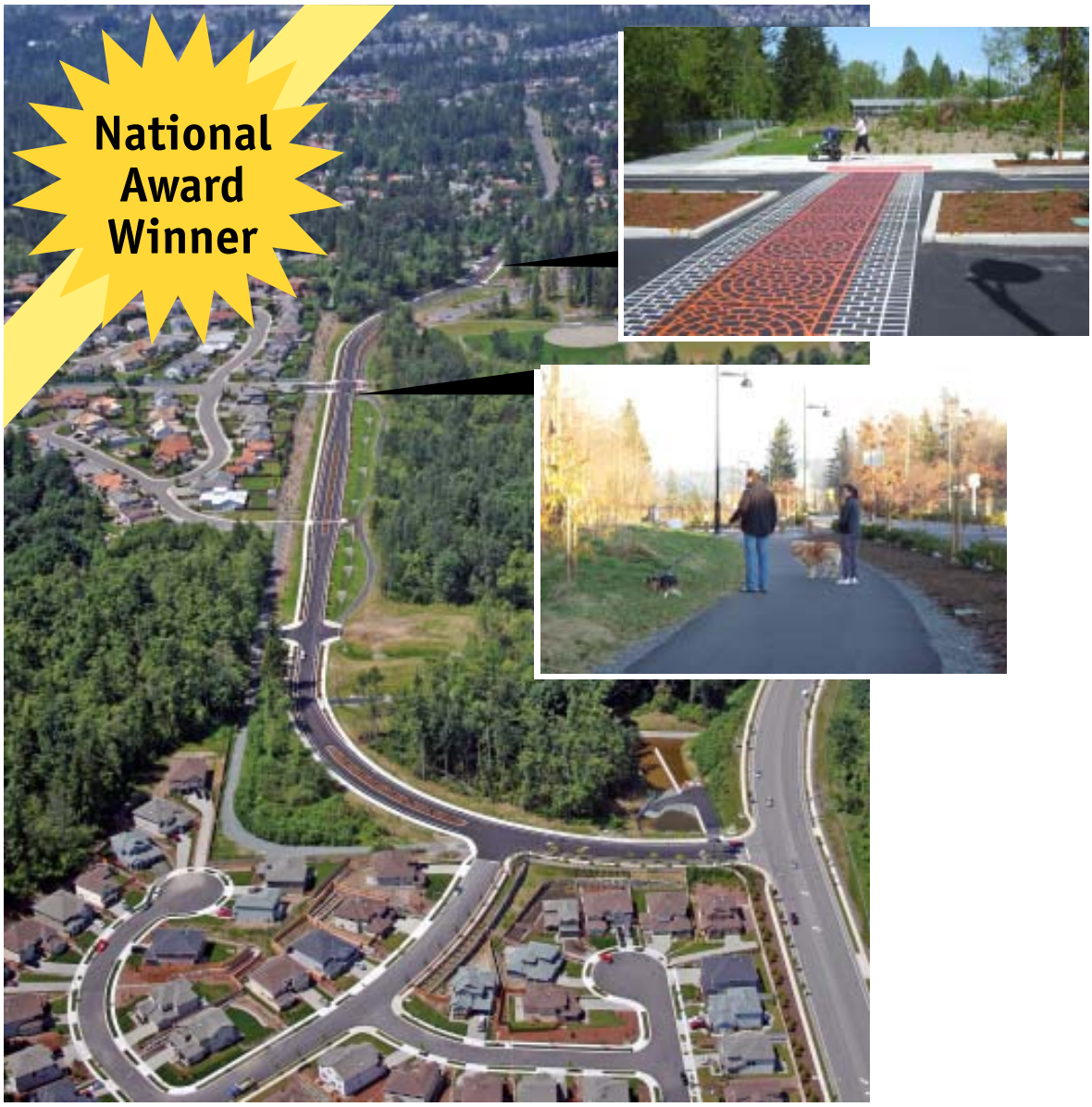

Puget Park Drive Extension

Snohomish County, Washington
Constructed 2005-2006

2007 American Public Works Association
National Project of the Year
Transportation Category, Projects $2-10 million

Snohomish County
Public Works

Project Summary

Environment/Low Impact Development

- The first rain gardens in Snohomish County replace detention ponds
- Curb cuts facilitate drainage and eliminate catch basins
- Trees were chipped and used on site as mulch and erosion control
- Extensive plantings (251 trees, 2,770 shrubs, and 3,813 groundcover plants)

Design Features

- The first "tabletop" intersection in Snohomish County
- Attention to detail—coordinated color and pattern choices were chosen for the crosswalks and tabletop intersection
- Thermal inlaid plastic creates handsome pattern at crosswalks
- Narrow travel lanes to slow vehicles
- Planted medians slow vehicles and create park-like boulevard
- Stylish lighting matches light posts on Park property

Pedestrian Enhancements

- Raised, brick red crosswalks
- "Bump-outs" at intersections shorten crossing distances
- 6-foot wide sidewalks fit more people walking side-by-side
- 8-foot wide meandering walking path provides transition from park to roadway

The University of Washington featured this site on a fieldtrip for "Improving Stormwater Management Using Low Impact Development Practices." The class is part of the University's continuing education program for professionals.

The project will be featured on "A Tour of Local LID Projects," offered through the APWA Washington State Chapter 2007 Spring Conference.

In response to neighborhood concerns, the County moved the proposed road design onto Park property, providing a 30-foot buffer between homes and the road.

This project was completed 2 months ahead of schedule, $268,000 under budget, with no accidents and no change orders.

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Puget Park Drive Extension is shown to the left of the park.

The Puget Park Drive Extension was constructed in a location that was originally a gravel access road between a new housing development and property where a new County park was being built.

Introduction

Given the opportunity to develop access to a new community park, Snohomish County Public Works elected to do more. More than a simple access road, the Puget Park Drive Extension project has created a welcome amenity for the community and a model of progressive engineering.

The project is located in one of the fastest growing areas of the county along the busy corridor between Interstate 5 and State Route 9. For a number of years, development has pushed eastward from I-5. The Puget Park Drive Extension connects to this east-west corridor at Cathcart Way, and links up several road stubs left by earlier residential developments to the south.

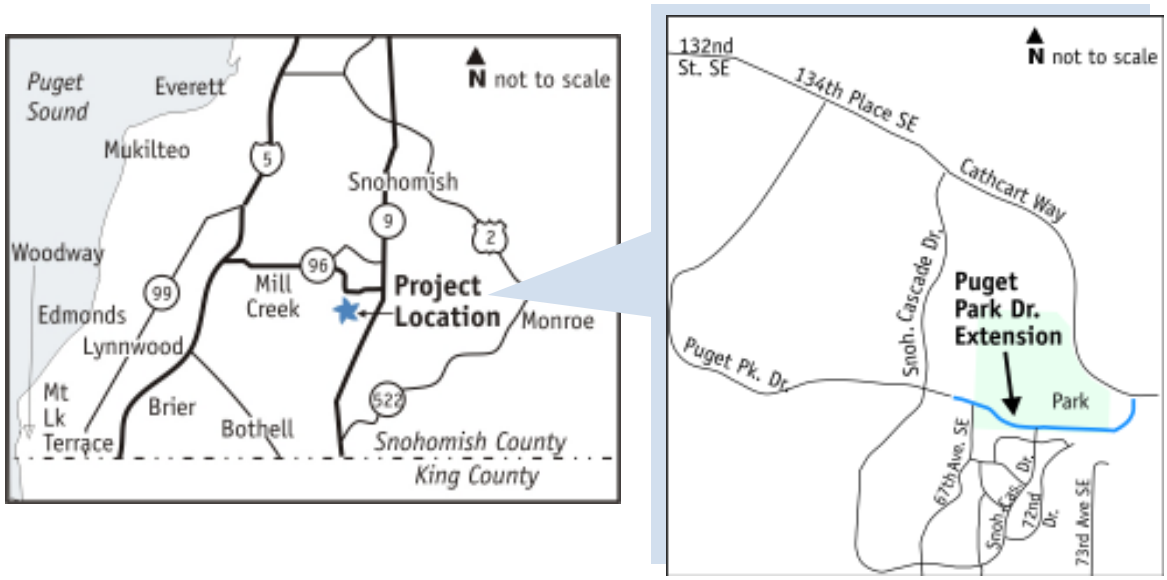
Project Description

The Puget Park Drive Extension is a beautifully landscaped suburban boulevard that hugs the southern border of the County's new Willis Tucker Park, a separate project built simultaneously by the County's Parks Department.

The half-mile long road project consists of two travel lanes with bicycle lanes, pedestrian paths and landscaped areas on both sides of the roadway. Center medians planted with trees and shrubs separate the travel lanes.

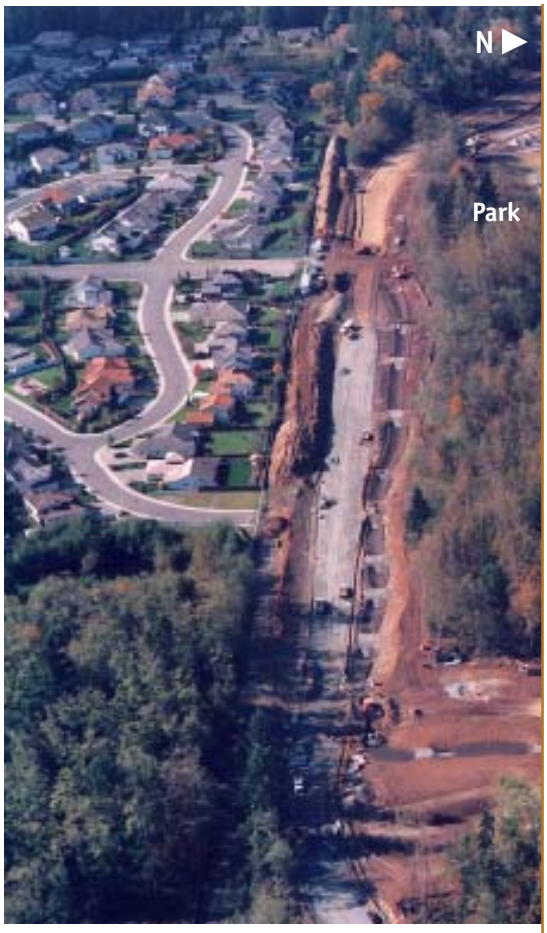
Instead of a conventional sidewalk, a paved pedestrian pathway that meanders up to 40 feet away from the road was constructed on the park side of the road. On the south side, a four-foot tall berm, planted with native and ornamental species, provides a visual and distance buffer between the adjacent homes and traffic.

Project Location



The project extended Puget Park Drive from 67th Avenue SE to Cathcart Way. A right-turn in and right-turn out intersection was created at 67th Avenue SE. A tabletop intersection was constructed at Snohomish Cascade Drive.

Instead of providing vehicle access at 72nd Drive SE, only the sidewalk was extended to Puget Park Drive and a crosswalk was added to provide pedestrian access to the park.



Stormwater runoff filters through 13 rain gardens (shown here on the right side of the road).

Contract Specifications

Costs

Preliminary Engineering $415,000
Construction Engineering $419,000
Final Construction Cost $2,684,000
Final Project Cost $3,518,000

The construction bid amount was $2,952,000. Final costs were $268,000 less than the bid.

Construction Schedule

Start Date: August 16, 2005
Completion Date: May 19, 2006

The contract allowed for 200 construction days. Actual construction was completed a full 2 months ahead of schedule.

In order to fast-track the schedule and stay ahead of the rainy Pacific Northwest winter weather, nine Public Works surveyors worked on a Saturday and Sunday to slope stake both sides of the entire half-mile project in only two days.

Safety During Construction

There were no injuries or accidents during this nine-month project—a significant achievement. Each morning the contractor's foreman met with his crew to discuss the plan for the day. Safety procedures and reminders were integral to those meetings.

Because the project is located between a neighborhood and a park, it presented a special safety challenge for the construction crew. Residents from the neighborhood wanted to walk through the project to the park. Additional special signage and barriers were placed to close off the site and direct people around the construction. The schedule was later rearranged to build the pedestrian path on the north side of the road before the road was constructed to provide safe pedestrian access to the park for residents.

The primary construction contractor was GG Excavation, a company with which the County had not previously worked. Throughout the project, GG's foreman worked closely with the County's Construction Engineer to maintain safety on the site and allow for flexibility in scheduling that proved very important at several points during construction.

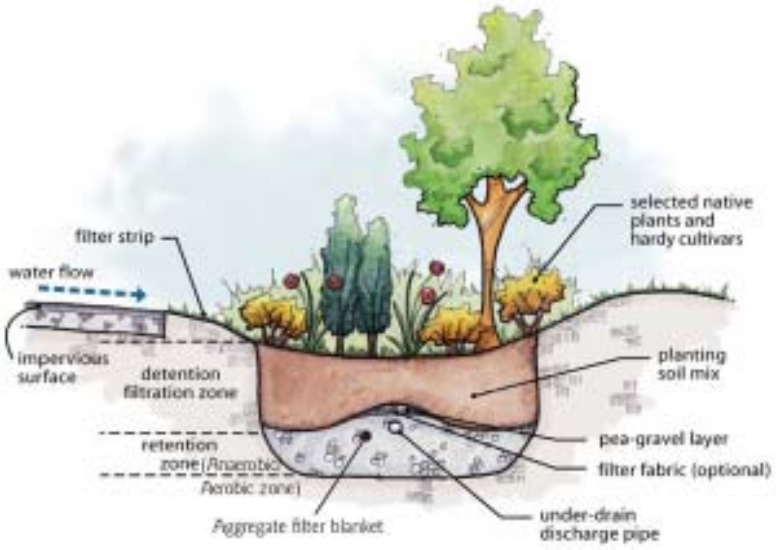
Environmental Considerations

The County's Public Works Department and the County's Parks Department were planning projects right next to each other at the same time. For efficiency, the two departments coordinated efforts and reviewed environmental conditions for both projects at the same time. One Environmental Impact Statement (EIS) was prepared that included both projects. One public meeting was held to discuss the environmental finding for both projects. This made it more convenient for the public and the staff, and reduced costs for both projects.

The First Rain Gardens in the County

Although there were no wetlands or endangered species on the site, a large number of trees needed to be removed from the preferred alignment. This created concerns about additional stormwater runoff since the project was to be constructed during the fall and winter rainy season.

The design team decided to handle the stormwater runoff issue by using bio-retention swales, also known as "rain gardens". Rain gardens had never been used in the county. This new challenge called for the engineers to explore different ways to model the flow pattern of the runoff.



A series of 13 interconnected rain gardens, totaling approximately 1,600 linear feet, were ultimately incorporated into the design, with each swale cascading into the next. The soil types at this site infiltrate only a small portion of runoff naturally. The rain gardens slow runoff and allow additional infiltration.

Excavating rain garden trenches

Shaping underdrain material & soil mixture

Finished rain garden, prior to plantings

The first rain gardens in Snohomish County were engineered to handle stormwater runoff. They are shown here under construction.

Cuts in the roadway curbline allow water to spread out evenly as it flows through the rain gardens and eliminates maintenance of catch basins.

A 50' x 60' x 60' mound of wood chips from site-clearing could have been a problem, but instead was used as mulch, erosion control and weed control. This saved the County approximately $20,000 in hauling and disposal fees.

The result is that the rain gardens mimic the flow of runoff that was present prior to construction and filter contaminants using the natural biological, chemical, and microbial processes provided by plants and soils. The traditional method would have been to convey all stormwater through a system of pipes, directly into large, open detention ponds.

The rain gardens also provide a significant buffer between the roadway and pedestrian path, serving as a safety feature. They blend nicely with the surrounding vegetated area and align with the Park and Recreation Department's Master Plan by providing an aesthetically pleasing way to incorporate stormwater management.

Saving Through Simplicity

An unusual, yet simple, method for this type of urban streetscape was also used to capture drainage. By making cuts in the roadway curb line, water is allowed to spread out evenly as it flows down through the rain gardens, instead of being directed into catch basins and pipes. This design approach not only reduces initial construction costs but also makes maintenance more economical and much easier for road crews by eliminating a structure that could plug up and require special equipment to inspect and clean.

Potential Problem Turned into a Benefit

The trees that were removed for the roadway could have presented a disposal and cost problem. Instead, a creative solution turned the problem into a benefit for both the Park project and the road project. The trees were chipped on-site. The wood chips were used as mulch around the new plantings along Puget Park Drive, and to control weeds and erosion. And, rather than pay an estimated $20,000 to have the remaining wood chips removed, the contractor spread the material around the construction site for the park's ball fields, also under construction at that time. This provided erosion control on that project as well.

Community Relations

Public input was essential in designing this project to fit the needs of the community.

The first meeting in 2002 was a collaborative effort by Snohomish County's Parks and Public Works Departments to discuss the park and road projects and give residents a chance to ask questions and provide comments. It was also the beginning of the environmental review process for both projects. Four thousand newsletter invitations were mailed to area residents, community groups, and agency representatives. A project website was created where environmental documents and newsletters were posted (www.snoco.org, search "Puget Park Drive"). Seventy-seven people attended the first meeting.

A second newsletter was mailed in 2004 to update residents on the progress of the projects and to invite them to another public meeting to look at more detailed plans for Puget Park Drive. Fifty people attended this second meeting.

Effective Network of Communication Maintained Throughout Construction

Most residents were satisfied with the information provided by the newsletters and public meetings. However, throughout the time between meetings and completion of construction, County staff were readily available to anyone who had questions or concerns. Phone numbers and e-mail addresses of project designers, construction engineers, environmental planners and communications staff were widely distributed.

During construction, an effective network of communication was in place to relay messages between residents and staff members, so issues could be handled immediately.

As a result of follow-up discussions with homeowners, staff members arranged a special meeting with residents to discuss traffic calming solutions for an area west of the project. Public Works Traffic staff are now working to implement suggested changes that resulted from that meeting.

4,000 newsletter invitations were mailed for the first public meeting. Some of the comments from residents at these meetings included . . .

"What can you do to discourage speeding?"

"It should have adequate lighting."

"The goal should be to safeguard pedestrians, bicyclists, and carriages from traffic."

"Can you make it narrow enough so it's easier to cross with our children?"

In response to homeowners, the roadway was moved 30 feet north, away from private property lines and onto Park property to provide a buffer between private properties and the roadway.

North Side Meandering Pedestrian Path. *Neighbors enjoy walking next to the new roadway, which includes an 8-foot wide path on the north (park) side of the road, shown above, and a 6-foot wide sidewalk along the south side—room for family members and friends to walk side-by-side.*

South Side Wider Sidewalks. *On the south side of the road, a planter strip separates the sidewalk from the road. Lighting features, landscaped medians, raised crosswalks and bump-outs at intersections facilitate driver awareness and pedestrian safety.*

Community Input Moves Road 30 Feet

The original proposal was for the road alignment to follow the property lines along the southern boundary of the park to provide as much park and open space as possible. However, comments during and after the public meetings made it clear that neighbors did not want the road up against their property lines and back yards. The Public Works and Parks Departments worked together to move the road approximately 30 feet to the north to provide additional distance between the road corridor and homes on the south side.

Pedestrian safety was a high priority for engineers throughout the design process and was a concern very clearly voiced by residents at the public meetings, through letters, e-mails, and phone conversations. Additionally, since the project would be next to the new park and in a residential neighborhood, the team chose to create an attractive, compatible, park-like boulevard for walking, jogging, and bicycling.

Public Works also coordinated with the Parks Department to add a meandering, multi-use pedestrian path on the north side of the road instead of a standard sidewalk. This 8-foot wide, asphalt-paved pathway is separated from the road by up to 40 feet. The Parks Department approved the use of their land for this pathway.

On the south side of the road, a planter strip that varies from five to ten feet in width was constructed alongside 6-foot wide sidewalks. A typical sidewalk is four to five feet wide. Sidewalk widths on this project were expanded to be comfortable for three people walking side by side.

Lighting for Aesthetics and Safety

Lighting was placed along the corridor to highlight features such as landscaped medians, crosswalks and intersections for driver awareness and pedestrian safety.

In continuing coordination with the Parks Department, the project team chose the same light pole design as used for the park instead of the standard street pole. The luminare selection has a lampshade-like covering that directs light downward to sidewalks and roadway rather than outward to adjacent homes.

Raised Crosswalks and Bump-outs Add Safety

Raised crosswalks intersect medians at several locations along the new road. The medians provide refuge for people crossing the road, allowing them to cross one lane at a time. Drivers must slow down to traverse these crosswalks, which are similar to a wide, gradual speed hump.

Sidewalk "bump-outs" at intersections were used to shorten the crossing distance for pedestrians. These also tend to slow vehicles as the road narrows at the intersection. Planting strips were used to provide a buffer between sidewalks and traffic lanes.

Mid-block crosswalks were elevated approximately 6 inches above the traffic lane and installed at several locations along the new road. Pedestrians are more visible to drivers and drivers must slow down to traverse these raised crosswalks.

Narrower Travel Lanes Slow Traffic

Snohomish County's standard width for two-lane arterials is 40 feet; for this project the engineers reduced that to 30 feet to reduce vehicle speeds. The 15-foot lane was subdivided by a paint stripe to provide a 5-foot wide bike lane and a 10-foot wide lane for automobiles. The narrower look also reinforces the idea that the corridor is a local street and not intended as a thoroughfare.

Landscaped, raised medians were interspersed along the new corridor to visually narrow the roadway and remove vehicle passing zones. New signs establish the lower 25 mph speed limit.

Bump-outs at the 67th Avenue SE and Snohomish Cascade Drive intersections shorten the crossing distance for pedestrians.

The County's first "tabletop" intersection is shown below.

Snohomish Cascade Drive **72nd Drive SE**

Option 3: *The landscaped median across the intersection at 67th Avenue SE was chosen to reduce cut-through traffic on 67th. A raised crosswalk provides pedestrian access to the park.*

> **Q** ***County Staff:*** *"What do you think of the median that was installed at the end of 67th Avenue?"*
>
> **A** ***Homeowner along 67th Avenue SE:*** *"I am very happy with it, and can tell you all of us along this road are. It's cut down on the number of cars and the speeding. I can pull out of my driveway in the morning now."*

Turn Restrictions at 67th Avenue SE Ease Congestion

For many years, 67th Avenue SE provided the primary access to a neighborhood of over 100 homes. It is a 28-foot wide residential road with parking. Homes and driveways line the west side. It was not designed to be a high capacity arterial. Each morning these unhappy homeowners had to wait for a long line of vehicles to pass before they were able to pull out of their driveways.

Three options were considered to alleviate the problem:

- **Option 1:** Make 67th a cul-de-sac. A cul-de-sac would have prevented emergency access and was eliminated as an option.
- **Option 2:** Realign 67th to form a 4-way stop intersection with the Puget Park Drive Extension and entrance to the park. The realignment of 67th would have required the purchase of additional costly right-of-way, hindered the flow of traffic along Puget Park Drive, and still would have remained a popular cut-through route.
- **Option 3 (chosen):** Build a median along Puget Park Drive at the north end of 67th to create a right-turn in and right-turn out intersection. The landscaped median on Puget Park Drive at the end of 67th reduces cut-through traffic. While maintaining emergency access, the right-turn in and right-turn out restriction encourages drivers to use area arterial roads instead of 67th. A raised crosswalk was added to provide pedestrian access across Puget Park Drive to the park.

Option 1: Cul-de-sac

Option 2: Realignment, 4-way stop

Option 3: **The chosen option**; median and restricted turning

Snohomish Cascade Drive is Connected to Puget Park Drive Extension

The new intersection was created to connect Snohomish Cascade Drive to the new road and was designed as a "tabletop intersection" for pedestrian safety. The entire intersection is elevated approximately 6 inches to raise pedestrians above the road level. Drivers must go slowly as they approach the intersection and drive up and over.

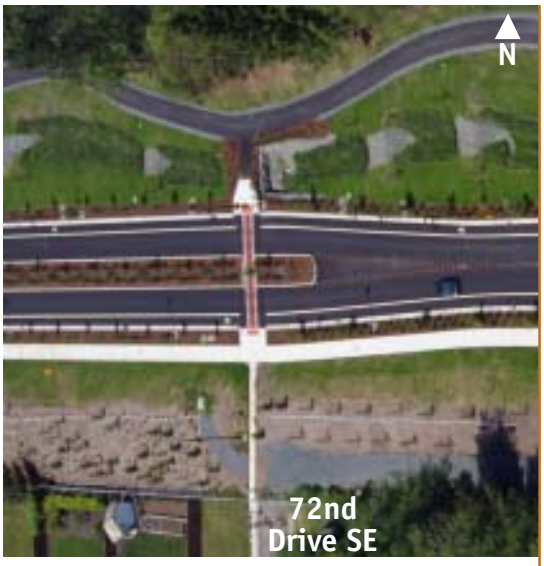
Rather than choose the typical bold white stripes to mark the crosswalks, the engineers chose a handsome white and red brick design. The red matches the warning mats and the white matches the tops of the bollards. The design is formed with red and white thermal-inlaid plastic which is much more durable than painted stripes. The commonly used painted crosswalk creates a thin edge of paint above the road surface that can wear off in time. The thermal plastic used on this project is embedded in the pavement, and is flush with the surface of the road and more durable than paint.

At all crosswalks, bumps on warning mats cue visually impaired pedestrians that they are at the crosswalk. Bollards are used to prevent vehicles from driving onto pedestrian paths.

Close-up view of one of the crosswalks at the tabletop intersection.

Before construction, Snohomish Cascade Drive was a stub road designed to eventually connect to an arterial.

This photo shows the intersection after construction. Snohomish Cascade Drive is the first raised, tabletop intersection in Snohomish County.



In response to input from residents, the plan for vehicle access was eliminated at the 72nd Drive SE stub. The final design provides pedestrian-only access to Puget Park Drive at this location.

Engineers paid special attention to safety features and aesthetic details on the entire project. Shown in the photo is the crosswalk on Puget Park Drive at 72nd Drive SE and the sidewalk that was extended from the neighborhood to the road.

Community Input Changes Design of 72nd Drive SE

Another stub road originally planned for connection to Puget Park Drive was 72nd Drive SE. However, 72nd is a narrow residential road with on-street parking and driveway access. Residents were concerned that if the road was extended to the new alignment, drivers might use the road to cut through the neighborhood.

In response to citizen input, and after the County's Traffic Engineer was consulted, the intersection design was changed to pedestrian-only access.

The sidewalk was extended and a raised crosswalk was constructed across Puget Park Drive. It intersects the median just like the crosswalk at 67th Ave SE, providing easy access to the pedestrian paths and park.

Unusual Accomplishments

During the construction of the Puget Park Drive Extension, the contractor and the County's Project Construction Manager mantained close communication and flexibility to handle issues as they arose:

- Since the construction site was between the park and the neighborhood, the schedule was rearranged to build pedestrian paths before the road was constructed. This provided safe access to the park for pedestrians.
- After the alignment was cleared, nine County staff worked extra hours to slope stake both sides of the entire half-mile project in one weekend. This work was needed to stay ahead of the weather and prevent erosion.
- A large number of trees needed to be removed from the alignment which created a disposal problem. The trees were chipped and used onsite, which saved approximately $20,000 in hauling and disposal costs.
- Neighbors had many concerns about safety and aesthetics. The project team made design changes in response to comments from residents.

- A high quality set of Design Plans and Specifications and properly managed construction contract resulted in a finished project with no change orders.
- The project was completed $268,000 under GG Excavation's competitive low bid of $2,952,000. This is the result of a strong partnership between Snohomish County Public Works, Snohomish County Parks, GG Excavation, Inc., and the neighboring community.

Additional Considerations

Many neighbors initially looked forward to the opening of the park, but not to construction of another road. The new Puget Park Drive Extension, however, is now seen as an asset to the neighborhood. As the trees mature, they will provide plenty of privacy and even more beauty along the road.

The project team listened to area homeowners and incorporated many features to reduce negative aspects often associated with roads. They chose to design a roadway that would be an asset to the community, enjoyed by walkers, joggers, and bicyclists and one that would encourage drivers to slow down.

A relaxing way to end the day.

Neighbor's request: "I have a luncheon planned next week at my house (adjacent to the site). Can you suspend construction during that time?" The construction team made it happen.

Celebrating the New Road

Neighbors and project participants were invited to a Friday morning ribbon-cutting ceremony to celebrate the completion of the project and the opening of the new road.

Cutting the ribbon to open the road (l to r): Project Design Manager Sam Filetti, Snohomish County Executive Aaron Reardon; Project Construction Engineer Bassam Al-Ali; and Snohomish County Public Works Director Steve Thomsen.