

## MEMORANDUM

**DATE:** June 13, 2023  
**TO:** Washington County  
City of Beaverton  
**FROM:** Monica Leal, PE  
Richard Martin, EIT



**SUBJECT:** REACH Elmonica Affordable Housing Access Management Plan P21-076

This memorandum summarizes the Access Management Plan (AMP) associated with the proposed Elmonica development to be located at 17030 W Baseline Road in Beaverton, Oregon. The development proposes 81 affordable multifamily housing units and has site frontages on W Baseline Road and SW 170<sup>th</sup> Avenue. No facilities currently exist on the site. However, the existing lot has one access point on each frontage roadway. Figures 1 and 2 shows the vicinity map and the preliminary site plan.

Agency standards and proposed access points were evaluated. Access points that do not meet Washington County standards may be allowed if an AMP is approved by the Agency. The purpose of this analysis is to review Agency standards, proposed access points, and address potential safety and operational problems if the proposed access points do not meet Agency standards. This AMP includes the following elements:

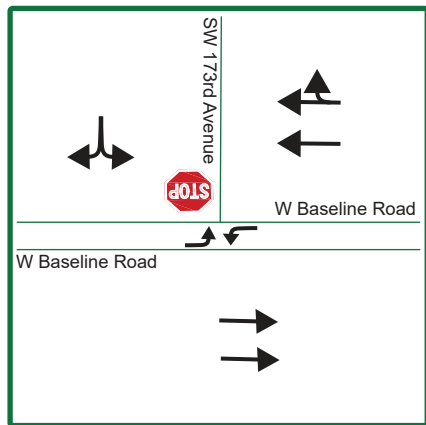
- Proposed Access Points
- Access Standards
- Exceptions to Access Standards

### PROPOSED ACCESS POINTS

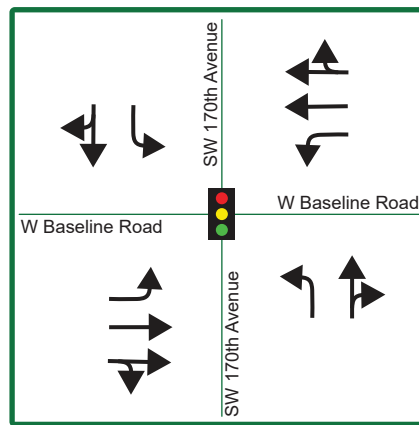
The Elmonica development is proposing an emergency right-out access on SW 170<sup>th</sup> Avenue. The proposed right-out access on SW 170<sup>th</sup> Avenue will be wide enough to accommodate emergency vehicles. The Elmonica development will share two accesses with a new neighboring development to be located at 17160 W Baseline Road. The proposed Elmonica development will utilize the shared access on W Baseline Road as a right-in/right-out access. The neighboring development will also have a full-movement access on SW 170<sup>th</sup> Avenue which is anticipated to be utilized by residents of the REACH Elmonica development. Figure 3 shows the available access points for the Elmonica development.



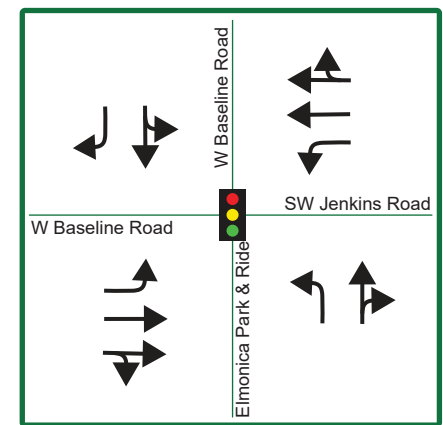
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① W Baseline Road at SW 173rd Avenue

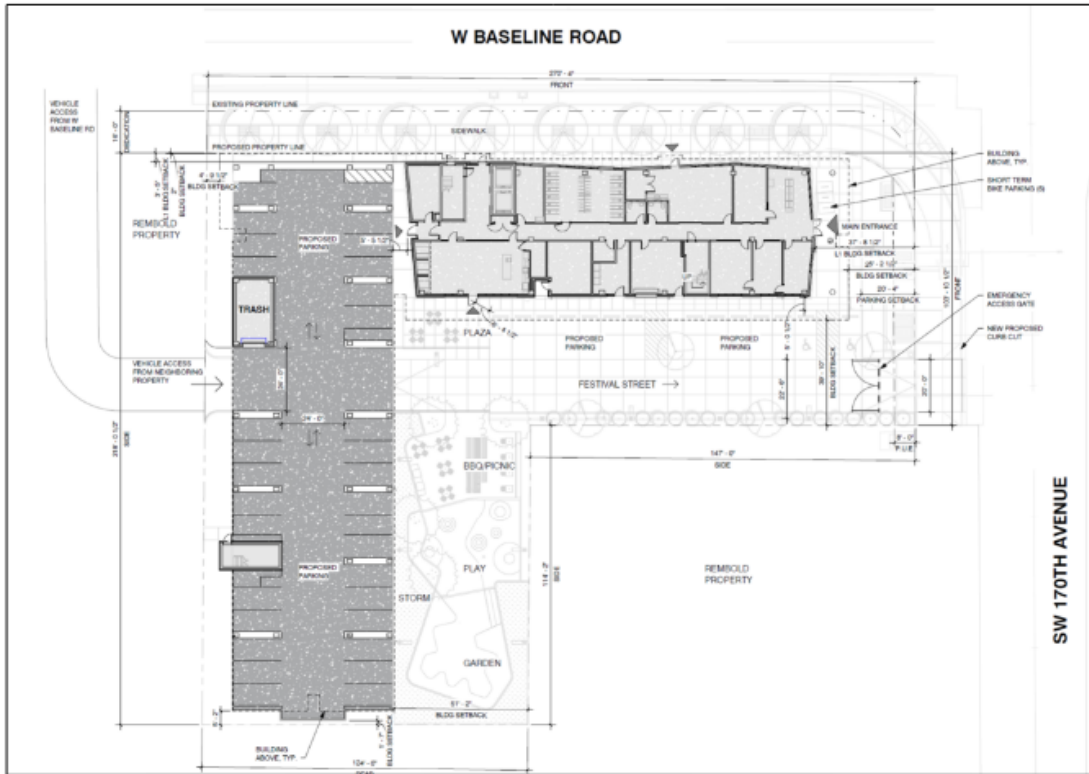


② W Baseline Road at SW 170th Avenue



③ W Baseline Road / SW Jenkins Road at Elmonica Park & Ride

**Figure 2: Preliminary Site Plan**



**Figure 3: Available Access Points**



- Access Points:
- #1 - Proposed Right-Out Access (Emergency Vehicles Only)
  - #2 - Proposed Shared Right-In/Right-Out Access
  - #3 - Proposed Access Between Developments
  - #4 - Proposed New Neighboring Development Full Movement Access

## ACCESS STANDARDS

The Washington County and City of Beaverton access standards are based on the functional classification of the roadways and existing speed limits within the study area. W Baseline Road and SW 170<sup>th</sup> Avenue are classified as arterials by Washington County. The existing posted speeds along W Baseline Road and SW 170<sup>th</sup> Avenue are 45 mph and 35 mph, respectively. Washington County and the City of Beaverton access standards are summarized below.

### Washington County

Based on Washington County Community Development Code Section 501-8.5, all developments shall have legal access to a public road, and all access points to arterials such as W Baseline Road and SW 170<sup>th</sup> Avenue must be at least 600 feet from any other intersection or other access point.

### City of Beaverton

Based on the City of Beaverton Engineering Design Manual Section 210.13.C, the minimum distance between the face of curb for the intersecting streets and the nearside edge of the proposed access is 180 feet for 35 mph (SW 170<sup>th</sup> Avenue) and 230 feet for 45 mph (W Baseline Road).

A summary of the access spacing standards and proposed access spacing is summarized in Table 1.

