From: Jenny Lapham
To: [redacted]
Subject: FW: Local Government Official Information request - 726607
Date: Friday, 30 August 2019 03:43:00 p.m.
Attachments: Documents.pdf

Dear [redacted]

I refer to your request below relating to the Jetty Street overbridge and the proposed Rattray Street Bridge.

Please find attached the information relating to the Jetty Street overbridge.

In relation to the Rattray Street Bridge at this time we are unable to answer your questions as the project is still in the planning phase rather than the design phase and the information you have requested is not known.

Regards

Jennifer Lapham
Governance Support Officer
Civic

P 03 4774000 | **E** **Jenny.Lapham@dcc.govt.nz**
Dunedin City Council, 50 The Octagon, Dunedin
PO Box 5045, Dunedin 9054
New Zealand
www.dunedin.govt.nz

From: [redacted]
Sent: Friday, 2 August 2019 9:54 p.m.
To: Official Information <officialinformation@oa.dcc.govt.nz>
Subject: Local Government Official Information request - 726607

[redacted] has submitted a LGOIMA request - 726607.

Below are the details of the request

Request details:
In regards to the Jetty Street overbridge, please advise: What provision was made in the original build for pedestrian access and transit of the bridge. What additional provision(s) were made subsequently for pedestrian access and transit of the bridge, and in what year(s). In regards to the proposed harbourside pedestrian/cycle bridge at Rattray Street, please advise: Will the main structural elements be constructed of steel, reinforced

concrete, or some other material (in which case, please specify). Will the approaches be by way of ramps; if so, what will be the maximum slope thereof. Will there be alternative approach method(s) available (e.g. stairs, lifts); if so please specify. Thanks

File attachment (file name**)**
No file uploaded

Name
[redacted]

Email address
[redacted]

Mailing address
[redacted]

Contact phone number
[redacted]

Do you wish to have your name withheld from publication
No

MINUTE EXTRACT FROM THE MINUTES OF THE EXECUTIVE MANAGEMENT TEAM HELD ON TUESDAY 2 NOVEMBER 2010 COMMENCING AT 8.30 AM

10 **JETTY STREET OVERBRIDGE PEDESTRIAN ACCESS STUDY**

A report from the Acting Transportation Planning Manager advised that following a submission to the Annual Plan process suggesting that a "clip-on" pedestrian path to the Cumberland Street on-ramp to the Jetty Street Overbridge be considered, the Transportation Planning team has assessed the feasibility. MWH Consultants were engaged to look at this option as well as other options to provide pedestrian access from Queens Gardens to the Harbourside. The preferred option (Option 1) provides pedestrian access within the existing carriageway of the Cumberland Street on-ramp at a rough cost of $96,000. This project provides a cost-effective solution to accessing to the Harbourside which can be funded through minor safety works for 2012/2013.

EMT suggested that future reports such as this should be signed off by the Transportation Operations Manager when the project involves funding from that department.

It was moved (General Manager Strategy and Development/General Manager City Environment):

"1 That the consultant's report be noted.

2 That subject to the Transportation Operations Manager's agreement that the attached report go to the Infrastructure Services Committee meeting in November with the project being funded out of the Minor Safety Works budget."

Motion carried

DUNEDIN CITY COUNCIL
Kaunihera-a-rohe o Otepoti

Report

TO: Planning and Environment Committee

FROM: Transportation Planning Manager (Acting)

MEETING DATE: 15 November 2010

SUBJECT: **JETTY STREET OVERBRIDGE PEDESTRIAN ACCESS STUDY**

SUMMARY

A submission was made as part of the Annual Plan process to look at a "clip-on" pedestrian path to the Cumberland Street on-ramp to the Jetty Street Overbridge. MWH Consultants were engaged to look at this option as well as others to provide pedestrian access from Queens Gardens to the Harbour. The preferred option (Option 1) provides pedestrian access within the existing carriageway of the Cumberland Street on-ramp at a cost of around $96,000. This project provides a cost effective solution to access to the Harbourside that can be funded through minor safety works for FY 2012/13.

IMPLICATIONS FOR:

(ii) **Approved Annual Budget:**	No, can be funded out of minor safety works budget for FY 2012/13.
(iii) **LTCCP / Funding Policy:**	No
(iv) **Activity Management Plans:**	No
(v) **Community Boards:**	No
(vi) **Sustainability:**	Yes, the proposed pedestrian access has impacts on greenhouse emissions and resource use.

