

CHAPTER 6 : CIRCULATION

The circulation analysis is based on information from the Public Works Director of the City of Sandpoint and a traffic study for Bonner County prepared by The Transporo Group in November of 2004. The Bonner County Traffic Study focused on the urban areas of Sandpoint and provided a broad overview of circulation and infrastructure needs for the entire County. The City of Sandpoint will begin a traffic study in October 2005 that will focus on the City and the surrounding areas in order to provide more in depth information. For the purposes of this study, information from the County Traffic Study is supplemented with further input from the Public Works Director.

I. LEVEL OF SERVICE

Traffic operations are evaluated based on the level of service (LOS) methodologies of the Highway Capacity Manual (HCM). The HCM is a nationally recognized and locally accepted method of measuring traffic flow and congestion. Criteria range from LOS A, indicating free-flow conditions with minimal vehicle delays to LOS F, indicating extreme congestion with significant delays. At signalized intersections, LOS is defined in terms of average delay per vehicle. At unsignalized intersections, LOS is measured in terms of average delay of vehicle and is typically reported for the worst traffic movements instead of the whole intersection.

The Bonner County Traffic Study identified a LOS standard for the urban and rural areas. LOS C is generally considered acceptable in rural areas, while a LOS D is considered acceptable in urban areas.

II. FACILITY ANALYSIS

A. Inventory of Existing Circulation Infrastructure⁵

1. Arterials

The City of Sandpoint is served by two major US highways, which are classified as arterials; US 95 and US 2.

US 95 provides regional north-south access connecting southern Idaho and Canada. US 95 generally has two travel lanes.

US 2 provides regional east-west access in the western portion of Bonner County between Oldtown and Sandpoint. Within Sandpoint, US 2 and US 95 become a shared highway. It generally has two travel lanes, except for a short section in Sandpoint, which has four lanes.

2. Major Collectors

Major collectors provide connections to the state highways and the regional arterial system. They are primarily intended to connect major community centers and in general serve through traffic instead of direct property access. The following is a description of major collectors.

⁵ Information obtained from the Bonner County Traffic Study.

Pine Street is an east-west, two lane street through the City of Sandpoint. This roadway is identified as a major collector and provides access between US 2, west Sandpoint and beyond. The City of Sandpoint's downtown grid system results in many intersections along Pine Street within the core.

Baldy Mountain Road serves east-west traffic north of downtown Sandpoint and south of Bonner County Airport. The roadway has two lanes and few intersecting roadways.

Division Avenue provides one of two primary north-south major collector routes through the City of Sandpoint. This roadway provides access between Ontario Street and Baldy Mountain Road. Division Avenue has two to three lanes and provides stop controls on the side street approaches to most intersections.

Boyer Avenue is the second primary north-south major collector route through the City of Sandpoint. Boyer provides access between Ontario Street and Schweitzer Cutoff Road. This roadway accommodates two to three lanes and provides stop controls on the side street approaches.

Schweitzer Cut-off Road provides east-west access along the northern boundary of the City of Sandpoint between Boyer Avenue and SH 200. This is a two to three lane roadway with a traffic signal at the intersection with US 95.

3. Minor Collectors

Minor collectors direct traffic from neighborhoods to major collectors, the arterial system, and the state highway. They provide a higher level of direct access than major collectors and arterials. Due to their nature, minor collectors are mostly located within areas of higher density rather than the more rural areas. The following is a list of minor collectors in Sandpoint.

Ontario Street serves east-west traffic through the southwest portion of Sandpoint. Ontario Street connects with several of the north-south arterials that provide access to the Sandpoint downtown core.

Lincoln Avenue provides north-south connections between Ontario Street and Larch Street through the southeast portion of Sandpoint.

Boyer Avenue south of US 2 is classified as a minor collector. The southern section of Boyer provides connections between Ontario Street and US 2.

Main Street runs along a diagonal alignment from the northwest portion of the Sandpoint downtown area to Cedar Street within the core.

Cedar Street provides east-west access through the Sandpoint downtown between Division Avenue and US 2/95.

Larch Street serves east-west traffic on the north end of the Sandpoint downtown. This roadway is classified as a local access street between Division and US 2/95.

4. Local Roads

A number of local roads exist throughout the City and in the Area of Impact. Local access roads are defined as land service streets and primarily service access to abutting property. These roads typically accommodate one to two lanes of traffic.

B. Adequacy of Existing Circulation Infrastructure

Circulation is a key component to the development of a city. Recent growth in the City and the surrounding areas has placed pressures on the existing infrastructure. There are also increases in traffic flow related to tourism in the summer and winter months. The majority of intersections in the City of Sandpoint are operating at acceptable levels of service (LOS), though there are a few exceptions. The intersection of Cedar Street and US 95 (5th Avenue) is at a LOS of F during weekday evening peak hours. The following is a table of the level of service at intersections in Sandpoint during weekday evening peak hour.

Table 15: Existing Weekday PM Peak Hour Intersection Level of Service

INTERSECTION	LOS
Baldy Road/Division	B
Baldy Road/Boyer Avenue	D
Larch Street/Division Avenue	B
Larch Street/Boyer Avenue	D
Larch Street/US 95	C
Main Street/Boyer Avenue	B
Main Street/Lincoln Avenue	A
Main Street/Division Avenue	B
Cedar Street/Lincoln Avenue	A
Cedar Street/Division Avenue	C
Cedar Street/Boyer Avenue	B
Cedar Street/US 95 (5th Ave)	F
Pine Street/Lincoln Avenue	B
Pine Street/Division Avenue	D
Pine Street/US 95 (1st Ave)	D
Pine Street/US 95 (5th Ave)	C
Pine Street/Boyer Avenue	B
Ontario Street/Lincoln Avenue	A
Ontario Street/Division Avenue	B
Ontario Street/Boyer Avenue	A
Schweitzer Cutoff Road/Boyer Avenue	B
US 2/Division Avenue	B
US 2/Boyer Street	B
US 2/Pine Street	C

C. Future Demand for Circulation Infrastructure

As the City of Sandpoint continues to grow, so will the demand for infrastructure to support the future population. As development expands in the Area of Impact, circulation becomes increasingly important. The railroad tracks create a barrier between the majority of the existing City limits and the outlying area. The ability to cross the railroad tracks, either under or over, will be a necessity for police and fire services in order to ensure the continued quality of service and response time. The following table contains a list of the improvement projects to be implemented to address future growth.

Table 16: Capital Improvement Projects

CITY LIMITS
Great Northern Road/Woodland Drive
Woodland Drive RR Crossing
Division/Pine Traffic Signal
Larch/Boyer Traffic Signal & Intersection Improvements
Pine Street Reconstruction
Boyer Reconstruction (N of Curve to Schweitzer C/O)
Baldy Extension to US 95/2
Baldy/BNSF Underpass
Sand Creek Peninsula (Second Access)
Larch St. - Boyer to Division
RR Underpass (Baldy or Gooby, etc)
AREA OF IMPACT
N. Boyer Reconstruction (Fairgrounds North)
Pine Street Widening & Bike Path
W. Mountain View Widening (3500 lf)
Gooby Road Widening (3000 lf)
Baldy Road Widening (3000 lf)
Schweitzer Road To US 95
Pine Street to Baldy Connector

III. CIRCULATION FACILITY COSTS

Development impact fees can only pay for infrastructure and improvements related to future growth, not existing deficiencies. To the extent that future traffic will create greater deficiencies than presently exist, the fee may fund the correction of such future impacts. Based on the projects listed above, the following table depicts the cost of the project, the percentage induced by growth and the resulting growth cost. The growth cost is the portion of the cost for which the development impact fees will be applicable.

Table 17: Circulation Facility Costs

PROJECT	COST	% GROWTH	GROWTH COST
CITY LIMITS			
Great Northern Road/Woodland Drive	\$4,500,000.00	75.00%	\$3,375,000.00
Woodland Drive RR Crossing	\$250,000.00	100.00%	\$250,000.00
Division/Pine Traffic Signal	\$350,000.00	25.00%	\$87,500.00
Larch/Boyer Traffic Signal & Intersection Improvements	\$500,000.00	25.00%	\$125,000.00
Pine Street Reconstruction	\$1,500,000.00	25.00%	\$375,000.00
Boyer Reconstruction (N of Curve to Schweitzer C/O)	\$500,000.00	25.00%	\$125,000.00
Baldy Extension to US 95/2	\$1,000,000.00	40.00%	\$400,000.00
Baldy/BNSF Underpass	\$4,000,000.00	40.00%	\$1,600,000.00
Sand Creek Peninsula (Second Access)	\$2,500,000.00	100.00%	\$2,500,000.00
Larch St. - Boyer to Division	\$1,000,000.00	25.00%	\$250,000.00
RR Underpass (Baldy or Gooby, etc)	\$3,500,000.00	100.00%	\$3,500,000.00
Sub-total	\$19,600,000.00		\$12,587,500.00
AREA OF IMPACT			
N. Boyer Reconstruction (Fairgrounds North)	\$1,500,000.00	100.00%	\$1,500,000.00
Pine Street Widening & Bike Path	\$325,000.00	100.00%	\$325,000.00
	\$120,000.00	100.00%	\$120,000.00
W. Mountain View Widening (3500 lf)	\$400,000.00	100.00%	\$400,000.00
Gooby Road Widening (3000 lf)	\$325,000.00	100.00%	\$325,000.00
Baldy Road Widening (3000 lf)	\$1,500,000.00	100.00%	\$1,500,000.00
Schweitzer Road To US 95	\$660,000.00	100.00%	\$660,000.00
Pine Street to Baldy Connector	\$1,500,000.00	100.00%	\$1,500,000.00
Sub-total	\$6,330,000.00		\$6,330,000.00
TOTAL	\$25,930,000.00		\$18,917,500.00

Information provided by Public Works Director, City of Sandpoint.

IV. FEE CALCULATION

A. Impact of Future Development

After the costs for circulation facilities have been identified, the next step in calculating the fee is to quantify the impacts of future development.

The fee calculation applies to both residential and non-residential development. The numbers of trips generated by land use are used to determine the impacts of development on roadways. Provided below are the trip generation rates for non-residential and residential development used in this circulation analysis:

Table 18: Trip Generation Rates by Land Uses

Land Use	Trip Generation Rate
Single Family	10 trips/du
Multi-Family	8 trips/du
Commercial	120 trips/ 1000 sq.ft.
Industrial	12 trips/ 1000 sq.ft.

These trips are representative averages used nationally to estimate the impact of development on roadways. Specifically, the commercial standard is based on the trips for a Neighborhood Shopping Center. The trips for industrial land uses is generated from an average of Industrial and combined Industrial/Commercial land use.

To calculate the total trips for future residential development, future dwelling units were separated into a total of single-family units and multi-family units. Non-residential development was separated into two general categories: Commercial and Industrial acreage. These acreages were converted to square footage by assuming a coverage factor of 30% per acre as previously defined in the Build Out Projections section.

The total impact of future development on roadways is calculated by multiplying the trips for each land use category by the future residential dwelling units and non-residential square footage in the study area.

B. Credit for Non-Residential Development

An adjustment must be made to account for the double counting of commercial and residential trips. For example, round trips from a dwelling unit may include a trip to a commercial destination within the City. This same trip, however, is included in the trips for the commercial land use. To adjust for double counting of trips, this analysis assigns a 40% discount to non-residential development. As a result, this discount factor provides a more accurate trip generation measurement.

To make this adjustment, the percentage of traffic impact is calculated for each land use. The percentage is then multiplied by the total cost for facilities to identify the proportional cost for each land use. The fee credit, however, reduces this cost to non-residential development by 40% and transfers the cost proportionally to residential development. If the cost was reduced by 40% and not transferred to residential development, the fee would be insufficient and there would be a shortage of funds collected by the City for future improvements.

The transfer of the 40% credit is reapportioned to residential development based on the percentage of single family and multi-family units of residential development within the study area. The transfer of credit for non-residential development to residential development results in a revised cost for each of the four land use categories: SFD, MFD, commercial and industrial land use.

C. Cost per land use

The last step in the fee calculation is to divide the cost per land use by the future trips projected for the four land uses. Due to the credit transfer, the result is a difference in cost per trip between residential and non-residential land uses.

Since the non-residential fee is based on a per trip generation rate and different non-residential land uses have different trip generation rates, all non-residential land uses will not have the same fee. Unfortunately, this tends to complicate the collection of circulation impact fees because it is difficult to assign a trip generation rate for all the various land uses.

The generation rates should be based on either the ITE standards or on another set of generation tables which more closely resemble conditions in Sandpoint. A trip generation rate table is provided in Appendix E. This table should be consulted when determining development impact fees for non-residential uses. However, for uses not listed, the City Engineer shall make the decision regarding the appropriate traffic generation rate. This determination shall be based upon ITE standards or traffic reports submitted with the proposed non-residential use.

A detailed breakdown of circulation impact fee calculations is shown on Table 19.

Table 19: Circulation Fee Calculation

STEP 1: IDENTIFY TOTAL COST							
Total Cost	\$18,917,500.00						
Other Funds	0						
	\$18,917,500.00						
STEP 2: CALCULATE PROPORTIONAL SHARE OF FUTURE TRAFFIC							
Single Family Detached (SFD)	10,734	DUs	x	10	Trips/DU	=	107,340 Trips
Multi-family (MF)	1,905	DUs	x	8	Trips/DU	=	15,240 Trips
Commercial (COMM)	787,894	Sq. Ft.	x	120	Trips/1000 sf	=	94,547 Trips
Industrial (IND)	2,948,768	Sq. Ft.	x	12	Trips/1000 sf	=	35,385 Trips
							252,512 Trips
STEP 3: CALCULATE % OF TOTAL TRIPS/PROPORTIONAL COST							
SFD	107,340	Trips	42.5%	=	\$8,041,599.85		
MF	15,240	Trips	6.0%	=	\$1,141,736.37		
COMM	94,547	Trips	37.4%	=	\$7,083,206.56		
IND	35,385	Trips	14.0%	=	\$2,650,957.22		
			100.0%		\$18,917,500.00		
STEP 4: DETERMINE COMMERCIAL/INDUSTRIAL CREDIT REAPPORTIONMENT							
COMM	\$7,083,206.56	x	40%	=	\$2,833,282.63		
IND	\$2,650,957.22	x	40%	=	\$1,060,382.89		
					\$3,893,665.51		
SFD Trips	107,340	Trips =	87.6%		\$3,409,577.88		
MF Trips	15,240	Trips =	12.4%		\$484,087.64		
	122,580				\$3,893,665.51		
STEP 5: REVISE COSTS BASED ON REAPPORTIONMENT							
SFD	\$8,041,599.85	+			\$3,409,577.88	=	\$11,451,177.73
MF	\$1,141,736.37	+			\$484,087.64	=	\$1,625,824.00
COMM	\$7,083,206.56	-			\$2,833,282.63	=	\$4,249,923.94
IND	\$2,650,957.22	-			\$1,060,382.89	=	\$1,590,574.33
							\$18,917,500.00
STEP 6: CALCULATE COST PER TRIP							
SFD	\$11,451,177.73	/		107,340 Trips	\$106.68 / Trip		
MF	\$1,625,824.00	/		15,240 Trips	\$106.68 / Trip		
COMM	\$4,249,923.94	/		94,547 Trips	\$44.95 / Trip		
IND	\$1,590,574.33	/		35,385 Trips	\$44.95 / Trip		
STEP 7: COST PER RESIDENTIAL DU & COMMERCIAL/INDUSTRIAL TRIPS							
SFD	\$106.68 / Trip	x	10 Trips/DU		\$1,066.81 /DU		
MF	\$106.68 / Trip	x	8 Trips/DU		\$853.45 /DU		
COMM					\$44.95 / Trip		
IND					\$44.95 / Trip		

Notes: