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Salisbury Park North Expansion

Traffic Impact Study - Draft

North Motsenbocker Rd

Parker, Colorado

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1 EXECUTIVE SUMMARY

This study investigates the traffic impact of the Salisbury Park North expansion on a new 90-acre site north of the existing Salisbury Park. Using trip generation methods, traffic to/from each area of the expanded park and surrounding street system was estimated. Two separate traffic estimates were done to evaluate the traffic operations in the area during different scenarios. One of the scenarios is a typical day scenario, where the park usage is estimated to be at half capacity during a weekday evening. The second scenario uses traffic estimates that coincide with a heavy use period at the park, when virtually all of the facilities are in use simultaneously during the weekend morning peak hour. This would likely occur a few times per year, when sporting events (tournaments) are happening. The traffic generated by the park expansion was then added to a background traffic condition that assumes the adjacent roadway improvements are completed. Intersection analyses were performed on the two proposed park accesses providing a basis for the geometric and traffic control device recommendations that follow:

- At the main entrance (north) access point, it is recommended that the intersection be configured as a two-way stop-controlled intersection. Any additional control at the intersection will be unnecessary at park opening as the intersection will be an LOS D at its' worst during weekend morning peak hours. This may need to be re-evaluated should year 2040 traffic projections come to fruition, as during this peak hour the eastbound movement is anticipated to be over capacity. A signalized intersection at this access point may be necessary for the intersection to provide acceptable operations in the long-term future.

- At the secondary entrance (south) access point, it is recommended that the intersection be configurated as a two-way stop-controlled intersection. This intersection configuration is projected to function at a LOS C through year 2040.

- A left turn deceleration lane should be added southbound on Dransfeldt Rd at the main entrance, with a length of 220'.

- A right turn deceleration lane should be added northbound on Motsenbocker Rd at the main entrance, with a length of 220'.

- A left turn deceleration lane should be added southbound on Dransfeldt Rd at the secondary entrance, with a length of 155'.

- A right turn deceleration lane should be added northbound on Motsenbocker Rd at the secondary entrance, with a length of 180'.

- It is recommended that a minimum of 480 parking spaces be available at the park to accommodate the park's maximum demand.

2 INTRODUCTION AND PROJECT DESCRIPTION

Salisbury Park North is a public park that will expand upon the existing Salisbury Park located immediately to the south on the East side of Motsenbocker Rd. The park is situated about ¾ mile north of Hess Rd and 1 ¼ miles south of Mainstreet in Parker, Colorado. The expansion will be roughly 90 Acres and will include several park elements that will be heavily used between the months of March-October. Refer to Section 4 Trip Generation for more information on the expansion elements.

Development of the park will coincide with adjustment of the neighboring roadways. This will include adjustment of the existing roadway on Motsenbocker Rd North of the existing park, as well as development of a new roadway that will connect Motsenbocker Rd to the intersection at 20 Mile Rd & Dransfeldt Rd. An exhibit illustrating the planned roadway adjustments, proposed site access points, and site layout is provided in Figure 1.

Traffic data was collected at three existing intersections that will experience traffic from the Salisbury Park North expansion. The three intersections include: Dransfeldt Rd & Twenty Mile Rd, Triple Crown St & Motsenbocker Rd, and Motsenbocker Rd & Hess Rd. Traffic Data was collected from 11:00 AM – 1:00 PM on Saturday June 23rd, 2023 and from 4:00 PM – 6:00 PM on Thursday June 8th, 2023. The traffic data collection dates were agreed upon with the Town of Parker and reflect typical weekend and weekday park usage. It is important to note that the selected times do not account for school traffic from the American Academy – Motsenbocker, located just north of the site. However, since park traffic is generally minimal during peak school hours, this was considered acceptable. These collections allowed for peak hour turning movement volumes to be determined for mornings and afternoons.

3 SITE ACCESS

The Salisbury Park North expansion will take access from Motsenbocker Rd at two new intersections that will be created from the roadway adjustments depicted in Figure 1. The North Entrance will be the main point of access. This entrance will be used by most park users as it provides expedient access to the baseball/softball fields, nature exploration area, bike park, and sports court area. The South Entrance will be a secondary point of access. This entrance provides access for the multi-use fields and secondary access to the baseball/softball fields. Salisbury Park North can also be accessed from the existing park entrance, located further south at the intersection of Motsenbocker Rd and Triple Crown St. The intersection of Motsenbocker Rd and Triple Crown St is currently a two-way stop control intersection. This existing park access has a left turn lane into the park from Motsenbocker Rd, as well as a left turn lane out of the park onto Motsenbocker Rd. Motsenbocker Rd is an undivided two-lane road with a 35 miles per hour (mph) speed limit.

Based upon Town standards, both new access points must have an entering sight distance of 350-ft for a posted speed of 35 MPH. The sight distances for each access were adjusted from this 350-ft based off the grade of the road on Motsenbocker Rd, these adjusted numbers can be seen in Table 1. When constructing the access points of the park, no objects such as trees should obstruct the driver's view within the sight triangle. Reference Figure 2 to see the sight distance on a map.

Figure 1: Salisbury Park North Concept Plan

Table 1: Adjusted Sight Distance Table

Access Location	Sight Direction	Sight Distance (ft)	Road Grade	Adjustment Factor	Adjusted Sight Distance (ft)
Main Entrance	South	350	3-4.9% Downgrade	1.2	**420**
	North	350	3-4.9% Upgrade	0.9	**315**
Secondary Entrance	South	350	5-7% Downgrade	1.35	**473**
	North	350	3-4.9% Upgrade	0.9	**315**

Figure 2: Sight Distance

4 TRIP GENERATION

Trip generation is a forecasting process that predicts the number of trips produced by each element of the park expansion. The trip generation was calculated by splitting the expansion into its primary elements and determining the trip generation of each primary element individually. Traditionally, the Institute of Transportation Engineer's (ITE) Trip Generation Manual is used to determine the number of trips generated by a particular land use. The ITE Trip Generation Manual contains a summary of trip generation data that has been collected and submitted to ITE. This can be a useful resource; however, Salisbury Park contains a number of land uses for which data is either unavailable, or the data is based on very few observations. For these land uses, a previous study completed by Stolfus & Associates (for Aurora Sports Park) was used. That study developed empirical rates for the number of trips produced in the peak hour for multi-use fields and ball fields. Finally, for land uses where no other sources existed (such as the pickleball courts), trip generation was estimated by approximating how many users each element will bring to the park. More details of the trip generation calculations are provided in the following.

Step #1 – Split the Expansion into Primary and Secondary Elements

Salisbury Park North contains 5 primary elements that are described in Table 2. While there are many secondary elements, such as picnic areas and playgrounds, most of the visitors to these amenities are presumed to also be there using the primary elements during periods of peak use (such as during tournaments). Secondary elements are listed in Table 3.

Table 2: Primary Elements (Responsible for Trip Generation)

Primary Element	**Description**
Tennis/Pickleball Courts	Includes 16 pickleball courts, 2 tennis courts, and supplementary amenities
Baseball/Softball Fields	Includes 4 baseball/softball fields, and supplementary amenities
Multi-Use Fields	Includes two 258' X 366' multi-use fields, and supplementary amenities
Nature Exploration Trail	1-mile exploration trail with connections both inside and outside of the park
Bike Park	4-acre mountain bike park

Table 3: Secondary Elements (Not Responsible for Trip Generation)

Secondary Element	**Description**
Picnic/Group Shelters	Includes 5 Picnic/Group shelter areas (2 large shelters, 2 medium shelters, and 1 small shelter)
Playgrounds	Includes 2 playground areas (1 large inclusive playground, and 1 smaller playground)
Outdoor Fitness Equipment	Includes 5 pieces of fitness equipment

Step #2 – Use ITE Trip Generation Manual to Calculate Trip Generation

For the different elements of the expansion, the only ones present in the ITE Trip Generation Manual are the tennis courts, and soccer complexes. The graphs that show the peak hour trip generation for each of these elements are provided in the Appendix. It was determined that the manual should not be used for trip generation on Salisbury Park because the tennis courts had a very small sample size that would not be highly accurate for trip generation estimation. Also, the number of multi-use/soccer fields that are included in the expansion is significantly smaller than all the studies in the ITE Manual. For these reasons, and because local data was available from a previous study at Aurora Sports Park, the ITE Trip Generation Manual was not used in this study. However, data from the manual was still referenced to confirm the trip generation estimates contained in this study are not wildly different from those in the manual.

Step #3 – Use Aurora Sports Park Traffic Study to Calculate Trip Generation

The *Aurora Sports Park Expansion - Traffic Impact Study* conducted by Stolfus & Associates in October of 2014 evaluated the addition of four new multipurpose fields to the park. Aurora Sports Park is a large park run by the City of Aurora, featuring 23 full-sized soccer fields and 12 baseball/softball fields. This expansion study is similar to Salisbury Park as it included adding numerous multi-use and baseball/softball fields. The Aurora Sports Park study collected traffic counts at the entrance to the existing park which enabled the actual trip generation of the park to be determined. The empirical trip generation rate per field from the Aurora Sports Park study is provided in Table 4 and was used for the for the new fields at Salisbury Park. The calculations from the Aurora Sports Park study are provided in the Appendix. The trip generation for Salisbury Park North's baseball and multi-use fields is provided in Table 4.

Table 4: Peak Hour Trip Generation for Baseball and Multi-use Fields

	Peak Hour Trips to/from Fields (vph)		
	Trips In	**Trips Out**	**Total Trips**
Trip Generation Rate (per Field)	32.2	30.5	62.7
Trips To/From New Fields (6 new fields)	**193**	**183**	**376**

Step #4 – Use Presumptions to Calculate Trip Generation

The trip generation rate for the other three primary expansion elements were estimated based upon their expected programming and utilization.

The tennis and pickleball courts trip generation rate was estimated by determining how many people will be occupying each court during a tournament weekend. Using knowledge from a recent tournament at the Apex Pickleball Courts in Arvada, 10 of the courts will be used for tournament play, while the other 6, and tennis courts may be used simultaneously for player warm-ups. Presuming there are 4 players per court the peak trip generation rate for a tournament weekend was estimated as detailed in Table 5. Based on conservative estimates on how many trips will be generated by the players (since not all tournament matches will be 2 on 2), it was not considered necessary to estimate the number of spectators or officials. The estimated trip generation rate is 4 trips generated per court per hour, which is

comparable to the average rate of trips generated by tennis courts in the ITE Trip Generation Manual of 4.12 (reference Figure A2).

Table 5: Sports Courts Trip Generation Table

Court Type	Avg. Persons Per Court	Number of Courts	Number of Players
Tournament Court	4	10	40
Warm-up Court	4	8	32
Total			72

It was presumed that during peak periods, all courts would be used and that the average duration of a match would be at least one hour. Thus, it was estimated that, on average, 72 persons would arrive and depart each hour (72 trips in/ 72 trips out for a total of 134 trips per hour).