RECOMMENDATIONS

1 That the consultant's report be received.

2 That the Council consider Option 1 – the installation of a new footpath up the Cumberland Street on-ramp (as shown in the attached plans)

3 That the Council agree to fund the project out of the minor safety works budget for FY 2012/13.

INTRODUCTION

As part of the Annual Plan process, a submission was made regarding pedestrian access across to the wharf area by way of the Jetty Street Overbridge. It was suggested the solution was a clip-on pedestrian path onto the existing Cumberland Street onramp. Council directed staff to investigate the possibility of the clip-on ramp and /or other solutions to provide safe pedestrian access across the railway line and to the Harbourside. The Dunedin City Council (DCC) commissioned MWH to investigate and report on the feasibility of providing a Jetty Street Overbridge Pedestrian Access.

BACKGROUND

There is a lack of connectivity for pedestrians between Queens Gardens/Settlers Museum area and the Harbourside. The existing pedestrian links are 1) the railway footbridge and 2) Jetty Street Overbridge crossing on the northern side to the Birch Street circular pedestrian ramp.

DCC has previously looked at the feasibility of a crossing at Rattray Street. In 2007, BECA provided a Project Feasibility Report which looked at five crossing options. Option 2.1 looked at a Pedestrian Overbridge at costing ranging from $500,000- $907,000. Four of the five suggestions were level crossings with one requiring the moving of the shunting yards. The other level crossings were later dismissed as ONTRACK would not allow a level crossing with the shunting yards in place.

DISCUSSION

There is a desire line for pedestrians from Queens Gardens to the Harbourside. The existing pedestrian access along Jetty Street from Princes Street to the overbridge is a bit convoluted with the crossing at Crawford Street only on the south side due to the heavy right turn movement into town. Pedestrians also have to cross one uncontrolled street (ie. Bond Street) but there are splitter island/pedestrian refuges on the north and south approaches to Jetty Street.

Currently many pedestrian are using the Cumberland Street on ramp informally. However, the existing situation is unsafe as there is no clearly defined pedestrian path. The crash history for the Cumberland Street on-ramp was reviewed to see if there had been an occurrence of car/pedestrian crashes on this ramp. From 2005-2009,fiive crashes occurred in the area of the Cumberland Street overbridge, with four crashes occurring o the Wharf Street off-ramp. No crashes were recorded on the Cumberland Street on-ramp during that period.

OPTIONS

Eight different options were investigated as a part of the preliminary Investigation report. Some of these options were dismissed early.

- **Option 1: Pedestrian footpath along eastern Cumberland Street and up the On-ramp (preferred option)**

  The installation of a footpath adjacent to the carriageway along the eastern side of Cumberland St and continuing up the on-ramp to provide a direct link between the Queens Gardens area and the Harbourside. The footpath will be constructed alongside the existing kerb and on top of the existing carriageway of the ramp.

- **Option 2: Cumberland Street On-ramp clip-on**

  On the same route as Option 1 but the footpath up the on-ramp would be a cantilever structure clipped on the existing bridge. The ramp would follow the outside of the existing handrail at a width of 2.5metres, allowing a 2m wide path and a handrail to match the existing. The path would terminate at the existing limit line, where a new opening in the existing handrail would be formed.

  This option provides good pedestrian separation but would require a small amount of private land to provide linkage around the existing end terminal. The cost is "more than double" the cost of Option 1 with a rough estimate of $270,000.

- **Option 3: Cumberland Street Off-ramp**

  The installation of a footpath down the eastern side of the Cumberland Street off-ramp.

  While this looked good based on desire lines, pedestrians would have to cross both lanes on the overbridge so deemed unsafe and **dismissed as an option**.

- **Option 4 : Wharf Street On-ramp**

  The installation of a footpath up either side of the Wharf Street on-ramp

  This option does not improve pedestrian connectivity. Sections of the footpath would begin in the middle of Wharf Street so deemed unsafe and **dismissed as an option**.

- **Option 5: Wharf Street Off-ramp**

  The installation of a footpath down the western side of the Wharf Street off-ramp

  Good connectivity to Harbourside but the end of the footpath would be in the middle of Wharf Street so deemed unsafe and **dismissed as an option**.

- **Option 6: Signalised and Gated Pedestrian Level Rail Crossing**

  The installation of a signalised and gated pedestrian level rail crossing at the Chinese Gardens (Rattray Street).

  This option was investigated in 2007 and later dismissed by ONTRACK for safety reasons.

- **Option 7: Underpass**

  The installation of a pedestrian underpass under the rail corridor and Thomas Burns Street.

  This option provides a direct route to the Harbourside but dismissed early on due to issues of cost, water table and safety/surveillance in underpasses.

- **Option 8: Overbridge**

  The installation of a pedestrian overbridge over the rail corridor and Thomas Burns Street.

