

**STAFF FINDINGS**

**Staff has examined the merits of the proposed development for compliance with the Kalama Municipal Code, Kalama Development Guidelines and Public Works Standards, and State Environmental Policy Act.**

**Only the major issues, errors in the development proposal and/or justification for any conditions of approval are discussed below. Staff finds that all other aspects of this proposed development comply with the applicable code requirements and require no discussion in this report.**

**Building code review is not performed during master plan review. Filing of a building permit application with required fees and materials is required for a building code review.**

***KMC Title 10 Vehicles and Traffic***

The master plan application includes a Traffic Impact Study (TIS) and updated traffic information (Exhibits 3.j and 11). The TIS indicates the development will result in 535 site trips during the morning peak hour, 1,186 site trips during the evening peak hour, and 12,194 daily trips at full build out. Increased trips will be mitigated by road dedication and improvements to Kalama River Road and Old Pacific Highway. Proposed public improvements are described in detail within Title 11 of this report and on the applicant's site plans, attached (Exhibit 3.d). Additional traffic mitigation will be provided to meet level of service (LOS) standards as required in the SEPA mitigation measures per Condition of Approval 5.

***KMC Title 11 Public Improvements***

The development site fronts the northern side of Kalama River Road and both sides of Old Pacific Highway 99. Kalama River Road has an existing 24-foot-wide paved surface within an existing 40-foot right-of-way with no curbs or sidewalks. Port of Kalama proposes to dedicate 20 feet of right-of-way along the site's frontage along Kalama River Road to achieve a total right-of-way width of 60 feet. Proposed improvements for Kalama River Road include a total of 42 feet of paved surface that will include two 14-foot travel lanes and a 14-foot center turn lane. A 5-foot-wide separated sidewalk, 4-foot planter strip, and curb is proposed along the north side of the road. No improvements are proposed for the south side of Kalama River Road due to the presence of wetlands along portions of this area.

Development is proposed along both sides of Old Pacific Highway, a collector street. The existing right-of-way is 40 feet. Port of Kalama will dedicate 10 feet of right-of-way along the site's frontage of Old Pacific Highway 99 to achieve a total right-of-way width of 60 feet where the development fronts on both sides of the roadway. Proposed improvements for Old Pacific Highway include a total of 42 feet of paved surface that will include two 14-foot travel lanes and a 14-foot center turn lane. A curb, planter strip, and 5-foot sidewalk will be constructed along the Spencer Creek Business Park frontage. Port of Kalama has proposed a realignment of Old Pacific Highway at the intersection of Kalama River Road for safety and to accommodate

frontage requirements. The realigned Old Pacific Highway would meet Kalama River Road at a more perpendicular angle.

Internal to the development, a system of private streets is proposed to serve future development. The proposed private streets, Swanstrom Court and Westin Circle will have a 50-foot cross section with 34 feet of paving from curb to curb that includes two 11-foot travel lanes and a 12-foot center turn lane. The internal private streets will also include a 4-foot planter strip and 5-foot sidewalk along both sides.

### ***KMC Title 12 Water and Sewers***

The proposed development will include water and sewer service for future development. Public utilities will be extended to serve the development. There is an existing 12-inch water line in Kalama River Road. Water service will be extended and looped through the site. Port of Kalama has constructed a regional sanitary sewer project that will service Spencer Creek Business Park. The Port sanitary sewer force main will be owned, maintained and operated by the Port prior to being transferred to the City under the terms of the developer's agreement. The applicant has identified an existing stormwater facility near the eastern end of the development site. Stormwater from the development will be treated and infiltrated throughout the development. No additional stormwater generated by the development will be directed to the existing facility. The proposed water and sewer services shall be constructed in accordance with KMC Title 12 and the Kalama Development Guidelines and Public Works Standards. Prior to construction, the applicant shall submit engineering construction drawings per Condition of Approval 4.

### ***KMC Title 14 Buildings and Construction***

Proposed buildings on site shall be in compliance with the International Building Codes as adopted by the City of Kalama except as amended by Chapter 14 of the Kalama Municipal Code per Condition of Approval 8.

### ***KMC Title 15 Environment***

The site contains wetlands, critical aquifer recharge areas, geologically hazardous areas, fish and wildlife habitat, and frequently flooded areas. A critical areas report has been submitted as part of the application. Each of these environmental resources is addressed. The critical areas report defines the site by four areas as follows; Area 1A is located north of Kalama River Road, west of Old Pacific Highway, Area 1B is located south of Kalama River Road, directly south of Old Pacific Highway, where the pump station is located, Area 2 is located north of Kalama River Road, east of Old Pacific Highway, and the Haydu Park site is located south of Kalama River Road, west of the Haydu Park main improvements area. Figure 4 within the Critical Areas Mitigation and Habitat Management Report show shows where these areas are located.



