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Downtown Stevenson / S.R. 14 Corridor Study

DRAFT

September, 1992

DAVID EVANS AND ASSOCIATES, INC.

TRANSMITTAL

Date 10/8/92

File STEV0001

To JOHN GRANHOLM
CITY OF STEVENSON

Project DOWNTOWN STEVENSON/
S.R.14 CORRIDOR STUDY

Subject BURLINGTON NORTHERN
RR LETTER

DEA

Item	Copies	Date	Description
	1		DRAFT OF FINAL REPORT (FOR SUBMITTAL TO BURLINGTON NORTHERN RAILROAD WITH YOUR LETTER)

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☒ As you requested
☐ For your information
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From Alan Danaher

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DOWNTOWN STEVENSON/S.R. 14 CORRIDOR STUDY

FINAL REPORT

DEA

DRAFT

Prepared for:

City of Stevenson, Washington

Prepared by:

David Evans and Associates, Inc.

September 1992

ALAN R. DANAHER
STATE OF WASHINGTON
27450
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 4/20/93

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1.0 INTRODUCTION

This report presents the results of a study to identify and evaluate alternatives to improve State Route 14 through downtown Stevenson, Washington. The study included an initial traffic needs assessment, the development of functional layout plans of different road improvement alternatives, and an impact assessment of the alternatives with respect to several criteria.

The study incorporated a public involvement process to secure general public review and comment on the alternatives developed and a recommended course of action. The program included two public meetings and a final presentation to the Stevenson Planning Commission and City Council.

The results of the study, including the recommended road improvement alternative, will be incorporated into a follow up preliminary design and environmental assessment study to be conducted by the Washington Department of Transportation (WSDOT) to further define an improvement to S.R. 14 through Stevenson. Once that study is completed, final design and construction of the improvement will proceed, assuming funds are programmed.

2.0 EXISTING CONDITIONS

S.R. 14 CONFIGURATION

State Route 14 is a major regional highway connecting the Portland/Vancouver metro area with central Washington, and running through the Columbia River Gorge. The highway is an important commercial and recreational route, including handling windsurfing traffic destined to beach areas in the Gorge. S.R. 14 runs through the City of Stevenson, including serving as the main street in the downtown area. Through downtown, S.R. 14 is referred to as 2nd Street.

Through downtown Stevenson, between Rock Creek Drive on the west and Kanaka Creek on the east, S.R. 14 is a two-lane facility, with parking on both sides of the street. The highway has a 60 foot right-of-way, with two 12 foot travel lanes, two eight foot parking lanes, and two eight foot sidewalks. There is curbing on both sides of the street between Rock Creek Drive and Kanaka Creek. The speed limit of S.R. 14 through downtown is 25 MPH.

There are five side street intersections along S.R. 14 through downtown Stevenson, all under stop sign control for the side street approaches. Rock Creek Drive, Russell Avenue, and Columbia Avenue are the three major intersections. Rock Creek Drive serves the Skamania County Fairgrounds, the new Skamania Lodge, and the residential area on the northwest side of town. Russell Avenue serves the Port of Stevenson and riverfront area south of 2nd Street, and the Skamania County Courthouse north of 2nd. There is a flashing beacon at the 2nd/Russell intersection. Russell Avenue between 2nd and 1st Streets operates one-way southbound. Columbia Avenue serves the high school and residential area northeast of the downtown area.

TRAFFIC VOLUMES

Traffic volumes on S.R. 14 through Stevenson are highest during the summer months, with the increased recreational traffic. Figure 1 compares the traffic volumes downtown during the summer peak month vs. the annual average condition in 1989. The traffic volume is about 10,000 vehicles a day during a typical summer weekday, compared to about 8,000 vehicles a day on an annaul average daily basis. Figure 2 shows the PM peak hour traffic volumes for specific street sections and intersections on a typical summer weekday, based on available counts. The heaviest turning movements off S.R. 14 occur at the Rock Creek Drive, Russell Avenue, and Columbia Avenue intersections. The PM peak hour volumes represent about 10% of the daily traffic volume.

Truck traffic comprises about 5% of the traffic on S.R. 14 through downtown Stevenson. The percentage of truck traffic is higher during off-peak periods with the reduction of recreational traffic.

LEVEL OF SERVICE

Table 1 identifies the 1989 summer weekday PM peak hour level of service at the Rock Creek Drive, Seymour Street, and Russell Avenue intersections in downtown Stevenson Today, there is a poor level of service "E" for movements from Rock Creek Drive and Russell Avenue onto S.R. 14 (see Appendix A for level of service definitions). The 2nd/Russell intersection has a high enough peak hour volume in the summer to warrant a traffic signal at this location.

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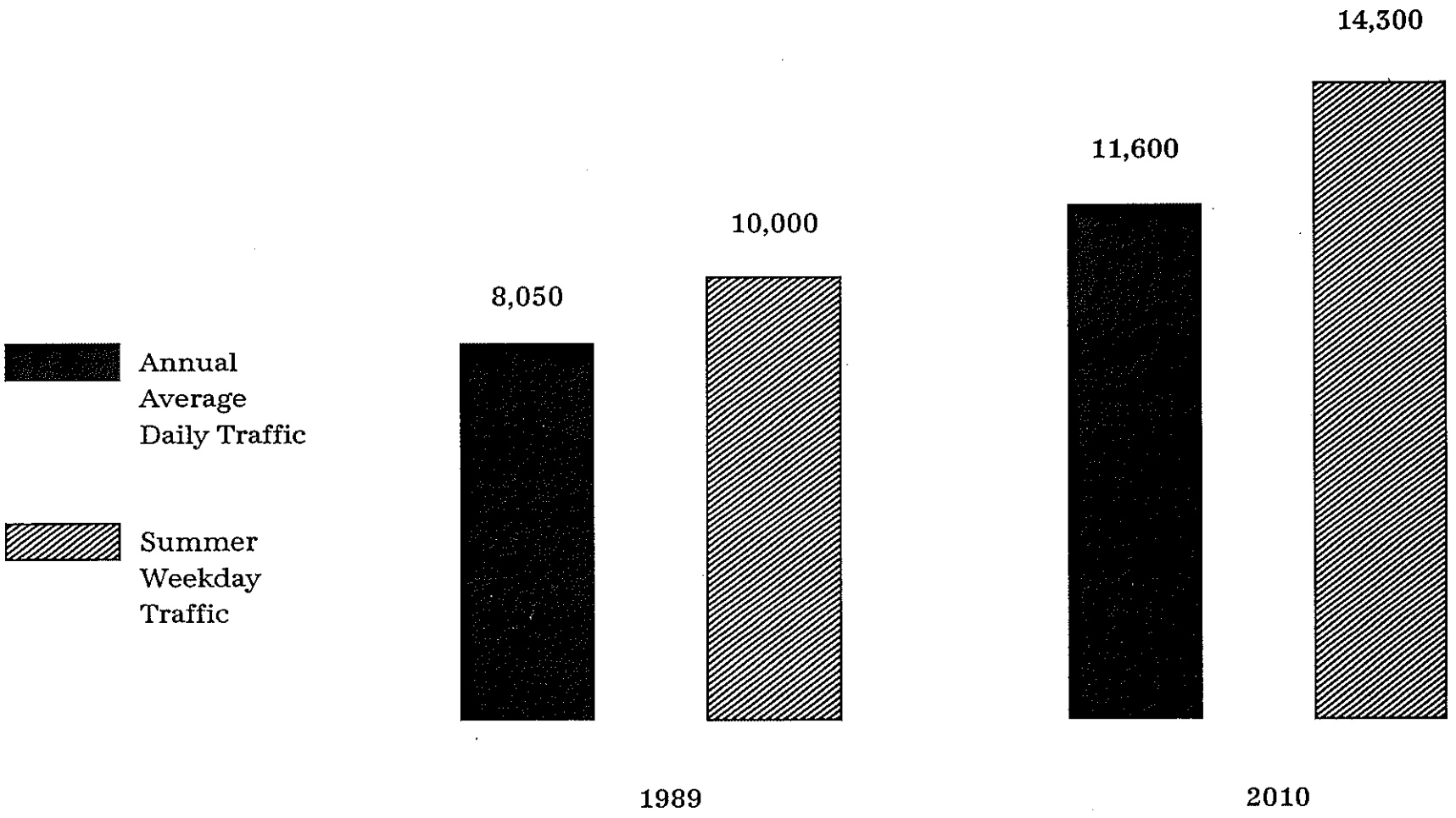
FIGURE 1
1989/2010 DAILY TRAFFIC VOLUMES ON S.R. 14 IN DOWNTOWN STEVENSON



LEGEND:

TRAVEL DIRECTION

75 1989 SUMMER WEEKDAY PM PEAK HR. TRAFFIC VOLUME

DAVID EVANS AND ASSOCIATES, INC.

N.T.S.

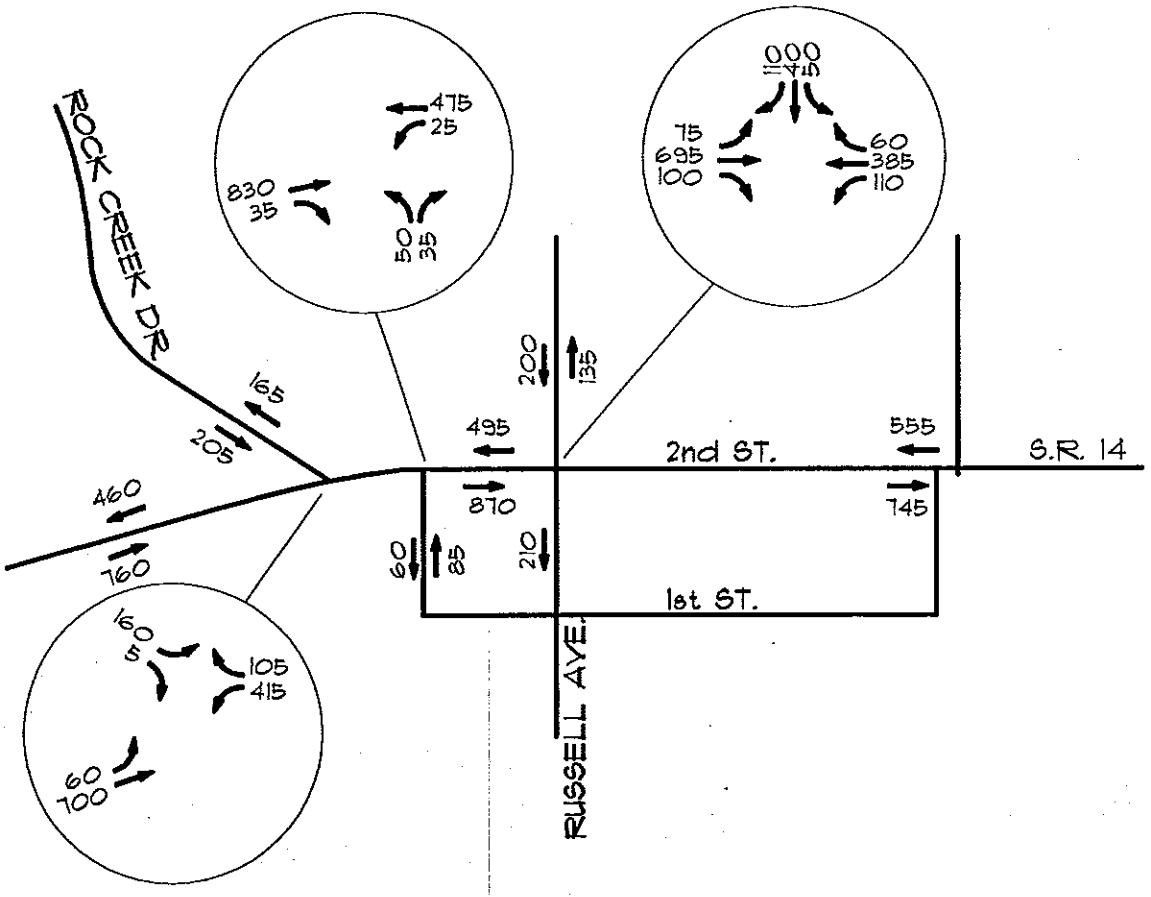


FIGURE 2

1989 SUMMER WEEKDAY P.M. PEAK HOUR VOLUMES

TABLE 1

1989/2010 NO-BUILD INTERSECTION LEVEL OF SERVICE

SUMMER WEEKDAY PM PEAK HOUR LEVEL OF SERVICE FOR SIDE STREET LEFT TURN

INTERSECTION	1989	2010
2nd Street/ Rock Creek Drive	C	F
2nd Street/ Seymour Road	D	E
2nd Street/ Ruseell Avenue	C	F

TRAFFIC CONFLICTS

Based on field observations, and a review of past accident experience, there are two potential traffic conflict situations along S.R. 14 through downtown Stevenson. These conflicts are:

1. Conflicts caused by parked vehicles on the street, including conflicts between parking maneuvers and through traffic and sight distance restrictions that parked vehicles impose on side street traffic movements onto or across S.R. 14.

2. Conflicts caused by unsignalized side street intersections in the downtown area, including unprotected pedestrian crossings.

Sight distance restrictions caused by parked vehicles are magnified with recreational vehicles parking along 2nd Street. Pedestrian crossings of S.R. 14 will increase in the future as the downtown commercial area expands.

3.0 TRAFFIC PROJECTIONS

FORECASTING METHODOLOGY

Traffic projections for S.R. 14 through downtown Stevenson were developed for the year 2010, reflecting a 20-year planning horizon to assess road improvement needs. The projections were derived from the base traffic projections developed in 1990 by the now defunct Intergovernmental Resource Center (IRC), which were generated for the *S.R. 14/Columbia River Gorge Needs Study*. The original IRC projections were adjusted to reflect the planned Skamania Lodge conference center, as documented in the *Skamania Lodge EIS*, and also reflect the possible development of an interpretative center across from the lodge.

YEAR 2010 TRAFFIC PROJECTIONS

Figure 1 identifies the projected year 2010 daily traffic volumes on S.R. 14 through downtown Stevenson on a typical summer weekday. Traffic is projected to increase about 50% over 1989 volumes, to about 25,000 vehicles a day.

Figure 3 identifies the year 2010 PM peak hour traffic volumes on certain street sections and intersections in downtown Stevenson. Heavy turning movements on and off S.R. 14 would continue to occur at the Rock Creek Drive and Russell Avenue intersections.

Table 1 identifies what the PM peak hour level of service at the Rock Creek Drive and Russell Avenue intersections would be in year 2010 during a typical summer weekday. If traffic signals are not installed at these intersections, the level of service for the side street approaches would be "F".

LEGEND:

TRAVEL DIRECTION

140 2010 SUMMER WEEKDAY PM PEAK HR. TRAFFIC VOLUME

DAVID EVANS AND ASSOCIATES, INC.

N.T.S.

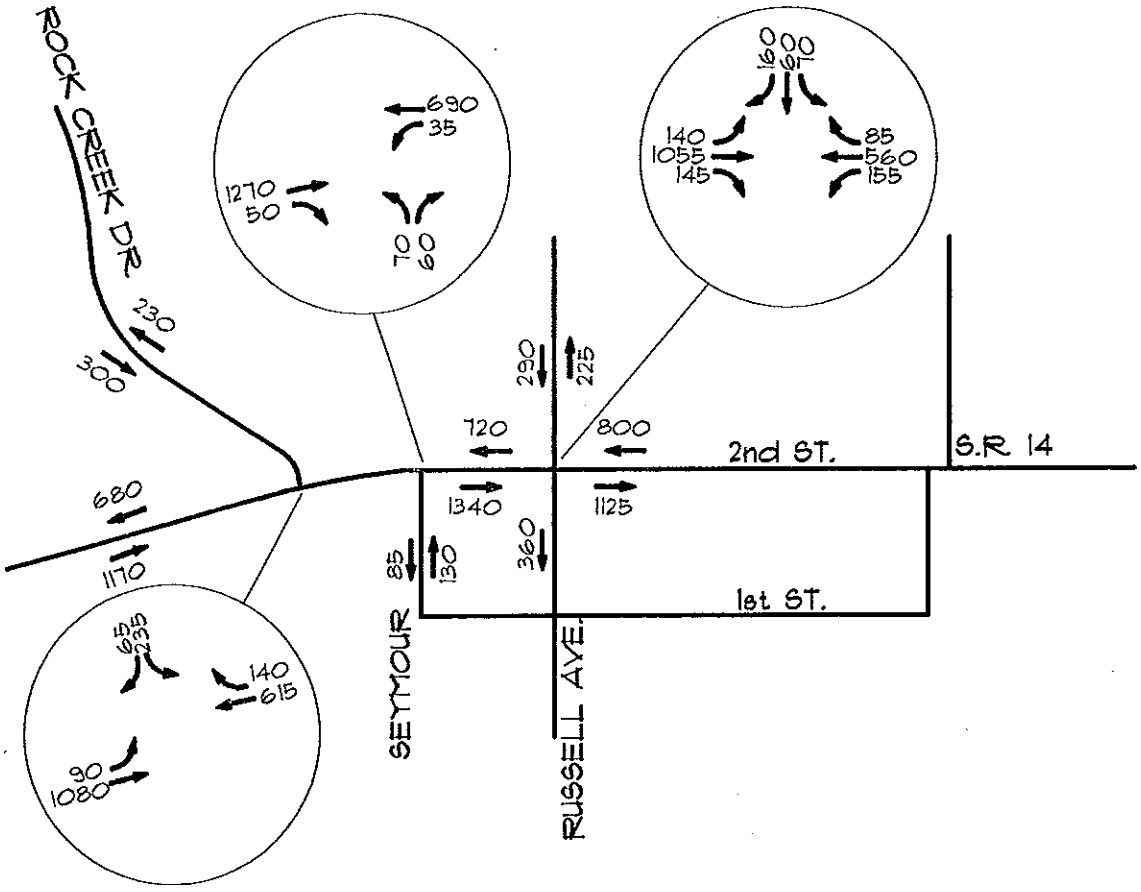


FIGURE 3

2010 SUMMER WEEKDAY P.M. PEAK HOUR TRAFFIC VOLUMES NO-BUILD

STEV0001 BCP 10/01/1992 11:59:12 BCP FIG-3

4.0 S.R. 14 IMPROVEMENT OPTIONS

In light of the existing traffic operational problems and the year 2010 traffic projections, three different improvement options for S.R. 14 through downtown Stevenson were developed. The alternatives were the same as those identified in the 1991 *Downtown Stevenson Revitalization Study* report, prepared by Walker & Macy.

IMPROVEMENTS TO 2ND STREET

The first option considered was increasing capacity and safety along 2nd Street - existing S.R. 14 through downtown Stevenson - by removing on-street parking on one side of the street and creating a center left turn lane. Given that there is less development and fewer parking spaces along the north side of 2nd Street downtown, it was assumed that it might be more appropriate to remove parking from that side of the street.

The street reconfiguration would be made within the existing pavement section, with no street widening or added right-of-way required. Figure 4 identifies the typical section associated with this improvement, while Figure 5 shows the conceptual street layout plan at 1" = 300' scale. Within the existing 44 foot pavement width, two 12-13 foot through lanes, a 11 foot left turn lane, and an eight foot parking lane would be provided. The existing eight foot sidewalks on both sides of the street would be maintained.

Other features of this improvement would include a relocation to the west of the 2nd Street/Rock Creek Drive intersection, installation of traffic signals on 2nd Street at Rock Creek Drive and Russell Avenue, and the conversion of Russell Avenue to two-way operation between 2nd and 1st Streets. Russell was assumed to be two-way south of 2nd because of the desire to have northbound Russell traffic access S.R. 14 at the signal location.

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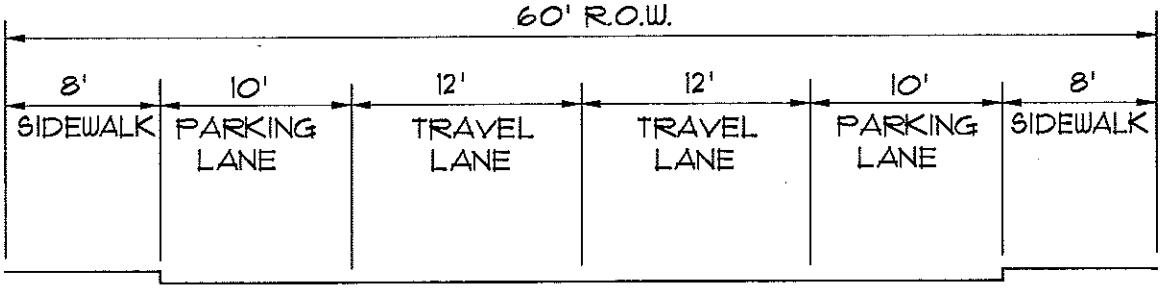
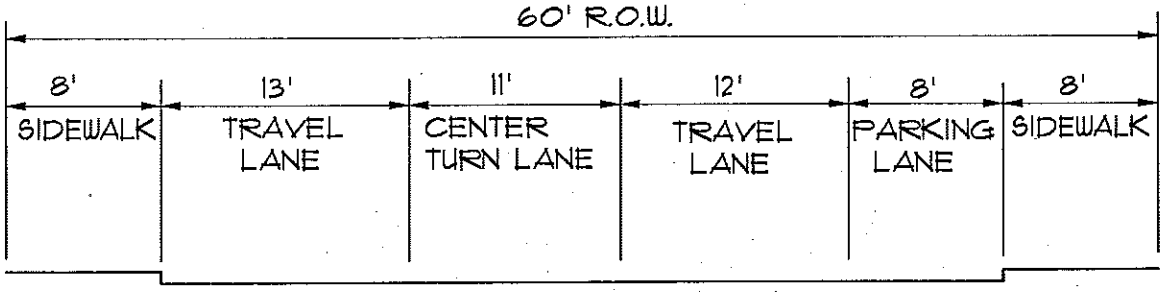


2-LANE SECTION
EXISTING



3-LANE SECTION
(LOOKING EASTBOUND)

FIGURE 4
TYPICAL SECTION
IMPROVEMENTS TO 2nd ST.
(OPTION # 1)

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SCALE: 1" = 300'

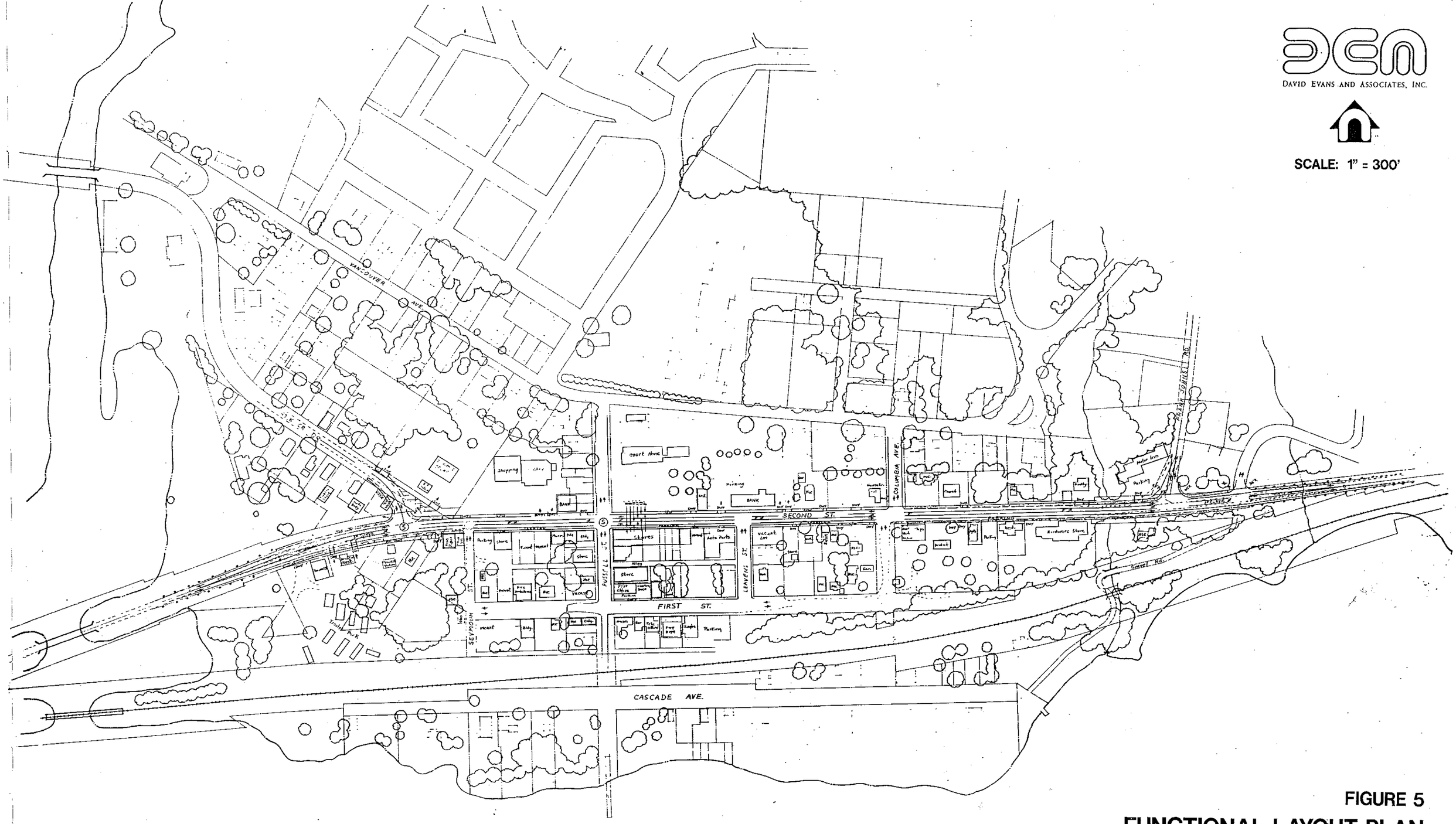

FIGURE 5

FUNCTIONAL LAYOUT PLAN IMPROVEMENTS TO 2ND STREET

The low-cost option to relocating the 2nd Street/Rock Creek Drive intersection would involve relocating the Rock Creek Drive approach through the existing car wash property northwest of the existing 2nd/Rock Creek intersection, allowing a 90 degree intersection to be provided.

With this alternative, bicycles along the S.R. 14 could be diverted to either 1st Street to the south or Vancouver Avenue to the north, as there would not be an opportunity to provide exclusive bike lanes on 2nd Street through downtown Stevenson with the identified improvement. There has been some discussion with WSDOT District 4 about possibly designating Rock Creek Drive as a bike route around the north side of Rock Creek Cove, which would make a bike connection to the Vancouver Avenue connection more attractive.

Figure 6 shows the year 2010 summer weekday PM peak hour traffic volumes associated with this alternative.

ONE-WAY COUPLET

This improvement would involve developing a one-way couplet for S.R. 14 through downtown using 2nd Street (existing S.R. 14) for westbound traffic and 1st Street for eastbound traffic. Figure 7 shows the typical sections on 2nd and 1st Streets with this concept. Figure 8 shows the conceptual street layout plan at 1" = 300' scale. Figure 9 shows the 2010 summer weekday PM peak hour traffic volumes assigned to a one-way couplet.

2nd Street

2nd Street would remain in its existing configuration, with the exception of restriping modifications to create two westbound travel lanes with on-street parking on both sides

LEGEND:

TRAVEL DIRECTION

140 2010 SUMMER WEEKDAY PM PEAK HR. TRAFFIC VOLUME

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N.T.S.

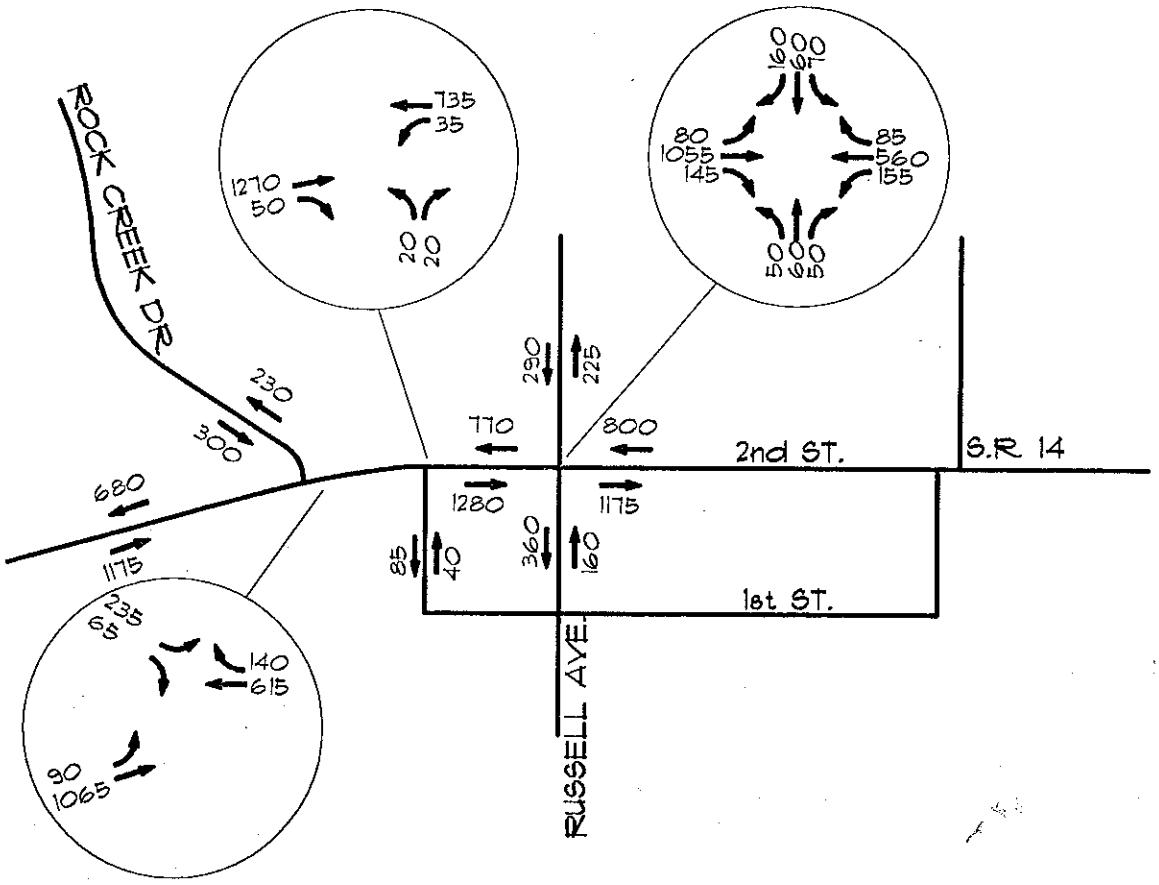
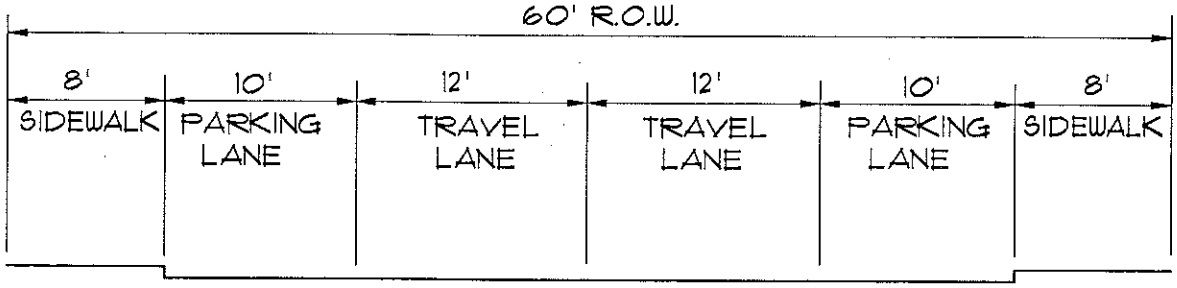


FIGURE 6

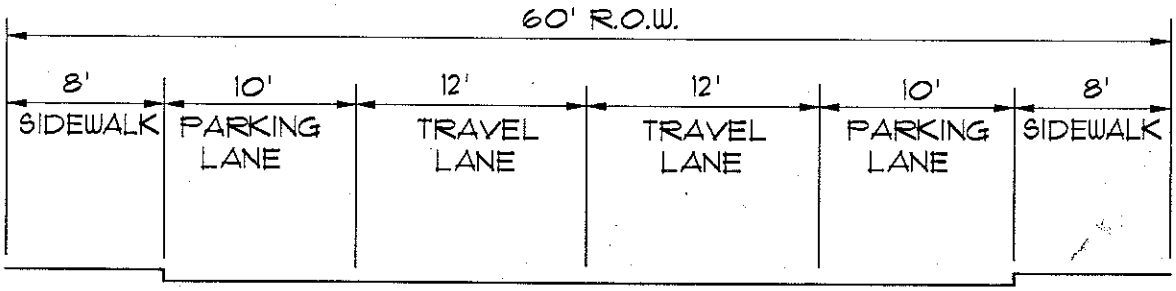
2010 SUMMER WEEKDAY P.M. PEAK HOUR VOLUMES IMPROVEMENTS TO 2nd ST.

DAVID EVANS AND ASSOCIATES, INC.

N.T.S.



2nd ST. - 2 LANES W/ PARKING
(LOOKING EASTBOUND)



1st ST. - 2 LANES W/ PARKING
(LOOKING EASTBOUND)

FIGURE 7
TYPICAL SECTIONS
ONE-WAY COUPLET
(OPTION # 2)

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SCALE: 1" = 300'

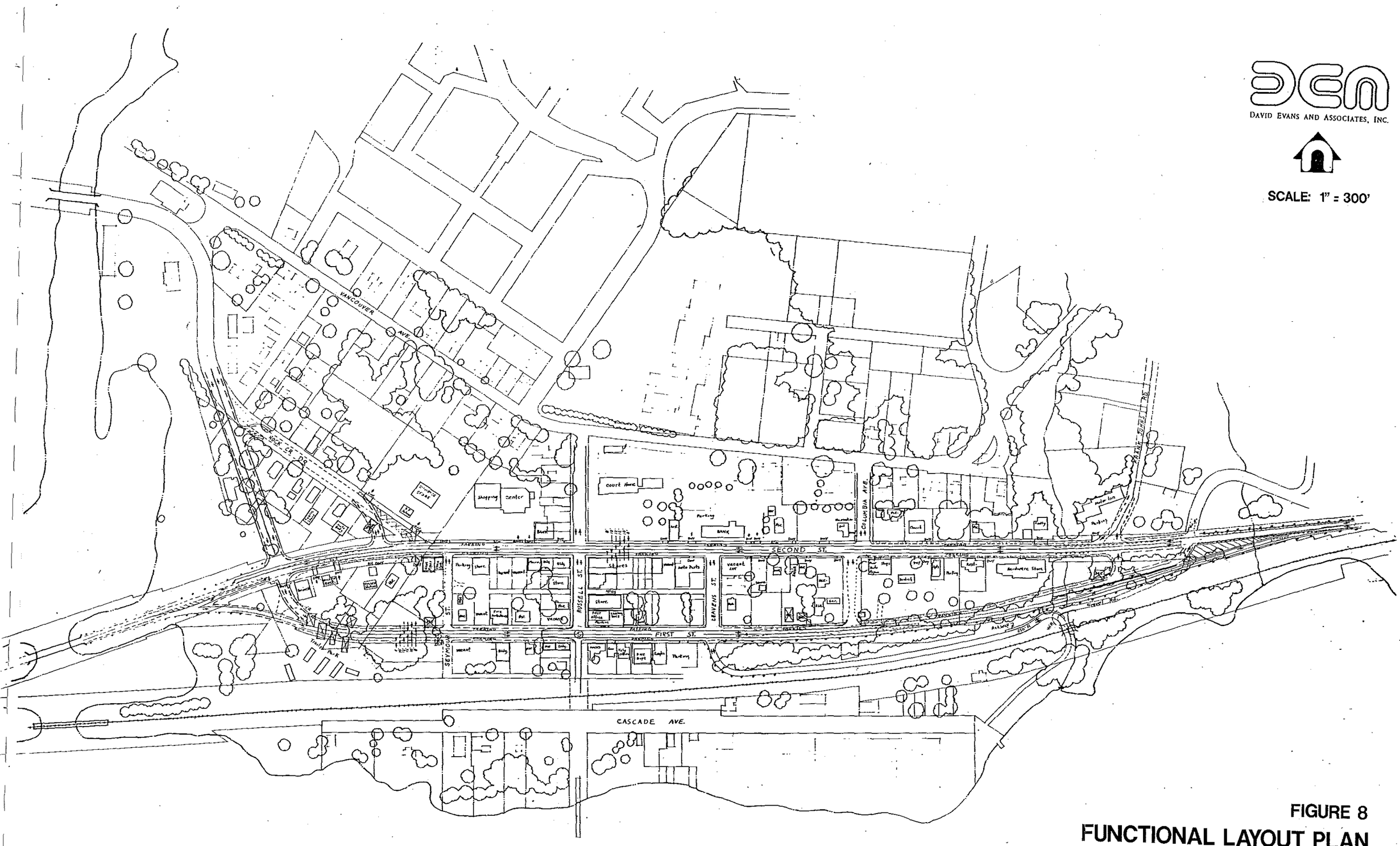

FIGURE 8
FUNCTIONAL LAYOUT PLAN
ONE-WAY COUPLET

LEGEND:

- TRAVEL DIRECTION
- 85 2010 SUMMER WEEKDAY PM PEAK HR. TRAFFIC VOLUME
- (90) 2010 SUMMER WEEKDAY PM PEAK HR. TRAFFIC VOLUME (WITH ROCK CREEK DR. WESTERLY REALIGNMENT)

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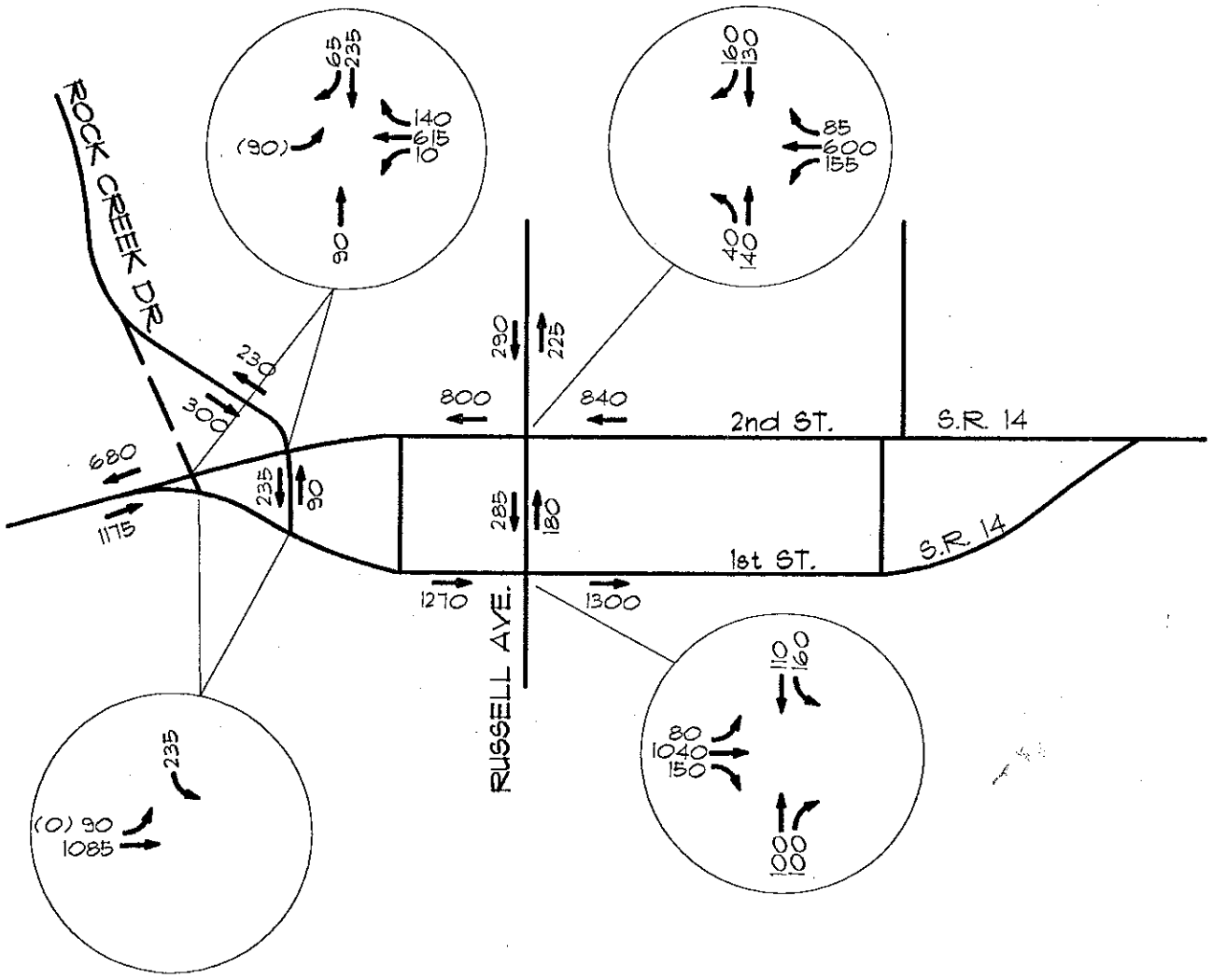

FIGURE 9

2010 SUMMER WEEKDAY P.M. PEAK HOUR VOLUMES ONE-WAY COUPLET

of the street. No pavement widening or added right-of-way along 2nd Street would be required.

1st Street

To develop 1st Street as the other leg of a couplet, the existing street between Seymour Road and Columbia Street would need to be widened, with the street extended through private property on the east and west ends of downtown to tie into S.R. 14. A design speed of 45 MPH was used in developing the transitions of 1st Street into 2nd Street at both ends of downtown. The layout plan shows alternate configurations of how Rock Creek Drive could tie into 1st Street, to provide a direct connection for Rock Creek Drive traffic to eastbound S.R. 14. One option would be to connect Rock Creek Drive to 1st Street off the more westerly realignment of Rock Creek Drive along the east side of Rock Creek Cove (see Figure 8). With this concept, an eastbound left turn lane on 2nd Street would be developed west of Rock Creek Drive to handle traffic turning left onto Rock Creek Drive. The Rock Creek Drive connection to 1st Street would then consist of a left turn onto a second lane developed on 1st Street east of the Rock Creek intersection. A second option would have Rock Creek Drive connected to 1st Street by an extension south of 2nd Street of the minor realignment of Rock Creek Drive west of the existing 2nd/Rock Creek Drive intersection (see Figure 10). This concept would create a separate 1st Street/Rock Creek Drive intersection.

Today the pavement width on 1st Street varies from a 30 foot pavement with no shoulders or curbing from Seymour Road to Russell Avenue and from Leavens Street to Columbia Avenue, to a 40 foot pavement with curbing between Russell Avenue and Columbia Avenue. The existing right-of-way width for 1st Street is 60 feet. With 1st Street incorporated into the couplet, a 44 foot pavement width in this section would be required, to accommodate two eastbound travel lanes and on-street parallel parking on both sides of the street. Eight foot attached sidewalks would also be provided on both

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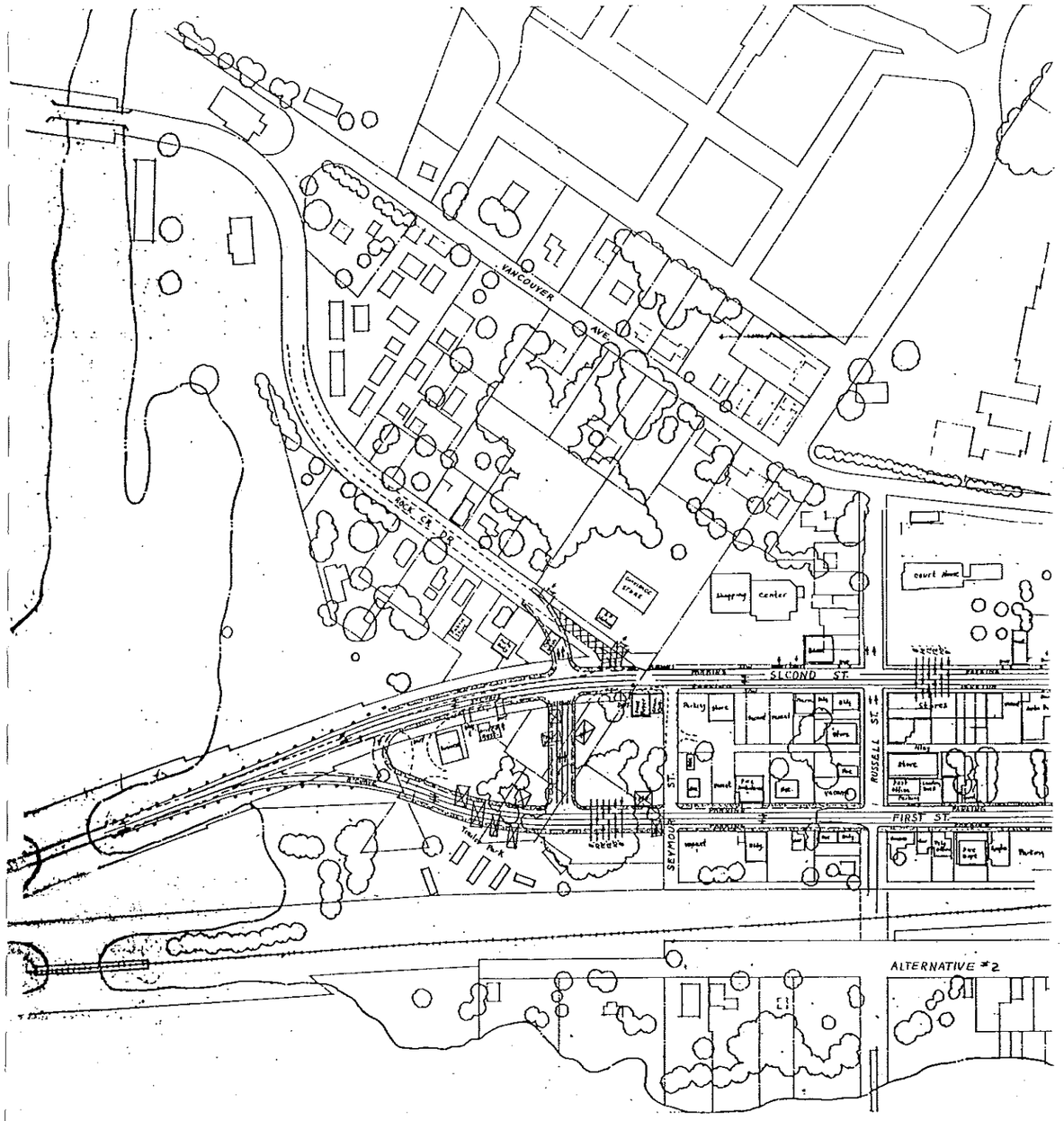
SCALE: 1" = 300'



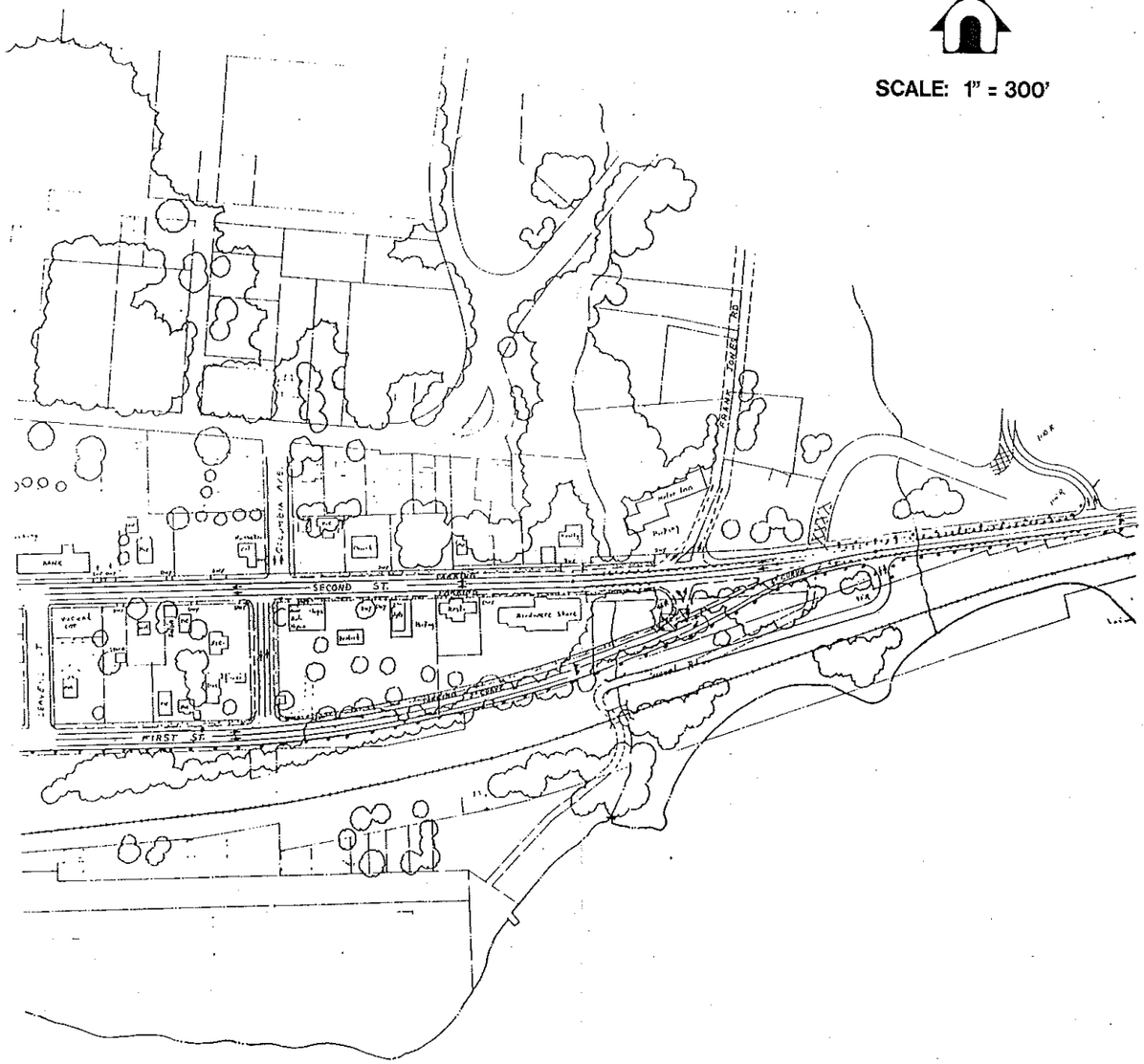


FIGURE 10

ALTERNATE ROCK CREEK DRIVE AND 1ST STREET CONNECTIONS ONE-WAY COUPLET

sides of the street. Based on the year 2010 traffic projections, a traffic signal at the 1st/Russell Avenue intersection would also be required.

At the east end of 1st Street east of Leavens Street, two profile options have been identified (see Figures 11 and 12). The first option would keep the profile of 1st Street close to the existing grade, to avoid encroachment on the homes in the block of 1st Street east of Leavens Street. This would result in a grade of 3.6% on 1st Street east of Leavens. The second option would lower the grade of 1st Street east of Leavens. This would require the acquisition of three residences on the north side of 1st Street between Leavens and Columbia. The grade on 1st Street would be reduced from 3.6% to 0.5% and the height of road embankment would be greatly reduced.

In consultation with the City of Stevenson Fire Department and the Skamania County Sheriff's Department, it was assumed in the design analysis that the existing access to the riverfront area provided at the east end of downtown via an underpass of the railroad should be preserved. This access is considered critical to providing a second emergency vehicle access to the riverfront area in case a train blocks the existing at-grade crossing of the railroad at Russell Avenue. This access is also used by pedestrians and bicyclists to access the park area along the river just south of the railroad underpass. One option would be to develop a new access road off Leavens Street from the west to access the railroad underpass (see Figure 8). This road would have to be developed within the railroad right-of-way, but could also serve as a railroad maintenance road. This connection would provide more direct access to the railroad underpass from the existing police and fire stations along Russell Avenue in the central downtown area. A second option would be to provide access with an alignment similar to the existing gravel road access (see Figure 10). The connection to S.R. 14 would need to shift easterly from the existing connection. With this option, the Lutheran Church access needs to be relocated easterly from its existing location and connected

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HORIZ. SCALE: 1" = 300'
VERT. SCALE: 1" = 30'

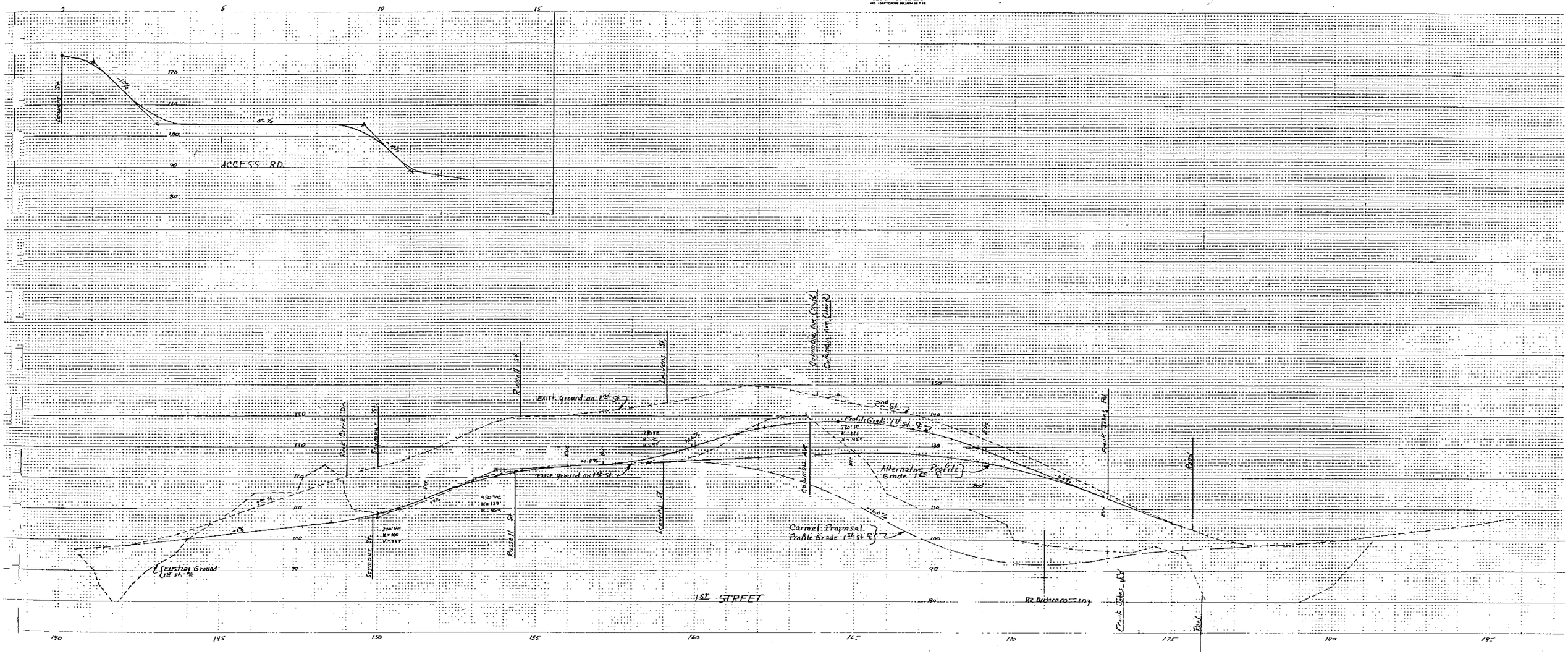

FIGURE 11
1ST STREET PROFILE OPTIONS

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HORIZ. SCALE: 1" = 300'
VERT. SCALE: 1" = 30'

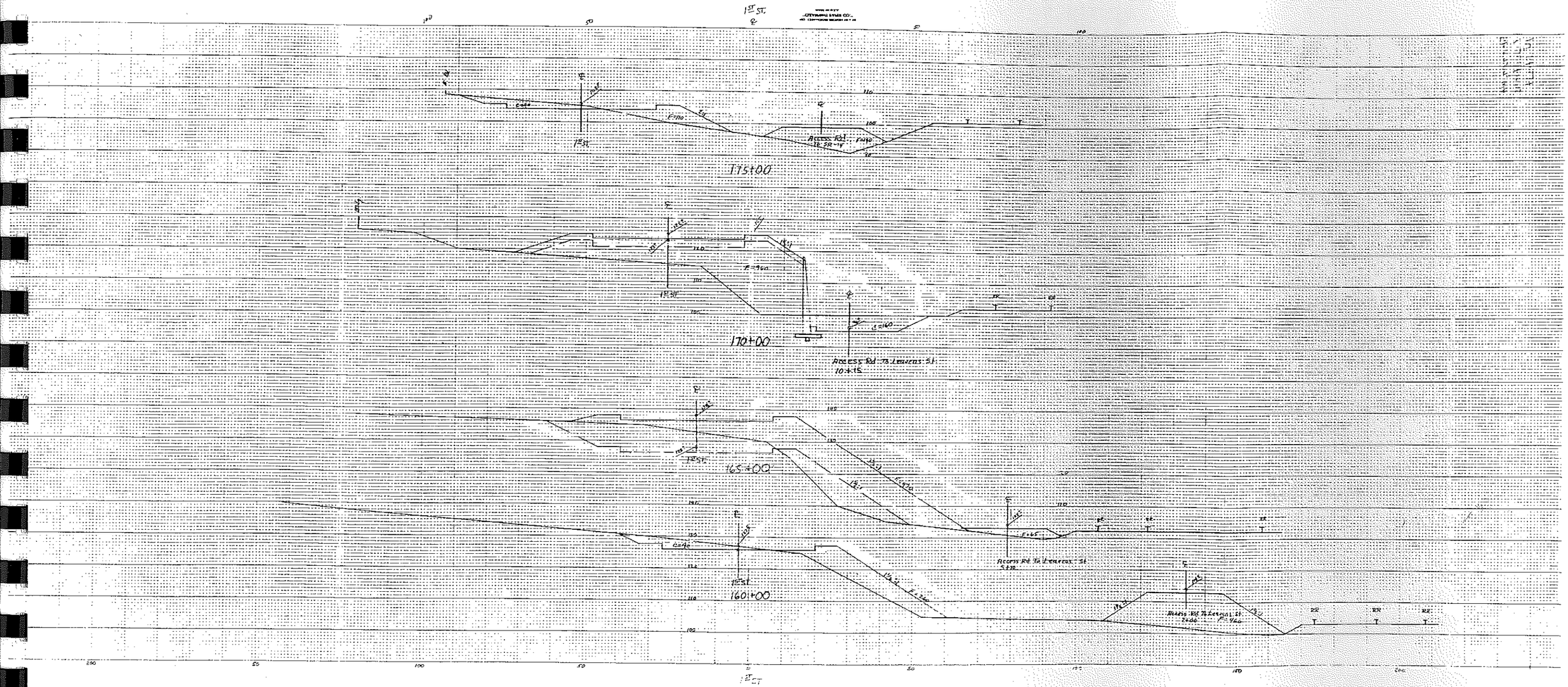

FIGURE 12
CROSS SECTIONS FOR 1ST STREET PROFILE OPTIONS

to Frank Johns Road as shown in Figure 14.

Bicycle Provisions

As for the improvements to 2nd Street, bicycles with the one-way couplet could be diverted to the Rock Creek Drive/Vancouver Avenue corridor, as there would not be any provision for exclusive bike lanes on 2nd or 1st Streets with the preservation of on-street parking.

TWO-WAYCOUPLET

The third option would be to develop a "two-way couplet" using 1st and 2nd Streets. With this concept, 2nd Street would be maintained as a two-way, two-lane street through downtown Stevenson, with 1st Street improved as a two-way street to develop a parallel reliever route to 1st Street. Figure 13 shows the typical sections on 2nd and 1st Streets with this concept. Figure 14 shows the conceptual street layout plan at 1" = 300' scale. Figure 15 shows the 2010 summer weekday PM peak hour traffic volumes assigned to a two-way couplet.