  This overbridge option was also investigated back in 2007 with an estimated cost of $500,000 - $907,000. An amount $1.4 million has been set aside for the

Rattray Pedestrian/Cycle Overbridge in FY20103/14 budget and will not be investigated further in this report.

PREFERRED OPTION

The preferred option of the consultant's report is Option 1. This option provides a 2 metre footpath within the existing ramp width. The existing carriageway width is 8 metres so there is ample room for a footpath and traffic lane. Narrowing the on-ramp has the added effect of narrowing the carriageway and thus slowing down the traffic, a benefit for pedestrian safety. It also provides an additional access across the rail corridor to the Harbourside. The cost is $96,000 and can be funded out of minor safety works budget in FY 2012/13.

CONCLUSION

The Transportation Planning Department agrees with the recommendation of the Jetty Street Preliminary Investigation Report to recommend the preferred option of incorporating a pedestrian footpath within the existing Cumberland Street onramp. It provides an additional access from town to the Harbourside using existing facilities and at minimal cost. The work can be done out of minor safety works and does not require separate funding.

Option 2 does offer better separation from traffic than Option 1 but it is more than twice the cost without significant benefit. There is sufficient width in the on-ramp for a pedestrian footpath without creating an unsafe pedestrian environment.

While funding is approved for the Rattray Street Overbridge, it is not felt it is an "either/or" scenario but that the Jetty Street Overbridge Pedestrian access improvements provide an additional link between the city and the Harbourside. The improvements can be done earlier and at minimal cost, providing access to Birch Street and beyond. While this might not be the most direct desire line to the Harbourside, the more pedestrian connections, the better access for all users, even those not destine for the Harbourside but to destinations further south.

Prepared by:

Lisa Clifford
TRANSPORTATION PLANNING MANAGER (ACTING)

Approved by: Nicola Johnston
GENERAL MANAGER STRATEGY AND DEVELOPMENT (ACTING)

Date report prepared: 28 October 2010

Attachments

1 MWH report – Jetty Street Overbridge Pedestrian Access

CUMBERLAND STREET OVERBRIDGE

By: D.R. Marsh B.E. M.N.Z.I.E.
Project Engineer for the
City Engineer's Department
of the Dunedin City Corp.

INTRODUCTION

The Cumberland Street Overbridge which is scheduled to be completed in October 1977 will provide Dunedin City with an asset which has been estimated to save the community half a million dollars annually.

CONCEPTUAL AND FUNCTIONAL ASPECTS

a) General

The Southern Endownment and foreshore commercial area is separated from the central business area of the City by the railway marshalling yards as shown in Photograph No. 1. Previous to the construction of the bridge the commercial area was serviced by a railway crossing at Rattray Street which is closed to road traffic approximately 15% of the time due to train movements and also by a substandard overhead bridge which has now been removed.

The new bridge will provide easy and more economical access between the two areas.

The estimated saving to the community is based on the following factors:

a) Eliminating the waiting time at Rattray/Fryatt Street rail/road crossing.
b) Shorter more convenient access to the Southern Endownment and South/Eastern suburb of the City.
c) Removal of the ceiling height (3.5m) hazard for road and rail traffic which was created by the old bridge.
d) There are also other advantages such as the reduction in traffic load on Andersons Bay Road and traffic congestion around the Queens Garden area combined with reduced air pollution due to the waiting vehicles.

The layout of the structure as shown in figure 1 was primarily decided on traffic requirements but conforms to physical restraints such as existing buildings, proposed and existing rail sidings and streets.

b) Selection of Bridge Type

To select the type of bridge the following factors were of paramount importance.

a) Torsional Requirements: The sharply curved on/off ramps create high torsional stresses.
b) The superstructure has varying widths.
c) The aesthetics of the structure were also considered important as it is an integral part of the City's Streetscape and has a visual impact on the thousands of people who will travel over or under it every day.

These requirements lead to the selection of a prestressed cast insitu concrete box girder.

Having selected the type of bridge superstructure the typical cross section shape as shown in figure 2 was determined by an appraisal of the maximum span length of the structure, local slab moments and torsions and an adequate physical dimensions to fit in prestress cables etc. The complication of the ramp intersections and aesthetics determined the vertical webs which correspond to the vertical sides of the columns.

c) Layout

To allow for thermal movements, seismic resistance etc the bridge is separated into ten structures as shown on figure 1.

These structures vary from the Cumberland Street North ramp. C_N which is a single cell three span continuous structure to the Main Spans: M_1 M_2, M_3, which vary in width from 11m to 29m.

There are also two pedestrian bridges CP and BP which can be observed in part on Photograph No. 7.

STRUCTURAL

a) Foundations

A subsurface investigation consisting of 15 bore holes indicated that the site was underlain by a layer of medium dense sand layer at a depth of 17m below ground level, this layer being suitable for the point bearing of the 600mm diameter steel cased concrete piles.

The 1.5 metre deep pile cap as shown in figure 4 supports the rectangular columns.

A number of the columns are designed to carry the horizontal loads that can be imposed by an earthquake. These columns have a region where the plastic hinge will form confined by closely spaced stirrups.

b) Analysis and Design

The method employed to analyse the superstructures was the equivalent grillage analysis. The structure was divided up into a) longitudinal members consisting of a web and a proportion of the top and bottom slabs. b) Transverse members to simulate the strength of either the diaphragms at support points or the top and bottom slab at points between the diaphragms.

The mathematical model was analysed using an I.C.L. 1900 computer.

The structures with the exception of the small reinforced concrete 'J_2' spans in Jetty Street are all prestressed longitudinally using cables made up of 19 - .5" diameter strands. Each of these cables have a 70% Ultimate Tensile Stress of 2,400 KN and are draped to provide the structures with a dead load balance. In addition to the draped cables there are 500 KN cables situated in the top and bottom slabs to provide additional compression to the structures.

Torsion and transverse moments are carried by the section acting as reinforced concrete.

c) Stage Construction - Main Spans

The stage construction of these spans was initiated by the N.Z. Railways requiring only one span at a time to be constructed across the marshalling yards although this requirement was later relaxed.

However the stage construction as shown in Figure 3 was found to be a practical means of constructing the Main Spans as more prestress force was required in the end regions with the cantilever providing a suitable position for the anchoring off of many of the cables and a further advantage of the stage construction was the moment relief that could be given to the four central columns.

The size of the columns was dictated by the columns at the junction of the structure where two bearings and hold down devices or force limiting devices had to be installed. To do this and maintain the Architects requirement of a ratio of 3:4 between the column faces the columns are around the wrong way i.e. the long side of the rectangle is parallel to the centre line of the bridge. Hence the central columns have a larger cross section than required and are much stiffer than required. This was overcome to a certain extent by lowering the pile cap which made the columns longer and also necking them in to a small cross section below ground level which also had the advantage of giving the structure a greater fundamental period and a lower basic seismic coefficient.

The method of stage construction is shown in Figure 3.

d) Seismic Resistance

Figure 5 indicates the mechanisms for resisting earthquake for the curved and Main Spans. The Jetty Street structures resist earthquakes by a combination of Force Limiting Devices and columns.

The Force Limiting Devices (FLD's) are 75mm diameter mild steel pins which are cantilevered from the superstructure into a socket in the column.

Up to the design earthquake the columns and FLD's act in the elastic range but if the design earthquake is exceeded plastic hinges form to dissipate the energy.

AESTHETICS

The appearance of this 7000m^3 of concrete was considered important from the outset and there was close liaison between architects and engineers on this aspect of the project.

The engineering design of the structure was carried out with consideration to the physical design and proportions to ensure that all aspects of the visual appearance were complementary and aesthetically pleasing.

Care was taken with the detail concrete finishes, size of members and proportions to complement the form of the structure.

The construction of the bridge has given the opportunity to landscape the areas around and adjacent to the site area to provide a 'green' link with other areas of the City and local detail planting will be carried out to complement the structure.

CONSTRUCTION

The construction of the overbridge was split into two major contracts.

a) Foundation Contract

The Foundation Contract was awarded to Downer & Company in November 1973. A shipping delay held up the supply of the steel plate for the pile casing with the driving of the piles commencing in September 1974. The 166 pipes were driven satisfactorily to point bear on the sand layer with a few exceptions at the Wharf Street end of the Main Spans where piles reached 27m before a satisfactory set was obtained.

A vibration problem was encounted when driving adjacent to buildings in Jetty street but this was overcome by drilling a hole through the rock fill material before attempting to drive the piles.

b) Superstructure Contract

The Superstructure Contract was awarded to Wilkins and Davies Construction Co. in August 1975 and work commenced shortly afterwards.

The construction procedure adopted by Wilkins and Davies was as follows:

1. Construct the scaffolding: Acrow shoreload frames are the basic unit and these are supported on 8" x 6" sleepers bedded in concrete on top of the rock fill. Photographs No's 6 and 7 indicate the procedure.
2. Construct the soffit formwork and erect the side shutters.
3. Construct the bottom slab.
4. Complete the erection of the formwork for the box girder as shown in Photograph No. 7.
5. Construct the web and top slab of the box girder.

In general each of the superstructures were constructed in 3 or 4 stages and then stressed.