*Informational Guide.* It is speculated that the designer's intent was to accommodate WB-50 design vehicle inside the circulatory roadway. Judging from the vehicle turning templates, this is still achievable even when the circulatory roadway width is reduced to 21', though. Reference: Section 6.4.3 of the *Informational Guide*.

3. The entry widths are in the range of 20'-21'. They are much wider than the typical range of 14'-18'. Similar to comment 2. above, these wider entry widths may cause operation and safety concerns (smaller vehicle treating the entry as two lanes, higher entry speeds, and longer pedestrian crosswalks, etc.). Again, it is speculated that this design choice is the result of accommodating the design vehicle (WB-67). However, judging from the vehicle turning templates and depending on where the leading tractor positions itself inside the travel lane, it should be achievable to reduce the entry widths to 18'-19'. Reference: Section 6.4.2 of the *Informational Guide*.
4. Overall, the current roundabout design appears imbalanced. Much attention was placed on accommodating the large design vehicles (WB-50, WB-67) rather than the speed management (requires adequate deflection) and safety issues (for both vehicles and pedestrians). The designer asserts that since the posted speed limit is 25mph, there is no concern for higher design entry speeds (see Page 13 of the *Roundabout Alternatives Analysis*). This is a misconception since in reality most of the drivers tend to ignore the speed limit sign and drive at the perceived, achievable highest speeds. Therefore, a balanced geometrical composition that considers both truck maneuverability and speed management is crucial for any roundabout design. We would recommend revising the roundabout design to address the items issues described above.

### **Stormwater Technical Information Report**

The Stormwater Technical Information Report (TIR) addresses the proposed stormwater management infrastructure, which consists of bioretention cells, compost-amended vegetated filter strips (CAVFS), and infiltration ditches alongside the roadways. The City of Kalama uses the 1992 Ecology Stormwater Management Manual as its reference manual. The Stormwater TIR was developed to comply with this Manual and the design recommendations of the latest version of the Ecology Manual (2012 Stormwater Management Manual for Western Washington, with 2014 revisions). The entire site is shown in the project boundary limits in Appendices B and C. The stormwater design is shown in the plans on sheets C200 through C253.

Appendix H provides the HydroCAD analysis inputs and outputs and indicates a total site area of 9.789 acres, 8.816 acres of which is impervious. The following comments apply to the Stormwater TIR.

1. The bioretention profile shown on sheet C250 indicates only 0.5 feet of ponding depth below the roadway curb cut elevation, and no freeboard depth is available before the curb cut. The design should be revised such that 0.5 feet of ponding is available below the riser elevation and an additional 0.5 feet of freeboard is available above the riser and below the curb cut elevation.

## Civil Engineering Plans

In general the plans appear to be consistent with the City's Development Guidelines and Public Works Standards (DGPWS). The following comments are provided regarding the plans that were submitted.

### General

1. Some of the proposed improvements appear to be occurring within Cowlitz County right-of-way. The applicant will need to obtain approval from Cowlitz County for this work.
2. The line work for utilities makes it difficult to distinguish between existing utilities and proposed utilities. The applicant should revise the line types to make the proposed utilities stand out better. Line weights for lane marking are also difficult to see on the plans.
3. Traffic control constraints should be clearly noted on the plans. The plans should note that at least one lane of traffic must be maintained at all times on Kalama River Road and Old Pacific Highway.
4. The applicant must submit pavement design calculations stamped and signed by a professional engineer.
5. The applicant should confirm the design speed used for the roadway improvements. Based on the existing posted speed of 35 mph for Kalama River Road and existing traffic speeds, it is likely that reduction of the posted speed to 25 mph will not be warranted until further development of the office park occurs and additional traffic reduces traveled speeds.
6. The applicant should confirm that clear zone requirements are met along the south side of Kalama River Road and the west side of Old Pacific Highway.

### Sheet C001

7. In Note 2, the 2016 WSDOT Standard Specifications should be referenced instead of the 2012 edition.

### Sheets C050 through C057

8. We recommend including a legend to identify the hatches shown for the proposed bioretention areas, trenches, and CAVFS facilities, or reference the storm drainage plan cover sheet in the general notes.

### Sheets C060 through C067

9. The temporary construction entrance hatch appears to be shaded light, similar to the shading of the existing site elements. Please ensure that the hatch is bold enough to be distinguishable from the existing site elements.



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9. The applicant understands and agrees with the condition that the applicant will be responsible for maintaining landscaping within the proposed median areas. The applicant requests that the City provide a draft maintenance agreement for review prior to finalization.

