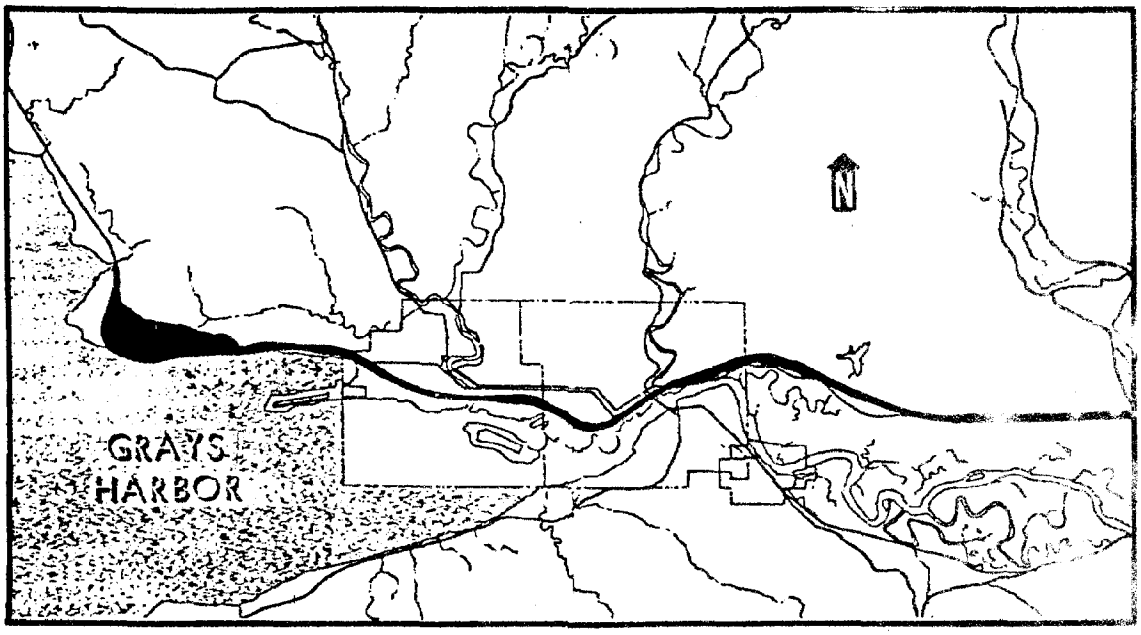
Hoquiam River Bridge

Corridor Study



January 1981

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HOQUIAM RIVER BRIDGE
CORRIDOR STUDY

GRAYS HARBOR REGIONAL PLANNING COMMISSION

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

JANUARY 1981

U.S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

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HOQUIAM RIVER BRIDGE CORRIDOR STUDY

WA-681

GRAY'S HARBOR REGIONAL PLANNING COMMISSION AND THE WASHINGTON STATE DEPT. OF TRANSPORTATION

HOQUIAM RIVER BRIDGE CORRIDOR STUDY

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INTRODUCTION AND BACKGROUND

A site in Hoquiam, Washington has been identified as having a high potential for future use as an oil drilling platform assembly yard or a similar facility. This site, owned by the Port of Grays Harbor and officially designated as industrial development district number one, is commonly known as the "Kaiser Site." This report will refer to the site as the "energy facility site." Federal permit conditions applying to this site restricts the site's use to a water dependent energy facility. The site, however, is located adjacent to a designated corridor for the planned construction of a new highway through Aberdeen/Hoquiam. This highway is commonly known as the "expressway." While the general corridor has been designated by the Department of Transportation in conjunction with the appropriate local communities, the actual corridor design has not been made. It is possible that this corridor could be designed in a manner which would limit or reduce the use of the "Kaiser Site" for energy facilities. Conversely the development of an energy facility on the site, along with the traffic it would generate, will impact the ability to construct an adequate highway. In order to avoid these problems and to provide for both needs, advance planning is needed. This planning should be undertaken now, before opportunity for design flexibility to avoid conflict with the energy site is further limited by the development of other properties or other actions in the vicinity.

To address this situation, the Grays Harbor Regional Planning Commission (GHRPC) has applied for and received a grant from the Coastal Energy Impact Program (CEIP), administered by the State Department of Ecology. Under this grant the GHRPC undertook, in conjunction with the State Department of Transportation, a corridor design study which considered both the impact of the highway on the use of the energy facility site, and the impact of the use of the energy facility site on the highway. This included traffic circulation considerations addressing the anticipated impacts on the traffic patterns from the proposed assembly yard. Specifically, aerial photographic mapping of the transportation corridor area was done and transportation concepts were discussed. Since impacts from the assembly yard could severely aggravate an already troublesome condition, they were particularly scrutinized as part of the necessary planning for the transportation corridor.

When the study was originally conceived, it was anticipated that it would consist merely of refining the earlier general corridor design into a specific design that would focus on access design considerations between the energy facility site, adjacent industrial properties, and the expressway. However, since the original corridor studies were completed in 1972, several significant changes occurred along the entire corridor of the expressway. Property ownerships have changed, new industrial plants have been constructed, and costs have increased for the relocation of a railroad right-of-way. These changes have created a more complex situation than was anticipated. It has been generally agreed that the best expressway corridor between the Hoquiam River and the junction of the expressway with SR 109 would be north of the rail lines (either north of the present line or relocated rail line somewhat to the south). This northern alignment would avoid problems in placing the expressway between the rail corridor and the industrial sites, creating the need to cross the expressway for either access to the rail services, or spurs to provide direct rail service. However, escalating property values, construction costs, and ownership changes may have made this alignment more difficult to implement. On the other hand, an alignment south of the rail line may be less costly and hence have greater feasibility in light of tightening highway construction funds.

These complexities made it fortuitous that this study could be undertaken to address the implications of these changes in the corridor concept and especially their impacts on the energy facility site. Since a southern route would cross the energy facility site, the potential impact of the expressway on the site could be greater than heretofore expected.

The implications of these changes on the general alignment of the corridor necessitated more consideration of various alternatives for a river crossing than was originally anticipated. Consequently, the study focused on identifying the key alternatives for the bridge and assessing their impact. The study outlines two alternative designs and assesses their impacts. More detailed design of Alternative B (and A) is available on photogrametric maps in the offices of the Grays Harbor Regional Planning Commission.

This study has sought to provide a framework for future design and construction of the full corridor as highway funding permits. Due to changes in the corridor alignment not directly in the concept of this study, this corridor cannot be finally designed until more corridor analysis occurs along other parts of the corridor. However, while the potential corridor alignment (Alternative B) which probably will best align with other corridor segments will impact the energy facility site, this impact does not appear to prevent the site's use as an energy facility as originally planned. While this alternative removes some area from the energy facility site, and requires some adjustment for rail access, it provides the positive aspect of significantly improving direct vehicle access to the site over other alternatives.

While the long range corridor needs were the primary design criteria, the design has also sought to produce an interim solution to the congestion problems in downtown Hoquiam. At present Highway 101 places large volumes of local traffic, many industrial truck movements and large volumes of tourist vehicles into the City. If a new Hoquiam River Bridge were constructed that could directly tie into current industrial routes on either side of the river, such a bridge would remove a substantial part of the heavy industrial traffic from downtown. Since due to limited financing available for highway construction the expressway would be built incrementally, the interim characteristics of the design might be particularly important to its implementation.

HOQUIAM RIVER BRIDGE

CORRIDOR

IDENTIFICATION STUDY

PURPOSE

Identify corridor opportunities in the vicinity of the Hoquiam River along the Central Alternate Corridor for the purpose of preserving it by mutual consent from conflicting development.

BACKGROUND

In 1969 through 1971, the Washington State Department of Highways worked with a Citizen's Advisory Committee and developed the "Grays Harbor Transportation Study." It was adopted by resolution by the Cities of Aberdeen, Hoquiam, and Cosmopolis in 1971. The study recommends a North, Central, and South Corridor. The central alternate corridor was adopted for development through Aberdeen and Hoquiam. The scope of the current study is to identify corridor opportunities on a segment of the central alternate corridor at the crossing of the Hoquiam River.

TECHNICAL ADVISORY COMMITTEE

Four meetings (August 19, August 26, September 9, and September 23, 1980) were held at the Grays Harbor County Multi-Services Building in Aberdeen. For meeting minutes, see Appendix A. The people participating represented the adjacent land owners, City of Hoquiam, Grays Harbor Regional Planning Commission, and Washington State Department of Transportation (W.S.D.O.T.). At the first meeting, it was explained that W.S.D.O.T. was retained to perform the technical functions of the study with the committee providing guidance, suggestions, and direction.

CORRIDOR SELECTION

A river crossing immediately up-stream from the railroad bridge was discussed. On the East Side of the River, future expansion of Rayonier's facility is such that placement of a bridge very close to the railroad is beneficial. This would preserve a maximum amount of land for their future expansion. Crossing 22nd Street at its intersection with Bay Avenue and at an elevation to permit traffic on 22nd Street to cross under, was recommended. Access to Rayonier and Grays Harbor Paper would not be altered. Alternate A and B provide these features (See Appendix B).

On the West Side of the River, the alternate discussed were the Ultimate Expressway location and the necessary ramps to connect the existing street and truck route system. It was felt Alternate A had the most impact on the Port's land at the mouth of the Hoquiam River. For this reason Alternate B was discussed. The Utlimate Expressway shown on the plan view photo conforms with the Transportation Study Corridor of 1971. Alternates A and B complement the Utlimate Expressway.

VERTICAL ALIGNMENT

The vertical clearance over the Hoquiam River was one of the first issues discussed. Adequate clearance to permit construction of a fixed bridge was

considered a high priority. Based on the Coast Guard requirements for Hoquiam River traffic at the Riverside Bridge, the minimum vertical clearance would be 75' above M.L.L.W. Both Alternates A and B and the Ultimate Expressway meet this requirement.

The crossing of 22nd Street was discussed relative to either an at-grade or overhead crossing. For the reasons mentioned above, an overhead crossing of 22nd Street was recommended.

On the West Side of the River, several profile grade options exist. If a North Ramp from the River crossing "K" Street is used, the crossing of the railroad spur track would have to be overhead. This leaves two options:

1. Move the spur track east and shorten the off-ramp to "K" Street.

2. Cross the spur track at its existing location.

From a cost viewpoint, they are roughly equal. However, the major disadvantage with the North Ramp is routing of industrial traffic back into the City and across the railroad tracks at the west end of Eighth Street. The profile grade options are therefore not critical to the decision.

A South ramp from the river crossing was discussed which would cross over the tracks of the railroad yard and connect to Earley Way. This ramp would place most of the industrial traffic on the South Side of the railroad and connect directly to the existing industrial road on the 5th Street Extension and Paulson Road.

Both North and South ramps would have a maximum gradient of 5%. A 7% gradient was discussed as a means of reducing the structure length but the disadvantages to trucks when loaded was considered too great. The vertical alignment was a critical item because of the need to provide clearance over the railroad and 22nd Street.

The Utlimate Expressway Corridor is a refinement of the one shown in the "Grays Harbor Area Transportation Study" of 1971. Placing it closer to the railroad on the East Side of the River and curving to an alignment North of and parallel to Bay Avenue was recommended by the committee. On the West Side no change in the corridor was recommended by the committee.

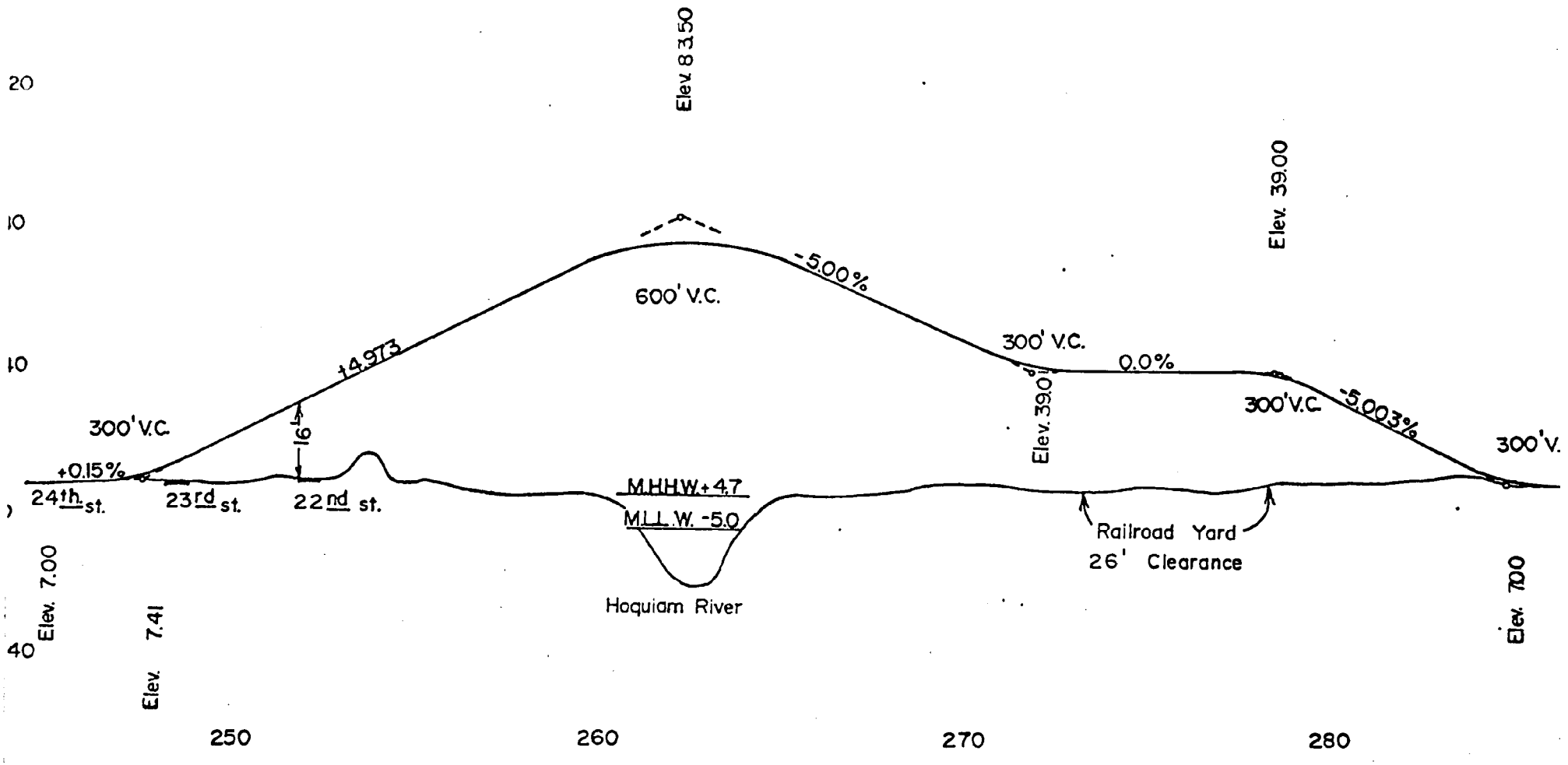
CONCLUSION

The corridor necessary for a proper implementation of an industrial road crossing of the Hoquiam River is within the area immediately North of the Burlington Northern Railroad. Ramp connections on the East Side of the River would be part of the Ultimate Expressway. Ramp connections on the West Side of the River would become part of the Ultimate Expressway, either as access ramps, or the mainline structure.

EVALUATION SUMMARY

IMPACT	ALTERNATE A		ALTERNATE B	
	NORTH RAMP	SOUTH RAMP	NORTH RAMP	SOUTH RAMP
CONSTRUCTION* COST	$11,000,000	$10,000,000	$11,000,000	$12,000,000
RIGHT OF WAY COST	GREATEST	LEAST	GREATEST	LEAST OF ALL
OPERATIONAL EFFICIENCY	FAIR	GOOD	FAIR	GOOD
SAFETY	FAIR	GOOD	FAIR	GOOD
SOCIAL IMPACT	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE

*Assume 36' Roadway @ $80.00/S.F.



PROFILE
ALTERNATE B
South Ramp
1"= 400' Horizonal
1"=40' Vertical

ANALYSIS OF THE IMPACT

OF ALTERNATIVE CORRIDOR ALIGNMENTS

ON ENERGY FACILITY SITE

The foregoing discussion has identified two basic alternatives for the proposed expressway as it crosses the Hoquiam River. As displayed on Appendix B, the original tentative concept (dotted line) was a bridge running north of the railroad bridge and running just south of the City of Hoquiam central business district. Upon more detailed consideration of this concept, and the increasing costs of land acquisition and necessary realignment of the railroad facilities alternative alignments were explored. Alternative A is the most apparent alternative from a highway design point of view but would limit the use of two prime industrial sites, the energy facility site and the property adjacent to the ITT mill on the east bank of the river. A second alternative was then developed to mitigate these impacts, Alternative B.

Each of the alternatives include two ramps on the west side of the river. While each of these ramps can be considered separate options in each of the alternatives, it would be preferable to include both in the utlimate construction. While construction of a ramp only into the north would eliminate direct impact on the energy site, it would tend to place too much traffic, especially heavy trucks, directly into the existing grid of the City of Hoquiam and therefore only provides limited improvements. On the other hand, construction of just the south ramp would limit direct access to the City. A more complex question is the number of lanes that should be provided on each ramp if both ramps are constructed since they both cannot be two-way ramps without crossing over. Since this consideration is best determined in light of the ultimate corridor, it is best dealt with in latter designs. For simplicity it will be assumed at this point that both will be two lane (with an additional turn lane for the south ramp), thereby assessing maximum impact on adjacent property.

While the bridge is intended to be part of a full expressway, it nonetheless needs, in any configuration, to serve interim needs of reducing truck congestion pending the construction of the full expressway. Consequently, the proposed alternatives need to be evaluated both in terms of their long-range potential and their ability to meet short-term problems.

IMPACTS OF THE ALTERNATIVES ON THE ENERGY SITE

PHYSICAL IMPACT

From the west bank of the Hoquiam River in Alternative A, the south ramp would cross the railroad tracks immediately and continue west parallel to the railroad switching yard for approximately 2000 feet where it reaches the energy facility site's western boundary. If this roadway were completely located (after it crosses the railroad) on the Port's property, a total of 2.3 to 2.5 acres would be taken for this facility (assuming a two lane facility with a central turn lane for the Kaiser Site). This acreage can be further reduced if the road bed encroaches into the railroad right of way, which is in public ownership. This alternative would necessitate relocation of a new City of Hoquiam pump station.

In Alternative B, the south ramp for this design begins approximately 1000 feet west of the riverbank, immediately crosses the railroad tracks at the east end of the switching yard proceeds to the end of existing Earley Industrial Way. Actual land consumed of the energy facility site by the roadway could be 1-3 acres or less.

ROAD ACCESS

For both Alternative A and B the north ramp connects with the existing "K" Street in Hoquiam. For Alternative A the bridge splits into two ramps immediately west of the riverbank. Road access to the site would be the same with either Alternative A or B. Turn lanes from the ramp (now at grade) near the end of the existing Earley Industrial Way would provide access to both the energy facility site and the adjacent log storage area. Either south ramp (A or B) would eliminate at grade railroad crossings for site traffic crossing the Hoquiam River. Traffic from the east side of the river would have considerably improved access to the site with the elimination of the need to traverse downtown Hoquiam. Traffic from the site traveling to areas west of the river would have several alternative routes from Earley Industrial Way. With the completion of a 101/109 bypass the south ramp would be the link in the complete truck route to divert traffic out of downtown Hoquiam.

RAIL ACCESS

Using only existing tracks, railroad access to the site would be significantly restricted with either alternative, although most significantly by Alternative A. This impact could be potentially mitigated by constructing a rail spur directly into the site under Alternative B. This would, however, reduce available ground further.

SUMMARY

Alternative B provides excellent road access to the site for traffic from either side of the Hoquiam River. Rail access from the existing switch yard is hindered but this problem could potentially be reduced if a new spur from these nearby lines could be constructed without concern for road traffic crossings although such a spur would reduce available area on the site. Minimal area would be used for the actual raised roadway and extension of Earley Industrial Way.

Alternative A provides the same access enhancement for road traffic and a greater resulting rail problem, but also involves the use of more than twice the amount of land area.

ULTIMATE EXPRESSWAY

If a complete expressway is ultimately constructed along the previously planned route, the south ramps for Alternative A or B would provide excellent access to the expressway for site traffic as well as traffic from other industrial sites nearby. If the south ramp of Alternative A or B became the ultimate expressway route with additional lanes, ramp widening may be necessary along the north side of the site.

CONCLUSION

Final designation of an expressway corridor alignment will utlimately depend on the alignment of the remainder of the expressway. A major concern is where the expressway will proceed from the Hoquiam River to its junction with SR 109. The key question in this reach will depend on how the expressway will relate to the locations of the rail lines; north or south of the existing line, or north of the relocated line. While north of the rail line is the most desireable from an overall point of view it is the most difficult to implement. While south of the existing line is the most implementable, it poses significant circulation issues through the industrial area and poses potential barriers between industrial areas and the rail corridor.

The analysis in this report presents a series of alternatives which include the original concept. While the original concept would have the least direct impact on the energy facility site itself, it is also one that would be the most difficult to implement. The other alternatives provide substantial flexibility to respond to the location decisions which will occur west of the Hoquiam River. Both alternatives can respond to a decision to locate the expressway on either (north or south) of the rail corridor. While Alternative A presents a good highway engineering concept of a "flexible" alignment, it also produces significant impacts on the use of several key industrial sites, including the energy facility site. Alternative B mitigates these impacts. While Alternative B has greater impact than the original concept, it improves vehicle access to the energy facility site as well as providing greater potential for implementation. Both Alternative A and B can be constructed as an interim solution for part of the truck congestion problems in downtown Hoquiam, and both have sufficient flexibility to respond (if constructed in the interim) to the ultimate location of the expressway.

DEPARTMENT OF TRANSPORTATION
INTRA-DEPARTMENTAL COMMUNICATION

DATE: August 20, 1980

FROM: John L. Hart
Phone:

SUBJECT: Y-2119
Grays Harbor Corridor Identification Study

To: File

The first meeting of the Technical Advisory Committee was held August 19, 1980, 9 a.m. at the G.H.R.P.C. meeting room. Those attending:

Ray Aurhaus	Mayr Brothers
Terry Ward	City of Hoquiam
George Cummings	Burlington Northern R.R.
Stan Lattin	Port of Grays Harbor
Else Korvell	
Pat Dugan	G.H.R.P.C.
John Hart	W.S.D.O.T.

The advantages and disadvantages of selecting a route North of the B.N.R.R. terminal switching yard was discussed. A map showing the route North was discussed. It was decided to look at an exhibit of the route on the South side at the next meeting (8-26-80).

The problems of continuing west were also discussed.

Profile grades of 5% to 7½% were discussed and it appears a 5% grade with a structure that passes over 22nd with enough height (16' clear) would be desirable.

JLH:evf

APPENDIX A

DEPARTMENT OF TRANSPORTATION
INTRA-DEPARTMENTAL COMMUNICATION

DATE: August 27, 1980

FROM: John L. Hart
Phone:

SUBJECT: Y-2119
Grays Harbor Corridor Identification Study

To: File

The Second Meeting was held at 9:00 a.m. August 26th, at the Grays Harbor County multi-services meeting room. The following mem bers of the Technical advisory committee attended:

J. A. KRAUTH	ITT Rayonier	532-1410
R. S. SPANICH	Lamb Grays Harbor Co.	532-1000
GEORGE V. LONNGREN	ITT Rayonier Inc. NWTD	
GEORGE A. CUMMINGS	BN INC	532-1614
RAY AARHAUS	Mayr Bros. Logging	532-2375
STAN LATTIN	Port of Grays Harbor	533-9522
TERRY W. WARD	City of Hoquiam	532-5700
HENRY E. SOIKE	Port of Grays Harbor	533-9530
DEE JOHNSON	ITT Rayonier	532-1410
GEORGE E. LAMB	Lamb Grays Harbor	532-1000
BOB ORR	Lamb-Grays Harbor	532-1000
RON MATTILA	W.S.D.O.T.	753-7260
CHARLES BATTERSBY	Hoquiam	532-5700
John Hart	WSDOT	

Pat Dugan generally discussed the need for this corridor identification and the general details of our last meeting.

I discussed the advantages and disadvantages of a corridor that went North of the railroad terminal and one that went south.

Many questions were asked relative to the impact on railroad spurs to existing and future waterfront industries. Also discussed was bridge height (Channel clearance) and access to and from Rayonier Pulp Mill, Paper Mill and the Vanillin Plant.

George Lamb expressed concern that a major highway placed so close to the waterfront would in fact be in the middle of the long range industrial area. A road no closer than Simpson Avenue should be built as afuture major highway and perhaps as far away as the base of the hill. He also stated the waterfront opposite L.G.H. would in the long term be used for shipping machinery overseas. He also felt that railroad shipping would be changed in that loaded trucks would transfer their load to the railroad at a central transfer area. This transfer area might be in Junction City. He felt the long range (Middle of next century) needs would preclude the need for a bridge and expressway adjacent to the railroad.

J. A. Krauth, Rayonier, stated they would be expanding the pulp mill, paper mill and doing more work with by-products such that their employment would probably double in 20 years. His main concern with any bridge and highway location was to retain access for the three entrances to the Vanillin plant, pulp mill and paper mill. The log deliveries use Ontario, thus the 22nd and 23rd streets and Ontario are important to them.

He emphasized that Rayonier's total operation of log sorting, sawmilling, pulp, paper and by-products was spread out along the waterfront and needed to be connnected with a more efficient road system.

The next meeting is scheduled for September 9, at which time a more detailed plan will be prepared for a bridge location, which would use ramps to connect to city streets on either the North or South side of the railroad yard.

JLH:evf

(September 9, 1980)
DATE: September 19, 1980

DEPARTMENT OF TRANSPORTATION
INTRA-DEPARTMENTAL COMMUNICATION

FROM: John L. Hart
Phone:

SUBJECT: Y-2119 RO2019
Grays Harbor Identification Study

To: File

The Third meeting was held at 9:30 a.m., September 9, 1980, at the Grays Harbor County multi-services meeting room in Aberdeen. The following people attended:

Pat Dugan	G.H.R.P.C.
Stan Lattin	Port of G.H.
Rudy Spanich	Lamp G.H.
Ray Aarhaus	Mayr Bros.
Dee Johnson	Rayonier
Terry Ward	City of Hoquiam
John Hart	W.S.D.O.T.

Much of the disucssion centered around the impacts of specific alignments of ramps.

On the east end Dee Johnson felt the alignment should be as close to the railroad as possible to allow more room for expansion of the vanillin plant. It still needed to align with the middle of the area between Bay Avenue and the alley to the North.

On the west end three options for ramping down to street level need to be identified and detailed.

1. North to K Street
2. South to Earley Way
3. Parallel to and North of the track in a westerly ditection.

The next meeting on September 23rd at 9:00 will explore these.

JLH:evf

DEPARTMENT OF TRANSPORTATION
INTRA-DEPARTMENTAL COMMUNICATION

DATE: September 29, 1980

FROM: John L. Hart
Phone:

SUBJECT: Y-2119 Ro 2019
Grays Harbor Corridor
Identification Study

To: File

The fourth meeting was held on September 23, 1980 at 9:30 a.m. at the Grays Harbor County multi-service meeting room. The following attended:

Pat Dugan	G.H.R.P.C.
Stan Lattin	Port of Grays Harbor
Rudy Spanich	Lamb Grays Harbor
Ray Aarhaus	Mayr Brothers
Dee Johnson	Rayonier
Terry Ward	City of Hoquiam
Else Korvell	Grays Harbor Chamber of Commerce
George Cummings	Burlington Northern R.R.
John Hart	W.S.D.O.T.

A relatively final alignment was agreed to which placed the river crossing as close to the railroad swing span as possible. On the east approach it would stay as close to the railroad as possible until a curve back to the area north of Bay Avenue at 22nd was reached.

On the west approach an ultimate alignment north of the railroad and at the north edge of the railroad yard and crossing the corner of eighth and "N" Street was recommended.

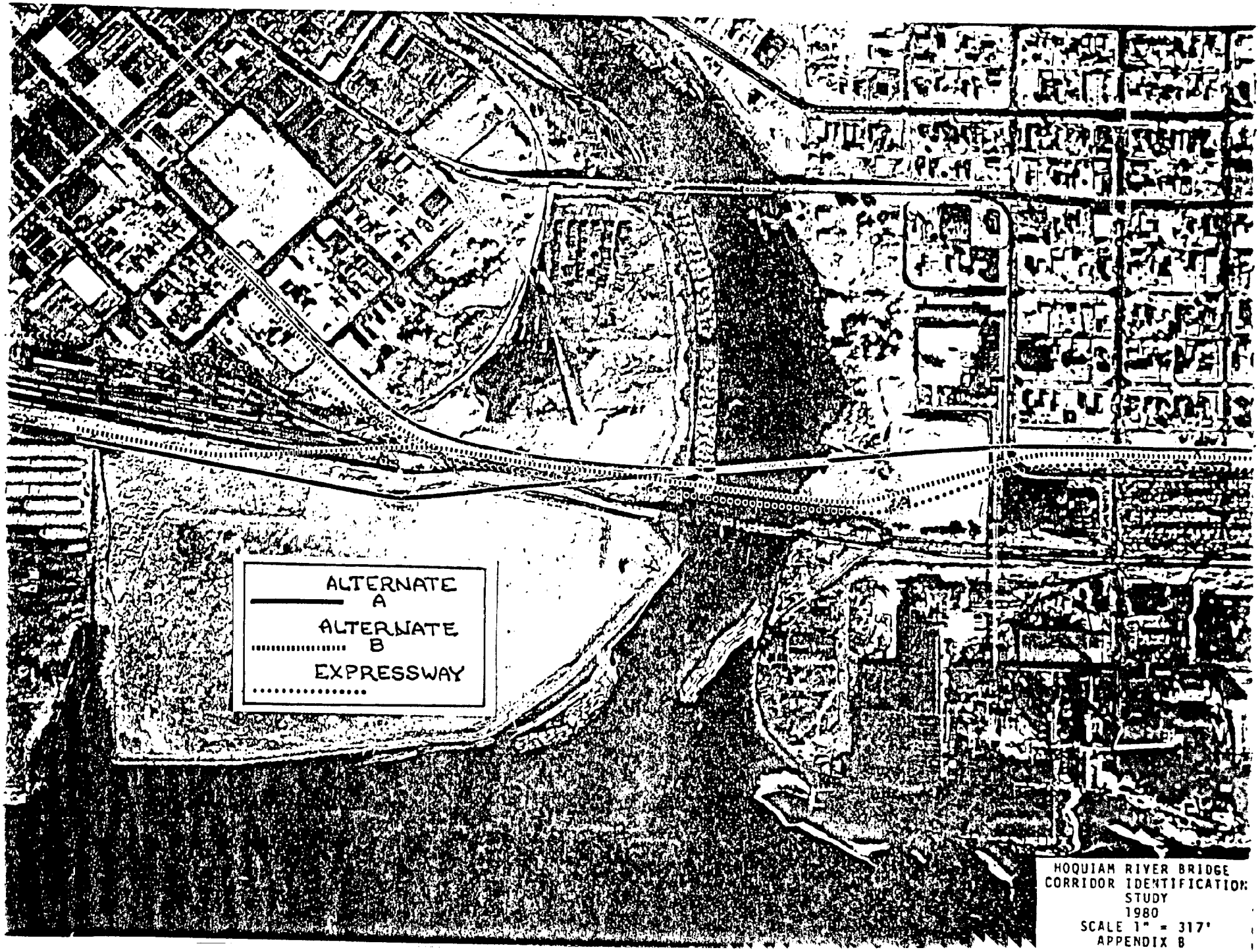
In addition to this, two possible 1-lane interim ramps connecting the river crossing to "K" Street and Earley Way were considered. The "K" Street ramp would have the least benefit to Industrial traffic and to adjacent property owners. The Earley Way ramp had the greatest benefit to traffic, but posed some problems for the adjacent port property.

The map (scale 1" = 80') and a photo (1" = 400') was taken by Stan Lattin to discuss with the Port Commisioners.

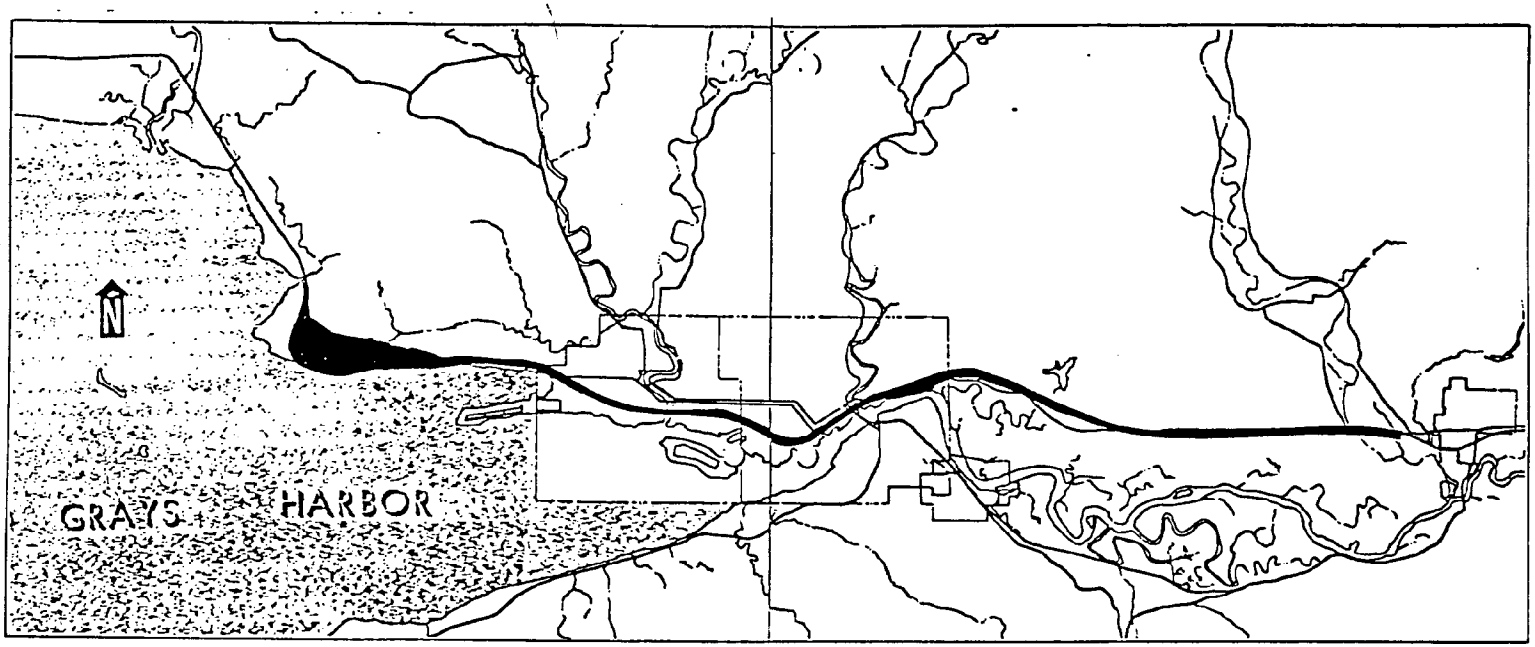
If no further concerns of road users and adjacent property owners is forthcoming by the second week of October, the report will be written based on the current plan.

All attendees agreed to the above and felt no more meetings would be needed.

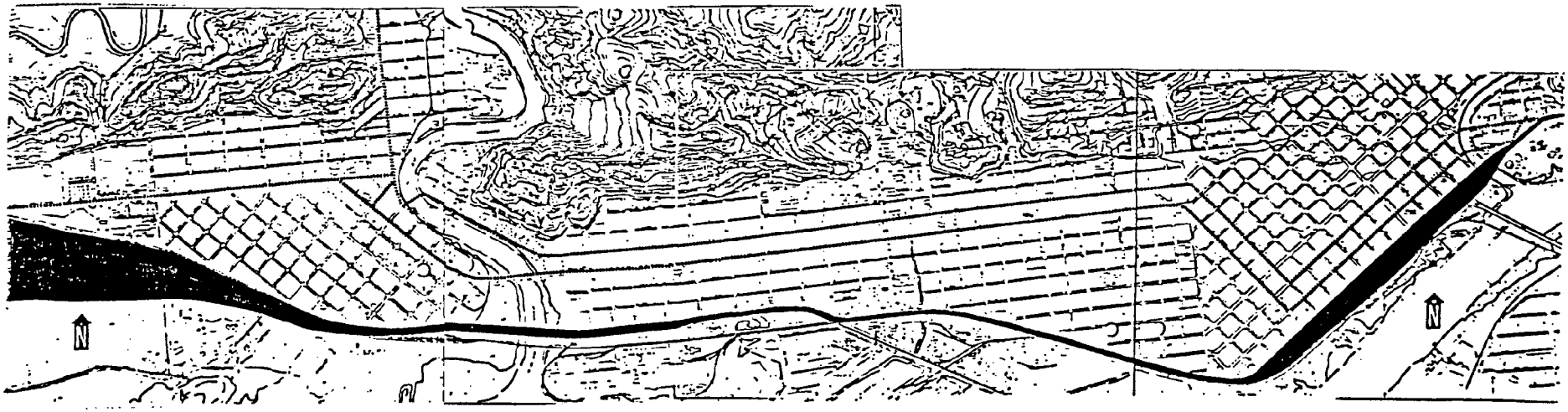
cc: Mattila



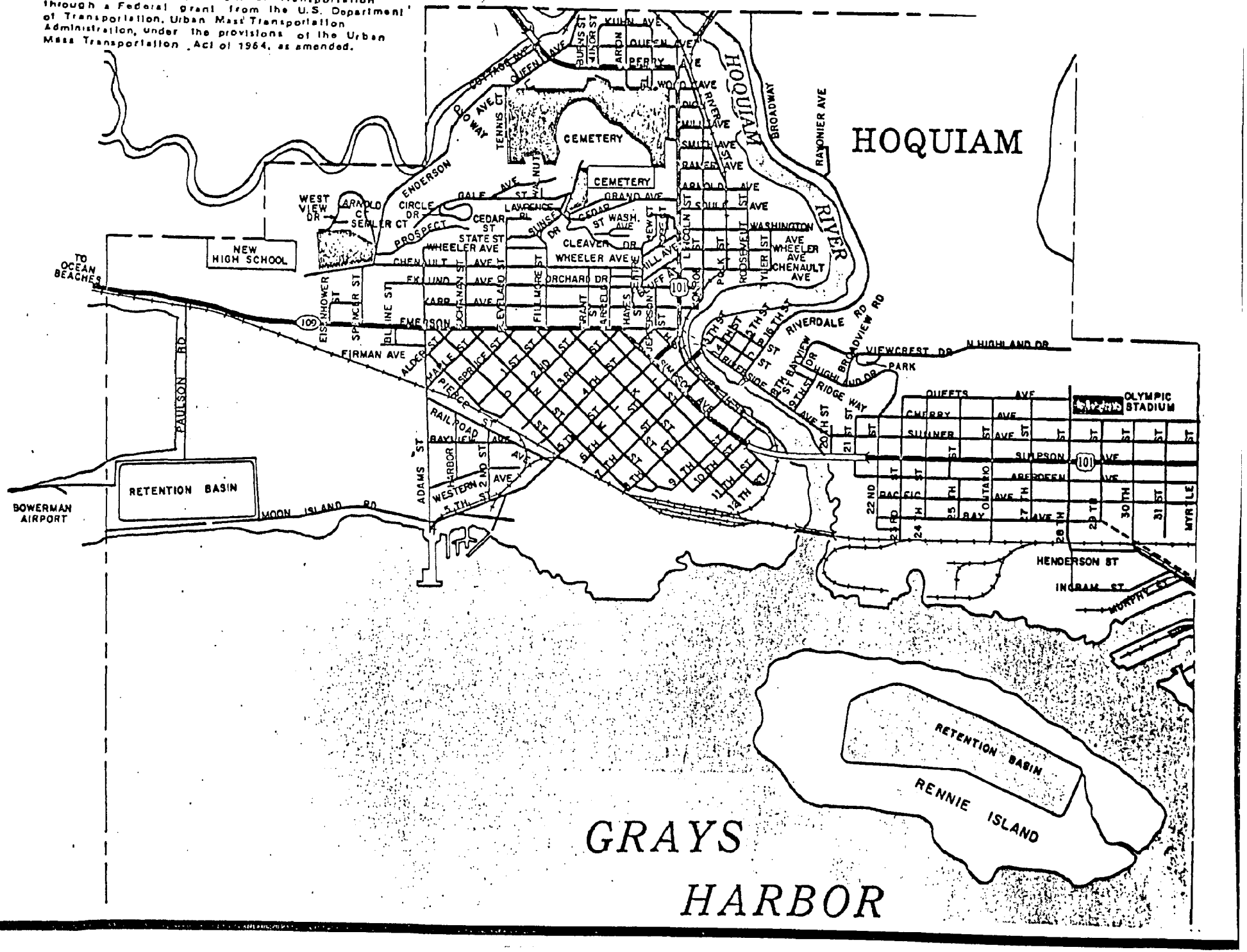
HOQUIAM RIVER BRIDGE
CORRIDOR IDENTIFICATION
STUDY
1980
SCALE 1" = 317'
APPENDIX B

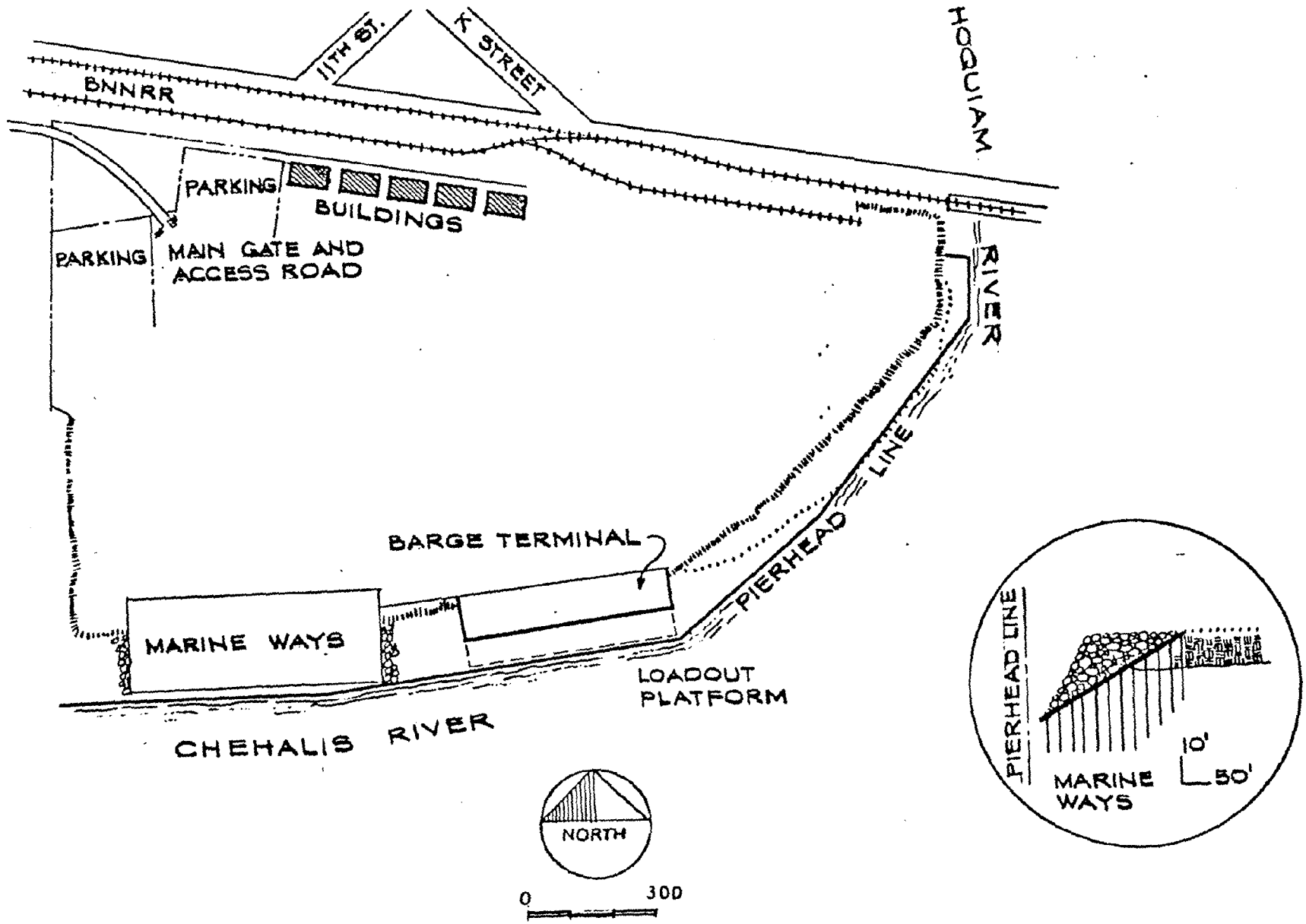


Central Corridor



Preparation of this map was aided by the Washington State Department of Transportation through a Federal grant from the U.S. Department of Transportation, Urban Mass Transportation Administration, under the provisions of the Urban Mass Transportation Act of 1964, as amended.





INDUSTRIAL DEVELOPMENT DISTRICT #1

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