For the exploration trail and bike park, an estimation was made that each would have 15 concurrent users during the peak hour of usage. Based on the size of both the bike park and the trail, this is the estimated number of users able to use the trails without them being overpopulated. Presuming that users stay at the park for about an hour, the trips in/out were estimated. The trips generated by these users are provided in the total trip generation tables in Table 6 and Table 7.

Table 6: Total Peak Hour Trip Generation (Park at Half Capacity)

	Trips In (vph)	Trips Out (vph)	Total Trips (vph)
Baseball and Multi-use Fields	97	93	190
Sports Courts Area	36	36	72
Bike Park	8	8	16
Exploration Trail	8	8	14
Total	**149**	**145**	**294**

Table 7: Total Peak Hour Trip Generation (Park at Full Capacity)

	Trips In (vph)	Trips Out (vph)	Total Trips (vph)
Baseball and Multi-use Fields	193	183	376
Sports Courts Area	72	72	144
Bike Park	15	15	30
Exploration Trail	15	15	30
Total	**295**	**285**	**580**

5 TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution was estimated based on existing traffic count data collected at the intersection of Motsenbocker Rd and Triple Crown St. The directions that traffic approach and depart the park expansion were presumed to be consistent with these existing turning movement counts. The turning movement counts for all existing intersections can be found in the Appendix.

The trip distribution was further split between the two new entrances, as well as the existing park entrance. The trip distribution can be seen in Figures 3 and 4. Applying the trip distribution percentages to the traffic generated by the park results in the project trips shown in Figure 5.

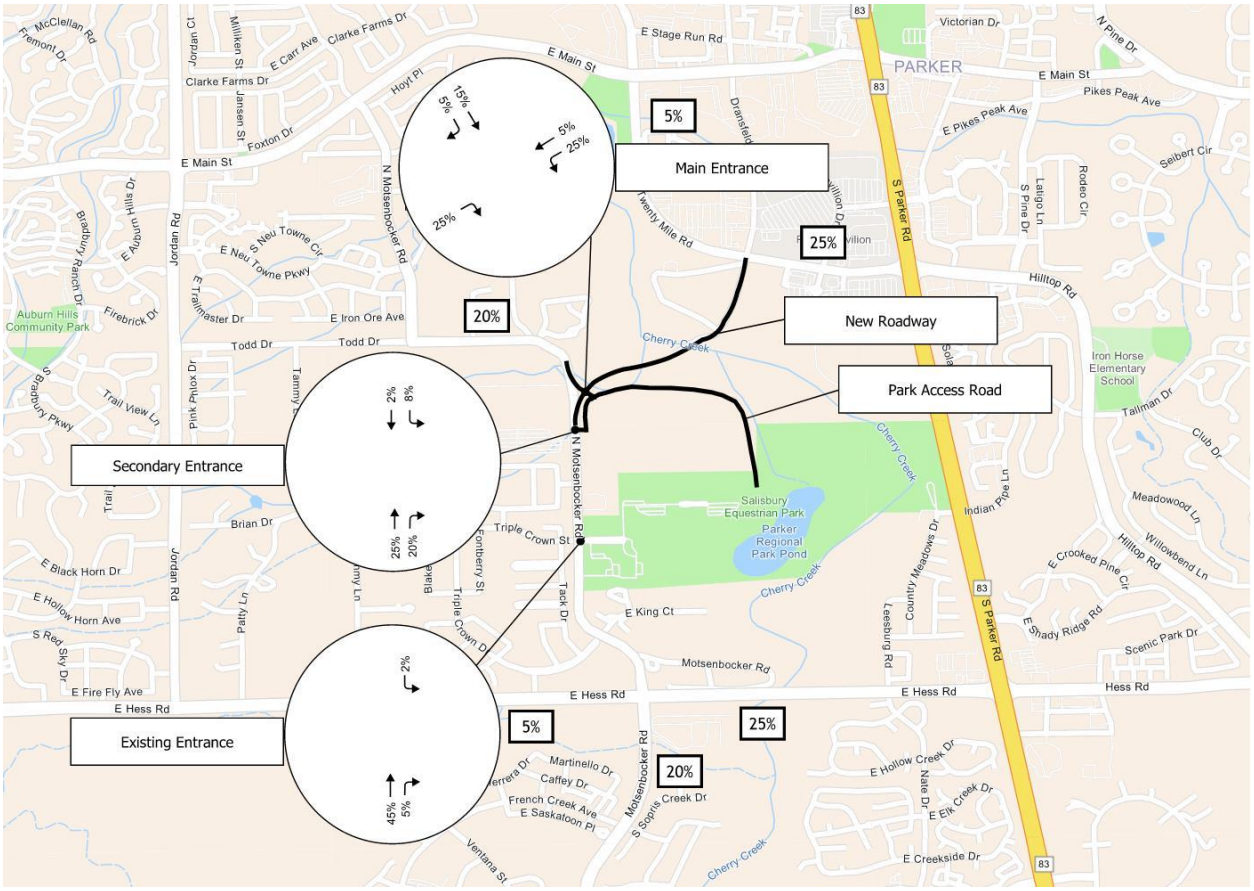


Figure 3: Entering Salisbury Park Expansion Trip Distribution (%)

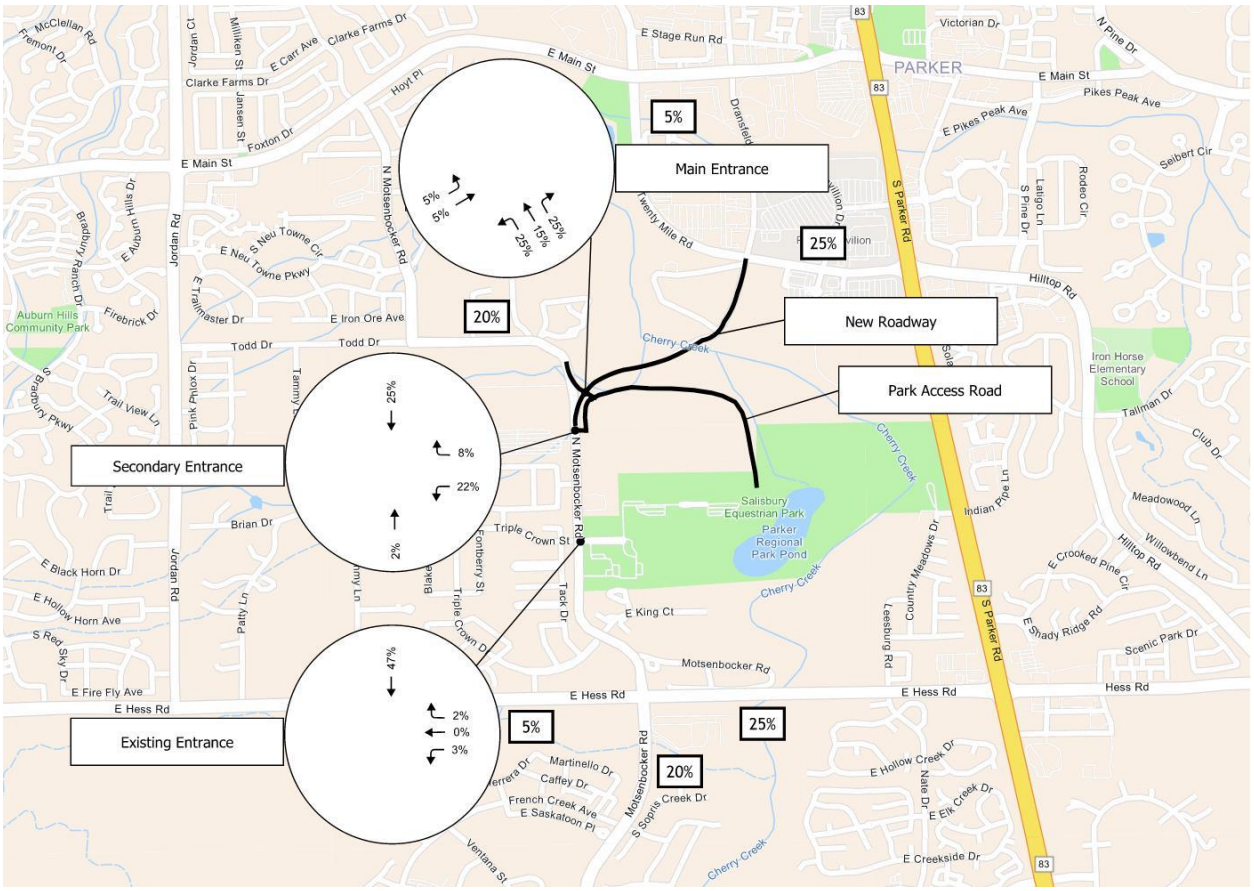


Figure 4: Exiting Salisbury Park Expansion Trip Distribution (%)