#### Kalama River Road / Old Pacific Highway Intersection

10. Responses to comments are addressed later in this memo. It should be noted that by proposing a roundabout, the applicant is proactively meeting a mitigation condition required by the City. Although current traffic volumes may not dictate installation of additional traffic control (lighted intersection, roundabout, etc.), the applicant is proposing to install the preferred traffic control option in advance. It should also be noted that the City had previously commented that it preferred that a signalized intersection not be installed in the future, likely due to maintenance and cost considerations.

11. No response.

#### **Kalama River Road / Old Pacific Highway Intersection Roundabout Alternatives Analysis**

The *Roundabout: An Informational Guide, 2<sup>nd</sup> Edition, NCHRP Report 672* is a manual considered to provide guidance into the design of roundabouts, but is by no means considered a final design standard because roundabout design is such a project/site-specific effort. WSDOT's Design Manual, *Chapter 1320 Roundabouts*, reiterates this and considers some values presented in the above Roundabout Guide as "only suggestions to start a roundabout design."

1. As briefly noted in the comments, the center of the proposed roundabout is shifted west of the existing intersection to avoid wetland and buffer impacts along the southeast quadrant. It should also be noted that the preferred alignment is considered the best solution because not only does it avoid wetland and buffer impacts, but it also situates the roundabout on soils that are likely more stable, and it helps minimize fill and other grading impacts. Additionally, it avoids encroachment onto adjacent properties in the southeast quadrant and the jurisdictional ditch in the northwest quadrant.

As discussed in the Alternatives Analysis, numerous iterations were analyzed to find a best fit intersection solution given many constraints. Analysis of the five identified goals are discussed in the Alternative Analysis. The review comments state that the north Old Pacific Highway approach appears inferior because it is not perpendicular to other alignments. Admittedly, in a perfect scenario when a roundabout can be designed and constructed on undeveloped land with no constraints, perpendicular alignments/approaches are generally preferable. However, as noted above, the proposed roundabout must accommodate numerous constraints and meet the identified project goals. The reviewer asserts that the north Old Pacific Highway approach will result in speed control issues and large vehicle turning difficulties. The speed control considerations are important, but the roundabout layout is dictated by a number of items. It should be noted that the City has previously verbally agreed that the posted speed on Old Pacific Highway and Kalama River Road will be changed to 25 MPH with the proposed Phase 1 improvements. The applicant requests that the City provide a memo clearly stating that they stand behind the implementation of this reduced speed limit. Given proper law enforcement and typical acceptable driving habits, the applicant cannot assume drivers will "drive at the perceived highest achievable speeds." In addition to the required traffic control items (roundabout ahead, yield, etc. signage and striping) shown on the plans, the applicant would like to propose delineating, with additional striping on the roundabout legs and circulatory lane, to address the reviewer's concerns about delineating a single travel lane (see response to #2-4



