TRANSPORTATION ELEMENT

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TRANSPORTATION ELEMENT

I. INTRODUCTION

1. Growth Management Act Requirements

The Growth Management Act (GMA) requires jurisdictions to prepare a transportation element that includes the following sub-elements and features:

A. Land use assumptions used in estimating travel;

B. Facilities and services needs, including:

1) An inventory of air, water and land transportation facilities and services, including transit alignments, to define existing capital facilities and travel levels as a basis for future planning;

2) Level of service standards for all arterials and transit routes to serve as a gauge to judge performance of the system. These standards should be regionally coordinated;

3) Specific actions and requirements to bring into compliance any facilities or services that are below an established level of service standard;

4) Traffic forecasts for at least ten years based on the adopted land use plan to provide information on the location, timing and capacity needs of future growth;

5) Identification of system expansion needs and transportation system management needs to meet current and future demands.

C. Financing, including:

1) An analysis of funding capability to judge needs against probable funding resources;

2) A multi-year financing plan based on the needs identified in the comprehensive plan. Portions of this plan will be the basis for the six-year street, road, or transit program required by state law;

3) If probable funding falls short of meeting identified needs, a discussion of how additional funding will be raised or how land use assumptions will be reassessed to ensure that level of service standards will be met;

D. Intergovernmental coordination efforts, including an assessment of the impacts of the transportation systems of adjacent jurisdictions; and

E. Demand management strategies.

F. Collaborative plan consistency. The GMA requires that regional agencies certify that the transportation element is consistent with regional transportation plans. Puget Sound Regional Council (PSRC) is the regional agency with this authority. PSRC measures consistency with the MTP by focusing on five items:

1) Consistency with the land use element,

2) Identification of facilities and service needs,

3) Discussion of financing for transportation facilities and services,

4) Description of intergovernmental coordination efforts, and,

5) Development of transportation demand strategies. [1]

In addition, PSRC reviews plans of cities and counties in the central Puget Sound region for consistency with the Clean Air Conformity Act. Consistency is measured by the presence of minimum policy language and provisions committed to developing programs and measures addressing federal and state air quality laws.

G. Other requirements. In addition to the GMA requirements, the Transportation Element must also comply with the Metropolitan Transportation Plan (MTP). The MTP is the transportation element of Vision 2020, the Puget Sound region's growth management, economic, and transportation strategy. The MTP's four main transportation policy areas are:

1) Transportation System Management (achieve maximum efficiency of the current system without adding major new infrastructure through activities such as making transit a priority and improving traffic signalization);

2) Transportation Demand Management (reduce the number of vehicles on the road to increase mobility);

3) Transportation System Capacity (expand regional transit facilities and services and complete roadway network useful for all travel modes); and

4) Transportation Impacts of Growth (coordinate land use and mobility issues).

These transportation policy areas are addressed in this Element.

2. Purpose of a Transportation Element

The Transportation Element has three functions: to examine the existing and future traffic circulation system, to address the relationship between transportation and land use, and to provide the background and analysis so that the City can ensure that transportation improvements are concurrent with development. More specifically, the Transportation Element considers the location and condition of the existing traffic circulation system; the cause, scope, and nature of transportation problems; the projected transportation needs; and plans for addressing all transportation needs while maintaining established level of service standards. The Transportation Element addresses motorized and non-motorized transportation needs.

The type and availability of transportation facilities are major factors in the development of land use patterns; while conversely, the way that land is used greatly influences the need and location for new transportation. The relationship between transportation and land use is one of continuous interaction and their planning must be coordinated.

One way the relationship between transportation and land use is measured is through the concept of concurrency. The GMA requires jurisdictions to apply the concept of concurrency to transportation facilities. Jurisdictions are to establish level of service standards with measurable criteria to judge the

[1] From the PSRC adopted policy and plan review process, revised September 2003.

adequacy of roadway service provision. Transportation improvements are required to be made concurrent with the development, either in place at the time of development or with a financial commitment to complete the improvements within six years of development. It is up to each jurisdiction to determine the acceptable timetable for completion of the improvements, as mandated in its concurrency management regulations. For example, the jurisdiction's regulations may state that improvements must be completed no more than two years after the development is complete, rather than in six years.

II. CONTEXT FOR THE ELEMENT

1. Transportation Element Background

This Transportation Element is based on two key documents. The first is the Final Comprehensive Transportation Plan (David Evans and Associates, Inc., July 1991, adopted by the City Council in March 1994). The second is the 2000 Plan Update that incorporated the requirements of the GMA and requirements for certification by the PSRC.

In terms of the development of background data, the development of the Transportation Element involved a number of steps as well as review of data. A list of the documents and plans that were used are included in **Appendix A**.

For the initial Final Comprehensive Transportation Plan (1991), Brier's transportation system was inventoried and entered into a geographic database. Streets, walkways, and trails were classified, using criteria developed by the City. Deficiencies of streets and non-motorized facilities were then identified, and needed transportation improvement projects and programs were identified. As part of the 2000 Plan Update, further analysis of the transportation system in Brier was undertaken. This analysis included identifying current levels of service for major streets and forecasting to 2012 future levels of service. The impacts of future growth in Brier on adjacent areas were also analyzed. Transportation Demand Management techniques appropriate for Brier were explored. An updated project needs list was developed to address current and future needs over the next six years.

To update this inventory and forecast for the 2004 Plan Update, the original transportation system inventory was augmented with data from recent studies and records of development in the city as well as through field checks.[2] In addition, current traffic volumes were measured, supplemented by spot counts and approach volumes factored accordingly. Average Daily Trip (ADT) information was projected based on traffic counts from 1997 (completed as part of environmental review for the proposed 236th Street SW extension).[3] Projected 2025 traffic volumes were forecast and consequent levels of service projected.

In terms of citizen and agency review, The GMA requires early and continuous public participation.[4] That participation started during the process to draft the Final Comprehensive Transportation Plan in 1991 (eleven workshops and public meetings were held and the draft plan was sent to adjacent cities and interested agencies). It continued as part of the 2000 Update (when additional community meetings and Council hearings were held during the Comprehensive Plan review and adoption process). The City Council held public meetings and hearings as part of the 2004 update, also.

[2] See Appendix C For data on 2004 turning movements, in addition.
[3] 236th Street SW Full Opening Programmatic Draft Environmental Impact Statement, R.W. Thorpe & Associates, Inc., Hammond, Collier, Wade-Livingstone, KJS Associates, Inc., September 18, 1998 and Transportation Engineers Northwest 2004.
[4] See RCW 36.70A.140, Comprehensive Plans – "Ensure public participation."

2. Existing Conditions

A. Regional setting

Brier had a population of 6,548 in 2000 within an area of 1,259.1 acres. The city is located in Southwest Snohomish County and lies just north of the King/Snohomish County border. Brier's western border is shared with the City of Mountlake Terrace, while to the north of the city is unincorporated Snohomish County and to the east is unincorporated Snohomish County and the City of Bothell. Brier lies in the midst of an urban area and its transportation systems are affected by and affect the communities surrounding it.

Brier is located between regional Interstates 5 and 405. Access to these major north/south freeways is provided by a series of minor arterials (as classified by the Snohomish County Arterial Plan).

B. Transportation System

Brier has a total of 27.5 miles of roadway with the majority of these roadways being low-volume neighborhood streets. Increasing cross-town commute traffic is a concern of residents. There are no arterials within Brier. The highest level of street is a collector that typically connects to an arterial outside of the City.

The streets in Brier classified by Snohomish County as collectors (or Major Traffic Streets as they are classified in the City)[5] are:

- Brier Road
- Poplar Way
- 228th Street SW

Minor Traffic Streets, tying into the Major Traffic Streets, include:

- Old Poplar Way
- Vine Road
- 214th Street SW

Other elements of Brier's transportation system include air transportation in the region (via major airports to the south – SeaTac and Boeing Field, and to the north via Paine Field), which is accessible by highway, and bus transportation provided by Community Transit (CT). Bus service is available in Brier on the "477" route. This route provides service between the Brier Park and Ride lot (located next to City Hall at 228th Street SW and 29th Avenue W.) and downtown Seattle during weekday peak hours. The route connects to CT route #112 (Lynnwood Transit Center) as well as Metro route #347 (Northgate Transit Center). Weekend and mid-day weekday service is provided one mile west of the City limits by the CT 112 or Metro 347 routes.