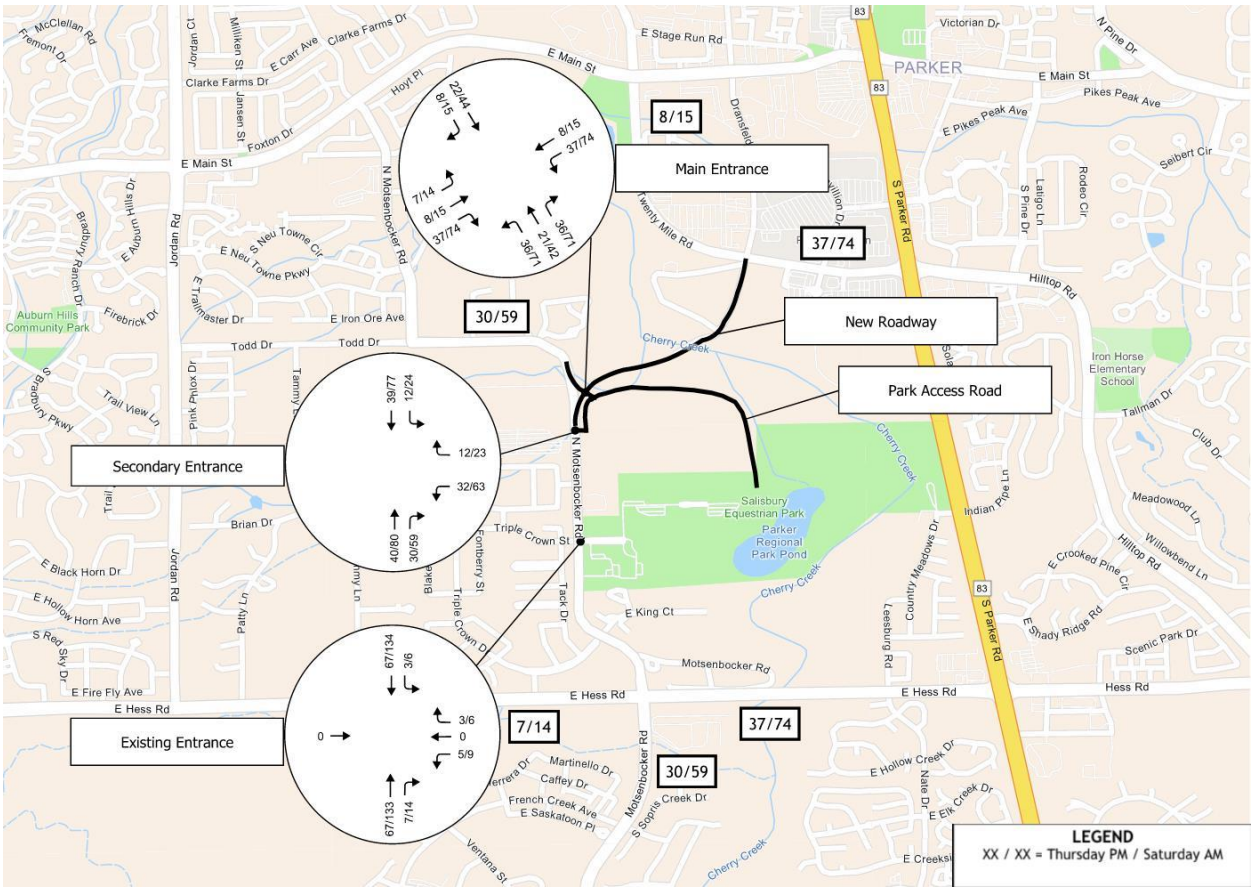


Figure 5: Salisbury Park Expansion Project Trips

6 FUTURE TRAFFIC VOLUMES

6.1 Opening Year (2025) Traffic Volumes

Salisbury Park North is set to open in the year 2025. Traffic volume projections from the City of Parker were used to estimate background (i.e., without the park expansion) traffic volumes for 2025 [Parker Roadway System Projections]. The Iterative Procedure – Directional Method as applied in the Turns32 program and described in the *National Cooperative Highway Research Program (NCHRP) Report 255: Highway Traffic Data for Urbanized Area Project Planning and Design* was used to incorporate traffic that will be added to the roadway system from the expansion of Dransfeldt Rd. This procedure refines projected traffic volumes by iteratively balancing demand volumes to ensure consistency between link volumes and turning movements at intersections. This was used to predict background turning movements based upon existing turning movements and growth in link volumes obtained from the Town of Parker's traffic projection system. This procedure was done for the intersection of Dransfeldt Rd and Twenty Mile Rd. The turning movements obtained from the NCHRP 255 procedure were added to the existing turn movements where necessary. The results of this procedure can be seen in the Appendix.

The future traffic volumes were determined in two different ways for the weekday evening peak hour, and the weekend morning peak hour. For the weekday evening peak hour, the turning movement counts were converted to 6PM-7PM. The reason for this is because park

usage during the week occurs in the early evening. This conversion allowed for a non-traditional peak hour to be used along with the trips estimated in Figure 5 to allow for the most accurate traffic volumes to be used in the intersection analyses. For the weekend peak hour, the peak hour traffic volumes were used from the traffic counts that were collected.

The NCHRP 255 Iterative Procedure was also used to convert the existing turning movement counts and traffic volume projections from the City of Parker into background traffic volume counts at other locations. Once these turning movements were determined, the traffic generated from the park expansion was added to the background volume to project the total traffic along the corridor in 2025. Existing traffic exhibits are provided in the Appendix. Opening year peak hour traffic volumes are provided in Figure 7 and background peak hour traffic volumes are provided in Figure 6.

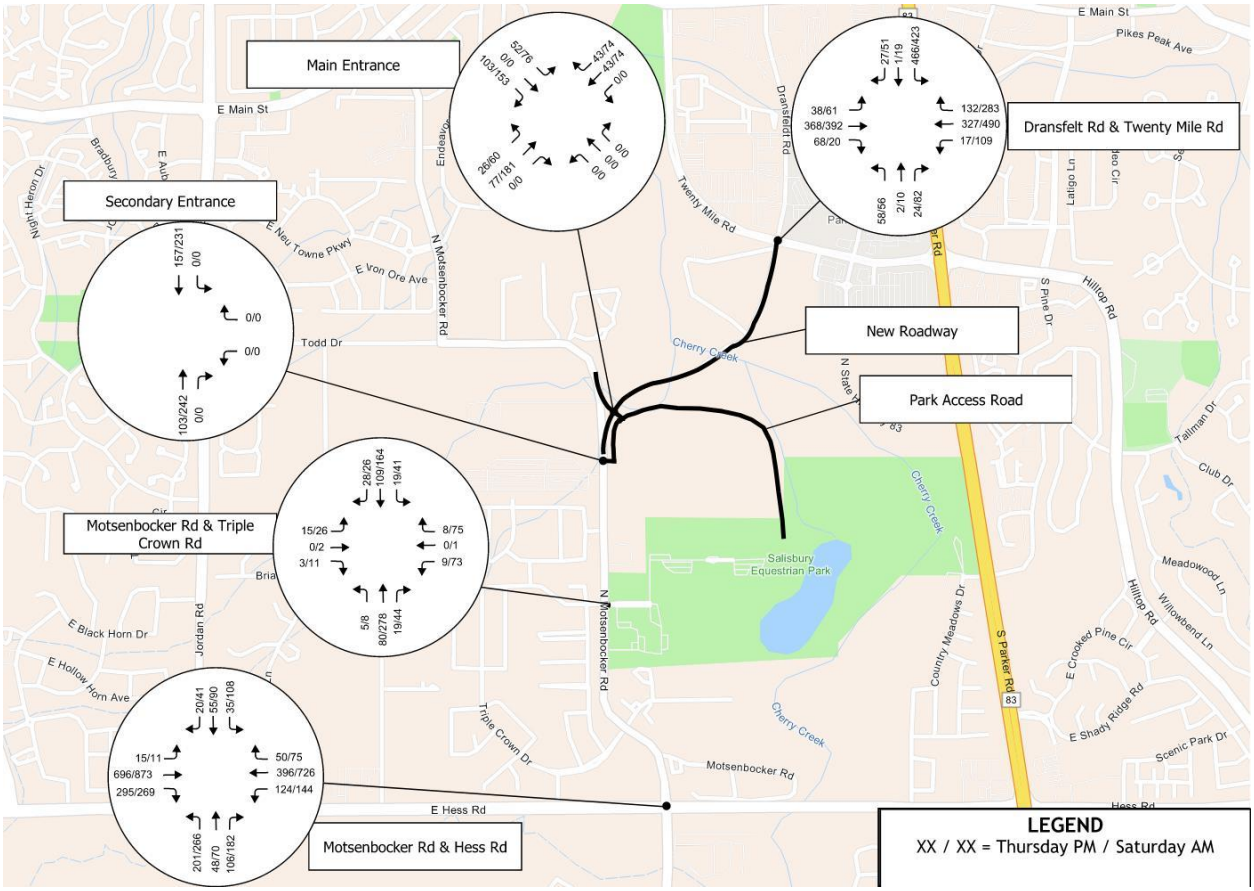


Figure 6: Opening Year (2025) Background Traffic Volumes

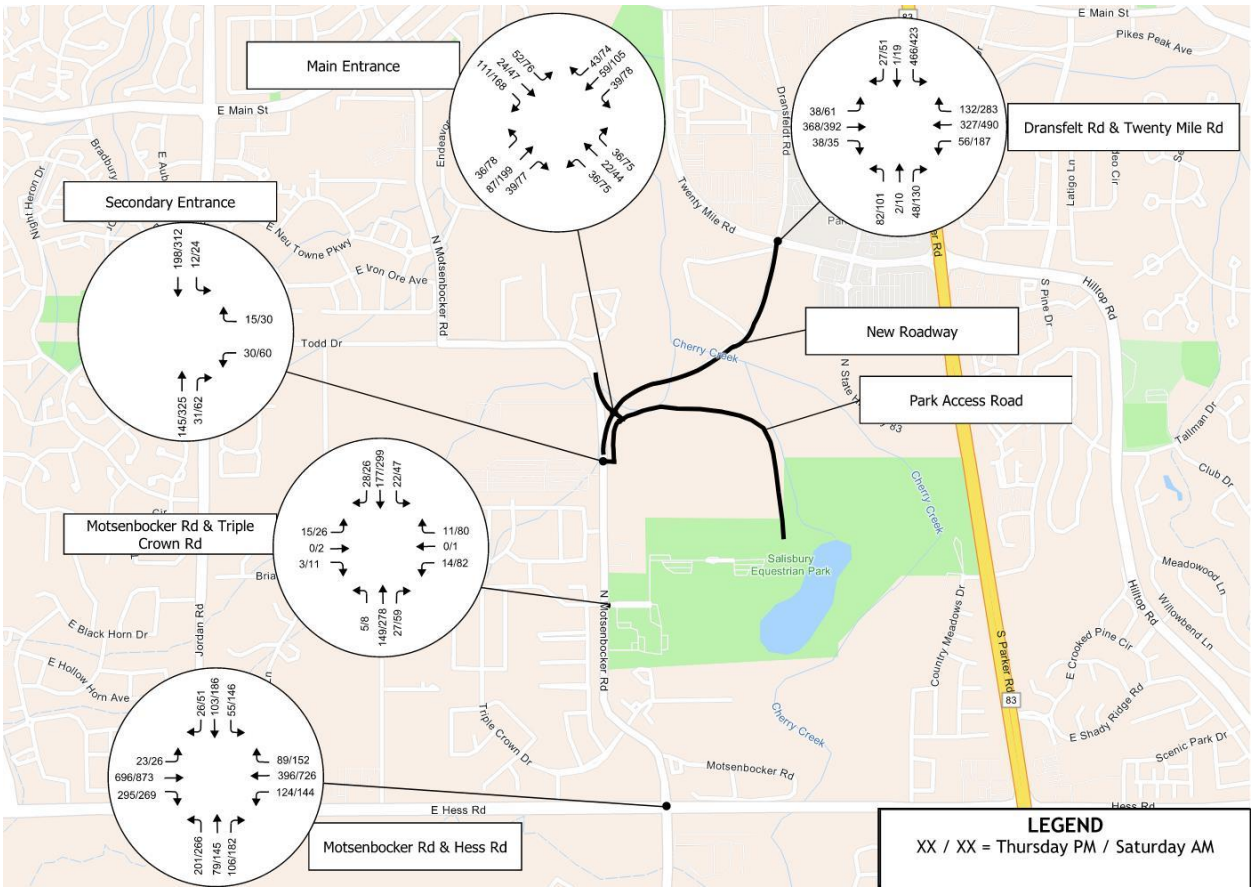


Figure 7 Opening Year (2025) Total (Background Plus Project Trips) Traffic Volumes

6.2 2040 Traffic Volumes

Background traffic volumes for the year 2040 were projected in the same way as for year 2025. City of Parker traffic volume projections for the year 2040 [Parker Roadway System Projections] were used to grow existing traffic volumes using the NCHRP 255 Iterative Procedure. The project trips shown in Figure 4 were combined with the background 2040 traffic volumes (provided in the Appendix) to result in the total 2040 peak hour traffic volumes provided in Figure 9and the 2040 background traffic volumes are provided in Figure 8.

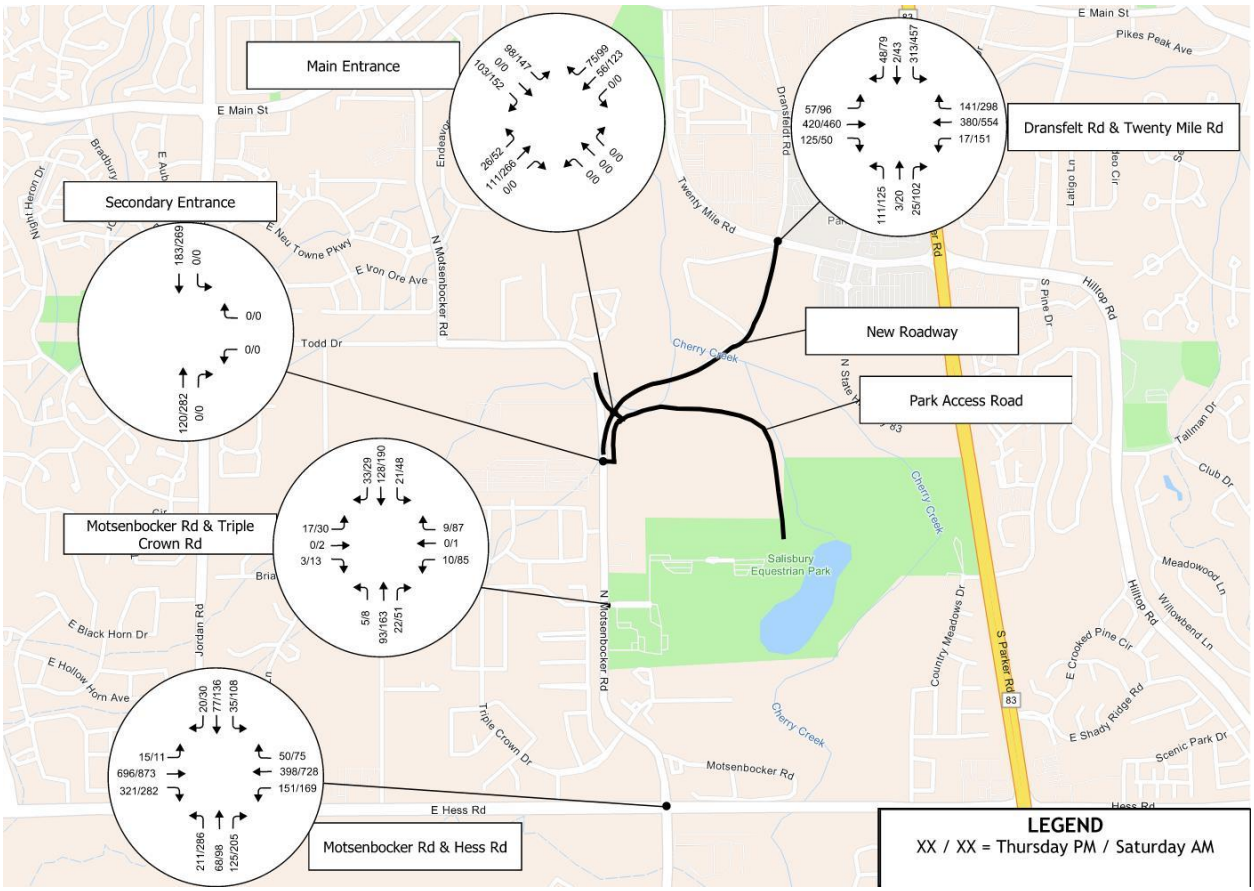


Figure 8: 2040 Background Traffic Volumes

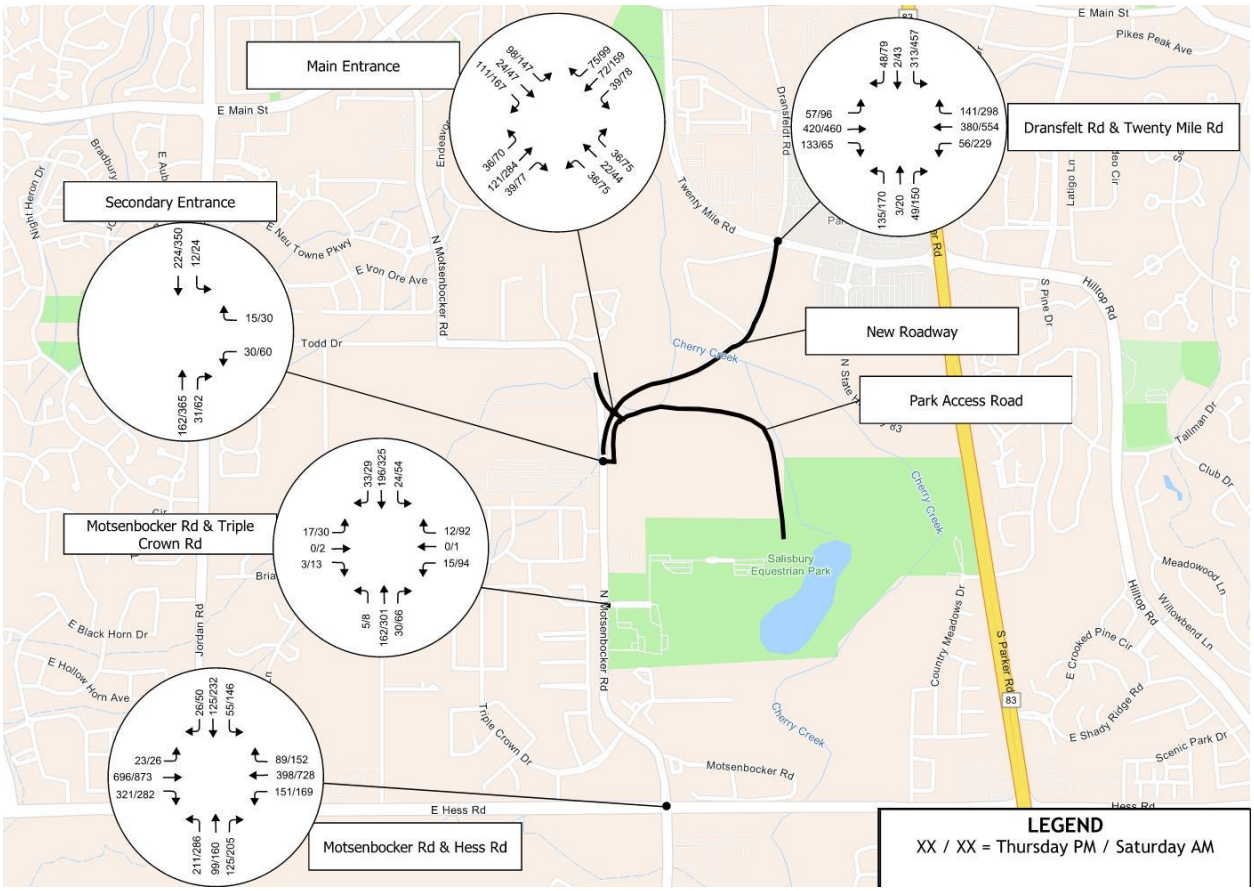


Figure 9: 2040 Total (Background Plus Project Trips) Traffic Volumes

7 TURN LANE WARRANTS

The City of Parker uses the Colorado Department of Transportation (CDOT) State Highway Access Code standards to determine when turn lanes are required at an access. Motsenbocker Rd is the road where the access points exist and is categorized as a NR-C collector road. The CDOT standards for an NR-C collector road are that a turn lane shall be installed if the hourly turning volume is greater than 25 for left turns, and greater than 50 for right turns. Using this standard, it is recommended that a turn lane be installed in the locations shown in Table 8.

Table 8: Turn Lane Requirements Table

Access Location	Auxiliary Lane	Volume Requirement	2040 Projected Volume	Turn Lane Recommended?
Main Entrance	Southbound Left-turn Lane	>25 vph	78 vph	**Yes**
	Northbound Right-Turn Lane	>50 vph	77 vph	**Yes**
Secondary Entrance	Southbound Left-turn Lane	>25 vph	24 vph	**Yes**
	Northbound Right-Turn Lane	>50 vph	62 vph	**Yes**

The recommended deceleration lane lengths are also based off CDOT standards and are shown in Table 9. The taper lengths are for a 35 MPH posted speed, while the storage lengths are based on the number of turning vehicles per peak hour. Storage lengths are to be a minimum of 100'. The taper lengths are based off a turning lane that is 12-ft wide, with a taper rate of 10:1.

Table 9: Required Turn Lane Lengths

Access Location	Turn Lane	Taper Length (ft)	Turning Vehicles per Peak Hour	Storage Length (ft)	Deceleration Lane Length (ft)
Main Entrance	Southbound Left-turn Lane	120	78 vph	100	**220**
	Northbound Right-Turn Lane	120	77 vph	100	**220**
Secondary Entrance	Southbound Left-Turn Lane	120	24 vph	100	**220**
	Northbound Right-Turn Lane	120	62 vph	100	**220**

Striping modifications for the proposed turn lanes will be implemented during Phase 1 of the Park Construction Project. For further details on construction phasing, refer to the Appendix, which includes the Overall Site and Phasing Plan as well as the Phase 1 Detailed Signage, Striping, and Paving Plan.

8 TRAFFIC ANALYSIS

An intersection level-of-service (LOS) analysis was completed on both park entrances under year 2025 and year 2040 traffic conditions with park traffic included. LOS is a measure of how well the intersection is performing and is based on average intersection delays. A traffic analysis was also performed on the existing intersections under existing traffic volumes to see how well the traffic is flowing with the current conditions and to provide a basis of comparison.

8.1 Existing Intersection LOS Analysis

Intersection LOS analyses were performed at the intersections of Hess Rd & Motsenbocker Rd, Triple Crown St & Motsenbocker Rd and Dransfeldt Rd & Twenty Mile Rd. The results can be seen in Tables 10 - 12 below.