This contract has proceeded extremely well with the completion date programmed 3 to 4 weeks ahead of the scheduled completion date. It has also been satisfactory financially with the contract tendered sum of $2.7M being approximately the final sum which includes variations and fluctuations in cost. This has been achieved by savings in amending the abutment construction after the contract was let and a realistic contingency item being included in the tender.

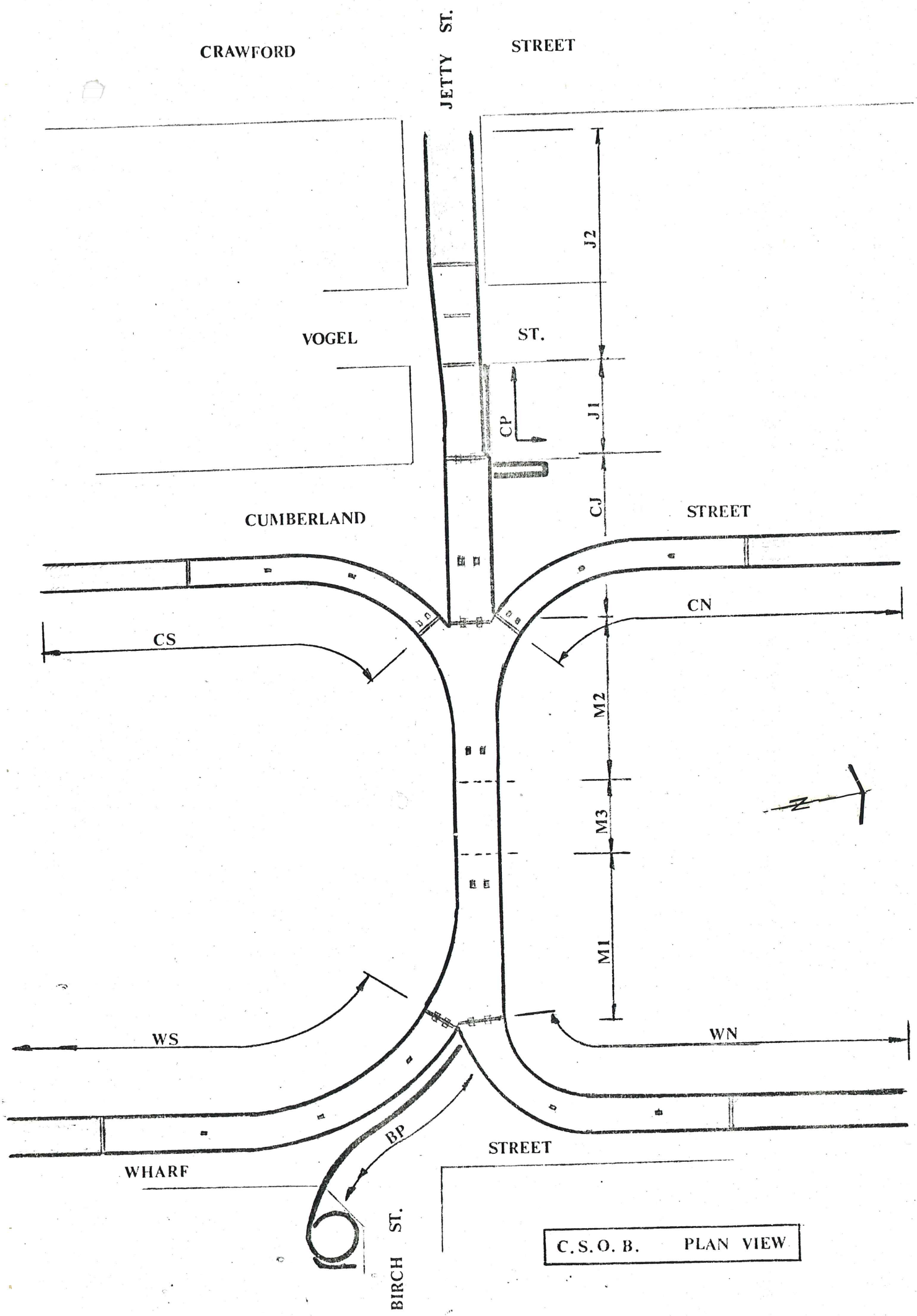
COSTS

The total cost of the project is $3.96 million dollars which is subdivided as below:

a)	Foundation Contract	570,000
b)	Superstructure Contract	2,700,000
c)	N.Z.R. track shift costs	100,000
d)	Various: including land purchase test piles road paving service shifting etc	590,000
	Total Project Cost	$3,960.000

CONCLUSION

The Cumberland Street Overbridge has evolved to an asset which has an appearance and function complementary with the environment in which it has been constructed.


