



Memorandum

To: **Emily Moran**
State Street Homes

From: **Myla Cross**

Date: **August 29, 2022**

Subject: **State Street Homes**
Transportation Analysis Letter



EXPIRES 12/31/2022

This Transportation Analysis Letter (TAL) evaluates the transportation impacts of the proposed State Street Homes development, consisting of 42 apartment units and 35 self-storage units, located at 38015 Highway 26 in Sandy, Oregon. Based on feedback from City of Sandy staff, a full traffic impact study is not required; however, this TAL is provided to address potential transportation-related concerns.

The purpose of this TAL is to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting the existing and proposed uses, as well as to determine any mitigation that may be necessary to do so. Detailed information on trip generation calculations and safety analyses are included as an attachment to this letter.

Location Description

The proposed State Street Homes is located north of Highway 26, and west Bluff Road. The adjacent land uses are predominately residential and commercial properties. The project site is currently undeveloped. Access will be provided via a shared driveway between the project site (tax lot 902) and the property to the west (tax lot 1000).

Vicinity Roadways

The proposed development is expected to mainly impact Highway 26, as this roadway provides access to the site. Table 1 provides a description of Highway 26.

Table 1: Vicinity Roadway Descriptions

Street Name	Jurisdiction	Functional Classification	Cross-Section	Speed (MPH)	Curbs & Sidewalks	On-Street Parking	Bicycle Facilities
Highway 26	ODOT	Major Arterial/ Statewide Hwy	5 lanes	40	Both Sides	Not Permitted	Both Sides

Figure 1 presents an aerial image of the nearby vicinity with the project site outlined in yellow.



Figure 1: Aerial Photo of Site Vicinity (Image from Google Maps)

Trip Generation

The State Street Homes development will include the construction of a four-story apartment building, consisting of 42 apartment units and 35 self-storage units on the ground floor. To estimate the number of trips that will be generated by the proposed use, trip rates from the *Trip Generation Manual*¹ were used. Specifically, data from the following land use codes were used:

- 151, *Mini-Warehouse*, based on the number of storage units.
- 221, *Multifamily Housing (Mid-Rise)*, was used based on the number of dwelling units.

The trip generation calculations show that the proposed project is projected to generate 16 morning peak hour trips, 17 evening peak hour trips, and 196 average weekday trips. The trip generation estimates are summarized in Table 2. Detailed trip generation calculations are included as an attachment to this memorandum.

Table 2: Trip Generation Summary

Land Use	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday Total
			In	Out	Total	In	Out	Total	
Mini-Warehouse	151	35 storage units	0	0	0	1	0	1	6
Multifamily Housing (Mid-Rise)	221	42 dwelling units	4	12	16	10	6	16	190
Total:			4	12	16	11	6	17	196

¹ Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.

Trip Distribution

A preliminary directional distribution of site trips to and from the proposed development was estimated based on locations of likely destinations and locations of major transportation facilities in the site vicinity. The following trip distribution was used for analysis:

- Approximately 40 percent of site trips will travel to/from the east along Highway 26;
- Approximately 40 percent of site trips will travel to/from the west along Highway 26; and
- Approximately 20 percent of site trips will travel to/from the north along Bluff Road.

Crash History

Using data obtained from ODOT's Crash Data System, a review of approximately five years of the most recent available crash history (January 2016 through December 2020) was performed along the site frontage on Highway 26. The crash data was evaluated based on the number of crashes, the type of collisions, and the severity of the collisions. Specific to the site access intersection (i.e. the existing access which currently serves Paola's Pizza Barn to the west of the site), a crash rate was calculated for the intersection by utilizing annual average daily traffic (AADT) volumes from ODOT's TransGIS website.

Crash severity is based on injuries sustained by people involved in the crash, and includes five categories:

- *PDO* – Property Damage Only;
- *Injury C* – Possible Injury;
- *Injury B* – Suspected Minor Injury;
- *Injury A* – Suspected Serious Injury; and
- *Fatality*

Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates in excess of 1.00 crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation. According to *Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control* of ODOT's Analysis Procedures Manual² (APM), intersections which experience crash rates in excess of their respective 90th percentile crash rates should be "flagged for further analysis". For stop-controlled, three-legged intersections in urban settings, the average and 90th percentile rates of 0.131 CMEV and 0.293 CMEV are applicable to the study intersection.

Based on the crash data, there was one reported crash located at the site access along Highway 26. The crash occurred when the driver of a southbound vehicle turning right from the site access failed to yield right-of-way to a westbound vehicle on Highway 26. The crash was classified as *PDO* – Property Damage Only. Given the

² [Oregon Department of Transportation: Analysis Procedures Manual](#)



AADT of Highway 26 at a location just west of Bluff Road is approximately 29,000 vehicles, the crash rate at the intersection was calculated to be 0.019 CMEV.

There were six other crashes reported on Highway 26 within the vicinity of the site access that were rear-end collisions involving vehicles traveling eastbound or westbound on the highway, none of which appear to be related to the existing site access intersection or any other driveways along this segment of Highway 26. Crash reports for the study area are included as an attachment to this memorandum.

Based on the review of the available crash data, no significant trends or crash patterns were identified at the site access intersection that were indicative of safety concerns. In addition, the study intersection does not exhibit crash rates near or above the ODOT's 90th percentile rate. Accordingly, no safety mitigation is recommended per the crash data analysis.

Sight Distance Evaluation

Sight Distance Definitions & Methodologies

Sight Distances were measured at the proposed site access along Highway 26 in accordance with standards established in *A Policy on Geometric Design of Highways and Streets*³.

Intersection sight distance is an operational measure, intended to provide sufficient line of sight along the major-street so that a driver can enter the roadway without impeding the flow of through traffic. For intersection sight distance, the driver's eye is assumed to be 14.5 feet from the near edge of the travel lane of the intersecting street and at a height of 3.5 feet above the approach street pavement.

Stopping sight distance is considered the minimum requirement to ensure safe operation of the driveway. This distance allows the driver of a vehicle traveling on the major-street to react to a turning vehicle or other object in the roadway and come to a complete stop to avoid a collision.

Sight Distance Measurements

A field investigation was conducted on Wednesday, August 17th, 2022, to measure sight distance at the proposed site access location along Highway 26. Based on the posted speed of 40 mph on Highway 26, the minimum recommended intersection sight distance for vehicles at a stopped position is 500 feet for left turning vehicles (viewing to the west of the site access), and 385 feet for right-turning vehicles (viewing to the east of the access). The minimum required stopping sight distance standard is 305 feet for both left and right-turning vehicles.

Due to existing fence and landscaping, sight distance measurements were taken from 11 feet behind the near edge of the travel lane rather than the standard 15 feet behind. However, there are no existing horizontal curves in the road near this location and no other obstructions were noted either on-site or along the roadway which would reduce sight distances to less than those measured in the field if measurements had been conducted at the standard 15-foot distance.

To the east, sight distance was measured back to the intersection of Highway 26 & Bluff Road approximately 425 feet away, therefore, exceeding the 385-foot minimum recommended intersection sight distance standard.

³ American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 7th Edition, 2018.



To the west, sight distance was measured to exceed 600 feet, exceeding the 500-foot minimum recommended intersection sight distance standard.

Provided any obstructing on-site foliage, fences, or landscaping near the proposed access are removed/ properly maintained following development of the site, adequate sight distances to the east and west of the access intersection can be made available to ensure safe and efficient operation along Highway 26. No other sight distance related mitigation is necessary or recommended at the proposed access intersection.

City of Sandy and ODOT Standards

Private Access Driveway Width Standards

Section 17.98.100(A) of the City of Sandy Development Code requires a minimum driveway width of 20 feet for two-way driveways. The proposed driveway access is approximately 26 feet wide. This standard is met and no mitigation is required.

Minimum ODOT Street Intersection Spacing Standards

According to Table 14 in Appendix C of the Oregon Highway Plan⁴ (OHP), for a Statewide Highway with a posted speed of 40 mph and an Annual Average Daily Traffic (AADT) of approximately 29,000 vehicles the minimum access spacing standard is 800 feet in urban areas and 990 feet in rural areas. Per Table 4 of the City's Transportation System Plan (TSP) indicates the minimum access spacing standards along Highway 26 are 990 feet for urban settings. Regardless of which standard is observed, neither spacing standard will be met at the proposed access location given the nearest accesses to the east and west of the site are located less than 100 feet and less than 150 feet away, respectively.

Although these spacing standards will not be met, approval of the proposed access is recommended for the following reasons:

- The project site's only frontage to an adjacent street is Highway 26. To gain access to Bluff Road, the nearest roadway to the site, the applicant would need to purchase additional property to the east of the site, creating an undue financial hardship on the applicant.
- The proposed site access will be consolidated/shared with an existing access which currently serves Paola's Pizza Barn to the west of the site. Accordingly, no additional access driveways will be constructed along Highway 26.
- Per the crash data analysis in this TAL, 1 crash was reported at the existing access intersection over the most recent five-year analysis period with a crash rate of 0.019 CMEV. Based on these findings it is expected that the access intersection will operate relatively safely following buildout of the proposed development.
- Adequate intersection sight distances to the east and west of the access intersection can be made available to ensure safe and efficient operation along Highway 26.
- There are currently multiple examples of driveways along the segment of Highway 26, between University Avenue and Bluff Road, where access spacing standards are not met. Therefore, it's

⁴ [Microsoft Word - 1999 OHP-Amend_Final_05-15_Update_20151223_clean.docx \(oregon.gov\)](#)



reasonable to assume motor vehicle operators along this segment of roadway will be aware of and expect other vehicles to turn to/from these minor-street approaches.

Based on the above reasoning, City of Sandy and ODOT staff may approve site access at the proposed location along Highway 26.

TSP Frontage Improvements

Section 17.84.50 of the City of Sandy Development Code states that *“Where a development site abuts an existing public street not improved to City standards, the abutting street shall be improved to City standards along the full frontage of the property concurrent with development.”* Based on a review of the City of Sandy’s TSP, any portions of site frontage along Highway 26 not designed to appropriate standards will be updated in a manner consistent with Figures 6 through 8. If meeting these design standards is impractical when considering existing infrastructure along the highway and adjacent to the site frontage, the applicant may seek a variance or modification to these standards.

Conclusions

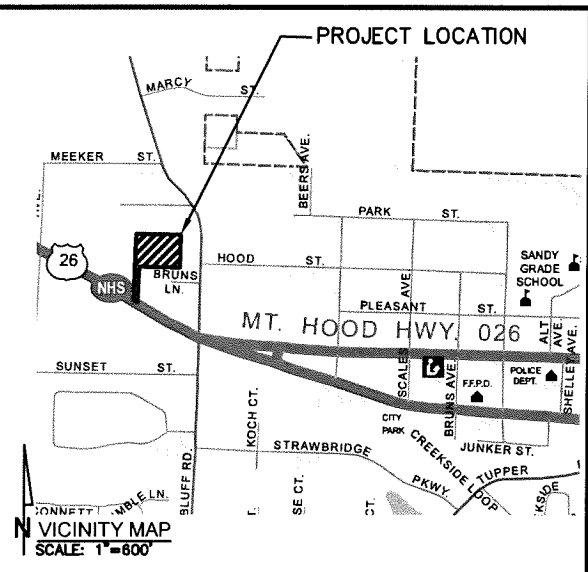
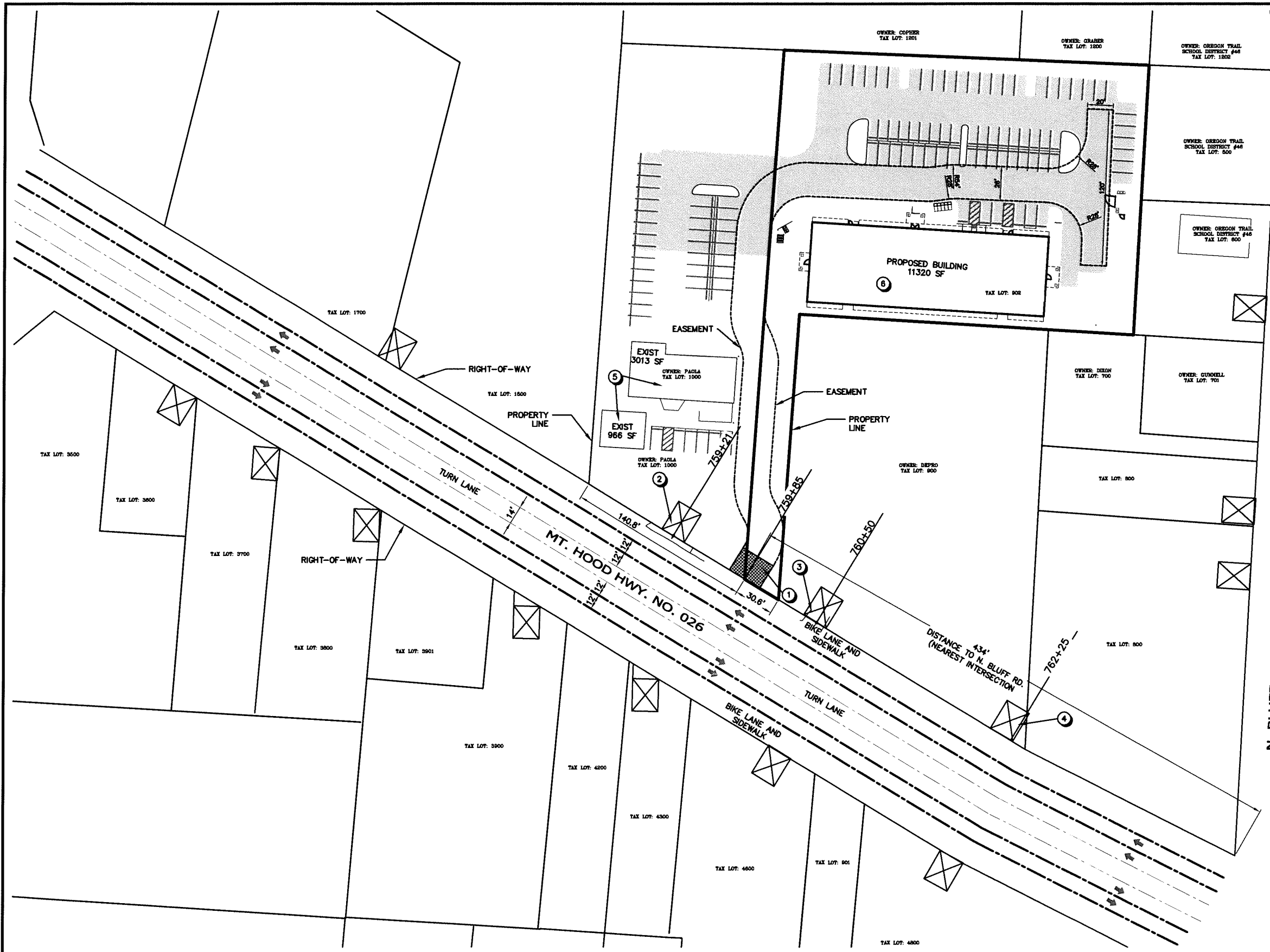
Findings from this TAL include:

- The trip generation calculations show that the proposed development is projected to generate 16 morning peak hour trips, 17 evening peak hour trips, and 196 average weekday trips.
- Based on a review of crash data, no significant existing crash hazards are evident in the site vicinity. No specific safety mitigations are necessary or recommended in conjunction with the proposed development.
- Intersection sight distance recommendations are met to the east and west of the site access.
- Although ODOT’s access spacing standards are not met at the proposed site access location, the City of Sandy and ODOT may approve site access at the proposed location along Highway 26 when considering the following:
 - The project site’s only frontage to an adjacent street is Highway 26.
 - The proposed site access will be consolidated/shared with an existing access which currently serves Paola’s Pizza Barn to the west of the site.
 - Based on a review of crash history at the existing access, it is expected that the access intersection will operate relatively safely following buildout of the proposed development.
 - Adequate sight distances to the east and west of the access intersection can be made available to ensure safe and efficient operation along Highway 26.
 - There are currently multiple examples of driveways along the segment of Highway 26, between University Avenue and Bluff Road, where access spacing standards are not met. Therefore, it’s reasonable to assume motor vehicle operators along this segment of roadway will be aware of and expect other vehicles to turn to/from these minor-street approaches.
- All other City of Sandy standards have been reviewed and deemed met, therefore, no additional mitigation is necessary or recommended.

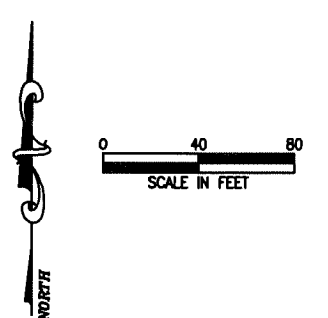
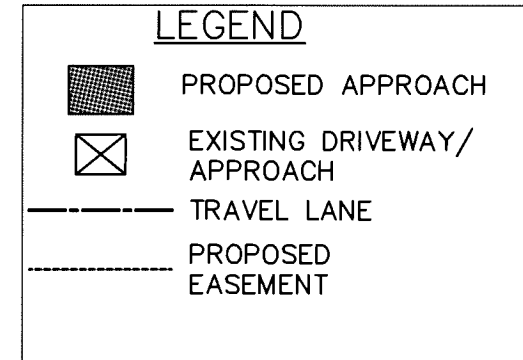


Attachments





- KEY NOTES**
- ① PROPOSED 27.2 WIDE COMMERCIAL DRIVEWAY APPROACH TO BE UTILIZED FOR SITE ACCESS. HWY STA 759+85
 - ② APPROACH ACCESS FOR BENEFIT OF TAX LOT 902 TO BE CANCELED. HWY STA 759+21
 - ③ APPROACH ACCESS FOR BENEFIT OF TAX LOT 902 TO BE CANCELED. HWY STA 760+50
 - ④ APPROACH ACCESS FOR BENEFIT OF TAX LOT 902 TO BE CANCELED. HWY STA 762+25
 - ⑤ EXISTING PIZZA PARLOR. NO CHANGE IN USE.
 - ⑥ PROPOSED NEW BUILDING TO BE USED AS STORAGE AND APARTMENTS.



N. BLUFF RD. (MKT. RD. NO. 15)

6/2/2022 2:29:26 PMBB s:\project files\projects\21-043 stote street homes\cod\sheets\for odot\21-043 odot sheet-new entrance.dwg

DATE:	NO.	REVISION

FIRWOOD DESIGN GROUP
 Reliable Engineering Solutions
 359 EAST HISTORIC COLUMBIA RIVER HIGHWAY
 TROUTDALE, OREGON 97060
 (503) 668-3737

STATE STREET HOMES
 1233 NW NORTHRUP ST. #125
 PORTLAND, OR 97209

ODOT ACCESS PERMIT SHEET
 MIXED USE SITE DEVELOPMENT
 38015 HWY 26, SANDY, OR 97055



TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use: Mini-Warehouse
Land Use Code: 151
Land Use Subcategory: All Sites
Setting/Location: General Urban/Suburban
Variable: Storage Units (100s)
Trip Type: Vehicle
Variable Quantity: **0.35**

WARNING: Variable Quantity is less than Minimum Survey Size for Peak Hours

AM PEAK HOUR

Trip Rate: 1.21

	Enter	Exit	Total
Directional Split	51%	49%	
Trip Ends	0	0	0

PM PEAK HOUR

Trip Rate: 1.68

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	1	0	1

WEEKDAY

Trip Rate: 17.96

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	3	3	6

SATURDAY

Trip Rate: 16.29

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	3	3	6



TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use: Multifamily Housing (Mid-Rise)
Land Use Code: 221
Land Use Subcategory: Not Close to Rail Transit
Setting/Location: General Urban/Suburban
Variable: Dwelling Units
Trip Type: Vehicle
Variable Quantity: **42**

AM PEAK HOUR

Trip Rate: 0.37

	Enter	Exit	Total
Directional Split	23%	77%	
Trip Ends	4	12	16

PM PEAK HOUR

Trip Rate: 0.39

	Enter	Exit	Total
Directional Split	61%	39%	
Trip Ends	10	6	16

WEEKDAY

Trip Rate: 4.54

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	95	95	190

SATURDAY

Trip Rate: 4.57

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	96	96	192

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

026: MT. HOOD Highway 026 ALL ROAD TYPES, MP 23.74 to 23.79 01/01/2016 to 12/31/2020, Both Add and Non-Add mileage

5 - 7 of 7 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	TRLR	QTY	MOVE	A	S	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE					
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST	STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE				
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND	STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE			
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
														02	NONE	9	STOP															
														N/A		NW-SE												011	00			
														PSNGR	CAR				01	DRVR	NONE	00	Unk	UNK		000	000	000	00			
02056	N	N	N	N		05/08/2016	CLACKAMAS	1	14		STRGHT	N		N	CLR	S-1STOP	01	NONE	0									013	29			
NONE						SU	SANDY	MN	0	PROCTOR BLVD	NW	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE									000	00				
N						5P	SANDY UA	23.77		BLUFF RD	05			N	DAY	INJ		PSNGR	CAR							026	026	29				
N						45 23 53.29	-122 16 20			002600100S00		(04)																				
														01	NONE	0	STRGHT															
														PRVTE		SE-NW												000	00			
														PSNGR	CAR				02	PSNG	INJB	73	F			000	000	000	00			
														02	NONE	0	STOP															
														PRVTE		SE-NW												011	013	00		
														PSNGR	CAR				01	DRVR	NONE	56	M	OTH-Y	N-RES	000	000	000	00			
														02	NONE	0	STOP															
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03607	N	N	N	N		08/08/2016	CLACKAMAS	1	14		STRGHT	N		N	CLD	S-1STOP	01	NONE	0													
CITY						MO	SANDY	MN	0	PROCTOR BLVD	W	(NONE)	UNKNOWN	N	WET	REAR		PRVTE										000	00			
N						1P	SANDY UA	23.79		BLUFF RD	04			N	DAY	INJ		PSNGR	CAR							026	000	29				
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Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.