Table 10: Existing LOS Analysis for Motsenbocker Rd & Triple Crown St

Movement	AM Year 2023			PM Year 2023		
	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio	LOS
Eastbound (Triple Crown St)	12.0	0.07	B	11.5	0.06	B
Westbound (Triple Crown St)	11.4	0.15	B	10.7	0.03	B
Northbound (Motsenbocker Rd)	0.3	0.01	A	0.3	0.01	A
Southbound (Motsenbocker Rd)	2.0	0.03	A	1.6	0.03	A
Overall Intersection	**4.8**	**---**	**B**	**2.2**	**---**	**B**

Table 11: Existing LOS Analysis for Dransfeldt Rd and Twenty Mile Rd

Movement	AM Year 2023			PM Year 2023		
	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio	LOS
Eastbound (Twenty Mile Rd)	19	0.24	B	22	0.13	C
Westbound (Twenty Mile Rd)	57	0.35	E	56	0.35	E
Northbound (Dransfeldt Rd)	55	0.55	E	56	0.27	E
Southbound (Dransfeldt Rd)	41	0.75	C	42	0.80	D
Overall Intersection	**27**	**---**	**C**	**27**	**---**	**C**

Table 12: Existing LOS Analysis for Motsenbocker Rd & Hess Rd

Movement	AM Year 2023			PM Year 2023		
	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio	LOS
Eastbound (Hess Rd)	49	0.54	C	45	0.90	D
Westbound (Hess Rd)	76	0.83	D	73	0.87	E
Northbound (Motsenbocker Rd)	70	0.83	E	63	0.89	F
Southbound (Motsenbocker Rd)	48	0.30	C	49	0.34	D
Overall Intersection	**35**	**---**	**C**	**46**	**---**	**D**

Intersection LOS is graded on a scale from LOS A to LOS F, with LOS A representing ideal traffic conditions with very little delays or vehicle stacking. LOS F represents an undesirable condition whereby average vehicle delays are very long. LOS F is typically considered an unacceptable condition; however, it is not uncommon for intersections in urban areas to function at a LOS E or even LOS F during peak traffic periods. LOS D is typically considered a desirable peak hour traffic condition when planning future roadway improvements.

8.2 Main Entrance LOS Analysis

The LOS Analysis for the intersection at the main entrance to Salisbury Park North can be found in Tables 13 and 14. A two-way stop control intersection is recommended for the intersection, and will allow the intersection to perform at a LOS D at park opening under highly conservative traffic volumes representing the weekend morning peak hour when the park is heavily utilized. Under these same park usage conditions, a two-way stop controlled intersection will operate at a LOS F under projected year 2040 conditions. The eastbound movement is the main concern as the volume-to-capacity (v/c) ratio is greater than one signifying the movement is over capacity. Should these projections come to be in the future, signalization of the intersection may be required to provide acceptable traffic conditions. Refer to Figures A12-A15 in the appendix for more information on the intersection analyses.

Table 13: LOS Analysis for Two-Way Stop Control Main Entrance PM

Movement	Year 2025			Year 2040		
	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio	LOS
Eastbound (Motsenbocker Rd)	11.1	0.17	B	13.3	0.30	B
Westbound (Access)	12.1	0.09	B	12.9	0.11	B
Northbound (Motsenbocker Rd)	1.7	0.03	A	1.5	0.03	A
Southbound (Dransfeldt Rd)	2.1	0.03	A	1.6	0.03	A
Overall Intersection	**12.1**	**---**	**B**	**13.3**	**---**	**B**

Table 14: LOS Analysis for Two-Way Stop Control Main Entrance AM

Movement	Year 2025			Year 2040		
	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio	LOS
Eastbound (Motsenbocker Rd)	24.5	0.61	C	128.1	1.33	F
Westbound (Access)	29.1	0.52	D	50.0	0.74	F
Northbound (Motsenbocker Rd)	1.9	0.06	A	1.5	0.06	A
Southbound (Dransfeldt Rd)	2.5	0.07	A	1.9	0.07	A
Overall Intersection	**29.1**	**---**	**D**	**128.1**	**---**	**F**

8.3 Secondary Entrance LOS Analysis

The HCS Analysis for the intersection at the secondary entrance to Salisbury Park North can be found in Tables 15 and 16. As can be seen, a two-way stop control intersection should be acceptable at this intersection. A two-way stop control intersection functions as an LOS B intersection in 2025. In the year 2040, the intersection is still projected to function well. Even in the worst-case scenario on weekend peak hours, the intersection is expected to operate at a LOS C. Refer to Figures A16-A19 in the appendix for more information on the intersection analyses.

Table 15: LOS Analysis for Two-Way Stop Control Secondary Entrance PM

Movement	Year 2025			Year 2040		
	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio	LOS
Westbound (Access)	10.6	0.05	B	10.9	0.06	B
Northbound (Motsenbocker Rd)	Free Movement					
Southbound (Motsenbocker Rd)	0.4	0.01	A	0.4	0.01	A
Overall Intersection	**10.6**	**---**	**B**	**10.9**	**---**	**B**

Table 16: LOS Analysis for Two-Way Stop Control Secondary Entrance AM

Movement	Year 2025			Year 2040		
	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio	LOS
Westbound (Access)	14.7	0.18	B	16.0	0.20	C
Northbound (Motsenbocker Rd)	Free Movement					
Southbound (Motsenbocker Rd)	0.6	0.02	A	0.5	0.02	A
Overall Intersection	**14.7**	**---**	**B**	**16.0**	**---**	**C**

9 NUMBER OF PARKING SPACES FOR EXPANSION AREA

Parking for the Salisbury North expansion has a minimum required number of parking spaces based upon Town of Parker municipal code. The minimum required number of parking spaces based on the code is 521 as detailed in the Appendix. The previous study done by Stolfus & Associates for the Aurora Sports Park expansion was also examined to see if the minimum required number of parking spaces would be sufficient to accommodate all the park's amenities.

In the Aurora Sports Park study, parking utilization was counted at four different times. During these times, the field usage was also counted so that the number of occupied parking

spaces could be related to the field usage. Through this study, it was determined that 60 parking spaces would be needed for each of the multi-use and baseball/softball fields in order to ensure there were enough parking spaces for each field. The results from the parking utilization measurements in the Aurora Sports Park study can be seen in Table 17.

Table 17: Aurora Sports Park Parking Utilization

Area	**Parking Spaces Used per Occupied Field** *(Based on observations at 9:30 am, 11:45 am, 1:00 pm, and 3:00 pm on Saturday, September 6, 2014)*	
	Average	Maximum
West Soccer Fields (10 Fields, 678 Parking Spaces)	49	54
East Soccer Fields (13 Fields, 772 Parking Spaces)	57	69
Baseball / Softball Fields (12 Fields, 683 Parking Spaces)	52	63
All Fields (35 Fields, 2,133 Parking Spaces)	**52**	**60**

It was also noted in the Aurora Sports Park study that the fields with the highest parking utilization were the fields being used by older kids' leagues (ages 12 and older). This would mean that depending on the age of the teams or leagues using the fields at Salisbury Park North, the number of parking spaces needed to accommodate the park users could be lower than what is recommended.

It is recommended that a minimum of 60 parking spaces should be available for the 2 multi-use fields, and the 4 baseball/softball fields to match the average maximum observed in the Aurora Sports Park study. With this being a conservative number of spaces for the fields it is recommended that the minimum number of required spaces should be used for most of the park's other amenities. Other changes that were made were the number of spaces needed for the tennis courts and the nature exploration trail. For the tennis courts, the amount of parking spaces was increased to 5 in order to match the pickleball courts minimum required parking spaces. For the nature exploration trail, the number of spots was increased to 10 to match the trip generation determined for the area. Also, with the increase in parking spaces recommended for the fields, the minimum number of parking spaces required for the secondary park elements was ignored for this recommendation. This results in a total of 480 parking spaces being available for Salisbury Park North. The breakdown of the required parking spaces can be found below in Table 18.

Table 18: Parking Space Recommendation

Park Element	Quantity	Units	Parking Spaces per Unit	Total Parking Spaces
Baseball/Softball Fields	4	Fields	60	240
Multi-use Fields	2	Fields	60	120
Pickleball Courts	16	Courts	5	80
Tennis Courts	2	Courts	5	10
Bike Park	4	Acres	5	20
Nature Exploration Area	1	Miles of Trail	10	10
Total Spaces Recommended for Salisbury Park North				**480**

10 RECOMMENDATIONS

- At the main entrance (north) access point, it is recommended that the intersection be configured as a two-way stop-controlled intersection. Any additional control at the intersection will be unnecessary at park opening as the intersection will be an LOS D at its' worst during weekend morning peak hours. This may need to be re-evaluated should year 2040 traffic projections come to fruition, as during this peak hour the eastbound movement is over capacity. A signalized intersection at this access point may be necessary in order for the intersection to provide acceptable operations in the long-term future.

- At the secondary entrance (south) access point, the intersection should be a two-way stop-controlled intersection, as any extra control at the intersection will be unnecessary with the LOS being an LOS C through year 2040.

- A left turn deceleration lane should be added southbound on Dransfeldt Rd at the main entrance, with a length of 220'.

- A right turn deceleration lane should be added northbound on Motsenbocker Rd at the main entrance, with a length of 220'.

- A left turn deceleration lane should be added southbound on Dransfeldt Rd at the secondary entrance, with a length of 155'.

- A right turn deceleration lane should be added northbound on Motsenbocker Rd at the main entrance, with a length of 180'.

- 480 parking spaces should be available at the park to accommodate the park's maximum capacity.