2nd Street

With the two-way couplet, 2nd Street would remain in its current configuration, with one travel lane in each direction and parallel parking on both sides of the street. A signal would be required at both the Russell Avenue and Rock Creek Drive intersections. As for the other two improvement options, Rock Creek Drive north of 2nd Street would either be slightly realigned to the west through the car wash property, or further west along the east side of Rock Creek Cove.

1st Street

1st Street would be improved and extended along the same alignment as for the one-

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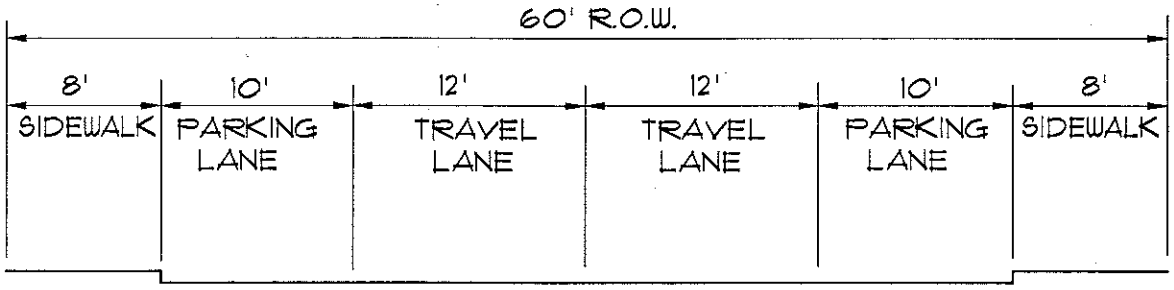
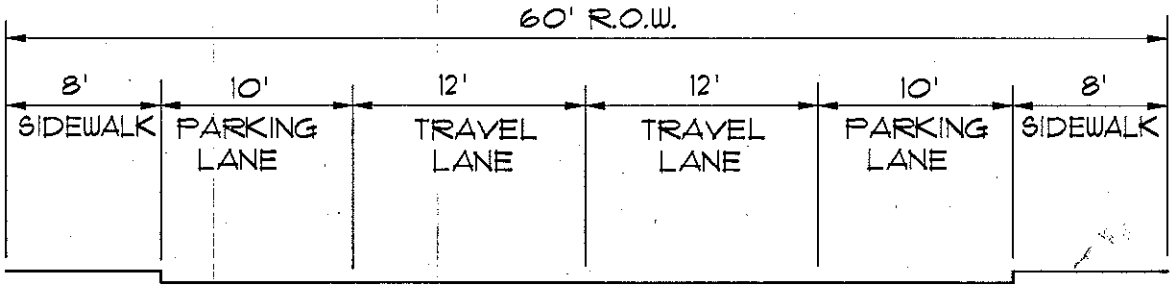


2nd ST. - 2 LANES W/ PARKING
(LOOKING EASTBOUND)



1st ST. - 2 LANES W/ PARKING
(LOOKING EASTBOUND)

FIGURE 13
TYPICAL SECTIONS
TWO-WAY COUPLET
(OPTION # 3)

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SCALE: 1" = 300'

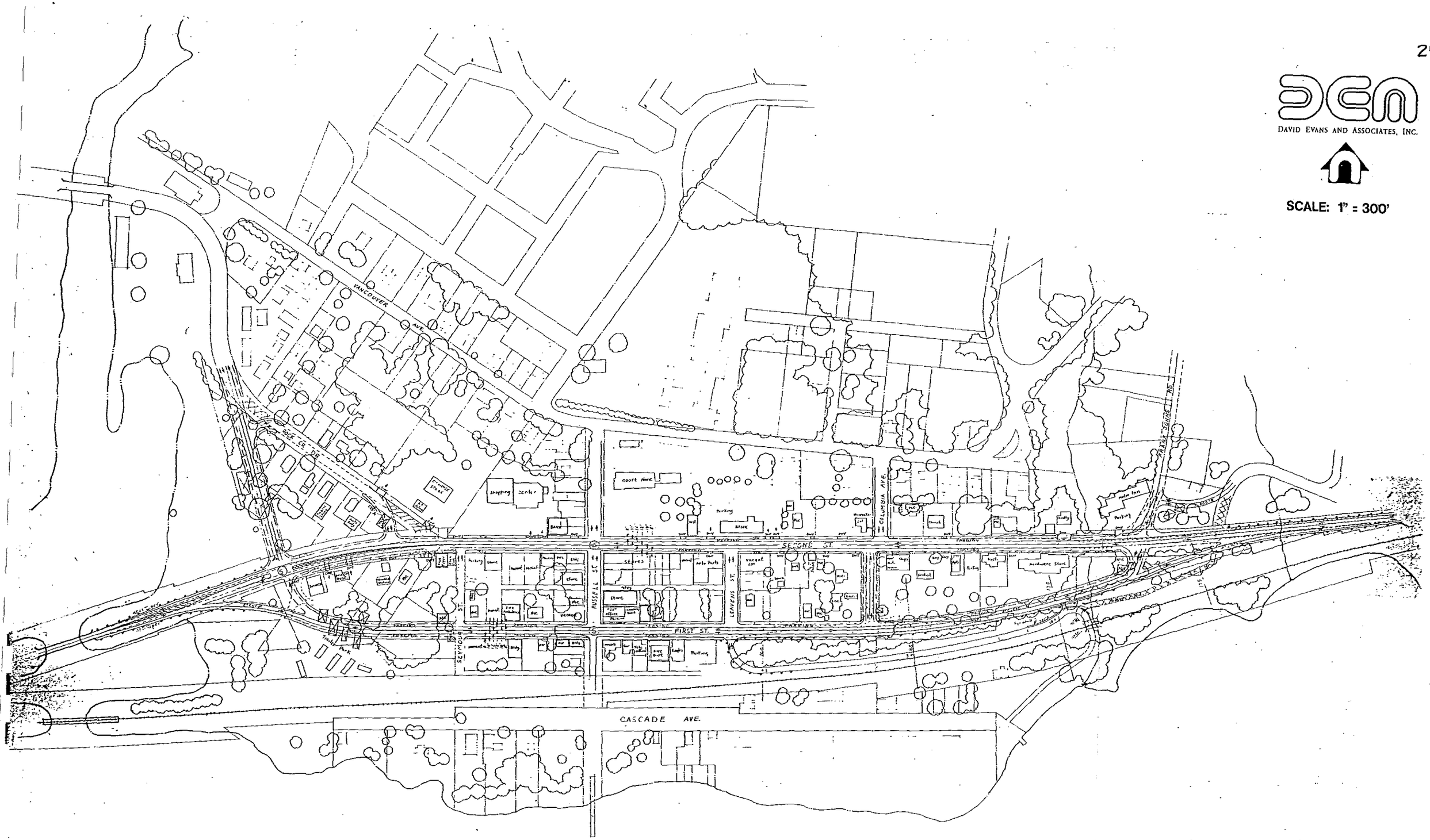

FIGURE 14
FUNCTIONAL LAYOUT PLAN
TWO-WAY COUPLET

LEGEND:

- TRAVEL DIRECTION
- 140 2010 SUMMER WEEKDAY PM PEAK HR. TRAFFIC VOLUME
- (90) 2010 SUMMER WEEKDAY PM PEAK HR. TRAFFIC VOLUME VOLUME (WITH ROCK CREEK DR. WESTERLY REALIGNMENT)

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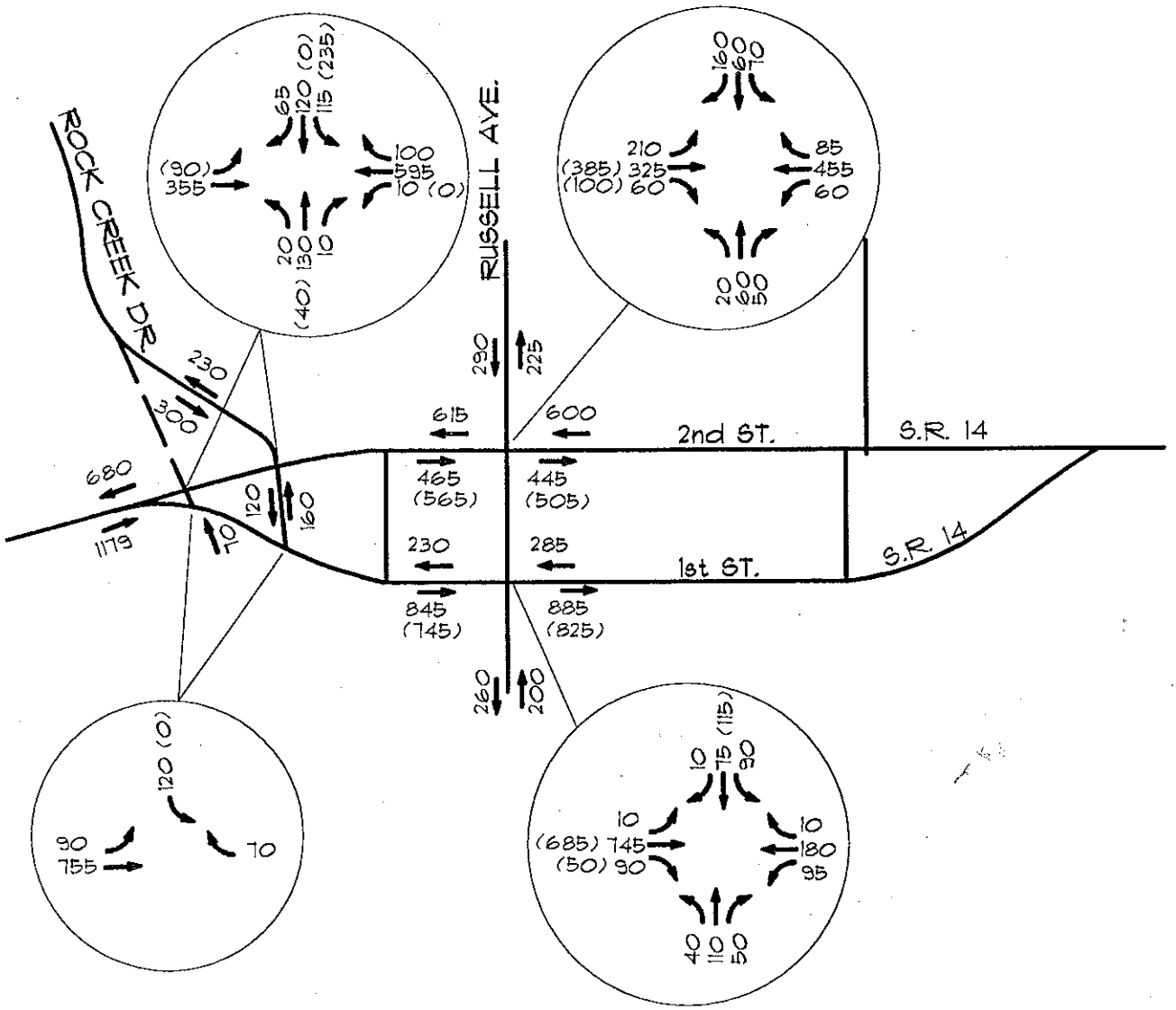

FIGURE 15

2010 SUMMER WEEKDAY P.M. PEAK HOUR VOLUMES TWO-WAY COUPLET

way couplet. The typical section on 1st Street would consist of one travel lane in each direction, parallel parking on both sides of the street, and sidewalks on both sides. A concept, with the westerly realignment of Rock Creek Drive, would have westbound 1st Street intersect as the south approach to the 2nd Street/Rock Creek Drive intersection, with turns off 1st Street limited to right-out only (see Figure 14). A connection from Rock Creek Drive onto 1st Street with the westerly realignment was not shown because of the lack of storage length which could be provided to accommodate Rock Creek Drive traffic wanting to turn left onto eastbound 1st Street. It was felt that the direct access to eastbound 1st Street for Rock Creek Drive traffic would not be necessary, as this traffic could turn left onto eastbound 2nd Street (not possible with the one-way couplet). With an alternate treatment, Rock Creek Drive could intersect with 1st Street via an extension south of 2nd Street of the minor realignment of Rock Creek Drive through the car wash property (see Figure 16).

At the east end of downtown, 1st Street would tie into S.R. 14 similar to the one-way couplet (see Figure 14). Eastbound 1st Street traffic will be merging with eastbound 2nd Street traffic. Therefore, using the existing gravel road connection to the railroad underpass to provide the second riverfront access is not the preferred option. Constructing a new access from Leavens Street would be the preferred option with the two-way couplet. The Lutheran Church access needs to be moved from S.R. 14 to Frank Johns Road as shown in Figure 14.

Bicycle Provisions

As for the improvements to 2nd Street, bicycles with the two-way couplet could be diverted to the Rock Creek Drive/Vancouver Avenue corridor, as there would not be any provision for exclusive bike lanes on 2nd or 1st Streets with the preservation of on-street parking.

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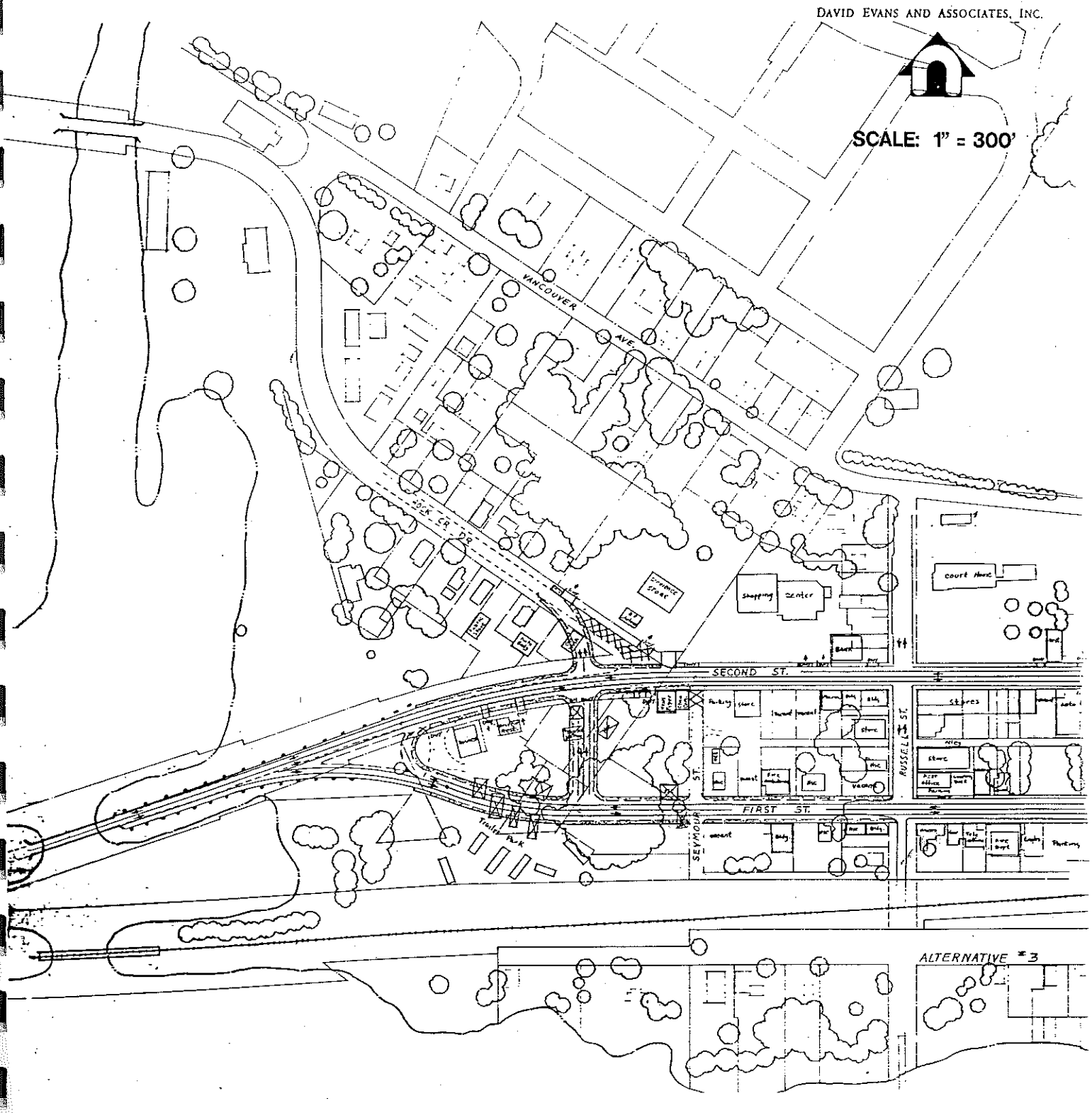


FIGURE 16

ALTERNATE ROCK CREEK DRIVE CONNECTION TWO-WAY COUPLET

5.0 EVALUATIONOF OPTIONS

The three S.R. 14 improvement options were evaluated against six impact categories:

1. Traffic operations
2. Construction
3. Economic
4. Environmental
5. Right-of-way
6. Cost

TRAFFIC OPERATIONS IMPACTS

Tables 2 and 3 summarize the traffic operations impacts associated with the different S.R. 14 improvement options. The intersection level of service computer outputs are presented in Appendix B.

Life of Improvement

The option of improving 2nd Street (adding center left turn lane and traffic signals) will provide an adequate level of service ("D") only until the year 1997. Both couplet options would provide an adequate level of service beyond the year 2015.

Number of Traffic Signals Required

The two-way couplet would require the most traffic signals (3) because the S.R. 14 traffic would be spread out over two streets and with two-way traffic on these streets. The one-way couplet would only require one signal. Even though the traffic on the one-way couplet is split between two streets, the traffic is only in one direction with fewer turning conflicts at intersections.

TABLE 2

TRAFFIC OPERATIONS IMPACTS

EVALUATION CRITERIA	S.R. 14 IMPROVEMENT ALTERNATIVE		
	Option #1 - Impr. to 2nd Street	Option #2 - 1-Way Couplet	Option #3 - 2-Way Couplet
Life of Improvement	1997	2015+	2015+
No. of Traffic Signals Required	2 (2nd/Rock Cr. 2nd/Russell)	1 (1st/Russell)	3 (2nd/Rk. Cr. 2nd/Russell 1st/Russell)
Traffic Diversion	None	All EB Traffic to 1st Street	All EB Through Traffic to 1st Street
2nd Access to Riverfront	No Change	Existing or Leaven Ave. Connection	Leaven Ave. Connection
On-Street Parking Impact	Parking removed on north side of 2nd	Parking added on 1st	Parking added on 1st

TABLE 2

TRAFFIC OPERATIONS IMPACTS (CONT.)

	S.R. 14 IMPROVEMENT ALTERNATIVE		
EVALUATION CRITERIA	Option #1 - Impr. to 2nd Street	Option #2 - 1-Way Couplet	Option #3 - 2-Way Couplet
Side Street Sight Distance	Improved on South Side of 2nd Street	Potential Conflicts With On-Street Parking Removal on 1st and 2nd (w/o Curb Extensions)	Same as With 1-Way Couplet
Bike Routing	Along 1st Street	Along Rock Creek Dr./Vancouver Ave.	Same as With 1-Way Couplet
Pedestrian Impact	Increased Conflicts With Vehicles on 2nd Street	Added Sidewalks on 1st/Reduced Conflicts on 2nd - Increased Conflicts on 1st	Same as With 1-Way Couplet

TABLE 3

INTERSECTION 2010 LEVEL OF SERVICE COMPARISON

	2010 SUMMER WEEKDAY PM PEAK HOUR LEVEL OF SERVICE		
INTERSECTION	Option #1 - Impr. to 2nd Street	Option #2 - 1-Way Couplet	Option #3 - 2-Way Couplet
2nd St./ Rock Creek Dr.	0.92 B (Signalized)	D (E) (Unsignalized)	0.82 B (0.73 B) (Signalized)
2nd St./ Russell Ave.	1.20 F (Signalized)	D (Unsignalized)	0.77 B (0.82 C) (Signalized)
1st St./ Russell Ave.	-	0.73 B (Signalized)	0.84 B (0.78 B) (Signalized)

Note: For signalized intersection - 0.82 B = intersection volume to capacity ratio is 0.82, intersection level of service is B - with Rock Creek Drive easterly realignment

For signalized intersection - (0.73 B) = intersection volume to capacity ratio is 0.73, intersection level of service is B - with Rock Creek Drive westerly realignment

For unsignalized intersection, D = worst level of service for side street approach - with Rock Creek Drive easterly realignment

For unsignalized intersection, (E) = worst level of service - with Rock Creek westerly realignment

Traffic Diversion

With improvements to 2nd Street alone, there would be no required diversion for S.R. 14 traffic and no traffic circulation changes within downtown Stevenson. With way couplet, all of the eastbound traffic on 2nd Street would be diverted to 1st Street as the eastbound leg of the couplet. With the two-way couplet, it is envisioned that all of the eastbound S.R. 14 through traffic would be diverted to 1st Street, with access to eastbound 2nd Street for local downtown-oriented traffic still possible.

Second Access to Riverfront

With only the improvements to 2nd Street, the second access to the riverfront via the gravel road across Kanaka Creek and the railroad underpass on the east side of downtown would remain unchanged. With the one-way couplet, either the existing gravel road or a new connection from Leaven Street could be developed. With the two-way couplet, the connection from Leaven Street is preferable.

On-Street Parking Impact

The most on-street parking would be associated with the improvements to 2nd Street option, where all of the parking on the north side of the street between Rock Creek Drive and Kanaka Creek would be removed to develop a center left turn lane. About 50 parking spaces would need to be removed. With the couplet options, most of the existing parking on 2nd Street could be preserved, with added parking provided on 1st Street with its widening.

Side Street Sight Distance

The S.R. 14 improvement options would have different impacts on the available sight distance at unsignalized intersections along S.R. 14 in downtown Stevenson, and hence the ability traffic on north-south local streets to cross or turn onto S.R. 14. With the option of only improving 2nd Street, sight distance on the north approaches of the side

streets at 2nd Street would be improved, due to the removal of parking on that side of the street. With the couplet options, on-street parking would still be provided on both sides of 2nd Street and provide some sight distance constraint, although side street traffic would find it easier to cross or turn onto 2nd Street due to the reduction in traffic with some traffic diversion to 1st Street. On 1st Street with the added traffic and on-street parking, traffic movements across or onto 1st from the side streets would be more difficult than today. For either couplet option, it would be important to restrict on-street parking in the vicinity of the intersections (within 100 feet or so) to improve sight distance as much as possible.

Bicycle Routing

With only improvements to 2nd Street, 1st Street could be used as the designated bicycle route through the downtown area. With either couplet option, bicycles would need to be diverted to Rock Creek Drive and Vancouver Avenue north of 2nd Street. For any of the options, added bike path construction on the east side of downtown east of Columbia Avenue would be required to tie the bike path back into S.R. 14.

Pedestrian Impact

Pedestrian conflicts with vehicles at unsignalized intersections along 2nd Street would probably increase with improvements limited to this street due to the added traffic on this street and its continued two-way operation. With either couplet option, pedestrian/vehicle conflicts on 2nd Street would decrease due to some of the traffic being diverted to 1st Street, more so with the one-way couplet as more traffic would be diverted to 1st Street and crossing 2nd Street would be easier with its conversion to one-way operation. On 1st Street, pedestrian/vehicle conflicts would probably increase over existing conditions with the traffic diversion from 2nd Street, but pedestrian movements would be facilitated along the street with the construction of sidewalks on both sides of the street with the street widening and extension.

CONSTRUCTION IMPACTS

Table 4 summarizes the impacts of the different S.R. 14 improvement options on the ability to physically construct the improvements required and the required traffic control during construction, the ability of converting the improvement to another of the options in the future if so required, and the disruption to neighboring businesses during construction.

Constructability

With the development of a center left turn lane with the 2nd Street improvement option, restriping of 2nd Street would be required. This would require some temporary traffic detours, either diverting traffic north or so to 1st Street or Vancouver Avenue, or diverting through traffic into the parking lanes on 2nd Street, thus temporarily removing parking. The restriping could be accomplished in a day, so the length of the construction impact would be minimal with this option.

With either couplet option, traffic could be maintained on 2nd Street while 1st Street is being constructed. Inconvenience to traffic would be limited to local traffic on 1st Street, which would have to be maintained to provide abutting access to properties during the construction.

Facility Conversion

The 2nd Street improvements option provides the least flexibility to be converted to either couplet option in the longer term as the center left turn lane would not be needed on 2nd Street with a couplet, and on-street parking on the north side of 2nd Street would have already been removed with the initial left turn lane provision. With either couplet option, it would be very easy to convert one to the other, with only restriping and signal modifications required. A negative impact associated with

TABLE 4

CONSTRUCTION IMPACTS

S.R. 14 IMPROVEMENT ALTERNATIVE

EVALUATION CRITERIA	Option #1 - Impr. to 2nd Street	Option #2 - 1-Way Couplet	Option #3 - 2-Way Couplet
Constructability	Moderate Impact- Restriping of 2nd Street Under Traffic	Minimal Impact- Use of 2nd Street During 1st Street Construction	Same as for 1-Way Couplet
Facility Conversion	Poor - Center Left Turn Lane not Required - On-Street Parking Already Removed	Good - Similar Alignment to 2-Way Couplet	Moderate - Similar Alignment to 1-Way Couplet - 2 signals require removal
Impact on Businesses	Minimal	Minimal	Minimal

converting the two-way couplet to a one-way couplet is that two signals on 2nd Street (at Rock Creek Drive and Russell Avenue) would not be required and thus should be removed.

Impact to Businesses

The impacts to businesses during the construction of any of the S.R. 14 improvement options is expected to be minimal. The construction of the improvements to 1st Street could be made without disrupting access or parking to 2nd Street and Russell Avenue businesses. Even with the restriping of 2nd Street to develop a center left turn lane, the work could be accomplished in a day with minimal impact on 2nd Street businesses.

ENVIRONMENTAL IMPACTS

Table 5 summarizes the possible environmental impacts associated with the S.R. 14 improvement options. This impact assessment represents a qualitative assessment of potential environmental impact, with much further study required as part of the subsequent preliminary design/environmental study to verify that certain improvement options will have environmental impact, and to identify appropriate mitigation measures.

Natural Resources

The 2nd Street improvements option would not be expected to have any impact on natural resources, as only minor restriping and signal improvements within the existing 2nd Street right-of-way would occur. With either couplet option, there would be some modification to Kanaka Creek required (probably putting the creek in a pipe) to develop the 1st Street transition to 2nd Street. Also at the west end of downtown, the transition developed off the existing S.R. 14 bridge over Rock Cove to connect with 1st Street could slightly encroach on the wetland area on the east side of the bridge.

TABLE 5

ENVIRONMENTAL IMPACTS

S.R. 14 IMPROVEMENT ALTERNATIVE

EVALUATION CRITERIA	Option #1 - Impr. to 2nd Street	Option #2 - 1-Way Couplet	Option #3 - 2-Way Couplet
Natural Resources	None	Possible minor encroachment on Rock Cove/ modifications to Kanaka Creek at 1st required	Similar to 1-way couplet
Noise	Increase on 2nd Street	Increase on 1st Street/ Potential Increase on 2nd	Same as for 1-Way Couplet
Hazardous Materials	None	None (#2A/#2B) Gas Station Storage Tanks Impacted (#2C/2D)	None (#3A/#3B) Gas Station Storage Tanks Impacted (#3C/#3D)

#2A/#3A - New Rock Creek Drive Alignment and At-Grade Profile on 1st

#2B/#3B - New Rock Creek Drive Alignment and Lowered Profile on 1st

Noise

Noise levels along 2nd Street would increase in the future if all through traffic is maintained on this street. With either couplet option, noise levels would be expected to be lower as some of the traffic is diverted to 1st Street. However, the diverted traffic on 1st Street would increase noise levels on that street. It would not be expected that noise levels on 1st Street would increase to the point that noise mitigation would be required (e.g. sound walls or berming).

Hazardous Materials

The only expected impact on hazardous materials would be if Rock Creek Drive were extended south of 2nd Street on the more easterly alignment option, which would route this street through the existing Texaco station and impact its underground gas storage tanks. This extension of Rock Creek Drive would be associated with either couplet option.

ECONOMIC IMPACTS

Table 6 summarizes the economic impacts associated with the different S.R. 14 improvement options. As for the environmental impact assessment, economic impacts are assessed in qualitative terms, drawing on past documentation of the impact of couplet development.

Impact on 2nd Street Businesses

The major impact of the improvements to 2nd Street which could have a negative impact on downtown Stevenson businesses would be the removal of about half of the existing on-street parking on 2nd Street. About 50 off-street parking spaces would be required to replace the on-street parking, which might not provide the same level of

TABLE 6

ECONOMIC IMPACTS

S.R. 14 IMPROVEMENT ALTERNATIVE

EVALUATION CRITERIA	Option #1 - Impr. to 2nd Street	Option #2 - 1-Way Couplet	Option #3 - 2-Way Couplet
Impact on 2nd Street Businesses	Removal of On-Street Parking	Removal of All EB Through Traffic/ On-Street Parking Preserved	Removal of Most of EB Through Traffic/ On-Street Parking Preserved
Impact on 1st Street Businesses	No Change	Added EB Through Traffic/ Added On-Street Parking	Same as for 1-Way Couplet
Redevelopment Potential	No Change	Added Commercial Potential on 1st Street	Same as for 1-Way Couplet

accessibility to businesses on the north side of 2nd Street as exists today.

With either couplet option, on-street parking on 2nd Street would be preserved. The one-way couplet would divert the most traffic to 1st Street (all of the eastbound traffic), while the eastbound through traffic would be expected to divert to 1st Street with the two-way couplet. In discussions with the City of Stevenson and local merchants, eastbound traffic on S.R. 14 tends to stop more to shop or dine in downtown Stevenson.

