



**City of McMinnville**  
**Planning Department**  
231 NE Fifth Street  
McMinnville, OR 97128  
(503) 434-7311

[www.mcminnvilleoregon.gov](http://www.mcminnvilleoregon.gov)

## STAFF REPORT

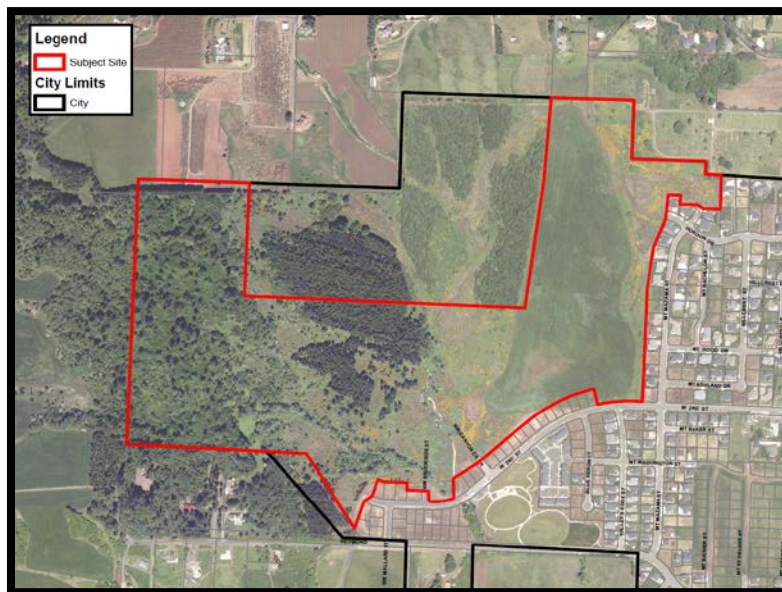
**DATE:** June 13, 2017  
**TO:** Mayor and City Councilors  
**FROM:** Ron Pomeroy, Principal Planner  
**SUBJECT:** **Ordinance No. 5024 – ZC 6-17** (Planned Development Amendment to an existing multi-phase residential subdivision master plan for Hillcrest Development)

---

**Council Goal:**  
Promote Sustainable Growth and Development

### Report in Brief:

This is the consideration of Ordinance No. 5024 (attached to this Staff Report), an ordinance approving a planned development amendment including an amended subdivision layout and phasing plan to an existing multi-phase residential subdivision master plan located generally north of Redmond Hill Road and West of Mt. Mazama and south of Fox Ridge Road and more specifically described as Tax Lot 801, Section 24, T. 4 S., R. 5 W., W.M.



---

### Attachments:

Ordinance No. 5024 including Exhibit A – ZC 6-17 Decision Document  
Attachment 1: ZC 6-17 Application and Attachments  
Attachment 2: Public Notices  
Attachment 3: McMinnville Ordinance No. 4868  
Attachment 4: Geotech Report by GeoPacific for West Hills Properties dated May 19, 2015  
Attachment 5: Public Testimony Received  
Attachment 6: Draft Planning Commission Meeting Minutes, May 18, 2017  
Attachment 7: Memo from AKS Engineering and Forestry, dated May 30, 2017

West Hills Properties, LLC, is requesting approval to amend Planned Development Ordinance No. 4868 to allow exceptions to current street grade, block length, block circumference and lot depth to width standards. Also requested as part of this Planned Development Amendment request is approval of an amended residential subdivision and phasing plan on approximately 132 acres of land.

On May 18, 2017, the McMinnville Planning Commission voted to recommend to the McMinnville City Council that the West Hills Properties, LLC application for a planned development amendment (ZC 6-17) be approved.

Exhibit A of Ordinance No. 5024 contains the Decision, Conditions of Approval, Findings of Fact, and Conclusionary Findings.

**Background:**

The applicant is requesting approval to amend Planned Development Ordinance 4868 to allow exceptions to current street grade, block length, block circumference and lot depth to width standards and to amend an approved residential subdivision and phasing plan on approximately 132 acres of land.

This request is to amend a Planned Development approved on April 24, 2007, when the McMinnville City Council adopted Ordinance No. 4868 for a zone change request from an R-1 (Single-Family Residential) zone to an R-2 PD (Single-Family Residential Planned Development) zone on a parcel of land approximately 164 acres in size. At the same time a phased subdivision request for approximately 4.0 acres of multifamily housing, 7.2 acres for park and storm water detention, and approximately 153 acres of residential housing (441 single-family detached residences, 50 single-family attached residences and 60 apartment units) was approved. It is the modification of this Ordinance and its implications to the attendant phased subdivision that is the subject of this Planned Development Amendment application.

Since that time, portions of that phased subdivision plan (referred to as the Hillcrest Planned Development) have been developed including the public park and storm water detention facility, multiple-family residential apartment complex and the Valley's Edge Phases 2 and 3 of the phased development plan. The remaining 132 acres of the original 164-acre multi-phase plan are the subject of this current zone change request.

**Summary of Application:**

The applicant has submitted a proposal to modify the existing Planned Development that currently encumbers this site to allow exceptions to current street grade, block length, block circumference and lot depth to width standards. Also requested as part of this Planned Development Amendment request is approval of an amended residential subdivision and phasing plan on the remaining approximately 132 acres of land.

As noted in the Section 1 (Executive Summary) of the applicant's submittal, at the end of 2007 and continuing through 2009, the U.S. and local housing market experienced one of the most significant declines in many years. This recession quelled demand for new housing in McMinnville and across the Country and, according to the applicant, is the main cause for the delay in the further development of the

---

*Attachments:*

*Ordinance No. 5024 including Exhibit A – ZC 6-17 Decision Document*

*Attachment 1: ZC 6-17 Application and Attachments*

*Attachment 2: Public Notices*

*Attachment 3: McMinnville Ordinance No. 4868*

*Attachment 4: Geotech Report by GeoPacific for West Hills Properties dated May 19, 2015*

*Attachment 5: Public Testimony Received*

*Attachment 6: Draft Planning Commission Meeting Minutes, May 18, 2017*

*Attachment 7: Memo from AKS Engineering and Forestry, dated May 30, 2017*

Hillcrest Planned Development. The current demand for housing now makes it possible for the applicant to move forward with development of the balance of the previously approved Hillcrest Planned Development. However, during the interim years, new and updated Americans with Disabilities Act (ADA) standards have been recommended and cities, including McMinnville, are requiring that these recommendations be implemented; the ADA standards related to development of rights-of-way are referenced as Public Right of Way Accessibility Guidelines (PROWAG).

Implementation of the PROWAG standards at street intersections necessitate a redesign of some elements of the original street layout and subdivision plan and result in associated modifications to other elements of the plan. A brief description of each of the proposed types of modification that comprise this Planned Development amendment request are as follows:

1. Street Grade – Approval of the original subdivision concept was based, in part, on street intersections being designed with intersections grades of 10% or more. The applicant notes that the flattening of these intersections to 5% or less, based on new PROWAG standards and construction tolerances, requires that street segments leading into and exiting the flatter intersections must now be graded even steeper to make up for the grade lost by this flattening. Additionally, because streets must be designed with appropriate transitions (vertical curve) between the steep street segments and the shallow intersections to ensure safe sight distance and vehicle clearance, the grade of street segments outside of the intersection can be excessive if the original number and locations of intersections were to be held constant. This relationship is graphically demonstrated in Figure 1 on page 26 of the applicant's narrative.

As a practical matter, the resulting steeper street grades exceed that which is recommended by current standards of the Land Division chapter of the McMinnville Zoning Ordinance (Chapter 17.53.101(L)). Current standards allow a maximum local (residential) street grade of up to 12% which is less than the 15% maximum grade requested by the applicant. The applicant is requesting an amendment to this standards to allow residential streets grades up and including 15% for street segments no longer than 200 linear feet.

2. Lot Depth to Width Standard – Section 1.53.105(B)(1) of the McMinnville Zoning Ordinance states that the depth of a lot shall not ordinarily exceed two times the average width. Page 10 of the applicant's narrative states that approximately 114 of the proposed lots throughout the site exceed this guideline due primarily to the need to accommodate an acceptable building envelope on lots where natural drainage ways and/or steep slopes occupy a portion of the rear yard area. Consequently, the applicant is seeking the ability to plat such lots through the allowance that can be made possible through the planned development amendment process.
3. Block Length – In redesigning the street grades to meet current PROWAG standards in combination with the geography of the area, the block length in numerous locations is proposed to exceed the maximum allowance of 400 feet between street corners as specified in Section 17.53.103(B) of the McMinnville Zoning Ordinance. This is also, in part, due to the topographical features of the West Hills area of McMinnville being characterized by numerous ridges, steep slopes and ravines.

---

*Attachments:*

*Ordinance No. 5024 including Exhibit A – ZC 6-17 Decision Document*

*Attachment 1: ZC 6-17 Application and Attachments*

*Attachment 2: Public Notices*

*Attachment 3: McMinnville Ordinance No. 4868*

*Attachment 4: Geotech Report by GeoPacific for West Hills Properties dated May 19, 2015*

*Attachment 5: Public Testimony Received*

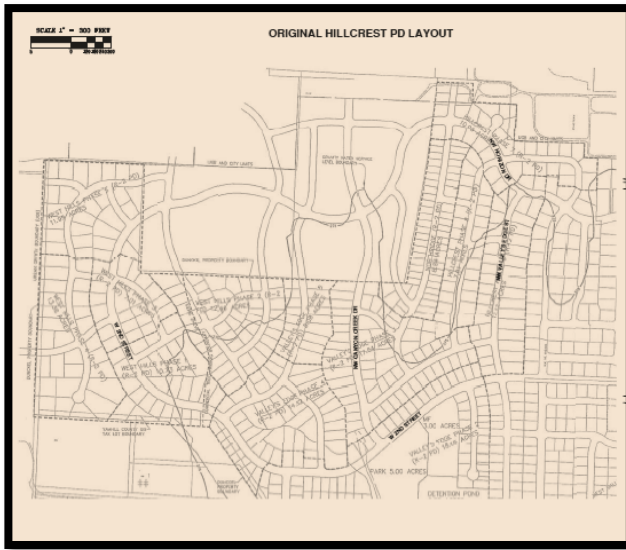
*Attachment 6: Draft Planning Commission Meeting Minutes, May 18, 2017*

*Attachment 7: Memo from AKS Engineering and Forestry, dated May 30, 2017*

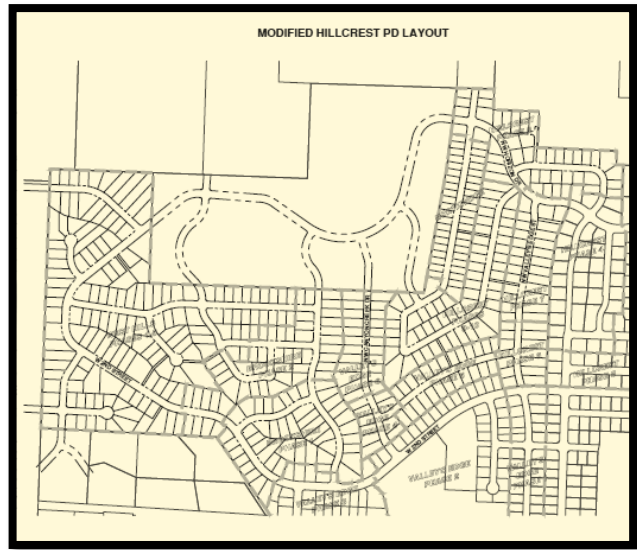
4. Block Circumference – Due to the physical topographic challenges of the area noted above and implementation of the more recently applied PROWAG standards, the block circumference in numerous instances is proposed to be exceeded in the proposed plan. Section 17.53.103(B) of the McMinnville Zoning Ordinance limits block circumference to a maximum of 1,600 feet unless topography or the location of adjoining streets justifies an exception.

For the benefit of context for the City Council, the originally approved (2007) conceptual subdivision plan for this site is provided below:

Original Layout



Proposed Layout



The applicant has provided a detailed narrative and numerous exhibits to support the submitted Planned Development amendment land use request. The findings offered by the applicant are extensive and shall be included by reference in the Decision Document (Exhibit A) attached to Ordinance No. 5024, and Attachment 1 of this staff report. A summary discussion of selected elements is provided below.

**DENSITY:**

While the differences between these two phased development plans graphically presented above may not be readily apparent, Table 1 as provided on page 5 of the applicant’s narrative, and reproduced below, provides a comparison of dwelling unit counts for both the originally approved and the proposed revised phased development plans for this site. As the shapes and sizes of the individual subdivision phases have changed due to the topographic and regulatory factors previously noted, it is perhaps most informative to review the total lots provided at the bottom of the Table.

**Attachments:**

- Ordinance No. 5024 including Exhibit A – ZC 6-17 Decision Document
- Attachment 1: ZC 6-17 Application and Attachments
- Attachment 2: Public Notices
- Attachment 3: McMinnville Ordinance No. 4868
- Attachment 4: Geotech Report by GeoPacific for West Hills Properties dated May 19, 2015
- Attachment 5: Public Testimony Received
- Attachment 6: Draft Planning Commission Meeting Minutes, May 18, 2017
- Attachment 7: Memo from AKS Engineering and Forestry, dated May 30, 2017

Phase	Original Approval No. of Lots	Proposed No. of Lots	Already Constructed	Pct. Change from Ord. 4868
Hillcrest Phase 6	36	13		
Hillcrest Phase 7	34	26		
Hillcrest Phase 8	50	44		
Hillcrest Phase 9-10		57		
<b>Hillcrest Total</b>	<b>120</b>	<b>140</b>	<b>0</b>	<b>16.67%</b>
Northridge	43	43		
<b>Northridge Total</b>	<b>43</b>	<b>43</b>	<b>0</b>	<b>0.00%</b>
Valley's Edge Phase 2	52		36	
Valley's Edge Phase 3	50		28	
Valley's Edge Phase 4	69	10		
Valley's Edge Phase 5	56	25		
Valley's Edge Phase 6		23		
Brookshire Phase 1		46		
Brookshire Phase 2		48		
<b>Valley's Edge Total</b>	<b>227</b>	<b>152</b>	<b>64</b>	<b>-4.85%</b>
West Hills Phase 1-5	122	153		
<b>Valley's Edge Total</b>	<b>122</b>	<b>153</b>		<b>25.41%</b>
<b>TOTAL</b>	<b>512</b>	<b>488</b>	<b>64</b>	<b>7.81%</b>

In particular, 512 lots were approved for the original Planned Development phased development plan with 64 of those lots having now been constructed. Adding those 64 existing units, to the proposed 488 dwelling unit yields a new total of 552 dwelling units. This results in a proposed increase of 40 additional residential dwelling units above that which was originally approved in 2007. While the base zone of R-2 would allow a theoretical 821 dwelling units on the gross 132-acre site, the applicant is proposing a total of 552 dwelling units which is well under that number. The applicant proposed 446 lots to be detached single-family residences and 42 dwelling lots are proposed to be single-family attached dwellings and planned to be platted in the Northridge Phase of the development which is consistent with the originally approved 2007 phasing plan.

As shown in the various graphics provided on Sheets SU-01 – SU 03 in Exhibit A of the applicant's submittal, lot sizes in the modified Planned Development are proposed to range from 5,292 square feet

Attachments:

Ordinance No. 5024 including Exhibit A – ZC 6-17 Decision Document

Attachment 1: ZC 6-17 Application and Attachments

Attachment 2: Public Notices

Attachment 3: McMinnville Ordinance No. 4868

Attachment 4: Geotech Report by GeoPacific for West Hills Properties dated May 19, 2015

Attachment 5: Public Testimony Received

Attachment 6: Draft Planning Commission Meeting Minutes, May 18, 2017

Attachment 7: Memo from AKS Engineering and Forestry, dated May 30, 2017

to 33,942 square feet in size (Lot 217) with an average lot size of 9,547 square feet; while the applicant's narrative notes that the largest lot would be 35,305 square feet in size, the largest proposed lot, as confirmed through an email exchange with the applicant on May 5, 2017, confirms that Lot 217 on Sheet SU-03 is to be the largest lot with a proposed size of 33,942 square feet. This average lot size exceeds the minimum lot size of 7,000 square feet required by the R-2 zone by approximately 2,547 square feet (an average lot size approximately 36% greater than the minimum required lot size).

## STREET GRADE

In order to implement PROWAG standards and achieve efficient development of the site, the applicant is requesting approval to construct certain street segments exceeding the 12% maximum grade permitted for local streets in Section 17.53.101(L) of the McMinnville Zoning Ordinance. The applicant proposed constructing certain street segments with up to a 15% street grade with segments of street grade between 15% and 12% being limited to no more than 200 linear feet in length as shown on Sheet P-02 of Exhibit A of the applicant's submittal. Such street segments are proposed to be separated by at least 75 linear feet of street grade not to exceed 12% to permit proper functioning of Fire Department apparatus in emergency operation conditions. This street layout and street grade proposal has been reviewed by the McMinnville Fire Department which finds that this proposal provides sufficient opportunity for emergency and fire response to be safely and adequately provided to each lot in these proposed neighborhoods. Additional comments from the Fire Department regarding these design standards is provided below in the Referrals section of this report.

## BLOCK LENGTH

The applicant proposed to frequently exceed the maximum block length allowance of 400 feet between street intersections as specified in Section 17.53.103(B) of the McMinnville Zoning Ordinance. An overview of the topographic challenges of this site is provided on Sheet GR-00 of Exhibit A of the applicant's submittal. Additional graphic sheets that follow (GR-01, GR-02 and GR-03) provide a more detailed representation of how the various elements of the proposed phased development overlay with the existing site topography.

The applicant submitted a supplemental narrative on May 9, 2017, providing additional information relative to the proposed longer block lengths. The applicant indicates that applying the ADA standard makes it impossible to meet the City's block length standard in the context of this relatively steep sloped site because each new public street intersection results in interim street grades that are prohibitively steep. Therefore, eliminating some public street intersections, and subsequently lengthening the block length and block perimeters, is the best way to achieve the ADA guidelines at proposed intersections, while minimizing steep street grades, and maintain a 10% maximum street grade on collector roadways such as W 2<sup>nd</sup> Street. Sheet B-1 of that supplemental narrative provides the resultant block lengths should this planned development amendment be approved. For reference, Sheet B-2 of that supplement provides the originally approved (2007) block lengths for this phased subdivision. It is important to observe that the approved 2007 plan permitted block lengths of up to 1,802 linear feet (located along the south and west side of W 2<sup>nd</sup> Street as it traversed through the West Hills Phases 1 and 3 and Valley's Edge Phase 4 areas of the plan) compared to a proposed block length of 1,895 linear feet located in effectively the same location in this current plan (a difference of 93 linear feet). There are also other such similarities between these two plans. However, this observation

---

### Attachments:

Ordinance No. 5024 including Exhibit A – ZC 6-17 Decision Document

Attachment 1: ZC 6-17 Application and Attachments

Attachment 2: Public Notices

Attachment 3: McMinnville Ordinance No. 4868

Attachment 4: Geotech Report by GeoPacific for West Hills Properties dated May 19, 2015

Attachment 5: Public Testimony Received

Attachment 6: Draft Planning Commission Meeting Minutes, May 18, 2017

Attachment 7: Memo from AKS Engineering and Forestry, dated May 30, 2017

is to note that the necessity to exceed this block length standard given the unique topography of this site was understood and endorsed by both the Planning Commission and the Council in the 2007 approval of the original planned development request for this site.

## BLOCK CIRCUMFERENCE

The applicant also proposes to exceed the maximum block circumference maximum of 1,600 feet as specified in Section 17.53.103(B) of the McMinnville Zoning Ordinance. The applicant is requesting an exception to this limitation based on the topography of the site as allowed by this code section. The applicant provides a justification for this request based partially on topography and partially due to the implementation of the more recently applied PROWAG standards and their effect on engineering streets on steep, varied terrain. This justification can be found on page 35 of their submitted narrative and in the supplemental narrative provided on May 9, 2017. Additionally, the applicant's graphics referenced above regarding Block Length are also instructive in demonstrating the topographic constraints leading to the request to exceed the City's block circumference standard. Those graphics are found on Sheets GR-00 through GR-03 of Exhibit A of the applicant's submittal.

## OPEN SPACE

As part of the previously approved master plan for this development the applicant coordinated with the McMinnville Parks Department in the provision of a 7-acre park and associated storm water detention facility located along the south side of W 2<sup>nd</sup> Street and adjacent to the west edge of the existing multiple-family phase of this development.

Due to the topography of the site, quite a lot of the open space is actually found along and within the numerous drainage ravines that traverse this hillside in often divergent and meandering directions. However, originally only the stream corridor on the east side of the site was identified and protected through centering the stream corridor along common backyard property lines and protecting them with restrictive backyard easements. The requirements for protection of development of these areas is more stringent now than those in place when the original Planned Development was reviewed ten years ago. These drainage ravines for the entire site have now been fully mapped by the applicant and are proposed to be protected by way of private drainage easements of variable widths to be provided along the common backyard property lines of residential lots. This approach is the same as was endorsed and approved by the City in 2007 and is an effective and way to provide protection and preserve the natural storm conveyance function of these natural drainageways. While amassing these drainageways into a larger public open space is not feasible, a large public park has been developed within the neighborhood designed to serve the larger community.

It is recommended that in order to ensure adequate capacity of the channels to convey larger storm events, the subdivision plats shall state that the areas within the storm drainage easements shall be kept in their natural condition, and that no fill or other construction activities (including the construction of fences) will be allowed within the easement areas. Additionally, the covenants shall identify and specify the maintenance responsibilities for those easement areas. Staff recommends this same condition being carried forward to similarly protect these areas.

---

### *Attachments:*

*Ordinance No. 5024 including Exhibit A – ZC 6-17 Decision Document*

*Attachment 1: ZC 6-17 Application and Attachments*

*Attachment 2: Public Notices*

*Attachment 3: McMinnville Ordinance No. 4868*

*Attachment 4: Geotech Report by GeoPacific for West Hills Properties dated May 19, 2015*

*Attachment 5: Public Testimony Received*

*Attachment 6: Draft Planning Commission Meeting Minutes, May 18, 2017*

*Attachment 7: Memo from AKS Engineering and Forestry, dated May 30, 2017*

## STORM WATER

The applicant has provided a Storm Water Report prepared by AKS-Engineering for the Hillcrest Planned Development master plan amendment proposal (Exhibit E of the applicant's submittal). The purpose of the report was to provide an evaluation of the effects of the master plan update on the existing seasonal drainage swales and downstream system. The system was modeled on the original 164 acre planned development approval inclusive of the single-family attached and detached lots, the multiple-family apartment complex, Westside public park and detention facility, proposed storm water facility Tract G (identified on Sheet ST-01 of Exhibit A of the applicant's narrative) and associated streets, sidewalks and underground utilities. The McMinnville Engineering Department has thoroughly reviewed this analysis and report and finds that the analysis and its findings are acceptable to the Engineering Department.

## WATER

While McMinnville Water & Light had no comments on this application (see Referral section below) it is commonly known that McMinnville's water is provided by a gravity pressure system. Consequently, the current water pressure can sufficiently serve residential uses up to an elevation of 275 feet. Residential service above of this elevation will either need to be served by private water pump system(s) or by a second tier water reservoir system to be constructed by McMinnville Water & Light at a higher elevation at a later date. This elevation line is shown on Sheet P-01 of Exhibit A of the applicant's submittal.

## TRAFFIC

The applicant has provided a Traffic Analysis Update Memo prepared by AKS-Engineering for the Hillcrest Planned Development master plan amendment proposal (Exhibit F of the applicant's submittal). The purpose of the report was to provide an evaluation of the effects of an increase of 40 dwelling units above that approved in the 2007 adoption of the original Hillcrest phased development plan. The analysis concludes that the improvement recommendations as noted in the 2007 decision remain valid. The McMinnville Engineering Department has thoroughly reviewed this analysis and report and finds that the analysis and findings are acceptable to the Engineering Department.

## PEDESTRIAN

Pedestrian connections in the form of public sidewalks are required as part of public street design standards adopted in the McMinnville Transportation System Plan (TSP, 2010). Public sidewalks will be required along both sides of all public streets should the proposed Planned Development amendment be approved. This is an appropriate requirement for much of the development that occurs locally. However when a planned development is proposed, even an amendment to an existing planned development, an additional level of importance is placed on pedestrian connections.

Comprehensive Plan Policy 77.00 states "the internal traffic system in planned developments shall be designed to promote safe and efficient traffic flow and give full consideration to providing pedestrian and bicycle pathways." The pedestrian pathways mentioned here are in addition the public sidewalks mentioned above. Toward this, the applicant notes that three mid-block pedestrian connections are proposed to provide for enhanced pedestrian circulation in situations where block length exceeds the

---

### Attachments:

Ordinance No. 5024 including Exhibit A – ZC 6-17 Decision Document

Attachment 1: ZC 6-17 Application and Attachments

Attachment 2: Public Notices

Attachment 3: McMinnville Ordinance No. 4868

Attachment 4: Geotech Report by GeoPacific for West Hills Properties dated May 19, 2015

Attachment 5: Public Testimony Received

Attachment 6: Draft Planning Commission Meeting Minutes, May 18, 2017

Attachment 7: Memo from AKS Engineering and Forestry, dated May 30, 2017



city standard or where cul-de-sacs make pedestrian connections more challenging. Specifically, to address this, the applicant is proposing the provision of pedestrian access tracts in six locations:

- Tract A connecting two segments of Road A between the Northridge Phase and Hillcrest Phases 9-10
- Tract B connecting Road A in Hillcrest Phases 9-10 and NW Valley's Edge Street in the Hillcrest Phase 7
- Tract C connecting NW Valley's Edge Street in the Hillcrest Phase 7 and a variable width private backyard drainage easement that would be established along the backyards of the easterly lots in Hillcrest Phases 6 and 7 between Lot 380 of Hillcrest Phase 7 and W 2<sup>nd</sup> Street; the purpose of this tract is to provide a secondary access point to this drainage easement
- Tract D connecting a portion of Road A in Hillcrest Phases 9-10 and NW Mt. Ashland Lane in Valley's Edge Phase 5
- Tract E connecting C Loop in Brookshire Phase 2 to D Court in West Hills Phase 1
- Tract F connecting C Loop to W 2<sup>nd</sup> Street both in West Hills Phase 1

Given the topography of this west hills area, the applicant has attempted in good faith to provide these additional pedestrian access and circulation amenities where possible. As some of these connections traverse steep terrain, it is envisioned that some of these pedestrian connections will be provided with stairs to enable safe movement between adjoining elevations.

## STREET TREES

The standards require street tree spacing of between 20 (twenty) and 40 (forty) feet apart dependent on the mature branching width of the approved tree(s). The McMinnville Zoning Ordinance requires that a street trees planting plan be submitted to and reviewed by the Landscape Review Committee as a condition of approval for residential subdivision development.

## REFERRALS

This matter was referred to the following public agencies for comment: McMinnville Fire Department, Police Department, Engineering and Building Departments, City Manager, and City Attorney, McMinnville School District No. 40, McMinnville Water and Light, Yamhill County Public Works, Yamhill County Planning Department, Frontier Communications, Comcast, Northwest Natural Gas, Oregon Department of Transportation, Oregon Division of State Lands, and Oregon Department of Fish and Wildlife. As of the date this report was written, the following comments had been received:

### McMinnville Engineering Department

- The applicant is proposing to construct the extensions of 2<sup>nd</sup> Street and Horizon Drive to the minor collector standard contained in the Transportation System Plan (TSP). Per the adopted 2010 TSP, all remaining streets (including the extensions of 2<sup>nd</sup> Street and Horizon Drive) within the development area can be constructed to the local residential street standard. Conditions 14, 15, and 16 of the existing subdivision approval for ZC18-06/S13-06 should be modified to reflect that the remaining streets shall be improved with a 28-foot wide paved section, 5-foot wide curbside

---

#### Attachments:

Ordinance No. 5024 including Exhibit A – ZC 6-17 Decision Document

Attachment 1: ZC 6-17 Application and Attachments

Attachment 2: Public Notices

Attachment 3: McMinnville Ordinance No. 4868

Attachment 4: Geotech Report by GeoPacific for West Hills Properties dated May 19, 2015

Attachment 5: Public Testimony Received

Attachment 6: Draft Planning Commission Meeting Minutes, May 18, 2017

Attachment 7: Memo from AKS Engineering and Forestry, dated May 30, 2017

planting strips, and five-foot-wide sidewalks placed one foot from the property line within a 50-foot right-of-way, as required by the McMinnville Land Division Ordinance for local residential streets.

- Condition 10 of the existing subdivision approval for ZC18-06/S13-06 should be modified to read, and is represented as Condition of Approval #8 in the Decision Document for this Planned Development Amendment.

10. The City Public Works Department will install, at the applicant's expense, the necessary street signage (including stop signs, no parking signage, and street name signage), curb painting, and striping (including stop bars) associated with the development. The applicant shall reimburse the City for the signage and markings prior to the City's approval of the final plat.

- The requested street grade and block length exceptions are acceptable to the Engineering Department.
- The submitted Preliminary Stormwater Management Memo is acceptable to the Engineering Department.
- The submitted Traffic Analysis Update Memo acceptable to the Engineering Department.

### **McMinnville Fire Department**

- 1) **GRADE:** Average road grade shall not exceed 12% except that any grade exceeding 12% shall be approved by the Fire Code Official (*during land use application*). No road grade shall exceed 15%.
- 2) When approved to exceed 12% grade, the following condition shall apply:
  - a) A maximum of 200 feet of road length may be allowed with a grade between 12% to 15% in any one section. The roadway must then level out below 12% for a minimum of length of 75 feet for firefighting operations.
  - b) Fire sprinklers shall be installed in any residential or commercial structure that is built on or whose access road is constructed to a grade of 12% or greater. The approval of fire sprinklers as an alternate means of fire safety shall be accomplished in accordance with the provisions of ORS 455.610(6) – (Low Rise Residential Dwelling Code).

### **McMinnville Water & Light**

MW&L has no comments on this application.

### **McMinnville Parks Department**

After reviewing the material about the planned development changes, I do not find any changes that impact the neighborhood park detention area (2.77 acres). I imagine the park will receive a greater volume of water over time as hard surfaces are more fully developed and the neighborhood is complete. However, that is what was intended with the detention capacity within the park. We shall

---

#### **Attachments:**

Ordinance No. 5024 including Exhibit A – ZC 6-17 Decision Document

Attachment 1: ZC 6-17 Application and Attachments

Attachment 2: Public Notices

Attachment 3: McMinnville Ordinance No. 4868

Attachment 4: Geotech Report by GeoPacific for West Hills Properties dated May 19, 2015

Attachment 5: Public Testimony Received

Attachment 6: Draft Planning Commission Meeting Minutes, May 18, 2017

Attachment 7: Memo from AKS Engineering and Forestry, dated May 30, 2017

see if the original calculations were accurate. But there are no concerning issues relative to anticipated impacts to the park of immediate surrounds with the proposed plans.

**Discussion:**

The Planning Commission received both written and oral testimony in support and opposition to this application request.

Supportive testimony focused on the following elements:

- Existing planned subdivision
- Need for more buildable housing lots
- Developer is proven quality McMinnville developer
- Requests appear reasonable and meet the criteria of the Comprehensive Plan and Zoning Ordinance

Oppositional testimony focused on the following elements:

- Concern about the grade of the streets relative to safety (fire apparatus capacity, skateboarders, vehicular speeds)
- Concern about the amount of traffic planned to use Horizon Drive
- Concern about the water capacity and pressure above 275'
- Concern about soil erosion on the hill as it is built out.

Representatives from McMinnville Fire, McMinnville Engineering and McMinnville Water and Light were available to address the steep streets, traffic and water capacity concerns.

The concern about the soil erosion was reviewed with the building official and Condition of Approval #12 was added to ensure that future building plan reviews for individual home construction are aware of the need for additional geo-technical engineering. (Please see Attachment 4 to this staff report).

Additionally Condition of Approval #11 was developed as part of the Planning Commission motion to recommend approval of the request to ensure that pedestrian connectivity was provided for the extended block lengths. This was agreed to by the developer and a Memo was provided with a connectivity plan on May 20, 2017. (Please see Attachment 7 to this staff report).

All written public testimony received by the Planning Commission is provided as Attachment 5 to this staff report. And Attachment 6 is the draft Planning Commission meeting minutes summarizing the oral testimony of the public hearing.

**Fiscal Impact:**

There is no anticipated fiscal impact to the City of McMinnville with this decision.

---

**Attachments:**

Ordinance No. 5024 including Exhibit A – ZC 6-17 Decision Document

Attachment 1: ZC 6-17 Application and Attachments

Attachment 2: Public Notices

Attachment 3: McMinnville Ordinance No. 4868

Attachment 4: Geotech Report by GeoPacific for West Hills Properties dated May 19, 2015

Attachment 5: Public Testimony Received

Attachment 6: Draft Planning Commission Meeting Minutes, May 18, 2017

Attachment 7: Memo from AKS Engineering and Forestry, dated May 30, 2017

**Council Options:**

1. **ADOPT** Ordinance No. 5024, approving ZC 6-17 and adopting the Decision, Conditions of Approval, Findings of Fact and Conclusionary Findings.
2. **ELECT TO HOLD A PUBLIC HEARING** date specific to a future City Council meeting.
3. **DO NOT ADOPT** Ordinance No. 5024, providing findings of fact based upon specific code criteria to deny the application for the denial in the motion to not approve Ordinance No. 5024.

**Recommendation/Suggested Motion:**

Staff recommends that the Council adopt Ordinance No. 5024 which would approve the application for a planned development amendment as the proposal meets the policies of the McMinnville Comprehensive Plan and the criteria of the McMinnville Zoning Ordinance.

**“THAT BASED ON THE FINDINGS OF FACT, THE CONCLUSIONARY FINDINGS FOR APPROVAL, AND THE MATERIALS SUBMITTED BY THE APPLICANT, I MOVE TO ADOPT ORDINANCE NO. 5024.”**

RP:sjs

---

**Attachments:**

*Ordinance No. 5024 including Exhibit A – ZC 6-17 Decision Document*

*Attachment 1: ZC 6-17 Application and Attachments*

*Attachment 2: Public Notices*

*Attachment 3: McMinnville Ordinance No. 4868*

*Attachment 4: Geotech Report by GeoPacific for West Hills Properties dated May 19, 2015*

*Attachment 5: Public Testimony Received*

*Attachment 6: Draft Planning Commission Meeting Minutes, May 18, 2017*

*Attachment 7: Memo from AKS Engineering and Forestry, dated May 30, 2017*

**ORDINANCE NO. 5024**

**AN ORDINANCE AMENDING PLANNED DEVELOPMENT ORDINANCE NO. 4868 TO ALLOW EXCEPTIONS TO CURRENT STREET GRADE, BLOCK LENGTH, BLOCK CIRCUMFERENCE AND LOT DEPTH TO WIDTH STANDARDS AND TO AMEND AN APPROVED RESIDENTIAL SUBDIVISION AND PHASING PLAN ON APPROXIMATELY 132 ACRES OF LAND.**

**RECITALS:**

The subject site is located north of NW Redmond Hill Road, west of NW Mt. Mazama Street and south of NW Fox Ridge Road and is more specifically described as Tax Lot 801 Section 24, T. 4 S., R. 5 W., W.M.; and

The Planning Department received application ZC 6-17 on April 5, 2017, and deemed it complete on April 11, 2017. The first public hearing before the McMinnville Planning Commission was held on May 18, 2017, after due notice had been provided in the local newspaper on May 9, 2017, and written notice had been mailed to property owners within 300 feet of the affected property. At the May 18, 2017, Planning Commission public meeting, after the application materials and a staff report were presented and testimony was received, the Commission voted unanimously to recommend approval of ZC 6-17 to the McMinnville City Council; and

The City Council, being fully informed about said request, found that the requested amendments conformed to the applicable Comprehensive Plan goals and policies, as well as the zone change review criteria listed in Section 17.74.020 and Planned Development Amendment review criteria listed in Section 17.74.070 of the McMinnville Zoning Ordinance based on the material submitted by the applicant and the findings of fact and conclusionary findings for approval contained in Exhibit A; and

The City Council having received the Planning Commission recommendation and staff report, and having deliberated;

**NOW, THEREFORE, THE COMMON COUNCIL FOR THE CITY OF MCMINNVILLE ORDAINS AS FOLLOWS:**

1. That the Council adopts the Findings of Fact, Conclusionary Findings, Decision and Conditions of Approval as documented in Exhibit A for ZC 6-17; and

2. That the Conditions of Approval as documented in Exhibit A for ZC 6-17 are as follows:

1. That the planned development overlay shall require the following setbacks:
  - A. Development of the multi-family lot and single-family lots within the Northridge subdivision shall be to standard R-4 zone setbacks.
  - B. Lots within the Valley's Edge Phase 2 subdivision shall be to a standard R-3 zone setback.

C. All other lots shall meet applicable R-2 zoning setbacks.

The Planning Director is authorized to permit reductions or increases to these setback standards as may be necessary to provide for the retention of trees greater than nine (9) inches in diameter measured at 4.5 feet above grade. In no case, however, may the side yard setback be reduced to less than five feet, or the exterior side yard setback to less than 12 feet, or the distance from the property line to the front opening of a garage be reduced to less than 18 feet without approval of the Planning Commission pursuant to the requirements of Chapter 17.69 (Variance). A request to adjust the setbacks for these lots shall be accompanied by a building plan for the subject site that clearly indicates the location of existing trees. Trees to be retained shall be protected during all phases of home construction.

2. That existing trees greater than nine inches in diameter above grade shall not be removed without prior review and written approval of the Planning Director. In addition, all trees shall be protected during home construction. A plan for such protection must be submitted with the building permit application and must meet with the approval of the Planning Director prior to release of construction or building permits within the subject site. Requests for removal of such trees based upon claims of disease, or hazard should be accompanied by a report from a licensed arborist.
3. That the "Hillcrest" phased tentative subdivision plan (revised as necessary to comply with the adopted conditions of approval) be placed on file with the Planning Department and that it become a part of the zone and binding on the property owner and developer, and shall in no way be binding on the City.

The developer shall be responsible for requesting approval of the Planning Commission for any major change of the details of the adopted plan. Minor changes to the details of the adopted plan may be approved by the Planning Director. It shall be the Planning Director's decision as to what constitutes a major or minor change. An appeal from a ruling by the Planning Director may be made only to the Commission. Review of the Planning Director's decision by the Planning Commission may be initiated at the request of any one of the Commissioners.

4. That site plans and building elevations for the proposed multi-family units must be submitted to the Planning Director for review and approval prior to the issuance of any building permits for said units. The following criteria shall apply:
  - A. The building layout must be nonlinear in design, even if to meet this goal the number of units has to be reduced.
  - B. The building roof lines and facades must be broken so as to avoid a flat, uniform appearance.
  - C. The site shall be heavily landscaped with emphasis on those sides facing a public street. Street-side landscaping shall include berming, and street trees a minimum of two-inch caliper at time of planting. In

addition, parking lots shall be broken up by landscaping, and usable open space shall be provided within the development.

- D. Signage shall be limited to a maximum of two free-standing monument-type signs, each not more than four feet in height and not exceeding 36 square feet in area. The signs, if illuminated, must be indirectly illuminated and non flashing.
  - E. Horizontal lap siding or similar type siding must be used (no T-111 or similar), and architectural composition roofing or a similar or higher grade type of roofing must be applied.
- 5. Prior to the issuance of the 290<sup>th</sup> building permit for the master planned development, the developer shall complete the installation of left-turn-lane improvements, meeting the City's and Yamhill County's standards, at the intersections of Hill Road / Horizon Drive and Hill Road / West Second Street.
  - 6. That minimum lot sizes within the Hillcrest development may be reduced below 7,000 square feet, provided the overall residential density within the subject site (less the parkland and storm detention areas) does not exceed the net density allowed by the R-2 zone (gross density reduced by 25 percent to account for public infrastructure).
  - 7. Grades shall not exceed six (6) percent on arterials, 10 (ten) percent on collector streets, or 12 (twelve) percent on any other street except as described below. Any local street grade exceeding 12 (twelve) percent shall be reviewed for approval by the Fire Code Official during the land use application review process. When a local residential street is approved to exceed 12 (twelve) percent the following shall be required:
    - A. A maximum of 200 feet of roadway length may be allowed with a grade between 12 (twelve) percent and 15 (fifteen) percent for any one section. The roadway grade must reduce to no more than 12 (twelve) percent for a minimum of 75 linear feet of roadway length between each such section for firefighting operations.
    - B. Fire sprinklers shall be installed in all residential and commercial structures whose access road is constructed at a grade higher than 12 (twelve) percent. The approval of such fire sprinklers shall be accomplished in accordance with the provisions of ORS 455.610(6).

Centerline radii of curves shall not be less than 300 feet on major arterials, 200 feet on secondary arterials, or 100 feet on other streets, and shall be to an even 10 (ten) feet. Where existing conditions, particularly topography, make it otherwise impractical to provide buildable lots, the Planning Commission may accept sharper curves.

- 8. That condition of approval number 10 of S 13-06 is supplanted as follows: "The City Public Works Department will install, at the applicant's expense, the necessary street signage (including stop signs, no parking signage, and street name signage), curb painting, and striping (including stop bars)

associate with the development. The applicant shall reimburse the City for the signage and markings prior to the City's approval of the final plat."

9. That condition of approval numbers 14, 15 and 16 of S 13-06 is supplanted as follows: "Per the adopted 2010 Transportation System Plan (TSP), all remaining streets (including the extensions of 2<sup>nd</sup> Street and Horizon Drive) within the development area can be constructed to the local residential street standard. All streets shall be improved with a 28-foot wide paved section, 5-foot wide curbside planting strips, and five-foot-wide sidewalks placed one foot from the property line within a 50-foot right-of-way, as required by the McMinnville Land Division Ordinance for local residential streets."
  10. That the applicant shall provide information detailing the number of lots that will be made available for individual sale to builders for review and approval by the Planning Director prior to recording of the final plat. Upon approval, the referenced lots will be made available for sale to the general public for a minimum of one hundred twenty (120) days prior to building permit issuance for said lots.
  11. That in addition to the pedestrian connections shown on Sheet SU-00 of the applicant's submittal, pedestrian connections shall also be provided between NW Brookshire and NW Canyon Creek Drive, NW Canyon Creek Drive and Road A, between Road A and the adjacent westerly edge of the subdivision (Tax Lot 809), between NW C Loop and NW Elizabeth, between Road D and the northwesterly edge of the subdivision (Tax Lot 809) and between Road E and NW 2<sup>nd</sup> Street. All private pedestrian connections shall be dedicated as tracts commonly held and maintained by a Homeowner's Association.
  12. That based on a Geo-Technical Engineering report dated May 10, 2016, and the soils conditions shown in this report, foundations will necessitate design by a Geo-Technical Engineer. Each design must take into account what might occur to the down slope construction (Phase 4), when further development of the hillside occurs in the future. Since the May 10, 2016, report this hillside has been saturated with substantial rainfall. How this has affected any construction on the downside as well as future development should be taken into consideration in the design of Phase 4.
  13. That Planned Development Ordinance No. 4868 is repealed in its entirety.
3. That this Ordinance shall take effect 30 days after its passage by the City Council.



Passed by the Council this 13<sup>th</sup> day of June 2017, by the following votes:

Ayes: \_\_\_\_\_

Nays: \_\_\_\_\_

\_\_\_\_\_

MAYOR

Attest:

Approved as to form:

\_\_\_\_\_  
CITY RECORDER

\_\_\_\_\_  
CITY ATTORNEY



**CITY OF MCMINNVILLE  
PLANNING DEPARTMENT  
231 NE FIFTH STREET  
MCMINNVILLE, OR 97128**

503-434-7311

[www.mcminnvilleoregon.gov](http://www.mcminnvilleoregon.gov)

**DECISION, CONDITIONS OF APPROVAL, FINDINGS OF FACT AND CONCLUSIONARY FINDINGS FOR THE APPROVAL OF A PLANNED DEVELOPMENT AMENDMENT REQUEST (ZC 6-17), TAX LOT 801, SECTION 25, T.4 S., R. 5 W., W.M., LOCATED GENERALLY NORTH OF REDMOND HILL ROAD AND WEST OF MT. MAZAMA AND SOUTH OF FOX RIDGE ROAD.**

**DOCKET:** ZC 6-17

**REQUEST:** West Hills Properties, LLC, has submitted an application requesting approval of a Planned Development Amendment (ZC 6-17) to an existing multi-phase residential subdivision master plan. The proposed modifications are summarized as follows:

Street Grade – The applicant is requesting approval to exceed the maximum grade of 12% for local residential streets.

Lot Depth to Width Standard – The applicant is requesting approval to exceed the lot depth to width standard of 2 to 1 that is not ordinarily exceeded.

Block Length – The applicant is requesting approval to exceed the maximum block length of 400 feet.

Block Circumference – The applicant is requesting approval to exceed the maximum block circumference of 1,600 feet.

As part of this Planned Development amendment application the applicant is also requesting approval of an amended subdivision layout and phasing plan that would also increase by 40 the number of residential lots in the multi-phase development plan.

**LOCATION:** Tax Lot 801, Section 24, T.4 S., R. 5 W., W.M.

**ZONING:** The subject site's current zoning is R-2 PD

**APPLICANT:** West Hills Properties, LLC  
2300 SW 2<sup>nd</sup> Street, Suite B  
McMinnville, OR 97128

**STAFF:** Ron Pomeroy, Principal Planner





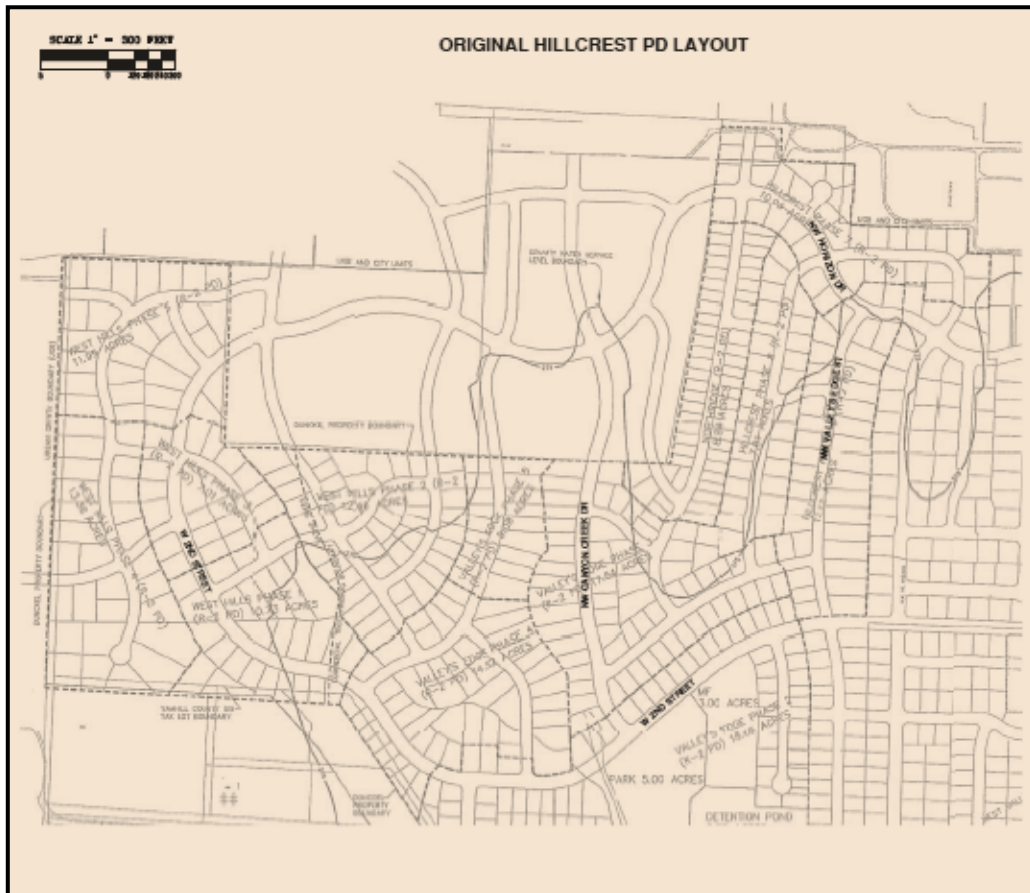
**APPLICATION SUMMARY:**

The applicant is requesting approval to amend Planned Development Ordinance 4868 to allow exceptions to current street grade, block length, block circumference and lot depth to width standards. Also requested is approval to amend an approved residential subdivision and phasing plan on approximately 132 acres of land.

This request is to amend a Planned Development approved on April 24, 2007, when the McMinnville City Council adopted Ordinance No. 4868 for a zone change request from an R-1 (Single-Family Residential) zone to an R-2 PD (Single-Family Residential Planned Development) zone on a parcel of land approximately 164 acres in size. At the same time a phased subdivision request for approximately 4.0 acres of multifamily housing, 7.2 acres for park and storm water detention, and approximately 153 acres of residential housing (441 single-family detached residences, 50 single-family attached residences and 60 apartment units) was approved. It is the modification of this Ordinance and its implications to the attendant phased subdivision that is the subject of this Planned Development Amendment application.

Since that time, portions of that phased subdivision plan (referred to as the Hillcrest Planned Development) have been developed including the public park and storm water detention facility, multiple-family residential apartment complex and the Valley's Edge Phases 2 and 3 of the phased development plan. The remaining 132 acres of the original 164-acre multi-phase plan are the subject of this current zone change request.

For the benefit of context for the Commission, the originally approved (2007) conceptual subdivision plan for this site is provided below:



The proposed conceptual subdivision plan for this site is provided below:



**CONDITIONS OF APPROVAL:**

The following conditions of approval shall be required to ensure that the proposal is compliant with the City of McMinnville’s Comprehensive Plan and Zoning Ordinance:

- 14. That the planned development overlay shall require the following setbacks:
  - A. Development of the multi-family lot and single-family lots within the Northridge subdivision shall be to standard R-4 zone setbacks.
  - B. Lots within the Valley’s Edge Phase 2 subdivision shall be to a standard R-3 zone setback.
  - C. All other lots shall meet applicable R-2 zoning setbacks.

The Planning Director is authorized to permit reductions or increases to these setback standards as may be necessary to provide for the retention of trees greater than nine (9) inches in diameter measured at 4.5 feet above grade. In no case, however, may the side yard setback be reduced to less than five feet, or the exterior side yard setback to less than 12 feet, or the distance from the property line to the front opening of a garage be

reduced to less than 18 feet without approval of the Planning Commission pursuant to the requirements of Chapter 17.69 (Variance). A request to adjust the setbacks for these lots shall be accompanied by a building plan for the subject site that clearly indicates the location of existing trees. Trees to be retained shall be protected during all phases of home construction.

15. That existing trees greater than nine inches in diameter above grade shall not be removed without prior review and written approval of the Planning Director. In addition, all trees shall be protected during home construction. A plan for such protection must be submitted with the building permit application and must meet with the approval of the Planning Director prior to release of construction or building permits within the subject site. Requests for removal of such trees based upon claims of disease, or hazard should be accompanied by a report from a licensed arborist.
16. That the "Hillcrest" phased tentative subdivision plan (revised as necessary to comply with the adopted conditions of approval) be placed on file with the Planning Department and that it become a part of the zone and binding on the property owner and developer, and shall in no way be binding on the City.

The developer shall be responsible for requesting approval of the Planning Commission for any major change of the details of the adopted plan. Minor changes to the details of the adopted plan may be approved by the Planning Director. It shall be the Planning Director's decision as to what constitutes a major or minor change. An appeal from a ruling by the Planning Director may be made only to the Commission. Review of the Planning Director's decision by the Planning Commission may be initiated at the request of any one of the Commissioners.

17. That site plans and building elevations for the proposed multi-family units must be submitted to the Planning Director for review and approval prior to the issuance of any building permits for said units. The following criteria shall apply:
  - A. The building layout must be nonlinear in design, even if to meet this goal the number of units has to be reduced.
  - B. The building roof lines and facades must be broken so as to avoid a flat, uniform appearance.
  - C. The site shall be heavily landscaped with emphasis on those sides facing a public street. Street-side landscaping shall include berming, and street trees a minimum of two-inch caliper at time of planting. In addition, parking lots shall be broken up by landscaping, and usable open space shall be provided within the development.
  - D. Signage shall be limited to a maximum of two free-standing monument-type signs, each not more than four feet in height and not exceeding 36 square feet in area. The signs, if illuminated, must be indirectly illuminated and non flashing.
  - E. Horizontal lap siding or similar type siding must be used (no T-111 or similar), and architectural composition roofing or a similar or higher grade type of roofing must be applied.
18. Prior to the issuance of the 290<sup>th</sup> building permit for the master planned development, the developer shall complete the installation of left-turn-lane improvements, meeting the City's

and Yamhill County's standards, at the intersections of Hill Road / Horizon Drive and Hill Road / West Second Street.

19. That minimum lot sizes within the Hillcrest development may be reduced below 7,000 square feet, provided the overall residential density within the subject site (less the parkland and storm detention areas) does not exceed the net density allowed by the R-2 zone (gross density reduced by 25 percent to account for public infrastructure).
20. Grades shall not exceed six (6) percent on arterials, 10 (ten) percent on collector streets, or 12 (twelve) percent on any other street except as described below. Any local street grade exceeding 12 (twelve) percent shall be reviewed for approval by the Fire Code Official during the land use application review process. When a local residential street is approved to exceed 12 (twelve) percent the following shall be required:
  - A. A maximum of 200 feet of roadway length may be allowed with a grade between 12 (twelve) percent and 15 (fifteen) percent for any one section. The roadway grade must reduce to no more than 12 (twelve) percent for a minimum of 75 linear feet of roadway length between each such section for firefighting operations.
  - C. Fire sprinklers shall be installed in all residential and commercial structures whose access road is constructed at a grade higher than 12 (twelve) percent. The approval of such fire sprinklers shall be accomplished in accordance with the provisions of ORS 455.610(6).

Centerline radii of curves shall not be less than 300 feet on major arterials, 200 feet on secondary arterials, or 100 feet on other streets, and shall be to an even 10 (ten) feet. Where existing conditions, particularly topography, make it otherwise impractical to provide buildable lots, the Planning Commission may accept sharper curves.

21. That condition of approval number 10 of S 13-06 is supplanted as follows: "The City Public Works Department will install, at the applicant's expense, the necessary street signage (including stop signs, no parking signage, and street name signage), curb painting, and striping (including stop bars) associate with the development. The applicant shall reimburse the City for the signage and markings prior to the City's approval of the final plat."
22. That condition of approval numbers 14, 15 and 16 of S 13-06 is supplanted as follows: "Per the adopted 2010 Transportation System Plan (TSP), all remaining streets (including the extensions of 2<sup>nd</sup> Street and Horizon Drive) within the development area can be constructed to the local residential street standard. All streets shall be improved with a 28-foot wide paved section, 5-foot wide curbside planting strips, and five-foot-wide sidewalks placed one foot from the property line within a 50-foot right-of-way, as required by the McMinnville Land Division Ordinance for local residential streets."
23. That the applicant shall provide information detailing the number of lots that will be made available for individual sale to builders for review and approval by the Planning Director prior to recording of the final plat. Upon approval, the referenced lots will be made available for sale to the general public for a minimum of one hundred twenty (120) days prior to building permit issuance for said lots.
24. That in addition to the pedestrian connections shown on Sheet SU-00 of the applicant's submittal, pedestrian connections shall also be provided between NW Brookshire and NW



Canyon Creek Drive, NW Canyon Creek Drive and Road A, between Road A and the adjacent westerly edge of the subdivision (Tax Lot 809), between NW C Loop and NW Elizabeth, between Road D and the northwesterly edge of the subdivision (Tax Lot 809) and between Road E and NW 2nd Street. All private pedestrian connections shall be dedicated as tracts commonly held and maintained by a Homeowner's Association.

25. That based on a Geo-Technical Engineering report dated May 10, 2016, and the soils conditions shown in this report, foundations will necessitate design by a Geo-Technical Engineer. Each design must take into account what might occur to the down slope construction (Phase 4), when further development of the hillside occurs in the future. Since the May 10, 2016, report this hillside has been saturated with substantial rainfall. How this has affected any construction on the downside as well as future development should be taken into consideration in the design of Phase 4.
26. That Planned Development Ordinance No. 4868 is repealed in its entirety.

**ATTACHMENTS:**

1. ZC 6-17 Application and Attachments (*on file*)
2. Public Notices (*on file*)
3. McMinnville Ord. No. 4868 (*on file*)
4. Geotech Report by GeoPacific for West Hills Properties dated May 19, 2016 (*on file*)
5. Public Testimony Received (*on file*)
6. Planning Commission, May 18, 2017 Meeting Minutes (*on file*)
7. Memo from AKS Engineering and Forestry, dated May 30, 2017 (*on file*)

## **COMMENTS:**

This matter was referred to the following public agencies for comment: McMinnville Fire Department, Police Department, Engineering and Building Departments, City Manager, and City Attorney, McMinnville School District No. 40, McMinnville Water and Light, Yamhill County Public Works, Yamhill County Planning Department, Frontier Communications, Comcast, Northwest Natural Gas. The following comments have been received.

### **McMinnville Engineering Department**

- The applicant is proposing to construct the extensions of 2<sup>nd</sup> Street and Horizon Drive to the minor collector standard contained in the Transportation System Plan (TSP). Per the adopted 2010 TSP, all remaining streets (including the extensions of 2<sup>nd</sup> Street and Horizon Drive) within the development area can be constructed to the local residential street standard. Conditions 14, 15, and 16 of the existing subdivision approval for ZC18-06/S13-06 should be modified to reflect that the remaining streets shall be improved with a 28-foot wide paved section, 5-foot wide curbside planting strips, and five-foot-wide sidewalks placed one foot from the property line within a 50-foot right-of-way, as required by the McMinnville Land Division Ordinance for local residential streets.
- Condition 10 of the existing subdivision approval for ZC18-06/S13-06 should be modified to read:
  10. The City Public Works Department will install, at the applicant's expense, the necessary street signage (including stop signs, no parking signage, and street name signage), curb painting, and striping (including stop bars) associated with the development. The applicant shall reimburse the City for the signage and markings prior to the City's approval of the final plat.
- The requested street grade and block length exceptions are acceptable to the Engineering Department.
- The submitted Preliminary Stormwater Management Memo is acceptable to the Engineering Department.
- The submitted Traffic Analysis Update Memo acceptable to the Engineering Department.

### **McMinnville Fire Department**

- 1) **GRADE:** Average road grade shall not exceed 12% except that any grade exceeding 12% shall be approved by the Fire Code Official (*during land use application*). No road grade shall exceed 15%.
- 2) When approved to exceed 12% grade, the following condition shall apply:
  - a) A maximum of 200 feet of road length may be allowed with a grade between 12% to 15% in any one section. The roadway must then level out below 12% for a minimum of length of 75 feet for firefighting operations.
  - b) Fire sprinklers shall be installed in any residential or commercial structure that is built on or whose access road is constructed to a grade of 12% or greater. The approval of fire sprinklers as an alternate means of fire safety shall be accomplished in accordance with the provisions of ORS 455.610(6) – (Low Rise Residential Dwelling Code).

## **McMinnville Water & Light**

MW&L has no comments on this application.

## **McMinnville Parks Department**

After reviewing the material about the planned development changes, I do not find any changes that impact the neighborhood park detention area (2.77 acres). I imagine the park will receive a greater volume of water over time as hard surfaces are more fully developed and the neighborhood is complete. However, that is what was intended with the detention capacity within the park. We shall see if the original calculations were accurate. But there are no concerning issues relative to anticipated impacts to the park of immediate surrounds with the proposed plans.

## **FINDINGS OF FACT**

1. West Hills Development, LLC, has submitted a Planned Development Amendment request (ZC 6-17) requesting approval to amend Planned Development Ordinance 4868 to allow exceptions to current street grade, block length, block circumference and lot depth to width standards. Also requested is approval to amend an approved residential subdivision and phasing plan on approximately 132 acres of land. The property is located generally north of Redmond Hill Road and West of Mt. Mazama and South of Fox Ridge Road and is more specifically described as Tax Lot 801, Section 24, T. 4 S., R. 5 W., W.M.
2. The site is currently zoned R-2 PD (Single-Family Residential Planned Development) and is designated as Residential on the McMinnville Comprehensive Plan Map, 1980.
3. Sanitary sewer and municipal water and power can serve the site. The municipal water reclamation facility has sufficient capacity to accommodate expected waste flows resulting from development of the property.
4. This matter was referred to the following public agencies for comment: McMinnville Fire Department, Police Department, Engineering and Building Departments, City Manager, and City Attorney, McMinnville School District No. 40, McMinnville Water and Light, Yamhill County Public Works, Yamhill County Planning Department, Frontier Communications, Comcast, Northwest Natural Gas, Oregon Department of Transportation, Oregon Division of State Lands, and Oregon Department of Fish and Wildlife. No comments in opposition have been provided.
5. The applicant has submitted findings (Attachment 1) in support of this application. Those findings are herein incorporated.

## **CONCLUSIONARY FINDINGS:**

The applicant provided findings for a wide range of Comprehensive Plan goals and policies, many of which were found to not apply to the request as the submitted application was for review of an approved Planned Development. However, all of the applicant's findings are incorporated herein as they were provided in the application. Staff concurs with the applicable findings provided by the applicant and offers the following additional findings.

## **Comprehensive Plan Volume I –**

## Chapter V. Housing and Residential Development – Land Use Controls

### Planned Developments:

“The planned development (PD) is a method by which creative, large-scale development of land is encouraged for the collective benefit of the area’s future residents. [...] As written, the planned development provisions are intended to provide specific benefits to a development (e.g., developed parks, retention of unique natural areas, etc.) [...] It is important that the City continue to scrutinize planned development designs to insure that amenities are being provided in excess of what is normally required.

4. Future planned developments should be carefully scrutinized to insure that there are trade-offs favorable to the community when zoning ordinance requirements are varied. Those trade-offs should not just include a mixture of housing types.

### Additional Design Considerations:

Pedestrian paths (sidewalks) are required by ordinance to be constructed in all new residential developments. Bike paths, however, have only been constructed in a few selected areas. The City should encourage the development of bike paths and foot paths to activity areas, such as parks, schools, and recreation facilities, in all development designs.

2. Open space is required in all residential developments in several ways. Traditional zoning setbacks reserve a large portion of each individual lot for potential open space. Planned developments can preserve large open areas for open space by clustering development in smaller areas. [...]
5. The City should encourage the provision of bike and foot paths within residential developments to connect to public and/or private parks, or recreation facilities and to connect to any paths which currently abut the land.”

Finding: Based on materials submitted by the applicant this proposal meets the intent of this portion of Volume I of the Comprehensive Plan relative to park space, open space and the provision of bike paths. Following the 2007 Planned Development approval for this site, the applicant worked with the McMinnville Parks Department to achieve the approximately 7-acre public park incorporating a functioning storm water facility sited along the major access into this development area. Additionally, the applicant has mapped the drainage ravines that carry storm runoff and traverse and meander throughout the site. The revised phased subdivision plan has aligned these natural drainageways with the common rear property lines of residential lots as much as practicable to allow their protection through restrictive easements to be maintained through homeowners associations to be created commensurate with the platting of subdivision phases. Additionally, the applicant has proposed the platting of six access tracts to serve as pedestrian connections at cul-de-sac and mid-block locations to enhance pedestrian connections through the topographically challenging hillside development area. Bikeways shall be provided as required by the adopted 2010 McMinnville Transportation System Plan (TSP).

In addition to that provided by the applicant, the following Goals and policies from Volume II of the McMinnville Comprehensive Plan of 1981 are also applicable to this request:

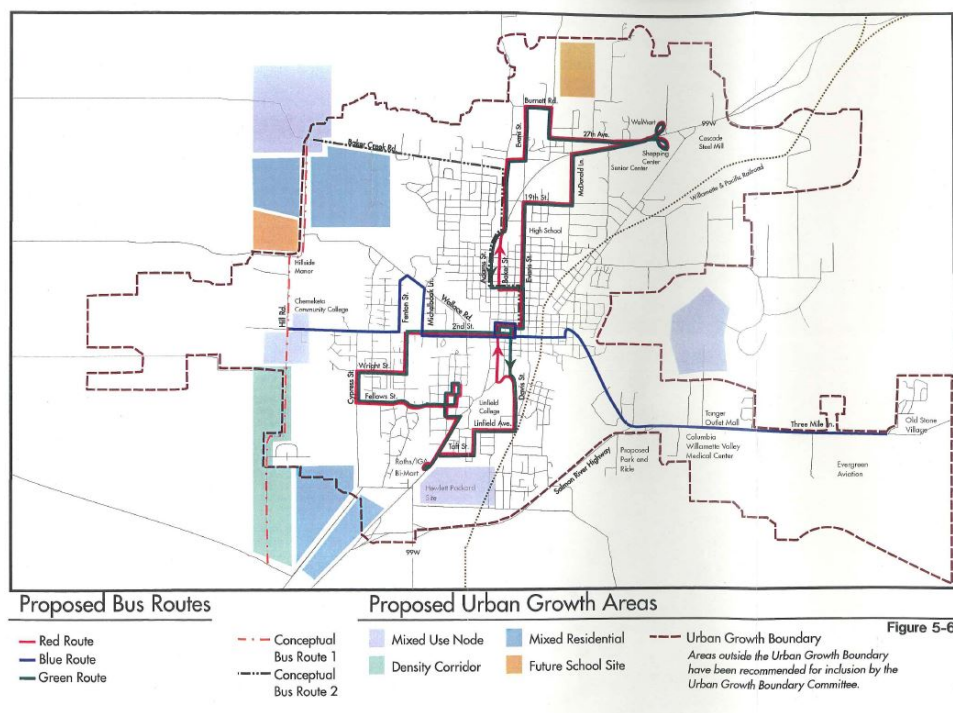
### Comprehensive Plan Volume II –

## Chapter V. Housing and Residential Development

### Westside Density Policy:

- 71.01 The City shall plan for development of the property located on the west side of the city that is outside of planned or existing transit corridors (1/4 mile either side of the route) to be limited to a density of six units per acre. It is recognized that it is an objective of the City to disperse multiple family units throughout the community. In order to provide higher density housing on the west side, sewer density allowances of trade-offs shall be allowed and encouraged.
- 71.10 The following factors should be used to define appropriate density ranges allowed through zoning in the medium density residential areas:
1. The density of development in areas historically zoned for medium and high density development;
  2. The topography and natural features of the area and the degree of possible buffering from established low density residential areas;
  3. The capacity of the services;
  4. The distance to existing or planned public transit;
  5. The distance to neighborhood or general commercial centers; and
  6. The distance from public open space.

Finding: Policies 71.01 and 71.10 are met by this proposal in that the development site is located on the west side of the city, proposed less than an average of the six dwelling units per acres and is located outside of existing or planned transit corridors as demonstrated by Figure 5-6 of the adopted McMinnville Public Transit Plan (below). The multiple-family component of the approved 2007 Planned Development for this area has already been constructed in a manner that dispersed this more dense type of development within the west hills area. Public open space has already been provide and developed as a public park adjacent to the multiple-family residential development. Additionally, this development site is adjacent to areas similarly zoned R-2 PD and developed accordingly with medium density residential development. While distance to neighborhood or general Commercial centers is not as critical to medium density residential development as it is to residential development of much higher densities, a neighborhood serving professional and commercial center exists eastward from this site along W 2<sup>nd</sup> Street which is the main roadway that will traverse the subject site.



**Planned Development Policies:**

- 72.00 Planned unit developments shall be encouraged as a favored form of residential development as long as social, economic, and environmental savings will accrue to the residents of the development and the city.
- 74.00 Distinctive natural, topographic, and aesthetic features within planned developments shall be retained in all development designs.
- 77.00 The internal traffic system in planned developments shall be designed to promote safe and efficient traffic flow and give full consideration to providing pedestrian and bicycle pathways.
- 78.00 Traffic systems within planned developments shall be designed to be compatible with the circulation patterns of adjoining properties.

**Finding:** Policies 72.00, 74.00, 77.00 and 78.00 are met by this proposal in that the proposal encourages social and environmental benefits and retains natural and aesthetic features within the planned development area by moving proposed roadways away from natural drainageways and requiring their protection through the creation of restrictive easements. Additionally, the proposed street design complies with current adopted City public street standards as defined by the adopted 2010 McMinnville Transportation System Plan (TSP) and extends opportunities for continuation of public streets to other adjacent properties beyond the scope of this development. Pedestrian connections are also proposed at numerous mid-block and cul-de-sac locations to enhance pedestrian access and circulation throughout the neighborhood.

**Residential Design Policies:**

- 79.00 The density allowed for residential developments shall be contingent on the zoning classification, the topographical features of the property, and the capacities and

availability of public services including but not limited to sewer and water. Where densities are determined to be less than that allowed under the zoning classification, the allowed density shall be set through adopted clear and objective code standards enumerating the reason for the limitations, or shall be applied to the specific area through a planned development overlay. Densities greater than those allowed by the zoning classification may be allowed through the planned development process or where specifically provided in the zoning ordinance or by plan policy.

- 80.00 In proposed residential developments, distinctive or unique natural features such as wooded areas, isolated preservable trees, and drainage swales shall be preserved wherever feasible.
- 81.00 Residential designs which incorporate pedestrian and bikeway paths to connect with activity areas such as schools, commercial facilities, parks, and other residential areas, shall be encouraged.
- 82.00 The layout of streets in residential areas shall be designed in a manner that preserves the development potential of adjacent properties if such properties are recognized for development on the McMinnville Comprehensive Plan Map.
- 83.00 The City of McMinnville shall review the design of residential developments to insure site orientation that preserves the potential for future utilization of solar energy.

Finding: Policies 79.00, 80.00, 81.00, 82.00 and 83.00 are met by this proposal in that the overall residential density, while less than the underlying R-2 zone, can be allowed through the review and approval of the requested modification of the previously approved planned development zoning designation. While maximum density under the opportunity presented by the R-2 zone is not occurring with this proposal, it is important to note that, due to the topographic constraints and regulatory requirements applicable to this site, the applicant has achieved re-phasing plan that accommodates an additional 40 residential lots above that which was previously approved for this site in 2007. The proposed amended street layout demonstrates connection with the existing surrounding street network and preserves the development potential of other adjacent land. Other areas within the development are proposed to be connected by pedestrian pathways increasing opportunities for off-street pedestrian mobility. In addition, given the physical dimensions of the site, streets have been oriented to create opportunities for solar access as practicable.

Lot Sales Policy:

- 99.10 The City of McMinnville recognizes the value to the City of encouraging the sale of lots to persons who desire to build their own homes. Therefore, the City Planning staff shall develop a formula to be applied to medium and large size subdivisions that will require a reasonable proportion of lots be set aside for owner-developer purchase for a reasonable amount of time which shall be made a part of the subdivision ordinance.

Finding: Policy 99.10 shall be satisfied by Condition of Approval #10.

**Streets**

Policies:

- 118.00 The City of McMinnville shall encourage development of roads that include the

following design factors:

1. Minimal adverse effects on, and advantageous utilization of, natural features of the land.
2. Reduction in the amount of land necessary for streets with continuance of safety, maintenance, and convenience standards.
3. Emphasis placed on existing and future needs of the area to be serviced. The function of the street and expected traffic volumes are important factors.
4. Consideration given to Complete Streets, in consideration of all modes of transportation (public transit, private vehicle, bike, and foot paths). (Ord.4922, February 23, 2010)
5. Connectivity of local residential streets shall be encouraged. Residential cul-de-sac streets shall be discouraged where opportunities for through streets exist

119.00 The City of McMinnville shall encourage utilization of existing transportation corridors, wherever possible, before committing new lands.

Finding: Goal VI 1 and Policies 117.00, 118.00, and 119.00 are satisfied by this proposal in that the each of the proposed lots will abut public streets developed to City standards with adequate capacity to safely accommodate the expected trip generation from this development. Residential streets proposed within the development will connect at intersections except for the proposed cul-de-sac streets due to the presence topographical and water course constraints. The proposed street design will utilize connections to adjacent street stubs and have minimal adverse effects on the natural features of the land. In addition, street grades shall be designed in cooperation with the McMinnville Engineering and Fire Departments as reflected in the conditions of this Decision Document.

### **Bike Paths**

Policies:

132.00 The City of McMinnville shall encourage development of subdivision designs that include bike and foot paths that interconnect neighborhoods and lead to schools, parks, and other activity areas.

132.15 The City of McMinnville shall require that all new residential developments such as subdivisions, planned developments, apartments, and condominium complexes provide pedestrian connections with adjacent neighborhoods.

Finding: Policies 132.00 and 132.15 are satisfied by this proposal in that the applicant proposes additional pedestrian pathways providing mid-block connections within the subdivision in situations where unique topography and steep water courses prevent other public connections. While the terrain makes the provision of separated bikeways challenging, public streets will be constructed to City standards to provide the opportunity for bicycle connections through this development area and beyond as required by the McMinnville TSP.

### **Supportive of General Land Use Plan Designations and Development Patterns**

Policies:



132.27.00 The provision of transportation facilities and services shall reflect and support the land use designations and development patterns identified in the McMinnville Comprehensive Plan. The design and implementation of transportation facilities and services shall be based on serving current and future travel demand—both short-term and long-term planned uses.

Finding: Policy 132.27.00 is satisfied by this proposal in that the proposed street design reflects and supports the land use designation of the site and urban development patterns within the surrounding area.

## **Circulation**

### **Policies:**

132.41.00 Residential Street Network – A safe and convenient network of residential streets should serve neighborhoods. When assessing the adequacy of local traffic circulation, the following considerations are of high priority:

1. Pedestrian circulation,
2. Enhancement of emergency vehicle access,
3. Reduction of emergency vehicle response times,
4. Reduction of speeds in neighborhoods, and
5. Mitigation of other neighborhood concerns such as safety, noise, and aesthetics. (Ord. 4922, February 23, 2010)

132.41.05 Cul-de-sac streets in new development should only be allowed when connecting neighborhood streets are not feasible due to existing land uses, topography, or other natural and physical constraints. (Ord. 4922, February 23, 2010)

132.41.20 Modal Balance – The improvement of roadway circulation must not impair the safe and efficient movement of pedestrians and bicycle traffic. (Ord. 4922, February 23, 2010)

132.41.25 Consolidate Access – Efforts should be made to consolidate access points to properties along major arterial, minor arterial, and collector roadways. (Ord. 4922, February 23, 2010)

132.41.30 Promote Street Connectivity – The City shall require street systems in subdivisions and development that promote street connectivity between neighborhoods. (Ord. 4922, February 23, 2010)

Finding: Policies 132.41.00, 132.41.05, 132.41.20, 132.41.25 and 132.41.30 are satisfied by this proposal in that the proposed street pattern provides a safe and efficient network of residential streets to serve the proposed and adjacent existing residential neighborhoods. The cul-de-sac streets are proposed in response to the noted existence of topographic and environmental constraints. The proposed street system is also designed to promote a balance of safe and efficient movement of vehicles, pedestrians and bicycles as required by the requirements of the McMinnville TSP and provision of additional private pedestrian pathways. Vehicular access points to the adjacent street system comply with this policy and

promote safe street connectivity to the surrounding transportation network.

GOAL VII 1: TO PROVIDE NECESSARY PUBLIC AND PRIVATE FACILITIES AND UTILITIES AT LEVELS COMMENSURATE WITH URBAN DEVELOPMENT, EXTENDED IN A PHASED MANNER, AND PLANNED AND PROVIDED IN ADVANCE OF OR CONCURRENT WITH DEVELOPMENT, IN ORDER TO PROMOTE THE ORDERLY CONVERSION OF URBANIZABLE AND FUTURE URBANIZABLE LANDS TO URBAN LANDS WITHIN THE McMINNVILLE URBAN GROWTH BOUNDARY.

### **Sanitary Sewer System**

Policies:

- 139.00 The City of McMinnville shall extend or allow extension of sanitary sewage collection lines with the framework outlined below:
1. Sufficient municipal treatment capacities exist to handle maximum flows of effluents.
  2. Sufficient trunk and main line capacities remain to serve undeveloped land within the projected service areas of those lines.
  3. Public water service is extended or planned for extension to service the area at the proposed development densities by such time that sanitary sewer services are to be utilized
  4. Extensions will implement applicable goals and policies of the comprehensive plan.

### **Storm Drainage**

Policies:

- 142.00 The City of McMinnville shall insure that adequate storm water drainage is provided in urban developments through review and approval of storm drainage systems, and through requirements for connection to the municipal storm drainage system, or to natural drainage ways, where required.
- 143.00 The City of McMinnville shall encourage the retention of natural drainage ways for storm water drainage.

### **Water System**

Policies:

- 144.00 The City of McMinnville, through McMinnville Water and Light, shall provide water services for development at urban densities within the McMinnville Urban Growth Boundary.
- 145.00 The City of McMinnville, recognizing McMinnville Water and Light as the agency responsible for water system services, shall extend water services within the framework outlined below:
1. Facilities are placed in locations and in such manner as to insure compatibility with surrounding land uses.

2. Extensions promote the development patterns and phasing envisioned in the McMinnville Comprehensive Plan.
3. For urban level developments within McMinnville, sanitary sewers are extended or planned for extension at the proposed development densities by such time as the water services are to be utilized;
4. Applicable policies for extending water services, as developed by the City Water and Light Commission, are adhered to.

147.00 The City of McMinnville shall continue to support coordination between city departments, other public and private agencies and utilities, and McMinnville Water and Light to insure the coordinated provision of utilities to developing areas. The City shall also continue to coordinate with McMinnville Water and Light in making land use decisions.

### **Water and Sewer – Land Development Criteria**

Policies:

151.00 The City of McMinnville shall evaluate major land use decisions, including but not limited to urban growth boundary, comprehensive plan amendment, zone changes, and subdivisions using the criteria outlined below:

1. Sufficient municipal water system supply, storage and distribution facilities, as determined by McMinnville Water and Light, are available or can be made available, to fulfill peak demands and insure fire flow requirements and to meet emergency situation needs.
2. Sufficient municipal sewage system facilities, as determined by the City Public Works Department, are available, or can be made available, to collect, treat, and dispose of maximum flows of effluents.
3. Sufficient water and sewer system personnel and resources, as determined by McMinnville Water and Light and the City, respectively, are available, or can be made available, for the maintenance and operation of the water and sewer systems.
4. Federal, state, and local water and waste water quality standards can be adhered to.
5. Applicable policies of McMinnville Water and Light and the City relating to water and sewer systems, respectively, are adhered to.

Finding: Goal VII 1 and Policies 139.00, 142.00, 143.00.20, 144.00, 145.00, 147.00 and 151.00 are satisfied by the request as adequate levels of sanitary sewer collection, storm sewer and drainage facilities, municipal water distribution systems and supply, and energy distribution facilities, either presently serve or can be made available to serve the site. Additionally, the Water Reclamation Facility has the capacity to accommodate flow resulting from development of this site. Administration of all municipal water and sanitary sewer systems guarantee adherence to federal, state, and local quality standards. The City of McMinnville shall continue to support coordination between city departments, other public and private agencies and utilities, and McMinnville Water and Light to insure the coordinated provision of utilities to developing areas and in making land-use decisions.

### **Police and Fire Protection**

Policies:

- 153.00 The City of McMinnville shall continue coordination between the planning and fire departments in evaluating major land use decisions.
- 155.00 The ability of existing police and fire facilities and services to meet the needs of new service areas and populations shall be a criterion used in evaluating annexations, subdivision proposals, and other major land use decisions.

Finding: Policies 153.00 and 155.00 are satisfied in that emergency services departments have reviewed this request. The concerns raised by the McMinnville Fire Department have been addressed with proposed modifications to street grade designs represented in the conditions of this Decision Document sufficient to ensure safe and efficient emergency access to protection to each lot.

**Open Space**

- 167.00 The City of McMinnville shall encourage the retention of open space and scenic areas throughout the community, especially at the entrances to the City.
- 168.00 Distinctive natural features and areas shall be retained, whenever possible, in future urban developments.
- 169.00 Drainage ways in the City shall be preserved, where possible, for natural areas and open spaces and to provide natural storm run-offs.

Finding: Policies 167.00, 168.00 and 169.00 are satisfied in that, in addition to the approximately 7-acre public park and adjacent storm water detention facility located along the north side of W 2<sup>nd</sup> Street, the applicant proposes to provide open spaces in the form of preserved drainage greenways that traverse the development area. These areas shall be maintained by a Home Owners Association according to CC&Rs as required by the 2007 Planning Commission subdivision approval that shall be recorded following approval of the Planning Director. The applicant is also proposing an additional storm water detention area near the southern edge (downhill side) of the development site to accommodate natural run-off which shall be designed and maintained in compliance with City requirements.

GOAL VIII 1: TO PROVIDE ADEQUATE ENERGY SUPPLIES, AND THE SYSTEMS NECESSARY TO DISTRIBUTE THAT ENERGY, TO SERVICE THE COMMUNITY AS IT EXPANDS.

Policies:

- 173.00 The City of McMinnville shall coordinate with McMinnville Water and Light and the various private suppliers of energy in this area in making future land use decisions.
- 177.00 The City of McMinnville shall coordinate with natural gas utilities for the extension of transmission lines and the supplying of this energy resource.

Finding: Goal VIII 1 is satisfied in that the City of McMinnville will continue coordinate with the various suppliers of energy and energy transmission systems commensurate

with proposed developments. No such concerns were raised during the review of this proposal.

## **Energy Conservation**

Policies:

- 178.00 The City of McMinnville shall encourage a compact urban development pattern to provide for conservation of all forms of energy.

Finding: Policy 178.00 is satisfied in that the applicant's proposal has utilized density averaging through the Planned Development process to achieve a mix of residential lot sizes, along with the developed multiple-family component, in addition to the proposed single-family attached and detached residential dwelling opportunities achieving a more compact form of urban development and energy conservation than would have otherwise been achieved.

GOAL X 1: TO PROVIDE OPPORTUNITIES FOR CITIZEN INVOLVEMENT IN THE LAND USE DECISION MAKING PROCESS ESTABLISHED BY THE CITY OF McMINNVILLE.

Policies:

- 188.00 The City of McMinnville shall continue to provide opportunities for citizen involvement in all phases of the planning process. The opportunities will allow for review and comment by community residents and will be supplemented by the availability of information on planning requests and the provision of feedback mechanisms to evaluate decisions and keep citizens informed.

Finding: Goal VII 3 and Policy 188.00 are satisfied in that McMinnville continues to provide opportunities for the public to review and obtain copies of the application materials and completed staff report prior to the holding of advertised public hearing(s). All members of the public have access to provide testimony and ask questions during the public review and hearing process.

1. The following Sections of the McMinnville Zoning Ordinance (Ord. No. 3380) are applicable to the request:

General Provisions:

17.03.020 Purpose. The purpose of this ordinance is to encourage appropriate and orderly physical development in the City through standards designed to protect residential, commercial, industrial, and civic areas from the intrusions of incompatible uses; to provide opportunities for establishments to concentrate for efficient operation in mutually beneficial relationship to each other and to shared services; to provide adequate open space, desired levels of population densities, workable relationships between land uses and the transportation system, and adequate community facilities; to provide assurance of opportunities for effective utilization of the land resource; and to promote in other ways public health, safety, convenience, and general welfare.

Finding: Section 17.03.020 is satisfied by the request for the reasons enumerated in Conclusionary Finding for Approval No. 1.

Planned Developments:

17.51.010 Purpose. The purpose of a planned development is to provide greater flexibility and greater freedom of design in the development of land than may be possible under strict interpretation of the provisions of the zoning ordinance. Further, the purpose of a planned development is to encourage a variety in the development pattern of the community; encourage mixed uses in a planned area; encourage developers to use a creative approach and apply new technology in land development; preserve significant man-made and natural features; facilitate a desirable aesthetic and efficient use of open space; and create public and private common open spaces. A planned development is not intended to be simply a guise to circumvent the intent of the zoning ordinance.

Finding: Section 17.51.010 is satisfied by the request in that the applicant proposes a development plan to provide for single-family detached and detached lots. City policies noted above speak to proposing lower density than that allowed by the underlying zone due to unique circumstances or limitations on specific sites. In this instance, the development site is very challenging due to the steep and varied topography as well as the natural drainage ravines that traverse the site. These features combined make the provision of public streets and the creation of buildable lots challenging. However, the applicant has proposed modifying the existing approved phased development plan in a way that attains a greater number of residential building lots while identifying and protecting additional natural resources to a greater extent than was approved in the 2007 Planned Development approval. Specifically dedicated pedestrian walkway connections are also proposed for further enhance connectivity and circulation throughout the various phases of this Planned Development.

17.51.020 Standards and requirements. The following standards and requirements shall govern the application of a planned development in a zone in which it is permitted:

- A. The principal use of land in a planned development shall reflect the type of use indicated on the comprehensive plan or zoning map for the area. Accessory uses within the development may include uses permitted in any zone, except uses permitted only in the M-2 zone are excluded from all other zones. Accessory uses shall not occupy more than twenty-five percent of the lot area of the principal use;
- B. Density for residential planned development shall be determined by the underlying zone designations. (Ord. 4128 (part), 1981; Ord. 3380 (part), 1968).

Finding: Section 17.51.020 (A-B) are satisfied by the request in that the applicant proposes a development type (single-family attached and detached residential) consistent with the residential zoning indicated on the comprehensive plan map and zoning map. This proposed amendment to the existing planned development approval for this site complies with Sub B of this standard.

17.51.030 Procedure. The following procedures shall be observed when a planned development proposal (or in this case, an amendment to a previously approved Planned Development) is submitted for consideration:

- C. The Commission shall consider the preliminary development plan at a meeting at which time the findings of persons reviewing the proposal shall also be considered. In reviewing the plan, the Commission shall need to determine that:

- (1) There are special physical conditions or objectives of a development which the proposal will satisfy to warrant a departure from the standard regulation requirements;

- (2) Resulting development will not be inconsistent with the comprehensive plan objectives of the area;
- (3) The development shall be designed so as to provide for adequate access to and efficient provision of services to adjoining parcels (as amended by Ordinance No. 4242, April 5, 1983);
- (4) The plan can be completed within a reasonable period of time;
- (5) The streets are adequate to support the anticipated traffic, and the development will not overload the streets outside the planned area;
- (6) Proposed utility and drainage facilities are adequate for the population densities and type of development proposed;
- (7) The noise, air, and water pollutants caused by the development do not have an adverse effect upon surrounding areas, public utilities, or the City as a whole.

Finding: Section 17.51.030 (C) is satisfied by the request in that the design objective of this proposal is to fulfill the City's policy direction to residential development commensurate with the underlying zone given topographic and environmental constraints. The applicant has indicated that this proposal can be completed in a reasonable period of time as long as the economy does not experience another drastic downturn that recently slowed down the development of other phases of this previously approved plan. The proposed street network is adequate to support anticipated traffic which can also be supported by the surrounding existing street network. Public facilities have the capacity to adequately serve the proposed development and there are no indications that the proposal will have an adverse effect due to pollutants or noise on surrounding areas or the City as a whole.

Review Criteria:

17.74.070 Planned Development Amendment - Review Criteria. An amendment to an existing planned development may be either major or minor. Minor changes to an adopted site plan may be approved by the Planning Director. Major changes to an adopted site plan shall be processed in accordance with Section 17.72.120, and include the following:

- An increase in the amount of land within the subject site;
- An increase in density including the number of housing units;
- A reduction in the amount of open space; or
- Changes to the vehicular system which results in a significant change to the location of streets, shared driveways, parking areas and access.

An amendment to an existing planned development may be authorized, provided that the proposal satisfies all relevant requirements of this ordinance, and also provided that the applicant demonstrates the following:

- A. There are special physical conditions or objectives of a development which the proposal will satisfy to warrant a departure from the standard regulation requirements;
- B. Resulting development will not be inconsistent with the Comprehensive Plan objectives of the area;
- C. The development shall be designed so as to provide for adequate access to and efficient provision of services to adjoining parcels;

- D. The plan can be completed within a reasonable period of time;
- E. The streets are adequate to support the anticipated traffic, and the development will not overload the streets outside the planned area;
- F. Proposed utility and drainage facilities are adequate for the population densities and type of development proposed;
- G. The noise, air, and water pollutants caused by the development do not have an adverse effect upon surrounding areas, public utilities, or the city as a whole.

Finding: The requirements of Section 17.74.070 are met by this major modification to an existing planned development for the reasons enumerated in the finding provided for the Section 17.51.030(C) requirements provided above. In addition, the applicant has determined the ability to increase the number of single-family lots while providing additional environmental protections to existing drainageways. The proposed Planned Development amendment also offers a partially reconfigured local street system that, while providing access to each proposed lot, meets acceptable Fire Department standards while employing grades that, for shorter distances, exceed standard grade limitations. The applicant has proposed an innovative approach to increasing density while ensuring public safety and enhancing environmental protection.

2. Ordinance No. 4868 is applicable to this request and is noted in Attachment 4 of this Decision Document.

Finding: The subject request generally complies with the requirements of Ordinance 4868 as the proposal seeks to modify the Planned Development (zone change) approved by this ordinance. As a practical matter of administration, should this request be approved, Ordinance 4868 will be repealed and replaced with the ordinance enacting the approval of this request. Most of the elements of Ordinance 4868 will remain in addition to new conditions reflecting the modifications to the phased development plan proposed by the applicant. This newly enacted ordinance will also serve to continue the Planning Commission's 2007 approval of the phased subdivision plan as amended (S 13-06) in the same manner that Ordinance 4868 enabled that phased subdivision plan.

RP:sjs



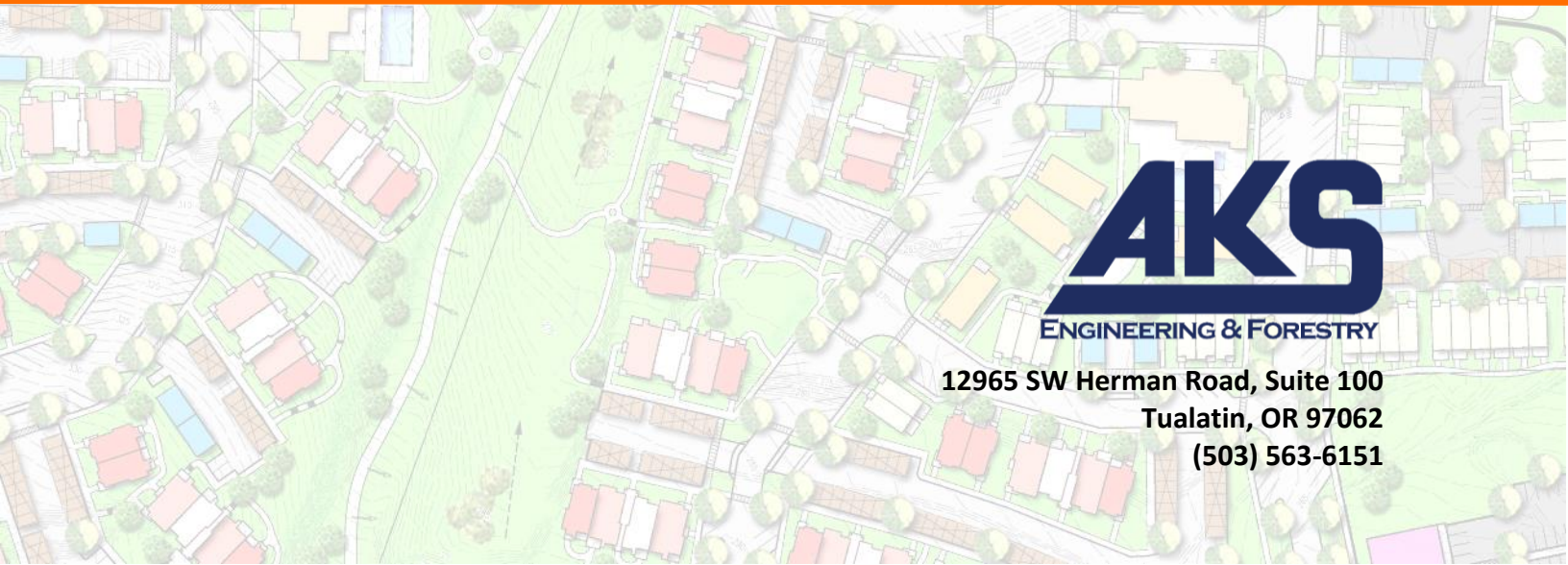
# Modification of a Planned Development

---

**Date:** March 30, 2017

**Submitted to:** City of McMinnville  
231 NE Fifth Street  
McMinnville, Oregon 97128

**Applicant:** West Hills Properties, LLC  
P.O. Box 731  
McMinnville, Oregon 97128



**AKS**  
ENGINEERING & FORESTRY

12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
(503) 563-6151

---

## Contents

<b>I. Executive Summary .....</b>	<b>2</b>
<b>II. Site Description/Setting .....</b>	<b>3</b>
<b>III. Applicable Review Criteria .....</b>	<b>3</b>
<u>CITY COUNCIL FINDINGS IN ORD. 4868 .....</u>	<u>3</u>
Observations .....	3
Tentative Subdivision Plan (S 13-06) .....	3
<u>CITY OF MCMINNVILLE ZONING ORDINANCE – TITLE 17 .....</u>	<u>34</u>
Title 17 Zoning .....	34
<b>IV. Conclusion.....</b>	<b>38</b>

## Exhibits

- Exhibit A:** Preliminary Development Plans
  - Exhibit B:** Application Form
  - Exhibit C:** Property Ownership Information
  - Exhibit D:** City of McMinnville Ord. 4868
  - Exhibit E:** Preliminary Stormwater Management Report
  - Exhibit F:** Traffic Analysis Update Memo
-

---

# Land Use Application for a PUD Modification

**Submitted to:** City of McMinnville  
Planning Department  
231 NE Fifth Street  
McMinnville, OR 97128

**Applicant/Owner:** West Hills Properties, LLC  
P.O. Box 731  
McMinnville, OR 97128

**Applicant's Consultant:** AKS Engineering & Forestry, LLC  
12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
Contact(s): Paul Sellke, P.E., G.E.  
Email: pauls@aks-eng.com  
Phone: (503) 563-6151  
Fax: (503) 563-6152

**Site Location:** North of NW 2nd Street, West of NW Mt. Mazama  
Street, South of NW Fox Ridge Road in McMinnville, OR

**Yamhill County Tax Map:** 4S-5-24 Lot 801

**Site Size:** ± 132.2 acres

**Land Use Districts:** PD (R-2)



---

## I. Executive Summary

AKS Engineering & Forestry, LLC (AKS) is pleased to submit this application on behalf of West Hills Properties, LLC for a modification of the Hillcrest Planned Development (PD; approved via Ordinance [Ord.] 4868).

The Hillcrest PD was approved by the City of McMinnville (City) Council on April 24, 2007. At the end of 2007, and continuing through 2009, the U.S. housing market experienced one of the most significant declines of the last century. The Great Recession quelled demand for new housing in McMinnville and across the Country and is attributed to the delay in the development of the Hillcrest PD. During this period of delay, new and updated Americans with Disabilities Act (ADA) standards have been recommended and cities are requiring that these recommendations be implemented. To meet these ADA standards, new public street intersections are generally required to be flattened to grades of less than 5%.

While Ord. 4868 established an R-2 zoning designation on the site, the approval specified a mix of lot sizes that would accommodate a wide range of housing types and sizes. This modification respects the intent of the original approval and maintains a mix of larger hillside lots, single-family attached units in the Northside Phase of development, and smaller detached lots near the south end of the site. The modification also preserves the general circulation pattern established in the original approval by maintaining Redmond Hill Road, W 2nd Street, and NW Horizon Drive as the backbone of the street network. Although implementation of the new ADA requirements results in a reduction of overall site connectivity, the application includes 4 mid-block pedestrian accessways that enhance pedestrian mobility throughout the site.

The current demand for housing makes it possible to move forward with development in the Hillcrest PD. However, due to the new ADA standards that have been enacted since the original approval, it is necessary to modify the original site plan before moving ahead. In revising intersection grades to meet the new ADA standards on this site, it is subsequently necessary to reconfigure the overall layout of streets and lots.

This is because the original PD was approved with intersection grades of 10% or more. Flattening these intersections to 5% (or less to allow for construction tolerances) requires that street segments leading into and exiting them must be graded even steeper to make up for the grade lost by this flattening. Also, because streets must be designed with appropriate transitions (vertical curve) between the steep street segments and shallow intersections to ensure safe sight distance and vehicle clearance, the grade of street segments outside of the intersection can be excessive where the number and location of intersections is held constant. An illustration of this relationship is shown in Figure 1.

The only practical solution to this problem, in the context of the relatively steep topography characteristic of this site, was to reconfigure the street network to seek more shallow grades and to eliminate several public street intersections. Through these modifications, the site can satisfy the ADA maximum intersection grade requirement at all new public street intersections. Even with these modifications, however, certain local street segments (see Exhibit A) must still exceed the 12% maximum established in the City's zoning ordinance. We are therefore seeking an adjustment through this PUD to MZO Section 17.53.101.L to permit the grade of certain new local streets up to a maximum of 15%.

A street grade adjustment is appropriate in the context of development on this site due to topographical characteristics that are atypical of other development sites in the City of McMinnville. The plans included in this application incorporate feedback from City Planning, Engineering, and local Fire Department staff to ensure the overall health and community wellbeing objectives of the City's Zoning Ordinance are

---

respected. This feedback resulted in revisions to the plan that limit steep street segments to a maximum of 200 feet as well as a condition that all homes accessed by a street exhibiting a grade of 12% percent or more, will include a residential fire suppression system.

In addition to street grade, the new ADA requirements and elimination of some public street intersections, makes it necessary to seek an adjustment to the block length and perimeter standards of MZO Section 17.53.103. Mid-block pedestrian accessways have been added where practical, to facilitate pedestrian movement through the site.

Ord. 4868 approved a total of 513 lots. The final piece of this modification is a new arrangement of residential lots caused by the reconfiguration of streets throughout the site. The reconfigured residential lots respect the variety of lot sizes found desirable by the City in Ord. 4868 and will do an even better job of protecting natural drainage channels on the site.

This application includes the City application forms, written materials, and preliminary plans necessary for City staff to review and determine compliance with the applicable approval criteria. The evidence is substantial and supports the City's approval of the application.

## **II. Site Description/Setting**

The subject site is approximately 132.2 acres in size and contains a single parcel located in the West Hills of the City. The site is currently vacant and flanked by single-family residences on the abutting properties to the east and south. The site includes grades ranging from 1 to 30% and drainage generally flows southeasterly from the northwest corner of the site. The high point of the site is located north and west of the property's center. The property is located within the City's R-2 Zoning District and has received tentative plat approval through Ord. 4868.

## **III. Applicable Review Criteria**

### **CITY COUNCIL FINDINGS IN ORD. 4868**

#### **Observations**

#### **Tentative Subdivision Plan (S 13-06)**

The applicant has submitted a tentative multi-phase subdivision plan for the entire 164.1 acres comprising the subject site. This tentative plan proposes the platting of 441 detached housing units, 50 attached housing units, a four-acre parcel for multi-family housing to accommodate an estimated 60 residential units, and the setting aside of some 5.1 acres for public park space adjacent to a 2.1-acre storm water detention area. As part of the development of this subdivision, the applicant would construct several new public streets, and improve existing streets, as may be required by the City Engineer or Yamhill County. West Second Street and Horizon Drive, for example, would be extended west of their present termini, and Redmond Hill Road would be improved as necessary to support the anticipated traffic needs.

Further information regarding each of these applications and elements of the submitted proposal are found in the following observations and the applicant's submitted materials.

- The applicant, KHA Properties, LLC, has submitted a detailed, multi-phased master plan for the entire site. In the applicant's supplemental information sheets, you will find categories providing a count of the number of lots, number of residential units by type, and other summary information. In some instances, however, this information differs slightly from that which is depicted on the tentative subdivision plan and other graphics provided by the applicant. As this plan was recently modified from an earlier draft version, this is simply an oversight in preparation of the application submittal

---

and not material to these requests. The tentative plan, however, does clearly represent the applicant's request and will be used in review of these requests.

- The plan depicts a total of 487 single-family residential lots dispersed according to the following 13 phases:

Hillcrest Phase 6	36 Lots
Hillcrest Phase 7	34 Lots
Hillcrest Phase 8	50 Lots
Northridge	43 Lots (single-family attached)
Valley's Edge Phase 2	51 Lots (additional lots/tract for park and detention facility)
Valley's Edge Phase 3	50 Lots
Valley's Edge Phase 4	45 Lots (one additional lot for multi-family housing)
Valley's Edge Phase 5	56 Lots
West Hills Phase 1	16 Lots
West Hills Phase 2	21 Lots
West Hills Phase 3	29 Lots
West Hills Phase 4	28 Lots
West Hills Phase 5	28 Lots

**Response:** As shown in Exhibit A, the application includes a modification to the Hillcrest PD (Ord. 4868) as approved by the City Council on April 24, 2007. The purpose of the modification is to accommodate new ADA requirements for maximum grades at public street intersections as well as to locate natural drainageways within protective easements along shared rear property lines to the maximum extent practicable.

In preparation for submitting the final plats for Valley's Edge Phase 4 and Hillcrest Phase 6, the applicant and their consultant discovered that streets throughout the Hillcrest PD would not meet new ADA standards, which require a maximum grade of 5% within the vicinity of a public street intersection. Given the relatively challenging topography on the 132-acre Hillcrest PD site, reconfiguration of the street network was necessary to satisfy these ADA requirements. Revisions to the arrangement of streets subsequently required a revision to residential lots accessed by these streets. Following discussions with City staff, the course of action determined to be most optimal was to simultaneously seek a modification from the original Hillcrest PD and a street grade adjustment to ensure future development throughout the Hillcrest PD would meet current ADA standards.

The street grade adjustment is a result of the need to create public street intersections that do not exceed 5% because to accommodate the shallower intersection grades, it is necessary that local street segments outside of the intersection area will have grades of up to 15% in some cases. Because the City's maximum grade for local streets is 12%, the application includes a street grade adjustment (permissible as part of a PD) which would permit 15% grades for certain local street segments.

The modification will affect the lot and street configuration, as well as the total area of the individual development phases. For this reason, it is not possible to compare the lot

changes on a per phase basis. Nonetheless, to provide a general comparison of where changes to the number of lots will occur on site, we have included Table 1 below. The modified Hillcrest PD included in this application will comprise 488 lots (446 detached and 42 attached single family lots) across 15 phases. This is a 13% increase in the total number of lots and a 5% increase in the overall gross density, but remains more than 250 lots fewer than would be allowed on this site under R-2 zoning standards. The phases shown in Exhibit A are approximate at this time and may change in size and location as the project proceeds.

**Table 1** Comparison of Lots by Phase

Phase	Original Approval No. of Lots	Proposed No. of Lots	Already Constructed	Pct. Change from Ord. 4868
Hillcrest Phase 6	36	13		
Hillcrest Phase 7	34	26		
Hillcrest Phase 8	50	44		
Hillcrest Phase 9-10		57		
<b>Hillcrest Total</b>	<b>120</b>	<b>140</b>	<b>0</b>	<b>16.67%</b>
Northridge	43	43		
<b>Northridge Total</b>	<b>43</b>	<b>43</b>	<b>0</b>	<b>0.00%</b>
Valley's Edge Phase 2	52		36	
Valley's Edge Phase 3	50		28	
Valley's Edge Phase 4	69	10		
Valley's Edge Phase 5	56	25		
Valley's Edge Phase 6		23		
Brookshire Phase 1		46		
Brookshire Phase 2		48		
<b>Valley's Edge Total</b>	<b>227</b>	<b>152</b>	<b>64</b>	<b>-4.85%</b>
West Hills Phase 1-5	122	153		
<b>Valley's Edge Total</b>	<b>122</b>	<b>153</b>		<b>25.41%</b>
<b>TOTAL</b>	<b>512</b>	<b>488</b>	<b>64</b>	<b>7.81%</b>

- The applicant's narrative further clarifies that Hillcrest Phases 6-8, located in the northeastern portion of the site, would consist of larger hillside lots that would typically be found on R-1 zoned land. Valley's Edge Phases 2-5, located in the southern and central portions of the site, will consist of middle and lower end housing typically found on R-2 and R-3 zoned properties. A four-acre multi-family parcel is proposed within Valley's Edge Phase 4. West Hills Phases 1-5 consist of larger, hillside lots varying in size between 10,000 and 30,000 square feet in size. This area is generally located in the northwest portion of the site; significant stands of trees are found here.

---

Northridge is sited on top of the north-south ridge in the eastern portion of the site and is proposed to be developed with common wall, mostly single-level, housing to meet the need of the retiring, downsizing baby boomer market. In addition, the plan also proposes the platting of a 7.2-acre combination park/storm water detention facility (5.1-acre public park, and 2.1-acre storm water detention) as part of the platting of Phase 2 of Valley's Edge. These uses are proposed to be located in the southeast portion of the site with the public park space being bounded by Redmond Hill Road to the south, West 2nd Street to the north, single-family residential to the east and multi-family residential to the west. A four-acre lot would be included in the Valley's Edge Phase 4 development for multi-family housing. It has been positioned adjacent to the planned public parkland and on collector streets, thereby taking advantage of open space for the future residents, and to afford appropriate access consistent with City policy for the siting of such housing.

**Response:** As shown in Exhibit A, the modification will reconfigure the area of individual phases approved with Ord. 4868. However, the Hillcrest phases will remain within the eastern and northeastern portions of the site. Lots within the Hillcrest phases will continue to be larger hillside lots, which resemble lots typically found in the City's R-1 zoning district. Additionally, while Valley's Edge Phase 2 has been completed, the Valley's Edge phases will include relatively smaller lots consistent with the original approval. This variation in lot sizes throughout the Hillcrest PD will create new residential lots with the ability to accommodate a wide range of housing demand across a variety of age and income groups. The phases shown in Exhibit A are approximate at this time and may change in size and location as the project proceeds.

The multi-family housing initially planned for Phase 4 of Valley's Edge has since been completed in the location originally identified as Valley's Edge Phase 2. This housing abuts the combination park/stormwater facility planned for this area. These new multi-family units will help satisfy the need for more affordable housing in the City.

Finally, 42 of the 43 lots in the Northridge Phase of the PD remain intended for single-family attached homes as approved in Ord. 4868.

- The street pattern for this multi-phased residential development proposes the westerly extensions of Horizon Drive, West 2nd Street, and Redmond Hill Road as the "backbone" of the internal street network. More specifically, West Second Street is proposed to be extended through the site toward its western edge to then turn north and east, joining with Horizon Drive in the proposed Hillcrest Phase 7 subdivision. This forms an effective looped end to West Second Street. This looping of West Second Street to join with Horizon Drive is proposed to be developed with a 36-foot-wide paved section with five-foot-wide curbside planters and five-foot-wide sidewalks within of a 60-foot-wide right-of-way to match the existing improvement of Horizon Drive.

**Response:** As shown in Exhibit A, westerly extensions of Horizon Drive, W 2nd Street, and Redmond Hills Road will continue to make up the backbone of the Hillcrest PD. As mentioned above, the precise location of these new streets has been slightly modified to accommodate new requirements for shallow grades at public street intersections. Per the City's current Minor Collector Street standard, West 2nd Street is designed in a 30-foot-wide paved section with 6.5-foot-wide curbside planters and 5-foot wide-sidewalks in a 56-foot-wide right-of-way.



---

Redmond Hill Road will continue to serve as part of the site's southern edge and will be developed with a three-quarter street improvement; 27-foot-wide paved section with a five-foot-wide curbside planter strip and five-foot-wide sidewalk on the north side within what will eventually be a 60-foot right-of-way (see "Redmond Hill Road Typical Section" found on Sheet 2 of 6 of the Hillcrest Master Plan drawings). This improvement would extend the entire distance that Redmond Hill Road will abut the subject site. The applicant will not be required to provide the remaining improvements along the southern portion of the right-of-way as such will be the responsibility of adjacent land owners either as conditions of approval based on their future development requests, or by participation in a local improvement district (LID) if so formed at a future time.

**Response:** As shown in Exhibit A, the phases of the original Hillcrest PD abutting Redmond Hills Road have been constructed. No additional improvements to Redmond Hills Road are either necessary or anticipated to accommodate development within the remaining portions of the Hillcrest PD.

A number of local residential streets would then extend from these main streets to create a modified grid street network to ensure adequate access to each of the proposed lots. This network will also provide stubs to the north, west and south to serve other future development on adjacent land.

**Response:** As shown in Exhibit A, the revised street network will eliminate several public street intersections previously included in the Hillcrest PD. This is largely attributed to the need to maintain a maximum grade of 5% at public street intersections, as discussed above.

Although no detail has been provided at this time, it appears that the applicant is proposing the creation of three landscaped medians marking the entrances to the Northridge subdivision. Staff understands these to be similar to the existing median constructed within the NW Meadows Drive right-of-way located at the south entrance to the Park Meadows Third residential subdivision. The proposed medians would similarly signify a transition from the adjacent single-family detached subdivisions to the Northridge single-family attached subdivision.

- As part of their submittal, the applicant contracted with Lancaster Engineering to perform a traffic impact study for the proposed Hillcrest development; a copy of this analysis is attached to this report. A brief summary of the study's conclusions is provided below; please refer to page 27 of the study for additional detail.

1. The results of the analysis indicate that the impact area intersections are capable of supporting traffic from either the proposed or the highest allowable density under the proposed zone change with minimal operational and safety mitigations.
2. Left-turn lane warrants were examined for Hill Road at the three study intersections. The analysis concluded that the intersections of Hill Road at Horizon Drive and Hill Road at West Second Street will meet left-turn lane warrants with development of the proposed subdivision. Left turn lanes will be needed for these intersections after the site is developed with more than 289 homes. Left-turn lane warrants will not be met at the intersection of Hill Road and Redmond Hill Road.
3. Traffic signal warrants were examined for future traffic conditions at the three study intersections.

---

Based on the analysis, it is anticipated that signal warrants will not be met at any of the subject intersections under year 2026 traffic conditions either with or without the proposed zone change. No traffic signal installations are recommended in association with the proposed development.

4. The intersection of Hill Road at Horizon Drive is currently operating acceptably and will continue to operate acceptably through 2026 either with or without the proposed zone change. No operational mitigations are needed for the zone change or the proposed development plan. Note: A left-turn pocket will be needed as noted in #2 above.
5. The intersection of Hill Road at Second Street is currently operating acceptably but is projected to operate at level of service "F" under year 2016 traffic conditions with development of the proposed subdivision. If the intersection is converted to four-way stop control, intersection operation is projected to be acceptable.
6. The intersection of Hill Road at Redmond Hill Road is currently operating acceptably and will continue to operate acceptably through 2026 either with or without the proposed zone change. No mitigations are required for the proposed zone change or development plan. Based upon this analysis, staff has drafted recommendations that would obligate the developer to mitigate anticipated traffic impacts, in part, through the construction of left turn lanes at the intersections of Hill Road and West Second Street, and Hill Road and Horizon Drive. These improvements will require coordination with Yamhill County and the City.

**Response:** As shown in Exhibit F, Lancaster Engineering provided an updated Traffic Memo (dated March 8, 2017) to confirm that area roadways have capacity to serve traffic generated by this development with the recommended mitigation measures included in the original Traffic Analysis.

- Detail as to specific site and building design elements for the proposed multi-family lot have not been provided at this time. In the absence of such details from the applicant, staff recommends that several site and building design conditions be incorporated into the planned development for this site, should the zone change and subdivision requests be approved. These would include conditions related to the landscaping of the multifamily site with emphasis along the perimeter of the site, and the physical arrangement and architectural scale of the future multifamily buildings, exterior lighting, landscaping and off-street parking. These are modeled on similar conditions applied in recent years to other vacant land rezoned for multi-family development, including the initial Hillsdale development proposal.

Staff estimates that, given the density of other garden apartment projects in McMinnville (two-story buildings; surface parking; appropriate landscaping) that this site would develop at a density of 15 to 18 dwelling units per acre, or a total of 60 to 72 dwelling units.

---

**Response:** The multi-family component of the original Hillcrest PD has been constructed and is currently occupied. This modification does not include revisions to this element of the PD.

- The Planning Commission is aware that land zoned for multi-family development in McMinnville is virtually non-existent. Aside from a 3.5 acre parcel of land situated at the southeast corner of Baker Creek Road and Hill Road, staff is unaware of any other vacant multi-family zoned lands larger than three acres in size in McMinnville. The siting of nearly any new multi-family housing within McMinnville will therefore require rezoning, and in some cases, amending the comprehensive plan designation, of a particular property to allow such use.

Elements that restrict site selection and development of multi-family housing are City policies regarding dispersal of such housing, and density limitations applied to development occurring on the west side of McMinnville. Specifically, Comprehensive Plan Policy 86.00 states, in part, that dispersal of new multiple housing development will be encouraged throughout the residential designated areas in the city to avoid a concentration of people, traffic congestion, and noise. Further, Plan Policy 91.00 states that multiple-family housing developments [...] shall be required to access off of arterials or collectors or streets determined by the City to have sufficient traffic carrying capacities to accommodate the proposed development; this element will be addressed below.

As regard the multi-family dispersal policy and its application to the subject site, the nearest multi-family housing project is the 34-unit Westvale Village apartment complex situated to the southeast, across Hill Road at a distance of slightly about three-quarters of a mile from the subject site. Within a one and one-half mile radius of the site are found apartment complexes in the Jandina planned development (adjacent to the linear park, the Columbus apartments on Fellows Street), Tall Oaks development (Tall Oaks Estates), and the Heather Glen apartments (on Goucher Street). The proposed multi-family development would be the first apartment complex located west of Hill Road. This multi-family lot is located adjacent to Redmond Hill Road and West Second Street, both of which are collector streets (or have sufficient capacity to accommodate the assumed density of this development) and would, therefore, satisfy the locational requirements of Plan Policy 91.00.

**Response:** The multi-family component of the original Hillcrest PD has been constructed and is currently occupied. This modification does not include revisions to this element of the PD.

This site comprises some 164.00 acres of land planned and zoned for residential development. Assuming 25 percent of this land would be devoted to public infrastructure (streets, rights-of-way, easements, etc), removing lands for park and storm water detention purposes, and that all lots would be platted at the R-2 minimum lot size of 7,000 square feet, a total of 732 dwelling units could be realized within the borders of the subject site. The applicant indicates in the submitted materials that 547 dwelling units are proposed. While providing opportunities for a range of residential types at a range of price points, this proposal is under the maximum number of dwelling units permitted by Plan Policy 71.01 (six dwelling units per acre). The applicant states in their submitted material that additional density may be realized within this development as a result of additional detailed engineering that would occur prior to the platting of each phase. Staff supports this direction and would recommend authority be granted to the Planning Director to grant adjustments to the details of this plan in order to allow for such increases, within certain prescribed limits.

**Response:** As shown in Exhibit A, the modified PD will include 488 residential lots (446 detached and 42 attached single family units). Added to the 92 lots that have already been platted, the

---

modified number of lots throughout the original Hillcrest PD boundary will be 552. This will represent a 13% increase from the number of lots approved with Ord. 4868 and be within the allowable density on this site.

- The applicant's narrative proposes the construction of 50 common wall (single-family attached) units, with 43 of these units comprising the entirety of the Northridge phase of the proposed tentative plan. The applicant's tentative plan locates the remaining seven common wall lots within Hillcrest Phase 8 (Lot 210) and Valley's Edge Phase 2 (six lots -- Lots 37-38, 42-43, and 74-75). The applicant indicates that the Northridge Lot 21 and the Hillcrest Phase 8, Lot 210 are to be complementary units joined by a common wall. Typically, residences that are attached are both part of the same subdivision and the applicant has not explained why this design was chosen. Staff encourages the applicant to consider adjusting either the lotting pattern or subdivision phasing boundaries to remedy this situation.

**Response:** As shown in Exhibit A, Lot 642 has been designed to accommodate a single-family detached home in response to this original finding.

- Not all of the lots proposed for single-family detached development will meet the minimum 7,000-square-foot area requirement for the R-2 zone. More specifically, lots less than 7,000 square feet in size identified for single-family detached development are planned for the following subdivisions and phases: Hillcrest Phase 8; Valley's Edge Phases 2, 3, 4 and 5; and, Northridge. Lot size averaging to enable the provision of smaller lots and still achieve the average required minimum lot size for the zone is a common feature of planned developments and, as noted previously, is requested as an element of this current proposal. Although a number of smaller lots are currently proposed, the average residential lot size within this multi-phased plan is some 10,390 square feet, which greatly exceeds the 7,000 square foot minimum required by the R-2 zoning designation alone.

**Response:** As shown in Exhibit A, lot sizes in the modified PD range from 5,292 square feet to 35,305 square feet with an average lot size of 9,547 square feet. Consistent with the approval in Ord. 4868, the average lot size exceeds the 7,000 square foot minimum as required in the R-2 District.

The modified PD includes a total of 58 lots that are less than 7,000 square feet. 43 of these lots are located in the Northridge phase of the site (primarily intended for single-family attached residences). The remaining lots which are less than 7,000 square feet are intended for single-family detached homes.

- There are a number of lots that exceed the recommended maximum lot depth to width ratio of two to one as noted in the Land Division Ordinance. The configuration of these lots is acceptable not only because this ratio is only a recommendation, but also because these proposed lot configurations are made necessary due to topographic constraints found within certain areas of the site. Even so, the general shape of the majority of these lots is fairly uniform and falls within the recommended ratio as provided within the Land Division Ordinance.

**Response:** Per Section 17.53.105.B.1, "...The depth of [a] lot shall not ordinarily exceed two times the average width." As shown in Exhibit A, lots throughout the modified Hillcrest PD exhibit a depth to width ratio near 2 to 1. Approximately 114 lots throughout the site exceed this guideline due primarily to, the need to accommodate an acceptable building footprint on lots where natural drainageways and/or steep slopes occupy a portion of the

---

rear yard area. The application therefore seeks flexibility per the PD standards to allow a depth to width ratio that slightly exceeds the 2:1 guidance in limited circumstances.

- The applicant is requesting approval of 15-foot exterior side yard setbacks for all corner lots. The applicant's narrative states, in part, that approval of the 15-foot exterior side yard setbacks for such lots allows the applicant and future home buyers flexibility in addressing the sloping topography across these corner lots and provides for flexibility in house building footprint width. In most cases, the Planning Commission has approved requests to reduce or modify the standard residential setback requirements in a planned development, particularly if it will result in an improved streetscape design, or is necessary to avoid the removal of trees, or is in response to other unique characteristics of a property (in this case, slope). As to this proposal, staff is unable to find within the applicant's submitted material a strong argument for adjusting this exterior side yard setback. We find, for example, that subdivisions developing to the immediate east of this site, on which are slope constrained lands, are required to meet 20 foot exterior side yard setback standards. We are not aware of issues in siting these homes within these properties.

Staff would support, however, the use of R-4 zone setbacks to the single-family attached housing within the Northridge subdivision, and the multi-family lot. R-3 zone setbacks, which have a 15 foot exterior side yard setback would also be appropriate for Valley's Edge Phase 2 development in which lot sizes appear to average under 7,000 square feet in size. We would further support the ability to adjust setbacks on those lots with significant trees if, in so doing, the tree(s) are retained. At no time, however, should the front of a garage or carport be allowed to be located closer than 18 feet to property line.

**Response:** The application does not seek a modification to the side yard setbacks approved as part of Ord. 4868.

- The subject site is encumbered by the requirements of the West Hills Planned Development Overlay (No. 4132). As such, certain policies and requirements apply to development within the west hills area. Specifically, this overlay states that scenic values of the property, as viewed from the City towards the site, shall be emphasized and enhanced in residential development designs. The overlay goes on to state that this should be accomplished by encouragement of a design which clusters housing in suitable areas while reserving open areas.

As regard the wooded areas of the site, the submitted tentative plan provides a north-south line that delineates the boundary between the hardwood trees (maples and oaks) that are native to the site and found on the site's western portion, and the conifer trees that were planted by the applicants for commercial harvesting (Christmas trees) and located on the eastern portion of the site. The applicant explored the opportunity to cluster development in a more traditional manner, leaving larger areas of open space and more densely designed residential spaces. Ultimately, they did not propose such a design for two prominent reasons:

1. A more dense clustering of residential uses and preservation of larger open spaces would result in a patchwork design of rooftops and vegetation. To accommodate more substantial clustering of residences, large areas would need to be virtually cleared of vegetation. In doing so, the area would not retain much of the tree cover's current integrity when viewing this hillside from the east.
2. Designing a street system to navigate these 12% to 25% slopes and serve a more traditional clustered

---

housing development plan for this site proved inefficient at best. With avoiding significant tree stands, the resulting street system was characterized with numerous dead-ends (cul-de-sacs) and a noticeable decrease in neighborhood connectivity.

The application before you proposes to address the goal of residential clustering by developing an approximately 60-unit multi-family complex as well as 50 single-family attached residences; 43 of which are proposed to be located within the Northridge subdivision, along the prominent ridge in the northeast portion of the site.

**Response:** The application includes modifications to the overall street network which will result in a loss of street connectivity in exchange for satisfying ADA requirements for public street intersections that have been enacted since the passage of Ord. 4868. While this resulting street network will reduce overall connectivity, it will avoid a greater number of trees when compared to the original street network. To improve connectivity, the PD modification includes 4 pedestrian mid-block connections located within private tracts.

Additionally, and as stated above, the goal of residential clustering has been addressed through the development of the multi-family residential units in Valley's Edge Phase 2, as well as through the attached units within the Northridge Phase of the project.

Further, the proposed public street layout has been designed to weave between the majority of the established, mature trees. To further preserve trees, the applicant proposes to:

1. Perform a detailed tree survey prior to submitting engineered construction drawings for public street and utility improvements within the site's naturally wooded area. The tree survey would be completed by a licensed surveyor and the survey would show horizontal location of tree, provide tree species and size of tree (DBH).
2. Limit clearing activities to the footprint of the public right-of-way and adjacent public utility easement.
3. Meander sidewalks where significant or desirable hardwood trees can be avoided.
4. Consider adjusting street alignment to avoid significant or desirable trees.
5. Avoid mass grading within residential lot areas as this leads to clearing large areas of vegetation prior to placing engineering fill embankments.
6. Plant street trees as required by City code.
7. Enact CC&Rs that require each home builder/lot developer to work with the City Planning Department staff to shift house footprint on the lot, within the allowable setbacks, to avoid impact to significant or desirable hardwood trees. Because the lots in the West Hills phases are large, there exists the ability to shift home sites on the lots.

- 
8. Enact CC&Rs that require each home builder/lot developer to replant trees on the lots based upon the number of existing natural trees on the lot and the number of proposed trees to be removed to accommodate home construction. The proposed requirement for inclusion in the CC&Rs is: "Plant one new tree for every tree removed on lots with five or fewer natural trees, or plant one tree for every one and one-half trees removed on lots with six or more natural trees."

In sum, given the steep and varied topography of the site and the tree preservation and replanting efforts addressed by the applicant, staff finds that the proposed design provides a sensitivity to the scenic value of the area that results in a reduced impact on the existing natural habitat and tree cover than would otherwise typically occur. Staff contends that the intent and purpose of ORD 4132 have been met.

**Response:** The application does not seek to modify the above tree protection measures which will be further evaluated during the final plat review of each individual phase of the Hillcrest PD.

- A 30-foot-wide storm drainage easement is proposed along the centerline of the central north-south natural drainageway that forms the boundary between Phases 3 and 4 of the Valley's Edge subdivision, and the Hillcrest Phase 8 and Valley's Edge Phase 4 subdivisions. The purpose of this easement would be to prevent building adjacent to the drainageway and to ensure that the channel retains its capacity to collect and convey storm water. With the exception of two street crossing locations, the applicant proposes to keep this drainageway in its natural, undisturbed conditions.

As designed, rear lot lines of the adjacent properties are located in the center of this easement (except for the multifamily and public park sites). In discussion with the applicant's engineer it was acknowledged that one benefit of this easement would be the creation of a defacto 30-foot-wide no-build zone along its length. This then would provide a view of the drainageway at the back of each lot, and of the neighbor's backyard across the drainageway as construction, including fences or accessory buildings, would not be allowed within the storm drainage easement. While this is the intent, given the observed history of other similar easements and tracts, the area within this easement would likely be used, over time, for a variety of residential purposes. While this is purely speculation on the part of staff, it is conceivable that some improvements (obstructions) may occur to include the placement of play structures, decks, and landscaping features, and even fences in some locations. It is suggested that a restrictive covenant be included to address this restriction in any recorded CC&Rs for the affected subdivisions; Hillcrest Phase 8, and Valley's Edge Phases 2, 3 and 4.

**Response:** In addition to meeting new ADA public street standards, this PD modification will also better preserve existing drainages on site. While the original PD layout was designed to locate the easternmost drainage channel in a protective easement at the rear of most lots, the original layout did not identify or accommodate on-site channels on the west side of the site. As shown in Exhibit A, the PD included in this modification will locate all drainage channels at the rear of most lots so they may be placed within a protective easement.

- 
- There is some history to the allocation of parkland being proposed by the applicant. By way of background, the applicants for this proposed zone change and tentative subdivision were responsible for the development of the property to the immediate east on which is located the existing phases of the Hillcrest, West Valley Estates, and Hillsdale residential subdivisions, as well as the Osprey Point Assisted Living facility, and Hillsdale Plaza commercial complex.

On April 28, 1998, the McMinnville City Council approved a zone change request on land east of the subject site and located at the southwest corner of the intersection of West 2nd Street and Hill Road. A companion subdivision tentative plan was also approved for this site the previous month by the Planning Commission. As part of that tentative plan, the applicant, Mr. Ed Christensen, proposed the creation of a centrally located 3.98-acre park. The plan for this park, as depicted by the applicant, included a softball/soccer field, basketball court, tennis courts, and a tot lot. It was the applicant's intent to dedicate this park land (without the improvements) to the City for use by the general public. The value of this dedication would have been applied as a credit against the park land system development charges applicable to the subject site. A design for the park was to be developed by the Parks and Recreation Department in concert with the surrounding neighborhoods in the future.

Ultimately Mr. Christensen did not move forward with his plans and in October of 1999 a new applicant stepped forward with a plan for this site. In summary, this plan, which was submitted by the applicants of the current proposal, requested the platting of 160 lots, to include 153 single-family residential lots; five two-family, "common-wall" lots; a 5.0-acre commercial lot; and, a 5.93-acre lot planned for multi-family residential development (this multi-family lot was subsequently developed for the Osprey Point Assisted Living Community facility). The park land identified in the original proposal was determined to be better addressed through a future development proposal on adjacent land to the west. The City granted approval of this proposal in December of 1999, subject to a number of conditions as contained in Ordinance No. 4713.

Subsequently, the same applicant later submitted, and received approvals for, detailed development plans for that on which now is developed with multiple phases of the Hillsdale and West Valley Estates residential subdivisions. Through the approvals of these subdivisions, the provision of parkland had been shifted to lands further to the west to the site of this current application. Part of the rationale for this adjustment from earlier plans was that, depending upon the final design for this park, the environmental assets found to the west might be afforded greater protection under that scenario and used for open space purposes. Further, this future park general location and need is more consistent with the City's adopted "Parks, Recreation and Open Space Plan." Staff posited that its construction would satisfy the applicable requirements of the West Hills Planned Development Overlay ordinance. Staff also recommended that the value of any future dedication of parkland on this site would be applied as a credit against parks system development charges applicable to that land to the west (the subject site).

Staff contends that, with the current proposal for the creation of a 5.1-acre public park, in addition to the 2.1-acre storm water detention facility, this proposal complements the Parks, Recreation and Open Space Plan and satisfies the prior land use decisions in planning such parkland within the subject site. Further, in the February 7, 2006, memo from the City's Park Director, it is made clear that the city fully supports this current plan and is intent on pursuing negotiations for acquisition of that land for public park space. The agreement will likely take the form of a purchase, parks system development charge (SOC) credit, or some combination thereof.

**Response:** The park land discussed above was constructed alongside the rest of the development proposed in Valley's Edge Phase 2. The application does not seek to modify this element of Ord. 4868.



- 
- Water service to McMinnville residents is delivered by a gravity feed system with reservoirs located in the higher elevations of Fox Ridge Road. This system has the capacity to adequately serve development below an elevation of 275 feet. Service above this elevation required one of two improvements. Namely, installation of a pump to move water from existing reservoirs to a higher elevation to new reservoirs thereby allowing the water to gravity feed to an acceptable pressurization minimum and ensure adequate service. Alternatively, development above the 275-foot elevation could be served directly by a pump. However, in the event of a power failure to the pump system, this alternative would leave residents and the Fire Department completely without water in that area until power was restored. Given the alternatives, McMinnville Water & Light is preparing to move forward toward a system to include a pump as well as the construction of new reservoir(s) as may be necessary. In summary, no development within this proposed subdivision would be allowed above the 275-foot elevation without prior approval of McMinnville Water and Light, and presence of water service infrastructure necessary to support the planned development. A condition specific to this concern is included in the staff recommendation.

**Response:** The application does not seek a modification to this finding. The modified PD will include 309 lots located above the 275-foot elevation. The applicant understands that lot development above this elevation will not be allowed until necessary water system improvements are in place.

#### Findings of Fact

1. The applicants are requesting approval of a zone change from an R-1 PD (Single-Family Residential Planned Development) zone to an R-2 PD (Single-Family Residential Planned Development) zone on some 164.1 acres of land. In addition, the applicant is requesting approval of a tentative residential subdivision plat for this same property that would provide for approximately 4.0 acres of multi-family housing, 7.2 acres for park space and detention pond purposes, and 152.9 acres for single-family housing (441 single-family detached residences; 46 single-family attached residences, and 60 apartment units). The subject property is generally located north of Redmond Hill Road, and west of West Second Street and Horizon Drive. The property is further described as Tax Lot 800, Section 24, T. 4 S, R 5 W, W.M.
2. The site is currently zoned R-1 PD (Single-Family Residential Planned Development) and designated as residential on the McMinnville Comprehensive Plan Map.
3. Sanitary sewer and municipal water (below the 275-foot elevation) and power can serve the site. The municipal waste treatment plant has sufficient capacity to handle expected waste flows resulting from development of the property.
4. Northwest Natural Gas, Verizon, Comcast, School District 40, and the McMinnville Fire Department have all recommended approval of the request.

- 
5. Goals and policies from Volume II of the McMinnville Comprehensive Plan of 1981 that are applicable to this request include:

Chapter V Housing and Residential Development

**GOAL V1: TO PROMOTE DEVELOPMENT OF AFFORDABLE, QUALITY HOUSING FOR ALL CITY RESIDENTS.**

**GOAL V2: TO PROMOTE A RESIDENTIAL DEVELOPMENT PATTERN THAT IS LAND-INTENSIVE AND ENERGY-EFFICIENT, THAT PROVIDES FOR AN URBAN LEVEL OF PUBLIC AND PRIVATE SERVICES, AND THAT ALLOWS UNIQUE AND INNOVATIVE DEVELOPMENT TECHNIQUES TO BE EMPLOYED IN RESIDENTIAL DESIGNS.**

General Housing Policies:

- 58.00 City land development ordinances shall provide opportunities for development of a variety of housing types and densities.
- 59.00 Opportunities for multiple-family and mobile home developments shall be provided in McMinnville to encourage lower-cost renter and owner-occupied housing. Such housing shall be located and developed according to the residential policies in this plan and the land development regulations of the City.
- 60.00 Attached single-family dwellings and common property ownership arrangements (condominiums) shall be allowed in McMinnville to encourage land-intensive, cost-effective, owner-occupied dwellings.
- 68.00 The City of McMinnville shall encourage a compact form of urban development by directing residential growth close to the city center and to those areas where urban services are already available before committing alternate areas to residential use.
- 71.1 The City of McMinnville shall designate specific lands inside the urban growth boundary as residential to meet future projected housing needs. Lands so designated may be developed for a variety of housing types. All residential zoning classifications shall be allowed in areas designated as residential on the Comprehensive Plan Map.
- 71.2 The City shall plan for development of the property located on the west side of the City to be limited to a density of six units per acre. It is recognized that it is an objective of the City to disperse multiple-family units throughout the community. In order to provide for multiple-family units on the west side, sewer density allowances or trade-offs shall be allowed and encouraged.

- 
- A. It will be the obligation of the City Planning Director and the City Engineer to determine whether or not the density of each proposed development can exceed six units per acre. School property, floodplain, and parklands will not be included in the density calculations.
  - B. For those developments which have less than six units per acre, the differences between the actual density of the development and the allowed density (six units per acre) may be used as an additional density allowance by other property which is located in the same immediate sewer service area, provided that no peak loading effect would occur which would cause overloading of particular line design capacity, and provided that the zone change application is processed under the provisions of Chapter 17.51 of the zoning ordinance.
  - C. The City will monitor development on the west side of McMinnville to determine which property is available for development at increased densities.
  - D. In no case will a residential development of a higher density than six units per acre be approved if, by allowing the development, some other undeveloped property (which is not included in the application, but which is within the above- mentioned sewer service area) would be caused to develop at less than six units per acre because of lack of sewer capacity.
  - E. Applications for multiple-family zone changes will be considered in relation to the above factors, e.g., sewer line capacity and dispersal of units. In addition, requests for zone changes to multiple-family shall consider those factors set forth in Section 17.72.035 (zone change criteria) of the zoning ordinance. (As amended by Ord. 4218, Nov. 23, 1985)"

71.05 The City of McMinnville shall encourage annexation and rezoning which are consistent with the policies of the comprehensive plan so as to achieve a continuous five-year supply of buildable land planned and zoned for all needed housing types (as amended by Ord. No. 4243, Apr. 5, 1983).

**Planned Development Policies:**

- 73.00 Planned residential developments which offer a variety and mix of housing types and prices shall be encouraged.
- 75.00 Common open space in residential planned developments shall be designed to directly benefit the future residents of the developments. When the open space is not dedicated to or accepted by the City, a mechanism such as a homeowners association, assessment district, or escrow fund will be required to maintain the common area.

- 
- 76.00 Parks, recreation facilities, and community centers within planned developments shall be located in areas readily accessible to all occupants.
  - 78.00 Traffic systems within planned developments shall be designed to be compatible with the circulation patterns of adjoining properties.

Multiple-family Development Policies:

- 86.00 Dispersal of new multiple-family housing development will be encouraged throughout the residentially designated area in the City to avoid a concentration of people, traffic congestion, and noise. The dispersal policy will not apply to areas on the fringes of the downtown "core" and surrounding Linfield College, where multiple-family developments shall still be allowed in properly designated areas.
- 89.00 All multiple-family housing developments shall provide landscaped grounds and large open spaces.
- 91.00 Multiple-family housing developments, including condominiums, boarding houses, lodging houses, rooming houses but excluding campus living quarters, shall be required to access off of arterials or collectors or streets determined by the City to have sufficient traffic carrying capacities to accommodate the proposed development.

Urban Policies:

- 99.1 An adequate level of urban services shall be provided prior to or concurrent with all proposed residential development. Services shall include, but not be limited to:
  - 1. Sanitary sewer collection and disposal lines. Adequate municipal waste treatment plant capacities must be available.
  - 2. Storm sewer and drainage facilities (as required).
  - 3. Streets within the development and providing access to the development, improved to city standards (as required).
  - 4. Municipal water distribution facilities and adequate water supplies (as determined by City Water and Light).
  - 5. Energy distribution facilities and adequate energy resource supplies.

Chapter VI Transportation System

**GOAL VI 1: TO ENCOURAGE DEVELOPMENT OF A TRANSPORTATION SYSTEM THAT PROVIDES FOR THE COORDINATED MOVEMENT OF PEOPLE AND FREIGHT IN A SAFE AND EFFICIENT MANNER.**

Streets:

- 
- 117.00 The City of McMinnville shall endeavor to insure that the roadway network provides safe and easy access to every parcel.
  - 126.00 The City of McMinnville shall continue to require adequate off-street parking and loading facilities for future developments and land use changes.

Chapter VII Community Facilities and Services

**GOAL VII 1: TO PROVIDE NECESSARY PUBLIC AND PRIVATE FACILITIES AND UTILITIES AT LEVELS COMMENSURATE WITH URBAN DEVELOPMENT, EXTENDED IN A PHASED MANNER, AND PLANNED AND PROVIDED IN ADVANCE OF OR CONCURRENT WITH DEVELOPMENT, IN ORDER TO PROMOTE THE ORDERLY CONVERSION OF URBANIZABLE AND FUTURE URBANIZABLE LANDS TO URBAN LANDS WITHIN THE McMINNVILLE URBAN GROWTH BOUNDARY.**

Sanitary Sewer System:

- 136.00 The City of McMinnville shall insure that urban developments are connected to the municipal sewage system pursuant to applicable city, state, and federal regulations.

Storm Drainage:

- 142.00 The City of McMinnville shall insure that adequate storm water drainage is provided in urban developments through review and approval of storm drainage systems, and through requirements for connection to the municipal storm drainage system, or to natural drainage ways, where required.

Water System:

- 144.00 The City of McMinnville, through the City Water and Light Department, shall provide water services for development at urban densities within the McMinnville Urban Growth Boundary.
- 147.00 The City of McMinnville shall continue to support coordination between city departments, other public and private agencies and utilities, and the City Water and Light Department to insure the coordinated provision of utilities to developing areas. The City shall also continue to coordinate with the City Water and Light Department in making land use decisions.

Water and Sewer - Land Development Criteria:

- 151.1 The City of McMinnville shall evaluate major land use decisions, including but not limited to urban growth boundary, comprehensive plan amendment, zone changes, and subdivisions using the criteria outlined below:

1. Sufficient municipal water system supply, storage and distribution facilities, as determined by the City Water and Light Department, are available or can be made available, to fulfill peak demands and insure fire flow requirements and to meet emergency needs.
2. Sufficient municipal sewage system facilities, as determined by the City Public Works Department, are available, or can be made available, to collect, treat, and dispose of maximum flows of effluents.
3. Sufficient water and sewer system personnel and resources, as determined by the Water and Light Department and City, respectively, are available, or can be made available, for the maintenance and operation of the water and sewer systems.
4. Federal, state, and local water and wastewater quality standards can be adhered to.
5. Applicable policies of the Water and Light Department and the City relating to water and sewer systems, respectively, are adhered to.

**Parks and Recreation:**

**GOAL VII 3: TO PROVIDE PARKS AND RECREATION FACILITIES, OPEN SPACES, AND SCENIC AREAS FOR THE USE AND ENJOYMENT OF ALL CITIZENS OF THE COMMUNITY.**

163.00 The City of McMinnville shall continue to require land, or money in lieu of land, from new residential developments for the acquisition and/or development of parklands, natural areas, and open spaces.

**Chapter VIII Energy**

**GOAL VIII 2: TO CONSERVE ALL FORMS OF ENERGY THROUGH UTILIZATION OF LAND USE PLANNING TOOLS.**

178.00 The City of McMinnville shall encourage a compact urban development pattern to provide for conservation of all forms of energy.

**Chapter IX Urbanization**

**GOAL IX 1: TO PROVIDE ADEQUATE LANDS TO SERVICE THE NEEDS OF THE PROJECTED POPULATION TO THE YEAR 2000, AND TO INSURE THE CONVERSION OF THESE LANDS IN AN ORDERLY, TIMELY MANNER TO URBAN USES.**

6. The following sections of the McMinnville Zoning Ordinance (No. 3380) are applicable to the request:

**General Provisions:**

17.03.020 **Purpose.** The purpose of this ordinance is to encourage appropriate and orderly physical development in the City through standards designed to protect residential, commercial, industrial, and civic areas from the intrusions of incompatible uses; to provide opportunities for

---

establishments to concentrate for efficient operation in mutually beneficial relationship to each other and to shared services; to provide adequate open space, desired levels of population densities, workable relationships between land uses and the transportation system, and adequate community facilities; to provide assurance of opportunities for effective utilization of the land resource; and to promote in other ways public health, safety, convenience, and general welfare."

**Planned Developments:**

17.51.030 Procedure. The following procedures shall be observed when a planned development proposal is submitted for consideration: [ . . ]

C. The Commission shall consider the preliminary development plan at a meeting at which time the findings of persons reviewing the proposal shall also be considered. In reviewing the plan, the Commission shall need to determine that:

- (1) There are special physical conditions or objectives of a development which the proposal will satisfy to warrant a departure from the standard regulation requirements;
- (2) Resulting development will not be inconsistent with the comprehensive plan objectives of the area;
- (3) The development shall be designed so as to provide for adequate access to and efficient provision of services to adjoining parcels (as amended by Ordinance No. 4242, April 5, 1983);
- (4) The plan can be completed within a reasonable period of time;
- (5) The streets are adequate to support the anticipated traffic, and the development will not overload the streets outside the planned area;
- (6) Proposed utility and drainage facilities are adequate for the population densities and type of development proposed;
- (7) The noise, air, and water pollutants caused by the development do not have an adverse effect upon surrounding areas, public utilities, or the City as a whole.

**Review Criteria:**

17.72.035 Review Criteria. An amendment to the official zoning map may be authorized, provided that the proposal satisfies all relevant requirements of this ordinance, and also provided that the applicant demonstrates the following:

- A. The proposed amendment is consistent with the goals and policies of the comprehensive plan;
- B. The proposed amendment is orderly and timely, considering the pattern of development in the area, surrounding land uses, and any changes which may have occurred in the neighborhood or community to warrant the proposed amendment;
- C. Utilities and services can be efficiently provided to service the proposed uses or other potential uses in the proposed zoning district.

When the proposed amendment concerns needed housing (as defined in the McMinnville Comprehensive Plan and state statutes), criterion "B" shall not apply to the rezoning of land designated for residential use on the plan map.

In addition, the housing policies of the McMinnville Comprehensive Plan shall be given added emphasis and the other policies contained in the plan shall not be used to: (1) exclude needed housing; (2) unnecessarily decrease densities; or (3) allow special conditions to be attached which would have the effect of discouraging needed housing through unreasonable cost or delay."

7. The following sections of the West Hills Planned Development Overlay (McMinnville Ord. No. 4132) are applicable to the request:

Section 4. Policies. The following policies shall apply to the subject property:

- (a) The goals and policies of the McMinnville Comprehensive Plan, Volume II, and applicable regulations and standards in Volume III, and other City codes shall be adhered to.
- (c) The density of any proposed development shall be set by the zoning classification.
- (d) The wooded portions of the site shall be incorporated into the development of the property so that they will be left substantially intact and with consideration given to the preservation of wildlife habitat. (Amended by Ordinance No. 4225, November 23, 1982)
- (e) Scenic values of the property, as viewed from the City towards the site, shall be emphasized and enhanced in residential development designs. This should be accomplished by encouragement of a design which clusters housing in suitable areas while reserving large open areas. This policy shall not preclude incorporation of single-family structures in development designs.

Section 5. Procedures for Review.



- 
- (a) The Planning Commission shall review proposals on the subject property to determine the acceptability of the plans. Neglect or failure of the applicants to take reasonable account of policies (a) through (e) in Section 4 shall constitute the Commission's sole basis for disapproving a proposal provided all applicable City codes are adhered to.

#### CONCLUSIONARY FINDINGS FOR APPROVAL

1. The subject request complies with goals and policies of the McMinnville Comprehensive Plan, 1981 (Finding of Fact No. 5) as follows:

- (a) Goal V-1 and V-2 and Policy 68.00 are satisfied by the request as a variety of additional housing stock will be added to the City (60 multi-family housing units; 46 common wall homes; and, 441 single-family homes); the application of the Uniform Building Code guarantees the quality of the housing; and an urban level of services is available to the development. According to the applicant, the development will provide housing for a variety of users, from entry level single-family housing and multi-family apartments in Valley's Edge Phase 2, to upper end housing in Hillcrest and West Hills subdivisions.

**Response:** This PD modification will continue to satisfy Goals 1 and 2 of Policy 68.00 by establishing a variety of additional housing units for existing and future residents of the City. 68 multi-family units were constructed in Valley's Edge Phase 2. Additionally, the application includes 42 lots intended for attached single-family residences in the Northridge Phase and another 446 single-family detached lots in the remaining phases of the Hillcrest PD.

- (b) Policies 58.00 and 59.00 are satisfied by the request as multi-family and townhome housing, which is a type of housing that is presently in relatively short supply, will be provided, thereby providing an opportunity for development of a variety of housing types and densities. This housing will be developed in accordance with applicable City ordinances, planned development requirements, and conditions of this approval.

**Response:** This PD modification will continue to satisfy Policies 58.00 and 59.00 by establishing a variety of additional housing units for existing and future residents of the City. 68 multi-family units were constructed in Valley's Edge Phase 2. Additionally, the application includes 42 lots intended for attached single-family residences in the Northridge Phase and another 446 single-family detached lots in the remaining phases of the Hillcrest PD.

- (g) Policy 60.00 is satisfied in that some 43 common wall units are proposed within the Northridge plat; an additional three such units would be located at

---

street corner locations elsewhere in the development. These units, when constructed, should provide cost-effective, owner-occupied housing for the residents of McMinnville. This housing type is in relatively short supply in McMinnville.

**Response:** This PD modification will continue to satisfy Policy 60.00. The application includes 42 lots intended for attached single-family residences in the Northridge Phase and another 446 lots in the remaining phases of the Hillcrest PD.

- (h) Policy 71.00 is satisfied in that the subject site is planned for residential use, as designated on the Comprehensive Plan Map, and the proposal to rezone the subject site to R-2 PD would allow for the construction of multi-family dwellings and commonwall housing in a planned development which, when built out, will consist primarily of single-family dwellings.

**Response:** This PD modification will continue to satisfy Policy 71.00 since the remaining development phases will primarily consist of single-family dwellings.

- (i) The various subdivisions that comprise this development will build out at gross densities ranging from 2.3 dwelling units per acre in the relatively steep West Hills Phases 1 - 5 areas to 6.5 dwelling units per acre in the Northridge subdivision (commonwall lots). Overall, the development site will average 3.6 dwelling units per gross acre. Plan policy 71.01, which limits west side density to a maximum of six dwelling units per acre, is therefore satisfied by the subject zone change request.

**Response:** This PD modification will continue to satisfy Policy 71.01 because the site density will average 3.7 dwelling units per gross acre.

- (j) Policy 71.05 is satisfied by the request in that the rezoning of this property from R-1 to R-2, and its subsequent development consistent with the plan submitted by the applicant, would increase the number of housing units that could be realized in this area. Additional engineering and verification of contours may result in additional building lots being platted, which this approval recognizes and supports up to the maximum permitted R-2 density. This proposal would move the city closer to the creation of a continuous five-year supply of land for all needed housing types.

**Response:** This application does not seek to modify the approved zoning authorized through Ord. 4868. The application therefore will continue to satisfy Policy 71.05.

- (k) Policy 73.00 is satisfied in that there is a variety of housing types offered by this proposal, including multi-family, single-family detached, and single-

---

family attached. Lot sizes within the development, and type of housing proposed, should foster a wide variety of prices, as well.

**Response:** This PD modification will continue to satisfy Policy 73.00 because the overall Hillcrest PD will offer a variety of housing types, including multi-family (constructed as part of Valley's Edge Phase 2), single-family attached, and single-family detached dwellings. Additionally, the range of lot sizes will promote a variety of housing types in meeting demand across a broad spectrum of age and income groups.

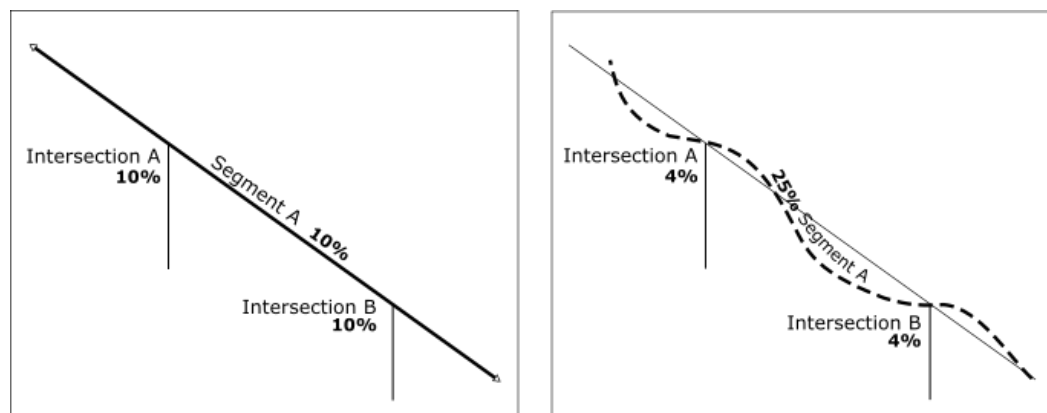
- (l) As part of the development of this subdivision, the applicant intends to offer for sale to the City approximately 7.2 acres of land for public park and open space use (5.1 acres of this is for detention pond purposes). This parkland is located within the southeast portion of the subject site and, when developed, will provide direct benefit to the adjacent multi-family housing and single-family residential neighborhoods within this development and adjoining lands. In addition, as a condition of this approval, useable open space within the multi-family complex is to be provided by the developer. Policies 75.00 and 76.00 are therefore satisfied.

**Response:** The park and open space described above was developed with Valley's Edge Phase 2. This public amenity will directly benefit the City and nearby uses. Policies 75.00 and 76.00 are therefore satisfied.

- (m) The street system proposed by the applicant, as depicted on the master plan, is designed in a manner that is compatible with the circulation patterns of adjoining properties and accounts for the steep topography present within this site. The street system provides for the extension of West Second Street, Horizon Drive, and Redmond Hill Road. Policy 78.00 is satisfied by this proposal.

**Response:** This PD modification is necessary due to new ADA intersection standards enacted since the passage of Ord. 4868. This new requirement to design public street intersections with a maximum grade not exceeding 5% (4% was conservatively shown to allow for flexibility due to construction tolerances) will not only affect the intersections themselves, but have a cascading effect on the overall site layout. The original Hillcrest PD approved intersections where grades exceeded 10% in many cases. As shown in Figure 1 below, street segments between these intersections would include grades exceeding 20% or more if the intersections were simply flattened to meet the new ADA requirements.

**Figure 1** Impact to corresponding street grades with shallow intersection grade



This is because the American Association of State Highway Transportation Officials (AASHTO) specifies a maximum vertical curvature that public streets may be built to. This specification ensures that public streets allow sufficient sight distance as vehicles move up and down steep roadways, as well as so that vehicles do not high-center on any portion of a steep vertical curve.

The most practical solution for addressing this situation in the context of the Hillcrest PD is to eliminate several intersections and subsequently increase the length of the street segments between intersections. This has the corresponding effect of requiring a new lot configuration to obtain access from these reconfigured streets, and makes it necessary to seek an adjustment to allow street grades of up to 15% along certain local street segments.

- (n) Policy 86.00 is satisfied in that, as part of the City's dispersal policy, all large scale residential subdivisions have been required to include land set aside for multi-family development. This insures that the multi-family uses will be dispersed throughout the larger scale single-family developments. The subject parent parcel is some 164.1 acres in size. The majority of the site will be developed with single-family attached and detached housing as may be permitted through this and future development application(s) and approval(s). The zone change insures that multi-family uses will be included as part of that large scale development.

**Response:** As mentioned above, a 68-unit, multi-family residential development was constructed as part of the Valley's Edge Phase 2 plat. The application does not seek to modify the zoning established in Ord. 4868.

- (o) Policy 89.00 will be satisfied at the time development occurs on the subject site in that extensively landscaped grounds shall be required as a condition of approval of this zone change and subsequent multi-family housing development. The McMinnville zoning ordinance requires a minimum of 25 percent of multi-family

development to be landscaped. In addition, a 7.2-acre public park (open space) would be provided within the southeast portion of the proposed development.

**Response:** A 68-unit, multi-family development (Valley Pointe Apartments) was constructed as part of the Valley's Edge Phase 2 plat. As shown in Figure 2 below, the multi-family development includes significant perimeter, interior, and parking lot landscaping. Additionally, the development borders the eastern side of a thoughtfully-landscaped, large public park and open space.

**Figure 2** Aerial Photo of Valley Pointe Apartments



Source: 2016 Google

- (p) Policy 91.00 is satisfied by the request in that all driveways from the proposed multi-family development will access onto a street designed to minor collector standards (Redmond Hill Road).

**Response:** The Valley Pointe Apartments multi-family development takes primary access/egress to/from NW 2nd Street, which is classified as a minor collector in the City's Transportation System Plan (TSP). Valley Pointe has a secondary access/egress from SW Blue Heron Court, which is a local street. This application does not seek to modify access to or from the existing multi-family development.

- (q) Goal VI-1 and Policy 117.00 are satisfied as the proposed development will be required to develop to city standards in terms of off-street parking, street construction, and sidewalk improvements as required by this planned development and the McMinnville Zoning Ordinance. As noted previously, the proposed street system will be

---

designed to provide safe and easy access to every parcel, and will provide connection to adjacent properties. The applicant's traffic impact study indicates that, at full buildout, intersections adjacent to the proposed development will continue to operate at Level of Service "B" or "C," provided certain improvements are made to the West Second and Hill Road, and Redmond Hill Road and West Second Street intersections following the construction of the 2701 home within the subject site.

Such a condition is part of this zone change approval. Streets within and adjacent to the subject site have adequate capacity to accommodate the expected trips from this project

**Response:** As shown in Exhibit A, all streets will be constructed in accordance with applicable local and collector street standards, and the revised street network will continue to provide connections to abutting properties outside of the Hillcrest PD site. Exhibit F (Traffic Analysis Update Memo) indicates that at full buildout, intersections adjacent to the Hillcrest PD will continue to operate at acceptable levels.

- (r) Policy 126.00 will be satisfied in that approval of the multi-family housing site will require demonstration of compliance with off-street parking standards prior to release of building permits. Additional off-street parking is required of each single-family attached and detached home as a condition of building permit approval, consistent with the standards provided in the McMinnville Zoning Ordinance.

**Response:** The application does not seek to modify requirements for off-street parking for single-family or multi-family development throughout the Hillcrest PD.

- (s) Goal VII-1 and Policies 99.00, 136.00, 144.00, and 151.00 are satisfied by the request as adequate levels of sanitary sewer collection, storm sewer and drainage facilities, and energy distribution facilities, are all available to the site, and the site can be served by Hill Road, a designated minor arterial, and West Second, a designated major collector, streets. In addition, the sewage treatment plant easily has capacity to serve the project, and all municipal water and sanitary sewer systems guarantee adherence to federal, state, and local quality standards. Municipal water service can be provided to those portions of the subject site located below the 275-foot elevation; the construction of an upper level water system will be required prior to the platting of lots located above this elevation, as conditioned herein.

**Response:** Adequate levels of sanitary sewer collection, storm sewer and drainage facilities, and energy distribution facilities will remain available to serve the Hillcrest PD. Additionally, westerly extensions of NW 2nd Street and Horizon Drive will provide the primary means

---

of access into and out of the site. Consistent with the approval in Ord. 4868, water service will be available to all portions of the site located below the 275-foot elevation line. Portions of the site above this elevation will rely on the future construction of additional water infrastructure improvements before they may be platted.

- (t) Policies 142.00 and 147.00 will be satisfied by the request in that the subject site will be converted in an orderly manner to urbanizable standards through the coordinated extension of utilities, and as conditioned by this planned development. In addition, adequate storm water system will be designed and constructed to the satisfaction of the City Engineer when the property is developed.

**Response:** Policies 142.00 and 147.00 remain satisfied since development on this site will ensure the coordinated extension of utilities, including adequate stormwater facilities.

- (u) Goals VII-3 and Policy 163.00 are satisfied by this request in that the applicant intends to provide parkland within this development for public use. This park, when developed, will benefit the adjacent west McMinnville neighborhoods.

**Response:** The park land discussed above was constructed as part of the Valley's Edge Phase 2 plat and can be seen in Figure 2 above. Therefore, Goal VII-3 and Policy 163.00 are satisfied.

- (v) Goal VIII-2 and Policy 178.00 are satisfied by the request as the development proposes a compact urban development pattern at a density higher than what would be permitted under the site's current R-1 zone. In addition, the proposal integrates commonwall and multi-family housing, thereby further increasing density and conserving energy. Utilities presently abut the property or are nearby and can be extended to the site in a cost effective and energy efficient manner, as required by an approved phasing plan for the site.

**Response:** The application does not seek to modify the mix of housing types or result in any measurable change in overall residential density from what is approved in Ord. 4868. Additionally, utilities will remain located nearby and can be extended to serve future development through the site.

- (w) Goal IX-1 is satisfied since the property is within the McMinnville Urban Growth Boundary and all urban services are available to the site.

**Response:** The site will remain within the City and its Urban Growth Boundary (UGB). As mentioned above, urban services will be available to the site. Also, as previously mentioned, development above the 275-foot elevation line will depend on future water system improvements, which will be provided upon the conditioning of future lot platting above this elevation by Ord. 4868. Goal IX-1 is therefore satisfied.

---

2. The subject request complies with the applicable requirements of the McMinnville Zoning Ordinance (Finding of Fact No. 6) as follows:

(a) Section 17.03.020 is satisfied by the request for the reasons enumerated in Conclusionary Finding for Approval No. 1.

**Response:** Please see the response to Conclusionary Finding for Approval No. 1 above.

(b) The applicable sections of Section 17.51.030 are also satisfied by the request as follows:

(1) There are special conditions and objectives which warrant a departure from the standard regulation requirements, including the need to condition the future development of the multi-family lot, and townhome lots, permit additional residential housing types beyond that which would be permitted under the provisions of the R-2 zone standards, and address slope and tree cover issues. In addition, the West Hills, of which the site is a part, is an area encumbered by a planned development overlay. The overlay requires that all zoning be processed under Chapter 17.51 of the zoning code.

**Response:** While the multi-family component and a portion of the single-family development originally approved in Ord. 4868 has been constructed, the physical and environmental constraints remain. The application does not seek to modify any of the conditions of approval or zoning authorized through Ord. 4868.

(2) As noted in the conclusionary findings for approval, the proposed development will be consistent with the comprehensive plan objectives for the area.

**Response:** See responses under the Conclusionary Findings section above.

(3) Adequate access and services will be provided to the proposed development through the construction of streets and sidewalks.

**Response:** As mentioned above, adequate access and services will be provided to the development through the construction of streets and sidewalks.

(4) The project, if approved, is expected to be completed within the next 10 to 15 years. This is a reasonable period to complete a project of this scale.

**Response:** Ord. 4868 was approved on April 24, 2007. Shortly thereafter, the U.S. housing market experienced one of the most devastating recessions in modern times. Excluding the phases already developed, the Hillcrest PD will now include 15 phases. Three-hundred-and-nine lots in modified PD lie above the 275-foot elevation line, whereby development



---

will be predicated on the provision of new water system infrastructure for which the timing of implementation is unknown. Ord. 4868 did not establish a timeline for the completion of the various phases of the Hillcrest PD. This application does not seek to modify the approved phasing timeline.

- (5) As noted in the conclusionary findings for approval, the existing and planned streets are adequate to support the anticipated traffic.

**Response:** As discussed above, all new streets will be constructed to the City's local and minor collector street standard and will therefore be adequate to support anticipated future traffic.

- (6) Utility facilities presently serving the area are adequate to serve the proposed development of the subject site.

**Response:** As discussed above, utilities serving the site will be adequate for serving future development on the site. Also, as noted above, development of lots located above the 275-foot elevation mark will rely on the provision of future water system improvements capable of supporting these homes.

- (7) No air, noise or water pollutants will be generated by the proposed development that are greater than those generated by any other residential development.

**Response:** The Hillcrest PD is expected to generate air, noise, and water impacts to a degree similar to typical residential development.

- (8) All of the requirements of Section 17.51.030 are satisfied by this request.

**Response:** As explained throughout this narrative, the PD modification continues to satisfy the PD criteria in 17.51.030.

- (c) Section 17.72.035 is satisfied by the request as the proposed change is consistent with the applicable goals and policies of the McMinnville comprehensive plan (see Conclusionary Finding for Approval No. 1), and utilities and services can be provided to the site. The request for "needed" housing eliminates the issues addressed in criterion "B" from consideration.

**Response:** Please see the response under Conclusionary Finding for Approval No. 1 above.

- 3. The subject request complies with the requirements of the West Hills Planned Development Overlay (Finding of Fact No. 7) as follows:
  - (a) The applicable goals and policies of the McMinnville Comprehensive Plan, Volume 1 1 , have been satisfied as is enumerated in conclusionary Finding for Approval No. 1, above.

- 
- (b) The density of the proposed development (overall density of 3.6 dwelling units per acre) falls within the limitations of the R-2 zone, and satisfies the requirements of plan policy 71.01.
  - (c) The submitted aerial photograph of the subject site delineates the boundary between conifer trees that were planted by the applicants for commercial harvesting and those hardwood trees (maples and oaks) that are native to the site. The applicants intend to clear or thin the commercially planted trees, as they were not harvested when originally planted and have overgrown to an unhealthy density.

The trees to the west of this delineation line are native to the site and exist in an area that is approximately 44 acres in size. The area of the public rights-of-ways encumbers approximately 21.6% (9.5 acres) of this wooded area.

On the adjacent properties to the west and south of this naturally wooded area are more naturally wooded areas. The tree density and canopy coverage is noticeably higher on the properties to the west and south of the subject property, as shown on the submitted aerial.

Within the subject property, the tree density and canopy coverage is uniform, but lower, with a greater spacing within the naturally wooded area on the subject property. This lower density is likely attributable to thinning efforts performed by the Applicants in the past to provide a healthier, better spaced tree canopy.

Rural residential development has occurred within some of the naturally wooded area to the south of the subject property. These naturally wooded areas to the south of the subject property have recently been brought into the City's UGB through partial approval of the City's UGB expansion request (Redmond Hill Road exception area).

Within the West Hills Phases 1, 3, 4 and 5 the applicants propose to develop larger residential home sites along a public street system as shown on the submitted tentative subdivision plan. The applicants have considered clustering development as requested in the West Hills Planned Development Overlay. However, because the tree coverage is uniform, cluster housing would save trees in undeveloped areas but require greater tree removal within the clustered housing areas. A second issue with clustering housing is developing a street system to navigate the 12% to 25% slopes in this area of the subject property that avoids dead end streets and provides the required street connectivity.

---

To minimize tree impacts during public infrastructure and housing construction the applicants are conditioned as part of this subdivision's approval to enact the following development policies for this naturally wooded portion of the site:

Perform detailed tree survey prior to submitting engineered construction drawings for public street and utility improvements within the site's naturally wooded area. Tree survey to be completed by licensed surveyor and survey will show horizontal location of tree, provide tree species and size of tree (DBH).

Limit clearing activities to the footprint of the public right-of-way and adjacent public utility easement.

Meander sidewalks where significant or desirable hardwood trees can be avoided. Consider adjusting street alignment to avoid significant or desirable trees.

Avoid mass grading within residential lot areas as this leads to clearing large areas of vegetation prior to placing engineering fill embankments.

Plant street trees as required by City code.

Enact CC&Rs that require each home builder I lot developer to work with City Planning Dept. staff to shift house footprint on the lot, within the allowable setbacks, to avoid impact to significant or desirable hardwood trees. Because the lots in the West Hills phases are large, there exists the ability to shift home sites on the lots.

Enact CC&Rs that require each home builder / lot developer to replant trees on the lots based upon the number of existing natural trees on the lot and the number of natural trees to be removed to accommodate home construction. Proposed CC&Rs would be as follows:

Plant one new tree for every tree removed on lots with five or less natural trees, or plant one tree for every one and one-half trees removed on lots with six or more natural trees.

Given the above findings, the City finds that Sections 4 (d) of Ordinance No. 4132 is satisfied.

**Response:** Modifications to the configuration of streets and lots included in this application will not have an appreciable impact to native trees on site. Furthermore, the application does not seek to modify the above conditions of approval.

(d) As "viewed from the city" nearly all of the subject site is unseen. In addition, development proposed for the lower elevations of the subject site include

public park and open space, and multi-family housing, both of which require extensive landscaping and, as to the latter, additional design review by City staff. Development of this project requires the planting of trees, and the use of practices that would retain as many existing trees as is practicable, thereby enhancing the visual quality of the West Hills area. Section 4(e) of Ordinance No. 4132 is satisfied.

**Response:** The application does not modify the accuracy of the above finding.

**CITY OF MCMINNVILLE ZONING ORDINANCE – TITLE 17**

Title 17 Zoning

Chapter 17.53 LAND DIVISION STANDARDS

17.53.101 Streets

- L. **Grades and curves.** Grades shall not exceed six (6) percent on arterials, 10 (ten) percent on collector streets, or 12 (twelve) percent on any other street. Centerline radii or curves shall not be less than 300 feet on major arterials, 200 feet on secondary arterials, or 100 feet on other streets, and shall be to an even 10 (ten) feet. Where existing conditions, particularly topography, make it otherwise impractical to provide buildable lots, the Planning Commission may accept steeper grades and sharper curves.

**Response:** Per Subsection L above, local streets may not exceed a grade of 12% unless the Planning Commission determines that existing conditions, such as existing topography, warrant steeper grades. This PD application includes a request for an adjustment to authorize street grades of up to 15% for limited sections of the streets listed in Table 1 below (see also Exhibit A). This adjustment is the minimum necessary to allow project conformance to the preliminary subdivision plat approval vested in Ord. 4868 while simultaneously integrating new ADA requirements for crosswalks at street intersections, which may not exceed a maximum grade of 5%.

**Table 2** Streets in modified PD where adjustment is requested

Street Name	Functional Classification	Maximum Grade allowed per MZO 17.53.101.L	Maximum Proposed Grade
NW Mt. Ashland Lane	Local Street		15%
Road D	Local Street		15%
C Loop	Local Street		15%
Road G	Local Street		12.01-14.99%
Road D	Local Street		12.01-14.99%
Road F	Local Street		15%
Road E	Local Street		15%

---

17.53.103 Blocks

- A. General. The length, width, and shape of blocks shall take into account the need for adequate lot size and street width and shall recognize the limitations of the topography.
- B. Size. No block shall be more than 400 feet in length between street corner lines or have a block perimeter greater than 1,600 feet unless it is adjacent to an arterial street, or unless the topography or the location of adjoining streets justifies an exception. The recommended minimum length of blocks along an arterial street is 1,800 feet.

**Response:** As shown in Exhibit A, certain blocks included in this application exceed the length and perimeter standard in Subsection B. above. There are approximately 31 block segments and 11 block perimeters that do not satisfy the standard in B. above. As discussed above, the elimination of public street intersections was necessary to accommodate new ADA requirements that have been enacted since the passage of Ord. 4868. The removal of these intersections subsequently created longer block lengths and perimeters. To minimize block length and facilitate pedestrian mobility throughout the site, the application includes several mid-block pedestrian accessways. Nonetheless, the application must seek an adjustment to these standards through the City's PD process.

- C. Easements.
  - 1. Utility lines. Easements for sewers, water mains, electric lines, or other public utilities shall be dedicated whenever necessary. The easements shall be at least 10 (ten) feet wide and centered on lot lines where possible, except for utility pole tieback easements which may be reduced to six (6) feet in width. Easements of 10 (ten) feet in width shall be required along all rights-of-way. Utility infrastructure may not be placed within one foot of a survey monument location noted on a subdivision or partition plat. The governing body of a city or county may not place additional restrictions or conditions on a utility easement granted under this chapter.

**Response:** The applicant is aware that public- and franchise utility easements will be necessary prior to final plat approval.

- 2. Water courses. If a subdivision is traversed by water courses such as a drainage way, channel, or stream, there shall be provided a storm unit easement or drainage right-of-way conforming substantially with the lines of the water course and of such width as will be adequate for the purpose, unless the water course is diverted, channeled, or piped in accordance with plans approved by the City Engineer's office. Streets or parkways parallel to major water courses may be required.

**Response:** As shown in Exhibit A the subdivision is traversed by several water courses that generally run north to south through the site. The modified PD site layout includes lots that backup

---

against these water courses and where the resource is located in a variable width easement at the rear of these lots.

3. Pedestrian ways. When desirable for public convenience, safety, or travel, pedestrian ways not less than 10 (ten) feet in width may be required to connect to cul-de-sacs, to pass through unusually long or oddly shaped blocks, to connect to recreation or public areas such as schools, or to connect to existing or proposed pedestrian ways.

**Response:** As shown in Exhibit A and as mentioned above, the application includes several mid-block pedestrian accessways that are intended to connect cul-de-sacs with nearby streets and/or minimize travel distance along unusually long or oddly shaped blocks.

#### Chapter 17.74 REVIEW CRITERIA

17.74.070 Planned Development Amendment - Review Criteria. An amendment to an existing planned development may be either major or minor. Minor changes to an adopted site plan may be approved by the Planning Director. Major changes to an adopted site plan shall be processed in accordance with Section 17.72.120, and include the following:

- An increase in the amount of land within the subject site;
- An increase in density including the number of housing units;
- A reduction in the amount of open space; or
- Changes to the vehicular system which results in a significant change to the location of streets, shared driveways, parking areas and access.

An amendment to an existing planned development may be authorized, provided that the proposal satisfies all relevant requirements of this ordinance, and also provided that the applicant demonstrates the following:

- A. There are special physical conditions or objectives of a development which the proposal will satisfy to warrant a departure from the standard regulation requirements;

**Response:** Responses to this criterion can be found under the Conclusionary Findings section above. With regard to the street grade adjustment, adherence to ADA intersection grade requirements in the context of this relatively steep site, results in portions of certain streets located throughout the site with grades of up to 15%.

- B. Resulting development will not be inconsistent with the Comprehensive Plan objectives of the area;

**Response:** Responses to this criterion can be found under the Conclusionary Findings section above. With regard to the street grade adjustment, the resulting development will comply with new ADA requirements that have been enacted since the original approval was granted.

---

C. The development shall be designed so as to provide for adequate access to and efficient provision of services to adjoining parcels;

**Response:** Responses to these criteria can be found under the Conclusionary Findings section above. With regard to the street grade adjustment, the resulting development will comply with new ADA requirements that have been enacted since the original approval was granted. Additionally, feedback from City Planning, Engineering, and Fire Department staff has resulted in short stretches of steep road segments and residential fire suppression systems to ensure fire and other local services are accommodated. Finally, although connections to adjacent parcels have been slightly relocated as a result of the revised site circulation, connections to adjacent parcels remain a key feature of the PD.

D. The plan can be completed within a reasonable period of time;

**Response:** Responses to these criteria can be found under the Conclusionary Findings section above.

E. The streets are adequate to support the anticipated traffic, and the development will not overload the streets outside the planned area;

**Response:** Responses to these criteria can be found under the Conclusionary Findings section above. With regard to the street grade adjustment, the applicant and their consultant have met with City Planning, Engineering, and local Fire Department staff to receive feedback regarding street grades exceeding 12% in the areas indicated in Exhibit A. Feedback from these agencies resulted in the following revisions to the applicant's preliminary subdivision plans:

1. Street segments designed at between 12-15% grade are limited to a maximum distance of 200 feet. This recommendation from the Fire Department is intended to ensure that continuous sections of steep street grades include flat benches to facilitate stopping and starting or slow movement of fire apparatus in these areas.
2. Future homes on lots abutting streets accessed via street segments exceeding 12% grade will be required to include fire sprinklers. The Fire Department recommended this as a condition of approval to ensure street grades are not an impediment to fire suppression.

The feedback received from these City agencies directly responds to the desire to ensure the subdivision and future homes on these lots can exist in harmony with the overall community health and well-being objectives outlined in the City's Zoning Ordinance, engineering design standards, and state and local fire standards. The applicant supports the feedback provided by these City agencies and accepts the suggested conditions of approval.

Exhibit F confirms that streets and anticipated mitigation efforts are adequate to support anticipated traffic from the development.

F. Proposed utility and drainage facilities are adequate for the population densities and type of development proposed;

**Response:** Responses to these criteria can be found under the Conclusionary Findings section above.

---

G. The noise, air, and water pollutants caused by the development do not have an adverse effect upon surrounding areas, public utilities, or the city as a whole.

**Response:** Responses to these criteria can be found under the Conclusionary Findings section above.

#### **IV. Conclusion**

The required findings have been made and this written narrative and accompanying documentation demonstrate that the application is consistent with the applicable provisions of the McMinnville Zoning Ordinance. The evidence in the record is substantial and supports approval of the application. Therefore, the applicant respectfully requests that the City approve this application.





---

# Exhibit A: Preliminary Development Plans

---

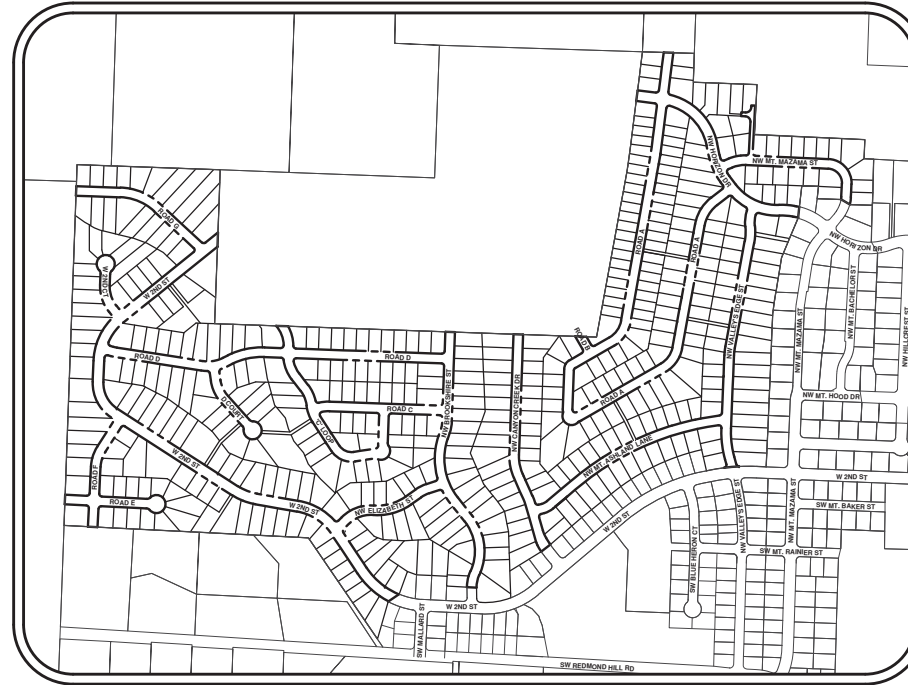
# HILLCREST PLANNED DEVELOPMENT

## MASTER PLAN UPDATE



VICINITY MAP

1" = 750'



SITE MAP

1" = 500'

### LEGEND

	EXISTING	PROPOSED		EXISTING	PROPOSED
DECIDUOUS TREE			STORM SEWER CLEAN OUT		
CONIFEROUS TREE			STORM SEWER CATCH BASIN		
FIRE HYDRANT			STORM SEWER AREA DRAIN		
WATER BLOWOFF			STORM SEWER MANHOLE		
WATER METER			GAS METER		
WATER VALVE			GAS VALVE		
DOUBLE CHECK VALVE			GUY WIRE ANCHOR		
AIR RELEASE VALVE			POWER POLE		
SANITARY SEWER CLEAN OUT			POWER VAULT		
SANITARY SEWER MANHOLE			POWER JUNCTION BOX		
SIGN			POWER PEDESTAL		
STREET LIGHT			COMMUNICATIONS VAULT		
MAILBOX			COMMUNICATIONS JUNCTION BOX		
			COMMUNICATIONS RISER		

	EXISTING	PROPOSED
RIGHT-OF-WAY LINE		
BOUNDARY LINE		
PROPERTY LINE		
CENTERLINE		
DITCH		
CURB		
EDGE OF PAVEMENT		
EASEMENT		
FENCE LINE		
GRAVEL EDGE		
POWER LINE		
OVERHEAD WIRE		
COMMUNICATIONS LINE		
FIBER OPTIC LINE		
GAS LINE		
STORM SEWER LINE		
SANITARY SEWER LINE		
WATER LINE		

### SHEET INDEX

P-00 COVER SHEET WITH SITE AND VICINITY MAPS  
 P-01 MASTER PLAN LAYOUT WITH AERIAL  
 P-02 STREET PLAN WITH ROAD GRADE  
 P-03 MASTER PLAN OVERLAY

### PRELIMINARY SUBDIVISION PLAT

SU-00 PRELIMINARY SUBDIVISION PLAT OVERVIEW  
 SU-01 PRELIMINARY SUBDIVISION PLAT  
 SU-02 PRELIMINARY SUBDIVISION PLAT  
 SU-03 PRELIMINARY SUBDIVISION PLAT

### PRELIMINARY GRADING PLAN

GR-00 PRELIMINARY GRADING OVERVIEW  
 GR-01 PRELIMINARY GRADING PLAN  
 GR-02 PRELIMINARY GRADING PLAN  
 GR-03 PRELIMINARY GRADING PLAN

### PRELIMINARY STREET PLAN

ST-00 PRELIMINARY STREET PLAN OVERVIEW  
 ST-01 PRELIMINARY STREET PLAN  
 ST-02 PRELIMINARY STREET PLAN  
 ST-03 PRELIMINARY STREET PLAN

### PRELIMINARY STREET PROFILES

SP-00 PRELIMINARY STREET PROFILES  
 SP-01 PRELIMINARY STREET PROFILES  
 SP-02 PRELIMINARY STREET PROFILES  
 SP-03 PRELIMINARY STREET PROFILES  
 SP-04 PRELIMINARY STREET PROFILES  
 SP-05 PRELIMINARY STREET PROFILES

### DEVELOPER/OWNER

WEST HILLS PROPERTIES LLC  
 CONTACT: HOWARD ASTER  
 PO BOX 731  
 MCMINNVILLE, OR 97128  
 PHONE: 503-434-0425

### ENGINEERING/ SURVEYING/LANDSCAPE ARCHITECTURE FIRM

AKS ENGINEERING & FORESTRY, LLC  
 CONTACT: PAUL SELLKE, PE, GE  
 12965 SW HERMAN ROAD, SUITE 100  
 TUALATIN, OR 97062  
 PH: 503-563-6151  
 FAX: 503-563-6152

### GEOTECHNICAL ENGINEER

GEOPACIFIC ENGINEERING, INC.  
 CONTACT: JIM IMBRIE, PE, GE  
 14835 SW 72ND AVENUE  
 TIGARD, OR 97224  
 PHONE: 503-598-8445

### PROJECT LOCATION:

LOCATED NORTH OF NW 2ND ST, WEST OF NW  
 MT MAZAMA ST, SOUTH OF NW FOX RIDGE RD,  
 IN MCMINNVILLE, OREGON

### PROPERTY DESCRIPTION:

TAX LOT 801  
 (YAMHILL COUNTY TAX MAP R4524) LOCATED IN  
 THE CENTER OF THE EAST 1/2 OF SECTION 45,  
 CITY OF MCMINNVILLE, YAMHILL COUNTY, OREGON

### EXISTING LAND USE:

VACANT LAND

### PROJECT PURPOSE:

SINGLE-FAMILY RESIDENTIAL PLANNED  
 DEVELOPMENT SUBDIVISION



AKS ENGINEERING & FORESTRY, LLC  
 12965 SW HERMAN RD, SUITE 100  
 TUALATIN, OR 97062  
 P: 503-563-6151  
 F: 503-563-6152  
 aks-eng.com

HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE  
 OREGON  
 MCMINNVILLE  
 YAMHILL COUNTY TAX MAP 4 5 24  
 TAX LOT 801

COVER SHEET WITH SITE AND VICINITY MAPS

DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017



RENEWAL DATE: 6/30/18

REVISIONS

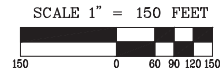
JOB NUMBER  
**5147**

SHEET  
**P-00**

**NOTES:**

1. THIS IS A CONCEPTUAL LAYOUT AND IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS. PROPERTY LINES AND TOPOGRAPHIC INFORMATION ARE BASED ON AVAILABLE GIS INFORMATION AND ARE APPROXIMATE.
2. SHOWN TOPOGRAPHIC CONTOURS ARE BASED ON LIDAR DATA AND WILL CHANGE DURING FINAL DESIGN BASED ON TOPOGRAPHIC SURVEY.

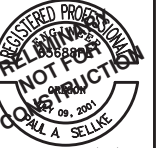
EXISTING GROUND CONTOUR (2 FT) ——— 252 ———  
 EXISTING GROUND CONTOUR (10 FT) ——— 250 ———



**HILLCREST PLANNED  
 DEVELOPMENT  
 MASTER PLAN UPDATE**

**MASTER PLAN  
 LAYOUT WITH AERIAL**

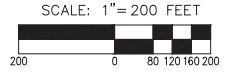
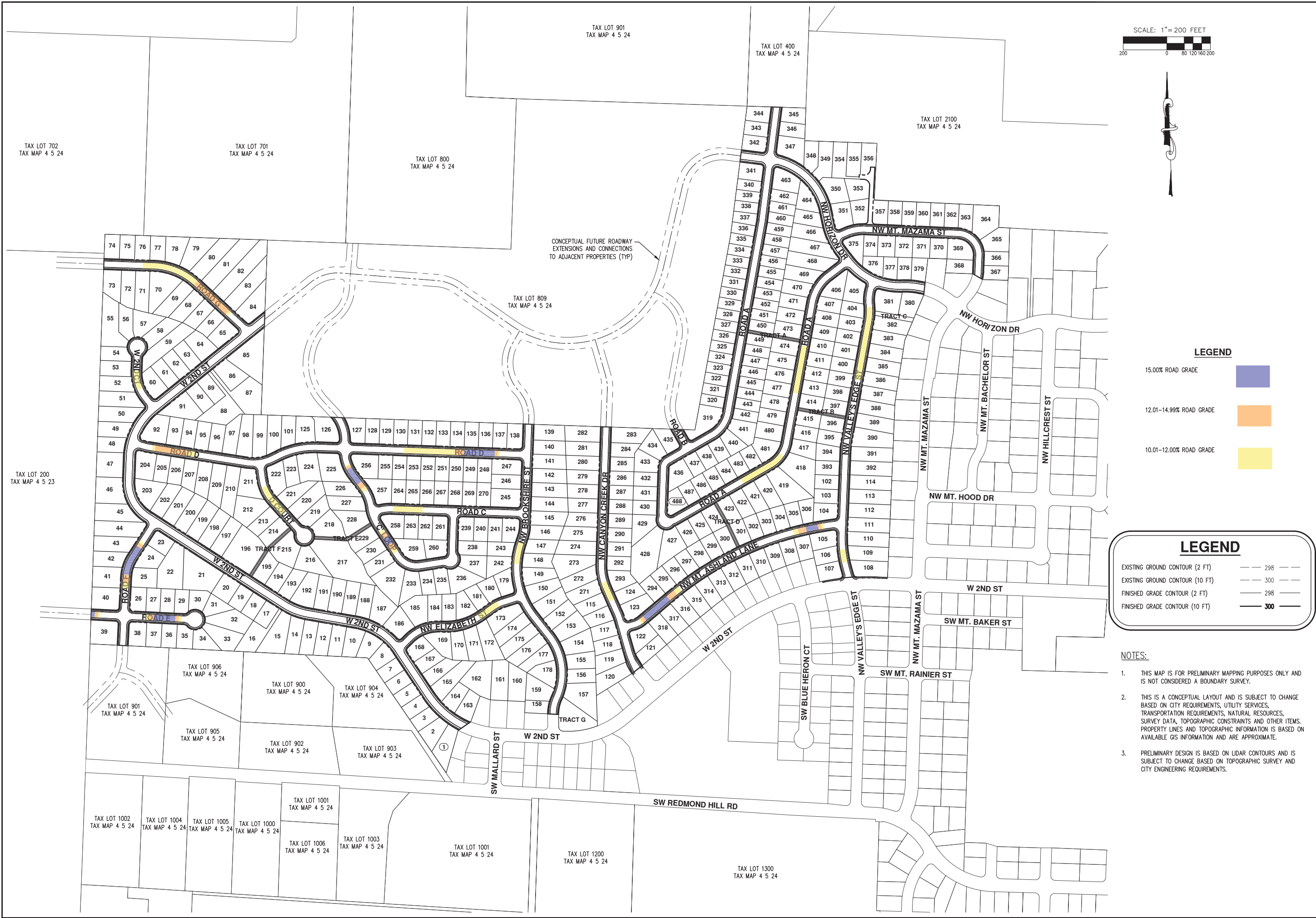
DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017



REVISIONS

JOB NUMBER  
**5147**  
 SHEET  
**P-01**

AKS DRAWING FILE: 5147 STREET GRADING.DWG | LAYOUT: PD-02



CONCEPTUAL FUTURE ROADWAY  
EXTENSIONS AND CONNECTIONS  
TO ADJACENT PROPERTIES (TYP)

**LEGEND**

- 15.00% ROAD GRADE
- 12.01-14.99% ROAD GRADE
- 10.01-12.00% ROAD GRADE

**LEGEND**

- EXISTING GROUND CONTOUR (2 FT)  298
- EXISTING GROUND CONTOUR (10 FT)  300
- FINISHED GRADE CONTOUR (2 FT)  298
- FINISHED GRADE CONTOUR (10 FT)  300

**NOTES:**

1. THIS MAP IS FOR PRELIMINARY MAPPING PURPOSES ONLY AND IS NOT CONSIDERED A BOUNDARY SURVEY.
2. THIS IS A CONCEPTUAL LAYOUT AND IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS. PROPERTY LINES AND TOPOGRAPHIC INFORMATION IS BASED ON AVAILABLE GIS INFORMATION AND ARE APPROXIMATE.
3. PRELIMINARY DESIGN IS BASED ON LIDAR CONTOURS AND IS SUBJECT TO CHANGE BASED ON TOPOGRAPHIC SURVEY AND CITY ENGINEERING REQUIREMENTS.

**AKS**  
AKS ENGINEERING & FORESTRY, LLC  
12965 SW HERMAN RD, STE 100  
TUALATIN, OR 97062  
P: 503.563.6151  
F: 503.563.6152  
aks-eng.com

**HILLCREST PLANNED  
DEVELOPMENT  
MASTER PLAN UPDATE**  
OREGON  
MCMINNVILLE  
YAMHILL COUNTY TAX MAP 4 5 24

**STREET PLAN WITH ROAD  
GRADE**

DESIGNED BY: CTS  
DRAWN BY: CTS  
CHECKED BY: PAS  
SCALE: AS NOTED  
DATE: 03/29/2017

**REGISTERED PROFESSIONAL  
ENGINEER  
NOT FOR  
CONSTRUCTION**  
PAUL A. SELLE  
RENEWAL DATE: 6/30/18

REVISIONS

JOB NUMBER  
**5147**

SHEET  
**P-02**

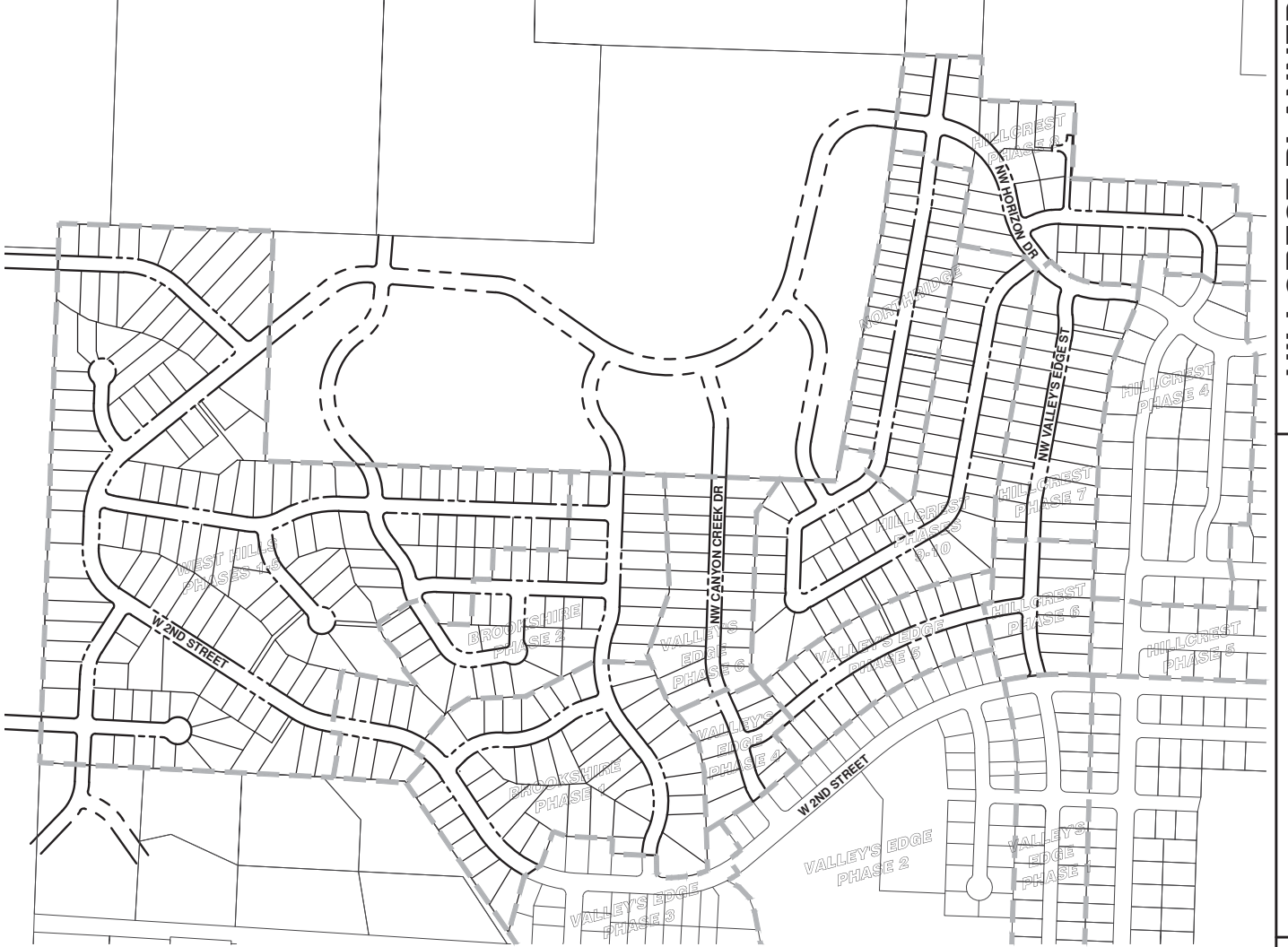


SCALE 1" = 300 FEET  
5 0 120 180 240 300

ORIGINAL HILLCREST PD LAYOUT



MODIFIED HILLCREST PD LAYOUT



**AKS**  
AKS ENGINEERING & FORESTRY, LLC  
12965 SW HERMAN RD. STE 100  
TUALATIN, OR 97062  
P: 503.563.6151  
F: 503.563.6152  
aks-eng.com

**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**  
OREGON  
MCMINNVILLE  
YAMHILL COUNTY TAX MAP 4.5.24  
TAX LOT 801

**MASTER PLAN COMPARISON**

DESIGNED BY: CTS  
DRAWN BY: CTS  
CHECKED BY: PAS  
SCALE: AS NOTED  
DATE: 03/29/2017



REVISIONS  
JOB NUMBER  
5147  
SHEET  
**P-03**

AKS DRAWING FILE: 5147 SITE PLAN OVERLAY.DWG | LAYOUT: EXHIBIT

SCALE: 1" = 200 FEET  
 200 0 80 120 160 200

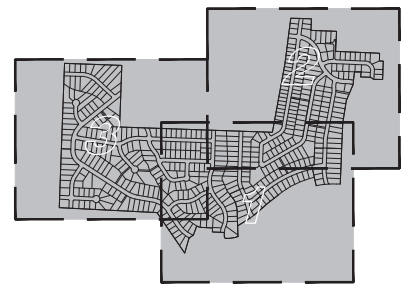


**DENSITY CALCULATIONS**

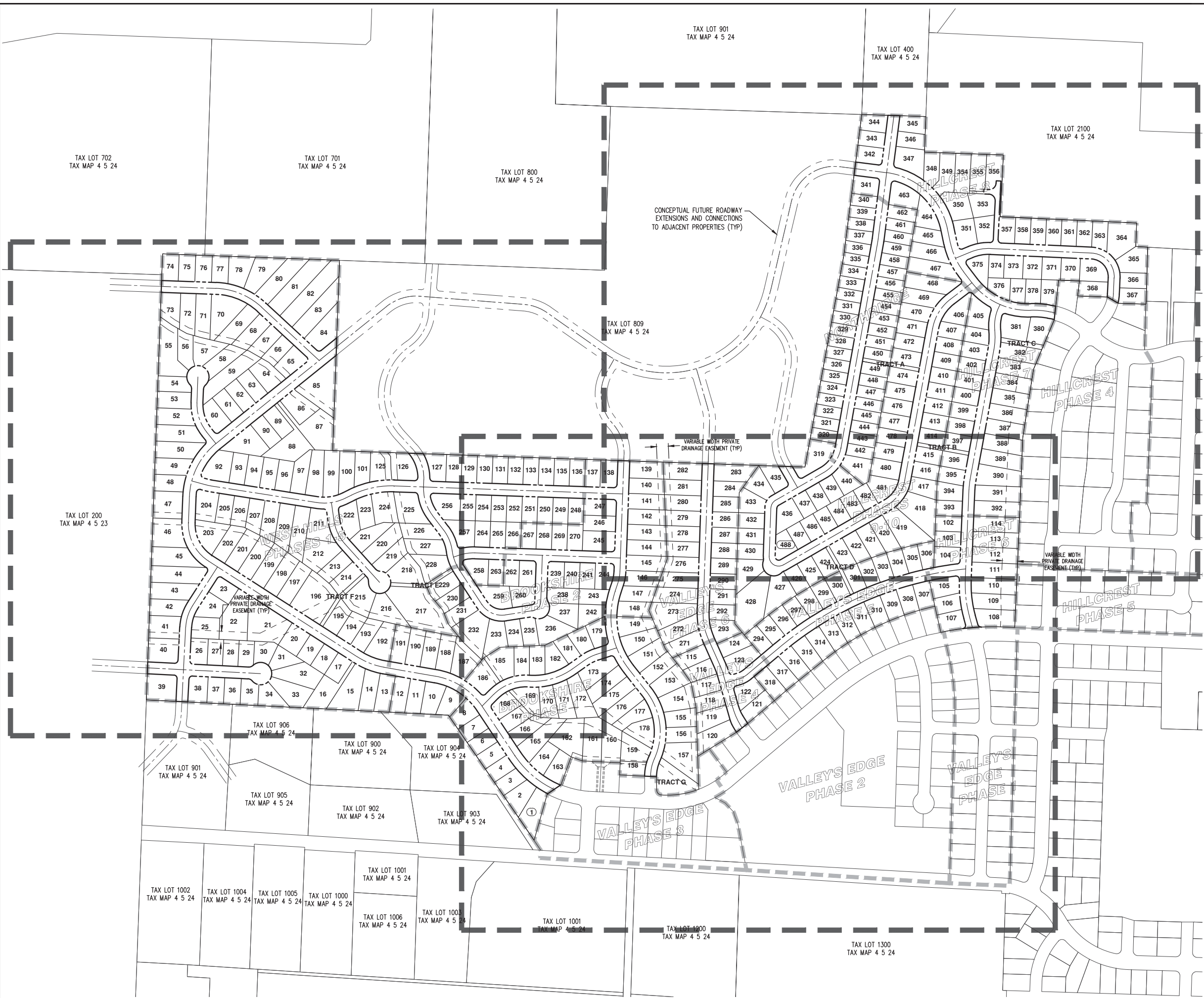
**R-2 ZONE**

GROSS SITE AREA REMAINING:	±5,758,030 SF (132.2 AC)
PUBLIC R.O.W DEDICATION:	±1,058,587 SF (24.3 AC)
STORMWATER FACILITY:	±17,503 SF (0.4 AC)
PUBLIC ACCESS TRACTS:	±22,524 SF (0.52 AC)
NET DEVELOPABLE AREA:	±4,659,416 SF (106.9 AC)
PROPOSED NUMBER OF LOTS:	488
PROPOSED MIN. LOT AREA:	± 5,292 SF
PROPOSED MAX. LOT AREA:	± 35,305 SF
PROPOSED AVG. LOT AREA:	± 9,547 SF
PROPOSED GROSS DENSITY:	3.7 UNITS PER ACRE
PROPOSED NET DENSITY:	4.6 UNITS PER ACRE
MAXIMUM DENSITY ALLOWED:	6 UNITS PER ACRE
TOTAL SINGLE FAMILY UNITS:	551 (63 ALREADY PLATTED/CONSTRUCTED)
TOTAL MULTI-FAMILY UNITS:	68 APARTMENTS (ALREADY CONSTRUCTED)
TOTAL UNITS:	619 UNITS

- NOTES:**
- PROPERTY LINES AND RIGHT-OF-WAY LINES ARE BASED ON INFORMATION PROVIDED BY GPS AND ARE CONSIDERED APPROXIMATE.
  - NO FIELD WORK HAS BEEN CONDUCTED AT THIS TIME.
  - THE PURPOSE OF THIS PRELIMINARY PLAT IS TO SHOW THE PROPOSED LOT DIMENSIONS FOR PLANNING PURPOSES. THE LAYOUT IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS.



**KEY MAP**  
 SCALE: 1" = 1250'





AKS ENGINEERING & FORESTRY, LLC  
 12065 SW HERMAN RD, STE 100  
 TUALATIN, OR 97062  
 P: 503.563.6151  
 F: 503.563.6152  
 aks-eng.com

ENGINEERING • SURVEYING • NATURAL RESOURCES  
 FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

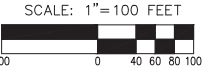
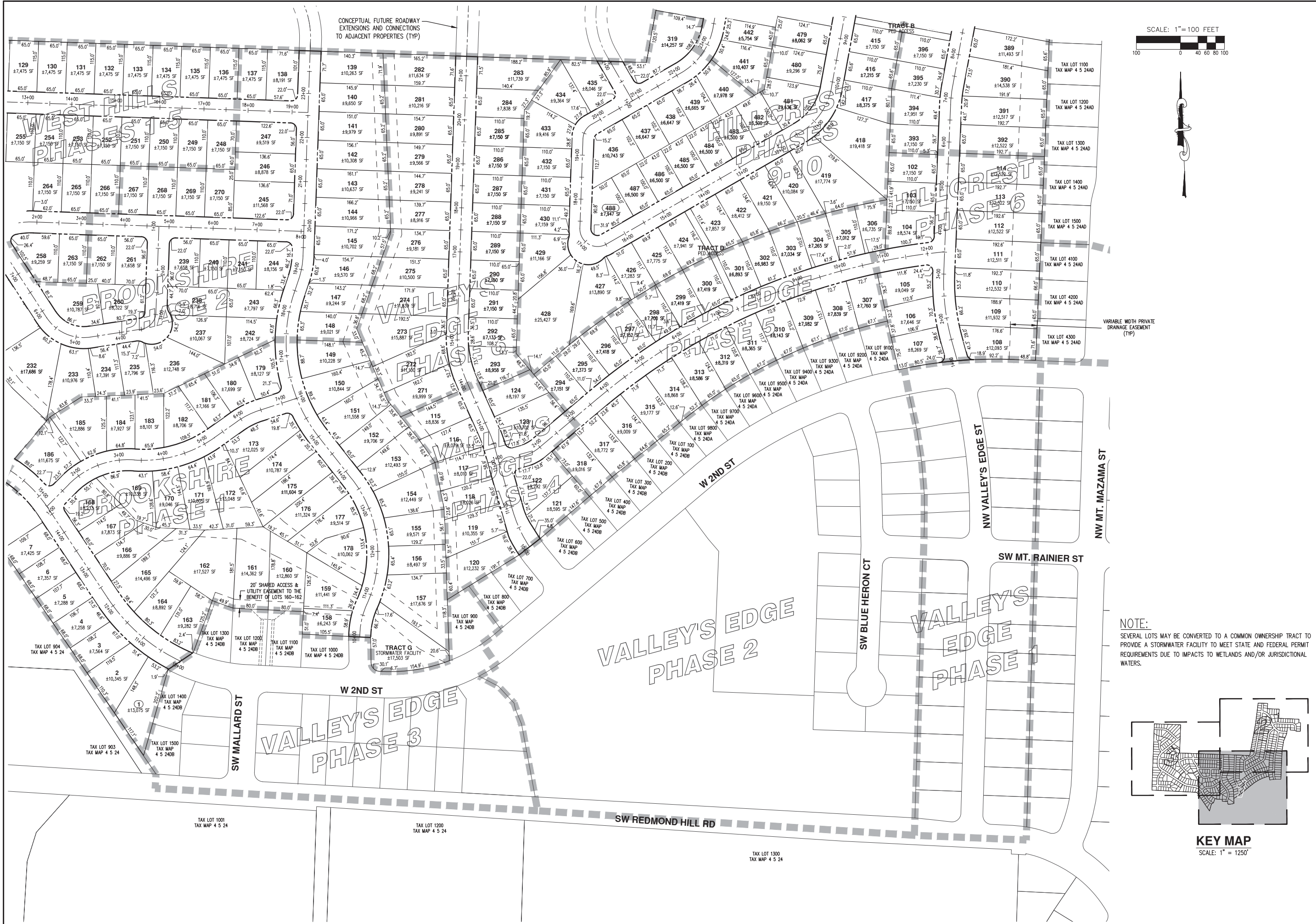
**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**

OREGON  
 YAMHILL COUNTY TAX MAP 4 5 24

**PRELIMINARY SUBDIVISION PLAT**

DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017  
 REGISTERED PROFESSIONAL LAND SURVEYOR  
 NOT FOR CONSTRUCTION  
 GREGORY J. COOPER  
 15, 2003  
 56539LS  
 RENEWS: 6/30/17  
 REVISIONS:

JOB NUMBER  
 5147  
 SHEET  
**SU-01**



VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (TYP)

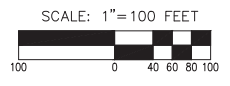
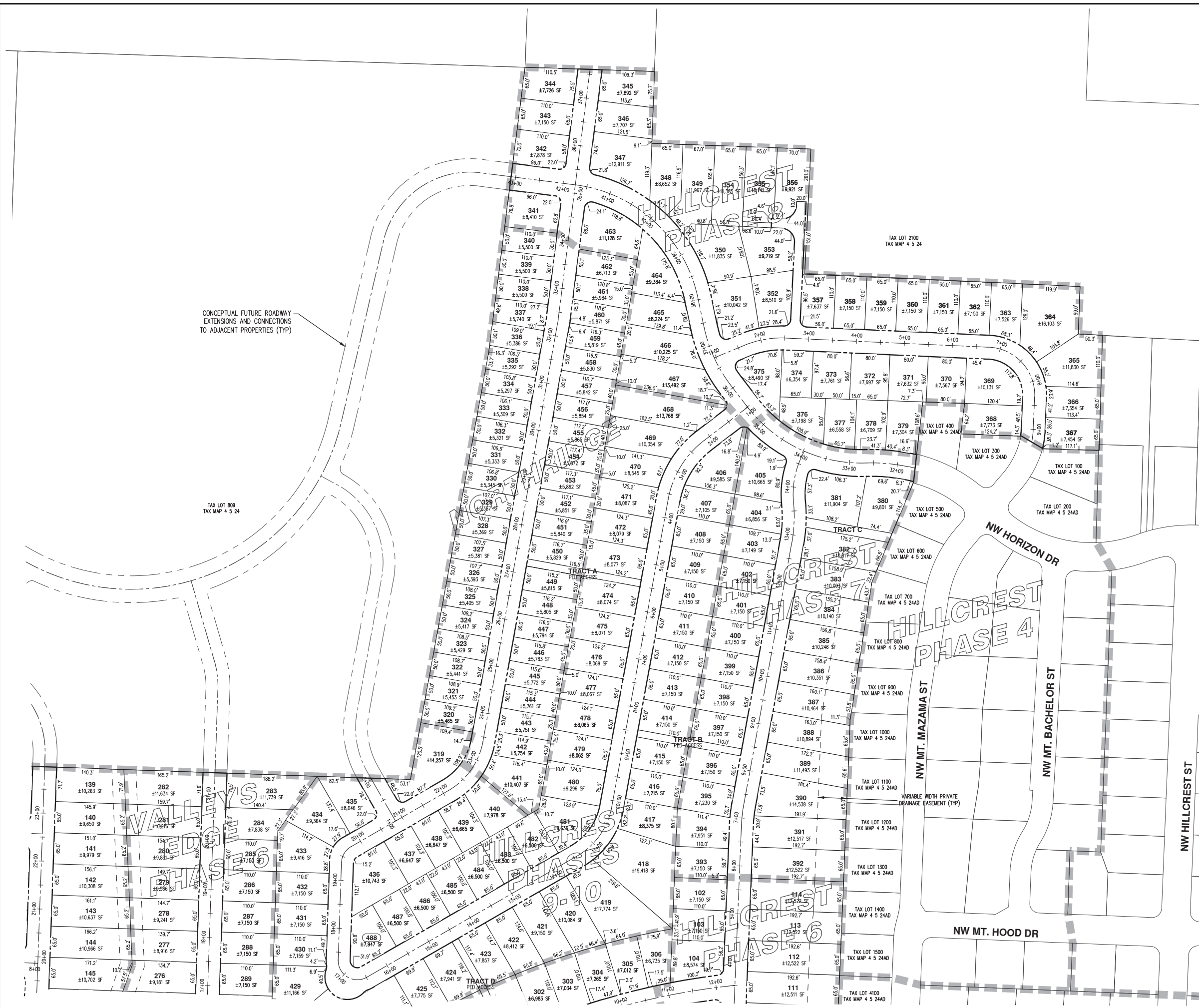
**NOTE:**  
 SEVERAL LOTS MAY BE CONVERTED TO A COMMON OWNERSHIP TRACT TO PROVIDE A STORMWATER FACILITY TO MEET STATE AND FEDERAL PERMIT REQUIREMENTS DUE TO IMPACTS TO WETLANDS AND/OR JURISDICTIONAL WATERS.



**KEY MAP**  
 SCALE: 1" = 1250'

AKS DRAWING FILE: 5147 PRELIMINARY PLAT.DWG | LAYOUT: SU-01

AKS DRAWING FILE: 5147 PRELIMINARY PLAT.DWG | LAYOUT: SU-02



**NOTE:**  
SEVERAL LOTS MAY BE CONVERTED TO A COMMON OWNERSHIP TRACT TO PROVIDE A STORMWATER FACILITY TO MEET STATE AND FEDERAL PERMIT REQUIREMENTS DUE TO IMPACTS TO WETLANDS AND/OR JURISDICTIONAL WATERS.



**AKS**  
AKS ENGINEERING & FORESTRY, LLC  
12065 SW HERMAN RD. STE 100  
TUALATIN, OR 97062  
P: 503.563.6151  
F: 503.563.6152  
aks-eng.com

ENGINEERING • SURVEYING • NATURAL RESOURCES  
FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**

**OREGON**  
MCMINNVILLE  
YAMHILL COUNTY TAX MAP 4 5 24

**PRELIMINARY SUBDIVISION PLAT**

DESIGNED BY: CTS  
DRAWN BY: CTS  
CHECKED BY: PAS  
SCALE: AS NOTED  
DATE: 03/29/2017

REGISTERED PROFESSIONAL LAND SURVEYOR  
**NOT FOR CONSTRUCTION**  
EXPIRES 15, 2003  
ANDER H. HURLEY  
56539LS  
RENEWS: 6/30/17

REVISIONS

JOB NUMBER  
**5147**

SHEET  
**SU-02**



AKS DRAWING FILE: 5147 PRELIMINARY PLAT.DWG | LAYOUT: SU-03



TAX LOT 702  
TAX MAP 4 5 24

TAX LOT 701  
TAX MAP 4 5 24

TAX LOT 800  
TAX MAP 4 5 24

TAX LOT 200  
TAX MAP 4 5 23

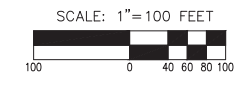
TAX LOT 901  
TAX MAP 4 5 24

TAX LOT 906  
TAX MAP 4 5 24

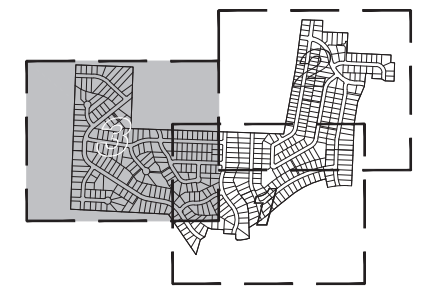
TAX LOT 900  
TAX MAP 4 5 24

TAX LOT 904  
TAX MAP 4 5 24

TAX LOT 809  
TAX MAP 4 5 24



**NOTE:**  
SEVERAL LOTS MAY BE CONVERTED TO A COMMON OWNERSHIP TRACT TO PROVIDE A STORMWATER FACILITY TO MEET STATE AND FEDERAL PERMIT REQUIREMENTS DUE TO IMPACTS TO WETLANDS AND/OR JURISDICTIONAL WATERS.



**KEY MAP**  
SCALE: 1" = 1250'

**AKS**  
AKS ENGINEERING & FORESTRY, LLC  
12965 SW HERMAN RD, STE 100  
TUALATIN, OR 97062  
P: 503.563.6151  
F: 503.563.6152  
aks-eng.com

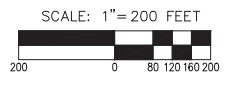
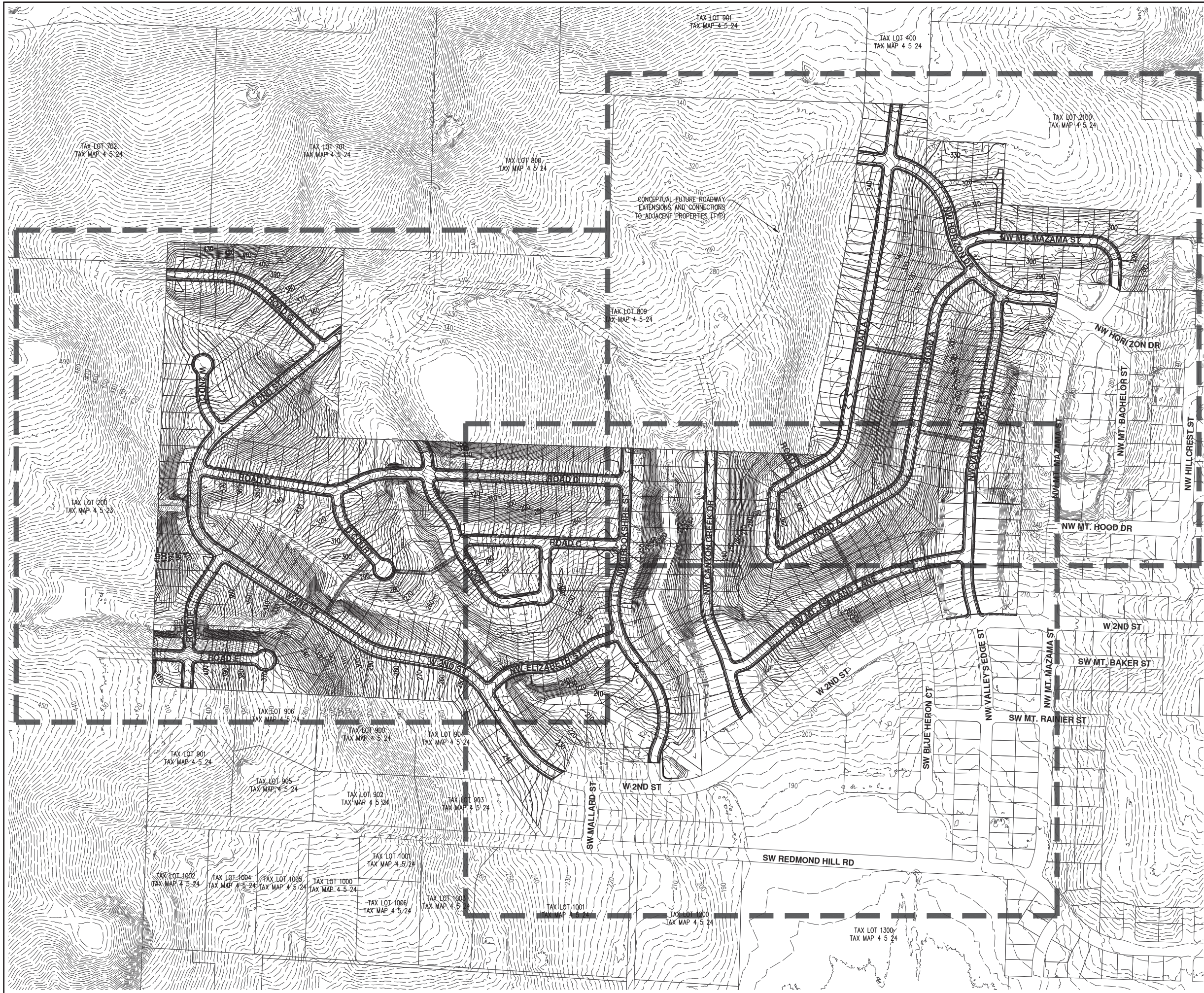
**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**  
OREGON  
MCMINNVILLE  
YAMHILL COUNTY TAX MAP 4 5 24

**PRELIMINARY SUBDIVISION PLAT**

DESIGNED BY: CTS  
DRAWN BY: CTS  
CHECKED BY: PAS  
SCALE: AS NOTED  
DATE: 03/29/2017  
REGISTERED PROFESSIONAL LAND SURVEYOR  
**NOT FOR CONSTRUCTION**  
GREGORY L. HURLEY  
15, 2003  
56539LS  
RENEWS: 6/30/17

REVISIONS  
JOB NUMBER  
**5147**  
SHEET  
**SU-03**

AKS DRAWING FILE: 5147 GRADING.DWG | LAYOUT: GR-00

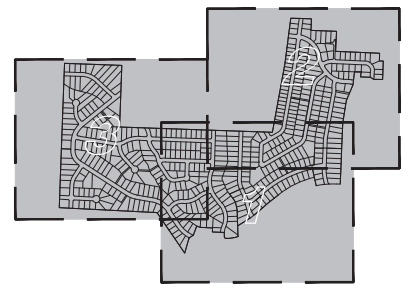


**NOTES:**

1. CONTOUR INTERVAL SHOWN IS 2.00 FOOT. VERTICAL DATUM IS BASED ON THE NAVD 88 DATUM. CONTOURS SHOWN ARE BASED ON LIDAR DATA PROVIDED BY OTHERS AND ARE CONSIDERED APPROXIMATE.
2. THIS MAP IS FOR PRELIMINARY MAPPING PURPOSES ONLY AND IS NOT CONSIDERED A BOUNDARY SURVEY.
3. THIS IS A CONCEPTUAL LAYOUT AND IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS. PROPERTY LINES ARE BASED ON AVAILABLE GIS INFORMATION AND ARE APPROXIMATE.
4. SHOWN ROAD GRADES ARE BASED ON PRELIMINARY DESIGN UTILIZING LIDAR CONTOURS AND IS SUBJECT TO CHANGE BASED ON CITY ENGINEERING REQUIREMENTS.

**LEGEND**

EXISTING GROUND CONTOUR (2 FT)	--- 298 ---
EXISTING GROUND CONTOUR (10 FT)	--- 300 ---
FINISHED GRADE CONTOUR (2 FT)	--- 298 ---
FINISHED GRADE CONTOUR (10 FT)	--- 300 ---



**AKS**  
 AKS ENGINEERING & FORESTRY, LLC  
 12965 SW HERMAN RD, STE 100  
 TUALATIN, OR 97062  
 P: 503.563.6151  
 F: 503.563.6152  
 aks-eng.com

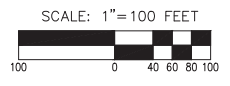
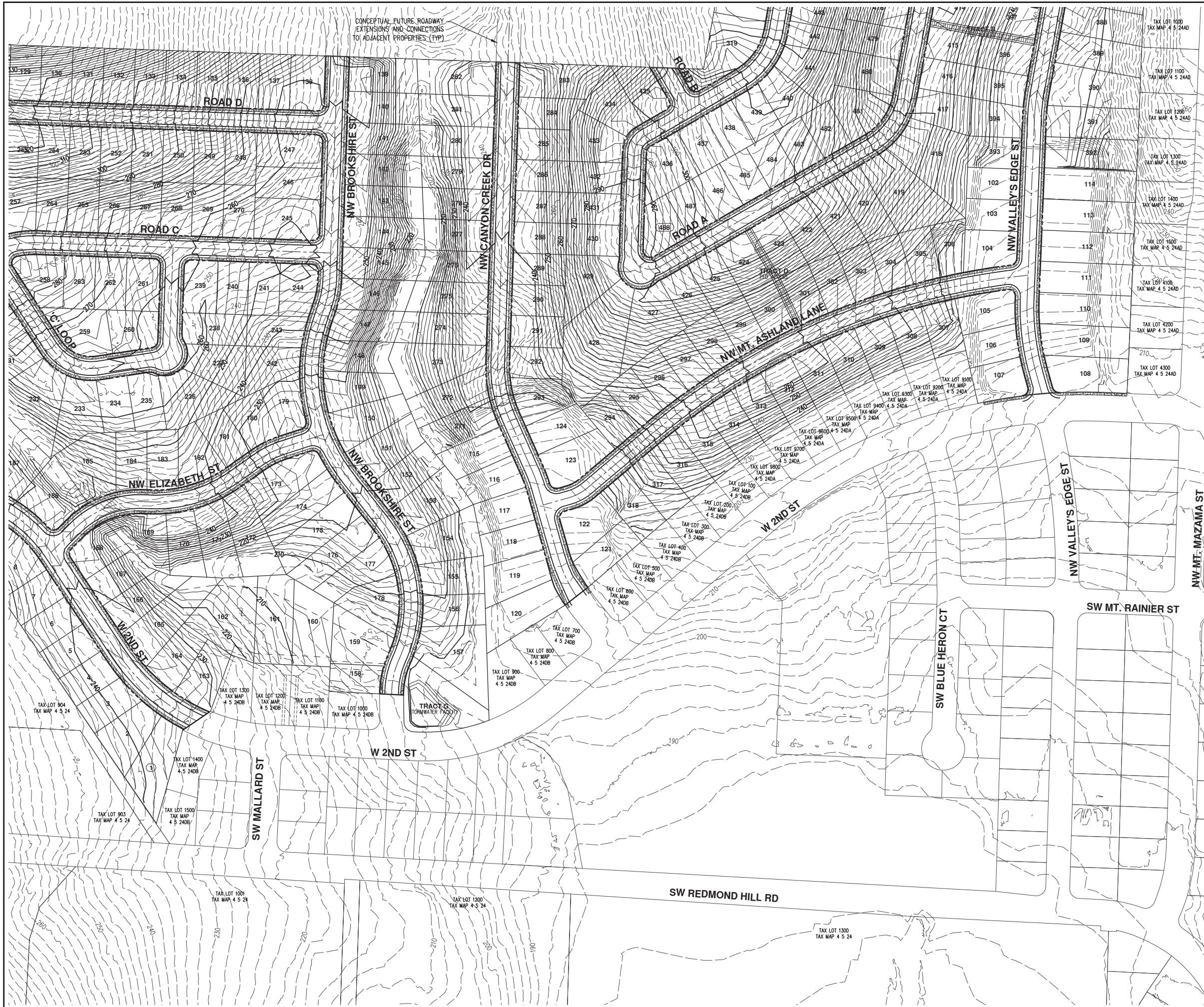
**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**  
 OREGON  
 McMinnville  
 YAMHILL COUNTY TAX MAP 4 5 24  
 TAX LOT 801

**PRELIMINARY GRADING OVERVIEW**

DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017

RENEWAL DATE: 6/30/18  
 REVISIONS:

JOB NUMBER  
**5147**  
 SHEET  
**GR-00**

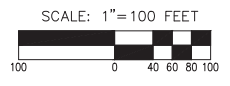


- NOTES:**
1. CONTOUR INTERVAL SHOWN IS 2.00 FOOT. VERTICAL DATUM IS BASED ON THE NAVD 88 DATUM. CONTOURS SHOWN ARE BASED ON LIDAR DATA PROVIDED BY OTHERS AND ARE CONSIDERED APPROXIMATE.
  2. THIS MAP IS FOR PRELIMINARY MAPPING PURPOSES ONLY AND IS NOT CONSIDERED A BOUNDARY SURVEY.
  3. THIS IS A CONCEPTUAL LAYOUT AND IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS. PROPERTY LINES ARE BASED ON AVAILABLE GIS INFORMATION AND ARE APPROXIMATE.
  4. SHOWN ROAD GRADES ARE BASED ON PRELIMINARY DESIGN UTILIZING LIDAR CONTOURS AND IS SUBJECT TO CHANGE BASED ON CITY ENGINEERING REQUIREMENTS.

LEGEND	
EXISTING GROUND CONTOUR (2 FT)	--- 298 ---
EXISTING GROUND CONTOUR (10 FT)	--- 300 ---
FINISHED GRADE CONTOUR (2 FT)	--- 298 ---
FINISHED GRADE CONTOUR (10 FT)	--- 300 ---



**KEY MAP**  
SCALE: 1" = 1250'



**NOTES:**

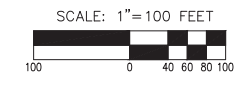
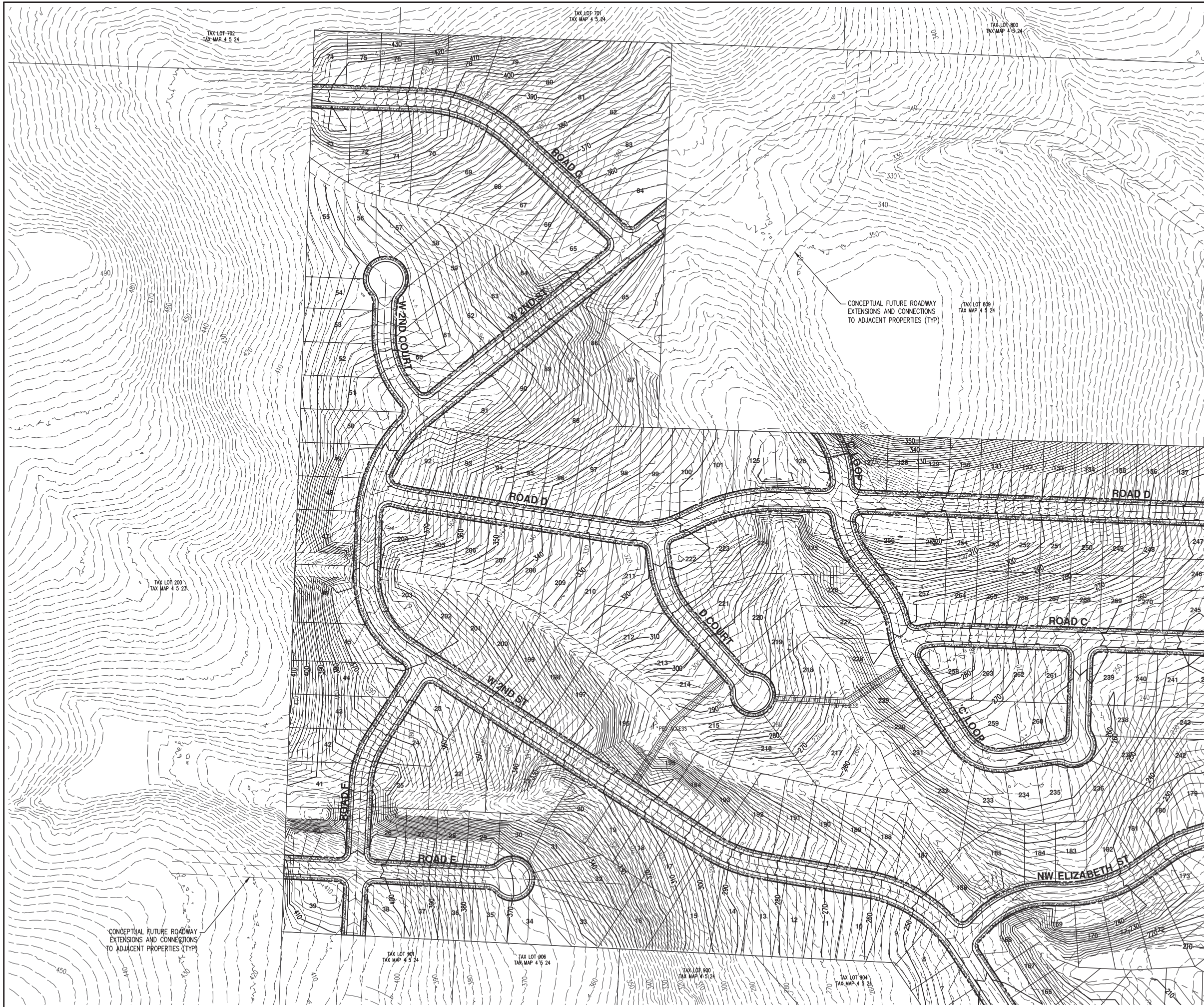
1. CONTOUR INTERVAL SHOWN IS 2.00 FOOT. VERTICAL DATUM IS BASED ON THE NAVD 88 DATUM. CONTOURS SHOWN ARE BASED ON LIDAR DATA PROVIDED BY OTHERS AND ARE CONSIDERED APPROXIMATE.
2. THIS MAP IS FOR PRELIMINARY MAPPING PURPOSES ONLY AND IS NOT CONSIDERED A BOUNDARY SURVEY.
3. THIS IS A CONCEPTUAL LAYOUT AND IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS. PROPERTY LINES ARE BASED ON AVAILABLE GIS INFORMATION AND ARE APPROXIMATE.
4. SHOWN ROAD GRADES ARE BASED ON PRELIMINARY DESIGN UTILIZING LIDAR CONTOURS AND IS SUBJECT TO CHANGE BASED ON CITY ENGINEERING REQUIREMENTS.

