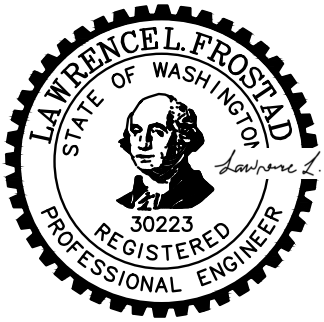
T·O ENGINEERS

memo

TO:	Inga Note, PE, City of Spokane Patty Kells, City of Spokane
FROM:	Larry Frostad, P.E. Project Manager Bill White, Senior Planner
DATE:	May 9, 2022
JOB NO.:	220005
RE:	Forest Grove Subdivision, TG & D Letter
CC:	Brian Thoreson, Hayden Homes, LLC



Digitally signed by Lawrence L Frostad
Contact Info: LFrostad@to-engineers.com
Date: 2022.05.10 18:31:34-07'00'

☐ **Urgent** ☒ **For Review** ☒ **Please Comment** ☒ **Please Reply** ☐ **For Your Use**

This revised technical memorandum summarizes the trip generation and distribution (TG&D) analysis prepared for the Forest Grove (was: Tree Farm) Subdivision development proposed in Spokane, WA. The study was prepared as an initial traffic impact statement provided to support a Washington State Environmental Policy Act (SEPA) application and determination process. The City of Spokane is the lead review agency for the study and application, administering the SEPA process, and will make determinations. Additional agencies can comment per invite of City of Spokane staff.

This revision of the February 9, 2022 submittal updates the name of the subdivision, and the number of lots from 76 to 78. This increases the weekday trips from 784 to 803, the AM trips from 58 to 59, and the PM trips from 77 to 79.

PROJECT DESCRIPTION

Forest Grove Subdivision is a proposed development of 78 residential homes constructed on individual lots encompassing approximately 16 acres east of Five Mile Road and north of Strong Road on the Five Mile Prairie. The site is in a Residential Single-Family (RSF) zone at the northern city limits of Spokane and in an area of existing homes. The immediate area to the north is in Spokane County and zoned Urban Reserve.

Access is proposed by a new unnamed local street along Strong Road aligned across from Nettleton Court, and from Cannon Street via a proposed extension of Maxine Avenue. The property would be developed over 3 to 5-years following acquisition of building permits with full occupancy no later than year 2026. **Figure 1** provides a site location map. **Figure 2** shows the project site plan.

TRIP GENERATION POTENTIALS

Development traffic was forecast using the methodologies of the Trip Generation Manual (ITE, 11th Edition, 2021). The Manual is a nationally recognized and locally accepted resource for forecasting traffic for commercial, institutional, and residential developments. The methods were developed based on the survey of other existing land uses situated throughout the U.S.

Trip generation was forecast using ITE Land Use Code 210 for Single-Family Detached Housing. A description of this Code is as follows:

Single-Family Detached Housing (ITE Code 210). Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.

Trip generation was calculated based on variables that relate the number of units to trips. The Fitted Curve Equations were used to calculate trips as ITE criteria was met: 1) R^2 value > 0.75, 2) equations were developed from more than 20 field studies. The resulting trip generation is slightly more conservative than if the average trip generation rates are used. The higher value also makes sense as this location of the City is not directly served by transit and is more than one mile from businesses, nor is it anticipated for this report that trips will be made via walking or cycling.

As indicated, the project proposes 78 single family homes. Trip generation was forecast for the weekday, and AM and PM peak hours of adjacent street traffic, representing the impacts of the project on the morning and evening rush hours/commute traffic. **Table 1** provides a summary of project trip generation at full project buildout.

Table 1. Trip Generation Potentials, Forest Grove Subdivsion

Land Use	Weekday	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
76 Single Family Residential Units	803	15	44	59	50	29	79

Source: ITE Trip Generation Manual (11th Edition)

As shown, the development of the Tree Farm project is forecast to generate about 803 weekday trips. About 59 trips are generated during the AM peak hour and 79 trips during the PM peak hour. Peak hour trips comprise 17 percent of weekday trip totals.

Trip Distribution and Assignment

Trip distribution and assignment is the process of forecasting likely travel routes for development-related traffic to identify the impacts of a development on adjacent streets. For this study, the trip distribution is based on the classification and volume data of the local street network, location of business activity in Spokane, our knowledge of travel patterns in this area, and location of major employment areas in Spokane County. In this case, the larger commercial areas are to the south and east.

Because Strong Road is the only access to the site, trips are originally split equally in both directions on Strong Road. Travel routes in this area are limited, primarily Strong Road, Cedar Road, and N. Five Mile Road. Trips are distributed on those routes as follows:

- West on Strong/Barnes Road – 15 percent
- South via Strong/Five Mile Road – 25 percent
- South via Cedar/Country Homes Blvd – 35 percent
- North via Cedar/Country Homes Blvd – 15 percent
- North via Strong/Five Mile Road – 10 percent

To provide a conservative impact assessment, all site trips were assumed to enter and exit the study area defined by attached illustrations. However, in reality, some trips will be to access destinations in the immediate area, such as the Five Mile Shopping Center, Salk Middle School, or Prairie View Elementary School. These trips are not subtracted from assignment calculations.

Two southerly routes access the Maple Street / Ash Street couplet within near proximity north of Francis Avenue. The first is available via Strong Road and Five Mile Road, a travel distance of about 2.45-miles to/from the couplet junction with Francis Avenue. The second is available via Strong Road and Cedar Road, a travel distance of 2.20-miles of travel to/from the same point on the couplet at Francis Avenue. Both routes are posted at 30-mph; however, the shorter route does have several horizonal curves with a narrower geometric cross section. Due to these visual constraints, only a few additional trips were assigned to the shorter Cedar Road route to access Francis Avenue via the Maple/Ash couplet (about 30% of trips versus 25% the shorter route).

Trip distributions and the resulting weekday trip assignments are shown in **Table 2**. Distributions and assignments were rounded to keep the totals to 100%. Total peak hour assignments (combined inbound and outbound trips) are also provided by this table, as well as with attached illustrations.

Table 2. Trip Distribution and Weekday Assignment

Destination	Distribution	Weekday	AM Peak Hour	PM Peak Hour
Whitworth	10%	81	6	8
Indian Trail	15%	120	9	11
Country Homes	15%	120	9	12
East on Francis	15%	120	9	12
Maple/Ash Corridor	40%	322	23	32
West on Francis	5%	40	3	4
Trip Totals	**100%**	**803**	**59**	**79**

Peak hourly trips were then assigned to the study area based on the distribution patterns identified above. A summary of project trip assignments is provided on **Figure 3** for the AM and PM peak hours. Per standard practice, major intersections forecast to support 20 or more new peak hour trips are of interest. Intersections in the vicinity identified by this projected distribution are:

- Strong Road / Forest Grove Access
- Strong Road / Cannon Street
- Strong Road / Five Mile Road
- Cedar Street / Country Homes Blvd
- Five Mile Road / Ash Street
- Five Mile Road / Maple Street
- Francis Avenue / Ash Street
- Francis Avenue / Maple Street

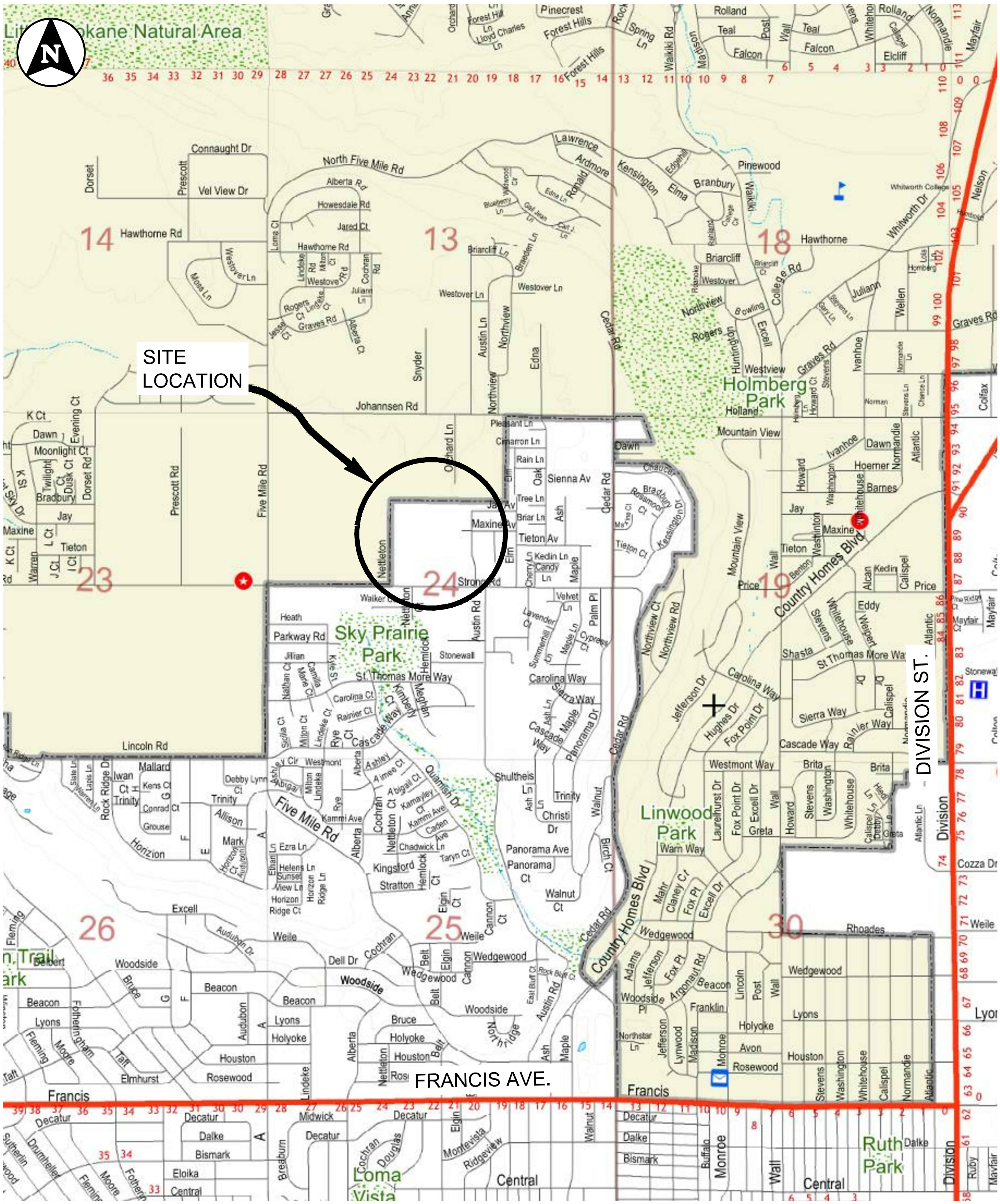
SUMMARY

Forest Grove would comprise of up to 78 single family residential homes on individual lots situated east of Five Mile Road and north of Strong Road in the City of Spokane. Project access would be provided from Strong Road by a new street connecting with Nettleton Court and by Cannon Street. The site is in a SFU zone of the city, with construction and occupancy expected by year 2026.

The project is forecast to generate 803 weekday trips with 59 trips generated during the AM peak hour and 79 trips generated during the PM peak hour. These trips are anticipated to distribute primarily to the south (75%) via Cedar Road and File Mile Road, with subsequent distributions of those trips to the north (15%), east (15%) and west (5%) using other various routes. A gain of 20 or more peak hour trips is forecast at eight noted intersections.

No specific project recommendations are provided. The development is assessed within the Northwest District of the City Traffic Impact Fee program, assessed at $850.20 per home. With 78 homes, this calculates to an assessment of $66,315.60 to mitigate the impacts of the project on the City.

This ends the trip generation and distribution analyses prepared for the Forest Grove Subdivision project in the City of Spokane, as a function of the SEPA application determination process. Please contact our office with questions or comments.



1

SITE LOCATION MAP

MAP NOT TO SCALE

FOREST GROVE SUBDIVISION
TRIP GENERATION & DISTRIBUTION LETTER

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1717 S. RUSTLE STREET SUITE 201
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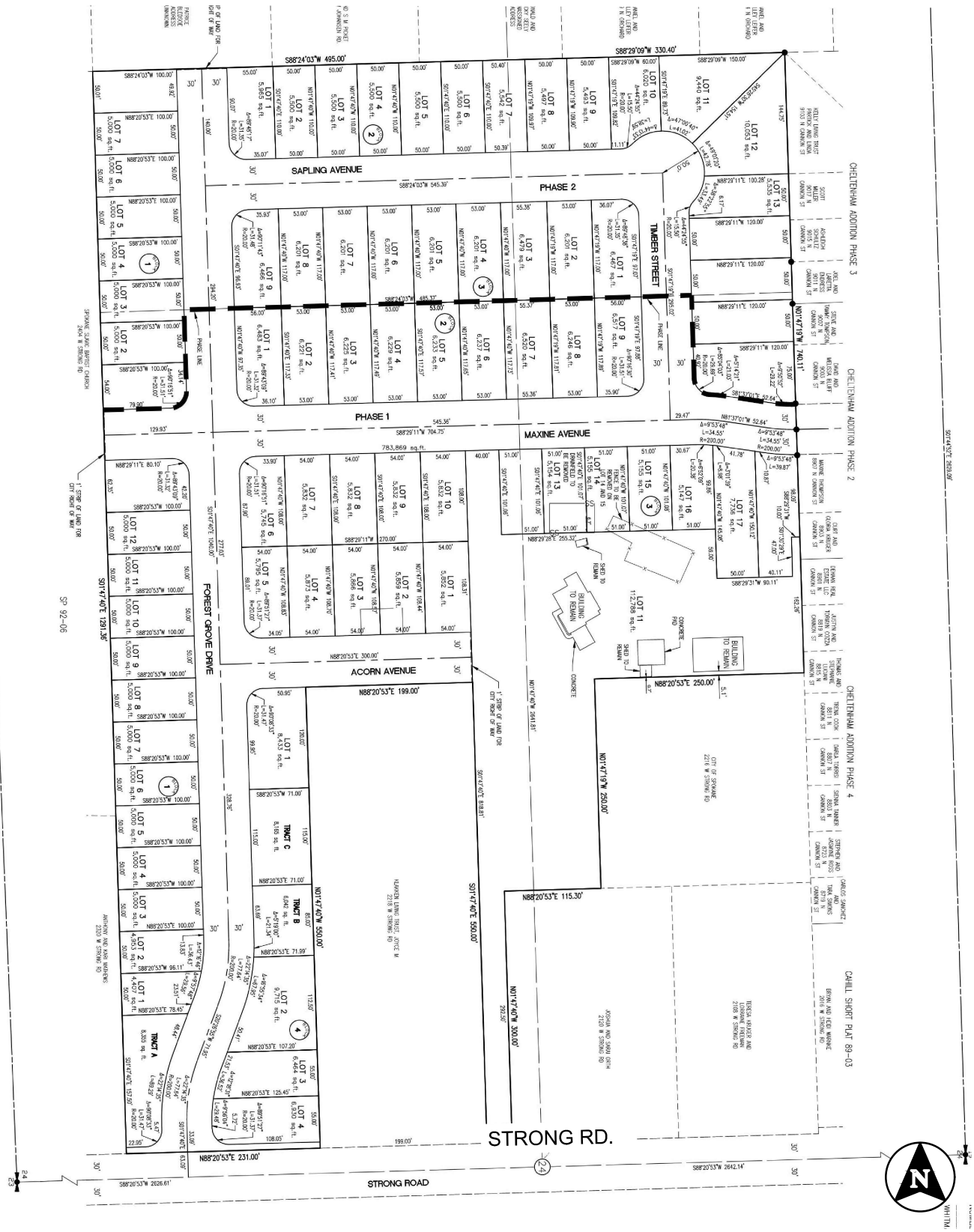
E-FILE: 220005 _ Hayden Five Mile _ Feb _ Figures.dwg DATE: 5/9/22 JOB: 200063



2 SITE LOCATION MAP

SITE PLAN NOT TO SCALE

FOREST GROVE SUBDIVISION
TRIP GENERATION & DISTRIBUTION LETTER
(SOURCES: SYNTIER ENGINEERS)

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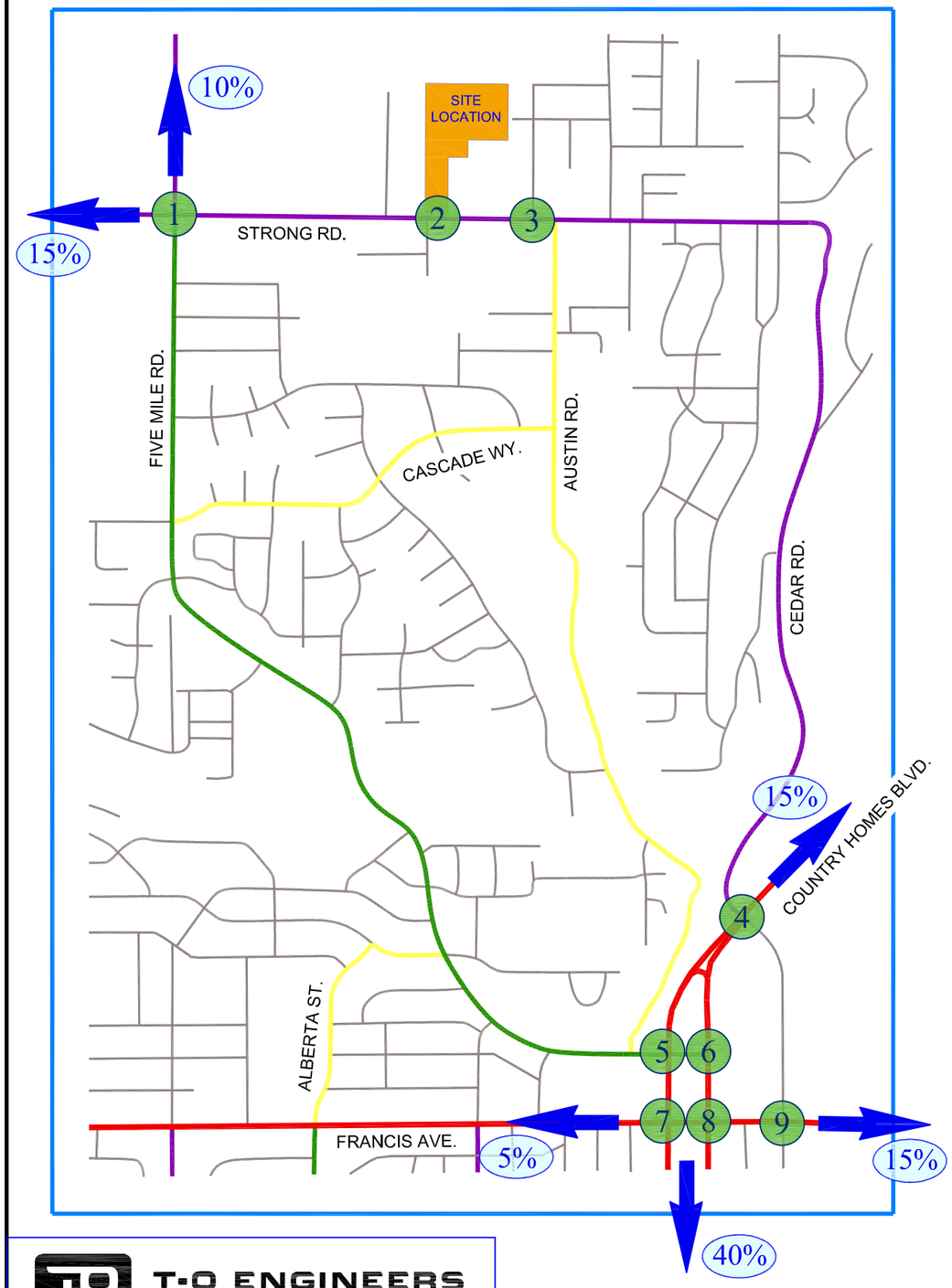

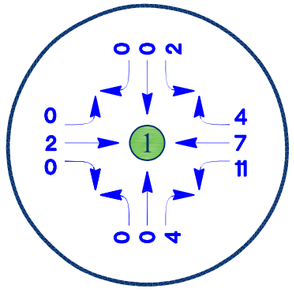

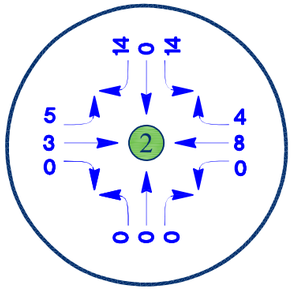

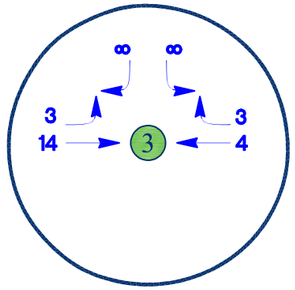

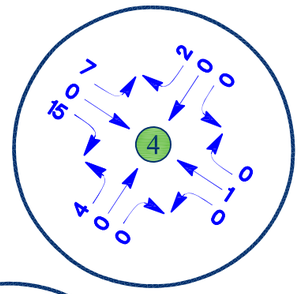

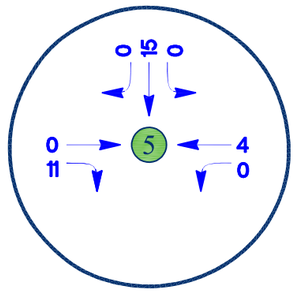

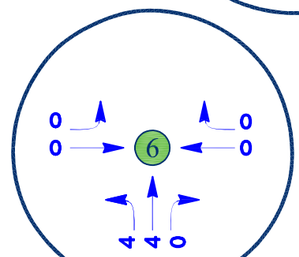

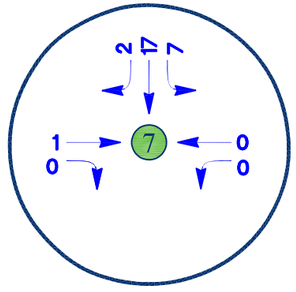

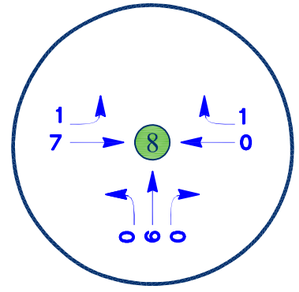

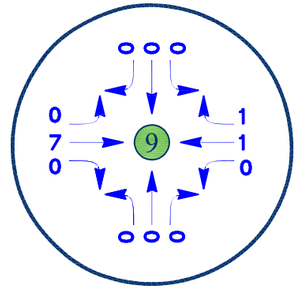

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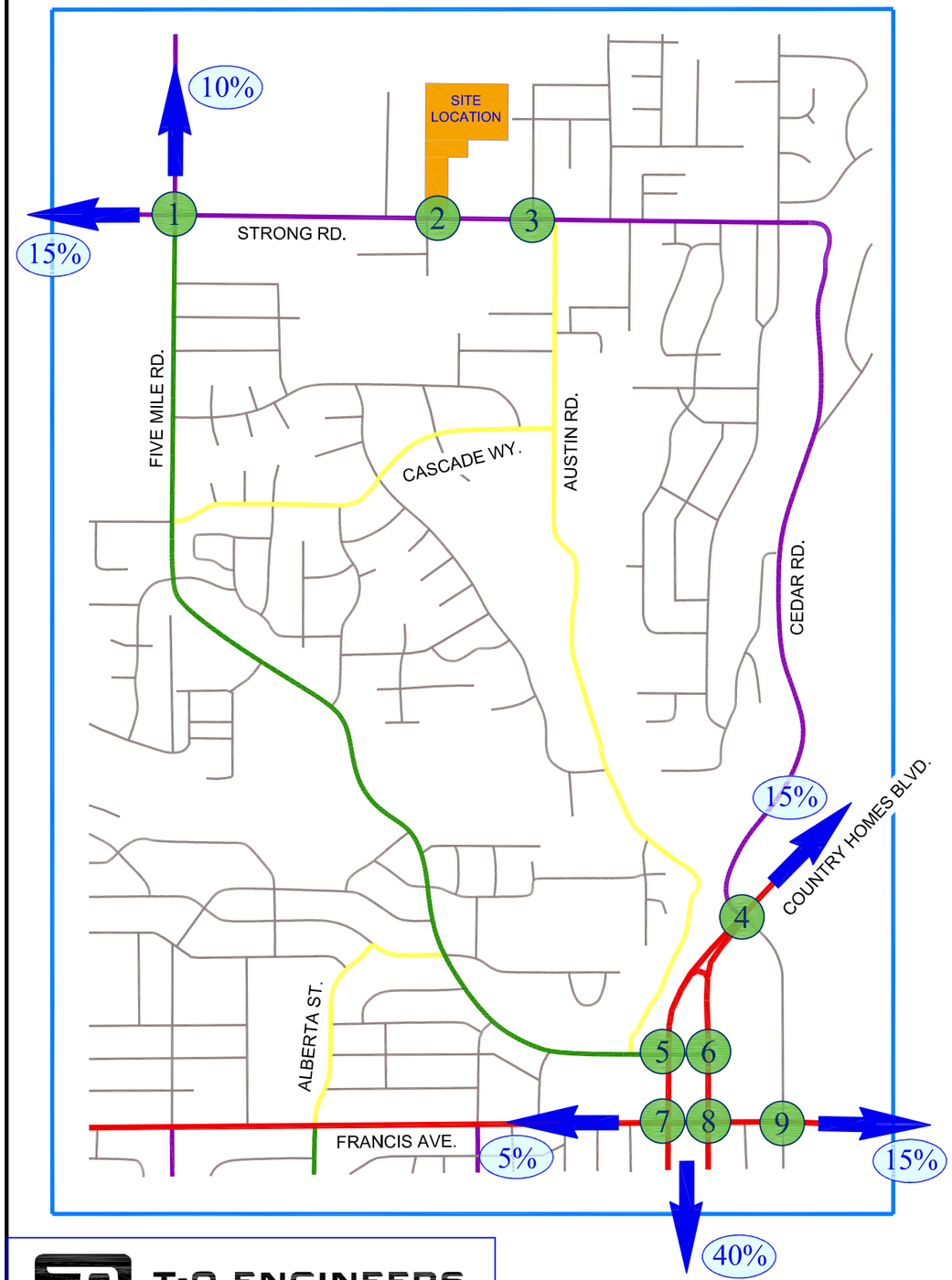
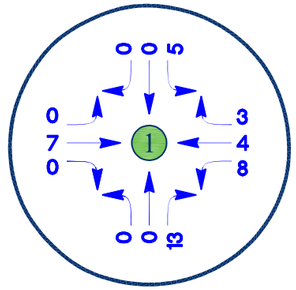
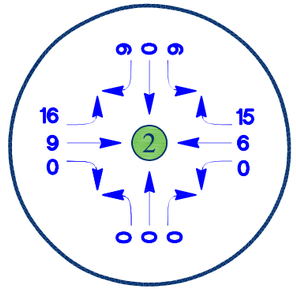
3 PROJECT TRIP ASSIGNMENTS
YEAR 2026 AM PEAK HOUR
FOREST GROVE SUBDIVISION
TRIP GENERATION & DISTRIBUTION LETTER

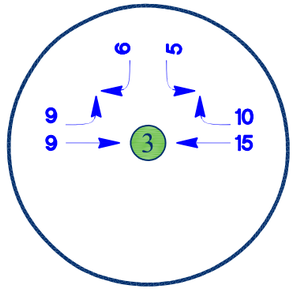
LEGEND
PRINCIPAL ARTERIAL
MINOR ARTERIAL
MAJOR COLLECTOR
MINOR COLLECTOR
LOCAL STREET
INTERSECTION TURNING MOVEMENTS

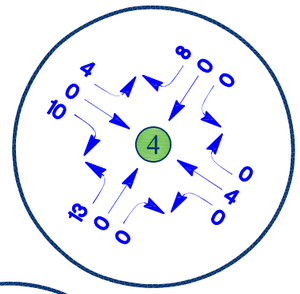
PLOTSTAMP

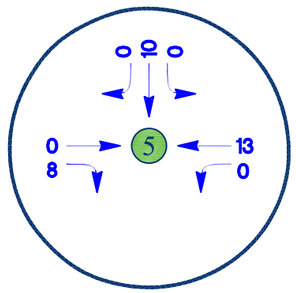


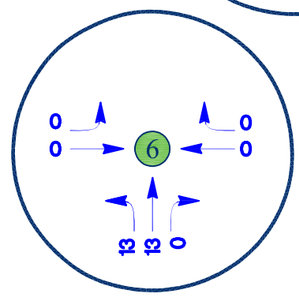


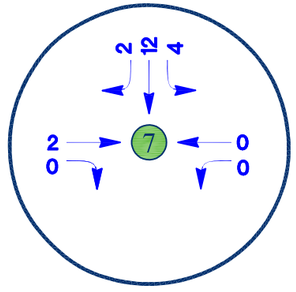


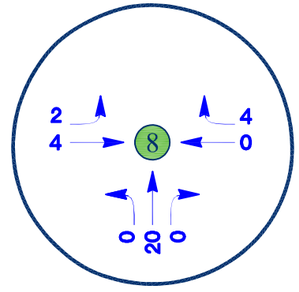


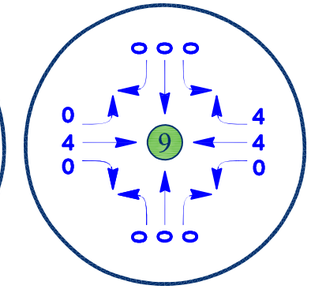












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