APPENDIX

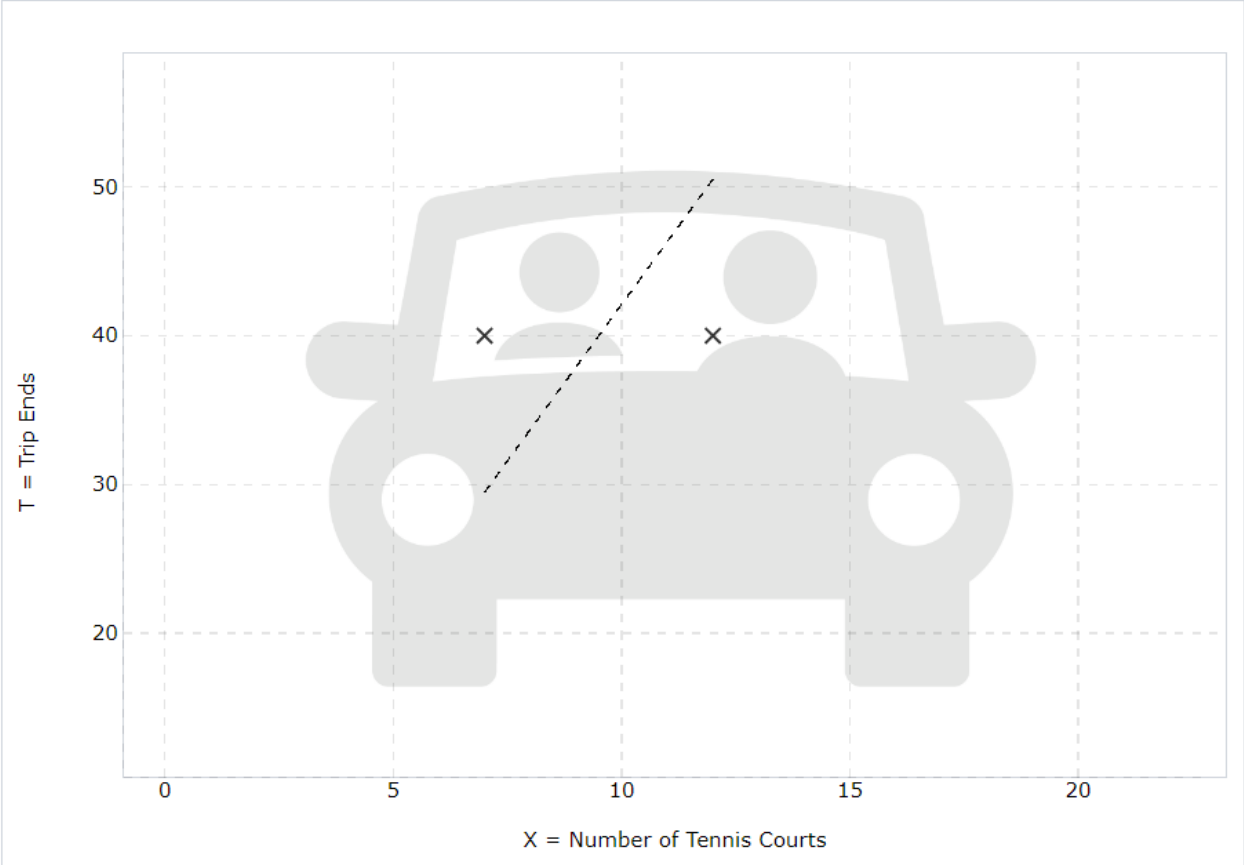


Figure A1: ITE Trip Generation for Tennis Courts

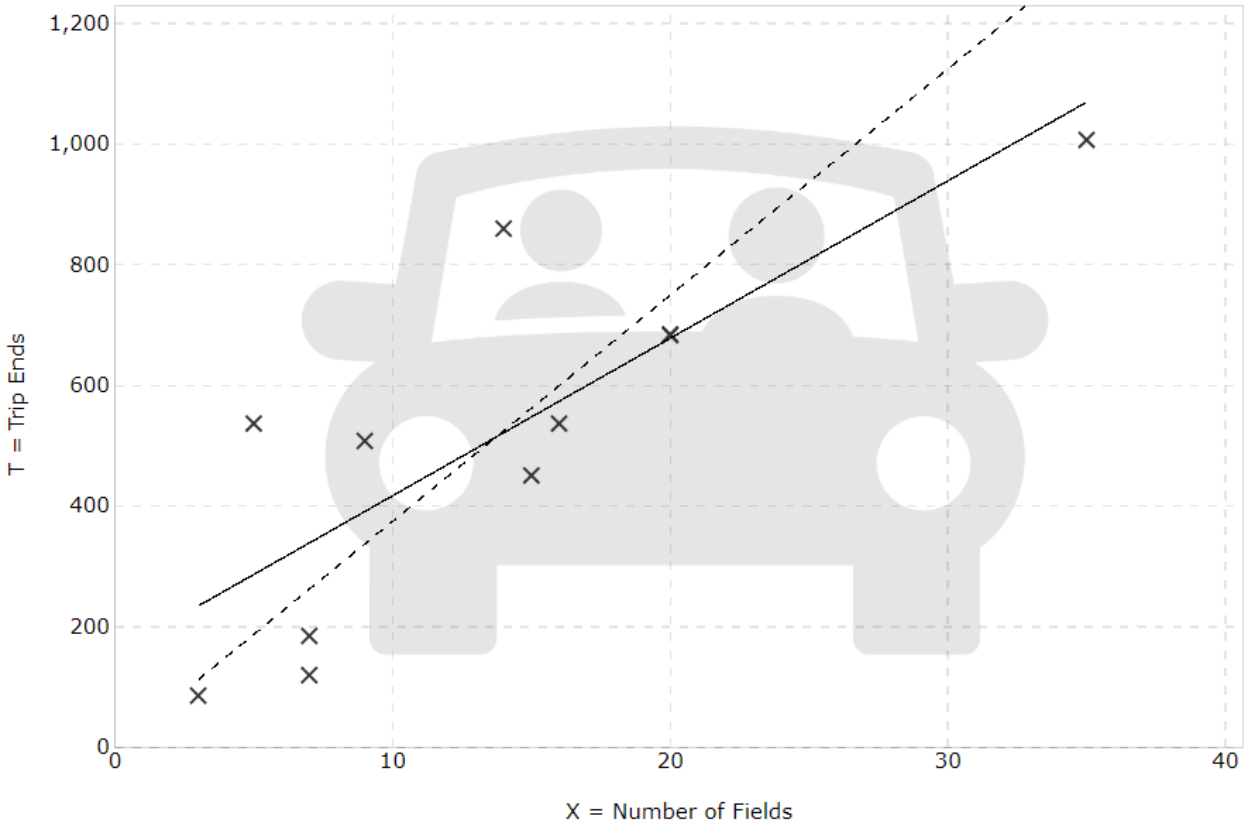


Figure A2: ITE Trip Generation for Soccer Complex

Table A1: Aurora Sports Complex Trip Generation Table

Count Date	Peak Hour Trips to/from the Sports Park (vph)				
	Trips IN [1]	Trips OUT [1]	Total Trips [2]	Trips IN [2]	Trips OUT [2]
Sat, Sept 6, 2014	583 *(10:30am - 11:30am)*	631 *(11:15am - 12:15am)*	1,115 (11:15am - 12:15am)	484	631
Sun, Sept 7, 2014	94 (7:45am – 8:45am)	141 (12:15pm - 1:15pm)	220 (12:15pm - 1:15pm)	79	141
Sat, Oct 4, 2014	788 *(10:00am - 11:00am)*	702 *(11:15am - 12:15am)*	1,443 (11:15am - 12:15am)	741	702
Highest Peak Hour	788	702	1,443	741	702
Trip Generation Rate *(Peak Hour Trips per Used Field)* [Based on 23 Fields] [3]	**34.3**	**30.5**	**62.7**	**32.2**	**30.5**
Trips to/from Expansion Area [4 New Fields]	**137**	**122**	**251**	**129**	**122**

Notes:
vph – vehicles per hour
1. These peak hours are independent of each other.
2. This represents the peak hour for the combination (total) of IN's and OUT's.
3. The peak field usage on September 6, 2014 was a total of 23 fields; the average field usage was 22 fields between 9:30 am and 1:00 pm.