**Table 1: Access Spacing Standards and Proposed Spacing**

Access Points	Functional Classification	Posted Speed (mph)	Access Standards (ft) <sup>1</sup>		Proposed Spacing (ft) <sup>2</sup>		Meets Standard?			
			WA	Beaverton	Intersection	Access	Intersection		Access	
							WA	Beaverton	WA	Beaverton
Shared Access on W Baseline Rd (Right-In/Right-Out)	Arterial	45	600	230	335	180 <sup>3</sup>	No	Yes	No	No
Access on SW 170 <sup>th</sup> Ave (Right-Out)	Arterial	35	600	180	104	310 <sup>4</sup>	No	No	No	Yes

Notes: <sup>1</sup> Distance measured from the face of curb of the intersecting streets and nearside edge of driveway.  
<sup>2</sup> Distance measured from the face of curb of the W Baseline Road/SW 170<sup>th</sup> Avenue Intersection  
<sup>3</sup> Distance measured from the nearside edge of the existing access located at 17300 W Baseline Road. Based on a *preliminary* site plan for the new neighboring development.  
<sup>4</sup> Distance measured from the nearside edge of the new neighboring development access. Based on a *preliminary* site plan for the new neighboring development.  
 WA = Washington County

As shown in Table 1, the proposed access points do not meet Washington County standards. Access points that do not meet Washington County standards may be allowed if an AMP is approved by the Agency.

The proposed shared access on W Baseline Road does not meet the required City of Beaverton distance between access points. The proposed access on SW 170<sup>th</sup> Avenue does not meet the City of Beaverton distance to the intersection. The other City of Beaverton spacing standards are met.

## EXCEPTIONS TO ACCESS STANDARDS

Based on the Washington County access standards, the proposed access points do not meet standards. This AMP addresses the safety and operational problems which would be encountered should a modification to the access spacing standards be granted. An access management plan shall at minimum contain the following criteria which is also addressed in this section.

*(a) The minimum study area shall include the length of the site's frontage plus the distance of the applicable access spacing standard, as set forth in Section 501-8.5 B., measured from the property lines or access point(s), whichever is greater. For example, a property with 500 feet of frontage on a minor arterial (required 600-foot access spacing standard) shall have a minimum study area which is 1,700 feet in length.*

Figures 1 and 3 show the vicinity map and the study area that extends 600 feet beyond the boundaries of the proposed development. Since the project is located on the southwest quadrant on the W Baseline Road and SW 170<sup>th</sup> Avenue intersection, the study area focusses on the proposed access points west and south of the Elmonica development.

*(b) The access management plan shall address the potential safety and operational problems associated with the proposed access point. The access management plan shall review both existing and future access for all properties within the study area as defined above.*

A sight distance evaluation was conducted to evaluate safety and operational conditions at the proposed Elmonica access points. The Elmonica development is proposing a shared right-in/right-out access on W Baseline Road and a proposed right-out access for emergency vehicles on SW 170<sup>th</sup> Avenue. Crash data was also evaluated.

### ***Sight Distance Evaluation***

The sight distance evaluation follows the guidance provided in the Washington County Development Code Section 501-8.5, and the American Association of State Highway and Transportation Officials' (AASHTO) Geometric Design of Highways and Streets, 2011.

Per Washington County standards, minimum sight distance shall be equal to ten times the vehicle speed of the road. This analysis assumed an object height of 4.25 feet, a driver's eye height of 3.5 feet, and a driver's setback of 15 feet from the traveled way.

Because the proposed access points are limited to right-in/right-out on W Baseline Road and an emergency right-out on SW 170<sup>th</sup> Avenue, only the AASHTO right-turn intersection sight distance scenarios were evaluated. Sight distance was compared to the AASHTO design intersection and stopping sight distance for the following cases:

- Case B2, Right Turn from the Minor Road<sup>1</sup>
- Stopping Sight Distance for Level Roadway<sup>2</sup>

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<sup>1</sup> AASHTO, Case B2 – Intersections with stop control on the minor road (AASHTO, Case B2, Table 9-8).

<sup>2</sup> AASHTO, Table 3-1.

For a 35-mph roadway, AASHTO requires 250 feet of stopping sight distance (SSD) and 335 feet of intersection sight distance (ISD); and Washington County requires 350 feet of ISD. For a 45-mph roadway, AASHTO requires 360 feet of SSD and 430 feet of ISD; and Washington County requires 450 feet of ISD.

Table 2 shows a summary of the sight distance evaluation. Figure 4 illustrates sight distance for the shared W Baseline Road access. Figure 5 illustrates sight distance for the SW 170<sup>th</sup> Avenue access. Figures 6 to 8 show the stopping sight distance available for southbound vehicles on SW 170<sup>th</sup> Avenue and westbound left turn and eastbound right turn vehicles on W Baseline Road.

**Table 2: Sight Distance Evaluation**

Sight Distance Evaluated	Posted Speed (mph)	Estimated Available Sightline (ft)	Sight Distance Standards (ft)	Meets Standard?
<b>Proposed Access at W Baseline Road</b>				
Case B2: Right-turn	45	≈ 1,000	430 (AASHTO) 450 (County)	Yes
SSD - EB		≈ 1,000	360 (AASHTO)	Yes
<b>Proposed Emergency Access at SW 170<sup>th</sup> Avenue</b>				
Case B2: Right-turn – SB TH	35	350	335 (AASHTO)	Yes
			350 (County)	Yes
SSD–SB TH on SW 170th Ave	35	365	250 (AASHTO)	Yes
SSD–WB LT on W Baseline Rd	15 <sup>2</sup> / 17 <sup>3</sup> / 20 <sup>4</sup>	250 / 150 <sup>2</sup>	80 <sup>2</sup> / 95 <sup>3</sup> / 115 <sup>4</sup>	Yes
SSD–EB RT on W Baseline Rd		185	(AASHTO)	Yes
Notes:				
<sup>1</sup> SSD without vehicles on the NB left turn lane/ SSD with vehicles on the NB left turn lane. <sup>2</sup> 15 mph was utilized based on a field investigation conducted on December 28, 2022. An average speed of 15 mph was considered a comfortable driving speed for westbound and eastbound turning vehicles. <sup>3</sup> 17 mph was utilized based on coordination with Washington County and the Washington County Sight Distance Guidelines – Rev 2 Memorandum dated 4/8/2021. <sup>4</sup> 20 mph was included based on the Access Management Plan Comments provided by Washington County in December, 2022.				

**Figure 4: Looking west from the proposed W Baseline Road access**



**Figure 5: Looking north from the proposed SW 170<sup>th</sup> Avenue access (Southbound Traffic)**



**Figure 6: Stopping sight distance for southbound SW 170<sup>th</sup> Avenue traffic**



**Figure 7: Stopping sight distance for westbound left turn Baseline traffic**



**Figure 8: Stopping sight distance for eastbound right turn Baseline traffic**





Figure 4 shows that sight lines are clear for over 1,000 feet to the west from a potential W Baseline Road access. Figure 5 shows that sight lines from the proposed SW 170<sup>th</sup> Avenue access are limited by a roadway curve north of the intersection. However, the intersection sight distance was measured to be 350 feet, which meets all standards for the access. The existing trees located on the northwest quadrant of the W Baseline Road and SW 170<sup>th</sup> Avenue intersection are located within the clear sight triangle (See Figure 5). However, trees do not create a solid wall and vehicle visibility is not impacted. No sight distance issues were found and no mitigations are recommended.

SSD is met for southbound vehicles on SW 170<sup>th</sup> Avenue and westbound left turn and eastbound right turn vehicles on W Baseline Road. The SSD of 250 feet for the westbound left turn vehicles could be impacted by northbound left turn traffic. However, an SSD of approx. 150 feet is still available for westbound left turn traffic approaching the site access. No sight distance issues were found and no mitigations are recommended.

### **Crash Data**

The last five years of complete crash data (January 2016 through December 2020) was obtained from the ODOT Crash Data System and was reviewed to identify traffic safety concerns. No crashes related to the existing driveways were identified. Detailed crash data is included in the Elmonica Traffic Impact Analysis submitted on May 12, 2022.

- (c) *The access management plan shall include a comparison of all alternatives examined. At a minimum, the access management plan shall evaluate the proposed modification to the access spacing standard and the impacts of a plan utilizing the county standard for access spacing. Specifically, the access management plan shall identify any impacts on the operations and/or safety of the various alternatives.*

Based on the Washington County Community Development Code Section 501-8.5, all developments shall have a legal access to a public road. However, access spacing requirements for the Elmonica development site are limited by the proximity to the intersection of W Baseline Road at SW 170<sup>th</sup> Avenue, the size of the lot, and the required right of way dedication. Any access point will not meet the access standard of 600 feet from the W Baseline Road at SW 170<sup>th</sup> Avenue intersection. Due to the size of the lot, the possibilities to move an access point to meet the required spacing between access points is limited. Based on the Washington County Standards and the characteristics of the study area, access alternatives were evaluated to provide adequate access to the Elmonica development residents. Access management alternatives and recommendations are presented below.

### **SW 170<sup>th</sup> Avenue**

Based on coordination with Washington County, the Elmonica development is proposing an access for emergency vehicles on SW 170<sup>th</sup> Avenue where the existing access is currently located. The proposed access does not meet Washington County access spacing standards but meets sight distance standards. No crashes related to the existing driveway were reported in the last five years of available crash data.

### ***W Baseline Road***

Since the Elmonica development and the new neighboring development need an access point on W Baseline Road to facilitate vehicle, pedestrian, and bicycle circulation within the study area, the Elmonica development is proposing to share an access point on W Baseline Road and record an agreement between the two developments. The shared access will be built as part of the new neighboring development project. The shared access will reduce the number of access points to W Baseline Road which is classified as an arterial. Many studies have found that crash rates rise with greater frequency of access points.<sup>3</sup> Each additional access point increases crash potential.

The proposed shared access does not meet Washington County access standards but meets sight distance. Three existing access points on W Baseline will be consolidated into one shared access point. This is an acceptable alternative to reduce the frequency of access points on W Baseline Road.

Where restricting turning movements to and from an access is possible, it is most beneficial from a safety perspective to prohibit left-turning movements. Access management policies recommend restricting left turns where access points are provided along arterials.<sup>4</sup> The shared access point of W Baseline Road will be limited to a right-in/right-out access. Due to the potential eastbound left turn queues at the W Baseline Road and SW 170<sup>th</sup> Avenue intersection, the left-turning movement restriction will remove the potential of left turn overlapping along the existing two-way left turn lane on W Baseline Road. This restriction will also reduce the number of potential vehicle conflicts and will remove the potential of vehicle crashes caused by left turn traffic trying to cross heavy eastbound traffic volumes to access the driveway.

Based on coordination with Washington County, a right turn lane is planned for the intersection of W Baseline Road at SW 170<sup>th</sup> Avenue. A full movement access is also not recommended to reduce potential vehicle conflicts with the planned eastbound right turn lane.

A 2035 queueing analysis was completed as part of the Elmonica Traffic Impact Analysis. Based on this analysis and the proposed location of the shared access point, the 2035 eastbound right turn queue will not extend to the proposed shared access. However, it is recommended to reevaluate queueing and traffic conditions closer to the installation of the right turn lane.

Based on the Washington County Community Development Code Section 501-8.5, sight distance evaluation, the proposed shared right-in/right-out access configuration, and the limited access alternatives for the Elmonica development, the proposed shared right-in/right-out access provides a reasonable access alternative on W Baseline Road.

*(d) The access management plan shall include a list of improvements and recommendations necessary to implement the proposed access modification, specifically addressing all safety and operational concerns identified.*

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<sup>3</sup> NCHRP Impacts of Access Management Techniques, Page 3.

<sup>4</sup> NCHRP Impacts of Access Management Techniques, Conclusions and Recommendations, Policy Implications Section.

Based on the Washington County Community Development, sight distance evaluation, crash data, the proposed access turning restrictions, the proposed reduction of access points, coordination with Washington County, and the limited access alternatives for the Elmonica development, the following access points are recommended:

- Provide a right-out access on SW 170<sup>th</sup> Avenue. The proposed access meets sight distance standards. However, it doesn't meet access spacing standards. Based on coordination with Washington County, this access will be utilized for emergency vehicles only.
- Provide a shared right-in/right out access on W Baseline Road. The proposed access point will be shared with the new neighboring development and an agreement will be recorded. The shared access will be built as part of the new neighboring development project. Three existing access points on W Baseline will be consolidated into this shared access point. This will reduce the number of access points to W Baseline Road which is classified as an arterial. Many studies have found that crash rates rise with greater frequency of access points. Each additional access point increases crash potential.
- The neighboring development will also have a full-movement access on SW 170<sup>th</sup> Avenue which is anticipated to be utilized by residents of the REACH Elmonica development.