CRAWFORD
STREET
JETTY ST.
J2
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CP
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CJ
CUMBERLAND
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CN
CS
M2
M3
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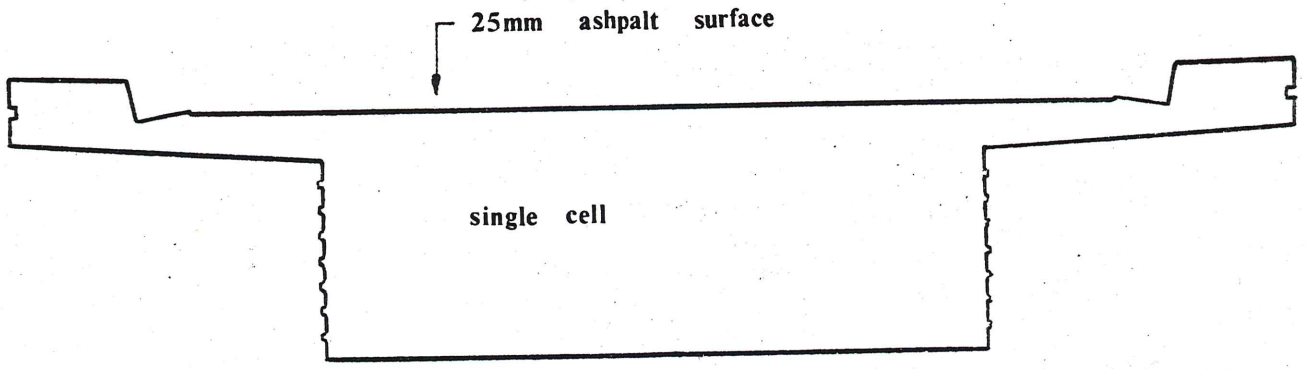
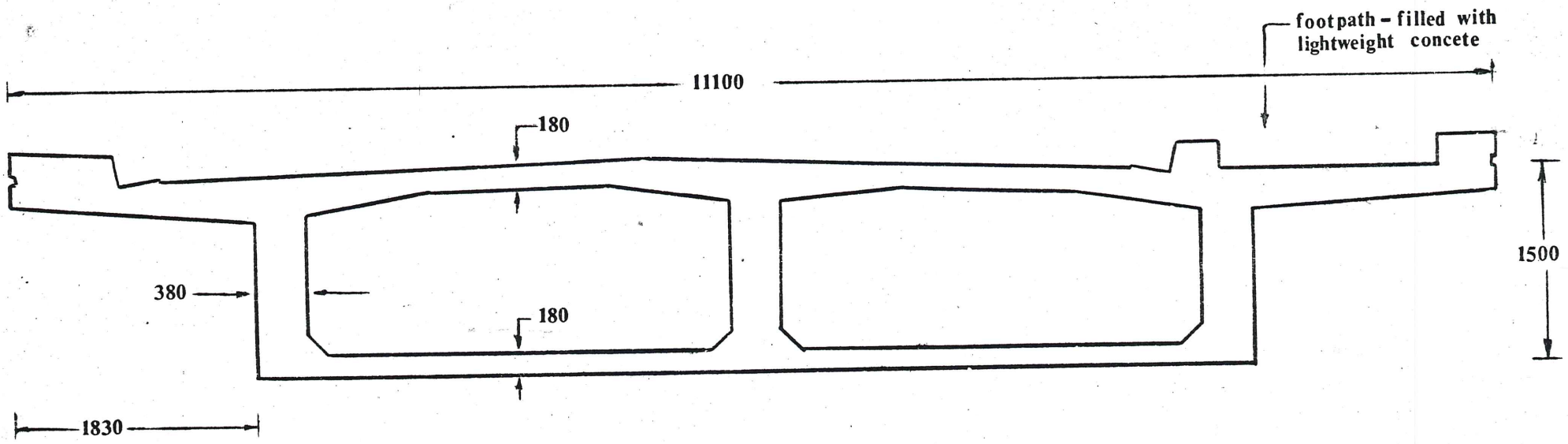
N
WS
WN
BP
STREET
WHARF
BIRCH ST.
C.S.O.B. PLAN VIEW