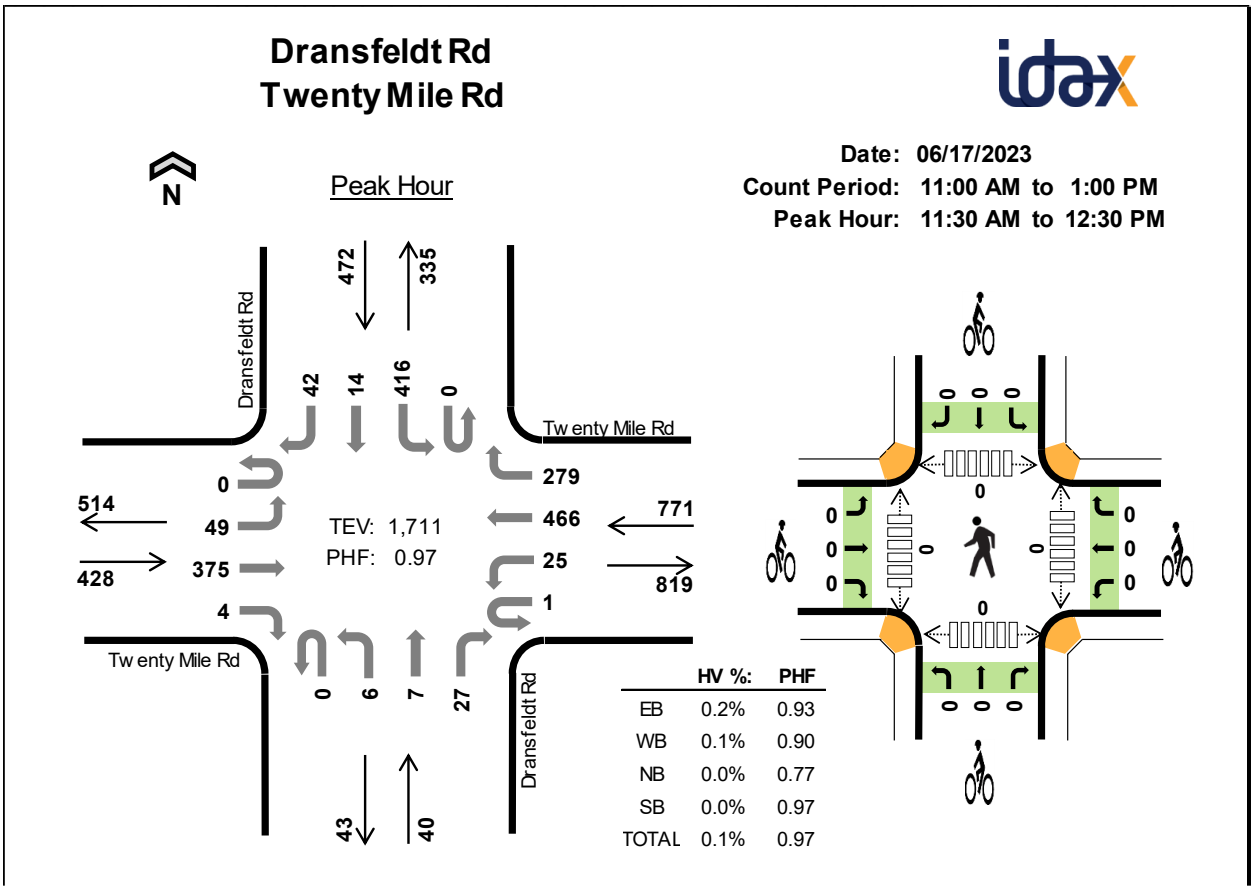


Figure A3: Dransfeldt Rd & Twenty Mile Rd Weekend Traffic Counts

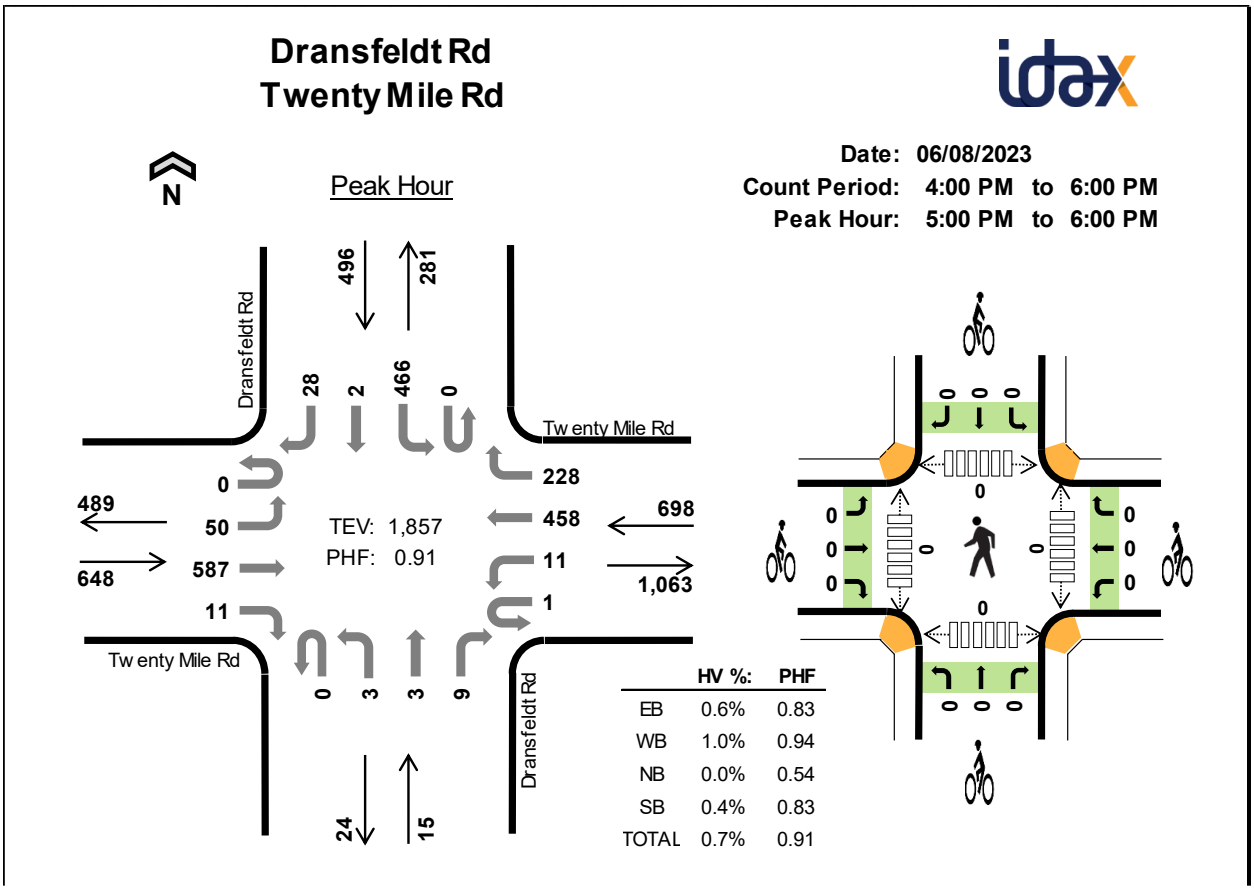


Figure A4: Dransfeldt Rd & Twenty Mile Rd Weekday Traffic Counts

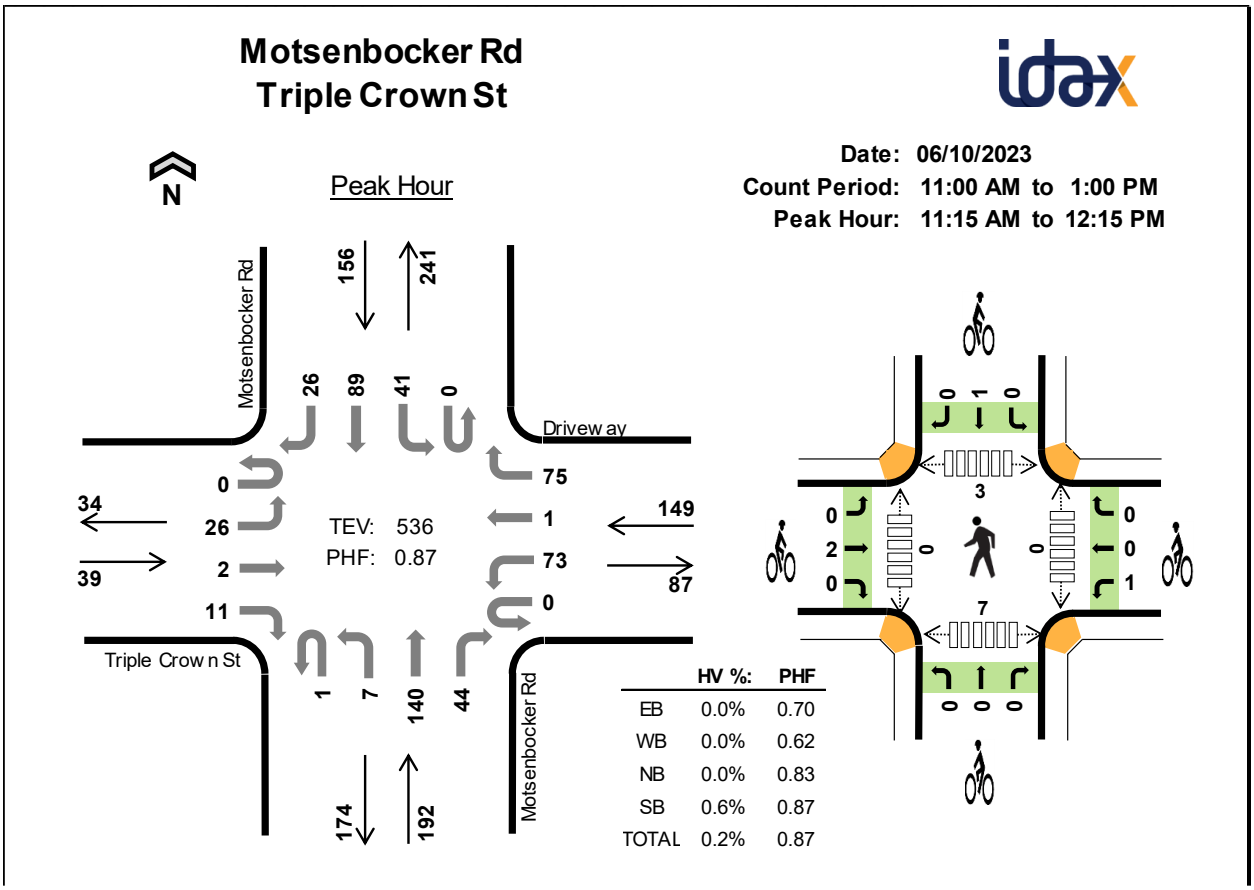


Figure A5: Motsenbocker Rd & Triple Crown St Weekend Traffic Counts

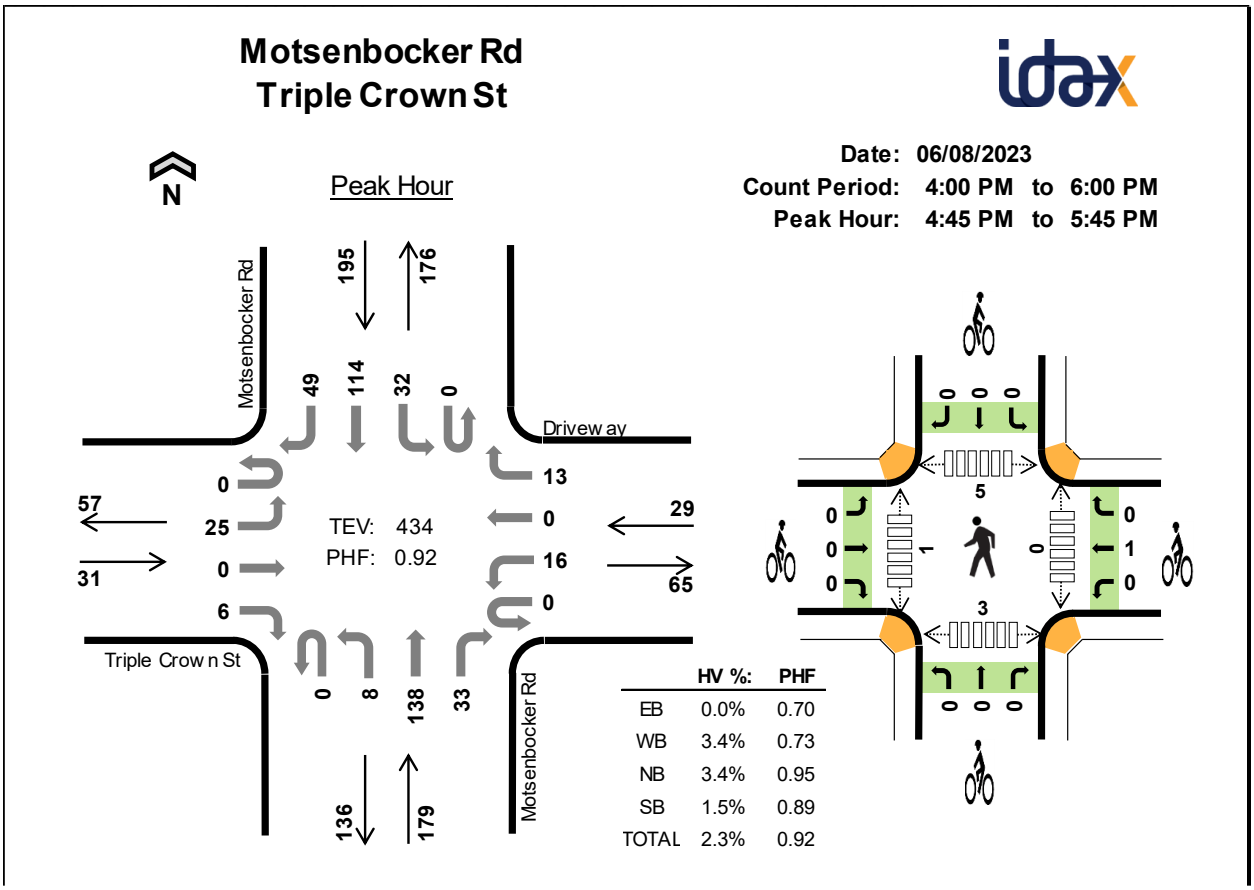