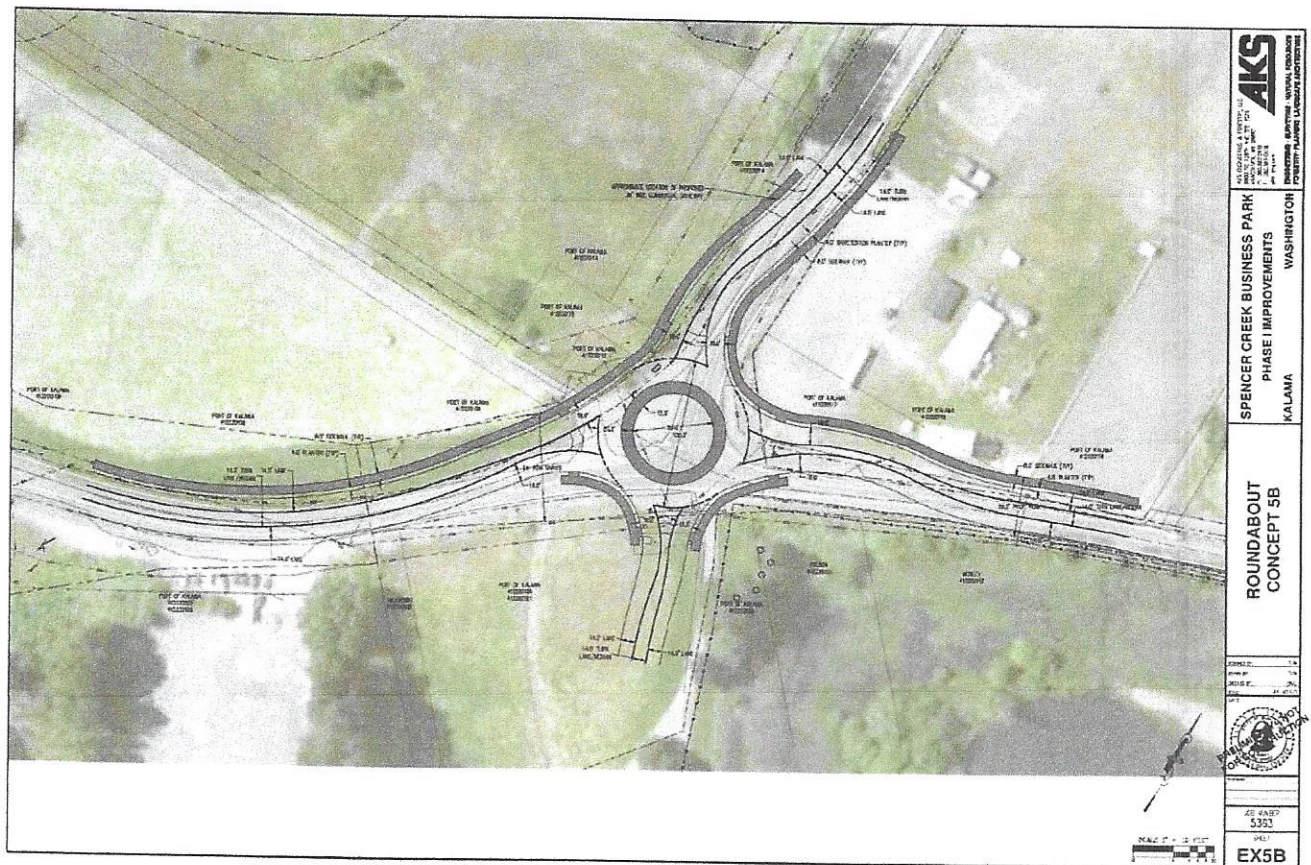


Figure 6: Preferred Concept 5B

The following roundabout design criteria were used in developing the intersection concepts discussed in this Alternatives Analysis. During the final design process several minor design revisions were applied to further refine the proposed design. Table 1 below includes the additional design values for the completed Preferred Concept 5B, following the applied design refinements. See the Spencer Creek Business Park: Phase 1 Construction Plans for the final roundabout design.

Table 1: Roundabout Design Criteria			
Design Feature	Standard	Design	Source
Classification	Single-Lane	Single-Lane	Federal Highway Administration (FHWA; Exhibits 1-9)
Design Year/Traffic	-	See Traffic Study	
Design Vehicles:			
Design	WB-50	Logging Truck/WB-50	FHWA (Section 6.2.4)
Accommodating	WB-67	Truck-Pup/WB-67	
Approach Design Speed:			
Old Pacific Hwy	40 miles per hour (mph; posted existing)	25 mph (proposed)	
Kalama River Road	35 mph (posted existing)	25 mph (proposed)	



Entry Design Speed	20-25 mph (Recommended)	18, 25, 19, 21 mph	FHWA (Section 6.2.1)
Circulating Design Speed	15-20 mph (Recommended)	15, 15, 16, 15 mph	FHWA (Section 6.7.1.3)
Inscribed Circle Diameter	105 feet-150 feet	150 feet	FHWA (Exhibits 6-9)
Entry/Exit Lane Widths	12 feet-15 feet	15 feet/18 feet	FHWA (Section 6.5.2)
Circulating Roadway Width	15 feet-20 feet	21 feet	FHWA (Section 6.5.3)
Truck Apron Width	3 feet-15 feet	10 feet	FHWA (Section 6.4.7.1)
Planter Strip	5 feet (Recommended) 2-foot-minimum	3.5 feet	FHWA (Section 6.8.1)
Sidewalks	10 feet (Minimum with bike)	8 feet	FHWA (Section 6.8.1)

*Reference: Roundabouts: An Informational Guide 2<sup>nd</sup> Edition. NCHRP Report 672, Transportation Research Board, 2010.*

The following is a short discussion on the standard roundabout design analysis tools used in developing the Preferred Roundabout Concept.

### **Design Vehicle/Truck Turning**

As stated in Goal #1 earlier, truck accommodation was identified as being critical to the development of the preferred alternative. Given the location of this intersection, its proximity to I-5 and the existing quarry/timber activities to the east along Kalama River Road and north along Old Pacific Highway, and the potential for additional truck traffic associated with the business park development, a high frequency of trucks is expected. In early team discussions, the appropriate trucks currently using Kalama River Road/Old Pacific Highway were identified and representative trucks were chosen by the team to be considered as the design and accommodating vehicles.

*Design Vehicle: A vehicle that can maneuver appropriately through a roundabout without requiring any special accommodations.*

*Accommodating Vehicle: The accommodating vehicle is designed to fit through a roundabout while using the additionally provided special accommodations. In most applications, this special accommodation is provided in the form of a truck apron around the center island and/or on the entries and is not needed for the design vehicle and/or traditionally-sized vehicles.*

Figures 7 & 8 below are the American Association of State Highway and Transportation Officials (AASHTO) profiles for the applicable design and accommodating vehicles: