

ITEM 13
MANAGER'S REPORT NO. 75
COUNCIL MEETING 87/11/30

RE: MARINE WAY/10TH AVENUE CONNECTOR AND THE GILLEY ALTERNATE

MUNICIPAL MANAGER'S RECOMMENDATION:

1. THAT the recommendations of the Director Engineering be adopted.

* * * * *

TO: MUNICIPAL MANAGER 1987 NOVEMBER 24

FROM: DIRECTOR ENGINEERING

SUBJECT: MARINE WAY/10TH AVENUE CONNECTOR AND THE GILLEY ALTERNATE

RECOMMENDATIONS:

- 1) THAT Council adopt Alternative #2 as shown on Figure 2 of Item 4, Manager's Report No. 67, 1987 November 02, copy attached.
- 2) THAT Council adopt Alternative G3 as the at-grade crossing of the B. C. Hydro railway south of 19th Street (copies of the complete report are available in the Director Engineering's Office).
- 3) THAT Council authorize staff to negotiate a contract with Reid Crowther and Partners Ltd. to provide the necessary engineering services to construct the Byrne Road portion of this project, as discussed in this report.
- 4) THAT Council authorize staff to negotiate the acquisition of a number of property frontages as more specifically outlined in this report.

S U M M A R Y

On 1987 November 02 Council tabled a report concerning the Marine Way/10th Avenue Connector and the Gilley Alternate (Item 4, Manager's Report No. 67), to permit time for Council to tour the subject project. The tour was conducted on 1987 November 09, and this report deals with the concerns which arose as a result of the tour and the discussion which followed.

The concerns raised by members of Council during the tour and subsequent discussions will be dealt with in the order raised:

R E P O R T

A. ALIGNMENT AT INTERSECTION OF MARINE WAY/10TH AVENUE CONNECTOR AND MARINE DRIVE

The first concern which requires addressing is related to the proposal to realign the Marine Way/10th Avenue Connector at Marine Drive. As discussed in the previous report (Item 4, Manager's Report No. 67, 1987 November 02), our consultant has examined a number of alternatives

(Cont'd.)

and has recommended one which differs from the one Council approved in principle on 1983 September 06.

This alignment (Alternative No. 2 on Figure 2 of previous report) does not provide for a full-movement controlled intersection at Marine Drive, because the latter has been downgraded from an arterial standard to a collector status. Instead, Marine Drive would connect to the proposed Marine Way/10th Avenue Connector by way of two tee intersections approximately 3-4 blocks apart.

The configuration being recommended will not adversely effect the No. 100 bus which runs east and west along Marine Drive between Coquitlam and the airport. Although the location of the connection of Marine Drive (west) is fairly obvious, the connection of Marine Drive (east) can be made at a number of locations, depending on the grades we are prepared to accept and what kind of driveway conflicts might be encountered. Another factor in pinning down the location of connection is the replotting of the area between Marine Drive and the proposed Marine Way/10th Avenue Connector between Byrne Road and Stride Avenue which is currently being investigated by our Planning Department.

The alignment being recommended has a greater impact on the large property at the southeast corner of Marine Drive and Byrne Road (6012 Marine Drive) than did the earlier adopted alignment. However, due to the large area of this property we are confident that should it be necessary to purchase the entire lot that there would definitely be a considerable resale value and therefore we have only used an estimate of the net cost (value) in our review of the different alternatives.

The alignment being recommended includes the option of relocating Byrne Creek in order to keep it to the north side of the proposed connector, which is desirable to do from the following points of view:

- 1) Improves flood control and channel capacity.
- 2) Provides better continuity of Byrne Creek Ravine Park making it safer for pedestrians by eliminating the need to cross a major secondary arterial (Byrne Road).
- 3) Eliminates one road/creek crossing.

Your Director Engineering definitely favours relocating the creek and to date our engineering investigations indicate that the creek relocation is feasible; however, before the final decision is made, a number of engineering details must be worked out.

The recommended road alignment would also accommodate leaving Byrne Creek in its present alignment if it should be necessary or desirable to do so but this would require considerable flood control work, upgrading of the two roadway crossings, (including a possible bridge at Marine Drive), and finding a satisfactory answer to carrying the Ravine Park across Byrne Road.

B. IMPACT ON BYRNE CREEK RAVINE SOUTH OF 19TH STREET

A second item of concern is the impact of the proposed

Gilley Alternate on the Byrne Creek Ravine in the vicinity south of 19th Street on both sides of the crossing of B. C. Hydro Rail/Skytrain.

The earlier Council report identified a consultant's special report which was done to assess five different alignments for the road link between the 19th Street/Edmonds Street intersection and the portion of the Gilley Alternate south of 20th Street, including alternate means of crossing B. C Hydro Rail/Skytrain. The full consultant's report is available for perusal in the Director Engineering's office. The recommended alternative is shown as G3 in the consultant's report and calls for the road to cross the B. C. Hydro Rail line at grade (after lowering the rail line) and then passing under the Skytrain between its columns.