FIGURE 1

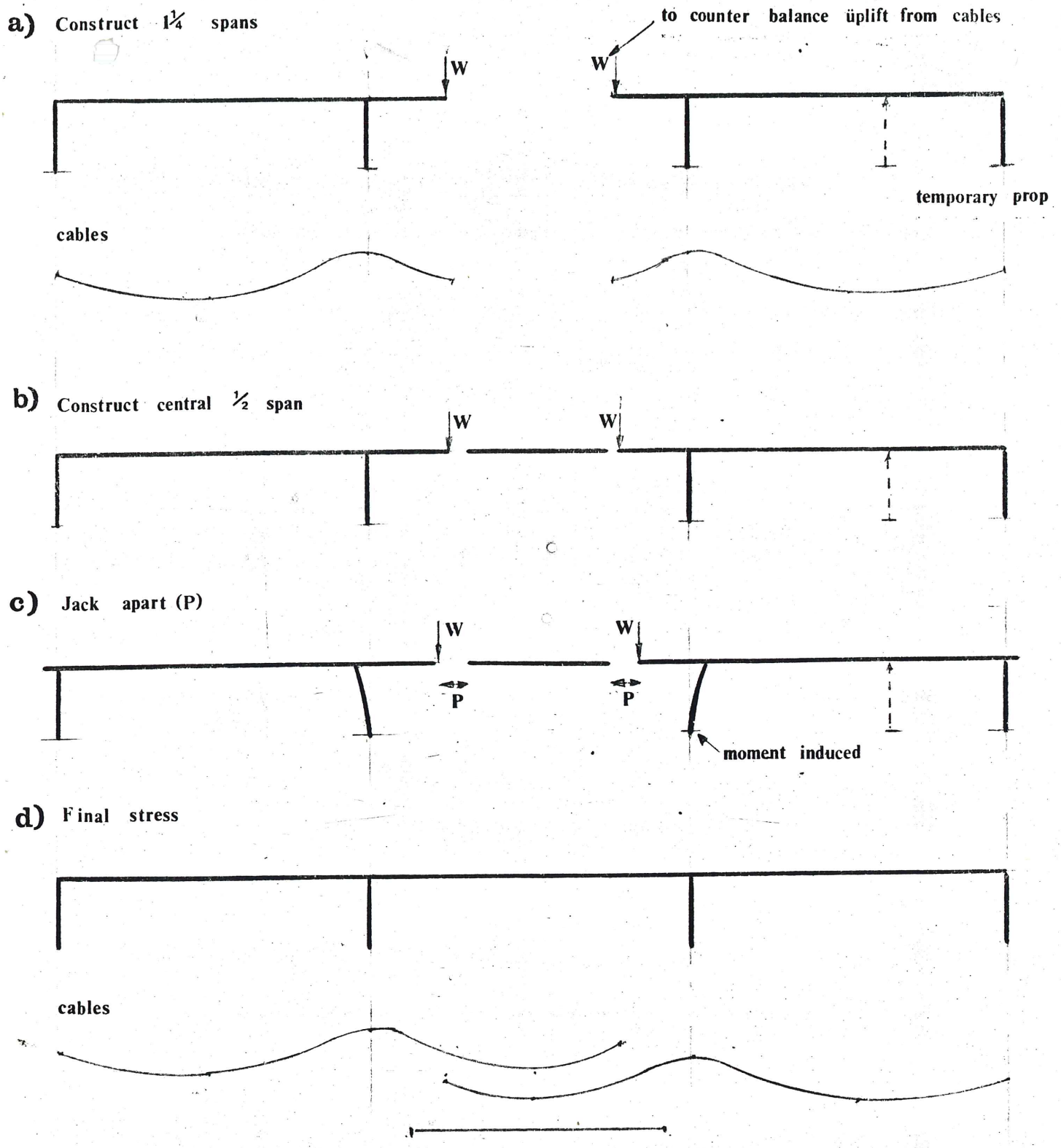


Section – Cumberland St.



Section – Main Spans

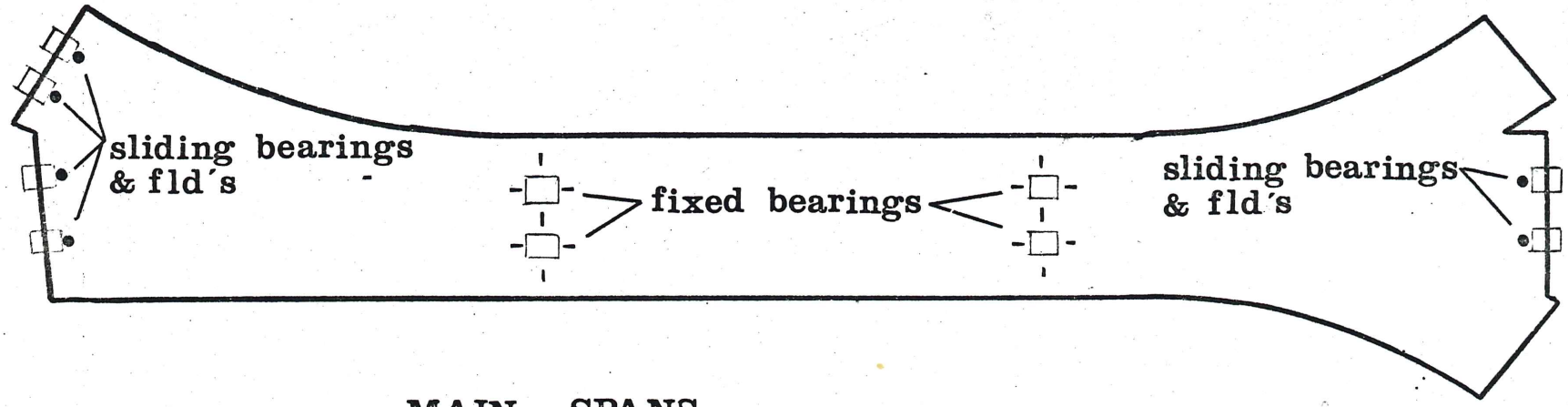
FIGURE 2



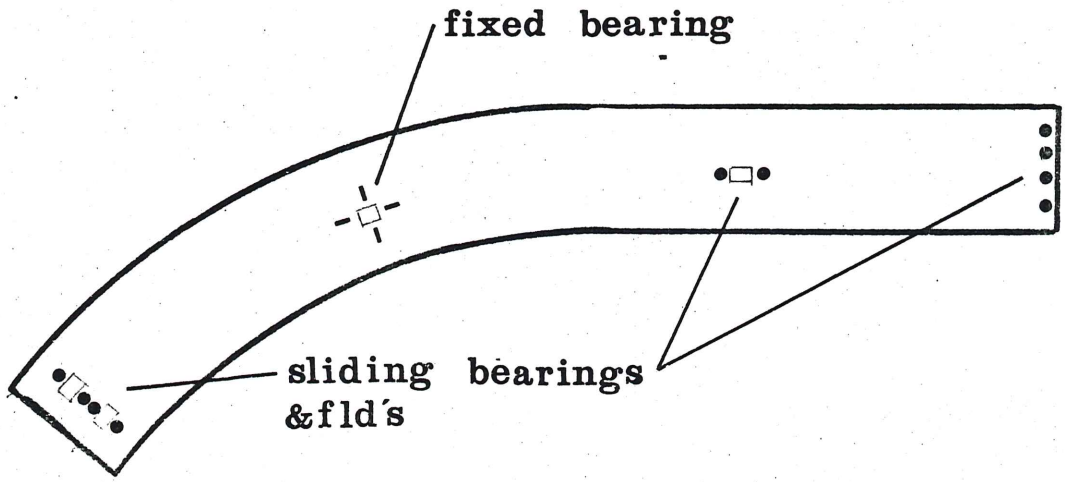
MAIN SPANS STAGE CONSTRUCTION SEQUENCE

FIGURE 3

SEISMIC RESISTANCE



MAIN SPANS



CURVED RAMPS

FIGURE 4

CUMBERLAND STREET OVERBRIDGE

LIST OF CREDITS:

Design and Contract Supervision	City Engineer's Department (Project Engineer D.R. Marsh)
Consulting Engineer (Responsible for the design of the Cumberland Street pedestrian bridge and advisor to Project Engineer)	E.R. Garden and Partners (R.G.P. Garden)
Quantity Surveyor	Hallam-Eames & Perry
Main Contractors	
A. Foundation Contract	Downer & Co Ltd
B. Superstructure	Wilkins & Davies Construction Company Ltd

DO NOT SCALE – IF IN DOUBT, ASK

200 mm 150 100 90 80 70 60 50 40 30 20 10 0

ORIGINAL SIZE **A1**

NOT FOR CONSTRUCTION

REV	REVISIONS	DRAWN	CHECKED	APPROVED	DATE

	Name	Date
SURVEYED		
DESIGNED	AD ISAACS	09/10
DESIGN CHECK	TE SIZEMORE	09/10
DRAWN	AD ISAACS	09/10
DRAWING CHECK	TE SIZEMORE	09/10
APPROVED	TE SIZEMORE	09/10

MWH

DUNEDIN CITY COUNCIL
Kaunihera-a-rohe o Otepoti

JETTY STREET OVER BRIDGE PEDESTRIAN ACCESS

PEDESTRIAN ROUTES

Status Stamp: **CONCEPTUAL**

Date Stamp: **30/11/2010**

SCALES **(A1)** NTS

Drawing No.: Z1650800-06

Sheet No.: C002

Rev.: C

XREFS : X_IMAGE, X_SERVICES

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