T·O ENGINEERS

memo

TO:	Inga Note, PE, City Transportation Engineer Patty Kells, Development Services Transportation
FROM:	Bill White, Regional Transportation Lead, T-O Engineers Robyn Lashbrook, P.E., Project Manager, T-O Engineers
DATE:	June 2021
JOB NO.:	210158
RE:	Sacajawea Middle School, TG&D and Pedestrian Analysis
CC:	Aubrie Christenson, Spokane Public Schools Gregory Forsyth, Spokane Public Schools

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

Administrators with Spokane Public Schools (SPS) were successful in securing a $495.3 million bond approval from Spokane voters in 2018 to improve capital facilities. With a state match of $57.9 million, SPS had a total of $553.2 million for projects. Highlights of the bond program for the District includes: the addition of commons to Lewis & Clark High School; replacement of Shaw, Sacajawea, and Glover Middle Schools; the construction of three new middle schools (Denny Yasuhara, Pauline Flett, and Carla Peperzak); replacement of Joe Albi Stadium; the creation of new space for On-Track Academy and Libby Center; and the districtwide upgrade of school safety and technology infrastructures.

This memorandum summarizes the expanded trip generation and distribution analysis performed for the Sacajawea Middle School of Spokane. The analysis has been prepared to support a State Environmental Policy Act (SEPA) application and permit process. This study should also help support a "concurrency" review process under the Growth Management Act. The SEPA process is administered by officials with SPS, as lead agency, with City of Spokane engineers and planners commenting on SEPA and certifying concurrency. Secondary agencies are invited to comment through the mandatory SEPA review process.

1. PROJECT DESCRIPTION

The Sacajawea Middle School project is proposed on 13.5-acres situated north of 33rd Avenue and west of Grand Boulevard within the City of Spokane where the current school is located. The proposed school will have a finished floor area of 130,000 square feet (s.f.) likely constructed along the north side of the site to maintain the existing school for operation during construction.

The school is anticipated to have occupancy and normal operations anticipated by the 2023 school year. The site is zoned in Residential Signal Family. **Figure 1** shows the location of the Sacajawea Middle School property. A site plan schematic is provided in **Figure 2**. The site plan is preliminary and subject to change during design and City design review. The conclusions of this study should not be impacted so long as proposed access accommodation and future attendance assumptions do not alter substantially.

Attendance Data

There are approximately 4,200-students in 7th and 8th grade throughout SPS, an average of about 2,100 students per grade. SPS officials plan to move 6th grade students into the middle schools, which is why three new middle schools were constructed to support the approximate 6,300 student summation of all anticipated middle school students for 6th through 8th grade.

The six existing and three new middle schools will have a practical capacity of about 825 students per school, establishing a collective capacity for about 6,750 students overall. In fact, the availability of special programs such as IST Middle School Immersion at North Central High School, Odyssey at the Libby Center, and Spokane Public Montessori, which also support middle school students, will provide further capacities and further assuring Spokane middle schools can accommodate student gains in the future of up to and beyond the capacity of 6,750 students.

Note relocation of 6th grade will free capacities for student growth at the 35-area SPS Elementary Schools, reducing need for new construction. Attendances per grade tend to decline, so the six existing high schools, On Track Academy, Pratt Academy, and NewTech Skill Center should have the capacity to sufficiently accommodate 9th through 12th grades.

2. Trip Generation and Traffic Forecasts

Trip generation was established using methodology outlined within the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10th Edition, 2017). This is a nationally recognized and locally accepted approach for calculating trip generation for institutional projects such as schools.

ITE Land Use code 522 was used to calculate trips using rates that equate traffic densities to the proposed capacity of 750-students. Summary trip generation is shown with **Table 1** for weekday, the AM and PM peak generator hours, and the PM peak hour of adjacent streets. A generator hour is the timeframe of peak trip generation for a proposed facility; in this case, from about 8:15 to 9:15 AM and 2:45 PM to 3:45 PM of the school. These hours reflect the drop off and pickup timeframes of students in relation to the morning 9:00 AM start and afternoon 2:55 PM departure bells. The PM peak hour of adjacent streets is the traditional evening commute/rush hour.

Table 1. Trip Generation Potentials, Sacajawea Middle School

Middle School ITE Land Use Code 522	Weekday	AM Generator Hour			PM Generator Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
School, 825 students	1,757	318	260	578	133	156	289	69	71	140

Source: ITE Trip Generation Manual (10th Edition)

Note for this land use and calculation, the application of ITE equations did result in a few more weekday trips versus rates. However, the application of rate methodology did yield moderately higher trip totals for both generator hours and the PM peak hour.

Trip Distribution and Assignment

The distribution and assignment of new project trips provides an initial impact assessment to help identify where volume changes are anticipated on City streets. To predict these trip distributions initially, ADT count volumes from the City of Spokane Traffic Flow Map 2019 were compared for arterials that provide primary approach and departure routes to/from the proposed development. Individual ADT counts were compared to gain a sense of how commuters are approaching, departing and traveling through the study area (as defined via volume densities).

SPS officials are in the process of redistricting to better facilitate equal attendance between the six existing and three new middle schools. There are multiple boundary options currently being explored holistically, with these potential boundaries to the Sacajawea Middle School attendance area. SPS officials are not prepared for districting maps to become public just yet, as they are still exploring options. However, through discussion, options could include the following roadways as general limits:

- **West Boundary:** East of S. Highbridge Park, West of High Drive.
- **East Boundary:** Sections of Altamont Street, E 9th Ave, S Nampa St, E 14th Ave, S Helena St, E Southeast Blvd, 29th, and Perry St.
- **North Boundary:** Spokane River, Division, and I-90.
- **South Boundary:** Sections of High Drive, Perry Street, and 29th Avenue.

Base or raw distributions were adjusted to reflect the current option. Sacajawea Middle School is in the southern center of the attendance area for these options. Thus, distributions assume more substantial travel to/from the north via Grand Boulevard and east via 29th Ave as a principal arterial, as they serve the largest area, with distributions more uniformly expected to/from the balance of the area via 37th Avenue, Bernard Street, and Perry Street. The resulting trip distributions are shown with **Table 2** with weekday trip assignments.

Table 2. Trip Distribution and Assignment

Location	ADT Compare	Raw Distribution	AM In/PM Out Adjusted Distribution	Weekday Trips	AM Out/PM In Adjusted Distribution	Weekday Trips
Grand Blvd N/of 29th Ave	14,500	19%	30%	527	35%	615
Grand Blvd S/ of 37th Ave	7,200	9%	5%	88	4%	70
29th Ave E/ of Perry St	20,600	27%	30%	527	21%	369
29th Ave W/ of Bernard	11,000	14%	10%	176	14%	246
37th Ave E/ of Perry St	6,000	8%	5%	88	4%	70
Bernard St N/ of 29th Ave	8,600	11%	10%	175	14%	246
Bernard St S/ of 37th Ave	2,800	4%	5%	88	4%	70
Perry St S/ of 37th	6,600	8%	5%	88	4%	70
Totals on ADT/Cordon Line	77,300	100%	100%	1,757	100%	1,757

Source: ITE Trip Generation Manual (10th Edition)

Project trips were assigned to the study area based on the distribution patterns identified above for typical weekday, peak generator hour and PM peak hour analysis conditions. AM and PM Adjusted Distributions vary as it is assumed in the AM, drivers will be leaving from their homes to the school, then headed downtown with the opposite pattern in the PM. A summary of project trip assignments is provided on **Figure 3**, **Figure 4** and **Figure 5** for the AM and PM peak generator hours, and for the PM peak hour of adjacent streets.

3. PEDESTRIAN MOBILITY

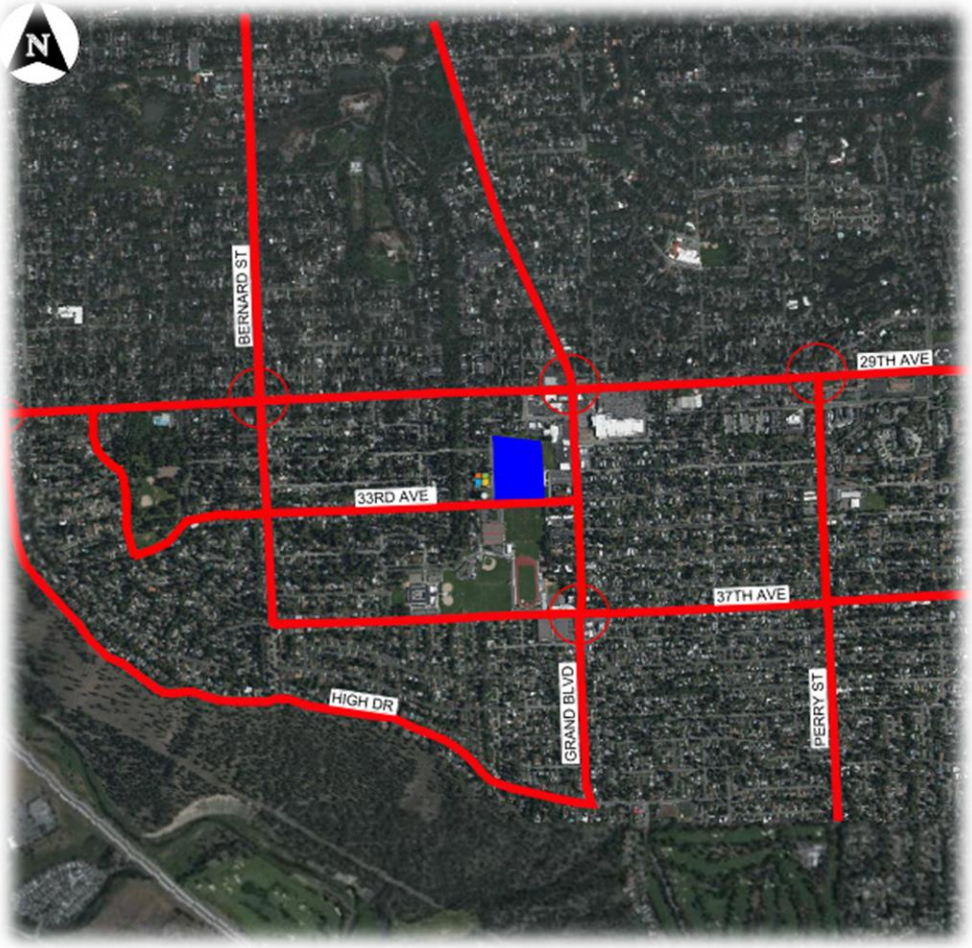
Per a Guide for the Planning, Design, and Operation of Pedestrian Facilities (AASHT0, 2004), the typical student can be expected to walk or bike at up to a mile to access a middle school. As such, it is standard practice to review collector and arterial approach routes to identify the sufficiency of pedestrian facilities and crossings, to assure safety for students. Typically, local streets are not a part of approach/departure analyses because shared use of vehicle right-of-way, if there are no pedestrian accommodations, is of minimal concern due to low traffic volumes.

Given this understanding and review of guidelines above, students will walk/bike within about a mile to/from:

- Grand Blvd south of 33rd Ave, extending to about 17th Ave.
- Grand Blvd north of 33rd Ave, extending to High Dr/ 43rd Ave.

- 29th Ave East of Grand Blvd, extending to Pittsburg St.
- 29th Ave West of Grand Blvd, extending to High Dr.
- Perry St South of 29th Ave, extending to 43rd Ave.
- Bernard St North of 29th Ave, extending to 20th Ave.
- 37th Ave East of Bernard St, extending to Pittsburg St.

The following graphic shows the pedestrian/bike approach and departure routes. The Middle School is shown in blue, and the red are alignments where sidewalk is available on one or both sides of arterial and collector routes (within the mile radius). Existing, signalized crossings are highlighted in red circles at arterial intersections. Sidewalks and crossings appear to be sufficient throughout most of the area.



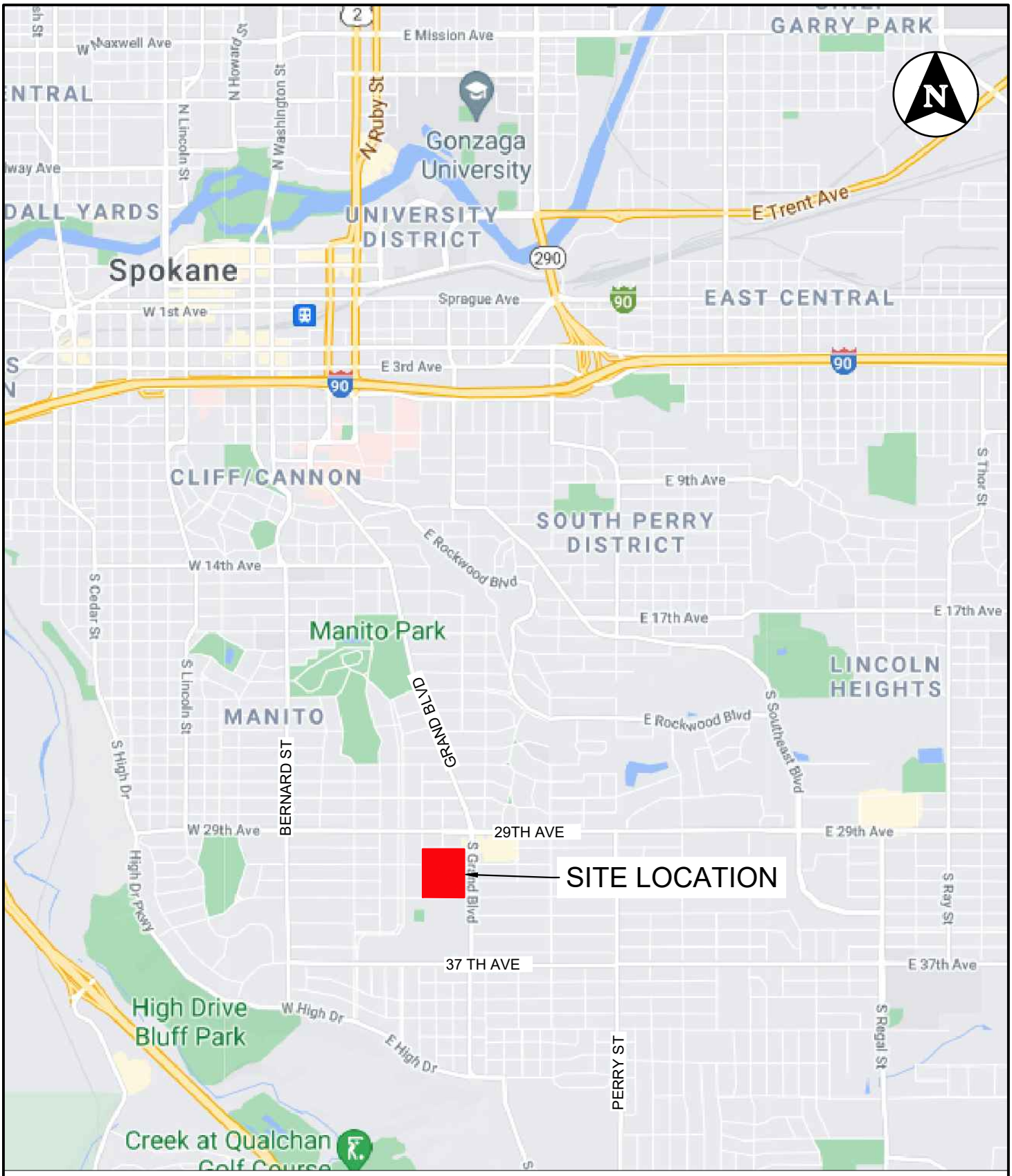
SUMMARY AND CONCLUSIONS

The Sacajawea Middle School is proposed on a the existing 13.5-acre site located west of Grand Boulevard between 33rd Avenue and 29th Avenue in Spokane, Washington. The school is proposed to have a finished floor area of 130,000 s.f. Employee access to the site is proposed through an approach located along 33rd Avenue near the Lamonte intersection. Busses will access the site off Grand Boulevard and exit via 33rd Avenue. Visitor parking would be addressed by a 78-stall parking lot shared with staff parking. The district plan is for parents to drop off and pick up students along 33rd Avenue and Lamonte Street adjacent to the school main entrance.

Trip generation was determined using ITE Trip Generation data, assuming fully occupancy of 825 students. The proposed middle school is anticipated to generate 1,757 weekday trips with 578 trips generated during the AM generator hour, 289 trips during the PM generator hour and 140 trips during the PM peak hour.

It should be noted that the current school on the same lot has approximately the same number of students and the new school will be replacing this one. In this report, trips were shown as new trips to forecast the distribution of how students will reach the school with the new site plan. However, this is a very conservative approach considering there is an existing school of comparable size on the site.

This ends the expanded trip generation and distribution analyses prepared for Sacajawea Middle School to support the SEPA application and permitting process. Please contact our office with questions or comments.



1 SITE VICINITY
NOT TO SCALE

SACAJAWEA MIDDLE SCHOOL
TRIP GENERATION AND DISTRIBUTION LETTER

T-O ENGINEERS
1717 S. RUSTLE STREET SUITE 201
SPOKANE, WA 99224
PHONE: (509) 319-2580 WWW.TO-ENGINEERS.COM
E-FILE: 190578_NE Middle School_TD&G.dwg DATE: MAY 2021 JOB: 210158

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2 SITE PLAN
NOT TO SCALE

SACAJAWEA MIDDLE SCHOOL
TRIP GENERATION & DISTRIBUTION LETTER

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PHONE: (509) 319-2580 WWW.TO-ENGINEERS.COM
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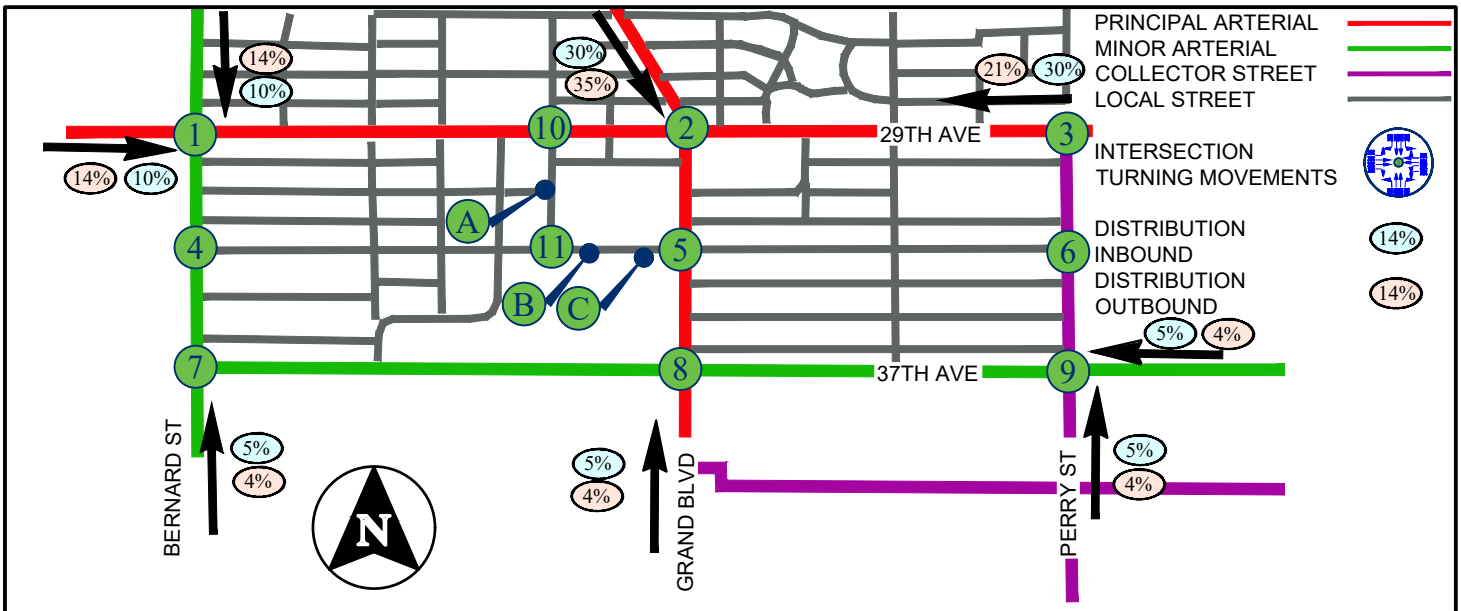

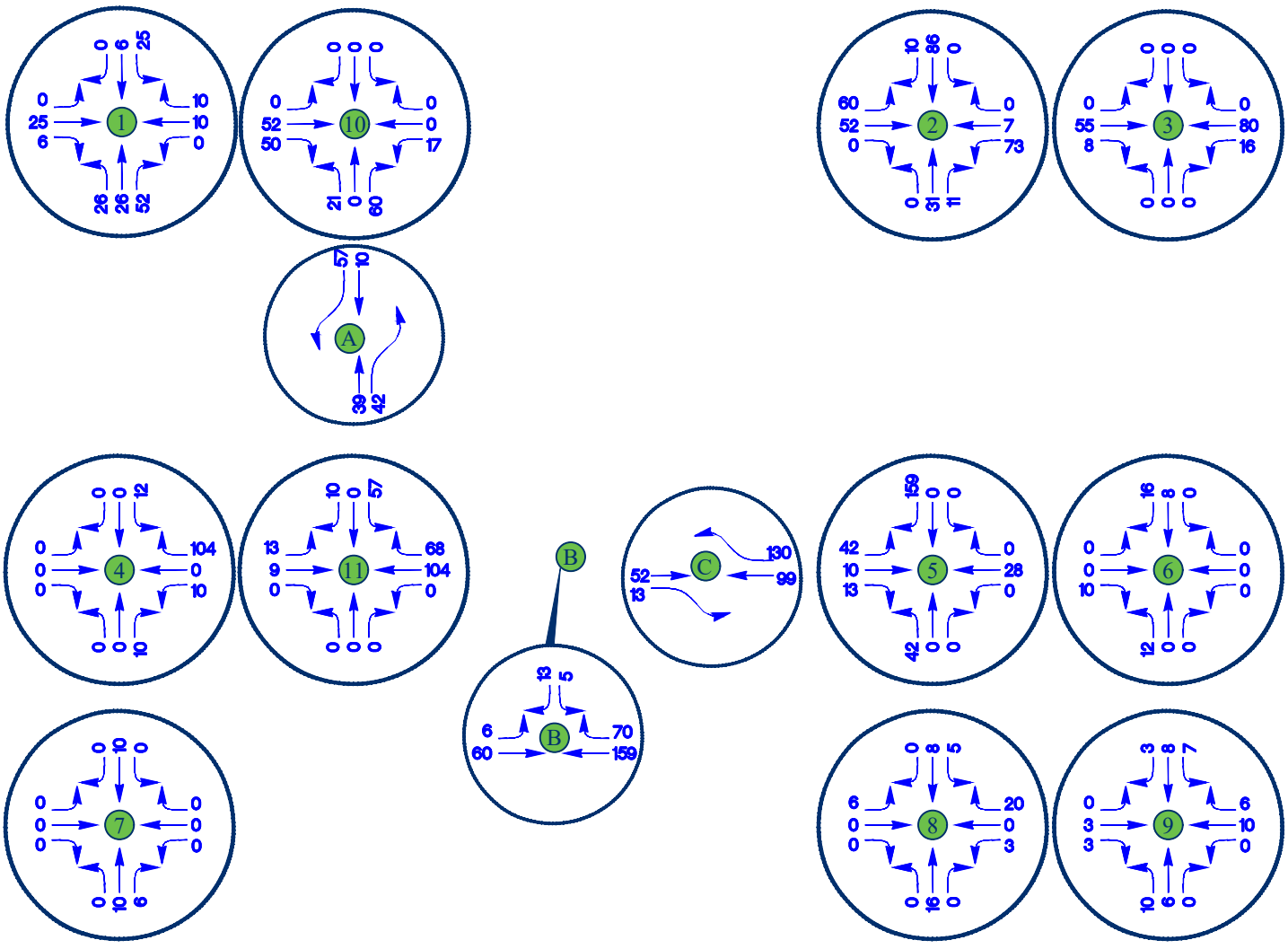

3 ASSIGNMENTS
AM GENERATOR HOUR

SACAJAWEA MIDDLE SCHOOL
TRIP GENERATION & DISTRIBUTION LETTER

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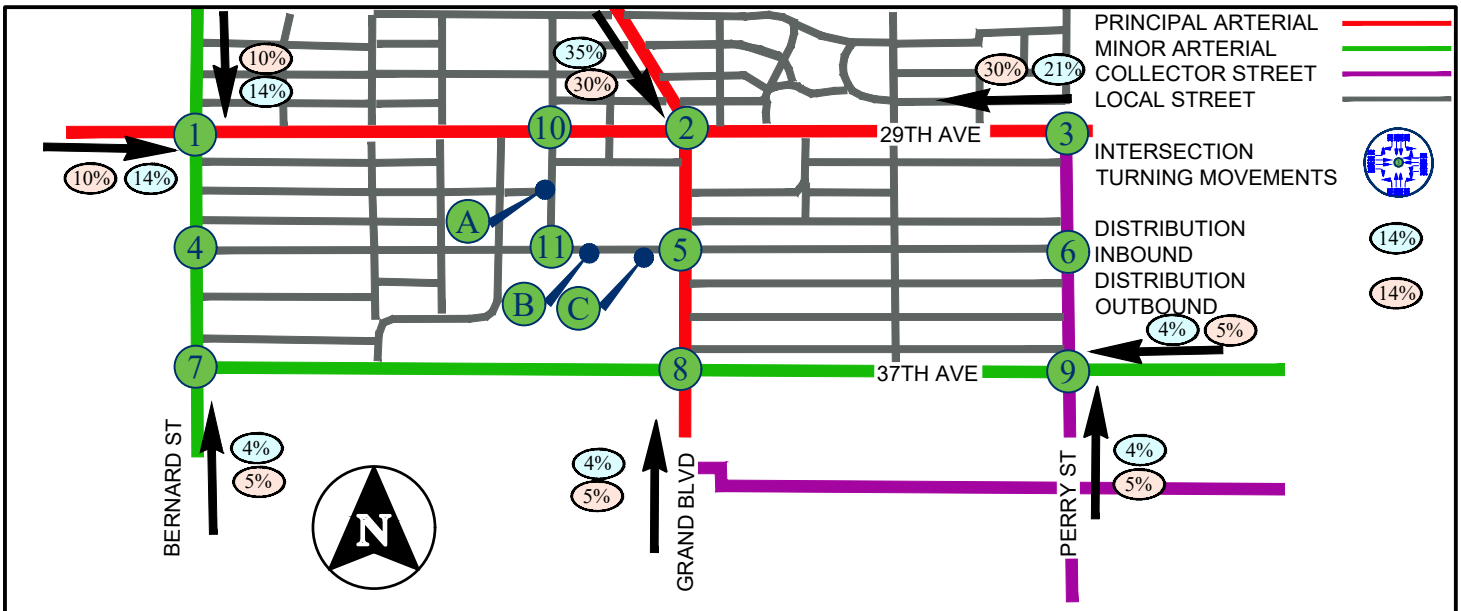

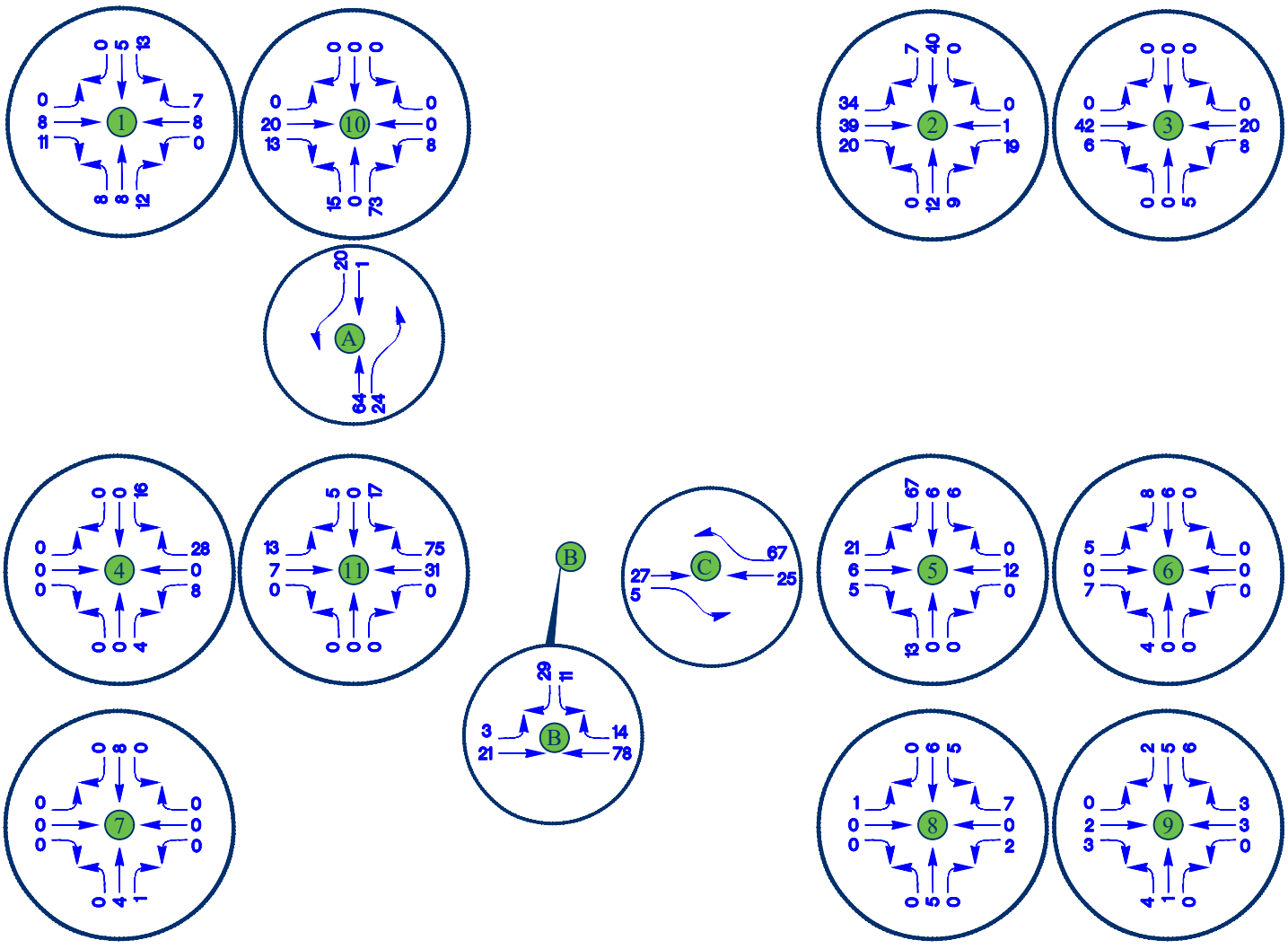

4 ASSIGNMENTS

PM GENERATOR HOUR

SACAJAWEA MIDDLE SCHOOL
TRIP GENERATION & DISTRIBUTION LETTER

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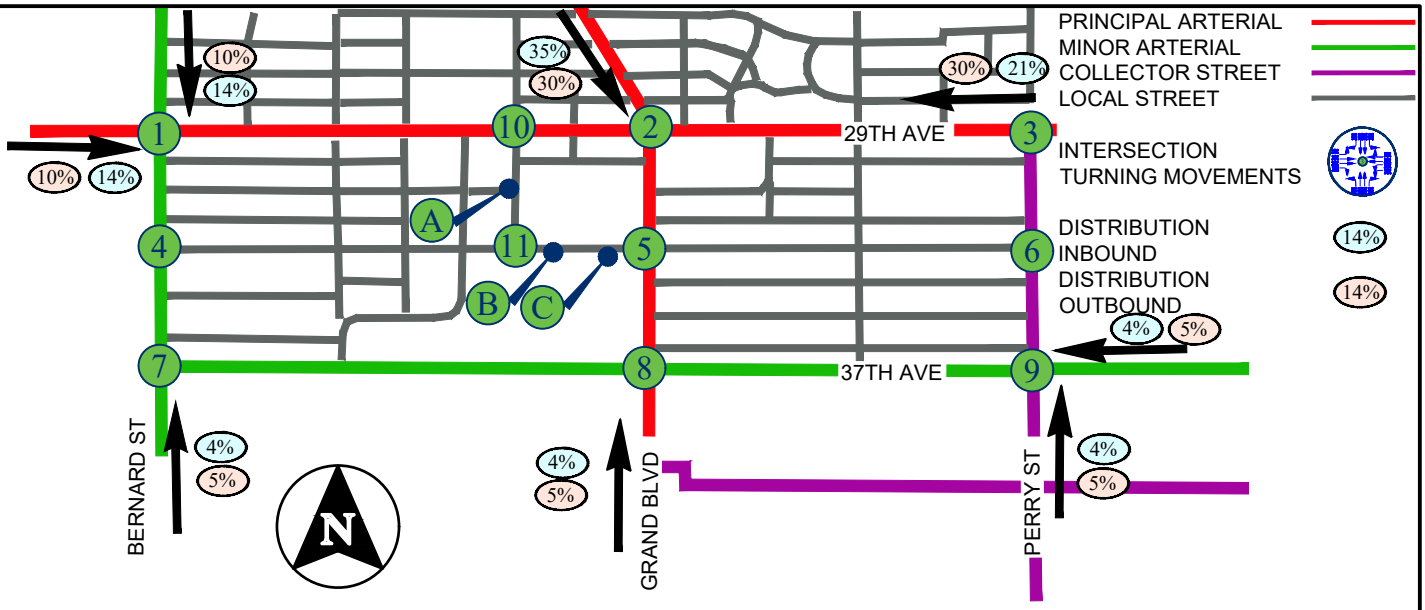

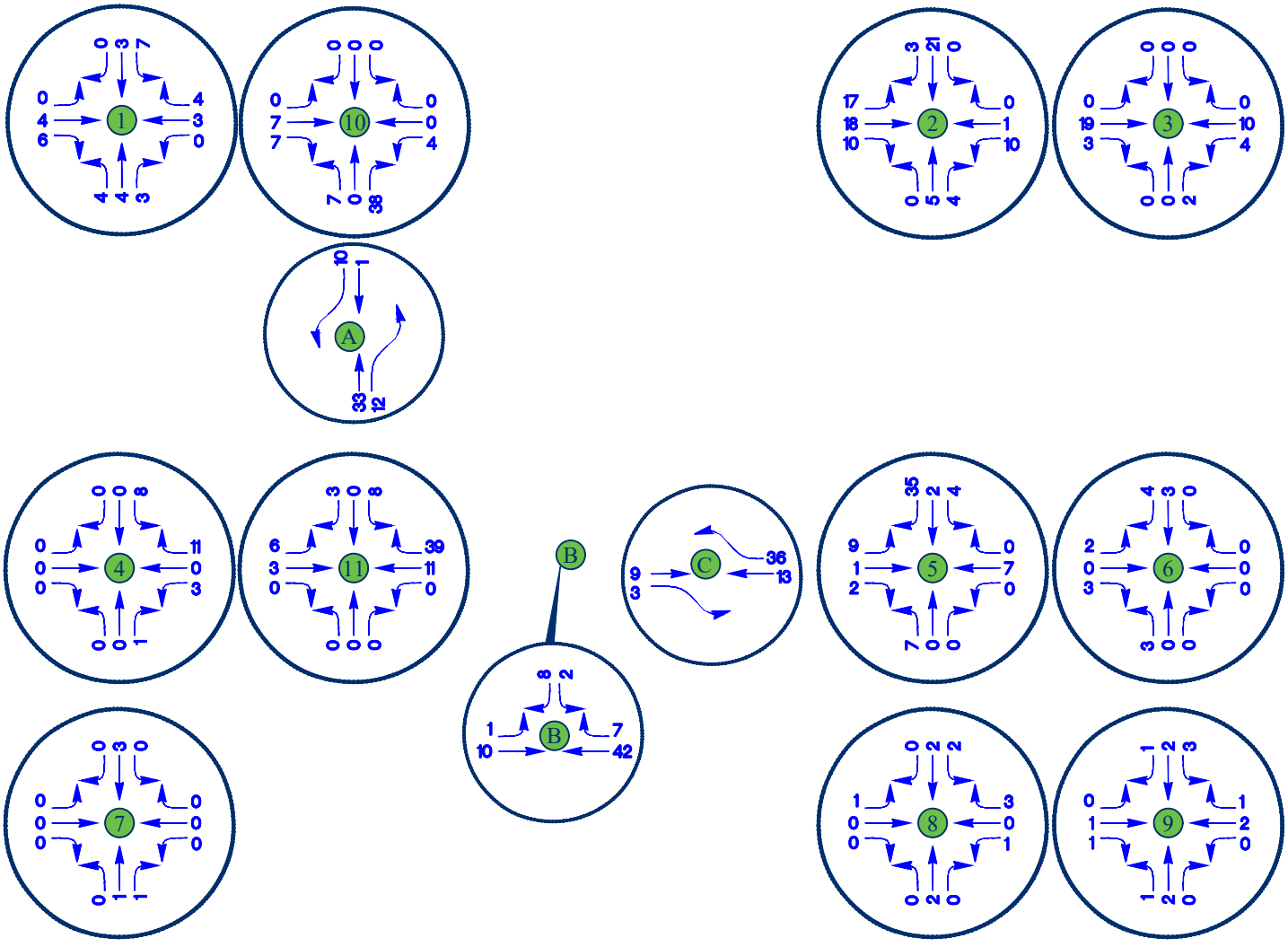

5 ASSIGNMENTS
PM PEAK HOUR

SACAJAWEA MIDDLE SCHOOL
TRIP GENERATION & DISTRIBUTION LETTER

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