Impact on 1st Street Businesses

The option of only improving 2nd Street would not impact existing businesses or significantly impact the development potential along 1st Street. With traffic diverted on 1st Street with either couplet option, the accessibility and attractiveness of existing businesses on this street would increase, particularly if on-street parking were provided with the street improvement.

Redevelopment Potential

The improvements along 2nd Street would not serve as a major stimulus for downtown redevelopment. The two-way couplet would appear to have the most impact on downtown redevelopment, by facilitating access to 1st Street at the same time providing access to 2nd Street businesses from both the east and west directions with less traffic congestion. The one-way couplet would stimulate development in the 1st Street corridor.

RIGHT-OF-WAYIMPACTS

Table 7 summarizes the right-of-way impacts associated with the different S.R. 14 improvement options. The right-of-way impacts were assessed through a windshield survey of potentially affected properties as identified from the conceptual road layout

TABLE 7

RIGHT-OF-WAY IMPACTS

S.R. 14 IMPROVEMENT ALTERNATIVE

EVALUATION CRITERIA	Option #1 - Impr. to 2nd Street	Option #2 - 1-Way Couplet	Option #3 - 2-Way Couplet
Land Acquisition Preliminary)	0.2 acres	4.8 acres (#2A) 4.9 acres (#2B) 3.4 acres (#2C) 3.2 spaces (#2D)	Similar to 1-Way couplet (#3A-#3D)
No. of Homes Acquired (Preliminary)	0	4 (#2A) 2 (#2B) 4 (#2C) 6 (#2D)	4 (#3A) 6 (#3B) 4 (#3C) 6 (#3D)
No. of Businesses Acquired (Preliminary)	1	1 (#2A) 1 (#2B) 2 (#2C) 2 (#2D)	Same as for 1-Way Couplet (#3A-#3D)

#1A - New Rock Creek Drive Alignment (new road on east side of Rock Creek Cove)
#1B - Rock Creek Drive Extension (through car wash property)
#2A/#3A - New Rock Creek Drive Alignment and At-Grade Profile on 1st
#2B/#3B - New Rock Creek Drive Alignment and Lowered Profile on 1st
#2C/#3C - Rock Creek Drive Extension and At-Grade Profile on 1st
#2D/#3D - Rock Creek Drive Extension and Lowered Profile on 1st

plans developed for each option. Existing parcel size and ownership were identified from Skamania County Assessor's data. Judgements were then made to the possible extent of property disruption, and the associated right-of-way acquisition and residential/business relocation requirements. The identified right-of-way impacts are subject to refinement when more detailed road layout plans and right-of-way maps are prepared as part of subsequent preliminary engineering of a recommended alternative.

Land Acquisition

The improvements to 2nd Street would have the least right-of-way requirements, primarily associated with the relocation of the Rock Creek Drive approach to 2nd Street. About 0.2 acres would be required if the realignment of Rock Creek Drive through the car wash property would occur, while about 1.0 acre would be required if the more westerly realignment on the east side of Rock Creek Cove were developed.

With the one-way couplet, from 3.4 to 4.9 acres of land would be required to construct the improvement, depending on which Rock Creek Drive realignment and 1st Street profile options are chosen. The most right-of-way acquisition would be associated with extending Rock Creek Drive on the more westerly alignment through the residential area on the east side of Rock Creek Cove, with the lowered profile on 1st Street impacting the residences just west of Columbia Avenue. Similar right-of-way acquisition would be required with the two-way couplet.

Number of Homes/Businesses Acquired

The improvements to 2nd Street would result in the fewest residential/business acquisitions, ranging from one for the minor, more easterly realignment through the car wash property to five for the westerly realignment on the east side of Rock Cove. The couplet options would result in more residential/business relocation, the extent again depending on which Rock Creek Drive realignment and 1st Street profile options are

chosen. The greatest number of residences/businesses which would need to be acquired (8) are associated with the extension of Rock Creek Drive through the car wash and gas station properties, and the lowered profile on 1st Street (similar in both the one-way and two-way couplet options).

COST IMPACTS

Table 8 summarizes the cost impacts associated with the S.R. 14 improvement options. The construction cost estimates are based on rough quantities and 1992 unit prices based on recent WSDOT construction projects, and include a 40% contingency factor. The right-of-way cost estimates are based on assumed per square foot land acquisition costs and the assessed valuation of residential and business buildings impacted. These costs are subject to substantial refinement as more detailed road layout plans are developed in the subsequent preliminary design/environmental study.

Improvements to 2nd Street

This improvement would be the lowest in cost, ranging from $1.6 million with the minor Rock Creek Drive realignment through the car wash property to $2.1 million with the more westerly realignment of Rock Creek Drive.

One-Way Couplet

The one-way couplet would cost about $3.5 million (in 1992 dollars). Most of this cost would be associated with the widening and extension of 1st Street.

Two-Way Couplet

The two-way couplet would cost around $4.0 million (in 1992 dollars). This option is higher in cost than the one-way couplet primarily due to the two added traffic signals.

TABLE 8

COST IMPACTS

S.R. 14 IMPROVEMENT ALTERNATIVE

EVALUATION CRITERIA	Option #1 - Impr. to 2nd Street	Option #2 - 1-Way Couplet	Option #3 - 2-Way Couplet
Construction Cost (Preliminary)	$1.0 mil.	$3.0 mil. (#2A) $2.9 mil. (#2B) $2.9 mil. (#2C) $2.8 mil. (#2D)	$3.3 mil. (#3A) $3.5 mil. (#3B) $3.2 mil. (#3C) $3.3 mil. (#3D)
R-O-W Cost (Preliminary)	$0.06 mil.	$0.63 mil. (#2A) $0.77 mil. (#2B) $0.63 mil. (#2C) $0.77 mil. (#2D)	$0.63 mil. (#3A) $0.73 mil. (#3B) $0.63 mil. (#3C) $0.77 mil. (#3D)
Total Cost (Preliminary)	$1.06 mil.	$3.63 mil. (#2A) $3.67 mil. (#2B) $3.53 mil. (#2C) $3.57 mil. (#2D)	$3.93 mil. (#3A) $4.23 mil. (#3B) $3.83 mil. (#3C) $4.07 mil. (#3D)

1. Construction cost for the railroad underpass access road would be about $0.2 million higher if the Leaven Road connection is selected in lieu of the S.R. 14 connection.

TABLE 8

COST IMPACTS (Cont.)

2. Added church road relocation cost north of 2nd St. ranges from $32,000 (realignment to east) to $45,000 (realignment to west Frank Jones Road) (this is optional improvement for any of the options).

3. Cost for option #1 is lower if transition to two lanes occurs west of Kanaka Creek.

4. Cost for 2nd St. improvement under all three options assumes no reconstruction cost between Seymour and Columbia.

#2A/#3A - New Rock Creek Dr. Alignment/At-Grade Profile on 1st

#2B/#3B - New Rock Creek Dr. Alignment/Lowered Profile on 1st

#2C/#3C - Rock Creek Dr. Extension/At-Grade Profile on 1st

#2D/#3D - Rock Creek Dr. Extension/Lowered Profile on 1st

SUMMARY

The impact assessment of the S.R. 14 improvement options can be summarized as follows:

1. To accommodate long-term traffic demands, either one or two-way couplet required (improvements to 2nd Street only adequate through 1997).

2. Minimal on-street parking displaced with either couplet alternative. Improvements to 2nd Street will eliminate parking on one side of street.

3. Traffic diversion out of core commercial area (2nd Street) greatest with one-way couplet (all eastbound traffic diverted to 1st Street). Most of eastbound through traffic diverted to 1st Street with two-way couplet.

4. There are two options to connect Rock Creek Drive with S.R. 14 on west side of downtown (minor and major realignment options east of existing intersection).

5. Signals warranted today on 2nd Streets at Rock Creek Drive and Russell Avenue. Signals can be preserved with two-way couplet development (with added signal at 1st/Russell required). With one-way couplet, only one signal needed (1st/Russell).

6. Conversion of Russell Avenue to two-way operation desirable with installation of a signal at 2nd/Russell intersection (with improvements to 2nd Street, two-way couplet improvement). Could also occur with one-way couplet.

7. There are two options to maintain second crossing of railroad tracks on east side

of town (maintain existing connection over Kanaka Creek or develop new connection from Leaven Avenue). Leaven Avenue connection provides better transition to railroad grade separation.

8. Minimal construction required to convert from one couplet configuration to the other (two-way to one-way or one-way to two-way) (primarily restriping, signal modifications).

9. Cost for 2nd Street improvements (approx. $1.0 million) much less than for couplet development (approx. $3.5 million for one-way couplet vs. $4 million for two-way couplet).

6.0 SUMMARY OF PUBLIC INVOLVEMENT

The public involvement program conducted as part of the Downtown Stevenson/S.R. 14 Corridor Study focused on two public meetings. The intent of these meetings was to solicit public review and comment of the S.R. 14 improvement issues and options which should be addressed in the study, and the road layout plans developed for and the impact assessment conducted on the different options. A third public meeting was held at the end of the study to present a recommended option to the Stevenson Planning Commission and City Council for approval so that this improvement could be addressed in further detail by WSDOT in the subsequent preliminary design/environmental stud

The detailed minutes to the first two public meetings are presented in Appendix C. Also included is a letter from the Stevenson Business Association in support of a two-way couplet. A summary of the comments expressed at the public meetings is discussed below.

FIRST PUBLIC MEETING

The first public meeting was held on Tuesday, June 30, 1992 at the Skamania County Courthouse Annex. About 50 people attended the meeting. This was intended to be an introductory meeting. First, a representative from the Stevenson Planning Commission identified the purpose of the study, followed by the consultant Project Manager (from David Evans and Associates) presenting traffic data identifying the need for improvements to S.R. 14, and three preliminary improvement options - improvements to 2nd Street, one-way couplet and two-way couplet. Finally, the results of the previous Stevenson Downtown Revitalization Study were presented by a representative from Walker & Macy - the consultant to the City of Stevenson on that

study - to define an overall downtown development framework which needs to be acknowledged in the S.R. 14 corridor study.

Once the presentations were completed, the meeting was divided into small group sessions to discuss issues and options in greater detail. The public confirmed the options to be studied. There were feelings that a realignment of the Rock Creek Drive approach to 2nd Street was appropriate, as well as traffic signals at this location and at the 2nd/Russell Avenue intersection. There was a concern about any elimination of on-street parking, and a feeling that it could be appropriate to convert Russell Avenue to two-way operation between 1st and 2nd Streets, particularly if a signal were installed at the 2nd/Russell intersection. There were also concerns about safety for pedestrians crossing 2nd Street, and the disruption caused by truck traffic through downtown.

The initial opinion on the two couplet options was that the one-way couplet would have a negative impact on existing businesses on 2nd Street, and that the two-way couplet might be a good compromise solution, as it would divert some traffic off 2nd Street yet preserve two-way traffic operation on 2nd Street. There was also some concern on the ability of WSDOT to finance and mobilize to construct an improvement to S.R. 14 through Stevenson.

SECOND PUBLIC MEETING

The second public meeting was held on Tuesday, August 13, 1992, again at the Skamania County Courthouse Annex. About 20 people attended the meeting. The meeting first involved a presentation by the consultant of the road layout plans developed for the S.R. 14 improvement options, and the results of the impact assessment. After the presentation, the meeting broke out into small group sessions, to review the layout plans and impact assessment in further detail. The intent was to try

to reach some level of consensus on a recommended improvement.

At the end of the small group sessions, it appeared that, for the group present, the two-way couplet was the preferred option, as it would serve the longer term traffic demands in the community, and have less disruption on 2nd Street businesses than with a one-way couplet. There was a consensus that the couplet should be developed now, and that an interim lower cost improvement to 2nd Street was not most cost-effective. There was also the feeling that the two-way couplet still preserved the flexibility to be converted to a one-way couplet in the long-term if business development along 1st Street occurred as a result of the improvement of 1st Street and incorporation into a couplet treatment.

While there was a consensus on the two-way couplet, there was no agreement on how Rock Creek Drive should tie into 2nd and 1st Streets on the west end of downtown. There was also differing opinion by property owners on the east side of downtown as to how 1st Street should be connected to 2nd Street. The owners of the parcel on the south side of 2nd Street east of Kanaka Creek did not want the alignment to bisect their property, while a motel owner on the north side of S.R. 14 in that area preferred the connection shown in the layout plan as it would facilitate access to his property.

Subsequent to the second public meeting, the owners of the property on the south side of S.R. 14 at Kanaka Creek presented an alternate alignment for 1st Street in that area, to minimize impact on their property (see Appendix D). 1st Street would be aligned in the railroad right-of-way on the south side of the parcel. This concept was reviewed by the consultant with the following impacts identified:

1. Would require right-of-way from properties north of 1st Street from Leavens Street to Kanaka Creek.

2. Can not provide access from the new 1st Street to the properties north of the existing 1st Street between Leavens Street and Columbia Avenue due to a 20 foot elevation difference.

3. Columbia Avenue connection between 1st and 2nd Streets would be very steep (in excess of 10%).

4. Elevation difference between Columbia Avenue and the railroad underpass at Kanaka Creek is about 50 feet, with a horizontal distance of about 700 feet. Therefore, the 1st Street grade must start lowering at Leavens Street, requiring a 6% grade.

5. 1st Street extension should be two-way between Kanaka Creek to the existing Lutheran church access road.

6. The Lutheran church access road should not be moved to the east with a two-way design because 1st and 2nd Street traffic would be merging at this location.

For the above reasons, the alternate 1st Street alignment proposal is not considered feasible, given the mapping available at this time.

7.0 CONCLUSIONS AND RECOMMENDATIONS

RECOMMENDED IMPROVEMENT

Based on the results of the impact assessment and the input received at the first two public meetings, it appears that the two-way couplet improvement through downtown Stevenson using 1st and 2nd Street should be pursued. There is no apparent community consensus at this time on the specific Rock Creek Drive realignment option, or whether the profile on 1st Street should be lowered at the east end of downtown to facilitate the transition to 2nd Street. These options should undergo further study in the subsequent preliminary design/environmental study to be conducted by WSDOT.

STAGING OPPORTUNITIES

There is an opportunity to stage the improvements to S.R. 14 through downtown Stevenson when implementing the two-way couplet option. Signals at the Rock Creek Drive and Russell Avenue intersections on 2nd Street are warranted based on existing conditions, and could be installed as an initial improvement, along with the relocation of Rock Creek Drive north of 2nd Street. The conversion of Russell Avenue to two-way operation between 2nd and 1st Streets could also occur initially, associated with the installation of a signal at the 2nd/Russell intersection.

FURTHER STUDIES

As previously mentioned, more detailed engineering and impact assessment of the recommended alternative and options at the east and west ends of downtown Stevenson will be required in the preliminary design/environmental study. A key component of the added design analysis will be obtaining up to date topographic and right-of-way

mapping, to serve as a base for developing refined road layout plans and profiles.

APPENDIX A

LEVEL OF SERVICE DEFINITIONS

UNSIGNALIZED LEVEL OF SERVICE DEFINITION

LEVEL OF SERVICE	DESCRIPTION
A	Operations with reserve capacity greater than 400 passenger cars per hour; little or no delay.
B	Operations with reserve capacity of 300 - 399 passenger cars per hour; short traffic delays.
C	Operations with reserve capacity of 200 - 299 passenger cars per hour; average traffic delay.
D	Operations with reserve capacity of 100 - 199 passenger cars per hour; long traffic delays.
E	Operations with reserve capacity of 0 - 99 passenger cars per hour; long traffic delays.
F	Operations where demand volume exceeds capacity of lane, causing extreme delays and queuing.

Source: Transportation Research Board, *Highway Capacity Manual, Special Report 209*, National Research Council, Washington, D.C., 1985.

SIGNALIZED LEVEL OF SERVICE DEFINITION

LEVEL OF SERVICE	Description
A	Operations with very low delay - less than 5 seconds per vehicle; occurs when most vehicles arrive during green phase, with most vehicles not stopping at all; short cycle lengths may contribute to low delay.
B	Operations with delay from 5.1 to 15 seconds per vehicle; occurs with good progression and/or short cycle lengths; more vehicles stop than with LOS A.
C	Operations with delay from 15.1 to 25 seconds per vehicle; occurs with fair progression and/or longer cycle lengths; individual cycle failures may begin to appear at this level; the number of vehicles stopping is significant at this level, although many vehicles still pass through the intersection without stopping.
D	Operations with delay from 25.1 to 40 seconds per vehicle; at this LOS, the influence of congestion becomes more noticeable; longer delays result from a combination of unfavorable progression, long cycle lengths, or high volume/capacity (v/c) ratios; many vehicles stop, and the proportion of vehicles not stopping declines; individual cycle failures are noticeable.
E	Operations with a delay of 40.1 to 60 seconds per vehicle; upper limit reflects capacity of intersection; high delay indicates poor progression, long cycle lengths, and high v/c ratios; individual cycle failures are frequent.
F	Operations with delay in excess of 60 seconds per vehicle; condition occurs from over-saturation, when arrival flow rates exceed capacity of the intersection; may also occur with high v/c ratios less than 1.0 with many individual cycle failures; poor progression and long cycle lengths may also contribute to high delay.

Source: Transportation Research Board, *Highway Capacity Manual, Special Report 209*, National Research Council, Washington, D.C., 1985.

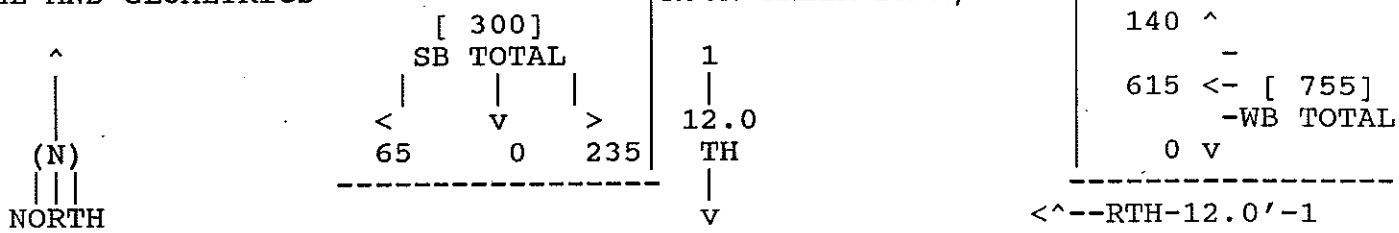
APPENDIX B

INTERSECTION OPERATIONS ANALYSIS COMPUTER OUTPUTS

INPUT WORKSHEET

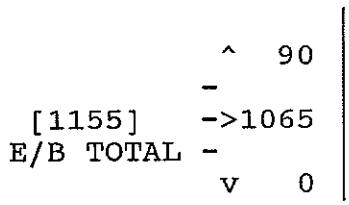
Intersection:2ND STREET & ROCK CREEK DR. Date:2010 IMPROVEMENTS
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

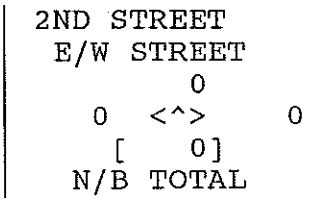
VOLUME AND GEOMETRICS



1-12.0'-LT---^
1-12.0'--TH--->

IDENTIFY IN DIAGRAM
1.Volumes
2.Lanes,lane widths
3.Movements by lane
4.Parking locations
5.Bay storge lngths
6.Islands
7.Bus stops



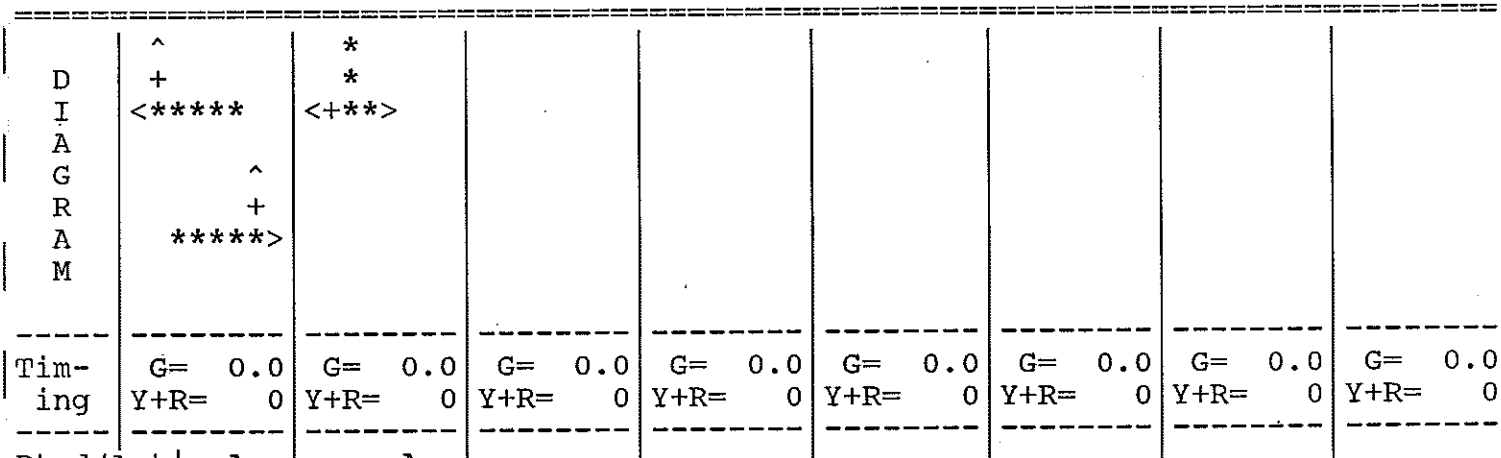


TRAFFIC AND ROADWAY CONDITIONS

Appr	Grd. (%)	% HV	Adj.Pkg.Lane Y/N	Adj.Pkg.Lane Nm	Buses (Nb)	PHF	Cnf.Ped (pd/hr)	Pedstrn Button Y/N	Pedstrn Button Mn.Time	Arr. Type
EB	+0.0	5.0	N	0	0	0.90	0	N	0	3
WB	+0.0	6.0	N	0	0	0.90	10	Y	6	3
NB	+0.0	0.0	N	0	0	0.00	10	Y	12	0
SB	+0.0	2.0	N	0	0	0.90	10	Y	12	3

Grade:+up,-down Nb:buses stopping/hr Min.Timing: min.green for
HV:veh. > 4 whls PHF:peak-hour factor pedestrian crossing
Nm:pkg.maneuvers/hr Cnf.Peds:Cnflctng peds/hr Arr.Type: Type 1-5

PHASING



Timing	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0
Ptmd/Act	A	A						

Protected turns: ****^ oooo^ | Permitted turns: ++++^ | Cycle Length 100 Sec

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

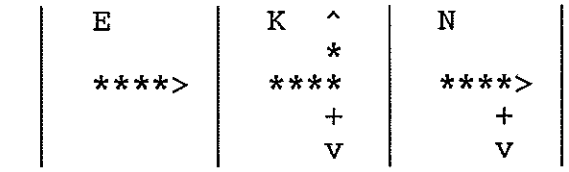
Intersection:2ND STREET & ROCK CREEK DR. Date:2010 IMPROVEMENTS
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

CAPACITY ANALYSIS WORKSHEET

LANE GROUP 1 Appr.	2 Mvmt.	3 Adjusted Flow Rate v (vph)	4 Ad.Sat Flw.Rt s (vphg)	5 Flow Ratio v/s 3/4	6 Green Ratio g / C	7 Ln.Grp Capac. c,vph 4x6	8 v/C Ratio X 3/7	9 Crit. ? Lane Group
	B	100 -	471	0.212 -	0.736	347	0.288	-
EB	E	1183 -	1755	0.674 -	0.736	1292	0.916	***
WB	N	839 -	1526	0.550 -	0.736	1123	0.747	-
NB								
SB	K	333 -	1782	0.187 -	0.204	364	0.916	***

Cycle Length= 100.0sec, Lost Time/Cycle,L= 6.0sec, S(v/s)ci= 0.861, Xc=0.916

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]



CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

Intersection:2ND STREET & ROCK CREEK DR. Date:2010 IMPROVEMENTS
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

LEVEL-OF-SERVICE WORKSHEET

1 LANE GROUP	2 Mv	First Term Delay: 3 v/c Ratio X	4 Green Ratio g/C	5 Cycle Length C (sec)	6 Delay d1 sec/veh	Second Term Delay: 7 Lane Group Cap,c (vph)	8 Delay d2 sec/veh	9 Prgrsn Factor PF T.9-13	10 Lane Gp Delay sec/veh (6+8)*9	Tot.Delay & LOS: 11 Ln Gp LOS 9-1	12 Apprch Delay sec/veh	13 Apr LOS Tbl 9-1
	B	0.288	0.736	100.0	3.36	347	0.13	1.00	3.50	A		
B	E	0.916	0.736	100.0	8.13	1292	7.49	0.85	13.28	B	12.51	B
B	N	0.747	0.736	100.0	5.88	1123	1.95	0.85	6.66	B	6.66	B
B											0.00	*
SB	K	0.916	0.204	100.0	29.61	364	19.38	0.85	41.64	E	41.64	E

Intersection Delay 14.46 sec/veh, Intersection LOS B Table 9.1

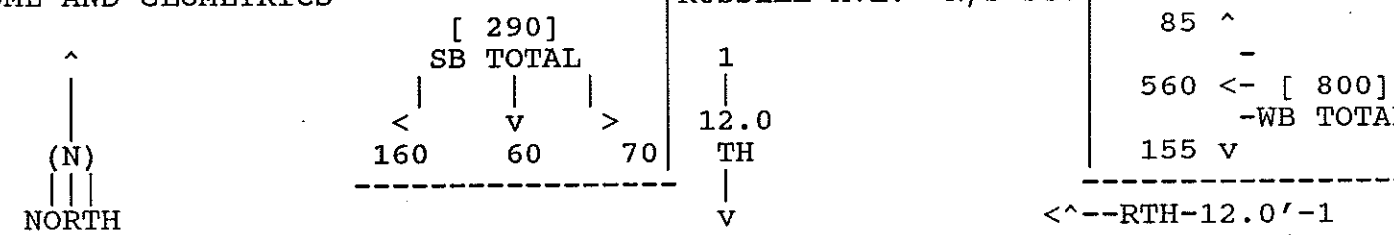
LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

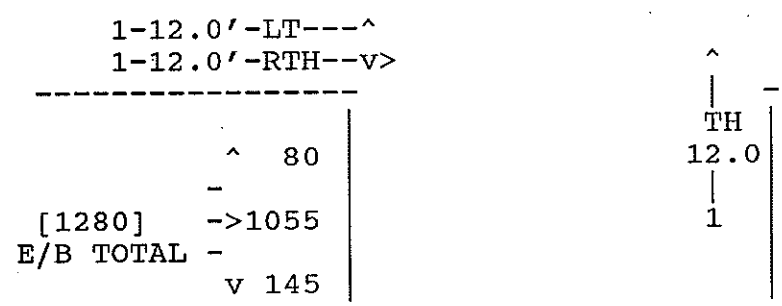
INPUT WORKSHEET

Intersection:2ND STREET & RUSSELL AVE. Date:2010 IMPROVEMENTS
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

VOLUME AND GEOMETRICS



IDENTIFY IN DIAGRAM
1.Volumes
2.Lanes,lane widths
3.Movements by lane
4.Parking locations
5.Bay storge lngths
6.Islands
7.Bus stops

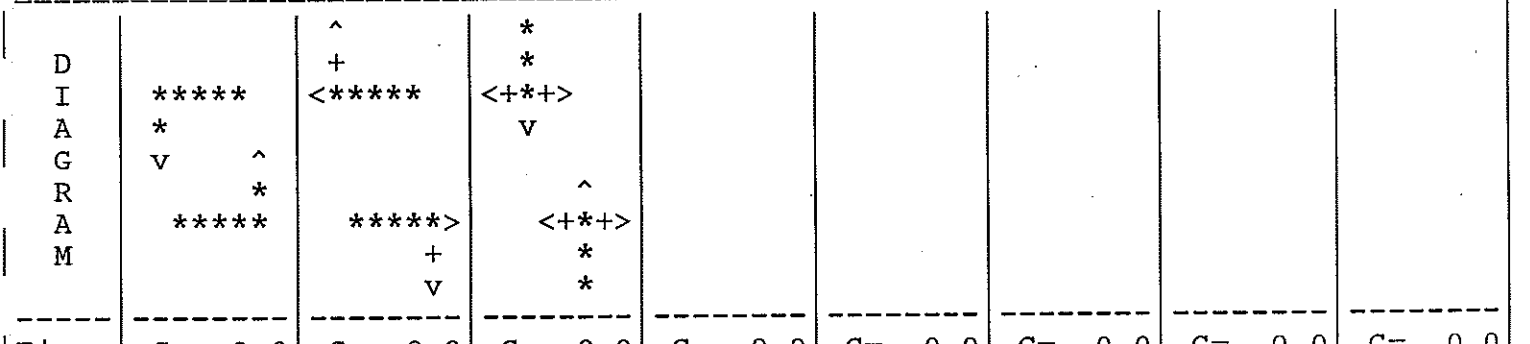


TRAFFIC AND ROADWAY CONDITIONS

Appr	Grd. (%)	% HV	Adj.Pkg.Lane Y/N	Adj.Pkg.Lane Nm	Buses (Nb)	PHF	Cnf.Ped (pd/hr)	Pedstrn Button Y/N	Pedstrn Button Mn.Time	Arr. Type
EB	+0.0	5.0	N	0	0	0.90	10	Y	9	3
WB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
NB	+0.0	1.0	N	0	0	0.90	10	Y	12	3
SB	+0.0	1.0	N	0	0	0.90	10	Y	12	3

Grade:+up,-down Nb:buses stopping/hr Min.Timing: min.green for pedestrian crossing
HV:veh. > 4 whls PHF:peak-hour factor
Nm:pkg.maneuvers/hr Cnf.Peds:Cnflctng peds/hr Arr.Type: Type 1-5

PHASING



Timing	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0
Ptmd/Act	A	A	A					

Protected turns: ****^ oooo^ | Permitted turns: ++++^ | Cycle Length 100 Sec

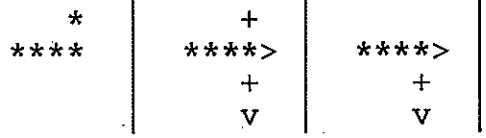
Intersection:2ND STREET & RUSSELL AVE. Date:2010 IMPROVEMENTS
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

CAPACITY ANALYSIS WORKSHEET

LANE GROUP		3		4	5		6	7	8	9
1 Appr.	2 Mvmt.	Adjusted Flow Rate v (vph)		Ad.Sat Flw.Rt s (vphg)	Flow Ratio v/s 3/4		Green Ratio g / C	Ln.Grp Capac. c,vph 4x6	v/C Ratio X 3/7	Crit. ? Lane Group
	A	89	-	1667	0.053	-	0.084	141	0.633	-
EB	N	1333	-	1722	0.774	-	0.630	1084	1.229	***
	A	172	-	1659	0.104	-	0.084	140	1.229	***
WB	N	716	-	1711	0.419	-	0.630	1077	0.665	-
NB	I	179	-	888	0.201	-	0.196	174	1.028	-
SB	I	323	-	1341	0.241	-	0.196	263	1.229	***

Cycle Length= 100.0sec, Lost Time/Cycle,L= 9.0sec, S(v/s)ci= 1.119, Xc=1.229

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]



CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

Intersection:2ND STREET & RUSSELL AVE. Date:2010 IMPROVEMENTS
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

LEVEL-OF-SERVICE WORKSHEET

LANE GROUP		First Term Delay				Second Term Delay				Tot.Delay & LOS		
		3	4	5	6	7	8	9	10	11	12	13
		v/c Ratio X	Green Ratio g/C	Cycle Length C (sec)	Delay d1 sec/veh	Lane Group Cap,c (vph)	Delay d2 sec/veh	Prgrsn Factor PF T.9-13	Lane Gp Delay sec/veh (6+8)*9	Ln Gp LOS 9-1	Apprch Delay sec/veh	Apr LOS Tbl 9-1
1 p	2 Mv											
	A	0.633	0.084	100.0	33.66	141	6.07	1.00	39.72	D		
B	N	1.229	0.630	100.0	23.06	1084	129.39	0.85	129.58	F	123.95	F
	A	1.229	0.084	100.0	35.54	140	174.76	1.00	210.30	F		
B	N	0.665	0.630	100.0	8.96	1077	1.10	0.85	8.55	B	47.63	E
B	I	1.028	0.196	100.0	30.77	174	61.64	0.85	78.55	F	78.55	F
SB	I	1.229	0.196	100.0	32.36	263	153.19	0.85	157.72	F	157.72	F

Intersection Delay 100.84 sec/veh, Intersection LOS F Table 9.1

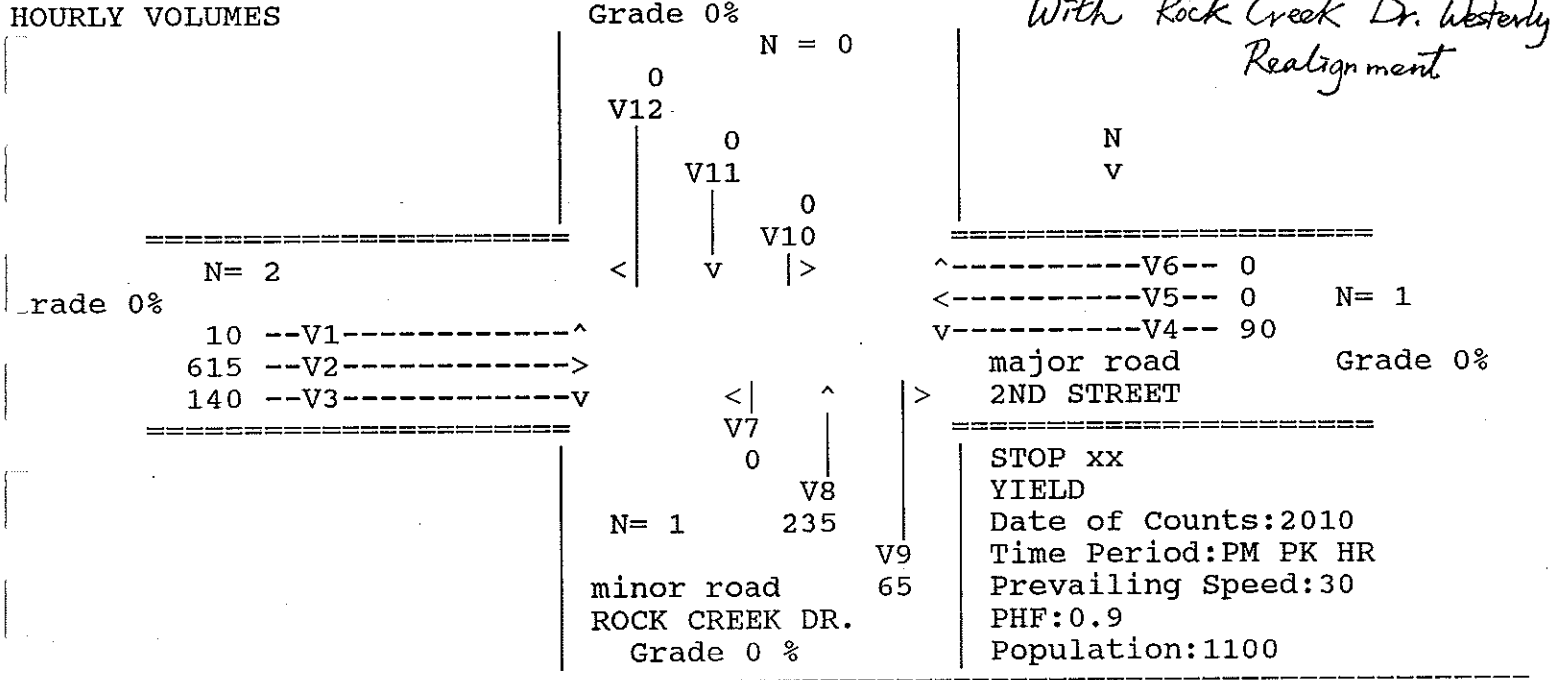
LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

OCATION:2ND STREET & ROCK CREEK DR. NAME:ONE-WAY COUPLET

With Rock Creek Dr. Westerly Realignment

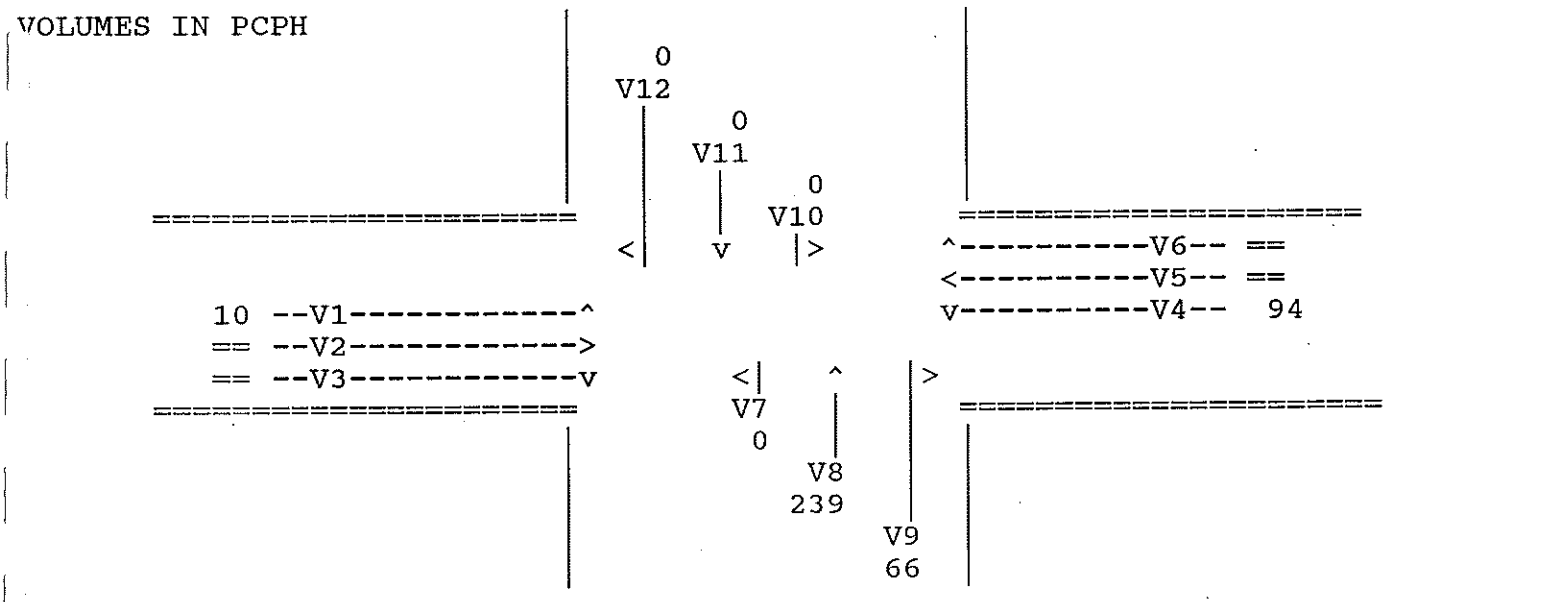
HOURLY VOLUMES



VOLUME ADJUSTMENTS

Movement no.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	10	615	140	90	0	0	0	235	65	0	0	0
Vol(pcph),Tab.10.1	10	XXXX	XXXX	94	XXXX	XXXX	0	239	66	0	0	0

VOLUMES IN PCPH



LOCATION:2ND STREET & ROCK CREEK DR. NAME:ONE-WAY COUPLET

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
onflicting Flows, Vc	1/2 V3+V2=Vc9 70+ 308= 378 vph	1/2 V6+V5=Vc12 0+ 0= 0 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp9 = 719 pcph	Cp12 = 1000 pcph
of Cp utilized	(V9/Cp9)x100= 9.2%	(V12/Cp12)x100= 0%
Impedance Factor, P (Fig.10.5)	P9= .94	P12= 1
Actual Capacity, Cm	Cm9=Cp9= 719 pcph	Cm12=Cp12= 1000 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
onflicting Flows, Vc	V3+V2=Vc4 140+ 615= 755 vph	V6+V5=Vc1 0+ 0= 0 vph
Critical Gap, Tc (Tab.10.2)	5 (secs.)	5 (secs.)
otential Capacity,Cp(Fig10.3)	Cp4 = 532 pcph	Cp1 = 1000 pcph
of Cp utilized	(V4/Cp4)x100= 17.7%	(V1/Cp1)x100= 1%
Impedance Factor, P (Fig.10.5)	P4= .88	P1= .99
ctual Capacity, Cm	Cm4=Cp4= 532 pcph	Cm1=Cp1= 1000 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
onflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8 70+ 615+ 10+ 0+ 0+ 90= 785 vph	.5V6+V5+V4+V3+V2+V1=Vc11 0+ 0+ 90+ 140+ 615+ 10= 855 vph
ritical Gap, Tc (Tab.10.2)	6 (secs.)	6 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 368 pcph	Cp11 = 335 pcph
of Cp utilized	(V8/Cp8)x100= 64.9%	(V11/Cp11)x100= 0%
mpedance Factor, P (Fig.10.5)	P8= .43	P11= 1
Actual Capacity, Cm	Cm8=Cp8xP1xP4 321= 368x.99x.88pcph	Cm11=Cp11xP1xP4 292= 335x.99x.88pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
onflicting Flows, Vc	Vc8(step3)+V11+V12=Vc7 785+ 0+ 0= 785vph	Vc11(step3)+V8+V9=Vc10 855+ 235+ 65= 1155vph
ritical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
otential Capacity,Cp(Fig10.3)	Cp7 = 318 pcph	Cp10 = 184 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12 = 318x.99x.88x 1x 1 = 277 pcph	Cm10=Cp10xP4xP1xP8xP9 = 184x.88x.99x.43x.94 = 65 pcph

LOCATION:2ND STREET & ROCK CREEK DR. NAME:ONE-WAY COUPLET

SHARED LANE CAPACITY
APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	0	277	365	277	60	C	E
8	239	321	365	82	60	E	E
9	66	719	365	653	60	A	E

APPROACH MOVEMENTS 10,11,12

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	0	65		65		E	
11	0	292		292		C	
12	0	1000		1000		A	

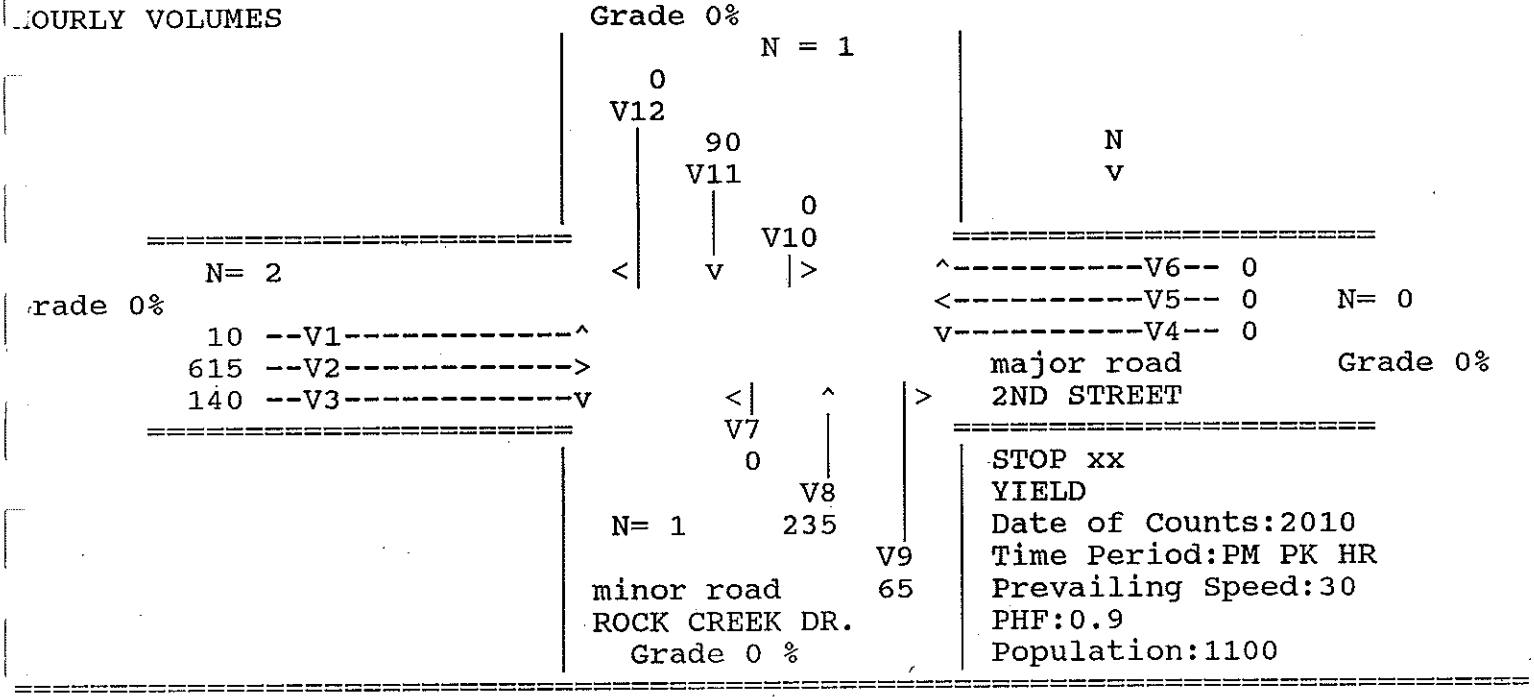
MAJOR STREET LEFT TURNS 1,4

MOVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	10	1000	990	A
4	94	532	438	A

COMMENTS:

LOCATION:2ND STREET & ROCK CREEK DR. NAME:ONE-WAY COUPLET

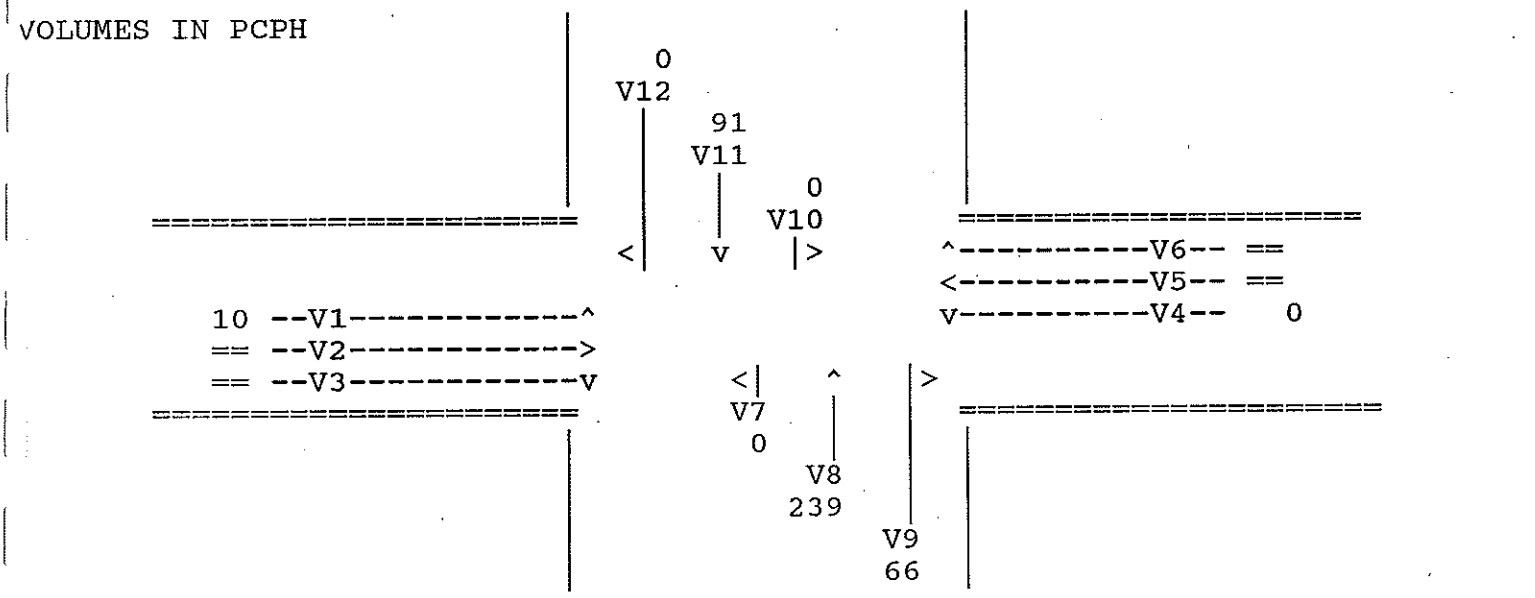
HOURLY VOLUMES



VOLUME ADJUSTMENTS

Movement no.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	10	615	140	0	0	0	0	235	65	0	90	0
Vol(pcph),Tab.10.1	10	XXXX	XXXX	0	XXXX	XXXX	0	239	66	0	91	0

VOLUMES IN PCPH



LOCATION:2ND STREET & ROCK CREEK DR. NAME:ONE-WAY COUPLET

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
onflicting Flows, Vc	1/2 V3+V2=Vc9 70+ 308= 378 vph	1/2 V6+V5=Vc12 0+ 0= 0 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
otential Capacity,Cp(Fig10.3)	Cp9 = 719 pcph	Cp12 = 1000 pcph
of Cp utilized	(V9/Cp9)x100= 9.2%	(V12/Cp12)x100= 0%
mpedance Factor, P (Fig.10.5)	P9= .94	P12= 1
Actual Capacity, Cm	Cm9=Cp9= 719 pcph	Cm12=Cp12= 1000 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
onflicting Flows, Vc	V3+V2=Vc4 140+ 615= 755 vph	V6+V5=Vc1 0+ 0= 0 vph
Critical Gap, Tc (Tab.10.2)	5 (secs.)	5 (secs.)
otential Capacity,Cp(Fig10.3)	Cp4 = 532 pcph	Cp1 = 1000 pcph
of Cp utilized	(V4/Cp4)x100= 0%	(V1/Cp1)x100= 1%
Impedance Factor, P (Fig.10.5)	P4= 1	P1= .99
ctual Capacity, Cm	Cm4=Cp4= 532 pcph	Cm1=Cp1= 1000 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
Conflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8 70+ 615+ 10+ 0+ 0+ 0= 695 vph	.5V6+V5+V4+V3+V2+V1=Vc11 0+ 0+ 0+ 140+ 615+ 10= 765 vph
ritical Gap, Tc (Tab.10.2)	6 (secs.)	6 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 418 pcph	Cp11 = 379 pcph
of Cp utilized	(V8/Cp8)x100= 57.2%	(V11/Cp11)x100= 24%
mpedance Factor, P (Fig.10.5)	P8= .51	P11= .82
Actual Capacity, Cm	Cm8=Cp8xP1xP4 414= 418x.99x 1pcph	Cm11=Cp11xP1xP4 375= 379x.99x 1pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
onflicting Flows, Vc	Vc8(step3)+V11+V12=Vc7 695+ 90+ 0= 785vph	Vc11(step3)+V8+V9=Vc10 765+ 235+ 65= 1065vph
ritical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
otential Capacity,Cp(Fig10.3)	Cp7 = 318 pcph	Cp10 = 211 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12 = 318x.99x 1x.82x 1 = 258 pcph	Cm10=Cp10xP4xP1xP8xP9 = 211x 1x.99x.51x.94 = 100 pcph

OCATION:2ND STREET & ROCK CREEK DR. NAME:ONE-WAY COUPLET

SHARED LANE CAPACITY
APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	0	258	456	258	151	C	D
8	239	414	456	175	151	D	D
9	66	719	456	653	151	A	D

APPROACH MOVEMENTS 10,11,12

OVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	0	100	375	100	284	D	C
11	91	375	375	284	284	C	C
12	0	1000	375	1000	284	A	C

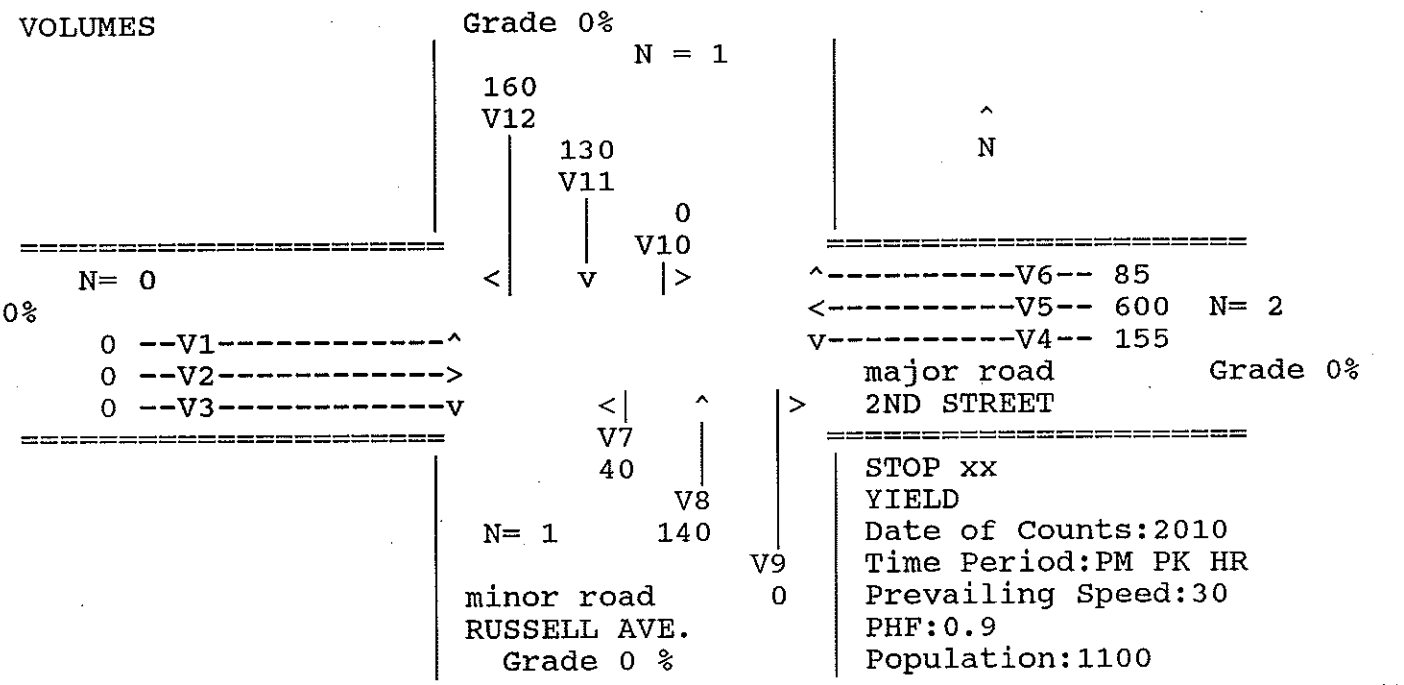
MAJOR STREET LEFT TURNS 1,4

OVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	10	1000	990	A
4	0	532	532	A

COMMENTS:

LOCATION:2ND ST. & RUSSELL AVE. NAME:ONE-WAY COUPLET

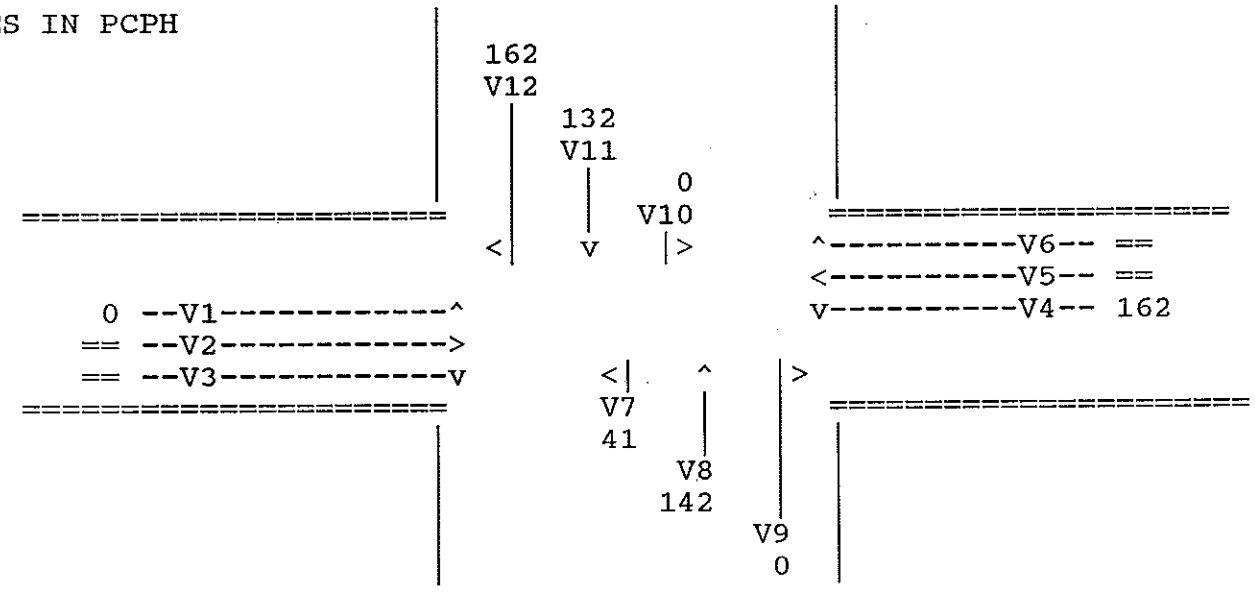
HOURLY VOLUMES



VOLUME ADJUSTMENTS

Movement no.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	0	0	0	155	600	85	40	140	0	0	130	160
Vol(pcph),Tab.10.1	0	XXXX	XXXX	162	XXXX	XXXX	41	142	0	0	132	162

VOLUMES IN PCPH



LOCATION:2ND ST. & RUSSELL AVE. NAME:ONE-WAY COUPLET

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
onflicting Flows, Vc	1/2 V3+V2=Vc9 0+ 0= 0 vph	1/2 V6+V5=Vc12 43+ 300= 343 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
otential Capacity,Cp(Fig10.3)	Cp9 = 1000 pcph	Cp12 = 748 pcph
of Cp utilized	(V9/Cp9)x100= 0%	(V12/Cp12)x100= 21.7%
Impedance Factor, P (Fig.10.5)	P9= 1	P12= .84
Actual Capacity, Cm	Cm9=Cp9= 1000 pcph	Cm12=Cp12= 748 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
onflicting Flows, Vc	V3+V2=Vc4 0+ 0= 0 vph	V6+V5=Vc1 85+ 600= 685 vph
Critical Gap, Tc (Tab.10.2)	5 (secs.)	5 (secs.)
otential Capacity,Cp(Fig10.3)	Cp4 = 1000 pcph	Cp1 = 575 pcph
% of Cp utilized	(V4/Cp4)x100= 16.2%	(V1/Cp1)x100= 0%
Impedance Factor, P (Fig.10.5)	P4= .89	P1= 1
ctual Capacity, Cm	Cm4=Cp4= 1000 pcph	Cm1=Cp1= 575 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
Conflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8 0+ 0+ 0+ 85+ 600+ 155= 840 vph	.5V6+V5+V4+V3+V2+V1=Vc11 43+ 600+ 155+ 0+ 0+ 0= 798 vph
Critical Gap, Tc (Tab.10.2)	6 (secs.)	6 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 342 pcph	Cp11 = 361 pcph
of Cp utilized	(V8/Cp8)x100= 41.5%	(V11/Cp11)x100= 36.6%
mpedance Factor, P (Fig.10.5)	P8= .66	P11= .7
Actual Capacity, Cm	Cm8=Cp8xP1xP4 304= 342x 1x.89pcph	Cm11=Cp11xP1xP4 321= 361x 1x.89pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
onflicting Flows, Vc	Vc8(step3)+V11+~~V12~~=Vc7 840+ 130+ ~~160~~= ~~1130~~ 550 vph	Vc11(step3)+V8+V9=Vc10 798+ 140+ 0= 938vph
Critical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
otential Capacity,Cp(Fig10.3)	Cp7 = ~~191~~ 450 pcph	Cp10 = 255 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12 = ~~191~~ 450x 1x.89x .7x.84 = ~~100~~ 235 pcph	Cm10=Cp10xP4xP1xP8xP9 = 255x.89x 1x.66x 1 = 150 pcph

OCATION:2ND ST. & RUSSELL AVE. NAME:ONE-WAY COUPLET

SHARED LANE CAPACITY
APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	41	~~100~~ 235	~~209~~ 285	59	~~26~~ 102	E	~~E~~ D
8	142	304	~~209~~ 285	162	~~26~~ 102	D	~~E~~ D
9	0	1000	~~209~~ 285	1000	~~26~~ 102	A	~~E~~ D

APPROACH MOVEMENTS 10,11,12

OVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	0	150	468	150	174	D	D
11	132	321	468	189	174	D	D
12	162	748	468	586	174	A	D

MAJOR STREET LEFT TURNS 1,4

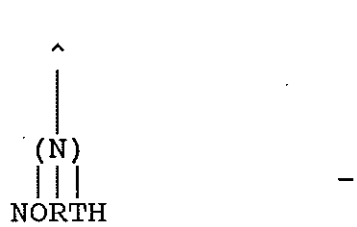
OVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	0	575	575	A
4	162	1000	838	A

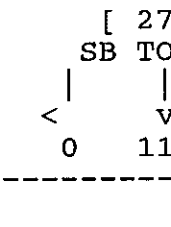
COMMENTS:

INPUT WORKSHEET

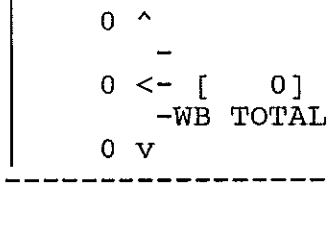
Intersection:1ST STREET & RUSSELL AVE. Date:2010 ONE-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

VOLUME AND GEOMETRICS

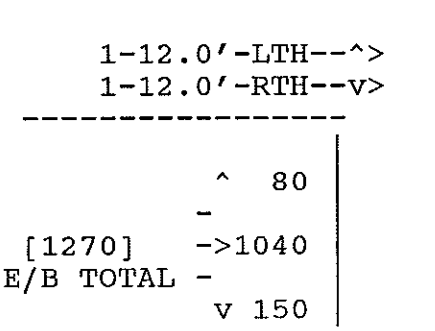


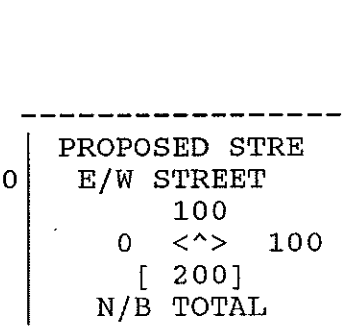


RUSSELL AVE. N/S ST.



IDENTIFY IN DIAGRAM
1.Volumes
2.Lanes,lane widths
3.Movements by lane
4.Parking locations
5.Bay storge lngths
6.Islands
7.Bus stops



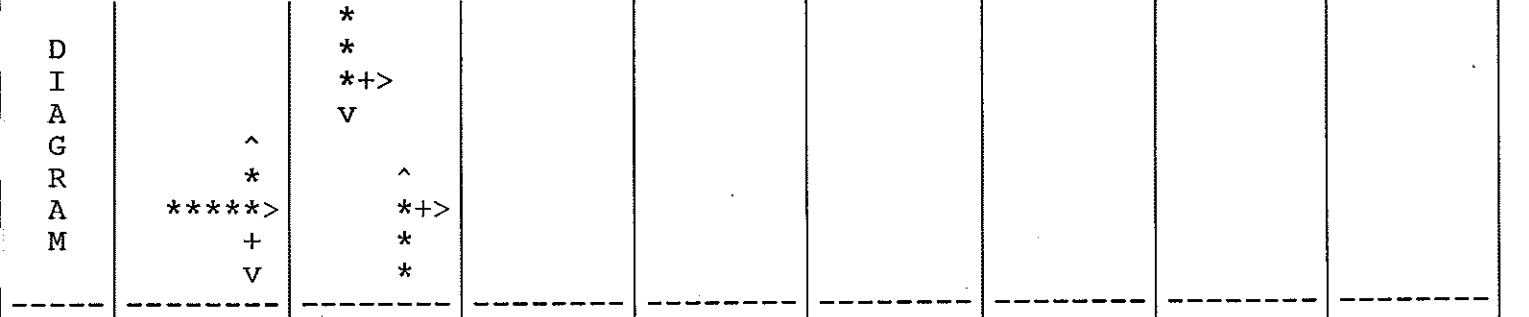


TRAFFIC AND ROADWAY CONDITIONS

Appr	Grd. (%)	% HV	Adj.Pkg.Lane Y/N	Adj.Pkg.Lane Nm	Buses (Nb)	PHF	Cnf.Ped (pd/hr)	Pedstrn Button Y/N	Pedstrn Button Mn.Time	Arr. Type
EB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
WB	+0.0	0.0	N	0	0	0.00	10	Y	9	0
NB	+0.0	2.0	N	0	0	0.90	10	Y	10	3
SB	+0.0	2.0	N	0	0	0.90	10	Y	10	3

Grade:+up,-down Nb:buses stopping/hr Min.Timing: min.green for pedestrian crossing
HV:veh. > 4 whls PHF:peak-hour factor Arr.Type: Type 1-5
Nm:pkg.maneuvers/hr Cnf.Peds:Cnflctng peds/hr

PHASING



Timing	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0
Ptmd/Act	A	A						

Protected turns: ****^ oooo^ | Permitted turns: ++++^ | Cycle Length 100 Sec

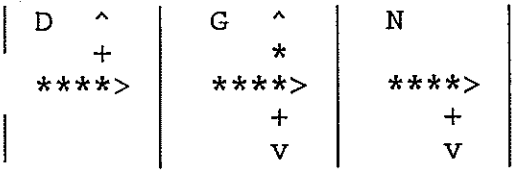
Intersection:1ST STREET & RUSSELL AVE. Date:2010 ONE-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

CAPACITY ANALYSIS WORKSHEET

LANE GROUP 1 Appr.	2 Mvmt.	3 Adjusted Flow Rate v (vph)	4 Ad.Sat Flw.Rt s (vphg)	5 Flow Ratio v/s 3/4	6 Green Ratio g / C	7 Ln.Grp Capac. c,vph 4x6	8 v/C Ratio X 3/7	9 Crit. ? Lane Group
EB	G	1483 -	3396	0.437 -	0.602	2044	0.726	***
WB								
NB	N	222 -	1479	0.150 -	0.338	500	0.444	-
SB	D	300 -	1222	0.245 -	0.338	413	0.726	***

Cycle Length= 100.0sec, Lost Time/Cycle,L= 6.0sec, S(v/s)ci= 0.682, Xc=0.726

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]



CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

Intersection:1ST STREET & RUSSELL AVE. Date:2010 ONE-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

LEVEL-OF-SERVICE WORKSHEET

LANE GROUP		First Term Delay				Second Term Delay				Tot.Delay & LOS		
1	2	3	4	5	6	7	8	9	10	11	12	13
	Mv	v/c Ratio X	Green Ratio g/C	Cycle Length C (sec)	Delay d1 sec/veh	Lane Group Cap,c (vph)	Delay d2 sec/veh	Prgrsn Factor PF T.9-13	Lane Gp Delay sec/veh (6+8)*9	Ln Gp LOS 9-1	Apprch Delay sec/veh	Apr LOS Tbl 9-1
3	G	0.726	0.602	100.0	10.70	2044	0.93	0.85	9.88	B	9.88	B
3											0.00	*
3	N	0.444	0.338	100.0	19.58	500	0.43	0.85	17.01	C	17.01	C
SB	D	0.726	0.338	100.0	22.06	413	4.29	0.85	22.40	C	22.40	C

Intersection Delay 12.54 sec/veh, Intersection LOS B Table 9.1

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

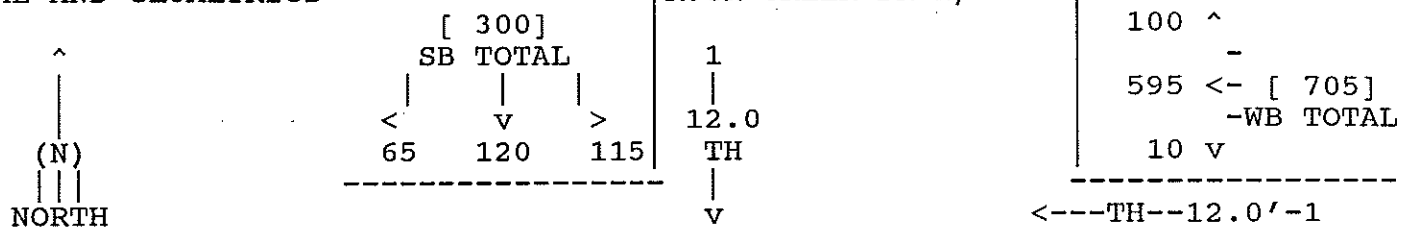
```
D  ^      G  ^      N
   +         *
****>     ****>     ****>
          +         +
          v         v
```

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

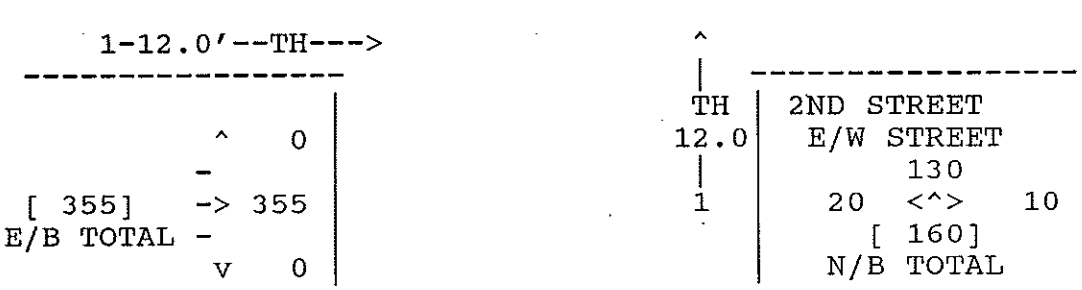
INPUT WORKSHEET

Intersection:2ND STREET & ROCK CREEK DR. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

VOLUME AND GEOMETRICS



IDENTIFY IN DIAGRAM
1.Volumes
2.Lanes,lane widths
3.Movements by lane
4.Parking locations
5.Bay storge lngths
6.Islands
7.Bus stops

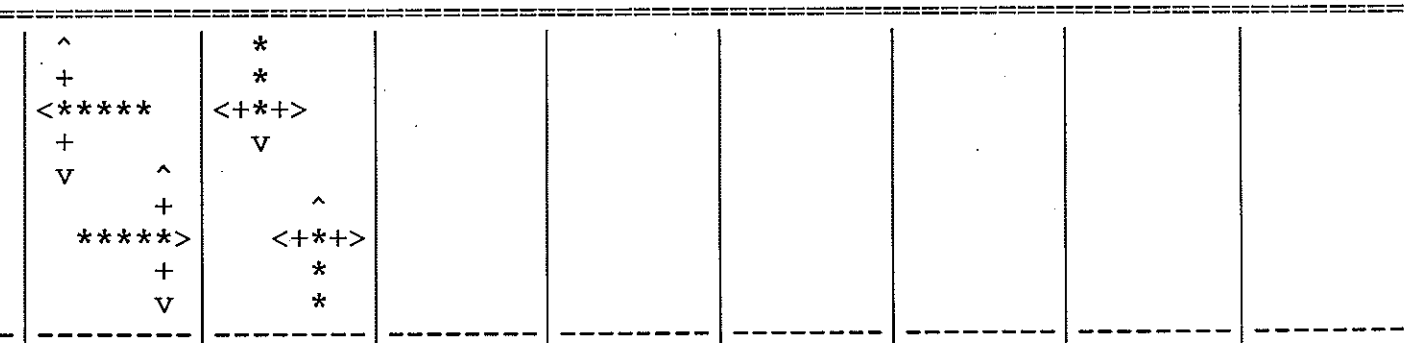


TRAFFIC AND ROADWAY CONDITIONS

Appr	Grd. (%)	% HV	Adj.Pkg.Lane Y/N	Adj.Pkg.Lane Nm	Buses (Nb)	PHF	Cnf.Ped (pd/hr)	Pedstrn Button Y/N	Pedstrn Button Mn.Time	Arr. Type
EB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
WB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
NB	+0.0	2.0	N	0	0	0.90	10	Y	9	3
SB	+0.0	2.0	N	0	0	0.90	10	Y	9	3

Grade:+up,-down Nb:buses stopping/hr Min.Timing: min.green for
HV:veh. > 4 whls PHF:peak-hour factor pedestrian crossing
Nm:pkg.maneuvers/hr Cnf.Peds:Cnflctng peds/hr Arr.Type: Type 1-5

PHASING



Timing	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0
Ptmd/Act	A	A						

Protected turns: ****^ oooo^ | Permitted turns: ++++^ | Cycle Length 100 Sec

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

Intersection:2ND STREET & ROCK CREEK DR. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

CAPACITY ANALYSIS WORKSHEET

LANE GROUP		3	4	5	6	7	8	9
1 Appr.	2 Mvmt.	Adjusted Flow Rate v (vph)	Ad.Sat Flw.Rt s (vphg)	Flow Ratio v/s 3/4	Green Ratio g / C	Ln.Grp Capac. c,vph 4x6	v/C Ratio X 3/7	Crit. ? Lane Group
EB	I	394 -	1571	0.251 -	0.625	982	0.401	-
WB	I	783 -	1537	0.509 -	0.625	961	0.815	***
NB	I	177 -	1465	0.121 -	0.315	461	0.384	-
SB	I	333 -	1298	0.257 -	0.315	409	0.815	***

Cycle Length= 100.0sec, Lost Time/Cycle,L= 6.0sec, S(v/s)ci= 0.766, Xc=0.815

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

```
I  ^
   +
****>
   +
   v
```

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

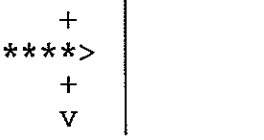
Intersection:2ND STREET & ROCK CREEK DR. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

LEVEL-OF-SERVICE WORKSHEET

LANE GROUP		First Term Delay				Second Term Delay				Tot.Delay & LOS		
		3	4	5	6	7	8	9	10	11	12	13
		v/c Ratio X	Green Ratio g/C	Cycle Length C (sec)	Delay d1 sec/veh	Lane Group Cap,c (vph)	Delay d2 sec/veh	Prgrsn Factor PF T.9-13	Lane Gp Delay sec/veh (6+8)*9	Ln Gp LOS 9-1	Apprch Delay sec/veh	Apr LOS Tbl 9-1
1 p	2 Mv											
EB	I	0.401	0.625	100.0	7.13	982	0.15	0.85	6.19	B	6.19	B
B	I	0.815	0.625	100.0	10.89	961	3.87	0.85	12.54	B	12.54	B
B	I	0.384	0.315	100.0	20.29	461	0.27	0.85	17.48	C	17.48	C
SB	I	0.815	0.315	100.0	24.00	409	8.30	0.85	27.45	D	27.45	D

Intersection Delay 14.52 sec/veh, Intersection LOS B Table 9.1

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

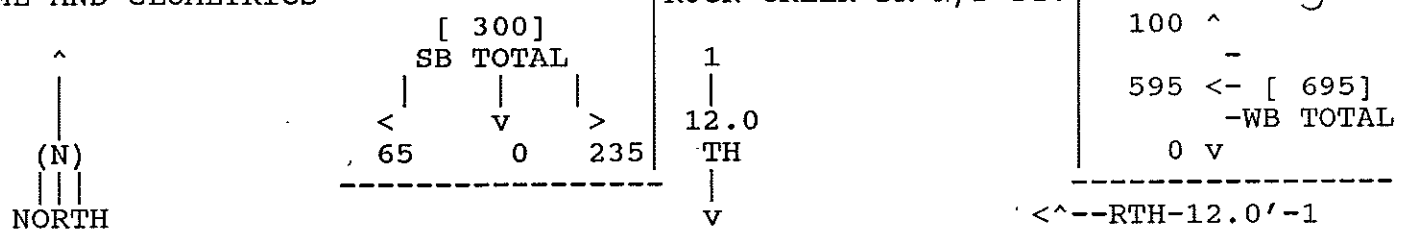


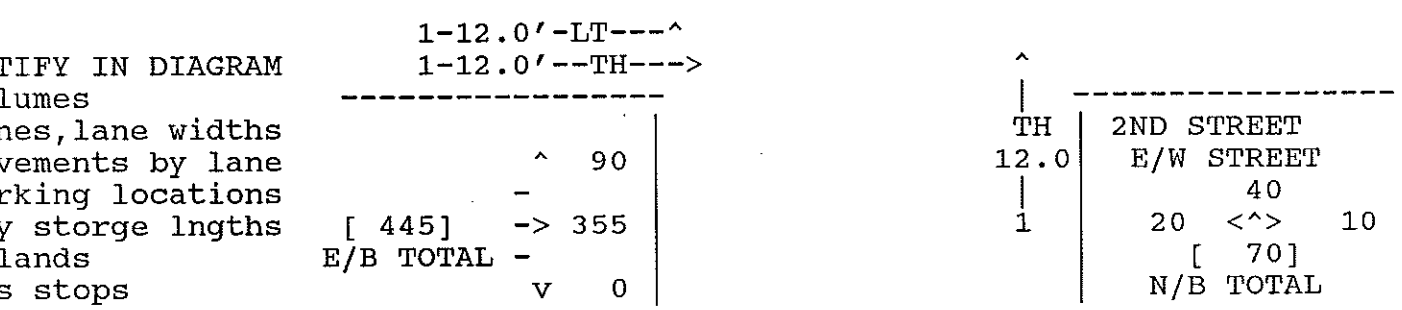
CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

INPUT WORKSHEET

Intersection:2ND STREET & ROCK CREEK DR. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA *With Rock Creek Dr. Westerly Realignment*

VOLUME AND GEOMETRICS



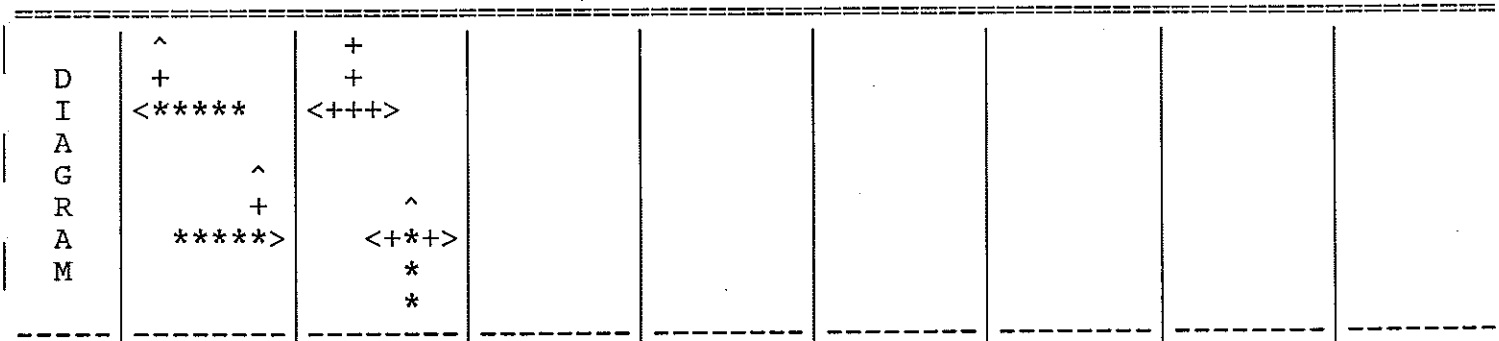


TRAFFIC AND ROADWAY CONDITIONS

Appr	Grd. (%)	% HV	Adj.Pkg.Lane Y/N	Nm	Buses (Nb)	PHF	Cnf.Ped (pd/hr)	Pedstrn Button Y/N	Mn.Time	Arr. Type
EB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
WB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
NB	+0.0	2.0	N	0	0	0.90	10	Y	12	3
SB	+0.0	2.0	N	0	0	0.90	10	Y	12	3

Grade:+up,-down Nb:buses stopping/hr Min.Timing: min.green for pedestrian crossing
HV:veh. > 4 whls PHF:peak-hour factor
Nm:pkg.maneuvers/hr Cnf.Peds:Cnflctng peds/hr Arr.Type: Type 1-5

PHASING



Timing	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0
Ptmd/Act	A	A						

Protected turns: ****^ oooo^ | Permitted turns: ++++^ | Cycle Length 100 Sec

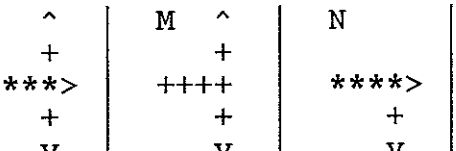
Intersection:2ND STREET & ROCK CREEK DR. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

CAPACITY ANALYSIS WORKSHEET

LANE GROUP 1 Appr.	2 Mvmt.	3 Adjusted Flow Rate v (vph)	4 Ad.Sat Flw.Rt s (vphg)	5 Flow Ratio v/s 3/4	6 Green Ratio g / C	7 Ln.Grp Capac. c,vph 4x6	8 v/C Ratio X 3/7	9 Crit. ? Lane Group
	B	100 -	501	0.200 -	0.685	343	0.291	-
EB	E	394 -	1746	0.226 -	0.685	1196	0.329	-
WB	N	772 -	1536	0.503 -	0.685	1053	0.733	***
NB	I	77 -	1510	0.051 -	0.255	385	0.200	-
SB	M	333 -	1782	0.187 -	0.255	454	0.733	***

Cycle Length= 100.0sec, Lost Time/Cycle,L= 6.0sec, S(v/s)ci= 0.689, Xc=0.733

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]



CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

Intersection:2ND STREET & ROCK CREEK DR. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

LEVEL-OF-SERVICE WORKSHEET

LANE GROUP		First Term Delay				Second Term Delay				Tot.Delay & LOS		
		3	4	5	6	7	8	9	10	11	12	13
		v/c	Green	Cycle	Delay	Lane	Delay	Prgrsn	Lane Gp	Ln	Apprch	Apr
		Ratio	Ratio	Length	d1	Group	d2	Factor	Delay	Gp	Delay	LOS
1	2	X	g/C	C	sec/veh	Cap,c	sec/veh	PF	sec/veh	LOS	sec/veh	Tbl
	Mv			(sec)		(vph)		T.9-13	(6+8)*9	9-1		9-1
	B	0.291	0.685	100.0	4.71	343	0.14	1.00	4.85	A		
B	E	0.329	0.685	100.0	4.86	1196	0.06	0.85	4.19	A	4.32	A
B	N	0.733	0.685	100.0	7.57	1053	1.87	0.85	8.03	B	8.03	B
B	I	0.200	0.255	100.0	22.24	385	0.04	0.85	18.93	C	18.93	C
SB	M	0.733	0.255	100.0	25.95	454	4.16	0.85	25.59	D	25.59	D

Intersection Delay 10.93 sec/veh, Intersection LOS B Table 9.1

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

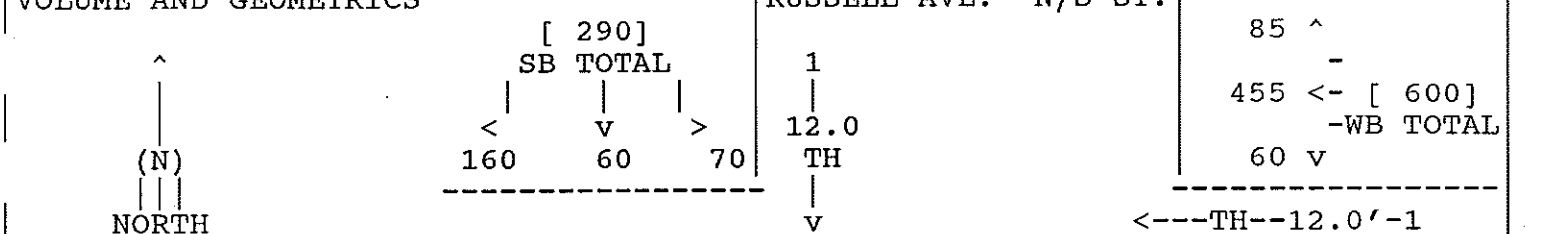
```
 B  ^      E        I  ^      M  ^      N
    +               +            +
 ++++      ****>    ****>     ++++      ****>
                    +            +            +
                    v            v            v
```

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

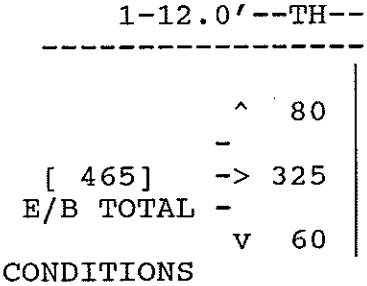
INPUT WORKSHEET

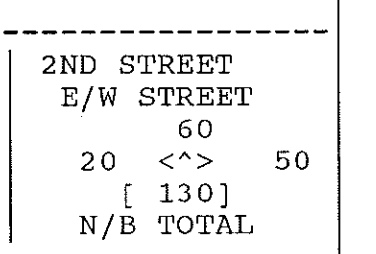
Intersection:2ND STREET & RUSSELL AVE. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

VOLUME AND GEOMETRICS



IDENTIFY IN DIAGRAM
1.Volumes
2.Lanes,lane widths
3.Movements by lane
4.Parking locations
5.Bay storge lngths
6.Islands
7.Bus stops



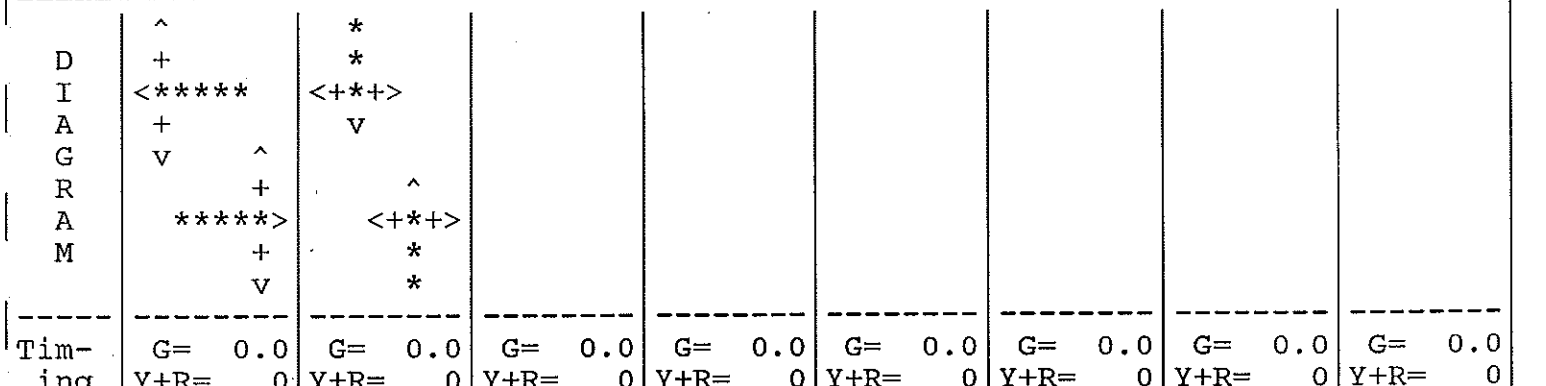


TRAFFIC AND ROADWAY CONDITIONS

Appr	Grd. (%)	% HV	Adj.Pkg.Lane Y/N	Adj.Pkg.Lane Nm	Buses (Nb)	PHF	Cnf.Ped (pd/hr)	Pedstrn Button Y/N	Pedstrn Button Mn.Time	Arr. Type
EB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
WB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
NB	+0.0	2.0	N	0	0	0.90	10	Y	9	3
SB	+0.0	2.0	N	0	0	0.90	10	Y	9	3

Grade:+up,-down Nb:buses stopping/hr Min.Timing: min.green for
HV:veh. > 4 whls PHF:peak-hour factor pedestrian crossing
Nm:pkg.maneuvers/hr Cnf.Peds:Cnflctng peds/hr Arr.Type: Type 1-5

PHASING



Timing	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0
Ptmd/Act	A	A						

Protected turns: ****^ oooo^ | Permitted turns: ++++^ | Cycle Length 100 Sec

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

Intersection:2ND STREET & RUSSELL AVE. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

CAPACITY ANALYSIS WORKSHEET

LANE GROUP 1 Appr.	2 Mvmt.	3 Adjusted Flow Rate v (vph)	4 Ad.Sat Flw.Rt s (vphg)	5 Flow Ratio v/s 3/4	6 Green Ratio g / C	7 Ln.Grp Capac. c,vph 4x6	8 v/C Ratio X 3/7	9 Crit. ? Lane Group
EB	I	517 -	1109	0.466 -	0.633	702	0.736	-
WB	I	667 -	1373	0.486 -	0.633	870	0.767	***
NB	I	145 -	1299	0.112 -	0.307	398	0.364	-
SB	I	323 -	1373	0.235 -	0.307	421	0.767	***

Cycle Length= 100.0sec, Lost Time/Cycle,L= 6.0sec, S(v/s)ci= 0.721, Xc=0.767

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

```
I  ^
   +
****>
   +
   v
```

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

Intersection:2ND STREET & RUSSELL AVE. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

LEVEL-OF-SERVICE WORKSHEET

LANE GROUP		First Term Delay				Second Term Delay				Tot.Delay & LOS		
		3	4	5	6	7	8	9	10	11	12	13
		v/c Ratio	Green Ratio	Cycle Length	Delay d1	Lane Group Cap,c	Delay d2	Prgrsn Factor	Lane Gp Delay	Ln Gp LOS	Apprch Delay	Apr LOS
1 p	2 Mv	X	g/C	C (sec)	sec/veh	(vph)	sec/veh	PF T.9-13	sec/veh (6+8)*9	9-1	sec/veh	Tbl 9-1
B	I	0.736	0.633	100.0	9.58	702	2.82	0.85	10.54	B	10.54	B
B	I	0.767	0.633	100.0	9.94	870	2.91	0.85	10.92	B	10.92	B
B	I	0.364	0.307	100.0	20.56	398	0.26	0.85	17.69	C	17.69	C
SB	I	0.767	0.307	100.0	23.88	421	5.69	0.85	25.13	D	25.13	D

Intersection Delay 14.17 sec/veh, Intersection LOS B Table 9.1

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

```
I   ^
    +
****>
    +
    v
```

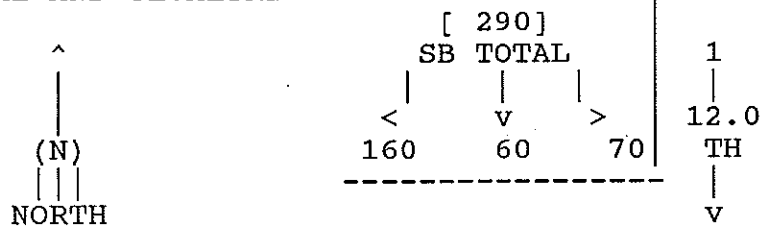
CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

INPUT WORKSHEET

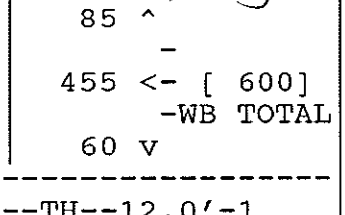
Intersection:2ND STREET & RUSSELL AVE. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

With Rock Creek Dr. Westerly Realignment

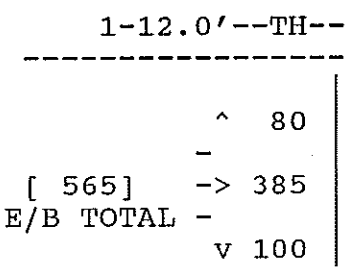
VOLUME AND GEOMETRICS

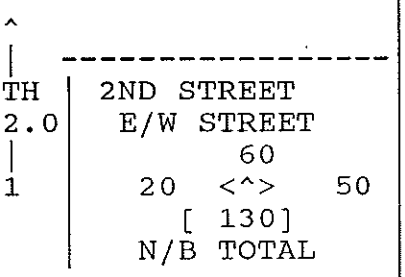


RUSSELL AVE. N/S ST.



IDENTIFY IN DIAGRAM
1.Volumes
2.Lanes,lane widths
3.Movements by lane
4.Parking locations
5.Bay storge lngths
6.Islands
7.Bus stops



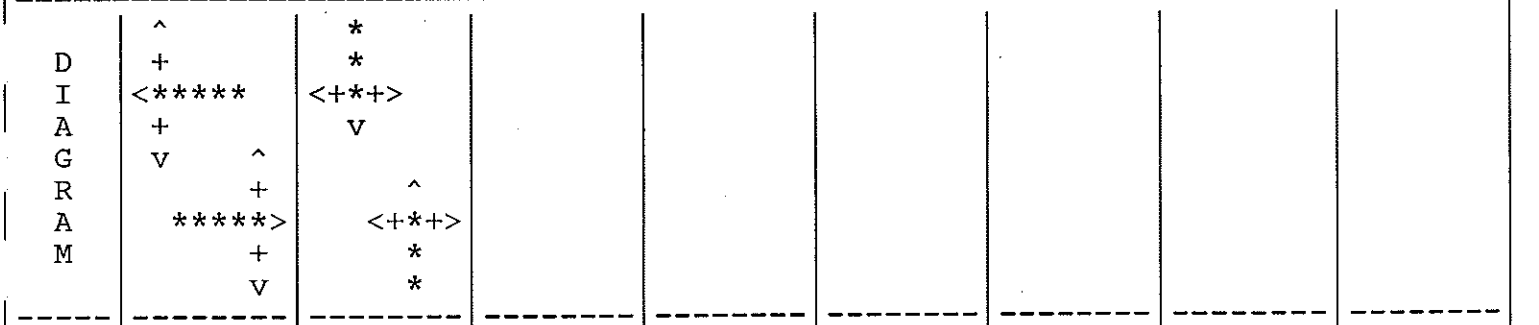


TRAFFIC AND ROADWAY CONDITIONS

Appr	Grd. (%)	% HV	Adj.Pkg.Lane Y/N	Adj.Pkg.Lane Nm	Buses (Nb)	PHF	Cnf.Ped (pd/hr)	Pedstrn Button Y/N	Pedstrn Button Mn.Time	Arr. Type
EB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
WB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
NB	+0.0	2.0	N	0	0	0.90	10	Y	9	3
SB	+0.0	2.0	N	0	0	0.90	10	Y	9	3

Grade:+up,-down Nb:buses stopping/hr Min.Timing: min.green for pedestrian crossing
HV:veh. > 4 whls PHF:peak-hour factor Arr.Type: Type 1-5
Nm:pkg.maneuvers/hr Cnf.Peds:Cnflctng peds/hr

PHASING



Timing	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0
Ptmd/Act	A	A						

Protected turns: ****^ oooo^ | Permitted turns: ++++^ | Cycle Length 100 Sec

Intersection:2ND STREET & RUSSELL AVE. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

CAPACITY ANALYSIS WORKSHEET

LANE GROUP 1 Appr.	2 Mvmt.	3 Adjusted Flow Rate v (vph)	4 Ad.Sat Flw.Rt s (vphg)	5 Flow Ratio v/s 3/4	6 Green Ratio g / C	7 Ln.Grp Capac. c,vph 4x6	8 v/C Ratio X 3/7	9 Crit. ? Lane Group
EB	I	628 -	1171	0.536 -	0.653	765	0.821	***
WB	I	667 -	1303	0.512 -	0.653	851	0.784	-
NB	I	145 -	1281	0.113 -	0.287	368	0.394	-
SB	I	323 -	1371	0.236 -	0.287	393	0.821	***

Cycle Length= 100.0sec, Lost Time/Cycle,L= 6.0sec, S(v/s)ci= 0.772, Xc=0.821

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

```
I   ^
    +
****>
    +
    v
```

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

Intersection:2ND STREET & RUSSELL AVE. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

LEVEL-OF-SERVICE WORKSHEET

LANE GROUP		First Term Delay				Second Term Delay				Tot.Delay & LOS		
1	2	3	4	5	6	7	8	9	10	11	12	13
p	Mv	v/c Ratio X	Green Ratio g/C	Cycle Length C (sec)	Delay d1 sec/veh	Lane Group Cap,c (vph)	Delay d2 sec/veh	Prgrsn Factor PF T.9-13	Lane Gp Delay sec/veh (6+8)*9	Ln Gp LOS 9-1	Apprch Delay sec/veh	Apr LOS Tbl 9-1
B	I	0.821	0.653	100.0	9.86	765	5.01	0.85	12.64	B	12.64	B
B	I	0.784	0.653	100.0	9.37	851	3.37	0.85	10.83	B	10.83	B
B	I	0.394	0.287	100.0	21.79	368	0.38	0.85	18.85	C	18.85	C
SB	I	0.821	0.287	100.0	25.28	393	8.98	0.85	29.12	D	29.12	D

Intersection Delay 15.48 sec/veh, Intersection LOS C Table 9.1

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

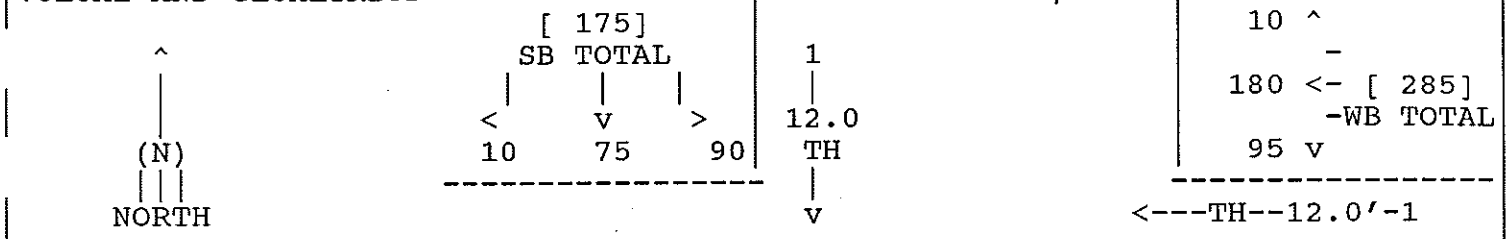
```
 I  ^
    +
 ****>
    +
    v
```

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

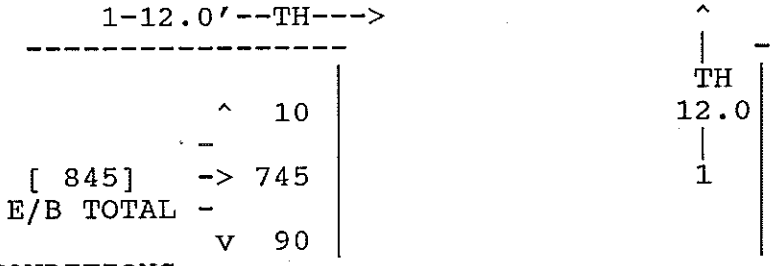
INPUT WORKSHEET

Intersection:1ST STREET & RUSSELL AVE. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

VOLUME AND GEOMETRICS



IDENTIFY IN DIAGRAM
1.Volumes
2.Lanes,lane widths
3.Movements by lane
4.Parking locations
5.Bay storge lngths
6.Islands
7.Bus stops

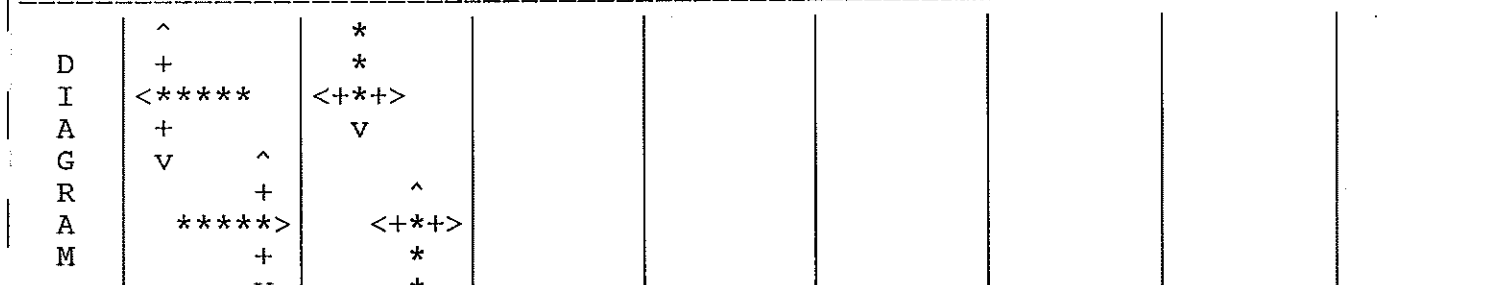


TRAFFIC AND ROADWAY CONDITIONS

Appr	Grd. (%)	% HV	Adj.Pkg.Lane Y/N	Adj.Pkg.Lane Nm	Buses (Nb)	PHF	Cnf.Ped (pd/hr)	Pedstrn Button Y/N	Pedstrn Button Mn.Time	Arr. Type
EB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
WB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
NB	+0.0	2.0	N	0	0	0.90	10	Y	9	3
SB	+0.0	2.0	N	0	0	0.90	10	Y	9	3

Grade:+up,-down Nb:buses stopping/hr Min.Timing: min.green for pedestrian crossing
HV:veh. > 4 whls PHF:peak-hour factor
Nm:pkg.maneuvers/hr Cnf.Peds:Cnflctng peds/hr Arr.Type: Type 1-5

PHASING



Timing	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0
Ptmd/Act	A	A						

Protected turns: ****^ oooo^ | Permitted turns: ++++^ | Cycle Length 100 Sec

Intersection:1ST STREET & RUSSELL AVE. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

CAPACITY ANALYSIS WORKSHEET

LANE GROUP		3	4	5	6	7	8	9
1 Appr.	2 Mvmt.	Adjusted Flow Rate v (vph)	Ad.Sat Flw.Rt s (vphg)	Flow Ratio v/s 3/4	Green Ratio g / C	Ln.Grp Capac. c,vph 4x6	v/C Ratio X 3/7	Crit. ? Lane Group
EB	I	939 -	1545	0.608 -	0.726	1121	0.837	***
WB	I	317 -	620	0.511 -	0.726	450	0.704	-
NB	I	222 -	1504	0.148 -	0.214	323	0.688	-
SB	I	194 -	1080	0.180 -	0.214	232	0.837	***

Cycle Length= 100.0sec, Lost Time/Cycle,L= 6.0sec, S(v/s)ci= 0.787, Xc=0.837

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

```
I  ^
   +
****>
   +
   v
```

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

Intersection:1ST STREET & RUSSELL AVE. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

LEVEL-OF-SERVICE WORKSHEET

LANE GROUP		First Term Delay				Second Term Delay				Tot.Delay & LOS		
1	2	3	4	5	6	7	8	9	10	11	12	13
Ap	Mv	v/c Ratio X	Green Ratio g/C	Cycle Length C (sec)	Delay d1 sec/veh	Lane Group Cap,c (vph)	Delay d2 sec/veh	Prgrsn Factor PF T.9-13	Lane Gp Delay sec/veh (6+8)*9	Ln Gp LOS 9-1	Apprch Delay sec/veh	Apr LOS Tbl 9-1
B	I	0.837	0.726	100.0	7.29	1121	4.04	0.85	9.64	B	9.64	B
B	I	0.704	0.726	100.0	5.85	450	3.41	0.85	7.87	B	7.87	B
B	I	0.688	0.214	100.0	27.51	323	4.15	0.85	26.92	D	26.92	D
SB	I	0.837	0.214	100.0	28.58	232	15.49	0.85	37.46	D	37.46	D

Intersection Delay 14.82 sec/veh, Intersection LOS B Table 9.1

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

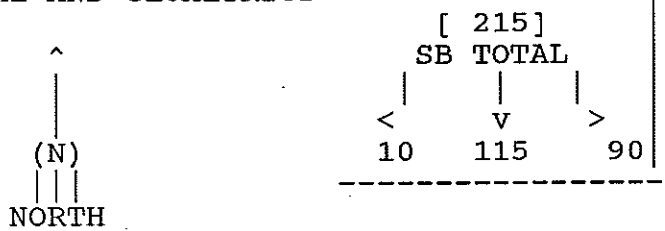
```
I  ^
   +
****>
   +
   v
```

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

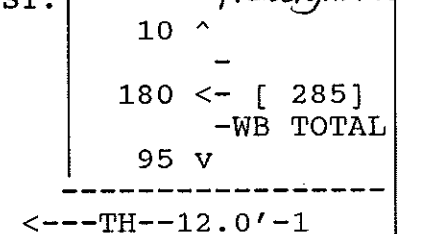
INPUT WORKSHEET

Intersection:1ST STREET & RUSSELL AVE. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA With Rock Creek Dr. Westerly Realignment

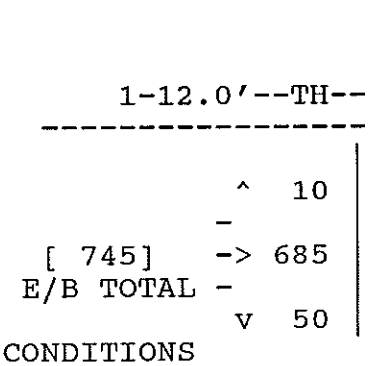
VOLUME AND GEOMETRICS

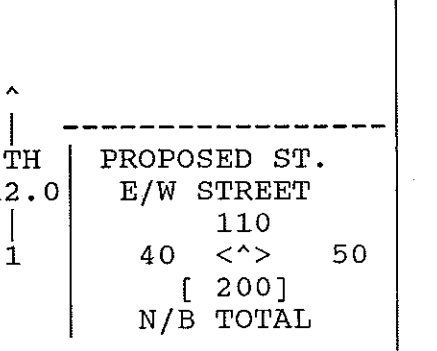


RUSSELL AVE. N/S ST.



IDENTIFY IN DIAGRAM
1.Volumes
2.Lanes,lane widths
3.Movements by lane
4.Parking locations
5.Bay storge lngths
6.Islands
7.Bus stops



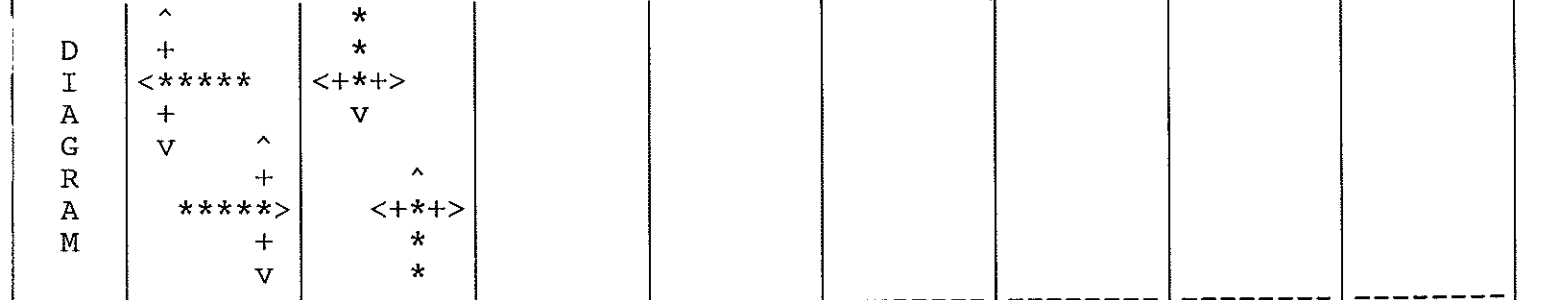


TRAFFIC AND ROADWAY CONDITIONS

Appr	Grd. (%)	% HV	Adj.Pkg.Lane Y/N	Adj.Pkg.Lane Nm	Buses (Nb)	PHF	Cnf.Ped (pd/hr)	Pedstrn Button Y/N	Pedstrn Button Mn.Time	Arr. Type
EB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
WB	+0.0	6.0	N	0	0	0.90	10	Y	9	3
NB	+0.0	2.0	N	0	0	0.90	10	Y	9	3
SB	+0.0	2.0	N	0	0	0.90	10	Y	9	3

Grade:+up,-down Nb:buses stopping/hr Min.Timing: min.green for pedestrian crossing
HV:veh. > 4 whls PHF:peak-hour factor
Nm:pkg.maneuvers/hr Cnf.Peds:Cnflctng peds/hr Arr.Type: Type 1-5

PHASING



Timing	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0	G= 0.0 Y+R= 0
Ptmd/Act	A	A						

Protected turns: ****^ oooo^ | Permitted turns: ++++^ | Cycle Length 100 Sec

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

Intersection:1ST STREET & RUSSELL AVE. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

CAPACITY ANALYSIS WORKSHEET

LANE GROUP 1 Appr.	2 Mvmt.	3 Adjusted Flow Rate v (vph)	4 Ad.Sat Flw.Rt s (vphg)	5 Flow Ratio v/s 3/4	6 Green Ratio g / C	7 Ln.Grp Capac. c,vph 4x6	8 v/C Ratio X 3/7	9 Crit. ? Lane Group
EB	I	828 -	1555	0.533 -	0.684	1064	0.779	***
WB	I	317 -	714	0.444 -	0.684	488	0.649	-
NB	I	222 -	1420	0.156 -	0.256	364	0.611	-
SB	I	239 -	1199	0.199 -	0.256	307	0.779	***

Cycle Length= 100.0sec, Lost Time/Cycle,L= 6.0sec, S(v/s)ci= 0.732, Xc=0.779

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]

```
I   ^
    +
****>
    +
    v
```

CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

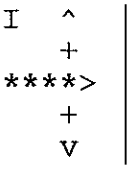
Intersection:1ST STREET & RUSSELL AVE. Date:2010 TWO-WAY COUP.
Analyst:JXZ TimePeriod Anlyzd:PM PK HR Area Type: CBD XOther
Project No.STEV0001 City/State:STEVENSON, WA

LEVEL-OF-SERVICE WORKSHEET

LANE GROUP		First Term Delay				Second Term Delay				Tot.Delay & LOS		
1	2	3	4	5	6	7	8	9	10	11	12	13
Lp	Mv	v/c Ratio X	Green Ratio g/C	Cycle Length C (sec)	Delay d1 sec/veh	Lane Group Cap,c (vph)	Delay d2 sec/veh	Prgrsn Factor PF T.9-13	Lane Gp Delay sec/veh (6+8)*9	Ln Gp LOS 9-1	Apprch Delay sec/veh	Apr LOS Tbl 9-1
LTB	I	0.779	0.684	100.0	8.12	1064	2.62	0.85	9.13	B	9.13	B
R	I	0.649	0.684	100.0	6.82	488	2.12	0.85	7.60	B	7.60	B
L	I	0.611	0.256	100.0	24.93	364	2.13	0.85	23.01	C	23.01	C
TRB	I	0.779	0.256	100.0	26.27	307	8.17	0.85	29.27	D	29.27	D

Intersection Delay 13.74 sec/veh, Intersection LOS B Table 9.1

LANE GROUP DIAGRAMS-[*** = PROTCTD, +++ = PERMTTD, ### = PROTCTD & PERMTTD]



CARL H. BUTTKE, INC., PORTLAND, OREGON, using NCAP by PSI

APPENDIX C

MINUTES TO PUBLIC MEETINGS

CITY OF STEVENSON

STATE ROUTE 14 CORRIDOR STUDY;
PUBLIC MEETING AND WORKSHOP
JUNE 29, 1992 - 7:00 PM - COURTHOUSE ANNEX

MINUTES

The meeting was opened by Don Hibbs of the Stevenson Planning Commission. (See attached attendance list)

Mr. Hibbs introduced Keith Ahola, District 4 Project Development Manager for the Department of Transportation. Mr. Ahola explained how the funding became available for improvements to SR 14. There is $14 million available for Skamania and Klickitat Counties.

Alan Danaher, Project Manager from the traffic engineering firm of David Evans and Associates briefly explained how they will incorporate previous SR 14 studies that have been done into this project. Those studies include: 1) S.R. 14/Columbia Gorge Needs Study (August 1990), 2) Skamania Lodge EIS (March 1991), 3) Columbia Gorge Conference Center Traffic Study (June 1991), and 4) Planning For Downtown Revitalization-Stevenson, Washington (June 1991).

Mr. Danaher also went over the work program/schedule for the project as well as existing and projected traffic volumes on S.R. 14 in downtown Stevenson. There are three downtown traffic flow alternatives being studied for this project; 1) Minimal changes (remove downtown parking, traffic signals, realign intersection), 2) One-way couplet, and 3) Two-way couplet.

Mr. Danaher introduced Wayne Stewart of Walker and Macy. Wayne was involved in the Downtown Revitalization study that was done by the Skamania County Chamber last year. Wayne went over the findings of that study with the group.

Mr. Stewart went over the benefits and detriments of the three alternatives as follows:

<u>Minimal Changes</u>

Benefits would be that changes could be made gradually as needed. For example traffic lights could be added as needed as well as turn lanes, etc.

A detriment would be that minimal changes would take care of traffic problems for a while, but there would come a time in the future when those changes wouldn't be enough to handle the traffic flows.

One-Way Couplet

Benefits would be that there would be ample capacity to handle traffic flows and major construction would be done on First Street which would not block the main street (Second) through town.

Detriments would be that changing from two-way traffic to one-way traffic would probably cause commercial business to suffer because west to east traffic would not travel through the downtown area. This would also add a great deal of traffic to First Street.

Two-Way Couplet

Benefits would be that there would be ample capacity to handle traffic flows. Traffic flows would increase on First Street and property values on First Street would increase. Construction could also be done in stages.

Detriments would be that First Street would experience an increase in traffic and right-of-ways would have to be acquired from property owners along First Street.

Workshop participants then broke up into four groups with a group facilitator to write down ideas. Following the strategy session the following thoughts were expressed:

Group #1 - Arlene Johnson/Facilitator

- move second street to the west
- didn't like the idea of one-way couplet
- need to get people to park and walk to downtown area
- adjust traffic signals (signals that work only when traffic is heaviest)
- two two-way couplets were preferred
- didn't like the idea of turn lanes
- one-way couplet would be easy to direct to malls
- questioned accuracy of traffic projections (do 1989 figures reflect situation today
- lodge and interpretive projections are 6000 trips per day (peak projections)
- turn lanes verses bulbing of sidewalks (group conflict)
- would traffic signals cause traffic back-up from Russell St. to Second Street Extension
- where would bike corridor be placed
- SR 14 verses First Street (need 12' to 6' for each way)
- another alternative would be to use Cascade Ave. instead of First
- move Second Street Extension to west along lake
- one-way couplet (hurt businesses too much, too street focused, hard to get off, higher traffic speed)
- development at converging points
- what about truck traffic
- no parking on First Street and Second Street (side street parking)

Group #2 - Joe Jones/Facilitator

- group was split between preferring two two-ways and two one-ways
- parking on Russell with diagonal parking on both sides would be alternative
- using courthouse lawn to utilize diagonal parking on north side of Second Street would be good
- Second Street extension with "T" traffic and light

Group #3 - Eric Brittingham/Facilitator

- removal of on-street parking was a concern
- one-way couplet was a concern (can't see retail shops, congestion, pedestrians can't cross street, adverse impact on businesses, traffic too fast, truck traffic and parking, emergency vehicle access to SR 14 from First)
- liked two-way traffic/leave as is, but change side streets into two-way streets
- put traffic signals at either end of town for more user friendly area downtown
- turn city park into parking lot
- eliminate some of the on-street parking
- realign Rock Creek Drive (former Second Street Extension)
- diagonal parking would be good on some streets
- keep parking on south side
- two-way couplet allows time for transition
- eliminate some parking spaces for added visibility
- realign Rock Creek Drive/provide business access
- need easy access to SR 14 from north side businesses
- relocate post office mail drop box
- provide parking between NAPA and Willy J's
- possibility of parking on courthouse lawn

Group #4 - Donna Rush/Facilitator

- eliminate need for one-way traffic on Russell and Levens Streets
- don't like one-way couplet because of speed of traffic/pedestrian safety
- maneuverability at ends of town for one-way couplet would be difficult to achieve
- is there enough money available to make suggested changes
- is DOT money going to cover sidewalks
- concerns over truck traffic and turns on two-way couplet
- realign Rock Creek Drive
- lack of parking a major concern
- possibility of using railroad street (Burlington North Railroad right-of-way)
- mini mall on Russell Street (flowers, planters, benches) would be nice

The traffic engineers will start detailing the ideas expressed and will put together what they feel will be the best alternative. The next public meeting will be held on Thursday, July 30, 1992 at 7:00 pm at the courthouse annex in Stevenson.

The meeting was adjourned at 9:00 pm.

CITY OF STEVENSON

STATE ROUTE 14 CORRIDOR STUDY

2ND PUBLIC MEETING AND WORKSHOP

AUGUST 13, 1992 - 7:00 PM - COURTHOUSE ANNEX

The meeting was opened by Roger Lembrick of the Stevenson Planning Commission (see attached attendance list). Mr. Lembrick then introduced Alan Danaher from David Evans and Associates (DEA), who is the consultant Project Manager on the study. Mr. Danaher reviewed the agenda for the meeting. The meeting was intended to present the functional layout plans developed for the three S.R. 14 improvement options (improvements to 2nd Street, two-way couplet, one-way couplet), and the impact assessment for the three options.

REVIEW OF ROAD FUNCTIONAL LAYOUTS

Option #1 - Improvements to 2nd Street

Mr. Danaher presented the first option - improvements to 2nd Street. This improvement would develop a center left turn lane on 2nd Street through downtown Stevenson, by removing parking on the north side of the street. The improvement would also include traffic signals at Rock Creek Drive and Russell Street, and a relocation of Rock Creek Drive to the west. There are two options to realign Rock Creek Drive - minor realignment through the car wash property, or a more substantial realignment to the west.

Option #2 - One-Way Couplet

Mr. Dick Fleming, Senior Highway Designer with DEA, presented the two couplet options. Option #2 would develop a one-way couplet through downtown Stevenson, using 2nd Street for westbound traffic and 1st Street for eastbound traffic. 1st Street would need to be widened to be incorporated into the couplet. There are options of tying 1st Street into 2nd Street at both ends of downtown. At the west end of downtown, either a minor or major realignment of Rock Creek Drive could be undertaken (similar to option #1). On the east end of downtown, there are two options to maintain the second crossing of the railroad to access the riverfront area (using the existing railroad grade separation). The first option would be to use the existing gravel road over Kanaka Creek, while the second option would develop a new access road from Leavens Street on the north side of the railroad. There are also two profile options for 1st Street on the east side of downtown. The first option would keep the existing profile on 1st Street, while the second option would lower the profile and thus

minimize the extent of retaining wall construction. The one-way couplet would provide two travel lanes and parking on both sides of the street on both 1st and 2nd Streets. Only one signal would be needed - at the 1st/Russell Street intersection.

Option #3 - Two-Way Couplet

This option would improve 1st Street similar to the one-way couplet, but would provide for two-way traffic operation on both 1st and 2nd Streets. The same Rock Creek Drive realignment options as in options #1 and #2 would be possible with the two-way couplet. One travel lane in each direction with parking on both sides of 1st and 2nd Streets would be provided. Two traffic signals would be required - at the 2nd/Rock Creek Drive and 2nd/Russell Street intersections. With this option, it does not appear that the existing gravel road over Kanaka Creek could be used to access the railroad grade separation on the east side of downtown. The connection from Leavens Street would be a viable option.

Bicycle/Pedestrian Provisions

For option #1, bicyclists would have to be diverted to 1st Street, as there would be no opportunity to provide exclusive bike lanes on 2nd Street through downtown with the development of a center left turn lane. With both couplet options, bicyclists might best be diverted to Rock Creek Drive on the west side of Stevenson and then to Vancouver Drive north of 2nd Street.

Both Mr. Danaher and Mr. Fleming emphasized that the road functional layouts were developed on fairly old mapping, and that further engineering analysis on improved mapping would be necessary before sufficient information is available to make decisions on a final design alternative and to assess right-of-way acquisition requirements. This added design would be conducted by the Washington State Dept. of Transportation (WSDOT) in a follow-up environmental assessment/preliminary design study.

IMPACT ASSESSMENT

Mr. Danaher summarized the impact assessment which was conducted for the three improvement options. The options were evaluated with respect to their traffic operations, construction, economic, environmental, right-of-way acquisition, and cost impacts. The improvements to 2nd Street would be the lowest cost option - around $1 million in 1992 dollars. The one-way couplet would cost around $3.5 million, while the two-way couplet would cost around $4.0 million. The improvements to 2nd Street would only provide an acceptable level of service through 1997, while the couplet options have

sufficient capacity past the year 2015.

The one-way couplet would divert the most traffic off 2nd Street, thus having a potential detrimental impact on 2nd Street businesses. The two-way couplet would divert the eastbound through traffic to 1st Street, but would have the opportunity of developing "City Center" signing on the west side of downtown to direct motorists to 2nd Street if they would like to stop in the downtown area.

SMALL GROUP SESSIONS

Once the technical presentation was concluded, the public gathered into three work groups to review the road improvement options in further detail. The following items were raised in the discussions:

Group #1

- Option #1 (improvements to 2nd Street) is not good, as it has too short a life span.
- There are problems with providing a "U" turn at the east end of downtown on 1st Street. Bisects several properties.
- One-way couplet is hard on businesses.
- Street width at turns is somewhat narrow for large trucks.
- Major realignment of Rock Creek Drive to west is preferable, as this will increase the size of the commercial area.
- Need to increase stacking distance south of S.R. 14 at Rock Creek Drive.
- For alternate bike route, consider using alley between 1st and 2nd Streets.
- More tourist/visitor traffic stops downtown traveling in the eastbound direction.
- Prefer two-way couplet, as it is better for businesses.

Group #2

- Option #1 (improvements to 2nd Street) has several faults, including:

  1. being a short-term solution;
  2. eliminates too much parking (with associated negative impacts on businesses); and
  3. three signals being required on 2nd, all close together.

- Option #2 (one-way couplet) would have the following impacts:

  1. traffic for some businesses may be reduced;
  2. traffic speeds may increase;
  3. some inconvenience for emergency vehicles;
  4. some awkward traffic patterns;
  5. traffic flow through town would be improved;
  6. premature at this time to develop this concept - not until commercial along 1st Street develops; and
  7. eastbound traffic is diverted from service stations.

- Option #3 (two-way couplet) would have the following impacts:

  1. provides for an easier transition of the business area towards 1st Street - impact on the existing business area is eased;
  2. provides option to be converted to one-way couplet at later date; and
  3. More direct access to Rock Creek Drive from eastbound S.R. 14 at west end of downtown.

Group #3

- Existing traffic problem at 2nd/Columbia intersection - eastbound turns from 2nd Street block local driveways;

- Signal at 2nd/Russell intersection needed with the one-way couplet;

- Traffic congestion in the vicinity of the Post Office needs to be addressed;

- One-way couplet preferred by one member of group - there is a limited length of highway through downtown for it to have a major economic impact;

- Two-way couplet preferred by another person - motorists won't stop in downtown area with one-way couplet;

- House on northwest corner of 1st and Columbia not properly located on base map (actually closer to 1st Street than shown); and

- If a two-way couplet is developed, should have eastbound truck traffic from Rock Creek Drive onto 2nd Street.

CONSENSUS ON RECOMMENDED IMPROVEMENT

At the end of the recap of the small group sessions, Mr. Danaher put forth the opinion that he felt that there was a general consensus on the part of those present that the two-way couplet was the recommended improvement, with further study needed of the connections to and from 1st Street on the west and east ends of downtown and the two Rock Creek realignment options. Mr. Danaher felt that these alignment alternatives could be addressed in further detail by WSDOT in the subsequent environmental/preliminary design study.

The two-way couplet option will be presented as the recommended improvement (in concept only) to the Stevenson Planning Commission and City Council at the end of September. The intent is to have these bodies pass a resolution supporting the two-way couplet, that can be passed onto WSDOT such that preliminary design can proceed and construction funding be allocated for improvements to S.R. 14 through downtown Stevenson. There will be a final opportunity for public input on the recommended improvement prior to and at the meeting prior to the deliberations of the Planning Commission and City Council on the proposed action.

RECEIVED
Aug 13, 92
- 10:00 AM

STEVENSON BUSINESS ASSOCIATION

City of Stevenson
PO BOX 371
Stevenson, Wa. 98648

August 12, 1992

Dear City Council

The Stevenson Business Association has weighed each proposed Highway 14 change and has voted to support the two - two way couplet. We feel changes need to be made in the way the traffic flows into and out of the city. We know that when the Skamania Lodge opens there will be even more traffic to contend with. Pedestrian traffic has increased and the wait time to cross the Highway 14 has increased. I personally have seen young children trying to cross the highway, and after waiting for awhile, they just dart across in front of cars.

We have a natural beauty in our town that most cities only dream of the Columbia River. We feel the new Port building helps makes this area a more attractive place for new businesses. With the two-two way couplet, new businesses would be willing to locate south of Second Street, because First Street would also have traffic coming from both sides of town.

As you know, the usable buildings are at a premium in this town. We can't afford to lose any of these buildings. We ask that your engineers look carefully at all plans and take into consideration future businesses that need space.

We would like you to consider running First Street all the way through, which would mean going along the railroad tracks, and coming behind Columbia Hardware. This would ease the traffic when it joins the main highway.

Sincerely

Jim Copeland, President

APPENDIX D

DOCUMENTATION OF "CARMEL"PROPOSAL

DAVID EVANS AND ASSOCIATES, INC.
A PROFESSIONAL SERVICES CONSULTING FIRM
OFFICES IN OREGON, WASHINGTON, CALIFORNIA AND ARIZONA
2828 S.W. CORBETT AVENUE
PORTLAND, OREGON 97201-4830
(503) 223-6663 FAX (503) 223-2701

REC'D. AUG. 18, 92
- J.G.

2351 Tucker Road
Hood River, OR 97031
August 16, 1992

Mr. Roger B. Lembrick
Stevenson Planning Commission
City Hall
P.O. Box 371
Stevenson, WA 98648

Re: State Road 14 Corridor Study

Dear Roger:

In the public meeting held on August 13, 1992, regarding the State Road 14 Corridor Study and potential improvement alternatives for Stevenson, we received the crushing blow that there are plans involving our commercial property on the east end of town that are 180 degrees from what we had envisioned to be the future for this property. We purchased this property (State Road 14, MP 44.8 R), in August 1990. In our eyes, it was a diamond in the rough. The fact that it was commercial property within the city limits with attributes including a spectacular river view, small gurgling creek, and large trees intrigued us. This was a one of a kind property. We knew because we had been scouring a sixty mile span of the Gorge, both on the Washington and Oregon sides, for the previous 4.5 years.

Approximately three years prior to purchasing this property, we had by accident met Jim Joseph at "Joseph's of the Gorge". We had spent the day moseying around Stevenson and ended up at his store. He must have sensed our "awe" regarding the beauty of the area and our amazement regarding the size and quality of his store. Jim explained to us a vision he and others were pursuing for Stevenson. The goal was to turn Stevenson into the Carmel of the Gorge while Hood River could be the San Francisco. We agreed that the potential for Stevenson was definitely there.

The Carmel philosophy was a philosophy that we could buy into wholeheartedly, and . . . buy into it we did. We actually purchased this parcel when the decision for the conference center location was still strongly leaning in favor of Klickitat county. Even without the conference center, we thought Stevenson had untapped potential. Our goal was to help in the transformation of this city, as the Gorge transformed more and more into a recreation area. Stevenson's winning of the conference center further deepened our sense that the people of Stevenson had the ability to make great things happen.

The plans for our business have always been to build something that Stevenson could be proud of and that would be an asset to the community. We saw this piece of property as the entrance into the city and thus felt that we had a special responsibility to make this property attractive. Taking advantage of the river view, the creek and the large trees were all going to be part of the plan.

We intended upon becoming residents of Stevenson, making our business and residence one in the same. Our plan was to have potentially a three story building that housed businesses such as a bookstore, soup and dessert shop, art gallery, and boutique on the first floor; possibly conference facilities or office space on the second floor; and our residence on the third floor.

Our dream was to build a structure that was so aesthetically appealing that it could become a landmark for Stevenson. We planned to build rock walls and rock gardens on the south side, possibly a bridge and path in the creek area, use quaint street lamps for lighting, etc. In order to ensure that the property retained its magic, we purchased the west bank of Kanaka Creek in a subsequent land purchase in order to ensure future preservation of the creek and the trees.

Back to harsh reality . . . seeing our property sliced and diced on the traffic planning proposals and hearing about the possibility of putting Kanaka Creek in a "tube" nearly broke our hearts. We support the foresight of the city to plan for future traffic volumes. For Stevenson's sake, however, we are concerned that the vision to create an efficient city not be allowed to erode the potential for a Carmel-like atmosphere.

Carmel was not designed for cars to move quickly through. Trees are considered such an integral part of the atmosphere that in some cases they have been left standing in the middle of a road and cars must drive around them. Cobblestone streets lit by attractive fixtures, beautiful landscaping and flowers, artistic signs, nooks and crannies create the great atmosphere.

Traffic gets snarled and parking is a huge problem in Carmel, but that doesn't stop people from flocking to experience the atmosphere. Widening streets, bulldozing trees, or building a Walmart is not what Carmel is about. These types of steps, which in many cases define progress, can also in other cases mark the beginning of the end.

We realize elements of both the Carmel world and a more efficient world need to be melded together in a situation where a state highway cuts through the middle of town. On the other hand, it is important to play on the fact that Stevenson is in the throat of the Gorge and the National Scenic Area. Routes through National Parks, or through the heart of a National Scenic Area, are not expected to be the efficient route. Typically, highways though National Parks are two lane with narrow shoulders and greatly reduced speed limits. If people are seeking a more efficient route, they should travel the Interstate highways and skirt these areas.

In conclusion, the traffic flow meeting of August 13 definitely put a new twist into our plans. Our time line for beginning the transition of this property had been spring of 1994. Needless to say, at this point in time we feel very trapped. It seems rather pointless to proceed with the planning of this project unless we can be assured that our property will remain relatively intact. On the other hand, if it is determined to be in the best interest of the city to acquire our property via the law of eminent domain, our money could be tied up for a substantial period of time waiting for this to occur.

Sometime this week, we plan to call and set up an appointment to further discuss with you our situation and present ideas that we have come up with for potential solutions. Thank you for the concern and consideration shown by you and the other meeting participants on the night of August 13. Our intent is not to block progress in Stevenson, but instead to ensure that all involved are aware of what the tradeoffs are when considering this unique piece of commercial property for use as a thoroughfare. If you need to contact us, we can be reached at work at either (503) 387-9642 (SLH) or (503) 387-9265 (KAK).

Sincerely,

Susan L. Holton

Susan L. Holton

Kip A. Kramer

Kip A. Kramer

cc: Jim Joseph, Joseph's of the Gorge
Dennis and Judy Wiebe, Columbia Hardware
Harry Hajari, Riverview Motor Inn

REC'D. AUG 31, 92
5:30 PM

PROPOSAL: USE OF RAILROAD RIGHT-OF-WAY FOR THE FIRST STREET EXTENSION EAST OF COLUMBIA AVENUE ("CARMEL PROPOSAL")

August 31, 1992

FROM: KIP CRAMER
SUSAN HOLTON

A. Diagrams:

1. Stevenson, WA
   MP 44.8R

   This diagram shows the commercial property currently available as one lot at MP 44.8R.

2. S.R. 14 Improvement Alternatives 2 & 3

   This diagram shows the "slicing and dicing" affect of State Road 14 Improvement Alternatives 2 and 3 on the property at MP 44.8R, Stevenson, WA.

3. Railroad Right-Of-Way

   This diagram shows that State Road 14 Improvement Alternatives 2 and 3 have the First Street extension east of Columbia Avenue built exclusively on private property. The emergency vehicle route west of Kanaka Creek and the Old Kanaka Creek Road east of Kanaka Creek would both be on railroad right-of-way.

4. Diagram of Involved Property Owners

   This diagram shows that the placement of the First Street extension east of Columbia Avenue could involve anywhere from one to three parties depending upon whether private land or railroad property is utilized.

5. "Carmel Proposal"

   This diagram shows State Road 14 Improvement Alternatives 2 and 3 with First Street built entirely on railroad property. This option leaves all the privately owned commercial property intact; eliminates the need for an emergency vehicle route west of Kanaka Creek; and utilizes the Old Kanaka Creek road as First Street on the east side of Kanaka Creek.

B. Advantages of the "Carmel Proposal":

1. Unique and potentially viable commercial property would be left intact.

   a. A commercial operation could be located on the property at MP 44.8R.

   b. Commercial property west of Kanaka Creek and east of Columbia Avenue could be developed with a set of businesses facing Second Street and another set facing First Street. Possibly, a quaint walking mall could be built through the middle of this business section.

2. Existing right-of-way with the railroad east of Kanaka Creek would be incorporated in this proposal. Under the original proposal, negotiations must occur with at least two private property owners, in addition to <u>new</u> railroad right-of-way which would be required west of Kanaka Creek.

3. Emergency vehicles would have direct west bound and east bound access to First Street when traveling north under the railroad trestle. Further, the proposed additional road on railroad right-of-way would not be required to the west since the transition from railroad grade on First Street would be much more gradual than was the case with the original proposal.

   This seems a much cleaner configuration, with fewer roads, easier maintenance and potentially fewer right-of-way difficulties.

4. Most traffic on First Street east of Kanaka Creek should be heading east out of town. This traffic would, however, have the option of looping back into town.

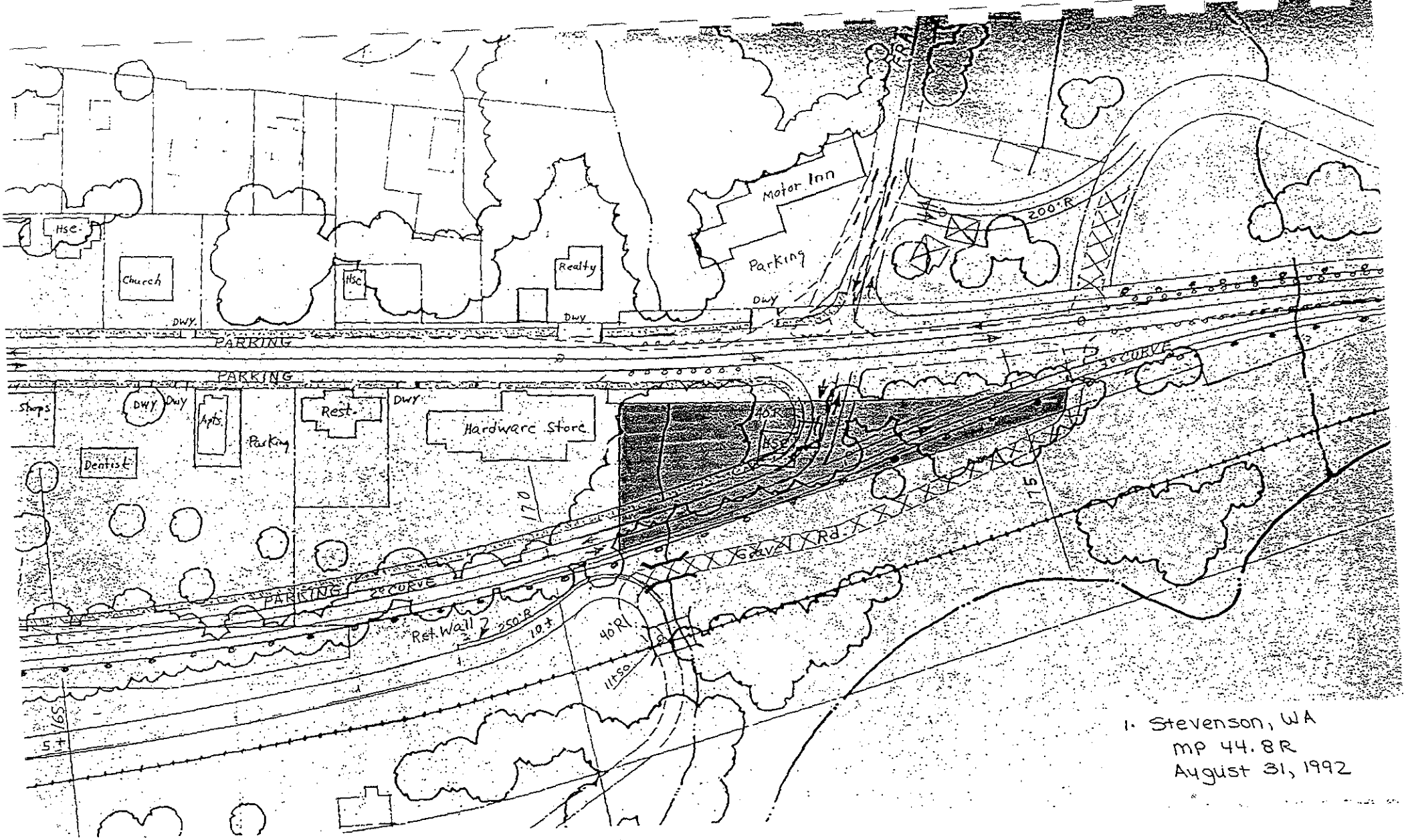
5. If it is decided that two-way access is needed between Kanaka Creek and the east side of town on First Street, this plan would accommodate it as easily as the original draft. However, it is not expected that a significant volume of west bound traffic would choose to travel on First Street. Also, Columbia Avenue is available for such a purpose.

C. Considerations Involving "Carmel Proposal":

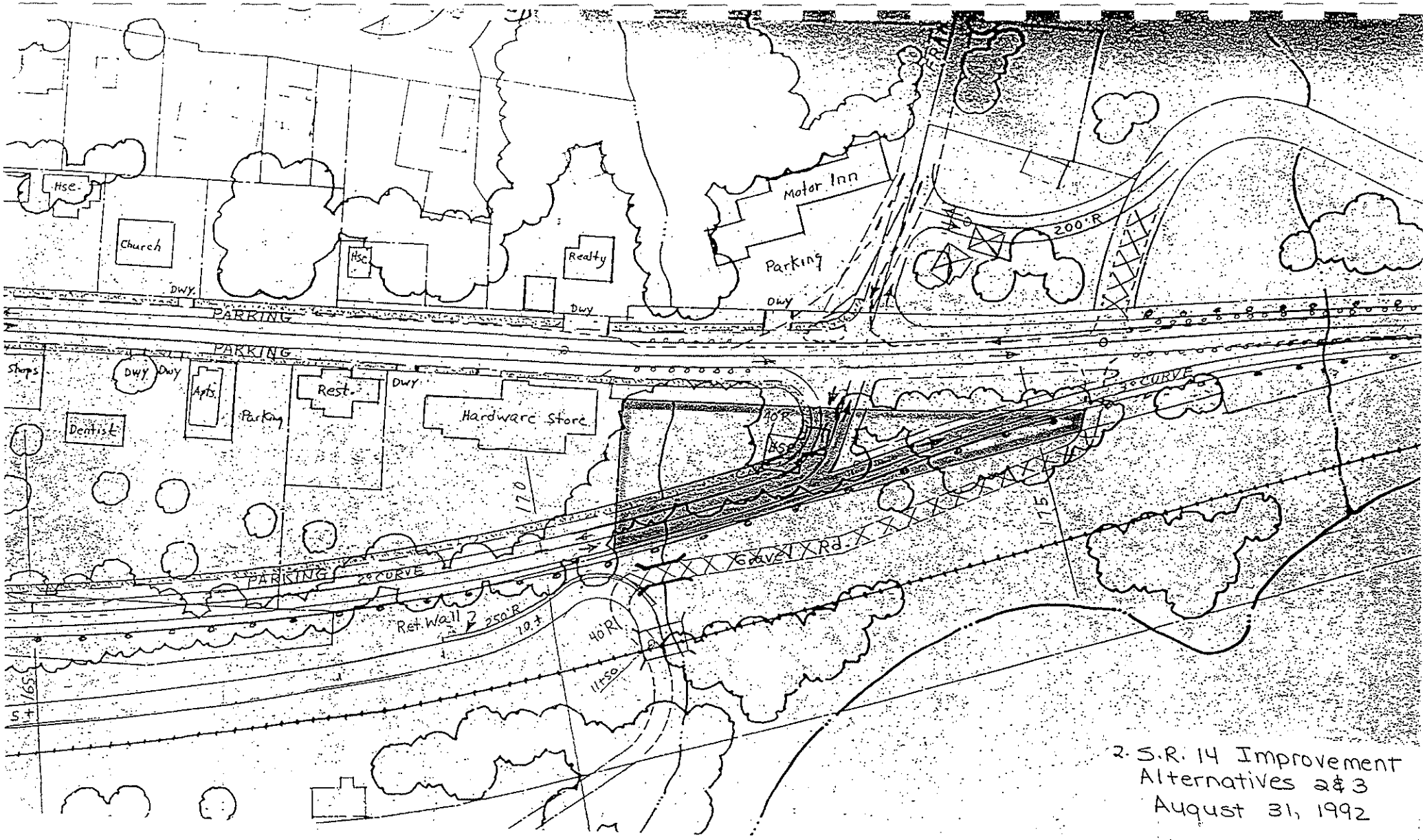
1. First Street would need to be graded down to meet the current gravel road. However, it should be possible to make the grade gradual because of the distance involved. Finally, it should be noted that grade changes and curves tend to make a roadway more picturesque. Aesthetic appeal should be part of the overall goal for First Street.

2. Frank Johns Road would not be as easily accessed from First Street, however, the Lutheran Church road would be matched up with First Street. This seems a minor point, however, and is offset by #3 below.

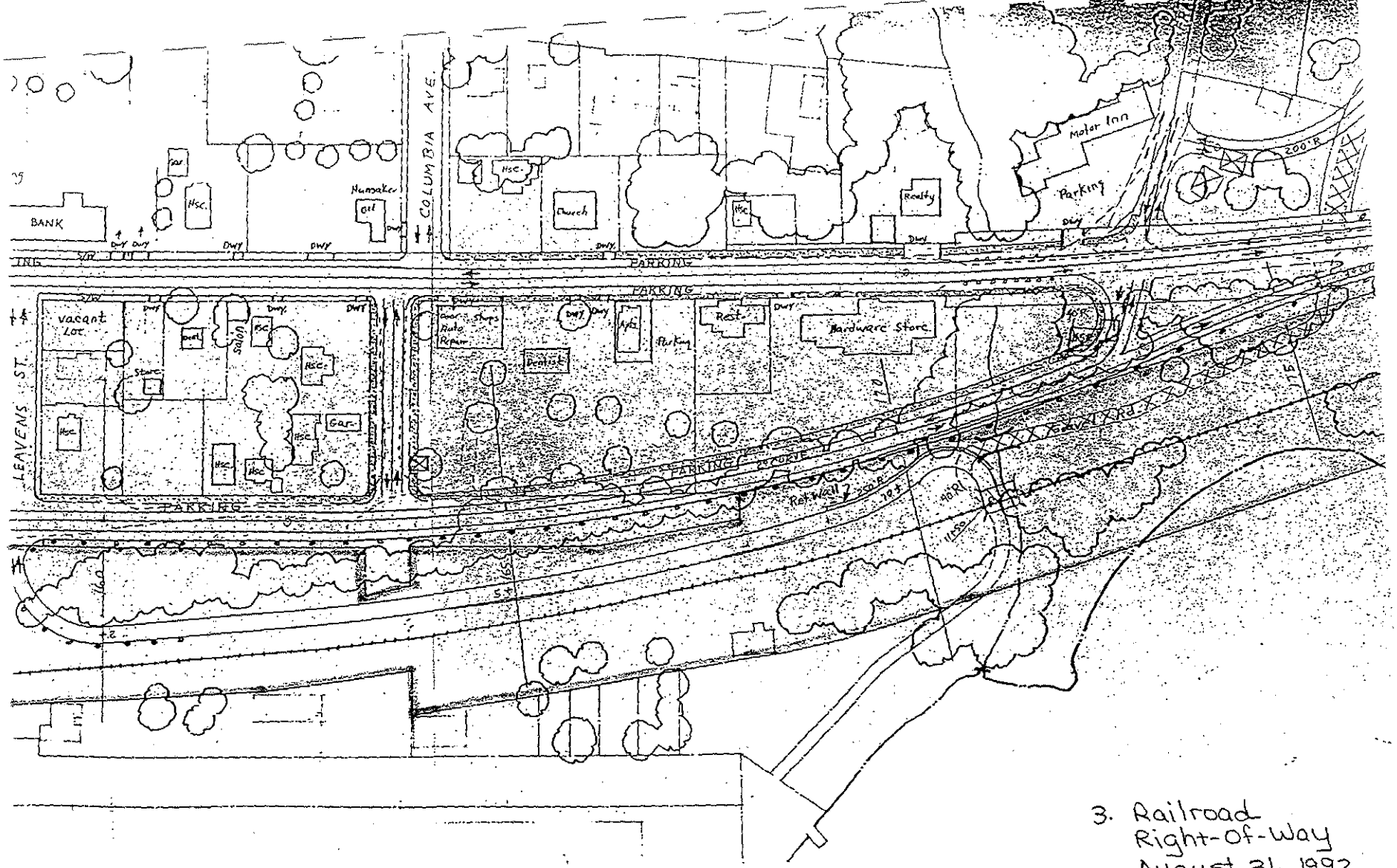
3. Land available for development in the urban district east of Kanaka Creek is largely located on the north side of State Road 14. Thus, in the future there may be a need to have an alternate loop north of State Road 14 in this part of town. This could be accomplished by tying the Lutheran Church road into State Road 14 on the east end of the urban growth district. Under this scenario, west bound and east bound traffic on either First Street or Second Street would have direct, easy access to such a loop.



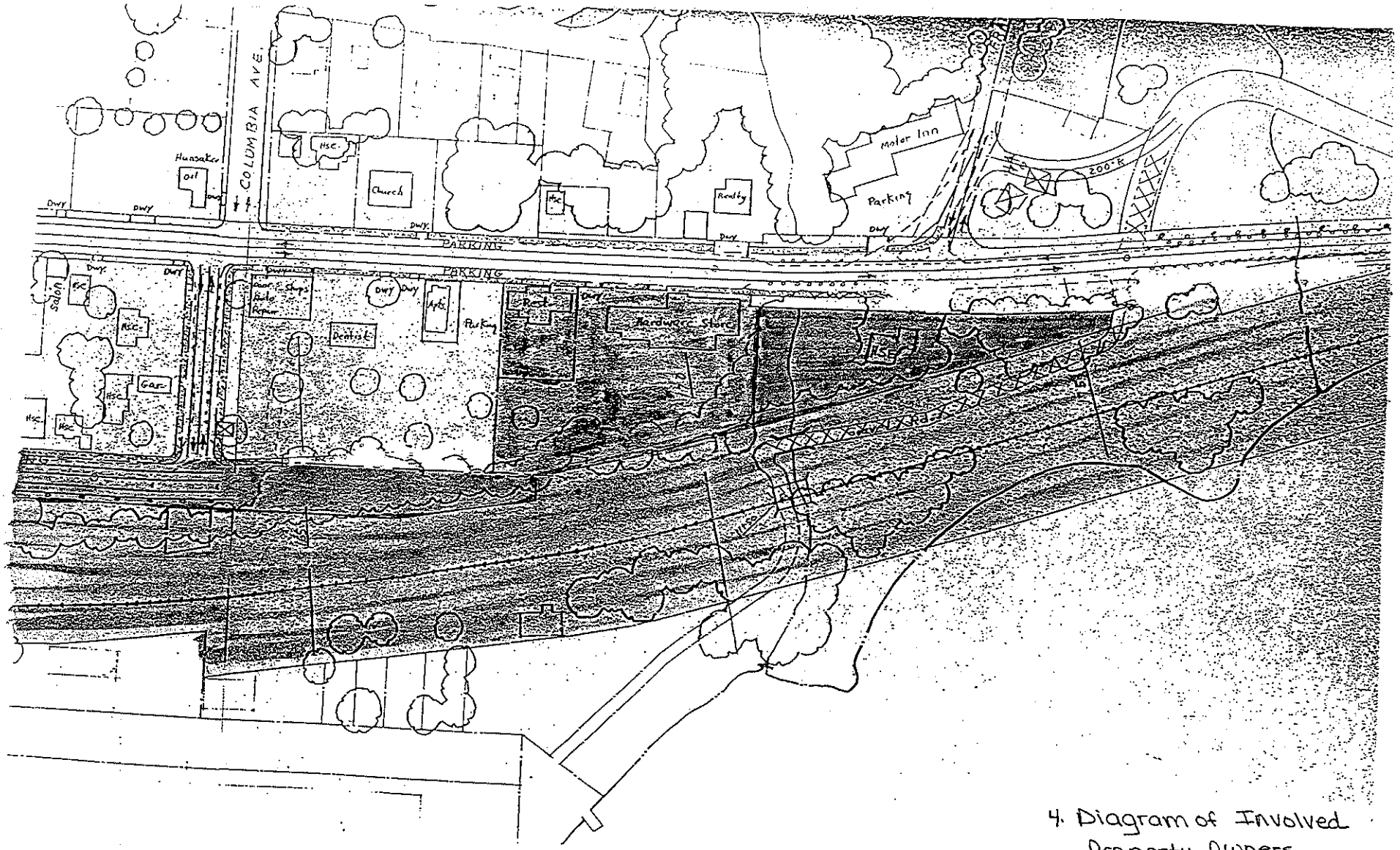
1. Stevenson, WA
MP 44.8R
August 31, 1992



2. S.R. 14 Improvement
Alternatives 2 & 3
August 31, 1992



3. Railroad
Right-of-Way
August 31, 1992



4. Diagram of Involved Property Owners
August 31, 1992

5. "Carmel Proposal"
August 31, 1992