DR 23-01 VAR 23-01 4th Avenue 5-plex
Attachment C Transportation Analysis

ARD ENGINEERING
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Technical Memorandum

To: Brianna Addotta, Development Services Department, City of Canby

From: Michael Ard, PE

Date: April 26, 2022

Re: 4th Avenue 5-Plex – Trip Generation Analysis and Scoping Memo

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This memorandum is written to provide information related to a proposed residential development to be located at 442 NW 4th Avenue in Canby, Oregon. It is written to provide information regarding the number of trips anticipated in association with the development and to discuss what is necessary to determine whether the existing street system can safely accommodate the added traffic from this development.

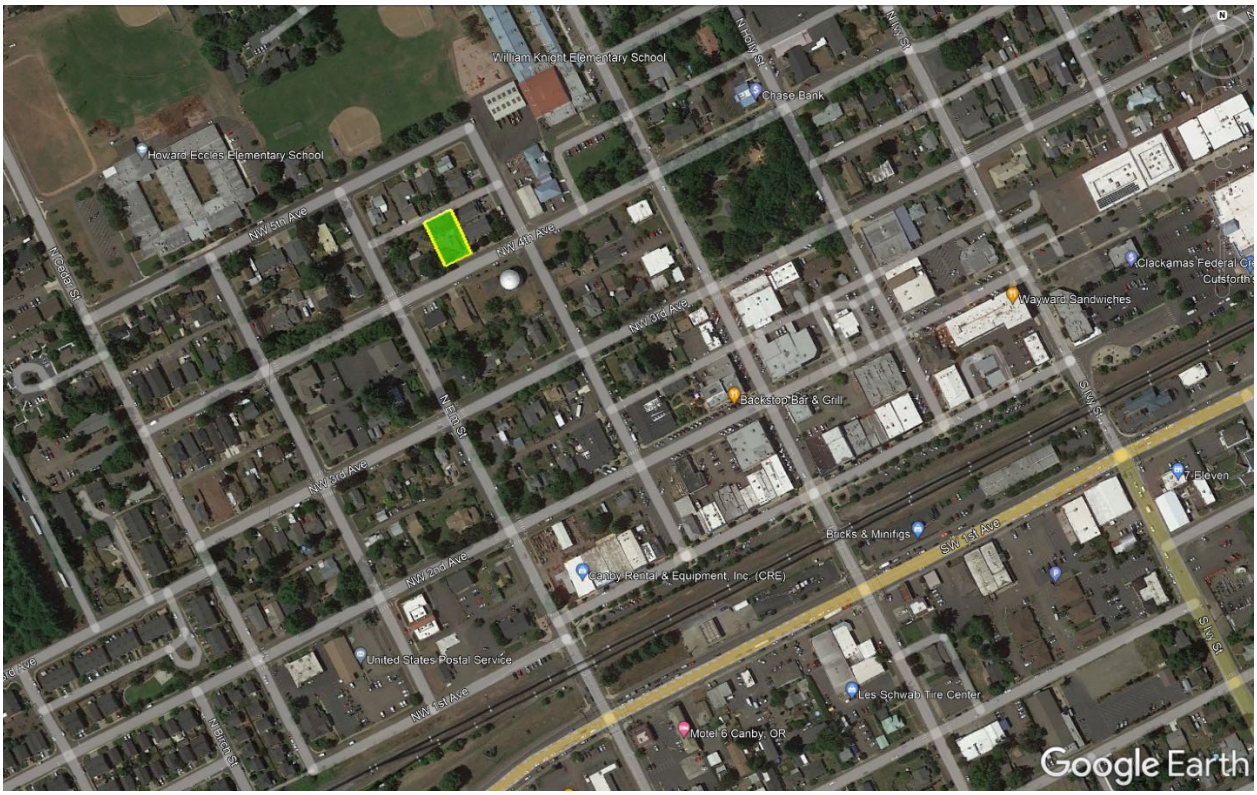
Site Location and Project Description

The subject property is on the northwest side of NW 4th Avenue between N Elm Street and N Fir Street in Canby. The subject property is zoned R-2, High-Density Residential, and multi-family dwellings are permitted within the zone. The site is currently occupied by a single-family home, which takes access via a driveway on NW 4th Avenue. Under the proposed development plan, the existing home will be removed, and five new dwelling units will be constructed within two buildings on the site (one duplex and one triplex unit).

NW 4th Avenue is classified by the City of Canby as a Local Street. It accommodates two-way traffic with one travel lane in each direction and a statutory residential speed limit of 25 mph. Partial curbs and sidewalks are in place on both sides of the roadway. On-street parking is also available on both sides of the street.

The project site is surrounded primarily by existing residential land uses. Other uses in the site vicinity include a Canby water supply facility on the opposite side of NW 4th Avenue adjacent to N Fir Street and two elementary schools (Howard Eccles Elementary School and William Knight Elementary School) located within approximately 3 blocks to the northwest and northeast of the subject property. There are also commercial and institutional uses to the south and Wait City Park is located 2 blocks to the northeast.

An aerial image showing the site location is provided in Figure 1 on the following page.



Aerial view of project site (image from Google Earth)

TRIP GENERATION

The trip generation estimate for the proposed use was prepared using data from the *Trip Generation Manual, 11th Edition,* published by the Institute of Transportation Engineers. Trip generation was calculated using the published trip rates for ITE land use code 215, *Single-Family Attached Housing*. The calculations are based on the number of dwelling units. Since the proposed development will replace the existing single-family home on the property, the site trips associated with the existing single-family home were subtracted to determine the net increase in site trips associated with the proposed development.

Based on the analysis, the proposed residential development is projected to generate 1 new trip during the morning peak hour, 2 new trips during the evening peak hour, and 27 new daily trips.

A summary of the trip generation calculations is provided in the table on the following page. A detailed trip generation calculation worksheet is also included in the attached technical appendix.

4th Avenue Four-Plex: Trip Generation Calculation Summary

	Morning Peak Hour			Evening Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
5 Single-Family Attached Homes	1	1	2	2	1	3	36
-1 Existing Single-Family Home	0	-1	-1	-1	0	-1	-9
Net Increase in Site Trips	**1**	**0**	**1**	**1**	**1**	**2**	**27**

TRAFFIC IMPACT STUDY SCOPING

The City of Canby's Zoning Code Section 16.08.150 establishes the requirements for transportation analysis of new developments. Sub-section (E)(1) establishes that:

"The study area will generally comprise an area within a ½-mile radius of the development site. If the city determines that development impacts may extend more than ½ mile from the development site, a larger study area may be required. Required study intersections will generally include (in addition to primary access points) collector/collector and above intersections with an anticipated peak hour traffic increase of five-percent from the proposed project."

In this instance, due to the low trip generation associated with the proposed development, an existing collector/collector intersection would need to accommodate fewer than 40 peak-hour trips in order for two trips to constitute an impact of 5 percent or greater. However, no collector/collector intersections have peak-hour traffic volumes that low. Therefore, no collector/collector intersections would be projected to experience a peak-hour traffic increase of five percent or more, and no off-site intersections will require analysis to meet the city's code requirements.

Additionally, since the impacts of the proposed development will be negligible, any requirement for mitigation would be disproportionate to the impacts of the proposed development. As such, no detailed operational analysis or mitigation is recommended in conjunction with the proposed development.

NEIGHBORHOOD THROUGH TRIP STUDY

Since the proposed development is located on an existing residential local street, it is also subject to the city's requirements for a Neighborhood Through Trip Study. Per City of Canby code section 16.08.150(H):

"Any development projected to add more than 30 through-vehicles in a peak hour or 300 through/vehicle per day to an adjacent residential local street or neighborhood route will require assessment and mitigation of residential street impacts."

In this instance, the proposed development will generate traffic increases that are far below the thresholds that require analysis. Again, no detailed analysis is therefore required in conjunction with the proposed development.

CONCLUSIONS

Based on the trip generation projections, the impacts of the proposed development fall well below the thresholds that would trigger the need for detailed analysis, and no mitigation can reasonably be recommended in conjunction with the proposed development which would remain proportionate to the impacts of the development. Accordingly, no further detailed analysis is recommended for the proposed five-plex development at 442 NW 4th Avenue.

If you have any questions regarding this analysis, please feel free to contact me at (503)537-8511 or via email at mike.ard@gmail.com.

Appendix

Trip Generation Calculation Worksheet

Land Use Description: Single-Family Attached Housing
ITE Land Use Code: 215
Independent Variable: Dwelling Units
Quantity: 5 Dwelling Units
Setting: General Urban/Suburban and Rural

Summary of ITE Trip Generation Data

AM Peak Hour of Adjacent Street Traffic
Trip Rate: 0.48 trips per dwelling unit
Directional Distribution: 31% Entering 69% Exiting

PM Peak Hour of Adjacent Street Traffic
Trip Rate: 0.57 trips per dwelling unit
Directional Distribution: 57% Entering 43% Exiting

Total Weekday Traffic
Trip Rate: 7.2 trips per dwelling unit
Directional Distribution: 50% Entering 50% Exiting

Site Trip Generation Calculations

5 Dwelling Units

	Entering	Exiting	Total
AM Peak Hour	1	1	2
PM Peak Hour	2	1	3
Weekday	18	18	36

Data Source: *Trip Generation Manual, 11th Edition* , Institute of Transportation Engineers, 2021

Trip Generation Calculation Worksheet

Land Use Description: Single-Family Detached Housing
ITE Land Use Code: 210
Independent Variable: Dwelling Units
Quantity: 1 Dwelling Units
Setting: General Urban/Suburban and Rural

Summary of ITE Trip Generation Data

AM Peak Hour of Adjacent Street Traffic
Trip Rate: 0.70 trips per dwelling unit
Directional Distribution: 26% Entering 74% Exiting

PM Peak Hour of Adjacent Street Traffic
Trip Rate: 0.94 trips per dwelling unit
Directional Distribution: 63% Entering 37% Exiting

Total Weekday Traffic
Trip Rate: 9.43 trips per dwelling unit
Directional Distribution: 50% Entering 50% Exiting

Site Trip Generation Calculations

1 Dwelling Units

	Entering	Exiting	Total
AM Peak Hour	0	1	1
PM Peak Hour	1	0	1
Weekday	5	4	9

Data Source: *Trip Generation Manual, 11th Edition* , Institute of Transportation Engineers, 2021

MEMORANDUM

DATE: June 11th, 2022

TO: Brianna Addotta and Don Hardy, City of Canby

FROM: Kevin Chewuk | DKS Associates

SUBJECT: Canby NW 4th Avenue 5-Plex
Transportation Analysis Findings and Conditions

Per your request, we have reviewed the memorandum submitted for the proposed NW 4th Avenue 5-Plex development[1] to determine if it adequately addresses City requirements for analyzing and reporting on potential transportation impacts. Typically, the City transportation review process would include coordination for scoping requirements prior to initiating the study, and this summary memo includes both a review of the submitted content and a documentation of needed information to address City transportation analysis requirements.

LEVEL OF TRANSPORTATION ANALYSIS REQUIRED

Based on information provided by the applicant about the proposed development, it was determined that it meets the criteria for a Transportation Analysis Letter (TAL) level of analysis. The proposed development is deemed consistent with the approval criteria 16.08.160.F (i.e., adopted intersection mobility standards) and only needs to provide a level of analysis that is consistent with the other specified approval criteria included in the Canby Municipal Code 16.08.160.

The specific requirements for a TAL are highlighted below, with a summary of what the applicant submitted and what additional information will need to be provided to address the criteria.

TRIP GENERATION

The applicant submitted trip generation information for the proposed project based on ITE Code 215 (Single-Family Attached Housing) using the latest version of the ITE Trip Generation Manual (11th Edition). The submitted content was reviewed and accurately addresses this requirement. No additional information is needed here.

[1] NW 4th Avenue 5-Plex- Trip Generation Analysis and Scoping Memo, Ard Engineering, April 26, 2022

TRIP DISTRIBUTION AND ASSIGNMENT

Typically, the resulting site generated traffic for the proposed project should be distributed and assigned to the existing or proposed arterial and collector roadway network during the AM and PM peak hours. This is required for documenting vested trips at these intersections and the City keeps records of these trips to apply to new developments. However, given the low resulting trip generation, the City will consider this requirement addressed for this proposed project.

TRANSPORTATION SYSTEM CIRCULATION AND ACCESS

A summary of proposed site access, qualitative impact on the transportation system and a review of on-site facilities and their connections to off-site facilities is also required for a TAL. This includes addressing compliance with applicable access spacing standards and providing an evaluation of available sight distance at any proposed access points, and a summary of street segments and intersections impacted by project generated trips, which includes pedestrian, bike and motor vehicle trips.

Again, given the low resulting trip generation, the City will consider the requirement for assessing the impact of motor vehicle traffic along nearby street segments and at intersections addressed. However, the City requests the following from the applicant to fully address the transportation approval criteria:

- Provide information on the conditions of the project frontage, to include more details on the cross-section elements and whether it meets City requirements, and make a finding on if the segment can accommodate the additional vehicle, pedestrian, and bicycle traffic expected.

- If the frontage does not meet current City standards, provide information on what improvements will be provided.

- Provide a site plan and document any proposed access onto public roadways. The applicant submitted study states that one driveway connecting to NW 4th Avenue exists today, which is a Local Street. Local street access spacing standards are documented in Canby Municipal Code 16.46.030. Provide information on what access will remain and/or is proposed, to be supported by a comparison to City access spacing and sight distance standards.

NEIGHBORHOOD TRAFFIC

The applicant provided information adequately addresses City neighborhood trip impacts included in Canby Municipal Code 16.08.150.H. The proposed site is expected to generate 2 or fewer new peak trips, and 27 new daily trips, well under the neighborhood trip impact threshold.

SUMMARY OF FINDINGS

The City has determined that the applicant has not provided enough information to satisfy the transportation approval criteria and livability measures for neighborhood traffic and pedestrian and bicycle circulation. The following information is needed to deem all criteria met:

- Provide information on the conditions of the project frontage, to include more details on the cross-section elements and whether it meets City requirements, and make a finding on if the segment can accommodate the additional vehicle, pedestrian, and bicycle traffic expected (Canby Municipal Code 16.08.160.E).

- If the frontage does not meet current City standards, provide information on what improvements will be provided (Canby Municipal Code 16.08.160.E).

- Provide a site plan and document any proposed access onto public roadways. The applicant submitted study states that one driveway connecting to NW 4th Avenue exists today, which is a Local Street. Local street access spacing standards are documented in Canby Municipal Code 16.46.030. Provide information on what access will remain and/or is proposed, to be supported by a comparison to City access spacing and sight distance standards (Canby Municipal Code 16.08.160.B and D).

TECHNICAL MEMORANDUM

DATE: July 1st, 2022

TO: Brianna Addotta and Don Hardy, City of Canby

FROM: Kevin Chewuk, PTP | DKS Associates

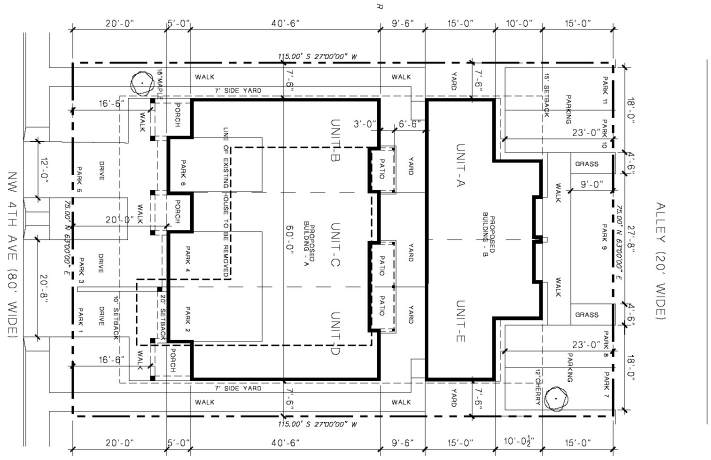
SUBJECT: Canby NW 4th Avenue 5-Plex
Transportation Analysis Support

This memorandum provides additional information to satisfy the City's transportation approval criteria and livability measures for neighborhood traffic and pedestrian and bicycle circulation for the proposed 5-Plex located along NW 4th Avenue in Canby, Oregon. These additional transportation analysis needs were documented in the City's review[1] of the original materials provided by the applicant[2], and with this supporting analysis, all transportation approval criteria will be met.

PROJECT DESCRIPTION

The proposed project is located on the northwest side of NW 4th Avenue between N Elm Street and N Fir Street in Canby, Oregon. The proposed development is for 5 attached residences in two separate buildings. The site plan can be seen in Figure 1.

FIGURE 1: SITE PLAN



[1] Transportation Analysis Findings and Conditions, Canby NW 4th Avenue 5-Plex, June 15, 2022.
[2] NW 4th Avenue 5-Plex- Trip Generation Analysis and Scoping Memo, Ard Engineering, April 26, 2022

SITE ACCESS AND CIRCULATION

SITE ACCESS

Access to the site is proposed via two driveways to the 3 residences fronting NW 4th Avenue (the proposed driveways to Units C and D were considered a single shared driveway); two driveways will also be provided for the 2 residences in the back off the alley.

ACCESS SPACING

The City of Canby has jurisdiction over NW 4th Avenue and applies a functional classification of "Local" to it. City standards require driveways to be spaced at least 10 feet apart on the same side of Local streets and spaced at least 5 feet from the property line[3]. There are no minimum distances required between driveways along alleys.

The proposed driveways on NW 4th Avenue will be approximately 15 feet from side property lines and 10 feet from each other[4], complying with the spacing standard.

SIGHT DISTANCE

The sight triangle at intersections should be clear of objects (large signs, landscaping, parked cars, etc.) that could potentially limit vehicle sight distance. In addition, all proposed accesses should meet AASHTO sight distance requirements as measured from 15 feet back from the edge of pavement[5].

The proposed driveways to NW 4th Avenue would require a minimum of 280 feet of sight distance based on a 25-mph design speed. Preliminary sight distance evaluation from the approximate location of the proposed driveways indicates expected sight distance beyond the N Elm Street intersection looking to the west (over 400 feet) and beyond the N Fir Street intersection looking to the east (over 400 feet). Prior to occupancy, sight distance at all access points will need to be verified, documented, and stamped by a registered professional Civil or Traffic Engineer licensed in the State of Oregon.

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[3] Canby Municipal Code 16.10.070(B)(9). Retrieved July 2022. Note that attached single-family residences are considered single-family units for the purposes of access spacing standards.

[4] The proposed driveways to Units C and D were considered a single shared driveway, so the 10-foot spacing standard between driveways was only applied between the shared driveway and the driveway to Unit B.

[5] AASHTO – Geometric Design of Highways and Streets, 7th edition, 2018.

SITE FRONTAGE

The proposed site has frontage along NW 4th Avenue. As documented earlier, the City of Canby has jurisdiction and applies a functional classification of "Local" to it.

The applicant will be required to design and construct half-street improvements along the entire site frontage to City standard. NW 4th Avenue is improved and exceeds the City's cross-section standard for Local streets, with a 50-foot paved width (the current standard requires a 34-foot paved width for Local streets). However, the existing 5-foot sidewalk along the frontage is substandard and the applicant should reconstruct with a 6-foot sidewalk. The existing roadway, with the frontage pedestrian improvements, can adequately accommodate the additional vehicle, pedestrian, and bicycle traffic expected.

INTERNAL SITE CIRCULATION

The proposed site plan (shown earlier in Figure 1) shows two driveways to the 3 residences fronting NW 4th Avenue and two driveways for the 2 residences in the back off the alley. These driveways will provide off-street parking for each residence and will provide adequate circulation to the surrounding existing roadway network.

The site plan also includes a proposed sidewalk from NW 4th Avenue connecting to the entrances of Units B, C and D, and to the entrances of Units A and E fronting the back alley.

APPROVAL CRITERIA AND LIVABILITY MEASURES

The following sections summarize how the proposed project adequately addresses the transportation approval criteria and the livability measures for neighborhood traffic and pedestrian and bicycle circulation.

TRANSPORTATION APPROVAL CRITERIA

The Canby Municipal Code 16.08.160 includes transportation approval criteria that each proposed development must satisfy. This includes criteria B, D, E, and F, as summarized below. While Criteria A, C and E.3 are not transportation related criteria, they are still applicable for approval. See the respective documents or plans for more details on how this proposed development meets Criteria A, C and E.3.

A. ADEQUATE STREET DRAINAGE, AS DETERMINED BY THE CITY.

Non-transportation related criteria. See respective project documents/plans for information.

B. SAFE ACCESS AND CLEAR VISION AT INTERSECTIONS, AS DETERMINED BY THE CITY.

The proposed driveways on NW 4th Avenue will be approximately 15 feet from side property lines and 10 feet from each other, complying with the spacing standard.

Prior to occupancy, sight distance at the driveways will need to be verified, documented, and stamped by a registered professional Civil or Traffic Engineer licensed in the State of Oregon. Preliminary sight distance evaluation from the approximate location of the proposed driveways indicates that they would be expected to provide adequate sight distance in both directions.

C. ADEQUATE PUBLIC UTILITIES, AS DETERMINED BY THE CITY.

Non-transportation related criteria. See respective project documents/plans for information.

D. ACCESS ONTO A PUBLIC STREET WITH THE MINIMUM PAVED WIDTHS AS STATED IN SUBSECTION E BELOW.

Access to the project site is proposed via two driveways to the 3 residences fronting NW 4th Avenue and two driveways for the 2 residences in the back off the alley. The driveway to Unit B will be 12-feet wide, while an approximately 21-foot shared driveway will serve Units C and D. Units A and D will both include an 18-foot driveway connecting to the alley. These proposed driveways comply with the City's driveway width standards for residential uses and will provide adequate circulation for motor vehicles to the surrounding existing roadway network. The site also includes a proposed sidewalk from NW 4th Avenue connecting to the entrances of Units B, C and D, and to the entrances of Units A and E fronting the back alley.

E. ADEQUATE FRONTAGE IMPROVEMENTS AS FOLLOWS:

1. **For local streets and neighborhood connectors, a minimum paved width of 16 feet along the site's frontage.**

   The proposed site has frontage along NW 4th Avenue. NW 4th Avenue is improved and exceeds the City's cross-section standard for Local streets, with a 50-foot paved width. The applicant should reconstruct the existing substandard sidewalk along the frontage with a 6-foot sidewalk. The existing roadway, with the frontage pedestrian improvements, can adequately accommodate the additional vehicle, pedestrian, and bicycle traffic expected.

2. **For collector and arterial streets, a minimum paved width of 20 feet along the site's frontage.**

   N/A. NW 4th Avenue is classified as a Local street.

3. **For all streets, a minimum horizontal right-of-way clearance of 20 feet along the site's frontage.**

   Non-transportation related criteria. See respective project documents/plans for information.

F. COMPLIANCE WITH MOBILITY STANDARDS IDENTIFIED IN THE TSP. IF A MOBILITY DEFICIENCY ALREADY EXISTS, THE DEVELOPMENT SHALL NOT CREATE FURTHER DEFICIENCIES.

The proposed development will generate no more than 2 new peak hour trips, and 27 new daily trips, and met criteria for a TAL level of analysis. Peak hour intersection operations will not be degraded by proposed developments that generate fewer than 25 AM and/or PM peak trips since these trips are distributed system wide and do not all impact a single location, including intersections and roadway segments. Proposed developments that meet the TAL criteria are deemed consistent with this approval criteria (i.e., adopted intersection mobility standards).

LIVABILITY CRITERIA

In addition, each project must comply with livability measures for neighborhood traffic and pedestrian and bicycle circulation. A summary is provided below for the proposed project.

NEIGHBORHOOD TRAFFIC

The proposed site is expected to generate 2 or fewer new peak trips, and 27 new daily trips, well under the neighborhood trip impact standard. The adjacent local street (i.e., NW 4th Avenue) will connect the site with nearby collector and arterial streets and maintain a level of traffic volume that is consistent with the local street classifications (i.e., under 1,200 daily trips).

PEDESTRIAN AND BICYCLE CIRCULATION

The proposed site has frontage along NW 4th Avenue. NW 4th Avenue includes sidewalks on both sides of the street, and bicyclists share the roadway with motor vehicles, consistent with the City cross-section standard for Local streets. Although the sidewalk along the frontage must be widened to 6-feet to comply with the City's design standard for local streets. The existing roadway, with the frontage pedestrian improvements, can adequately accommodate the additional vehicle, pedestrian, and bicycle traffic expected.

TRANSPORTATION CONDITIONS OF APPROVAL

The following is a summary of the transportation conditions of approval:

1. The development shall pay Transportation System Development Charges to address citywide impacts.
2. The development shall design and reconstruct the existing 5-foot sidewalk along the NW 4th Avenue frontage with a 6-foot sidewalk.
3. Minimum sight distance requirements shall be met at all site accesses. Sight distances should be verified in the final engineering/construction stages of development.