With regard to the question of preserving the existing ravine in this area, the consultant was unable to avoid impacting on the ravine with any of the five alternatives primarily because of the constraints imposed by required road connection points and the relative "tightness" of the whole area. The attached Drawings A & B show both in plan and by typical cross-section the extent of impact on the ravine by both the recommended at-grade alignment and one of the other grade-separated alignments. Although the sections shown on the drawings are shown through the area north of the B. C. Hydro Rail, it can be taken as being typical of what would happen to the ravine area south of the B. C. Hydro Rail. As the section shows, no real difference exists with respect to impact on the ravine as each of the road alignments of necessity have an alignment close to the ravine centreline.

It is possible to achieve a partial relocation of the creek between 19th Street and B. C. Hydro/Skytrain, as shown on Drawings A and B. The costs and benefits of so doing will be examined as a part of the detailed design stage now under way.

To sum up, it is not possible to effect the required road connections without creating an impact on the ravine areas, the extent of which is approximately the same for each of the alternatives of crossing B. C. Hydro Rail/Skytrain. Your Director Engineering concludes that the only workable solution is to construct the road with as little disruption as possible and then restore the road/ravine interface areas to as near their original condition as is feasible.

C. GRIFFITHS AVENUE/RUMBLE STREET INTERSECTION

The third item of concern centers around the intersection configuration at Griffiths Avenue/Rumble Street. Attached Figure C reflects the introduction of a right-turn filter lane from Rumble Street onto 19th Street, as suggested by a member of Council. The possible cul-de-sacing of Prenter Street and possible allocation of leftover Griffiths Avenue road allowance to the adjacent property are being examined and the decision on these two questions will be reflected in the final roadway design.

NEXT STEPS: PROPERTY ACQUISITION AND CONSTRUCTION

As noted in the previous report, the consultant has been working on detailed designs for all parts of the project

(Cont'd.)

except the realignment proposal in the vicinity of Marine Drive and Byrne Road. The most difficult section to design is the portion of the Marine Way/10th Avenue Connector which is coincident with the current Byrne Road alignment between Marine Way and Marine Drive. The consultant has developed a design concept for this portion of roadway between Marine Way and approximately Meadow Street; one of the major concerns relating to the ultimate development of this portion of Byrne Road is the impact on adjacent buildings due to the significant depth of filling and pre-load required and a secondary concern is the ability to maintain access to the adjacent properties during the construction period which is estimated to be in excess of one year. In addressing these two concerns, it was decided that a two-phased approach would be initiated which would require a maximum filling of approximately two metres during the pre-load phase and approximately one-half metre after the completion of surface works. This would give us the final width of finished roadway but it would not be complete with concrete curb and gutter and sidewalks at least not for some time.

There is still some concern regarding the impact on adjacent properties and it is for this reason that the consultant is recommending that some typical test sections be constructed which can be monitored and used to better predict the impact in the future when the pavement elevation is raised to the ultimate grade. The principal benefit of doing a test section is to allow the Municipality to gain as much documentation as possible with respect to impact on adjacent properties; this information could prove to be of considerable assistance in responding to possible claims.

With the completion of design almost at hand and approval of the Ministry of Transportation and Highways having been obtained under the Revenue Sharing Act, we can now not afford to lose any time in proceeding to actual construction and run the risk of losing the grant. The engineering team which prepared the design concept for the Byrne Road section is Reid Crowther and Partners Ltd. in concert with sub-consultant Golder Associates, Geotechnical Engineers. The Corporation already has a significant amount of money invested in the preparation of the design concept and, in order to avoid losing time and money and risking lawsuits arising out of a change in engineering companies, it is very highly desirable and almost essential that we stay with the same engineering team. It is for these reasons that we recommend that Council authorize staff to negotiate a contract with Reid Crowther and Partners Ltd. to provide the necessary engineering services to construct the Byrne Road (approved Revenue Sharing) portion of the project. The estimated cost of construction is just over \$1,000,000 and engineering fees are estimated to cost approximately 15 to 17 per cent of the cost of construction.

We also need to proceed with property acquisition without delay. The required amounts of property are shown on Attachment D plus the amount of taking from 6012 Marine Drive which will be determined from final design.

VNW/EEO:ml
Attachs.

cc: Director Planning and Building Inspection
Director Recreation and Cultural Services
Director Finance


R. W. C. S. D.
DIRECTOR ENGINEERING

ITEM	13
MANAGER'S REPORT NO.	75
COUNCIL MEETING	87/11/30
MANAGER'S REPORT NO.	67
COUNCIL MEETING	87/11/02

RE: MARINE WAY/10TH AVENUE CONNECTOR AND THE GILLEY ALTERNATE

MUNICIPAL MANAGER'S RECOMMENDATION:

1. THAT the recommendation of the Director Engineering be adopted.

* * * * *

TO: MUNICIPAL MANAGER 1987 OCTOBER 28

FROM: DIRECTOR ENGINEERING

SUBJECT: MARINE WAY/10TH AVENUE CONNECTOR AND THE GILLEY ALTERNATE

RECOMMENDATION:

THAT this report be received for the information of Council.

R E P O R T

Background

Council, at its regular meeting of 1987 February 23, approved the retention of an engineering consultant to design the Gilley Alternate phase of this project, which includes a portion of the Marine Way/10th Avenue Connector and the Gilley Alternate to 19th Street. The consultant's terms of reference included the preparation of an evaluation report addressing the question of how the three major intersections at 19th Street/18th Avenue, 19th Street/Edmonds, and Griffiths/Rumble would interact with each other, given that they are located in very close proximity to each other. The terms of reference also requested a separate report outlining the available alternatives for crossing Byrne Creek, B. C. Hydro Rail and the A.L.R.T. in the area immediately south of 19th Street. In addition, the successful consultant, Reid Crowther and Partners Ltd., proposed to examine a number of alternatives for crossing the Byrne Creek ravine immediately north of Marine Drive.

All three of these reports have now been completed and the consultant is proceeding with detailed design. The basic content of these reports is being submitted to Council for its information, in recognition of the fact that the detailed design stage must now recognize and incorporate the recommendations inherent in each of the respective special reports mentioned above.

Traffic Study at Three Intersections

This report was specifically requested in our terms of reference to prepare an evaluation report including recommendations on how the three intersections of 19th Street/18th Avenue, 19th Street/Edmonds, and Griffiths/Rumble, which are all in very close proximity to each other, will interact. The objectives of this study were: (1) to forecast travel demand on the proposed road network, (2) to analyze the impact of this traffic on the intersections, and (3) to develop the configuration of intersections to accommodate all turning movements.

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The consultant's report identifies both a very high 19th Street to Griffiths Avenue through traffic volume as well as a high 19th Street/Griffiths Avenue westbound to Rumble Street left-turning demand. The consultant therefore confirms the basic intersection configuration as shown on attached Figure 1 as being the most suitable one to accommodate those major movements; a number of possible alternatives were examined but no other configuration works as well as that shown on Figure 1. In addition, the consultant's final report makes the following recommendations with respect to the three identified intersections:

- (1) Each of the three intersections must be signalized. The optimization and phasing of this signalization will be carried out in the design phase.
- (2) The proposed intersection layout for each of these intersections is for 4-lane roadways with exclusive left-turn lanes where warranted. In addition, there should be right-of-way provisions made for widening Griffiths Avenue between Gilley and Kingsway. The consultant's report also recommends that the alignment of the proposed Griffiths Avenue/19th Street connection be finalized at this time, as it impacts on the detailed design of the Gilley Alternate/Edmonds intersection.
- (3) That 18th Avenue north of 19th Street be realigned to create a standard properly aligned intersection. This recommendation has already been incorporated into the Edmonds Station Area Plan.

Report on the Crossing of Byrne Creek/B. C. Hydro Railway/B. C. Transit Skytrain

The consultant's terms of reference specifically requested that he prepare a report outlining the available alternatives for crossing Byrne Creek, B. C. Hydro Rail, and the Skytrain line, which all co-exist just south of 19th Street. This report was to give due consideration to the environmental impact on Byrne Creek and, furthermore, it was to recognize input from B. C. Hydro Rail and B. C. Transit, the latter having responsibility for the A.L.R.T. guideway structure. Furthermore, the report was to address the cost/benefit aspects of each alternative and identify particular problems associated with any of the possible alternatives.

The consultant identified five (5) alignments which represented the range of solutions available. These alignments consisted of two basic categories: (1) at grade road/B. C. Hydro Rail crossings, and (2) separated road/B. C. Hydro Rail crossings. The general proximity of Byrne Creek, B. C. Hydro Rail and the Skytrain guideway severely constrained the design possibilities. In addition, the agencies responsible for these various facilities each had firm criteria, and, as such, the design possibilities were even further constrained. Considering all these factors, plus such others as roadway alignment aspects, land acquisition impact, and construction complexity and cost, the consultant has recommended that an at-grade crossing best meets all of the project requirements. The recommended alternative will require the lowering of a portion of the B. C. Hydro Railway in order to provide sufficient clearance between the proposed Gilley Alternate and the underside of the A.L.R.T. guideway structure. This recommended alternative also has the least amount of encroachment on Byrne Creek, requires the least amount of land acquisition and provides the best overall horizontal and vertical road alignments.

Arising out of the recommended alignment are a number of matters which will be dealt with during the design phase. These include establishing an arrangement and alignment for new culverts between 19th Street and Griffiths Avenue, arranging for B. C. Hydro Rail requirements for a temporary storage track during construction, the finalization of intersection design at 19th/Edmonds and determining whether the B. C. Parkway is to be grade-separated from the proposed Gilley Alternate by way of an overpass or an underpass. This latter item will be the subject of a separate report which will be available within a month.

Byrne Creek Bridge Alternatives (near Marine Drive end)

The consultant's terms of reference generally recognized an earlier study done with respect to the Gilley Alternate and Byrne Road upgrading. This earlier study identified an alignment which included a bridge structure over Byrne Creek ravine immediately north of Marine Drive. This alignment of the proposed Marine Way/10th Avenue Connector was approved in principle by Council at its meeting of 1983 September 06.

The consultant's proposal acknowledged that considerable work had been done on that previous study and that the bridge alternative appeared to be quite firm notwithstanding that the consultant did propose to examine other alternatives for crossing the Byrne Creek ravine. The principal reasons for the consultant wanting to review other alternatives are based on the following: (1) the potential for significant cost savings, (2) the possibility of changes in environmental agencies' requirements since the completion of the previous report which was more than seven years ago, and (3) the potential existence of alternative approaches to better address the question of linking Byrne Creek ravine park to the north with a new Byrne Creek linear park reconstruction to the south of Marine Drive. This aspect of the consultant's proposal was identified in our report to Council on 1987 February 23, at which time approval was given to engage the consultant. Based on Council's adoption of that report, we worked with the consultant on examining a number of alternatives for the Marine Drive/Byrne Road intersection and the crossing of Byrne Creek ravine.

The consultant has now completed sufficient detailed examination of a number of alternatives to show that one clearly emerges as the recommended solution. This recommended alignment has been thoroughly discussed with all affected Municipal Departments and has been given approval in principle by each. As the recommended alignment differs from that indicated in the earlier Gilley Alternate study, we are now advising Council of this fairly significant change.

The attached Figure 2 schematically shows three alternative alignments, of which #2 has two different approaches to the treatment of the Byrne Creek ravine and watercourse. The recommended alignment (#2) is considerably less costly than the original alignment requiring a bridge as proposed by the previous study; the magnitude of net savings is roughly estimated to be in excess of \$1,000,000. The recommended alternative does have a greater impact on acquisition of private properties than do the other alternatives. However, it does have the best road alignment and provides for a north-south continuity of the Byrne Creek ravine park across Marine Drive. The recommended alignment also has minimal impact on the agricultural land reserve.

The alternative alignment being recommended was not available at the time of the earlier study because at that time, which was

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prior to the adoption of the Municipal Transportation Plan, Marine Drive was considered to be a major arterial and, as such, it was required to connect to the Gilley Alternate by way of a fully-signalized intersection. Our current transportation plan downgrades Marine Drive, and accordingly the consultant was able to take more latitude with the recommended alignment in that it was no longer critical that Marine Drive be a full-movement intersection with the Marine Way/10th Avenue Connector.

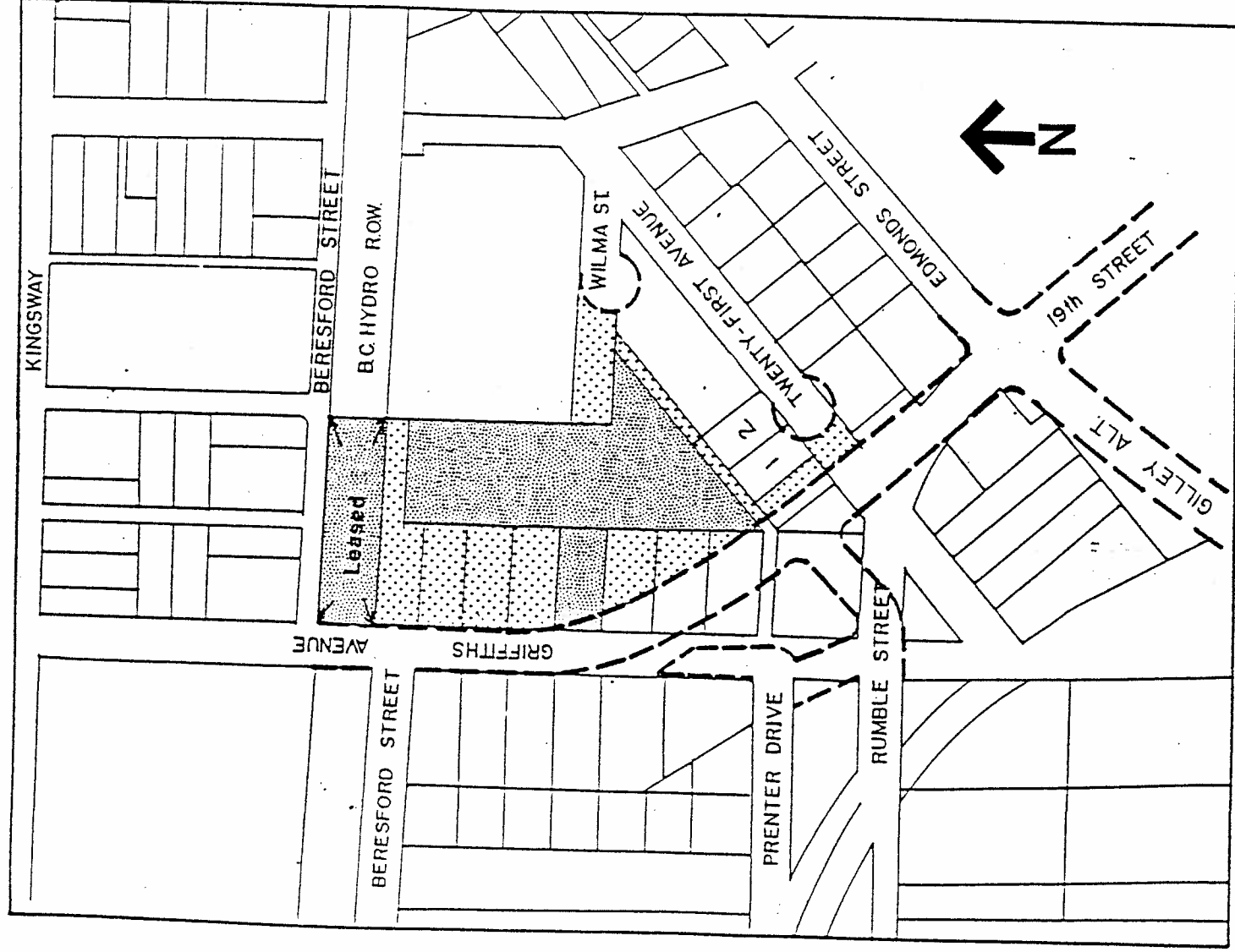
The consultant has been instructed to proceed with detailed design work but has not yet commenced work specifically on the newly-recommended alignment. The next step is to advise him to proceed with that portion of the design as well, which will identify necessary property acquisitions, following which a further report to Council will seek authority to commence negotiations for the required property.


DIRECTOR ENGINEERING



VNW/EEO:m1
Attach.

cc: Director Planning and Building Inspection
Director Recreation and Cultural Services

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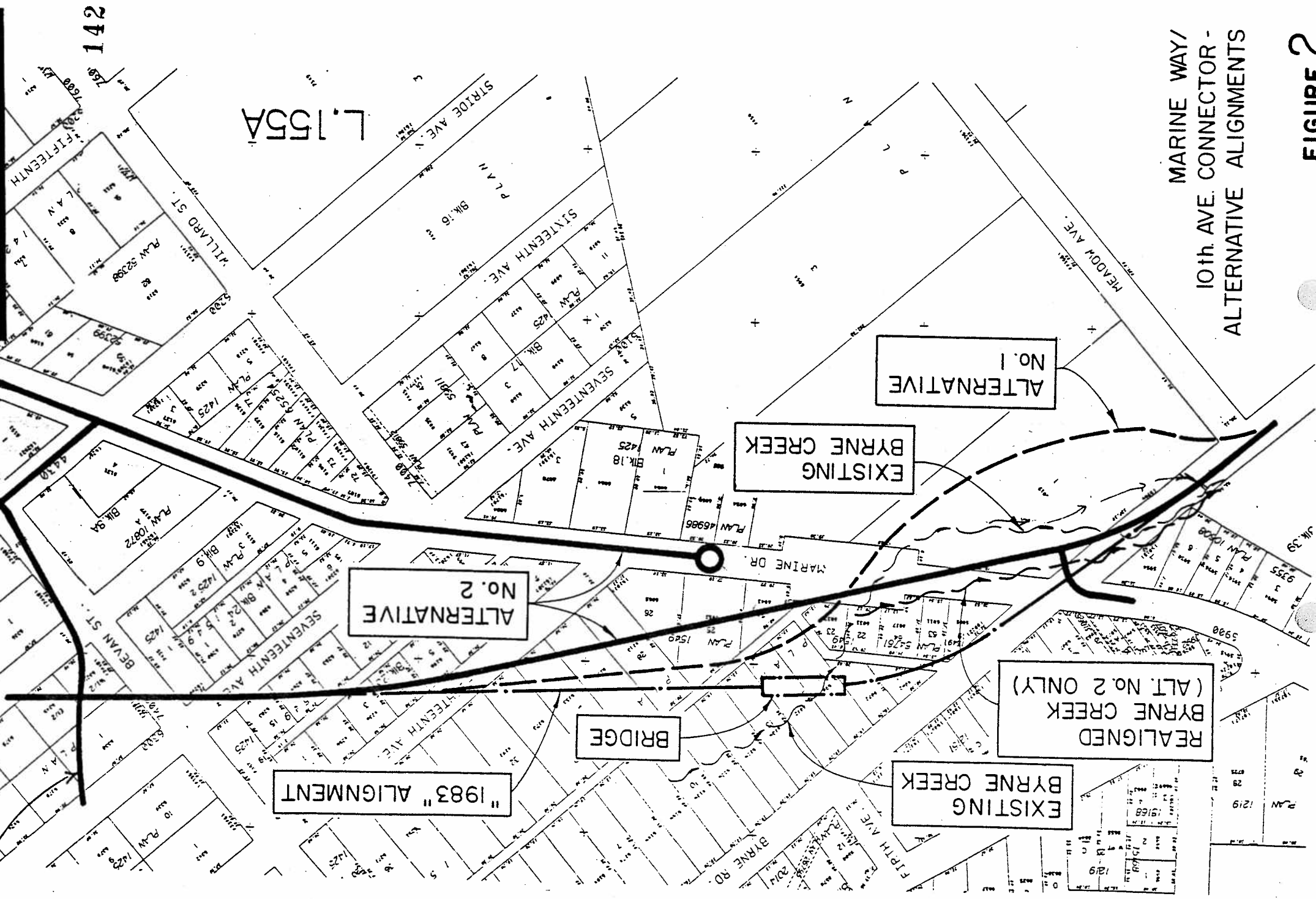
LEGEND

-  proposed park property
-  existing park property

PROPOSED INTERSECTION CONFIGURATION
 ON 19th ST. / GRIFFITHS AVE.

GILLEY ALT.

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MARINE WAY/
10th. AVE. CONNECTOR -
ALTERNATIVE ALIGNMENTS

FIGURE 2

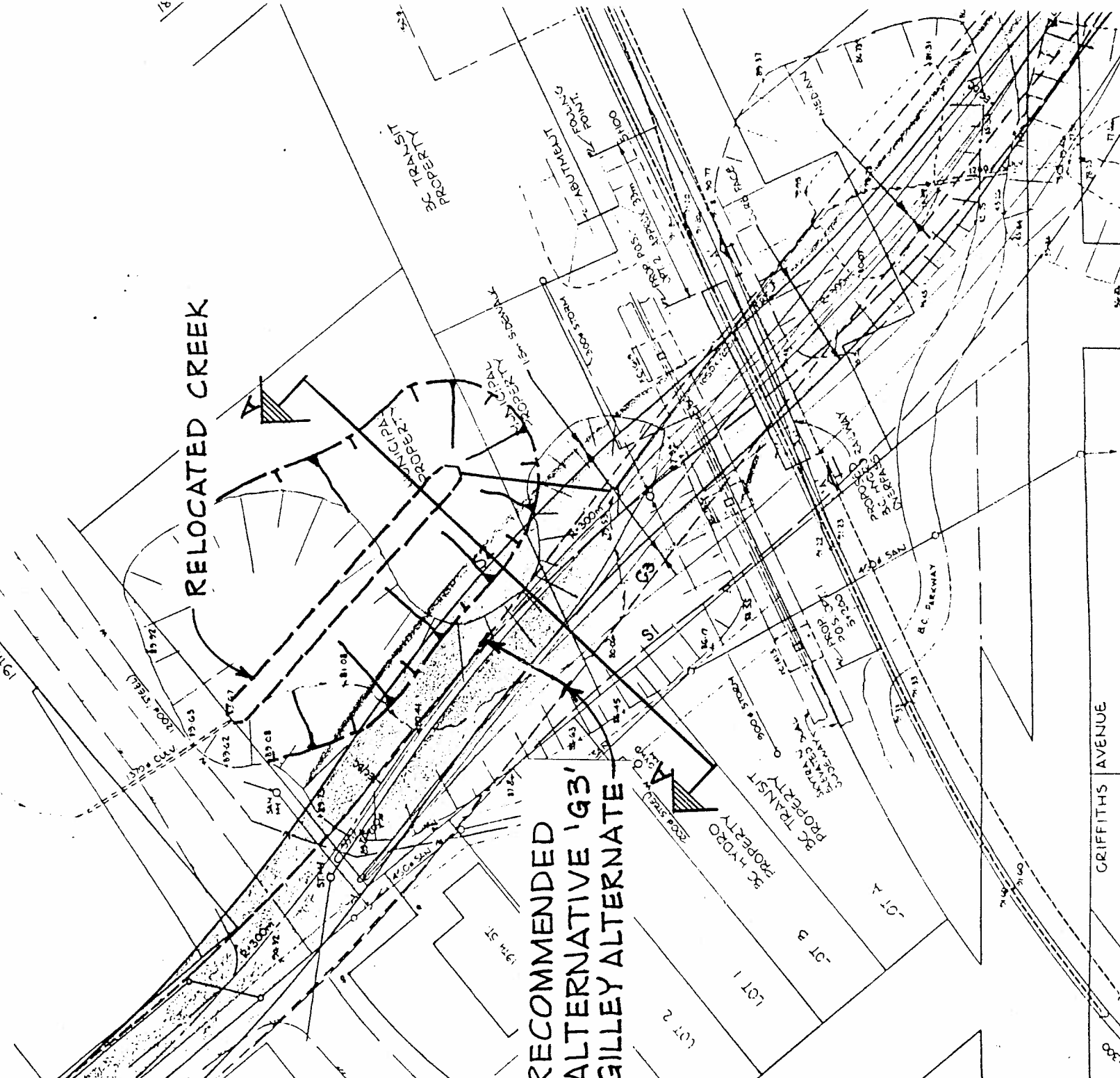
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19TH STREET
 GROVE CREEK

RELOCATED CREEK

RECOMMENDED
 ALTERNATIVE 'G3'
 GILLEY ALTERNATE



DATE	REVISIONS	APP

GILLEY ALTERNATE & BYRNE
 CREEK AT 19TH STREET

Reid Crowther & Partners Ltd.
 Engineers • Planners • Scientists
 Vancouver • Kelowna • Calgary • Red Deer
 Edmonton • Lethbridge • Saskatoon • Regina
 Winnipeg • Ottawa • Yellowknife • Whitehorse

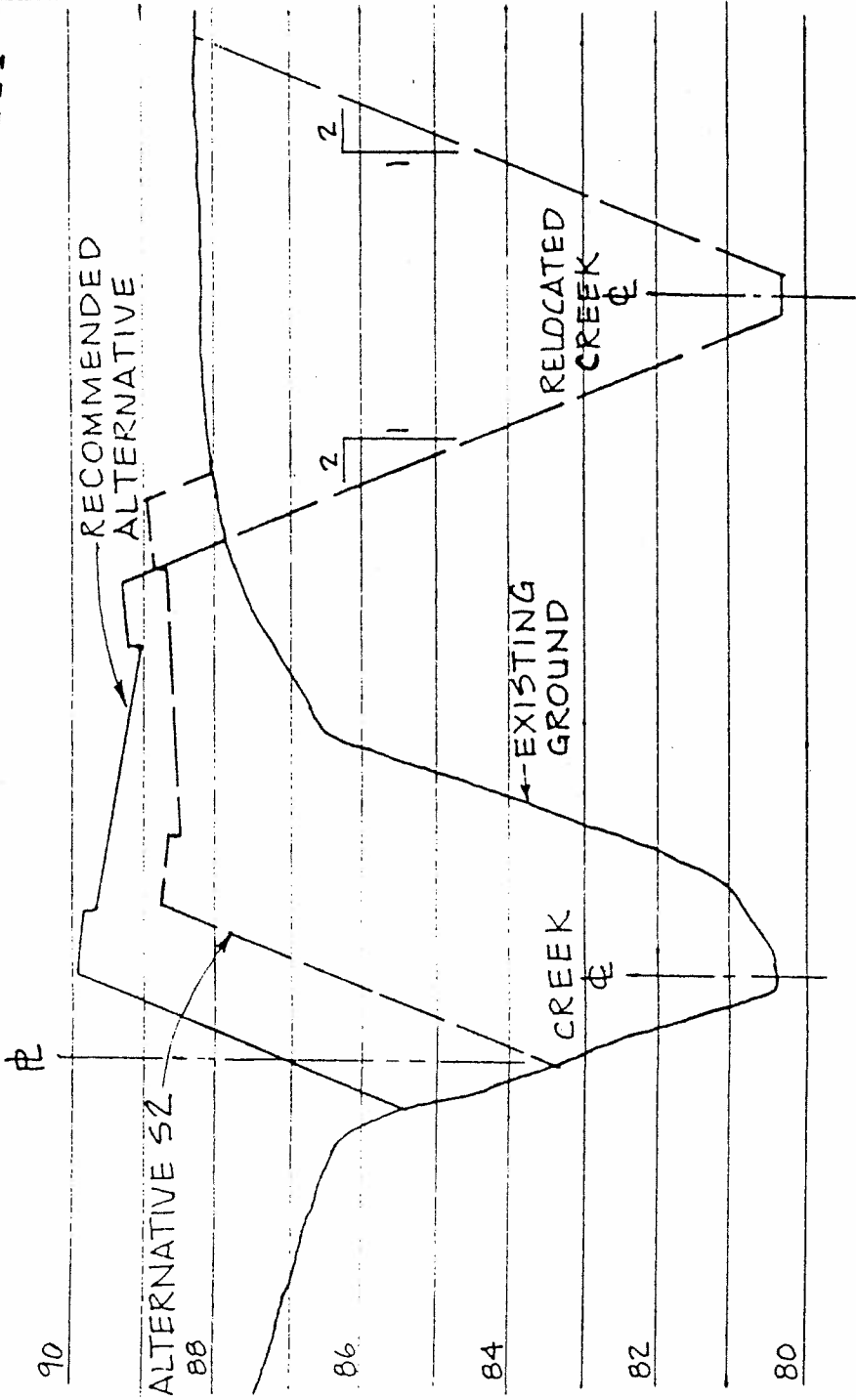
Reid
 Crowther

SCALE 1:1000
 DATE NOV. 23 / 87
 DES DWN G.S.
 CKD APP
 PROJ. NO. 31100
 DWG NO. CD 37



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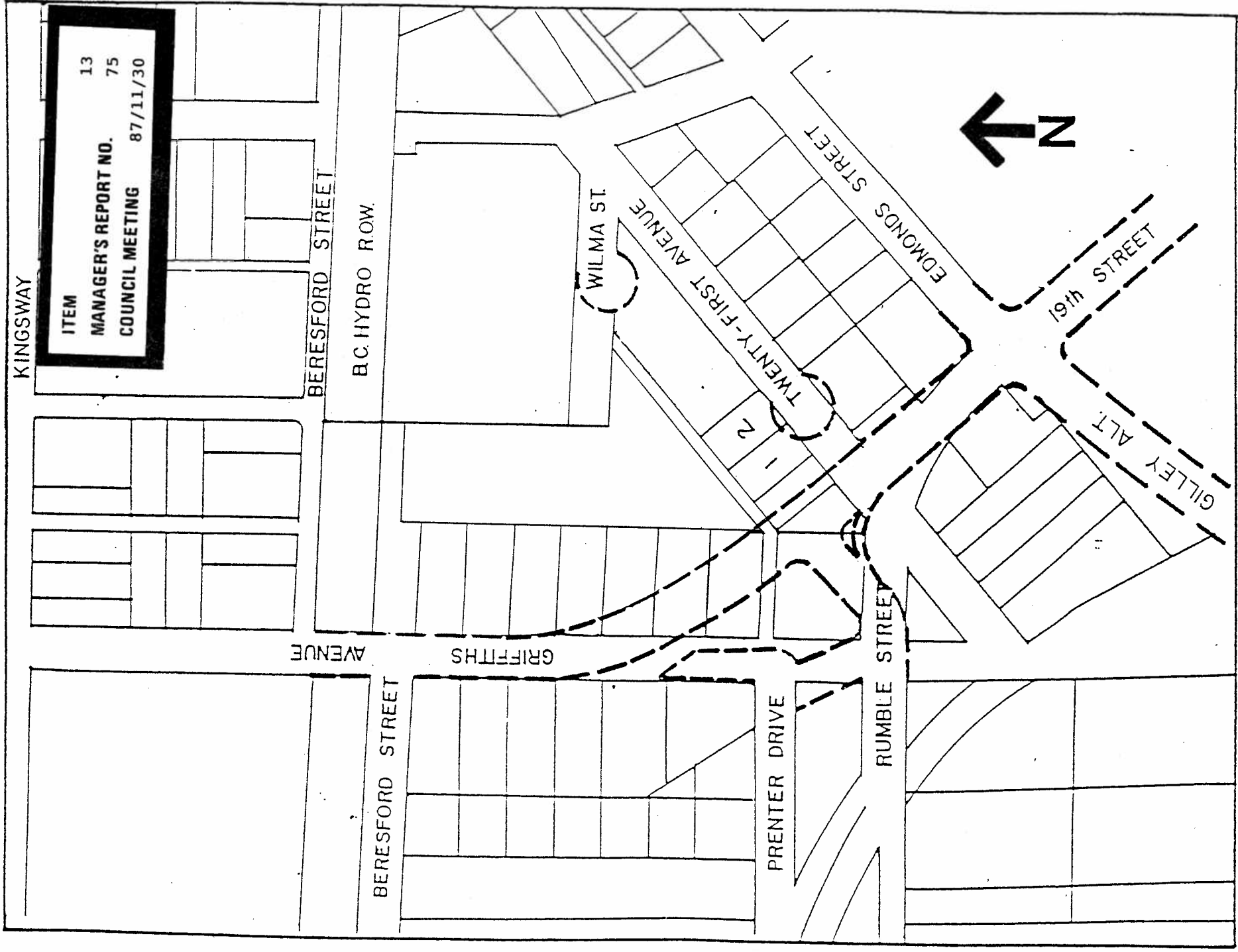
144



SECTION A-A
 SCALE: 1:500 HOR.
 1:100 VERT.

REFER TO CD 37

				SCALE AS-NOTED	DATE NOV. 23/87	DES DWN G.S.	CKD APP	PROJ. NO. 31100	DWG NO. CD 38		
				GILLEY ALTERNATE & BYRNE CREEK AT 19TH STREET SECTIONS		Reid Crowther					
				Reid Crowther & Partners Ltd Engineers • Planners • Scientists Vancouver • Kelowna • Calgary • Red Deer Edmonton • Lethbridge • Saskatoon • Regina Winnipeg • Ottawa • Yellowknife • Whitehorse							
DATE	REVISIONS	APP									



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PROPOSED INTERSECTION CONFIGURATION
 ON 19th. ST. /GRIFFITHS AVE.
 BETWEEN KINGSWAY AND EDMONDS

NO. DATE

REVISION

APPRVD.

PROPOSED PROPERTY ACQUISITION AT 5744, 5784, 5820 BYRNE ROAD AND 7303 MEADOW ST.

CORPORATION OF THE DISTRICT OF BURNABY
ENGINEERING DEPARTMENT
DIVISION
DESIGNED BY D.R. CALOCERO
DRAWN BY D.R. CALOCERO
CHECKED BY
APPRVD. BY
SCALE
DATE 87.11.20
DRWG NO. 2088

MARINE

WAY