**LEGEND**

EXISTING GROUND CONTOUR (2 FT)	--- 298 ---
EXISTING GROUND CONTOUR (10 FT)	--- 300 ---
FINISHED GRADE CONTOUR (2 FT)	--- 298 ---
FINISHED GRADE CONTOUR (10 FT)	--- 300 ---



**KEY MAP**  
SCALE: 1" = 1250'

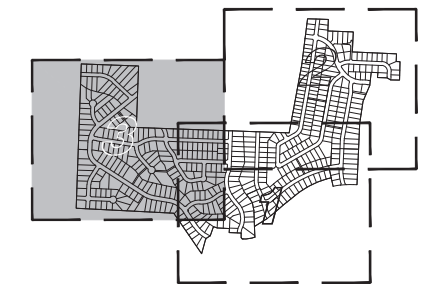


**NOTES:**

1. CONTOUR INTERVAL SHOWN IS 2.00 FOOT. VERTICAL DATUM IS BASED ON THE NAVD 88 DATUM. CONTOURS SHOWN ARE BASED ON LIDAR DATA PROVIDED BY OTHERS AND ARE CONSIDERED APPROXIMATE.
2. THIS MAP IS FOR PRELIMINARY MAPPING PURPOSES ONLY AND IS NOT CONSIDERED A BOUNDARY SURVEY.
3. THIS IS A CONCEPTUAL LAYOUT AND IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS. PROPERTY LINES ARE BASED ON AVAILABLE GIS INFORMATION AND ARE APPROXIMATE.
4. SHOWN ROAD GRADES ARE BASED ON PRELIMINARY DESIGN UTILIZING LIDAR CONTOURS AND IS SUBJECT TO CHANGE BASED ON CITY ENGINEERING REQUIREMENTS.

**LEGEND**

EXISTING GROUND CONTOUR (2 FT)	--- 298 ---
EXISTING GROUND CONTOUR (10 FT)	--- 300 ---
FINISHED GRADE CONTOUR (2 FT)	--- 298 ---
FINISHED GRADE CONTOUR (10 FT)	--- 300 ---



**KEY MAP**  
SCALE: 1" = 1250'

DESIGNED BY: CTS  
DRAWN BY: CTS  
CHECKED BY: PAS  
SCALE: AS NOTED  
DATE: 03/29/2017

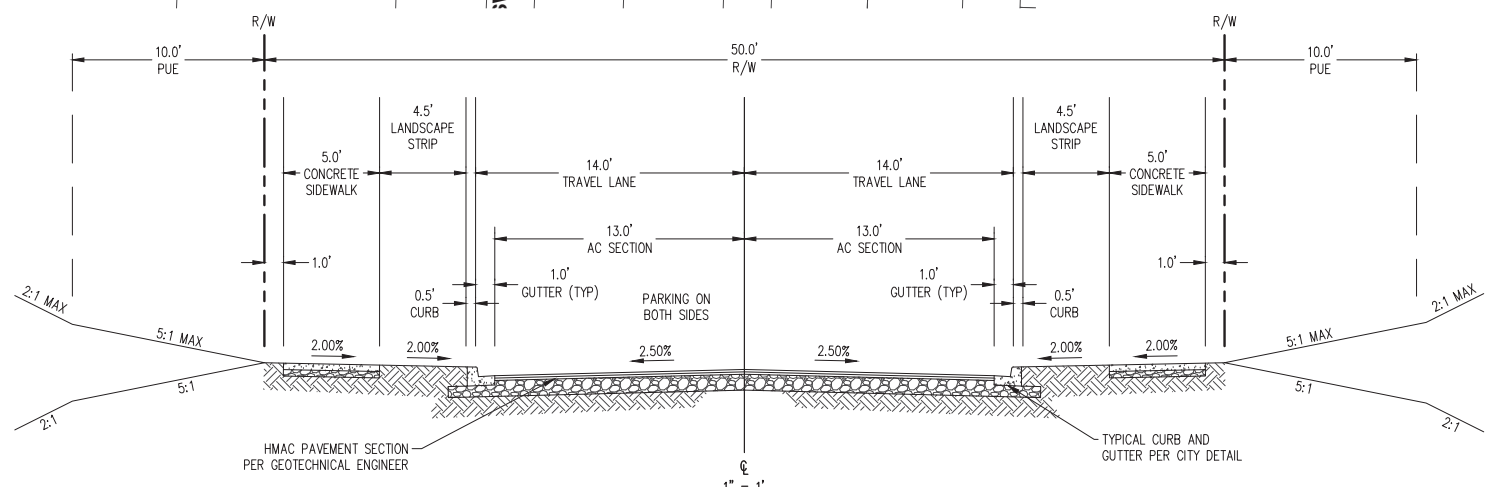
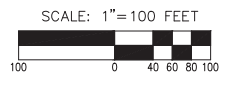


REVISIONS

JOB NUMBER  
**5147**

SHEET  
**GR-03**





**AKS**  
 AKS ENGINEERING & FORESTRY, LLC  
 12965 SW HERMAN RD. STE 100  
 TUALATIN, OR 97062  
 P: 503.563.6151  
 F: 503.563.6152  
 aks-eng.com

**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**  
**PRELIMINARY STREET PLAN**  
 OREGON  
 MCMINNVILLE  
 YAMHILL COUNTY TAX MAP 4 5 24  
 TAX LOT 801

DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017  
 REGISTERED PROFESSIONAL ENGINEER  
 NOT FOR CONSTRUCTION  
 PAULA A. SELLKE  
 RENEWAL DATE: 6/30/18  
 REVISIONS

JOB NUMBER  
**5147**  
 SHEET  
**ST-01**

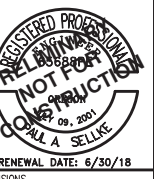
AKS DRAWING FILE: 5147 STREETS.DWG | LAYOUT: ST-01

**HILLCREST PLANNED  
 DEVELOPMENT  
 MASTER PLAN UPDATE**

OREGON  
 YAMHILL COUNTY TAX MAP 4 5 24  
 McMinnville  
 TAX LOT 801

**PRELIMINARY STREET  
 PLAN**

DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017



REVISIONS  
 JOB NUMBER  
 5147  
 SHEET  
**ST-02**

SCALE: 1" = 100 FEET



CONCEPTUAL FUTURE ROADWAY  
 EXTENSIONS AND CONNECTIONS  
 TO ADJACENT PROPERTIES (TYP)

56.00' RIGHT-OF-WAY (TYP)

TAX LOT 809  
 TAX MAP 4 5 24

50.00' RIGHT-OF-WAY (TYP)



**KEY MAP**  
 SCALE: 1" = 1250'



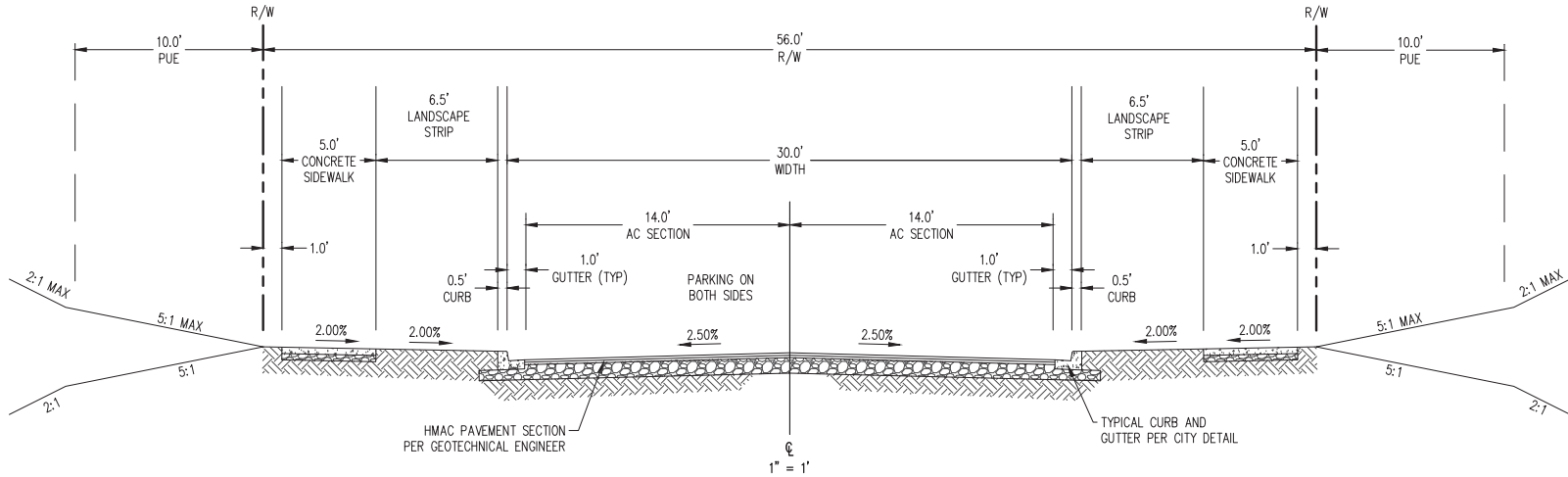
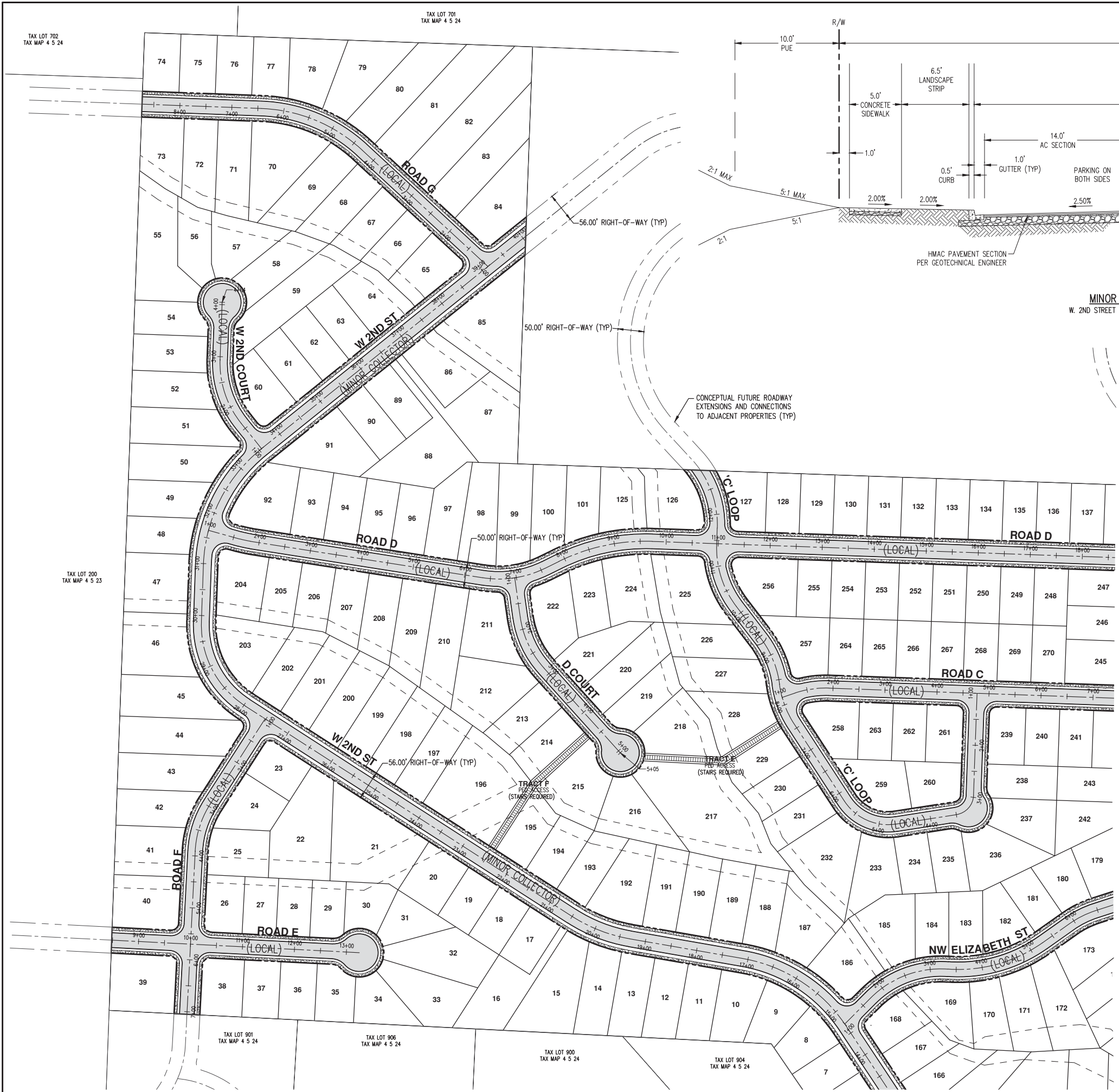
**HILLCREST PLANNED  
 DEVELOPMENT  
 MASTER PLAN UPDATE**

OREGON  
 YAMHILL COUNTY TAX MAP 4 5 24  
 MCMINNVILLE  
 TAX LOT 801

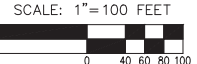
**PRELIMINARY  
 STREET PLAN**

DESIGNED BY:	CTS
DRAWN BY:	CTS
CHECKED BY:	PAS
SCALE:	AS NOTED
DATE:	03/29/2017
	
RENEWAL DATE:	6/30/18
REVISIONS:	

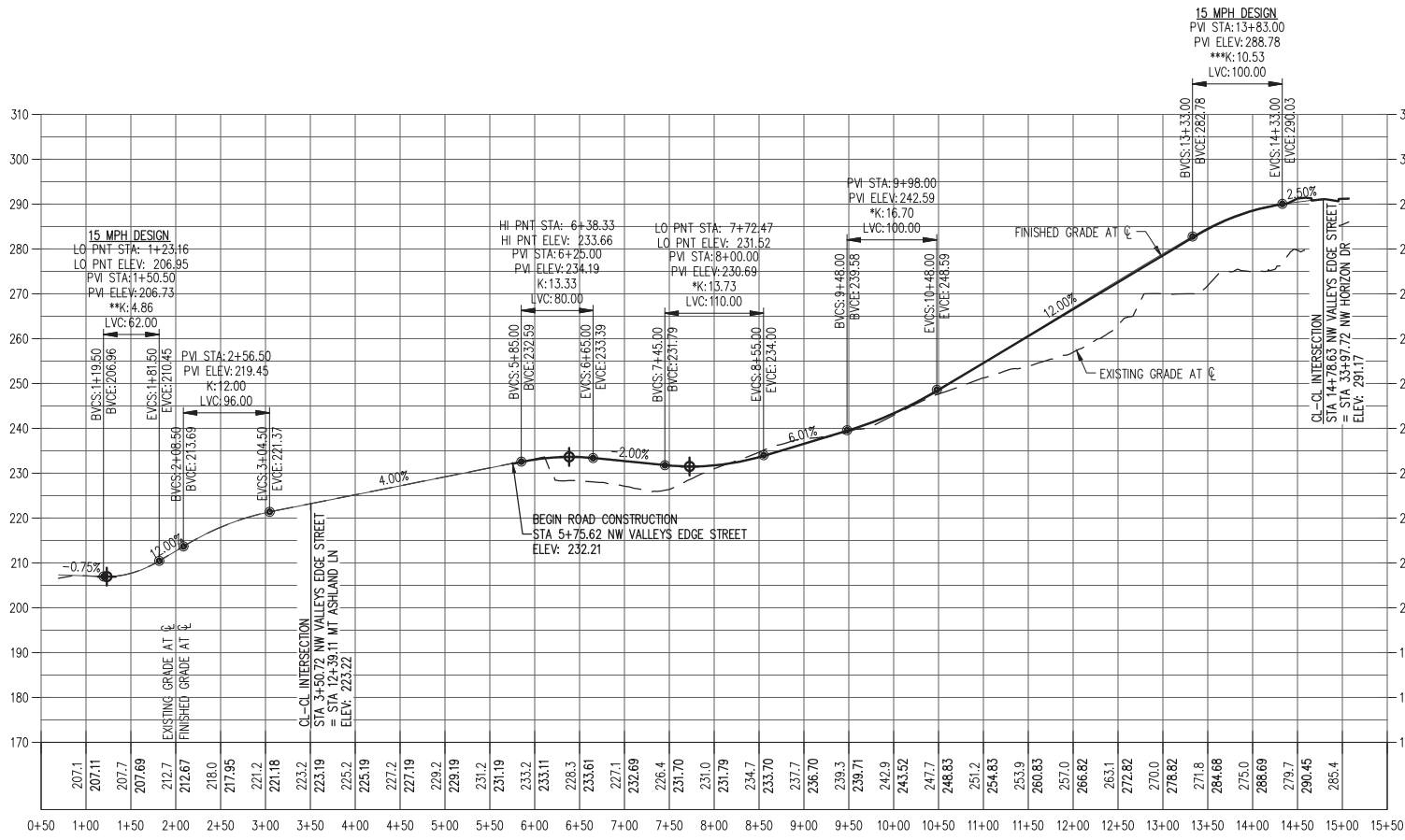
JOB NUMBER  
**5147**  
 SHEET  
**ST-03**



**MINOR COLLECTOR**  
 W. 2ND STREET AND NW HORIZON DRIVE

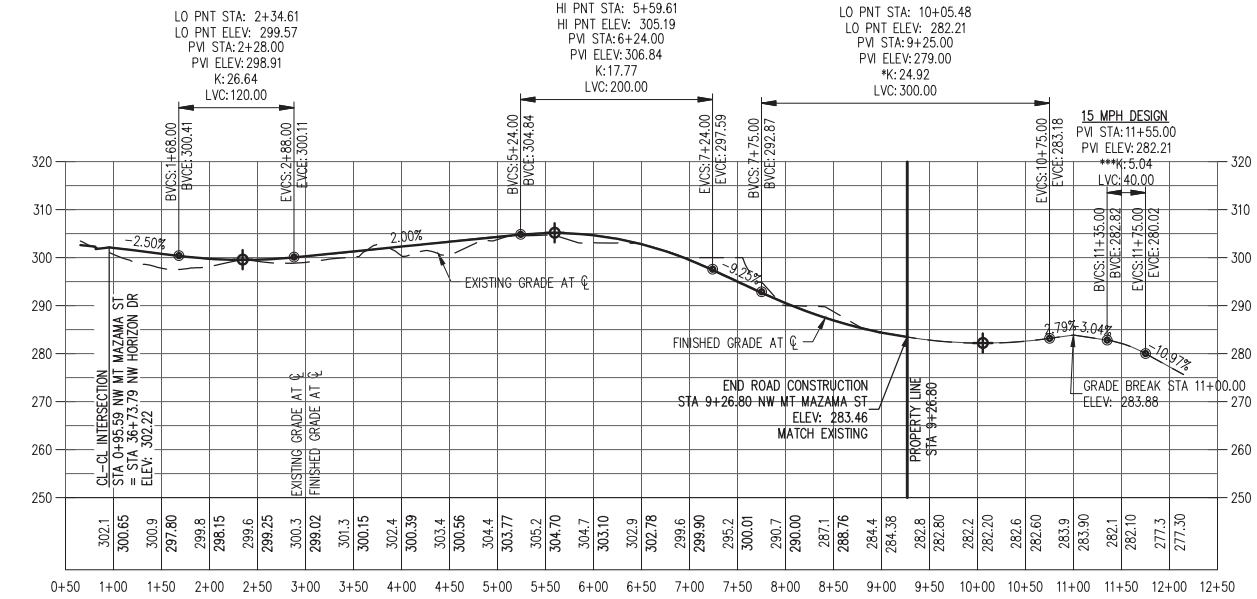


**KEY MAP**  
 SCALE: 1" = 1250'

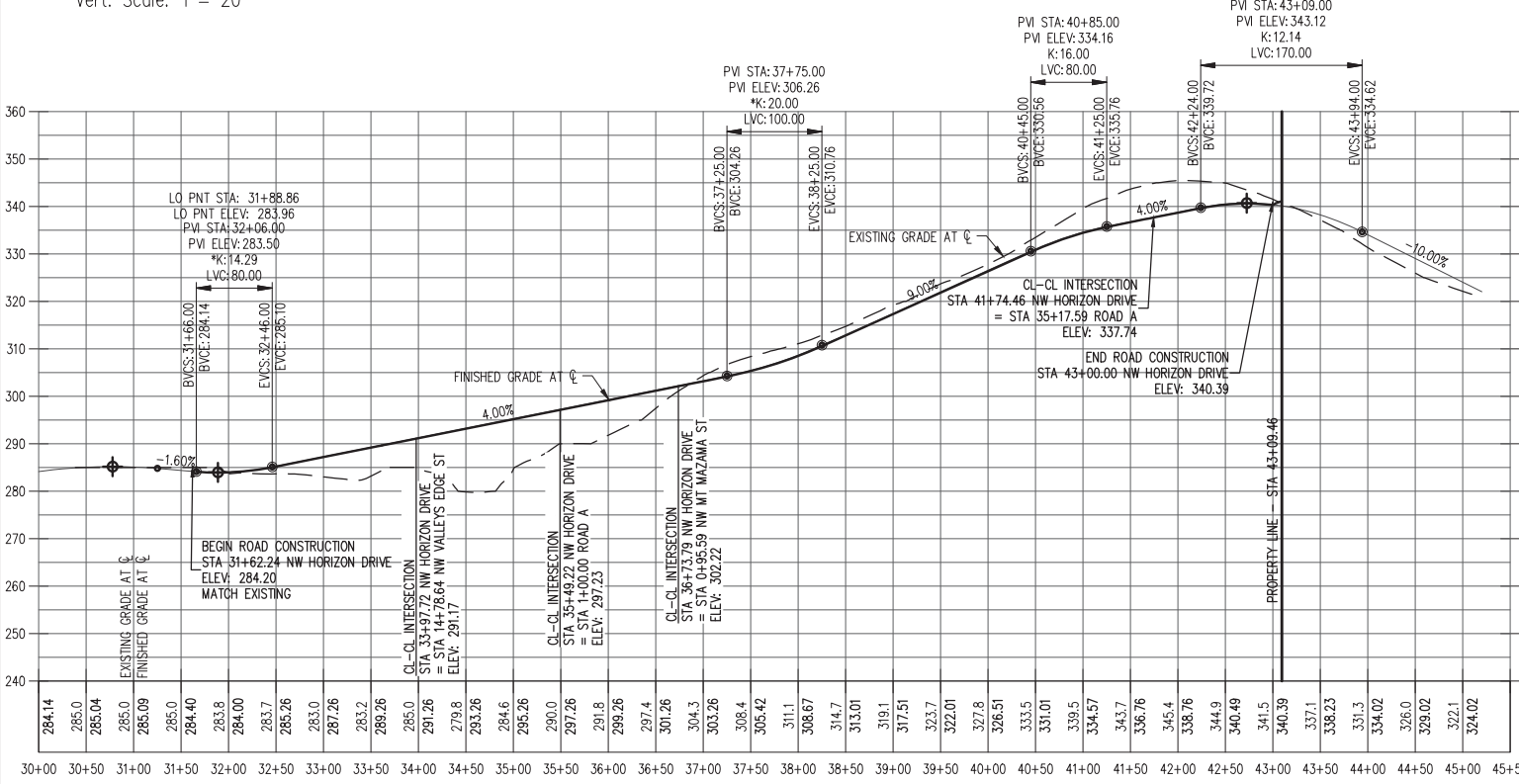


**NW VALLEYS EDGE STREET**  
Hor. Scale: 1" = 100'  
Vert. Scale: 1" = 20'

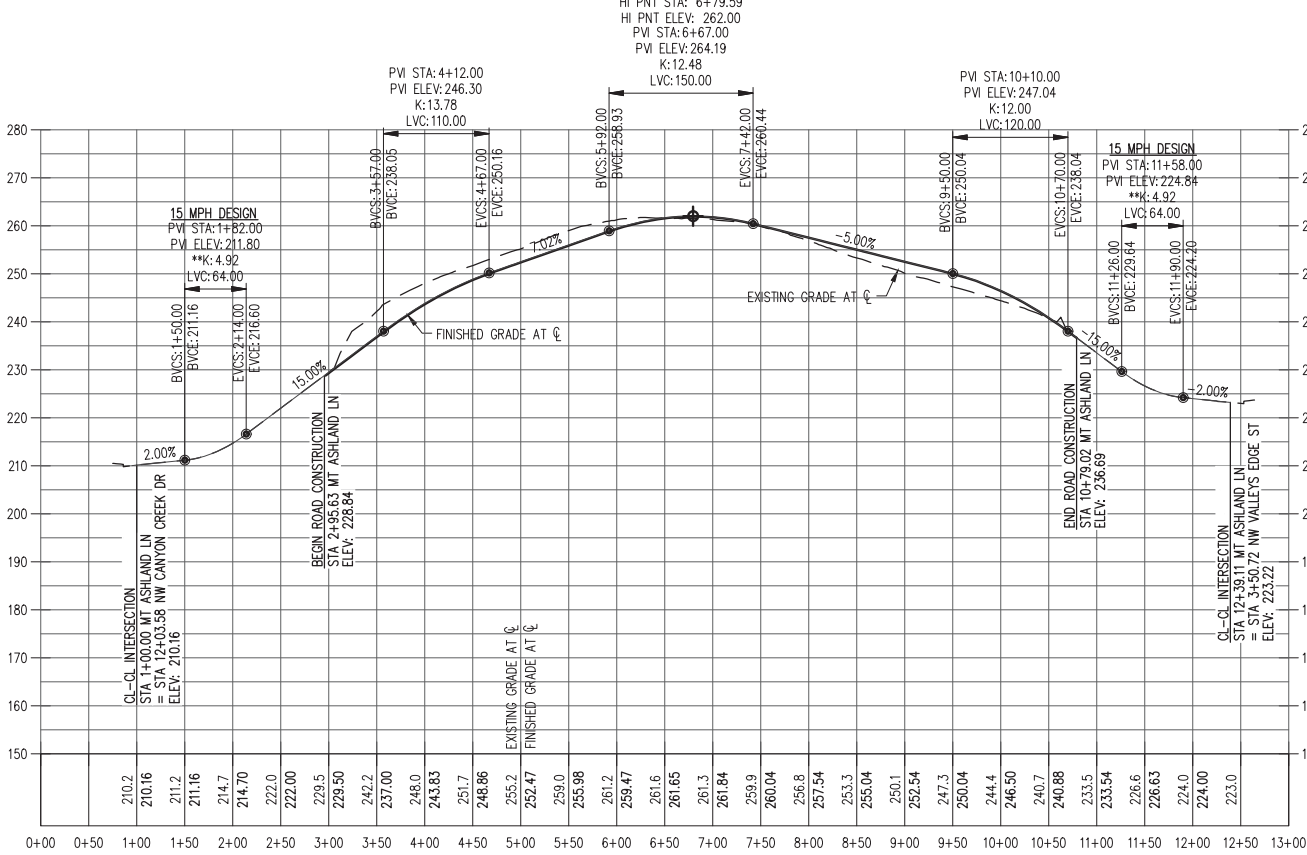
\*SAG VERTICAL CURVE MEETS 25 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
\*\*SAG VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
\*\*\*CREST VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED PER AASHTO DESIGN STANDARDS



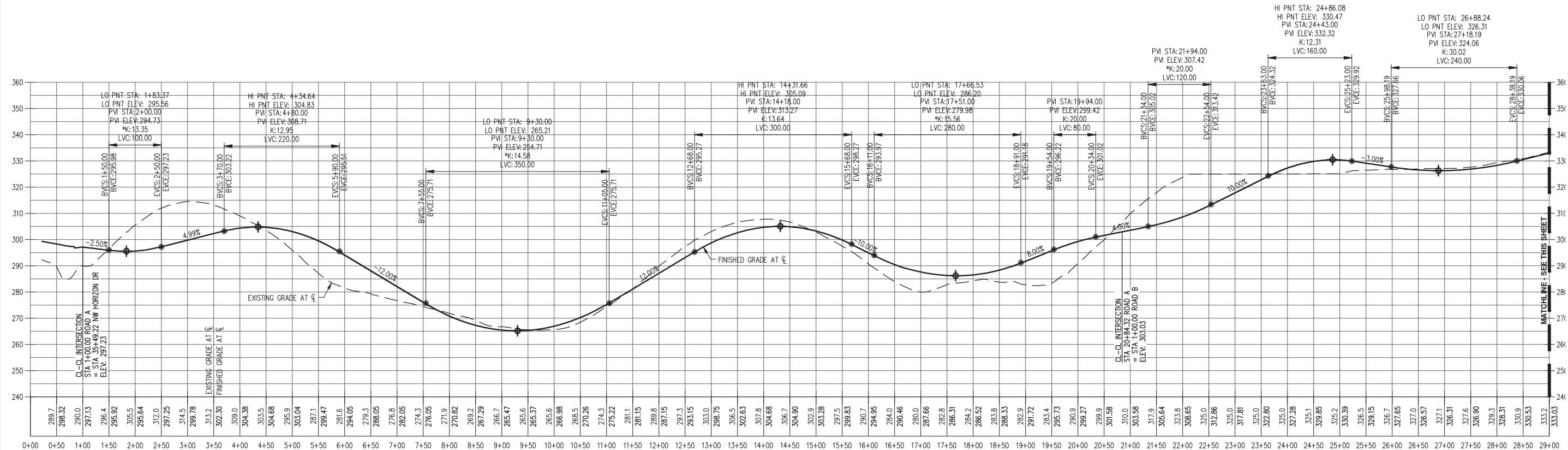
**NW MT MAZAMA ST**  
Hor. Scale: 1" = 100'  
Vert. Scale: 1" = 20'



**NW HORIZON DRIVE**  
Hor. Scale: 1" = 100'  
Vert. Scale: 1" = 20'

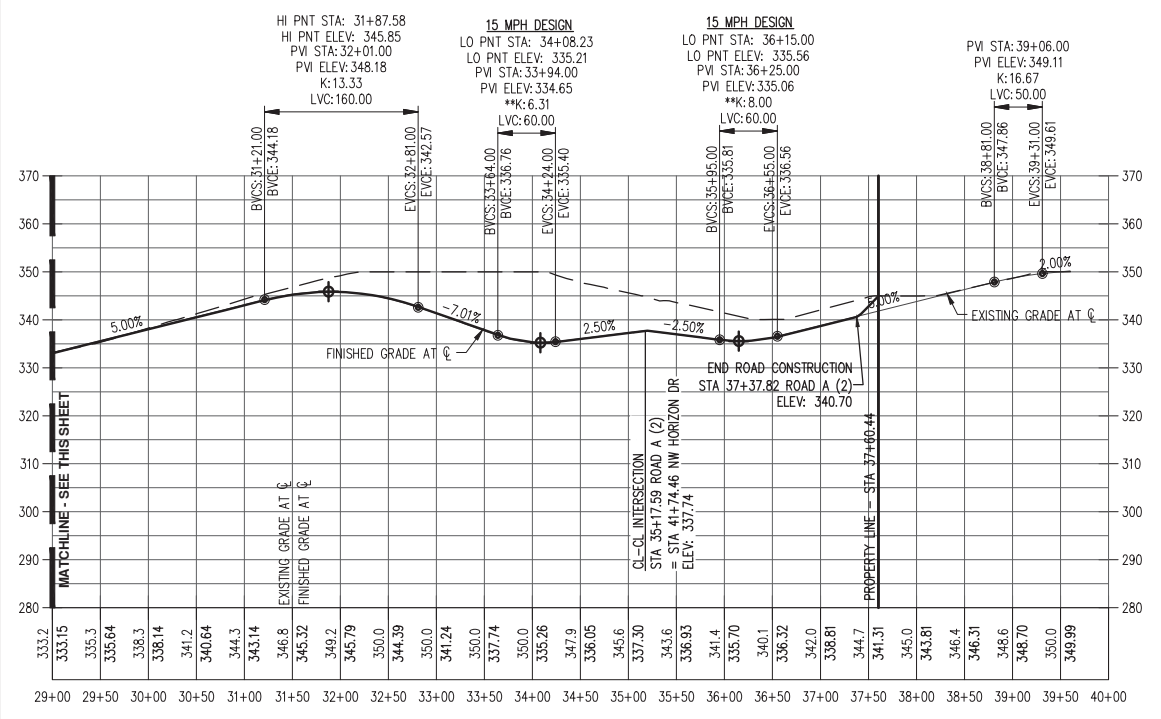


**MT ASHLAND LN**  
Hor. Scale: 1" = 100'  
Vert. Scale: 1" = 20'

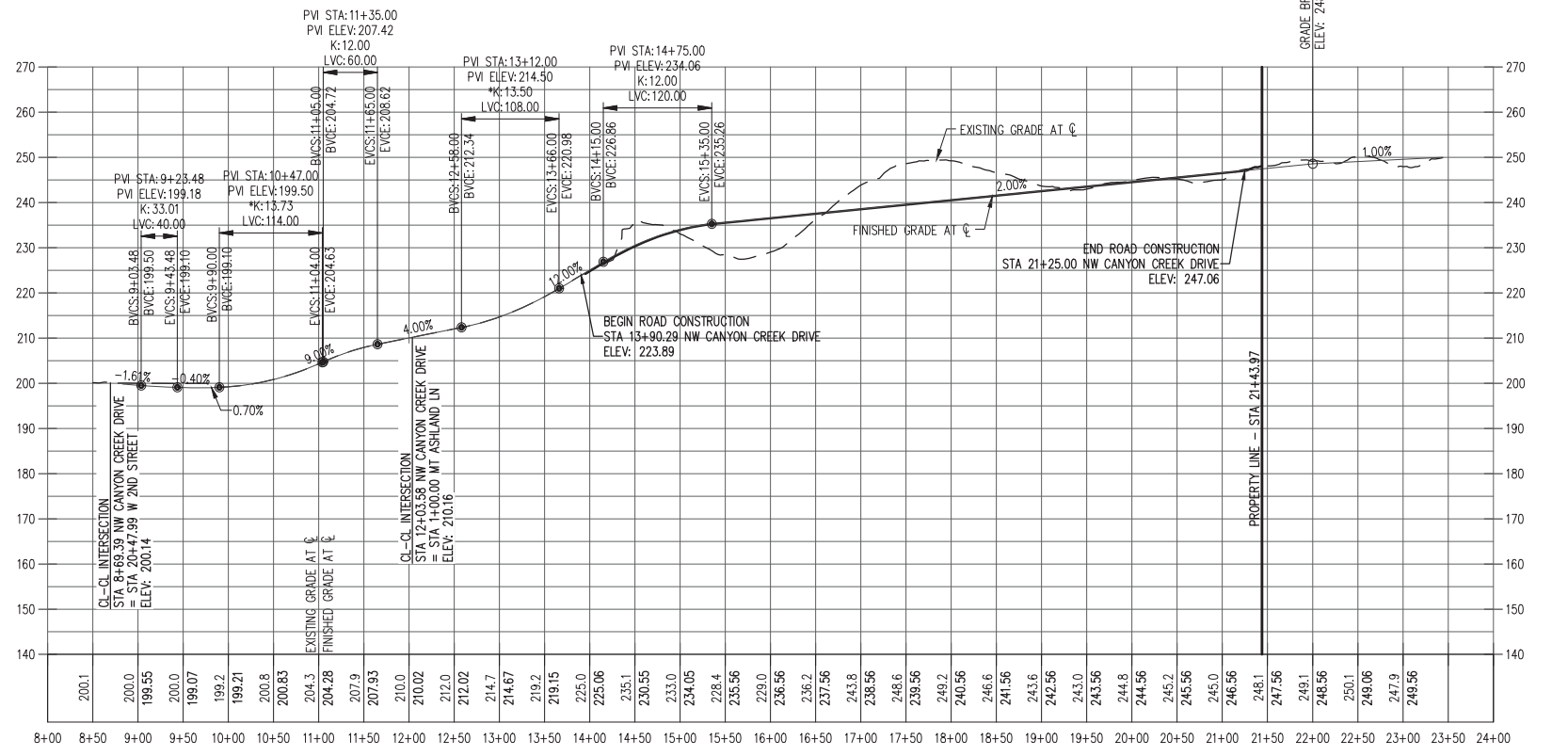


**ROAD A**  
 Hor. Scale: 1" = 100'  
 Vert. Scale: 1" = 20'

\*SAG VERTICAL CURVE MEETS 25 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
 \*\*SAG VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS

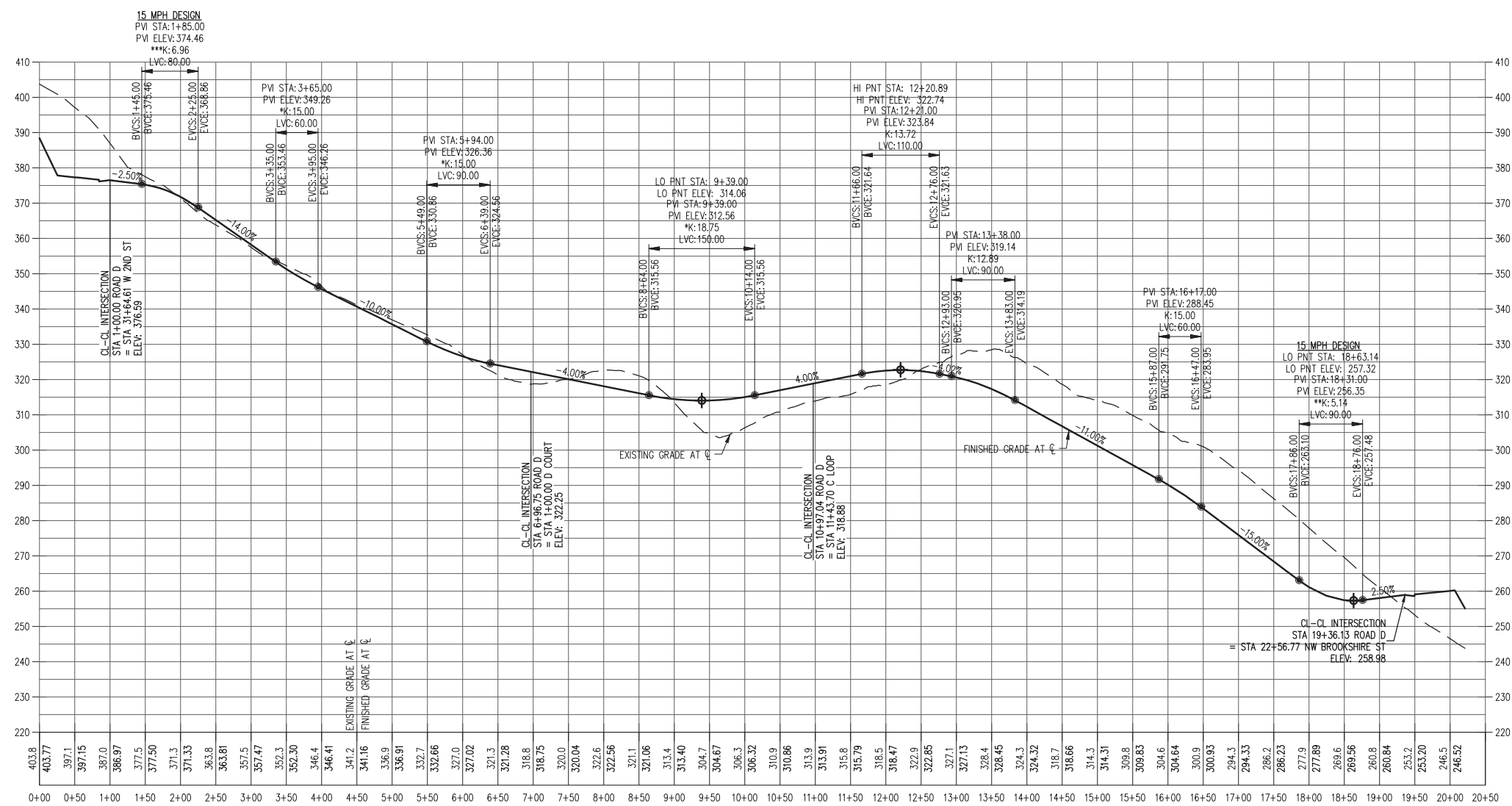


**ROAD A (2)**  
 Hor. Scale: 1" = 100'  
 Vert. Scale: 1" = 20'

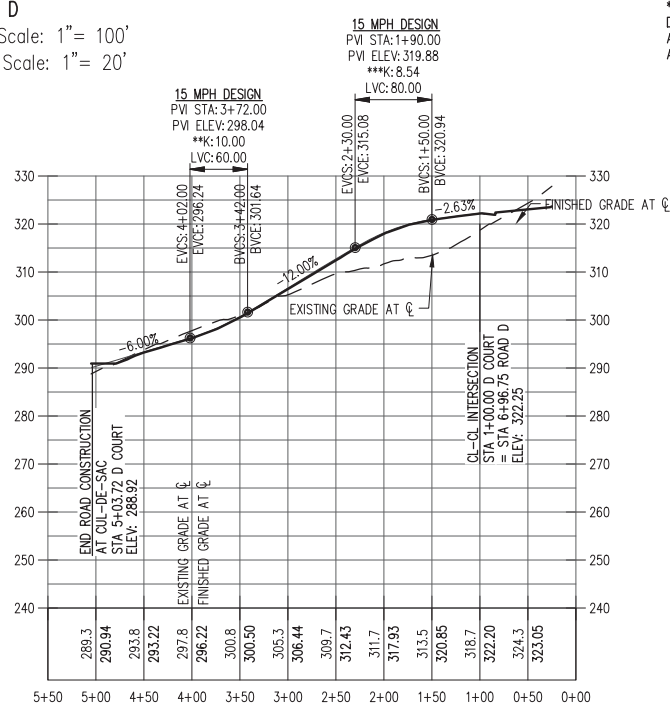


**NW CANYON CREEK DRIVE**  
 Hor. Scale: 1" = 100'  
 Vert. Scale: 1" = 20'





**ROAD D**  
 Hor. Scale: 1" = 100'  
 Vert. Scale: 1" = 20'



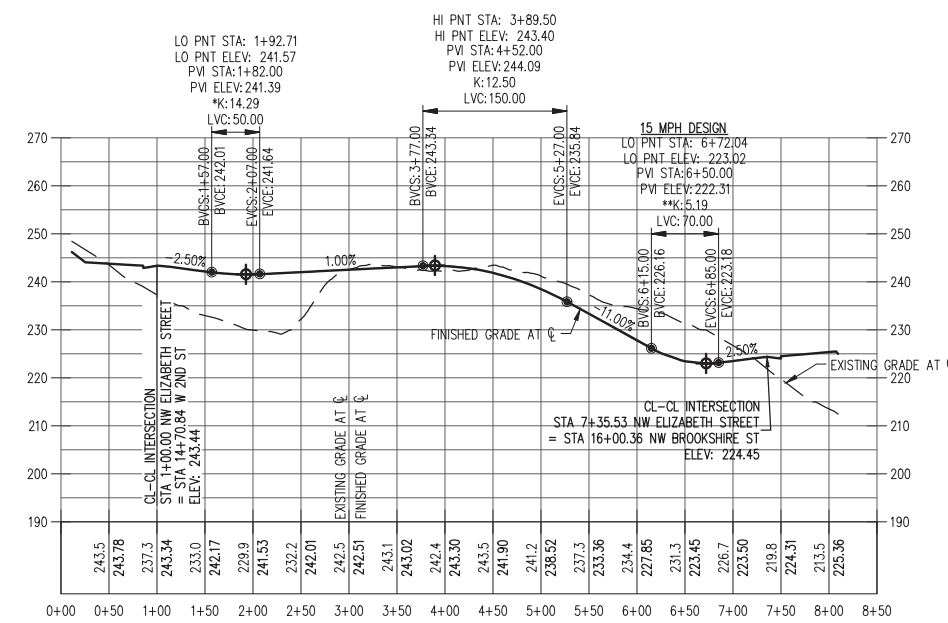
**D COURT**  
 STA 0+00.00 - STA 5+50.00  
 Hor. Scale: 1" = 100'  
 Vert. Scale: 1" = 20'

\*\*SAG VERTICAL CURVE MEETS 25 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS

\*\*SAG VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS

\*\*SAG VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS

\*\*\*CREST VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED PER AASHTO DESIGN STANDARDS

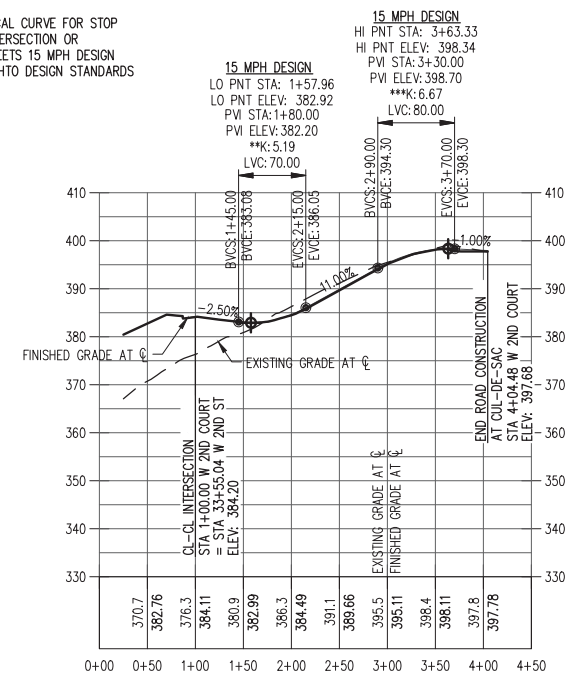
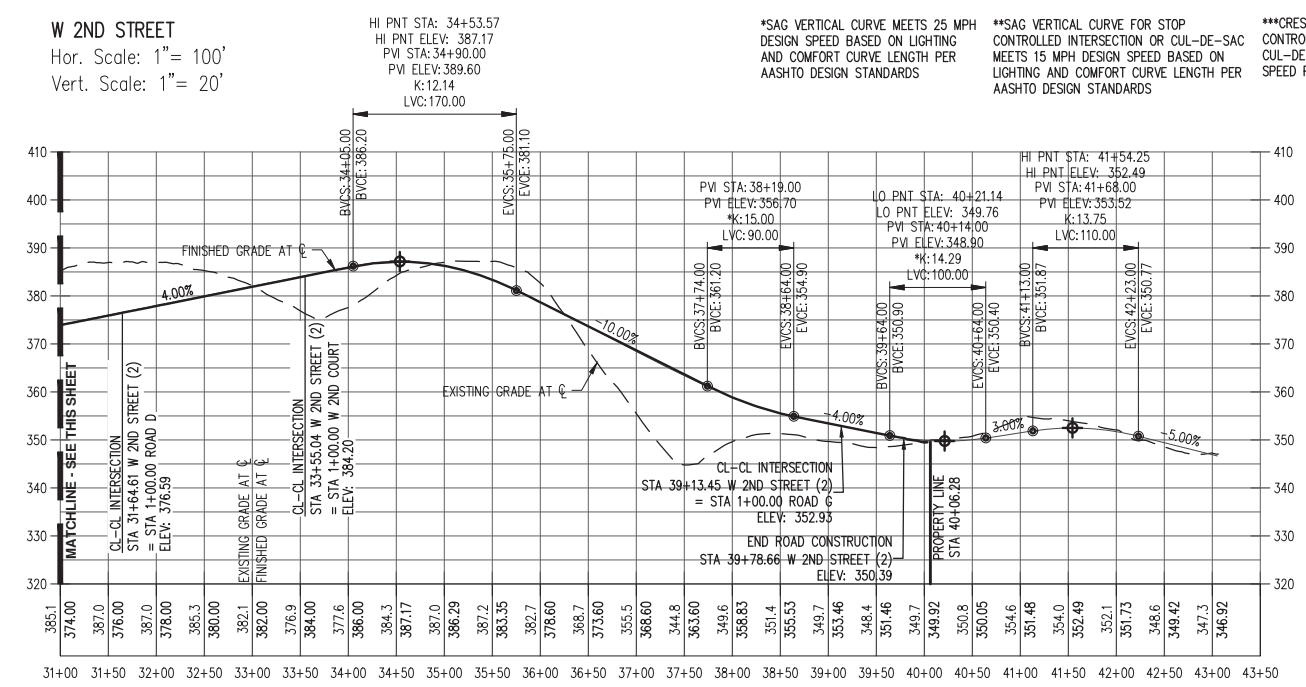
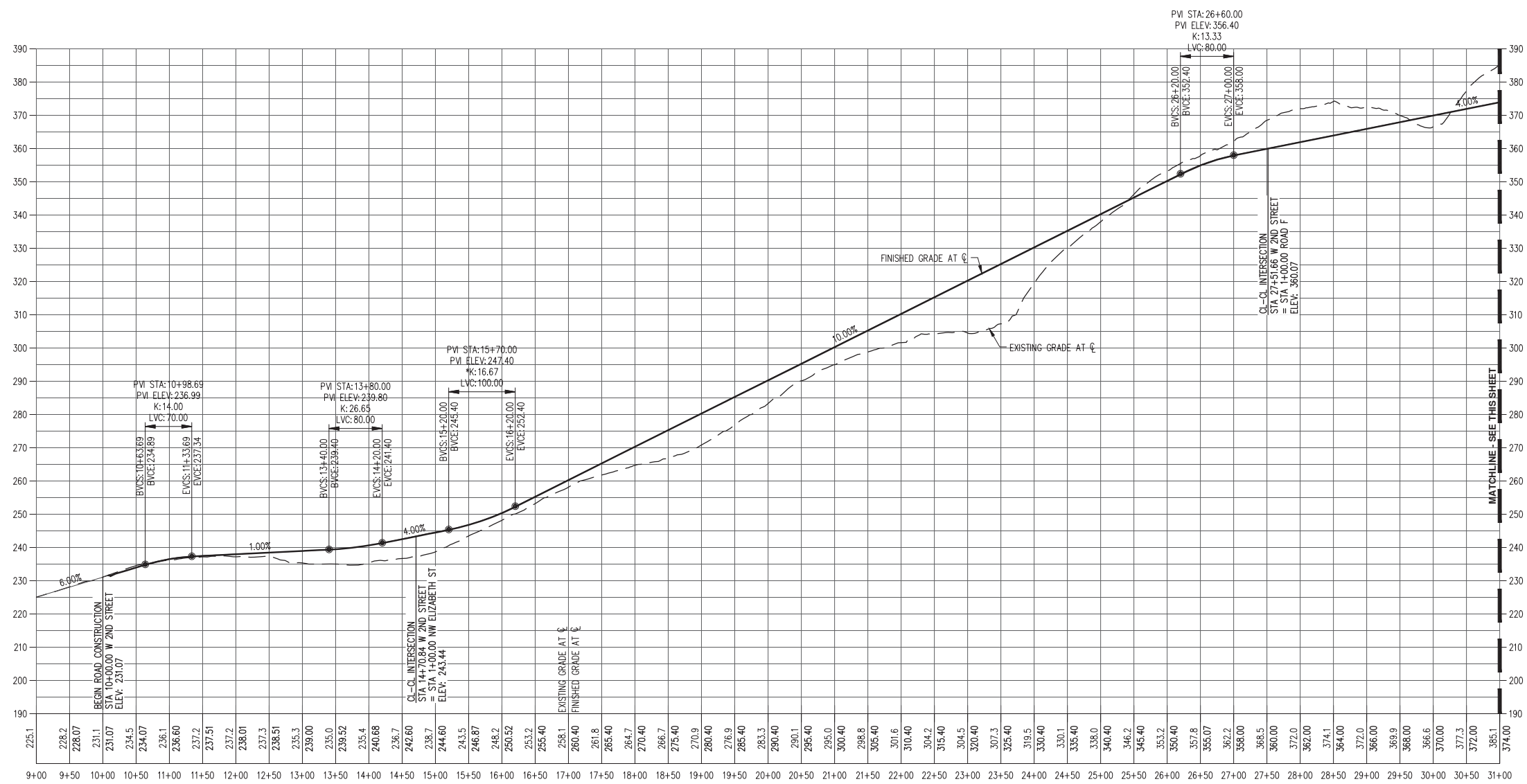


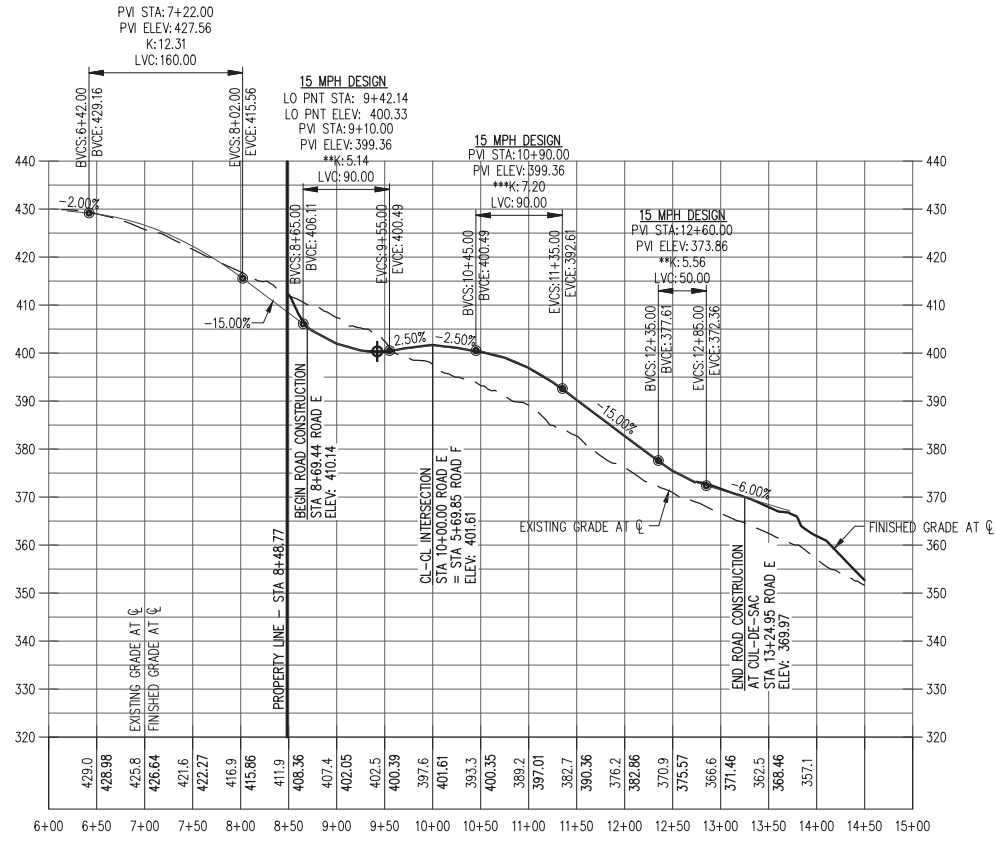
**NW ELIZABETH STREET**  
 Hor. Scale: 1" = 100'  
 Vert. Scale: 1" = 20'

**PRELIMINARY STREET PROFILES**

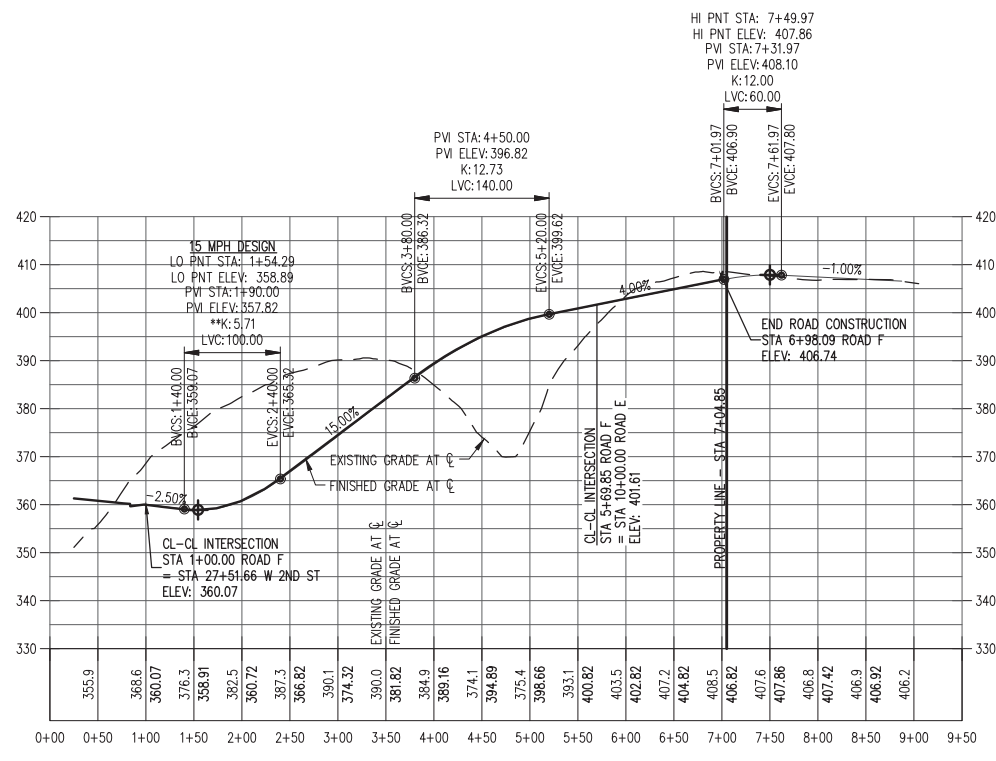
DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017  
  
 RENEWAL DATE: 6/30/18

JOB NUMBER  
**5147**  
 SHEET  
**SP-04**



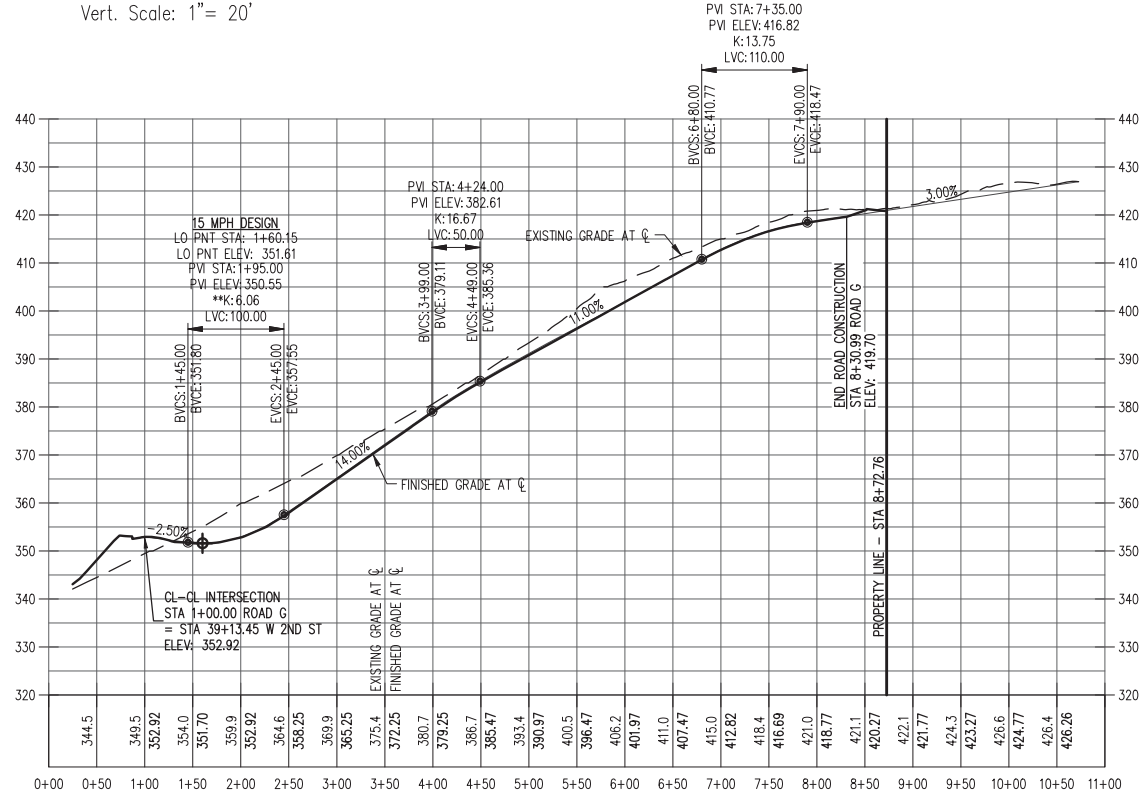


ROAD E  
Hor. Scale: 1" = 100'  
Vert. Scale: 1" = 20'



ROAD F  
Hor. Scale: 1" = 100'  
Vert. Scale: 1" = 20'

\*SAG VERTICAL CURVE MEETS 25 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
 \*\*SAG VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
 \*\*\*CREST VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED PER AASHTO DESIGN STANDARDS



ROAD G  
Hor. Scale: 1" = 100'  
Vert. Scale: 1" = 20'



---

## **Exhibit B: Application Form**

---



# Planned Development Amendment Information & Submittal Requirements



Planning Department  
231 NE Fifth Street ◦ McMinnville, OR 97128  
(503) 434-7311 Office ◦ (503) 474-4955 Fax  
[www.mcminnvilleoregon.gov](http://www.mcminnvilleoregon.gov)

## Overview

A planned development is applied to property as a vehicle to encourage variety in the development pattern of the community; encourage mixed uses in a planned area; encourage developers to use a creative approach and apply new technology in land development; preserve significant man-made and natural features; facilitate a desirable aesthetic and efficient use of open space; and create public and private open spaces. A planned development is not intended as a guise to circumvent the intent of the Zoning Ordinance. Once adopted and applied to a property, the planned development -- in concert with the Zoning Ordinance -- guides development within the subject property. The City recognizes that changes to the details of a planned development may be necessary on occasion due to circumstances that may be beyond the control of the property owner. This application is used to request such amendments.

An amendment to an existing planned development overlay may be either major or minor. Minor changes to an adopted site plan may be approved by the Planning Director. Any text amendments or major changes to an adopted site plan must be approved by the Planning Commission. Major changes to an adopted site plan include the following:

- A. An increase in the amount of land within the subject site;
- B. An increase in density, including the number of housing units;
- C. A reduction in the amount of open space; or
- D. Changes to the vehicular system which results in a significant change to the location of streets, shared driveways, parking areas, and access.

For further clarification as to what constitutes a major or minor amendment, you are encouraged to contact the Planning Department before submitting an application.

## Application Submittal

The following materials must be provided at the time of submittal, or the application will not be accepted for processing.

- A completed Planned Development Amendment application form. If additional explanation or materials would assist or support the request, include them with the application form.
- A site plan (drawn to scale, with a north direction arrow, legible, and of a reproducible size). The site plan should show existing and proposed features such as: access; lot and street lines with dimensions in feet; distances from property lines; improvements; and significant features (slope, vegetation, adjacent development, drainage, etc.).
- A legal description of the subject site, preferably taken from the deed.

A copy of the current planned development overlay ordinance.

Payment of the applicable review fee.

## Review Process

Upon receipt of a complete application for a major change to an existing planned development, the Planning Department will schedule a date and time for the Planning Commission's public hearing on the request, and provide notification of the proposed amendment to property owners within 300 feet of the subject site. The Planning Commission's public hearing will follow the procedures as stated in Sections 17.72.120 (Applications – Public Hearings) and 17.72.130 (Public Hearing Process) of the Zoning Ordinance.

Approval of an amendment to an existing planned development requires that the applicant demonstrate that the following criteria, as stated in Section 17.74.070 (Planned Development Amendment – Review Criteria) of the Zoning Ordinance have been met:

- A. There are special physical conditions or objectives of a development which the proposal will satisfy to warrant a departure from the standard regulation requirements;
- B. Resulting development will not be inconsistent with the Comprehensive Plan objectives of the area;
- C. The development shall be designed so as to provide for adequate access to, and efficient provision of, services to adjoining parcels;
- D. The plan can be completed within a reasonable period of time;
- E. The streets are adequate to support the anticipated traffic, and the development will not overload the streets outside the planned area;
- F. Proposed utility and drainage facilities are adequate for the population densities and type of development proposed;
- G. The noise, air, and water pollutants caused by the development do not have an adverse effect upon surrounding areas, public utilities, or the city as a whole.

Following the close of the hearing, the Commission will vote to forward a recommendation to the City Council to approve the requested amendment, or approve it with a different form. If the Commission recommends the request be denied, no further proceedings shall be held, unless an appeal of the Commission's decision is filed, as stated in Section 17.72.180 (Appeal from Ruling of Planning Commission) of the Zoning Ordinance.

Upon receipt of the decision of the Planning Commission to recommend approved the Council shall:

- A. Based on the material in the record and the findings adopted by the Commission and transmitted to the City Council, adopt an ordinance effecting the proposed change, or;
- B. Call for a public hearing on the proposal subject to the notice requirements stated in Section 17.72.120(D-F) (Applications – Public Hearings) of the Zoning Ordinance.



**Planning Department**  
 231 NE Fifth Street ◦ McMinnville, OR 97128  
 (503) 434-7311 Office ◦ (503) 474-4955 Fax  
[www.mcminnvilleoregon.gov](http://www.mcminnvilleoregon.gov)

<b>Office Use Only:</b>	
File No.	_____
Date Received	_____
Fee	_____
Receipt No.	_____
Received by	_____

## Planned Development Amendment Application

### Applicant Information

**Applicant is:**  Property Owner    Contract Buyer    Option Holder    Agent    Other \_\_\_\_\_

Applicant Name West Hills Properties, LLC Phone please contact Applicant's consultant

Contact Name Howard Aster Phone \_\_\_\_\_  
*(If different than above)*

Address 2300 SW 2nd St., Suite B

City, State, Zip McMinnville, OR 97128

Contact Email please contact Applicant's consultant (see attached application narrative for contact information)

### Property Owner Information

Property Owner Name R&B Kauer Investments, LLC and BR House, LLC Phone please contact Applicant's consultant  
*(If different than above)*

Contact Name see Applicant info above Phone \_\_\_\_\_

Address PO Box 731

City, State, Zip McMinnville, OR 97128

Contact Email please contact Applicant's consultant

### Site Location and Description

*(If metes and bounds description, indicate on separate sheet)*

Property Address no site address

Assessor Map No. R4      5 - 24      - 00801 Total Site Area +/- 132.2

Subdivision Hillcrest Planned Development Block \_\_\_\_\_ Lot \_\_\_\_\_

Comprehensive Plan Designation Residential Zoning Designation R-2 PD





5. Document how the site can be efficiently provided with public utilities, including water, sewer, electricity, and natural gas, if needed, and that there is sufficient capacity to serve the proposed use: \_\_\_\_\_

Please see the attached narrative.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Describe, in detail, how the proposed use will affect traffic in the area. What is the expected trip generation? \_\_\_\_\_

Please see the attached narrative.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

In addition to this completed application, the applicant must provide the following:

- A site plan (drawn to scale, legible, and of a reproducible size). The site plan should show existing and proposed features such as: access; lot and street lines with dimensions in feet; distances from property lines; improvements; north direction arrow, and significant features (slope, vegetation, adjacent development, drainage, etc.).
- A copy of the current planned development overlay ordinance.
- A legal description of the subject site, preferably taken from the deed.
- Payment of the applicable review fee, which can be found on the Planning Department web page.

I certify the statements contained herein, along with the evidence submitted, are in all respects true and are correct to the best of my knowledge and belief.

Howard Oster  
Applicant's Signature

March 2, 2017  
Date

Howard Oster  
Property Owner's Signature

March 2, 2017  
Date



---

## **Exhibit C: Property Ownership Information**

---

**Yamhill County Parcel Information**



*First American Title*

**Parcel Information**

**Parcel #:** R452400801  
**Account:** 532603  
**Related:**  
**Site Address:**  
 McMinnville, OR 97128  
**Owner:** R & B Kauer Investments LLC 1/2  
**Owner2:** B R House LLC 1/4  
**Owner Address:** PO Box 731  
 McMinnville, OR 97128  
**Phone:**  
**Twn/Range/Section:** T: 04S R: 05W S: 24 Q:  
**Parcel Size:** 137.98 Acres (6,010,409 SF)  
**Plat/Subdivision:**  
**Lot:**  
**Block:**  
**Map Page/Grid:** 770-C5  
**Census Tract/Block:** 030602/2020  
**Waterfront:**

**Assessment Information**

**Market Value Land:** \$13,660,020  
**Market Value Impr:** \$0  
**Market Value Total:** \$13,660,020  
**Assessed Value:** \$294,220

**Tax Information**

**Levy Code Area:** 40.0  
**Levy Rate:** 16.9278  
**Tax Year:** 2016  
**Annual Tax:** \$4,980.49

**Exemption Description:**

**Legal**

POTENTIAL ADDITIONAL TAX LIABILITY 137.98 ACRES IN SEC 24 T4S R5W

**Land**

**Cnty Land Use:** 680 - Forest - Multiple special assessments - Vacant  
**Land Use Std:** VAGR - VACANT AGRICULTURE/RURAL  
**Neighborhood:** I005  
**Watershed:** Yamhill River

**Cnty Bldg Use:** -  
**Zoning:** R-2 - Single Family Residential  
**Recreation:** -  
**School District:** 40

**Improvement**

<b>Year Built:</b> 0	<b>Attic Fin/Unfin:</b> 0 / 0 SF	<b>Foundation:</b>
<b>Bedrooms:</b> 0	<b>Bathrooms:</b> 0.00	<b>Roof Covering:</b>
<b>Bldg Fin:</b> 0 SF	<b>Bsmt Fin/Unfin:</b> 0 / 0 SF	<b>Garage:</b> 0 SF
<b>1st Floor:</b> 0 SF	<b>2nd Floor:</b> 0 SF	<b>Ext Walls:</b>
<b>A/C:</b> No	<b>FirePlace:</b> 0	<b>Heat Type:</b>

**Transfer Information**

<b>Rec. Date:</b> 2/6/2012	<b>Sale Price:</b>	<b>Doc Num:</b> 2012/1333	<b>Doc Type:</b> BS
----------------------------	--------------------	---------------------------	---------------------

Sentry Dynamics, Inc. and its customers make no representations, warranties or conditions, express or implied, as to the accuracy or completeness of information contained in this report.







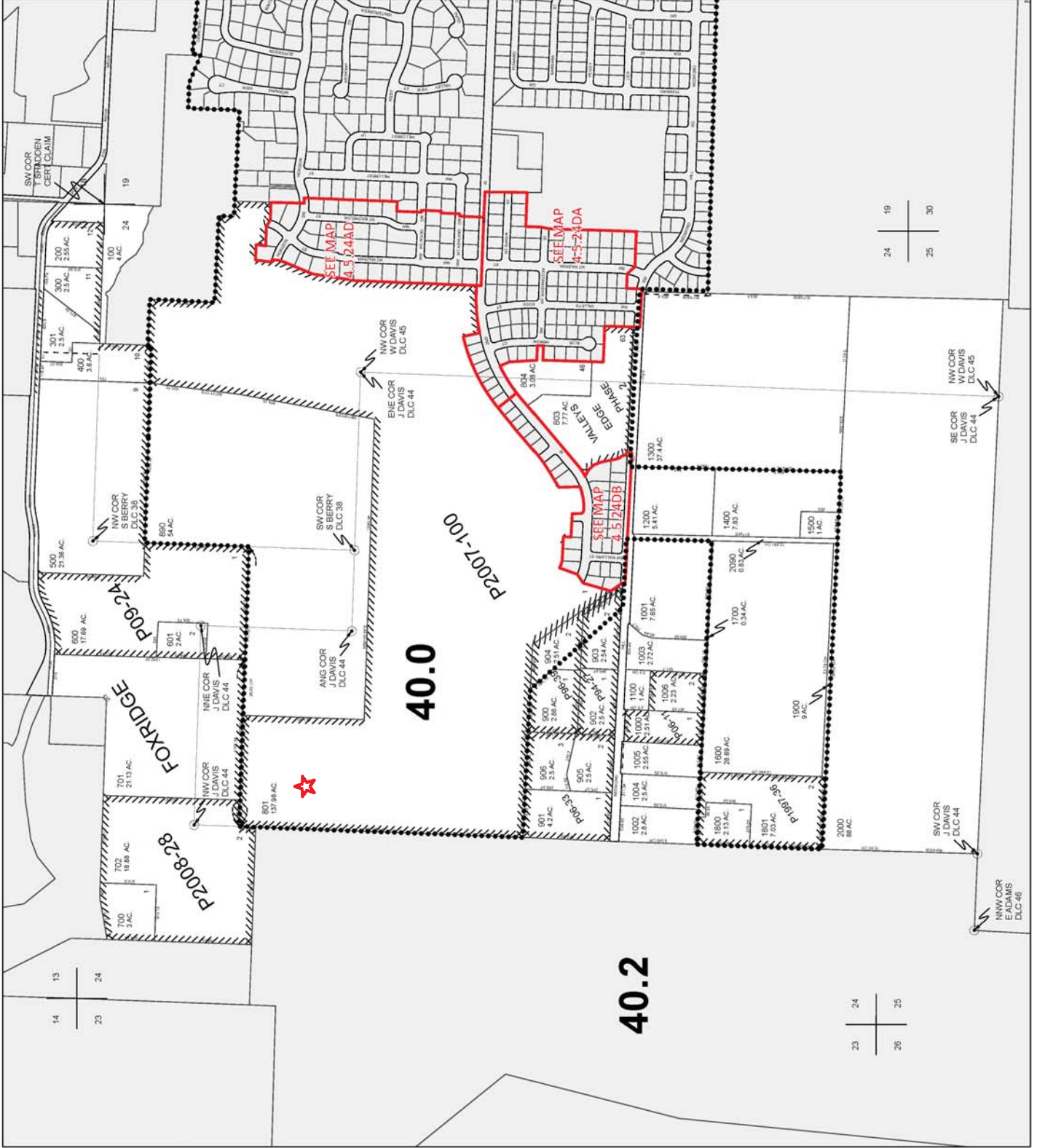
ASSESSMENT & TAX  
CARTOGRAPHY

SECTION 24 T.4S. R.5W. W.M.  
YAMHILL COUNTY OREGON  
1" = 400'

CANCELLED TAXLOTS:  
600  
601  
00802

DATE PRINTED: 10/22/2014

This product is for Assessment and Taxation (A&T) purposes only and has not been prepared or is suitable for legal, engineering, surveying or any purposes other than assessment and taxation.







After recording return to Grantee and until a change is requested all tax statements shall be sent to the Grantee at the following address:  
 Jerry Allen and Edith Allen  
 2707 NW Horizon Dr.  
 McMinnville, OR 97128

Grantor Address:  
 Jerry Allen and Edith Allen  
 2707 NW Horizon Dr.  
 McMinnville, OR 97128

File No.: 1031-1827587 (LF)  
 Date: January 30, 2012

THIS SPACE RESERVED FOR RECORDER'S USE

OFFICIAL YAMHILL COUNTY RECORDS  
 REBEKAH STERN DOLL, COUNTY CLERK

2012-01333



\$66.00

00385384201200013330060065

02/06/2012 09:15:00 AM

DMR-DDMR Cnt=1 Stn=3 SUSIE  
 \$30.00 \$10.00 \$11.00 \$15.00

**STATUTORY BARGAIN AND SALE DEED**

**R & B Kauer Investments, LLC as to a 1/2 interest; B R House, LLC as to a 1/4 interest; Howard N. Aster as to a 1/8 interest; Margaret E. B. Aster as to a 1/8 interest,** Grantor, conveys to **R & B Kauer Investments, LLC, as to a 1/2 interest; B. R. House, LLC, as to a 1/4 interest; Howard N. Aster as to a 1/8 interest; Margaret E. B. Aster as to a 1/8 interest,** Grantee, the following described real property:

**LEGAL DESCRIPTION:** Real property in the County of Yamhill, State of Oregon, described as follows:

**See Exhibit "A"**

The true consideration for this conveyance is **To perfect Boundary Line Adjustment Docket #BLA1-08.** (Here comply with requirements of ORS 93.030)

FIRST AMERICAN TITLE



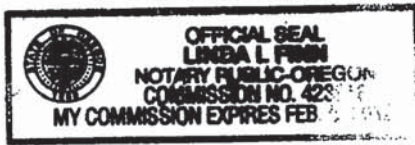
APN: R4524AD-00400

Bargain and Sale Deed  
- continued

File No.: 1031-1827587 (LF)  
Date: 01/30/2012

STATE OF Oregon )  
 )ss.  
County of Yamhill )

This instrument was acknowledged before me on this 31 day of January, 2012  
by Barry House as Member of B. R. House, LLC.

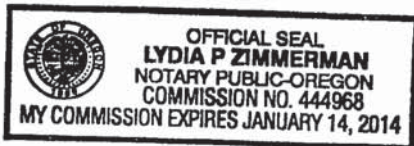


Linda L. Finn

Notary Public for Oregon  
My commission expires: 2/6/2012

STATE OF Oregon )  
 )ss.  
County of Yamhill )

This instrument was acknowledged before me on this 2 day of February, 2012  
by ~~Howard N. Aster and Margaret E. B. Aster.~~ Margaret E. B. Aster

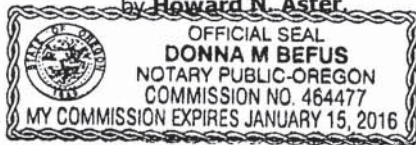


Lydia Zimmerman

Notary Public for Oregon  
My commission expires: Jan 14 2014

STATE OF Oregon )  
 )ss.  
County of Yamhill )

This instrument was acknowledged before me on this 2 day of February, 2012  
by Howard N. Aster



Donna Befus

Notary Public for Oregon  
My commission expires:

Matt Dunckel & Assoc.  
Land Surveyors  
3765 Riverside Drive  
McMinnville, OR 97128  
Phone: 503-472-7904  
Fax: 503-472-0367  
E-Mail: matt@dunckelassoc.com

Date: 5 Feb. 2008

KAUER – Legal Description of "new" TL 801 (133 Ac. more or less)

A tract of land in Section 24, Township 4 South, Range 5 West, City of McMinnville, Yamhill County, Oregon, being more particularly described as follows:

Beginning at the intersection of the west line of VALLEY'S EDGE-Phase 1 with the centerline of Redmond Hill Road; thence North  $00^{\circ}20'28''$  West 628.87 feet along the west line of VALLEY'S EDGE-Phase 1; thence North  $01^{\circ}39'57''$  East 50.02 feet along said west line; thence North  $00^{\circ}47'28''$  West 54.13 feet along said west line; thence North  $02^{\circ}50'50''$  West 42.00 feet along said west line; thence North  $06^{\circ}35'47''$  West 74.99 feet along said west line; thence North  $10^{\circ}42'44''$  West 74.99 feet along said west line; thence North  $14^{\circ}29'28''$  West 80.12 feet along said west line; North  $13^{\circ}42'08''$  West 60.00 feet to the northwest corner of VALLEY'S EDGE-Phase 1 and the beginning of a non-tangent curve concave to the south having a radius of 1030.00 feet; thence easterly 251.14 feet along said curve (chord= North  $83^{\circ}16'58''$  East 250.51 feet); thence South  $89^{\circ}44'58''$  East 48.72 feet to the southwest corner of HILLCREST- PHASE 5; thence North  $00^{\circ}40'13''$  East 267.78 feet to the southwest corner of HILLCREST PHASE 4; thence North  $00^{\circ}15'00''$  East 532.22 feet along the west line of HILLCREST PHASE 4; thence North  $06^{\circ}52'55''$  East 291.95 feet along said west line; thence North  $20^{\circ}40'09''$  East 224.52 feet along said west line; thence North  $04^{\circ}06'34''$  East 60.55 feet along said west line; thence North  $04^{\circ}35'27''$  East 108.63 feet along said west line to the northwest corner of HILLCREST PHASE 4; thence North  $89^{\circ}55'14''$  East 87.28 feet along the north line of HILLCREST PHASE 4; thence South  $04^{\circ}31'24''$  West 64.21 feet along said north line; North  $89^{\circ}55'14''$  East 126.21 feet along said north line; thence South  $61^{\circ}40'46''$  East 52.10 feet along said line; thence North  $89^{\circ}32'11''$  East 117.10 feet along said line to the west line of HILLCREST PHASE 3; thence North  $00^{\circ}27'49''$  West 240.00 feet along said west line to the north line of that tract of land described in deed from BARRY HOUSE and ROBERTA HOUSE, HOWARD N. ASTER and MARGARATE B. ASTER and RAYMOND C. KAUER and BARBARA M. KAUER to KHA PROPERTIES, LLC and recorded in Instrument 200322470, Yamhill County Deed Records; thence North  $89^{\circ}06'31''$  West 50.3' feet along said north line; thence North 1.50 chains along said north line; thence North  $89^{\circ}30''$  West 8.71 chains along said line; thence North  $00^{\circ}45'$  East 6.25 chains along said line; thence South  $89^{\circ}45''$  West 24.89 chains along said line; thence South

690.73' along said line; thence West 28.25 chains along said line to the northwest corner of said KHA PROPERTIES, LLC tract; thence South 37.985 chains along the west line of said tract to the centerline of Redmond Hill Road; thence Easterly along the centerline of Redmond Hill Road to the point of beginning.

EXCEPTING THEREFROM that tract of land described in deed to Yamhill County and recorded August 5, 1926 in Book 94, Page 461, Yamhill County Deed Records.

ALSO EXCEPTING that tract of land described in deed from BARRY HOUSE and ROBERTA HOUSE, and RAYMOND C. KAUER and BARBARA M. KAUER to DONALD and JEAN OLIVER and recorded Film Volume 309, Page 354, Yamhill County Deed Records.

ALSO EXCEPTING that tract of land described in deed from BARRY HOUSE and ROBERTA HOUSE, and RAYMOND C. KAUER and BARBARA M. KAUER to RICHARD and CHARLOTTE BORGAN and recorded Film Volume 309, Page 433, Yamhill County Deed Records.

ALSO EXCEPTING that tract of land described in deed to UNION LODGE NO. 43 A.F. and A.M. and recorded November 24, 1906 in Book 46 Page 571, Yamhill County Deed Records.

ALSO EXCEPTING that tract of land described in deed to LINFIELD COLLEGE, trustee of the RAYMOND C. KAUER and BARBARA M. KAUER Charitable Remainder Unitrust and BARRY W. HOUSE and ROBERTA M. HOUSE Charitable Remainder Unitrust and recorded December 27, 1995 in Instrument No. 199517375 and Instrument No. 199517376, Yamhill County Deed Records

ALSO EXCEPTING (MEKKERS Tract) the following described tract: Beginning at a point that is North 36.415 chains from the southwest corner of said John B. Davis Donation Land Claim; thence North 20.00 feet to the north line of the county road which is the TRUE POINT OF BEGINNING; thence East along the fence line bordering the county road 1471 feet to an aluminum pipe; thence North 37°19' West 450 feet to an aluminum pipe; thence North 44°27' West 316 feet to an aluminum pipe; thence West parallel with the county road 977.6 feet to a fence line now there, which is the west line of the John B. Davis Donation Land Claim; thence South along said fence line to the point of beginning.

ALSO EXCEPTING A tract of land in Section 24, Township 4 South, Range 5 West, City of McMinnville, Yamhill County, Oregon, being more particularly described as follows: Beginning at the southwest corner of Lot 86 of HILLCREST PHASE 4; thence westerly 15.06 feet along a curve concave to the south having a radius of 330.00 feet (chord=North 80°11'34" West 15.06 feet); thence North 04°35'27" East 106.03 feet; thence North 89°55'14" East 15.05 feet to the northwest corner of said Lot 86; thence South 04°35'27" West 108.63 feet along the west line of said Lot 86 to the point of beginning as shown by Exhibit "B".



# Exhibit "B"

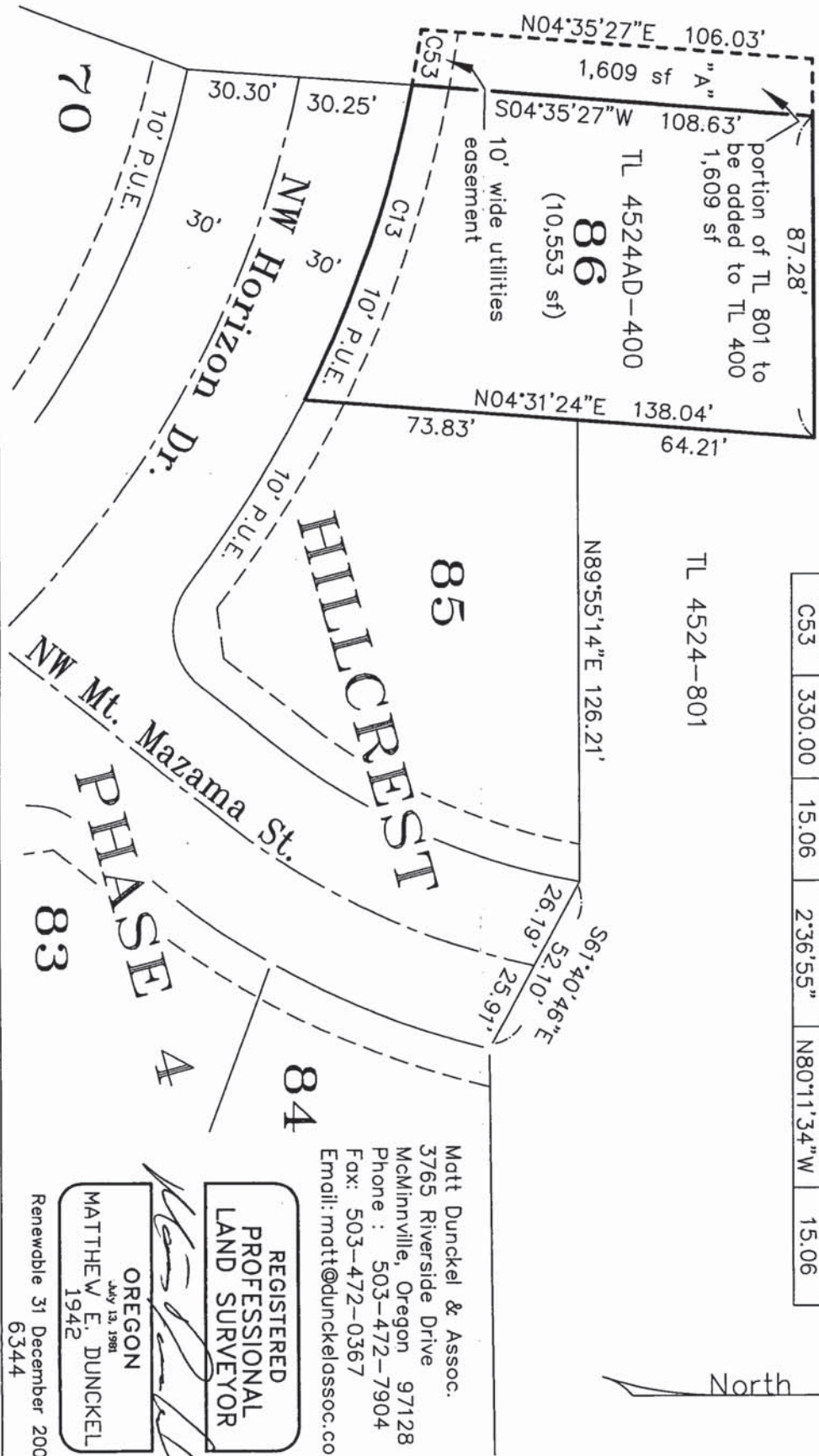
Location: NE 1/4 Section 24, T. 4 S., R. 5 W., WM.,  
City of McMinnville, Yamhill County, OR

Tax Lot: 4524-801 & 4524AD-400

Date: 15 Jan. 2008

Scale: 1" = 40'

CURVE TABLE					
CURVE	RADIUS	LENGTH	DELTA ANGLE	CHORD BEARING	CHORD DISTANCE
C13	330.00	90.24	15°40'05"	N71°03'04"W	89.96
C53	330.00	15.06	2°36'55"	N80°11'34"W	15.06



Matt Duncel & Assoc.  
3765 Riverside Drive  
McMinnville, Oregon 97128  
Phone : 503-472-7904  
Fax: 503-472-0367  
Email: matt@duncelassoc.com

REGISTERED  
PROFESSIONAL  
LAND SURVEYOR

*Matthew E. Duncel*

OREGON  
July 13, 1988  
MATTHEW E. DUNCHEL  
1942

Renewable 31 December 2009  
6344

## **Exhibit D: City of McMinnville Ord. 4868**

---

ORDINANCE NO. 4868

An Ordinance rezoning certain property from an R-1 (Single-Family Residential) zone to an R-2 PD (Single-Family Residential Planned Development) zone on a parcel of land approximately 164.1 acres in size.

RECITALS

The Planning Commission received an application (ZC 19-06) from KHA Properties, LLC, dated December 14, 2007, for a zone change from an R-1 (Single-Family Residential) zone to an R-2 PD (Single-Family Residential Planned Development) zone on a parcel of land approximately 164.1 acres in size. The property is more specifically described as a Tax Lot 800, Section 24, T. 4 S., R. 5 W., W.M.

A public hearing was held on February 15, 2007 at 6:30 p.m. before the McMinnville Planning Commission after due notice had been given in the local newspaper on February 8, 2007, and written notice had been mailed to property owners within 300 feet of the affected property; and

At said public hearing, testimony was received, the application materials and a staff report were presented; and

The Planning Commission, being fully informed about said request, found that said change conformed to the zone change review criteria listed in Chapter 17.72.035 of Ordinance No. 3380 based on the material submitted by the applicant and findings of fact and the conclusionary findings for approval contained in the staff report, all of which are on file in the Planning Department, and that the zone change is consistent with the Comprehensive Plan; and

The Planning Commission approved said zone change and has recommended said change to the Council; and

On March 8, 2007, an appeal of the Planning Commission's recommendation was filed with the City Planning Department. Consistent with the requirements of the McMinnville Zoning Ordinance, a public hearing was scheduled before the City Council on April 10, 2007 after due notice had been given in the local newspaper, and written notice had been mailed to property owners within 300 feet of the affected property; and

At said public hearing, testimony was received, the application and materials and staff report were presented. Prior to public agency input being received, the hearing was continued by the City Council to its April 24, 2007 hearing where it was concluded and a decision reached; and now, therefore,

THE CITY OF McMINNVILLE ORDAINS AS FOLLOWS:

Section 1. That the Council adopts the findings and conclusions of the Planning Commission, staff report on file in the Planning Department, and the application filed by KHA Properties, LLC.

Section 2. That the property described in Exhibit "A," is hereby rezoned from an R-1 (Single-Family Residential) zone to an R-2 PD (Single-Family Residential Planned Development) zone, subject to the following conditions:

1. That the planned development overlay shall require the following setbacks:
  - A. Development of the multi-family lot and lots within the Northridge subdivision shall be to standard R-4 zone setbacks.
  - B. Lots within the Valley's Edge Phase 2 subdivision shall be to a standard R-3 zone setback.
  - C. All other lots shall meet applicable R-2 zoning setbacks.

The Planning Director is authorized to permit reductions or increases to these setback standards as may be necessary to provide for the retention of trees greater than nine (9) inches in diameter measured at 4.5 feet above grade. In no case, however, may the side yard setback be reduced to less than five feet, or the exterior side yard setback to less than 12 feet, or the distance from the property line to the front opening of a garage be reduced to less than 18 feet without approval of the Planning Commission pursuant to the requirements of Chapter 17.69 (Variance). A request to adjust the setbacks for these lots shall be accompanied by a building plan for the subject site that clearly indicates the location of existing trees. Trees to be retained shall be protected during all phases of home construction.

That existing trees greater than nine inches DBH (diameter at breast height) shall not be removed without prior review and written approval of the Planning Director. In addition, all trees shall be protected during home construction. A plan for such protection must be submitted with the building permit application and must meet with the approval of the Planning Director prior to release of construction or building permits within the subject site. Requests for removal of such trees based upon claims of disease, or hazard should be accompanied by a report from a licensed arborist.

2. That the "Hillcrest" tentative subdivision plan (revised as necessary to comply with the adopted conditions of approval) be placed on file with the Planning Department and that it become a part of the zone and binding on the property owner and developer, and shall in no way be binding on the City.

The developer shall be responsible for requesting approval of the Planning Commission for any major change of the details of the adopted plan. Minor changes to the details of the adopted plan may be approved by the Planning Director. It shall be the Planning Director's decision as to what constitutes a major or minor change. An appeal from a ruling by the Planning Director may be made only to the Commission. Review of the Planning Director's decision by the Planning Commission may be initiated at the request of any one of the Commissioners.

3. That site plans and building elevations for the proposed multi-family units must be submitted to the Planning Director for review and approval prior to the issuance of any building permits for said units. The following criteria shall apply:
  - A. The building layout must be nonlinear in design, even if to meet this goal the number of units has to be reduced.
  - B. The building roof lines and facades must be broken so as to avoid a flat, uniform appearance.

- C. The site shall be heavily landscaped with emphasis on those sides facing a public street. Street-side landscaping shall include berming, and street trees a minimum of two-inch caliper at time of planting. In addition, parking lots shall be broken up by landscaping, and usable open space shall be provided within the development.
  - D. Signage shall be limited to a maximum of two free-standing monument-type signs, each not more than four feet in height and not exceeding 36 square feet in area. The signs, if illuminated, must be indirectly illuminated and non flashing.
  - E. Horizontal lap siding or similar type siding must be used (no T-111 or similar), and architectural composition roofing or a similar or higher grade type of roofing must be applied.
4. Prior to the issuance of the 290<sup>th</sup> building permit for the master planned development, the developer shall complete the installation of left-turn-lane improvements, meeting the City's and Yamhill County's standards, at the intersections of Hill Road / Horizon Drive and Hill Road / West Second Street.
  5. That the minimum lot sizes within the Hillcrest development may be reduced below 7,000 square feet, provided the overall residential density within the subject site (less the parkland and storm detention areas) does not exceed the net density allowed by the R-2 zone (gross density reduced by 25 percent to account for public infrastructure).

Passed by the Council this 24<sup>th</sup> day of April 2007, by the following votes:

Ayes: Hansen, Hill, Menke, Olson, May, Yoder

Nays: \_\_\_\_\_

Approved this 24<sup>th</sup> day of April 2007.



MAYOR

COUNCIL PRESIDENT

Attest:

  
CITY RECORDER

Approved as to form:

  
CITY ATTORNEY

## EXHIBIT "A"

A tract of land in Section 24, Township 4 South, Range 5 West, Yamhill County, Oregon, being part of the John B. Davis Donation Land Claim No. 44 and the William C. Davis Donation Land Claim No. 69, and also being part of the tract of land described in deed from BARRY HOUSE and ROBERTA HOUSE, HOWARD N. ASTER and MARGARAT E.B. ASTER, and RAYMOND C. KAUER and BARBARA M. KAUER to KHA PROEPRTIES, LLC and recorded in Instrument 200322470, Yamhill County Deed and Mortgage Records, and being more particularly described as follows:

Being at a point that is North 36.415 chains from the Southwest corner of said John B. Davis Donation Land Claim; thence South 89°10'43" East 3408.02 feet along the South line of that tract of land described in deed from BARRY HOUSE and ROBERTA HOUSE, HOWARD N. ASTER and MARGARAT E.B. ASTER, and RAYMOND C. KAUER and BARBARA M. KAUER to KHA PROEPRTIES, LLC and recorded in Instrument 200322470, Yamhill County Deed and Mortgage Records; thence North 00°20'28" West 629.86 feet; thence North 01°43'13" East 48.02 feet; thence North 00°39'53" West 52.35 feet; thence North 03°40'44" West 47.94 feet; thence North 06°24'27" West 75.06 feet; thence North 10°54'26" West 75.05 feet; thence North 14°29'26" West 76.51 feet; thence North 17°46'24" West 60.35 feet to the beginning of a non-tangent curve concave to the South having a radius of 1030.21 feet; thence Easterly 255.43 feet along said curve (chord=North 83°08'50" East 254.78 feet); thence South 89°45'00" East 50.70 feet; thence North 00°15'00" East 267.78 feet to the Southwest corner of HILLCREST PHASE 4; thence North 00°15'00" East 532.22 feet along the West line of HILLCREST PHASE 4; thence North 06°52'55" East 291.959 feet along said West line; thence North 20°40'09" East 224.52 feet along said West line; thence North 04°06'34" East 60.55 feet along said West line; thence North 04°35'27" East 108.63 feet along said West line to the Northwest corner of HILLCREST PHASE 4; thence North 89°55'14" East 87.28 feet along the north line of HILLCREST PHASE 4; thence South 04°31'24" West 64.21 feet along said North line; thence North 89°55'14" East 126.21 feet along said North line; thence South 61°40'46" East 52.10 feet along said line; thence North 89°32'11" East 117.10 feet along said line to the West line of HILLCREST PHASE 3; thence North 00°27'49" West 240.00 feet along said West line to the North line of said KHA PROPERTIES, LLC tract; thence North 89°06'31" West 50.3 feet along said North line; thence North 1.50 chains along said north line; thence North 89°30" West 8.71 chains along said line; thence North 00°45' East 6.25 chains along said line; thence South 89°45" West 24.89 chains along said line; thence South 690.73 feet along said line; thence West 28.25 chains along said line to the Northwest corner of said KHA PROPERTIES, LLC tract; thence South 37.985 chains along the West line of said tract to the point of beginning.

EXCEPTING THEREFROM that tract of land described in deed to Yamhill County and recorded August 5, 1926 in Book 94, Page 461, Yamhill County Deed Records.

ALSO EXCEPTING that tract of land described in deed from BARRY HOUSE and ROBERTA HOUSE, and RAYMOND C. KAUER and BARBARA M. KAUER to DONALD and JEAN OLIVER and recorded Film Volume 3096, Page 354, Yamhill County Deed Records.

ALSO EXCEPTING that tract of land described in deed from BARRY HOUSE and ROBERTA HOUSE, and RAYMOND C KAUER and BARBARA M. KAUER to RICHARD and CHARLOTTE BORGEN and recorded in Film Volume 309, Page 433, Yamhill County Deed and Mortgage Records.

ALSO EXCEPTING that tract of land described in deed to UNION LODGE NO. 43 A.F. and A.M. and recorded November 24, 1906 in Book 46 Page 571, Yamhill County Deed Records.

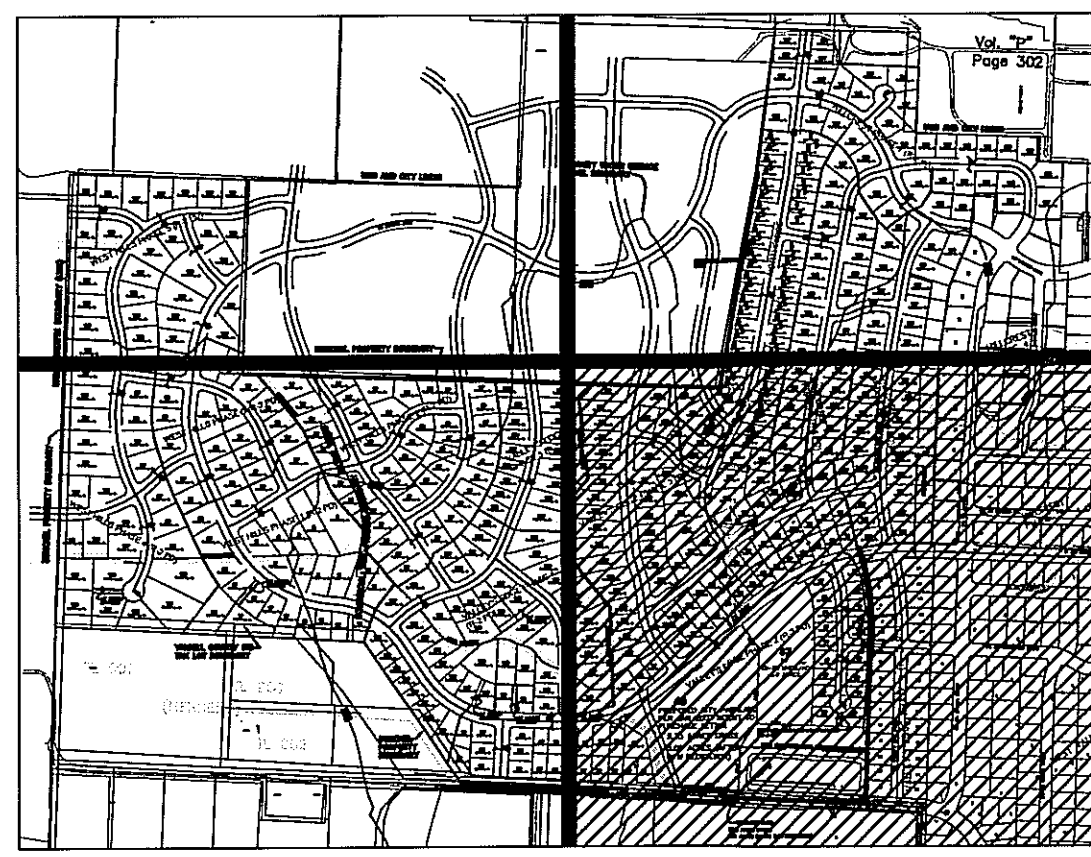
ALSO EXCEPTING that tract of land described in deed to LINFIELD COLLEGE, trustee of the RAYMOND C KAUER and BARBARA M. KAUER Charitable Remainder Unitrust and BARRY W. HOUSE and ROBERTA M. HOUSE Charitable Remainder Unitrust and recorded December 27, 1995 in Instrument No. 199517375 and Instrument No. 199517376, Yamhill County Deed and Mortgage Records.

ALSO EXCEPTING the following described tract: Beginning at a point that is North 36.415 chains from the Southwest corner of said John B. Davis Donation Land Claim; thence North 20.00 feet to the North line of the county road which is the TRUE POINT OF BEGINNING; thence East along the fence line bordering the county road 1471 feet to an aluminum pipe; thence North 37°19' West 450 feet to an aluminum pipe; thence North 44°27' West 316 feet to an aluminum pipe; thence West parallel with the county road 977.6 feet to a fence line now there, which is the West line of the John B. Davis donation Land Claim; thence South along said fence to the point of beginning.

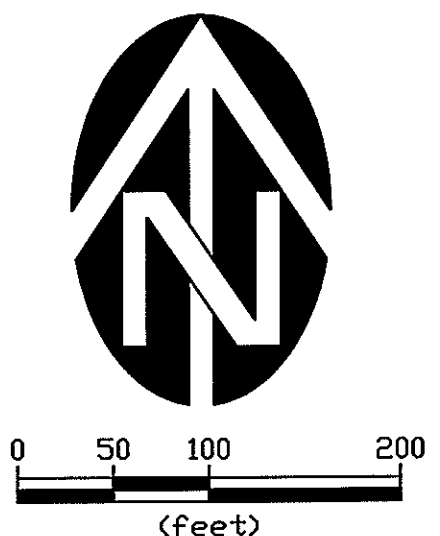




Apr 05, 2007 - 11:56am  
R: DWIG KAUFER\Overall Master Plan\_2006\Civil\Plot\Overall Subdivision Plan--April 2007.dwg (SCALE 100\_SHT 5 tab)



ZONE LEGEND



MATCHLINE - SEE SHEET 4 FOR CONTINUATION

MATCHLINE - SEE SHEET 6 FOR CONTINUATION



48  
PROPOSED CITY PARKLAND  
PER JAN 2007 INTENT TO  
PURCHASE LETTER  
5.35 ACRES GROSS  
5.09 ACRES (AFTER  
R/W DEDICATION)

DETENTION AREA  
2.58 ACRES GROSS  
2.11 ACRES (AFTER R/W DEDICATION)

NO.	DATE	DESCRIPTION	BY
1	APRIL 07	REVISED MF LOCATION	SSM

VERIFY SCALE  
BAR IS ONE INCH ON  
ORIGINAL DRAWING  
IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

1" = 100'

DATE: OCT 06

**WESTTECH ENGINEERING, INC.**  
CONSULTING ENGINEERS AND PLANNERS

3841 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302  
Phone: (503) 585-2474, Fax: (503) 585-3886  
E-mail: westtech@westtech-eng.com

KHA PROPERTIES LLC    McMinnville, Oregon

**HILLCREST MASTER PLAN**  
**REVISED PER APPEAL 2-07**

SHEET  
**5** OF **6**  
JOB NUMBER  
**2257.0000.0**



---

# Exhibit E: Preliminary Stormwater Management Memo

---

*Hillcrest Planned Development  
Master Plan Update  
Mcminnville, Oregon*

**Preliminary Stormwater  
Report**

**Date:** March 13, 2017

**Client:** West Hills Properties, LLC  
P.O. Box 731  
McMinnville, OR 97128

**Engineering Contact:** Paul Sellke, PE, GE  
PaulS@aks-eng.com

**Engineering Firm:** AKS Engineering & Forestry, LLC



12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
P: (503) 563-6151  
www.aks-eng.com



RENEWAL: JUNE 30, 2018

*Hillcrest Planned Development  
Master Plan Update  
Mcminnville, Oregon*

**Preliminary Stormwater  
Report**

**Date:** March 13, 2017

**Client:** West Hills Properties, LLC  
P.O. Box 731  
McMinnville, OR 97128

**Engineering Contact:** Paul Sellke, PE, GE  
PaulS@aks-eng.com

**Engineering Firm:** AKS Engineering & Forestry, LLC



12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
P: (503) 563-6151  
[www.aks-eng.com](http://www.aks-eng.com)

---

## Table of Contents

<b>1.0</b>	<b>PURPOSE OF REPORT .....</b>	<b>1</b>
<b>2.0</b>	<b>PROJECT LOCATION/DESCRIPTION .....</b>	<b>1</b>
<b>3.0</b>	<b>REGULATORY DESIGN CRITERIA.....</b>	<b>1</b>
3.1	Stormwater Quantity .....	1
3.2	Stormwater Quality.....	1
<b>4.0</b>	<b>DESIGN PARAMETERS .....</b>	<b>2</b>
4.1	Design Methodology .....	2
4.2	Design Storm .....	2
4.3	Pre-Developed Site Conditions .....	2
4.3.1	Site Topography .....	2
4.3.2	Land Use.....	2
4.4	Soil Type .....	2
4.5	Post-Developed Site Conditions.....	2
4.5.1	Site Topography .....	2
4.5.2	Land Use.....	3
4.5.3	Post-Developed Input Parameters.....	3
4.5.4	Description of Off-Site Contributing Basins .....	3
<b>5.0</b>	<b>STORMWATER ANALYSIS .....</b>	<b>3</b>
5.1	Post-Developed Stormwater Peak Flow Comparison .....	3

## Tables

<b>Table 4-1:</b>	Rainfall Intensity .....	2
<b>Table 5-1:</b>	Post-Developed Total Drainage Basin Peak Flow Comparison .....	3

## Figures

- FIGURE 1:** VICINITY MAP  
**FIGURE 2:** POST-DEVELOPED BASIN DELINEATION

## Appendices

- APPENDIX A:** POST-DEVELOPED SITE WITH OFFSITE BASINS 10-YEAR STORM EVENT ANALYSIS  
**APPENDIX B:** WEST HILLS PROPERTIES STORMWATER REPORT  
**APPENDIX C:** HYDROLOGICAL SOIL GROUP MAPS  
**APPENDIX D:** TR55 RUNOFF CURVE NUMBERS
-

---

# **Preliminary Stormwater Report**

## **HILLCREST PLANNED DEVELOPMENT**

### **MASTER PLAN UPDATE**

### **MCMINNVILLE, OREGON**

#### **1.0 Purpose of Report**

This report evaluates the effects of the master plan update on the existing seasonal drainage swales and downstream system. We will document the criteria, methodology, and informational sources used to evaluate the anticipated stormwater runoff due to the modified subdivision, and present the results and comparison of our analyses to the original stormwater report.

#### **2.0 Project Location/Description**

The proposed residential subdivision is planned for north of W 2nd Street, west of NW Mt. Mazama Street, and south of NW Fox Ridge Road in the City of McMinnville, Oregon (City). The property proposed for development encompasses 132.2 acres (Tax Lot 801, Tax Map 4S-5-24).

The phased planned development will create a 647-lot residential subdivision for single-family detached and attached homes and multi-family apartment units. The proposed modification to the master plan proposes a maximum total of 488 new single-family units to be constructed with future phases (91 single-family homes and 68 multi-family apartments have already been constructed/platted). The site improvements will include the construction of public streets, underground utilities, and new stormwater facilities. Additional stormwater facilities will be incorporated into the subdivision to meet state and federal requirements for wetland fill permits.

#### **3.0 Regulatory Design Criteria**

##### **3.1 STORMWATER QUANTITY**

Stormwater quantity management for this project currently uses the existing regional stormwater facility, which was designed to detain the stormwater runoff from the 10-year storm event (see the West Hills Properties Stormwater Report included in Appendix B for additional information). Additional stormwater facilities (vegetated swales and/or extended dry basins) will be incorporated into the future phases of the subdivision to meet stormwater quantity requirements for state and federal wetland fill permit requirements (SLOPES V).

The existing regional stormwater facility, built in 2007, and the Valley's Edge Subdivision storm conveyance system (stormwater master plan for all subdivision phases) were designed using the 1991 City of McMinnville Storm Drainage Master Plan. This report will evaluate the proposed stormwater runoff quantities utilizing the 2009 Storm Drainage Master Plan standards.

##### **3.2 STORMWATER QUALITY**

The City currently does not require stormwater quality treatment for stormwater runoff. Stormwater facilities (which will include water quality treatment) will be incorporated where necessary, as each phase develops, to meet the stormwater quality requirements to obtain state and federal wetland fill permits. The modifications will preserve the open channel waterways, which are recommended for water quality measures within Section 9.6.3 of the 2009 Storm Drainage Master Plan.

---

## 4.0 Design Parameters

### 4.1 DESIGN METHODOLOGY

The stormwater runoff analysis was completed using the Santa Barbara Urban Hydrograph (SBUH) Method. This method uses the Soil Conservation Service (SCS) Type 1A 24-hour design storm. HydroCAD 10.0 computer software aided in the analysis. The Natural Resources Conservation Service (NCRS) *Technical Release 55* (TR-55) provided representative curve numbers (CNs) and selected values are identified in Appendix D.

### 4.2 DESIGN STORM

Per City of McMinnville 2009 Master Plan requirements, the stormwater analysis utilized the 24-hour storm event for the evaluation of the pre- and post-developed stormwater runoff. The following 24-hour rainfall intensity was used as the design storm for the recurrence interval:

Table 4-1: Rainfall Intensity	
Recurrence Interval (years)	Total Precipitation Depth (inches)
10	3.8*

\*The original stormwater report by Westech used a 24-hour, 10-year rainfall intensity of 3.6 inches as required at the time of subdivision approval.

### 4.3 PRE-DEVELOPED SITE CONDITIONS

#### 4.3.1 Site Topography

Existing on-site grades vary from  $\pm 1\%$  to  $\pm 30\%$ , with open seasonal swales running throughout the western side of the property and draining towards the south (existing W 2nd Street). The site has a high point of  $\pm 440$  feet in the northwest corner and a low point of  $\pm 195$  feet near the southern boundary along SW Redmond Hill Road.

#### 4.3.2 Land Use

The pre-developed site is vacant land and currently comprises pasture land and/or wooded areas.

### 4.4 SOIL TYPE

Per the 2009 McMinnville Storm Drainage Master Plan, the soils found in the City of McMinnville area are generally silt loams with low to moderate permeability. The soils were grouped into NRCS Hydrologic Groups A, B, C, or D. By overlaying the City's Hydrological Soil Groups Map on the site, the underlying soils were determined to range from Groups A to D soils. The off-site basins were assumed to be Group C soils since most of the property is comprised of the same. Appendix C includes a map with the location of the hydrologic soil groups and an overlay of the site.

### 4.5 POST-DEVELOPED SITE CONDITIONS

#### 4.5.1 Site Topography

The on-site slopes will be modified with cuts and fills to accommodate the construction of public streets and associated utilities. Additionally, sloped residential building pads will be constructed adjacent to the public right-of-way. Significant grading (cuts/fills) will be required to develop the site due to the site's topography.

---

## 4.5.2 Land Use

The post-developed site land use will consist of a multi-phase 647-lot, single- and multi-family residential subdivision with associated streets, sidewalks, and underground utilities.

## 4.5.3 Post-Developed Input Parameters

Appendix A of this report includes the HydroCAD Report generated for the analyzed storm event. The report includes the parameters (e.g., impervious/pervious areas, time of concentration, etc.) applied to model the post-developed hydrology.

## 4.5.4 Description of Off-Site Contributing Basins

Off-site basins (Basins 160X, 170X, 180X, 190X, 200X, 210X, 220X, 230X, 240X, 250X, 260X, 270X and 280X) currently convey flow through the project site by a system of seasonal swales running north to south. To accommodate the flow coming from these off-site basins, the seasonal swales will maintain their current alignment (when possible) and road crossing culverts will be designed to convey the 10-year storm event.

## 5.0 Stormwater Analysis

### 5.1 POST-DEVELOPED STORMWATER PEAK FLOW COMPARISON

The City requires all proposed developments to provide stormwater detention of the post-developed 10-year storm event peak runoff to the pre-developed 10-year storm event peak runoff. Stormwater quantity management will be satisfied with an existing regional stormwater pond located west of SW Valley's Edge Street and north of SW Redmond Hill Road. The West Hills Properties Stormwater Report, dated September 2007, states that the existing regional facility has been sized to provide stormwater detention for the full development of Tax Lot 801.

The following table presents the results for the total peak flow for the post-developed total drainage basin and the comparative results with respect to the West Hills Properties Stormwater Report prepared by Westech Engineering.

Table 5-1: Post-Developed Total Drainage Basin Peak Flow Comparison	
Report	10-year, 24-Hour Developed Flows (cfs)
Westech Engineering	199.1
AKS Engineering & Forestry, LLC	191.4

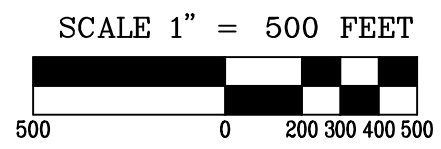
As shown above, the increase in the number of lots does not result in an increase in the overall stormwater runoff volumes due to the conservative assumptions used in the original stormwater analysis. (i.e., impervious area based on density vs actual lot area).

As outlined in the Westech Stormwater Report, the existing regional stormwater facility in the West Hills Neighborhood Park was designed to detain stormwater runoff during the 10-year storm event. However, due to jurisdictional water/wetland impacts, new stormwater facilities are required within the subdivision to meet the state and federal permit requirements due to wetland impacts. These facilities will further detain stormwater runoff for lower storm events and be incorporated into the subdivision as needed for future development phases of the site, likely requiring reductions in the number of lots to provide space for the facilities.



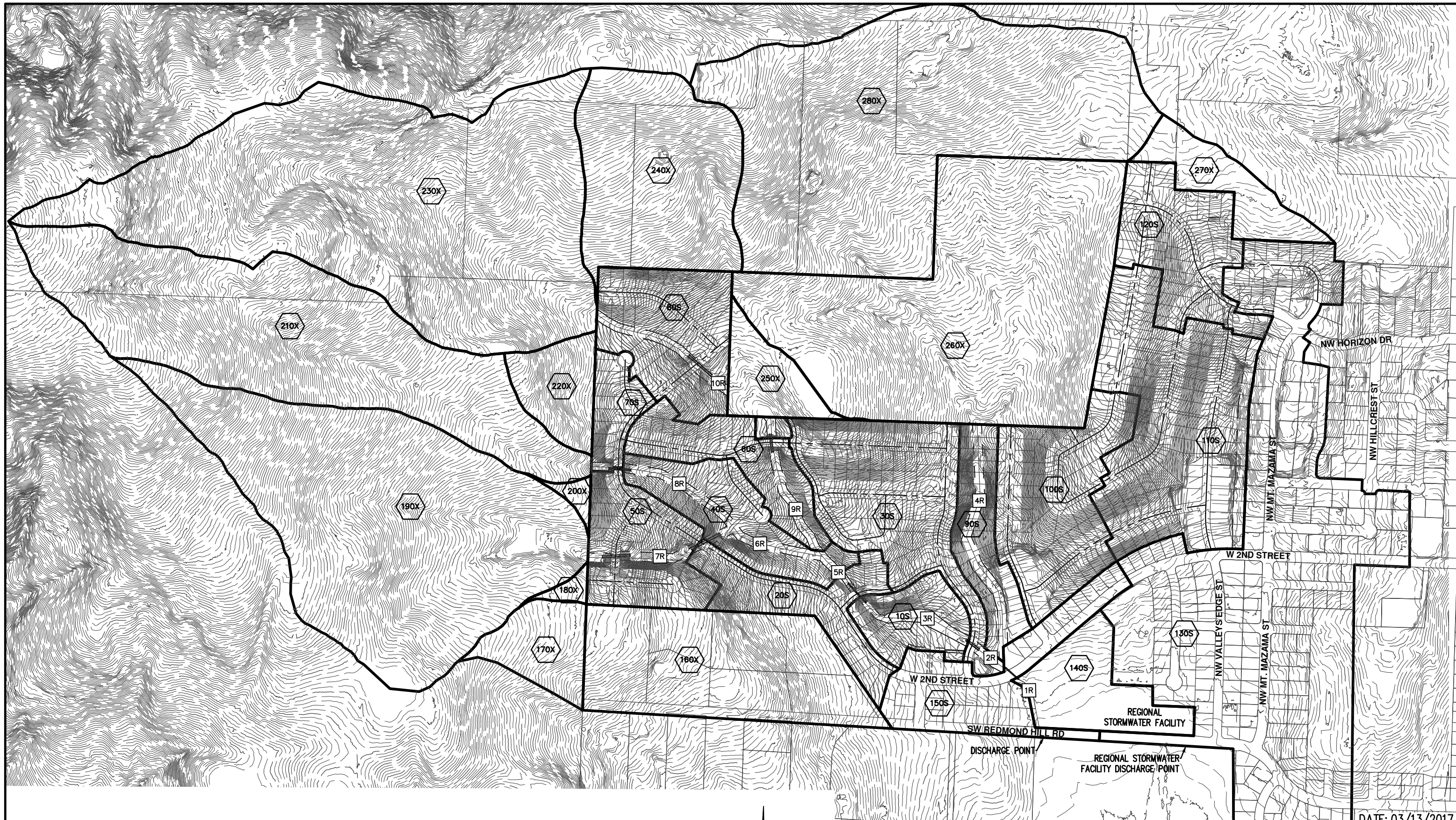


DATE: 03/09/2017

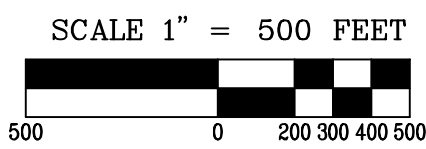


<b>VICINITY MAP</b>		FIGURE
<b>HILLCREST MASTER PLAN</b>		<b>1</b>
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 P: 503.563.6151 F: 503.563.6152 aks-eng.com		DRWN: CTS CHKD: PAS AKS JOB: 5147





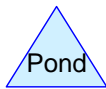
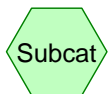
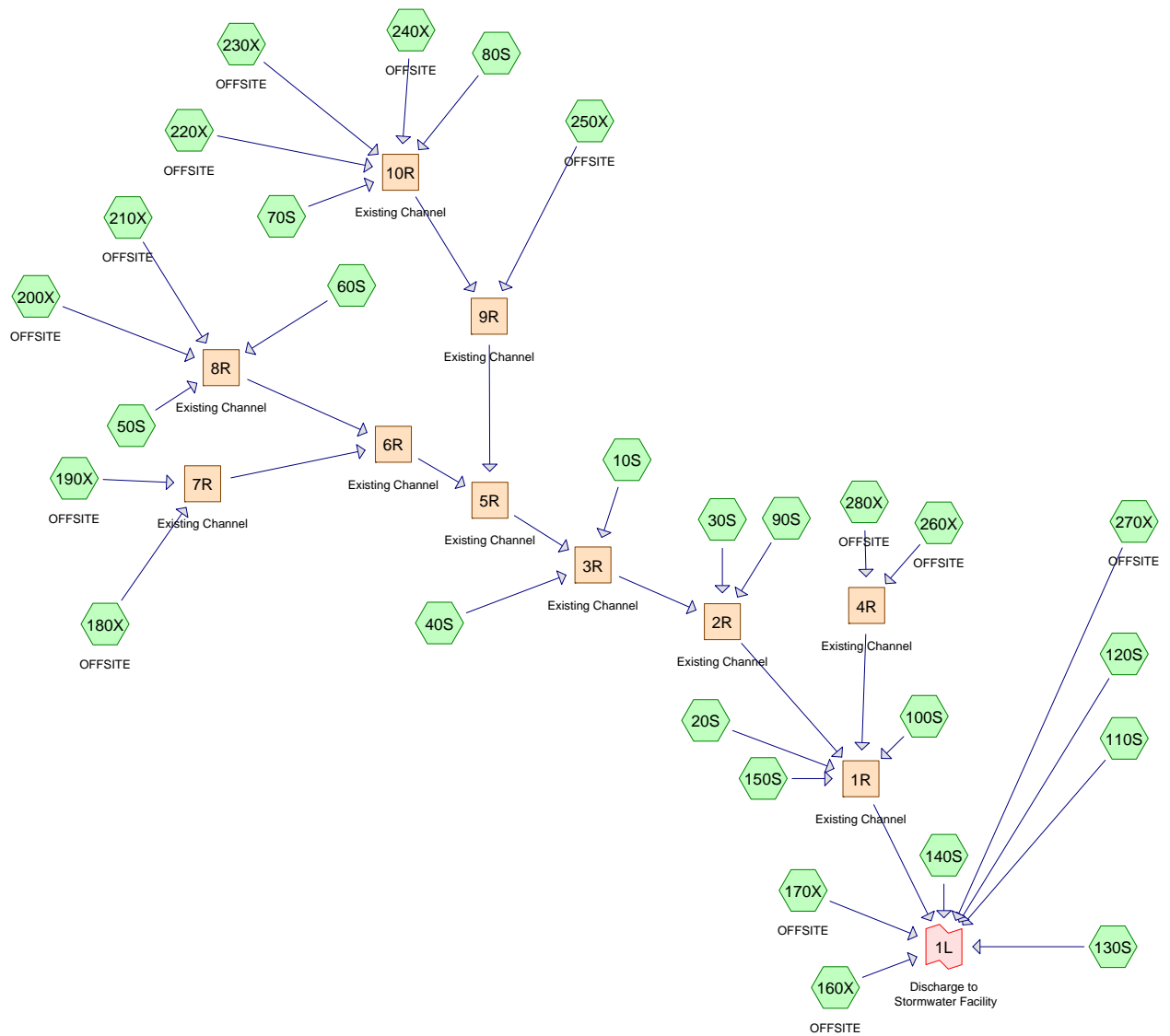
DATE: 03/13/2017



<b>POST-DEVELOPED BASIN DELINEATION</b>		FIGURE
<b>HILLCREST MASTER PLAN</b>		<b>2</b>
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 P: 503.563.6151 F: 503.563.6152 aks-eng.com		DRWN: CTS CHKD: PAS AKS JOB: 5147

# **APPENDIX A**

## **POST-DEVELOPED SITE WITH OFFSITE BASINS 10-YEAR STORM EVENT ANALYSIS**



**Routing Diagram for 5147 MASTER PLAN POST-DEV - ALL DEV**  
 Prepared by AKS Engineering & Forestry, LLC, Printed 3/14/2017  
 HydroCAD® 10.00-18 s/n 01338 © 2016 HydroCAD Software Solutions LLC

# 5147 MASTER PLAN POST-DEV - ALL DEV

Prepared by AKS Engineering & Forestry, LLC

HydroCAD® 10.00-18 s/n 01338 © 2016 HydroCAD Software Solutions LLC

Printed 3/14/2017

Page 2

## Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
28.537	61	1/4 acre lots, 38% imp, HSG A (160X, 260X)
354.160	83	1/4 acre lots, 38% imp, HSG C (130S, 160X, 170X, 180X, 190X, 200X, 210X, 220X, 230X, 240X, 250X, 260X, 270X, 280X)
3.833	87	1/4 acre lots, 38% imp, HSG D (250X, 260X)
2.032	98	28% Impervious Area on Lots (150S)
17.007	39	>75% Grass cover, Good, HSG A (lots) (20S, 30S, 50S, 60S, 80S, 90S, 100S, 110S)
7.808	74	>75% Grass cover, Good, HSG C (140S)
5.758	74	>75% Grass cover, Good, HSG C (ROW) (20S, 30S, 40S, 50S, 60S, 70S, 80S, 100S, 110S, 120S, 150S)
54.522	74	>75% Grass cover, Good, HSG C (lots) (10S, 20S, 30S, 40S, 50S, 60S, 70S, 80S, 100S, 110S, 120S, 150S)
2.453	80	>75% Grass cover, Good, HSG D (lots) (110S, 120S)
19.901	98	Impervious Area in ROW (20S, 30S, 40S, 50S, 60S, 70S, 80S, 100S, 110S, 120S, 150S)
6.485	98	Impervious Area on Lots (2640 sf x 107 lots) (110S)
1.273	98	Impervious Area on Lots (2640 sf x 21 lots) (10S)
4.727	98	Impervious Area on Lots (2640 sf x 26 lots) (20S, 50S, 60S)
1.948	98	Impervious Area on Lots (2640 sf x 31 lots) (40S)
2.242	98	Impervious Area on Lots (2640 sf x 37 lots) (80S)
2.303	98	Impervious Area on Lots (2640 sf x 38 lots) (90S)
2.424	98	Impervious Area on Lots (2640 sf x 40 lots) (120S)
3.091	98	Impervious Area on Lots (2640 sf x 51 lots) (30S)
3.273	98	Impervious Area on Lots (2640 sf x 54 lots) (100S)
0.545	98	Impervious Area on Lots (2640 sf x 9 lots) (70S)
1.933	30	Woods, Good, HSG A (natural resource easement) (50S, 90S)
6.041	70	Woods, Good, HSG C (natural resource easement) (10S, 40S, 50S, 60S, 80S, 110S)
<b>532.296</b>	<b>80</b>	<b>TOTAL AREA</b>

**5147 MASTER PLAN POST-DEV - ALL DEV**

Prepared by AKS Engineering & Forestry, LLC

HydroCAD® 10.00-18 s/n 01338 © 2016 HydroCAD Software Solutions LLC

Printed 3/14/2017

Page 3

**Soil Listing (all nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
47.477	HSG A	20S, 30S, 50S, 60S, 80S, 90S, 100S, 110S, 160X, 260X
0.000	HSG B	
428.289	HSG C	10S, 20S, 30S, 40S, 50S, 60S, 70S, 80S, 100S, 110S, 120S, 130S, 140S, 150S, 160X, 170X, 180X, 190X, 200X, 210X, 220X, 230X, 240X, 250X, 260X, 270X, 280X
6.286	HSG D	110S, 120S, 250X, 260X
50.244	Other	10S, 20S, 30S, 40S, 50S, 60S, 70S, 80S, 90S, 100S, 110S, 120S, 150S
<b>532.296</b>		<b>TOTAL AREA</b>

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment 10S:</b>	Runoff Area=229,654 sf 24.14% Impervious Runoff Depth>1.91" Tc=5.0 min CN=73/98 Runoff=2.25 cfs 0.838 af
<b>Subcatchment 20S:</b>	Runoff Area=332,852 sf 40.71% Impervious Runoff Depth>2.12" Flow Length=2,080' Tc=5.8 min CN=69/98 Runoff=3.61 cfs 1.351 af
<b>Subcatchment 30S:</b>	Runoff Area=734,581 sf 41.15% Impervious Runoff Depth>2.10" Flow Length=2,042' Tc=5.3 min CN=68/98 Runoff=7.86 cfs 2.949 af
<b>Subcatchment 40S:</b>	Runoff Area=387,551 sf 25.74% Impervious Runoff Depth>1.94" Flow Length=1,462' Tc=7.7 min CN=73/98 Runoff=3.76 cfs 1.438 af
<b>Subcatchment 50S:</b>	Runoff Area=406,337 sf 33.01% Impervious Runoff Depth>1.71" Flow Length=1,565' Tc=8.3 min CN=63/98 Runoff=3.17 cfs 1.332 af
<b>Subcatchment 60S:</b>	Runoff Area=335,735 sf 31.22% Impervious Runoff Depth>2.02" Flow Length=1,528' Tc=7.5 min CN=72/98 Runoff=3.41 cfs 1.294 af
<b>Subcatchment 70S:</b>	Runoff Area=151,887 sf 34.18% Impervious Runoff Depth>2.17" Flow Length=885' Tc=6.7 min CN=74/98 Runoff=1.72 cfs 0.630 af
<b>Subcatchment 80S:</b>	Runoff Area=531,993 sf 28.01% Impervious Runoff Depth>1.73" Flow Length=2,297' Tc=11.0 min CN=67/98 Runoff=4.09 cfs 1.757 af
<b>Subcatchment 90S:</b>	Runoff Area=285,400 sf 35.15% Impervious Runoff Depth>1.25" Flow Length=1,350' Tc=8.6 min CN=36/98 Runoff=1.98 cfs 0.683 af
<b>Subcatchment 100S:</b>	Runoff Area=632,182 sf 39.90% Impervious Runoff Depth>1.49" Flow Length=2,165' Tc=7.6 min CN=44/98 Runoff=5.03 cfs 1.797 af
<b>Subcatchment 110S:</b>	Runoff Area=1,048,600 sf 40.00% Impervious Runoff Depth>2.20" Flow Length=3,711' Tc=15.5 min CN=72/98 Runoff=10.62 cfs 4.421 af
<b>Subcatchment 120S:</b>	Runoff Area=475,503 sf 37.76% Impervious Runoff Depth>2.27" Flow Length=3,926' Tc=17.7 min CN=75/98 Runoff=4.89 cfs 2.068 af
<b>Subcatchment 130S:</b>	Runoff Area=2,606,901 sf 38.00% Impervious Runoff Depth>2.25" Flow Length=3,735' Tc=9.2 min CN=74/98 Runoff=29.87 cfs 11.199 af
<b>Subcatchment 140S:</b>	Runoff Area=340,109 sf 0.00% Impervious Runoff Depth>1.44" Flow Length=640' Slope=0.0600 '/' Tc=9.7 min CN=74/0 Runoff=2.18 cfs 0.939 af
<b>Subcatchment 150S:</b>	Runoff Area=457,197 sf 44.66% Impervious Runoff Depth>2.39" Flow Length=693' Tc=8.3 min CN=74/98 Runoff=5.71 cfs 2.088 af
<b>Subcatchment 160X: OFFSITE</b>	Runoff Area=896,268 sf 38.00% Impervious Runoff Depth>1.74" Tc=5.0 min CN=59/98 Runoff=7.23 cfs 2.976 af

**5147 MASTER PLAN POST-DEV - ALL DEV**

Type IA 24-hr 10-YR Rainfall=3.80"

Prepared by AKS Engineering &amp; Forestry, LLC

Printed 3/14/2017

HydroCAD® 10.00-18 s/n 01338 © 2016 HydroCAD Software Solutions LLC

Page 7

<b>Subcatchment 170X: OFFSITE</b>	Runoff Area=239,159 sf 38.00% Impervious Runoff Depth>2.24" Flow Length=2,530' Tc=17.0 min CN=74/98 Runoff=2.43 cfs 1.024 af
<b>Subcatchment 180X: OFFSITE</b>	Runoff Area=30,593 sf 38.00% Impervious Runoff Depth>2.24" Flow Length=665' Tc=13.9 min CN=74/98 Runoff=0.33 cfs 0.131 af
<b>Subcatchment 190X: OFFSITE</b>	Runoff Area=2,202,039 sf 38.00% Impervious Runoff Depth>2.23" Flow Length=2,997' Tc=29.1 min CN=74/98 Runoff=18.81 cfs 9.373 af
<b>Subcatchment 200X: OFFSITE</b>	Runoff Area=32,333 sf 38.00% Impervious Runoff Depth>2.24" Flow Length=1,070' Tc=12.8 min CN=74/98 Runoff=0.35 cfs 0.139 af
<b>Subcatchment 210X: OFFSITE</b>	Runoff Area=1,802,806 sf 38.00% Impervious Runoff Depth>2.22" Flow Length=3,796' Tc=31.6 min CN=74/98 Runoff=14.93 cfs 7.665 af
<b>Subcatchment 220X: OFFSITE</b>	Runoff Area=228,043 sf 38.00% Impervious Runoff Depth>2.24" Flow Length=1,152' Tc=14.9 min CN=74/98 Runoff=2.39 cfs 0.977 af
<b>Subcatchment 230X: OFFSITE</b>	Runoff Area=2,806,985 sf 38.00% Impervious Runoff Depth>2.23" Flow Length=4,118' Tc=28.5 min CN=74/98 Runoff=24.17 cfs 11.952 af
<b>Subcatchment 240X: OFFSITE</b>	Runoff Area=921,256 sf 38.00% Impervious Runoff Depth>2.23" Flow Length=2,410' Tc=23.6 min CN=74/98 Runoff=8.47 cfs 3.932 af
<b>Subcatchment 250X: OFFSITE</b>	Runoff Area=210,435 sf 38.00% Impervious Runoff Depth>2.25" Tc=5.0 min CN=74/98 Runoff=2.51 cfs 0.906 af
<b>Subcatchment 260X: OFFSITE</b>	Runoff Area=2,138,570 sf 38.00% Impervious Runoff Depth>1.76" Flow Length=1,790' Tc=9.7 min CN=60/98 Runoff=16.91 cfs 7.201 af
<b>Subcatchment 270X: OFFSITE</b>	Runoff Area=255,803 sf 38.00% Impervious Runoff Depth>2.23" Flow Length=3,690' Tc=26.8 min CN=74/98 Runoff=2.25 cfs 1.090 af
<b>Subcatchment 280X: OFFSITE</b>	Runoff Area=2,466,021 sf 38.00% Impervious Runoff Depth>2.23" Flow Length=3,163' Tc=25.8 min CN=74/98 Runoff=22.00 cfs 10.513 af
<b>Reach 1R: Existing Channel</b>	Avg. Flow Depth=3.10' Max Vel=3.52 fps Inflow=138.13 cfs 68.330 af n=0.080 L=310.0' S=0.0226 '/' Capacity=248.44 cfs Outflow=138.05 cfs 68.264 af
<b>Reach 2R: Existing Channel</b>	Avg. Flow Depth=1.24' Max Vel=2.64 fps Inflow=91.29 cfs 45.535 af n=0.080 L=264.0' S=0.0347 '/' Capacity=596.25 cfs Outflow=91.21 cfs 45.477 af
<b>Reach 3R: Existing Channel</b>	Avg. Flow Depth=1.16' Max Vel=2.77 fps Inflow=85.51 cfs 42.050 af n=0.080 L=768.0' S=0.0428 '/' Capacity=662.85 cfs Outflow=84.68 cfs 41.903 af
<b>Reach 4R: Existing Channel</b>	Avg. Flow Depth=1.61' Max Vel=2.97 fps Inflow=38.69 cfs 17.715 af n=0.080 L=1,340.0' S=0.0351 '/' Capacity=2,366.15 cfs Outflow=37.02 cfs 17.618 af
<b>Reach 5R: Existing Channel</b>	Avg. Flow Depth=1.06' Max Vel=3.18 fps Inflow=80.99 cfs 39.807 af n=0.080 L=212.0' S=0.0665 '/' Capacity=825.92 cfs Outflow=80.97 cfs 39.774 af
<b>Reach 6R: Existing Channel</b>	Avg. Flow Depth=0.80' Max Vel=2.74 fps Inflow=40.01 cfs 19.855 af n=0.080 L=537.0' S=0.0739 '/' Capacity=870.78 cfs Outflow=39.72 cfs 19.808 af



**5147 MASTER PLAN POST-DEV - ALL DEV**

Type IA 24-hr 10-YR Rainfall=3.80"

Prepared by AKS Engineering & Forestry, LLC

Printed 3/14/2017

HydroCAD® 10.00-18 s/n 01338 © 2016 HydroCAD Software Solutions LLC

Page 8

**Reach 7R: Existing Channel** Avg. Flow Depth=0.53' Max Vel=2.83 fps Inflow=19.13 cfs 9.505 af  
n=0.080 L=846.0' S=0.1162 '/' Capacity=3,539.93 cfs Outflow=18.85 cfs 9.468 af

**Reach 8R: Existing Channel** Avg. Flow Depth=0.42' Max Vel=3.19 fps Inflow=21.64 cfs 10.430 af  
n=0.080 L=905.0' S=0.1197 '/' Capacity=670.49 cfs Outflow=21.27 cfs 10.387 af

**Reach 9R: Existing Channel** Avg. Flow Depth=1.02' Max Vel=3.19 fps Inflow=42.30 cfs 20.085 af  
n=0.080 L=1,126.0' S=0.0728 '/' Capacity=1,290.64 cfs Outflow=41.27 cfs 19.998 af

**Reach 10R: Existing Channel** Avg. Flow Depth=0.61' Max Vel=3.43 fps Inflow=40.66 cfs 19.247 af  
n=0.080 L=857.0' S=0.0881 '/' Capacity=551.68 cfs Outflow=40.10 cfs 19.179 af

**Link 1L: Discharge to Stormwater Facility** Inflow=191.37 cfs 91.980 af  
Primary=191.37 cfs 91.980 af

**Total Runoff Area = 532.296 ac Runoff Volume = 92.662 af Average Runoff Depth = 2.09"**  
**62.97% Pervious = 335.170 ac 37.03% Impervious = 197.125 ac**

**Summary for Subcatchment 10S:**

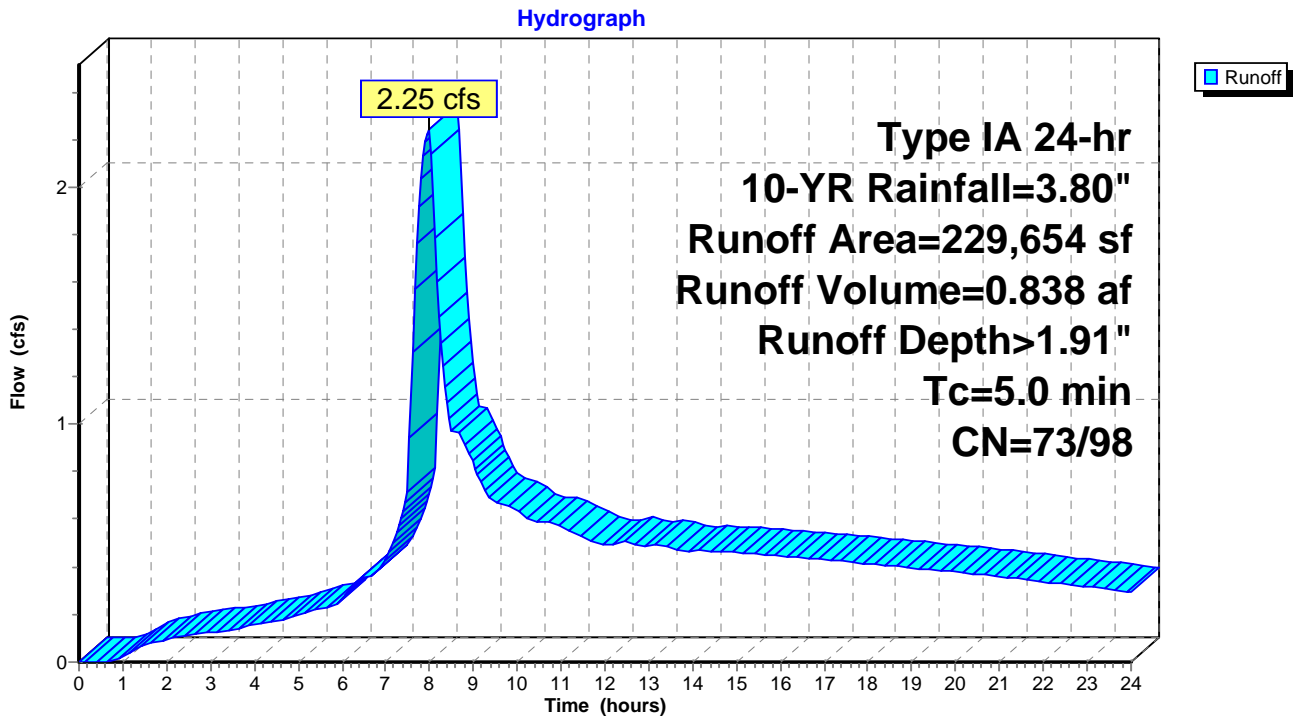
Runoff = 2.25 cfs @ 7.98 hrs, Volume= 0.838 af, Depth> 1.91"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
* 55,440	98	Impervious Area on Lots (2640 sf x 21 lots)
* 136,901	74	>75% Grass cover, Good, HSG C (lots)
* 37,313	70	Woods, Good, HSG C (natural resource easement)
229,654	79	Weighted Average
174,214		75.86% Pervious Area
55,440		24.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

**Subcatchment 10S:**



**5147 MASTER PLAN POST-DEV - ALL DEV**

Type IA 24-hr 10-YR Rainfall=3.80"

Prepared by AKS Engineering & Forestry, LLC

Printed 3/14/2017

HydroCAD® 10.00-18 s/n 01338 © 2016 HydroCAD Software Solutions LLC

Page 10

**Summary for Subcatchment 20S:**

Runoff = 3.61 cfs @ 7.97 hrs, Volume= 1.351 af, Depth> 2.12"

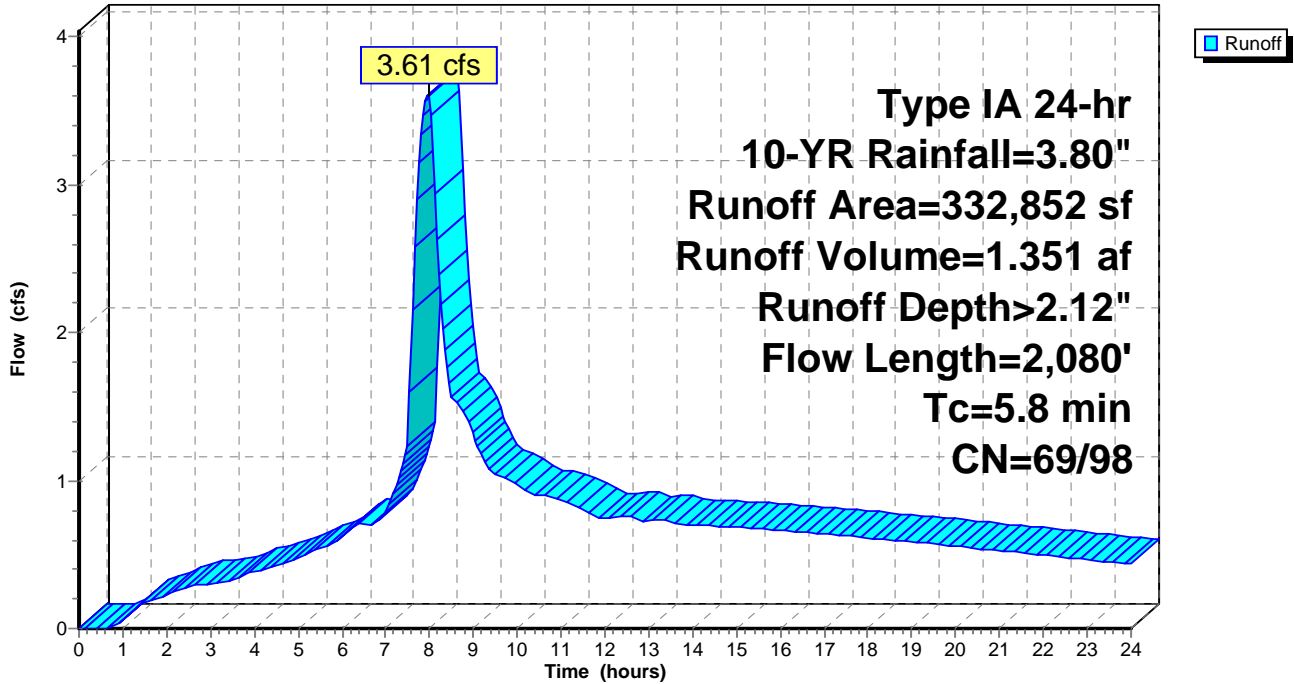
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
* 66,868	98	Impervious Area in ROW
* 23,520	74	>75% Grass cover, Good, HSG C (ROW)
* 68,640	98	Impervious Area on Lots (2640 sf x 26 lots)
* 145,720	74	>75% Grass cover, Good, HSG C (lots)
* 28,104	39	>75% Grass cover, Good, HSG A (lots)
332,852	81	Weighted Average
197,344		59.29% Pervious Area
135,508		40.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	50	0.2500	0.37		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
0.9	180	0.2100	3.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.6	1,850	0.0700	12.00	9.43	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
5.8	2,080	Total			

Subcatchment 20S:

Hydrograph



**Summary for Subcatchment 30S:**

Runoff = 7.86 cfs @ 7.96 hrs, Volume= 2.949 af, Depth> 2.10"

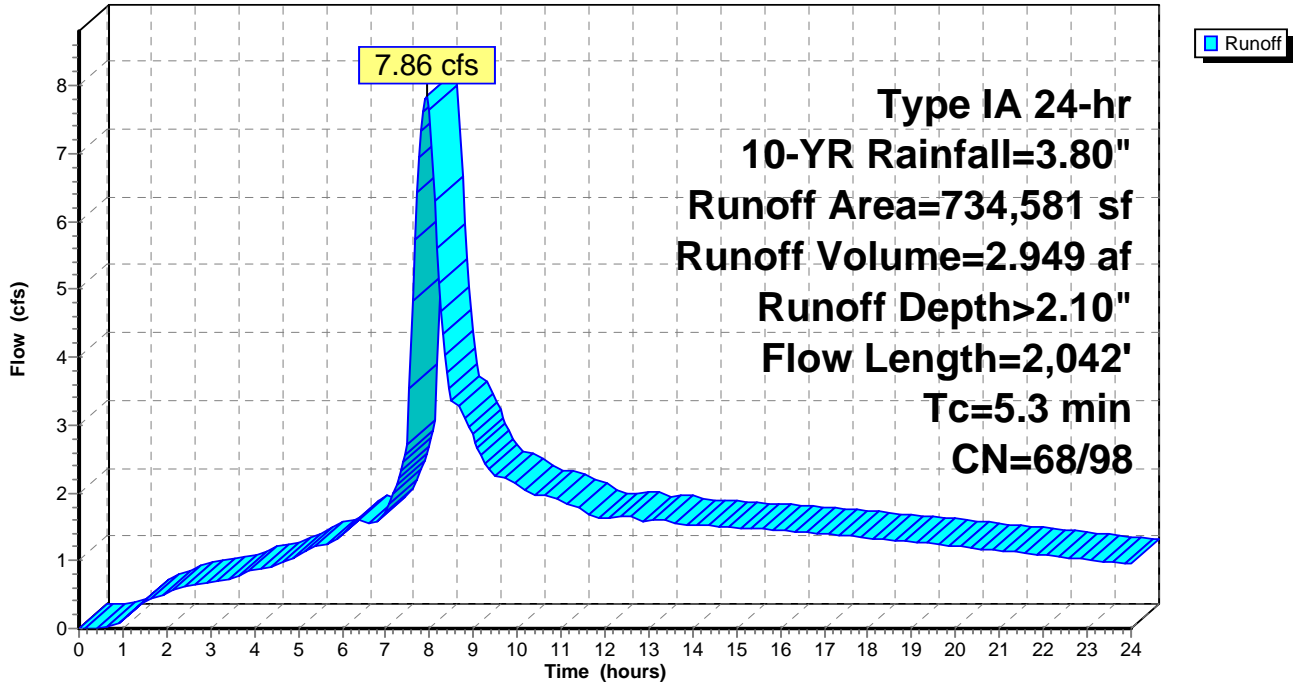
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
* 167,661	98	Impervious Area in ROW
* 47,289	74	>75% Grass cover, Good, HSG C (ROW)
* 134,640	98	Impervious Area on Lots (2640 sf x 51 lots)
* 313,028	74	>75% Grass cover, Good, HSG C (lots)
* 71,963	39	>75% Grass cover, Good, HSG A (lots)
734,581	80	Weighted Average
432,280		58.85% Pervious Area
302,301		41.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.5000	0.48		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
1.0	62	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.4	90	0.0300	3.52		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
2.2	1,840	0.0700	13.93	17.09	<b>Pipe Channel,</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
5.3	2,042	Total			

Subcatchment 30S:

Hydrograph



**Summary for Subcatchment 40S:**

Runoff = 3.76 cfs @ 7.99 hrs, Volume= 1.438 af, Depth> 1.94"

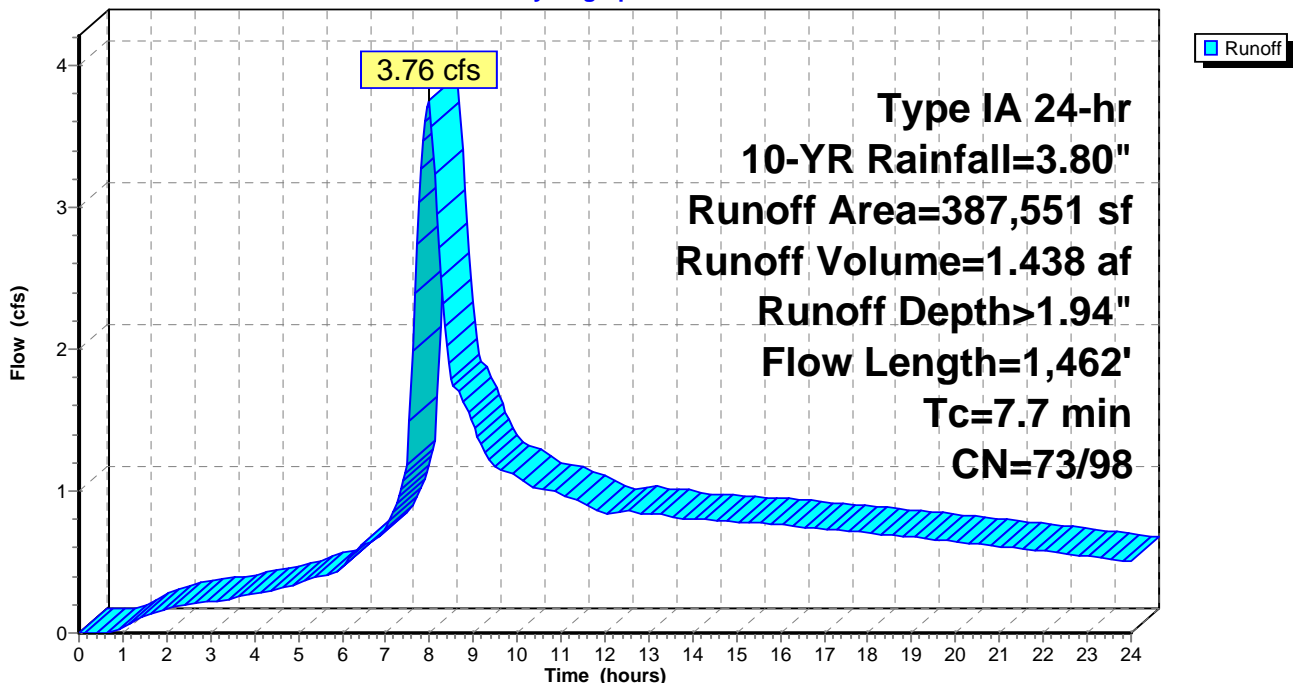
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
* 14,935	98	Impervious Area in ROW
* 4,215	74	>75% Grass cover, Good, HSG C (ROW)
* 84,840	98	Impervious Area on Lots (2640 sf x 31 lots)
* 210,847	74	>75% Grass cover, Good, HSG C (lots)
* 72,714	70	Woods, Good, HSG C (natural resource easement)
387,551	79	Weighted Average
287,776		74.26% Pervious Area
99,775		25.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	50	0.2500	0.37		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
5.4	1,412	0.0800	4.38	80.53	<b>Channel Flow,</b> Area= 18.4 sf Perim= 24.2' r= 0.76' n= 0.080 Earth, long dense weeds
7.7	1,462	Total			

**Subcatchment 40S:**

Hydrograph



**Summary for Subcatchment 50S:**

Runoff = 3.17 cfs @ 7.99 hrs, Volume= 1.332 af, Depth> 1.71"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

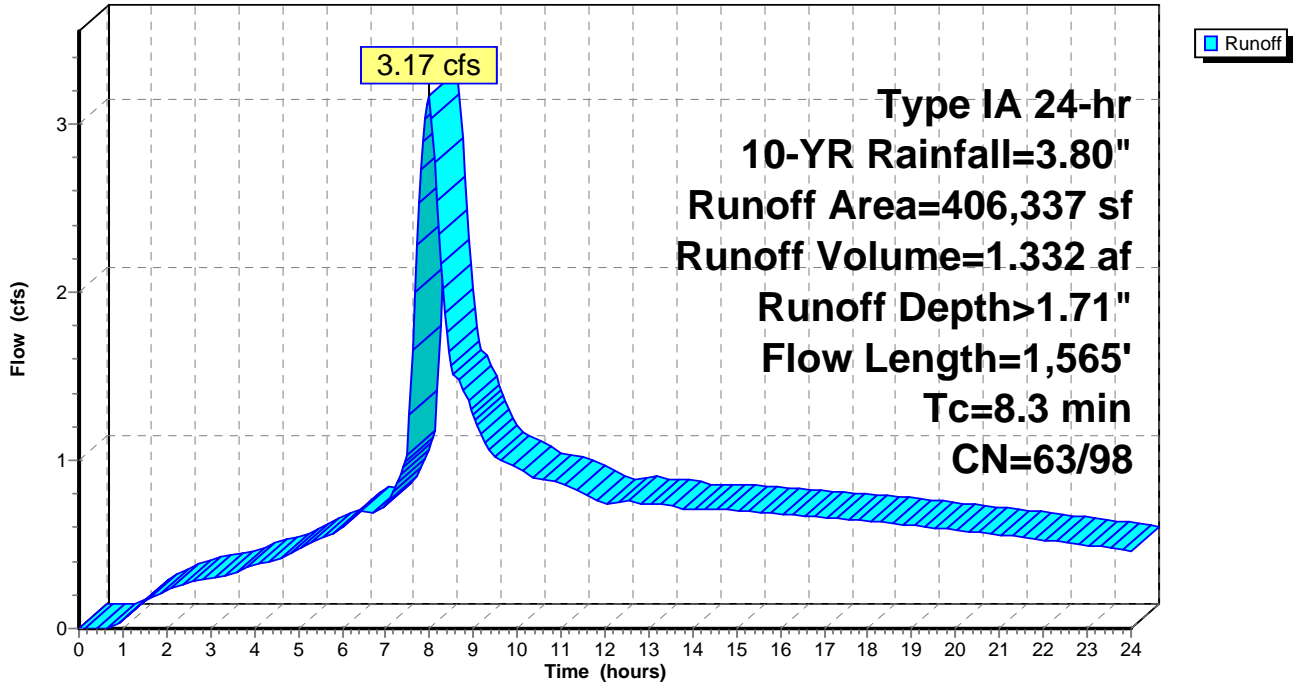
Area (sf)	CN	Description
* 65,484	98	Impervious Area in ROW
* 20,686	74	>75% Grass cover, Good, HSG C (ROW)
* 68,640	98	Impervious Area on Lots (2640 sf x 26 lots)
* 159,568	74	>75% Grass cover, Good, HSG C (lots)
* 69,733	39	>75% Grass cover, Good, HSG A (lots)
* 9,661	70	Woods, Good, HSG C (natural resource easement)
* 12,565	30	Woods, Good, HSG A (natural resource easement)
406,337	74	Weighted Average
272,213		66.99% Pervious Area
134,124		33.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0800	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
1.1	65	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.6	300	0.1500	7.86		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.1	150	0.2500	22.68	17.81	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
2.9	1,000	0.1400	5.79	106.53	<b>Channel Flow,</b> Area= 18.4 sf Perim= 24.2' r= 0.76' n= 0.080 Earth, long dense weeds
8.3	1,565	Total			



Subcatchment 50S:

Hydrograph



**Summary for Subcatchment 60S:**

Runoff = 3.41 cfs @ 7.98 hrs, Volume= 1.294 af, Depth> 2.02"

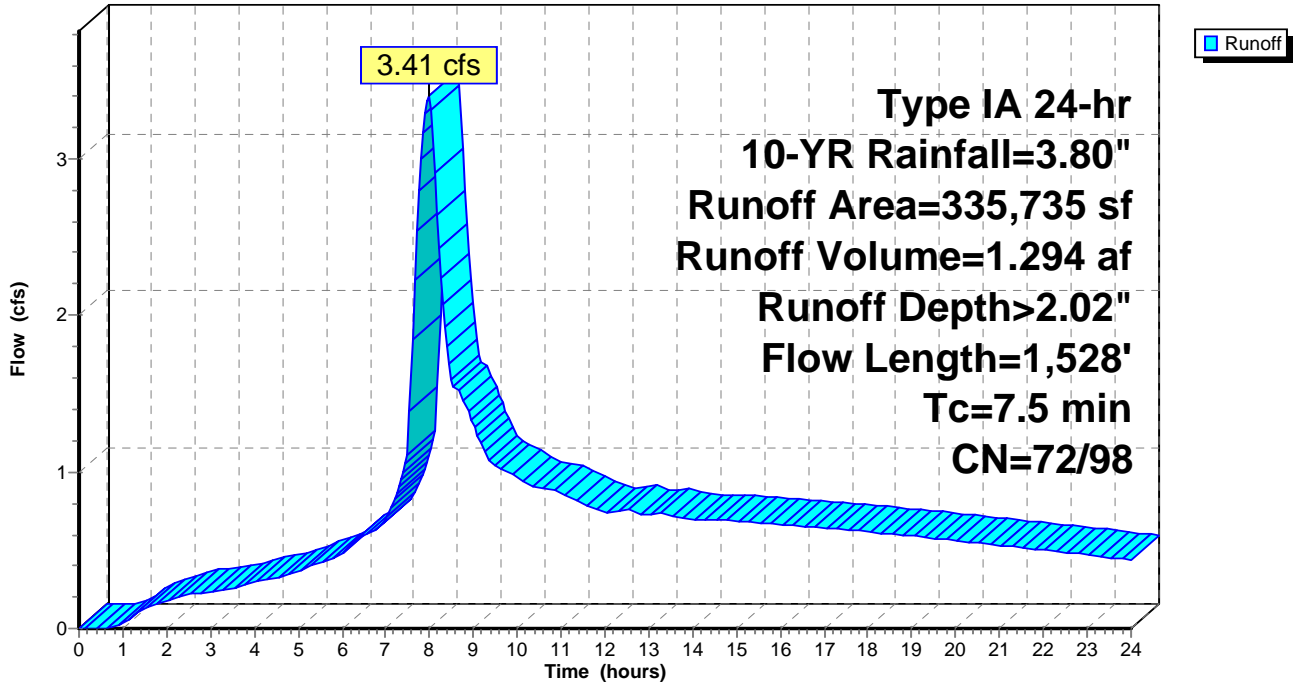
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
* 36,192	98	Impervious Area in ROW
* 10,208	74	>75% Grass cover, Good, HSG C (ROW)
* 68,640	98	Impervious Area on Lots (2640 sf x 26 lots)
* 180,014	74	>75% Grass cover, Good, HSG C (lots)
* 10,081	39	>75% Grass cover, Good, HSG A (lots)
* 30,600	70	Woods, Good, HSG C (natural resource easement)
335,735	80	Weighted Average
230,903		68.78% Pervious Area
104,832		31.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	50	0.2500	0.37		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
1.8	104	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.4	170	0.1200	7.03		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.8	620	0.0800	12.83	10.08	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
2.2	584	0.0800	4.38	80.53	<b>Channel Flow,</b> Area= 18.4 sf Perim= 24.2' r= 0.76' n= 0.080 Earth, long dense weeds
7.5	1,528	Total			

Subcatchment 60S:

Hydrograph



**Summary for Subcatchment 70S:**

Runoff = 1.72 cfs @ 7.98 hrs, Volume= 0.630 af, Depth> 2.17"

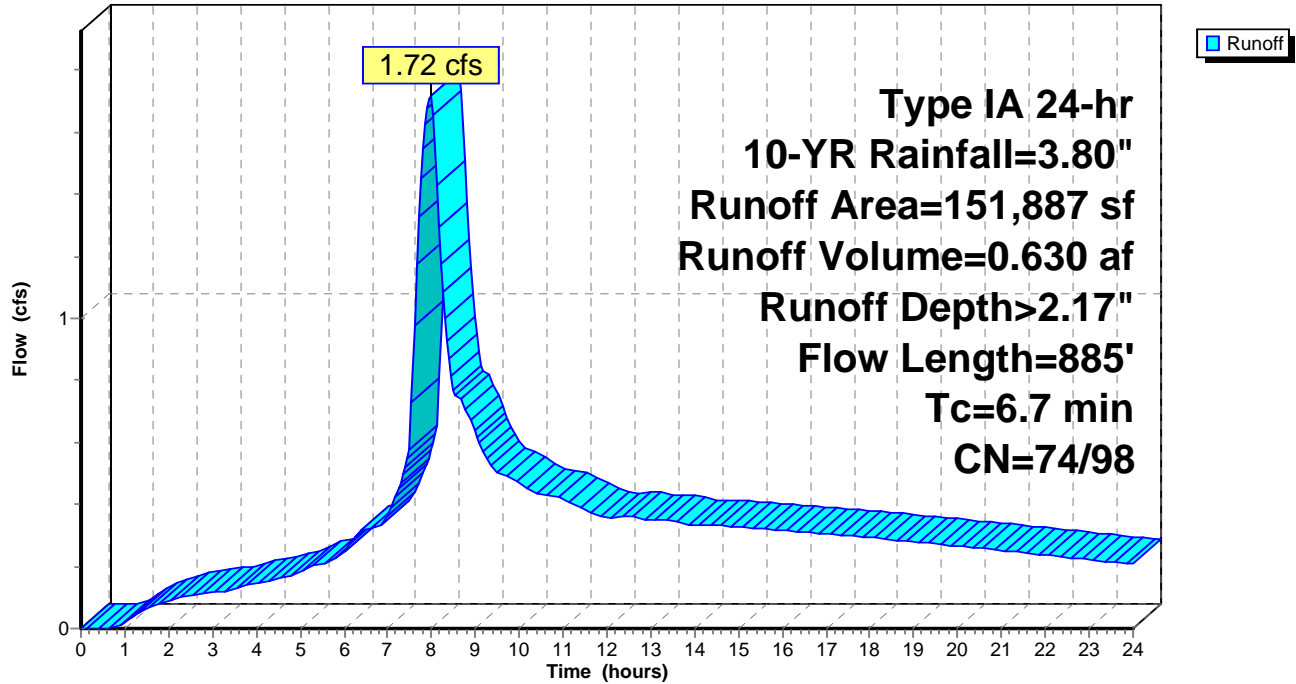
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
* 28,156	98	Impervious Area in ROW
* 9,526	74	>75% Grass cover, Good, HSG C (ROW)
* 23,760	98	Impervious Area on Lots (2640 sf x 9 lots)
* 90,445	74	>75% Grass cover, Good, HSG C (lots)
151,887	82	Weighted Average
99,971		65.82% Pervious Area
51,916		34.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	50	0.0700	0.22		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
1.3	75	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.7	295	0.1100	6.73		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.9	465	0.0400	9.07	7.13	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
6.7	885	Total			

Subcatchment 70S:

Hydrograph



**Summary for Subcatchment 80S:**

Runoff = 4.09 cfs @ 8.00 hrs, Volume= 1.757 af, Depth> 1.73"

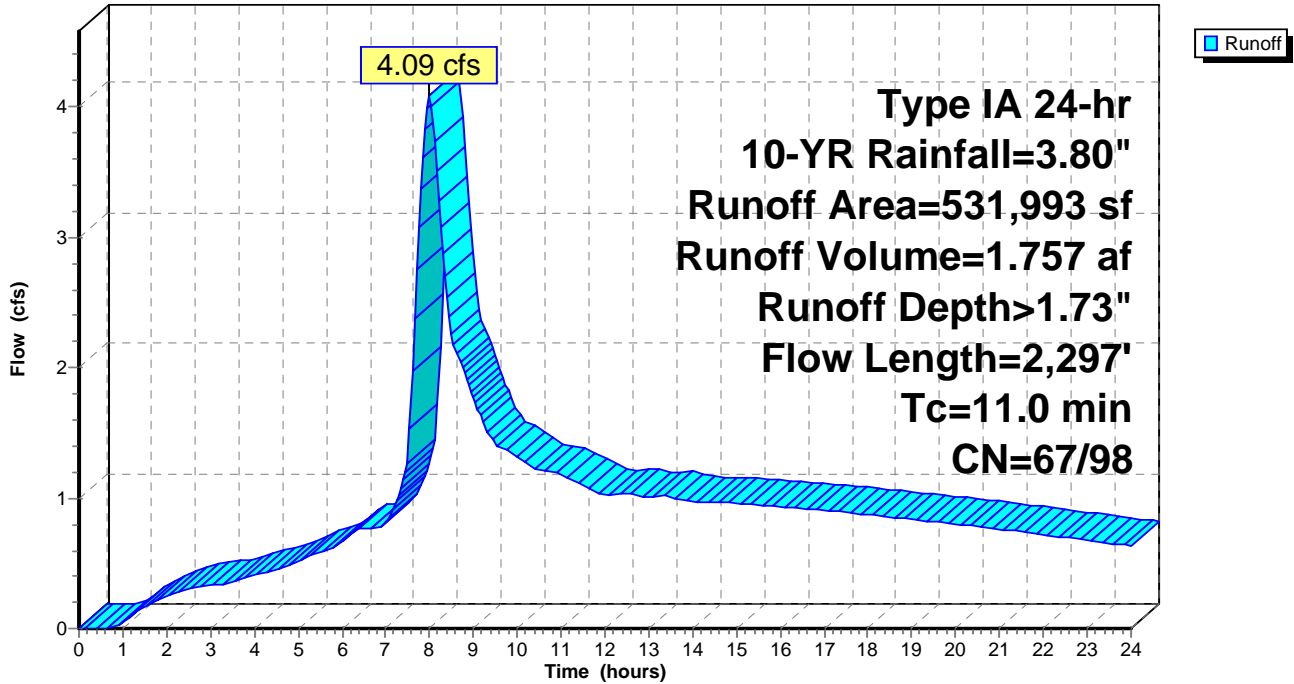
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
* 51,310	98	Impervious Area in ROW
* 16,338	74	>75% Grass cover, Good, HSG C (ROW)
* 97,680	98	Impervious Area on Lots (2640 sf x 37 lots)
* 75,707	39	>75% Grass cover, Good, HSG A (lots)
* 250,308	74	>75% Grass cover, Good, HSG C (lots)
* 40,650	70	Woods, Good, HSG C (natural resource easement)
531,993	75	Weighted Average
383,003		71.99% Pervious Area
148,990		28.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	50	0.2500	0.37		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
1.5	88	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.4	114	0.0650	5.18		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.0	845	0.1000	14.35	11.27	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
5.8	1,200	0.0500	3.46	63.66	<b>Channel Flow,</b> Area= 18.4 sf Perim= 24.2' r= 0.76' n= 0.080 Earth, long dense weeds
11.0	2,297	Total			

Subcatchment 80S:

Hydrograph



**Summary for Subcatchment 90S:**

Runoff = 1.98 cfs @ 7.96 hrs, Volume= 0.683 af, Depth> 1.25"

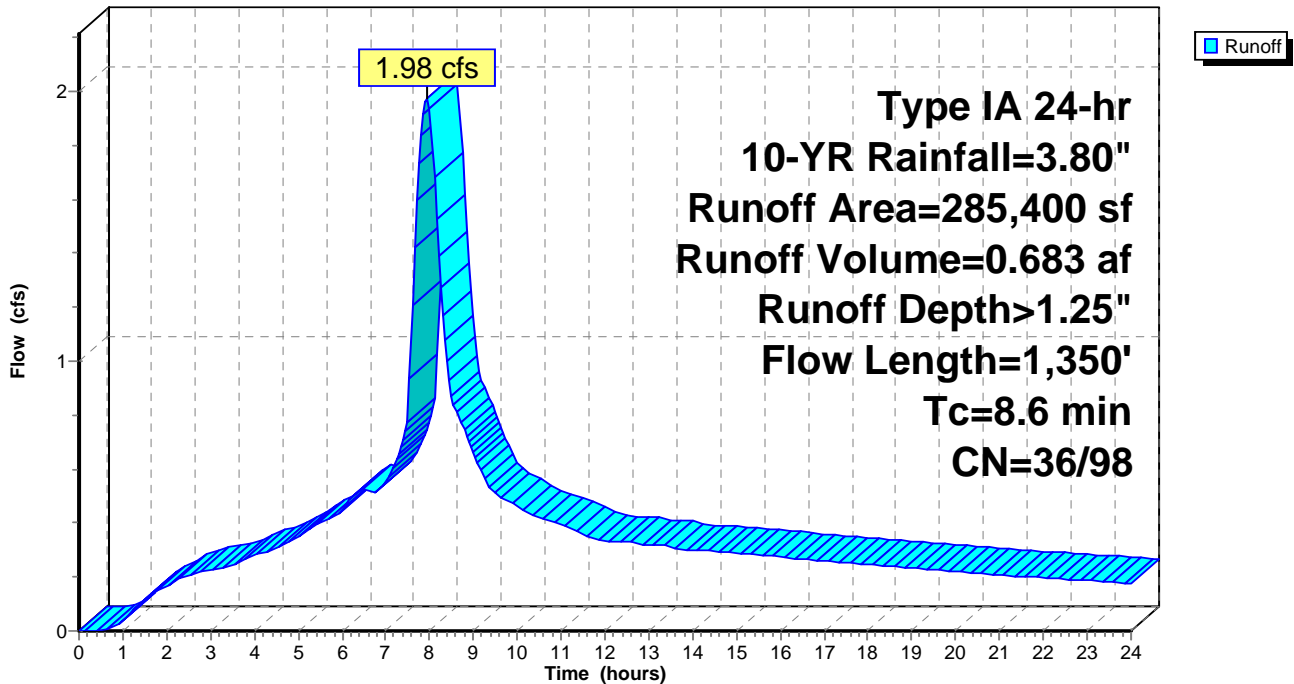
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
* 100,320	98	Impervious Area on Lots (2640 sf x 38 lots)
* 113,460	39	>75% Grass cover, Good, HSG A (lots)
* 71,620	30	Woods, Good, HSG A (natural resource easement)
285,400	57	Weighted Average
185,080		64.85% Pervious Area
100,320		35.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	50	0.2500	0.37		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
6.3	1,300	0.0500	3.46	63.66	<b>Channel Flow,</b> Area= 18.4 sf Perim= 24.2' r= 0.76' n= 0.080 Earth, long dense weeds
8.6	1,350	Total			

**Subcatchment 90S:**

Hydrograph





**5147 MASTER PLAN POST-DEV - ALL DEV**

Type IA 24-hr 10-YR Rainfall=3.80"

Prepared by AKS Engineering & Forestry, LLC

Printed 3/14/2017

HydroCAD® 10.00-18 s/n 01338 © 2016 HydroCAD Software Solutions LLC

Page 24

**Summary for Subcatchment 100S:**

Runoff = 5.03 cfs @ 7.94 hrs, Volume= 1.797 af, Depth> 1.49"

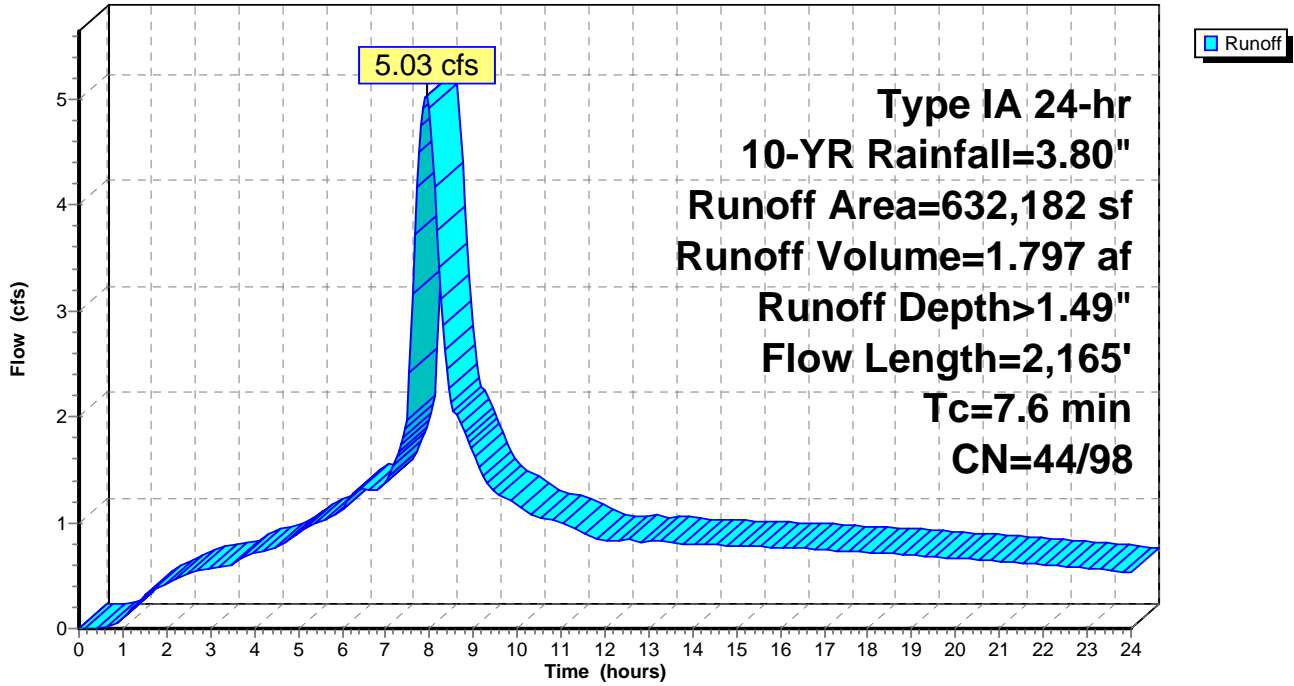
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
* 109,707	98	Impervious Area in ROW
* 30,943	74	>75% Grass cover, Good, HSG C (ROW)
* 142,560	98	Impervious Area on Lots (2640 sf x 54 lots)
* 330,383	39	>75% Grass cover, Good, HSG A (lots)
* 18,589	74	>75% Grass cover, Good, HSG C (lots)
632,182	65	Weighted Average
379,915		60.10% Pervious Area
252,267		39.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	50	0.0420	0.18		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
0.7	55	0.0400	1.40		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.3	2,060	0.0800	14.89	18.27	<b>Pipe Channel,</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
7.6	2,165	Total			

Subcatchment 100S:

Hydrograph



**Summary for Subcatchment 110S:**

Runoff = 10.62 cfs @ 8.01 hrs, Volume= 4.421 af, Depth> 2.20"

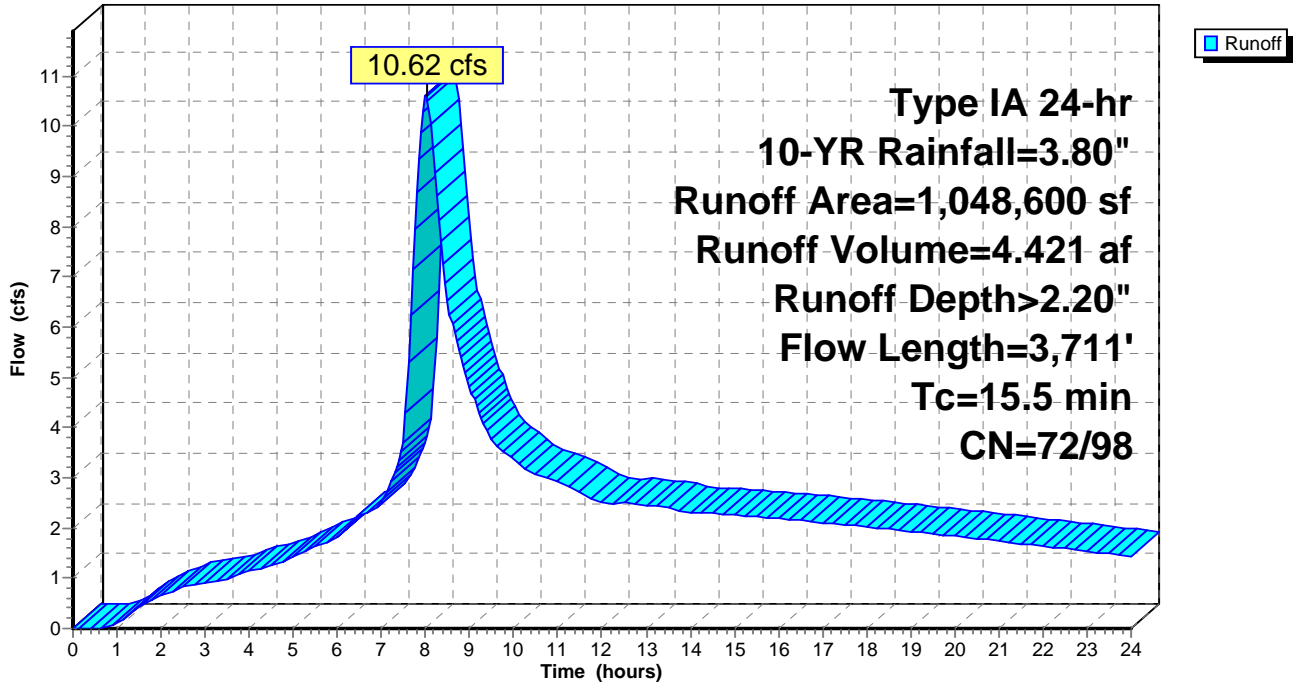
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
* 136,929	98	Impervious Area in ROW
* 38,621	74	>75% Grass cover, Good, HSG C (ROW)
* 282,480	98	Impervious Area on Lots (2640 sf x 107 lots)
* 412,510	74	>75% Grass cover, Good, HSG C (lots)
* 41,388	39	>75% Grass cover, Good, HSG A (lots)
* 64,446	80	>75% Grass cover, Good, HSG D (lots)
* 72,226	70	Woods, Good, HSG C (natural resource easement)
1,048,600	82	Weighted Average
629,191		60.00% Pervious Area
419,409		40.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0200	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
0.9	56	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.7	200	0.0500	4.54		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.5	1,378	0.0800	14.89	18.27	<b>Pipe Channel,</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
3.1	581	0.0400	3.09	56.94	<b>Channel Flow,</b> Area= 18.4 sf Perim= 24.2' r= 0.76' n= 0.080 Earth, long dense weeds
3.1	1,446	0.0300	7.86	6.17	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.5	3,711	Total			

Subcatchment 110S:

Hydrograph



**Summary for Subcatchment 120S:**

Runoff = 4.89 cfs @ 8.02 hrs, Volume= 2.068 af, Depth> 2.27"

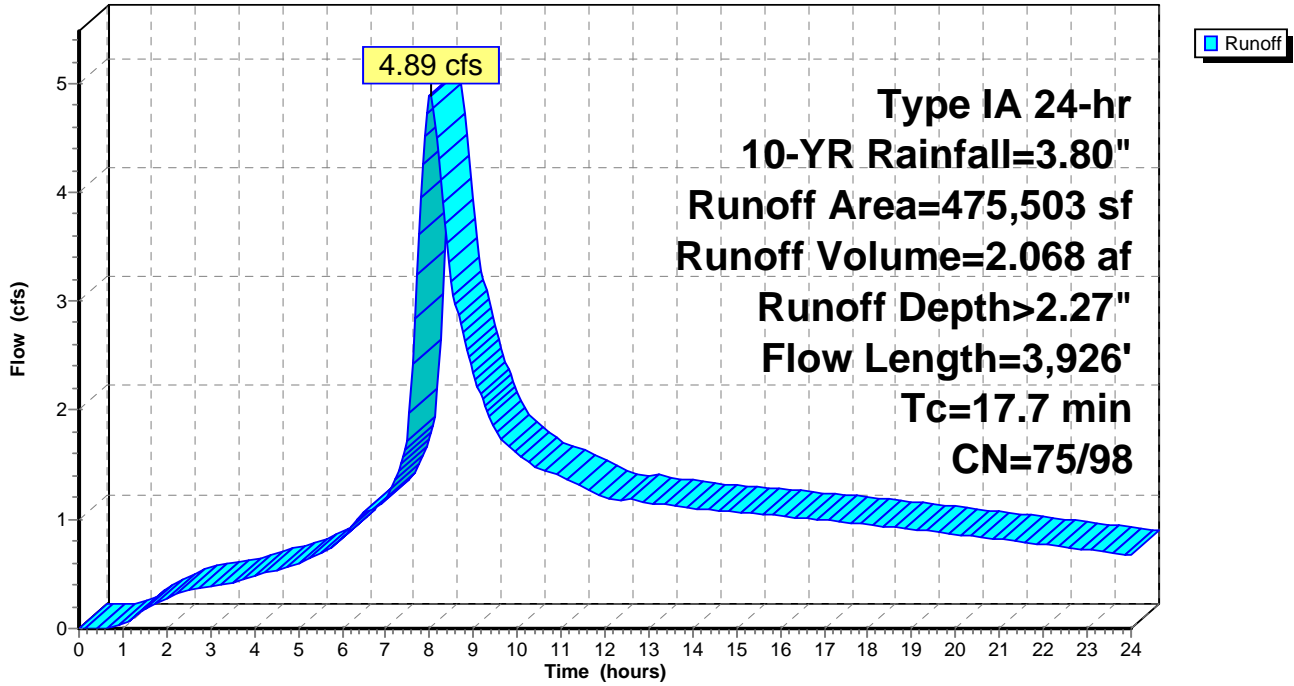
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
* 73,954	98	Impervious Area in ROW
* 24,092	74	>75% Grass cover, Good, HSG C (ROW)
* 105,600	98	Impervious Area on Lots (2640 sf x 40 lots)
* 229,430	74	>75% Grass cover, Good, HSG C (lots)
* 42,427	80	>75% Grass cover, Good, HSG D (lots)
475,503	84	Weighted Average
295,949		62.24% Pervious Area
179,554		37.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0200	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
0.7	60	0.0400	1.40		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.5	111	0.0400	4.06		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.8	1,175	0.0600	11.11	8.73	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
5.9	1,100	0.0400	3.09	56.94	<b>Channel Flow,</b> Area= 18.4 sf Perim= 24.2' r= 0.76' n= 0.080 Earth, long dense weeds
2.6	1,430	0.0400	9.07	7.13	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
17.7	3,926	Total			

Subcatchment 120S:

Hydrograph



**Summary for Subcatchment 130S:**

Runoff = 29.87 cfs @ 7.99 hrs, Volume= 11.199 af, Depth> 2.25"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

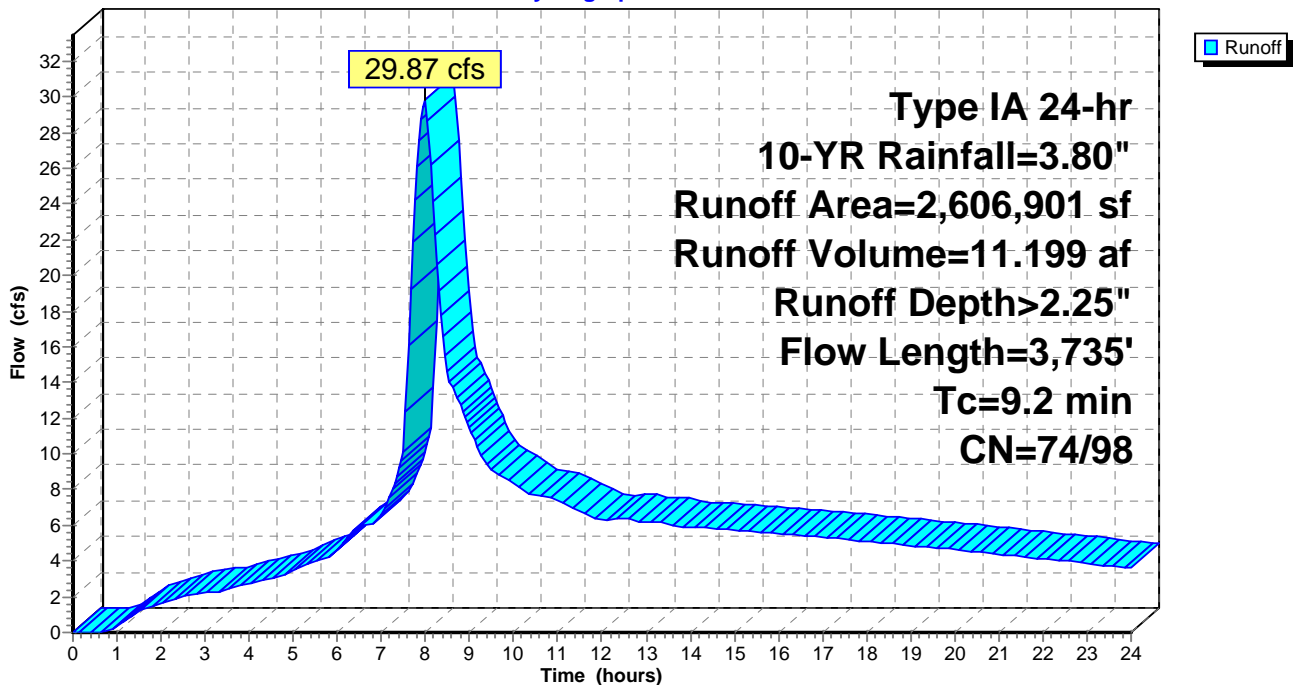
Area (sf)	CN	Description
2,606,901	83	1/4 acre lots, 38% imp, HSG C
1,616,279		62.00% Pervious Area
990,622		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	50	0.1600	0.31		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
1.0	60	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.6	150	0.0500	4.54		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
4.9	3,475	0.0500	11.77	14.44	<b>Pipe Channel,</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
9.2	3,735	Total			

**Subcatchment 130S:**

Hydrograph



**Summary for Subcatchment 140S:**

Runoff = 2.18 cfs @ 8.01 hrs, Volume= 0.939 af, Depth> 1.44"

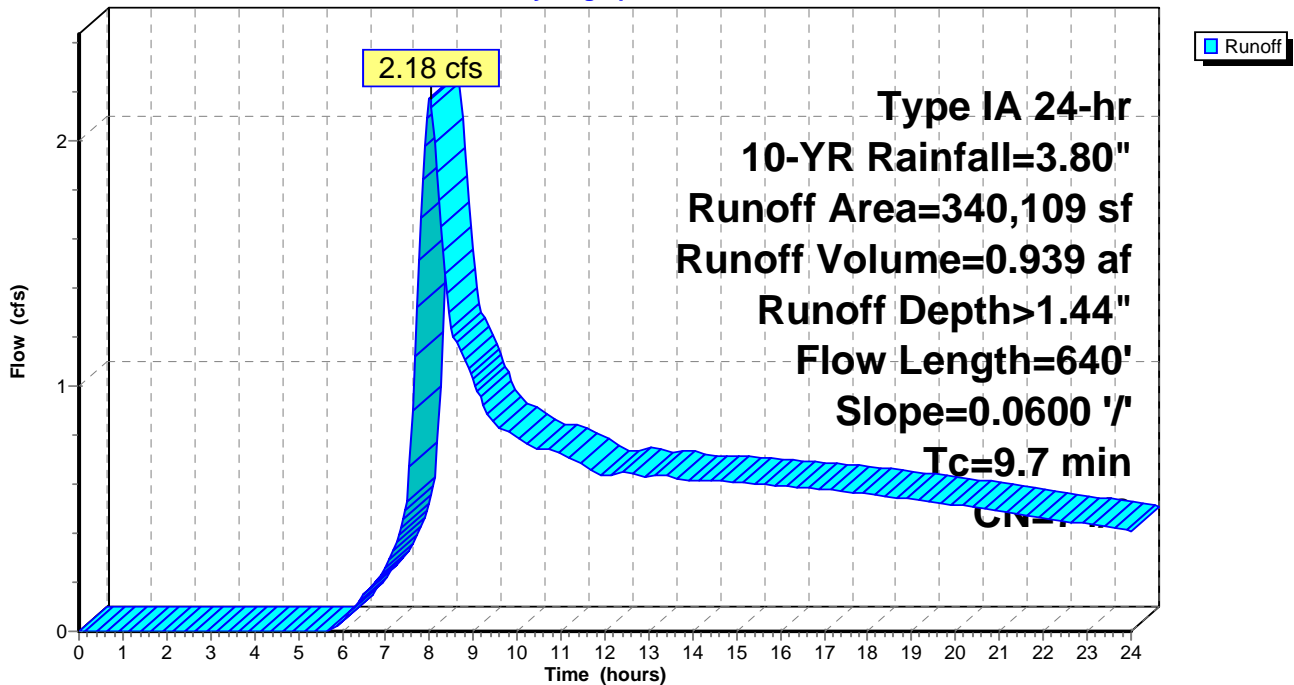
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
340,109	74	>75% Grass cover, Good, HSG C
340,109		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	50	0.0600	0.21		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
5.7	590	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
9.7	640	Total			

**Subcatchment 140S:**

Hydrograph





**Summary for Subcatchment 150S:**

Runoff = 5.71 cfs @ 7.98 hrs, Volume= 2.088 af, Depth> 2.39"

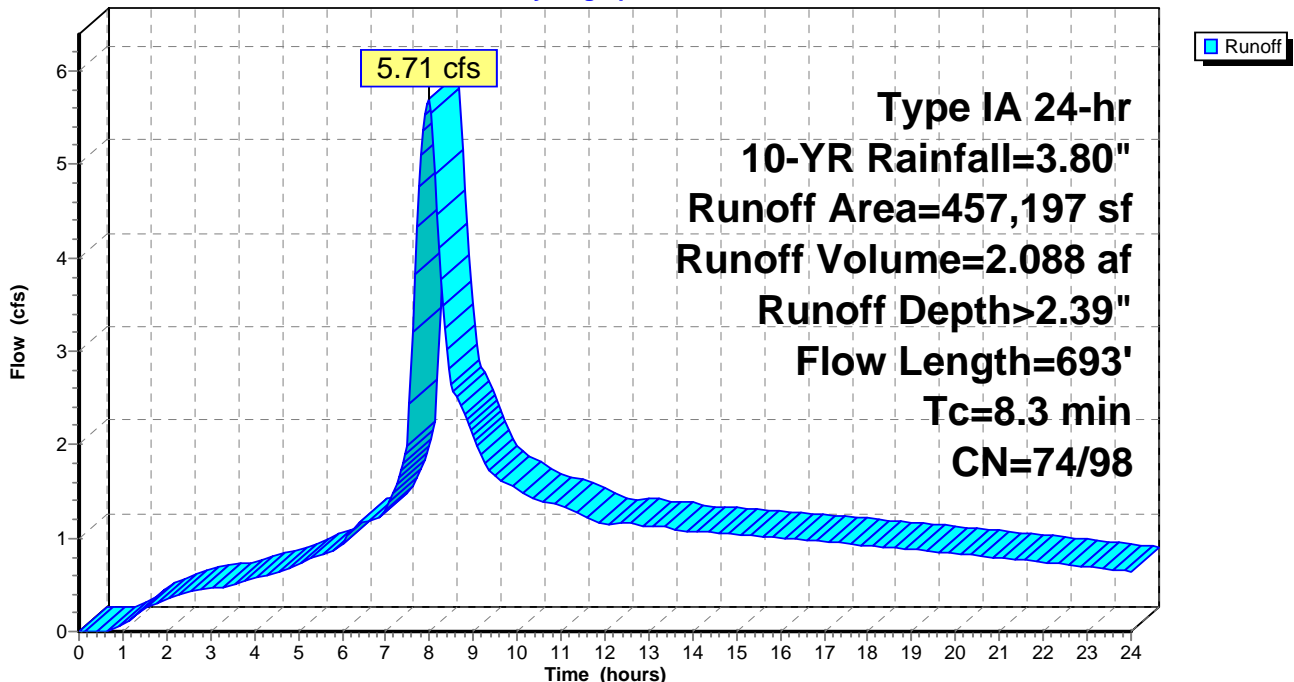
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
* 115,682	98	Impervious Area in ROW
* 25,393	74	>75% Grass cover, Good, HSG C (ROW)
* 88,514	98	28% Impervious Area on Lots
* 227,608	74	>75% Grass cover, Good, HSG C (lots)
457,197	85	Weighted Average
253,001		55.34% Pervious Area
204,196		44.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0200	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
1.2	73	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.9	570	0.0600	11.11	8.73	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
8.3	693	Total			

**Subcatchment 150S:**

Hydrograph



**Summary for Subcatchment 160X: OFFSITE**

Runoff = 7.23 cfs @ 7.96 hrs, Volume= 2.976 af, Depth> 1.74"

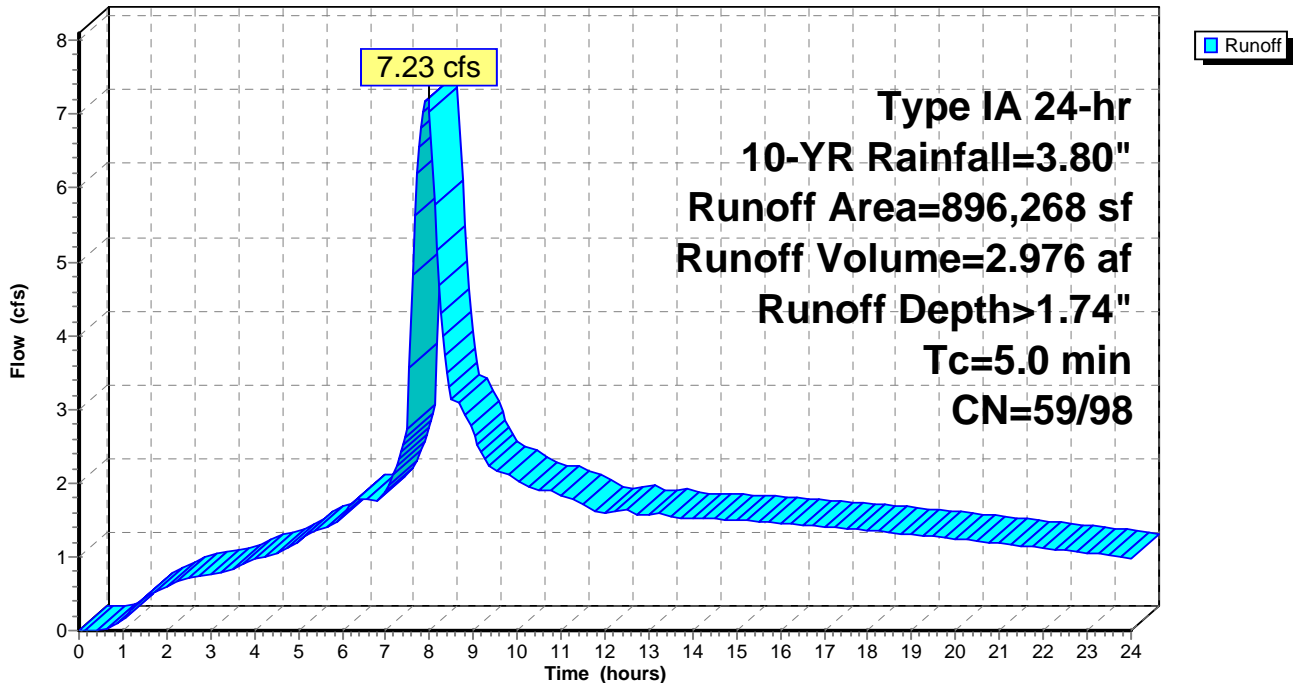
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
512,606	83	1/4 acre lots, 38% imp, HSG C
383,662	61	1/4 acre lots, 38% imp, HSG A
896,268	74	Weighted Average
555,686		62.00% Pervious Area
340,582		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

**Subcatchment 160X: OFFSITE**

Hydrograph



**Summary for Subcatchment 170X: OFFSITE**

Runoff = 2.43 cfs @ 8.02 hrs, Volume= 1.024 af, Depth> 2.24"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

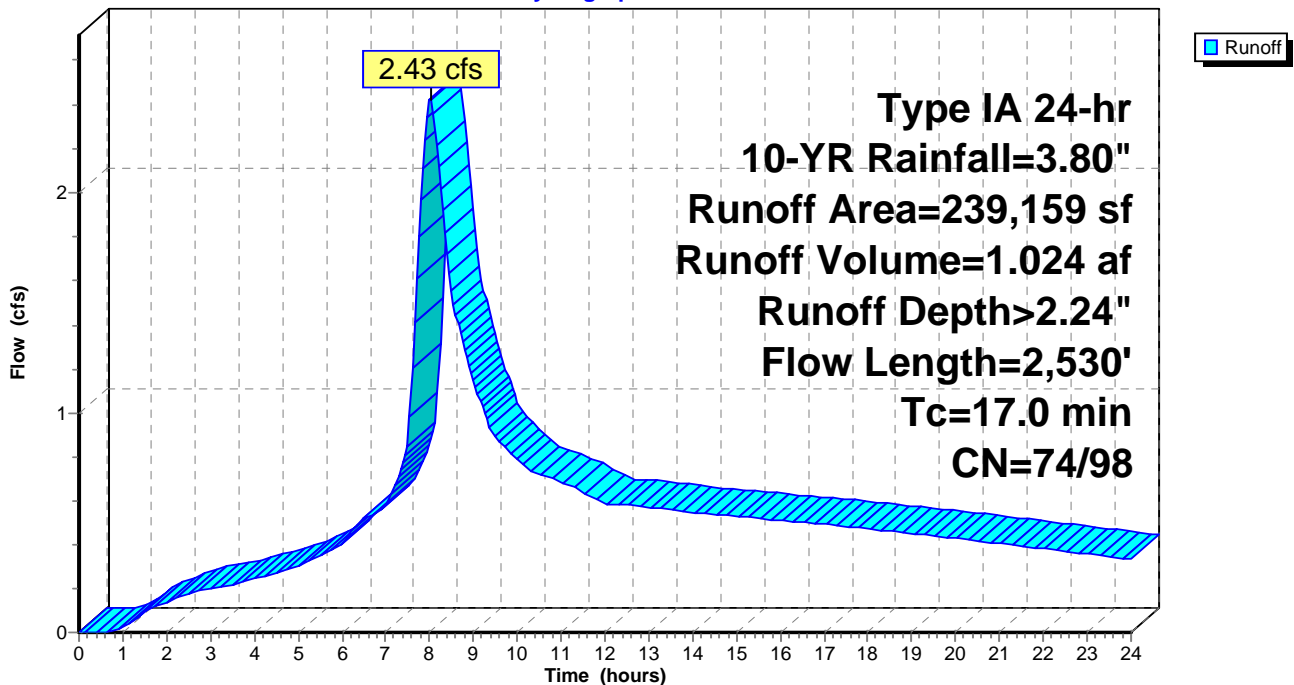
Area (sf)	CN	Description
239,159	83	1/4 acre lots, 38% imp, HSG C
148,279		62.00% Pervious Area
90,880		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0800	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.60"
7.0	730	0.1200	1.73		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
2.1	1,750	0.0900	13.61	10.69	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
17.0	2,530	Total			

**Subcatchment 170X: OFFSITE**

Hydrograph



**Summary for Subcatchment 180X: OFFSITE**

Runoff = 0.33 cfs @ 8.01 hrs, Volume= 0.131 af, Depth> 2.24"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

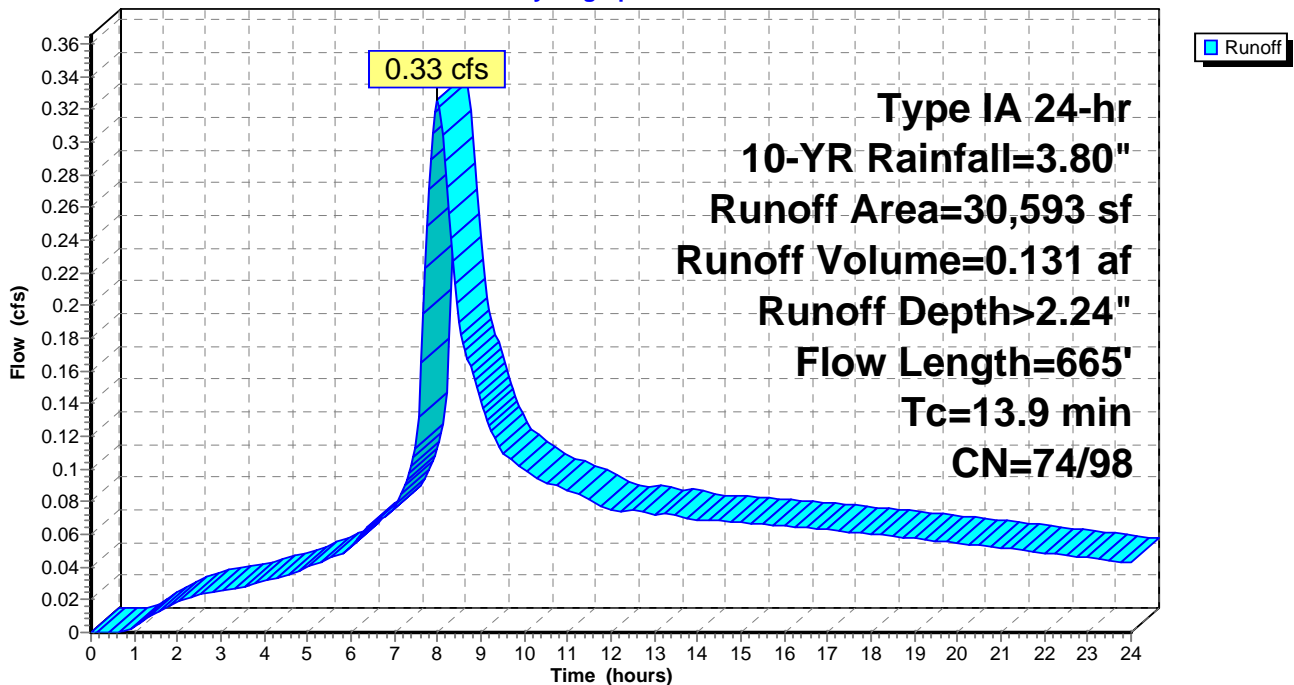
Area (sf)	CN	Description
30,593	83	1/4 acre lots, 38% imp, HSG C
18,968		62.00% Pervious Area
11,625		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0600	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.60"
4.1	300	0.0600	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.6	100	0.1400	2.62		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.4	215	0.0400	9.07	7.13	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
13.9	665	Total			

**Subcatchment 180X: OFFSITE**

Hydrograph



**Summary for Subcatchment 190X: OFFSITE**

Runoff = 18.81 cfs @ 8.06 hrs, Volume= 9.373 af, Depth> 2.23"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

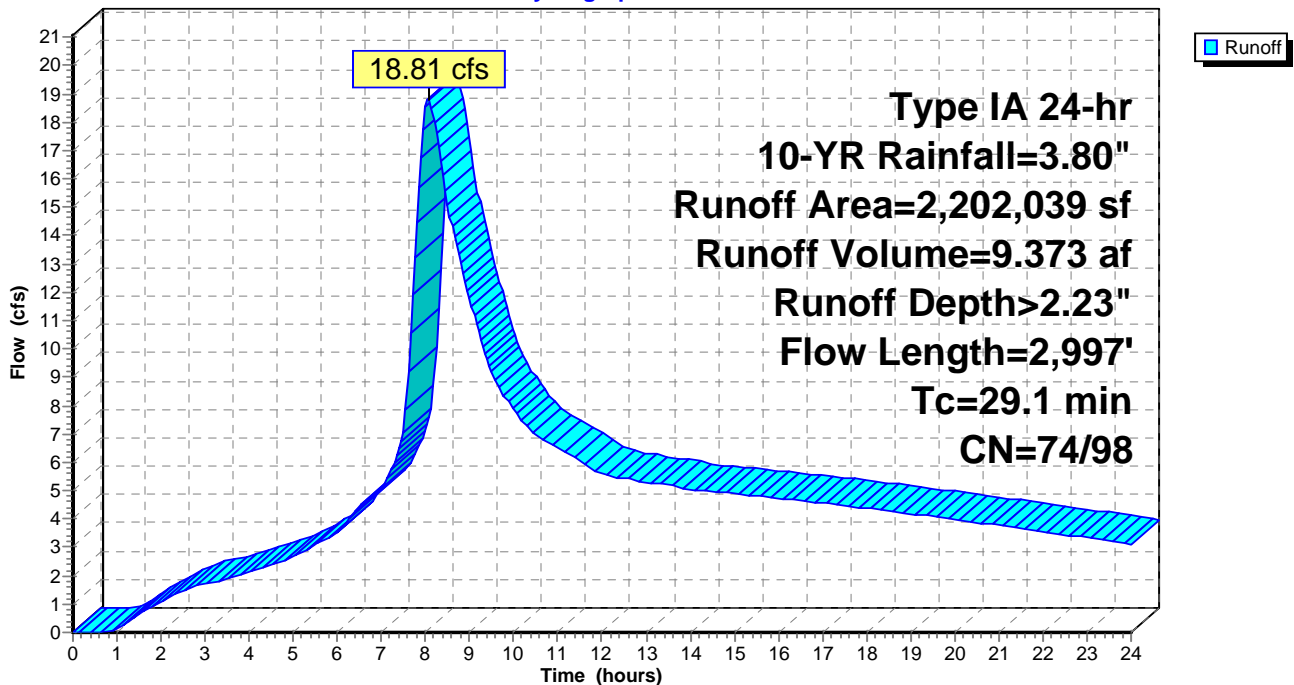
Area (sf)	CN	Description
2,202,039	83	1/4 acre lots, 38% imp, HSG C
1,365,264		62.00% Pervious Area
836,775		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0800	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.60"
18.3	2,192	0.1600	2.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
2.9	755	0.0800	4.32	78.64	<b>Channel Flow,</b> Area= 18.2 sf Perim= 24.4' r= 0.75' n= 0.080 Earth, long dense weeds
29.1	2,997	Total			

**Subcatchment 190X: OFFSITE**

Hydrograph



**Summary for Subcatchment 200X: OFFSITE**

Runoff = 0.35 cfs @ 8.00 hrs, Volume= 0.139 af, Depth> 2.24"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

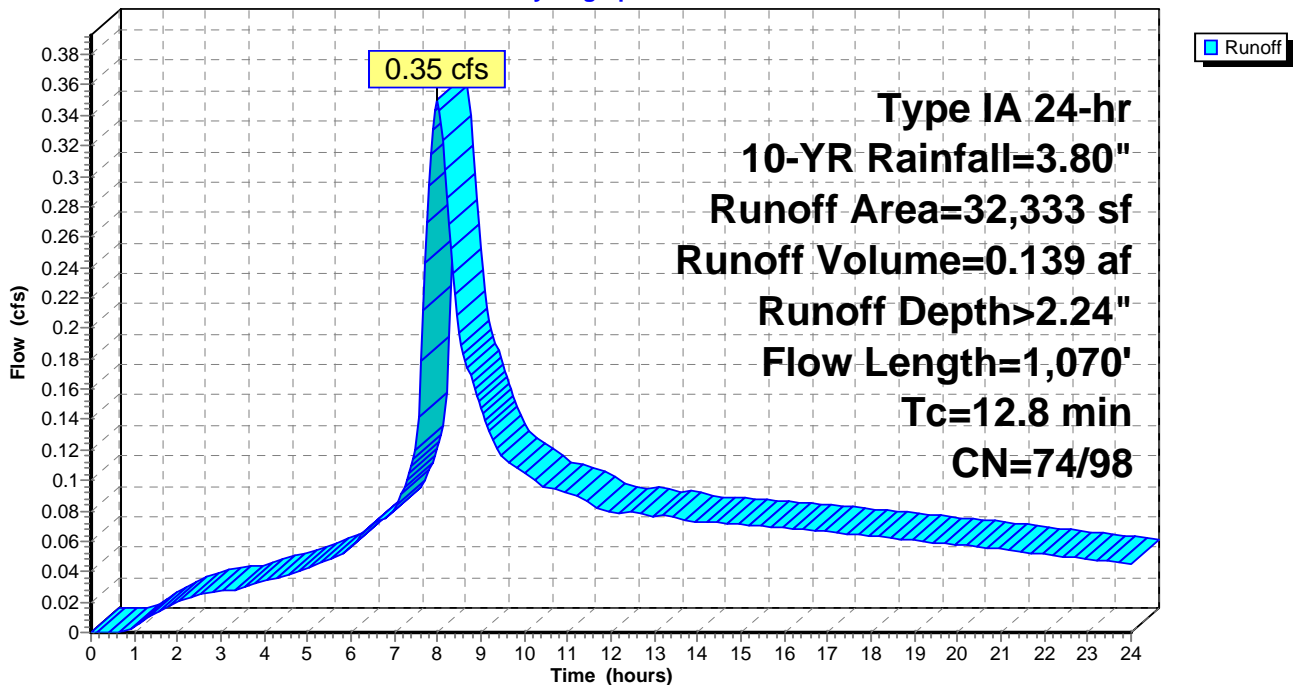
Area (sf)	CN	Description
32,333	83	1/4 acre lots, 38% imp, HSG C
20,046		62.00% Pervious Area
12,287		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0700	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.60"
3.0	280	0.1000	1.58		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.8	170	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.7	570	0.0800	12.83	10.08	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
12.8	1,070	Total			

**Subcatchment 200X: OFFSITE**

Hydrograph



**Summary for Subcatchment 210X: OFFSITE**

Runoff = 14.93 cfs @ 8.06 hrs, Volume= 7.665 af, Depth> 2.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

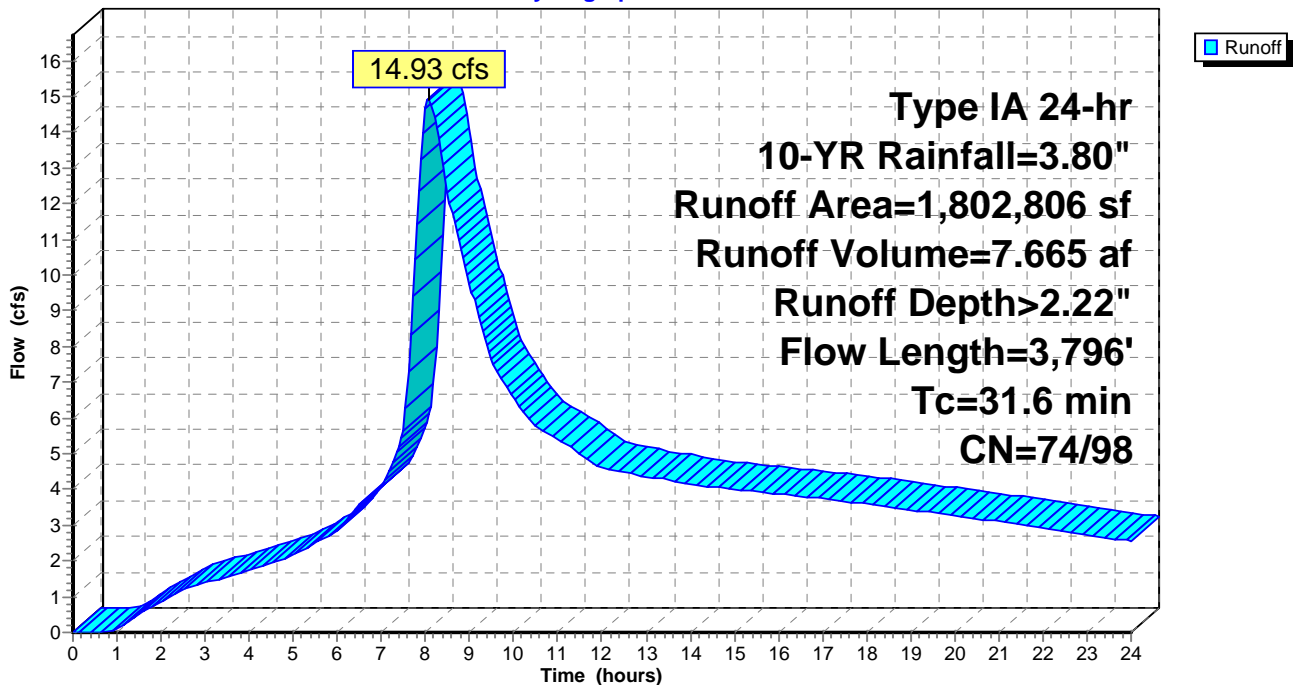
Area (sf)	CN	Description
1,802,806	83	1/4 acre lots, 38% imp, HSG C
1,117,740		62.00% Pervious Area
685,066		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0600	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.60"
15.8	1,706	0.1300	1.80		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
7.0	2,040	0.1000	4.83	87.93	<b>Channel Flow,</b> Area= 18.2 sf Perim= 24.4' r= 0.75' n= 0.080 Earth, long dense weeds
31.6	3,796	Total			

**Subcatchment 210X: OFFSITE**

Hydrograph



**Summary for Subcatchment 220X: OFFSITE**

Runoff = 2.39 cfs @ 8.01 hrs, Volume= 0.977 af, Depth> 2.24"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

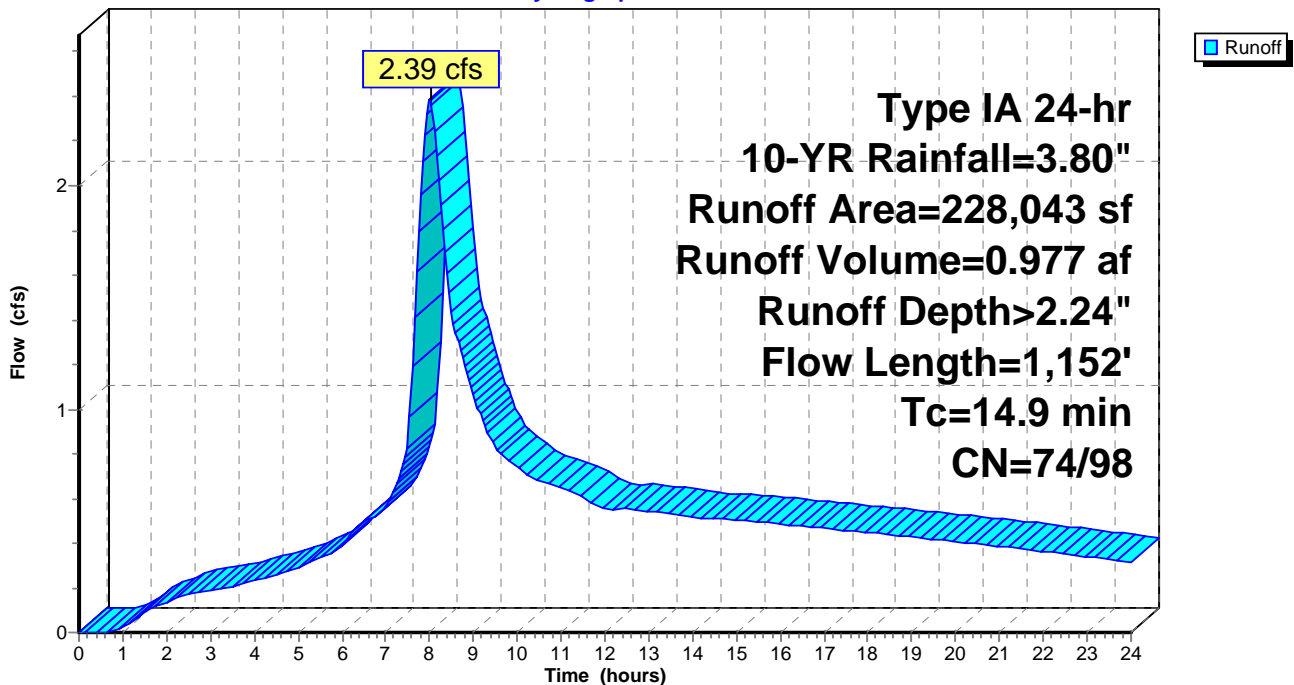
Area (sf)	CN	Description
228,043	83	1/4 acre lots, 38% imp, HSG C
141,387		62.00% Pervious Area
86,656		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0700	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.60"
4.6	540	0.1500	1.94		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.3	200	0.1400	2.62		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.7	362	0.0400	9.07	7.13	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
14.9	1,152	Total			

**Subcatchment 220X: OFFSITE**

Hydrograph





**Summary for Subcatchment 230X: OFFSITE**

Runoff = 24.17 cfs @ 8.05 hrs, Volume= 11.952 af, Depth> 2.23"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

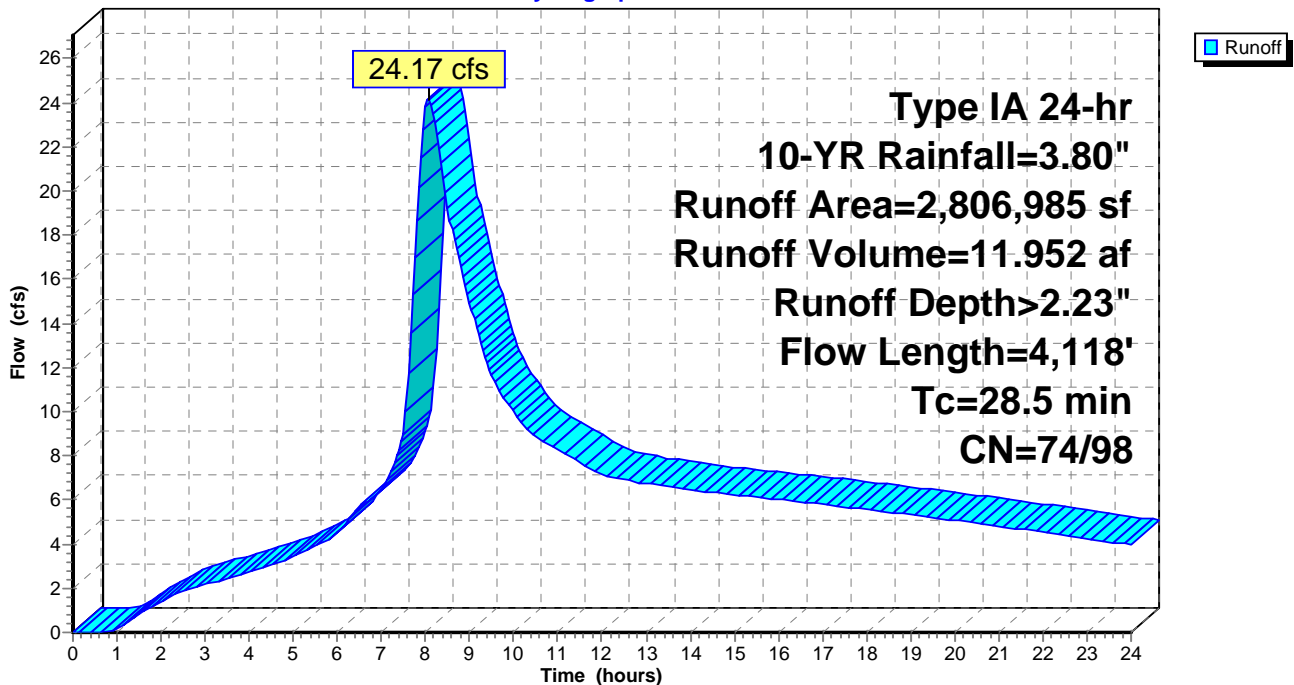
Area (sf)	CN	Description
2,806,985	83	1/4 acre lots, 38% imp, HSG C
1,740,331		62.00% Pervious Area
1,066,654		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0800	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.60"
13.5	1,718	0.1800	2.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
7.1	2,350	0.1300	5.51	100.25	<b>Channel Flow,</b> Area= 18.2 sf Perim= 24.4' r= 0.75' n= 0.080 Earth, long dense weeds
28.5	4,118	Total			

**Subcatchment 230X: OFFSITE**

Hydrograph



**Summary for Subcatchment 240X: OFFSITE**

Runoff = 8.47 cfs @ 8.04 hrs, Volume= 3.932 af, Depth> 2.23"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

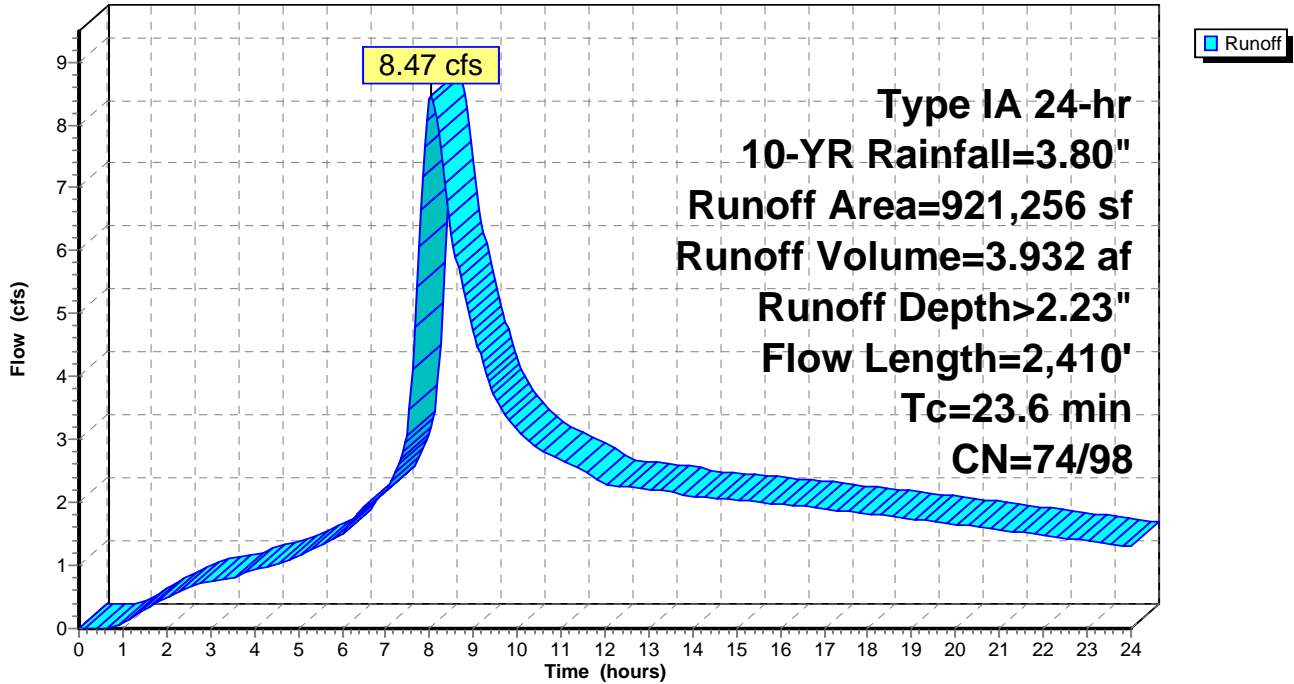
Area (sf)	CN	Description
921,256	83	1/4 acre lots, 38% imp, HSG C
571,179		62.00% Pervious Area
350,077		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.1100	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.60"
11.7	1,215	0.1200	1.73		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
2.4	375	0.1400	2.62		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.5	300	0.0500	10.14	7.97	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
2.1	470	0.0600	3.79	69.74	<b>Channel Flow,</b> Area= 18.4 sf Perim= 24.2' r= 0.76' n= 0.080 Earth, long dense weeds
23.6	2,410	Total			

Subcatchment 240X: OFFSITE

Hydrograph



**Summary for Subcatchment 250X: OFFSITE**

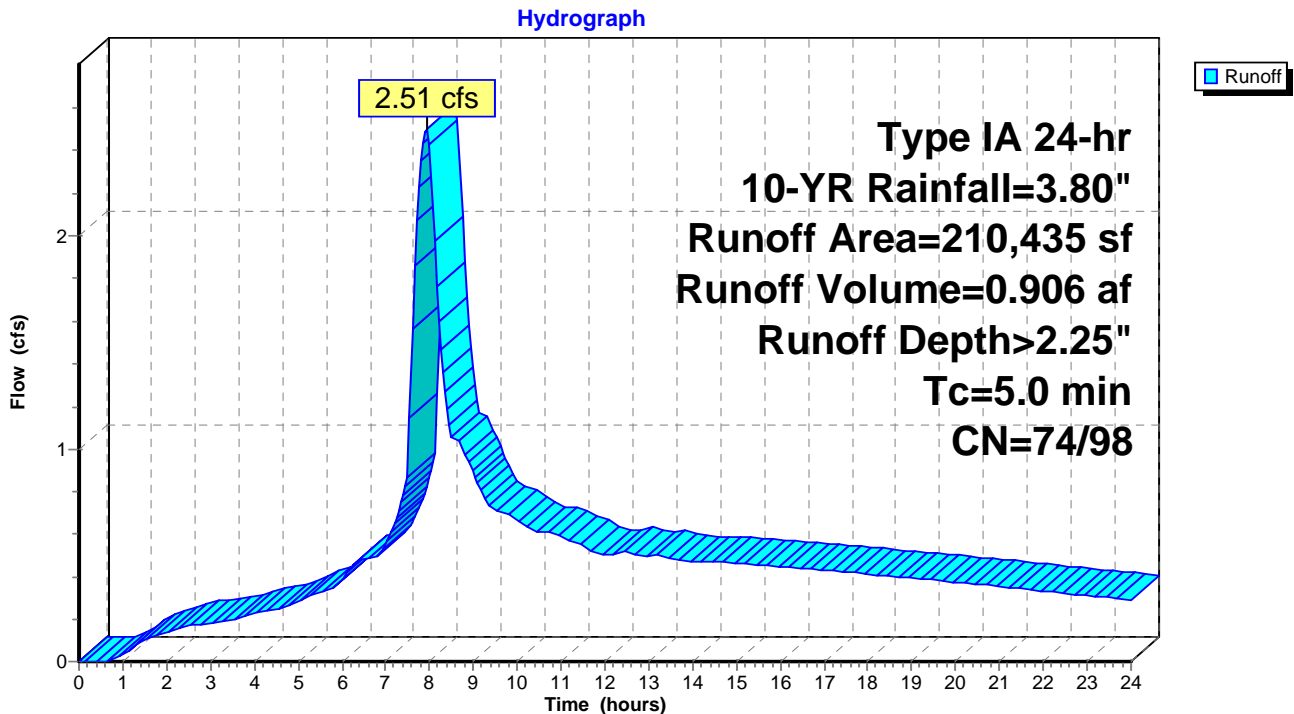
Runoff = 2.51 cfs @ 7.95 hrs, Volume= 0.906 af, Depth> 2.25"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
16,973	87	1/4 acre lots, 38% imp, HSG D
193,462	83	1/4 acre lots, 38% imp, HSG C
210,435	83	Weighted Average
130,470		62.00% Pervious Area
79,965		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

**Subcatchment 250X: OFFSITE**



**Summary for Subcatchment 260X: OFFSITE**

Runoff = 16.91 cfs @ 7.99 hrs, Volume= 7.201 af, Depth> 1.76"

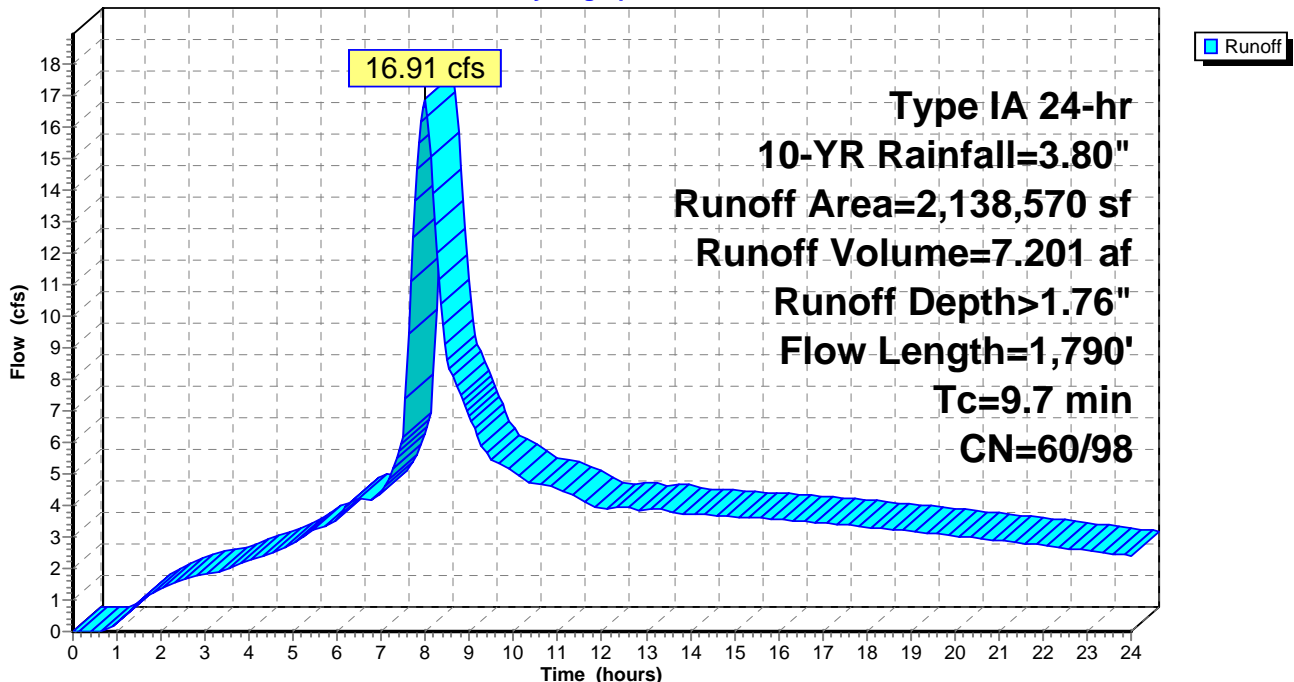
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
149,971	87	1/4 acre lots, 38% imp, HSG D
1,129,187	83	1/4 acre lots, 38% imp, HSG C
859,412	61	1/4 acre lots, 38% imp, HSG A
2,138,570	74	Weighted Average
1,325,913		62.00% Pervious Area
812,657		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	50	0.2500	0.37		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.60"
0.1	100	0.0800	12.83	10.08	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
7.3	1,640	0.0600	3.74	68.11	<b>Channel Flow,</b> Area= 18.2 sf Perim= 24.4' r= 0.75' n= 0.080 Earth, long dense weeds
9.7	1,790	Total			

**Subcatchment 260X: OFFSITE**

Hydrograph



**Summary for Subcatchment 270X: OFFSITE**

Runoff = 2.25 cfs @ 8.05 hrs, Volume= 1.090 af, Depth> 2.23"

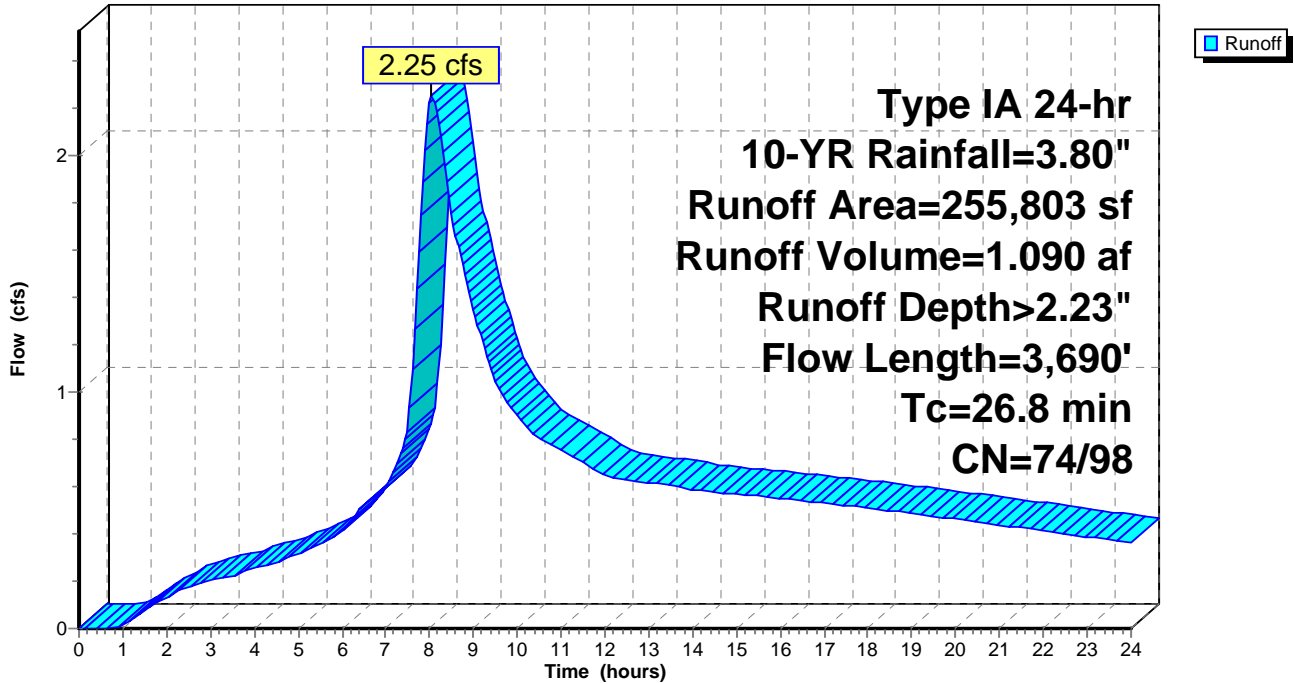
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Type IA 24-hr 10-YR Rainfall=3.80"

Area (sf)	CN	Description
255,803	83	1/4 acre lots, 38% imp, HSG C
158,598		62.00% Pervious Area
97,205		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	50	0.0200	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.60"
2.7	180	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.7	190	0.0700	1.85		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.2	730	0.0500	10.14	7.97	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
4.9	1,100	0.0400	3.74	68.86	<b>Channel Flow,</b> Area= 18.4 sf Perim= 18.2' r= 1.01' n= 0.080 Earth, long dense weeds
2.6	1,440	0.0400	9.07	7.13	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
26.8	3,690	Total			

Subcatchment 270X: OFFSITE

Hydrograph



**Summary for Subcatchment 280X: OFFSITE**

Runoff = 22.00 cfs @ 8.05 hrs, Volume= 10.513 af, Depth> 2.23"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-YR Rainfall=3.80"

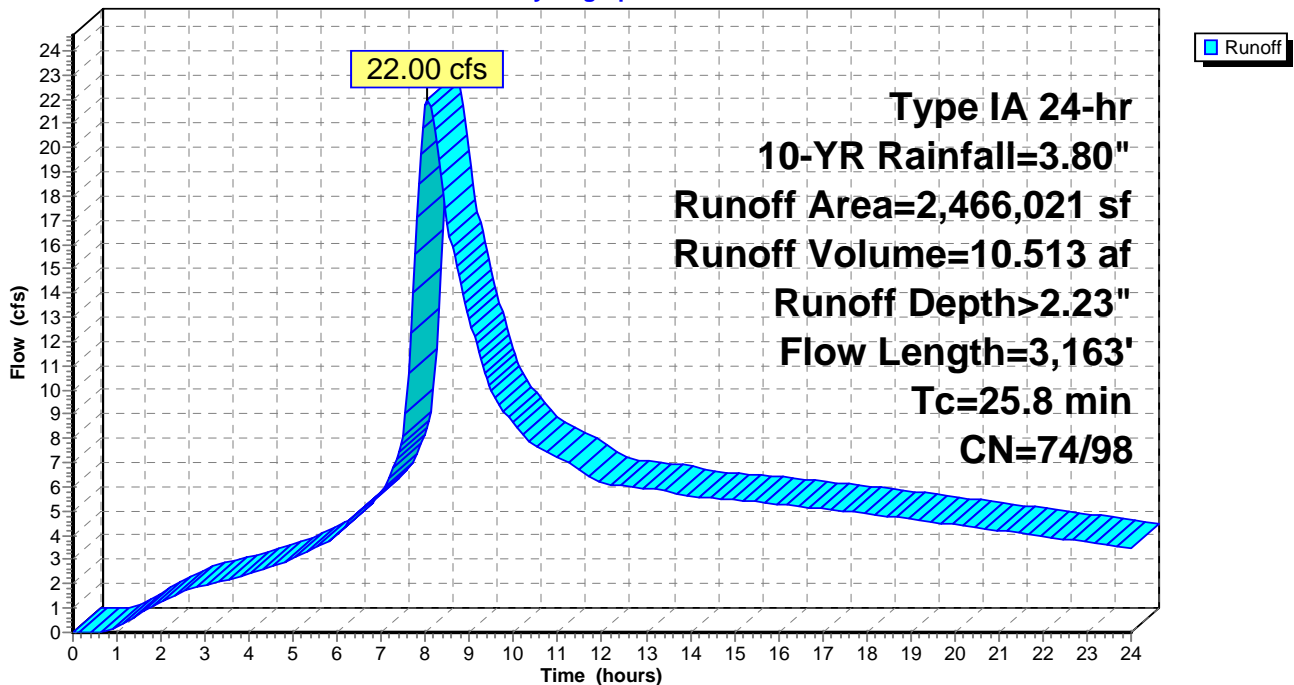
Area (sf)	CN	Description
2,466,021	83	1/4 acre lots, 38% imp, HSG C
1,528,933		62.00% Pervious Area
937,088		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0500	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.60"
9.1	1,473	0.1500	2.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.2	1,640	0.0600	3.79	69.74	<b>Channel Flow,</b> Area= 18.4 sf Perim= 24.2' r= 0.76' n= 0.080 Earth, long dense weeds
25.8	3,163	Total			

**Subcatchment 280X: OFFSITE**

Hydrograph





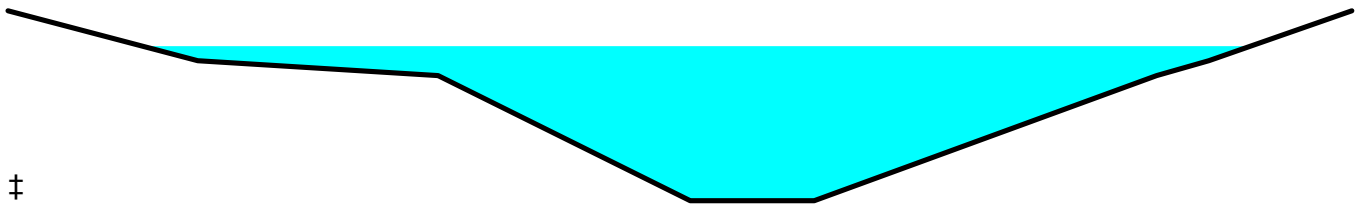
**Summary for Reach 1R: Existing Channel**

Inflow Area = 397.715 ac, 37.34% Impervious, Inflow Depth > 2.06" for 10-YR event  
 Inflow = 138.13 cfs @ 8.13 hrs, Volume= 68.330 af  
 Outflow = 138.05 cfs @ 8.15 hrs, Volume= 68.264 af, Atten= 0%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.52 fps, Min. Travel Time= 1.5 min  
 Avg. Velocity = 2.60 fps, Avg. Travel Time= 2.0 min

Peak Storage= 12,169 cf @ 8.15 hrs  
 Average Depth at Peak Storage= 3.10'  
 Defined Flood Depth= 3.50' Flow Area= 50.6 sf, Capacity= 195.68 cfs  
 Bank-Full Depth= 3.81' Flow Area= 60.3 sf, Capacity= 248.44 cfs

Custom cross-section, Length= 310.0' Slope= 0.0226 '/' (101 Elevation Intervals)  
 Constant n= 0.080 Earth, long dense weeds  
 Inlet Invert= 189.00', Outlet Invert= 182.00'

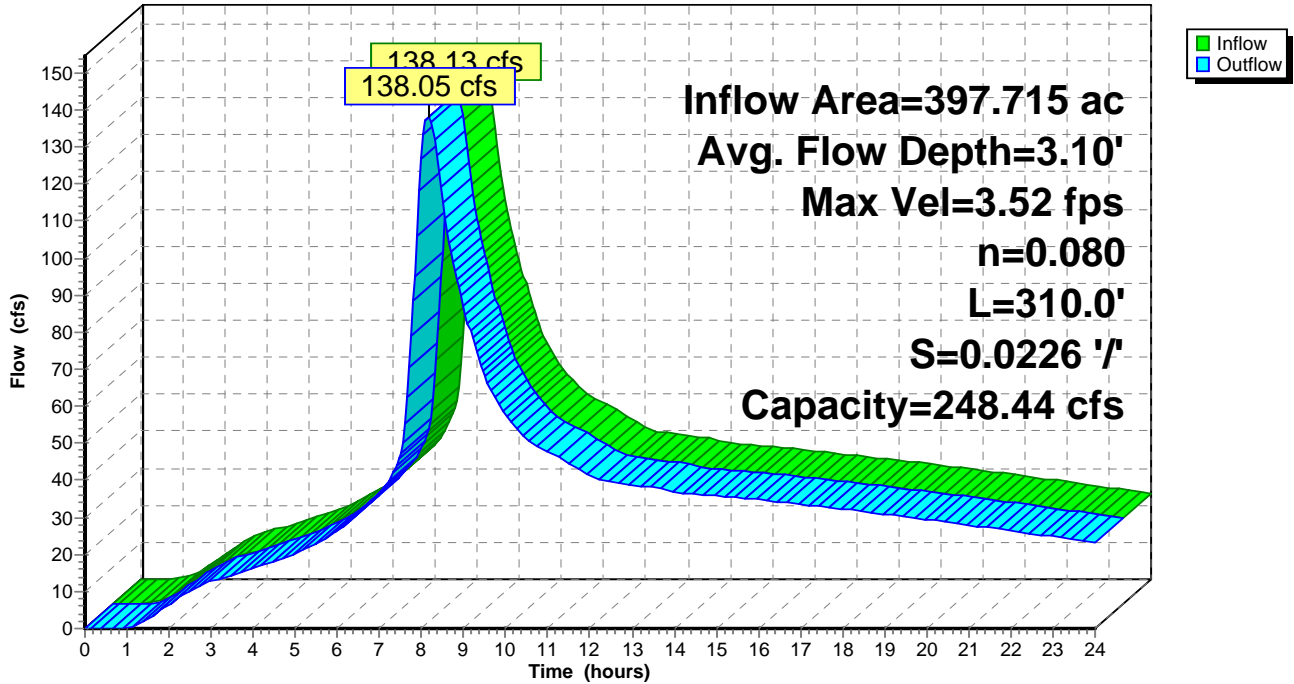


Offset (feet)	Elevation (feet)	Chan.Depth (feet)
-18.00	3.81	0.00
-13.41	2.81	1.00
-7.60	2.51	1.30
-1.50	0.00	3.81
1.50	0.00	3.81
9.78	2.51	1.30
11.04	2.81	1.00
14.50	3.81	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	3.0	0	0.00
2.51	25.6	18.2	7,929	89.18
2.81	31.9	25.4	9,874	103.49
3.81	60.3	33.7	18,701	248.44

### Reach 1R: Existing Channel

Hydrograph



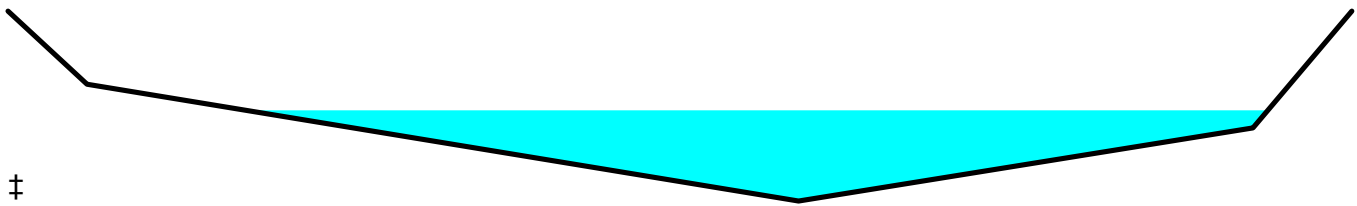
**Summary for Reach 2R: Existing Channel**

Inflow Area = 259.358 ac, 36.53% Impervious, Inflow Depth > 2.11" for 10-YR event  
 Inflow = 91.29 cfs @ 8.18 hrs, Volume= 45.535 af  
 Outflow = 91.21 cfs @ 8.20 hrs, Volume= 45.477 af, Atten= 0%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.64 fps, Min. Travel Time= 1.7 min  
 Avg. Velocity = 1.72 fps, Avg. Travel Time= 2.6 min

Peak Storage= 9,118 cf @ 8.20 hrs  
 Average Depth at Peak Storage= 1.24'  
 Bank-Full Depth= 2.60' Flow Area= 119.1 sf, Capacity= 596.25 cfs

Custom cross-section, Length= 264.0' Slope= 0.0347 '/' (102 Elevation Intervals)  
 Constant n= 0.080 Earth, long dense weeds  
 Inlet Invert= 200.00', Outlet Invert= 190.84'

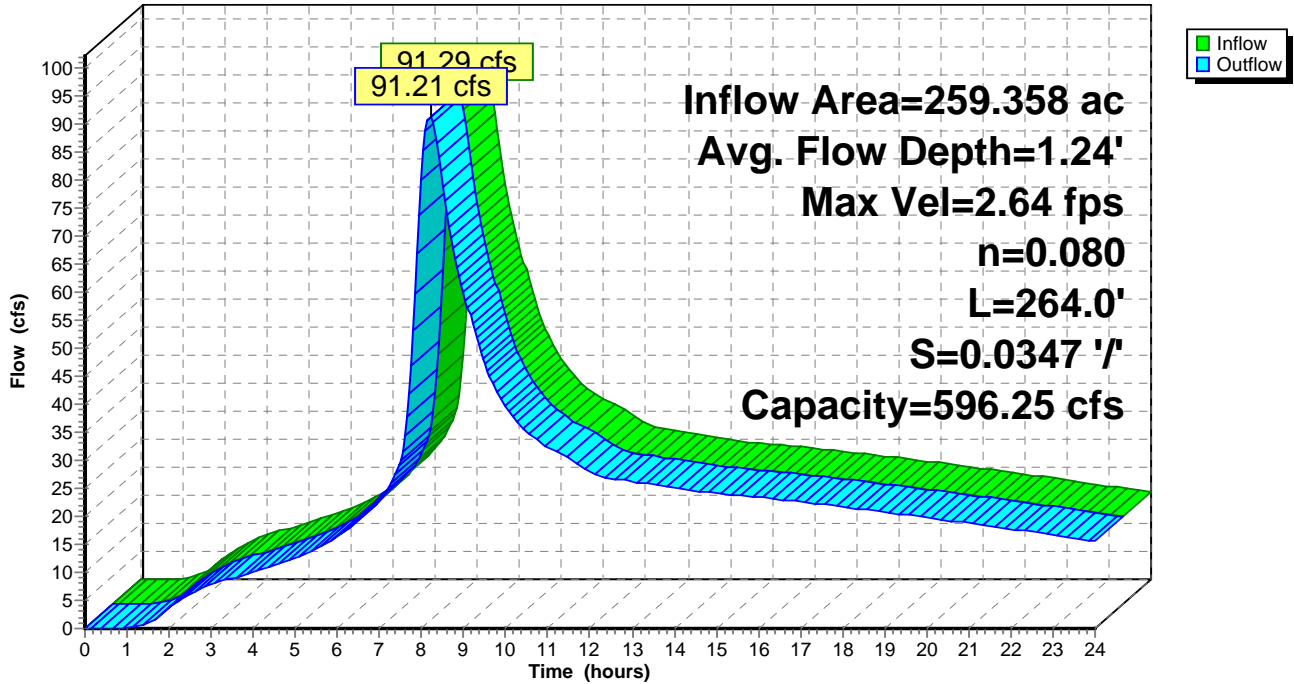


Offset (feet)	Elevation (feet)	Chan.Depth (feet)
-40.00	2.60	0.00
-36.00	1.60	1.00
0.00	0.00	2.60
23.00	1.00	1.60
28.00	2.60	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.00	22.8	45.5	6,006	49.56
1.60	54.7	61.0	14,431	175.74
2.60	119.1	68.4	31,442	596.25

### Reach 2R: Existing Channel

Hydrograph



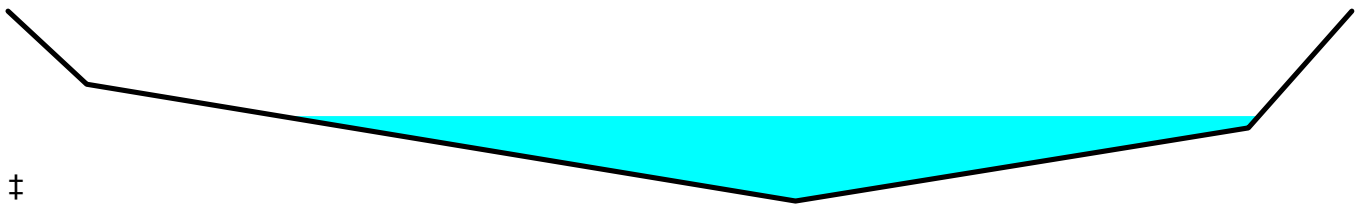
**Summary for Reach 3R: Existing Channel**

Inflow Area = 235.942 ac, 36.24% Impervious, Inflow Depth > 2.14" for 10-YR event  
 Inflow = 85.51 cfs @ 8.14 hrs, Volume= 42.050 af  
 Outflow = 84.68 cfs @ 8.20 hrs, Volume= 41.903 af, Atten= 1%, Lag= 3.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.77 fps, Min. Travel Time= 4.6 min  
 Avg. Velocity = 1.82 fps, Avg. Travel Time= 7.1 min

Peak Storage= 23,438 cf @ 8.20 hrs  
 Average Depth at Peak Storage= 1.16'  
 Bank-Full Depth= 2.60' Flow Area= 119.3 sf, Capacity= 662.85 cfs

Custom cross-section, Length= 768.0' Slope= 0.0428 '/' (102 Elevation Intervals)  
 Constant n= 0.080 Earth, long dense weeds  
 Inlet Invert= 232.90', Outlet Invert= 200.00'



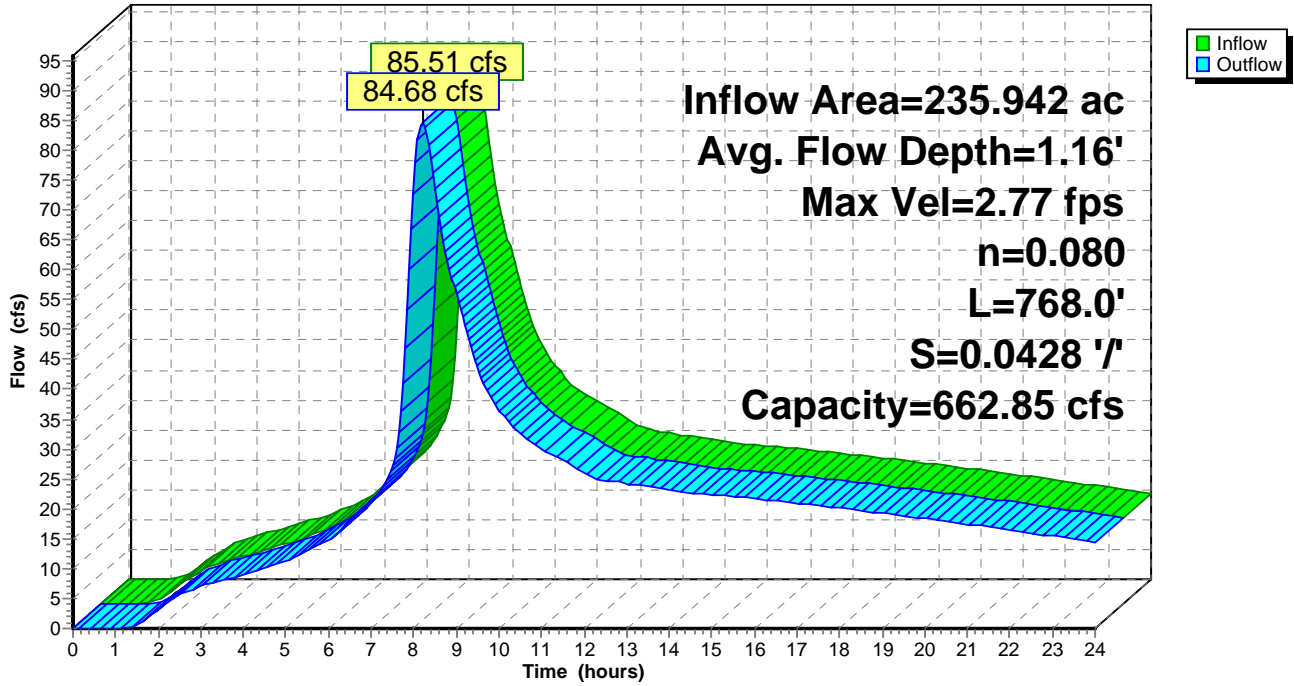
‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
-40.00	2.60	0.00
-36.00	1.60	1.00
0.00	0.00	2.60
23.00	1.00	1.60
28.26	2.60	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.00	22.8	45.5	17,472	55.06
1.60	54.7	61.1	42,003	195.25
2.60	119.3	68.7	91,629	662.85

### Reach 3R: Existing Channel

Hydrograph



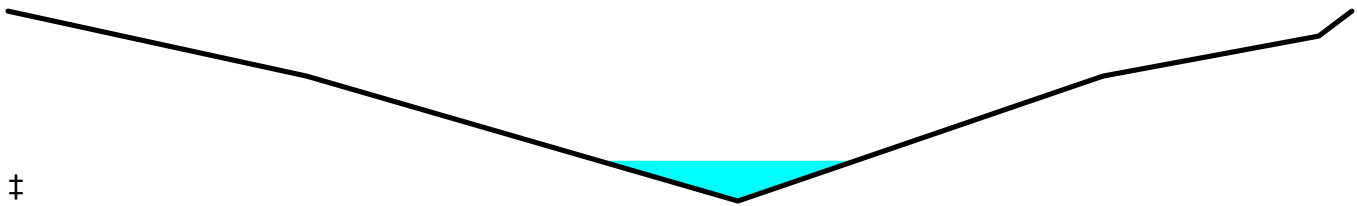
**Summary for Reach 4R: Existing Channel**

Inflow Area = 105.707 ac, 38.00% Impervious, Inflow Depth > 2.01" for 10-YR event  
 Inflow = 38.69 cfs @ 8.01 hrs, Volume= 17.715 af  
 Outflow = 37.02 cfs @ 8.10 hrs, Volume= 17.618 af, Atten= 4%, Lag= 5.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.97 fps, Min. Travel Time= 7.5 min  
 Avg. Velocity = 2.01 fps, Avg. Travel Time= 11.1 min

Peak Storage= 16,702 cf @ 8.10 hrs  
 Average Depth at Peak Storage= 1.61'  
 Bank-Full Depth= 7.60' Flow Area= 292.6 sf, Capacity= 2,366.15 cfs

Custom cross-section, Length= 1,340.0' Slope= 0.0351 '/' (102 Elevation Intervals)  
 Constant n= 0.080 Earth, long dense weeds  
 Inlet Invert= 236.00', Outlet Invert= 189.00'

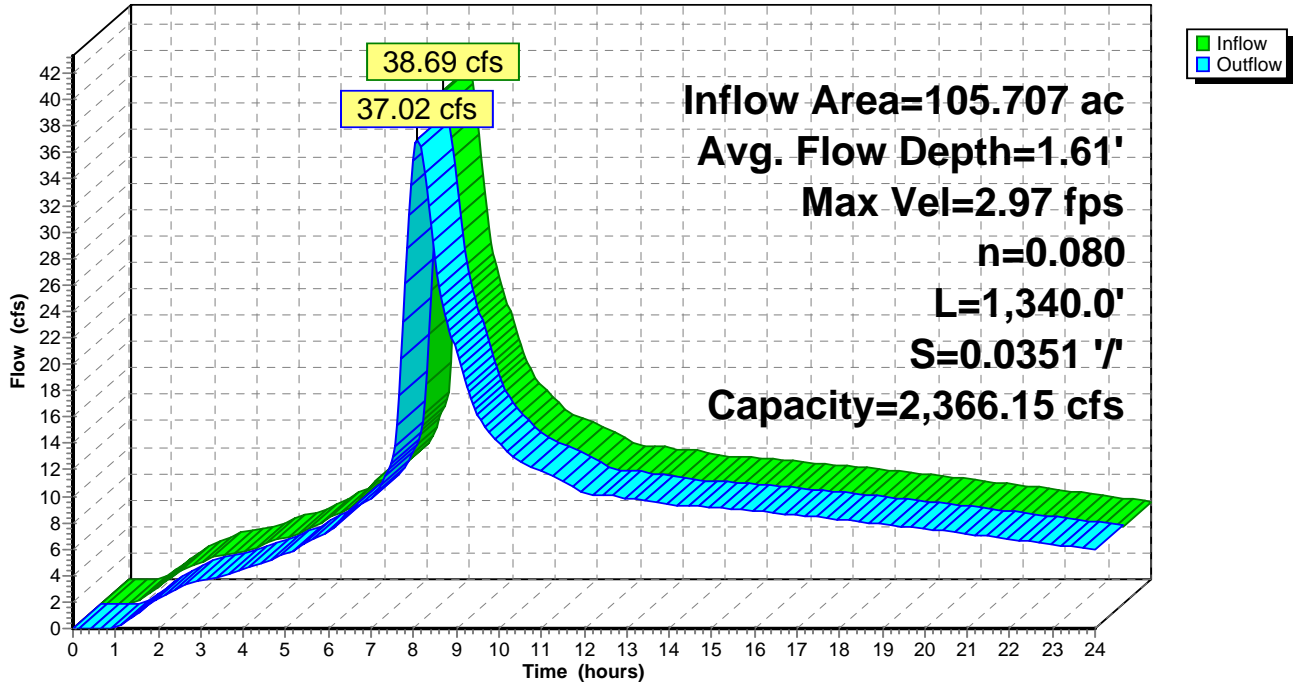


Offset (feet)	Elevation (feet)	Chan.Depth (feet)
-44.00	7.60	0.00
-26.00	5.00	2.60
0.00	0.00	7.60
22.00	5.00	2.60
35.00	6.60	1.00
37.00	7.60	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
5.00	120.0	49.0	160,800	758.07
6.60	216.1	73.3	289,522	1,544.82
7.60	292.6	82.6	392,084	2,366.15

### Reach 4R: Existing Channel

Hydrograph





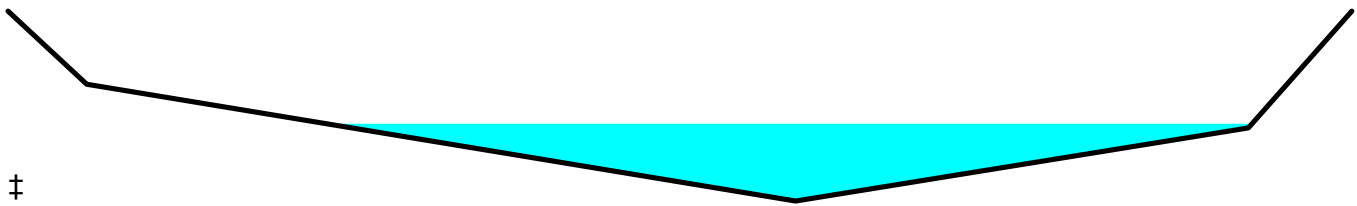
**Summary for Reach 5R: Existing Channel**

Inflow Area = 221.773 ac, 36.94% Impervious, Inflow Depth > 2.15" for 10-YR event  
 Inflow = 80.99 cfs @ 8.15 hrs, Volume= 39.807 af  
 Outflow = 80.97 cfs @ 8.16 hrs, Volume= 39.774 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.18 fps, Min. Travel Time= 1.1 min  
 Avg. Velocity = 2.12 fps, Avg. Travel Time= 1.7 min

Peak Storage= 5,397 cf @ 8.16 hrs  
 Average Depth at Peak Storage= 1.06'  
 Bank-Full Depth= 2.60' Flow Area= 119.3 sf, Capacity= 825.92 cfs

Custom cross-section, Length= 212.0' Slope= 0.0665 '/' (102 Elevation Intervals)  
 Constant n= 0.080 Earth, long dense weeds  
 Inlet Invert= 247.00', Outlet Invert= 232.90'



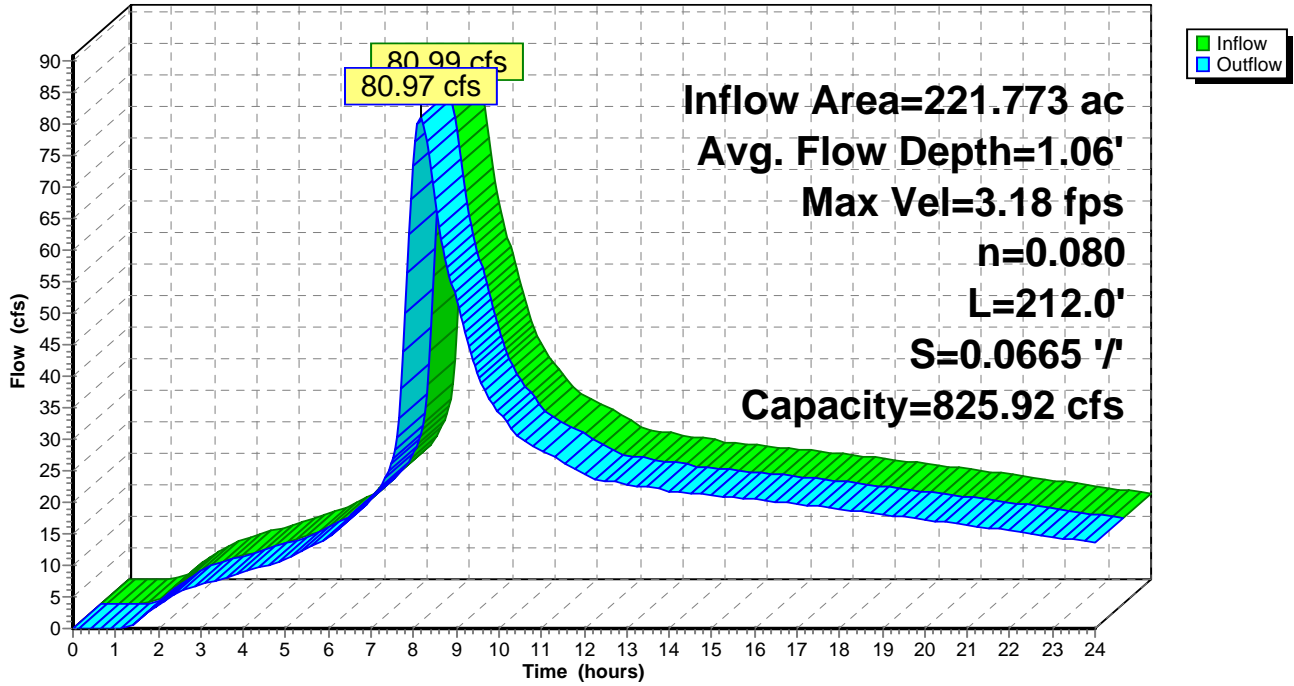
‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
-40.00	2.60	0.00
-36.00	1.60	1.00
0.00	0.00	2.60
23.00	1.00	1.60
28.26	2.60	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.00	22.8	45.5	4,823	68.61
1.60	54.7	61.1	11,595	243.29
2.60	119.3	68.7	25,293	825.92

### Reach 5R: Existing Channel

Hydrograph



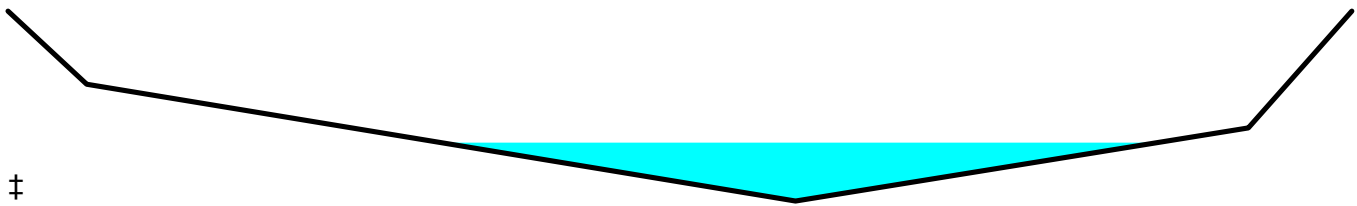
**Summary for Reach 6R: Existing Channel**

Inflow Area = 110.419 ac, 37.11% Impervious, Inflow Depth > 2.16" for 10-YR event  
 Inflow = 40.01 cfs @ 8.09 hrs, Volume= 19.855 af  
 Outflow = 39.72 cfs @ 8.14 hrs, Volume= 19.808 af, Atten= 1%, Lag= 2.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.74 fps, Min. Travel Time= 3.3 min  
 Avg. Velocity = 1.86 fps, Avg. Travel Time= 4.8 min

Peak Storage= 7,792 cf @ 8.14 hrs  
 Average Depth at Peak Storage= 0.80'  
 Bank-Full Depth= 2.60' Flow Area= 119.3 sf, Capacity= 870.78 cfs

Custom cross-section, Length= 537.0' Slope= 0.0739 '/' (102 Elevation Intervals)  
 Constant n= 0.080 Earth, long dense weeds  
 Inlet Invert= 286.70', Outlet Invert= 247.00'

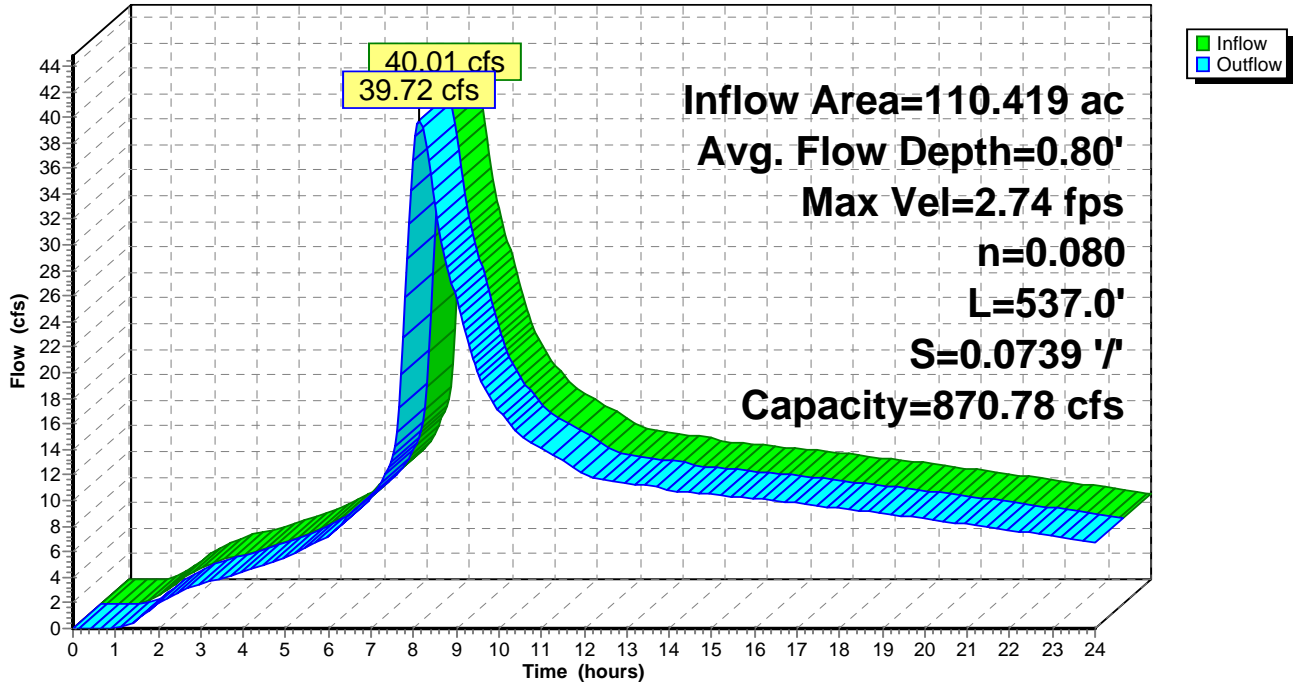


Offset (feet)	Elevation (feet)	Chan.Depth (feet)
-40.00	2.60	0.00
-36.00	1.60	1.00
0.00	0.00	2.60
23.00	1.00	1.60
28.26	2.60	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.00	22.8	45.5	12,217	72.34
1.60	54.7	61.1	29,369	256.50
2.60	119.3	68.7	64,068	870.78

### Reach 6R: Existing Channel

Hydrograph



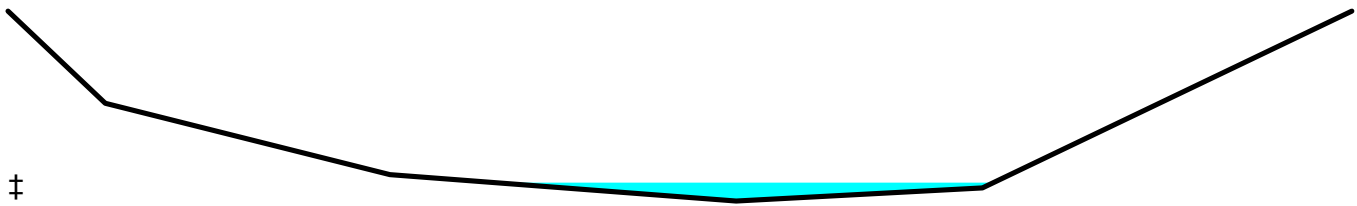
**Summary for Reach 7R: Existing Channel**

Inflow Area = 51.254 ac, 38.00% Impervious, Inflow Depth > 2.23" for 10-YR event  
 Inflow = 19.13 cfs @ 8.05 hrs, Volume= 9.505 af  
 Outflow = 18.85 cfs @ 8.12 hrs, Volume= 9.468 af, Atten= 1%, Lag= 4.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.83 fps, Min. Travel Time= 5.0 min  
 Avg. Velocity = 1.82 fps, Avg. Travel Time= 7.8 min

Peak Storage= 5,630 cf @ 8.12 hrs  
 Average Depth at Peak Storage= 0.53'  
 Bank-Full Depth= 5.48' Flow Area= 231.4 sf, Capacity= 3,539.93 cfs

Custom cross-section, Length= 846.0' Slope= 0.1162 '/' (102 Elevation Intervals)  
 Constant n= 0.080 Earth, long dense weeds  
 Inlet Invert= 385.00', Outlet Invert= 286.70'

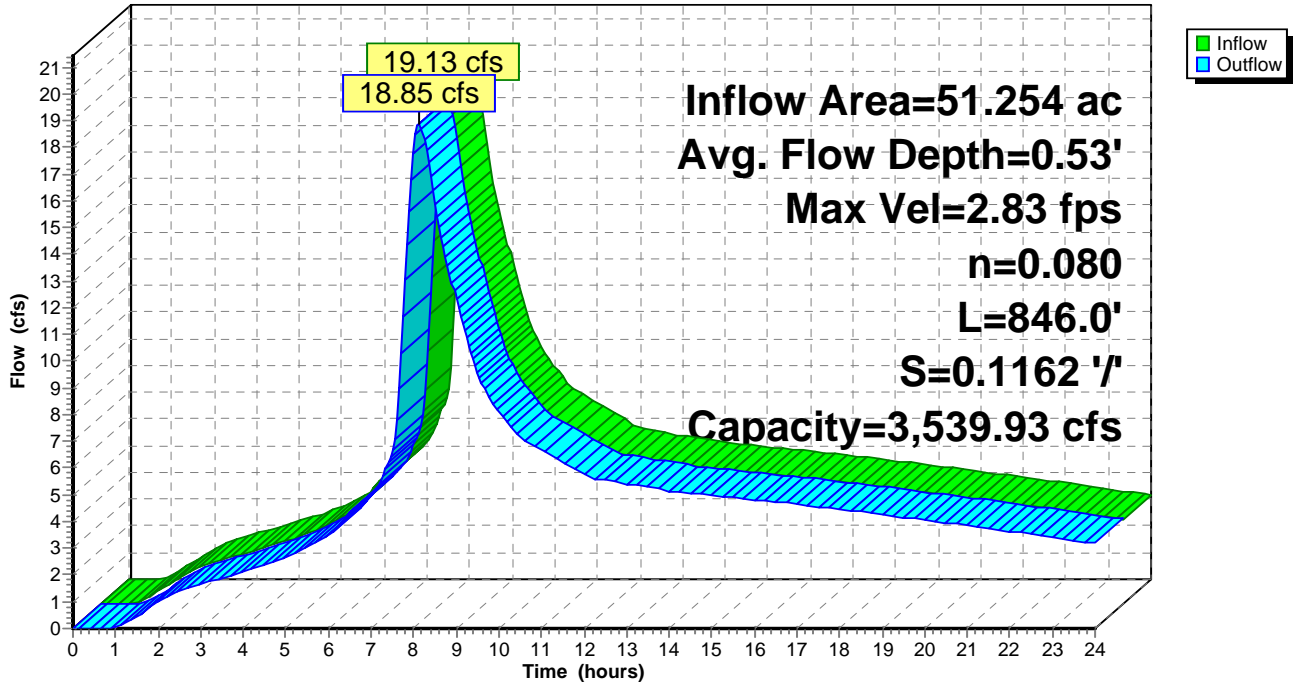


Offset (feet)	Elevation (feet)	Chan.Depth (feet)
-32.47	5.48	0.00
-28.13	2.82	2.66
-15.44	0.76	4.72
0.00	0.00	5.48
10.98	0.38	5.10
27.45	5.48	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.38	3.6	18.7	3,010	7.47
0.76	12.4	27.7	10,456	45.66
2.82	89.2	47.6	75,493	859.63
5.48	231.4	61.6	195,786	3,539.93

### Reach 7R: Existing Channel

Hydrograph



**Summary for Reach 8R: Existing Channel**

Inflow Area = 59.165 ac, 36.33% Impervious, Inflow Depth > 2.12" for 10-YR event  
 Inflow = 21.64 cfs @ 8.02 hrs, Volume= 10.430 af  
 Outflow = 21.27 cfs @ 8.07 hrs, Volume= 10.387 af, Atten= 2%, Lag= 3.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.19 fps, Min. Travel Time= 4.7 min  
 Avg. Velocity = 1.89 fps, Avg. Travel Time= 8.0 min

Peak Storage= 6,020 cf @ 8.07 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 2.50' Flow Area= 77.4 sf, Capacity= 670.49 cfs

Custom cross-section, Length= 905.0' Slope= 0.1197 '/'  
 Constant n= 0.080 Earth, long dense weeds  
 Inlet Invert= 395.00', Outlet Invert= 286.70'



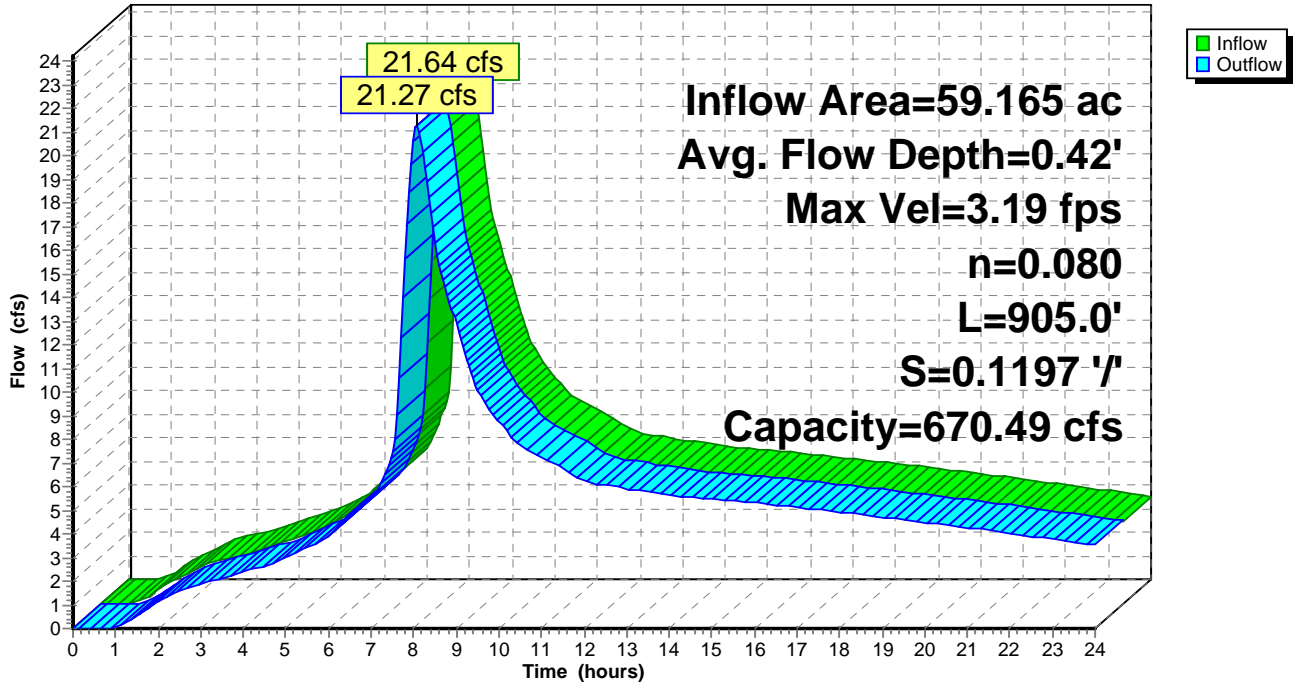
‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
-22.22	2.50	0.00
-6.14	0.00	2.50
6.65	0.00	2.50
26.94	2.50	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	12.8	0	0.00
2.50	77.4	49.5	70,081	670.49

### Reach 8R: Existing Channel

Hydrograph





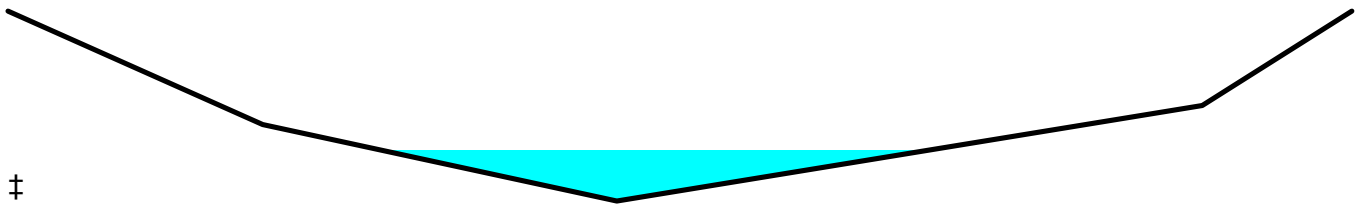
**Summary for Reach 9R: Existing Channel**

Inflow Area = 111.354 ac, 36.78% Impervious, Inflow Depth > 2.16" for 10-YR event  
 Inflow = 42.30 cfs @ 8.07 hrs, Volume= 20.085 af  
 Outflow = 41.27 cfs @ 8.15 hrs, Volume= 19.998 af, Atten= 2%, Lag= 5.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.19 fps, Min. Travel Time= 5.9 min  
 Avg. Velocity = 2.15 fps, Avg. Travel Time= 8.7 min

Peak Storage= 14,549 cf @ 8.15 hrs  
 Average Depth at Peak Storage= 1.02'  
 Bank-Full Depth= 3.80' Flow Area= 146.2 sf, Capacity= 1,290.64 cfs

Custom cross-section, Length= 1,126.0' Slope= 0.0728 '/' (102 Elevation Intervals)  
 Constant n= 0.080 Earth, long dense weeds  
 Inlet Invert= 329.00', Outlet Invert= 247.00'

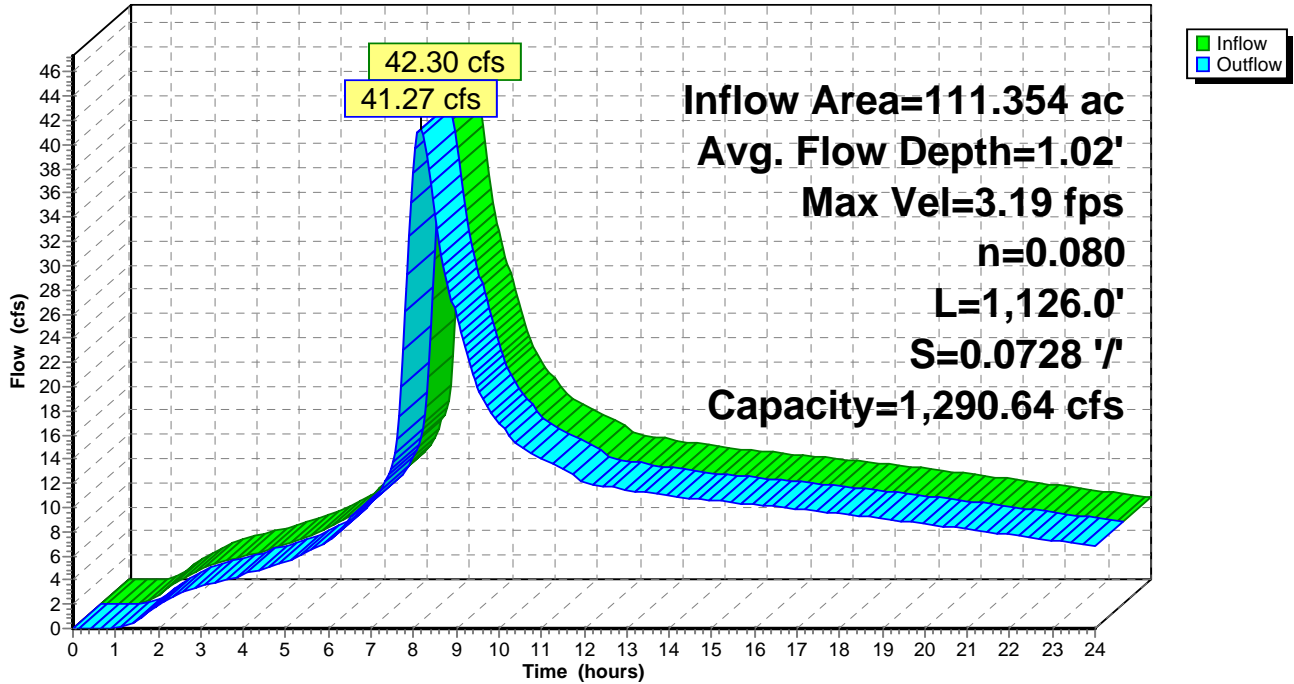


Offset (feet)	Elevation (feet)	Chan.Depth (feet)
-28.08	3.80	0.00
-16.33	1.53	2.27
0.00	0.00	3.80
27.00	1.91	1.89
33.90	3.80	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.53	29.0	38.1	32,697	121.48
1.91	44.9	45.5	50,509	222.82
3.80	146.2	62.6	164,659	1,290.64

### Reach 9R: Existing Channel

Hydrograph



**Summary for Reach 10R: Existing Channel**

Inflow Area = 106.524 ac, 36.73% Impervious, Inflow Depth > 2.17" for 10-YR event  
 Inflow = 40.66 cfs @ 8.03 hrs, Volume= 19.247 af  
 Outflow = 40.10 cfs @ 8.08 hrs, Volume= 19.179 af, Atten= 1%, Lag= 2.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.43 fps, Min. Travel Time= 4.2 min  
 Avg. Velocity = 2.05 fps, Avg. Travel Time= 7.0 min

Peak Storage= 10,006 cf @ 8.08 hrs  
 Average Depth at Peak Storage= 0.61'  
 Bank-Full Depth= 2.36' Flow Area= 76.0 sf, Capacity= 551.68 cfs

Custom cross-section, Length= 857.0' Slope= 0.0881 '/'  
 Constant n= 0.080 Earth, long dense weeds  
 Inlet Invert= 404.50', Outlet Invert= 329.00'



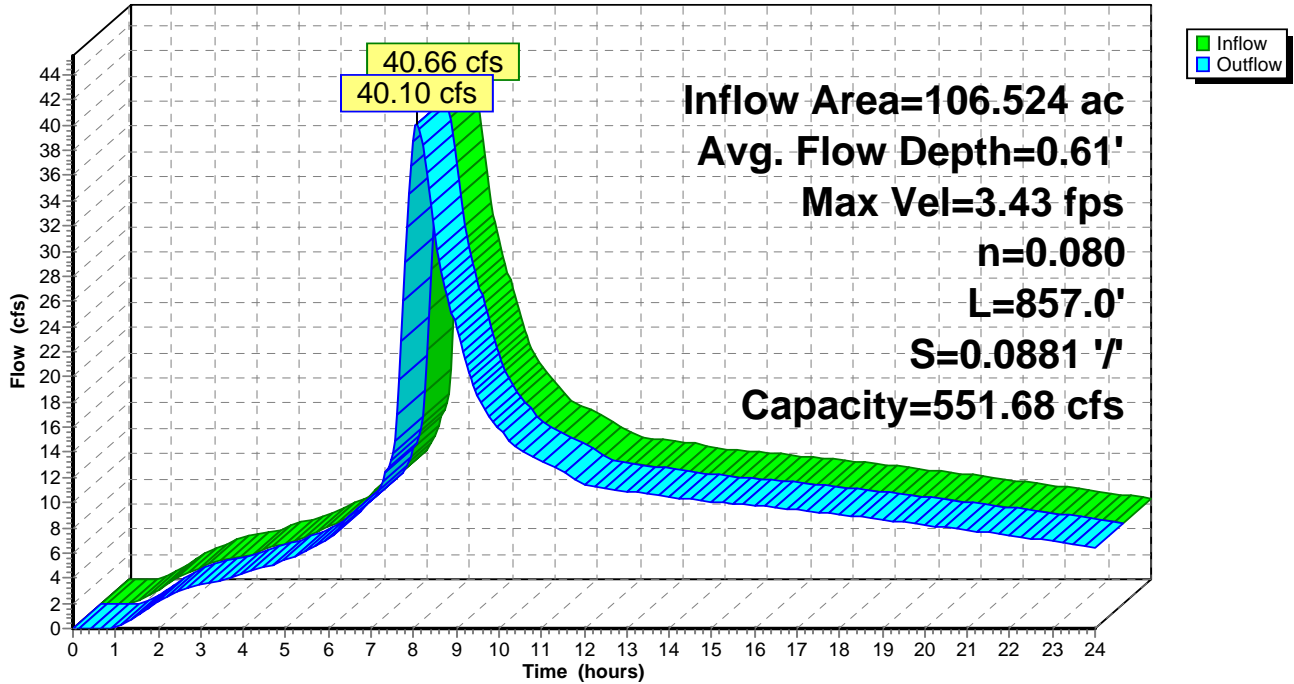
Offset (feet)	Elevation (feet)	Chan.Depth (feet)
-21.83	2.36	0.00
-7.20	0.00	2.36
7.20	0.00	2.36
28.20	2.36	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	14.4	0	0.00
2.36	76.0	50.4	65,155	551.68

### Reach 10R: Existing Channel

Hydrograph

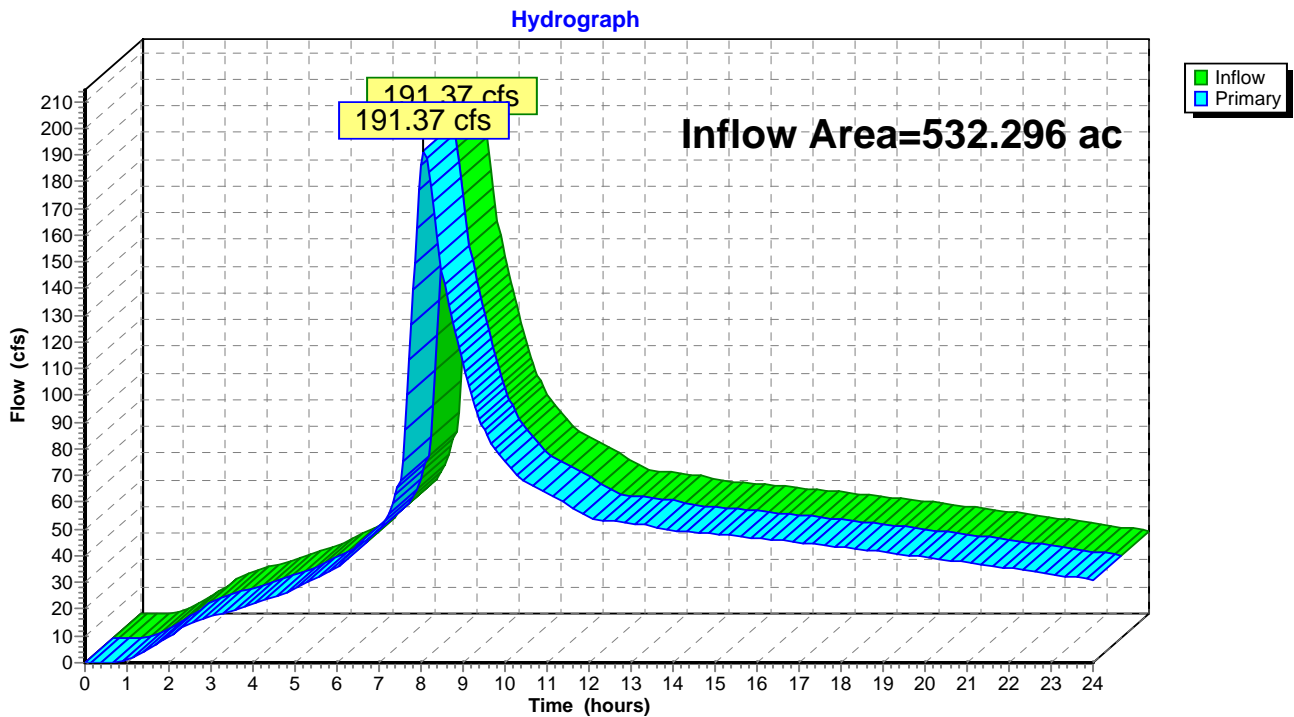


### Summary for Link 1L: Discharge to Stormwater Facility

Inflow Area = 532.296 ac, 37.03% Impervious, Inflow Depth > 2.07" for 10-YR event  
Inflow = 191.37 cfs @ 8.07 hrs, Volume= 91.980 af  
Primary = 191.37 cfs @ 8.07 hrs, Volume= 91.980 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

### Link 1L: Discharge to Stormwater Facility



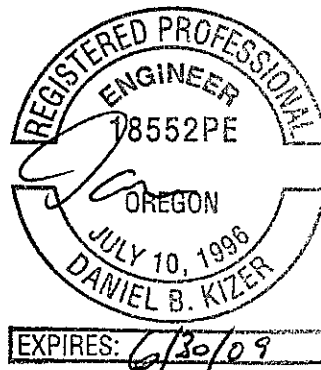
**APPENDIX B**  
**WEST HILLS PROPERTIES STORMWATER**  
**REPORT**

# STORMWATER PLAN & CALCULATIONS

FOR

## WEST HILLS PROPERTIES LLC

### McMINNVILLE, OREGON



2272.2020.0

September 2007

WESTECH ENGINEERING, INC.  
3841 Fairview Industrial Dr. SE, Suite 100  
Salem, OR 97302  
(503) 585-2474

## TABLE OF CONTENTS

1.1 PROJECT OVERVIEW .....	1
1.2 McMinnville Stormwater Requirements .....	1
1.3 Stormwater Detention Methodology and Criteria.....	1
1.4 Calculations Summary .....	3
1.5 Detention Volume Determination .....	4
1.6 Over Flow Routing Summary .....	5

## LIST OF TABLES

Table 1: McMinnville 24-Hour Rainfall Events.....	1
Table 2: Subdivision Area Predeveloped and Developed Land-Use.....	2
Table 3: Total Drainage Basin Predeveloped and Developed Land-Use.....	3
Table 4: Subdivision Pre and Post Developed Peak Flows .....	3
Table 5: Total Drainage Basin Pre and Post Developed Peak Flows .....	4

## LIST OF FIGURES

Figure 1: Overall Subdivision Master Plan.....	6
Figure 2: Subdivision Storm Drain Basin Map .....	7
Figure 3: Total Storm Drain Basin Map .....	8
Figure 4: Detention Pond Grading Plan.....	9

## APPENDICES

### APPENDIX 1: KHA PROPERTY PRE-DEVELOPED CONDITIONS CALCULATIONS

Master Summary  
Tc Calculations  
Curve Number Calculations

### APPENDIX 2: KHA PROPERTY DEVELOPED CONDITIONS CALCULATIONS

Master Summary  
Tc Calculations  
Detention Pond Calculations

### APPENDIX 3: TOTAL DRAINAGE BASIN DEVELOPED CONDITIONS CALCULATIONS

Master Summary  
Tc Calculations  
Future Detention Pond Calculations

### APPENDIX 4: TOTAL DRAINAGE BASIN PRE-DEVELOPED CONDITIONS CALCULATIONS

Master Summary  
Tc Calculations  
Curve Number Calculations

### APPENDIX 5: FULL SIZE WOODED & PASTURE AREA MAPS DELINEATION

### APPENDIX 6: FULL SIZE – Overall Subdivision Map, Subdivision Basin Map and Total Drainage Basin Map

### APPENDIX 7: YAMHILL COUNTY SOIL SURVEY & CURVE NUMBER TABLE



### 1.1 Project Overview

The West Hills Properties LLC property encompasses just over 200 acres and is made up of many different subdivisions including, West Hills Phases 1 – 5, Valley’s Edge Phases 2 – 5, Hillcrest Phases 6 – 8, and Northridge subdivision (Refer to Figure 1). These residential subdivisions will create approximately 690 lots. In order to maximize developable area and minimize construction costs a regional detention basin has been constructed based on the City of McMinnville detention requirements

### 1.2 McMinnville Stormwater Requirements

The City of McMinnville requires the detention on all developments that create a significant portion of impervious area. New developments are required to detain the difference between the post-developed 10-year 24-hour and the pre-developed 10-year 24-hour storm event, with a maximum release rate equal to the pre-developed 10-year 24-hour storm event.

### 1.3 Stormwater Detention Methodology and Criteria

The proposed residential subdivision will take up a significant portion of the drainage basin made up of forests and pasture, which upon development will require a significant amount of detention due to the addition of impervious area. In order to determine the size of the detention facility, maximum flow release rate from the detention facility, and bypass flow rate, and overflow rates must be determined. To determine the maximum flow release rate from the detention facility the 10-year, 24-hour pre-developed flow rates were determined for the land occupying the buildout development area (a significant portion of the entire drainage basin). These flow rates will later be used to help size the outlet orifice of our detention facility. The bypass flow rate for the detention facility can be sized by determining the peak 10-year, 24-hour runoff event for the entire upstream drainage basin and subtracting off the 10-year, 24-hour runoff event for the buildout development area. The developed 10-year, 24-hour runoff event for the entire drainage was used to determine the total overflow capacity of the detention pond.

The 10-year 24-hour runoff events for the development and the entire drainage basin were determined with the aid of the “PondPack” computer simulation program created by Haested Methods using the Santa Barbara Urban Hydrograph methodology. The Type 1A, 24-hour rainfall distribution was utilized to convert selected rainfall depths listed in Table 1 of a particular recurrence interval into a hyetograph.

**Table 1: McMinnville 24-Hour Rainfall Events**

<u>Recurrence Interval (years)</u>	<u>Rainfall Depth (inches)</u>
2	2.4
5	3.1
10	3.6
25	4.2
50	4.7
100	5.3

The total drainage basin was modeled as 11 sub-basins, while the subdivision was modeled as 9 sub-basins for both the predeveloped and developed conditions as illustrated in Figure 2 and Figure 3. The predeveloped curve numbers were determined for each sub-basin based on either a wooded or pasture land use. The area of woods vs. pasture was determined by using a scaled aerial photographs (Refer to Appendix 5 for full size sheets). Wooded and pasture land areas were assigned Curve Numbers (CN) equal to 70 and 74, respectively. The curve numbers were then weighted based on areas (refer to Appendix 1 through 4 for calculations). The curve numbers are associated with a type C and D soil per the City of McMinnville Storm Drainage Master Plan. However, for this project a type C soil was used though out the basin. Supporting soils maps CN selection tables can be found in Appendix 7.

Developed runoff conditions were determined by assigning curve numbers to each of the drainage basins based upon residential density. The subdivision had a residential density that ranged from 2.4 residential units per acre to 3.8 residential units per acre as shown in Table 2 and Table 3 and illustrated in Figure 2. If a sub-basin had a residential density less than 3 units per acre it was rounded up to 3 units per acre. If a sub-basin had a residential density between 3 and 4 units per acre the density was rounded up to 4 units per acre. Sub-basins with assigned residential density of 3 units per acre and 4 units per acre were assigned curve numbers of 83 and 81, respectively, and in accordance with TR-55 Curve Numbers.

**Table 2: Subdivision Area Predeveloped and Developed Land-Use**

BASIN	AREA	PREDEVELOPED LAND-USE		DEVELOPED LAND-USE (DU/Acre)		
		Woods Area	Pasture Area	DU	Calculated	Assigned
C1.0.A	58.9	0.0	58.9	189	3.2	4
C1.0.B	7.4	0.2	7.2	18	2.4	3
C1.1.A	44.5	0.0	44.5	162	3.6	4
C2.0.A	18.2	13.2	6.0	69	3.8	4
C3.0.A	23.2	8.4	14.8	78	3.4	4
C3.1.A	36.8	36.6	0.2	96	2.6	3
C3.2.A	8	8.0	0.0	20	2.5	3
C4.0.A	10.2	3.3	6.9	37	3.6	4
<b>TOTAL</b>	<b>207.2</b>	<b>69.7</b>	<b>138.5</b>	<b>669</b>	<b>N/A</b>	<b>N/A</b>

**Table 3: Total Drainage Basin Predeveloped and Developed Land-Use**

BASIN	AREA	PREDEVELOPED LAND-USE		DEVELOPED LAND-USE
		Woods Area	Pasture Area	Assigned DU/Acre
C1.0.A	54	0.0	54.0	4
C1.0.B	7.4	0.2	7.2	3
C1.1.A	43.3	0.0	43.3	4
C2.0.A	39.7	33.1	6.6	4
C2.1.A	11.5	8.2	3.3	4
C3.0.A	23.8	9.0	14.8	4
C3.1.1.A	95	45.6	49.4	4
C3.1.A	42.4	39.6	2.8	3
C3.2.A	78.4	61.5	16.9	4
C3.2.B	15.1	2.8	12.3	4
C4.0.A	49.1	18.6	30.5	4
C5.0.A	73.3	17.5	55.8	4
<b>TOTAL</b>	<b>533</b>	<b>236.1</b>	<b>296.9</b>	<b>N/A</b>

**1.4 Calculations Summary**

Refer to Appendix 1 through 4 for the runoff calculations, Tc calculations, and pond volume calculations. Table 4 and Table 5 provide a summary of all the peak runoff values for each sub-basin.

**Table 4: Subdivision Pre and Post Developed Peak Flows**

BASIN	10-Year, 24-Hour Predeveloped Flows (CFS)	10-Year, 24-Hour Developed Flows (CFS)
C1.0.A	10.78	23.88
C1.0.B	1.54	2.74
C1.1.A	7.43	17.03
C2.0.A	2.52	6.63
C3.0.A	3.54	0.87
C3.1.A	3.63	15.57
C3.2.A	0.78	2.32
C4.0.A	1.79	3.39
<b>PEAK</b>	<b>31.64</b>	<b>70.17</b>

**Table 5: Total Drainage Basin Pre and Post Developed Peak Flows**

BASIN	10-Year, 24-Hour Predeveloped Flows (CFS)	10-Year, 24-Hour Developed Flows (CFS)
C1.0.A	9.88	22.28
C1.0.B	1.54	2.8
C1.1.A	7.23	17.02
C2.0.A	4.32	16.02
C2.1.A	1.21	4.48
C3.0.A	2.52	9.33
C3.1.1.A	10.63	33.95
C3.1.A	10.92	14.36
C3.2.A	7.97	27.86
C3.2.B	2.42	5.65
C4.0.A	6.72	18.56
C5.0.A	9.93	27.27
<b>PEAK</b>	<b>73.96</b>	<b>199.1</b>

#### 1.5 Detention Volume Determination

Please refer to Appendix 2 for the detention calculations and Figure 4. The detention volume was determined in compliance with McMinnville’s required maximum release rate equal to the basins peak 10-year runoff event, while capturing the 10-year post-developed runoff event. Based on preliminary calculations we determined the approximate amount of storage required. The detention basins grading plan, i.e., the area as a function of height was entered into the “Pond Pack” computer program, which determines volume as a function of height. By iteration, the orifice size was adjusted until the maximum release rate was equal to the 10-year predeveloped runoff event. The maximum amount of water stored in the pond was equal to the required detention volume. The total detention required is 3.567 ac-ft or 155,379 cubic-feet. The detention pond as shown on sheet C8 of the Civil drawings and Figure 4 have a total detention capacity of approximately 190,000 cubic-feet.

The detention basin was sized to provide the volume necessary to limit the stormwater discharge rate to the release rate that is equivalent to the 10-year, 24-hour pre-developed runoff event for the total drainage basin (74 cfs).

The 10-year, 24-hour pre-developed runoff event for the total basin was calculated to be 74 cfs. Three pipe discharges on Redmond Hill Road are shown on construction drawing sheets St-2 and St-3. These 3 discharges are as follows:

1. Detention Pond 24-inch discharge pipe with 16.5-inch orifice, restricted the release rate to 14 cfs with the pond at water surface elevation 184.0
2. A 12-inch discharge pipe from a slope inlet set at elevation 180.0, which restricts the release rate at 7 cfs with the pond at water surface elevation 184.0.

3. A 48-inch cross culvert at Redmond Hill Road Station 38+25. At the ditch water surface elevation of 185.00 the water begins to flow overland east to the detention pond. At elevation 185.0, the 48-inch culvert can convey 54 cfs across Redmond Hill Road to the open ditch on the south side.

At elevation 185.50, the 48-inch culvert can convey 65 cfs across Redmond Hill Road to the open ditch on the south side. The overflow for the north-south ditch can convey 51 cfs at a depth of flow of 6-inches (Manning's value of 0.030 for the overland flow across the park grass.)

Refer to the Detention Pond Grading Plan on Sheet G9 for the surface overflow route for the north-south ditch.

#### 1.6 Over Flow Routing Summary

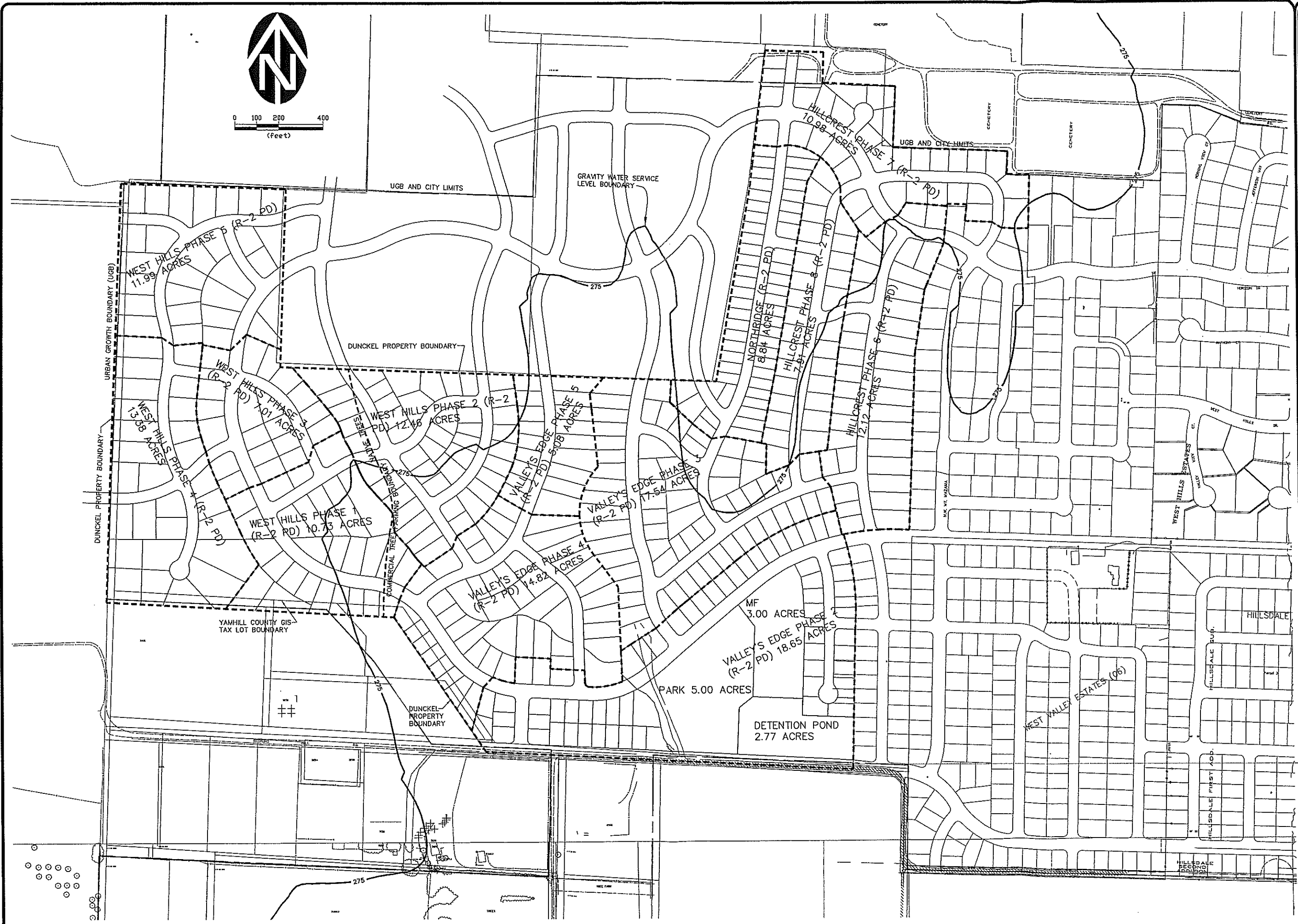
The detention pond was sized with a total overflow capacity equal to the post developed 10-year storm for the entire drainage basin or 199.1 cfs. As indicated on the Civil Drawings and in Figure 4 once the detention pond begins to fill until the stormwater reaches the overflow elevation of 184. At this elevation the orifice will release 21 cfs (the predeveloped 10-year flow for the total basin). Above this elevation (between 185 and 184) water will back up to the culvert west of the pond and a second Type III inlet. The capacity of the 125-foot long spillway at a flow depth of 3" is approximately 109 cfs.

The detention pond can overflow via 4 routes:

1. Water can flow into the two overflow catchbasins set at elevation 184.0 along the side of the south berm in the detention pond.
2. Water can overflow the flow control manhole riser piping inside the manhole at Redmond Hill Road Station 31+43.
3. Water can overflow the north, curbside sidewalk at elevation 184.98 at Redmond Hill Road Station 32+50. The sidewalk serves as the overland flow route for water to flow across Redmond Hill Road.

Above elevation 185.5, water can overflow through the remainder of the capacity of the 48-inch culvert crossing Redmond Hill Road at Station 38+25. Capacity is available between flow depth of 34-inches (elevation 185) flow depth of 48-inches (elevation 186.2).

Jan 21, 2007 - 10:58am  
R:\p\g\VAUER\2257.2020.d\Plot\Overall Subdivision Master Plan.dwg (Layout1.tbl)



**KHA PROPERTIES LLC** McMinnville, Oregon

**FIGURE 1.**  
OVERALL SUBDIVISION  
MASTER PLAN

**WESTTECH ENGINEERING, INC.**  
CONSULTING ENGINEERS AND PLANNERS  
3841 Fairview Industrial Dr., S.E., Suite 100, Salem, OR 97302  
Phone: (503) 585-2474 Fax: (503) 585-3988  
E-mail: westtech@westtech-eng.com

**REVIEW**  
DATE: JAN 20, 2007

NO.	DATE	DESCRIPTION	BY
1			

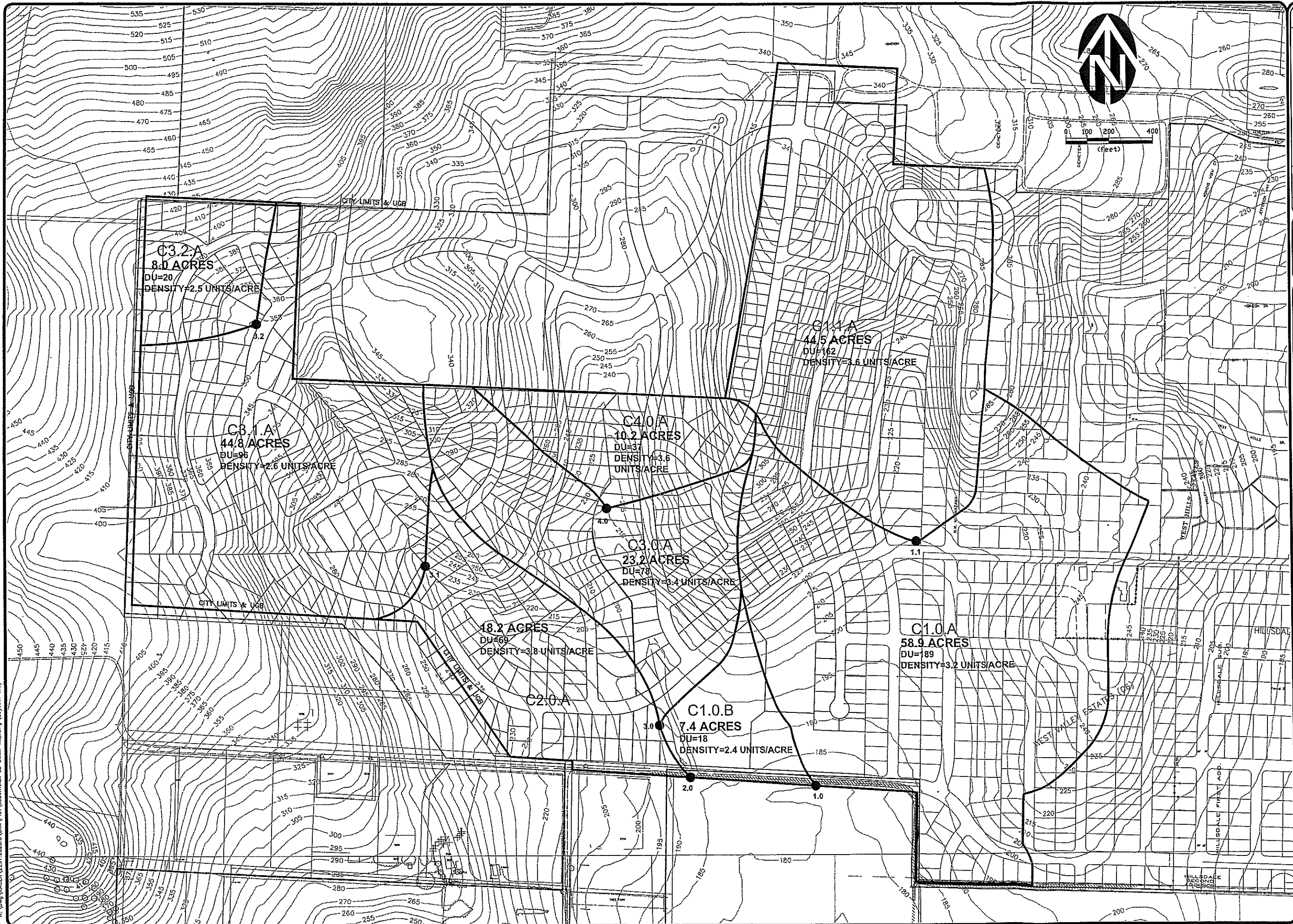
VERIFICATION SCALE: 1" = 400'

DATE: JUN 07

DESIGNER: DBK  
DRAWN: SSM  
CHECKED: DBK

SHEET X OF X  
JOB NUMBER 2257.2020.0

Jun 21, 2007 - 10:57am  
D:\proj\KALERA\2257.2020.0\CityPlan\Subdivision SD Basin Map.dwg (Laysan) (tab)



VERIFY SCALE	DATE: JUN 20, 2007
DATE: JUN 20, 2007	NO. DATE
DESCRIPTION	BY
REVISIONS	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
70	
71	
72	
73	
74	
75	
76	
77	
78	
79	
80	
81	
82	
83	
84	
85	
86	
87	
88	
89	
90	
91	
92	
93	
94	
95	
96	
97	
98	
99	
100	

REGISTERED PROFESSIONAL ENGINEER  
STATE OF OREGON  
**REVIEW**  
DANIEL B. JONES  
ID: 100000000  
EXPIRES: JUNE 20, 2007

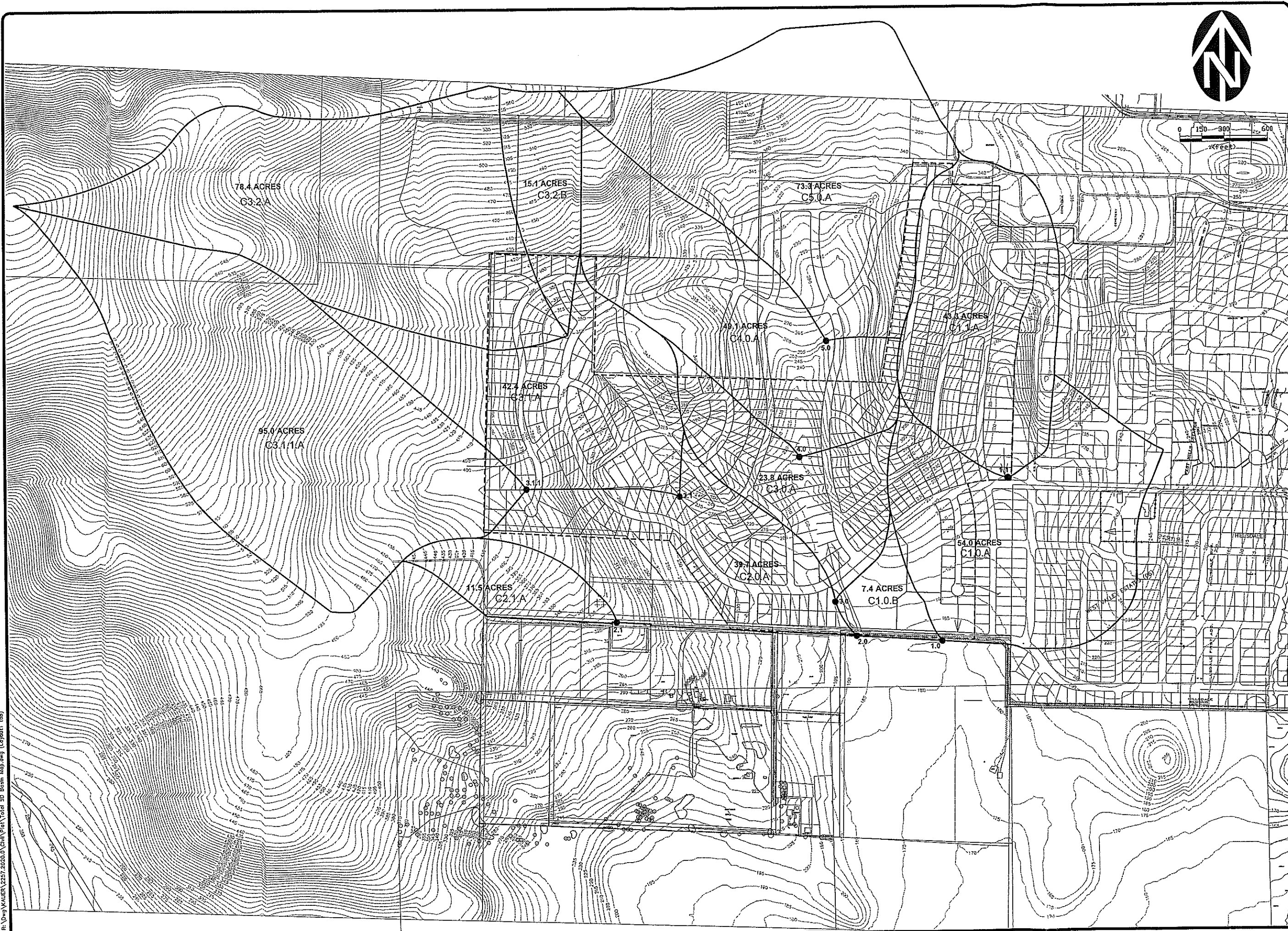
**WE**  
WESTTECH ENGINEERING, INC.  
CONSULTING ENGINEERS AND PLANNERS  
3841 Fairview Industrial Dr., S.E., Suite 100, Salem, OR 97302  
Phone: (503) 585-2474 Fax: (503) 585-3986  
E-mail: westtech@westtech-eng.com

KHA PROPERTIES LLC MCMINNVILLE, OREGON

**FIGURE 2**  
SUBDIVISION SD BASIN MAP

SHEET  
**X** OF **X**  
JOB NUMBER  
2257.2020.0

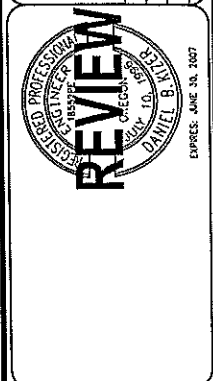
Jun 21, 2007 10:58am  
R:\Dmy VICTORIA\2257.2020.0\DWG\Plot\Total SD Basin Map.dwg (Layout1.tbx)



NO.	DATE	DESCRIPTION	BY
1	JUN 07		

VERIFY SCALE  
 0 150 300 450 600  
 FEET  
 AS SHOWN ON THIS DRAWING  
 IS NOT TO BE USED FOR  
 ANY OTHER PURPOSES WITHOUT  
 THE WRITTEN CONSENT OF  
 WESTTECH ENGINEERS AND PLANNERS

DSN: DBK  
 DRN: SSM  
 CKD: DBK  
 DATE: JUN 07



**WESTTECH ENGINEERING, INC.**  
 CONSULTING ENGINEERS AND PLANNERS

3841 Forview Industrial Dr. S.E., Suite 100, Salem, OR 97302  
 Phone: (503) 585-2474 Fax: (503) 393-3986  
 E-mail: westtech@westtech-eng.com

KHA PROPERTIES LLC McMinnville, OREGON

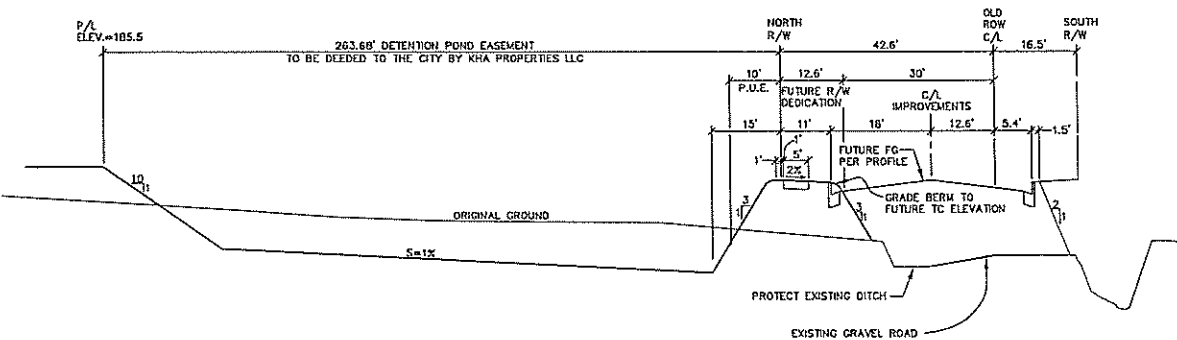
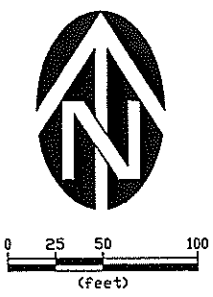
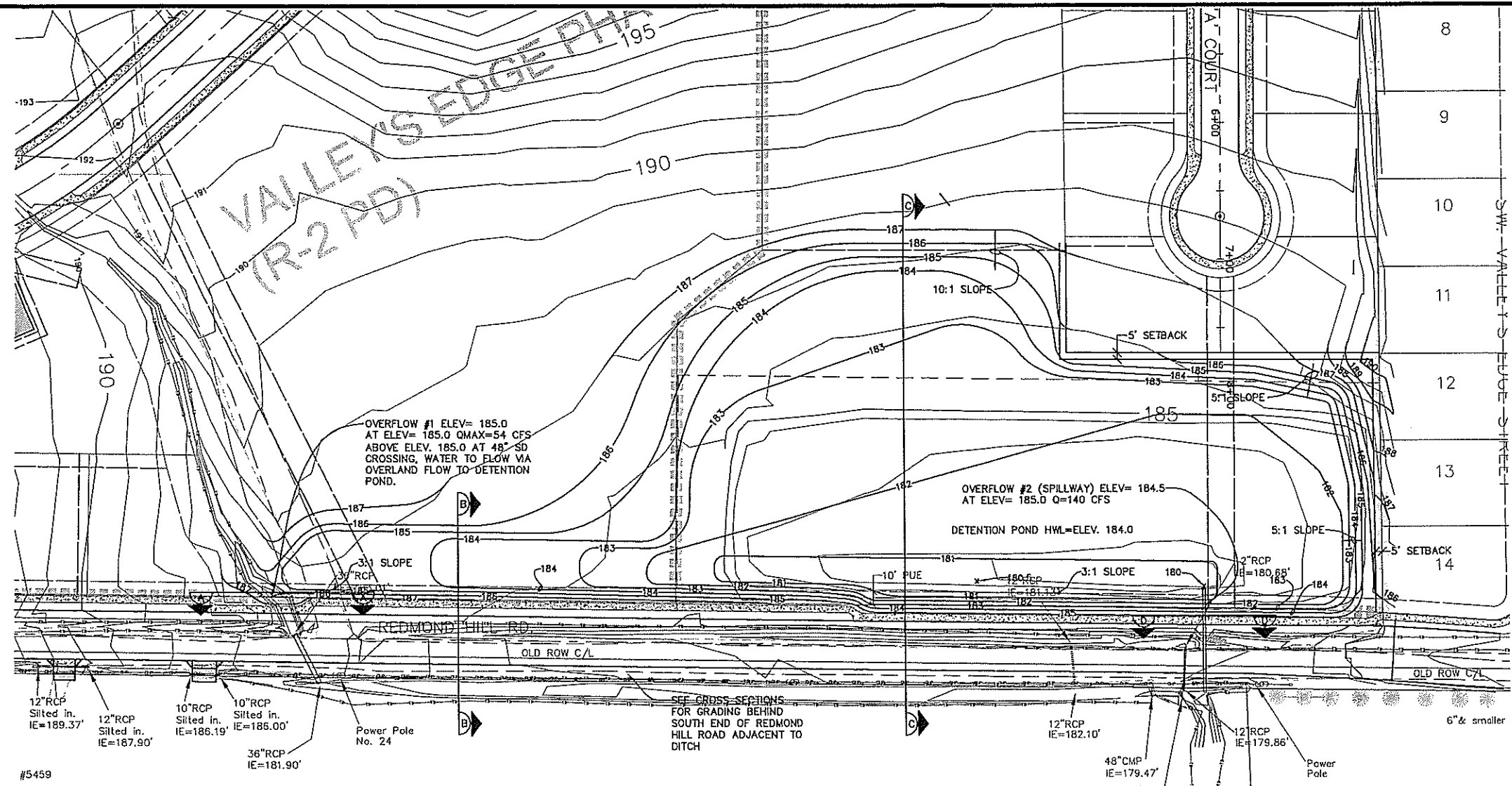
**FIGURE 3**

TOTAL SD BASIN MAP

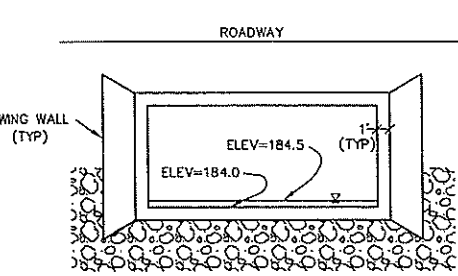
SHEET  
 X OF X  
 JOB NUMBER  
 2257.2020.0



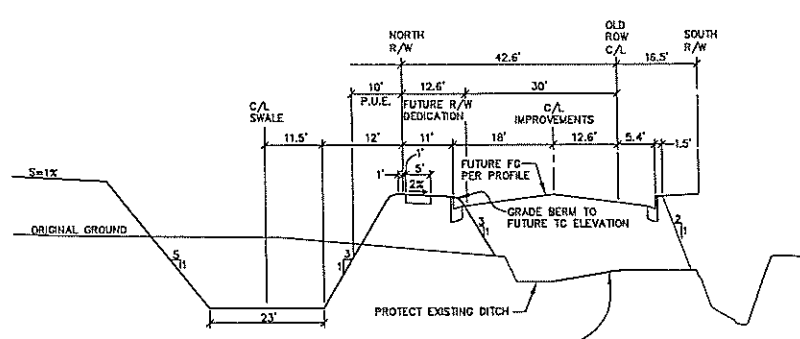
Oct. 08, 2007 - 7:58am  
 R:\04\KALU\2257.2020.0\DWG\Plan\Detention Pond Grading Plan.dwg (0-10 tab)



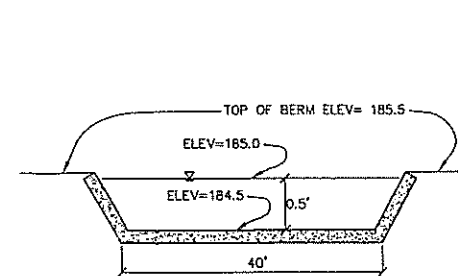
TYPICAL SECTION C-C  
N.T.S.



TYPICAL SECTION A-A  
N.T.S.



TYPICAL SECTION B-B  
N.T.S.



TYPICAL SECTION D-D  
N.T.S.

**DETENTION POND DEPTHS:**

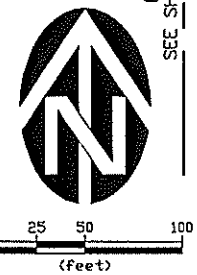
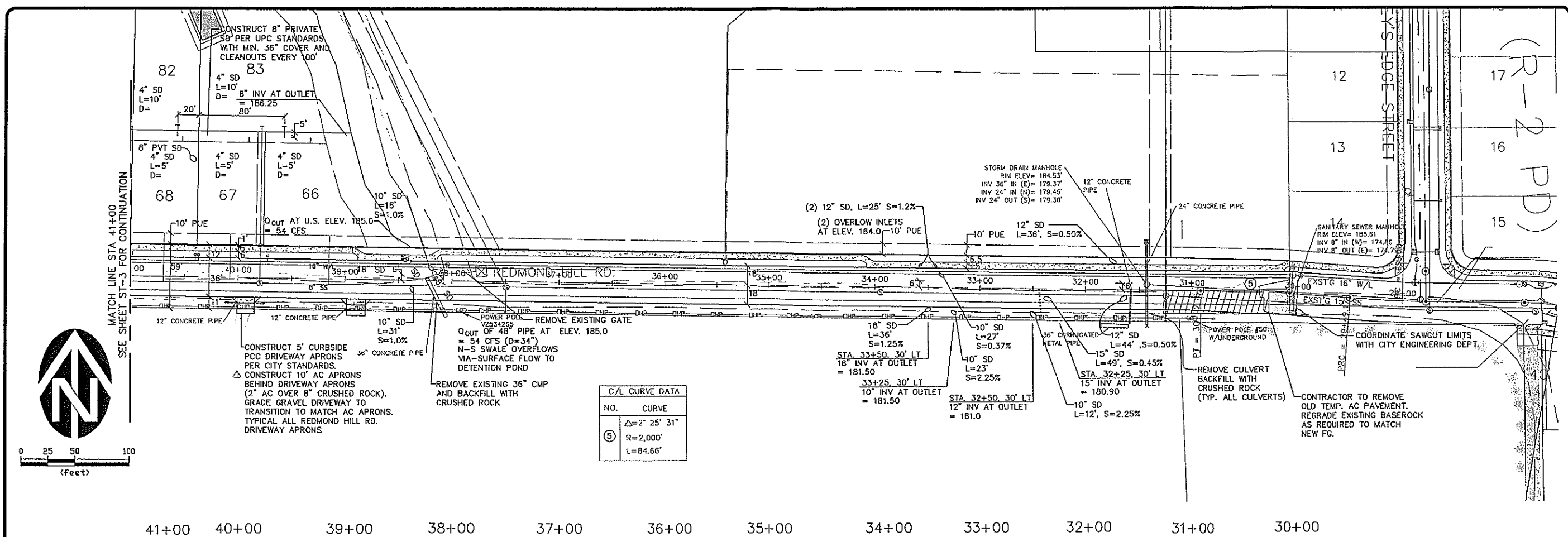
- MAX. DETENTION ELEV.= 184.0
- OVERFLOW #1 ELEV.= 184.5
- OVERFLOW #2 (SPILLWAY) ELEV.= 185.0

**KHA PROPERTIES AND WEST VALLEY ESTATES DETENTION POND CALCULATIONS:**

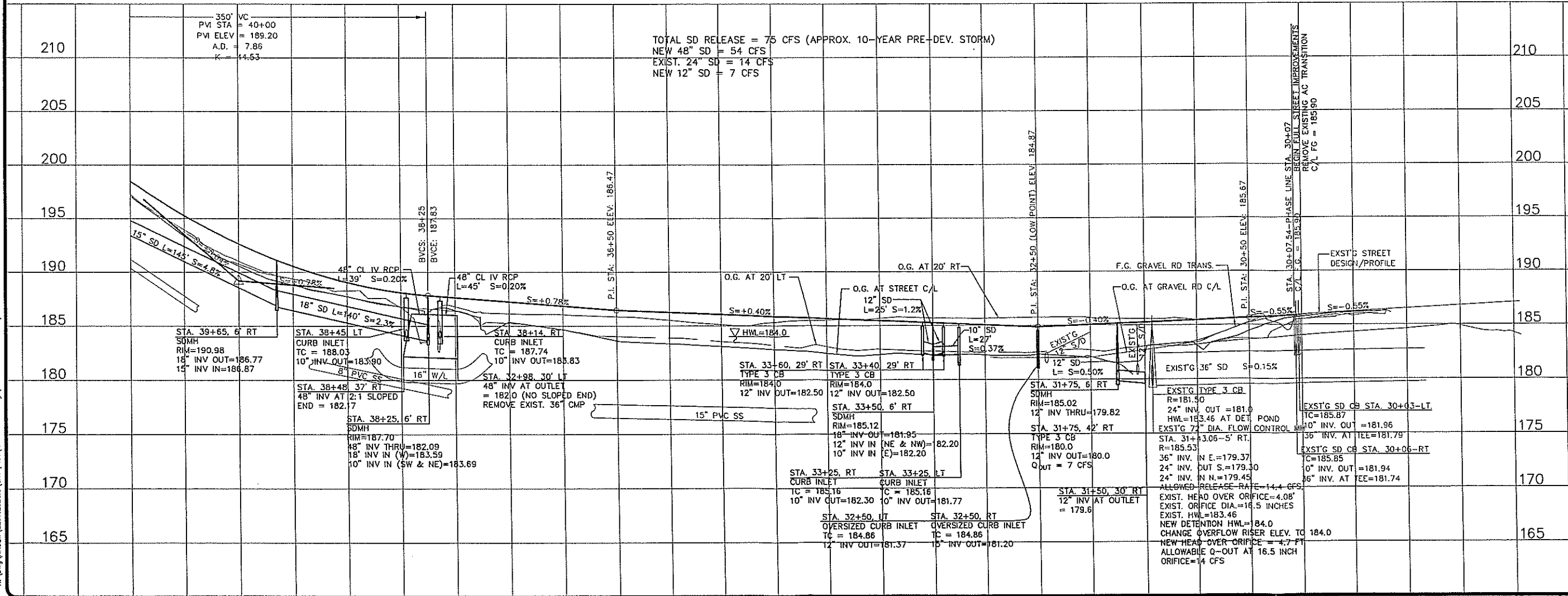
- DETENTION VOLUME REQUIRED= 155,379 CF.
- DETENTION VOLUME PROVIDED= 190.00 CF.
- EXISTING SITE 10-YR Q= 31.64 CFS.
- DEVELOPED SITE 10-YR Q= 70.17 CFS.
- TOTAL BASIN 10-YR PREDEVELOPED= 73.97 CFS.
- TOTAL BASIN 10-YR POST-DEVELOPED= 199.1 CFS.
- ORIFICE DIAMETER= 24.53 inches
- TOTAL DETAINED RELEASE AT HWL=184.0=75 CFS  
 (48" SD=54 CFS, EXIST. 24" SD=14 CFS, NEW 12" SD=7 CFS)

	DSN: DBK DRN: SSM CKD: DBK DATE: JUN 07	NO. 1 DATE	DESCRIPTION	BY
<b>KHA PROPERTIES LLC</b> McMinnville, OR VALLEY'S EDGE PHASE 2 AND PHASE 3 <i>Figure 4</i> <b>DETENTION POND GRADING PLAN</b>				
SHEET <b>G10 OF X</b> JOB NUMBER <b>2257.2020.0</b>				

Oct 08, 2007 - 8:02am  
 R:\Dwg\VALLEY\2257.2020.0\Chf\Plot\RedmondHill.dwg (0 to 10.00 feet)



C/L CURVE DATA	
NO.	CURVE
5	Δ=2° 25' 31"
	R=2,000'
	L=84.66'



WEST HILLS PROPERTIES LLC McMinnville, OR  
 VALLEY'S EDGE PHASE 2 AND PHASE 3  
 REDMOND HILL ROAD  
 PLAN & PROFILE  
 STA. 30+00 TO STA. 41+00

SHEET  
 ST-2 OF X

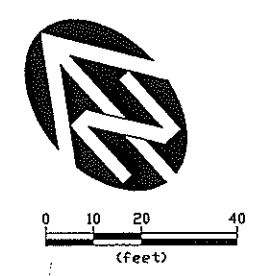
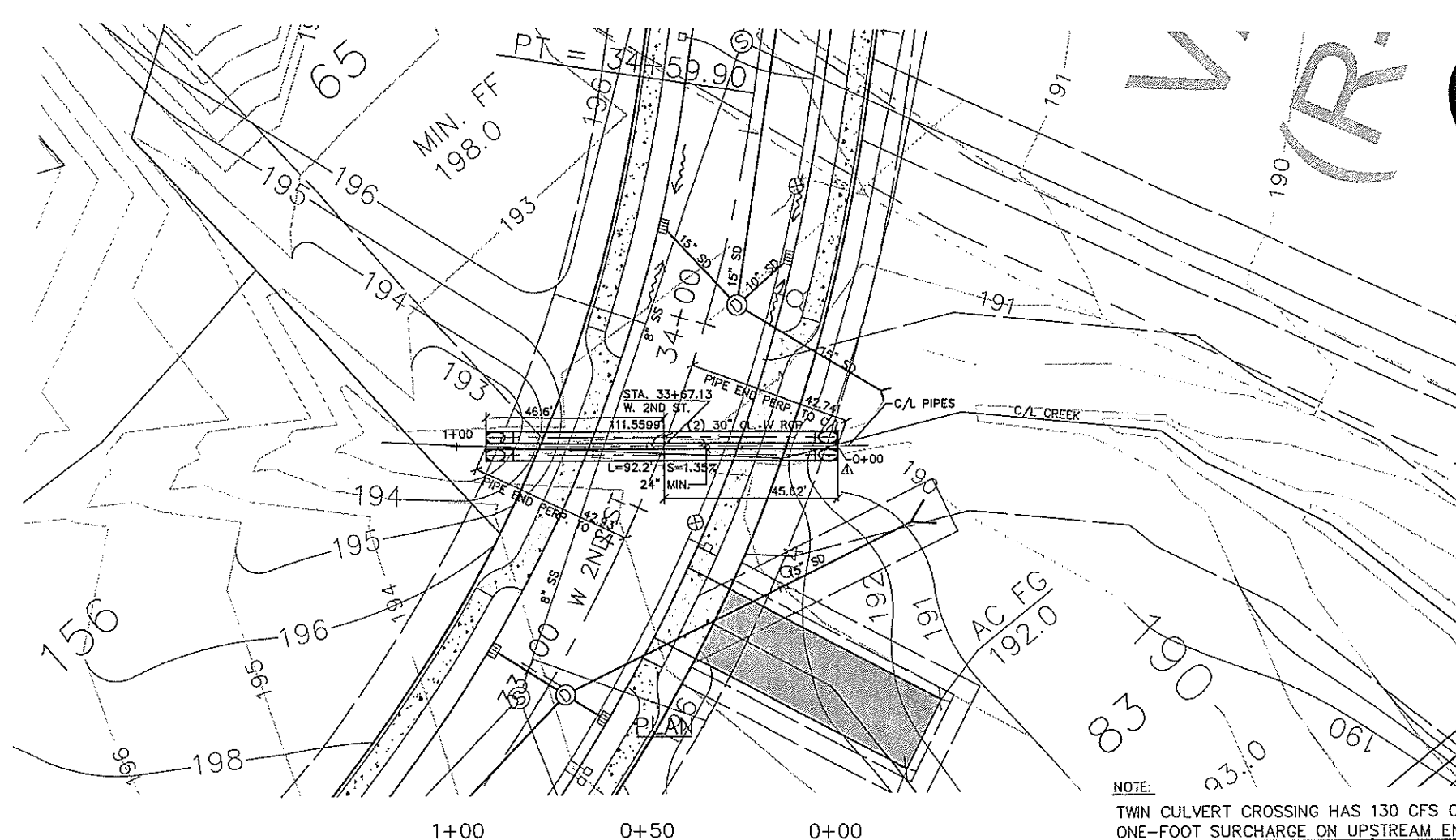
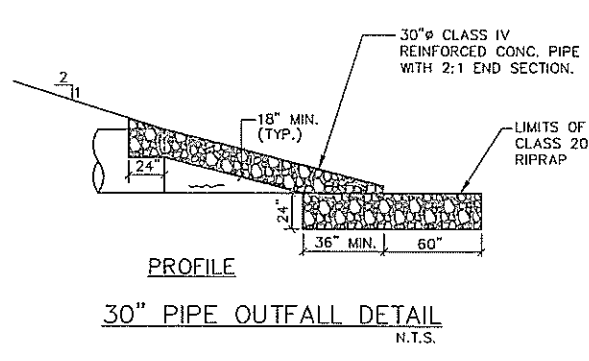
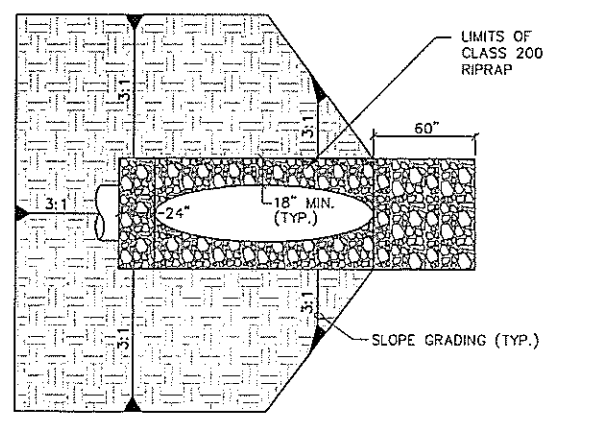
JOB NUMBER  
 2257.2020.0

WESTTECH ENGINEERING, INC.  
 CONSULTING ENGINEERS AND PLANNERS  
 3941 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302  
 Phone: (503) 585-2474 Fax: (503) 585-3986  
 E-mail: westtech@westtech-eng.com

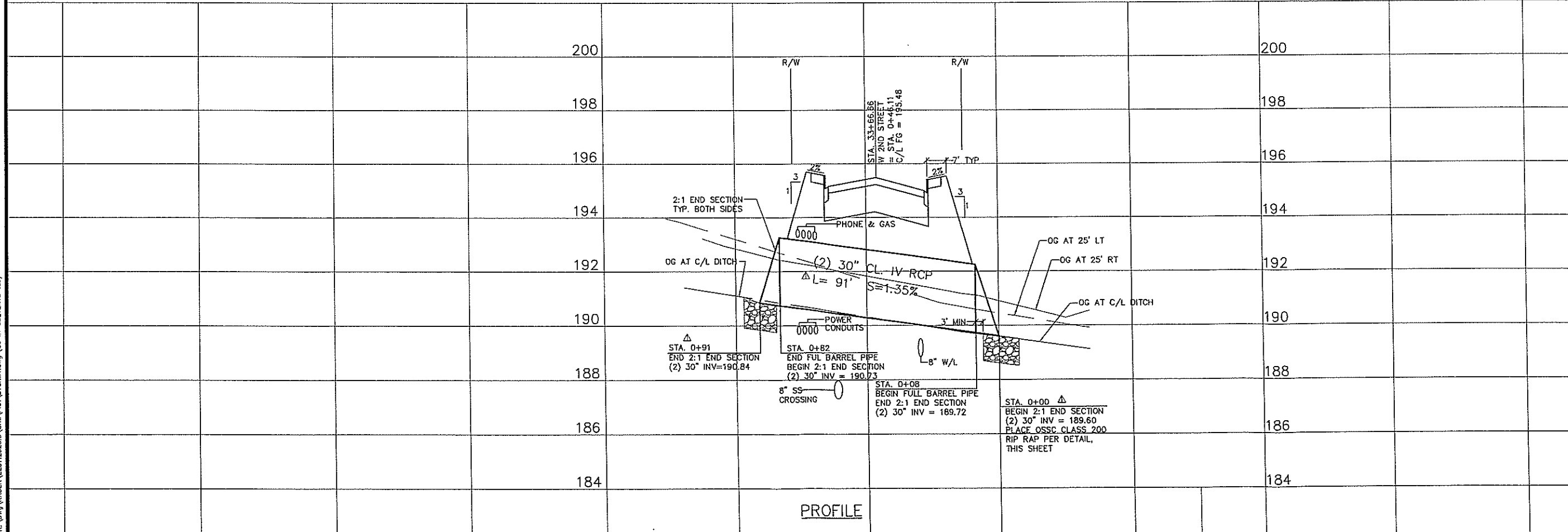
REGISTERED PROFESSIONAL  
 CIVIL ENGINEER  
 DANIEL R. BERRY  
 OREGON  
 EXPIRES: JUNE 30, 2009

VERIFY SCALE  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 IF NOT ONE INCH ON SCALE TECHNOLOGY

DATE: JULY 07  
 NO. 9-10-07  
 REVISIONS  
 BY  
 LS  
 DESCRIPTION



Oct 08, 2007 - 8:18am  
 R:\DWG\KAUER\2257.2020.0\civil\p101\STDRM1.dwg (36 IN CULVERTS 10b)



WEST HILLS PROPERTIES LLC McMinnville, OR  
VALLEY'S EDGE PHASE 2 AND PHASE 3  
(2) 36" CULVERT  
PLAN & PROFILE  
STA. 0+00 TO STA. 0+91

SHEET  
SD-1 of X  
JOB NUMBER  
2257.2020.0

WESTTECH ENGINEERING, INC.  
CONSULTING ENGINEERS AND PLANNERS  
3941 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302  
Phone: (503) 585-2474 Fax: (503) 585-3088  
E-mail: westtech@westtech-eng.com

REGISTERED PROFESSIONAL ENGINEER  
STATE OF OREGON  
NO. 10710  
DAVID B. B.

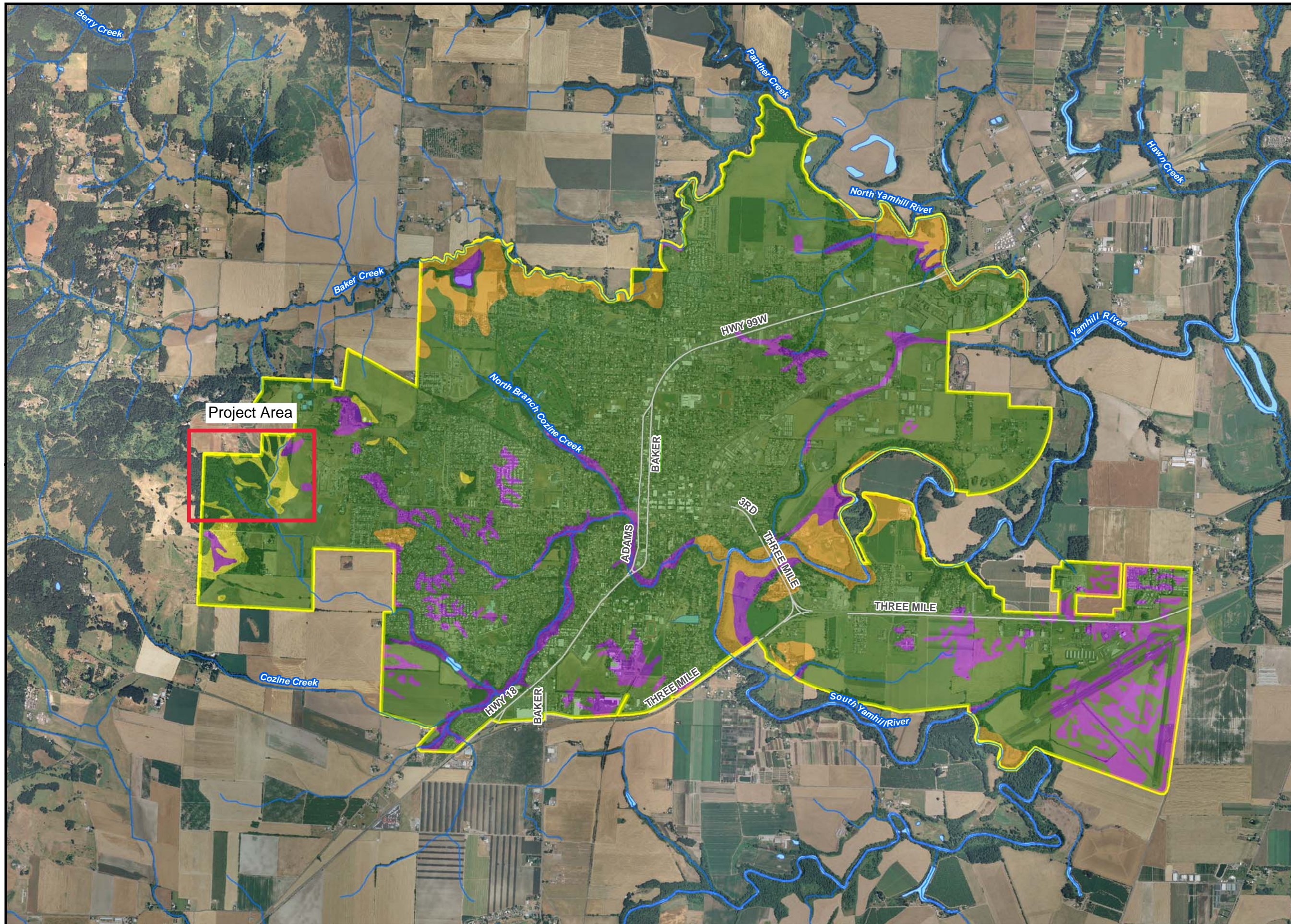
DATE: JULY 07

NO.	DATE	REVISIONS
1	9-10-07	Revised Per CIV Review
2		
3		
4		
5		
6		
7		
8		
9		
10		

VERIFY SCALE  
BAR IS ONE INCH ON ORIGINAL DRAWING  
ALL DIMENSIONS ARE TO BE SHOWN ON THIS SHEET UNLESS OTHERWISE NOTED  
SCALE: AS SHOWN

DSN: DBK  
DRN: SSM  
CKD: DBK  
DATE: JULY 07

**APPENDIX C**  
**MCMINNVILLE STORM DRAINAGE MASTER**  
**PLAN HYDROLOGICAL SOIL GROUP MAP**



**FIGURE 2-3**

**SOIL INFILTRATION  
CAPABILITY**

City of McMinnville  
Stormwater Drainage Master Plan

**Legend**

- Creek/River
- Major Roads
- Proposed UGB
- Hydrologic Soil Class**
- A
- B
- C
- D

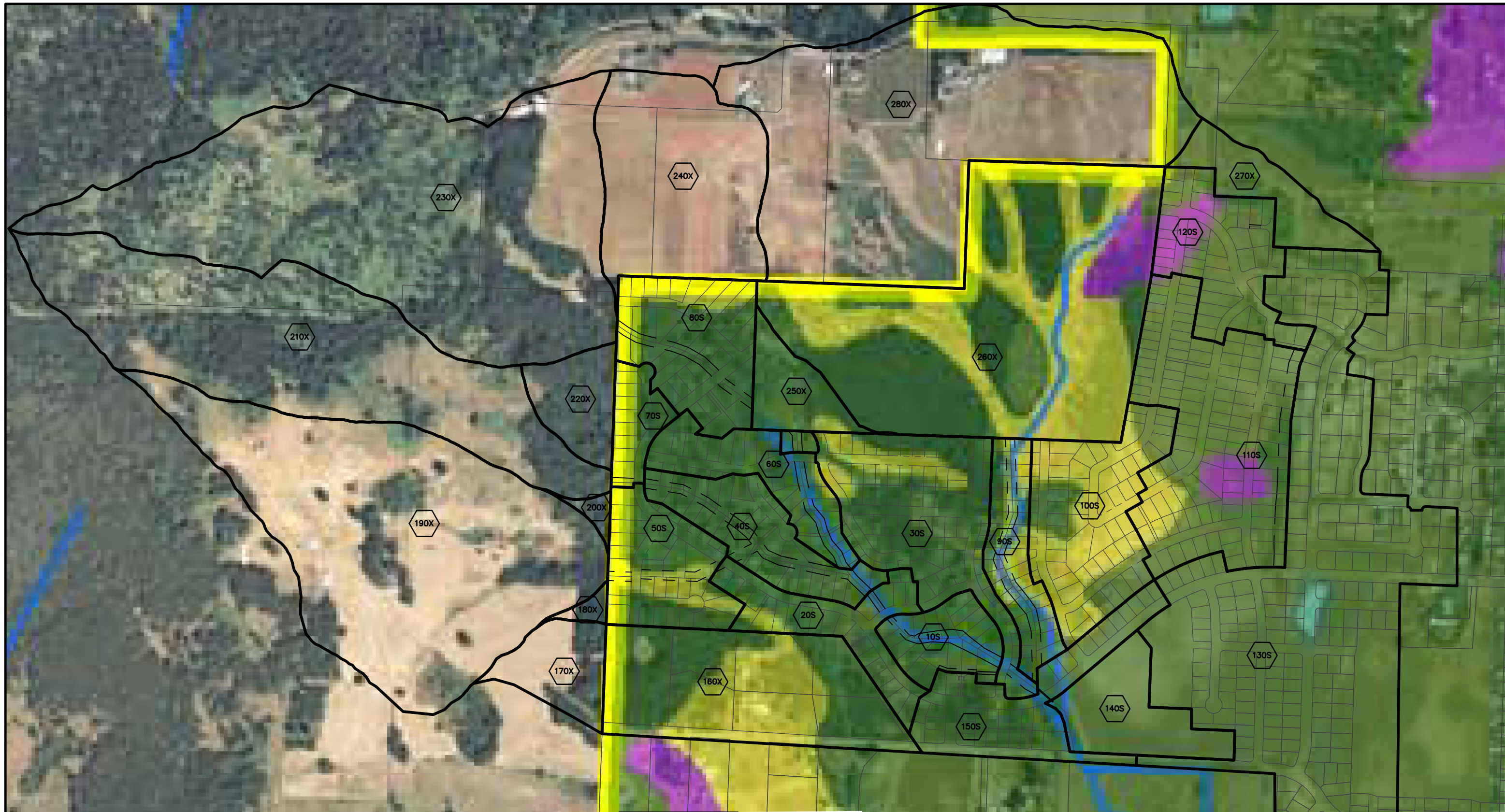


1 inch equals 3,000 feet

Source:  
City of McMinnville  
NRCS -  
Soil Survey Geographic  
(SSURGO) Database



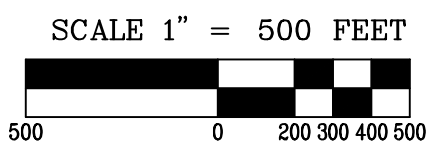
Date: 11/01/2007



DATE: 03/13/2017

**Legend**

- Creek/River
- Major Roads
- Proposed UGB
- Hydrologic Soil Class**
- A
- B
- C
- D



<b>HYDROLOGICAL SOIL GROUP SITE MAP OVERLAY</b>	FIGURE <b>3</b>
<b>HILLCREST MASTER PLAN</b> AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 P: 503.563.6151 F: 503.563.6152 aks-eng.com	
	DRWN: CTS CHKD: PAS AKS JOB: 5147

**APPENDIX D**  
**TR55 RUNOFF CURVE NUMBERS**

**Table 2-2a** Runoff curve numbers for urban areas <sup>1/</sup>

Cover description	Average percent impervious area <sup>2/</sup>	Curve numbers for hydrologic soil group			
		A	B	C	D
<b>Fully developed urban areas (vegetation established)</b>					
Open space (lawns, parks, golf courses, cemeteries, etc.) <sup>3/</sup> :					
Poor condition (grass cover < 50%) .....		68	79	86	89
Fair condition (grass cover 50% to 75%) .....		49	69	79	84
Good condition (grass cover > 75%) .....		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way) .....		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way) .....		98	98	98	98
Paved; open ditches (including right-of-way) .....		83	89	92	93
Gravel (including right-of-way) .....		76	85	89	91
Dirt (including right-of-way) .....		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) <sup>4/</sup> .....		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders) .....		96	96	96	96
Urban districts:					
Commercial and business .....	85	89	92	94	95
Industrial .....	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses) .....	65	77	85	90	92
1/4 acre .....	38	61	75	83	87
1/3 acre .....	30	57	72	81	86
1/2 acre .....	25	54	70	80	85
1 acre .....	20	51	68	79	84
2 acres .....	12	46	65	77	82

**Developing urban areas**

Newly graded areas (pervious areas only, no vegetation) <sup>5/</sup> .....

	77	86	91	94
--	----	----	----	----

Idle lands (CN's are determined using cover types similar to those in table 2-2c).

<sup>1/</sup> Average runoff condition, and  $I_a = 0.2S$ .  
<sup>2/</sup> The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.  
<sup>3/</sup> CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.  
<sup>4/</sup> Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.  
<sup>5/</sup> Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.



**Table 2-2b** Runoff curve numbers for cultivated agricultural lands <sup>1/</sup>

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment <sup>2/</sup>	Hydrologic condition <sup>3/</sup>	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
C&T+ CR	Poor	65	73	79	81	
	Good	61	70	77	80	
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T+ CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

<sup>1</sup> Average runoff condition, and  $I_a=0.2S$

<sup>2</sup> Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

<sup>3</sup> Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good  $\geq 20\%$ ), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

**Table 2-2c** Runoff curve numbers for other agricultural lands <sup>1/</sup>

Cover description	Hydrologic condition	Curve numbers for hydrologic soil group			
		A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. <sup>2/</sup>	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. <sup>3/</sup>	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 <sup>4/</sup>	48	65	73
Woods—grass combination (orchard or tree farm). <sup>5/</sup>	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. <sup>6/</sup>	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 <sup>4/</sup>	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

<sup>1</sup> Average runoff condition, and  $I_a = 0.2S$ .

<sup>2</sup> **Poor:** <50% ground cover or heavily grazed with no mulch.

**Fair:** 50 to 75% ground cover and not heavily grazed.

**Good:** > 75% ground cover and lightly or only occasionally grazed.

<sup>3</sup> **Poor:** <50% ground cover.

**Fair:** 50 to 75% ground cover.

**Good:** >75% ground cover.

<sup>4</sup> Actual curve number is less than 30; use CN = 30 for runoff computations.

<sup>5</sup> CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

<sup>6</sup> **Poor:** Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.

**Fair:** Woods are grazed but not burned, and some forest litter covers the soil.

**Good:** Woods are protected from grazing, and litter and brush adequately cover the soil.

**Table 2-2d** Runoff curve numbers for arid and semiarid rangelands <sup>1/</sup>

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition <sup>2/</sup>	A <sup>3/</sup>	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

<sup>1</sup> Average runoff condition, and  $I_a = 0.2S$ . For range in humid regions, use table 2-2c.

<sup>2</sup> Poor: <30% ground cover (litter, grass, and brush overstory).

Fair: 30 to 70% ground cover.

Good: > 70% ground cover.

<sup>3</sup> Curve numbers for group A have been developed only for desert shrub.

## **Exhibit F: Traffic Analysis Update Memo**

---

## Hillcrest Subdivision Analysis Update

**To:** Paul Sellke, AKS Engineering and Forestry, LLC  
**From:** Michael Ard, PE  
**Date:** March 8, 2017  
**Subject:** Hillcrest Subdivision Analysis Update



321 SW 4th Ave., Suite 400  
Portland, OR 97204  
phone: 503.248.0313  
fax: 503.248.9251  
lancasterengineering.com

Lancaster Engineering prepared a detailed traffic impact study dated January, 2007 for the Hillcrest Subdivision in McMinnville, Oregon. Subsequent to approval of the 580-lot subdivision, changes have been proposed which would result in increased density, with a total development consisting of 579 single-family homes and 68 apartment units. This memorandum is written to provide information regarding the change in site trip generation as well as information regarding whether changes are required to the original mitigation recommendations contained in the January, 2007 analysis.

### *Trip Generation*

The January, 2007 traffic impact study provided trip generation projections for three analysis scenarios. These included the maximum development permitted under the prior R1 Residential zoning (679 homes), the maximum development permitted under the current R2 Residential zoning (873 homes), and the then-proposed actual development scenario (580 homes). These analysis scenarios resulted in 601 trips, 754 trips and 522 trips, respectively during the critical evening peak hour.

If the proposed development plan is modified as proposed to include 579 single-family homes and 68 apartment units, the resulting trip generation during the critical evening peak hour would be 552 trips, which is an increase of 30 trips as compared to the original development scenario analysis and fewer site trips than would have been permitted under the prior R1 Residential zoning. Detailed trip generation worksheets showing the projected site trips for the single-family home and apartment land uses are included in the attached technical appendix.

### *Mitigation Analysis*

Under the January, 2007 traffic impact study, an operational and safety analysis was prepared for the intersections of NW Hill Road at NW Horizon Drive, NW Hill Road at NW 2<sup>nd</sup> Street, and SW Hill Road at SW Redmond Hill Road. The analysis prepared for each of these intersections was revisited to determine whether the projected small increase in traffic would have resulted in the need for any additional mitigation.



### *NW Hill Road at NW Horizon Drive*

For the intersection of NW Hill Road at NW Horizon Drive, the operational analysis showed that the intersection was projected to operate acceptably without the need for mitigation through year 2026 even with maximum development under the R2 Residential zoning. Since the number of site trips generated under this scenario is far in excess of the number of trips generated under the currently-proposed development scenario, it can be concluded that no mitigation will be needed to support added traffic at this intersection.

### *NW Hill Road at NW 2<sup>nd</sup> Street*

For the intersection of NW Hill Road at NW 2<sup>nd</sup> Street, it was projected that the intersection would operate with volumes exceeding intersection capacity during the evening peak hour. It was recommended that the intersection be converted to all-way stop control in order to improve operation. With the conversion to all-way stop control the intersection was projected to operate acceptably through 2026 even with the addition of the maximum development levels permissible under the R-2 Residential zoning. Based on the prior analysis, it can be concluded that the recommended conversion to all-way stop control remains appropriate, and that the added trips from the currently-proposed development will not result in the need for any additional mitigation at this intersection. It should be noted that the conversion to all-way stop control has already been implemented at this intersection.

### *SW Hill Road at SW Redmond Hill Road*

For the intersection of SW Hill Road at SW Redmond Hill Road, the operational analysis again showed that the intersection was projected to operate acceptably without the need for mitigation through year 2026 even with maximum development under the R2 Residential zoning. Since the number of site trips generated under this scenario is far in excess of the number of trips generated under the currently-proposed development scenario, it can be concluded that no additional mitigation will be needed to support added traffic at this intersection.

### *Turn Lane Warrant Analysis*

In addition to the operational analysis of the three study intersections, a safety-based turn-lane warrant analysis was conducted for the study intersections. Based on the analysis, installation of a northbound left-turn lane on NW Hill Road at NW Horizon Drive was projected to be warranted upon development of the 290<sup>th</sup> home within the proposed subdivision. Similarly, northbound and southbound left-turn lanes were projected to be warranted on NW Hill Road at NW 2<sup>nd</sup> Street once site development reached 290 or more homes.

For the intersection of SW Hill Road at SW Redmond Hill Road it was determined that left-turn lane warrants would not be met under the maximum development scenario for the prior R1 Residential zoning (679 homes), but that installation of a left-turn lane would be warranted with maximum development under



March 8, 2017  
Page 3 of 3

the current R2 Residential zoning (873 homes). Since the revised development scenario results in fewer trips than the levels allowed under the prior R1 Residential zoning, it can be concluded that installation of a left-turn lane will not be needed upon completion of the revised development plan.

Since completion of the January, 2007 traffic impact study, the intersection of NW Hill Road at NW 2<sup>nd</sup> Street has been converted to all-way stop control. This change to the traffic control means that the left-turn lane warrant analysis previously prepared for this intersection is no longer applicable. Warrants for left-turn lanes are based on the idea that vehicles stopping within an otherwise free-flowing travel lane can create an unexpected hazard to through traffic and can increase the risk of rear-end collisions, as well as turning-movement collisions that can occur when a stopped vehicle is rear-ended and pushed into the path of oncoming traffic. However, since all vehicles must now stop on all intersection approaches, the turn-lane warrants can no longer be appropriately applied to the intersection. Accordingly, recommendations regarding installation of any new approach lanes at the intersection of NW Hill Road at NW 2<sup>nd</sup> Street would be based solely on capacity and delay concerns, rather than turn-lane warrants.

Based on the updated operational analysis for the intersection, it is projected that the intersection will operate acceptably during the morning peak hours with the existing lane configuration, but will operate at level of service "F" during the evening peak hours. If the previously-recommended northbound and southbound left-turn lanes are provided, the intersection would be projected to operate at level of service C and with all movements within capacity. Based on this analysis, the prior recommendation for installation of northbound and southbound left turn lanes at NW 2<sup>nd</sup> Street remains valid under the proposed development plan.

### *Conclusions*

Based on the detailed investigation of the revised development plan, the following improvement recommendations remain valid:

- A northbound left-turn lane should be provided on NW Hill Road at NW Horizon Drive once site development reaches a total of 290 homes.
- Northbound and southbound left-turn lanes should be provided on NW Hill Road at NW 2<sup>nd</sup> Street once site development reaches a total of 290 homes.

No other operational or safety mitigations are necessary or recommended in conjunction with the modified development proposal.

## APPENDIX





## TRIP GENERATION CALCULATIONS

*Land Use:* Single-Family Detached Housing  
*Land Use Code:* 210  
*Variable:* Dwelling Units  
*Variable Value:* 579

### AM PEAK HOUR

*Trip Equation:*  $T = 0.70(X) + 9.74$

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	<b>104</b>	<b>311</b>	<b>415</b>

### PM PEAK HOUR

*Trip Equation:*  $\ln(T) = 0.90\ln(X) + 0.51$

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	<b>321</b>	<b>189</b>	<b>510</b>

### WEEKDAY

*Trip Equation:*  $\ln(T) = 0.92\ln(X) + 2.72$

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>2,642</b>	<b>2,642</b>	<b>5,284</b>

### SATURDAY

*Trip Equation:*  $\ln(T) = 0.93\ln(X) + 2.64$

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>2,599</b>	<b>2,599</b>	<b>5,198</b>



## TRIP GENERATION CALCULATIONS

*Land Use:* Apartment  
*Land Use Code:* 220  
*Variable:* Dwelling Units  
*Variable Value:* 68

### AM PEAK HOUR

*Trip Rate:* 0.51

	Enter	Exit	Total
Directional Distribution	20%	80%	
Trip Ends	<b>7</b>	<b>28</b>	<b>35</b>

### PM PEAK HOUR

*Trip Rate:* 0.62

	Enter	Exit	Total
Directional Distribution	65%	35%	
Trip Ends	<b>27</b>	<b>15</b>	<b>42</b>

### WEEKDAY

*Trip Rate:* 6.65

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>226</b>	<b>226</b>	<b>452</b>


















### SATURDAY

*Trip Rate:* 6.39

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>217</b>	<b>217</b>	<b>434</b>

HCM Unsignalized Intersection Capacity Analysis  
 1: NW Hill Road & NW 2nd Street


















03/08/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	51	177	46	41	71	67	28	182	122	149	132	29
Future Volume (vph)	51	177	46	41	71	67	28	182	122	149	132	29
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	65	227	59	53	91	86	36	233	156	191	169	37
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1							
Volume Total (vph)	292	59	230	425	397							
Volume Left (vph)	65	0	53	36	191							
Volume Right (vph)	0	59	86	156	37							
Hadj (s)	0.08	-0.57	-0.13	-0.08	0.13							
Departure Headway (s)	7.8	3.2	7.9	7.1	7.4							
Degree Utilization, x	0.64	0.05	0.51	0.84	0.82							
Capacity (veh/h)	412	1121	399	485	468							
Control Delay (s)	23.6	6.4	18.7	37.6	35.4							
Approach Delay (s)	20.7		18.7	37.6	35.4							
Approach LOS	C		C	E	E							
Intersection Summary												
Delay			29.6									
Level of Service			D									
Intersection Capacity Utilization			76.2%		ICU Level of Service		D					
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis




















## 1: NW Hill Road & NW 2nd Street

03/08/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	34	106	31	88	184	174	61	164	76	114	211	63
Future Volume (vph)	34	106	31	88	184	174	61	164	76	114	211	63
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	115	34	96	200	189	66	178	83	124	229	68
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1							
Volume Total (vph)	152	34	485	327	421							
Volume Left (vph)	37	0	96	66	124							
Volume Right (vph)	0	34	189	83	68							
Hadj (s)	0.08	-0.57	-0.16	-0.04	0.03							
Departure Headway (s)	8.6	3.2	7.1	7.7	7.5							
Degree Utilization, x	0.36	0.03	0.96	0.70	0.87							
Capacity (veh/h)	378	1121	500	452	468							
Control Delay (s)	16.5	6.3	57.3	26.7	43.2							
Approach Delay (s)	14.6		57.3	26.7	43.2							
Approach LOS	B		F	D	E							
Intersection Summary												
Delay			40.5									
Level of Service			E									
Intersection Capacity Utilization			76.7%	ICU Level of Service	D							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 1: NW Hill Road & NW 2nd Street

03/08/2017

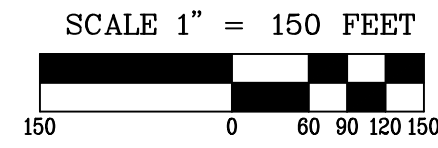
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	34	106	31	88	184	174	61	164	76	114	211	63
Future Volume (vph)	34	106	31	88	184	174	61	164	76	114	211	63
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	115	34	96	200	189	66	178	83	124	229	68
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2					
Volume Total (vph)	152	34	485	66	261	124	297					
Volume Left (vph)	37	0	96	66	0	124	0					
Volume Right (vph)	0	34	189	0	83	0	68					
Hadj (s)	0.08	-0.57	-0.16	0.57	-0.15	0.57	-0.09					
Departure Headway (s)	7.8	3.2	6.5	8.4	7.6	8.2	7.5					
Degree Utilization, x	0.33	0.03	0.88	0.15	0.55	0.28	0.62					
Capacity (veh/h)	429	1121	535	402	438	416	452					
Control Delay (s)	14.6	6.3	40.1	11.7	18.5	13.2	20.8					
Approach Delay (s)	13.0		40.1	17.1		18.6						
Approach LOS	B		E	C		C						
Intersection Summary												
Delay			24.9									
Level of Service			C									
Intersection Capacity Utilization			65.5%		ICU Level of Service			C				
Analysis Period (min)			15									



**NOTES:**

1. THIS IS A CONCEPTUAL LAYOUT AND IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS. PROPERTY LINES AND TOPOGRAPHIC INFORMATION ARE BASED ON AVAILABLE GIS INFORMATION AND ARE APPROXIMATE.
2. SHOWN TOPOGRAPHIC CONTOURS ARE BASED ON LIDAR DATA AND WILL CHANGE DURING FINAL DESIGN BASED ON TOPOGRAPHIC SURVEY.

EXISTING GROUND CONTOUR (2 FT) --- 252 ---  
 EXISTING GROUND CONTOUR (10 FT) --- 250 ---



DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017

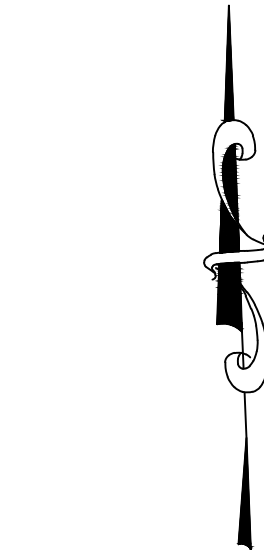


RENEWAL DATE: 6/30/18

REVISIONS

JOB NUMBER  
**5147**  
 SHEET  
**P-01**

SCALE: 1" = 200 FEET



CONCEPTUAL FUTURE ROADWAY  
 EXTENSIONS AND CONNECTIONS  
 TO ADJACENT PROPERTIES (TYP)

**LEGEND**

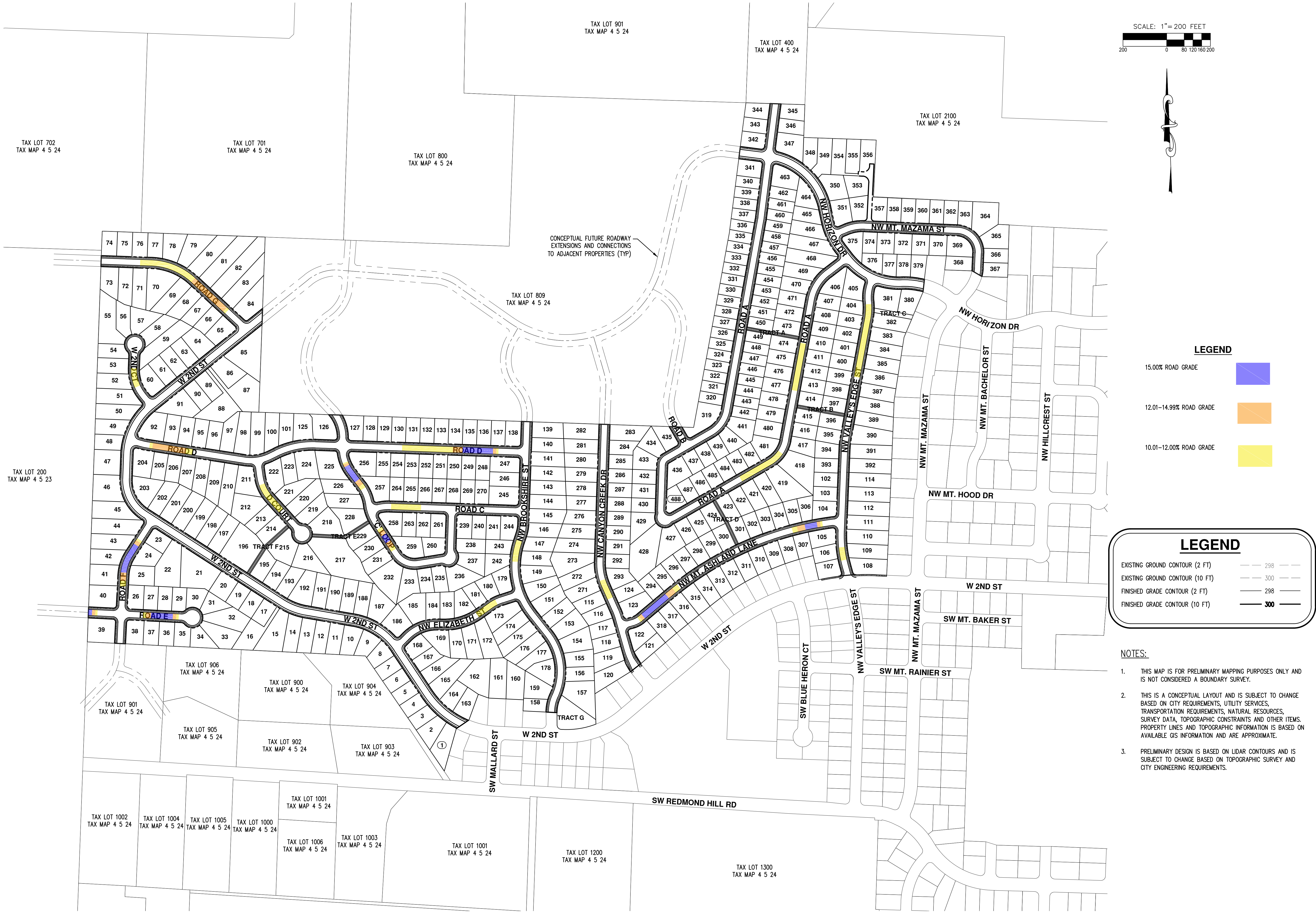
- 15.00% ROAD GRADE
- 12.01-14.99% ROAD GRADE
- 10.01-12.00% ROAD GRADE

**LEGEND**

- EXISTING GROUND CONTOUR (2 FT)  298
- EXISTING GROUND CONTOUR (10 FT)  300
- FINISHED GRADE CONTOUR (2 FT)  298
- FINISHED GRADE CONTOUR (10 FT)  300

**NOTES:**

1. THIS MAP IS FOR PRELIMINARY MAPPING PURPOSES ONLY AND IS NOT CONSIDERED A BOUNDARY SURVEY.
2. THIS IS A CONCEPTUAL LAYOUT AND IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS. PROPERTY LINES AND TOPOGRAPHIC INFORMATION IS BASED ON AVAILABLE GIS INFORMATION AND ARE APPROXIMATE.
3. PRELIMINARY DESIGN IS BASED ON LIDAR CONTOURS AND IS SUBJECT TO CHANGE BASED ON TOPOGRAPHIC SURVEY AND CITY ENGINEERING REQUIREMENTS.







AKS ENGINEERING & FORESTRY, LLC  
12065 SW HERMAN RD. STE 100  
TUALATIN, OR 97062  
P: 503.563.6151  
F: 503.563.6152  
aks-eng.com

ENGINEERING - SURVEYING - NATURAL RESOURCES  
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

# HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE

OREGON  
YAMHILL COUNTY TAX MAP 4 5 24

# MASTER PLAN COMPARISON

MCMINNVILLE  
TAX LOT 801

DESIGNED BY: CTS  
DRAWN BY: CTS  
CHECKED BY: PAS  
SCALE: AS NOTED  
DATE: 03/29/2017



RENEWAL DATE: 6/30/18

REVISIONS

JOB NUMBER  
5147

SHEET  
P-03



SCALE 1" = 300 FEET  
5 0 120 180 240 300

## ORIGINAL HILLCREST PD LAYOUT



## MODIFIED HILLCREST PD LAYOUT



**HILLCREST PLANNED  
 DEVELOPMENT  
 MASTER PLAN UPDATE**

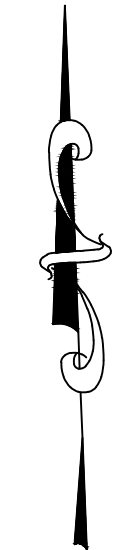
OREGON  
 YAMHILL COUNTY TAX MAP 4 5 24  
 MCMINNVILLE  
 TAX LOT 801

**PRELIMINARY SUBDIVISION  
 PLAT OVERVIEW**

DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017  
 REGISTERED PROFESSIONAL LAND SURVEYOR  
 NOT FOR CONSTRUCTION  
 ALEXANDER H. HURLEY  
 15, 2003  
 56539LS  
 RENEWS: 6/30/17  
 REVISIONS:

JOB NUMBER  
**5147**  
 SHEET  
**SU-00**

SCALE: 1" = 200 FEET  
 200 0 80 120 160 200



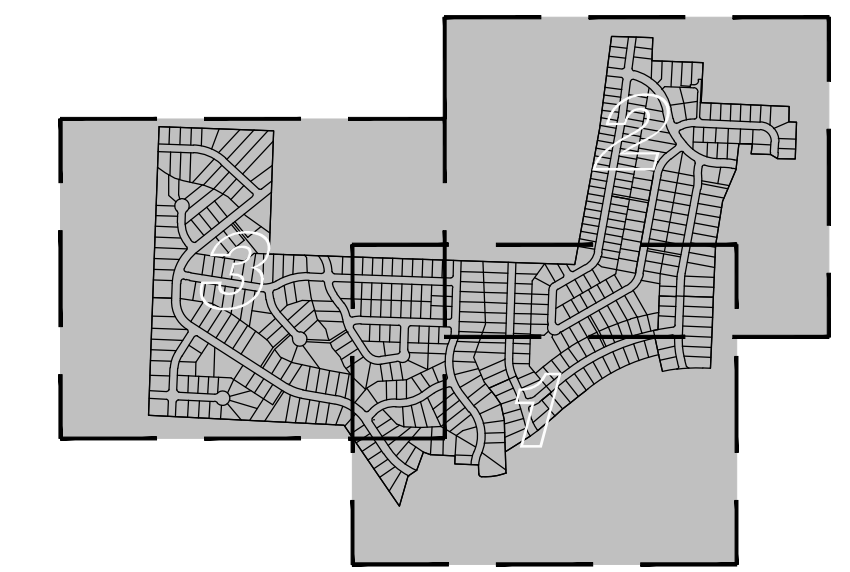
**DENSITY CALCULATIONS**

**R-2 ZONE**

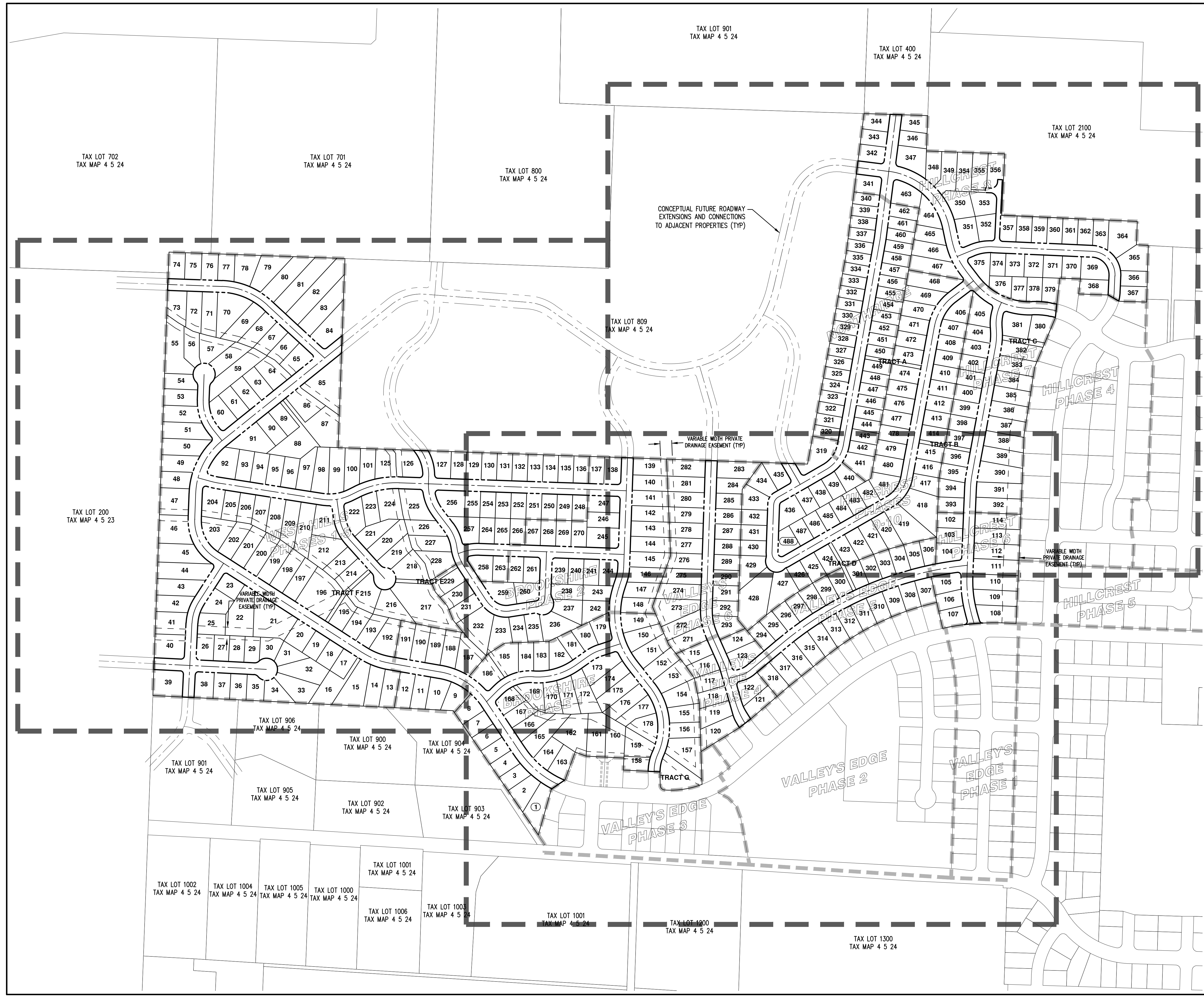
GROSS SITE AREA REMAINING:	±5,758,030 SF (132.2 AC)
PUBLIC R.O.W DEDICATION:	±1,058,587 SF (24.3 AC)
STORMWATER FACILITY:	±17,503 SF (0.4 AC)
PUBLIC ACCESS TRACTS:	±22,524 SF (0.52 AC)
NET DEVELOPABLE AREA:	±4,659,416 SF (106.9 AC)
PROPOSED NUMBER OF LOTS:	488
PROPOSED MIN. LOT AREA:	± 5,292 SF
PROPOSED MAX. LOT AREA:	± 35,305 SF
PROPOSED AVG. LOT AREA:	± 9,547 SF
PROPOSED GROSS DENSITY:	3.7 UNITS PER ACRE
PROPOSED NET DENSITY:	4.6 UNITS PER ACRE
MAXIMUM DENSITY ALLOWED:	6 UNITS PER ACRE
TOTAL SINGLE FAMILY UNITS:	551 (63 ALREADY PLATTED/CONSTRUCTED)
TOTAL MULTI-FAMILY UNITS:	68 APARTMENTS (ALREADY CONSTRUCTED)
TOTAL UNITS:	619 UNITS

**NOTES:**

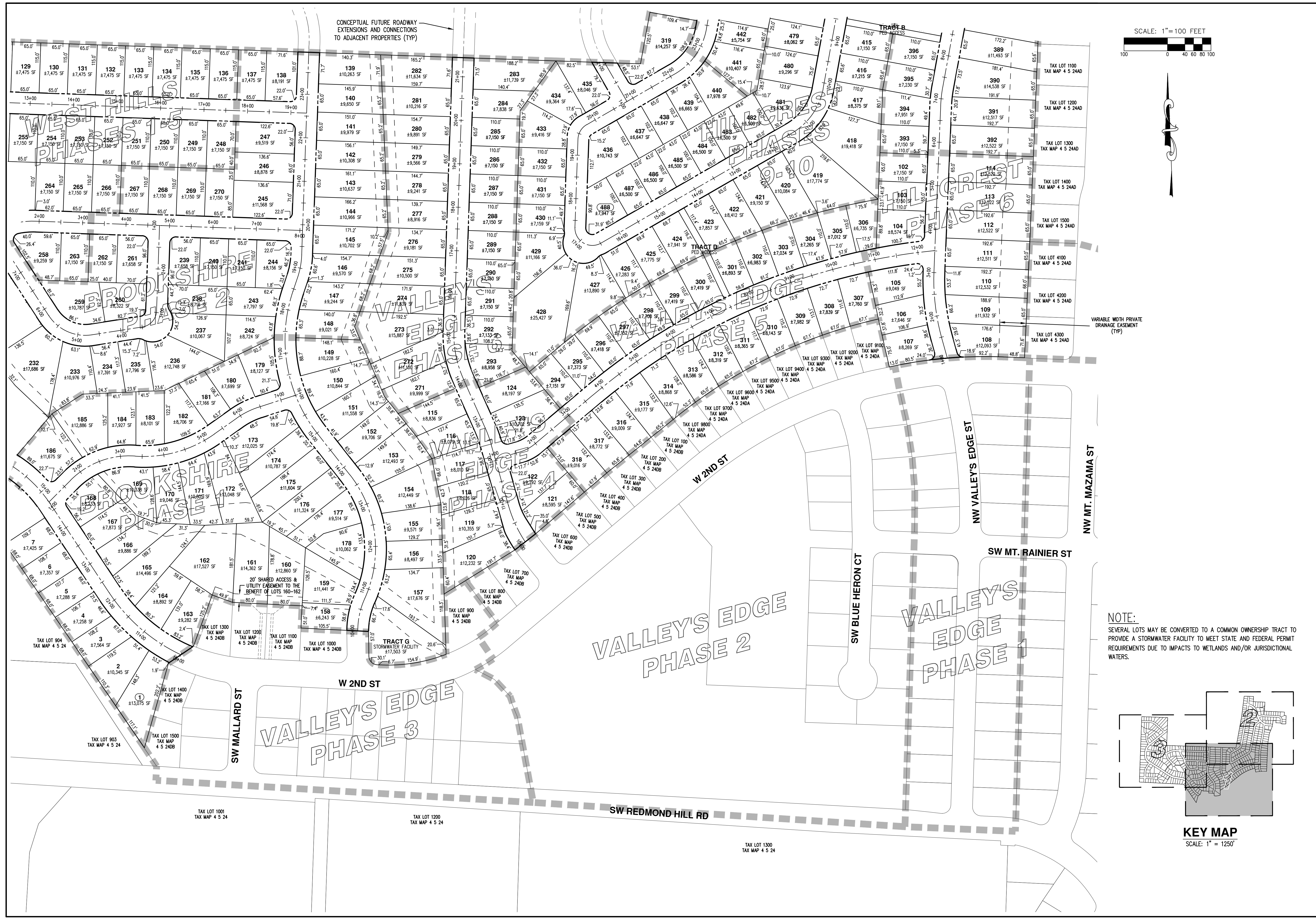
- PROPERTY LINES AND RIGHT-OF-WAY LINES ARE BASED ON INFORMATION PROVIDED BY GPS AND ARE CONSIDERED APPROXIMATE.
- NO FIELD WORK HAS BEEN CONDUCTED AT THIS TIME.
- THE PURPOSE OF THIS PRELIMINARY PLAT IS TO SHOW THE PROPOSED LOT DIMENSIONS FOR PLANNING PURPOSES. THE LAYOUT IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS.



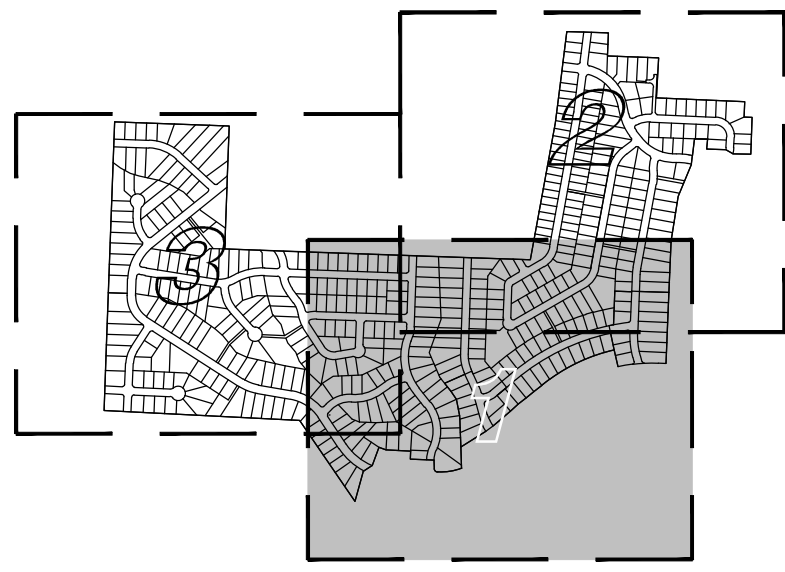
**KEY MAP**  
 SCALE: 1" = 1250'




AKS DRAWING FILE: 5147 PRELIMINARY PLATTING | LAYOUT: SU-01



NOTE:  
SEVERAL LOTS MAY BE CONVERTED TO A COMMON OWNERSHIP TRACT TO PROVIDE A STORMWATER FACILITY TO MEET STATE AND FEDERAL PERMIT REQUIREMENTS DUE TO IMPACTS TO WETLANDS AND/OR JURISDICTIONAL WATERS.





AKS ENGINEERING & FORESTRY, LLC  
12065 SW HERMAN RD. STE 100  
TUALATIN, OR 97062  
P: 503.563.6151  
F: 503.563.6152  
aks-eng.com

ENGINEERING - SURVEYING - NATURAL RESOURCES  
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**

**PRELIMINARY SUBDIVISION PLAT**

OREGON  
YAMHILL COUNTY TAX MAP 4 5 24

MCMINNVILLE  
TAX LOT 801

DESIGNED BY: CTS  
DRAWN BY: CTS  
CHECKED BY: PAS  
SCALE: AS NOTED  
DATE: 03/29/2017

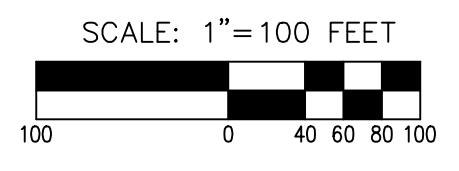
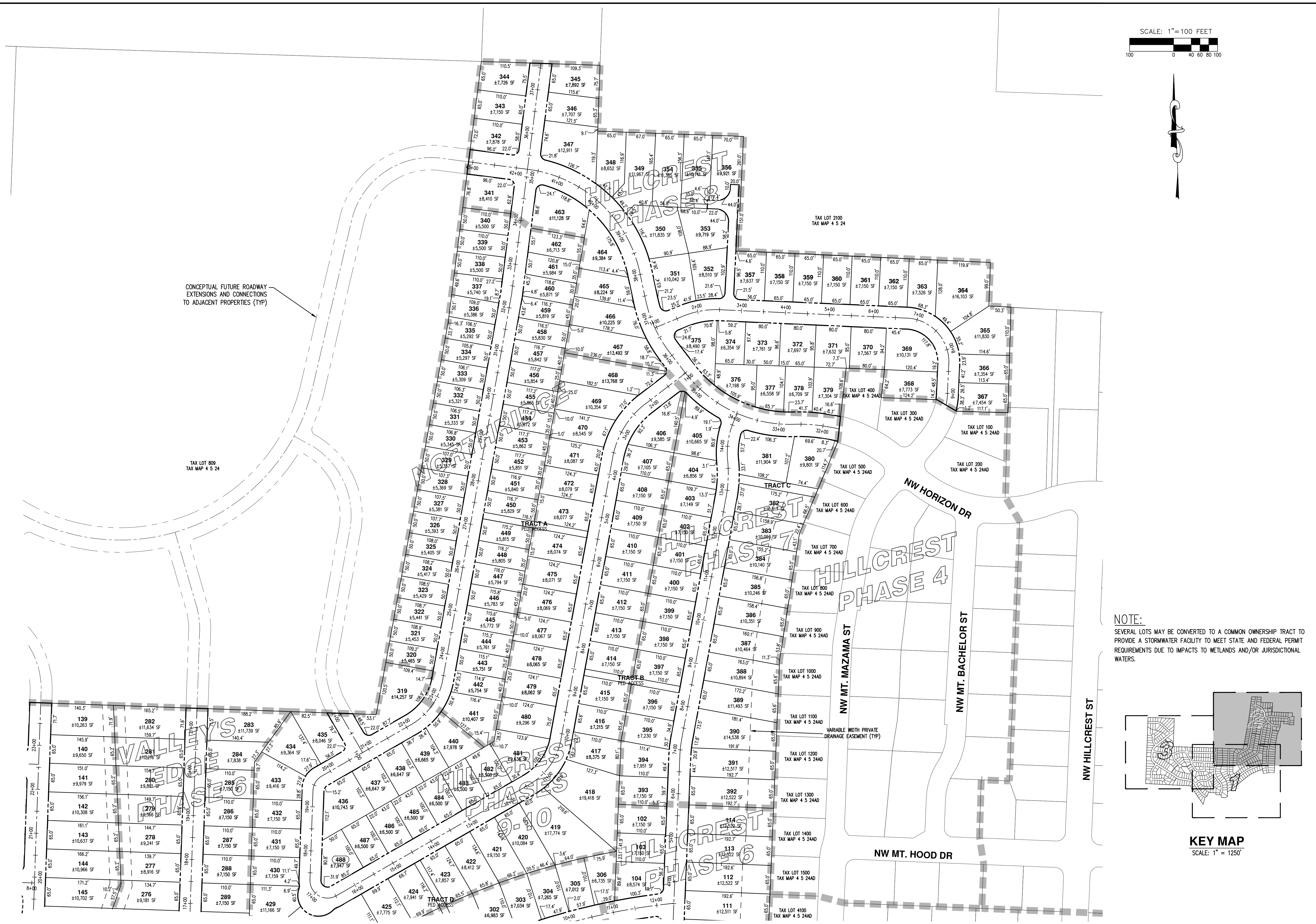
REGISTERED PROFESSIONAL LAND SURVEYOR  
**PRELIMINARY NOT FOR CONSTRUCTION**  
ALEXANDER H. HURLEY  
15, 2003  
56539LS  
RENEWS: 6/30/17

REVISIONS

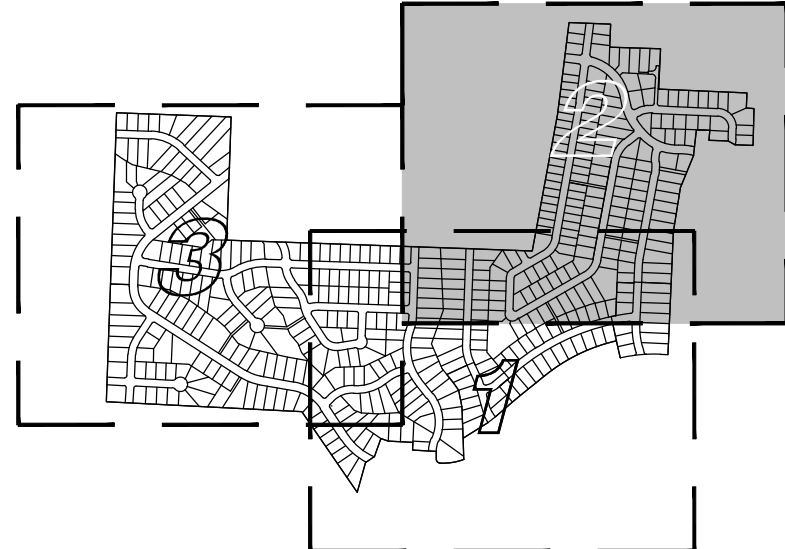
JOB NUMBER  
5147

SHEET  
**SU-01**

AKS DRAWING FILE: 5147 PRELIMINARY PLAT.DWG | LAYOUT: SU-02



**NOTE:**  
SEVERAL LOTS MAY BE CONVERTED TO A COMMON OWNERSHIP TRACT TO PROVIDE A STORMWATER FACILITY TO MEET STATE AND FEDERAL PERMIT REQUIREMENTS DUE TO IMPACTS TO WETLANDS AND/OR JURISDICTIONAL WATERS.



**AKS**  
AKS ENGINEERING & FORESTRY, LLC  
12065 SW HERMAN RD, STE 100  
TUALATIN, OR 97062  
P: 503.563.6151  
F: 503.563.6152  
aks-eng.com

ENGINEERING - SURVEYING - NATURAL RESOURCES  
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**

**OREGON**  
YAMHILL COUNTY TAX MAP 4 5 24

**MCMINNVILLE**  
TAX LOT 801

**PRELIMINARY SUBDIVISION PLAT**

DESIGNED BY: CTS  
DRAWN BY: CTS  
CHECKED BY: PAS  
SCALE: AS NOTED  
DATE: 03/29/2017

REGISTERED PROFESSIONAL LAND SURVEYOR  
**NOT FOR CONSTRUCTION**  
ALEXANDER H. HURLEY  
56539LS  
RENEWS: 6/30/17

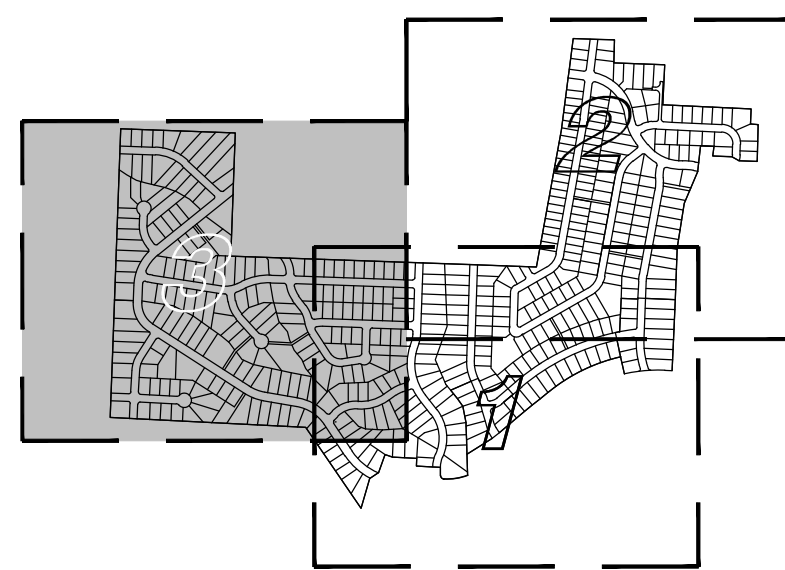
JOB NUMBER  
**5147**

SHEET  
**SU-02**

AKS DRAWING FILE: 5147 PRELIMINARY PLAT.DWG | LAYOUT: SU-03



**NOTE:**  
SEVERAL LOTS MAY BE CONVERTED TO A COMMON OWNERSHIP TRACT TO PROVIDE A STORMWATER FACILITY TO MEET STATE AND FEDERAL PERMIT REQUIREMENTS DUE TO IMPACTS TO WETLANDS AND/OR JURISDICTIONAL WATERS.



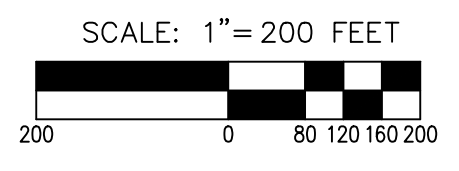
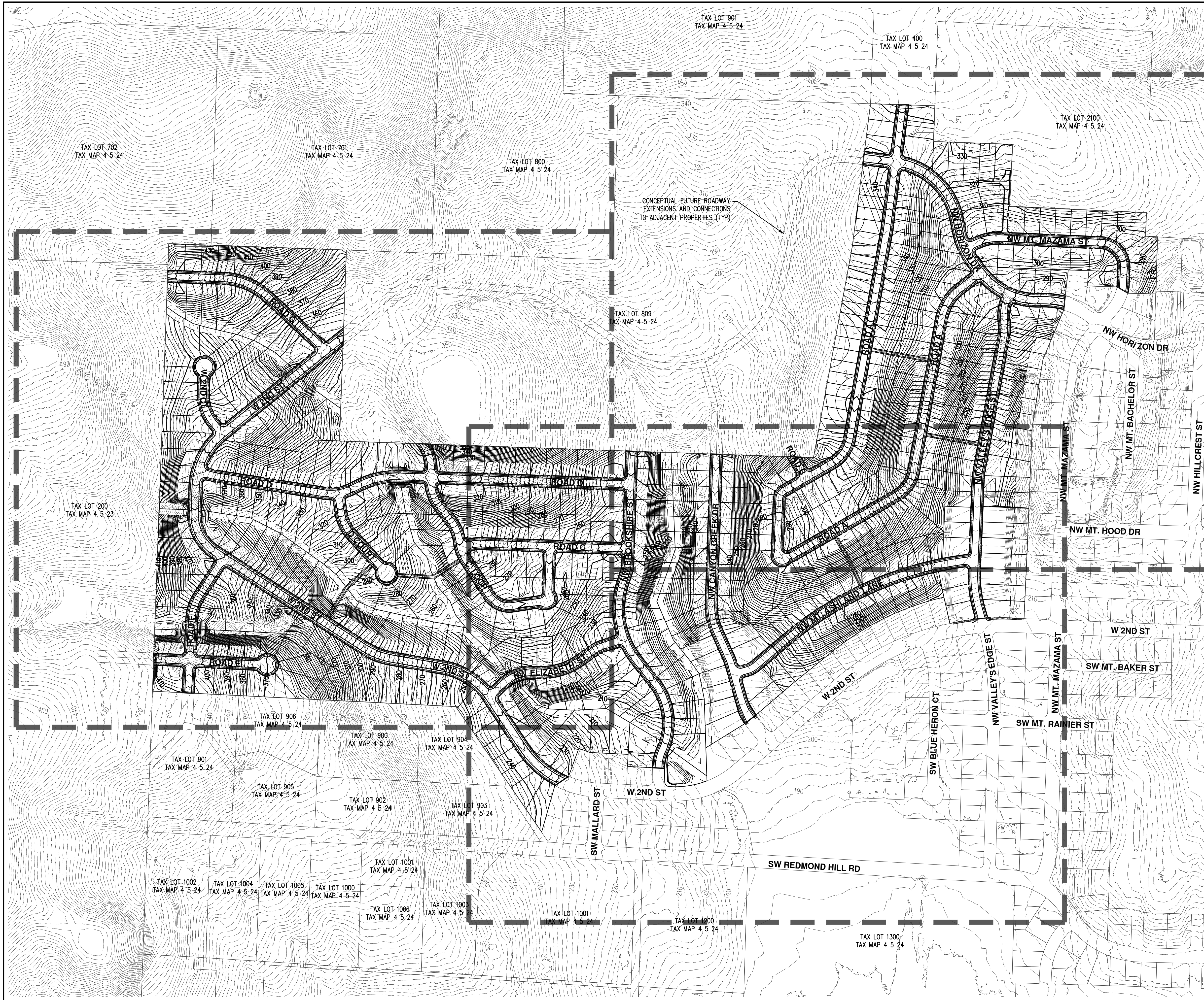
**AKS**  
AKS ENGINEERING & FORESTRY, LLC  
12065 SW HERMAN RD. STE 100  
TUALATIN, OR 97062  
P: 503.563.6151  
aks-eng.com

**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**  
OREGON  
YAMHILL COUNTY TAX MAP 4 5 24  
MCMINNVILLE

**PRELIMINARY SUBDIVISION PLAT**

DESIGNED BY: CTS  
DRAWN BY: CTS  
CHECKED BY: PAS  
SCALE: AS NOTED  
DATE: 03/29/2017  
REGISTERED PROFESSIONAL LAND SURVEYOR  
**NOT FOR CONSTRUCTION**  
ALEXANDER H. HURLEY  
56539LS  
RENEWS: 6/30/17

REVISIONS  
JOB NUMBER  
**5147**  
SHEET  
**SU-03**



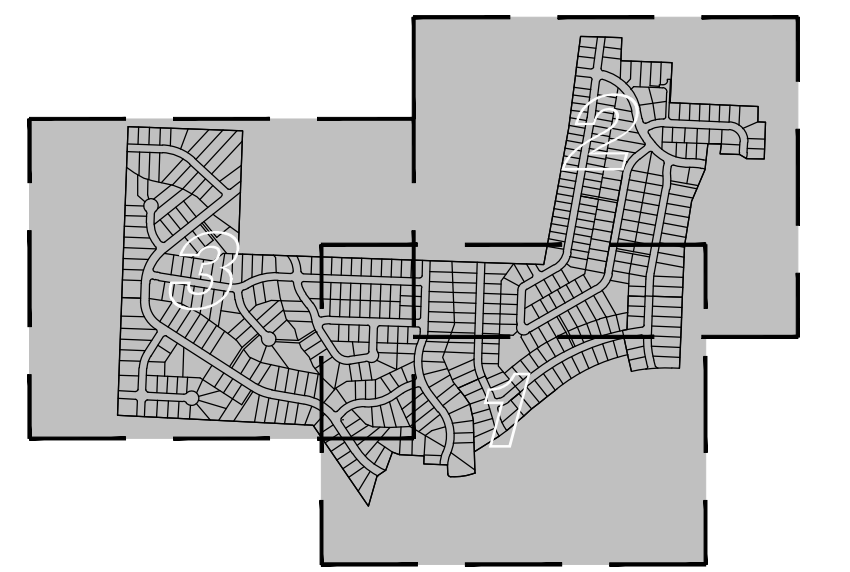
CONCEPTUAL FUTURE ROADWAY  
EXTENSIONS AND CONNECTIONS  
TO ADJACENT PROPERTIES (TYP)

**NOTES:**

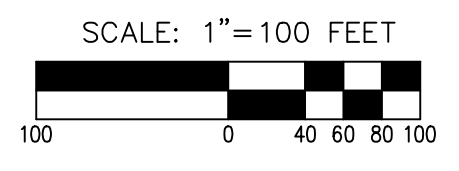
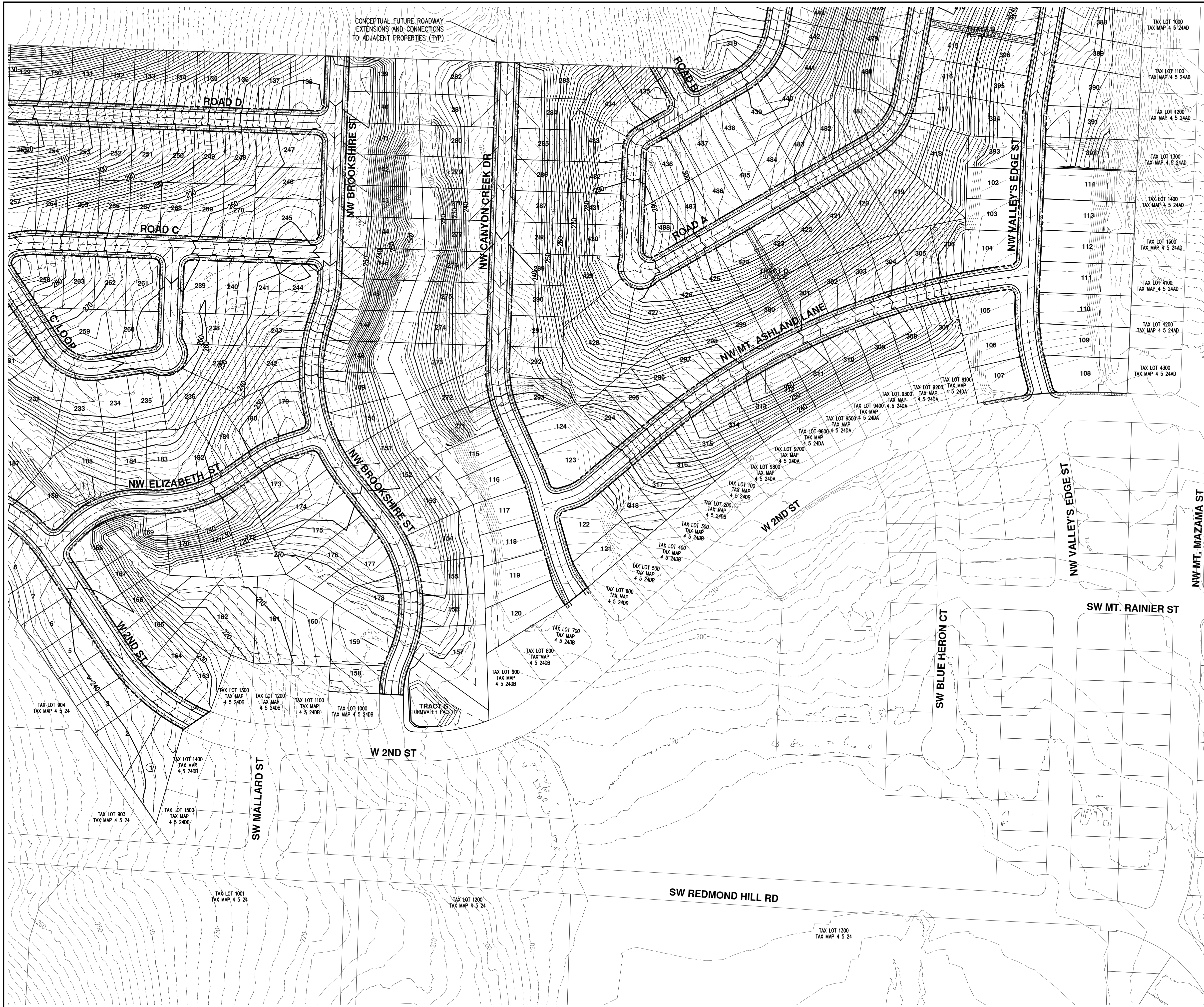
1. CONTOUR INTERVAL SHOWN IS 2.00 FOOT. VERTICAL DATUM IS BASED ON THE NAVD 88 DATUM. CONTOURS SHOWN ARE BASED ON LIDAR DATA PROVIDED BY OTHERS AND ARE CONSIDERED APPROXIMATE.
2. THIS MAP IS FOR PRELIMINARY MAPPING PURPOSES ONLY AND IS NOT CONSIDERED A BOUNDARY SURVEY.
3. THIS IS A CONCEPTUAL LAYOUT AND IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS. PROPERTY LINES ARE BASED ON AVAILABLE GIS INFORMATION AND ARE APPROXIMATE.
4. SHOWN ROAD GRADES ARE BASED ON PRELIMINARY DESIGN UTILIZING LIDAR CONTOURS AND IS SUBJECT TO CHANGE BASED ON CITY ENGINEERING REQUIREMENTS.

**LEGEND**

EXISTING GROUND CONTOUR (2 FT)	--- 298 ---
EXISTING GROUND CONTOUR (10 FT)	--- 300 ---
FINISHED GRADE CONTOUR (2 FT)	--- 298 ---
FINISHED GRADE CONTOUR (10 FT)	--- 300 ---

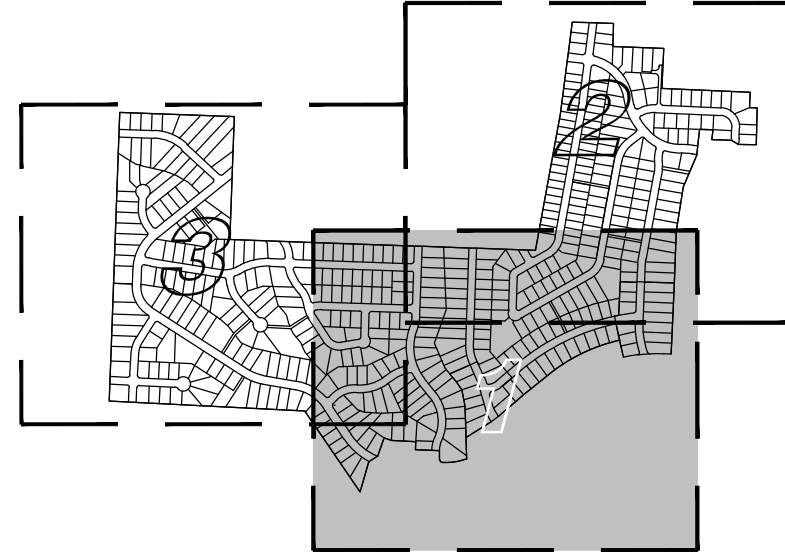


DESIGNED BY:	CTS
DRAWN BY:	CTS
CHECKED BY:	PAS
SCALE:	AS NOTED
DATE:	03/29/2017
RENEWAL DATE:	6/30/18
REVISIONS:	

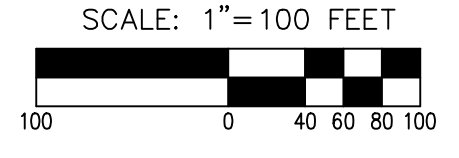


- NOTES:**
1. CONTOUR INTERVAL SHOWN IS 2.00 FOOT. VERTICAL DATUM IS BASED ON THE NAVD 88 DATUM. CONTOURS SHOWN ARE BASED ON LIDAR DATA PROVIDED BY OTHERS AND ARE CONSIDERED APPROXIMATE.
  2. THIS MAP IS FOR PRELIMINARY MAPPING PURPOSES ONLY AND IS NOT CONSIDERED A BOUNDARY SURVEY.
  3. THIS IS A CONCEPTUAL LAYOUT AND IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS. PROPERTY LINES ARE BASED ON AVAILABLE GIS INFORMATION AND ARE APPROXIMATE.
  4. SHOWN ROAD GRADES ARE BASED ON PRELIMINARY DESIGN UTILIZING LIDAR CONTOURS AND IS SUBJECT TO CHANGE BASED ON CITY ENGINEERING REQUIREMENTS.

LEGEND	
EXISTING GROUND CONTOUR (2 FT)	--- 298 ---
EXISTING GROUND CONTOUR (10 FT)	--- 300 ---
FINISHED GRADE CONTOUR (2 FT)	--- 298 ---
FINISHED GRADE CONTOUR (10 FT)	--- 300 ---



**KEY MAP**  
SCALE: 1" = 1250'

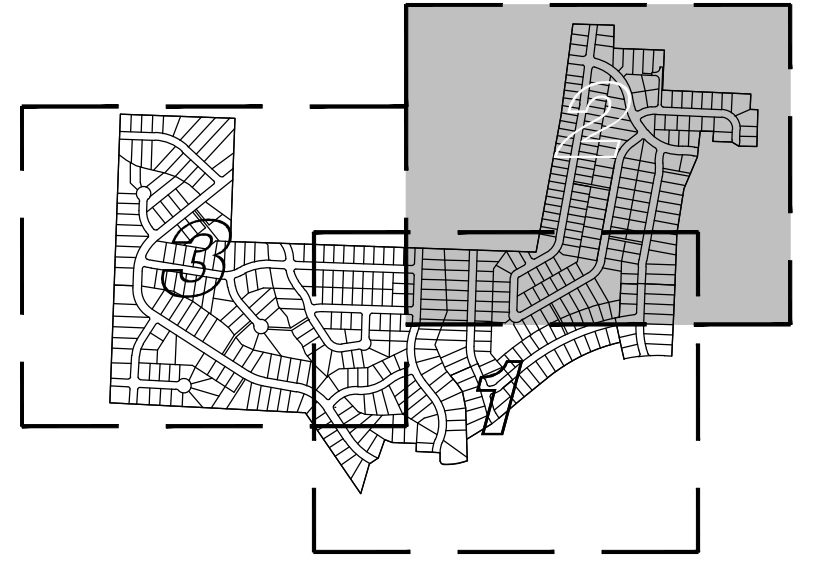


**NOTES:**

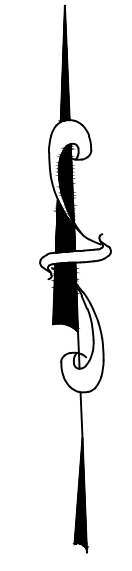
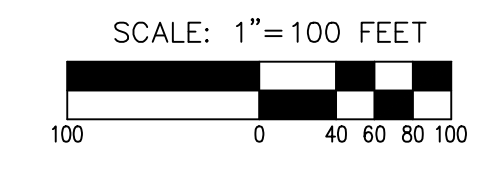
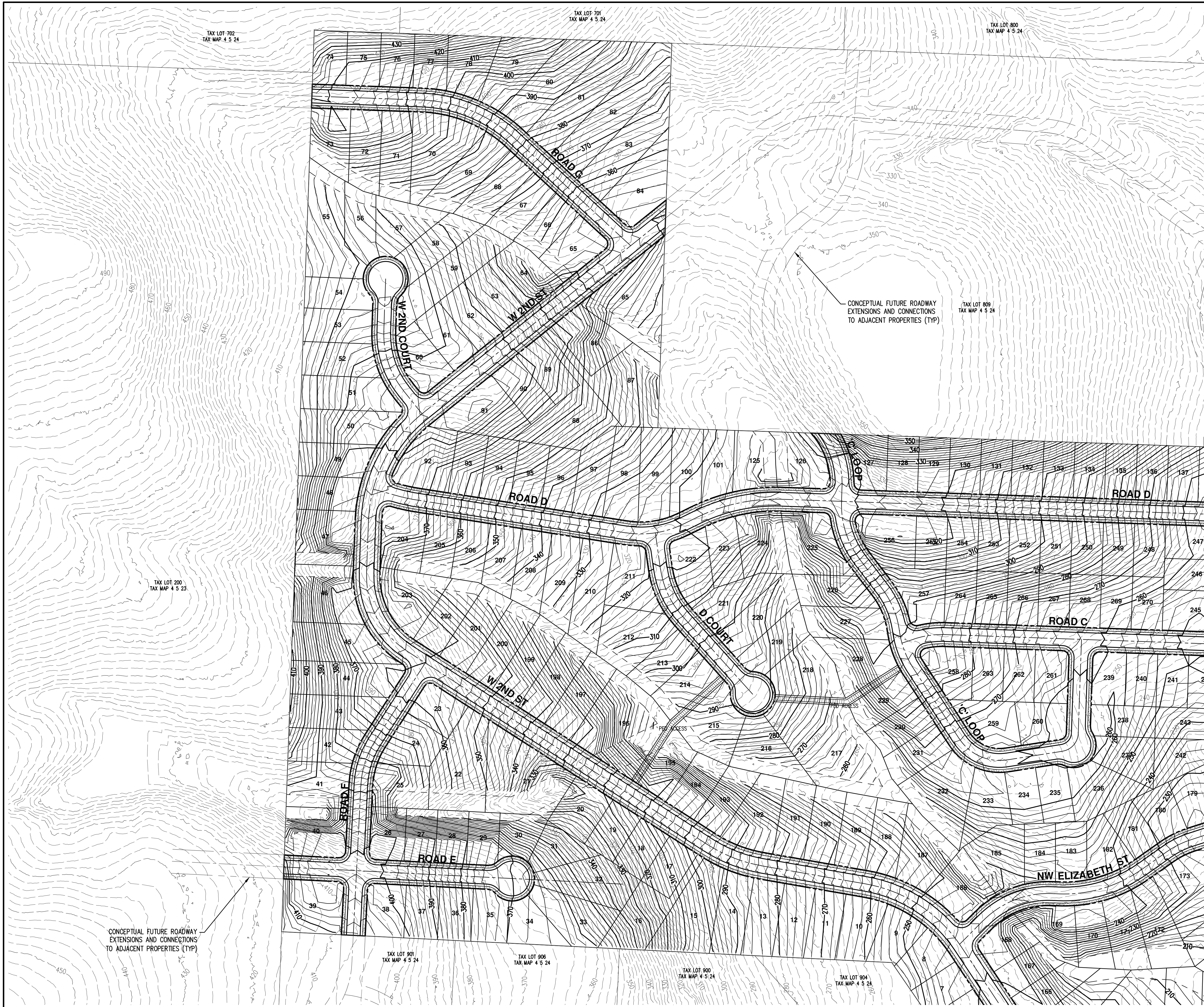
1. CONTOUR INTERVAL SHOWN IS 2.00 FOOT. VERTICAL DATUM IS BASED ON THE NAVD 88 DATUM. CONTOURS SHOWN ARE BASED ON LIDAR DATA PROVIDED BY OTHERS AND ARE CONSIDERED APPROXIMATE.
2. THIS MAP IS FOR PRELIMINARY MAPPING PURPOSES ONLY AND IS NOT CONSIDERED A BOUNDARY SURVEY.
3. THIS IS A CONCEPTUAL LAYOUT AND IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS. PROPERTY LINES ARE BASED ON AVAILABLE GIS INFORMATION AND ARE APPROXIMATE.
4. SHOWN ROAD GRADES ARE BASED ON PRELIMINARY DESIGN UTILIZING LIDAR CONTOURS AND IS SUBJECT TO CHANGE BASED ON CITY ENGINEERING REQUIREMENTS.

**LEGEND**

EXISTING GROUND CONTOUR (2 FT)	--- 298 ---
EXISTING GROUND CONTOUR (10 FT)	--- 300 ---
FINISHED GRADE CONTOUR (2 FT)	--- 298 ---
FINISHED GRADE CONTOUR (10 FT)	--- 300 ---





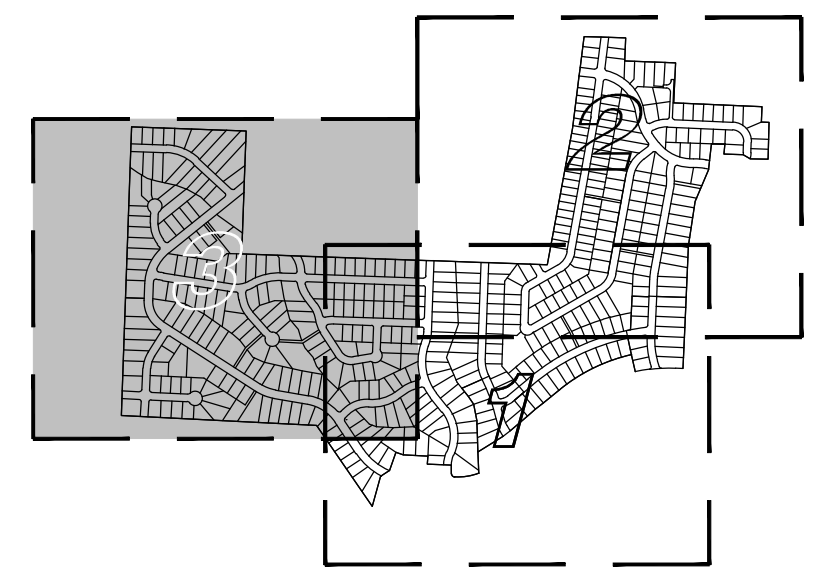


**NOTES:**

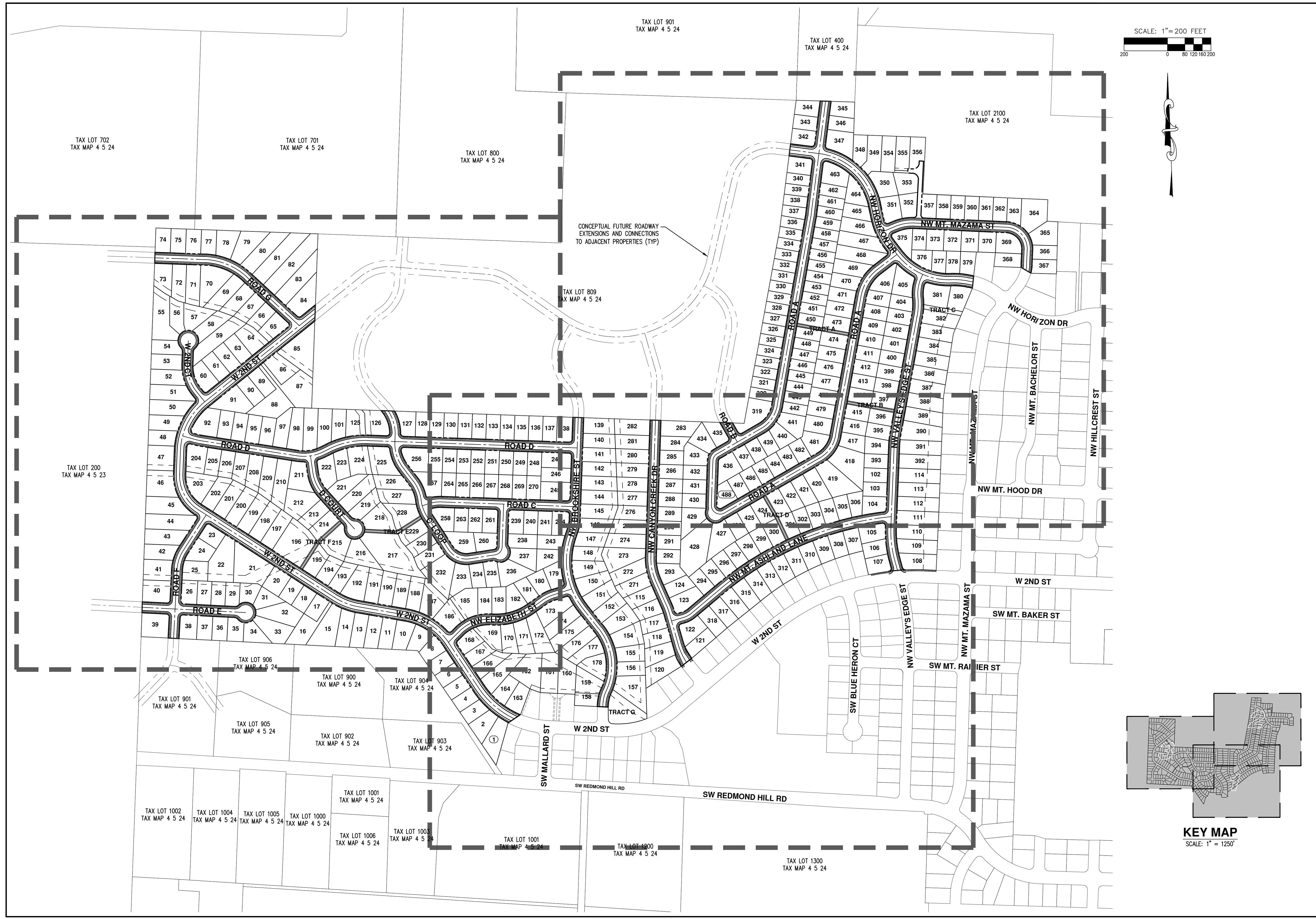
1. CONTOUR INTERVAL SHOWN IS 2.00 FOOT. VERTICAL DATUM IS BASED ON THE NAVD 88 DATUM. CONTOURS SHOWN ARE BASED ON LIDAR DATA PROVIDED BY OTHERS AND ARE CONSIDERED APPROXIMATE.
2. THIS MAP IS FOR PRELIMINARY MAPPING PURPOSES ONLY AND IS NOT CONSIDERED A BOUNDARY SURVEY.
3. THIS IS A CONCEPTUAL LAYOUT AND IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS. PROPERTY LINES ARE BASED ON AVAILABLE GIS INFORMATION AND ARE APPROXIMATE.
4. SHOWN ROAD GRADES ARE BASED ON PRELIMINARY DESIGN UTILIZING LIDAR CONTOURS AND IS SUBJECT TO CHANGE BASED ON CITY ENGINEERING REQUIREMENTS.

**LEGEND**

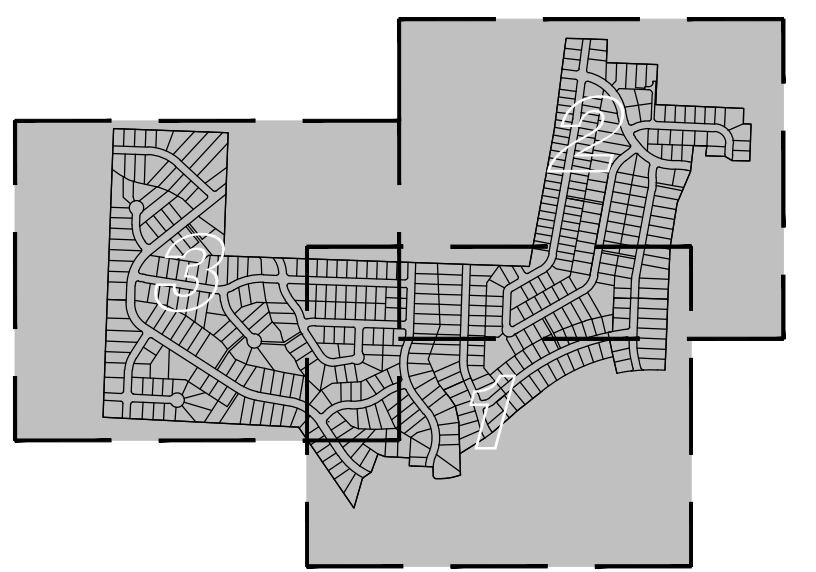
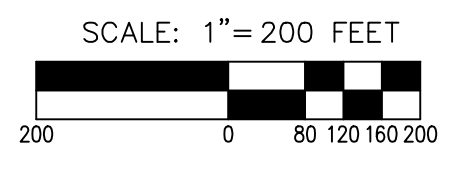
EXISTING GROUND CONTOUR (2 FT)	--- 298 ---
EXISTING GROUND CONTOUR (10 FT)	--- 300 ---
FINISHED GRADE CONTOUR (2 FT)	--- 298 ---
FINISHED GRADE CONTOUR (10 FT)	--- 300 ---



**KEY MAP**  
SCALE: 1" = 1250'



CONCEPTUAL FUTURE ROADWAY EXTENSIONS AND CONNECTIONS TO ADJACENT PROPERTIES (TYP)



KEY MAP  
SCALE: 1" = 1250'

**AKS**  
 AKS ENGINEERING & FORESTRY, LLC  
 12065 SW HERMAN RD, STE 100  
 TUALATIN, OR 97062  
 P: 503.563.6151  
 F: 503.563.6152  
 aks-eng.com

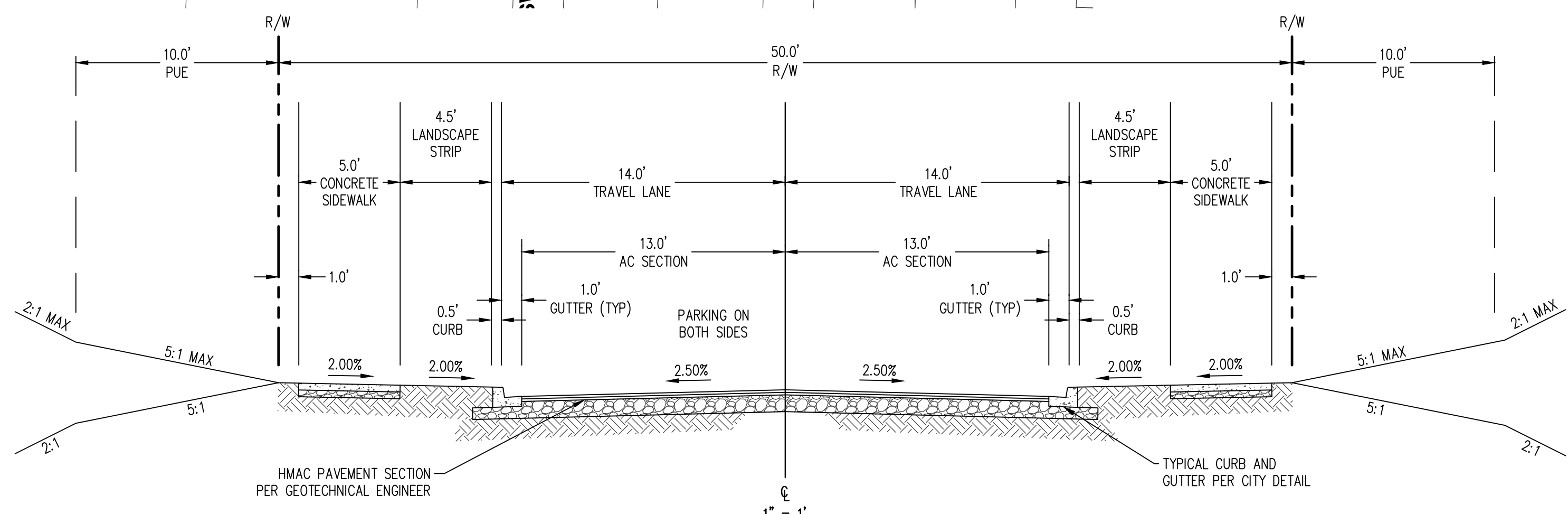
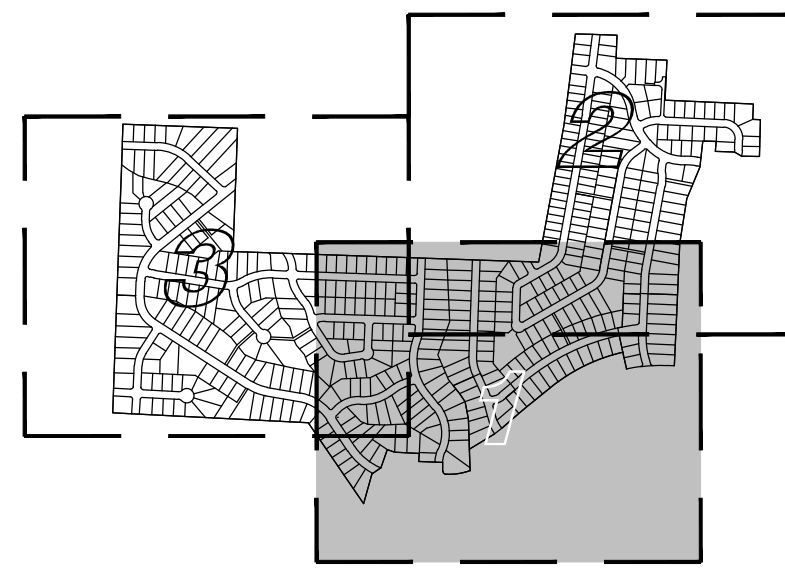
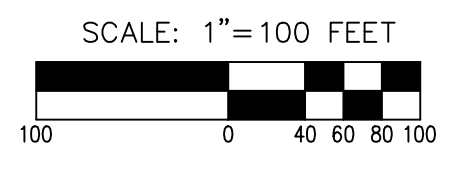
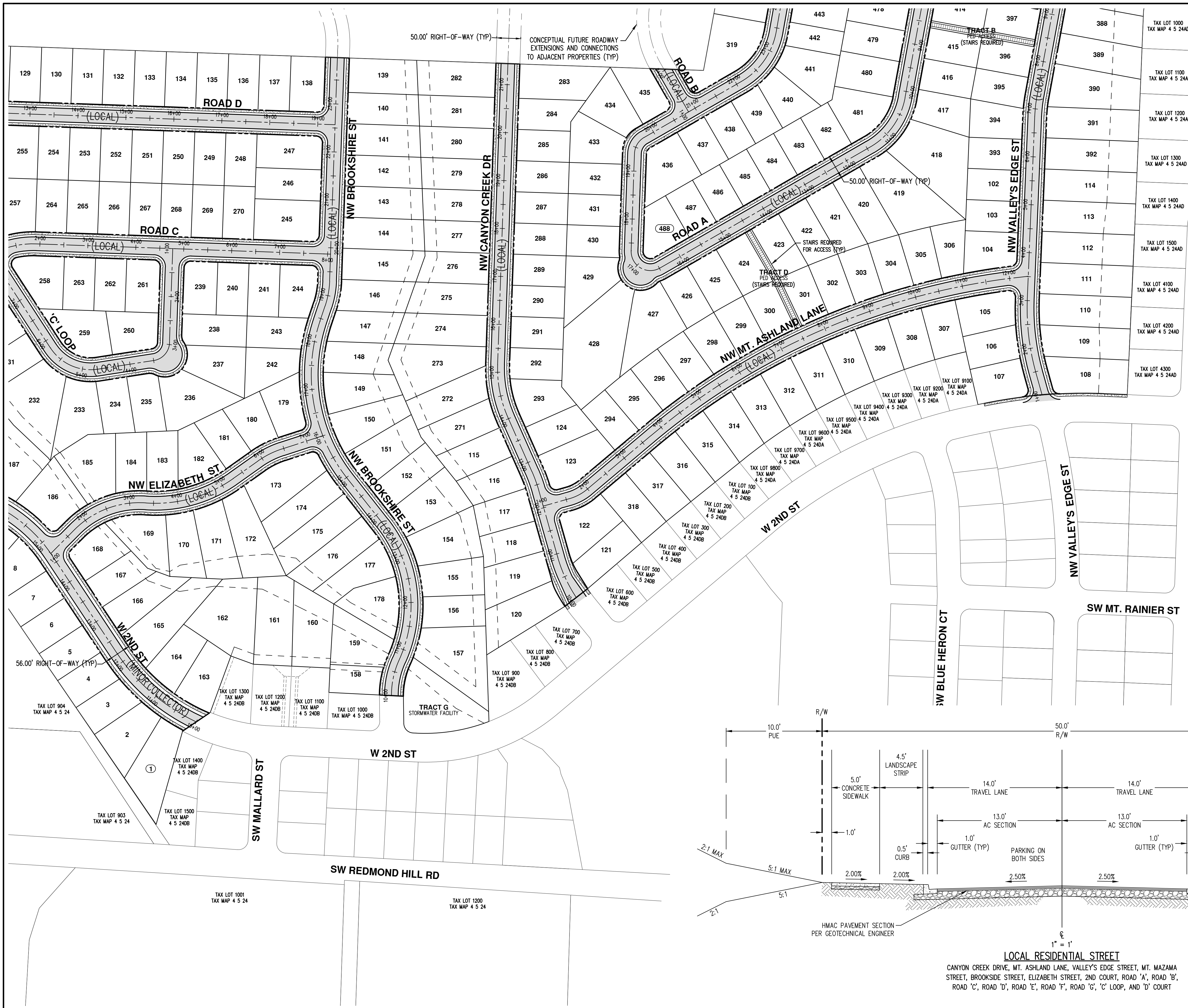
**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**  
 OREGON  
 YAMHILL COUNTY TAX MAP 4 5 24  
 MCMINNVILLE  
 TAX LOT 801

**PRELIMINARY STREET PLAN OVERVIEW**

DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017

RENEWAL DATE: 6/30/18  
 REVISIONS:

JOB NUMBER  
**5147**  
 SHEET  
**ST-00**



**AKS**  
 AKS ENGINEERING & FORESTRY, LLC  
 12965 SW HERMAN RD. STE 100  
 TUALATIN, OR 97062  
 P: 503.563.6151  
 F: 503.563.6152  
 aks-eng.com

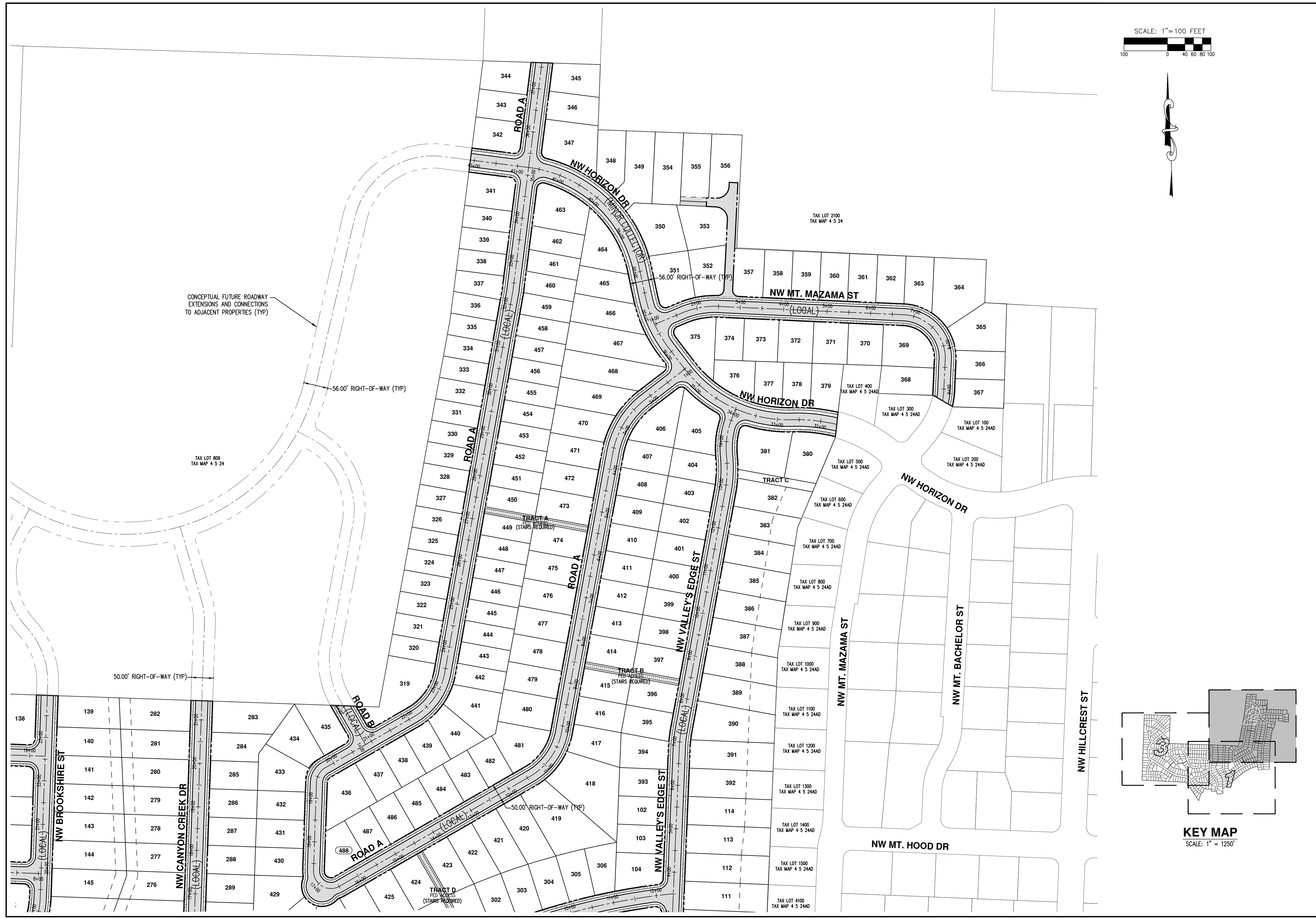
**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**  
**OREGON**  
 MCMINNVILLE  
 YAMHILL COUNTY TAX MAP 4 5 24  
 TAX LOT 801

**PRELIMINARY STREET PLAN**

DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017

RENEWAL DATE: 6/30/18  
 REVISIONS  
 JOB NUMBER: 5147  
 SHEET: ST-01

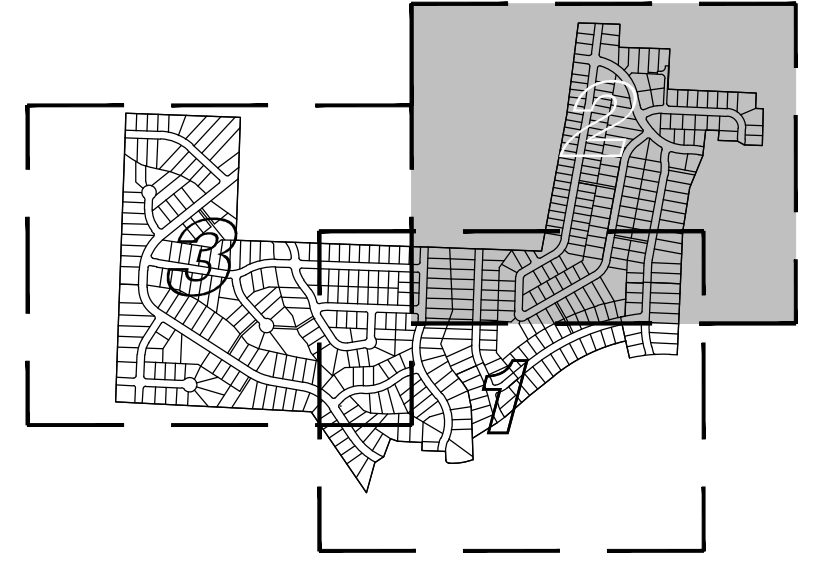
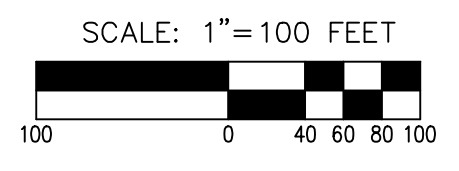
AKS DRAWING FILE: 5147 STREETS.DWG | LAYOUT: ST-01



CONCEPTUAL FUTURE ROADWAY EXTENSIONS AND CONNECTIONS TO ADJACENT PROPERTIES (TYP)

56.00' RIGHT-OF-WAY (TYP)

50.00' RIGHT-OF-WAY (TYP)



**PRELIMINARY STREET PLAN**

DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017



REVISIONS

JOB NUMBER  
**5147**

SHEET  
**ST-02**

TAX LOT 702  
TAX MAP 4 5 24

TAX LOT 701  
TAX MAP 4 5 24

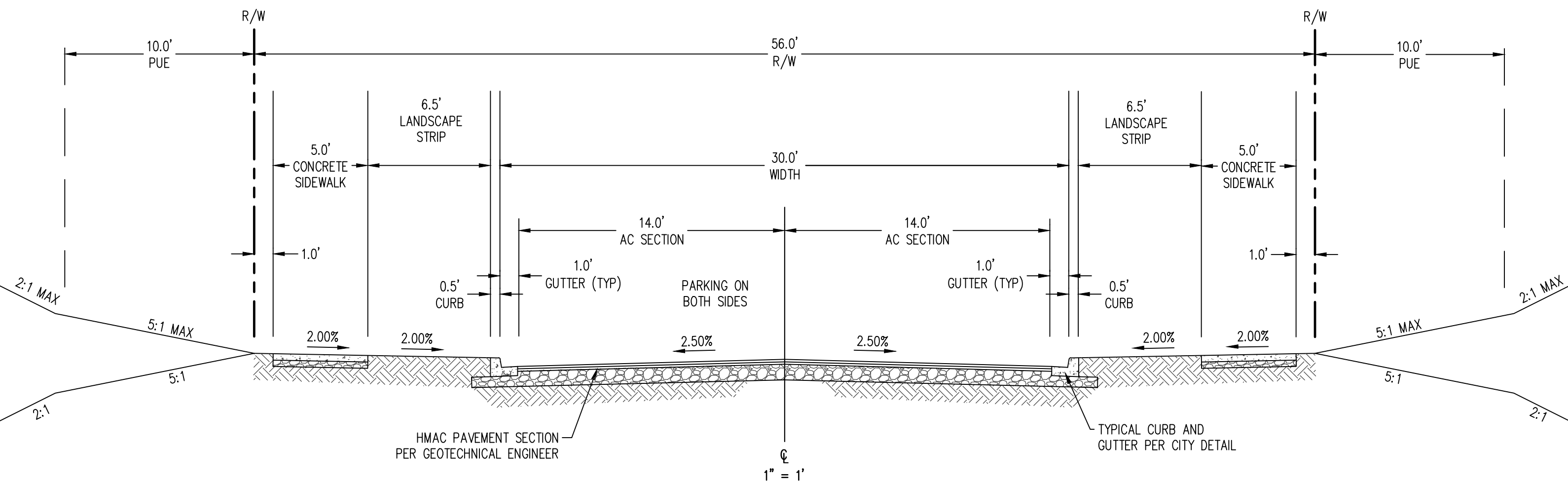
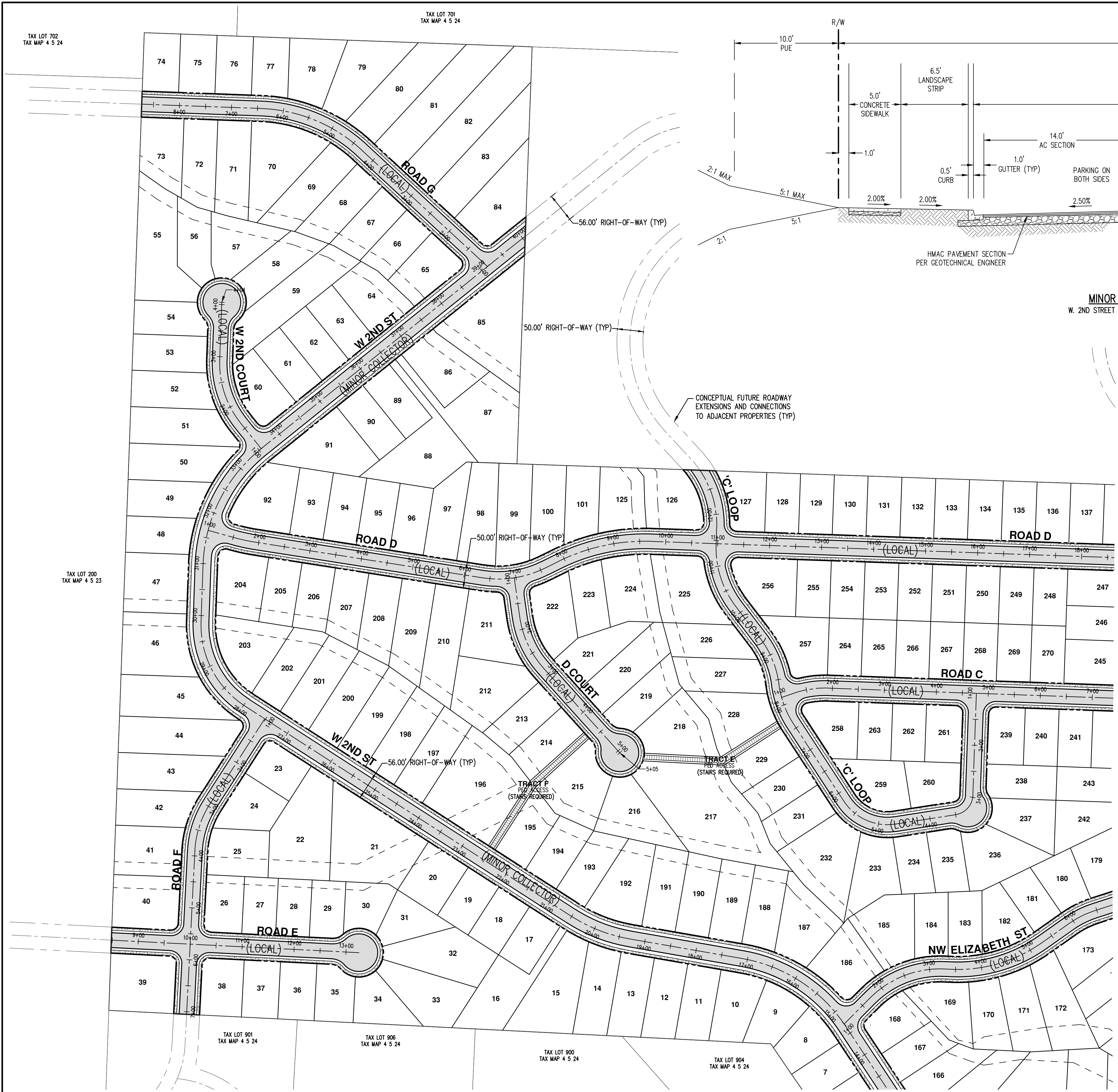
TAX LOT 200  
TAX MAP 4 5 23

TAX LOT 901  
TAX MAP 4 5 24

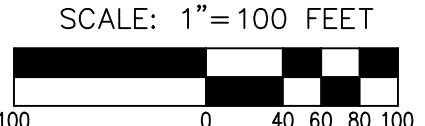
TAX LOT 906  
TAX MAP 4 5 24

TAX LOT 900  
TAX MAP 4 5 24

TAX LOT 904  
TAX MAP 4 5 24



MINOR COLLECTOR  
W. 2ND STREET AND NW HORIZON DRIVE



KEY MAP  
SCALE: 1" = 1250'

**AKS**  
AKS ENGINEERING & FORESTRY, LLC  
12065 SW HERMAN RD. STE 100  
TUALATIN, OR 97062  
P: 503.563.6151  
F: 503.563.6152  
aks-eng.com

**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**  
OREGON  
MCMINNVILLE  
YAMHILL COUNTY TAX MAP 4 5 24

**PRELIMINARY STREET PLAN**

DESIGNED BY: CTS  
DRAWN BY: CTS  
CHECKED BY: PAS  
SCALE: AS NOTED  
DATE: 03/29/2017



RENEWAL DATE: 6/30/18

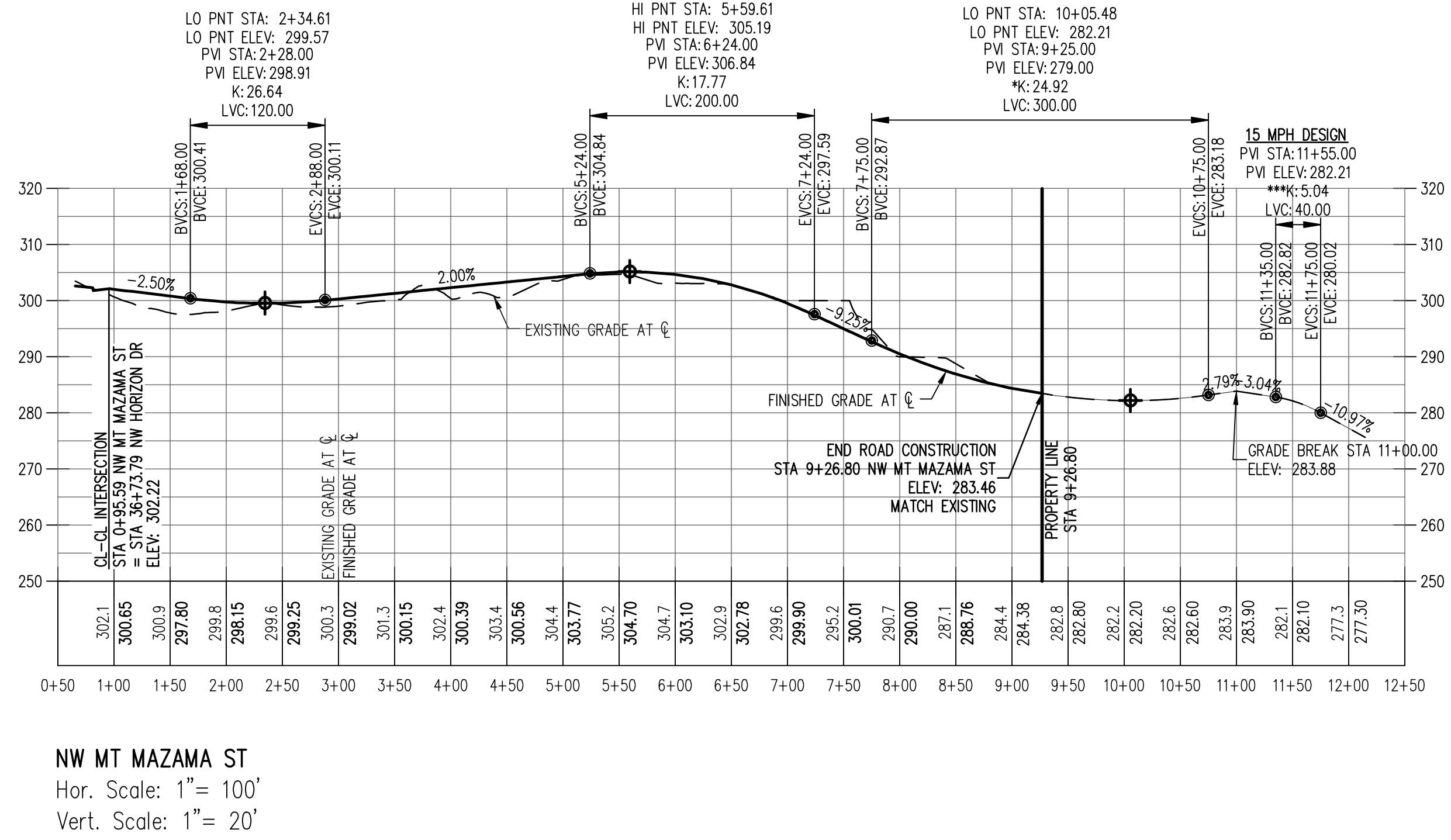
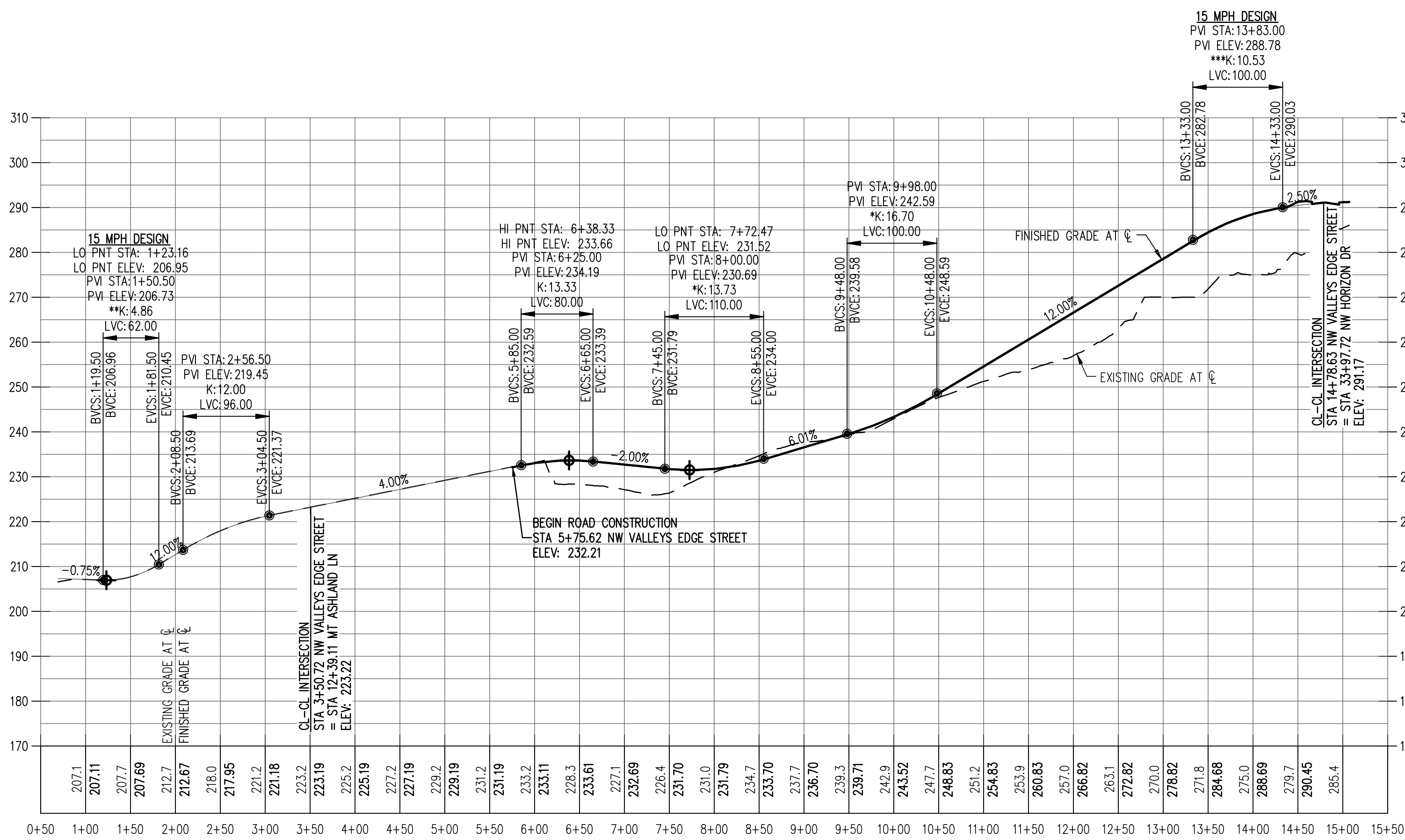
REVISIONS

JOB NUMBER  
5147

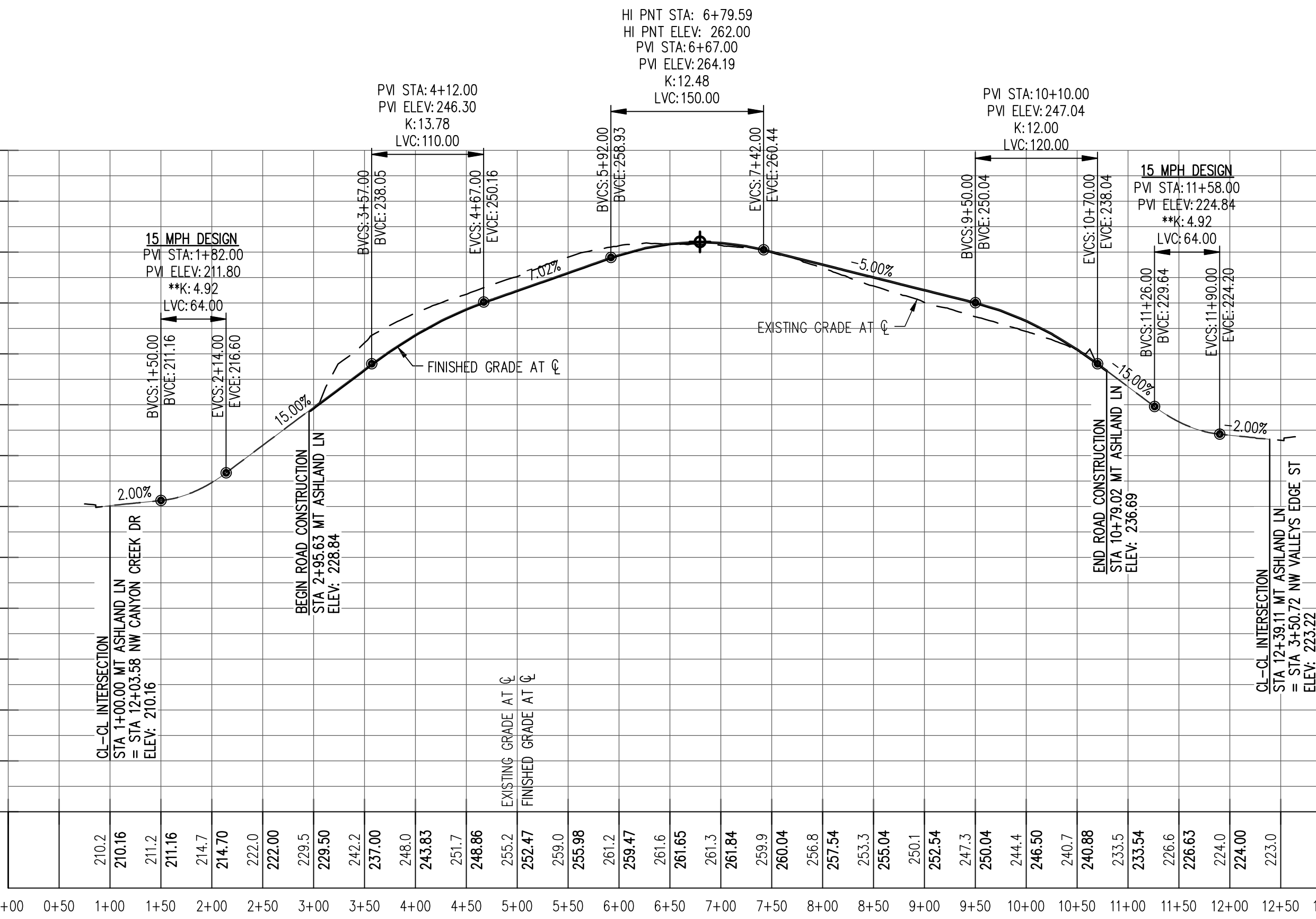
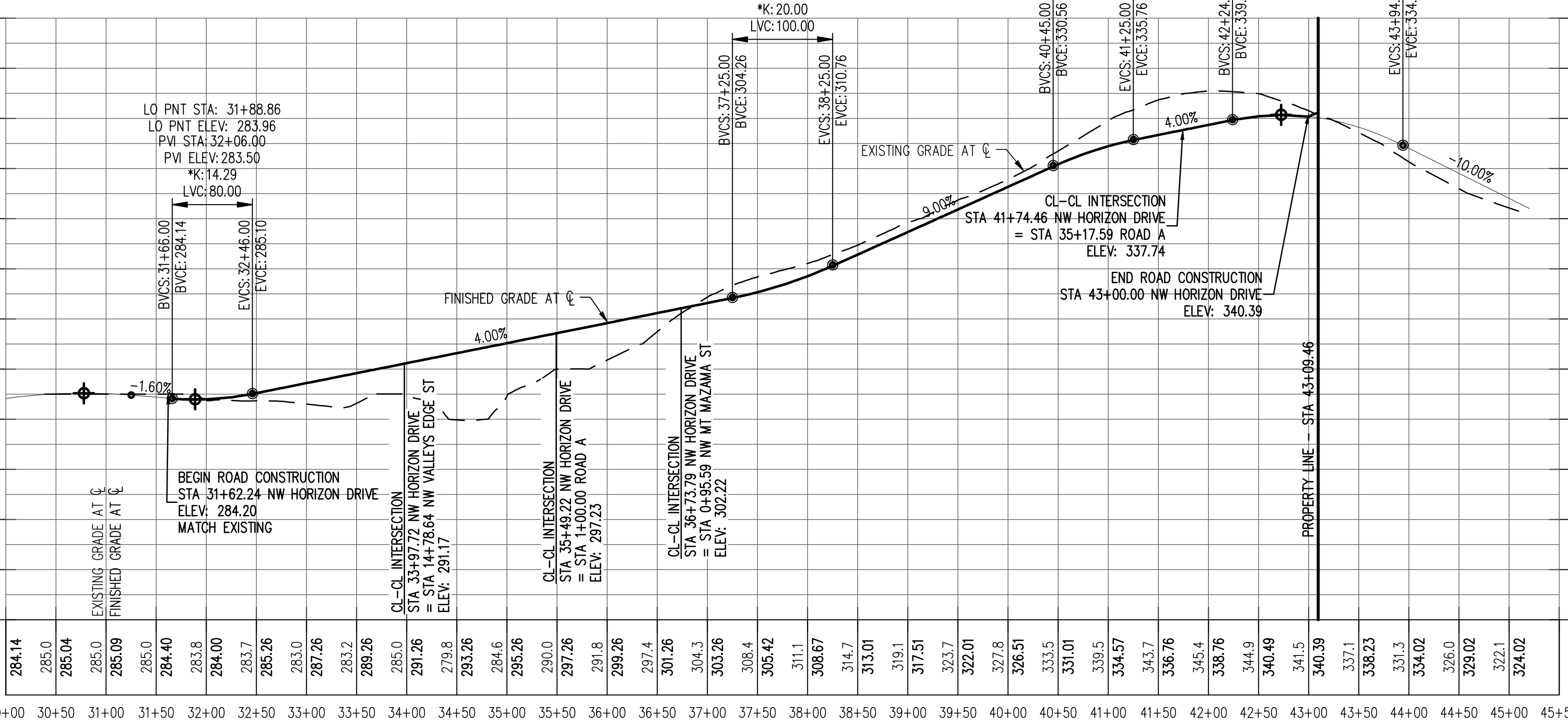
SHEET

**ST-03**

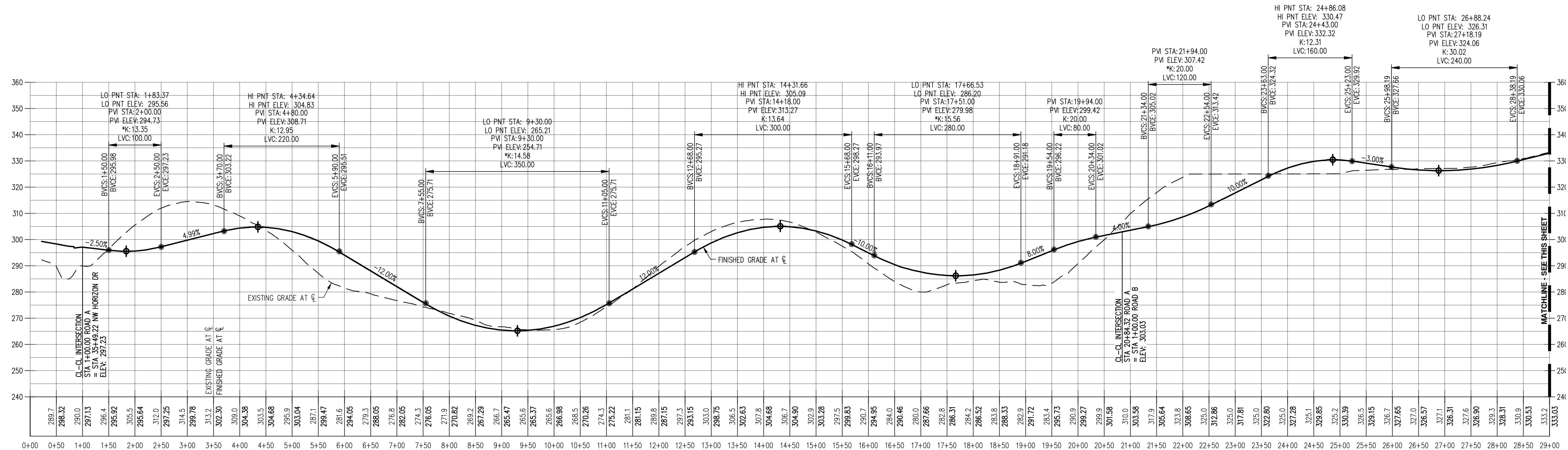
AKS DRAWING FILE: 5147 STREETS.DWG | LAYOUT: ST-03



\*SAG VERTICAL CURVE MEETS 25 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
\*\*SAG VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
\*\*\*CREST VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED PER AASHTO DESIGN STANDARDS

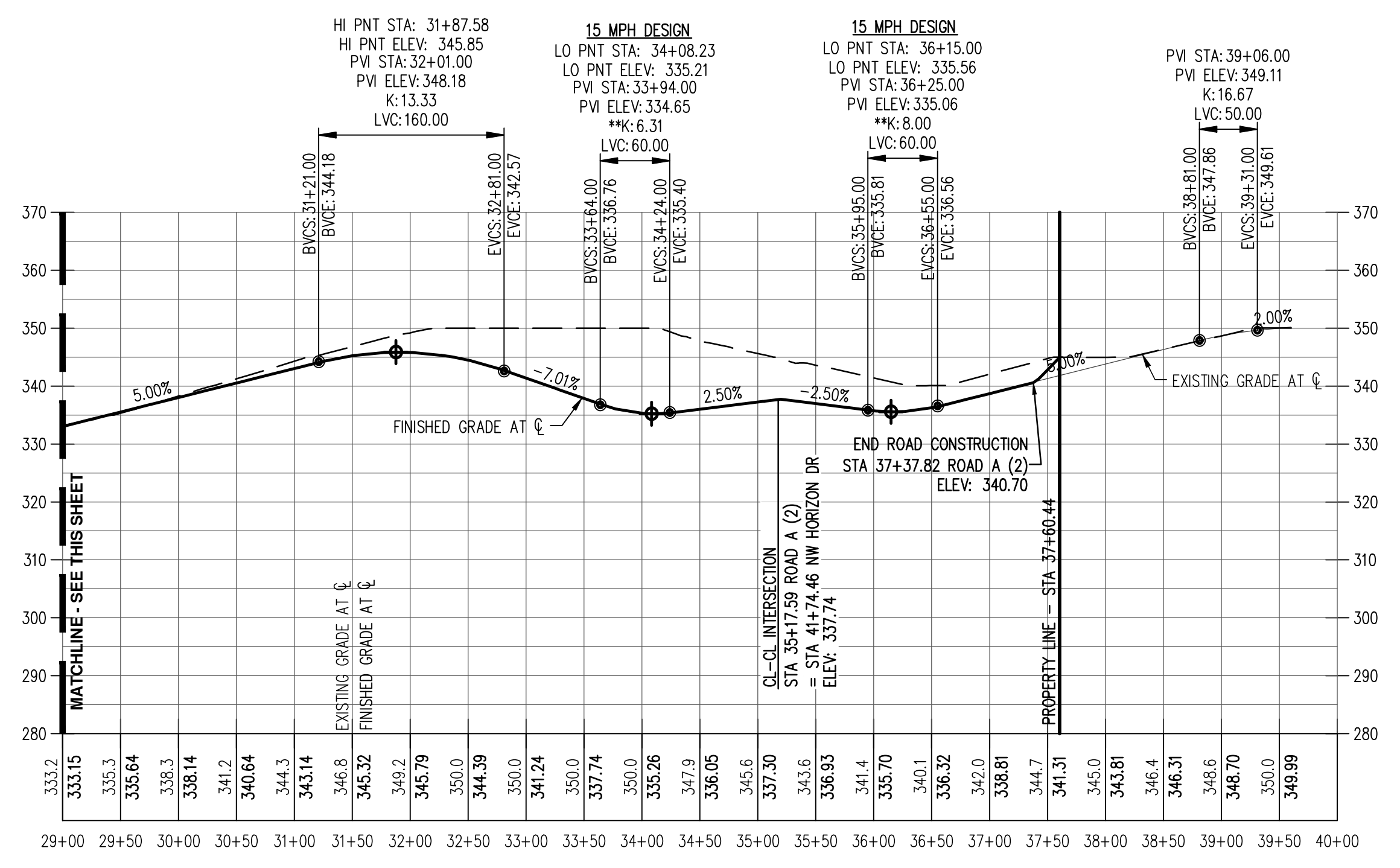


\*SAG VERTICAL CURVE MEETS 25 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
\*\*SAG VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
\*\*\*CREST VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED PER AASHTO DESIGN STANDARDS

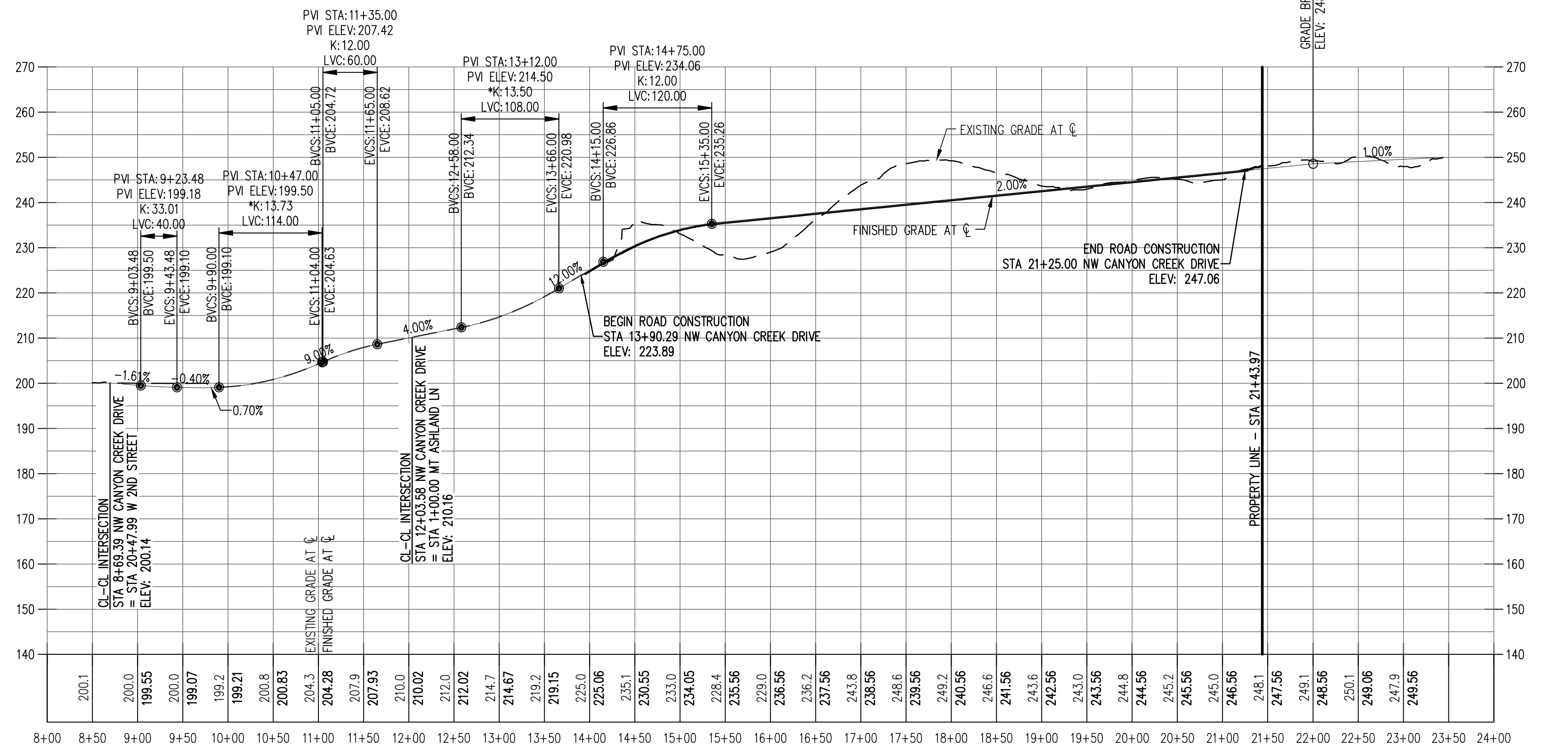


**ROAD A**  
 Hor. Scale: 1" = 100'  
 Vert. Scale: 1" = 20'

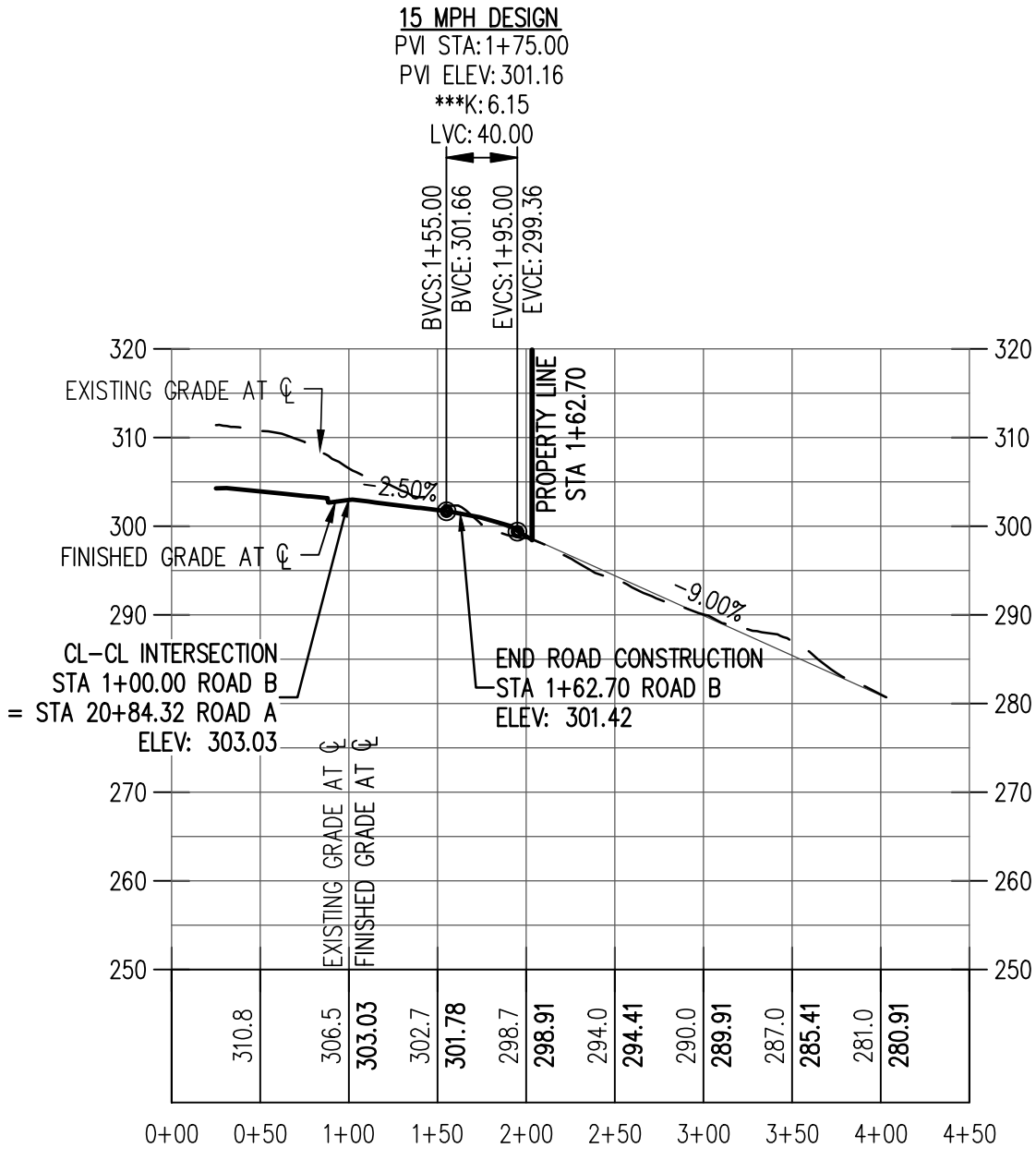
\*SAG VERTICAL CURVE MEETS 25 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
 \*\*SAG VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS



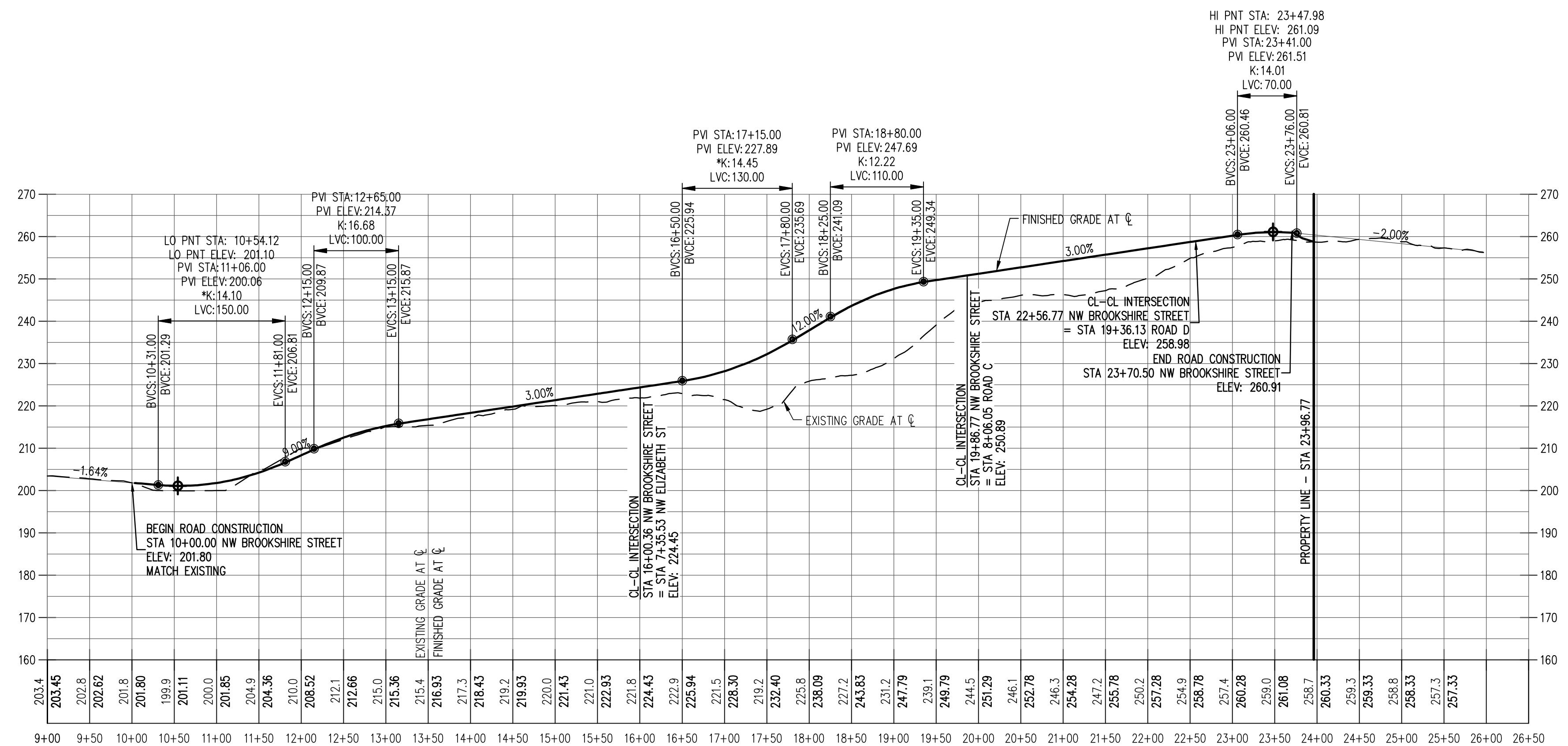
**ROAD A (2)**  
 Hor. Scale: 1" = 100'  
 Vert. Scale: 1" = 20'



**NW CANYON CREEK DRIVE**  
 Hor. Scale: 1" = 100'  
 Vert. Scale: 1" = 20'

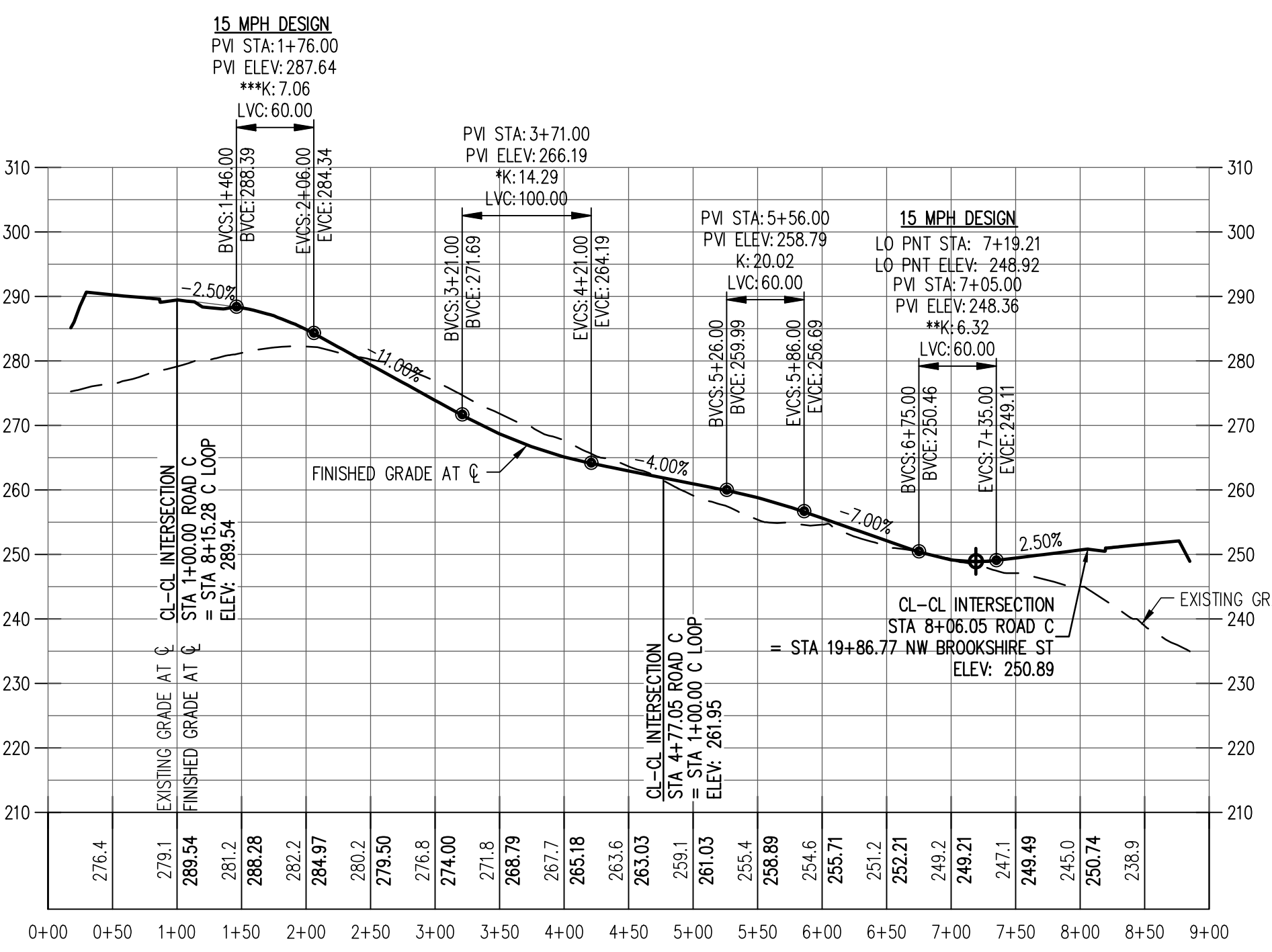


**ROAD B**  
Hor. Scale: 1" = 100'  
Vert. Scale: 1" = 20'

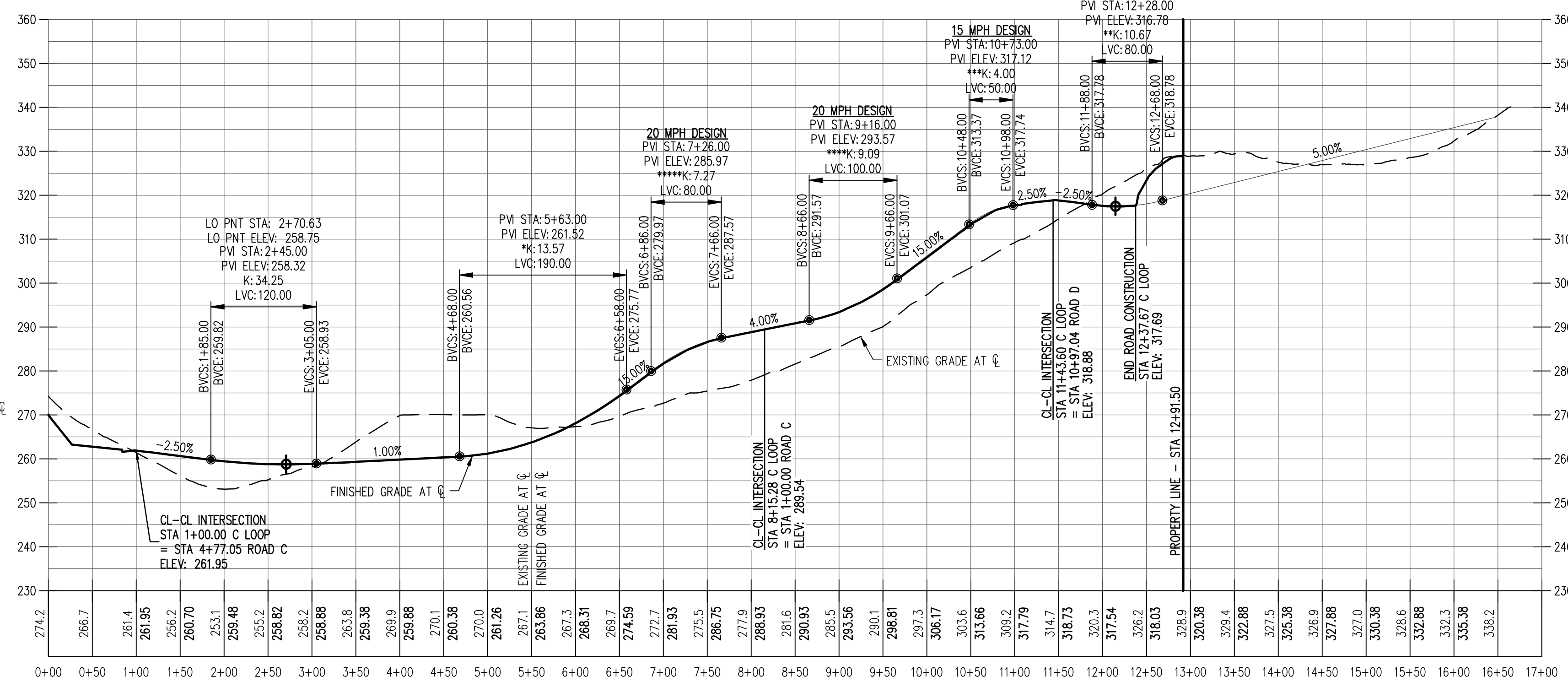


**NW BROOKSHIRE STREET**  
Hor. Scale: 1" = 100'  
Vert. Scale: 1" = 20'

\*SAG VERTICAL CURVE MEETS 25 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
\*\*SAG VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
\*\*\*CREST VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED PER AASHTO DESIGN STANDARDS  
\*\*\*\*SAG VERTICAL CURVE MEETS 20 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
\*\*\*\*\*CREST VERTICAL CURVE MEETS 20 MPH DESIGN SPEED PER AASHTO DESIGN STANDARDS



**ROAD C**  
Hor. Scale: 1" = 100'  
Vert. Scale: 1" = 20'



**C LOOP**  
Hor. Scale: 1" = 100'  
Vert. Scale: 1" = 20'



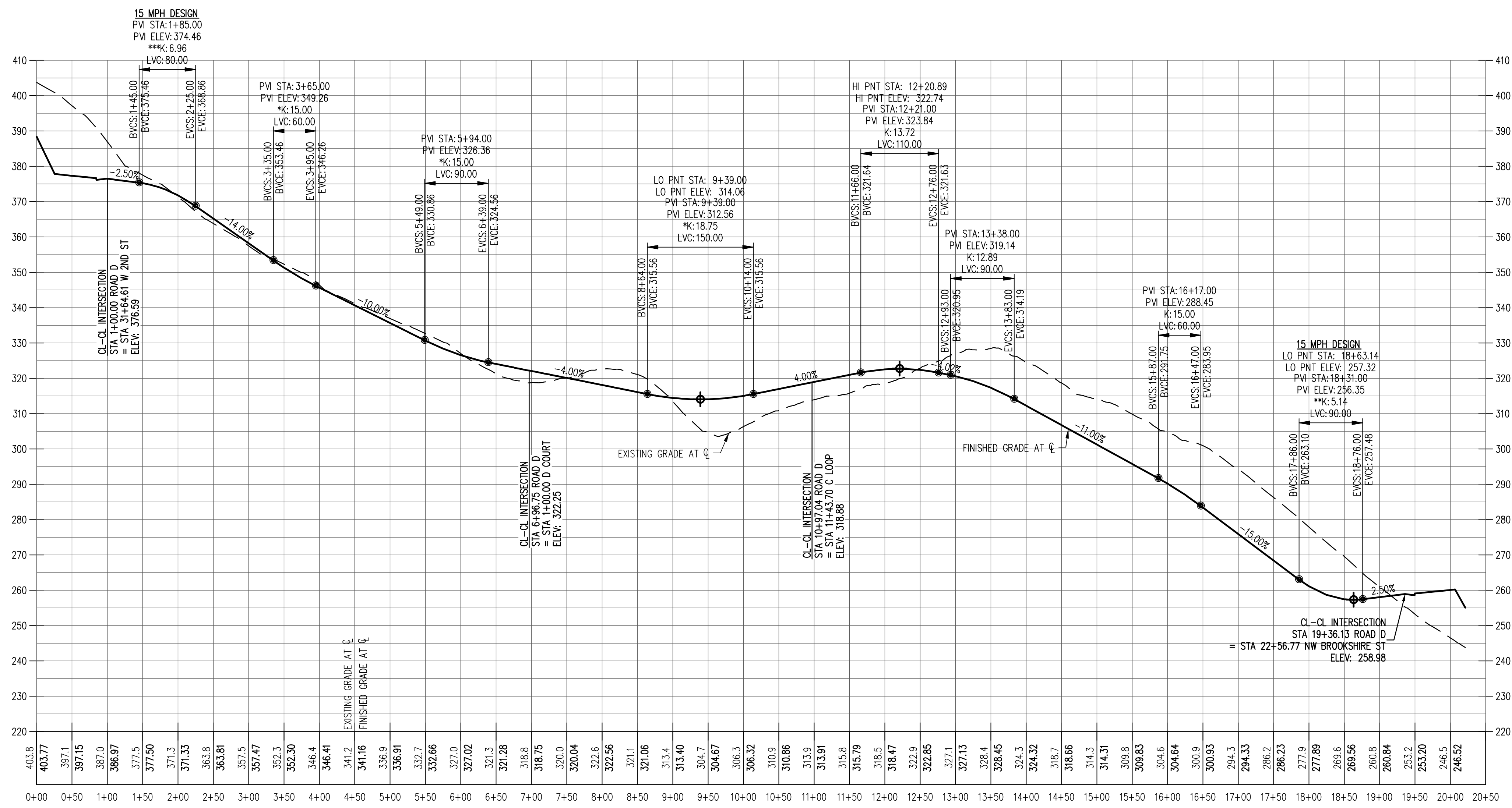
**HILLCREST PLANNED  
 DEVELOPMENT  
 MASTER PLAN UPDATE**

OREGON  
 YAMHILL COUNTY TAX MAP 4 5 24  
**McMINNVILLE**  
 TAX LOT 801

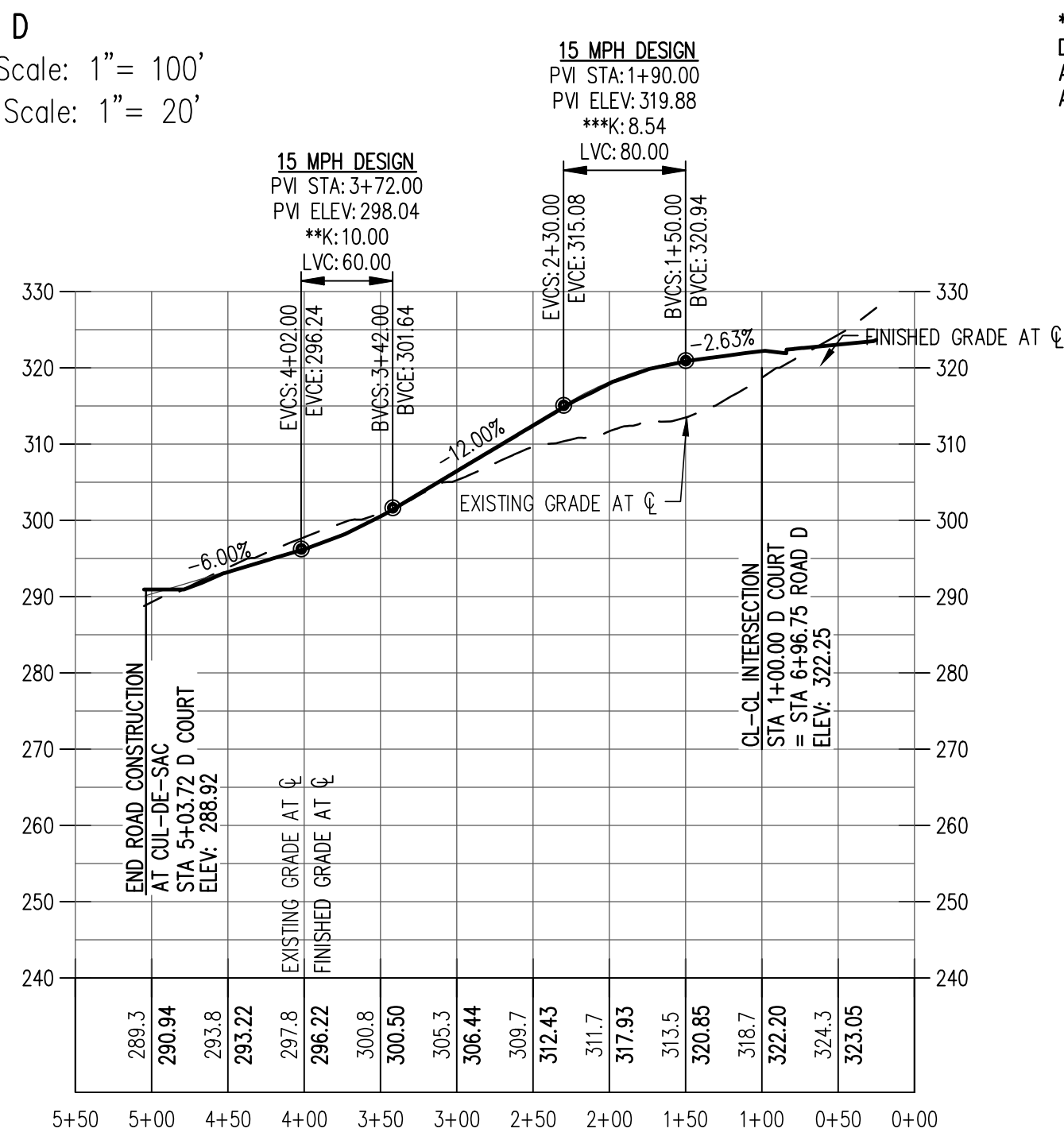
**PRELIMINARY STREET  
 PROFILES**

DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 03/29/2017  
  
 RENEWAL DATE: 6/30/18  
 REVISIONS:

JOB NUMBER  
**5147**  
 SHEET  
**SP-03**



**ROAD D**  
 Hor. Scale: 1" = 100'  
 Vert. Scale: 1" = 20'



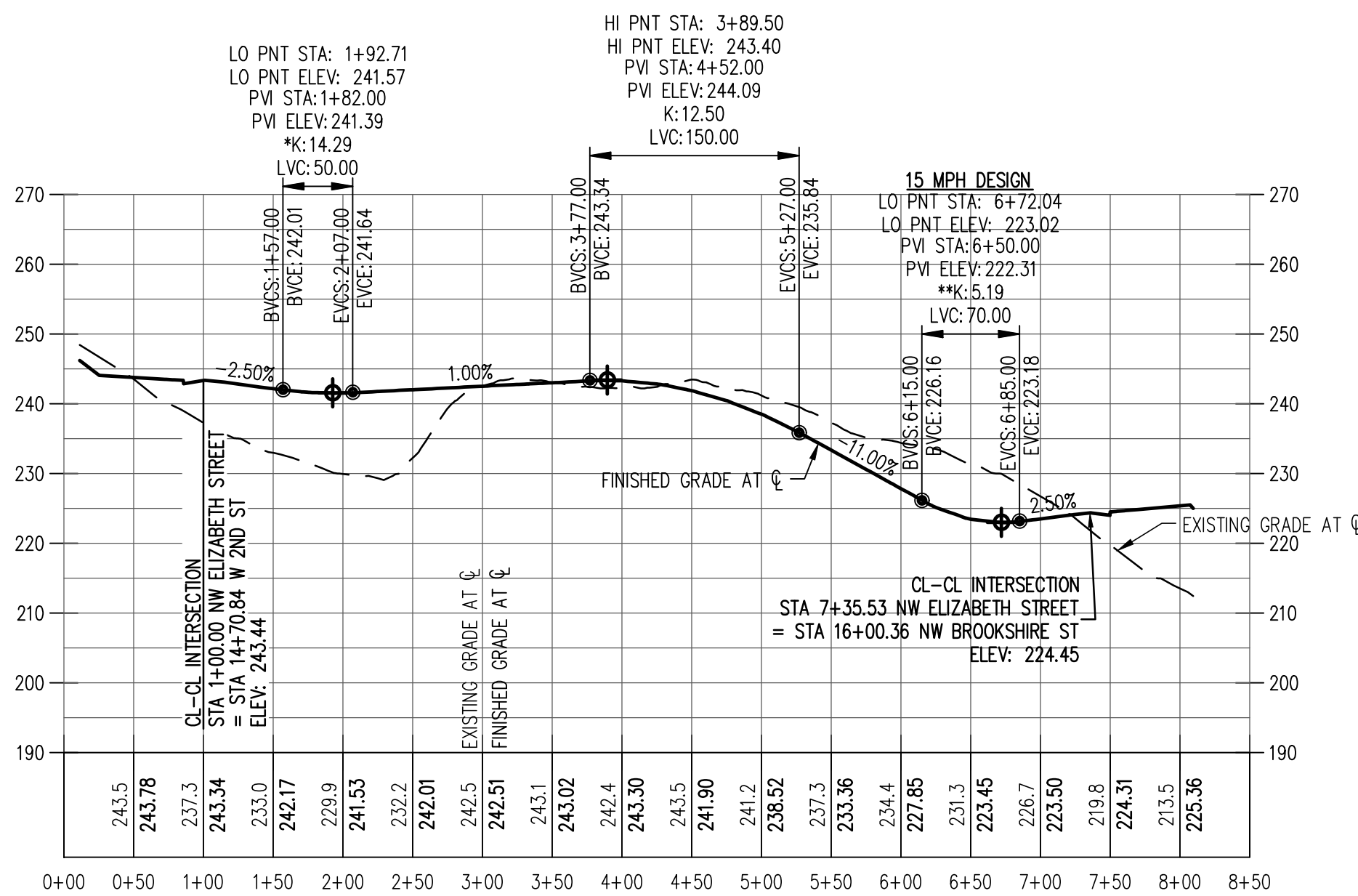
**D COURT**  
 STA 0+00.00 - STA 5+50.00  
 Hor. Scale: 1" = 100'  
 Vert. Scale: 1" = 20'

\*\*SAG VERTICAL CURVE MEETS 25 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS

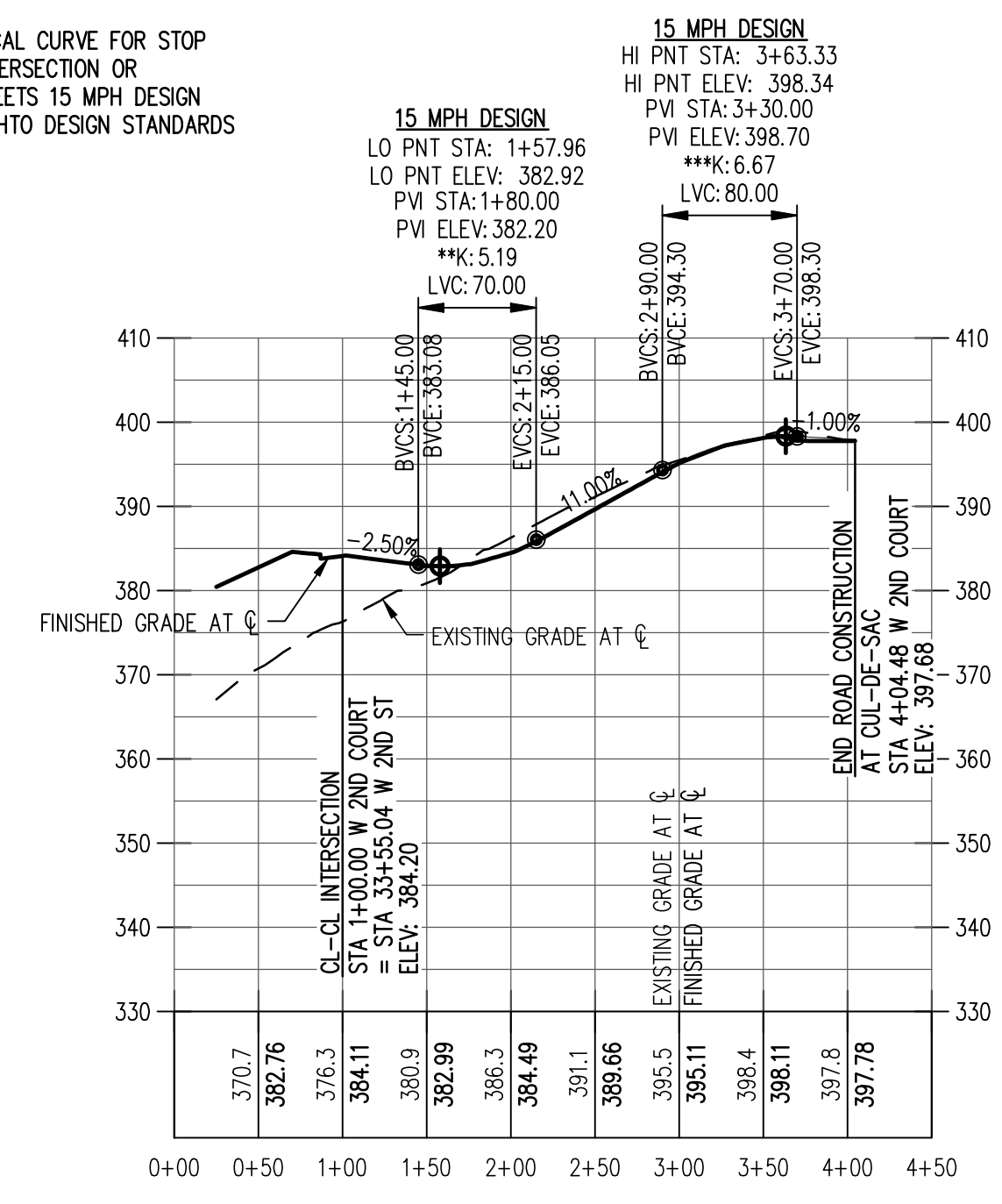
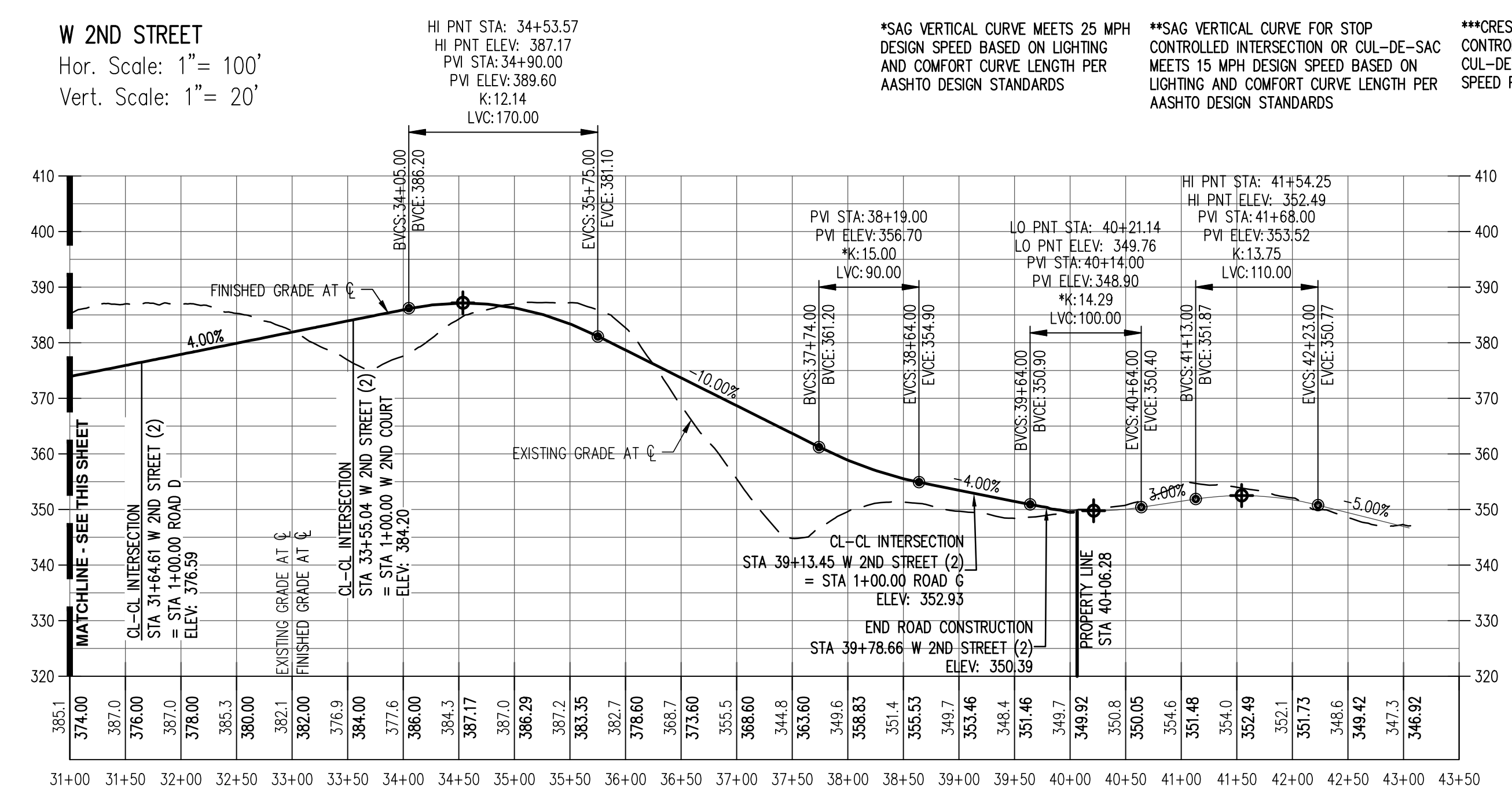
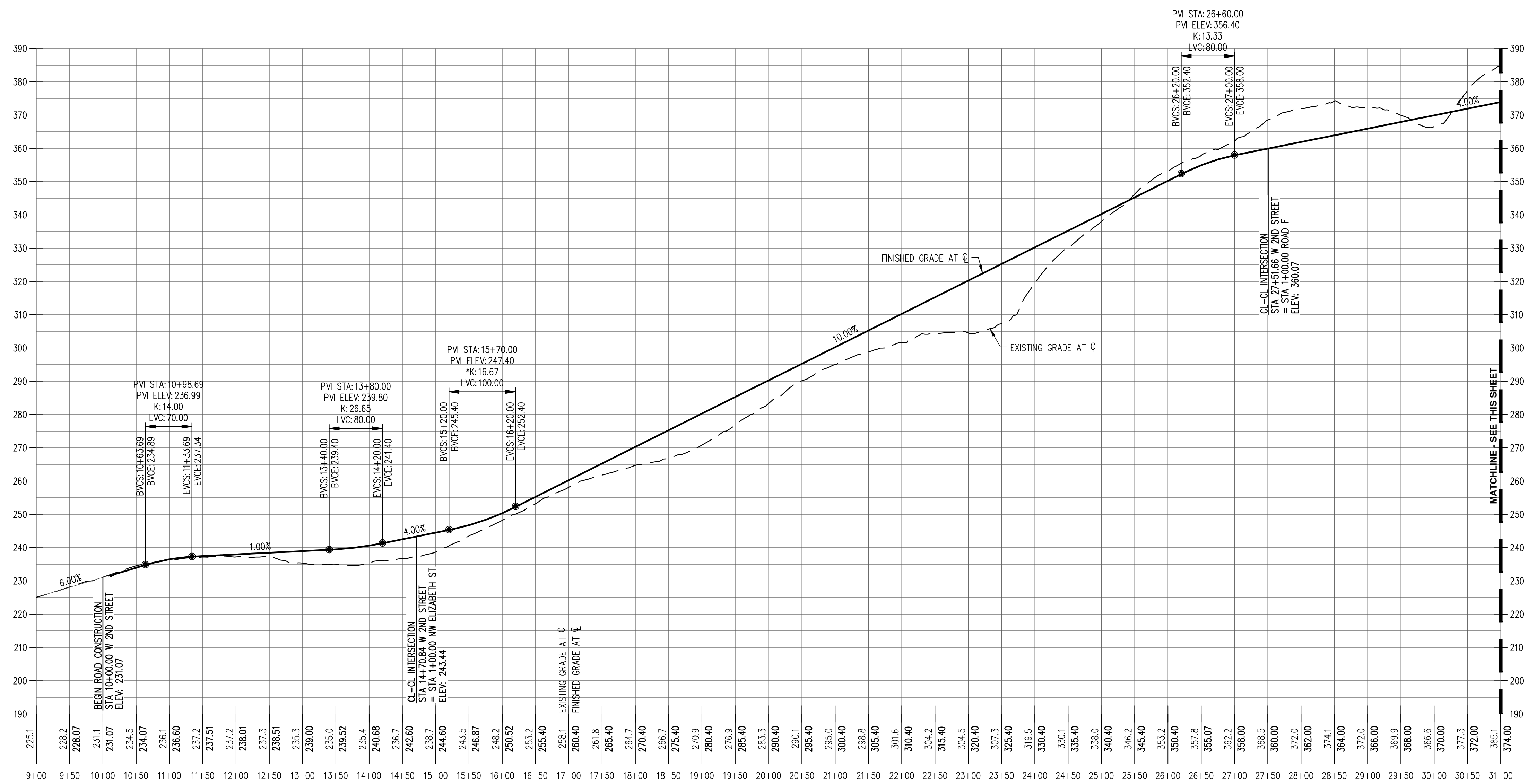
\*\*SAG VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS

\*\*SAG VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS

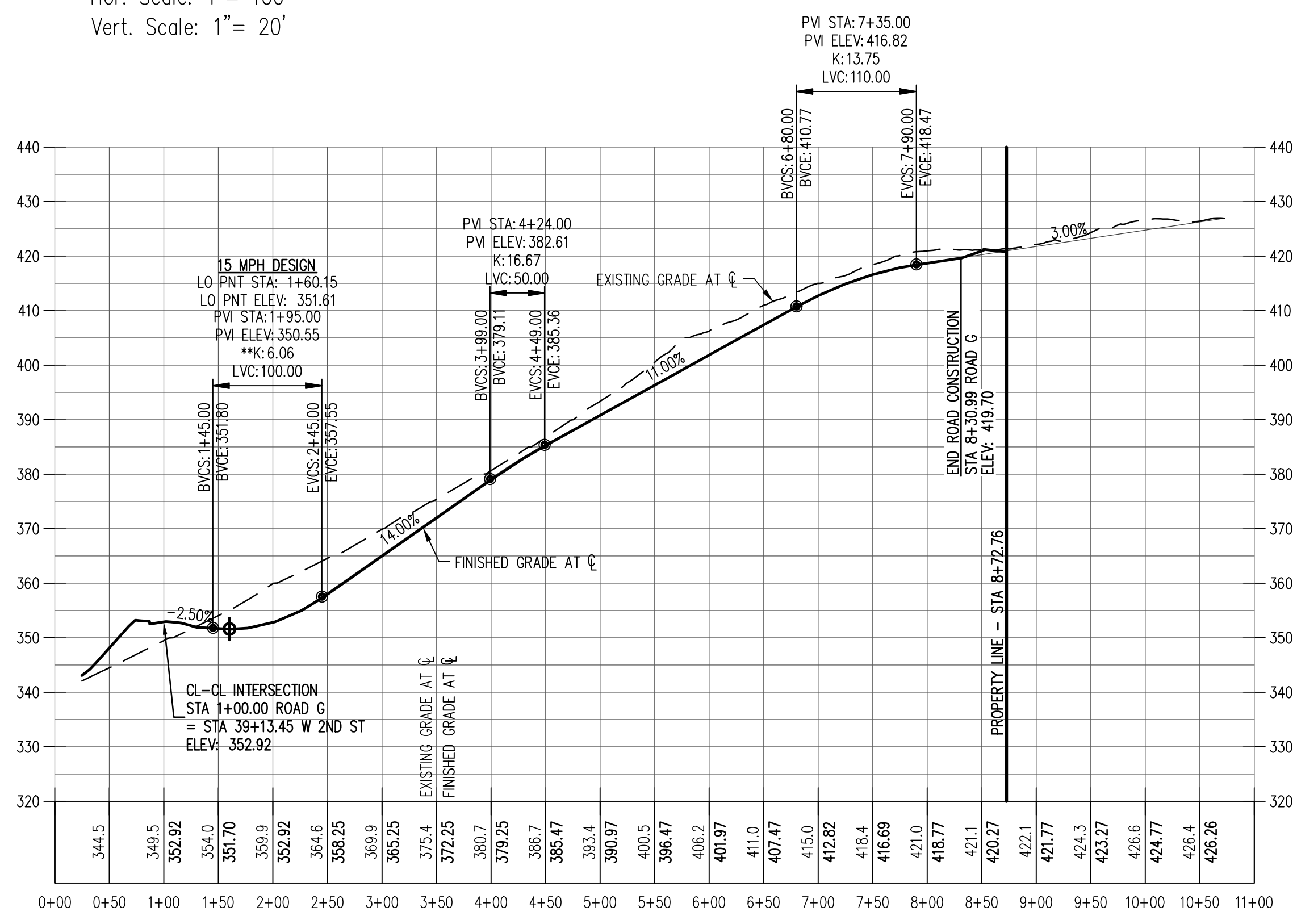
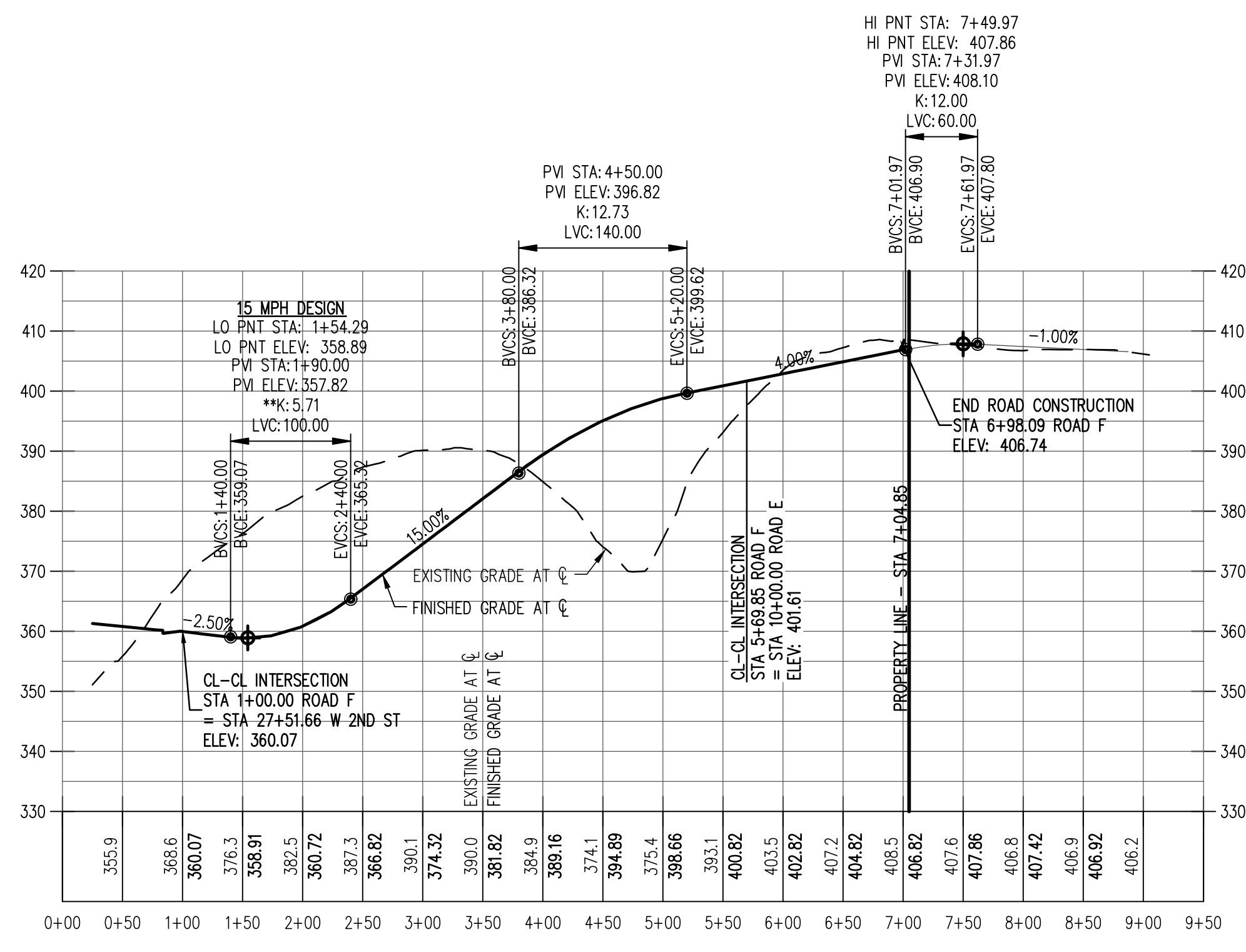
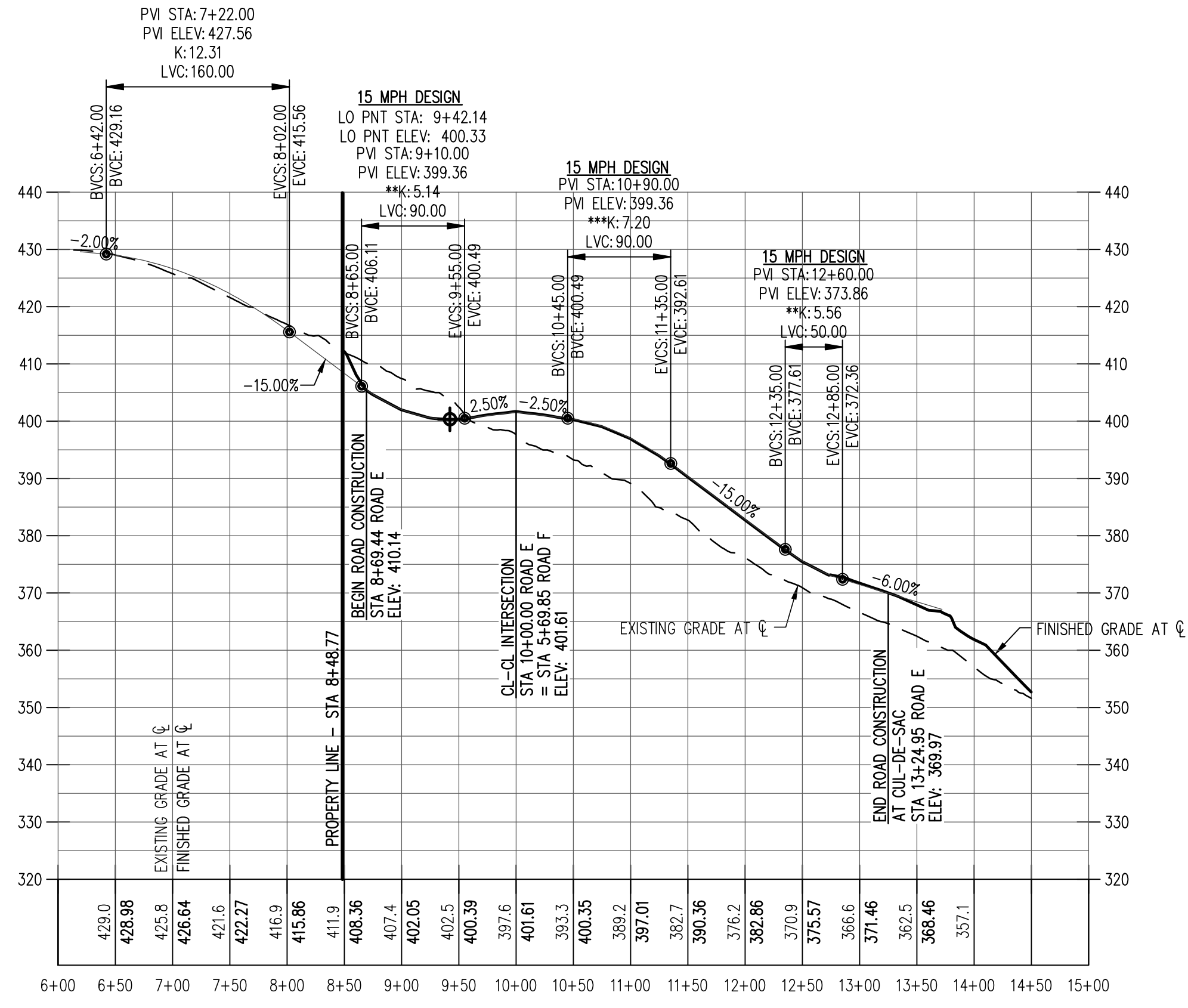
\*\*\*CREST VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED PER AASHTO DESIGN STANDARDS



**NW ELIZABETH STREET**  
 Hor. Scale: 1" = 100'  
 Vert. Scale: 1" = 20'



AKS DRAWING FILE: 5147 STREET PROFILES.DWG | LAYOUT: SP-04



\*SAG VERTICAL CURVE MEETS 25 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
 \*\*SAG VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED BASED ON LIGHTING AND COMFORT CURVE LENGTH PER AASHTO DESIGN STANDARDS  
 \*\*\*CREST VERTICAL CURVE FOR STOP CONTROLLED INTERSECTION OR CUL-DE-SAC MEETS 15 MPH DESIGN SPEED PER AASHTO DESIGN STANDARDS

NOTICE

Planning Commission

NOTICE IS HEREBY GIVEN that the McMinnville Planning Commission will hold a public hearing on the 18<sup>th</sup> day of May, 2017, at the hour of 6:30 p.m. in the McMinnville Civic Hall Building at 200 NE Second Street in the City of McMinnville, Oregon, relating to the following matter:

**MODIFICATION OF AN EXISTING PLANNED DEVELOPMENT –  
WEST HILLS PROPERTIES, LLC**

DOCKET NUMBER: ZC 6-17

West Hills Properties, LLC, is requesting approval to amend Planned Development Ordinance No. 4868 to allow exceptions to current street grade, block length, block circumference and lot depth to width standards. Also requested is approval to amend an approved residential subdivision and phasing plan on approximately 132 acres of land. The subject site is located north of West Second Street, west of NW Mt. Mazama Street and south of NW Fox Ridge Road and is more specifically described as Tax Lot 801, Section 24, T. 4 S., R. 5 W., W.M.

**AMENDMENTS TO THE McMINNVILLE ZONING ORDINANCE**

DOCKET NUMBER: G 2-17

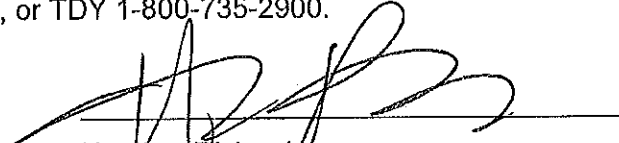
The City of McMinnville is proposing to amend Chapter 17.53 (Land Division Standards) of the McMinnville Zoning Ordinance to update provisions to allow local street grades up to and including fifteen (15) percent.

Persons are hereby invited to attend the McMinnville Planning Commission hearing to observe the proceedings, to register any statements in person, by attorney, or by mail to assist the McMinnville Planning Commission in making a decision.

The decision-making criteria, application, and records concerning this matter are available in the McMinnville Planning Department office at 231 NE Fifth Street, McMinnville, Oregon, during working hours, and on the City of McMinnville website at [www.mcminnvilleoregon.gov](http://www.mcminnvilleoregon.gov).

For additional information please contact the Planning Department at the above address or by phone at (503) 434-7311.

The meeting site is accessible to handicapped individuals. Assistance with communications (visual, hearing) must be requested 24 hours in advance by contacting the City Manager (503) 434-7405 – 1-800-735-1232 for voice, or TDY 1-800-735-2900.



Heather Richards  
Planning Director

**Publish in the Tuesday, May 9, 2017, News Register**

# PUBLIC HEARING NOTICE



NOTICE IS HEREBY GIVEN that the McMinnville Planning Commission will hold a public hearing on the 18<sup>th</sup> day of May, 2017, at the hour of 6:30 p.m. at the McMinnville Civic Hall Building at 200 NE Second Street in the City of McMinnville, Oregon, to take testimony and evidence on the following matter:

## **MODIFICATION OF AN EXISTING PLANNED DEVELOPMENT – WEST HILLS PROPERTIES, LLC**

### DOCKET NUMBER: ZC 6-17

West Hills Properties, LLC, is requesting approval to amend Planned Development Ordinance No. 4868 to allow exceptions to current street grade, block length, block circumference and lot depth to width standards. Also requested is approval to amend an approved residential subdivision and phasing plan on approximately 132 acres of land. The subject site is located north of West Second Street, west of NW Mt. Mazama Street and south of NW Fox Ridge Road and is more specifically described as Tax Lot 801, Section 24, T. 4 S., R. 5 W., W.M.

The Planning Commission will conduct a hearing and make a decision to recommend approval to the McMinnville City Council or to deny the application. Persons are hereby invited to attend the McMinnville Planning Commission hearing to observe the proceedings, to register any statements in person, by attorney, or by mail to assist the McMinnville Planning Commission and City Council in making a decision.

The Planning Commission's recommendation on the above public hearing item must be based on findings that a specific set of criteria have been or have not been met. Testimony and evidence at the public hearing must be directed toward those criteria, which are generally as follows:

1. The goals and policies of the McMinnville Comprehensive Plan.
2. The requirements of McMinnville Ordinance No. 3380 (the Zoning Ordinance) with particular emphasis on Section 17.03.020 (Purpose), Chapter 17.15 (R-2 Single-Family Residential Zone), Chapter 17.51 (Planned Development Overlay), Chapter 17.53 (Land Division Standards), Chapter 17.72 (Applications and Review Process), and Chapter 17.74 (Review Criteria).

17.74.070 Planned Development Amendment - Review Criteria. An amendment to an existing planned development may be either major or minor. Minor changes to an adopted site plan may be processed by the Planning Director. Major changes to an adopted site plan shall be processed in accordance with Section 17.72.120, and include the following:

- An increase in the amount of land within the subject site;
- An increase in density including the number of housing units;
- A reduction in the amount of open space; or
- Changes to the vehicular system which results in a significant change to the location of streets, shared driveways, parking areas and access.

An amendment to an existing planned development may be authorized, provided that the proposal satisfies all relevant requirements of this ordinance, and also provided that the applicant demonstrates the following:

- A. There are special physical conditions or objectives of a development which the proposal will satisfy to warrant a departure from the standard regulation requirements;
- B. Resulting development will not be inconsistent with the Comprehensive Plan objectives of the area;
- C. The development shall be designed so as to provide for adequate access to and efficient provision of services to adjoining parcels;
- D. The plan can be completed within a reasonable period of time;
- E. The streets are adequate to support the anticipated traffic, and the development will not overload the streets outside the planned area;
- F. Proposed utility and drainage facilities are adequate for the population densities and type of development proposed;

The noise, air, and water pollutants caused by the development do not have an adverse effect upon surrounding areas, public utilities, or the city as a whole.

3. The requirements of McMinnville Planned Development Ordinance No. 4868.

The referenced zoning ordinance criteria is available for review in the Planning Department's portion of the city's website located at: [www.mcminnvilleoregon.gov](http://www.mcminnvilleoregon.gov).

Failure to raise an issue in person or by letter prior to the close of the public hearing with sufficient specificity to provide the Planning Commission opportunity to respond to the issue precludes appeal to the Land Use Board of Appeals (LUBA) on that issue.

The failure of the applicant to raise constitutional or other issues relating to proposed conditions of approval with sufficient specificity to allow this Commission to respond to the issue precludes an action for damages in circuit court.

The decision-making criteria, application, and records concerning this matter are available in the McMinnville Planning Department office at 231 NE 5th Street, McMinnville, Oregon, during working hours, and is available for review in the Planning Department's portion of the city's website located at: [www.mcminnvilleoregon.gov](http://www.mcminnvilleoregon.gov).

For additional information contact Ron Pomeroy, Principal Planner, at the above address, or phone (503) 434-7311.

The meeting site is accessible to handicapped individuals. Assistance with communications (visual, hearing) must be requested 24 hours in advance by contacting the City Manager (503) 434-7405 – 1-800-735-1232 for voice, or TDY 1-800-735-2900.

  
Heather Richards  
Planning Director

(Map of area on back)

ORDINANCE NO. 4868

An Ordinance rezoning certain property from an R-1 (Single-Family Residential) zone to an R-2 PD (Single-Family Residential Planned Development) zone on a parcel of land approximately 164.1 acres in size.

RECITALS

The Planning Commission received an application (ZC 19-06) from KHA Properties, LLC, dated December 14, 2007, for a zone change from an R-1 (Single-Family Residential) zone to an R-2 PD (Single-Family Residential Planned Development) zone on a parcel of land approximately 164.1 acres in size. The property is more specifically described as a Tax Lot 800, Section 24, T. 4 S., R. 5 W., W.M.

A public hearing was held on February 15, 2007 at 6:30 p.m. before the McMinnville Planning Commission after due notice had been given in the local newspaper on February 8, 2007, and written notice had been mailed to property owners within 300 feet of the affected property; and

At said public hearing, testimony was received, the application materials and a staff report were presented; and

The Planning Commission, being fully informed about said request, found that said change conformed to the zone change review criteria listed in Chapter 17.72.035 of Ordinance No. 3380 based on the material submitted by the applicant and findings of fact and the conclusionary findings for approval contained in the staff report, all of which are on file in the Planning Department, and that the zone change is consistent with the Comprehensive Plan; and

The Planning Commission approved said zone change and has recommended said change to the Council; and

On March 8, 2007, an appeal of the Planning Commission's recommendation was filed with the City Planning Department. Consistent with the requirements of the McMinnville Zoning Ordinance, a public hearing was scheduled before the City Council on April 10, 2007 after due notice had been given in the local newspaper, and written notice had been mailed to property owners within 300 feet of the affected property; and

At said public hearing, testimony was received, the application and materials and staff report were presented. Prior to public agency input being received, the hearing was continued by the City Council to its April 24, 2007 hearing where it was concluded and a decision reached; and now, therefore,

THE CITY OF McMINNVILLE ORDAINS AS FOLLOWS:

Section 1. That the Council adopts the findings and conclusions of the Planning Commission, staff report on file in the Planning Department, and the application filed by KHA Properties, LLC.

Section 2. That the property described in Exhibit "A," is hereby rezoned from an R-1 (Single-Family Residential) zone to an R-2 PD (Single-Family Residential Planned Development) zone, subject to the following conditions:

1. That the planned development overlay shall require the following setbacks:
  - A. Development of the multi-family lot and lots within the Northridge subdivision shall be to standard R-4 zone setbacks.
  - B. Lots within the Valley's Edge Phase 2 subdivision shall be to a standard R-3 zone setback.
  - C. All other lots shall meet applicable R-2 zoning setbacks.

The Planning Director is authorized to permit reductions or increases to these setback standards as may be necessary to provide for the retention of trees greater than nine (9) inches in diameter measured at 4.5 feet above grade. In no case, however, may the side yard setback be reduced to less than five feet, or the exterior side yard setback to less than 12 feet, or the distance from the property line to the front opening of a garage be reduced to less than 18 feet without approval of the Planning Commission pursuant to the requirements of Chapter 17.69 (Variance). A request to adjust the setbacks for these lots shall be accompanied by a building plan for the subject site that clearly indicates the location of existing trees. Trees to be retained shall be protected during all phases of home construction.

That existing trees greater than nine inches DBH (diameter at breast height) shall not be removed without prior review and written approval of the Planning Director. In addition, all trees shall be protected during home construction. A plan for such protection must be submitted with the building permit application and must meet with the approval of the Planning Director prior to release of construction or building permits within the subject site. Requests for removal of such trees based upon claims of disease, or hazard should be accompanied by a report from a licensed arborist.

2. That the "Hillcrest" tentative subdivision plan (revised as necessary to comply with the adopted conditions of approval) be placed on file with the Planning Department and that it become a part of the zone and binding on the property owner and developer, and shall in no way be binding on the City.

The developer shall be responsible for requesting approval of the Planning Commission for any major change of the details of the adopted plan. Minor changes to the details of the adopted plan may be approved by the Planning Director. It shall be the Planning Director's decision as to what constitutes a major or minor change. An appeal from a ruling by the Planning Director may be made only to the Commission. Review of the Planning Director's decision by the Planning Commission may be initiated at the request of any one of the Commissioners.

3. That site plans and building elevations for the proposed multi-family units must be submitted to the Planning Director for review and approval prior to the issuance of any building permits for said units. The following criteria shall apply:
  - A. The building layout must be nonlinear in design, even if to meet this goal the number of units has to be reduced.
  - B. The building roof lines and facades must be broken so as to avoid a flat, uniform appearance.

- C. The site shall be heavily landscaped with emphasis on those sides facing a public street. Street-side landscaping shall include berming, and street trees a minimum of two-inch caliper at time of planting. In addition, parking lots shall be broken up by landscaping, and usable open space shall be provided within the development.
  - D. Signage shall be limited to a maximum of two free-standing monument-type signs, each not more than four feet in height and not exceeding 36 square feet in area. The signs, if illuminated, must be indirectly illuminated and non flashing.
  - E. Horizontal lap siding or similar type siding must be used (no T-111 or similar), and architectural composition roofing or a similar or higher grade type of roofing must be applied.
4. Prior to the issuance of the 290<sup>th</sup> building permit for the master planned development, the developer shall complete the installation of left-turn-lane improvements, meeting the City's and Yamhill County's standards, at the intersections of Hill Road / Horizon Drive and Hill Road / West Second Street.
  5. That the minimum lot sizes within the Hillcrest development may be reduced below 7,000 square feet, provided the overall residential density within the subject site (less the parkland and storm detention areas) does not exceed the net density allowed by the R-2 zone (gross density reduced by 25 percent to account for public infrastructure).

Passed by the Council this 24<sup>th</sup> day of April 2007, by the following votes:

Ayes: Hansen, Hill, Menke, Olson, May, Yoder

Nays: \_\_\_\_\_

Approved this 24<sup>th</sup> day of April 2007.



MAYOR

COUNCIL PRESIDENT

Attest:

  
CITY RECORDER

Approved as to form:

  
CITY ATTORNEY



## EXHIBIT "A"

A tract of land in Section 24, Township 4 South, Range 5 West, Yamhill County, Oregon, being part of the John B. Davis Donation Land Claim No. 44 and the William C. Davis Donation Land Claim No. 69, and also being part of the tract of land described in deed from BARRY HOUSE and ROBERTA HOUSE, HOWARD N. ASTER and MARGARAT E.B. ASTER, and RAYMOND C. KAUER and BARBARA M. KAUER to KHA PROEPRTIES, LLC and recorded in Instrument 200322470, Yamhill County Deed and Mortgage Records, and being more particularly described as follows:

Being at a point that is North 36.415 chains from the Southwest corner of said John B. Davis Donation Land Claim; thence South 89°10'43" East 3408.02 feet along the South line of that tract of land described in deed from BARRY HOUSE and ROBERTA HOUSE, HOWARD N. ASTER and MARGARAT E.B. ASTER, and RAYMOND C. KAUER and BARBARA M. KAUER to KHA PROEPRTIES, LLC and recorded in Instrument 200322470, Yamhill County Deed and Mortgage Records; thence North 00°20'28" West 629.86 feet; thence North 01°43'13" East 48.02 feet; thence North 00°39'53" West 52.35 feet; thence North 03°40'44" West 47.94 feet; thence North 06°24'27" West 75.06 feet; thence North 10°54'26" West 75.05 feet; thence North 14°29'26" West 76.51 feet; thence North 17°46'24" West 60.35 feet to the beginning of a non-tangent curve concave to the South having a radius of 1030.21 feet; thence Easterly 255.43 feet along said curve (chord=North 83°08'50" East 254.78 feet); thence South 89°45'00" East 50.70 feet; thence North 00°15'00" East 267.78 feet to the Southwest corner of HILLCREST PHASE 4; thence North 00°15'00" East 532.22 feet along the West line of HILLCREST PHASE 4; thence North 06°52'55" East 291.959 feet along said West line; thence North 20°40'09" East 224.52 feet along said West line; thence North 04°06'34" East 60.55 feet along said West line; thence North 04°35'27" East 108.63 feet along said West line to the Northwest corner of HILLCREST PHASE 4; thence North 89°55'14" East 87.28 feet along the north line of HILLCREST PHASE 4; thence South 04°31'24" West 64.21 feet along said North line; thence North 89°55'14" East 126.21 feet along said North line; thence South 61°40'46" East 52.10 feet along said line; thence North 89°32'11" East 117.10 feet along said line to the West line of HILLCREST PHASE 3; thence North 00°27'49" West 240.00 feet along said West line to the North line of said KHA PROPERTIES, LLC tract; thence North 89°06'31" West 50.3 feet along said North line; thence North 1.50 chains along said north line; thence North 89°30" West 8.71 chains along said line; thence North 00°45' East 6.25 chains along said line; thence South 89°45" West 24.89 chains along said line; thence South 690.73 feet along said line; thence West 28.25 chains along said line to the Northwest corner of said KHA PROPERTIES, LLC tract; thence South 37.985 chains along the West line of said tract to the point of beginning.

EXCEPTING THEREFROM that tract of land described in deed to Yamhill County and recorded August 5, 1926 in Book 94, Page 461, Yamhill County Deed Records.

ALSO EXCEPTING that tract of land described in deed from BARRY HOUSE and ROBERTA HOUSE, and RAYMOND C. KAUER and BARBARA M. KAUER to DONALD and JEAN OLIVER and recorded Film Volume 3096, Page 354, Yamhill County Deed Records.

ALSO EXCEPTING that tract of land described in deed from BARRY HOUSE and ROBERTA HOUSE, and RAYMOND C KAUER and BARBARA M. KAUER to RICHARD and CHARLOTTE BORGEN and recorded in Film Volume 309, Page 433, Yamhill County Deed and Mortgage Records.

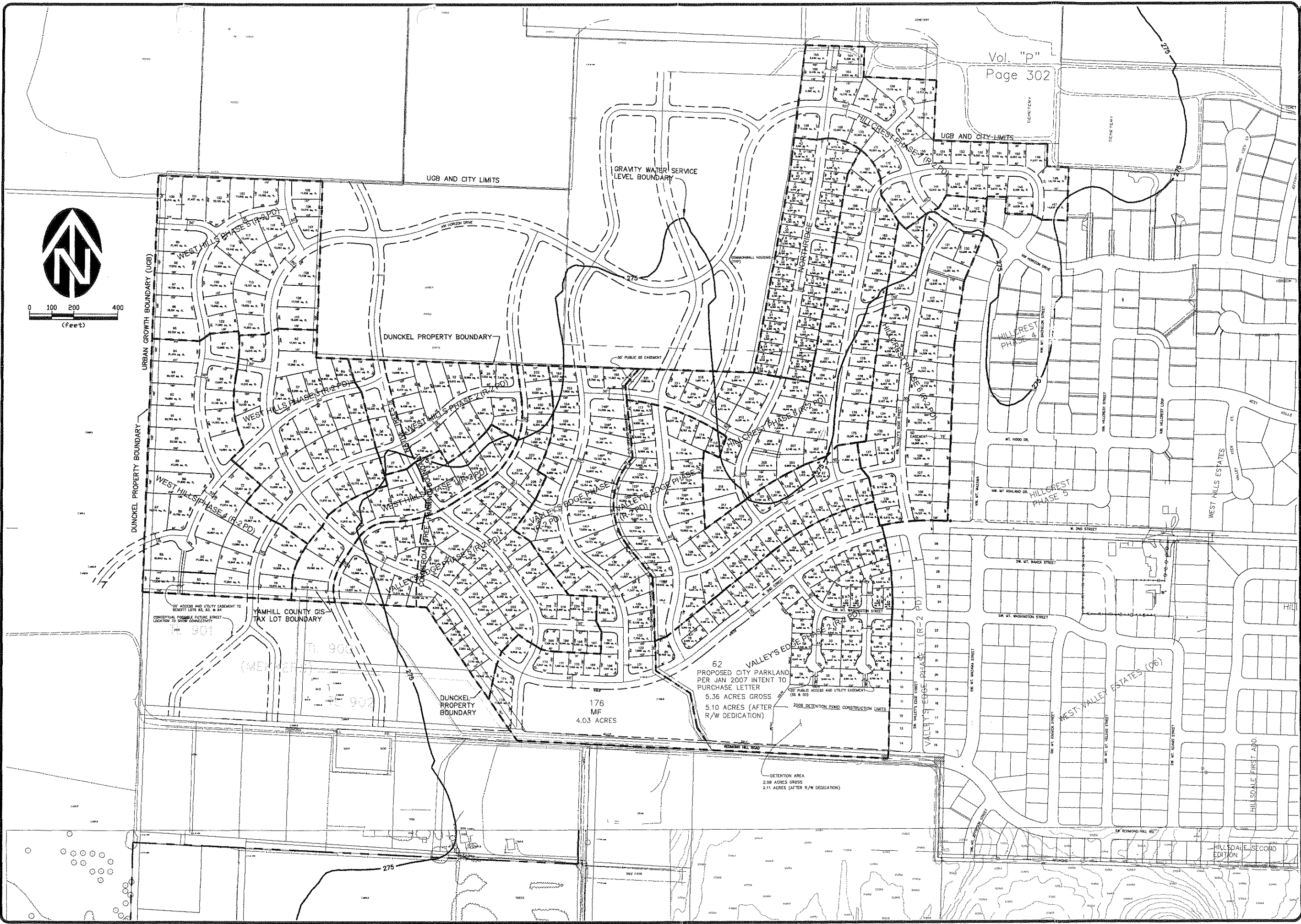
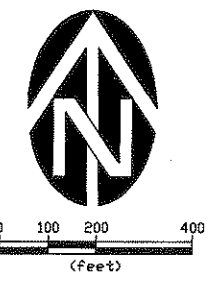
ALSO EXCEPTING that tract of land described in deed to UNION LODGE NO. 43 A.F. and A.M. and recorded November 24, 1906 in Book 46 Page 571, Yamhill County Deed Records.

ALSO EXCEPTING that tract of land described in deed to LINFIELD COLLEGE, trustee of the RAYMOND C KAUER and BARBARA M. KAUER Charitable Remainder Unitrust and BARRY W. HOUSE and ROBERTA M. HOUSE Charitable Remainder Unitrust and recorded December 27, 1995 in Instrument No. 199517375 and Instrument No. 199517376, Yamhill County Deed and Mortgage Records.

ALSO EXCEPTING the following described tract: Beginning at a point that is North 36.415 chains from the Southwest corner of said John B. Davis Donation Land Claim; thence North 20.00 feet to the North line of the county road which is the TRUE POINT OF BEGINNING; thence East along the fence line bordering the county road 1471 feet to an aluminum pipe; thence North 37°19' West 450 feet to an aluminum pipe; thence North 44°27' West 316 feet to an aluminum pipe; thence West parallel with the county road 977.6 feet to a fence line now there, which is the West line of the John B. Davis donation Land Claim; thence South along said fence to the point of beginning.

Revised 1/20/07

Vol. "P"  
Page 302



Jan 26, 2007 - 4:00pm  
R:\Vega\VALLEY\Overall Master Plan\_2004\Civil\Plot\Overall Subdivision Plan-12-01-06.dwg (OVERALL WITHOUT CONTIGUES TAB)

NO.	DATE	DESCRIPTION	BY
1			

VERIFY SCALE  
 1" = 100'  
 0 100 200 300 400  
 IF NOT ONE INCH ON SCALE IS ACCURATE

DSN: DBK  
 DRN: SSM  
 CKD: DBK  
 DATE: OCT 06

WESTTECH ENGINEERING, INC.  
 CONSULTING ENGINEERS AND PLANNERS

3941 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302  
 Phone: (503) 585-2474 Fax: (503) 585-3986  
 E-mail: westtech@westtech-eng.com

KHA PROPERTIES LLC McMinnville, OREGON

**HILLCREST MASTER PLAN  
 OVERALL TENTATIVE PLAN**

SHEET  
 1 of 6  
 JOB NUMBER  
 2257.0000.0





Real-World Geotechnical Solutions  
Investigation • Design • Construction Support

May 10, 2016  
Project No. 16-4142

**West Hills Properties**

Mr. Howard Aster  
PO Box 731  
McMinnville, Oregon 97128  
Phone: (503) 472-0473

**c/o AKS Engineering and Forestry**

Alex Hurley  
12965 SW Herman Rd #100  
Tualatin, Oregon 97062  
Phone: (503) 563-6151

Via email with hard copies mailed upon request: Alex Hurley ([alex@aks-eng.com](mailto:alex@aks-eng.com))

**SUBJECT: PRELIMINARY GEOTECHNICAL ENGINEERING REPORT  
VALLEY'S EDGE PHASE 4 SUBDIVISION  
WEST 2<sup>ND</sup> STREET & NW CANYON CREEK DRIVE  
MCMINNVILLE, OREGON**

This report presents the results of a geotechnical explorations conducted by GeoPacific Engineering, Inc. (GeoPacific) for the above-referenced project. The purpose of our work was to evaluate subsurface conditions at the site and provide preliminary recommendations for site development. The report can be finalized after grading plans are reviewed by GeoPacific. This geotechnical study was performed in accordance with GeoPacific Proposals No. P-5547 and No. P-5621 dated January 8, 2016 and April 28, 2016, respectively, and your subsequent authorization of our proposals and *General Conditions for Geotechnical Services*.

**SITE DESCRIPTION AND PROPOSED DEVELOPMENT**

The subject site is located on the north side of West 2<sup>nd</sup> Street in the City of McMinnville, Yamhill County, Oregon as shown on the attached Vicinity Map (Figure 1). The site is roughly rectangular in shape, as shown on the attached Site Plan (Figure 2). Topography generally slopes down to the west, southwest, south, and southeast from the central and northern portions of the site at an average grade of approximately 15 to 20 percent. Steeper slopes exist in the western portion of the site, with topography sloping down to the west at grades of up to 50 percent. Vegetation on the site consists primarily of grasses and sparse brush.

We understand that a landslide occurred on the subject site during grading and retaining wall construction on adjacent lots to the southwest of the site. The slide is approximately 100 feet wide and temporary measures, such as shallow swales to divert surface runoff and a sump drain, have been installed on the subject site. Also, between March 17, 2016 and May 3, 2016

a trench appears to have been excavated along the southern property boundary for the width of the landslide. A drain may have been installed at this location. The sump was installed in the approximate middle of the landslide mass and appears to have been installed to a depth of 10 feet.

It is our understanding that the proposed development consists of a 45 lot subdivision with grading to support new single family residences, approximately 1,900 feet of new public streets, and associated underground utilities. Grading plans have not yet been provided for our review.

## **SITE GEOLOGY**

Regionally, the subject site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. A series of discontinuous faults subdivide the Willamette Valley into a mosaic of fault-bounded, structural blocks (Yeats et al., 1996). Uplifted structural blocks form bedrock highlands, while down-warped structural blocks form sedimentary basins. Valley-fill sediment in the adjacent basin achieves a maximum thickness of 1,500 feet and overlies Miocene Columbia River Basalt at depth (Madin, 1990; Yeats et al., 1996).

Available geologic mapping indicates that the site is underlain by the Eocene age (33.9-55.8 million years ago) Nestucca Formation (Baldwin et al, 1955). The Nestucca Formation contains marina strata, consisting of siltstone and sandstone, as well as volcanic flows and tuffs.

## **REGIONAL SEISMIC SETTING**

At least three major fault zones capable of generating damaging earthquakes are thought to exist in the vicinity of the subject site. These include the Portland Hills Fault Zone, the Gales Creek-Newberg-Mt. Angel Structural Zone, and the Cascadia Subduction Zone.

### **Portland Hills Fault Zone**

The Portland Hills Fault Zone is a series of NW-trending faults that include the central Portland Hills Fault, the western Oatfield Fault, and the eastern East Bank Fault. These faults occur in a northwest-trending zone that varies in width between 3.5 and 5.0 miles. The combined three faults vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years) sediment (Madin, 1990). The Portland Hills Fault occurs along the Willamette River at the base of the Portland Hills, and is about 30 miles northeast of the site. The Oatfield Fault occurs along the western side of the Portland Hills, and is about 32.4 miles northeast of the site. The Oatfield Fault is considered to be potentially seismogenic (Wong, et al., 2000). Mabey et al., (1996) indicate the Portland Hills Fault Zone has experienced Late Quaternary (last 780,000 years) fault movement; however, movement has not been detected in the last 20,000 years. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000). No historical seismicity is correlated with the mapped portion of the Portland Hills Fault Zone, but in 1991 a M3.5 earthquake occurred on a NW-trending shear plane located 1.3 miles east of the fault (Yelin, 1992). Although there is no definitive evidence of recent activity, the Portland Hills Fault Zone is assumed to be potentially active (Geomatrix Consultants, 1995).

### **Gales Creek-Newberg-Mt. Angel Structural Zone**

The Gales Creek-Newberg-Mt. Angel Structural Zone is a 50-mile-long zone of discontinuous, NW-trending faults that lies about 12.2 miles northeast of the subject site. These faults are recognized in the subsurface by vertical separation of the Columbia River Basalt and offset seismic reflectors in the overlying basin sediment (Yeats et al., 1996; Werner et al., 1992). A geologic reconnaissance and photogeologic analysis study conducted for the Scoggins Dam site in the Tualatin Basin revealed no evidence of deformed geomorphic surfaces along the structural zone (Unruh et al., 1994). No seismicity has been recorded on the Gales Creek Fault or Newberg Fault (the fault closest to the subject site); however, these faults are considered to be potentially active because they may connect with the seismically active Mount Angel Fault and the rupture plane of the 1993 M5.6 Scotts Mills earthquake (Werner et al. 1992; Geomatrix Consultants, 1995).

### **Cascadia Subduction Zone**

The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year (Goldfinger et al., 1996). A growing body of geologic evidence suggests that prehistoric subduction zone earthquakes have occurred (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). This evidence includes: (1) buried tidal marshes recording episodic, sudden subsidence along the coast of northern California, Oregon, and Washington, (2) burial of subsided tidal marshes by tsunami wave deposits, (3) paleoliquefaction features, and (4) geodetic uplift patterns on the Oregon coast. Radiocarbon dates on buried tidal marshes indicate a recurrence interval for major subduction zone earthquakes of 250 to 650 years with the last event occurring 300 years ago (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). The inferred seismogenic portion of the plate interface lies roughly along the Oregon coast at depths of between 20 and 40 miles.

## **SUBSURFACE CONDITIONS**

Our initial site-specific exploration was conducted on March 17, 2016. As part of our initial exploration, 15 exploratory test pits were excavated with a trackhoe to depths ranging from 2.5 to 12.5 feet. We returned to the site on May 3, 2016 to perform further exploration of the site. As part of our further study of the site, 9 additional exploratory test pits were excavated to depths ranging from 6.5 to 12 feet and one soil boring was drilled to a depth of 21.5 feet.

Approximate locations of our explorations are shown on Figure 2. It should be noted that exploration locations were located in the field by pacing distances from apparent property corners and other site features shown on the plans provided. As such, the locations of the explorations should be considered approximate.

The borehole was drilled using a portable drill rig and solid stem auger methods. At the boring location, SPT (Standard Penetration Test) sampling was performed in general accordance with ASTM D1586 using a 2-inch outside diameter split-spoon sampler and a 140-pound hammer equipped with a rope and cathead mechanism. During the test, a sample is obtained by driving the sampler 18 inches into the soil with the hammer free-falling 30 inches. The number of blows for each 6 inches of penetration is recorded. The Standard Penetration Resistance ("N-value") of the soil is calculated as the number of blows required for the final 12 inches of penetration. If 50 or more blows are recorded within a single 6-inch interval, the test is terminated, and the

blow count is recorded as 50 blows for the number of inches driven. This resistance, or N-value, provides a measure of the relative density of granular soils and the relative consistency of cohesive soils. At the completion of the boring, the hole was backfilled with bentonite.

A GeoPacific geotechnical engineer continuously monitored the field exploration program and logged the test pits and the boring. Soils observed in the explorations were classified in general accordance with the Unified Soil Classification System. Rock hardness was classified in accordance with Table 1, modified from the ODOT Rock Hardness Classification Chart. During exploration, our engineer also noted geotechnical conditions such as soil consistency, moisture and groundwater conditions. Logs of our explorations are attached to this report. The following report sections are based on the exploration program and summarize subsurface conditions encountered at the site.

**Table 1 - Rock Hardness Classification Chart**

<b>ODOT Rock Hardness Rating</b>	<b>Field Criteria</b>	<b>Unconfined Compressive Strength</b>	<b>Typical Equipment Needed For Excavation</b>
Extremely Soft (R0)	Indented by thumbnail	<100 psi	Small excavator
Very Soft (R1)	Scratched by thumbnail, crumbled by rock hammer	100-1,000 psi	Small excavator
Soft (R2)	Not scratched by thumbnail, indented by rock hammer	1,000-4,000 psi	Medium excavator (slow digging with small excavator)
Medium Hard (R3)	Scratched or fractured by rock hammer	4,000-8,000 psi	Medium to large excavator (slow to very slow digging), typically requires chipping with hydraulic hammer or mass excavation)
Hard (R4)	Scratched or fractured w/ difficulty	8,000-16,000 psi	Slow chipping with hydraulic hammer and/or blasting
Very Hard (R5)	Not scratched or fractured after many blows, hammer rebounds	>16,000 psi	Blasting

**Topsoil Horizon:** Directly underlying the ground surface in all test pits except for TP-9 and TP-11 through TP-14, we observed highly organic SILT (ML-OL) to silty CLAY (CL-OL) with fine roots. The thickness of the topsoil layer ranged from 8 to 14 inches, as summarize on Table 2 below. The topsoil horizon was generally very soft to soft.

**Till Zone:** Underlying the topsoil horizon in test pits TP-1, TP-3 through 8, TP-15, TP-21, , TP-22, TP-23, and TP-24 we observed a layer of disturbed native soil. This layer was generally soft and likely resulted from previous agricultural operations on the site. Therefore, it is referred to as the till zone for the purposes of this report. The till zone generally consisted of low to moderately organic silty CLAY (CL) with some fine roots.

Laboratory testing on representative samples within this layer indicate that it contains 7.5 percent organic material. The total depth of the till zone, measured from the ground surface



ranges from 18 to 36 inches, where encountered. The total depths of the till zone layer are summarized on Table 2.

**Table 2 - Thicknesses of Topsoil Horizon and Till Zone in Test Pit Explorations**

<b>Test Pit Designation</b>	<b>Topsoil Thickness (in)</b>	<b>Total Depth of Topsoil and Till Zone (in)</b>
TP-1	8	18
TP-2	12	N/A (erosional deposit)
TP-3	12	36
TP-4	10	18
TP-5	10	18
TP-6	8	22
TP-7	12	24
TP-8	10	24
TP-10	14	N/A
TP-15	10	24
TP-16	12	N/A
TP-17	10	N/A
TP-18	8	N/A
TP-19	10	N/A
TP-20	10	N/A
TP-21	10	24
TP-22	10	20
TP-23	8	16
TP-24	10	24

**Erosional Deposits:** Underlying the topsoil layer in test pit TP-2 we observed very soft, highly organic silty CLAY (CL-OL). It is likely that this material was deposited in the low-lying area in the northeast portion of the site by erosion. We attempted to dig a test pit in this material, but had to terminate the test pit at a depth of 5 feet due to extensive caving. Erosional deposits extended beyond the maximum depth of exploration in test pit TP-2 (5 feet).

**Undocumented Fill:** Directly underlying the ground surface in test pits TP-9 and TP-11 through TP-13, and underlying the topsoil layer in test pit TP-10, we observed undocumented fill material. In test pit TP-9 the undocumented fill material generally consisted of loose GRAVEL, COBBLES, and BOULDERS in a silt matrix. The consistency of the undocumented fill material in test pits TP-10 through TP-13 was highly variable, ranging from SILT (ML) to silty GRAVEL (GM) with differing amounts of organic debris and construction debris. The depths of undocumented fill material encountered in test pits TP-9 and TP-11 through TP-14 are summarized on Table 3.

**Buried Topsoil:** Underlying the undocumented fill material in test pits TP-10, TP-11, and TP-12, we observed a layer of buried topsoil. The buried topsoil consisted of soft to medium stiff, low to moderately organic clayey SILT (ML-OL) to silty CLAY (CL-OL) with varying amounts of organic material. In test pits TP-11 and TP-12 the layer of buried topsoil contained partially decomposed roots up to 3 inches in diameter. The total depths of buried topsoil are summarized on Table 3.

**Table 3 - Depth of Undocumented Fill and Buried Topsoil in Test Pit Explorations**

Test Pit Designation	Depth of Undocumented Fill (ft)	Total Depth of Undocumented Fill and Buried Topsoil (ft)
TP-9	10	N/A
TP-10	5.5	7.5
TP-11	4	5.5
TP-12	3	4
TP-13	1.7	N/A

**Landslide Mass:** Test pit TP-6 and boring B-1 were located in the apparent central portion of the landslide. Directly underlying the till zone in test pit TP-6, we observed silty CLAY (CL) with some fragments of siltstone which is labeled as landslide mass for the purposes of this report. The upper portion of this material was generally stiff to very stiff, but graded to medium stiff below 9.5 feet. We observed that the landslide mass soils from 11 to 11.5 feet had a disturbed texture. We also observed rapid groundwater seepage at depths of 11 to 11.5 feet, which appeared to occur at the same plane in all sides of the test pit. Below 11.5 feet, soils became very stiff which may indicate that the landslide mass is 11.5 feet thick at the location of test pit TP-6.

In boring B-1, we encountered similar soil conditions to test pit TP-6, with the landslide mass generally consisting of silty CLAY (CL) with some fragments of siltstone and a slight disturbed texture. The upper 10 feet of the landslide mass was generally medium stiff to stiff with SPT N-values of N=6 to N=8. However, when driving the sampler at a depth of 10 feet, we observed that it only took 1 blow to drive the first six inches and 2 blows to drive the next six inches. The low blow counts observed from 10 to 11 feet bgs indicate the presence of the slide plane and that the slide mass is approximately 11 feet thick at the location of boring B-1.

**Alluvium:** Underlying the buried topsoil horizon in test pits TP-11 and TP-12, we observed alluvial soil deposits. Alluvium soils generally consisted of soft, gravelly CLAY (CL) to gravelly SILT (ML). The gravel was generally subrounded. Alluvium soils extended to a depth of 9.5 feet in test pits TP-11 and TP-12.

**Colluvium:** Underlying the till zone in test pits TP-1, TP-2 through TP-5, TP-7, TP-8, TP-15, TP-21, and TP-22, underlying the undocumented fill material in test pits TP-9 and TP-13, and underlying the alluvium in test pits TP-11 and TP-12, we observed soils derived from ancient colluvial debris flows of the native Nestucca Formation. The colluvial soils generally consisted of silty CLAY (CL) to highly plastic CLAY (CH) with varying amounts of angular, sand to gravel-size fragments of siltstone. The consistency of the colluvium soils ranged from medium stiff to hard. Colluvium soils extended to depths of 8 feet in test pit TP-4, 2 feet in test pit TP-5, 7 feet in test pit TP-7, 6 feet in test pit TP-8, 11 feet in test pit TP-12, 3 feet in test pit TP-13, 4 feet in test pit TP-21, 9.5 feet in test pit TP-22

Colluvium soils extended beyond the maximum depth of exploration in test pit TP-1, TP-3, TP-9, TP-11, and TP-15. On March 3, 2016 when soils were wetter, caving frequently occurred in the sidewalls of our test pits. On May 3, 2016 when soils were dryer we did not observe significant caving.

Portions of the colluvial soils were observed to display highly plasticity. Highly plastic CLAY (CH) was encountered below a depth of 1.5 feet in test pit TP-1, below a depth of 3 feet in test pit TP-3, from 6 to 8 feet in test pit TP-4, and below a depth of 2.5 to 6 feet in test pit TP-8, from 2 to 4 feet in test pit TP-21, and from 1.5 to 9.5 feet in test pit TP-22.

Laboratory tests indicated that this material has a plasticity index of 70.1 and liquid limit of 104, which indicates a very high plasticity. We subcontracted Northwest Testing, Inc. to perform expansion index testing on this soil. A representative sample taken at a depth of 3 feet in test pit TP-1 exhibited an expansion index of 156, indicating a very high potential for shrinkage and swelling with changes in moisture content. The depths and thicknesses of soil with very high expansion potential are summarized on the following table.

**Table 4 – Summary of Depths of Soil with Very High Expansion Potential**

Test Pit Designation	Depth of Soil with Very High Expansion Potential (ft)
TP-1	>1.5
TP-3	3
TP-4	6 - 8
TP-8	2.5 - 6
TP-21	2 - 4
TP-22	1.5 – 9.5

**Nestucca Formation:** Underlying the colluvium soils in test pits TP-4, TP-5, TP-7, TP-8, TP-12, TP-13, TP-21, and TP-22, the ground surface in test pit TP-14, the buried topsoil horizon in test pits TP-10 and TP-16, TP-17, the till zone in test pits TP-23 and TP-24, and the landslide mass in boring B-1 we observed materials belonging the Nestucca Formation. The Nestucca Formation soils generally consisted of siltstone. In test pit TP-4 we observed that the bedding of the siltstone appeared to be relatively level. In boring B-1 we observed a layer of residual soil consisting of highly plastic CLAY (CH), derived from in-place weathering of the Nestucca Formation.

Basalt belonging to or intruding into the Nestucca Formation was encountered in test pits TP-14, TP-16, TP-17, TP-18, TP-20. Practical refusal was obtained on basalt in test pits TP-14, TP-16, TP-17, and TP-18 at depths of 2.5, 6.5, 7, and 7.5 feet, respectively. In test pit TP-20, we were to excavate through the layer of basalt from 1 to 7.5 feet, and into the underlying siltstone. In test pit TP-20 the basalt layer contained a 2-foot diameter chunk of soft (R2) siltstone, centered at a depth of approximately 2.5 feet.

Residual soil derived from in-place weathering of basalt was encountered in test pits TP-18 and TP-19. The residual soil of basalt generally consisted of silty CLAY (CL) with some gravel and cobble-size basalt clasts and extended to a depth of 2.5 feet in test pit TP-18 and to a depth of 8 feet in test pit TP-19.

Practical refusal was obtained on siltstone in test pits TP-5, TP-8, TP-13, TP-19, TP-20, TP-21, TP-23, and TP-24 at depths of 5 to 6.5, 8, 9, 12, 11, 6.5 to 8.5, 7.5, and 8 feet, respectively. The depths of practical refusal are summarized on the following table.

**Table 5 - Depths of Practical Refusal in Test Pit Explorations**

<b>Test Pit Designation</b>	<b>Depth of Refusal (ft)</b>	<b>Material</b>
TP-5	5-6.5	Siltstone
TP-8	8	Siltstone
TP-13	9	Siltstone
TP-14	2.5	Basalt
TP-16	6.5	Basalt
TP-17	7	Basalt
TP-18	7.5	Basalt
TP-19	12	Siltstone
TP-20	11	Siltstone
TP-21	6.5-8.5	Siltstone
TP-23	7.5	Siltstone
TP-24	8	Siltstone

**Soil Moisture and Groundwater**

On March 17, 2016, we encountered seepage in all test pits except test pits TP-1, TP-8, TP-9, TP-13, and TP-14. In some locations the rate of groundwater seepage was rapid, visually estimated at 10 gallons per minute or more. Groundwater was encountered at a depth of 7 feet in test pit TP-12. On March 17, 2016 we observed that the water level in the sump installed in the central portion of the landslide was approximately 9 feet beneath the ground surface and that a pump installed in the sump was running frequently. We also observed running water on the ground surface along the west and east property boundaries.

On May 3, 2016, we encountered groundwater seepage at a depth of 9.5 feet in test pit TP-22 and at a depth of 8 feet in test pit TP-24. Groundwater seepage encountered in test pits TP-22 and TP-24 was very slow, visually estimated at less than 1 gallon per minute. We did not observe groundwater seepage in boring B-1, but the side of the sampler was wet at a depth of 20 to 21.5 feet and the soil from 10 to 11.5 feet was very moist to wet. Also, on May 3, 2016 we measured groundwater at a depth of 7 feet in the sump installed in the central portion of the landslide and that the pump had been removed from the sump. On May 3, 2016 we did not observe running water on the ground surface along the west and east property boundaries.

Experience has shown that temporary storm related perched groundwater within the near surface soils often occur over fine-grained native deposits such as those beneath the site during the wet season, particularly in clay soils such as were identified in the test pits. It is anticipated that groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors.

**PORTABLE DYNAMIC CONE PENETROMETER TESTING - INTERIOR STREETS**

As part of this study, GeoPacific evaluated the subgrade conditions for the proposed interior public streets. On March 17, 2016 GeoPacific performed field testing of subgrade strength using a portable dynamic cone penetrometer (PDCP) to determine the strength parameters of the soil for support of crushed aggregate surfacing. The PDCP tests were performed at the approximate locations of test pits TP-1, TP-7, and TP-15. Representative California Bearing

Ratio (CBR) values at each test location are summarized on Table 6, for the depth intervals indicated.

**Table 6 - PDCP Field Test Results and Representative CBR Values**

<b>Field Test Designation</b>	<b>Material Tested</b>	<b>Depth Interval of Test (feet)</b>	<b>Representative CBR Value</b>
TP-1	Native Clay	1.6-2.4	4
TP-7	Native Clay	1.5-2.4	3.5
TP-15	Native Clay	1.4-2.5	3.5

The test results indicate moderate subgrade soil conditions for support of traffic loading. A low-end CBR value of 3.5 was used for subgrade soils in our analyses for the proposed interior public streets, discussed in a subsequent report section.

### **PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS**

Based on the results of our geotechnical investigation, there are several significant geotechnical issues for project completion. Although we consider the proposed development to be geotechnically feasible, we anticipate that the overall feasibility of the proposed development will depend on the cost of construction. The most significant geotechnical issues currently known to us are listed below.

- 1) *Existing slopes in the central and northeastern portions of the site are marginally stable*- As evidenced by the recent landslide which occurred on the site by grading on the adjacent site, the existing slopes are marginally stable and may be negatively affected by grading activities on the site. No additional fill material should be placed on existing slopes without remedial measures. In order to improve the stability of existing slopes in the central and northeastern portions of the site, we recommend that the colluvial soils along the downslope portions of the site be removed down to competent native soil and replaced with an engineered fill slope buttress. The fill slope buttress should incorporate a keyway, drainage measures, and cement-treated engineered fill material.
- 2) *Presence of a recently active landslide* - We recommend that the existing landslide mass be completely removed down to competent native soils. This work should only be attempted in a dry weather season. The slide plane was encountered at a depth of 11.5 feet in test pit TP-6 and at a depth of 10 to 11 feet in boring B-1. An engineered fill slope buttress may be constructed at the location of the existing landslide, with a keyway, drainage measures, and cement-treated engineered fill material.
- 3) *Significant depths of undocumented fill material, buried topsoil, erosional deposits, and soft alluvium* – Undocumented fill material, buried topsoil, erosional deposits, and soft alluvium should be completely removed and the excavations backfilled with engineered fill.
- 4) *Presence of expansive soils* - Where highly expansive soils are present within 5 feet of foundation subgrade elevation, the highly expansive soils should be over-excavated to a depth of 5 feet below foundation subgrade or below the highly expansive soils, whichever is shallower. After highly expansive soils have been over-excavated, the lots

should be backfilled to finished grade with compacted structural fill consisting of soils with low expansion potential.

- 5) *Deep till zone* - Due to the organic content of the till zone (7.5 percent), it must be blended with other materials in order to be used as engineered fill.
- 6) *Groundwater seepage and perched groundwater at relatively shallow depths* – On March 17, 2016 groundwater seepage was encountered at relatively shallow depths in test pits TP-2 through TP-7, TP-10 through TP-12, and TP-15. Groundwater was encountered at a depth of 7 feet in test pit TP-12. On May 3, 2016 groundwater seepage was encountered in test pits TP-22 and TP-24.
- 7) *Caving issues for trench excavations* – On March 17, 2016 in colluvium soils the sides of the test pits frequently caved in, indicating that special attention will need to be paid to the stability of trench sidewalls during installation of utilities.
- 8) *Hard rock at relatively shallow depths in portions of the site* – Practical refusal was obtained in several test pits at the depths summarized on Table 5.

The following report sections provide recommendations for site development and construction in accordance with the current applicable codes and local standards of practice. These recommendations are considered preliminary because grading plans have not yet been finalized. The report can be finalized after grading plans are reviewed by GeoPacific. GeoPacific should be consulted to review the proposed grading plans and to provide specific recommendations for the proposed plans prior to construction.

#### **General Slope Stability – Fill Buttress on Downslope Side of the Site**

Based on the results of our geotechnical investigation, the downslope sections of existing slopes in the central and eastern portions of the site are underlain by colluvium. This material is considered marginally stable. No fill material should be placed on existing slopes in the central and northeastern portions of the site without remedial measures.

In order to improve the stability of existing slopes in the central and northeastern portions of the site, we recommend that the colluvial soils along the downslope portions of the site be removed down to competent native soil and replaced with an engineered fill slope buttress. The fill slope buttress should incorporate a keyway, drainage measures, and cement-treated engineered fill material. A typical detail for the engineered fill slope buttress is shown on Figure 3. For preliminary planning purposes, we anticipate that the fill slope buttress will need to be constructed across lots 26 through 34, as shown on the attached Site Plan (Figure 2). The extent of the fill buttress will depend on proposed site grading and may need to extend across Lots 21 through 24 as well.

We recommend that surface runoff be collected and water discharged to a suitable location in a controlled manner. In no case should uncontrolled stormwater runoff be allowed to flow over slopes.

#### **Remediation of Recently Active Landslide**

We understand that a landslide occurred on the subject site during grading and retaining wall construction on adjacent lots to the south of the site. The slide is approximately 100 feet wide

and temporary measures, such as shallow swales to divert surface runoff and a sump, have been installed on the subject site. Between March 17, 2016 and May 3, 2016 it appears that a trench was excavated by others along the southern property boundary for the width of the landslide. A drain may have been installed in this trench. The sump was installed in the approximate middle of the landslide mass and appears to have been installed to a depth of 10 feet. However, on May 3, 2016 the pump had been removed from the sump and water was measured at a depth of 7 feet beneath the ground surface.

Based on the results of our geotechnical investigation, the slide plane of the existing landslide appears to have been encountered at a depth of 11.5 feet in test pit TP-6 and at a depth of 10 to 11 feet in boring B-1.

We recommend that the landslide mass be completely removed down to competent native soils. This work should only be attempted in a the dry weather season. An engineered fill slope buttress, as described in the previous report section, may be constructed at the location of the existing landslide, with a keyway, drainage measures, and cement treated fill material. A preliminary cross section of the engineered fill slope buttress is shown on Figure 3.

### **Site Preparation**

Areas of proposed buildings, streets, and areas to receive fill should be cleared of vegetation and any organic and inorganic debris. Inorganic debris should be removed from the site. Organic materials from clearing should either be removed from the site or placed as landscape fill in areas not planned for structures.

Organic-rich topsoil should then be stripped from construction areas of the site or where engineered fill is to be placed. The estimated average necessary depth of removal in undisturbed areas for moderately to highly organic soils is 11 inches. The topsoil layer ranges in thickness from 8 to 14 inches, as summarized in Table 2. Deeper stripping to remove large tree roots or other organics may be necessary in localized areas. The final depth of soil removal will be determined on the basis of a site inspection after the stripping/excavation has been performed. Stripped topsoil should be stockpiled only in designated areas and stripping operations should be observed and documented by the geotechnical engineer or his representative.

The till zone soils contain too much organic material to be suitable for foundation subgrade or to be reused as engineered fill. As summarized on Table 2, the till zone soils extended to depths of 18 to 36 inches, with an average depth of approximately 23 inches. This material must be blended with other soils to reach an organic content of 5 percent or less in order to be reused as engineered fill. Therefore, till zone soils should either be completely removed from the site, placed as landscape fill in areas not planned for structures, or blended to an appropriate organic content and reused as engineered fill.

Any remaining undocumented fill material, buried topsoil, soft alluvium, erosional deposits, and subsurface structures (tile drains, basements, driveway and landscaping fill, old utility lines, septic leach fields, etc.) should be removed and the excavations backfilled with engineered fill. Depths of undocumented fill material and buried topsoil are summarized on Table 3. Soft alluvium soils were encountered in test pits TP-11 and TP-12. To a depth of 9.5 feet. Erosional deposits extended beyond a depth of 5 feet in test pit TP-2.

Highly plastic, highly expansive clay was encountered in test pits TP-1, TP-3, TP-4, TP-8, TP-12, and TP-22. Expansive soils may also be present in other areas of the site, outside of our explorations. Expansion index testing of clay material from test pit TP-1 indicates the highly plastic clay on the site has a very high potential for expansion and shrinkage. The depths of highly expansive clay are summarized on Table 4.

Where highly expansive soils are present within 5 feet of foundation subgrade elevation, the highly expansive soils should be over-excavated to a depth of 5 feet below foundation subgrade or below the highly expansive soils, whichever is shallower. The highly plastic clay material should also be removed 5 feet horizontally beyond the building envelopes. Other areas of potentially expansive clay may exist on the site outside of our explorations. The proposed on site public streets are comprised of flexible pavements that are not significantly impacted by expansive soils, therefore no soil removal is recommended within the streets.

Other alternatives may be considered for addressing the presence of expansive soils on the site, depending on the final grading plan. Alternatives may include placing at least 5 feet of engineered fill over the layer of expansive soil or treating the potentially expansive soil with cement or chemicals such as CondorSF and recompacting it. Additional measures may include installation of footing perimeter drains, elimination of deep-rooted plants and irrigation systems adjacent to structures, and placement of additional reinforcing steel in footings and floor slabs.

Once stripping/excavation of a particular area is approved, the area must be ripped or tilled to a depth of 12 inches, moisture conditioned, root-picked, and compacted in-place prior to the placement of engineered fill or crushed aggregate base for pavement. Exposed subgrade soils should be evaluated by the geotechnical engineer. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition, over-excavated and replaced with engineered fill (as described below), or stabilized with rock prior to placement of engineered fill. The depth of overexcavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

### **Engineered Fill**

All grading for the proposed development should be performed as engineered grading in accordance with the applicable building code at time of construction with the exceptions and additions noted herein. Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill. Imported fill material must be approved by the geotechnical engineer prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 95% of the maximum dry density determined by Standard Proctor AASHTO T-99 or equivalent. Field density testing should conform to ASTM D2922 and D3017, or D1556. All engineered fill should be observed and tested by the project geotechnical engineer or his representative. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 yd<sup>3</sup>, whichever requires more testing. Because testing is performed on an on-call basis, we



recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency.

Site earthwork will be impacted by soil moisture and shallow groundwater conditions. Earthwork in wet weather would likely require extensive use of cement, lime, or chemical treatment, or other special measures, at considerable additional cost compared to earthwork performed under dry-weather conditions.

### **Excavating Conditions and Utility Trenches**

Subsurface test pit exploration indicates that medium hard basalt and siltstone belonging to the Nestucca Formation exists at relatively shallow depths in portions of the site. Practical refusal was obtained with the small trackhoe used in our geotechnical investigation in many of the test pits. The depths of practical refusal are summarized on Table 5.

We anticipate that native silts and clays can be excavated using conventional heavy equipment such as dozers and trackhoes. Excavating into rock may require blasting or specialized equipment such as rock chippers or trackhoes fitted with rock teeth.

Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions. All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Health Administration (OSHA) regulations (29 CFR Part 1926), or be shored. The existing soils classify as Type B Soil and temporary excavation side slope inclinations as steep as 1H:1V may be assumed for planning purposes. This cut slope inclination is applicable to excavations above the water table only. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions.

Saturated soils and groundwater may be encountered in utility trenches, particularly during the wet season. We anticipate that dewatering systems consisting of ditches, sumps and pumps would be adequate for control of perched groundwater. Regardless of the dewatering system used, it should be installed and operated such that in-place soils are prevented from being removed along with the groundwater.

Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321. We recommend that trench backfill be compacted to at least 95% of the maximum dry density obtained by Standard Proctor ASTM D698 or equivalent. Initial backfill lift thickness for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be

carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

### **Erosion Control Considerations**

During our field exploration program, we did not observe soil types that would be considered highly susceptible to erosion. In our opinion, the primary concern regarding erosion potential will occur during construction, in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw bales and silt fences. If used, these erosion control devices should be in place and remain in place throughout site preparation and construction.

Erosion and sedimentation of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

### **Wet Weather Earthwork**

Soils underlying the site are likely to be moisture sensitive and may be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will probably require expensive measures such as cement treatment or imported granular material to compact fill to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent fines. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and

exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;

- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed and suitable compaction and site drainage is achieved; and
- Straw wattles and/or geotextile silt fences should be strategically located to control erosion.

If cement or lime treatment is used to facilitate wet weather construction, GeoPacific should be contacted to provide additional recommendations and field monitoring.

**New Pavement Sections for Proposed Interior Light-Duty Public Roads**

We understand that approximately 1,900 feet of new light-duty public roads are to be constructed on the site. The proposed new streets within the subdivision will be surfaced with asphalt pavement. We assume the proposed new streets will be subjected to an initial two-way ADT (average daily traffic count) of 250 vehicles per day. Further, we assumed 2 percent of the vehicles will be heavy trucks (FHWA Class 5 or greater). For design purposes, we used an estimated resilient modulus of 5,250 pci for existing subgrade soils. This correlates to a CBR value of about 3.5, which is consistent with our PDCP test results.

Table 7 presents the recommended section thicknesses for the proposed public streets that are to be completed as part of the project, under dry weather construction conditions. In our opinion, this pavement section is suitable to support the anticipated levels of traffic. See attached pavement section calculations for details.

**Table 7 - Recommended Minimum Dry-Weather Pavement Section**

<b>Material Layer</b>	<b>Section Thickness (in)</b>	<b>Compaction Standard</b>
Asphaltic Concrete (AC)	3	91%/ 92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½"-0	8	95% of Modified Proctor AASHTO T-180
Subgrade	12	95% of Standard Proctor AASHTO T-99

The subgrade should be ripped or tilled to a depth of 12 inches (as permitted by existing utilities), moisture conditioned, root-picked, and compacted in-place prior to the placement of crushed aggregate base for pavement. Any pockets of organic debris or loose fill encountered during ripping or tilling should be removed and replaced with engineered fill (see *Site Preparation* Section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving.

If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils

make the site a difficult wet weather construction project. General recommendations for wet weather pavement sections are provided below.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

### **Wet Weather Construction Pavement Section**

This section presents our recommendations for wet weather pavement section and construction, which are for on-site and off-site light duty public streets, and for off-site improvements to SW Taylors Ferry Road to be constructed as part of the project. These wet weather pavement section recommendations are intended for use in situations where it is not feasible to compact the subgrade soils to project requirements, due to wet subgrade soil conditions, and/or construction during wet weather.

Based on our site review, we recommend a wet weather section with a minimum subgrade deepening of 6 inches to accommodate a working subbase of additional 1½"-0 crushed rock. Geotextile fabric, Mirafi 500x or equivalent, should be placed on subgrade soils prior to placement of base rock.

In some instances it may be preferable to use Special Treated Base (STB) in combination with overexcavation and increasing the thickness of the rock section. GeoPacific should be consulted for additional recommendations regarding use of STB in wet weather pavement sections if it is desired to pursue this alternative. Cement treatment of the subgrade may also be considered instead of overexcavation. For planning purposes, we anticipate that treatment of the on site soils would involve mixing cement powder to approximately 6 percent cement content and a mixing depth on the order of 12 inches.

With implementation of the above recommendations, it is our opinion that the resulting pavement section will provide equivalent or greater structural strength than the dry weather pavement section currently planned. However, it should be noted that construction in wet weather is risky and the performance of pavement subgrades depend on a number of factors including the weather conditions, the contractor's methods, and the amount of traffic the road is subjected to. There is a potential that soft spots may develop even with implementation of the wet weather provisions recommended in this letter. If soft spots in the subgrade are identified during roadway excavation, or develop prior to paving, the soft spots should be overexcavated and backfilled with additional crushed rock.

During subgrade excavation, care should be taken to avoid disturbing the subgrade soils. Removals should be performed using an excavator with a smooth-bladed bucket. Truck traffic should be limited until an adequate working surface has been established. We suggest that the crushed rock be spread using bulldozer equipment rather than dump trucks, to reduce the amount of traffic and potential disturbance of subgrade soils.

Care should be taken to avoid overcompaction of the base course materials, which could create pumping, unstable subgrade soil conditions. Heavy and/or vibratory compaction efforts should be applied with caution. Following placement and compaction of the crushed rock to project specifications (95% of Modified Proctor), a finish proof-roll should be performed before paving.

The above recommendations are subject to field verification. GeoPacific should be on-site during construction to verify subgrade strength and to take density tests on the engineered fill, base rock and asphaltic pavement materials.

### **Spread Foundations**

The proposed residential structures may be supported on shallow foundations bearing on competent undisturbed, native soils and/or engineered fill, appropriately designed and constructed as recommended in this report. As previously discussed, expansive soils should be over-excavated to a depth of 5 feet below foundation subgrade or below the highly expansive soils, whichever is shallower. After highly expansive soils have been over-excavated, the lots should be backfilled to finished grade with compacted structural fill.

Foundation design, construction, and setback requirements should conform to the applicable building code at the time of construction. For maximization of bearing strength and protection against frost heave, spread footings should be embedded at a minimum depth of 12 inches below exterior grade.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft<sup>2</sup> for footings bearing on competent, native soil and/or engineered fill. A maximum chimney and column load of 30 kips is preliminarily recommended for the site. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For heavier loads, the geotechnical engineer should be consulted. The coefficient of friction between on-site soil and poured-in-place concrete may be taken as 0.42, which includes no factor of safety. The maximum anticipated total and differential footing movements (generally from soil expansion and/or settlement) are 1 inch and ¾ inch over a span of 20 feet, respectively. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied. Excavations near structural footings should not extend within a 1H:1V plane projected downward from the bottom edge of footings.

Footing excavations should penetrate through topsoil and any loose soil to competent subgrade that is suitable for bearing support. All footing excavations should be trimmed neat, and all loose or softened soil should be removed from the excavation bottom prior to placing reinforcing steel bars. Due to the moisture sensitivity of on-site native soils, foundations constructed during the wet weather season may require overexcavation of footings and backfill with compacted, crushed aggregate.

### **Below-Grade Structural Walls**

Lateral earth pressures against below-grade retaining walls will depend upon the inclination of any adjacent slopes, type of backfill, degree of wall restraint, method of backfill placement, degree of backfill compaction, drainage provisions, and magnitude and location of any adjacent surcharge loads. At-rest soil pressure is exerted on a retaining wall when it is restrained against rotation. In contrast, active soil pressure will be exerted on a wall if its top is allowed to rotate or yield a distance of roughly 0.001 times its height or greater.

If the subject retaining walls will be free to rotate at the top, they should be designed for an active earth pressure equivalent to that generated by a fluid weighing 35 pcf for level backfill against the wall. For restrained walls, an at-reset equivalent fluid pressure of 54 pcf should be used in design, again assuming level backfill against the wall. These values assume that the

recommended drainage provisions are incorporated, hydrostatic pressures are not allowed to develop against the wall, and free draining granular backfill is utilized.

During a seismic event, lateral earth pressures acting on below-grade structural walls will increase by an incremental amount that corresponds to the earthquake loading. Based on the Mononobe-Okabe equation and peak horizontal accelerations appropriate for the site location, seismic loading should be modeled using the active or at-rest earth pressures recommended above, plus an incremental rectangular-shaped seismic load of magnitude  $6.5H$ , where  $H$  is the total height of the wall.

We assume relatively level ground surface below the base of the walls. As such, we recommend passive earth pressure of 320 pcf for use in design, assuming wall footings are cast against competent native soils or engineered fill. If the ground surface slopes down and away from the base of any of the walls, a lower passive earth pressure should be used and GeoPacific should be contacted for additional recommendations.

A coefficient of friction of 0.42 may be assumed along the interface between the base of the wall footing and subgrade soils. The recommended coefficient of friction and passive earth pressure values do not include a safety factor, and an appropriate safety factor should be included in design. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

The above recommendations for lateral earth pressures assume that the backfill behind the subsurface walls will consist of properly compacted structural fill, and no adjacent surcharge loading. If the walls will be subjected to the influence of surcharge loading within a horizontal distance equal to or less than the height of the wall, the walls should be designed for the additional horizontal pressure. For uniform surcharge pressures, a uniformly distributed lateral pressure of 0.3 times the surcharge pressure should be added. Traffic surcharges may be estimated using an additional vertical load of 250 psf (2 feet of additional fill), in accordance with local practice.

The recommended equivalent fluid densities assume a free-draining condition behind the walls so that hydrostatic pressures do not build-up. This can be accomplished by placing a minimum 12- to 18-inch wide zone of crushed drain rock containing less than 5 percent fines against the walls. A 3-inch minimum diameter perforated, plastic drain pipe should be installed at the base of the walls and connected to a sump to remove water from the crushed drain rock zone. The drain pipe should be wrapped in filter fabric (Mirafi 140N or other as approved by the geotechnical engineer) to minimize clogging. The above drainage measures are intended to remove water from behind the wall to prevent hydrostatic pressures from building up. Additional drainage measures may be specified by the project architect or structural engineer, for damp-proofing or other reasons.

GeoPacific should be contacted during construction to verify subgrade strength in wall keyway excavations, to verify that backslope soils are in accordance with our assumptions, and to take density tests on the wall backfill materials.

### **Footing and Roof Drains**

If the proposed structures will have raised floors, and no concrete slab-on-grade floors are used, perimeter footing drains would not be required based on soil conditions encountered at the site and experience with standard local construction practices. Where it is desired to reduce the

potential for moist crawl spaces, footing drains may be installed. If concrete slab-on-grade floors are used, perimeter footing drains should be installed as recommended below.

Where used, perimeter footing drains should consist of 3 or 4-inch diameter, perforated plastic pipe embedded in a minimum of 1 ft<sup>3</sup> per lineal foot of clean, free-draining drain rock. The drain pipe and surrounding drain rock should be wrapped in non-woven geotextile (Mirafi 140N, or approved equivalent) to minimize the potential for clogging and/or ground loss due to piping. Water collected from the footing drains should be directed to the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. The footing drains should include clean-outs to allow periodic maintenance and inspection. In our opinion, footing drains may outlet at the curb, or on the back sides of lots where sufficient fall is not available to allow drainage to the street.

Construction should include typical measures for controlling subsurface water beneath the homes, including positive crawlspace drainage to an adequate low-point drain exiting the foundation, visqueen covering the exposed ground in the crawlspace, and crawlspace ventilation (foundation vents). The homebuyers should be informed and educated that some slow flowing water in the crawlspaces is considered normal and not necessarily detrimental to the home given these other design elements incorporated into its construction. Appropriate design professionals should be consulted regarding crawlspace ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

Down spouts and roof drains should collect roof water in a system separate from the footing drains in order to reduce the potential for clogging. Roof drain water should be directed to an appropriate discharge point well away from structural foundations. Grades should be sloped downward and away from buildings to reduce the potential for ponded water near structures.

### **Seismic Design**

Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2012 International Residential Code (IRC) for One- and Two-Family Dwellings, with applicable Oregon Structural Specialty Code (OSSC) revisions (*current 2014*). We recommend Site Class D be used for design per the OSSC, Table 1613.5.2 and as defined in ASCE 7, Chapter 20, Table 20.3-1. Design values determined for the site using the USGS (United States Geological Survey) 2016 *Seismic Design Maps Summary Report* are summarized in Table 7.

**Table 7 - Recommended Earthquake Ground Motion Parameters (2016 USGS)**

Parameter	Value
Location (Lat, Long), decimal	45.2086, -123.2443
Probabilistic Ground Motion Values, 2% Probability of Exceedance in 50 yrs	
Short Period, $S_s$	1.022 g
1.0 Sec Period, $S_1$	0.486 g
Soil Factors for Site Class D:	
$F_a$	1.091
$F_v$	1.514
Residential Site Value = $2/3 \times F_a \times S_s$	0.744 g
Residential Seismic Design Category	D

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to earthquake shaking. Soil liquefaction is generally limited to loose, granular soils located below the water table. The on-site soils consist predominantly of medium stiff to hard fine-grained soils and hard rock, and are not considered susceptible to liquefaction.

#### UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and their consultants for use in design of this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. The checklist attached to this report outlines recommended geotechnical observations and testing for the project. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, GeoPacific attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, expressed or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.



Valley's Edge Phase 4 Subdivision  
May 10, 2016

We appreciate this opportunity to be of service.

Sincerely,

**GEOPACIFIC ENGINEERING, INC.**



Benjamin G. Anderson, P.E.  
Geotechnical Engineer



EXPIRES: 06/30/2017  
James D. Imbrie, G.E., C.E.G.  
Principal Geotechnical Engineer

- Attachments: References
- Figure 1 - Vicinity Map
  - Figure 2 - Site Plan and Exploration Locations
  - Figure 3 - Engineered Fill Slope Buttress (Preliminary)
  - Photographic Log (8 Pages)
  - Laboratory Test Results (4 Pages)
  - Test Pit Logs (TP-1 through TP-24)
  - Boring Log (B-1)
  - Pavement Design Calculations (3 Pages)

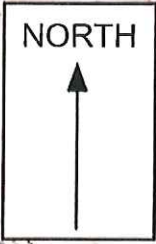
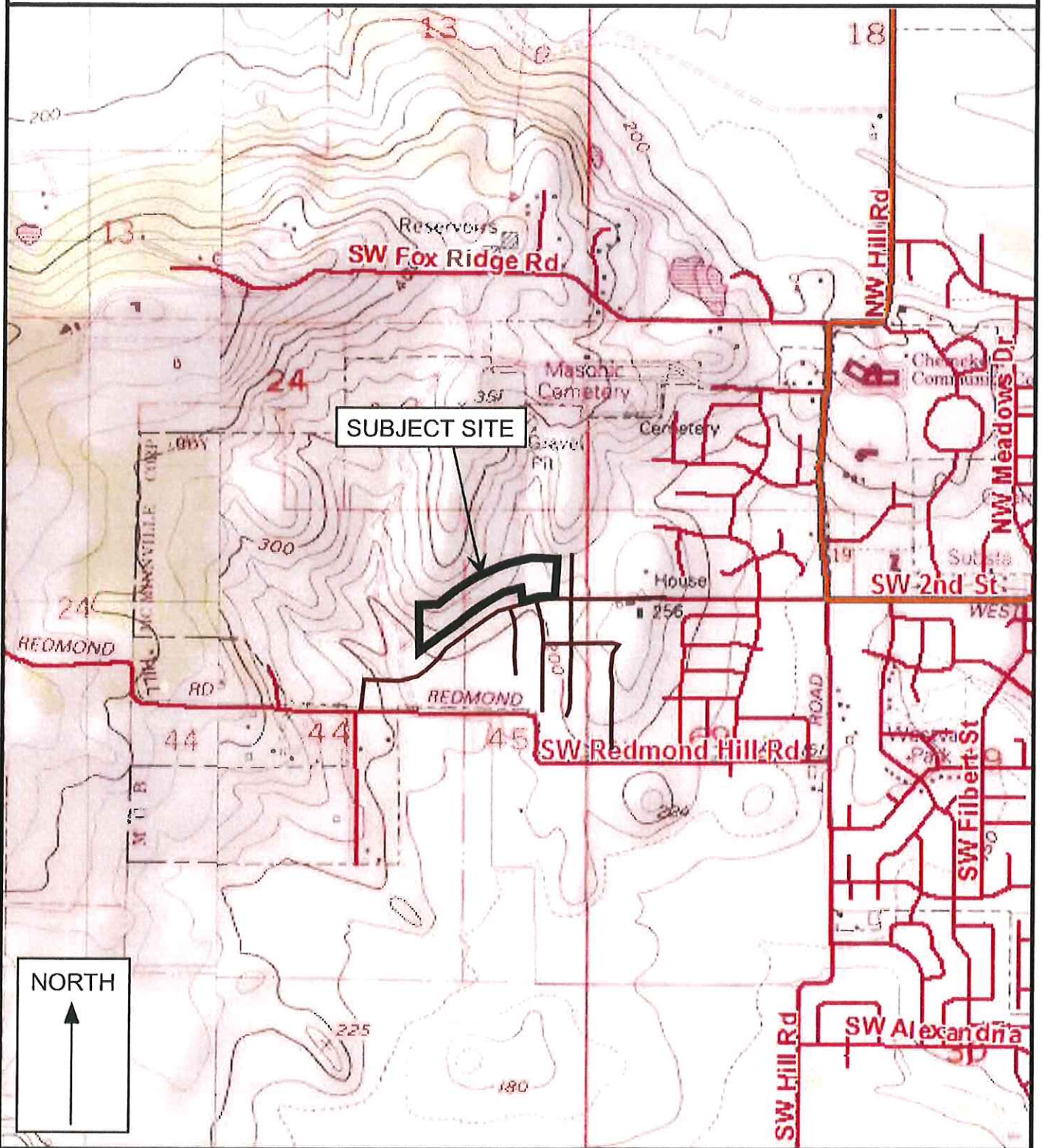
## REFERENCES

- Atwater, B.F., 1992, Geologic evidence for earthquakes during the past 2,000 years along the Copalis River, southern coastal Washington: *Journal of Geophysical Research*, v. 97, p. 1901-1919.
- Baldwin, E.M., Brown, R.D., Jr., Gair, J.E., and Pease, M.H., Jr., 1955, Geology of the Sheridan and McMinnville quadrangles: U.S. Geological Survey, Oil and Gas Investigations Map OM-155, scale 1:62500.
- Carver, G.A., 1992, Late Cenozoic tectonics of coastal northern California: American Association of Petroleum Geologists-SEPM Field Trip Guidebook, May, 1992.
- Geomatrix Consultants, 1995, Seismic Design Mapping, State of Oregon: unpublished report prepared for Oregon Department of Transportation, Personal Services Contract 11688, January 1995.
- Goldfinger, C., Kulm, L.D., Yeats, R.S., Appelgate, B., MacKay, M.E., and Cochrane, G.R., 1996, Active strike-slip faulting and folding of the Cascadia Subduction-Zone plate boundary and forearc in central and northern Oregon: in *Assessing earthquake hazards and reducing risk in the Pacific Northwest*, v. 1: U.S. Geological Survey Professional Paper 1560, P. 223-256.
- Madin, I.P., 1990, Earthquake hazard geology maps of the Portland metropolitan area, Oregon: Oregon Department of Geology and Mineral Industries Open-File Report 0-90-2, scale 1:24,000, 22 p.
- Peterson, C.D., Darioenzo, M.E., Burns, S.F., and Burris, W.K., 1993, Field trip guide to Cascadia paleoseismic evidence along the northern California coast: evidence of subduction zone seismicity in the central Cascadia margin: *Oregon Geology*, v. 55, p. 99-144.
- Unruh, J.R., Wong, I.G., Bott, J.D., Silva, W.J., and Lettis, W.R., 1994, Seismotectonic evaluation: Scoggins Dam, Tualatin Project, Northwest Oregon: unpublished report by William Lettis and Associates and Woodward Clyde Federal Services, Oakland, CA, for U. S. Bureau of Reclamation, Denver CO (in Geomatrix Consultants, 1995).
- Werner, K.S., Nabelek, J., Yeats, R.S., Malone, S., 1992, The Mount Angel fault: implications of seismic-reflection data and the Woodburn, Oregon, earthquake sequence of August, 1990: *Oregon Geology*, v. 54, p. 112-117.
- Wong, I., Silva, W., Bott, J., Wright, D., Thomas, P., Gregor, N., Li, S., Mabey, M., Sojourner, A., and Wang, Y., 2000, Earthquake Scenario and Probabilistic Ground Shaking Maps for the Portland, Oregon, Metropolitan Area; State of Oregon Department of Geology and Mineral Industries; Interpretative Map Series IMS-16.
- Yeats, R.S., Graven, E.P., Werner, K.S., Goldfinger, C., and Popowski, T., 1996, Tectonics of the Willamette Valley, Oregon: in *Assessing earthquake hazards and reducing risk in the Pacific Northwest*, v. 1: U.S. Geological Survey Professional Paper 1560, P. 183-222, 5 plates, scale 1:100,000.
- Yelin, T.S., 1992, An earthquake swarm in the north Portland Hills (Oregon): More speculations on the seismotectonics of the Portland Basin: *Geological Society of America, Programs with Abstracts*, v. 24, no. 5, p. 92.



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

VICINITY MAP



Legend

Approximate Scale 1 in = 1,400 ft

Date: 04/13/16

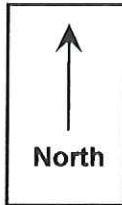
Drawn by: BGA

Base maps: National Geographic TOPOI, Tele Atlas, Oregon, 1990.

Project: Valley's Edge Subdivision Phase 4  
 McMinnville, Oregon

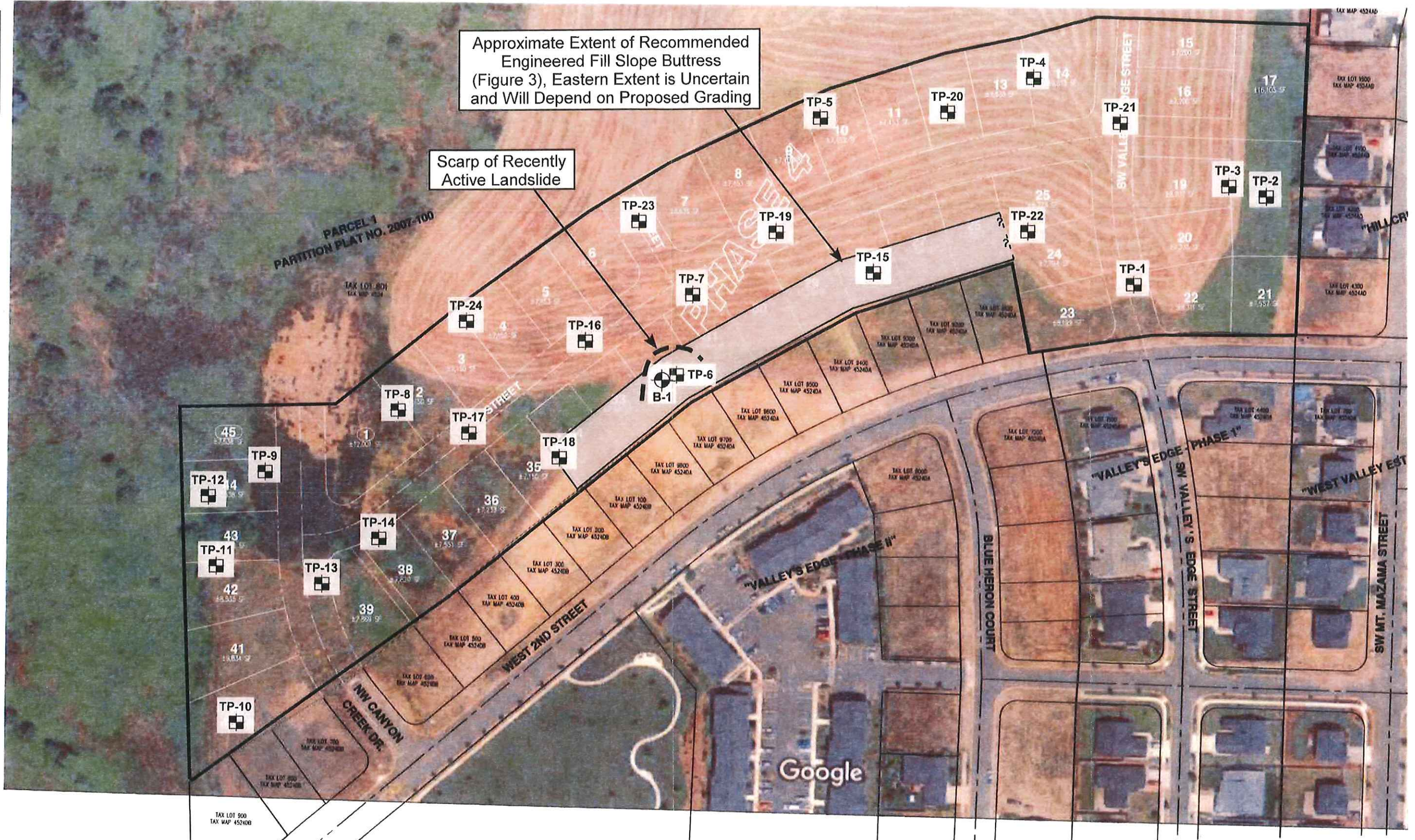
Project No. 16-4142

FIGURE 1



Approximate Extent of Recommended Engineered Fill Slope Buttress (Figure 3), Eastern Extent is Uncertain and Will Depend on Proposed Grading

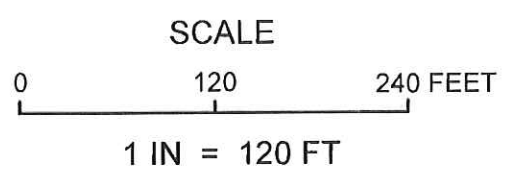
Scarp of Recently Active Landslide



Base map provided by AKS Engineering & Forestry

Legend  
TP-1 Test Pit Designation and Approximate Location

B-1 Boring Designation and Approximate Location



**GeoPacific** Engineering, Inc.  
14835 SW 72nd Avenue  
Portland, Oregon 97224  
Tel: (503) 598-8445 Fax: (503) 941-9281

### SITE PLAN AND EXPLORATION LOCATIONS

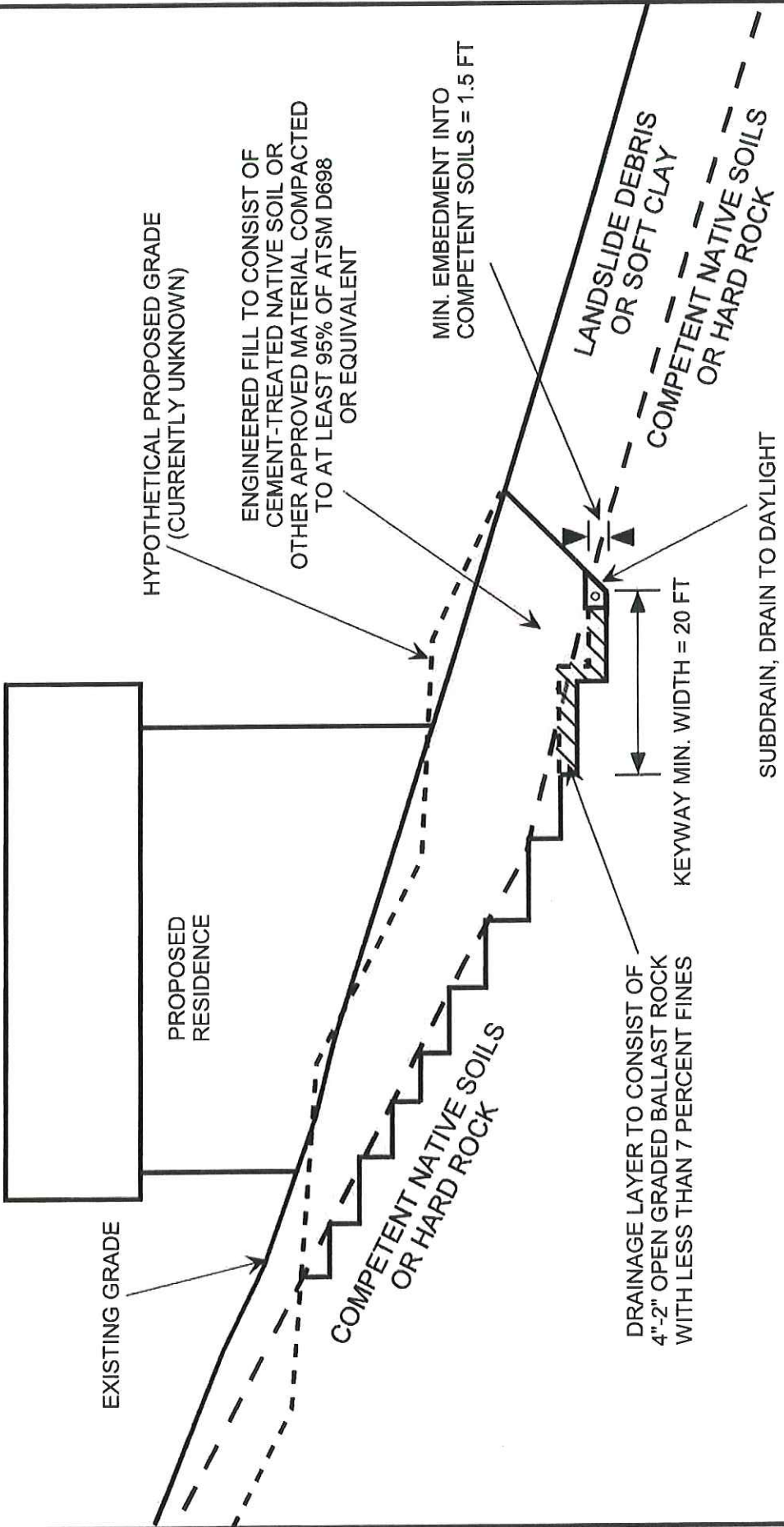
Note: Location of all geotechnical information is approximate.

Project: Valley's Edge Phase 4 Subdivision Wilsonville, Oregon	Project No. 16-4142	Drawn By: BGA	FIGURE 2
---	---------------------	---------------	----------



14835 SW 72nd Avenue  
Portland, Oregon 97224  
Tel: (503) 598-8445 Fax: (503) 941-9281

# ENGINEERED FILL SLOPE BUTTRESS DETAIL (PRELIMINARY)



Date: 04/13/16  
Drawn by: BGA

Project: Valley's Edge Phase 4  
McMinnville, Oregon

Project No. 16-4142

FIGURE 3



**Real-World Geotechnical Solutions  
Investigation • Design • Construction Support**

## **PHOTOGRAPHIC LOG**

**VALLEY'S EDGE PHASE 4 SUBDIVISION  
GEOTECHNICAL SITE INVESTIGATION  
PHOTOGRAPHIC LOG**



**Northeast Portion of the Site – View to the North  
March 17, 2016**

**VALLEY'S EDGE PHASE 4 SUBDIVISION  
GEOTECHNICAL SITE INVESTIGATION  
PHOTOGRAPHIC LOG**



**Central Portion of the Site – View to the West  
March 17, 2016**



**VALLEY'S EDGE PHASE 4 SUBDIVISION  
GEOTECHNICAL SITE INVESTIGATION  
PHOTOGRAPHIC LOG**



**Western Portion of the site – View to the South  
March 17, 2016**

**VALLEY'S EDGE PHASE 4 SUBDIVISION  
GEOTECHNICAL SITE INVESTIGATION  
PHOTOGRAPHIC LOG**



**Western Portion of the Site – View to the North  
March 17, 2016**

**VALLEY'S EDGE PHASE 4 SUBDIVISION  
GEOTECHNICAL SITE INVESTIGATION  
PHOTOGRAPHIC LOG**



**Existing, Recently Active Landslide – View to the East  
March 17, 2016**

**VALLEY'S EDGE PHASE 4 SUBDIVISION  
GEOTECHNICAL SITE INVESTIGATION  
PHOTOGRAPHIC LOG**



**Existing, Recently Active Landslide – View to the West  
March 17, 2016**

**VALLEY'S EDGE PHASE 4 SUBDIVISION  
GEOTECHNICAL SITE INVESTIGATION  
PHOTOGRAPHIC LOG**



**Existing, Recently Active Landslide – View to the North  
March 17, 2016**

## VALLEY'S EDGE PHASE 4 SUBDIVISION GEOTECHNICAL SITE INVESTIGATION PHOTOGRAPHIC LOG



**Location of Boring B-1, View to the Southwest  
May 3, 2016**



**Real-World Geotechnical Solutions  
Investigation • Design • Construction Support**

## **LABORATORY TEST RESULTS**



Project: Valley's Edge Subdivision Ph. 4 Project No.: 16-4142 Samp By: BGA Tested By: SJC  
 Sample ID: S16-078 Depth: 1' TP-8 Samp Date: 3/17/2016 Test Date: 3/25/2016  
 Material Type: Silt with Organics  
 Material Source:

**Moisture**

Tare Number: 46  
 Tare Wt.: 512.3  
 Tare + Wet Soil: 791  
 Tare + Dry Soil: 730.5  
 Percent Moisture: 28%

**Organic Content**

Tare Number: 1 3  
 Tare Wt.: 19.29 22.01  
 Tare + Pre-Oven Soil: 45.09 46.5  
 Tare + Post-Oven Soil: 43.2 44.55  
 Percent Organic: 7.3 8.0  
 avg 7.65

**No. 200 Wash Data**

Tare Number \_\_\_\_\_  
 Tare Wt: \_\_\_\_\_  
 Tare+Pre-Wash Samp: \_\_\_\_\_  
 Tare+Post-Wash Samp: \_\_\_\_\_  
 #200 From Wash: 0  
 Pre-Wash Mass: 0  
 Percent Pass No. 200 #DIV/0!

**Grain Size Data**

Sieve Size	Individual Weight Retained	Cumulative Weight Retained	Weight Passing	Percent Retained	Percent Passing
3"					
1.5"					
1"					
3/4 / 900					
1/2 / 570					
3/8 / 550					
1/4					
#4 / 325					
#8					
#10 / 180					
#16					
#30					
#40 / 75					
#50					
#100 / 40					
#200 / 20					
Pan					

**Grain Size Data**

Tare # \_\_\_\_\_  
 Tare Wt. \_\_\_\_\_  
 Tare+Samp \_\_\_\_\_  
 Pre-Sieve \_\_\_\_\_  
 Mass: \_\_\_\_\_

**Atterberg Analysis LI**

	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 1	Point 2	Point 3	Point 4
Tare #										
Tare Wt.										
Wet Wt										
Dry Wt										
# of Blows										
MC	0	0	0	0	0	0	0	0	0	0
Moist. %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

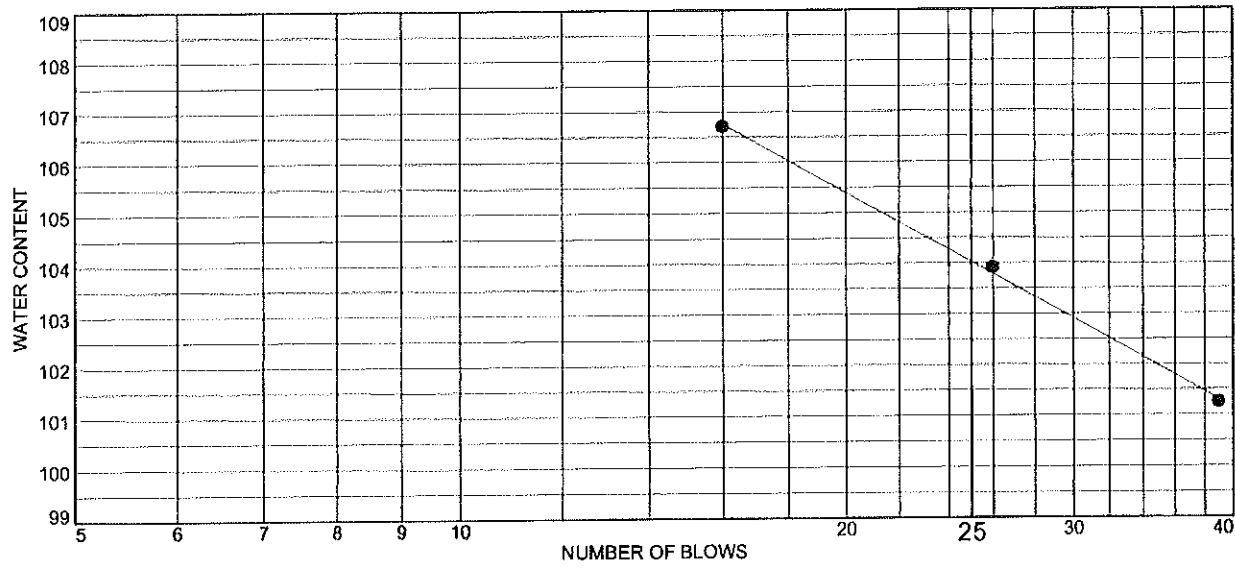
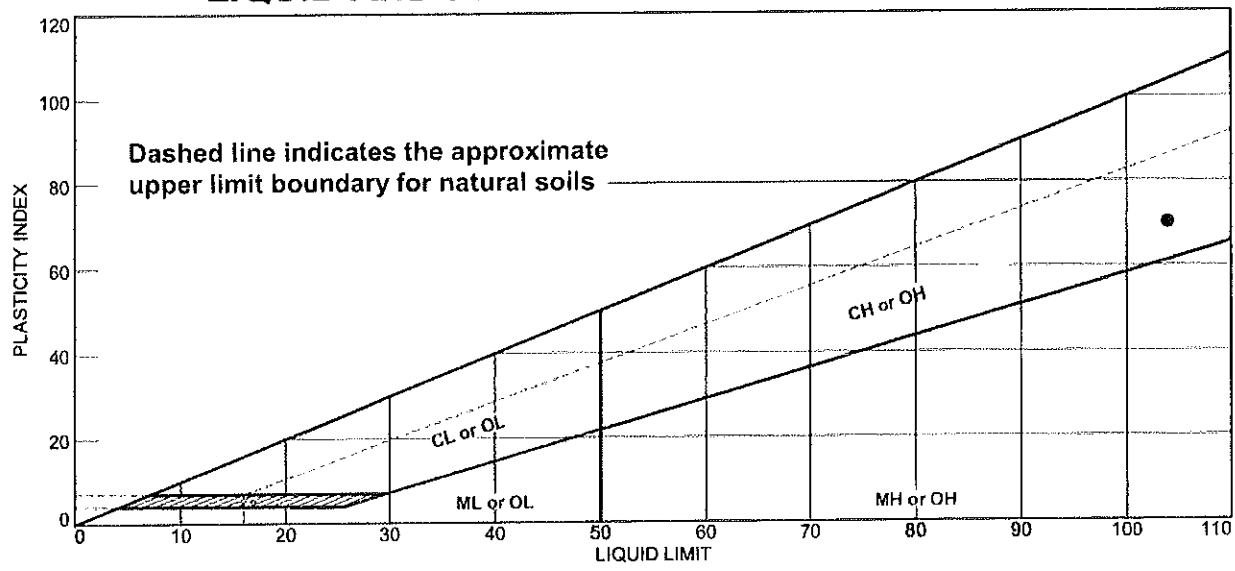
**Atterberg Analysis PI**

	Point 1	Point 2	Point 3	Point 4
Tare #				
Tare Wt.				
Wet Wt				
Dry Wt				
# of Blows				
MC	0	0	0	0
Moist. %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!





# LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● Fat Clay	104.0	33.9	70.1			

**Project No.** 16-4142      **Client:** West Hills Properties  
**Project:** Valley's Edge Ph. 4  
**Location:** TP-8  
**Sample Number:** S16-080      **Depth:** 3'

**Remarks:**

Figure

## GEOPACIFIC ENGINEERING, INC.

**Tested By:** SJC



## TECHNICAL REPORT

**Report To:** Ms. Beth Rapp, R.G., C.E.G.  
GeoPacific Engineering, Inc.  
14835 SW 72<sup>nd</sup> Avenue  
Portland, Oregon 97224

**Date:** 3/28/16

**Lab No.:** 16-054

**Project:** Laboratory Testing – No. 16-4142  
Valley's Edge Phase IV

**Project No.:** 2684.1.1

**Report of:** Expansion index of soil

### Sample Identification

As requested, NTI completed expansion index testing on a sample delivered to our laboratory on March 21, 2016 by a GeoPacific Engineering, Inc. representative. All testing was performed in general accordance with the methods indicated. Our laboratory's test results are summarized on the following table.

### Laboratory Test Results

Expansion Index of Soils (ASTM D 4829)	
Test	Test Results
Initial Moisture Content, (%)	16.7
Initial Dry Unit Weight, (pcf)	86.5
Initial Height of Specimen, (inches)	1.00
Initial Degree of Saturation, (%)	48
Final Moisture Content, (%)	43.8
Expansion Index, <i>E<sub>I</sub></i>	156

**Copies:** Addressee

This report shall not be reproduced except in full, without written approval of Northwest Testing, Inc. *BKA*

SHEET 1 of 1

REVIEWED BY: Bridgett Adame

TECHNICAL REPORT

\\192.168.1.115\Laboratory\Lab Reports\2016 Lab Reports\2684.1.1 GeoPacific\16-054 Expansion Index.docx




14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG







Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP- 1**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						8" soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, <u>very moist to wet (Topsoil)</u>
2	1.5					Soft, moderately organic, silty CLAY (CL), with some fine roots and organic odor, very moist (Till Zone)
3	1.5	 100 to 1,000 g				Stiff, highly plastic CLAY (CH), brown, with small angular fragments of siltstone, disturbed texture, very moist (Colluvium) [Expansion index = 152, indicating very high expansion potential]
4	1.5					Grades to very stiff
5						
6						
7						
8						
9						
10						Grades to very stiff to hard and with increased amounts of siltstone fragments, still with disturbed texture
11						Test pit terminated at 11 feet
12						
13						Note: No seepage or groundwater encountered
14						No caving observed
15						
16						
17						

**LEGEND**

					
Bag Sample	Bucket Sample	Shelby Tube Sample	Seepage	Water Bearing Zone	Water Level at Abandonment

Date Excavated: 03/17/16  
 Logged By: BGA  
 Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-2**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						Very soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, wet (Erosional Deposit)
2				Grades to without roots		
3				[Global caving 0-5 feet]		
4						
5				Grades to medium stiff		
6						Test pit terminated at 5 feet due to global caving from 0-5 feet
7						Notes: Seepage encountered at the ground surface Visually estimated at greater than 10 gallons per minute
8						Global caving from 0 to 5 feet
9						
10						
11						
12						
13						
14						
15						
16						
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:







14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-3**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						12" soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, very moist to wet (Topsoil)
2						Soft, moderately organic, silty CLAY (CL), with some fine roots and organic odor, very moist (Till Zone)
3						Stiff, highly plastic CLAY (CH), brown, with small angular fragments of siltstone, disturbed texture, very moist (Colluvium)
4	1.5					
5	2.0					
6						
7						
8						
9						Test pit terminated at 9 feet
10						
11						Notes: Seepage encountered from 0 to 3 feet bgs Visually estimated at 5 gallons per minute
12						Significant caving 0 to 3 feet
13						
14						
15						
16						
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-4**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						10" soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, very moist to wet (Topsoil)
2	2.0					Soft, moderately organic, silty CLAY (CL), with some fine roots and organic odor, very moist (Till Zone)
3	2.0					Stiff, silty CLAY (CL), brown, moderate plasticity, with small angular fragments of siltstone, disturbed texture, very moist (Colluvium)
4	2.0					
5						Caving from 0 to 5.5 feet
6						Stiff, highly plastic CLAY (CH), brown, very moist to wet (Colluvium)
7						
8						SILTSTONE, very soft to soft (R1-R2), brown, gray, and black, very moist to wet (Nestucca Formation)
9						Test pit terminated at 8.5 feet
10						
11						Notes: Seepage at 0 to 1.5 feet, visually estimated at 1 to 3 gpm Seepage at 5 feet, visually estimated at 5 gpm Seepage at 7.5 feet, visually estimated at 5 gpm
12						Caving from 0 to 5.5 feet
13						
14						
15						
16						
17						

LEGEND



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:




14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-5**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						10" soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, very moist to wet (Topsoil)
2	2.0					Soft, moderately organic, silty CLAY (CL), with some fine roots and organic odor, very moist (Till Zone)
3	2.0					6 to 10 inches of stiff, brown silty CLAY, very moist (Colluvium)
4	2.0					SILTSTONE, extremely soft to very soft (RO-R1), gray, brown, and black, highly fractured, relatively level bedding, very moist (Nestucca Formation)
5						Grades to soft to medium hard (R2-R3)
6						Test pit terminated due to practical refusal at 5 feet on north side of test pit and 6.5 feet on south side of test pit
7						
8						Notes: Slow groundwater seepage encountered at 4.5 feet Visually estimated at 1 gpm
9						No caving observed
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:






14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-6**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						8" soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, very moist to wet (Topsoil)
2	1.5					Soft, low to moderately organic, silty CLAY (CL), with some fine roots and organic odor, very moist (Till Zone)
3	3.0					Stiff to very stiff, silty CLAY (CL), brown, low to moderate plasticity, with siltstone fragments, very moist (Landslide Mass)
4	3.0					
5						Increased plasticity below 6 feet
6						
7						
8						
9						
10						Grades to medium stiff
11						Disturbed texture 11 to 11.5 feet
12						Grades to gray, very stiff, and with increased amounts of siltstone fragments
13						Test pit terminated at 12.5 feet
14						
15						Note: Seepage encountered at 11.5 to 12 feet bgs Visually estimated at 10 gpm
16						Caving 0 to 12 feet on east side of test pit Caving 10 to 12 feet on west side of test pit
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:




14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-7**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	1.0					12" soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, very moist to wet (Topsoil)
2	1.0					Soft, low to moderately organic, silty CLAY (CL), with some fine roots and organic odor, very moist (Till Zone)
3	1.5					Stiff to very stiff, silty CLAY (CL), brown, low to moderate plasticity, with siltstone fragments, very moist (Colluvium)
4	3.0					
5	3.0					
6						
7						SILTSTONE, extremeley soft (R0), gray, brown, and black, very moist (Nestucca Formation)
8						
9						
10						
11						
12						Test pit terminated at 11.5 feet
13						
14						Note: Seepage encountered at 6 to 7 feet bgs Visually estimated at 3 gpm
15						No caving observed
16						
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-8**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.5					10" soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, very moist to wet (Topsoil)
2	1.0		Soft, low to moderately organic, silty CLAY (CL), with some fine roots and organic odor, very moist (Till Zone)			
3	1.5					Stiff to very stiff, highly plastic CLAY (CH), brown, moist (Colluvium)
4	3.0					
5	3.0					
6						SILTSTONE, extremely soft (R0), gray, brown, and black, very moist (Nestucca Formation)
7						Grades to very soft (R1)
8						Test pit terminated at 8 feet due to practical refusal on soft to medium hard (R2-R3) SILTSTONE
9						Notes: No seepage or groundwater encountered
10						No caving observed
11						
12						
13						
14						
15						
16						
17						

LEGEND



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-9**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						Loose, GRAVEL, COBBLES, and BOULDERS in a silt matrix, brown, subrounded to subangular, basaltic, damp (Undocumented Fill)
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						Medium stiff, clayey SILT (ML) to silty CLAY (CL), orange-brown, low plasticity, moist (Colluvium)
12						Test pit terminated at 12 feet
13						Notes: No seepage or groundwater encountered
14						Small amount of caving from 2 to 7 feet bgs
15						
16						
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:





14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-10**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						14" soft, moderately organic SILT (ML-OL), dark brown, moist (Topsoil)
2						Stiff, SILT (ML) and CLAY (CL), brown, with occasional rounded and angular gravel, trace amount of wood debris, disturbed texture (Undocumented Fill)
3						
4						
5						
6						Medium stiff, clayey SILT (ML) to silty CLAY (CL), low organic content, moist (Buried Topsoil Horizon)
7						
8						SILTSTONE, extremely soft (R0), gray, brown, and black, very moist (Nestucca Formation)
9						
10						
11						
12						Test pit terminated at 12 feet
13						
14						Notes: Slow seepage encountered at 10.5 feet Visually estimated at 1 gpm
15						No caving observed
16						
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:







14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-11**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						Soft, gravelly, moderately organic SILT (ML), dark brown, moist (Undocumented Fill)
2						Grades to brown and with some debris and angular gravel
3						
4						Medium stiff, moderately organic, clayey SILT (ML-OL), with some organic debris including roots up to 3 inches in diameter, moist (Buried Topsoil Horizon)
5						
6						Medium stiff, silty CLAY (CL), gray, moist (Alluvium)
7						Grades to soft, wet, reddish brown and gravelly, gravel is rounded
8						
9						
10						Stiff, silty CLAY (CL), brown with gray staining, very moist to wet (Colluvium)
11						
12						Test pit terminated at 12 feet
13						
14						Notes: Seepage encountered at 7.5 feet, visually estimated at 5 gpm Seepage encountered at 10 feet, visually estimated at 10 gpm
15						No caving observed
16						
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:








14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-12**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						Loose, silty GRAVEL (GM), brown and gray, moist (Undocumented Fill)
2						
3						Layer of geotextile fabric encountered at 3 feet bgs
4						Soft, moderately organic, clayey SILT (ML-OL), with some organic debris including roots up to 3 inches in diameter, moist (Buried Topsoil Horizon)
5						Soft, SILT (ML), reddish brown, wet (Alluvium)
6						Grades to gravelly, subrounded gravel
7						Grades to wet
8						
9						
10						Stiff, silty CLAY (CL) to clayey SILT (ML), brown with angular siltstone fragments, wet (Colluvium)
11						BASALT, extremely soft to very soft (R0-R1), dark gray, vesicular, wet
12						Test pit terminated at 12 feet
13						Notes: Groundwater encountered at 7 feet bgs
14						No caving observed
15						
16						
17						

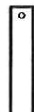
**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-13**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						20" soft, gravelly SILT (ML), dark brown, moist (Undocumented Fill)
2						Stiff to very stiff, silty CLAY (CL), brown, with angular siltstone fragments, moist (Colluvium)
3						SILTSTONE, extremely soft (R0), dark gray and brown, very moist (Nestucca Formation)
4						
5						
6						Grades to very soft (R1)
7						
8						
9						Test pit terminated at 9 feet due to practical refusal on soft to medium hard (R2-R3) SILTSTONE
10						
11						Notes: No seepage or groundwater encountered
12						No caving observed
13						
14						
15						
16						
17						

**LEGEND**



100 to 1,000 g  
Bag Sample



5 Gal. Bucket  
Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:





14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-14**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						BASALT, extremely soft (R0), dark gray, damp, excavating as gravel, cobbles, and boulders in a silt matrix
2						Grades to very soft (R1)
3						<p>Test pit terminated at 2.5 feet due to practical refusal on soft to medium hard (R2-R3) BASALT</p> <p>Notes: No seepage or groundwater encountered</p> <p>No caving observed</p>
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-15**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	1.0					10" soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, very moist to wet (Topsoil)
2						Soft, moderately organic, silty CLAY (CL), with some fine roots and organic odor, very moist (Till Zone)
3	2.0					Medium stiff to stiff, silty CLAY (CL), brown, very moist to wet (Colluvium)
4						
5						
6						
7						Grades to with increased plasticity
8						
9						
10						
11						Grades to hard and blue gray
12						
13						
14						
15						
16						
17						

Test pit terminated at 12 feet

Notes: Seepage encountered below 2 feet bgs, visually estimated at 5 gpm  
 Seepage encountered below 7 feet, visually estimated at 10 gpm

Significant caving 0 to 10 feet

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 03/17/16

Logged By: BGA

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-16**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						12" soft, highly organic silty CLAY (OL-CL), brown, with fine roots throughout, moist (Topsoil)
2						BASALT, extremely soft (R0), dark gray to black, damp, vesicular
3						Grades to very soft (R1)
4						
5						Grades to soft (R2) with very hard digging below 5 feet
6						
7						Test pit terminated at 6.5 feet due to practical refusal on soft to medium hard (R2-R3) BASALT
8						
9						Notes: No seepage or groundwater encountered
10						No caving observed
11						
12						
13						
14						
15						
16						
17						

**LEGEND**



100 to 1,000 g



5 Gal. Bucket



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 05/03/16

Logged By: BGA

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-17**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						10" soft, highly organic clayey SILT (ML-OL), dark brown, with fine roots throughout, moist (Topsoil)
2						BASALT, extremely soft to very soft (R0-R1), dark gray to black, damp, vesicular
3						
4						
5						Grades to soft (R2) with very hard digging below 5 feet
6						
7						
8						Test pit terminated at 7 feet due to practical refusal on soft to medium hard (R2-R3) BASALT
9						
10						Notes: No seepage or groundwater encountered
11						No caving observed
12						
13						
14						
15						
16						
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 05/03/16

Logged By: BGA

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-18**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.5					8" soft, highly organic clayey SILT (ML-OL), dark brown, with fine roots throughout, moist (Topsoil)
2	3.0					Very stiff to hard, silty CLAY (CL), reddish brown, with occasional gravel to cobble size basalt clasts, moist (Residual Soil of BASALT)
3	>4.5					BASALT, extremely soft to very soft (R0-R1), dark gray to black, damp, vesicular
4						Grades to very soft to soft (R1-R2) with very hard digging below 5 feet
5						
6						Grades to soft (R2) with very hard digging below 6 feet
7						
8						Test pit terminated at 7.5 feet due to practical refusal on soft to medium hard (R2-R3) BASALT
9						
10						Notes: No seepage or groundwater encountered
11						No caving observed
12						
13						
14						
15						
16						
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 05/03/16

Logged By: BGA

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-19**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.5					10" soft, moderately organic clayey SILT (ML-OL), dark brown, with fine roots throughout, moist (Topsoil)
2	4.0					Very stiff, silty CLAY (CL), reddish brown, moist (Residual Soil of BASALT)
3	3.5					
4						
5						Grades to lighter color and with occasional gravel and cobble size vesicular basalt fragments
6						
7						
8						SILTSTONE, extremely soft (R0), dark gray and brown, with black and orange mineral staining, very moist (Nestucca Formation)
9						
10						
11						Grades to very soft to soft (R1-R2)
12						Test pit terminated at 12 feet due to practical refusal on soft to medium hard (R2-R3) SILTSTONE
13						
14						
15						Notes: No seepage or groundwater encountered
16						No caving observed
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 05/03/16

Logged By: BGA

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-20**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	>4.5					10" soft, moderately organic clayey SILT (ML-OL), dark brown, with fine roots throughout, moist (Topsoil)
2	>4.5					BASALT, extremely soft (R0), brown to black, moist, vesicular, in a matrix of clayey silt
3	>4.5					2-foot diameter chunk of R2 Siltstone encountered at 2.5 feet
4						
5						Grades to very soft (R1)
6						
7						
8						SILTSTONE, extremely soft to very soft (R0-R1), dark gray and brown, with black and orange mineral staining, very moist (Nestucca Formation)
9						
10						
11						Test pit terminated at 11 feet due to practical refusal on dark gray, soft to medium hard (R2-R3) SILTSTONE
12						
13						
14						Notes: No seepage or groundwater encountered
15						No caving observed
16						
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 05/03/16

Logged By: BGA

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-21**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						10" soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, very moist to wet (Topsoil)
2						Soft, moderately organic, silty CLAY (CL), with some fine roots and organic odor, moist (Till Zone)
3						Stiff, highly plastic CLAY (CH), gray, with occasional gravel-size angular siltstone fragments, moist (Colluvium)
4						SILTSTONE, extremely soft to very soft (R0-R1), reddish brown, gray, and black, with some sandstone, moist (Nestucca Formation)
5						Grades to very soft to soft (R1-R2) with very hard digging below 5 feet
7						Test pit terminated due to practical refusal on soft to medium hard (R2-R3) SILTSTONE at 6.5 feet on NW side of test pit and at 8.5 feet on SE side of test pit
8						Notes: No seepage or groundwater encountered
9						No caving observed
10						
11						
12						
13						
14						
15						
16						
17						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 05/03/16

Logged By: BGA

Surface Elevation:






14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-22**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						10" soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, very moist to wet (Topsoil)
2	2.0					10" soft, moderately organic, silty CLAY (CL), with some fine roots and organic odor, moist (Till Zone)
2.5	2.5					Stiff to very stiff, moderately to highly plastic CLAY (CH), gray, with gray and orange mottling, moist (Colluvium)
3	3.0					
3.5	3.5					
4						Increased plasticity below 4.5 feet, very high plasticity
5						
6						Grades to with some gavel-size angular fragments of siltstone and very moist to wet
7						
8						
9						
10						SILTSTONE, extremely soft to very soft (R0-R1), reddish brown, gray, and black, moist (Nestucca Formation)
11						
12						Test pit terminated at 12 feet
13						
14						Notes: Groundwater seepage encountered at 9.5 feet Visually estimated at less than 1 gpm
15						No caving observed
16						
17						

LEGEND



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 05/03/16

Logged By: BGA

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-23**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						8" soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, very moist to wet (Topsoil)
2						8" soft, moderately organic, silty CLAY (CL), with some fine roots and organic odor, moist (Till Zone)
3						SILTSTONE, extremely soft to very soft (R0-R1), light gray and brown, moist (Nestucca Formation)
4						Grades to very soft to soft (R1-R2)
5						
6						
7						
8						Test pit terminated at 7.5 feet due to practical refusal on soft to medium hard (R2-R3) SILTSTONE
9						
10						Notes: No seepage or groundwater encountered
11						No caving observed
12						
13						
14						
15						
16						
17						

**LEGEND**



100 to 1,000 g  
Bag Sample



5 Gal Bucket  
Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 05/03/16

Logged By: BGA

Surface Elevation:




14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Valley's Edge Phase 4 Subdivision  
 McMinnville, Oregon

Project No. 14-4142

Test Pit No. **TP-24**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1						10" soft, highly organic silty CLAY (OL-CL), dark brown, with fine roots throughout, <u>very moist to wet (Topsoil)</u>
2						14" soft, moderately organic, silty CLAY (CL), with some fine roots and organic odor, <u>moist (Till Zone)</u>
3						SILTSTONE, extremely soft to very soft (R0-R1), light gray and brown, moist (Nestucca Formation)
4						Grades to very soft to soft (R1-R2)
5						
6						
7						
8						Test pit terminated at 8 feet due to practical refusal on soft to medium hard (R2-R3) SILTSTONE
9						Notes: Groundwater seepage encountered at 8 feet Visually estimated at less than 1 gpm
10						No caving observed
11						
12						
13						
14						
15						
16						
17						

**LEGEND**



100 to 1,000 g



5 Gal. Bucket



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 05/03/16

Logged By: BGA

Surface Elevation:













14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# BORING LOG

Project: Valley's Edge Phase 4  
 McMinnville, Oregon

Project No. 16-4142

Boring No. **B-1**

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing Zone	Material Description
5		6				Medium stiff, silty CLAY (CL), brown, with some coarse sand to gravel-size subrounded to subangular fragments of silstone, with slight disturbed texture, moist (Landslide Mass)
		8				Grades to medium stiff to stiff
		8				
10		1				
		2				
		4				
		6				Medium stiff, highly plastic CLAY (CH), brown, appears undisturbed, very moist to wet (Residual Soil of the Nestucca Formation)
		11				Grades to with weathered rock fabric from in-place weathering
15		37				SILTSTONE, very soft to soft (RO-R1), gray, brown, and black, highly fractured, relatively level bedding, very moist (Nestucca Formation)
20		55				Grades to soft to medium hard (R1-R2) and dark gray [side of the sampler is wet]
						Boring terminated at 21.5 feet
25						Notes: No significant groundwater encountered in boring in period of three hours
						Water elevation at 7 feet bgs in 18-inch diameter sump located approximately 15 feet south of boring B-1
30						
35						

LEGEND



Bag Sample



Split-Spoon



Shelby Tube Sample



Static Water Table at Drilling



Static Water Table



Water Bearing Zone

Date Drilled: 05/03/16

Logged By: BGA

Surface Elevation:

=====

DARWin(tm) - Pavement Design

A Proprietary AASHTOWARE(tm)  
Computer Software Product

-----

Flexible Structural Design Module

-----

Project Description

Valley's Edge Phase 4 Subdivision - Light-Duty Public Streets

Flexible Structural Design Module Data

18-kip ESALs Over Initial Performance Period: 53,979

Initial Serviceability: 4.2

Terminal Serviceability: 2.5

Reliability Level (%): 85

Overall Standard Deviation: .44

Roadbed Soil Resilient Modulus (PSI): 5,250

Stage Construction: 1

Calculated Structural Number: 2.35

Specified Layer Design

Layer: 1

Material Description: New Asphalt Pavement  
Structural Coefficient (Ai): .44  
Drainage Coefficient (Mi): 1  
Layer Thickness (Di) (in): 3.00  
Calculated Layer SN: 1.32

Layer: 2

Material Description: 3/4"-0 crushed agg  
Structural Coefficient (Ai): .12  
Drainage Coefficient (Mi): 1  
Layer Thickness (Di) (in): 2.00  
Calculated Layer SN: .24

Layer: 3

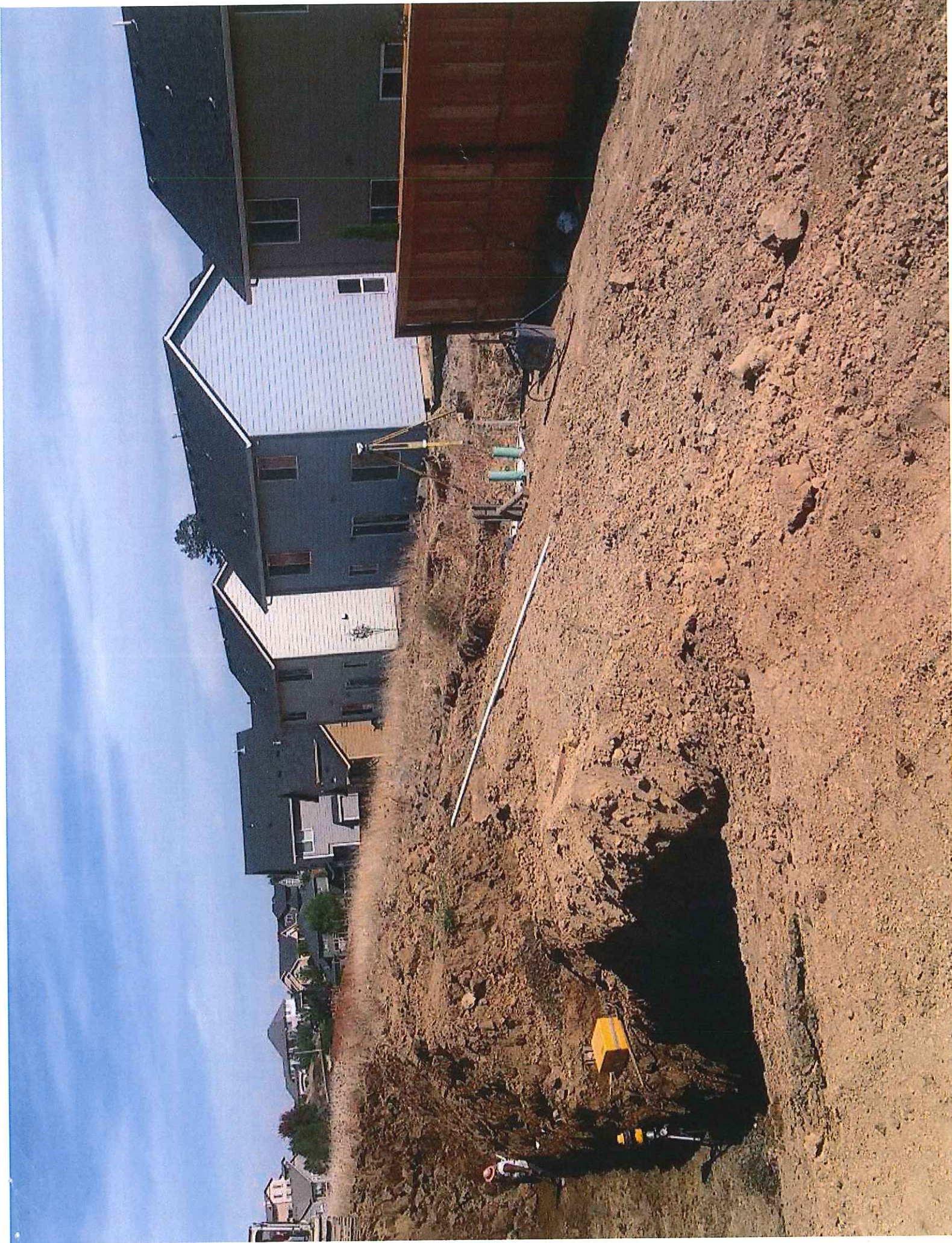
Material Description: 1 1/2"-0 crushed agg  
Structural Coefficient (Ai): .11  
Drainage Coefficient (Mi): 1  
Layer Thickness (Di) (in): 8.00  
Calculated Layer SN: .88

Total Thickness (in): 13.00  
Total Calculated SN: 2.44

Simple ESAL Calculation

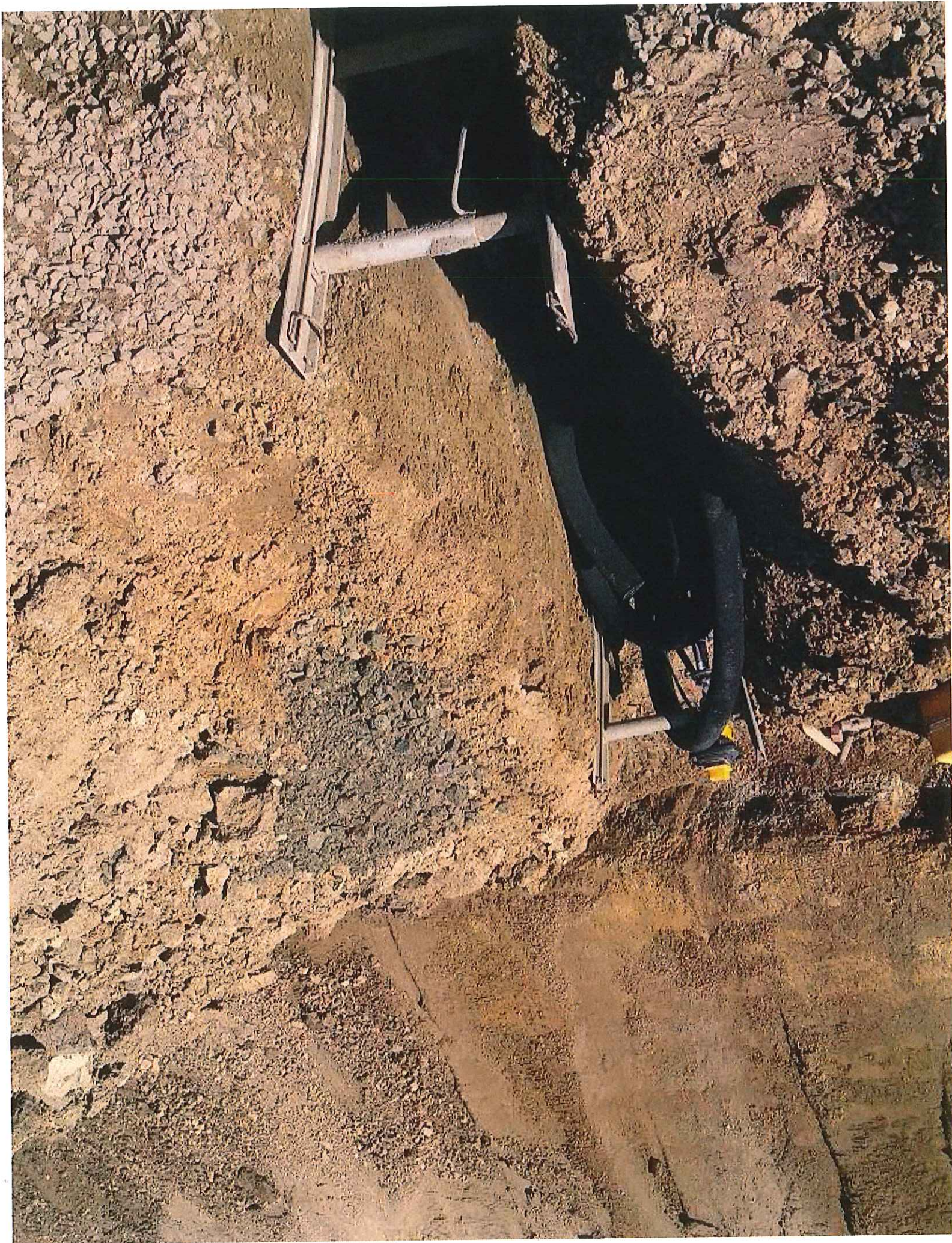
Initial Performance Period (years): 20  
Initial Two-Way Daily Traffic (ADT): 250  
% Heavy Trucks (of ADT) FHWA Class 5 or Greater: 2  
Number of Lanes In Design Direction: 1  
Percent of All Trucks In Design Lane (%): 100  
Percent Trucks In Design Direction (%): 50  
Average Initial Truck Factor (ESALs/truck): 2.2  
Annual Truck Factor Growth Rate (%): 0  
Annual Truck Volume Growth Rate (%): 3  
Growth: Compound

Total Calculated Cumulative Esals: 53,979













**PLANNED DEVELOPMENT AMENDMENT (ZC 6-17)**

**PLANNING COMMISSION PUBLIC HEARING (MAY 18, 2017) ITEM D**

**NEIGHBORHOOD SUBMISSION TO PUBLIC RECORD**

**CONCERN: Water Issues – Drainage & Flow**

**Modification Request:** The Planned Development (PD) Modification is designed to “better preserve existing drainage on site”. While the original PD layout was designed to locate the easternmost drainage channel in a protective easement at the rear of most lots, the original design did not identify or accommodate on-site channels on the west side of the site. The proposed PD will locate all drainage channels at the rear of most lots so they may be placed within a protective easement.

**Neighborhood Response:**

The hillside has shown unstable behavior including: (1) a slide on the south side of the hill which occurred onto a City approved lot with a home on West Second Street that damaged the home’s foundation; (2) evidence of east side erosion has been observed during initial construction along Valley’s Edge Road; (3) water showing up in holes dug by homeowners along West Second Street when no rain is present is often an indication of artesian water inside the hill; (4) creation of a drainage ditch crossing horizontally the hill to mitigate drainage on the back side of homes on West Second Street; (5) a tendency of water to run out of the hill for several weeks after rains end; and (6) creation of a “stream” circumventing the initial construction along Valley’s Edge Road. The public good and safety as outlined in General Provision Purpose of ordinances defined in 17.03.020 must be respected. Shifting hillside causes safety and resale concerns for residents but due to Planning Staff assurances on the design and further checks in the development process, we are not requesting a rejection of the Amendment.

An additional water issue is current homeowners both above and below the 275 foot water support line are currently experiencing water flow rate reductions. Neighborhood is concerned that flow will be severely affected by future development in spite of suggestion to build a “necessary water system improvement”.

**Conditions:**

If accepted by Commission and approved by Council, Neighborhood requests these conditions be included in final draft:

- Request City to reiterate no building approvals above 275 feet until infrastructure is completed, tested, and approved by McMinnville Water and Light.
- Require CC&R promised language on requiring additional drainage be mandatory and require new homeowners to install public and private drainage as appropriate
- Ask Planning Commission to re-justify 10-year storm application standard for drainage analysis rather than more commonly 100-year accepted civil engineering rules. Given our climate is getting wetter and the area of development over the past two winters has experienced record amounts of moisture in the form of both rain and snow.

**PLANNED DEVELOPMENT AMENDMENT (ZC 6-17)**

**PLANNING COMMISSION PUBLIC HEARING (MAY 18, 2017) ITEM D**

**NEIGHBORHOOD SUBMISSION TO PUBLIC RECORD**

**NEIGHBORHOOD CONCERN: Street Reconfiguration Road A Loop**

**Modification Request:** To accommodate new ADA requirements of 5% grade at public street intersections, the applicant plans to reduce the number of intersections, reconfigure the street network; revise the arrangement of streets and residential lots accessed by these streets. (Particularly, Hillcrest Phases 9 & 10; Northridge Phase).

As part of Applicant's submittal, Lancaster Engineering performed an updated Traffic Impact Study confirming that area roadways have capacity to serve traffic generated by the development with the recommended mitigation measures included.

**Neighborhood Response:**

Neighborhood is respecting the General Provision Purpose of ordinances as defined in 17.03.020 and wishes compliance with established standards for public safety.

The creation of 'Road A Loop' (Street Reconfiguration) with both entrances and exits entirely feeding onto Horizon Drive will result in several public safety issues. Under the existing Ordinance 4868, 106 of the proposed residences were able to access both W. Second Street and Horizon Drive; but as PD proposes, access is limited under the new configuration.

It is noted that any impediment caused by fire, accident, tree falling, natural acts, etc. would cut off access to all residents and severely limit arrival of emergency response vehicles. While acknowledging that McMinnville emergency departments are at this time comfortable with the risk posted by this long Road A Loop design we still have concerns for public safety.

**Conditions:**

If accepted by Commission and approved by Council, Neighborhood requests these conditions be included in final draft:

- Ensure a coordinated phasing plan of new road development with traffic/street impacts that makes safe access the priority.

**PLANNED DEVELOPMENT AMENDMENT (ZC 6-17)**  
**PLANNING COMMISSION PUBLIC HEARING (MAY 18, 2017)**  
**NEIGHBORHOOD SUBMISSION TO PUBLIC RECORD**

QUESTIONS TO DEVELOPER - Item ZC 6-17

1) Blasting

Residents request West Hills Properties, LLC either ensure notification is sent to homeowners in advance of dynamiting/blasting events on the hillside during infrastructure construction or that signage be placed throughout the neighborhood 24 hours before any upcoming activity. During work to date, no notice was given on blasting so basically houses shook, pets went nuts, and people started calling the town for answers. What can West Hills Property, LLC do to ensure advanced notifications are provided?

2) Trees

The Town Planning Department has indicated building code requires trees be planted in the median between the curb and sidewalk on all new homes built. Residents would like assurances that West Hills Property will maintain similar tree standards of aesthetics as represented by the existing parts of West Hills Development. Will this be done?

**D. Planned Development Amendment (ZC 6-17)**

**Request:** West Hills Properties, LLC, is requesting approval to amend Planned Development Ordinance No. 4868 to allow exceptions to current street grade, block length, block circumference and lot depth to width standards. Also requested is approval to amend an approved residential subdivision and phasing plan on approximately 132 acres of land.

**Location:** The subject site is located generally north of West Second Street, west of NW Mt. Mazama Street and south of NW Fox Ridge Road and is more specifically described as Tax Lot 801, Section 24, T. 4 S., R. 5 W., W.M.

**Applicant:** West Hills Properties, LLC

Chair Hall opened the public hearing and read the hearing statement. He asked if there were any objections to the Planning Commission's jurisdiction on this matter. There were none. He asked if any Commissioner wished to make a disclosure or abstain from participating or voting on this application.

Commissioner Chroust-Masin said he knew a lot of people in the audience, however that would not affect his decision.

Chair Hall asked if any Commissioner needed to declare any contact prior to the hearing with the applicant, any other party involved, or any other source of information outside of staff regarding the subject of this hearing. There was none.

Chair Hall asked if any Commissioner visited the site. Most of them had.

Chair Hall asked if any Commissioner wished to discuss their visit to the subject site. No one did.

Planning Director Richards provided the staff report. This was a zone change request to amend an existing planned development. The site was north of West 2<sup>nd</sup> Street, west of NW Mt. Mazama Street, and south of NW Fox Ridge Road. The applicant was West Hills Properties, LLC. There was already approval for development on the site, and tonight they were looking at amending the existing decision. It was 164 acres and was approved for development in 2007. The property had been partially developed. Valley's Edge Phase 2 was developed with apartments, a public park, detention pond, and single family homes, and Valley's Edge Phase 3 was developed with single family homes. The subject of the current planned development amendment request was 132 acres of the original 164 acres. When the applicant went to engineer the subdivisions and looked at street grades and intersections and the 5% they were trying to achieve at the intersections, they found it could not be engineered into the existing topography.

Planning Director Richards explained that the applicant tried to keep most of the plan the same, however they had to eliminate some of the street connections, create longer block circumferences, and increase the number of lots by 40. The total lots of the existing plan were 512, and if the proposed amended plan was approved, it would create 552 lots. The current plan was zoned R-2 PD and the maximum density allowed was six units per acre. The proposed plan would be 4.6 units per acre with net density and 3.7 units per acre with gross density. The



minimum lot size was 5,292 square feet and the maximum lot size was 35,000 square feet. The average lot size would be 9,547 square feet. These were larger lot sizes than the average lot size minimum requirement in the R-2 zone. The total number of single family units was 551 units and total multi-family units was 68. The multi-family units had already been built and several of the single family units had already been built as well in the first two phases.

Planning Director Richards explained that some variances had been requested including changing the street grades from 12% to 15% in some sections, changing the block length from 1,802 linear feet to 1,995 linear feet for 31 units, increasing the block circumference for 11 units that would exceed the 1,600 square feet, and a variance for the lot depth to width standard due to the wetlands and topography. For zone changes, the criteria included deciding whether it was a major or minor amendment. There was an increase in housing units by 40 and the internal vehicular circulation network had changed and staff felt it was a major amendment requiring a public hearing process.

Planning Director Richards explained that the criteria for an amendment to an existing planned development included the special physical conditions of the site, whether the resulting development was consistent with the Comprehensive Plan objectives for the area, whether it had adequate access and efficient provision of services to the adjoining areas, whether the plan could be completed in a timely manner, whether the streets were adequate to support the traffic and the development would not overload the streets outside the planned area, whether or not the proposed utility and drainage facilities were adequate, and whether or not noise, air, and water pollutants were mitigated. In terms of being consistent with the Comprehensive Plan, residential land in west McMinnville was limited to an average of six dwelling units per acre except for those within a quarter mile of transit routes where higher density should be encouraged. This application proposed 4.6 units per acre with net density and 3.7 units per acre with gross density and fell under the six units per acre. It qualified as a lower density residential development under R-2 PD and was limited to land shown as developed low density on the buildable lands inventory. It was in an area of only collectors and local streets and an area with geographical constraints.

Commissioner Schanche asked why there was no open space other than the existing park included in this project. Planning Director Richards said the park was part of the planned development and in 2007 the City thought the open space requirement was addressed through the neighborhood park.

Commissioner Schanche said planned developments were not supposed to be used to get out of zoning, and she did not think there was enough open space. She thought it was inconsistent with the Comprehensive Plan objectives because of the open space.

Commissioner Butler agreed, especially when they were adding 40 more units and not any open space.

Planning Director Richards said due to the connectivity issues, the street network system was changed and some connections were removed because of the street grading. They did add some pedestrian connections where the street connectivity had been removed. This was considered a green space.

Commissioner Chroust-Masin asked how large the park was. Planning Director Richards said it was 7 acres.

Zach Pelz, land use planner with AKS Engineering, was representing the applicant. In 2007 this plan was approved. Within the last few years they realized Phase 4 would require significant on-site grading that made it unfeasible to develop as it was approved in 2007. They decided to do a modification to the planned development instead.

Howard Aster, West Hills Development, introduced his development partners who were long time McMinnville residents who raised their families here and loved the community. This land was purchased 45 years ago and was located in the City limits and zoned for residential development. West Hills Properties sold their lots to a variety of small, mostly local home builders and local residents who wanted to choose a builder of their own. Their subdivisions featured a mixture of many talented home designers, contractors, and landscapers. This gave the subdivisions more creativity, uniqueness, and individuality. Most of the people who built in their subdivisions lived in the community. Local builders often bought local materials and hired local subcontractors. There was a demand for entry level housing and it was difficult to find any lots in the City that were affordable. There were older citizens who wished to downsize and build a single story house that was easier to maintain. Their subdivision provided lots that were spacious in size. This request was a revision to their master plan for an improved and safer subdivision.

Barry House was representing himself as a realtor. He had been a realtor in McMinnville for 30 years. He was also one of the principles in this project. The City was terribly short in inventory of available homes and lots. The property had been in the City limits for 45 years.

Commissioner Chroust-Masin asked why the property was not developed until now. Mr. House said the flat, level portion of the property was developed and now they were moving up the hill. They were getting into the rougher land that was harder to develop.

Mr. Pelz discussed the site, which was steep with slopes in excess of 30%. This application was approved in 2007, just before the housing bubble burst and the economy was still recovering. The site was two and a half miles west of where they sat today, at the west end of 2<sup>nd</sup> Street. There was about 132 acres remaining to be developed and it was zoned R-2. If they developed to the maximum 6 units per acre, they could build 800 homes. The application was more than 30% below what was allowed. The original application protected the drainage channel that ran down the center of the site. The streams on the western half of the site were not considered and the lots and the streets were laid out inconsiderate of those drainageways. With the slopes, it was a challenge to design the streets, intersections, and lots on the site in a way that satisfied the City's street grade requirements and ADA grading requirements, as well as creating a practical, livable community. He reviewed the 2007 approval that mandated significant on-site grading. It included life cycle housing and with the range of lot and housing sizes it could serve a demand across a wide range of age and income groups in the City.

Mr. Pelz explained that since 2007, there were new ADA requirements that made sure the grades at intersections did not exceed 5%. The ADA requirements for shallower street grades resulted in steeper segments between those intersections that ultimately required removal of some of the intersections and required longer block lanes and circumferences. The variances requested were all related to this ADA requirement. He explained the 2007 lot layout and the

existing drainageways on the site. The 2007 layout showed the rear of the lots backing up to the drainage channel, but the western half of the site did not identify the drainageways and it would result in filling in those drainage channels and eliminating them altogether. It would be a significant impact to the natural resource. The new plan was for 552 lots. The idea of life cycle housing promoted housing across a wide range of age and income groups to serve a wide range of demand in the City. They also wanted to promote ADA compliant intersections and street grades. He gave an example of one of the eliminated streets. If it was added back in, it would require West 2<sup>nd</sup> Street to be over 14% grade to make up for the flattening of the intersection to 5%. West 2<sup>nd</sup> Street was a collector and they wanted to keep it at 10% or below. The adjustments proposed were only occurring on local streets. The collector street was being kept at or below standard. He showed another example of Road A which would result in a street that was in excess of 30% grade.

Mr. Pelz explained that they had tried to balance the City's objective of promoting connectivity, and in locations where street connections could not be made there were pedestrian connections. There were over 20 acres of protected drainageway and a park. More open space was preserved in the back of the lots that would accommodate habitat and better protection of the drainageways throughout the site. Regarding the criteria, he asked the Commission to keep in mind that they were asking for the Commission's recommendation to approve a modification to an application that was approved in 2007. This was not a new planned development and there was a narrower scope for the decision.

Commissioner Schanche asked about the pedestrian accessways, how did they determine where they should go?

Paul Sellke, project engineer with AKS Engineering, said most of the accessways were located to split up walk lengths and provide connectivity between the longer block lengths that were created through the looped roads. They were centrally located in those areas.

Commissioner Schanche asked what was the typical grade for these walkways and did they all have stairs? What kind of stairs would they be, landscape stairs or concrete with railings? Mr. Sellke replied most would have stairs due to the steepness of the topography. To be accessible to the public, the stairs had to be an all-weather surface and had to be able to last long term.

Commissioner Schanche asked if they were going to put something in so people could wheel their bikes up the stairs? Mr. Sellke said they had discussed including a bike rail. Some of the grades would be 15% to 20%, but some would approach 40%.

Commissioner Schanche asked who would be in charge of maintaining the pedestrian pathways? Mr. Sellke answered it would most likely be done through an HOA.

Commissioner Chroust-Masin said they were worried about ADA intersections, but how did a handicapped person get up the streets when they were so steep?

Commissioner Geary asked how the western drainage slopes were overlooked? Zach replied he presumed what happened was they were overlooked due to the City's Code and that the analysis was required later in the process and not at the preliminary plat stage of the land use application.

Commissioner Chroust-Masin asked about the water supply and steep slopes. Mr. Pelz stated until a new reservoir was built to serve the upper elevations, there was an area that could not develop. That was a condition of the original application in 2007. There were about 250 lots above that line that could not be developed at this time.

Commissioner Schanche was concerned that people would not walk the really long blocks. She would like to see more pedestrian connections. She thought more connections was supported by Policy 77 and Residential Design Policy 81. Mr. Pelz said the policies changed when the topography was the overarching challenge.

Brad Bassitt pointed out this development would bring lots to the City that were much needed. Howard Aster had a long tradition of passing on lots to smaller home builders like he was. He had been able to build homes in the other phases of this project. This development had already been planned and this was only a request for a few changes.

John Dan lived within the development area. Mr. Aster sold a lot to Mr. Dan who then had a builder build his house. He walked down to the park all the time with his children. It was a beautiful park with nice walking paths. He had open fields all around him because development was not finished. There were wild turkeys and deer that walked through his yard. He did buy the lot knowing that development would continue. He thought the proposed changes were consistent with the character of the approved development and the lot sizes were similar. The drainageways were close to his house. It was a forested area until they cut down the trees and that might be why they were not seen before. They showed up when the snow melted, and they were not really visible even when it rained. It was hilly topography. Home values had increased in the last few years, and anyone who wanted an affordable home would have a difficult time. They needed more housing and did not want to take away farmland. They were going to have to build in the hills where there were steeper grades and longer blocks.

Nick Scarla stated this was a planned development already and the discussion should be if the amendments were an enhancement to the plan. He thought they were. There was a need for these lots. He asked the Commission to approve the application.

Rich Decker, McMinnville resident, said currently the work of cutting in the new road included blasting that was occurring in the neighborhood at unknown intervals. It bothered the dogs of the retirees, rattled cupboards, and so on. He asked if the developer could post a 24 hour notice before blasting. Mr. Aster said they had not blasted since October, however more blasting would need to be done. The contractors had tried to contact people, but obviously not everyone. He was open to suggestions.

Mr. Decker wanted to make sure the builders continued the look and feel of the neighborhood and trees. Chair Hall confirmed that was a requirement.

Scott Schieber, McMinnville resident, asked about the green areas contiguous with the drainageways, were they part of the lots and homeowner property? Zach clarified they would be private conservation easements on the private lots to protect the drainageways in perpetuity. People could not build on those areas, but they had to maintain them.

Mr. Schieber asked about the policy on building cul-de-sacs and if any were going to be built. Planning Director Richards explained the City had a policy that discouraged cul-de-sacs, but they were allowed when the conditions were such that they could not create the connectivity.

Susie Bamer, McMinnville resident, lived at the top of the hill on Horizon and she had to have pumps for the water pressure. Her pressure at the meter was 30 pounds and without the pump there was virtually no pressure. She was concerned about her water pressure being affected by the new homes coming in. She would like something in the record that stated the water situation would be resolved and in place before anything was developed on the top of the hill. As all of these houses were being developed, would they draw down the pressure on her home?

City Engineer Bissett stated there was a line that no one could develop past because there was no water available at this time. A reservoir site had been purchased on Fox Ridge. The plan was to pump from the existing reservoirs to that site and then gravity back down the hill.

Ms. Bamer asked for those houses that were on the pumps, could they use the reservoir in the future and have the pumps taken off their homes. Mr. Aster thought she would be able to remove the pump and feed off the new reservoir. A building permit would not be approved for any of the buildings above the line until the infrastructure was in place.

Rich Decker thanked City staff for their help in understanding this process. His main concern was about the water runoff from the hill. There was a detailed stormwater plan with this application. Over the last year with the beginning of construction, the City had a landslide on 2<sup>nd</sup> Street and water bubbled up through the stormdrain covers when it rained. Hill Road flooded, one channel had been dug behind the homes on 2<sup>nd</sup> in order to prevent water from getting in their backyards, there was routed water behind the houses on Mazama, and on the berm that was built for the road every three to five feet there was visible run off between three and six feet deep. There was a problem and they had not sealed off areas with asphalt yet or put houses in. He did not think the water that would come off of this hill was under control. If a house on the hill moved, it would make it so he could not sell his house.

City Engineer Bissett stated that there was a comprehensive stormwater analysis for this development that met the current adopted Stormwater Master Plan. Several of these issues were not related to this development. The drainage along Hill Road would be dealt with through the roadway improvements that the City was currently out to bid for. There was a large detention facility at the bottom of the hill near the park. There would be other stormwater detention in the plan and they were going to keep natural drainage areas open. Geotechnical analysis had been done that determined the landslide was an isolated slide. They had corrected that issue with drainage improvements and had structurally repaired the house that was damaged. The Building Official had to require geotechnical reports for future development as it proceeded. The current standard was that any lot that had fill had to have a geotechnical report done to demonstrate the fill was suitable for construction of a house. There were several check points to make sure the standards were being met and the house was being built on a suitable location. The applicant had a stormwater erosion permit and the permit was enforced through DEQ. Any issue with run off currently was being handled through the contractor of the project and the stormwater erosion plans they had that the state.

Mr. Aster said further development would help solve some of the drainage issues as the streets would cut off a lot of the drainage from above.

Mr. Decker raised a concern about Loop A road, if there was a fire and the neighborhood needed to empty, it would be difficult for all 120 houses to get out on one street while the fire trucks were trying to get in.

Fire Marshal McDermott thought the roads were wide enough to allow vehicles to come in and out at the same time. As development occurred, there would be less forest land and trees that could catch fire.

Commissioner Chroust-Masin asked if they foresaw any problems with sewer lines on these roads. Mr. Aster said there should not be a problem with sewer and stormwater lines as the topography worked to their favor in providing capacity for these services. They might have to blast to excavate the depth needed for the sewer lines.

The applicant agreed to waive the seven day period to submit final written arguments in support of the application.

Chair Hall closed the public hearing.

Commissioner Chroust-Masin said since this development had already been approved previously, and this was a modification to meet the new criteria, he did not see any reason for denial.

Commissioner Schanche was still concerned about open space. She realized this was an approved plan that was being modified. She thought it was disingenuous to say the drainageways could be considered open space as they were not meant to be accessible to the public. There was no way for the people in this development to get around other than by car. She suggested a condition that had added pedestrian connections.

Commissioner Butler agreed about the connections. They had added 40 more lots and some of that space could have been used to make the development more walkable and pedestrian friendly.

Commissioner Geary also concurred about the open space, however he did not know if they had leverage to make any changes to the existing planned development.

Mr. Aster said the plan was approved with the park as the required open space. There was no flat land to put a park up on the hill. The lots on the hill would have large backyards with creeks.

Commissioner Schanche read the planned development overlay purpose. She did not think this development fit with that purpose regarding open space.

Planning Director Richards said purpose statements were not criteria. They had to find criteria to request more open space than the neighborhood park.

Contract Attorney Spencer Parsons looked at the language of Policy 75 and the way staff was reading the language, the chapter was dealing with how open space was managed and maintained rather than a requirement for dedication of open space.

Mr. Aster said they were open to more pedestrian connections and suggested working with staff on locations. Mr. House said the park was built ahead of the housing. The park was what the City required for open space, and they had fulfilled that. He asked for a recess to work on this issue.

The Commission took a short break as requested.

Mr. Aster said they would be happy to add a condition of approval for more pedestrian walkways between the blocks and providing some space for a City park wherever the City would recommend.

Commissioner Butler asked what the price of the lots would be. Mr. Aster explained there would be bigger lots with CC&Rs for higher end homes, some would be lots for more middle class homes, and some would be common wall duplexes. They would go with what the market asked for. They tried to price lots at what home builders could afford, and yet be able to cover all their construction costs. They would sell most of the lots to other small, local builders and individuals who wanted to build on their own lots.

Commissioner Chroust-Masin asked when he expected this development to be built out. Mr. Aster said it depended on the market. They would try to build a subdivision per year, which was about 40 to 70 lots. It would be slow and controlled growth.

Chair Hall was in favor of approving the application. He asked who would maintain the pedestrian connections and park space. Mr. Aster said the pedestrian connections would be maintained by the Homeowners Association, however he thought the City should maintain the park. He was open to transferring some land to the City for a park, but he did not think they should be responsible for the park.

Chair Hall said if it was a park up on the hill, it was for the benefit of the home owners in that area. It was not a park that would be used by the rest of the City. Mr. Aster said there were many neighborhood parks that were owned by the City.

Commissioner Schanche said she had requested pedestrian connections consistent with Policy 77, Policy 132, and Residential Design Policy 81. She had not brought up parks.

Commissioner Butler said she was talking about open space, not necessarily a playground.

Planning Director Richards said the City's level of service was that every resident had access to a neighborhood park within a half mile of their residence. The City did not have funding to bring on additional parks for maintenance. Mr. House said the existing park was meant to be the park for the entire property. Mr. Aster said they were happy to work with the City to donate land for a park and to put in more pedestrian walkways.

Planning Director Richards said the developer was willing to provide more pedestrian connectivity that would be maintained through an HOA. Staff had language to include that in the motion.

Commissioner Schanche said the streets where she would like connections were: NW Brookshire to NW Canyon Creek Drive, Canyon Creek to Road A, Road A to the west, Road C to Road D, C Loop to Elizabeth, Road E to 2<sup>nd</sup>, and Road D to the future north.

There was discussion regarding the dedication of open space, since the City would not be able to maintain it. Chair Hall thought because it would benefit that neighborhood, not the rest of the City, it should be maintained by an HOA.

Commissioner Chroust-Masin thought the park would be used by other residents in the City.

Commissioner Butler said because it was in a wooded area and there were creeks in people's backyards, she suggested only requiring the pedestrian connections and not the park.

Based on the findings of fact, conclusionary findings for approval, and materials submitted by the applicant, Commissioner Schanche MOVED to recommend to the City council approval of ZC 6-17 subject to the staff recommended conditions of approval with an added condition for additional pedestrian connectivity between NW Brookshire and NW Canyon Creek Drive, Canyon Creek to Road A, Road A to the west, Road C to Road D, C Loop to Elizabeth, Road E to 2<sup>nd</sup> Street, and Road D to the northwest and an added condition requiring the formation of a Homeowners Association for maintenance of the pedestrian walkways. SECONDED by Commissioner Chroust-Masin. The motion CARRIED 5-0.

**1. Old/New Business**

None.

**2. Commissioner Comments**

None.

**3. Staff Comments**

None.

**4. Adjournment**

Chair Hall adjourned the meeting at 10:45 p.m.

---

Heather Richards  
Secretary



## Modification to Site Plan to Include Additional Pedestrian Connections as Approved by the Planning Commission on May 18, 2017

**Date:** May 30, 2017

**To:** Heather Richards, Planning Director, City of McMinnville

**From:** Zach Pelz, AICP, AKS Engineering and Forestry

**Project:** ZC 6-17: Hillcrest Planned Development Amendment

**Site Location:** Yamhill County Assessor's Map 4S-5-24 Lot 801

---

On May 18, 2017, the City of McMinnville Planning Commission unanimously recommended approval of the amendment to the Hillcrest Planned Development (ZC 6-17) submitted by West Hills Properties, LLC. The Planning Commission's recommendation imposed one additional condition of approval that would require additional pedestrian connections between the following proposed streets:

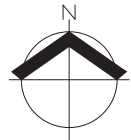
1. NW Brookshire St and NW Canyon Creek Dr;
2. NW Canyon Creek Dr and Road A;
3. Road A and Tax Lot 809;
4. Road C and Road D;
5. C Loop and NW Elizabeth St;
6. Road E and 2nd Street;
7. Road D and Tax Lot 809.

The Applicant fully supports the Planning Commission's recommendation to improve the walkability and overall connectivity of this topographically challenging site and has made minor modifications to the lot layout to allow additional pedestrian and bicycle access tracts in the above listed locations (see also Exhibit A, attached).

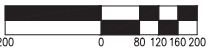
Attached: Exhibit A – Pedestrian Access Locations Revision

---

AKS DRAWING FILE: 5147 PED. ACCESS EXHIBITING | LAYOUT: EX-A



SCALE: 1" = 200 FEET



**LEGEND**

PUBLIC PEDESTRIAN PATH ACCESS LOCATIONS

CONCEPTUAL FUTURE ROADWAY EXTENSIONS AND CONNECTIONS TO ADJACENT PROPERTIES (TYP)

VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (TYP)

VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (TYP)

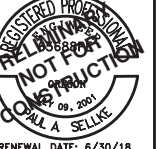
- NOTES:**
- PROPERTY LINES AND RIGHT-OF-WAY LINES ARE BASED ON INFORMATION PROVIDED BY GPS AND ARE CONSIDERED APPROXIMATE.
  - NO FIELD WORK HAS BEEN CONDUCTED AT THIS TIME.
  - THE PURPOSE OF THIS CONCEPTUAL DRAWING IS TO SHOW THE PROPOSED PUBLIC PEDESTRIAN ACCESS LOCATIONS FOR PLANNING PURPOSES. THE LAYOUT IS SUBJECT TO CHANGE BASED ON CITY REQUIREMENTS, UTILITY SERVICES, TRANSPORTATION REQUIREMENTS, NATURAL RESOURCES, SURVEY DATA, TOPOGRAPHIC CONSTRAINTS AND OTHER ITEMS.

**AKS**  
 AKS ENGINEERING & FORESTRY, LLC  
 12965 SW HERMAN RD, STE 100  
 TUALATIN, OR 97062  
 P: 503.563.6151  
 F: 503.563.6152  
 aks-eng.com

**HILLCREST PLANNED DEVELOPMENT MASTER PLAN UPDATE**  
 OREGON  
 YAMHILL COUNTY TAX MAP 4 5 24  
 MCMINNVILLE  
 TAX LOT 801

**PEDESTRIAN ACCESS LOCATIONS REVISION**

DESIGNED BY: CTS  
 DRAWN BY: CTS  
 CHECKED BY: PAS  
 SCALE: AS NOTED  
 DATE: 05/26/2017



RENEWAL DATE: 6/30/18

JOB NUMBER  
**5147**  
 EXHIBIT  
**A**