There are no known railroad rights of way in Brier; therefore that transportation mode is not available for either personal ridership or movement of freight and goods. The expeditious movement of freight and goods via truck in and through the City is not an issue as there is limited commercial development and there are no arterials. The postal service and other delivery services have not experienced any difficulty in providing services within Brier.

Brier does not have any state-owned transportation facilities, nor any facilities with statewide significance.

[5] Snohomish County's designation for a "Collector", also known as a "Collector Arterial" is equivalent to Brier's "Major Traffic Street" classification. Daily volumes on streets so classified is 3000 vehicles per day or more. Snohomish County's lowest street designation is a "Non-arterial". This classification is equivalent to Brier's "Minor Traffic Street" (1,000 to 3,000 vehicles per day) and "Neighborhood Street" (less than 1,000 vehicles per day) designations. See Appendix B for a more detailed discussion of these classifications.

INSERT FIGURE 1 – VICINITY MAP

C. Land Use

Land use is an important element of any transportation system. Figure 1 in the Land Use Element above shows the land use in Brier. The majority of Brier's land use (over 80%) is zoned for single-family residential. Neighborhood business (commercial) land use is restricted by zoning to a two and one half-acre area. As a result, Brier residents travel outside of Brier for shopping and employment. There are no major City destinations that attract large volumes of traffic to the City. Within Brier, land use such as neighborhood businesses, parks, and schools are trip destinations for residents. These destinations include:

- Brier Park
- Brierwood Park
- Bobcat Park
- Locust Creek Park
- City Lights Woods Park
- Brier Patch Park
- Brier Horse Arena
- Brier Elementary School
- Brier Terrace Middle School
- Brier City Hall
- Brier Library
- Brier Community Church
- Saint Paul's Orthodox Church
- Brier neighborhood business area

No significant changes are proposed at this time for the land use pattern through 2025.

D. Transportation System Inventory

As part of the Final Comprehensive Transportation Plan development in 1991, a survey of the existing conditions of Brier's streets, walkways and trails was conducted. The survey included a field check of every street in Brier, as well as examination of undeveloped areas that potentially might include trails or walkways. This survey collected information on:

- Right-of-Way Width
- Number of Lanes
- Sidewalks
- Drainage
- Emergency Access
- Lane Widths
- Grades
- Speed Limits
- Geometrics
- Pavement Type
- Pavement Condition
- Trails and Paths
- Abutting Land Use

This information was collected for each intersection-to-intersection segment on Brier's street system and then entered eventually into a computerized database.[6] This data was updated in 2004 through review of City records and field checks.

Overall, Brier's streets are two-lane roads with a maximum speed limit of 30 miles per hour. The Brier Road /Poplar Way corridor, which is Brier's main north/south street, has 20-foot wide lanes along most of its length. 228th Street SW, the main east/west street, has 11-foot wide lanes. Other streets typically have two lanes varying from 9 feet to 16 feet in width. Storm water drainage is provided by open ditches or by curbs, gutters and closed drain pipes.

With the exception of newer subdivisions, several minor streets, and Brier Road, curbs and gutters are not in place. Hilly terrain and curving roads result in geometric (sight distance, etc.) and radius problems along the following roads. In addition, road dips, slopes and sharp curves also create problems — **Figure 2** shows the location of these problems:

- 214th Street SW (Geometrics)
- Vine Road (Geometrics)
- 236th Street SW (Geometrics)
- 238th Street SW (Geometrics)
- 227th Street SW from 32nd Avenue W to end (dips in road/hazards)
- 232nd Place SW (3900 block – slope and curve)
- 237th Place SW and 36th Place W (parked cars combined with sight distance problems)
- 216th Street SW at Poplar Way and at Elm Drive (sharp curves combined with speeding)

Several streets are in poor condition with potholes and uneven pavement. **Figure 3** shows the location of roadways with either old overlay (greater than 10 years), that will need replacing, or with obvious problems.

No new collectors have been built in the last five years, but most of the streets in the City have had major overlays. In addition, new residential connectors have been built as well as sidewalk extensions. [7]

Bothell and Snohomish County completed improvements to 228th Street SE up to the eastern city limits in the last ten years. This resulted in increased volumes of non-local, pass-through traffic in the City.

Brier's current transportation system has facilities for non-motorized use. Most prominent is a multi-use trail along the east side of Brier Road/Poplar Way. In addition, in many parts of Brier, there is informal use of the roadway by equestrians, pedestrians, and bicyclists.

[6] This database is contained in a document titled "City of Brier Roadway Inventory, August 20, 1996" (on file in the Brier Public Works Department).

[7] According to the Public Works Department, since 2000 new sidewalks have been installed on 35th Avenue W from 228th Street SW to Alaska Street; on Old Poplar Way from 227th Street SW to 228th Street SW as well as from 219th Street SW to Brier Road, and along 233rd Place SW from 35th Avenue W to 37th Avenue W.

E. Historical and Forecast Population Growth

Brier and the areas around Brier experienced rapid growth in the late 1970s and 1980s. Brier's population increased by 78.0 percent between 1980 and 1990 with the number of housing units almost doubling. Between 1990 and 2000, Brier's population grew by 25.7 percent while the number of housing units increased by 16.1 percent. **Table 1** shows the historical growth of Brier. The slowing growth rate between 1990 and 2000 is similar to what occurred in older urban areas elsewhere in Snohomish County as the supply of vacant land decreased.

Population in Brier in the next two decades is expected to increase to 7,790 by 2025, an increase of 19.0 percent. This growth rate reflects the slower rate observed between 1990 and 2000.

TABLE 1
Historical and Forecast Population Growth

Population	1980	1990	2000	2025	% Change 1980-1990	% Change 1990-2000	% Change 2000-2025
Population [8]	2,915	5,210	6,548	7,790	78.7%	25.7%	19.0%
Housing Units [9]	946	1,822	2,115	2,556 [10]	92.6%	16.1%	20.9%

[8] 1980 and 1990 population figures are from Washington State's Office of Financial Management. 2000 population figures are from the U.S. Census Bureau – Census 2000. The 2025 population estimate was developed by Snohomish County using Puget Sound Regional Council's (PSRC) population forecasts as well as the State Office of Financial Management (OFM) forecasts. See Appendix C of the Land Use Element, "Technical Notes to Accompany Initial 2025 Population and Employment Growth Targets" for a more detailed discussion of the methodology.

[9] Washington State Office of Financial Management.

[10] 2,115 (housing units in 2000) plus 441 (minimum projected housing units needed to accommodate 2025 population) = 2,556. See the Land Use Element, Residential land Area Requirements section for a more detailed discussion of needed housing units for 2025.

FIGURE 2 — ROADWAY PROBLEMS

FIGURE 3– PAVEMENT CONDITIONS

FIGURE 4 – 2004 AVERAGE DAILY TRAFFIC VOLUMES

F. Traffic Volumes

Existing traffic volumes on selected Brier streets were collected in 1997 by Traffic Count Consultants as part of the 236th Street SW Draft EIS (1998). Hourly traffic counts on select roadway segments were collected by City of Brier staff in September 2004 to monitor traffic growth since 1997. Estimated 2004 Average Daily Traffic Volumes (ADT) resulting from the traffic counts are shown in **Figure 4**. The highest volume streets within Brier are 228th Street SW and Brier Road/Poplar Way. 228th Street SW west of Brier Road carries more than 10,000 daily vehicles, while Brier Road/Poplar Way carries more than 5,000 daily vehicle trips.

These volumes reflect the travel pattern of Brier residents and the surrounding communities. Brier Road /Poplar Way carries north/south trips through the City and 228th Street SW carries east/west trips.

G. Accidents

The Washington State Department of Transportation reports accident history data from January 1, 2001 through December 31, 2003 (the latest available tabulated data).[11] According to the summary report, the following locations have experienced from two to five accidents during that three-year period:

- Brier Road between 222nd Street SW and 224th Street SW (3 accidents)
- Brier Road at 236th Street SW (3 accidents)
- Brier Road in the 23400 block (3 accidents)
- 228th Street SW at 32nd Avenue W (4 accidents)
- 228th Street SW between 36th and 37th Avenues W (2 accidents)
- 214th Street SW near 32nd Avenue W (2 accidents)
- Vine Road at Elm Street (2 accidents)
- Locust Way at Vine Road (2 accidents)
- Locust Way at 228 Street SW (2 accidents)
- Poplar Way between 214th and 216th Streets SW (5 accidents)
- Old Poplar Way and Brier Road (4 accidents)

In general, five accidents or more at a single location in a twelve-month period would trigger the review for improvements, including stop signs or signals, if warranted. None of these locations fit those criteria.

H. Travel Patterns

Current travel patterns reflect the residential nature of the City. Residents travel west to Mountlake Terrace (via 228th Street SW and 214th Street SW) and north to Lynnwood (via Poplar Way) where there are opportunities for employment, shopping, entertainment, dining or to reach I-5 for travel to Seattle, Everett, or Bellevue/East Side. They also head east through Bothell via Vine Road, Atlas Road, and 228th Street SW, where there are

[11] See Appendix D for a summary report. Collision data for 2003 is 90% complete.

opportunities for employment, entertainment and dining in the Canyon Park and North King County areas. Residents travel south through Lake Forest Park to access north Seattle for opportunities for employment, to access I-405 and the East Side or for recreational opportunities on Lake Washington, or the Burke-Gilman Bicycle Trail.

3. Level of Service

A. Level of Service Definitions

Level of service is generally defined as the ability of a roadway or intersection to carry the volume of traffic. The level of service (LOS) is typically measured using a six-tiered rating system that has become a standard used by the majority of jurisdictions in the region.

Level of service is an indicator of the quality of traffic flow at an intersection or road segment. The LOS grading ranges from A to F, such that LOS A is assigned when no delays are present and low volumes are experienced. LOS F indicates long delays and/or forced flow.

B. Intersection level of service

Table 2 summarizes the delay range for each level of service at signalized and unsignalized intersections, and describes the prevalent traffic characteristics of each. The methods used to calculate the levels of service are described in the 2000 Highway Capacity Manual (Special Report 209, Transportation Research Board).

Table 2: Signalized and Unsignalized Intersection Level of Service Measures

	Signalized Intersection	***Unsignalized Intersection***
Level of Service	**Delay Range (sec)**	**Delay Range (sec)**
A	≤ 10	≤ 10
B	> 10 to ≤ 20	> 10 to ≤ 15
C	> 20 to ≤ 35	> 15 to ≤ 25
D	> 35 to ≤ 55	> 25 to ≤ 35
E	> 55 to ≤ 80	> 35 to ≤ 50
F	≥ 80	≥ 50

Source: "Highway Capacity Manual", Special Report 209, Transportation Research Board, 2000, Update.

Level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, and increased travel time. The delay experienced by a motorist is made of up a number of factors that relate to traffic control, geometries, traffic demand, and incidents. Total control delay is the difference between the travel time actually experienced and the *reference travel time* that would result during base conditions (i.e., the absence of traffic control, geometric delay, any incidents, or as a result other vehicles).

For unsignalized intersections, a level of service and estimate of average control delay is determined for each minor or controlled movement based upon a sequential analysis of

gaps in the major traffic streams and conflicting traffic movements. In addition, given that unsignalized intersections create different driver expectations and congestion levels than signalized intersections, their delay criteria are lower. Control delay at unsignalized intersections include deceleration delay, queue move-up time, stopped delay in waiting for an adequate gap in flows through the intersection, and final acceleration delay.

The *Highway Capacity Software* (version 4.1d) was used to evaluate levels of service at signalized and unsignalized intersections.

C. Street Level of Service

Street level of service is based on the average travel speed for the segment, or entire street under consideration. The average speed is derived from the travel time on the street segment(s) including the intersection approach delay. On a given facility, such factors as poor progression, improper spacing of side streets and driveways, and increasing traffic flow can substantially degrade the level of service. **Table 3** contains the street level-of-service definitions, which are based on average travel speed of Brier Road and 228th Street SW.

TABLE 3
Street Level of Service (LOS) Criteria
Range of free flow speeds of 35 to 25 MPH

LEVEL OF SERVICE	Avg. Travel Speed	General Description
A	>25	Free flow operations at average travel speeds. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay is minimal.
B	19 to 24.9	Reasonably unimpeded operations. Ability to maneuver is only slightly restricted and stopped delays are not bothersome. Drivers are not generally subjected to appreciable tension.
C	13 to 18.9	Stable operations. Ability to maneuver may be more restricted than in LOS B, longer queues may contribute to lower average travel speeds.
D	9 to 12.9	Borders on a range on which small increases in flow may cause substantial decrease in average travel speeds.
E	7 to 8.9	Is characterized by significant intersection approach delays and average travel speeds of one-third the free flow speed or lower.
F	<7	Traffic flows at extremely low speeds below one-third of the free flow speed. High approach delays at intersections.

Source: 2000 Highway Capacity Manual

D. Existing Intersection and Street Level of Service

Table 4 shows a sample of major intersections in the vicinity of Brier for comparison of existing levels of service.

TABLE 4
2004 Intersection Level of Service
(PM Peak Hour)

Intersection Type	**LOS**
Neighborhood-Minor Traffic Streets/ Neighborhood-Minor Traffic Streets	B
Neighborhood-Minor Traffic Streets / Major Traffic Streets	C
Major Traffic Streets / Major Traffic Streets	D
Street Type	
Neighborhood and Minor Traffic Streets	B
Major Traffic Streets	D

Intersection	**LOS**	**Delay[12]**
228th Street SW/44th Avenue W	C	28
228th Street SW/Brier Road	C	17
236th Street SW/Brier Road	A	8
232nd Street SW/35th Avenue W	B	14

Source: Transportation Engineering Northwest, LLC, 2004

Local Access streets in Brier typically have a LOS of 'A'. Since these streets do not provide routes through the City, they are unlikely to experience an increase in traffic due to growth in surrounding jurisdictions. Within Brier, the highest-level street is a collector. Collectors currently experience a LOS of 'C' during the peak hour, but function at a higher LOS at other times. The streets in Brier classified by Snohomish County as collectors are:

- Brier Road/Poplar Way
- Old Poplar Way
- 228th Street SW
- 34th Avenue W (between 228th Street SW and 232nd Street SW)*
- 232nd Street SW (between 34th Avenue W and Brier Road)*

* Classified as a collector on an interim basis

E. Minimum Level of Service Standards

[12] Note: Analysis based on HCS 2000 results using HCM 2000 control delays as reported in seconds per vehicle and LOS. At stop controlled intersections LOS and average control delays for stop controlled movements are reported only.

The following minimum level of service standards have been adopted for intersections and streets

within the City of Brier (see **Table 5**).

TABLE 5
Minimum Los Standards
Peak Hours

Intersection	LOS	Delay[13]
228th Street SW/44th Avenue W	C	28
228th Street SW/Brier Road	C	17
236th Street SW/Brier Road	A	8
232nd Street SW/35th Avenue W	B	14

III. NEEDED FACILITIES AND SERVICES

1. Transportation System Improvements

A. Traffic Volumes Forecast

By 2025, the population of Brier is projected to grow to 7,790, an increase of 19.0 percent over the year 2000. Estimated 2004 traffic volumes were projected to 2025 to determine impacts on the City's transportation system. **Figure 5** shows the forecast volume. The forecast volume indicates the future demands on Brier's roads.

Future daily traffic volumes on the City's Major and Minor Traffic streets are estimated on **Table 6**. The combination of continued growth of southwest Snohomish County, probable improvements in the regional highway network, and a greater choice in alternative transportation modes, make these estimates tentative. To be consistent with the work completed in 1998 and historical growth within the City, future daily traffic demands were estimated based on an average increase of approximately 1.0 percent per year.[14]

Intensive development is not expected to occur in Brier as the majority of the vacant land has been developed. Much of the remaining undeveloped land is undevelopable due to sensitive areas, and land use restrictions. In addition, there are no industrial sites and only four, low traffic generating neighborhood businesses in Brier. Based on the 2025 projected volumes, existing arterial/street levels of service are not likely to change during the planning period.

[13] Note: Analysis based on HCS 2000 results using HCM 2000 control delays as reported in seconds per vehicle and LOS. At stop controlled intersections LOS and average control delays for stop controlled movements are reported only.
[14] The traffic volume forecast assumes that 236th Street SW will not be opened to through traffic.

INSERT FIGURE 5 – Forecast Average Daily Traffic Volumes

TABLE 6 City Of Brier Existing And Forecasted Average Daily Traffic Volumes				
	1997 Measured Volumes		2004 Estimated Volumes	2025 Projected Volumes
Brier Road, south of 228th	5,400		5,800	7,900
Brier Road, north of 228th	5,500		6,000	8,000
Brier Road, south City Limits	4,200		4,500	6,100
Poplar Way	7,700		8,300	11,200
Old Poplar Way	1,000		1,100*	1,500
228th Street SW, west of Brier	11,300		12,200	16,400
228th Street SW, east of Brier	4,900		5,300	7,100
Vine Road	1,500		1,620	2,200
214th Street SW	1,600		1,730	2,300

Source: Transportation Engineering Northwest LLC., 2004

Future intersection levels of service for 2025 at key intersections are shown in **Table 7**. The all-way stop controlled intersection of 228th Street SW and Brier Road is estimated to operate at LOS D by 2025. Stop controlled movements at all other intersections would operate at LOS C or better. While some intersection levels of service would lower significantly over the planning period, the city's adopted levels of service standards would continue to be met.

TABLE 7

TABLE 7
2025 Intersection Level of Service
(PM Peak hour)

2025 Intersection Level of Service

Intersection	LOS	DELAY[15]
228th Street SW/44th Avenue W	C	35
228th Street SW/Brier Road	D	32
236th Street SW/Brier Road	C	17
232nd Street SW/35th Avenue W	A	8
Old Poplar Way/Brier Road[16]	C	17

Source: Transportation Engineering Northwest, LLC, 2004

B. Future Transportation System Development and Management

Forecasting future traffic volumes and levels of service helps the City to plan for the transportation facilities needed as a result of growth. This section discusses ways that the

[15] Analysis based on HCS 2000 results using HCM 2000 control delays as reported in seconds per vehicle and LOS. At stop controlled intersections LOS and average control delays for stop controlled movements are reported only.
[16] This intersection was added to the year 2025 analysis as a result of 2004 field checks and forecast growth in volumes.

City can respond to the increased demand on the transportation system. As shown below, by planning for needed roadways and through incorporating transportation demand and system management programs, the adopted level of service standards will be maintained.

1) Future Roads

Brier has limited room for additional development and expansion of the transportation system. Development during the last planning period was focused in the triangle formed by Old Poplar Way, Brier Road and 228th Street SW. The new roads in this area connect with Old Poplar Way and Brier Road. In the next two decades, there is growth potential along Poplar Way from the north city limit to Vine Road. Any new roads in this area would connect with Poplar Way. Other growth would be dispersed on occasional vacant lots or where lots are redeveloped. Under this scenario, no specific street would experience the brunt of significant new traffic volumes, as the growth in traffic would be spread throughout the City.

Several streets will need overlays in the next 10 – 15 years, according to the Public Works Department. These include:

- 228th Place SW
- 26th Avenue W
- 243rd Place SW
- 39th Avenue W
- 232nd Street SW
- 241st Place SW
- 27th Place W
- 28th Place W
- 217th Place SW
- 37th Place W[17]

No other significant transportation system improvements needs are projected at this time.

2) Transportation Demand Management

Another way to address the future transportation system demands is through the use of transportation demand management (TDM) techniques. This is a term used for a broad range of strategies that are intended to reduce and reshape use of the transportation system. These strategies focus on reducing or changing the amount of use of the transportation system rather than increasing the amount/availability of the system itself (i.e., streets, traffic signals, etc.) TDM is beneficial in that it can help to reduce the number of cars on the road, and thereby improve the air quality in the city and throughout the region, reduce the consumption of petroleum fuels, and reduce traffic congestion in the city and in the region without constructing new roads.

Considering TDM at the comprehensive plan level is important because it can uncover alternatives to investment in new, expensive city and regional

[17] These planned overlays are in addition to two that are already scheduled in the adopted and proposed 6-year TIP; 34th Avenue W (from 236th to 238th Street SW) and 39th Place SW (from Alaska Road to the end of the cul-de-sac).

capital projects. It can also extend the life cycle of existing infrastructure, such as streets.

TDM can be implemented in Brier using a range of strategies, including:

- Alternative Mode Support Strategies such as public education and promotion, ride matching services and Park & Ride lots
- Worksite-Based Strategies, such as alternative work schedules
- Land Use Strategies, such as compact residential development, mixed land uses, jobs/housing balance, affordable housing and development impact mitigation
- Programmatic and policy support strategies, such as trip reduction ordinances and programs, and support of new institutional relationships
- Telecommunications strategies, such as telecommuting, and internet-based strategies, and
- Pricing strategies, such as parking pricing, and transit and vanpool fare subsidies

Strategies that can be implemented without large budgetary expenditures include encouraging carpooling and vanpooling, promoting transit use, and promoting bicycling and walking. Also, working with Community Transit to offer one of its many public awareness campaign tools in the City is a strategy that would require little new expenditure to encourage transit alternatives to reduce automobile trips. In addition, the City will work with Community Transit to increase service in Brier in order to have more opportunities for transit use. Increasing transit ridership to optimum levels would also be a significant TDM measure in the City.

Land use planning also can be an effective, long-term TDM strategy for the City. It includes measures such as:

- Increasing housing density and mix of uses around areas already served by transit
- Considering custom transit strategies
- Consider mixed-use development
- Improving the jobs/housing balance within the city
- Improving bike and pedestrian support facilities and amenities
- Insuring that future development provides for transit usage and are pedestrian and bicycle friendly

All of these measures would reduce the volumes of traffic in the city and region without significant investment in transportation system improvements.

Appendix E includes detailed discussion of key strategies the City could consider in implementing its TDM program.

3) Transportation System Management

Transportation system management is intended to achieve maximum efficiency of the current system without adding major new infrastructure. An efficient system in Brier will have a positive impact on the overall transportation system in the region. Other benefits of transportation system management are cost savings in not having to build new roads, reduced traffic congestion, and reduced air pollution.

Brier's transportation system is fairly efficient, especially since traffic congestion and capacity are not issues the City has had to face. However, the City is committed to a balanced and efficient transportation system, and recognizes that improvements to the existing system may be necessary as the population grows. Increased transit service to enhance the links between surrounding communities is a system improvement that could be implemented in the near term. This service could include additional bus lines or re-instituting door-to-door service. The City will also monitor key busy intersections, such as Brier Road and 228th Street SW, to ensure that traffic flows smoothly through them. Future improvements, if necessary, might include turn lane pockets, signals, or roundabouts (traffic circles).

4) Traffic Management

Effective traffic management on the existing streets will reduce traffic speeds, vehicle noise, visual impacts and through traffic volumes in residential neighborhoods by physical, psychological, visual, social and legal (regulatory and enforcement) means. **Table 8** lists common action of traffic management programs.

TABLE 8
Traffic Management Activities

Traffic management		**Activities**
Reducing	By What Means	Example
Through Volumes	Physical	Traffic circles, chicanes, or curb bulb-outs. Installation of signs such as "Residential Street; Local Access Only"
Vehicle Noise	Psychological; Physical	Variable-spaced paint stripes to reduce speeds and thus noise. Landscape buffers and planter strips.
Visual Impacts	Visual	Landscaping to block through views.
Traffic Speeds	Social; Physical	Neighborhood "Speed Watch" program, and/or implementation of traffic calming methods listed above. Construction of narrower streets, especially when lined with trees or other landscaping.
Accidents	Legal	Strict speed enforcement; spot safety improvements

Source: Adapted from WSDOT A Guidebook for Residential Traffic Management

Strategies for achieving effective traffic management are as follows:

- Education, encouragement and enforcement programs such as "emphasis patrols" by local police to catch speeders, elementary school programs to teach and reinforce "defensive walking and biking habits" to school children, or speed watch programs by residents.

  Laws and ordinances – prohibiting through trucks in residential areas, posting speed limits in residential areas, or on-street parking restrictions.
- Traffic control devices – ranging from turn prohibitions at key entry points to successions of stop signs.
- Geometric design features – physical restrictions to induce low speed travel such as narrow streets, traffic circles, chicanes, bulb-outs or chokers, and traffic diverters and street closures.

C. Impact of Brier's Transportation and Land Use Plan on Adjacent Jurisdictions

The future development within Brier's City Limits and in its Planning or Sphere of Interest Area will consist primarily of single-family residential dwellings. Non-residential development is likely to include new parks and open space or redevelopment of neighborhood business uses located within Brier. Since there are limited employment and shopping opportunities within the City, residents will continue to go west to Mountlake Terrace (via 228th Street SW and 214th Street SW) and north to Lynnwood (via Poplar Way, through unincorporated Snohomish County) for employment, shopping, or to reach I-5 for travel to Seattle, Everett, or Bellevue/East Side. Forecast volumes on these two streets show that these two adjacent jurisdictions would experience increased traffic from the City.

Additional traffic will head east through Bothell, possibly via Vine Road, Atlas Road, and 228th Street SW, to reach the Canyon Park. Traffic is likely to increase for people traveling south-bound on Brier Road through Lake Forest Park to reach north Seattle. Traffic forecasts show some increases on these south-bound streets, though the degree to which these southern jurisdictions would experience City traffic is less than for Mountlake Terrace and Snohomish County.

Given the nature of the forecast land use for 2025 in Brier, traffic patterns are likely to remain similar to current patterns, although there is likely to be some additional traffic generated by the new development. There may be some traffic congestion and associated delays on major streets, particularly during morning and afternoon commute hours. Adjacent jurisdictions would likely experience some increase in volumes on streets connecting with the City. That increase would be on the same streets and intersections as experience Brier traffic now, given the expected dispersed pattern of City growth.

Impacts of the adjacent jurisdictions of Mountlake Terrace, Lynnwood, Snohomish County, Bothell, and Lake Forest Park on Brier are also anticipated. As neighboring cities and the unincorporated County increase in population, there will be an increase in non-local through traffic traveling through the City on Brier Road as well as on 236th Street SW, 228th Street SW and Vine/Poplar Way. Existing levels of service on arterials are not likely to change, however, even assuming projected through traffic. Additional coordination with these jurisdictions is essential so that no jurisdiction has a substantial increase in traffic that will reduce its level of service.

D. Coordination of Land Use and Transit Service

Future residential development in Brier is planned to continue within the established pattern of zoning. It is anticipated that Brier's development will continue to support at least one commuter bus line associated with a Park and Ride lot. Much of the future development will be located in the northeast quadrant of Brier, which is within walking or biking distance to the Park and Ride Lot. This could result in an increase in bus ridership and/or carpooling or vanpooling. Accessory dwelling units, which are allowed in Brier, should be especially encouraged to locate within one mile of the Park and Ride Lot or 228th Street SW to further encourage transit use, vanpooling, carpooling, walking, and bicycling.

In addition, it is anticipated that non-motorized travel will increase during the planning period because more sidewalks, multi-use trails, and connections to existing trails will be built. These new sidewalks and trails can be used to encourage alternative forms of commuting by making it easier to walk or bicycle to the Park and Ride Lot, or to connect to one of the regional trails such as the Interurban and Centennial Trails to the west and north, and to the Burke-Gilman trail to the south, all of which are located near employment centers. Education about alternative transportation modes, trip reduction, and non-motorized travel will be very important as the City grows and traffic congestion in the Puget Sound Region increases.

Community Transit also has policy guidelines to encourage public transportation systems to reduce traffic congestion, promote energy conservation, and improve mobility within the community. The foundation of these policies is to effectively coordinate land use decisions with public transportation services. Brier's efforts to coordinate land use and mobility, as described above, should demonstrate the City's commitment to a balanced and efficient transportation system.

2. Proposed Transportation Facilities

A. Proposed Street System Classification

The street classification criteria shown in Appendix B were applied to Brier's transportation system once future street volumes had been forecast. Figure 6 shows the future street classifications. The streets are classified similarly to the 2004 classifications with some exceptions.

Reflecting Brier's residential character, the majority of the streets would remain Neighborhood Traffic and Local Neighborhood Service Streets with 1,000 or fewer daily trips. Several streets serve enough neighborhoods to warrant higher-level classification as a Minor Traffic street, with 1,000 to 3,000 daily trips.

Minor Traffic Streets would include:[18]

- Old Poplar Way
- Vine Road
- 214th Street SW
- 236th Street SW
- 34th Avenue SW
- 36th Avenue SW

[18] Based on Final Comprehensive Transportation Plan (David Evans and Associates, Inc., July 1991) and Traffic Engineers Northwest 2004 survey and forecast.

The highest level of streets in Brier are Major Traffic Streets, which carry 3,000 or more vehicles a day and function as through roadways. The streets that would fit the criteria for Major Traffic Streets in 2025 in Brier would be Brier Road /Poplar Way and 228th Street SW.

A proposed perimeter and loop multi-use trail for Brier is shown in **Figure 9**. This proposes the addition of a number of soft-surface, multi-use trails to form a loop route through Brier.

A walkway, sidewalk and trail classification map is shown in **Figure 10**. Shown are a number of soft-surface, multi-use trails. Most of these trails are part of the proposed perimeter trail. In addition, the location of several possible off-road trails are identified.

Figure 11 shows proposed bikeways. Again, a number of the proposed bikeways are designed to be part of a perimeter trail.

B. Transportation Projects

See the Capital Facilities Element for the schedule of transportation system improvements. Brier will continue to improve its street system as shown in the Capital Facilities Plan (CFP) included in that Element. It includes projects designed to correct identified maintenance problems and roadway deficiencies. Other projects on the list include non-motorized improvements and traffic calming improvements. **Table 6** in the Capital Facilities Element indicates the road sections, type of projects, and estimated cost of the improvements. Implementation of these projects will help the City maintain its current level of service as it grows.

In addition to the capital facilities projects, the City continues to install new crosswalks to increase safety. Since 2000, crosswalks have been installed across Brier Road (at the intersections of 236th Street SW and 232nd Street SW as well as across Brier Road at 222nd Street SW) across Poplar Way at 216th Street SW; across 232nd Street SW at 34th and 32nd Avenues W; across 228th Street SW at 32nd Avenue W; across 35th Avenue W near Brier Elementary School (4 crosswalks), and at the intersection of 34th Place and 233rd Place SW, Additional safety improvements will continue to be constructed as conditions warrant.

The City's Six-Year Transportation Improvement Program (TIP) calls for six projects over the period 2007 to 2012, including four (4) projects to construct or replace curb, gutter and sidewalks — as well as two asphalt overlay projects.[19] This TIP builds upon the analysis and projection of needed projects and available revenue found in the Capital Facilities Element. The estimated expenditure would be $504,000. The next section as well as the Capital Facilities Element discusses alternative revenue sources for funding these projects.

[19] See Appendix F for the detailed Six Year TIP.

Figure 6 - Proposed Street Classification

Figure 7 - Typical Traffic Diverter (Plan View)

Figure 8 - Typical Traffic Diverter (Overhead View)

Figure 9 - Perimeter and Loop Multi-Uses Trail

Figure 10 - Walkways, Sidewalks and Trails

Figure 11 - Bicycle Ways

IV. FINANCING NEEDED FACILITIES AND SERVICES

1. Funding

Over the past two decades, the traditional sources of state and municipal public road funding have declined and securing of funding has become more competitive. Funding road projects, especially in light of the rapidly increasing costs for improvements, has become more difficult. The main outcome of reduced funding is that some projects might be delayed if there is not sufficient funding in a given year.

Despite the funding challenges, Brier has received funding in recent years from a variety of sources to assist in paying for its road improvements. Funding sources have included:

- 1998 — $31,700 from the Washington State Department of Transportation for design and construction engineering and funding assistance on the 34th Avenue W and 230th Street sidewalk improvements;
- 1999 — $50,000 each from the Washington State Transportation Improvement Board (TIB) for design and construction engineering and funding assistance on two projects; the 214th Street SW and the 228th Street SW sidewalk improvements;
- 2000 — $138,410 from the Washington State TIB for design and construction engineering and funding assistance on the Brier Road sidewalk improvements;
- 2003 — $50,000 from the Edmonds School District and $65,500 from the Washington Traffic Safety Commission for design and construction engineering and funding assistance on the Brier Elementary pedestrian improvements;
- 2003 — $126,000 from the Washington State TIB for design and construction engineering and funding assistance on the Old Poplar Way sidewalk improvements.

If there are potential funding shortfalls based on the projected transportation system needs, the City will need to raise additional funds for transportation improvements, consider revising its level of service standards, or reassess its land use assumptions.

It is forecast that the level of service for streets will not change by 2025; the level of service for intersections will change, though none of the intersections would drop below City-adopted LOS standards, even with the anticipated growth and development. Therefore, the focus of the strategy in this Element as well as in the Capital Facilities Element is on funding solely. In Brier, raising additional funds will primarily rely on alternative, outside sources, rather than raising City property taxes or floating bonds to fund transportation projects. Recognizing that traditional sources of funding are often inadequate, a number of alternative funding strategies could be used to pay for Brier's roadway projects.

These strategies include the following sources:

- TIP funding is the Six Year Transportation Improvement Program. This is State distributed funding.
- TIA funding is the Transportation Improvement Account that grants funds from the Transportation Improvement Board (TIB) for eligible projects.
- LID, or Local Improvement District funding assesses fees on property owners who choose to tax themselves to finance improvements.
- Impact fees and frontage mitigation assess developers for the cost of roadway

improvements. (This option is discussed in greater detail below.)

- Federal and State transportation funding, such as the new TEA-21 (Transportation Equity Act for the 21st Century), could be requested by the City. Other funds include:

  - Public Works Trust Fund – The State Department of Community, Trade and Economic Development (CTED) provides low interest loans available for capital facilities planning, emergency planning and construction of bridges, roads, domestic water, sanitary sewer, and storm sewer.

  - Community Development Block Grant – Community Development Block Grant (CDBG) funding is available annually statewide through the federal Department of Housing and Urban Development for public facilities, economic development, and housing projects which benefit low and moderate income households.

  - Community Economic Revitalization Board Grant (CERB) – CTED provides low interest loans and occasionally grants to finance sewer, water, access roads, bridges and other facilities for a specific private sector development.

  - Urban Arterial Trust Account Grants (UATA) – The Washington State Transportation Improvement Board (TIB) provides funding for projects to alleviate and prevent traffic congestion. In order to be eligible, roads should be structurally deficient, congested by traffic, and have geometric deficiencies or a high incidence of accidents. Funds are awarded on an 80% Federal / 20% local matching basis.

  - Transportation Improvement Account Grants (TIA) – The State TIB provides funding for projects to alleviate and prevent traffic congestion caused by economic development or growth. Eligible projects should be multi-agency, multi-modal, designed to reduce congestion and encourage economic development, and partially funded locally. Funds are awarded on an 80% Federal / 20% local matching basis.

  - Surface Transportation Program (STP) Grants – The Puget Sound Regional Council (PSRC) provides grants for road construction, transit capital projects, bridge projects, transportation planning, and research and development. Projects must be on the Regional (TIP) list, and must be for roads with higher functional classifications than local or rural minor collectors. Funds are available on a Federal / local match, based on the highest-ranking projects from the Regional TIP list.

- IAC funding is from the Inter Agency Committee for Outdoor Recreation. The program combines funds from several sources and makes them available for outdoor recreation and conservation purposes. Agencies which apply need to have a parks and recreation plan.

Transportation improvements are also funded and constructed by developers for subdivisions and other land development projects in order to meet the City's development regulations and to mitigate project impacts. These regulations also extend to major and minor traffic streets in the project vicinity where project impacts have been identified through the SEPA process.

Developer assessments can take on many different forms. Traditional methods include the Local Improvements District (LID). Its application has been generally restricted to properties that abut a road improvement and that will directly benefit. However, the concept is extended to a greater benefit area that may include properties not abutting the road improvement.

The LID is still considered one of the most equitable and desirable forms of developer assessment. It causes road improvement costs to be spread over all potential benefactors, including existing as well as new developments, and a reasonable public share. It permits execution of road improvements at such a time as it is necessary; and it permits the recovery of the improvement costs incrementally over a 10 to 20 year period of time at municipal bond interest rates.

By avoiding "up front" capital assessments, development projects can be more economically viable. By spreading recovery costs over time, such costs can be better handled commensurate with the cash flow economics of a completed land development project. The public share of the road improvement costs can also be collected incrementally over a measured period of time.

A practice that is becoming more commonly used by municipal governments is an "up front" assessment of development projects for desired road improvements. These requirements are being imposed during the SEPA and permitting processes as conditions of development permit. They take on different forms ranging from various offsite road construction requirements to direct cash assessments for off-site road improvements to be paid prior to occupancy.

An outcome of the 2004 Plan Update is that Brier will be in a better position to seek alternative funding sources as a result of meeting GMA and PSRC requirements. In addition, stronger policies and ordinances will be in place to require improvements for needs generated by new development. By continuing a multi-faceted funding approach and considering new funding sources, such as impact fees or public/private partnerships, Brier will be able to continue to improve its transportation system.

2. Capital Facilities Plan

The transportation capital facilities priorities are incorporated into the City's overall capital facilities plan which is located in the Capital Facilities Element. Potential funding sources from the list above are identified for each project included in the Capital Facilities Plan.

V. TRANSPORTATION ELEMENT GOALS, OBJECTIVES AND POLICIES

GOAL TR1.0: Provide a multi-modal transportation system which meets the needs of motorized and non-motorized travel.

Policy TR1.1: Develop a system of transportation facilities and services that serves the access and circulation needs of City residents and visitors.

Policy TR1.2: Establish and apply a functionally defined hierarchy of streets and appropriate design guidelines for street development.

Policy TR1.3: Establish an on-going street right-of-way review program in order to bring existing streets up to standards and to plan for new streets and improvements.

Policy TR 1.4: Work with Community Transit to ensure that transit service within Brier is designed to meet, to the extent possible, the needs of the users and to ensure that the public is aware of the service.

Policy TR 1.5: Collaborate with the State DOT and Community Transit to continue to offer convenient transit connections such as between the central Brier Park and Ride and bus route number 477 with service to Seattle.

Policy TR 1.6: Participate in programs and provide information to the citizens on transportation demand management techniques such as ridesharing, promoting transit use, and increasing the use of non-motorized transportation in order to reduce the number of automobile trips within Brier and to help reduce pollutants that affect the air quality of the Puget Sound region.

Policy TR 1.7: Provide handicap access in compliance with federal laws for all transportation components, including buses, nonresidential parking areas, streets, sidewalks, and multi-use trails.

Policy TR 1.8: Adopt a minimum peak hour Level of Service as follows:

Streets

"B" for all Minor Traffic and Neighborhood Streets; and "D" for all Major Traffic Streets;

Intersections

"B" for Neighborhood-Minor Traffic Streets/ Neighborhood-Minor Traffic Streets;

"C" for Neighborhood-Minor Traffic Streets/Major Traffic Streets; and
"D" for Major Traffic Streets / Major Traffic Streets

GOAL TR 2.0: Ensure the safety of the traveling public.

Policy TR 2.1: Attempt to reduce accidents by analyzing transportation elements to determine unsafe locations.

Policy TR 2.2: Provide for a safe integration of bicycle, pedestrian, equestrian, and motorized networks.

GOAL TR 3.0: Provide cost effective transportation facilities and services compatible with and supportive of the City's residential character.

Policy TR 3.1: Strive for equitable allocation of improvement cost responsibilities among public jurisdictions and the private sector.

Policy TR 3.2: Coordinate land use development plans with transportation and mobility needs for the community to promote non-motorized travel, pedestrian travel, and transit use.

Policy TR 3.3: Develop and adopt concurrency management regulations.

Policy TR 3.4: The City should pursue and strategize the funding for transit-related safety enhancements such as bus pullouts and similar infrastructure.

Policy TR 3.5: Establish transit communications services, and establish connections to other transit services and regional transit services such as Sound Transit and Community Transit.

GOAL TR 4.0: Establish a transportation system and facilities which fulfill Brier residents' desire to remain a residential community which encourages minimal, non-local traffic.

Policy TR 4.1 Plan and design streets to provide a logical network related to all segments of the planning area and to the community at large to discourage non-local trips.

Policy TR 4.2: Provide adequate traffic flow on Major Traffic streets while limiting traffic on all other streets.

Policy TR 4.3: Continue to pursue the current road maintenance program and encourage property owners to maintain the appearance of the public right-of-way adjacent to their property.

Policy TR 4.4: Continue to upgrade City streets to current adopted standards based on availability of funds and existing physical constraints.

Policy TR 4.5: Continue the City's neighborhood traffic control program in coordination with Public Works and the Police Department to address specific neighborhood traffic concerns.

Policy TR 4.6: Encourage safety and beautification projects for all roads in the City.

Policy TR 4.7: Encourage, where possible, the provision of landscaping strips on all streets at the time of acquisition and/or development.

Policy TR 4.8: Recognize the needs of and incorporate designs for emergency vehicle, refuse collection and public transportation in city road design and construction.

Policy TR 4.9: Develop traffic mitigation priorities, with roundabouts (traffic circles) being a high priority, in order to preserve the character of Brier.

GOAL TR 5.0: Provide transportation facilities and services in a manner that protects and enhances the environment.

Policy TR 5.1: Avoid sitting transportation facilities in environmentally sensitive areas.

Policy TR 5.2: Implement appropriate mitigating measures where impacts are identified.

Policy TR 5.3: Encourage buffering between motorized travel and non-motorized transportation modes by physical space, landscape strips or other physical or design methods.

Policy TR 5.4: Evaluate all land use permit applications for biofiltration and storm drainage requirements, and capital improvements (for example, curbs and gutters improvements).

GOAL TR 6.0: Develop a functional, safe and convenient system of pedestrian, bicycle and equestrian pathways and facilities throughout the city.

Policy TR 6.1: Encourage the development of pedestrian right-of-way and lighted trails which can provide safe passage between neighborhoods, schools, businesses, and recreational areas.

Policy TR 6.2: Provide for the safe and convenient integration of bicycle, pedestrian, equestrian and motorized networks.

Policy TR 6.3: Provide sidewalks, or walkways on at least one side of every street, especially near schools.

Policy TR 6.4: Require sidewalks on all streets designated as school walk routes between schools and major and minor traffic streets.

Policy TR 6.5: Consider and encourage the designation of additional public rights-of-way for trails and walkways for access and circulation of non-motorized travel.

Policy TR 6.6: Encourage sidewalks, bikeways and multi-use trails along public roads.

GOAL TR7.0: Communicate and coordinate the transportation needs and interests of Brier with adjacent communities and applicable transportation agencies.

Policy TR 7.1: Communicate and coordinate with the surrounding areas so their transportation

plans can be adapted in order to minimize cross-traffic through Brier.

Policy TR 7.2: Participate with other jurisdictions in the planning process of regional transportation systems.

GOAL TR 8.0: Provide parking facilities and controls that complement the road system.

Policy TR 8.1: Promote adequate off-street parking for all land uses.

Policy TR 8.2: Establish design requirements for nonresidential land uses.

GOAL TR 9.0: Strive to attain or maintain federal and state air quality requirements.

Policy TR 9.1: Support the air pollution abatement and prevention activities of the Puget Sound Air Pollution Control Agency (PSAPCA), including the requirements of the federal and state clean air acts.

Policy TR 9.2: Promote and support public education efforts regarding air quality impacts.

APPENDIX A

Background Data

APPENDIX A – BACKGROUND DATA

- City of Brier Comprehensive Plan - Draft Final - September, 1988
- City of Brier Draft Comprehensive Plan - November, 1988
- City of Brier Comprehensive Plan - April, 1989
- City of Brier 2000 Comprehensive Plan Update – November 28, 2000
- City of Brier 236th Street SW FULL OPENING, Programmatic Environmental Impact Statement – December 1999
- City of Brier Final Comprehensive Transportation Plan – July 1991
- Brier Comprehensive Park, Trail, and Open Space Plan - 1989
- Brier Subdivision Ordinance - May 1990
- Assorted Brier Planning Commission Minutes
- Assorted Traffic Studies -
  - Castle Crest
  - Country Side
  - Vanek Plat
  - Community Christian Church
- Historical Traffic Counts 1983-1986 - Snohomish County Department of Public Works - 1988
- Kroll Map Company - Atlas of Everett and Southwest Snohomish County - 1990
- Snohomish County - Design Standard and Specifications - Snohomish County Department of Public Works - 1990
- Road Needs Report - Snohomish County Department of Public Works - November, 1990
- Market Profile Analysis - Consumer and Business Demographic Reports - 1988
- Population Trends for Washington State - Office of Financial Management - 1990
- Snohomish County Comprehensive Parks & Recreation Guide - 1986
- Snohomish County Parklands Guide - 1988
- Community Transit Comprehensive Plan 2001 - 1989
- Southwest County Area Comprehensive Plan - Southwest Snohomish County Planning Council - 1965
- City of Lynnwood Traffic Flow Map - 1988
- Lynnwood Policy Plan - 1989
- City of Mukilteo Comprehensive Plan - 1988
- Mountlake Terrace Comprehensive Policy Plan - 1983
- Alderwood Area Comprehensive Plan - Snohomish County Planning Department - 1973
- City of Mill Creek Comprehensive Plan - Draft – 1990
- Washington State Department of Transportation 'TDM Guide for Planners…' – August 1996

APPENDIX B

CLASSIFICATION CRITERIA

MAJOR TRAFFIC STREET (Collector)

Functional Purpose

- Principal route for movement of traffic through and to Brier. This class of street connects local cities and commercial areas to Brier. In addition, this street connects to higher-level regional streets outside of Brier city limits. This level of street carries through trips.

Physical Design Features

- Residential areas should be buffered by distance and landscaped with planted strips.
- Landscaped planting strip with trees.
- Intersections at grade with direct access to adjacent property.
- Traffic controls at intersection with other streets.
- Provisions made for pedestrian use, including frequent crosswalks and signage.
- May be designed to include bicycle routes, walking paths and equestrian trails.
- Two lanes.
- Spacing between streets of approximately 1 mile.

Operational Characteristics

- Speeds of 25 to 35 mph.
- Daily traffic volume of 3,000+ vehicles.
- Traffic on other lower classifications of streets stop at Major Traffic Streets.
- Parking restricted as necessary for the movement of motorized and non-motorized traffic.

Traffic control used to control turning movements as necessary for safe and efficient flow of traffic.

MINOR TRAFFIC STREET

Functional Purpose

- Serves as a distributor of traffic from a Major Traffic Street to less important streets, to secondary generators such as schools and parks and to serve trips between areas within and immediately around Brier.
- Has less traffic carrying capacity than Major Traffic Streets. The design and operational controls should give preference to the distribution of traffic and should discourage through trips.

Physical Design Features

- Intersections at grade with direct access to adjacent property.
- Landscaped planting strips.
- Traffic signs at intersections with other streets as warranted to provide for the safe distribution of traffic.

Provision of safe pedestrian facilities along such routes. The design should provide for maximum separation between pedestrian and motorized travel lanes and for safe and frequent pedestrian crossings. Pedestrian crossing prohibitions would be unusual at any intersection with another Minor Traffic Street or street of lower classification.

May be designated bike, pedestrian or equestrian routes, incorporate paths or horse lanes or

be open for the general use of non-motorized vehicles and horses.
- Incorporates two lanes; incorporate a two-way, left-turn lane if necessary.
- Spacing between Minor Traffic Streets of .25 mile.

Operational Characteristics
- Typical traffic speeds of 25 mph except 20 mph in school zones.
- Traffic volumes of 1,000 to 3,000 vehicles per day.
- Traffic on Neighborhood Traffic Streets is stopped to give the right-of-way to traffic on Minor Traffic Streets. Access between Minor and Local Neighborhood Service Streets may be restricted to protect adjacent land uses from undesirable levels of traffic.
- On-street parking generally permitted, but may be restricted to facilitate efficient traffic flow.
- Access to adjacent property may be restricted for safety considerations.

NEIGHBORHOOD TRAFFIC STREET

Functional Purpose
- To collect and distribute traffic from higher level streets to residential areas. The design and operational controls should give preference to the distribution of traffic and should discourage through trips.

Physical Design Features
- Intersections at grade with direct access to adjacent property.
- Landscaped planting strips.
- Intersections with Major, Minor or other Neighborhood Traffic Streets should be signed as warranted to facilitate the safe movement of traffic along each street as well as to facilitate turning movements between such streets.
- The design should provide for safe pedestrian movement along such routes. Pedestrian crossing prohibitions would be unusual at any intersections.
- May have designated path, incorporate non-motorized or horse lanes or be open for the general use of non-motorized vehicles or horses.
- Incorporates two through lanes; two-way, left-turn lanes generally not applied.
- Spacing between Neighborhood Traffic Streets of 500 to 1,000 feet.

Operational Characteristics
- Typical traffic speeds of 25 mph except 20 mph in school zones.
- Traffic volumes of less than 1,000 vehicles per day.
- Traffic on Local Neighborhood Service Streets is stopped to give the right-of-way to traffic on Neighborhood Traffic Streets. Access between Neighborhood and Local Neighborhood Service Streets may be restricted to protect the lower class street and adjacent land uses from undesirable levels of traffic.
- Traffic movement and service to abutting properties are both important functions of Neighborhood Traffic Streets; therefore, parking removal or the acquisition of additional right-of-way for moving traffic should not be undertaken except at specific locations or under special circumstances.
- Parking generally unrestricted except for safety considerations.

LOCAL NEIGHBORHOOD TRAFFIC STREET

Functional Purpose

- Provide access to neighborhoods and driveways and provides on-street parking and access to off-street parking and loading for the immediate residential area. These streets are often residential cul-de-sacs connected to Neighborhood Traffic Streets and occasionally to higher level streets.

Physical Design Features

- Intersections at grade with direct access to adjacent property.
- Landscaped planting strips.
- The design should provide for safe pedestrian movement with safe and frequent pedestrian crossings.
- Typically open for the general use of non-motorized transportation and may be utilized for designated bicycle, pedestrian and equestrian routes.
- One to two through lanes and one to two parking lanes should be provided. Streets should be designed and located to prevent the continuous or unobstructed flow of traffic through a neighborhood.
- Spacing between Local Neighborhood Traffic Streets of 100 to 500 feet.

Operational Characteristics

- Typical Traffic speeds of 25 mph except 20 mph in school zones.

Traffic volumes as generated by the immediate neighborhood, but generally less than 500 vehicles per day, depending upon the land use intensity and distance between surrounding higher classified streets.

- Intersections with other Local Neighborhood Streets uncontrolled except as found necessary for safety or to control traffic volumes or speeds. The control utilized may consist of signing as guided by the MUTCD or by such restrictive devices as traffic circles or traffic diverters consistent with emergency and other access needs.
- Traffic on Local Neighborhood Service Streets is stopped at intersections with higher classified streets. Access to higher classified streets may be restricted as consistent with emergency access needs to protect the neighborhood from significant volumes of non-local traffic.
- Parking generally unrestricted although restrictions may be applied for emergency vehicle access, and general traffic safety.

SCENIC ROUTE

Functional Purpose

- To provide special landscaping and park-like features to streets or to recognize scenic significance of streets otherwise intended to move traffic and/or provide access. This classification is in addition to a "traffic" street classification.

Physical Design Features

- All types of street design.
- Design may include scenic route signs, medians, benches, planting strips and other features to increase park-like appearance of the street.
- Often concurrent with walkways, bike paths, and multi-use trails.

Operational Characteristics

- As dictated by principal use of the street.

BICYCLE LANE

Functional Purpose

- Roadway of which a portion has been designated by traffic control devices for preferential or exclusive use by bicycles to provide separation from motor vehicle traffic. Typically, they are installed to encourage bicycle use on a particular street.

Physical Design Features

- One-way facilities, one on each side of the street (two-way bicycle lanes are not advisable). Typically located between the parking areas and the traffic lanes, or where parking is prohibited, the lanes are located between the curb and the traffic lanes.
- Designated by a painted white line four feet from the curb or five feet from a parked car; and a bicycle symbol painted in the bike lane at intervals of one block. Where there are heavy volumes of left turning bicycles, a separate turning lane for bicyclists may be provided.
- General guidelines for striping and signing are in the MUTCD and the AASHTO Guide for the Development of New Bicycle Facilities.

Operational Characteristics

- As dictated by principal use of street.
- A wide range of bicyclists speeds (8 to 25 mph) and a wide range of users can be expected.

SIGNED BICYCLE ROUTE

Functional Purpose

- Shared roadways (i.e. bicycle and motor vehicles) which are signed as "Bike Routes". Typically, they are used to create local recreational loop routes and provide continuity for regional systems.

Physical Design Features

- Designated by installing Bicycle Route signs. Pavement stencils and arrows may also be used to demarcate Bicycle Routes.
- Wide curb lanes (13 to 15 feet side) desirable.
- May or may not have a striped Bicycle Lane.

Operational Characteristics

- As dictated by principal use of street.
- A wide range of bicyclists speeds (8 to 25 mph) and a wide range of users can be expected.

WALKWAY/SIDEWALK

Functional Purpose

- Paved facility for the exclusive use of pedestrians and slow speed bicyclists. Typically, they are adjacent to all classes of streets and may provide connections between neighborhoods, schools and other destinations where streets do not go through.

Physical Design Features

- Five feet wide minimum. Extra width needed at schools, bus stops, and other high pedestrian locations.
- Concrete where adjacent to streets. Asphalt my be appropriate in some situations through parks and open areas.
- Typically separated from the curb (or edge) of a street by a two to six foot planting strip. May be directly adjacent to the curb in some residential situations.
- On one side of every street. On both sides of street where space allows.

Operational Characteristics

- Walkers are primary users.
- Likely to be mixed use with joggers and children on bicycles.

MULTI-USE TRAIL

Functional Purpose

- Soft surface trail for exclusive use of joggers, walkers, equestrians, and mountain bikes. Typically, they either parallel a street or go through open space in a connected, continuous system.

Physical Design Features

- Soft surface.
- Minimum of three feet wide with a total clearance of six feet up to a height of twelve feet.
- Typically separated from the curb (or edge) of a street by a six foot planting strip. May be directly adjacent to the curb in some situations.
- On one side of a street. Typically, paired with a paved walkway/sidewalk on the other side of a street.

Operational Characteristics

- Likely to be mixed use with joggers, walkers, equestrians, and mountain bikes.

POSSIBLE OFF-ROAD TRAIL

Functional Purpose

- Future desired trails show where the potential exists for a connection or linkage, but where research or exploration is needed. The classification serves as an alert to the City of Brier where it may be possible to consider incorporating trails in adjacent developments.

Physical Design Features

- As dictated by use. Typically a soft surface, multi-use trail.

Operational Characteristics

- Likely to be mixed use with joggers, walkers, equestrians, and mountain bikes.

TABLE 1
Street Classifications
Summary of Design and Planning Features

CATEGORY	NO. OF LANES	AVE. DAILY TRAFFIC	TYPICAL SPEEDS	TYPICAL SPACING	TRANSIT USE	ON-STREET PARKING	TURN POCKTS/ 2-WAY LN	CROSS-WALKS	TRAFFIC DIVERTERS	THROUGH CONNECTIONS
MAJOR St.	2+	3,000+	30	Mile	Yes	Possible	Yes	Yes	No	Yes
MINOR St.	2+	1,000 to 3,000	20-30	¼ Mile	Possible	Possible	Possible	Yes	No	Possible
NEIGHBOR-HOOD St.	2	1,000 or less	25	500 to 1,000 ft.	Possible	Possible	No	Possible	Possible	No
LOCAL NBHD. St.	2	500 or less	20-25	100 to 500 ft.	No	Possible	No	Possible	Possible	No
SCENIC ROUTE	ANY	OF THE	ABOVE	FEATURES	POSSIBLE					
BICYCLE LANE	4-5 ft.	1-3K+	25-30	Contin. System	Possible	No	Possible	Possible	No	Possible
SIGNED BICYCLE ROUTE	2+	0-3K+	15-30	Contin. System	Possible	No	Possible	Possible	Possible	Possible
WALKWAY/ SIDEWALK	5+ ft.	--	--	City-wide	--	--	--	Possible	--	Yes
MULTI-USE TRAIL	3+ ft.	--	--	City-wide	--	--	--	Possible	--	Yes
OFF-ROAD TRAIL	Varies	--	--	City-wide	--	--	--	Possible	--	Yes

APPENDIX C

TRANSPORTATION ENGINEERS NORTHWEST

2004 BACKGROUND

APPENDIX D

ACCIDENT SUMMARY REPORT

APPENDIX E

TRANSPORTATION DEMAND STRATEGIES

APPENDIX F

SIX YEAR TIP