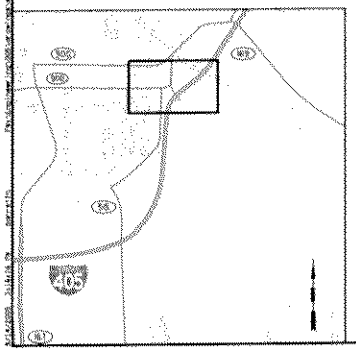
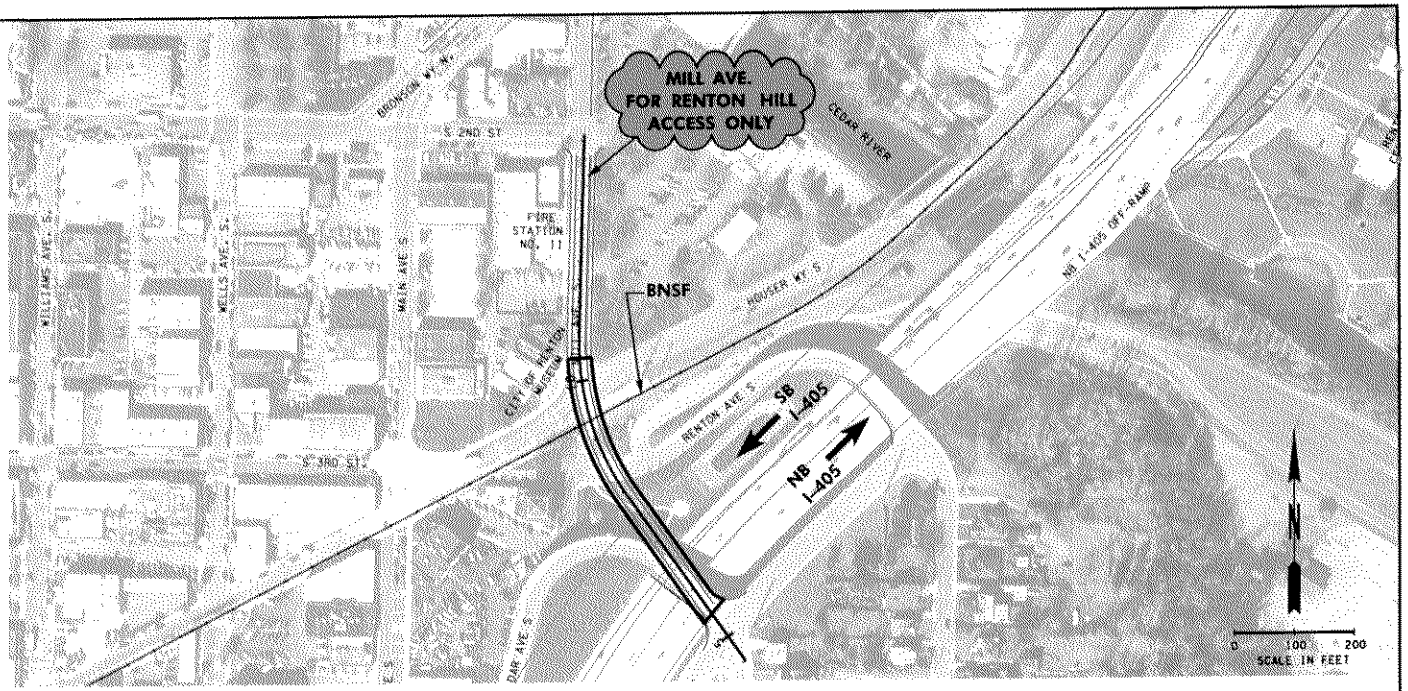
RENTON HILL ACCESS
OPTION J1
CEDAR AVE. TO MILL AVE.

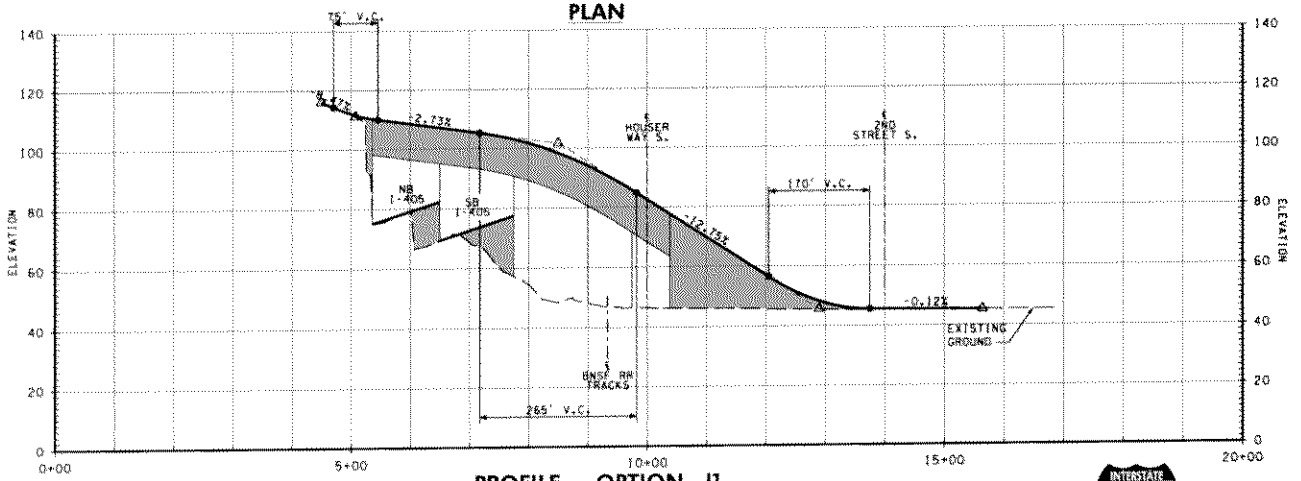
+ BETTER		- WORSE	
●	○	○	Impacts to Residential Area(s)
○	○	●	Impacts to Businesses
●	○	○	Impacts to Park(s)
○	○	○	Right of Way Needed
○	○	●	Fire /Emergency Response Time
●	○	○	Discourages Drive-Thru Traffic
○	○	○	Safe Geometrics (Grades and Curves)
●	○	○	Environmental Impacts to Slopes and Wetlands

KEYMAP





PLAN



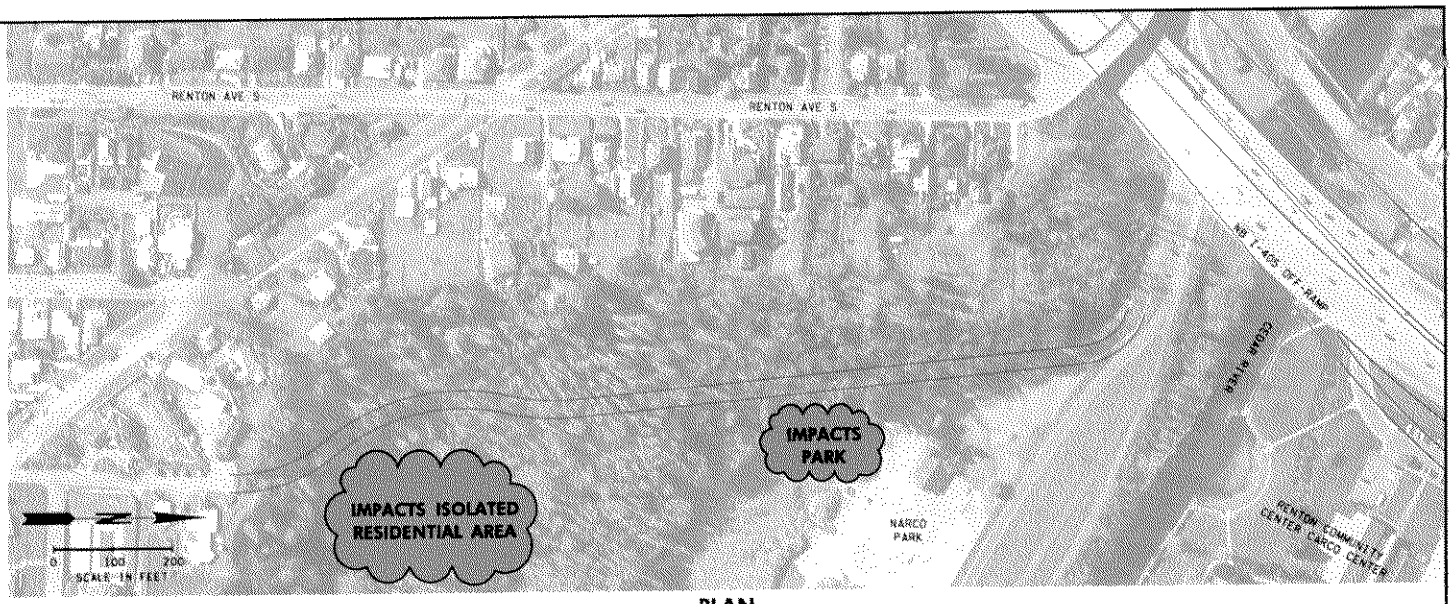
PROFILE - OPTION J1

INTERSTATE 405 Corridor Program

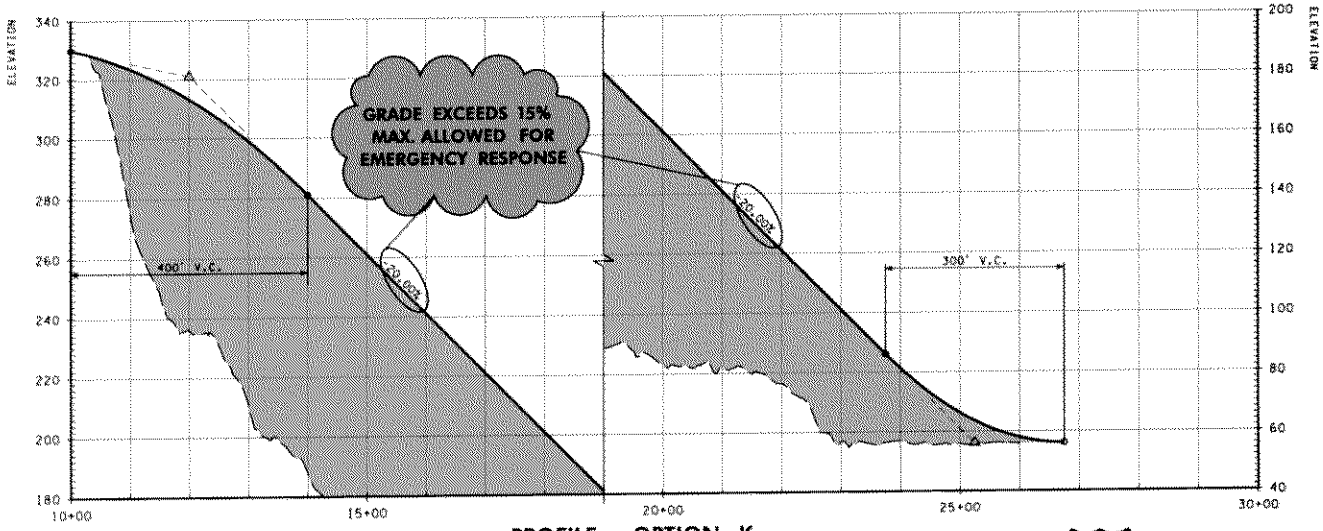
Washington State Department of Transportation

RENTON HILL ACCESS
OPTION K

+ BETTER		− WORSE	
○	○	○	Impacts to Residential Area(s)
●	○	○	Impacts to Businesses
○	○	■	Impacts to Park(s)
○	○	●	Right of Way Needed
○	○	■	Fire /Emergency Response Time
●	○	○	Discourages Drive-Thru Traffic
○	○	■	Safe Geometrics (Grades and Curves)
○	○	●	Environmental Impacts to Slopes and Wetlands

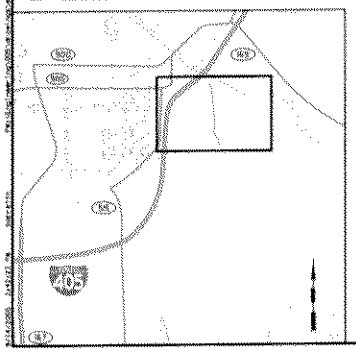


PLAN



PROFILE – OPTION K

KEYMAP



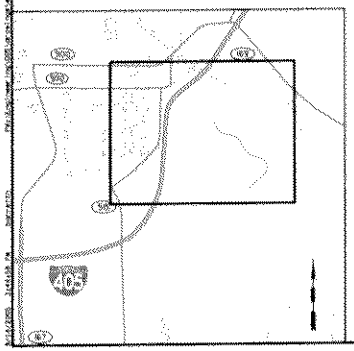
INTERSTATE 405 Corridor Program

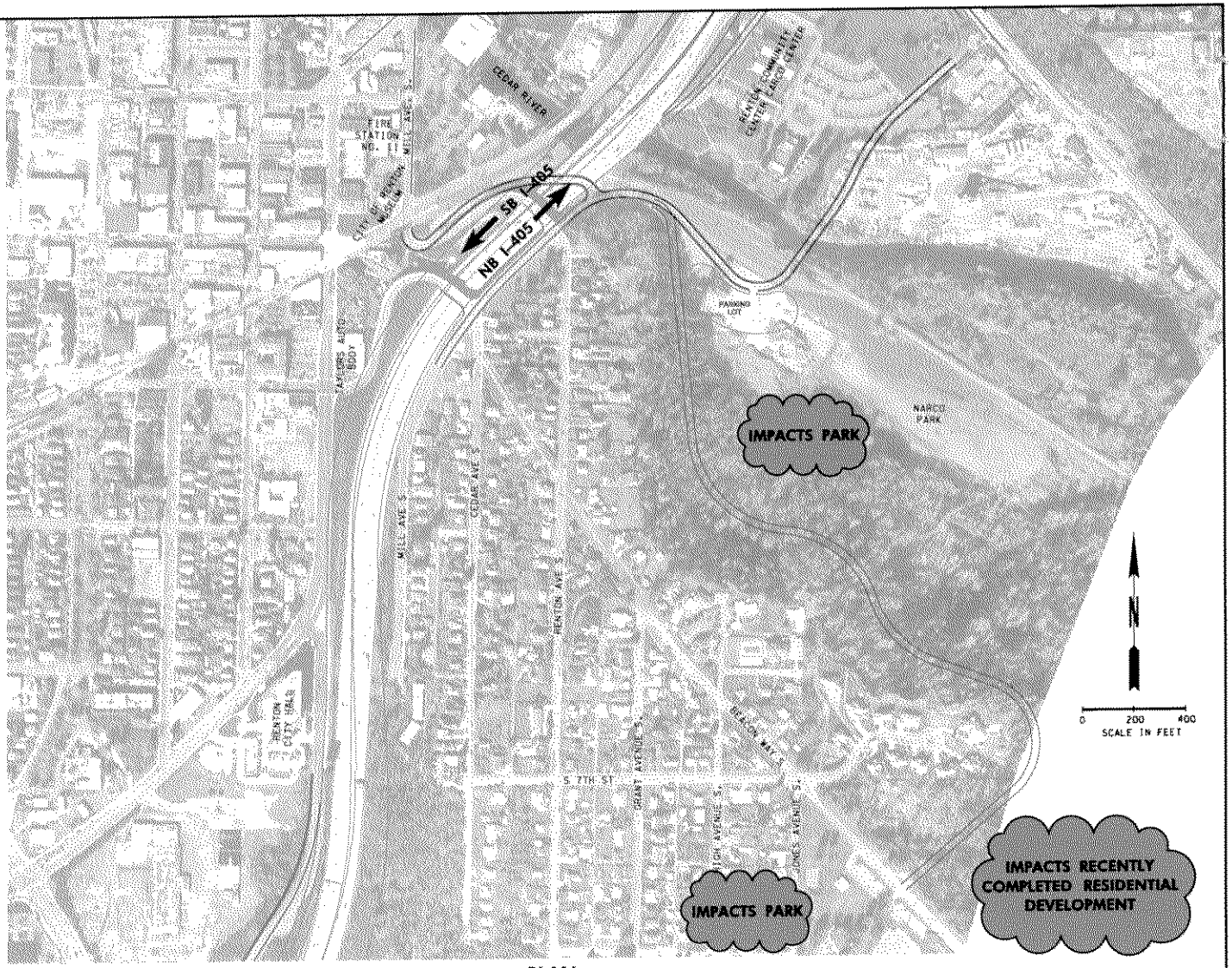
Washington State Department of Transportation

RENTON HILL ACCESS
OPTION L

+ BETTER		− WORSE	
○	○	●	Impacts to Residential Area(s)
●	○	○	Impacts to Businesses
○	○	■	Impacts to Park(s)
○	○	●	Right of Way Needed
○	○	●	Fire /Emergency Response Time
●	○	○	Discourages Drive-Thru Traffic
○	○	○	Safe Geometrics (Grades and Curves)
○	○	●	Environmental Impacts to Slopes and Wetlands

KEYMAP





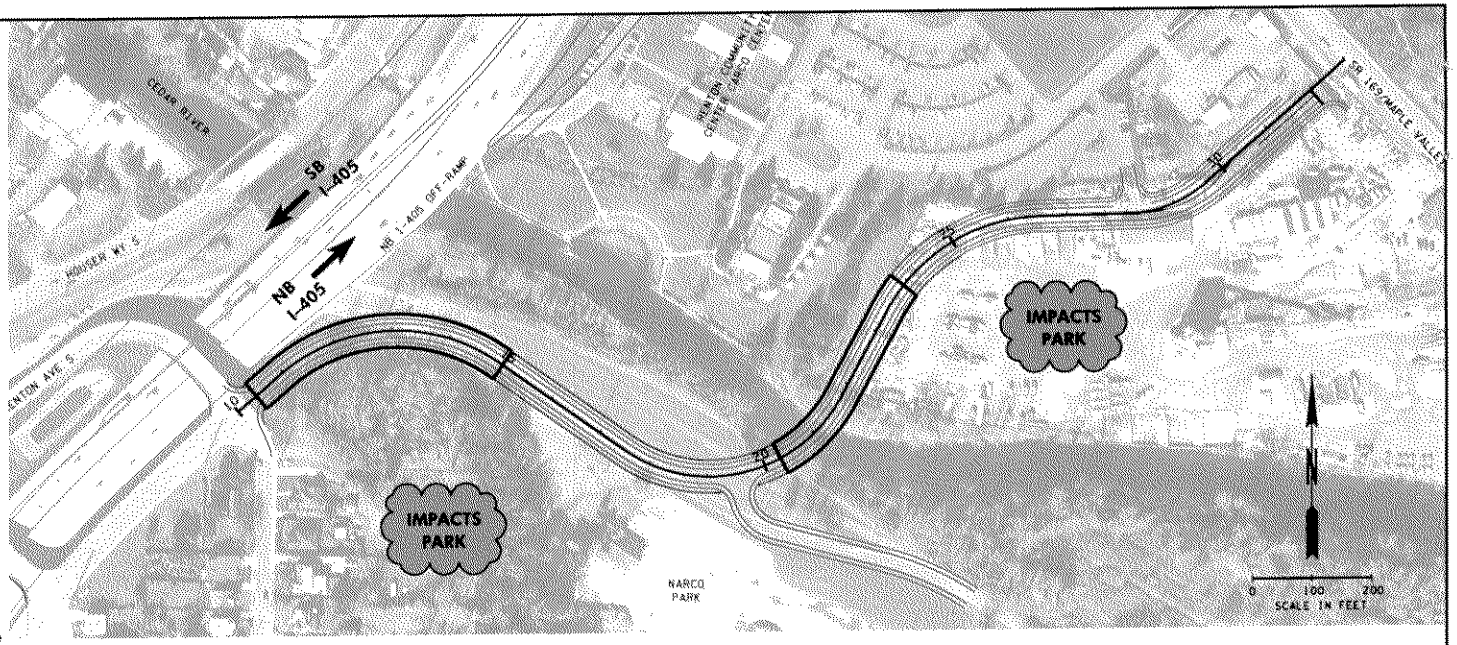
PLAN

INTERSTATE 405 Corridor Program

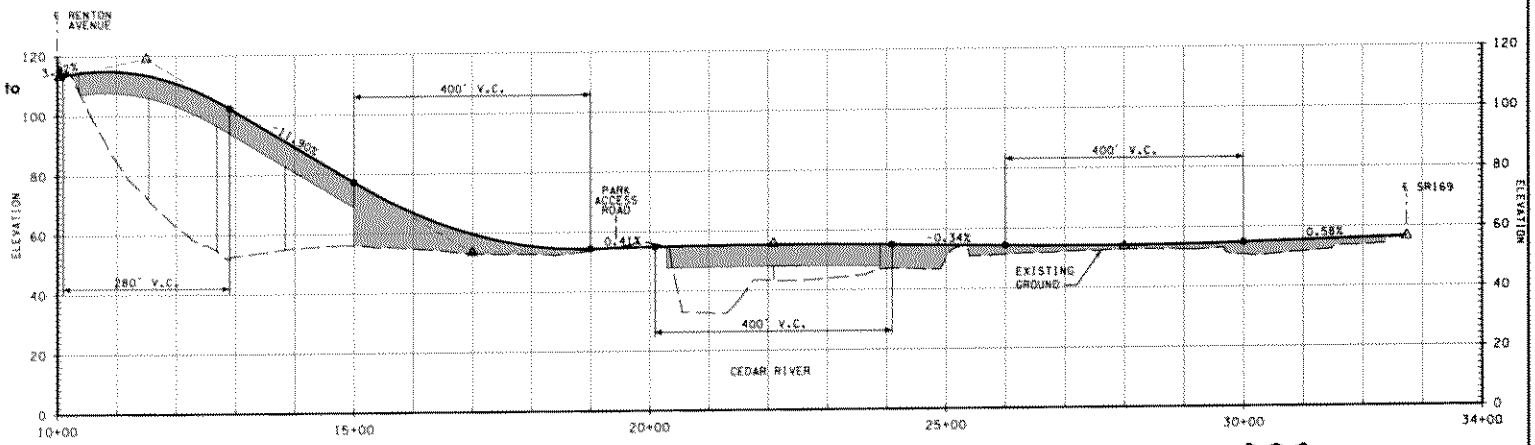
Washington State Department of Transportation

RENTON HILL ACCESS
OPTION N
MILL STREET TO SR169

+ BETTER		− WORSE	
●	○	○	Impacts to Residential Area(s)
●	○	○	Impacts to Businesses
○	○	⊠	Impacts to Park(s)
○	○	●	Right of Way Needed
○	○	⊠	Fire /Emergency Response Time
○	○	●	Discourages Drive-Thru Traffic
○	○	○	Safe Geometrics (Grades and Curves)
○	○	●	Environmental Impacts to Slopes and Wetlands

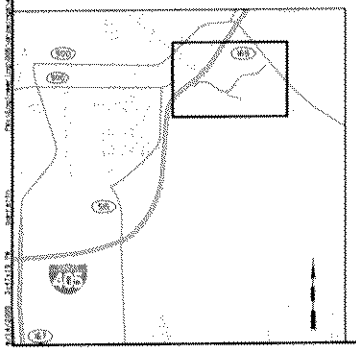


PLAN



PROFILE – OPTION N

KEYMAP



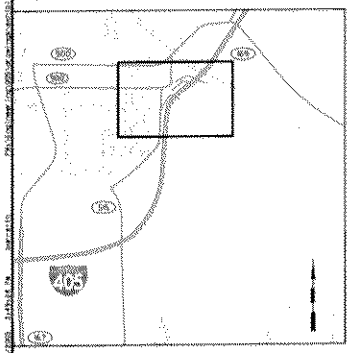
INTERSTATE 405 Corridor Program

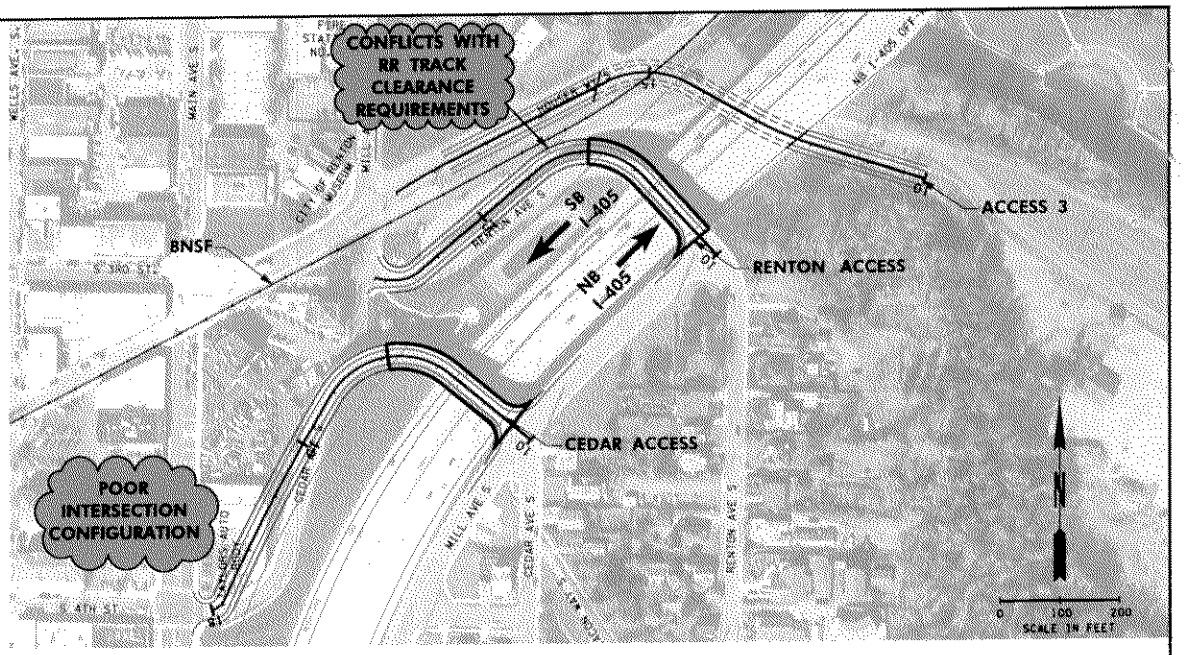
Washington State Department of Transportation

RENTON HILL ACCESS
OPTION P – SHEET 1

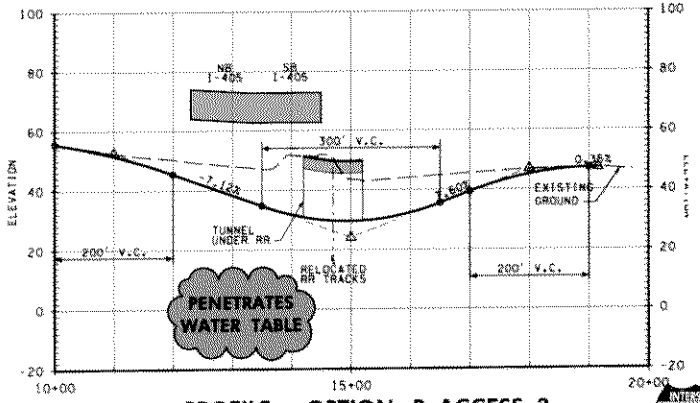
+ BETTER		– WORSE	
●	○	○	Impacts to Residential Area(s)
○	○	●	Impacts to Businesses
●	○	○	Impacts to Park(s)
●	○	○	Right of Way Needed
○	○	■	Fire /Emergency Response Time
●	○	○	Discourages Drive-Thru Traffic
○	○	■	Safe Geometrics (Grades and Curves)
●	○	○	Environmental Impacts to Slopes and Wetlands

KEYMAP





PLAN



PROFILE – OPTION P, ACCESS 3

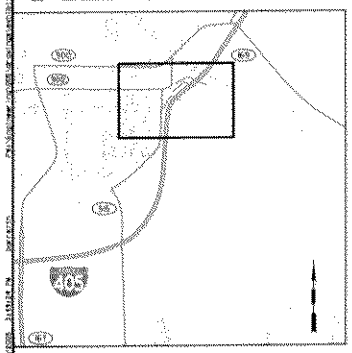
INTERSTATE 405 Corridor Program

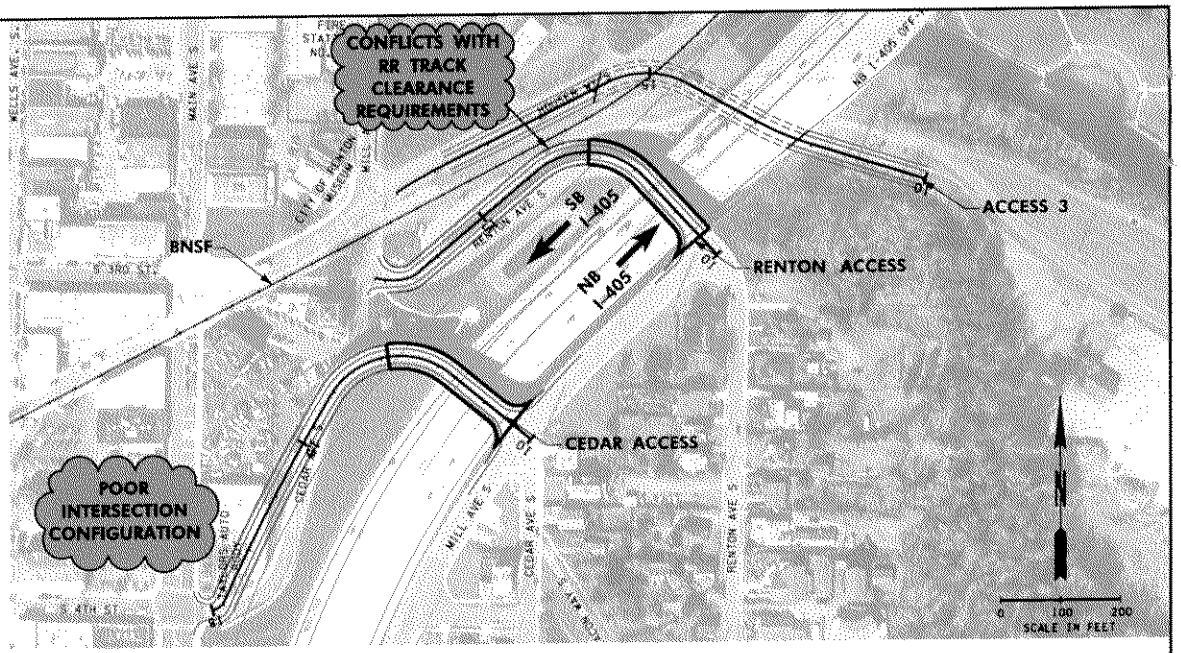
Washington State Department of Transportation

RENTON HILL ACCESS
OPTION P – SHEET 1

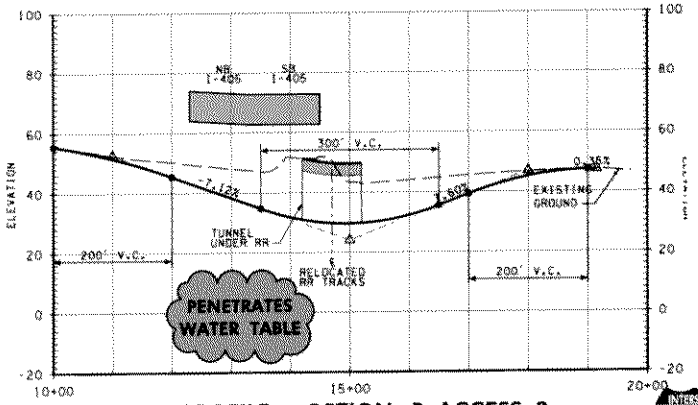
+ BETTER		– WORSE	
●	○	○	Impacts to Residential Area(s)
○	○	●	Impacts to Businesses
●	○	○	Impacts to Park(s)
●	○	○	Right of Way Needed
○	○	⊠	Fire /Emergency Response Time
●	○	○	Discourages Drive-Thru Traffic
○	○	⊠	Safe Geometrics (Grades and Curves)
●	○	○	Environmental Impacts to Slopes and Wetlands

KEYMAP





PLAN



PROFILE – OPTION P, ACCESS 3

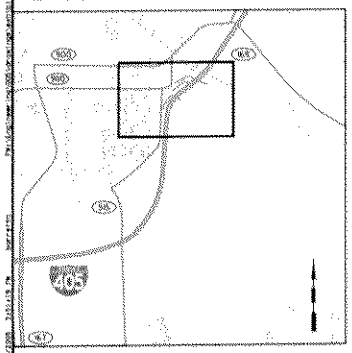
INTERSTATE 405 Corridor Program

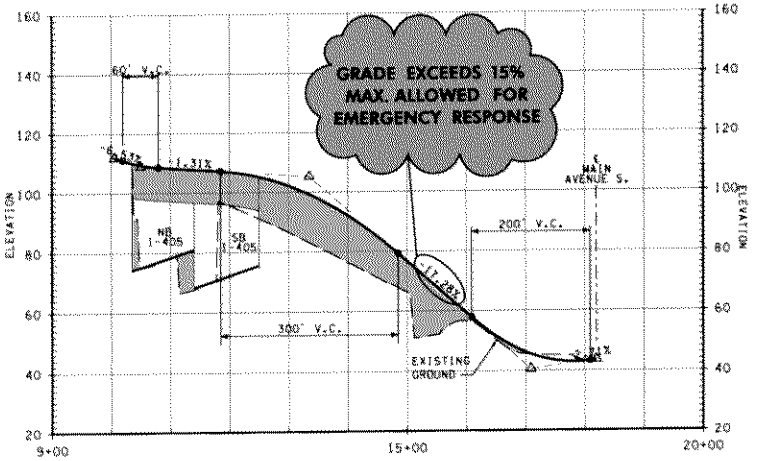
Washington State Department of Transportation

RENTON HILL ACCESS
OPTION P – SHEET 2

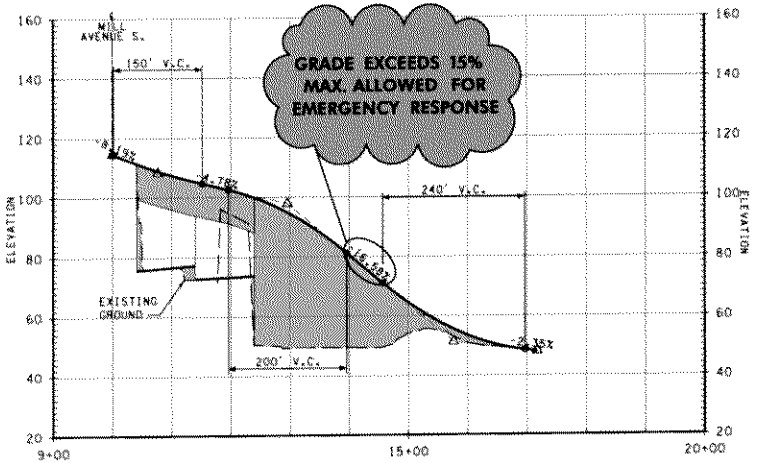
+ BETTER		– WORSE	
●	○	○	Impacts to Residential Area(s)
○	○	●	Impacts to Businesses
●	○	○	Impacts to Park(s)
●	○	○	Right of Way Needed
○	○	■	Fire /Emergency Response Time
●	○	○	Discourages Drive-Thru Traffic
○	○	■	Safe Geometrics (Grades and Curves)
●	○	○	Environmental Impacts to Slopes and Wetlands

KEYMAP





PROFILE – OPTION P, CEDAR ACCESS



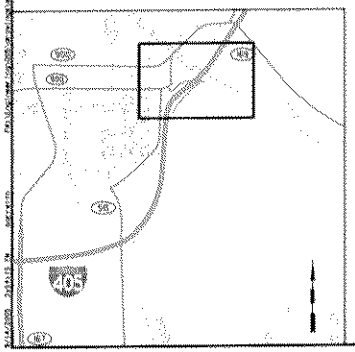
PROFILE – OPTION P, RENTON ACCESS

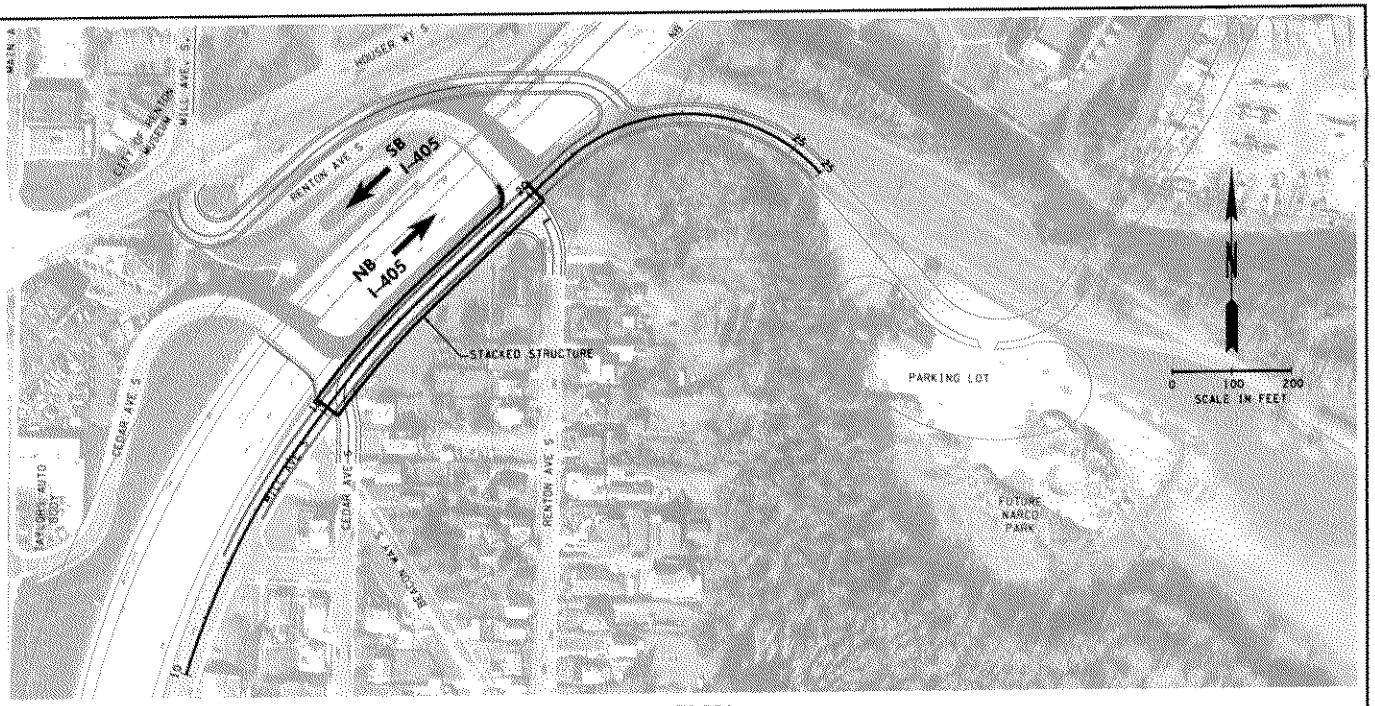
INTERSTATE 405 Corridor Program
Washington State Department of Transportation

RENTON HILL ACCESS
OPTION Q
MILL AVE S TO S 2ND ST

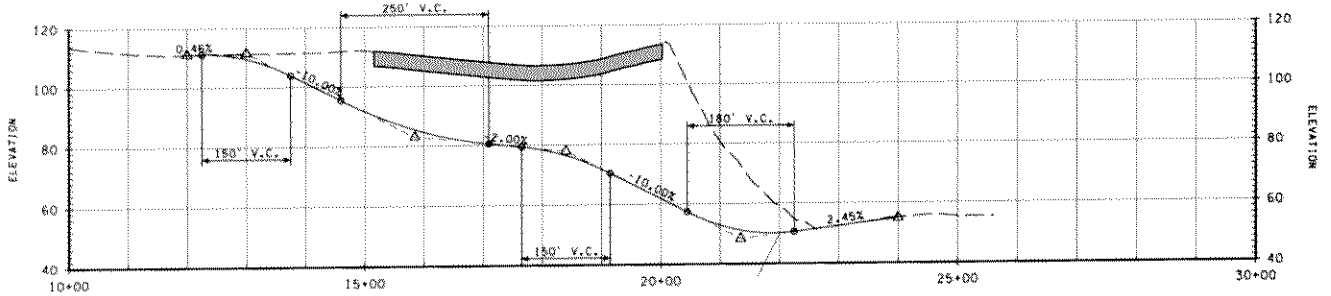
+ BETTER		− WORSE	
○	○	○	Impacts to Residential Area(s)
●	○	○	Impacts to Businesses
○	○	○	Impacts to Park(s)
○	○	○	Right of Way Needed
●	○	○	Fire /Emergency Response Time
●	○	○	Discourages Drive-Thru Traffic
○	○	○	Safe Geometrics (Grades and Curves)
○	○	○	Environmental Impacts to Slopes and Wetlands

KEYMAP





PLAN

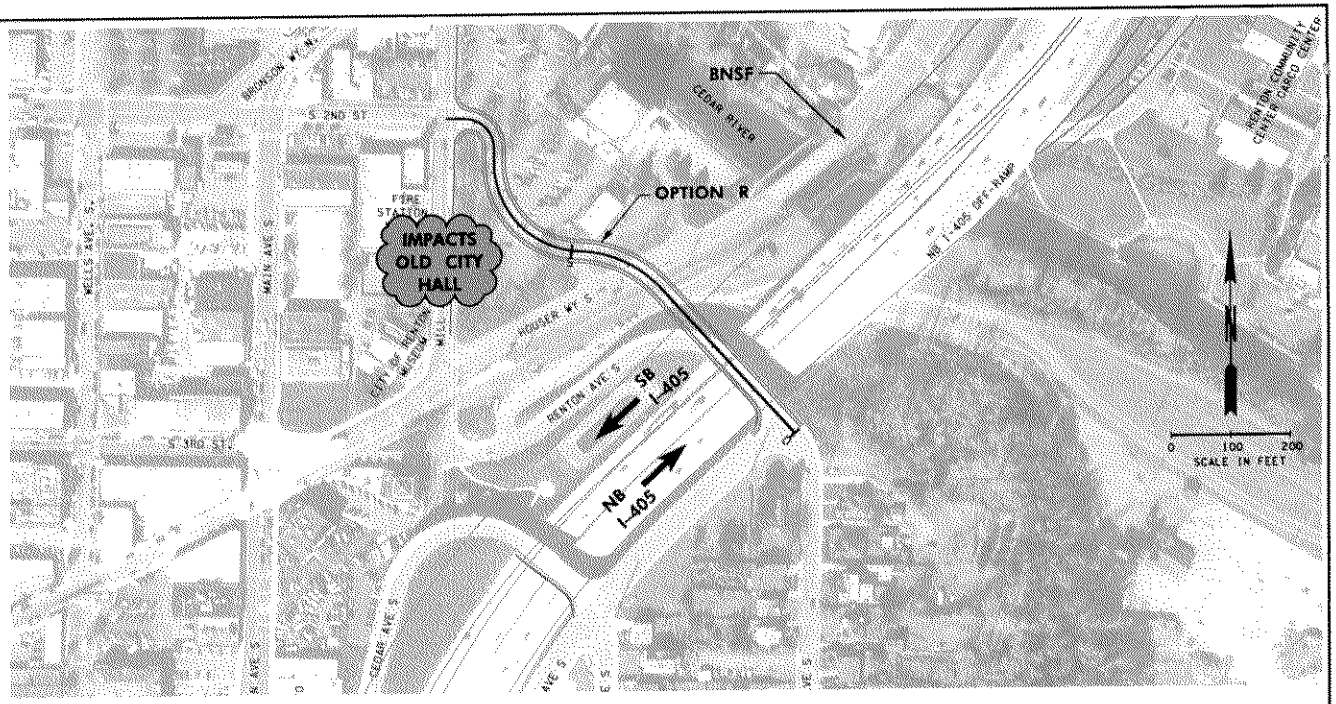


PROFILE – OPTION Q

INTERSTATE 405 Corridor Program
Washington State Department of Transportation

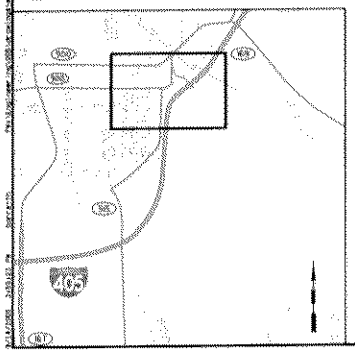
RENTON HILL ACCESS
OPTION R
MILL AVE S TO NARCO PARK

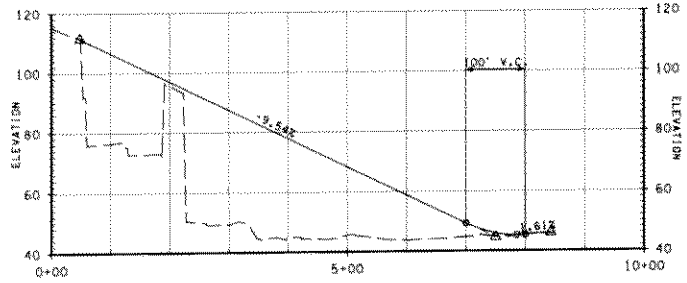
+ BETTER		− WORSE	
●	○	○	Impacts to Residential Area(s)
○	○	⊠	Impacts to Businesses
●	○	○	Impacts to Park(s)
○	○	●	Right of Way Needed
●	○	○	Fire /Emergency Response Time
●	○	○	Discourages Drive-Thru Traffic
○	○	●	Safe Geometrics (Grades and Curves)
●	○	○	Environmental Impacts to Slopes and Wetlands



PLAN

KEYMAP





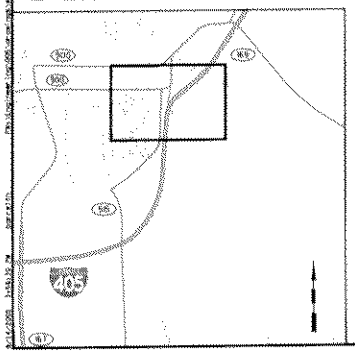
PROFILE – OPTION R

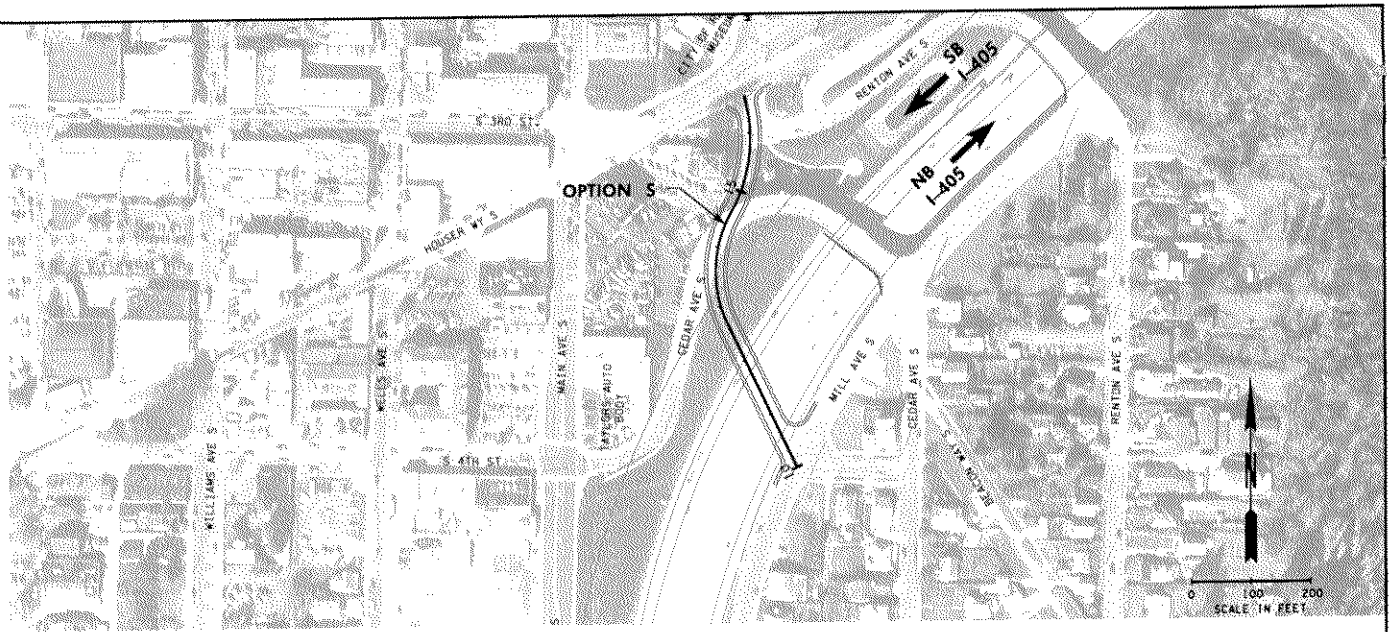
INTERSTATE 405 Corridor Program
Washington State Department of Transportation

RENTON HILL ACCESS
OPTION S
MILL AVE S TO HOUSER WAY S

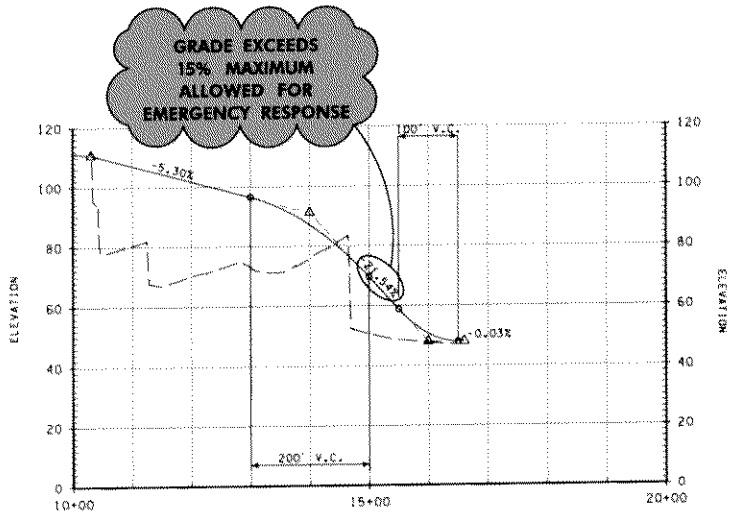
+ BETTER		− WORSE	
●	○	○	Impacts to Residential Area(s)
●	○	○	Impacts to Businesses
●	○	○	Impacts to Park(s)
●	○	○	Right of Way Needed
○	○	■	Fire /Emergency Response Time
●	○	○	Discourages Drive-Thru Traffic
○	○	■	Safe Geometrics (Grades and Curves)
●	○	○	Environmental Impacts to Slopes and Wetlands

KEYMAP





PLAN

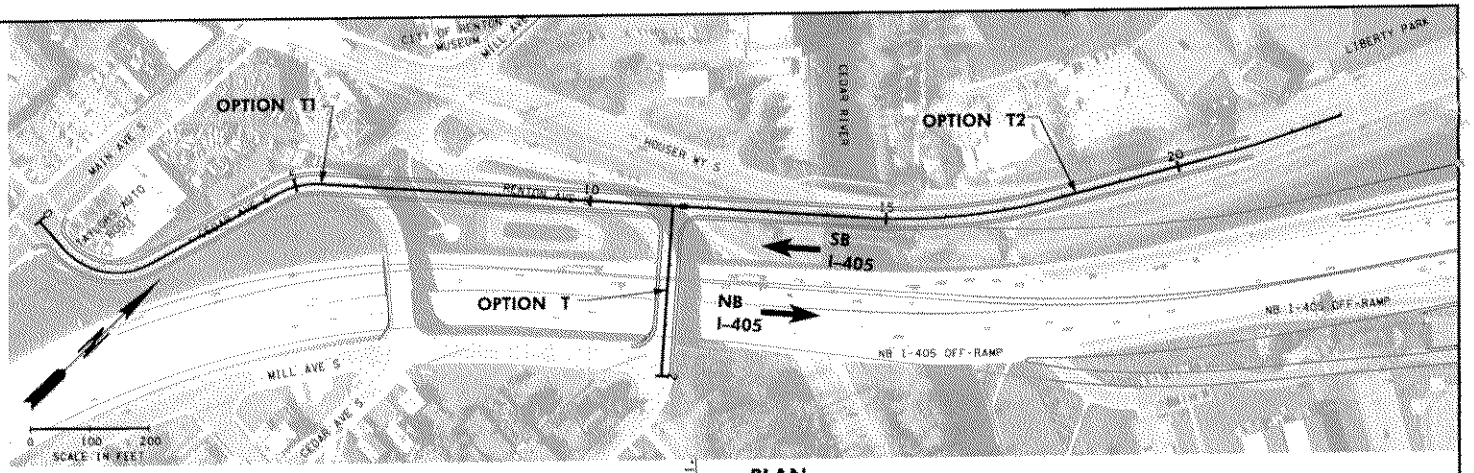


PROFILE – OPTION S

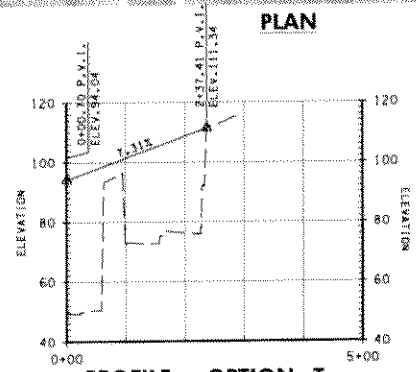
INTERSTATE 405 Corridor Program
Washington State Department of Transportation

RENTON HILL ACCESS
OPTION T
MILL AVE S TO HOUSER WAY S.

+ BETTER		− WORSE	
●	○	○	Impacts to Residential Area(s)
●	○	○	Impacts to Businesses
○	○	○	Impacts to Park(s)
●	○	○	Right of Way Needed
○	○	○	Fire /Emergency Response Time
●	○	○	Discourages Drive-Thru Traffic
○	○	●	Safe Geometrics (Grades and Curves)
○	○	○	Environmental Impacts to Slopes and Wetlands

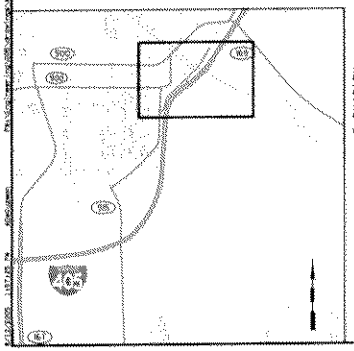


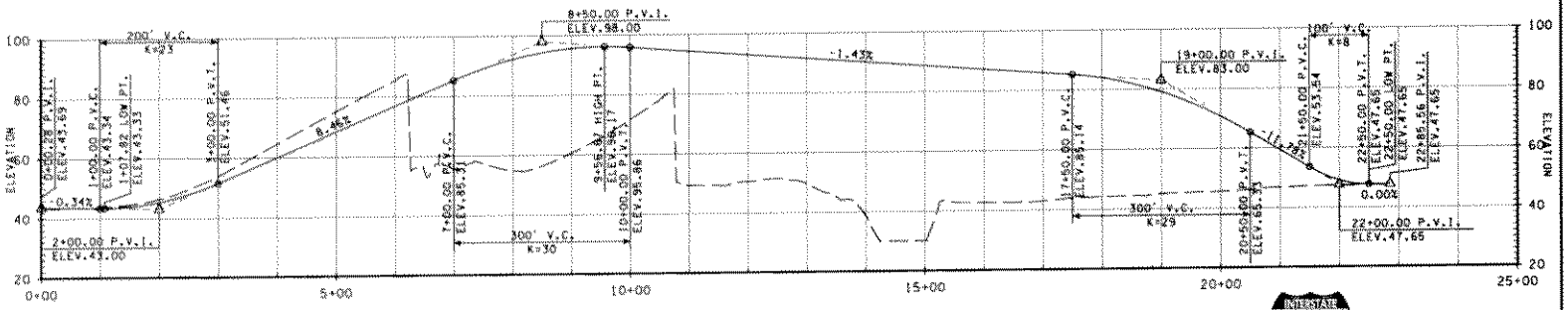
PLAN



PROFILE – OPTION T

KEYMAP





PROFILE – OPTION T1 AND T2

INTERSTATE 405 Corridor Program

Washington State Department of Transportation

APPENDIX B

INTERSTATE 405 Project Team
Congestion Relief & Bus Rapid Transit Projects

600 – 108th Avenue NE, Suite 405
Bellevue, WA 98004
Main 425-456-8500
Fax 425-456-8600

To: Stacy Trussler/Ross Fenton

From: Patty Rubstello/Karl Westby

Subject: Renton Hill Traffic Follow-up

A capacity analysis was conducted to update the future traffic operations of the proposed WSDOT I-405 Implementation Plan project. This memorandum discusses the results of this analysis as they apply to the Renton Hill neighborhood. The operational analysis results incorporate the comments received by the neighborhood related to traffic distribution on the east side of I-405.

Future Volumes

The analysis was conducted for year 2030 AM and PM peak hour conditions. To determine future traffic volumes, forecasts were developed using the Puget Sound Regional Council, City of Renton, and historical data sources. Using existing counts as a starting point, traffic volumes to and from the Renton Hill neighborhood using the Cedar and Renton Avenue crossings were projected to year 2030.

The AM peak hour traffic volume (both crossings, both directions) was projected to increase from 130 vehicles per hour to 240 vehicles per hour, a 185% increase. The PM peak hour traffic volume (both crossings, both directions) was projected to increase from 290 vehicles per hour to 620 vehicles per hour, a 214% increase. Although the Renton Hill neighborhood is already developed, these projections assume increased density, new homes, and an increase in the number of trips generated by individual households. It is likely that all of these increases will not be realized in year 2030, however the use of these future year numbers results in a conservative evaluation of traffic operations. If these future year volumes are not realized, traffic operations would be better than those presented below.

Compared to a Do Nothing option, the year 2030 forecasts show lower volumes on Main Avenue South. The additional lanes on I-405 and the additional freeway access at Talbot Road South in the Implementation Plan remove some of the traffic from Main Avenue South and place it on I-405.

2030 Operational Analysis

Operational analysis was conducted for the AM and PM peak hours using the Corsim analysis software. In the Implementation Plan, the traffic using the Cedar Avenue South crossing was reassigned to the Renton Avenue South crossing. The reassigned traffic was distributed on the east side of I-405 as follows: 40% of the traffic assigned to Mill Avenue South, 60% of the traffic assigned to Cedar Avenue South.

Assuming three-way stop control, the intersection of the Renton Avenue South/Mill Avenue South is projected to operate at Level of Service A for both AM and PM peak hour in 2030. The maximum queue of vehicles at the intersection is projected to be four vehicles for the southeast approach in the PM peak hour. The other intersection approaches have projected maximum queues of two to three vehicles.

A comparison was also made between the 2030 Do Nothing alternative and the 2030 Implementation Plan for all vehicles accessing Renton Hill.

INTERSTATE 405 Project Team
Congestion Relief & Bus Rapid Transit Projects

600 – 108th Avenue NE, Suite 405
Bellevue, WA 98004
Main 425-456-8500
Fax 425-456-8600

Trip Direction	2030 Do Nothing		2030 Implementation Plan	
	AM	PM	AM	PM
From Renton Hill	10.4	31.7	11.4	37.9
To Renton Hill	13.8	33.0	20.3	31.7

Weighted Average Vehicle Delay in Seconds

In the Do Nothing alternative, the AM Peak hour the weighted average vehicle delay for vehicles accessing the Renton Hill neighborhood was estimated at 10.4 seconds. The AM peak hour Implementation Plan average delay for the same movements was 11.4 seconds. For vehicles leaving Renton Hill, the Do Nothing average delay was 13.8 seconds. The Implementation Plan was 20.3 seconds.

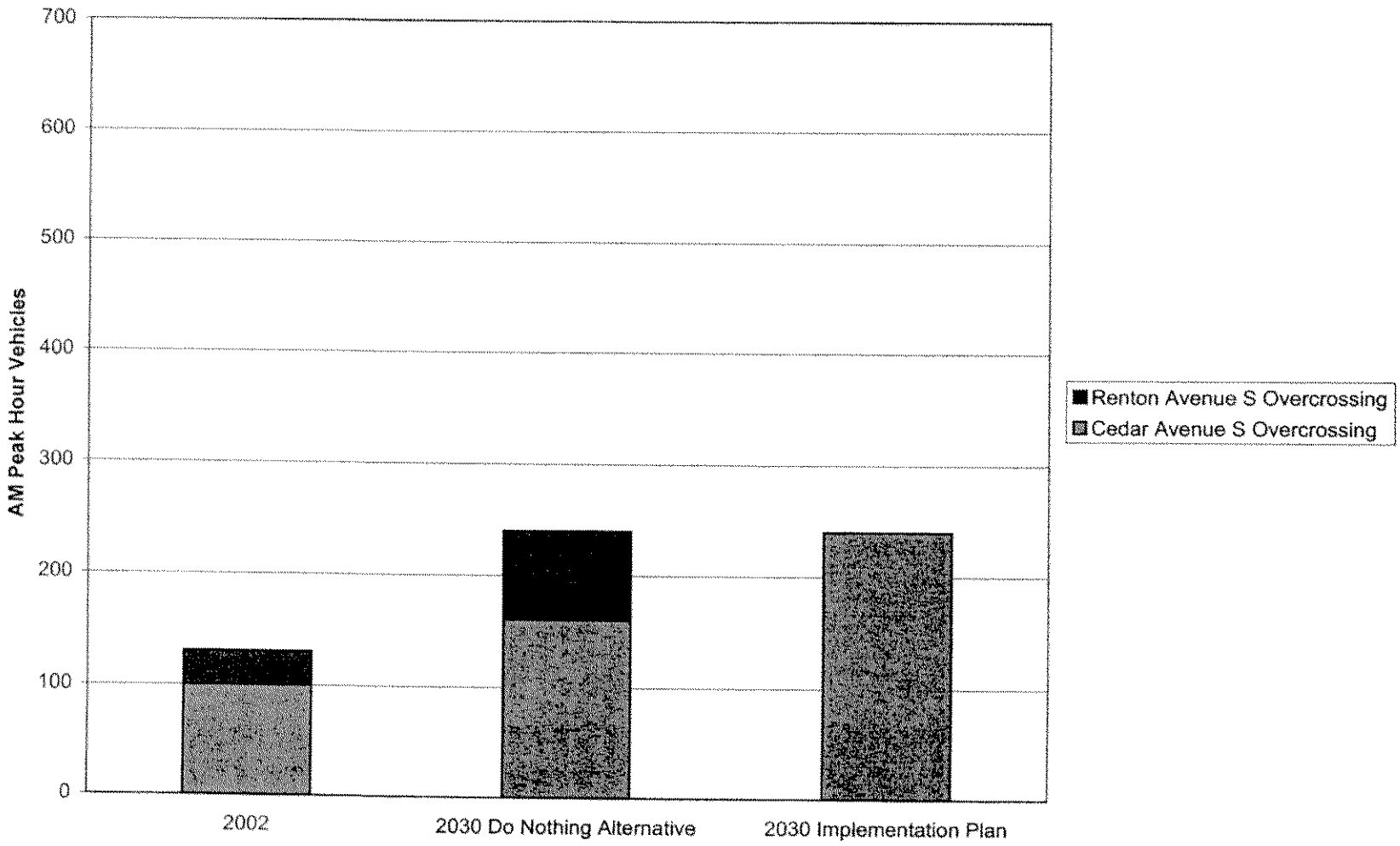
For the 2030 PM peak hour Do Nothing alternative, the weighted average vehicle delay for vehicles accessing the Renton Hill neighborhood was estimated at 31.7 seconds. The PM peak hour Implementation Plan average delay for the same movements was 37.9 seconds. For vehicles leaving Renton Hill, the Do Nothing average delay was 33.0 seconds. The Implementation Plan was 31.7 seconds.

Summary

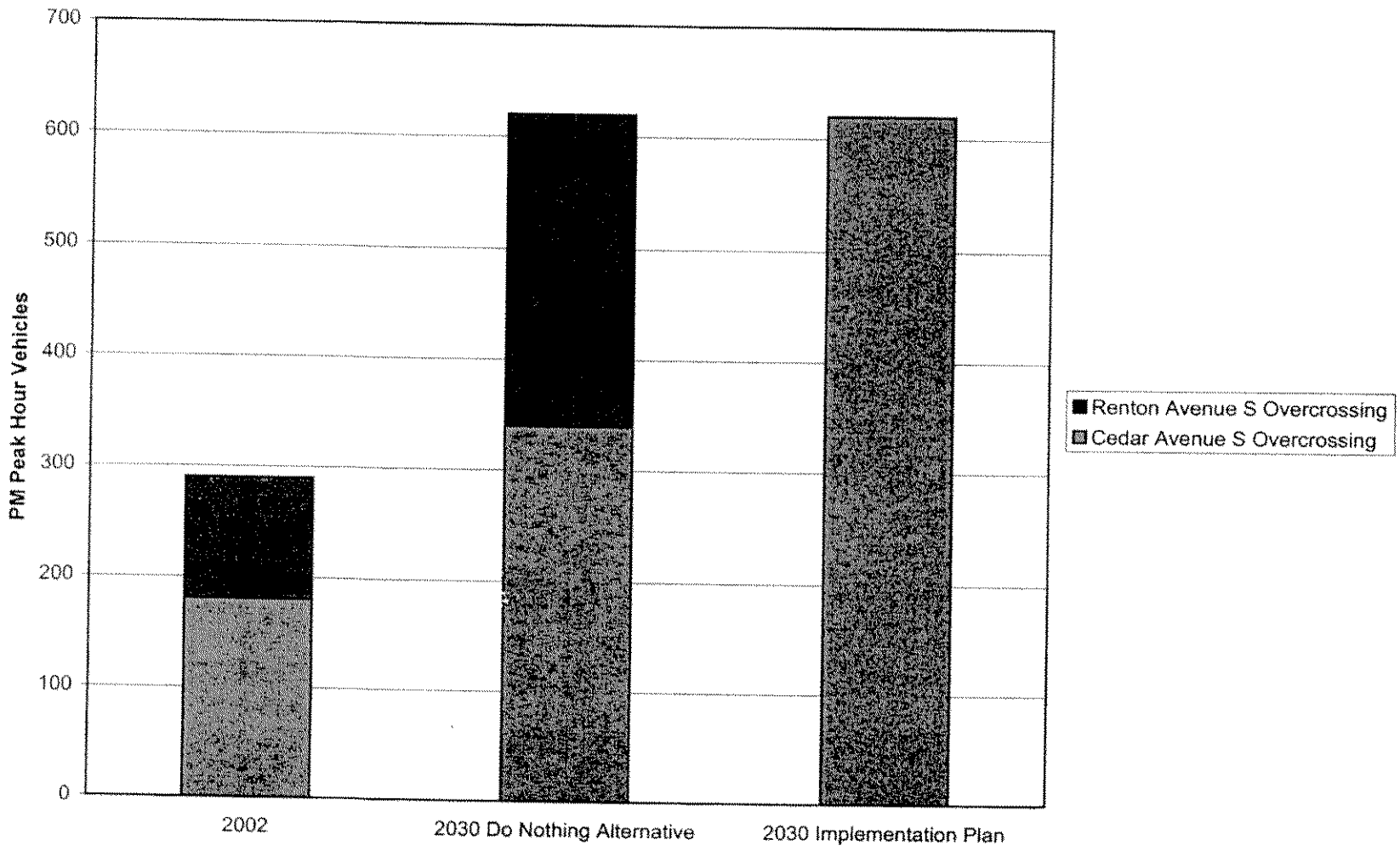
Using a conservatively high estimate of future year traffic volumes, the intersection of Renton Avenue South/Mill Avenue South is projected to operate at LOS A for the AM and PM peak hours. Maximum queues at this intersection are less than five vehicles. A comparison Do Nothing and Implementation Plan travel to and from Renton Hill for year 2030 AM and PM peak hours show little change in average delay. The average delay change ranged from a 1.3 second reduction to a 6.5 second increase depending on time and direction.

Please contact Karl Westby if you have any questions or concerns.

AM Peak Hour Volume Comparison of I-405 Overcrossings



PM Peak Hour Volume Comparison of I-405 Overcrossings



APPENDIX C

Renton Fire Department Emergency Vehicle Response to Renton Hill

Background:

WSDOT is proposing a change to the primary access routes to Renton. This change is a reduction from two primary access routes to one.
Currently, there are two secondary access routes to Renton Hill to be used by Police and Fire when the primary access is not available. These secondary access routes are also used for routine and special circumstances related to providing City services to the residents of Renton Hill in the most efficient manner.

Method:

Renton Fire apparatus were used to drive both the current primary and current secondary access routes to Renton Hill from Station 11 and Station 13. Response times for aid cars, engines and truck companies were measured.

Times were measured using stopwatches and the Department's existing method for calculating emergency response. State Law and Department policy do not allow code red response for non-emergency situations.
The times for the proposed Narco access were estimated based on known information on the grade of the access route and the distance as calculated by the City of Renton Transportation division.

Emergency Response Criteria:

Renton Fire Department emergency response criteria are as follows:

1. All code red call response is six minutes from the time of dispatch to the time of arrival at the address requesting service. The goal is four minutes or less. All responses over six minutes are evaluated to determine what the mitigating factors were. These may include subsequent calls, time of day and traffic, response vehicle location at the time of call.

2. For full first alarm response to larger emergencies such as house fires, the goal is 8 minutes for all first alarm units. This include three engines, one truck company, one aid car and one command vehicle.

3. Times were measure from each station to the intersection of 7th and Renton Avenue. This intersection was chosen due to its location at the center of Renton Hill and at close to the highest grade on Renton Hill. These times were taken during the mid-week morning hours. Traffic was light, the weather was clear and the streets were dry. These are considered optimal conditions by the Renton Fire Department. Based on the traffic and weather during the data collection period and analysis of calls to Renton Hill for the period of 2001 thru 2003, a 10% response time increase was added to the times recorded.

Results:

	Aid Car Sta. 11	Engine Sta.11	Ladder Sta. 11	Engine Sta. 13
Mill Access	**2:56**	**3:14**	**4:02**	**7:46**
4th Avenue	**3:27**	**3:58**	**4:41**	**7:22**
Grant *	**7:19**	**7:28**	**8:14**	**6:25**
Beacon *	**8:24**	**8:46**	**10:11**	**7:17**
Narco**	**4:00**	**4:16**	**5:23**	**8:49**

* The gates currently in place at Beacon and Grant were opened prior to the measuring of response times to simulate the presence opticom gates at these locations.

** The response times of the proposed Narco access were arrived at by calculating the distance and grade and measuring actual emergency vehicle response for similar distance and grade. This time was then

added to the time to the base of the Mill access and the time from the intersection of Renton and Mill Ave to the intersection of 7th and Renton Avenue.

Analysis:

A single primary access to Renton Hill proposed by WSDOT does not significantly impact emergency vehicle response times to Renton Hill.

However, if this primary access is blocked or is in anyway unavailable, the secondary access at Grant Avenue or Beacon Way must be utilized. Based on data using these secondary response routes, response times are significantly longer than what the Fire Department allows. Station 11 units take, on average, an additional 4 minutes to respond to Renton Hill using the existing secondary access at Grant Avenue. These response times are longer than Renton Fire Department guidelines allow.

The data shows that emergency response from Station 11 using the proposed Narco access is approximately 3 minutes faster than using the Grant Avenue access. This secondary access option is preferred by the Fire Department for access to Renton Hill by the primary responding Fire Station, which is Station 11.

The secondary accesses off Beacon Way and Grant Avenue are both needed to properly serve Renton Hill and the multi-family housing accessed off Grant Avenue regardless of what the final configuration of I-405 and the primary access from downtown Renton are.

Renton Fire Department continues to support three secondary access routes to Renton Hill if a single primary access route is constructed.