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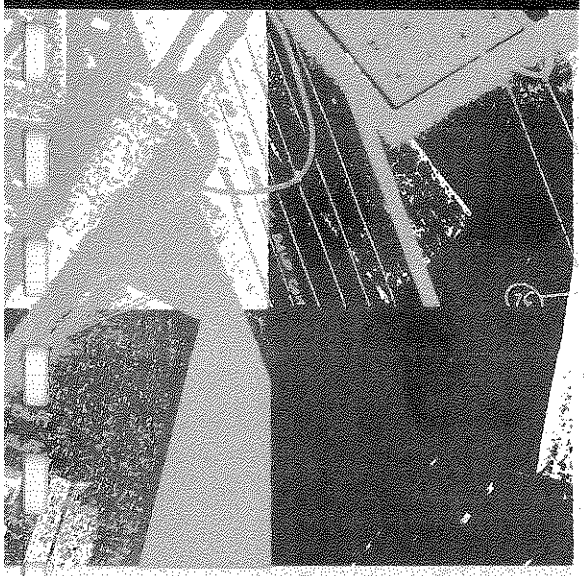

McMinnville Westside Bicycle and Pedestrian Plan

August 1995

David Evans and Associates, Inc.

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Prepared for:

City of McMinnville

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INTRODUCTION

BACKGROUND

The development of a bicycle system and construction of pathways for use by bicyclists and pedestrians is supported by past actions and policies at both a local and state-wide level. The most relevant local document supporting development of bicycle facilities is the McMinnville Transportation Master Plan, while the state-wide policy is established by Oregon's Transportation Planning Rule.

One of the goals of the McMinnville Transportation Master Plan is to "develop a city-wide transportation system which enhances the livability of the City, which is sensitive to environmental concerns and includes all transportation modes appropriate to the City's needs."

The McMinnville Transportation Master Plan provides more specific direction in its a bicycle element. The planned bicycle system includes a combination of on-street bicycle lanes and separate, independent, off-street paths. The Transportation Master Plan calls for the construction of bicycle lanes on collector and arterial streets and in several locations on-street lanes have already been implemented. One of the locations where the Transportation Master Plan specifies a separate, independent path is the north-south Bonneville Power Administration (BPA) power line easement between West 2nd Street and Baker Creek Road.

From a state-wide perspective, the key policy document is the Oregon Transportation Planning Rule (TPR). The TPR calls for the development of a balanced transportation system which will reduce the principal reliance on the use of the automobile. In addition it encourages development of separate bike and pedestrian ways to minimize travel distances.

PURPOSE

The Westside Bicycle & Pedestrian Master Plan is intended to help build upon the general planning which has already occurred and advance one particular project toward the construction phase. This has become increasingly important in the rapidly-growing western portion of McMinnville which is in transition from agriculture to residential use. Three residential developments have occurred in close proximity to the BPA line corridor (Barclay Heights, Hillside Manor Garden Cottages, and Park Meadows) and others are planned in the near future.

The purpose of the Westside Bicycle & Pedestrian System Master Plan is to

- provide a design for the area within the BPA easement that is multi-functional, attractive and safe;
- provide a plan that encourages greater use by bicyclists and pedestrians;
- provide physical connections to existing and planned residential and commercial development, schools, and parks in the immediate area; and
- provide design details to further the objectives of this plan.

The project site consists of a corridor approximately 1.2-miles on length and 60 feet in width. The corridor runs in a north-south direction and is located in Township 4 South, Range 4 West, in Sections 18 and 19. Major streets which intersect the path are West Second Street, Wallace Road, and Baker Creek Road.

FRAMEWORK

The Westside Bicycle & Pedestrian Plan provides guidance to the City and developers for the location of the path and the connections to it from existing, proposed and future development adjacent to the corridor. The Plan provides design standards to ensure the path is safe and meets all applicable standards.

Construction of the path will help to maintain the livability of the community, address transportation needs using non-motorized modes, fulfill the City's Comprehensive Plan goals and policies, and meet the intent of Oregon's Transportation Planning Rule.

SITE ANALYSIS

The first task undertaken in development of this plan was to conduct an on-site review of the corridor and the areas immediately adjacent to it to determine design opportunities and constraints. The review and analysis included mapping of the topography and slope, significant vegetation, significant views, existing and planned utilities, and existing development and planned uses within and adjacent to the corridor. In addition, a preliminary wetlands reconnaissance was conducted. The findings of this on-site review and analysis are described below.

NATURAL FEATURES

Topography

The southern third of the corridor is a section with a length of approximately 2400 feet and runs from West Second Street to a point about 300 feet south of Wallace Road. This southern portion of the corridor is relatively flat with slopes varying to a maximum of about 4 percent and an overall slope which averages only 2 percent. This portion of the corridor rises in elevation from about 159 feet mean sea level (MSL) at West Second Street to approximately 206 feet MSL approximately 300 feet south of the corridor's intersection with Wallace Road. Adjacent to this section of the corridor, the terrain falls away to the south or to the west.

The high point of the corridor is about 2400 feet north of West Second Street and 300 feet south of Wallace Road. This high point has an elevation of approximately 206 feet MSL. The significant change in slope and makes this topographic feature the obvious, if arbitrary, demarcation between the southern and central portions of the corridor.

The central portion of the corridor is a short, steeply sloped section about 300 feet in length. This portion goes from the high point of the corridor 300 feet south of Wallace Road to Wallace Road. The elevation of high point 300 feet south of Wallace Road is approximately 206 feet MSL, while Wallace Road has an elevation of approximately 162 feet MSL. The central portion of the corridor has an average slope of more than 14 percent and a maximum slope calculated to be over 20 percent. In this central portion of the corridor, the predominant topographic characteristic is way that the terrain drops away steeply to the north.

Wallace Road serves as a readily identifiable demarcation between the central and northern portions of the corridor.

The northern portion of the corridor is about 3700 feet in length, going from Wallace Road on the south to Baker Creek Road at the north. This segment of the corridor is almost flat with a variation in elevation of less then ten feet over its length. This segment varies from an

elevation of 162 feet MSL at Wallace Road to about 156 feet MSL where it crosses a small tributary of Cozine Creek (about 600 feet north of Wallace Road) to an elevation of 164 feet MSL at Baker Creek Road. The northern portion of the corridor has an average slope of less than one percent.

Vegetation

Over the years, much of the land within the BPA easement has been cleared of most native vegetation. Because of potential interference with BPA operations and maintenance activities, most tall vegetation, particularly beneath the power lines themselves, has been eliminated while lower-growing species have been allowed to remain. In the central portion of the corridor, a few native oaks have been allowed to remain because the placement of the poles and the differential of the terrain provides additional vertical clearance beneath the conductors and BPA maintenance vehicles need not turn sharply on the steeply sloped hillside.

In the southern and central portions of the corridor, woody vegetation such as hawthorn trees, have been allowed to take hold at random locations along fence rows or at the edges of the BPA easement. Adjacent to the BPA easement, agricultural uses with field crops are being replaced with residential developments. Residential developments feature vegetation ranging from introduced lawn grasses to rhododendrons to ornamental trees of various deciduous and coniferous species.

Vegetation in the northern portion of the corridor consists primarily of agricultural field crops. The northerly-most half mile of the BPA easement and the adjacent lands are nearly continuous agricultural fields.

In addition to the agricultural vegetation, the northern portion of the corridor also features a wetland with a variety of vegetation and an adjacent residential development with introduced vegetation typical of a suburban environment. The Park Meadows residential development which lies to the west of the BPA easement north of Wallace Road is newly developed and will likely develop using a typical suburban landscaping theme of introduced-lawn grasses, ornamental shrubs and trees. The wetland, which is traversed by the power line, flanks a small tributary of Cozine Creek and lies within an area about 500 to 900 feet north of Wallace Road. The wetland, which is also adjacent to developed lots in the Park Meadows subdivision, is irregularly shaped and contains a variety of vegetation. It includes forested and non-forested areas and is vegetated with species including red alder, red osier dogwood, willow, Oregon ash, field mint, Pacific water parsley, cow parsnip, and teasel.

The transition from agricultural use to residential and commercial use will cause a change in the vegetation. Field crops will be replaced by residential-type landscaping which can be expected to feature a variety of introduced species including grasses, ornamental shrubs and trees.

Wetlands

An evaluation of existing resource materials and a site reconnaissance were used to determine whether or not wetlands or other significant natural features occur within the pathway corridor.

The principal reference for determining the existence of wetlands is the Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987). According to the Manual, an area is a wetland if there is a simultaneous occurrence of hydric soils, a dominance of hydrophilic vegetation, and hydrology specific to wetlands. Wetlands determined on the basis of the Manual are subject to regulatory jurisdiction by the Oregon Division of State Lands (DSL) and the US Army Corps of Engineers (COE).

Two sources of information reviewed prior to field reconnaissance were the National Wetlands Inventory (NWI) and the Yamhill County Soil Survey. Neither the NWI map which covers the project area nor the Soil Survey indicated soil types which positively indicate the presence of wetlands. However, the absence of a positive specific soil types on large-scale maps cannot be used as the basis for concluding that the corridor is free of wetlands. An on-site, field inspection is still necessary and was conducted.

North of Wallace Road, there is an irregularly-shaped, forested area adjacent to, and bisected by, the power line corridor. The larger portion of the forested area lies to the east of the power line corridor. Measured along the center of the BPA easement, the forested area lies between about 500 and 900 feet north of Wallace Road.

Two water features crossing the BPA easement are evident and were the first indication of the possible presence of a wetland. One creek crossing is a natural tributary of North Branch Cozine Creek. The other is the storm water detention outlet for the subdivision west of the corridor. The wetland has been disturbed from adjacent development and clearing of vegetation under the power lines.

Based on field observations, the forested area north of Wallace Road is a wetland based upon the presence of the presence of hydric soils, the types of vegetation, and hydrology specific to wetlands. Within the BPA easement a wetland is estimated to exist for a distance of several hundred feet. The preliminary indication is that the segment of the easement between 500 feet and 900 feet north of Wallace Road is a wetland subject to regulatory jurisdiction by DSL and the COE.

Agricultural fields are harder to evaluate because vegetation which indicates the presence of wetlands have been replaced with agricultural crops. The agricultural fields to the north along the corridor have been seeded with a grass crop.

Based on visual observations of ponding and apparent soil saturation, wetlands may exist in isolated pockets along the corridor in the field located between Baker Creek Road and Wallace Road. Specific vegetation which might add further information to positively indicate the presence of wetlands could not be identified because of the small size of the plants at the time of field reconnaissance. Pockets which might be determined to be wetlands by subsequent analysis are located along the BPA easement approximately 1100 feet, 1500 feet, and 1900 feet south of Baker Creek Road.

Significant Views

The corridor provides a number of opportunities for views of the surrounding countryside and of the Pacific Coast Range and Mt. Hood.

In the southern portion of the corridor, where the predominant slope is to the south and west, the principal views are of the Coast Range and foothills to the southwest. As one moves north toward the high point on the corridor, the views include Quarry Park to the southeast, Mount Hood to the northeast, and the Coast Range and valley to the northwest and north.

In the central section of the corridor immediately south of Wallace Road, the steep slope cuts off views to the south. Views to the northwest, north and northeast become less impressive as one moves down the slope where houses, trees and other nearby objects restrict the sight line.

In the northern portion of the corridor, views are generally less imposing due to the lack of an elevation differential with the nearby, surrounding terrain. Immediately north of Wallace Road, houses and vegetation preclude more distant panoramas. The forested wetland provides nearby visual interest, but also cuts off distant sightings except to the north and south along the length of the corridor. The open fields traversed by the BPA easement for the northerly one-half mile of the corridor allow distant views of the Coast Range to the southwest, west and northwest; Mt. Hood to the northeast; and Quarry Park and nearby hills to the south.

Along the length of the corridor, continuous views are available to the north and south, disrupted only where elevation differences within the corridor itself screen the more distant views.

Throughout the majority of the path corridor, the predominant views are of Mt. Hood or the Pacific Coast Range. Other views include the butte to north, various open fields, the surrounding valley, development, and the pathway corridor. Development which has recently occurred, or which is planned adjacent to the corridor, will tend to reduce the more distant views. The screening or interruption of distant views will depend on both the design and mass of structures and the density and type of vegetation used as landscaping within or adjacent to the corridor.

MAN-MADE FEATURES

Parks and Open Spaces

Quarry Park, a site of approximately 11 acres, is located north of West Second Street and east of the BPA easement. At the north end of Quarry Park the separation between the BPA easement and the park is approximately 450 feet. At the south end of Quarry Park (at West Second Street), the separation between the Park and the BPA substation into which the power line leads is about 160 feet. The Barclay Heights Subdivision separates the BPA easement from Quarry Park.

Quarry Park's maximum elevation is approximately 242 feet MSL and is located approximately 700 feet east of the BPA power line easement and about 1000 feet north of West Second Street. The park is the site of an abandoned rock quarry and is currently undeveloped.

A linear park system, which winds through the southern portion of McMinnville, features a pedestrian pathway which generally follows small streams. Of the paths which comprise this system, the one nearest the proposed project site presently terminates on the south side of West Second Avenue approximately 200 feet west of the BPA power line easement.

Land Use and Development

As evident from the number of recent developments and others which are planned, the western portion of McMinnville is experiencing rapid growth. The area within McMinnville's urban growth boundary is in transition from agricultural use to residential and commercial use.

Three recent residential developments, with predominately single family housing, have occurred adjacent to the corridor (Barclay Heights, Hillside Manor Garden Cottages, and Park Meadows). Nearby, but non-adjacent, developments include commercial activities. Adjacent to the corridor other developments in the planning stages include residential (single family and multi-family housing), as well as commercial (retail) and institutional (school) uses.

Utilities

The single feature most evident in the BPA easement is the existing power line. The power line consists of three conductors affixed to cross-arms spanning between single wood poles

located an average of 300 feet apart. The power line ties into a BPA substation of approximately 0.8 acres abutting West Second Street.

Other utilities in the corridor include major subsurface water mains running in an east-west direction near Wallace Road.

Roads

West Second Street and Baker Creek Road are the southern and northern termini of this particular project site. The only public street which presently crosses the BPA easement is Wallace Road, which runs in a generally east-west direction, and is approximately 0.5 miles north of West Second Street and 0.7 miles south of Baker Creek Road.

OPPORTUNITIES AND CONSTRAINTS

Upon review of natural and man-made features identified within and adjacent to the BPA easement, the following opportunities and constraints have been identified.

OPPORTUNITIES

Existing right-of-way/easement - The BPA easement provides a continuous corridor within which a pathway can be located from the BPA substation abutting West Second Avenue to Baker Creek Road. The 60-foot BPA easement provides sufficient width to locate a path of sufficient width for shared use by pedestrians and bicyclists plus landscaping and amenities for path users. Connections to the main path may need to be made using land adjacent to the BPA easement. (See also Constraints, below.)

Linkages - Paved shoulders appropriate for bicycle use currently exist on Baker Creek Road and on West Second Street terminating at Fleishauer Lane. The City is in the process of extending the bike lanes on West Second Street to Hill Road. A concrete pathway which terminates on the south side of West Second street provides a pedestrian-only connection to the south and east through a system of linear parks. The proposed pathway within the BPA easement could provide a continuous bicycle and pedestrian connection from Baker Creek Road to West Second Street.

Parks, Open Space, and Neighborhood Connections - Developing a path in the BPA easement also provides an opportunity to establish connections to adjoining parcels, and through those, to other destinations. Examples of destinations which might attract pathway users include Quarry Park and planned developments such as commercial areas or schools. The final result could be an interconnected system of paths on the west side of McMinnville with the north-south path within the BPA easement serving as a principal route.

Significant Views - Due to changes in elevation along the corridor and the differential between the elevation of the terrain in the BPA easement and that of adjacent parcels, several opportunities exist to retain at least some of the significant views presently available along the corridor. It should be noted that development activity and building construction will eliminate or reduce viewing opportunities from some locations. The more impressive views include those of the surrounding valley, the foothills of the Pacific Coast Range, Mt. Hood, and Quarry Park.

Wetlands - The existing, forested wetland north of Wallace Road represents an opportunity to bring path users into close proximity to an ecosystem different than those usually found in suburban developments. Designed and developed properly, a path and interpretive materials

can help introduce path users to some of the attributes of wetlands and help to develop a public stewardship of such resources.

CONSTRAINTS

Arterial Crossings - West Second Street and Baker Creek Road define the south and north termini of the project site, respectively. Both roads have relatively high volumes of traffic and are expected to carry additional traffic as development occurs in the western portions of McMinnville. In planning for and designing a pathway in the BPA corridor, particular attention needs to be paid to the location of crossings at both streets to ensure that the crossings are safe and convenient for path users.

Slope - The steep slope of land in the BPA easement immediately south of Wallace Road would make it extraordinarily difficult to construct of a path which meets grade requirements for bicycle use. Thus, a multi-use path may be difficult to develop within this section of the corridor. Further land acquisition or dedication of right-of-way may be required to provide a connection which avoids the steep slope in this portion of the corridor. Retaining a pedestrian connection within the BPA easement would result in a separation of bicyclists and pedestrians in this particular section.

Wetlands - As previously mentioned, wetlands have been identified within the project corridor. These wetlands represent both an opportunity and a constraint. Prior to preliminary design, a wetland delineation should be performed to determine more precisely the extent and location of jurisdictional wetlands and water courses. The forested wetland located between about 500 feet and 900 feet north of Wallace Road represents a significant resource which will require careful design and more expensive facilities and construction techniques to cross than would other non-wetland segments of equal length.

BPA Substation - BPA's existing substation abutting West Second Street limits the options for the location at which the pathway could intersect West Second Street.

Other BPA Requirements - To avoid impacting their operational and maintenance activities, BPA have numerous standards relating to shared use of their corridor. Key requirements of BPA include: providing access points which can accommodate service vehicles, including trucks with long trailers; retaining a 16-foot-wide accessway for their vehicles; constructing pavements or surfaces which will withstand a specific wheel loading (known as HS-20) for their heavy vehicles; keeping plant materials under 10 feet in height; keeping trees, shrubs and structures at least 30 feet away from their utility poles, and submitting detailed plans for BPA's review prior to construction.

Existing, Adjacent Development - Existing developments adjacent to the BPA easement (such as Barclay Heights) do not always have common areas, dedicated corridors, or other locations within which connections to the BPA easement can be constructed. This represents a

constraint since it limits the opportunity to provide direct connections between neighborhoods and the proposed path.

Planned Development - Planned developments, such as one being considered in the northern portion of the corridor (between Wallace Road and Baker Creek Road), appear to have alternative proposals for the land beneath or immediately adjacent to the BPA easement. One preliminary proposal appears to reserve this strip for a roadway which has a design incompatible with a multi-use pathway in the BPA easement.

PATH DESIGN AND LOCATION

GENERAL CONCEPT

The second phase of the study was to expand upon the site analysis, along with the opportunities and constraints, to develop a general design concept for the corridor.

This corridor is intended to provide access for bicyclists and pedestrians within west McMinnville. The pathway will connect neighborhoods to each other as well as to open spaces and natural areas, and to activity centers such as schools and downtown. In addition, it will provide close-to-home recreational opportunities. It will be an all-weather, off-street, multi-use path for bicyclists, pedestrians, joggers and skaters. For the most part, the Westside Bicycle and Pedestrian Pathway is to be within or parallel to the existing 60 foot BPA easement which extends from West Second Street to Baker Creek Road.

At present, the corridor has an open character and by keeping the edges unobstructed, this feeling will be retained. Due to the location of the pathway corridor and the change in elevation a pullout/viewpoint has been proposed at the high point of the corridor. This pullout will capture views of the corridor north and south, including partial views of Mt. Hood, the foothills of the Coast Range, and the surrounding valley.

The wetland area north of Wallace Road would provide viewing and interpretive opportunities, enhancing the users' experience along the pathway.

The characteristics of the corridor, including its width and length, views, topography, and location, provide opportunities to develop the corridor with features and public amenities such as interpretive signing, information kiosks, benches, maps of the area, or exercise stations. Even facilities such as restrooms might conceivably be constructed in the corridor. Most of these features could be constructed in an initial phase or added at a later date.

Landscaping options range from ones which feature native plant materials to those which utilize introduced, or ornamental species. Likewise, the landscape theme could range from an informal appearance to formal gardens. Except for the need to retain native plantings in the wetlands areas, the city and neighbors have a wide range of choices depending upon the construction budget and continued availability maintenance funds. The landscaping can change also from one area to another to be compatible with neighboring parcels or to encourage or discourage particular uses in different parts of the corridor.

The pathway would meander within the corridor and could be elevated within the topographically flatter sections such as the area south of Baker Creek Road. This would help to create visual interest and variety along the path.

SPECIFIC AREAS OF CONCERN

Connection at West Second Street

Bike lanes presently do not exist on West Second Street west of Fleishauer Lane. However, lanes are planned for West Second Street and the city is in the process of extending the bike lanes west to Hill Road. South of West Second Street, a pathway system suitable for pedestrians (but not for bicyclists because of its narrow width) provides a southerly and easterly connection to existing residential development, open spaces and schools.

A variety of options were considered for the southern terminus of the path at West Second Street in the vicinity of the BPA substation. North of the BPA substation, the path would be in the power line easement. Routing options were considered which included routes to the west and to the east of the substation. The recommended option uses a route to the east of the substation and includes a segment on Suzanna Avenue.

From the northwest corner of the BPA substation, from which the main path continues north along the power line easement, the recommended route to West Second Street has a section of off-street path and a section which uses Suzanna Avenue. The path section has an east-west alignment and would be constructed for a distance of approximately 160 feet in an easement between the north boundary of the substation and the Barclay Heights residential development. This path would be 10 feet wide and would connect the BPA easement to Suzanna Avenue approximately 250 feet north of West Second Street. The roadway section of the recommended route would utilize Suzanna Avenue, which is the entry road to Barclay Heights Subdivision. The distance along Suzanna Avenue from West Second Street to the pathway connection which leads to the main path within the BPA easement is approximately 250 feet. Joint use of the roadway, rather than on-street bike lanes, is recommended for Suzanna Avenue. Joint use of the roadway will be practical and safe due to low vehicle operating speeds and traffic volumes. Pedestrians would use sidewalks adjacent to the street.

The advantage to this routing option, and the principal reason it is recommended, is that it brings bicyclists to West Second Street where a crossing can be made directly to Filbert Street on the south side of West Second Street. From Filbert Street, cyclists can readily access other residential streets to the south and east. Routing cyclists and pedestrians to the Suzanna Avenue and West Second Street intersection helps to concentrate bicycle and pedestrian crossings to a single location. Disadvantages of this routing are that it places cyclists and pedestrians in a street right-of-way (as opposed to an independent, off-street path) and that the Suzanna Avenue intersection is approximately 500 feet east of the point at which an existing pathway provides access to the south and east from West Second Street. The overriding factor in the recommendation is that the existing pathway which leads south from West Second Street has an inadequate width for shared bicycle and pedestrian use.

An alternative routing option which would bring the path to West Second Street would go to the west of the BPA substation. From the main path (at an arbitrary point within a few hundred feet north of the BPA substation), a connecting path could run in a southwesterly or southerly direction to intersect West Second Street approximately 500 feet west of Suzanna Avenue. This routing option would be located in the southeastern portion of land owned by the Squires Trust. This is currently planned for residential development. There are two potential disadvantages of this alignment option. The first is that it requires dedication of a corridor or other land acquisition through the Squires Trust property. The second is that this routing option leads directly to a path on the south side of West Second Street which is of insufficient width for shared bicycle and pedestrian use. Thus, this routing option is not recommended as the principal connection with West Second Street, but it could be constructed as a secondary or auxiliary connection. Should it be built, it should be constructed to a minimum width of 10 feet for shared use, or posted as a pedestrian rather than a bicycle route.

South of Wallace Road

As indicated in the Topography section of the Site Analysis chapter of this report, the central portion of the corridor is steeply sloped and runs from Wallace Road to the corridor's high point about 300 feet south of Wallace Road. In this portion of the corridor, the grade averages 14 percent and is calculated to exceed 20 percent in its steepest section. Based upon recognized engineering standards, a bicycle path cannot be recommended in this portion of the corridor.

The American Association of State Highway and Transportation Official's Guide for the Development of Bicycle Facilities (August 1991) provides guidance on bicycle facility design. The AASHTO guide states: "Grades greater than 5 percent are undesirable because ascents are difficult for many bicyclists to climb and descents cause some bicyclists to exceed the speeds at which they are competent." A twenty percent grade, as would be required to negotiate the slope south of Wallace Road, is extraordinarily steep in view of AASHTO's cautions relating to a five percent grade.

A more detailed engineering analysis was also conducted using charts and formulas in the AASHTO guide. Using formulas in the AASHTO guide, the stopping distance for bicyclists were determined for various speeds and grades Using a 20 percent slope, the minimum stopping distance is calculated to be more than 340 feet with a design speed of 20 mph and more than 500 feet for a design speed of 25 mph. Since these stopping distances exceed the distance from the high point of the corridor to Wallace Road, it is strongly recommended that a bike path not be located on this steep slope.

If a path intended for pedestrian use is constructed on this steeply-sloping portion of the BPA easement, it must be limited to pedestrian activity and every effort should be made through design of access and through signing to keep cyclists from straying onto this slope.

To avoid the steeply-sloping section of the BPA easement south of Wallace Road, the recommended route for cyclists uses Meadows Drive, the adjacent local street which intersects Wallace Road about 200 feet east of the power line. Using Meadows Drive is beneficial because the terrain east of the power line easement is slightly less steep. Furthermore, the grade of the newly constructed road has been further reduced by cutting into the north-facing slope.

A path limited to pedestrian use could be constructed on the steep slope. Either steps or a switch-back ramp design could be used to negotiate the slope. Construction of a pedestrian path on this slope within the BPA easement may be a lower priority given the ability of pedestrians to use the path to Meadows drive and the sidewalks adjacent to Meadows Drive.

A switch-back design concept within the BPA easement for a bike path was also examined, but determined to be impractical because of the steepness of the slope, the turning radii required for safe design of a bike path, and the width of the easement.

Wallace Road Crossing

Since that portion of the bike route immediately south of Wallace Road is necessarily an on-street route due to the terrain (as described in the preceding section), the intersection of Wallace Road and Meadows Drive defines the location of the corridor on the south side of Wallace Road. No special treatment, such as marking on-street bike lanes, is recommended for Meadows Drive. Vehicle operating speeds and traffic volumes will be low, making joint use of the roadway practical and safe. Bicyclists are expected to operate as vehicles on the street, including riding on the proper side of the street.

Normally, one would prefer that a bike path line up directly from one side of a street to the other. In the case of the Wallace Road crossing, it would be best if the northerly continuation of the path intersected Wallace Road opposite Meadows Drive (about 200 feet east of the BPA easement). However, the land on the north side of Wallace Road has already been platted for single family homes to the east of the BPA easement, so this is not an option. As a result, the only viable option for the path on the north side of Wallace Road is to have it intersect Wallace Road within the BPA easement.

At Wallace Road, the offset between the route on the south side of Wallace Road (Meadows Drive) and the path on the north side of Wallace Road (the BPA easement) is approximately 200 feet. Cyclists will need to use Wallace Road to transition from the intersection of Meadows Drive (the street which serves as the connection to the southern portion of the corridor) to the BPA easement (which serves as the northern portion of the corridor). If a pedestrian-only path (as discussed in the preceding section) is not constructed on the steeply-

sloped BPA easement on the south side of Wallace Road, pedestrians would use the sidewalks along Wallace Road to rejoin the path.

Although the offset of the bicycle route (along Wallace Road from Meadows Drive to the BPA easement) is less than ideal, it should be an acceptable routing option given the lack of other viable alternatives. To minimize conflicts and potential safety concerns, it will be important to warn motorists of the presence of cyclists and pedestrians and to direct cyclists to the proper crossing locations.

Warning signs would be appropriate to alert motorists of the path where it crosses Wallace Road. The size, color, design and placement of these signs are specified in the Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD's W11-1 bicycle warning sign or W11-2 pedestrian warning sign may be used as a crossing sign. According to the MUTCD, warning signs should be located approximately 250 feet in advance of the crossing.

Since bicyclists will be traveling on a section of Wallace Road to transition from one section of the north-south pathway to the other, provisions should be made to accommodate them. At the least, on-street parking should be prohibited on Wallace Road for a distance of approximately 200 feet in each direction from Meadows Drive and the BPA easement. A parking prohibition would help to improve sight distance and ensure that sufficient space is available on Wallace Road for shared use of the available street width by bicyclists and motorists. A parking prohibition fits with the long-range plans for Wallace Road which is designated as a minor collector in the City's Transportation Master Plan. The Plan indicates Wallace Road as a "proposed bikeway with road improvements" and specifies a street cross-section with bike lanes. Since striping Wallace Road for on-street bicycle lanes is the long-range solution, parking along Wallace Road would be precluded in any case.

It is also important that both northbound and southbound cyclists are informed about the continuation of the path in the vicinity of the Wallace Road crossing. Guide signing, including a small map, could be used along the path near the high point of the corridor (especially to guide northbound cyclists) and a little way north of Wallace Road (especially to guide southbound cyclists).

At the Wallace Road crossing itself, the MUTCD's D11-1 BIKE ROUTE signs with appropriate directional arrows should be used to keep bicyclists informed of directional changes.

Key factors in the Wallace Road crossing design are the provision of adequate sight distance and the need to restrict motor vehicles from the path. Sight distance can be enhanced by keeping the path at right angles to Wallace Road, restricting fences and other built structures, and restricting vegetation to low-growing varieties. Tall, high-branching trees would also allow adequate sight distance, but are not permitted within the BPA easement because of potential interference with BPA operations and maintenance needs.

Access to the pathway can be limited to bicyclists, pedestrians, and maintenance vehicles by careful design. The preferred method is through a split entry design which provides for two narrow curb cuts and a small triangular landscaped area or median as illustrated in Figure 1. Further discussion on this and other design features are found in the Design Standards section.

Wetlands

As discussed in the Wetlands section of the chapter on Site Analysis, there are wetlands within the project corridor north of Wallace Road as determined by an on-site wetland reconnaissance.

Construction of a path within an identified wetlands may require a permit from the US Army Corps of Engineers (COE) or the Oregon Division of State Lands (DSL).

Nationwide Permit 26 under Section 404 administered by the COE allows filling up to one acre of isolated wetland or adjacent wetlands located above the headwaters. However, filling of wetlands is not permitted in documented habitat for federally- or state-listed endangered, threatened, or sensitive plant or animal species. The COE also authorizes an Individual Permit for more than one acre of fill for these types of wetlands, or for any amount of fill in adjacent wetlands below headwaters. This type of permit is costly, time consuming, requires multiple agency review and an "alternative analysis." Water quality certification must be obtained from the Department of Environmental Quality before the COE will issue a letter of compliance under a Nationwide Permit 26.

Any activity that proposes removal, filling, or alteration of more than 50 cubic yards of material in a wetland requires a Fill-Removal Permit from DSL. In addition, DSL also requires a mitigation plan that will compensate for the wetland loss. Prior to preliminary design of the proposal, a wetland delineation should be performed to determine the location and extent of jurisdictional wetlands and water courses. Wetland delineations are more accurate when performed when the ground water is recharged. This is typically in March through early May. The wetland delineation process defines precise wetland boundaries that may be utilized during site design.

North End of Corridor

For a distance of approximately one-half mile south of Baker Creek Road, the power line easement crosses undeveloped agricultural land. Several alternatives exist for the location and design of the bicycle and pedestrian corridor from Wallace Road to Baker Creek Road.

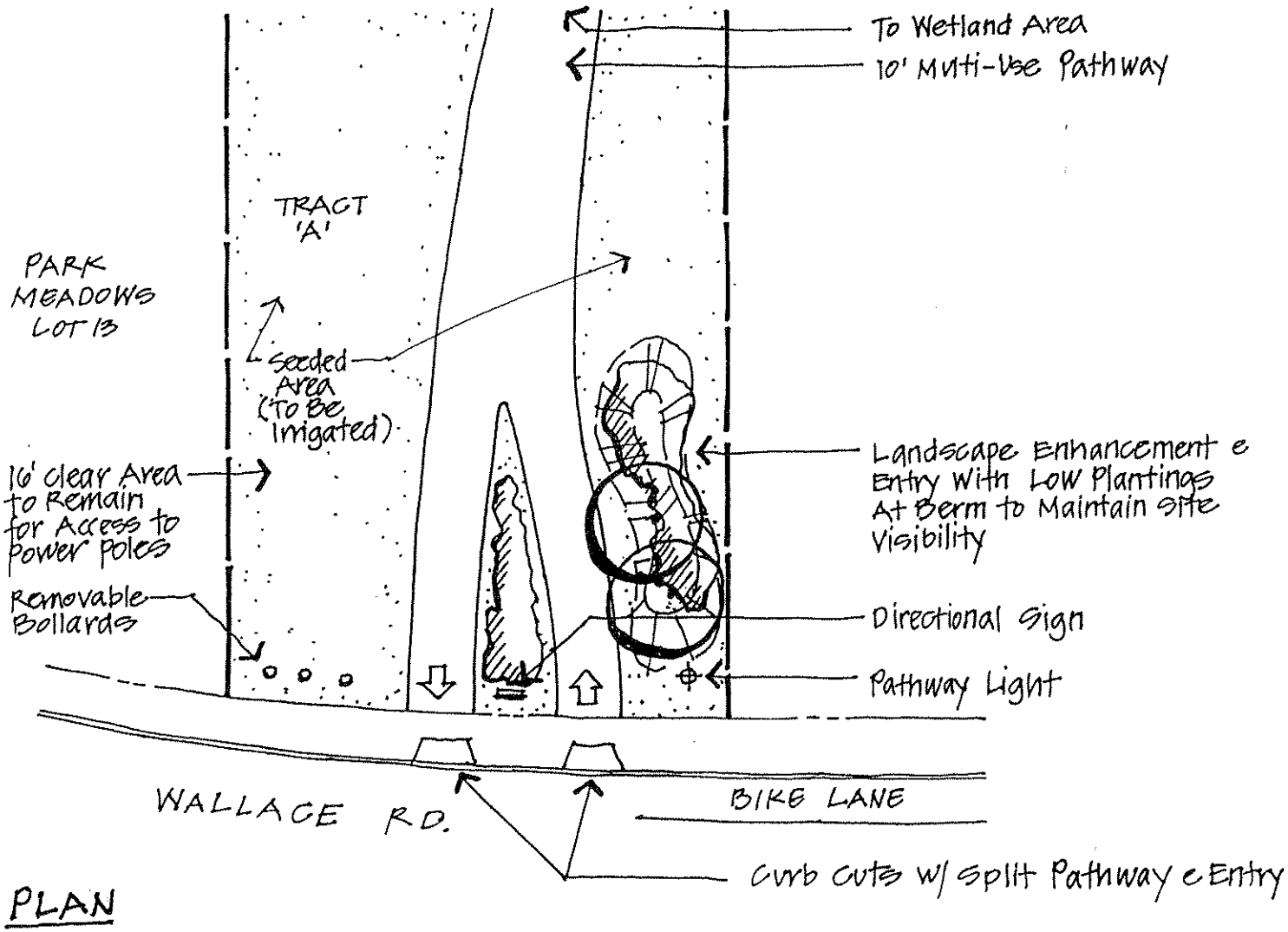

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FIGURE 1
WALLACE ROAD
ENTRY

The preferred alternative is to construct the bicycle-pedestrian path as a separate, off-street facility within the power line easement as is proposed for most of the southern portion of the corridor. There are few constraints caused by the terrain north of the wetland area (which is estimated to have a northern boundary approximately 900 feet north of Wallace Road). Sufficient width is available to meander the path within the 60 foot wide BPA easement to provide visual interest and enhance the users' experience. The path can be curved to allow it to move to either the east or west side of the easement. A design speed of 25 mph would be recommended, which requires a minimum curve radius of 155 feet.

However, one land development and street layout proposal reportedly being considered for the parcels between Baker Creek Road and Wallace Road involves other uses for the BPA easement and the lands immediately adjacent to it. This land development and street layout proposal includes north-south streets immediately adjacent to the power line easement on each side. This would apparently be designed with two one-way street segments, one on either side of the power poles.

This street layout proposal, using streets on each side of the BPA easement, is definitely not compatible with a bike path or multi-use path within the BPA easement. Should this street layout be advanced, placing bikes in on-street lanes on the roadway would be the preferred way of accommodating cyclists in this particular area. Sidewalks along these streets could serve pedestrian needs. However, on-street lanes and sidewalks in this corridor would not meet the same needs as would a separate, off-street path.

This report includes a large-scale map of the corridor which schematically depicts an off-street path in a corridor parallel to the BPA easement between Wallace Road and Baker Creek Road. This recommendation, with an off-street, multi-use path in a parallel corridor, is based on the assumption that roadways will be constructed immediately adjacent to the power line easement. The separate, off-street path is shown parallel with and several hundred feet to the east of the BPA easement. The distance from the BPA easement is arbitrary can be varied as long as good design practices are followed as discussed below.

When designing a path in a separate location like the one illustrated, particular care should be taken to make crossings of intersecting streets at carefully selected locations. Sufficient spacing should be maintained between the path and nearby street intersections. Mid-block path crossings between closely spaced intersecting streets should be avoided. Placing the path near driveways, particularly high-volume, commercial driveways should also be avoided. Adequate sight distance, well-designed curb cuts and ramps, and appropriate signing should be used at each crossing point.

Another option for providing reasonable bicycle and pedestrian connections between Wallace Road and Baker Creek Road involves the use of local, residential streets. Although a street-based corridor fails to provide the amenities of an off-street path, it can help serve non-automotive transportation needs. Low-volume residential streets can provide safe and

reasonably convenient bike access, but the presence of frequent STOP signs will discourage many riders from using such routes and can inadvertently teach cyclists to disregard traffic control devices.

If it is necessary to use residential streets for bicycle access, there are options to help make a local residential street system more "bicycle friendly." This involves some planning and traffic engineering practices which can be used to compensate for the inconveniences cited above, especially the placement of STOP signs at almost every intersection to limit through traffic and automobile speeds. One of these practices is the "bicycle boulevard" concept. The bicycle boulevard concept uses a variety of street design features to narrow the road and reduce through traffic and automobile operating speeds without discouraging through bicycle traffic and without placement of STOP signs at each block. This bicycle boulevard concept being tested by Portland and some other cities and might be an option in this portion of McMinnville.

DESIGN STANDARDS

This section of the report summarizes some of the key elements which must be considered prior to or during final design or construction of the path.

This section lists key references which should be consulted during design. It discusses certain aspects of path design for which there are significant options and makes recommendations. In addition, it discusses some of the design details, amenities, and features which can help to make the completed path achieve the objectives of this plan.

KEY REFERENCES

There are many similarities between design criteria for paths and those for streets (e.g. horizontal alignment, sight distance, access management, signing, and markings). However, there are some differences which makes it important that the designer consult the appropriate references for pathways. The three key references which should be consulted during subsequent phases of this project (i.e. design and construction) are:

- the Oregon Bicycle and Pedestrian Plan (1994);
- the Americans with Disabilities Act (ADA) and its companion Americans with Disabilities Act Accessibility Guidelines (ADAAG); and
- the American Association of State Highway and Transportation Officials' Guide for Development of Bicycle Facilities (1991).

There are some differences and potentially conflicts between them which must be resolved by the designer. For example the Americans with Disabilities Act requires that the grade of pedestrian facilities not exceed 5%, although bicyclists can handle grades of up to 10% for short distances. The maximum allowable cross-slope for a pedestrian facility is 2% whereas bicyclists prefer a cross-slope between 2%-5% to assist in drainage and turning at speed in curves. In practice, hilly routes may necessitate grades and cross-slopes beyond ADA requirements. In such cases, a warning sign (e.g., W7-5, Hill) may be advisable. The ADAAG should be consulted during design.

It is especially recommended that the path designer review and consult the Oregon Bicycle and Pedestrian Plan throughout the design process. This document covers many applications for all types of bikeways and situations. It provides comprehensive discussions of design considerations, examples of good and bad practices, a glossary of terms, and expanded guidelines for separated multi-use paths, and exceptions to AASHTO standards. It is a valuable reference source for planners, designers and engineers and maintenance personnel.

Note also that Bonneville Power Administration will need to review engineering plans for parts of the path which are to be constructed on their easement.

PATHWAY WIDTH OPTIONS AND RECOMMENDATIONS

It is important to maintain adequate width for the anticipated use of this facility. Over the years, multi-use paths have been constructed in widths varying from as little as 8 feet to more than 14 feet.

A path with an 8-foot width may be tempting to some because of its lower cost, but a path of this width is not recommended for this corridor. Communities which have built paths 8 feet wide have often discovered that they are too narrow for the amount of use they receive. The Oregon Bicycle and Pedestrian Plan recommends a 10 ft. width as the standard with 12 ft. in high use areas.

We recommend that the city evaluate the cost of a 10 foot and 12 foot wide path and select the width based upon the available construction budget. If financial constraints preclude construction of a 12 foot wide path, a 10-foot wide path is recommended.

The Oregon Bicycle and Pedestrian Plan recommends a 3-foot or greater, graded "shy" or clear distance on both sides of a multi-use path as the standard. If necessary due to width constraints, it may be reduced to a minimum of 2 feet. Three foot wide clear zones on each side are recommended since they match nicely with a 10 foot wide path to provide BPA's required minimum clear area of 16 feet.

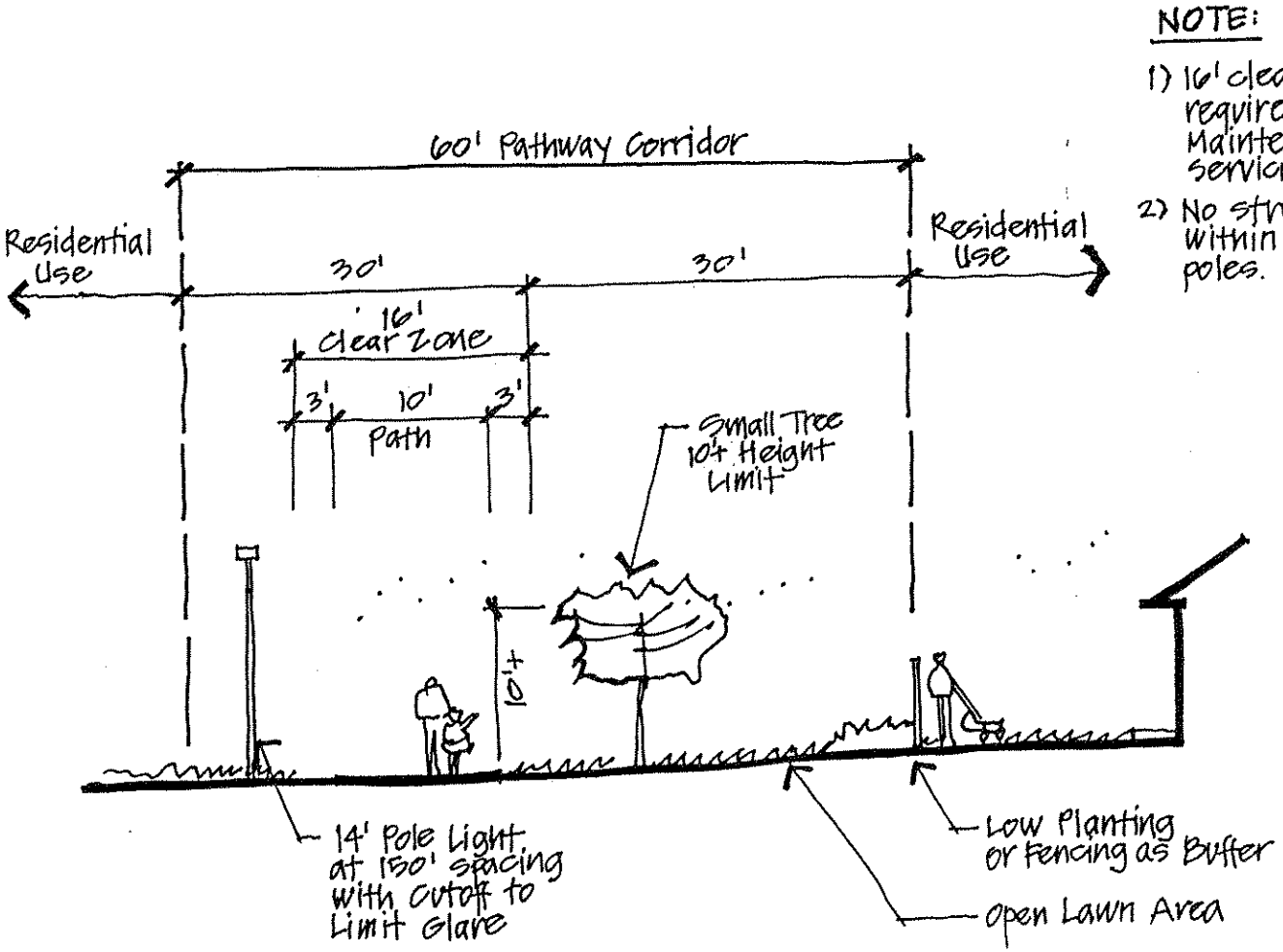
The Oregon Bicycle and Pedestrian Plan recommends a standard clearance to overhead obstructions of 10 feet with a minimum 8 feet. Because of BPA's vertical clearance needs, the Oregon Bicycle and Pedestrian Plan's vertical clearance standards will likely not be a design limitation in most locations.

Key elements concerning width and clearance are illustrated in a typical cross-section in Figure 2.

PAVEMENT SECTION OPTIONS AND RECOMMENDATIONS

There are two materials which should be considered when constructing a multi-use path: asphaltic concrete and Portland cement concrete.

The Oregon Bicycle and Pedestrian Plan suggests asphaltic concrete paths be constructed using a structural section of 2"-4" of asphaltic concrete surface over 4"-6" of aggregate or stabilized base over a compacted subgrade. This section is illustrated in Figure 3.



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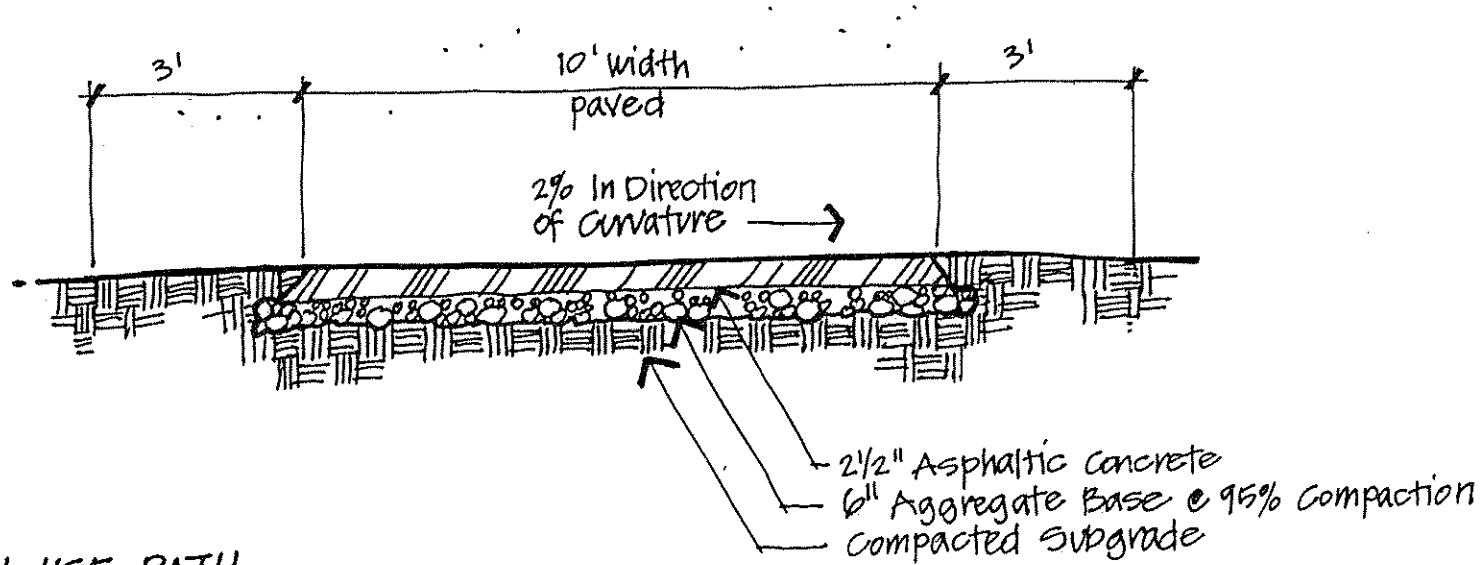
McMINNVILLE WESTSIDE BICYCLE AND PEDESTRIAN PLAN

FIGURE 2
RESIDENTIAL TRAIL SECTION

NOTE:

1) Design Speed 20 MPH (30 MPH on Long Downgrades over 4% slope for more than 500').
2) Maximum Grade is 5% (10% on Segments Less than 500' Long).
3) Minimum Curve Radius is 155'.
4) 8' Vertical clearance shall Be Required.
5) Pathway construction shall conform to loading requirements HS-20.



MULTI-USE PATH
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BICYCLE AND PEDESTRIAN PLAN

FIGURE 3
CONSTRUCTION DETAIL

Note that the asphaltic pavement section shown in this figure may not meet BPA's requirements that the pavement withstand HS-20 loadings. The thickness of the asphaltic concrete and the aggregate may need to be increased.

The widely-reported advantages of asphaltic pavement are that it provides a smoother riding surface and has a lower initial cost. Problems with asphalt paths are that the pavement tends with age to become brittle, cracked and rough, or deformed with roots.

Portland cement concrete (PCC) paths are generally more expensive to construct than those of asphaltic concrete. However, PCC surfacing has proven to be the more durable and therefore less expensive in the long term. Well finished PCC paths provide a smooth surface with low maintenance costs. The surface must have a cross-broomed finish for drainage and crack control joints must be saw cut not troweled. A typical cross-section using a PCC pavement is shown in Figure 4.

Note that this PCC pavement section may not meet BPA's requirements that the pavement withstand HS-20 loadings. The thickness of the PCC pavement and the aggregate may need to be increased.

Multi-use paths should be designed with adequate structural depth to support emergency and maintenance vehicles. Where the path is within BPA's easement, BPA has specific requirements which define the structural section which will be required. If the subgrade is poor (wet and/or poor material), treatment of the subgrade with lime, cement or geotextile fabric should be considered. A geotechnical report prior to final design will help determine what treatment is necessary.

Multi-use paths within or adjacent to streams, wooded areas, and wetlands present special problems in design and construction. The roots of trees can pierce through the path surface and cause it to break up. Preventive methods include removal of vegetation, realignment of the path away from trees or placement of root barriers along the edge of the path.

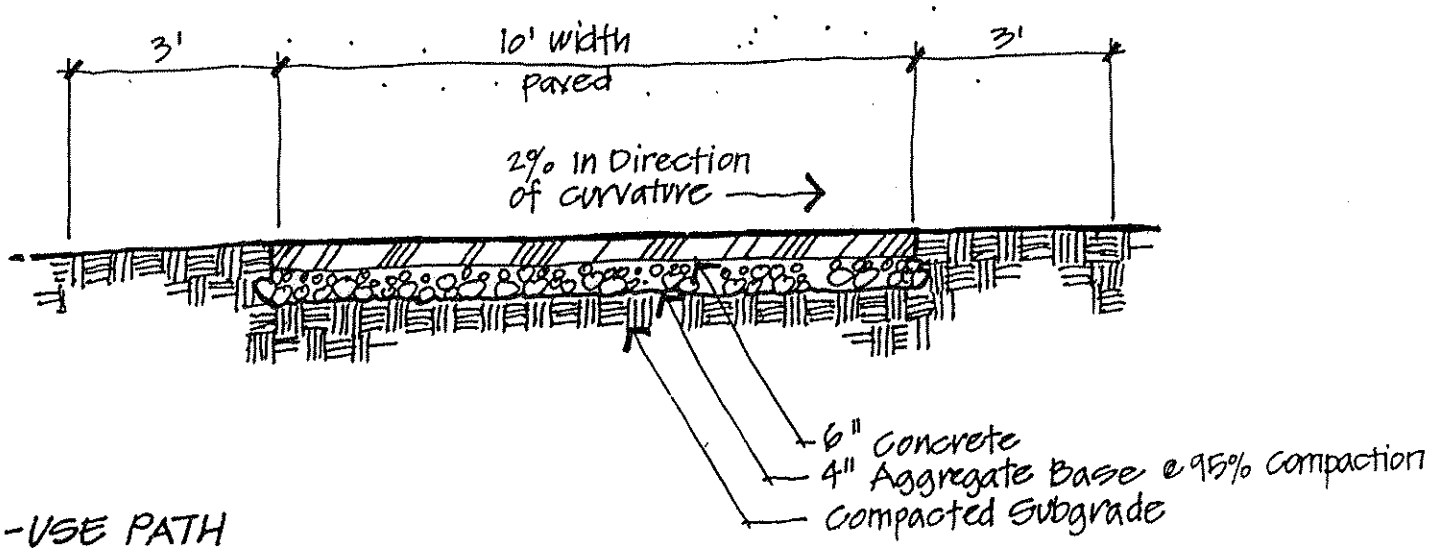
We recommend the city evaluate the costs of both PCC and asphaltic concrete paths giving consideration to initial and long-term costs, and taking into account site-specific soil conditions and BPA's loading requirements. If financial considerations allow, we recommend a PCC pavement because of its long-term durability.

WETLANDS CROSSING OPTIONS AND RECOMMENDATIONS

The large-scale map of the corridor shows the location of the path north of Wallace Road continuing to Baker Creek Road. Between approximately 400 feet and 900 feet north of Wallace Road, a wetland area has been identified.

NOTE:

1) Design Speed 20 MPH (30 MPH on Long Downgrades over 4% slope for more than 500').
2) Maximum Grade is 5% (10% on Segments Less than 500' Long).
3) Minimum Curve Radius is 155'.
4) 8' Vertical clearance shall be Required.
5) Concrete shall Attain A Minimum Compressive Strength of 3500 PSI IN 28 Days.
6) Pathway construction shall conform to loading requirements HS-20.



MULTI-USE PATH
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As mentioned previously a detailed wetland delineation will be needed to determine the final design options, particularly because pathway layout is of vital importance in wetlands. Sensitive design will locate paths to minimize damage to delineated wetlands and to shorten the length of a path through wetlands.

One design solution would be to develop an elevated walkway/boardwalk. The elevated walkway is supported by a system called "pinned piles". Pressure-treated vertical posts are sunk an average of four inches in soil. Each post is supported with galvanized pins driven through metal brackets. Handrails will help to keep pedestrians and cyclists on the boardwalk thus protecting the wetlands and minimizing impacts, as shown in Figure 5. (Note that the Oregon Bicycle and Pedestrian Plan and AASHTO Guide should be consulted for design requirements such as railing height and design.)

A more traditional method of pathway construction would be to use a compacted subgrade of rock with an asphalt surface, as illustrated in Figure 6. This path design would use concrete culverts placed crosswise for water to pass through from one side of the path to the other, but requires filling portions of the wetland.

DSL has stated that wetlands can be crossed via a boardwalk without a permit or mitigation provided the pilings do not require excavation of more than 50 cubic yards of material.. Depending upon width, a relatively short segment of the traditional asphalt pathway design option may exceed the 50 cubic yard limit, requiring permitting and wetland mitigation.

Some land development options being considered between Wallace Road and Baker Creek Road might result in roadway layouts which would permit cyclists and pedestrians to detour around the wetland area. This might allow construction of an off-street path through the wetland area to be delayed if financial or wetland issues preclude early construction of this section.

We recommend that the city proceed with a formal wetland delineation which can serve as the basis for a carefully conducted design and evaluation. A design which uses path sections of both types (traditional and boardwalk) may be the most appropriate. Construction cost, permitting, mitigation requirements and other factors will need to be considered by the city

LANDSCAPING OPTIONS AND RECOMMENDATIONS

There are a wide range of options for landscaping for the corridor. This section includes a discussion of two different the landscape options and includes landscape design recommendations and a plant list. It also provides some information on landscape maintenance considerations.

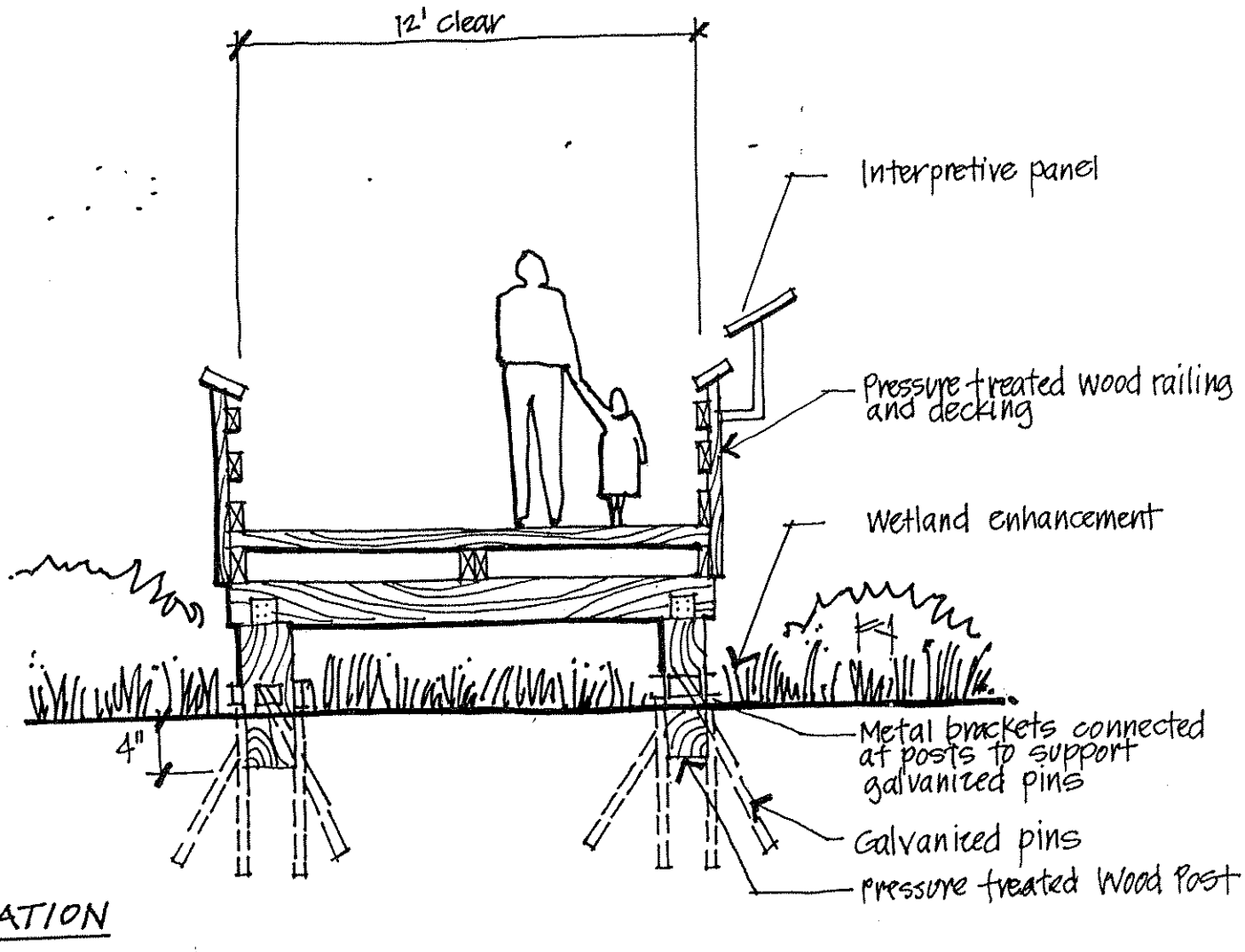

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FIGURE 5
ELEVATED WALKWAY @ WETLAND

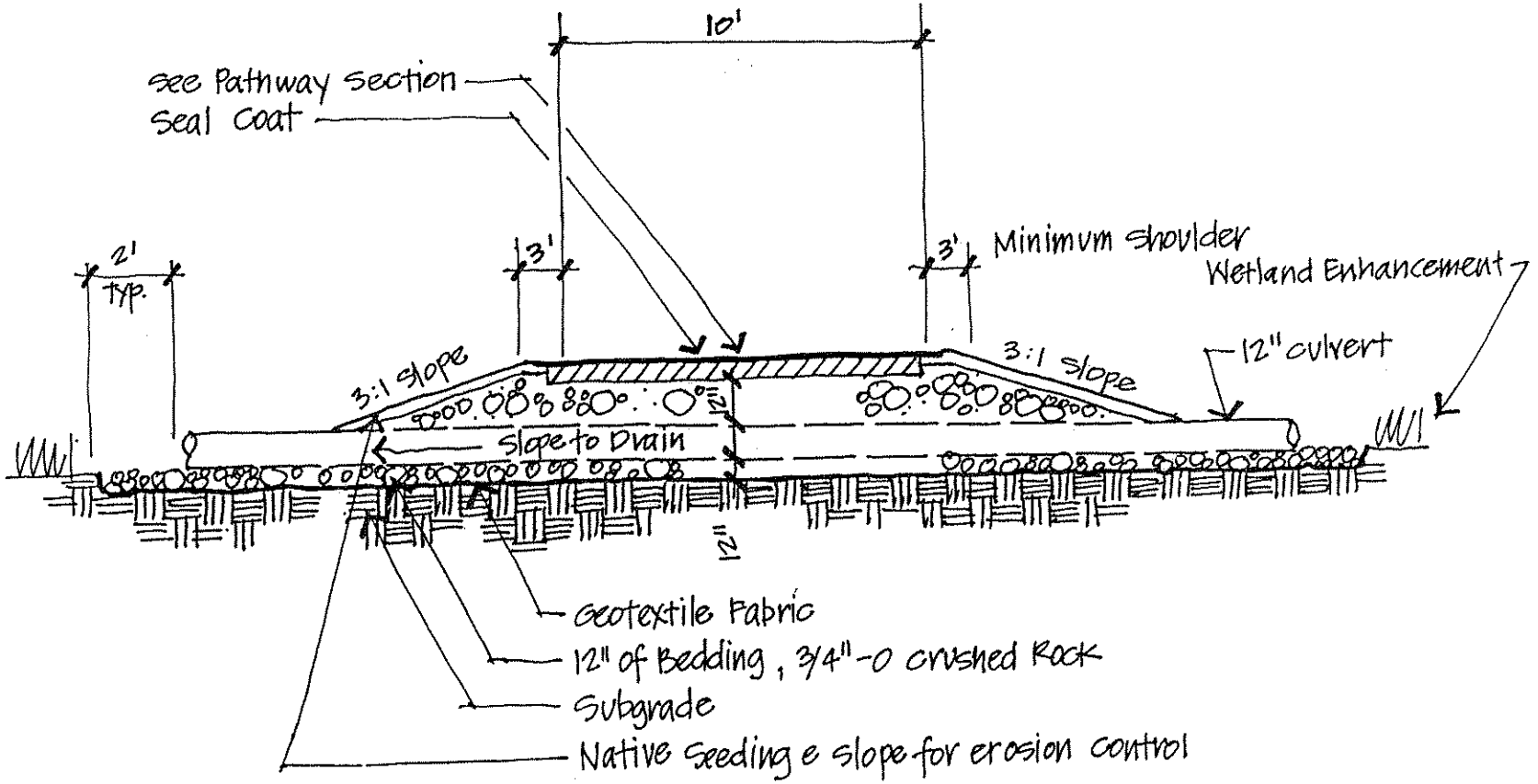

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FIGURE 6
PATHWAY @ WETLAND

The pathway corridor has two distinct landscape options, one being a developed manicured landscape and the other being the retention and enhancement of existing natural areas including the wetland.

The developed landscape would be open in character providing a continuation of the linear park to the south of Second Street, with irrigated lawn and ornamental and native plantings of trees and shrubs. These developed areas would be located to the north of the substation at Second Street continuing north to the viewpoint, the entrance to the pathway on the north side of Wallace Street, and the area north of the wetland in the Shadden Claim Subdivision which is proposed to have a series of small parks linked together by the pathway.

The natural areas include a small area of existing trees on the steep slope south of Wallace Road and the wetland area to the north of Wallace Road. The existing vegetation will be retained where possible with minimal disturbance to the slope to maintain slope stability and erosion control. The natural systems of the wetland will be maintained with native plantings added for enhancement to provide aesthetic as well as functional value. These are important areas which provide a transition to break up the formality of ornamental plantings and lawn.

We recommend the following landscape design guidelines be considered when developing the final planting plan for the corridor:

1. Use plant materials in groups to form walls, or floors of varying heights to give privacy, screen or reveal while maintaining visibility for safety.

2. Design techniques should include irregular or informal rows of plant materials and berms where possible. These techniques can be used individually or in combination depending on the space involved.

3. Provide larger planting beds and massing of trees and shrubs where possible, although single trees can provide accent. A mixture of small trees and shrubs with groundcover or native grasses provide transition.

4. Preserve existing vegetation where possible which provide aesthetic as well as functional value for wildlife.

5. Keep the edges as open as possible to help retain the existing open character of the corridor and minimize the tunnel effect of the linear corridor.

6. Provide random evergreen plantings at various locations as buffers to development and help maintain the need for privacy if fencing does not occur. Plant low vegetation to ensure site visibility at intersections to roads and access points.

7. Provide plantings that are a mixture of high and low plant materials, that are evergreen and deciduous, provide a variety of textures, contrast and color through the seasons of the year.

Especially for the wetland, a sensitive planting program should respond to the existing conditions and qualities seeking to reinforce the existing plant community. An understanding of the hydrology and the fluctuations of that system is necessary at the design stage.

A wide variety of plants can be used in the corridor. The following list of recommended plants provides a starting point from which the final planting plan can be developed.

Small Trees

Acer buergeranum	Trident Maple
A. ginnala	Amur Maple
A. palmatum	Japanese Maple
Amelanchier grandiflora	Service berry
Cercis Canadensis	Eastern Redbud
Cornus Kousa	Japanese Dogwood
Crataegus lavallei	Lavelle Hawthorne
Fraxinus excelsier globusum	Globe Headed European Ash
Malus 'Red Jewel'	Red Jewel Crabapple
Prunus serrulata 'Shirotae'	Mt. Fuji Flowering Cherry

Shrubs

Azalea	Azalea
Cornus Stolonifera	Red-twig Dogwood
Chaenomeles	Flowering Quince (low variety)
Gaultheria shallon	Salal
Mahonia acquifolium	Oregon Grape
Mohonia repens	Creeping Mahonia
Ribies sanquineum	Pink Flowering Currant
Rhododendron	Rhododrendron
Vaccinium ovatum	Evergreen Huckleberry

Groundcovers

Viburnum Davidii	David Viburnum
Artostaphyllos uva-ursi	Kinnikinnick
Cornus stolonifera 'kelseyi'	Red Twig Dogwood 'Nana'
Juniperus honzontalis	Juniper

Recommended Wetland Plant List

Small Trees

Salix Lasiandra	Pacific Willow

Shrubs

Cornus stolonifera	Red Osier Dogwood
Physocarpus capitatus	Pacific Ninebark
Rubus spectabilis	Salmonberry
Spiraea douglasii	Douglas Spirea

Groundcovers

Carex dewyana	Dewey's Sedge
Carex obnupta	Slough Sedge
Festuca rubra	Red fescue
Oenanthe sarmentosa	Pacific Water Parsley
Polysticum munitum	Swordfern

Another factor which should be considered during the design phase is the landscape maintenance. Lawns are highly maintenance intensive requiring topsoil and amendments, continual watering, fertilizing and mowing. The seeding of native grasses is an alternative to lawn and will save on installation time and reduced equipment costs, will adapt to local climate and soils, and therefore be more conducive to energy and water conservation than the traditional high maintenance landscape.

We recommend the city carefully consider maintenance needs of the landscaping and water availability during final design and before undertaking the installation of planting.

OTHER RECOMMENDATIONS

Path Surface Recommendations

The surface of the path should be as uniform as possible with a high skid resistance. Alternative paving materials, such as brick or pavers, are sometimes used to delineate crosswalks in downtown areas. For pathways, they should generally be avoided because of the extra joints in the path surface and the change in skid resistance. Most brick has low skid resistance, particularly in wet conditions. Any pavement markings should also be selected

with attention to their skid resistance. Thermo-plastic pavement markings should be avoided due to their low skid resistance when wet.

Expansion joints should be used only perpendicular to the length of the path. Lateral joints (parallel with the path) should be avoided since a displacement of as little as 1/4 inch can cause a loss of control by cyclists.

Some jurisdictions have experimented with closely-spaced joints or saw cuts to warn cyclists of pathway intersections or congested areas in an attempt to duplicate "rumble strips" used occasionally on highways. The effect of closely-spaced joints is unknown and is probably not worth the added effort or expense.

Edge Treatment Of Corridor

Treatment of the boundaries of the power line easement will influence activity and character of the corridor. This must be balanced with the needs of the adjacent property owners.

Keeping the boundaries as open as possible helps to minimize the tunnel effect of a linear corridor. An absence of fencing or dense vegetative boundaries will help to retain views, particularly from the high spots along the corridor. Visibility into the corridor from surrounding properties also helps to discourage inappropriate activity and contributes to a feeling of "ownership" of the corridor by nearby residents. On the other hand, the desire for minimum boundaries needs to be balanced with a need for privacy and security by the adjacent property owners.

To the extent possible, the lands which abut the corridor should be those for which privacy is not critical. These might include public lands, such as parks and schools, plus common areas associated with planned unit developments.

We recommend that where fencing is necessary, such as that needed for single family homes, efforts should be made to restrict fence height and to avoid continuous, solid materials.

One of the factors which can be used to provide variety in the corridor is to shift the location of the path from side to side. In addition, plantings can be used within or adjacent to the corridor to vary the feeling one gets by traversing it. The easement's 60-foot width gives sufficient flexibility to vary the location of the path and provide a variety of plantings.

A corridor which emphasizes variety is far preferred to one in which a straight path is bounded by continuous solid fencing on each side of the sixty-foot easement with a uniform field of grass.

We recommend that final design incorporate pathway location within the easement that varies from side to side, taking into account needs of adjacent owners, the opportunities for connections, terrain constraints, and safe design practices for users.

Lighting

Pathway lighting is a common and highly desirable feature for paths. It contributes to safety and comfort of path users and should be considered no less important than is street lighting for motorists, pedestrians and cyclists using streets.

The most appropriate lighting for a pathway in a residential area is pedestrian-scale lighting. Pedestrian-scale lighting is typically mounted on posts approximately 10 to 15 feet high and is spaced approximately 200 to 300 feet apart. AASHTO suggests horizontal illumination levels of 0.5-foot-candles to 2.0 foot-candles.

Many different post, globe, and mounting designs are available. Lighting along some pathways is provided continuously along one side. Other paths have posts on alternate sides. Regardless of what lighting design or spacing is selected, it is critical that vertical and horizontal clearances be maintained. The minimum horizontal clear zone is two-feet from the edge of the pavement, with three feet of clearance preferred. Note that BPA should be consulted to ensure that the pole height and location meets their requirements for operations and for movement of maintenance vehicles.

We recommend that the city consider providing lighting along the path and that it be provided if is within the financial constraints of the city.

Street Intersections

Special effort should be made to minimize the number of intersecting streets and driveways when locating and designing multi-use paths. Wherever a path intersects with a street, spacing between the path and any driveways or other intersections should be considered. The pathway's intersection with the cross-street should be treated as any other street intersection. Driveways, particularly high-volume commercial driveways, should not be allowed to be located close to the path. Mid-block path crossings in short blocks should be avoided. Spacing between the path and nearby public roads should be as uniform as possible.

Where an emergency access road crosses a path, the path should be treated as the "through route." and consideration should be given to using barriers on the access road rather than the path itself. A barrier can be removable (with a lock and key) and can be designed with a breakaway mount for those occurrences when delay cannot be tolerated. Figure 7 illustrates a location near Hillside Manor where an emergency access road is proposed to cross the path.

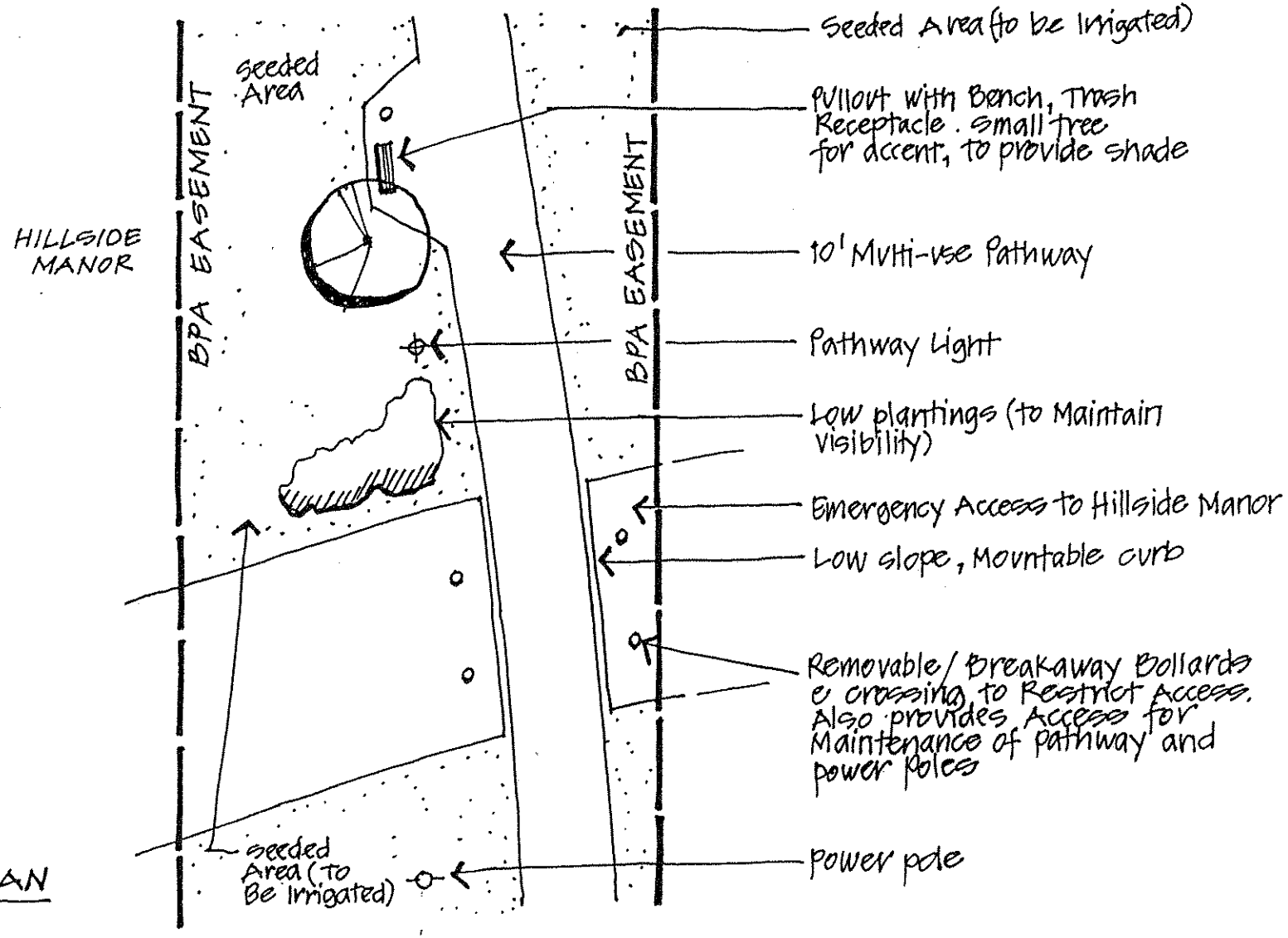

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FIGURE 7
HILLSIDE MANOR ACCESS ROAD CROSSING

A ramp which brings the path to the same elevation as the street should be designed to exactly match the street. No "lip" or bump should be permitted where the path intersects the street.

We recommend that the designer consult the Oregon Bicycle and Pedestrian Plan during final design of the pathway.

Viewing Areas

Viewing areas and pullouts will provide a stopping place adjacent to the pathway for cyclists and pedestrians. A paved surface provides an area for a bench and for parking bicycles. The addition of native plantings open in character will add variety and interest while maintaining visibility for safety. Small canopied trees located near benches will help provide shade for those who have chosen to pause, before continuing on, as illustrated in Figures 8, 9 and 10.

Bollards, Barrier Posts And Other Methods Of Discouraging Vehicle Traffic

Barrier posts or "bollards" have often been used to limit vehicle entry on multi-use paths. Their use is now discouraged because they become an obstruction and hazard to bicyclists. They can be hard to see after dark and, if closely spaced, can inhibit the passage of bicycle trailers and wheelchairs.

A highly effective solution which discourages motor vehicle use is a split path entry. Near the roadway, the path is split into two narrower one-way paths, leaving a small triangular piece of ground which can be landscaped. Maintenance vehicles and emergency vehicles can still access the path, but at a very low speed since one set of wheels will have to mount a full height curb. Figure 1 illustrates the split path entry as recommended for the north side of Wallace Road.

If necessary to use a bollard, it can be designed to be removable for passage by maintenance or other authorized vehicles. An illustration of a removable barrier is shown in Figure 11.

We recommend that wherever possible that a split entry design be used to minimize access by unauthorized vehicles to the path.

Maps And Other Pathway Information

Maps or other information depicting the extent of the corridor can be provided at key locations. Several locations are possibilities for information kiosks or simple map boards. These include the path termini (West Second Street and Baker Creek Road) and viewing areas

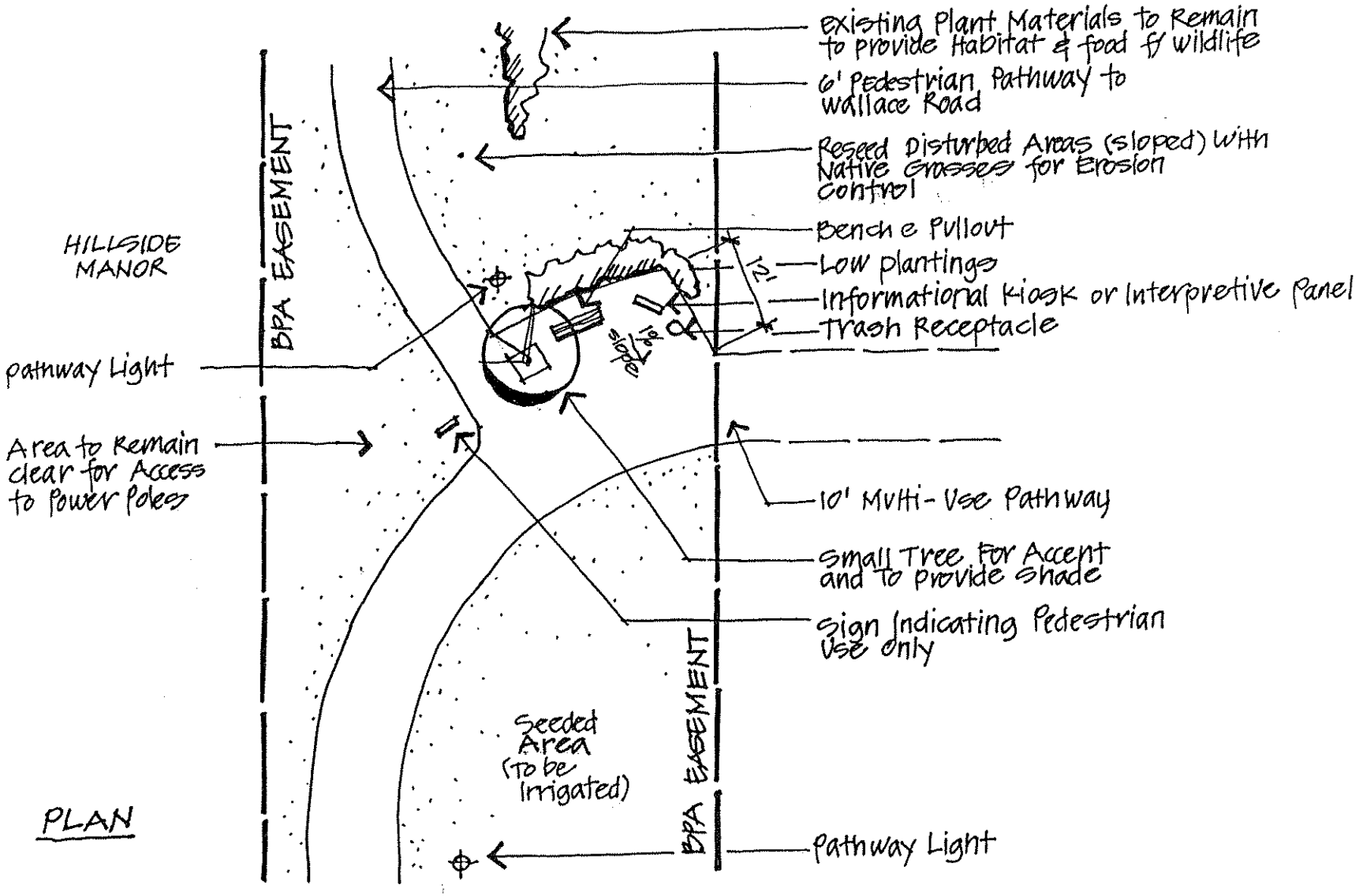

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FIGURE 8
PULLOUT & VIEWPOINT

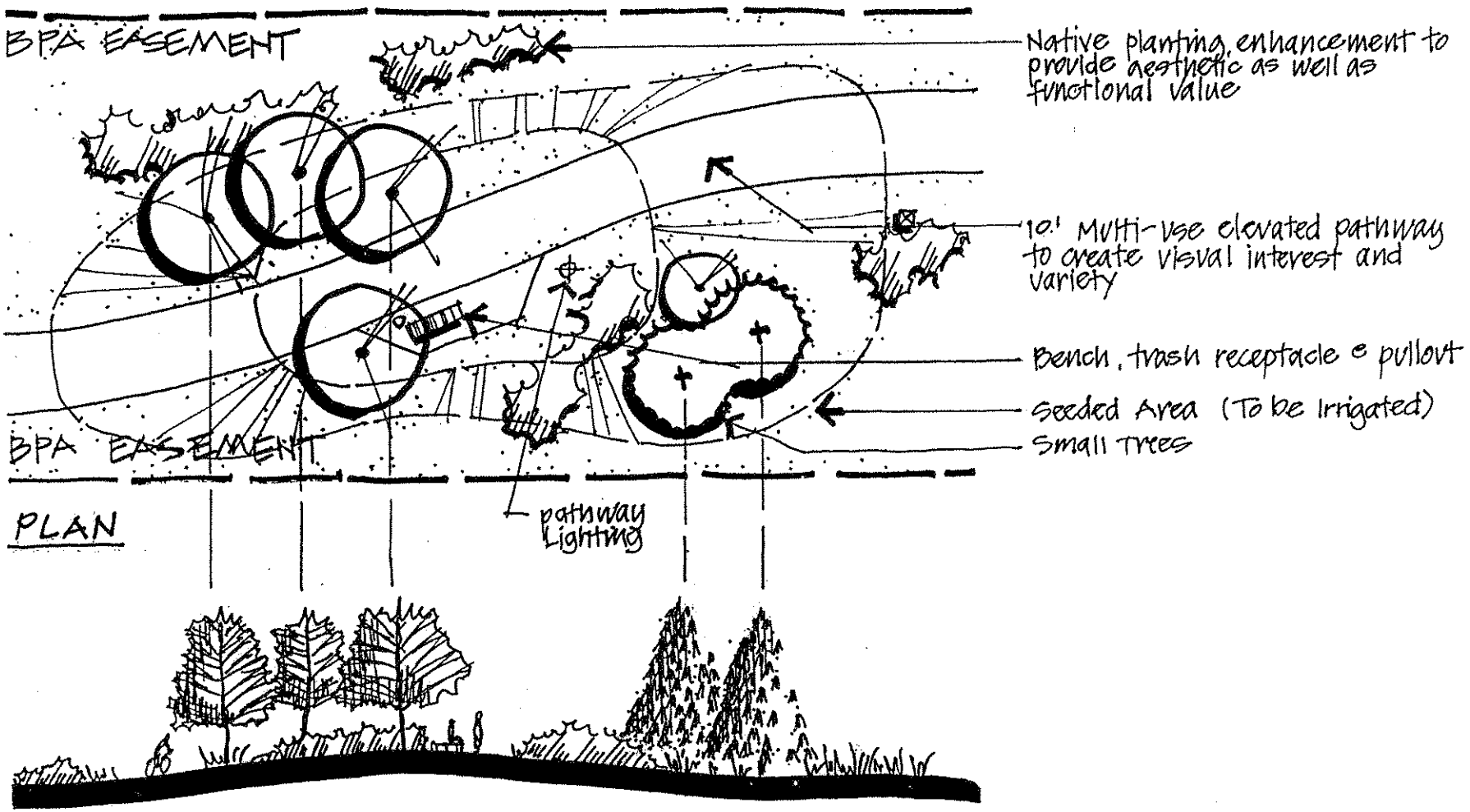

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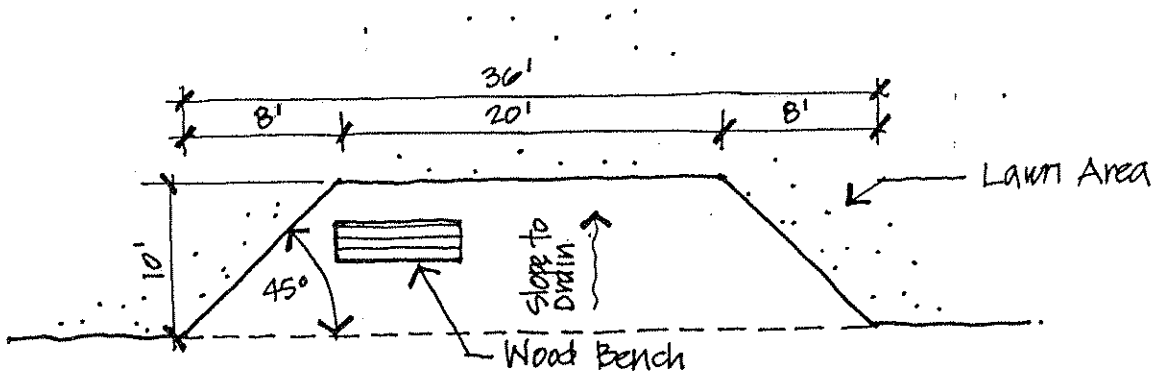
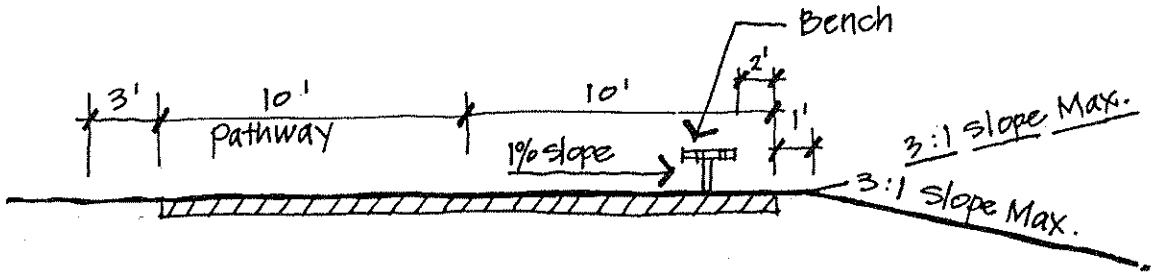
FIGURE 9
TYPICAL SMALL SCALE PULLOUT

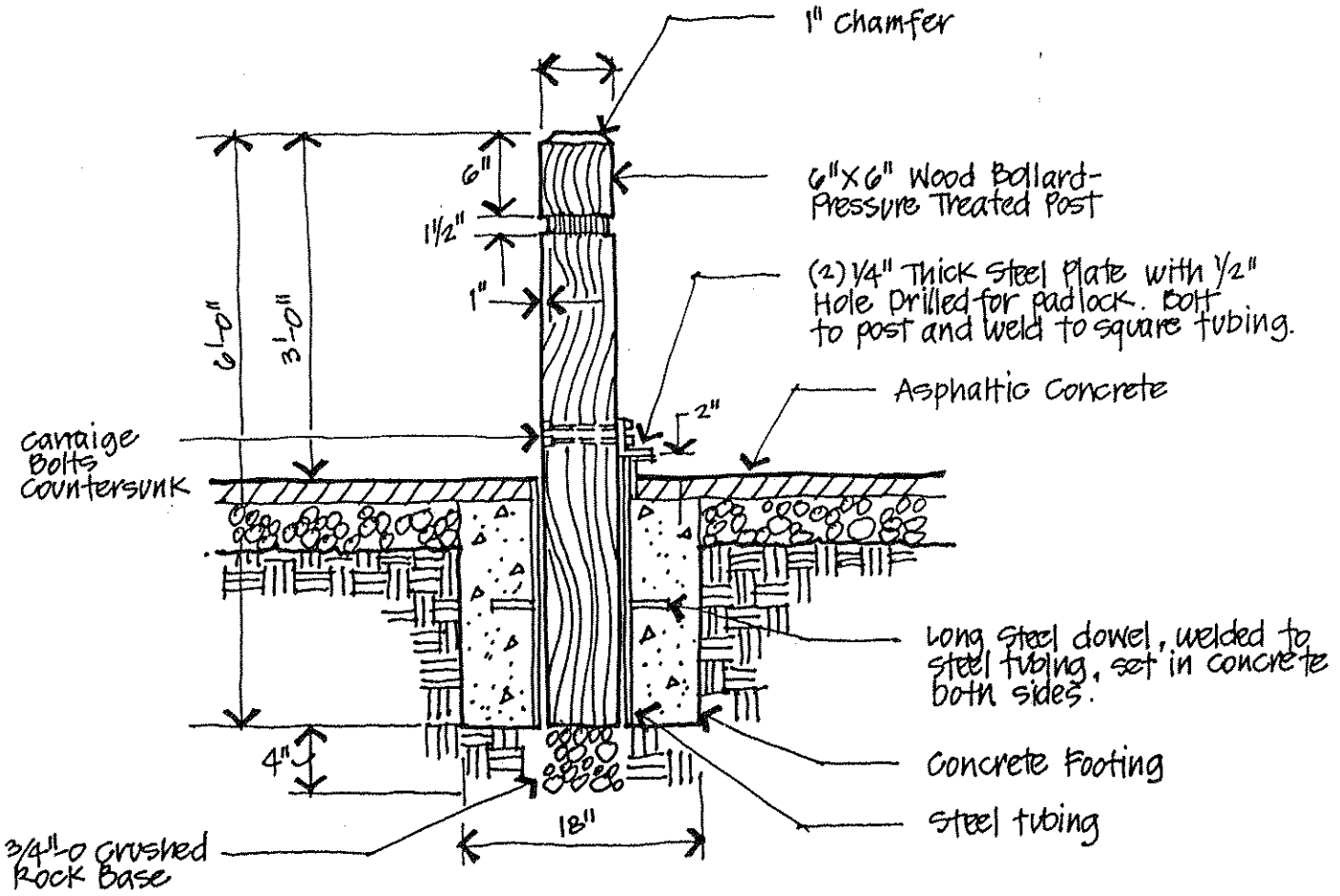


PLAN



SECTION

NOT TO SCALE



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McMINNVILLE WESTSIDE
BICYCLE AND PEDESTRIAN PLAN

FIGURE 11
REMOVABLE BOLLARD

(the high point south of Wallace Road or the wetland area north of Wallace Road). These are also prime locations for interpretive signing explaining topographic or natural features. An example of an information kiosk is illustrated in Figure 12.

Destination signing where other paths interconnect may also be appropriate. Simple signs noting the names of schools, parks, and of streets to which intersecting paths connect can help orient path users. Destination signing need not be extensive nor highly visible from great distances.

Directional signing will be needed in the vicinity of Wallace Road to help bicyclists negotiate the street system to go from one section of off-street path to another. A further discussion of this is in Wallace Road Crossing section of the Path Design And Location chapter of this report.

We recommend that the designer develop informational, destination, and directional signing during the final design.

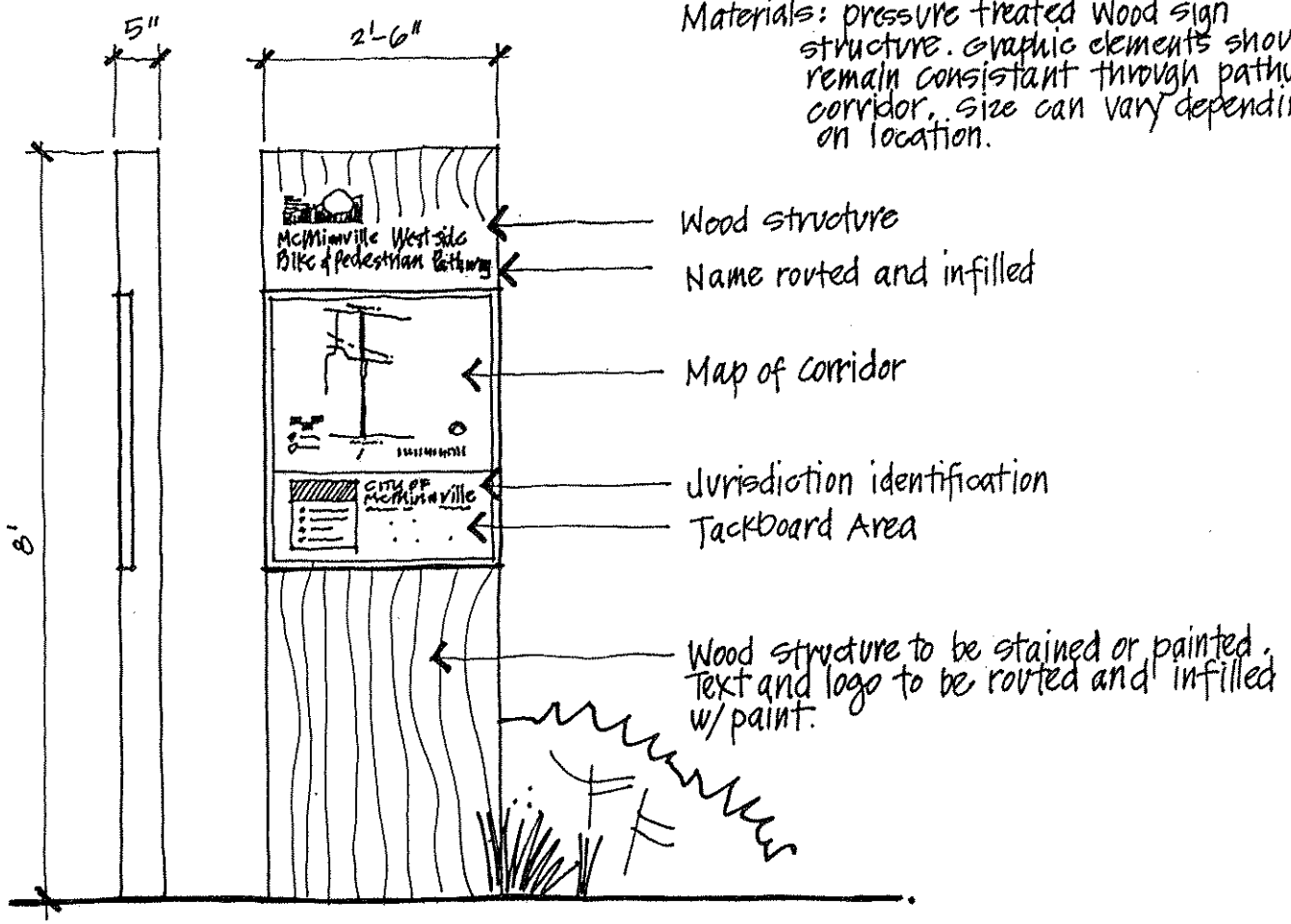
Connection with Existing and Planned Development

In the southern portion of the corridor (between West Second Street and the corridor's high point about 300 feet south of Wallace Road), the pathway is proposed to be located within the 60 foot wide BPA easement. In the northern portion of the corridor (between Wallace Road and Baker Creek Road), the pathway is proposed to be located in a separate right-of-way or easement parallel to the BPA easement. Connections to adjacent streets, parks, open spaces and other publicly owned lands will need to be provided.

Care needs to be taken in the design of these connections. Connections to the main path from adjacent streets or parcels should be direct and as short as practicable. It is preferred that the entire length of a connection be visible from both ends (where one end is the main path within the BPA easement and the second end is a cul-de-sac, an adjacent street, or a park). Generally a width of 20 feet will be sufficient for the connection's easement or right-of-way. If the connection also serves as a point from which BPA maintenance vehicles will gain access to the BPA corridor, width may need to be increased. The path surface should be a minimum of 10 feet with 3 foot shy distance on each side if bicycle access is likely.

For connectors to the main path, lighting is highly desirable and helps in providing a level of comfort and safety. If the connection's length is less than about 150 or 200 feet, the lighting provided at the main path and at the other end may be sufficient.

Landscaping should be selected with visibility in mind. Low profile vegetation will almost always be acceptable for the connections, and where overhead utilities are not anticipated,



ELEVATION

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FIGURE 12
INFORMATION KIOSK

vegetation with high-branching characteristics may also be acceptable. The preferred vertical clearance above a path is 10 feet, with 8 feet as a minimum.

Connections or access points should be signed at the street to prohibit access by unauthorized motor vehicles. Physical barriers such as a split entry or bollards should also be installed to prevent access. See further discussion on Bollards, Barrier Posts and Methods of Discouraging Vehicular Traffic.

Destination signing on the main pathway should be used to inform path users about the destinations to which each connection provides access.

RELATIONSHIP TO OTHER PLANS

The City of McMinnville's Transportation Master Plan (adopted December 22, 1992) references the Westside corridor within the power line easement as well as the bike lanes on West Second Street, Wallace Road, and Baker Creek Road. Goals and objectives support implementation of city-wide bicycle and pedestrian system improvements.

Design standards shown in the Transportation Master Plan for streets, including the specifications for bike lane width, are still applicable and meet State of Oregon and AASHTO standards. A specification relating to multi-use paths is not included in the Transportation Master Plan, however, that is not considered a serious deficiency as long as applicable Oregon and AASHTO standards are followed during the design of facilities.

The City of McMinnville's Comprehensive Plan Volume II Goals and Policies also supports bicycle and pedestrian planning and implementation. Five policies address bike paths and three more address pedestrian ways. No additions or changes appear to be needed to provide any further justification or support for the planned multi-use path within the power line corridor.

FUNDING OPPORTUNITIES

Under state law, the City of McMinnville is obligated to spend a small amount of money on bicycle and pedestrian facilities. This "one percent" money is a small portion of the "gas tax" money collected by the state and shared with cities and counties. By constitutional restriction, it may not be expended on bicycle and pedestrian facilities outside of highway rights-of-way.

The principal funding mechanism for this path is the requirement that developers complete their portion of the path. This is directly parallel with requirements placed on developers to construct roadways or provide public utilities.

Given the restriction on funding from the state's gas tax, the only other sources of public funding likely to be available would be locally-derived money. This could include the city's general funds and systems development charge (SDC) funds. When SDC programs are enacted, mechanisms must be set up to determine project eligibility. Either a transportation SDC program or a park SDC program may be structured in a manner which allows expenditures for projects such as the Westside corridor path. Legal research may be required to determine whether any existing McMinnville funding mechanism would allow this expenditure.

PRELIMINARY COST ESTIMATE

A preliminary cost estimate was prepared for construction of the path from West Second Street to Baker Creek Road.

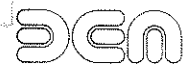
Construction costs can vary depending upon the final design and site conditions. Other factors which can influence the construction cost include market conditions, time of construction, and bidding procedures.

In preparing a preliminary cost estimate, several assumptions were made. The path was assumed to be 10 feet wide, optimal soil conditions were assumed (to minimize the need for expensive subgrade treatment), right-of-way was assumed to be available at no cost, and the portion of the wetland requiring a boardwalk crossing was assumed to be 250 feet in length.

Four cost estimates were prepared varying from approximately $390,000 to approximately $770,000. Estimates were prepared for both PCC and asphaltic pavements and with two landscaping options. One landscaping option (Scheme I) features a more manicured design with irrigation and the other (Scheme II) is a more natural, non-irrigated design.

Details of the cost estimates are contained in Appendix A.

APPENDIX A



PRELIMINARY COST ESTIMATE - SCHEME I

City of McMinnville

	DESCRIPTION	EST. QUAN.	UNIT	UNIT PRICE	CONTRACT TOTAL
I.	PATHWAY (Entire length of pathway, 10' width)				
	1. Option 1 - Asphalt	6400	L.F.	$14.00	$89,600
	2. Option 2 - Concrete (6")	6400	L.F.	$40.00	$256,000
	3. Elevated Boardwalk	250	L.F.	$150.00	$37,500
	4. Stairs	All	EA.	Lump Sum	$11,000
II.	LIGHTING 14' Light Standard (Entire length of pathway)	43	EA.	$2,500.00	$107,500
III.	LANDSCAPING (Southern portion of corridor only)				
	1. Planting (includes trees, shrubs, soil amendment and lawn seeding)	126,000	S.F.	$0.79	$99,540
	2. Irrigation (excludes electrical point of connection and water meters)	126,000	S.F.	$0.65	$81,900
IV.	SITE AMENITIES (Southern corridor only)				
	1. Bollards	12	EA.	$350.00	$4,200
	2. Benches	3	EA.	$1,000.00	$3,000
	3. Trash Receptacles	5	EA.	$700.00	$3,500
	4. Signage				
	a. Entry	2	EA.	$750.00	$1,500
	b. Directional and Destination Signing	All	EA.	Lump Sum	$3,000
	c. Interpretive Signage	All	EA.	Lump Sum	$3,500
	d. Informational Kiosk	1	EA.	Lump Sum	$3,500

TOTAL COST WITH ASHPALT PATHWAY

SUBTOTAL	$449,240
25% Contingency	$112,310
TOTAL	**$561,550**

TOTAL COST WITH CONCRETE PATHWAY

SUBTOTAL	$615,640
25% Contingency	$153,910
TOTAL	**$769,550**

NOTE: Construction cost estimates are based on experience and judgment. Costs may vary due to market conditions, time of construction and bidding procedures.

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PRELIMINARY COST ESTIMATE - SCHEME II

City of McMinnville

	DESCRIPTION	EST. QUAN.	UNIT	UNIT PRICE	CONTRACT TOTAL
I.	PATHWAY (Entire length of pathway, 10' width)				
	1. Option 1 - Asphalt	6400	L.F.	$14.00	$89,600
	2. Option 2 - Concrete (6")	6400	L.F.	$40.00	$256,000
	3. Elevated Boardwalk	250	L.F.	$150.00	$37,500
	4. Stairs	All	EA.	Lump Sum	$11,000
II.	LIGHTING 14' Light Standard (Entire length of pathway)	43	EA.	$2,500.00	$107,500
III.	LANDSCAPING (Southern portion of corridor only)				
	1. Planting (includes trees, shrubs and seeding with native species)	126,000	S.F.	$0.35	$44,100
IV.	SITE AMENITIES (Southern corridor only)				
	1. Bollards	12	EA.	$350.00	$4,200
	2. Benches	3	EA.	$1,000.00	$3,000
	3. Trash Receptacles	5	EA.	$700.00	$3,500
	4. Signage				
	a. Entry	2	EA.	$750.00	$1,500
	b. Directional and Destination Signing	All	EA.	Lump Sum	$3,000
	c. Interpretive Signage	All	EA.	Lump Sum	$3,500
	d. Informational Kiosk	1	EA.	Lump Sum	$3,500

TOTAL COST WITH ASHPALT PATHWAY

SUBTOTAL	$311,900
25% Contingency	-$77,975
TOTAL	**$389,875**

TOTAL COST WITH CONCRETE PATHWAY

SUBTOTAL	$478,300
25% Contingency	$119,575
TOTAL	**$597,875**

NOTE: Construction cost estimates are based on experience and judgment. Costs may vary due to market conditions, time of construction and bidding procedures.

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