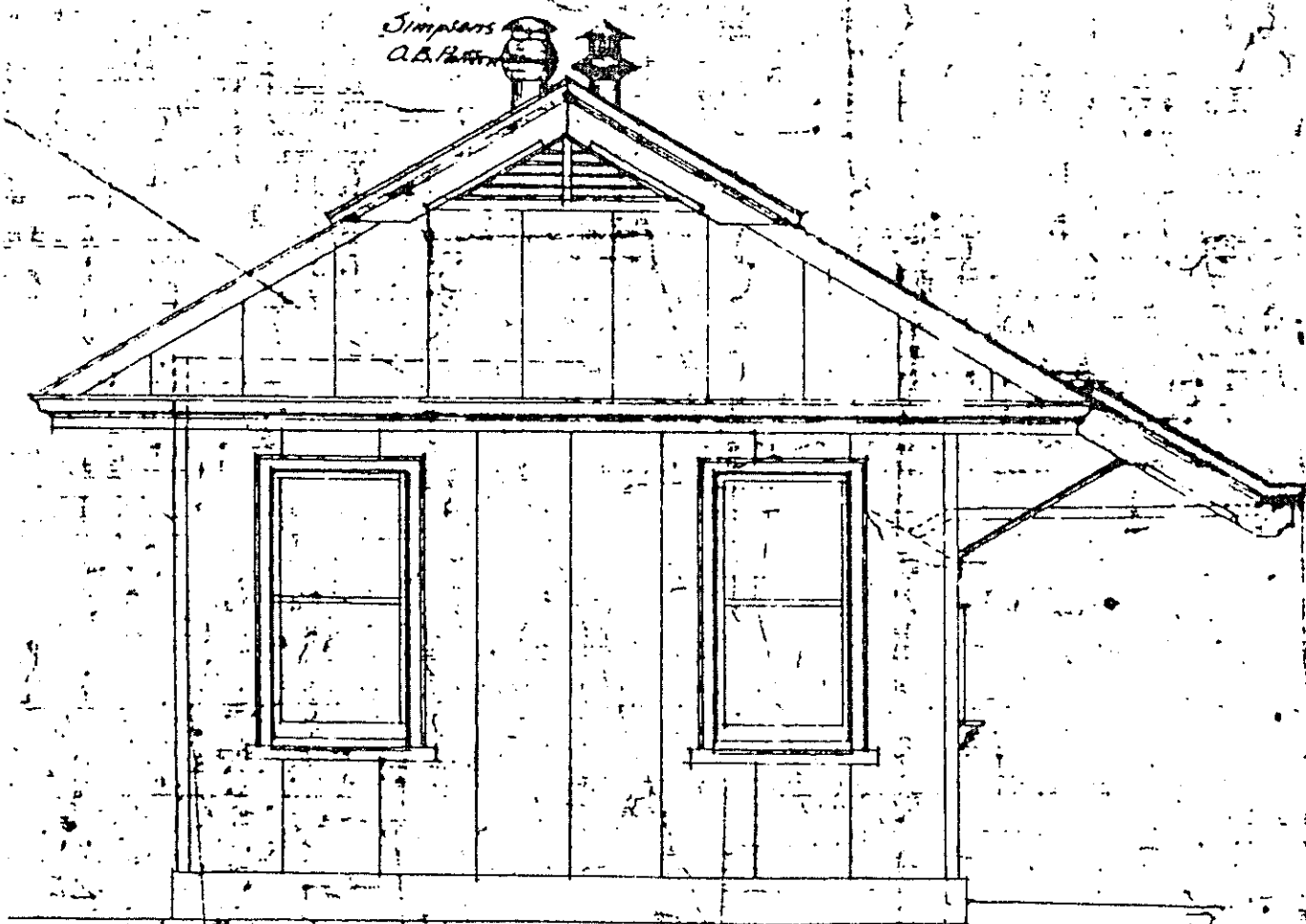
PLATFORM ELEVATION.

TICKET OFFICE
and
LUGGAGE ROOM

Design Drawings prepared 1912 Contract S.A.R. 92/12
Extract from S.A. Railways Drawing 214/27045
Scale: 4 ft to 1 inch

MORGAN HERITAGE STUDY.
Ed. Moack and Associates, Town Planners Largs Bay, S.A. in association with Heritage Investigations 1980.

*Simpsons
A.B.P.*



S.W. ELEVATION.

Design Drawings prepared 1912. Contract S.A.R 92/12
Extract from S.A. Railways Drawing 214/27045
Scale: 4 ft to 1 inch.

**TICKET OFFICE
and
LUGGAGE ROOM**

MORGAN HERITAGE STUDY.

Ed. Hoack and Associates, Town Planners, Largs Bay, S.A. in association with Heritage Investigations. 1980

Pendle's Rooms (1920's)

The corrugated iron building now used by the Morgan Youth Club was built during the 1920's as a depot for Pendle's road services. At that time, Pendle's ran a passenger and freight service from the Morgan railway terminal to Renmark using a Hudson car. (Comments of Mr. W. Payne, Morgan.)

Current Condition: The building is kept in good condition for use by the Youth Club.

Other Structures

1. Cutting

A large cutting runs up Billygoat Hill from the railway yard but details are not known of its construction or function. It was, presumably, part of a gravity feed shunting system.

2. Water Hydrant.

The hydrant used to feed locomotive boilers stands in the station yard. It is well maintained by the District Council of Morgan.

3. Crane.

The base and structure of the crane are in sound condition and require only normal maintenance to prevent termites and rust.

4. Goods Shed

The corrugated iron shed is mounted on a platform and if maintained in good condition will be useful as a store and display area for heavy relics associated with the wharf and railway.

5. Shelter Shed.

The shelter on the platform is in good condition and continues to provide a handy shelter for visitors to the site.

6. Morgan Station Sign.

The sign is an important reminder of the once busy station and should continue to be maintained and great care taken with any repainting to retain the original sign work.

7. Ashpit and Coal Stage.

These have been filled in or removed and no relics remain.

8. Railway Cottages.

The four cottages on Billygoat Hill are presently used as private residences and as they occupy a highly visible location they should be maintained in good condition.

APPENDIX A.

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APPENDIX B
STRUCTURES DEMOLISHED
1960
MORGAN

Obsolete G.I. sheds, steam, hydraulic and
cranes

List of Buildings

- Boiler house, 36' x 16' approx. Timber & G.I.
- Power house, 38' x 22' approx. with accumulator tower. Timber & G.I.
- Old stone boiler house, 24' x 20' approx.
- Workshop. Timber & G.I. 12' x 10' approx.
- Pump house. G.I. 12' x 7'.
- Store. 5' x 3' approx.
- Brick smoke stack.

Obsolete Steam Plant

- 1 - B. & W. water tube boiler. 593 sq. ft. heating surface.
- 1 - Cornish boiler. 16' 8" x 4' 9" dia.
- 1 - old boiler standing outside boiler house.
- 1 - steam hydraulic pump. Steam 2 cyl. 13" dia. x 15" stroke.
Force pump 2 13" dia. 700 lb. accumulator pressure. 6' 0" dia. flywheel. 16
- 1 - steam hydraulic pump. 2 cylinder. Approx. 8" dia. x 11" stroke.
Force pump 2" dia. 3' 0" dia. flywheel.
- 1 - steam pump 14" dia. x 24" stroke single cylinder.
- 1 - accumulator 8' 6" dia. approx.
- { 1 - Worthington steam pump double acting } Below ground level in
15000 G.P.H. approx. } G.I. pump house.
{ 1 - small steam pump }
- 3 - 400 gallon tanks.
- Miscellaneous lengths of piping - steam and hydraulic.

Cranes and Piping

- 1 - 5 Ton hydraulic wharf crane. 17' 0" rad. with approx. 180 ft. of 7/8" dia. chain and hydraulic cylinder under wharf.
- 4 - 3 Ton hydraulic wharf cranes.
 - 2 - complete with 180 ft. of 5/8" chain.
 - 1 - crane without chain.
 - 1 - crane portion above wharf - cut and dismantled with approx. 150 ft. chain.
- All four cranes have hydraulic cylinders under wharf.
- 400 lin. ft. approx. of 2 1/2" dia. W.I. pressure pipe.
- 400 lin. ft. approx. of 3" dia. C.I. return pipe.
- { 80 lin. ft. approx. of 3" W.I. pressure pipes } below rail
{ 80 lin. ft. approx. of 4" G.I. return pipes } tracks.
- 1 - hydraulic pump set at back of wharf.