Figure A6: Motsenbocker Rd & Triple Crown St Weekday Traffic Counts

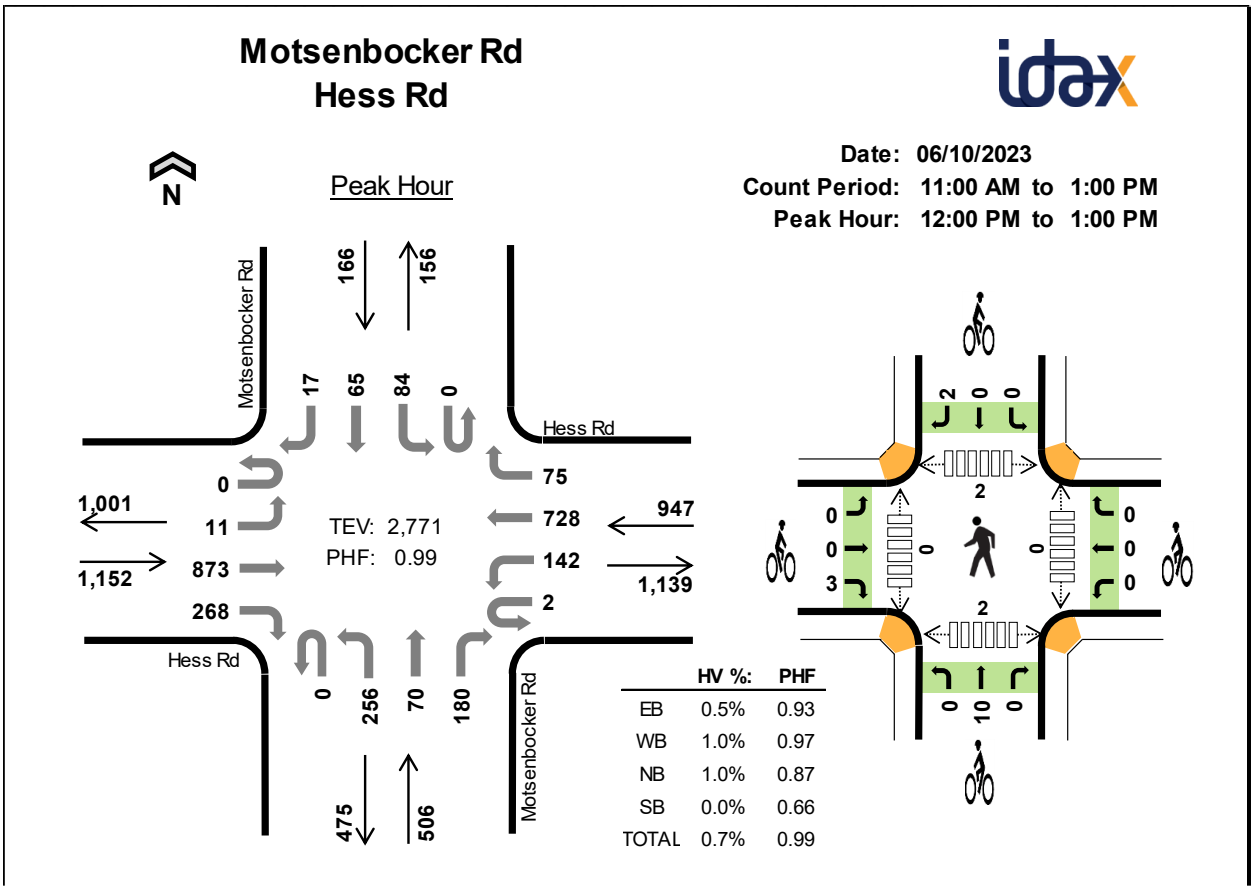


Figure A7: Motsenbocker Rd & Hess Rd Weekend Traffic Counts

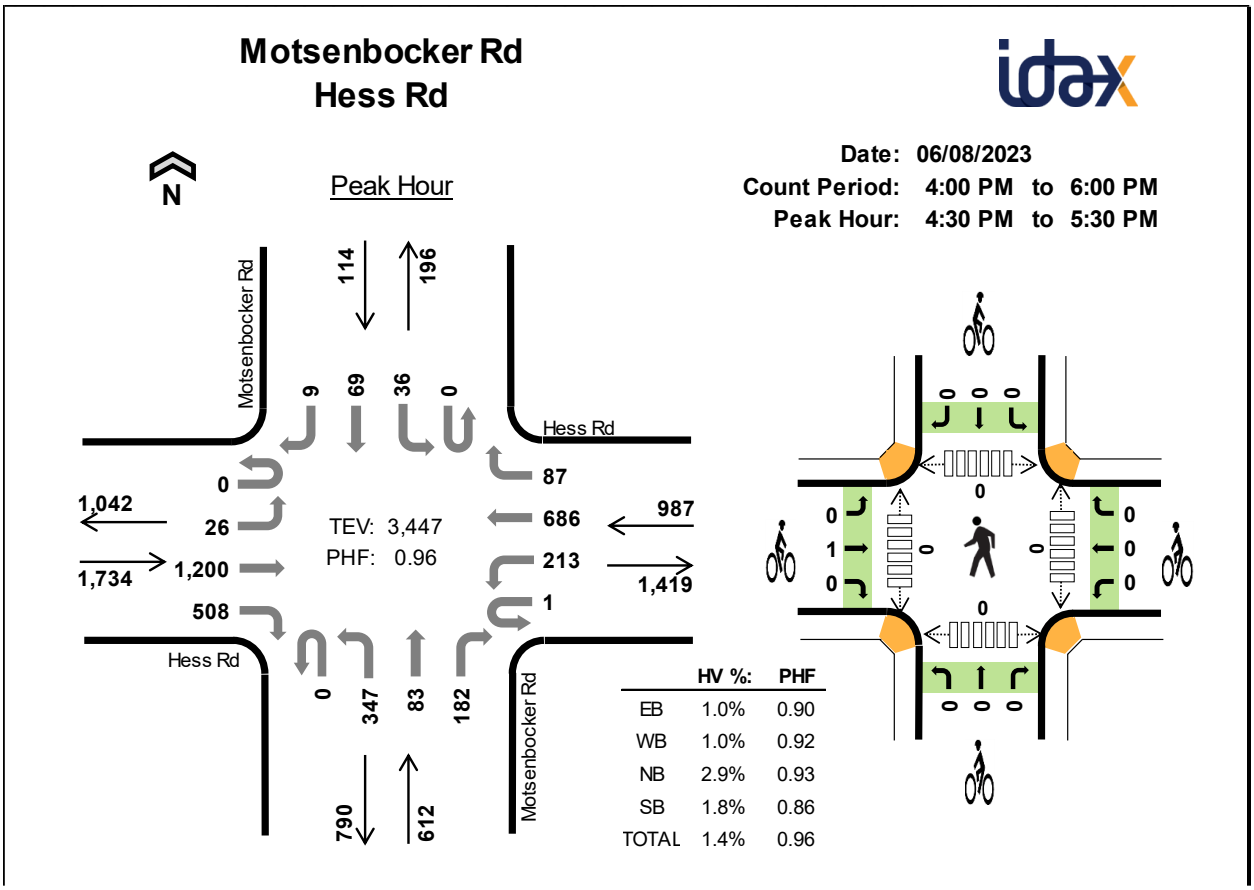


Figure A8: Motsenbocker Rd & Hess Rd Weekday Traffic Counts

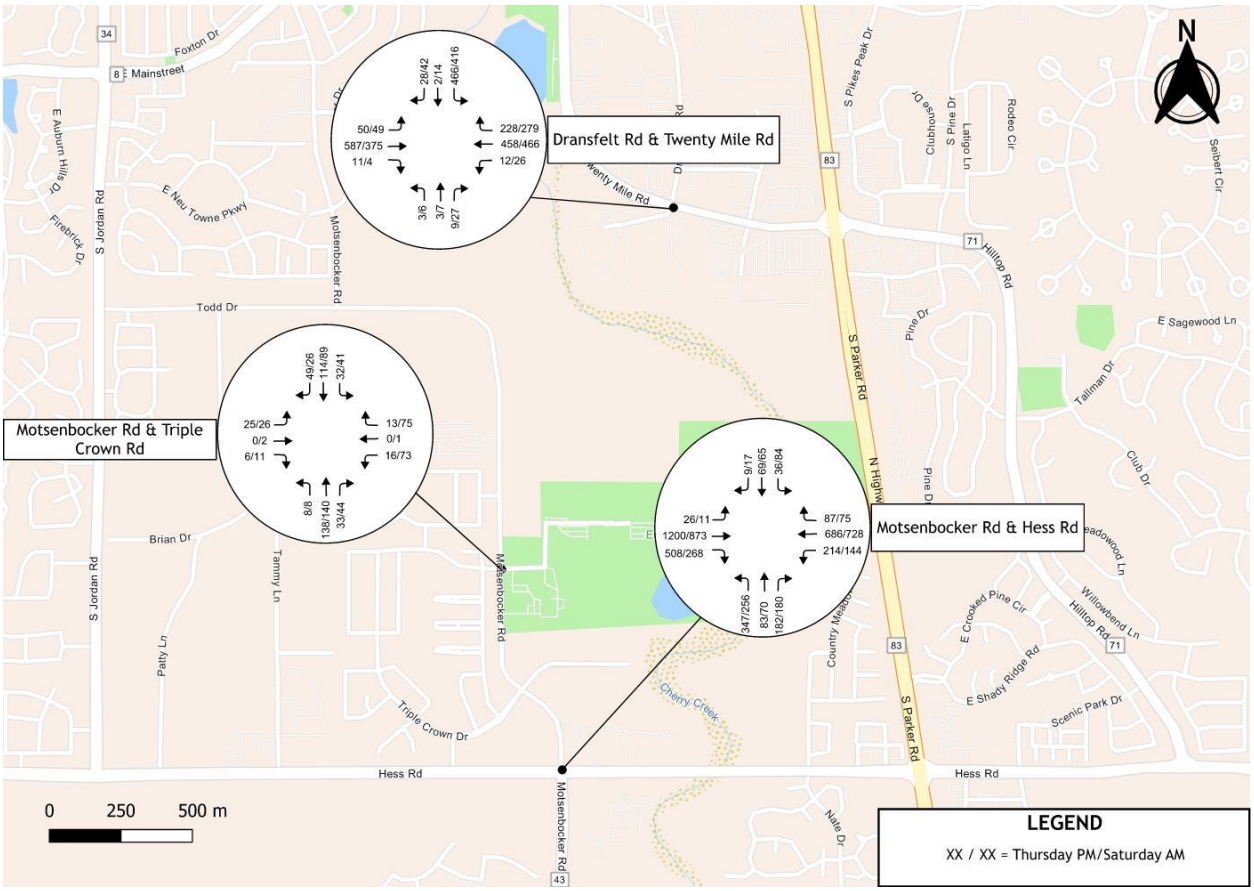


Figure A9: Existing Traffic Volumes

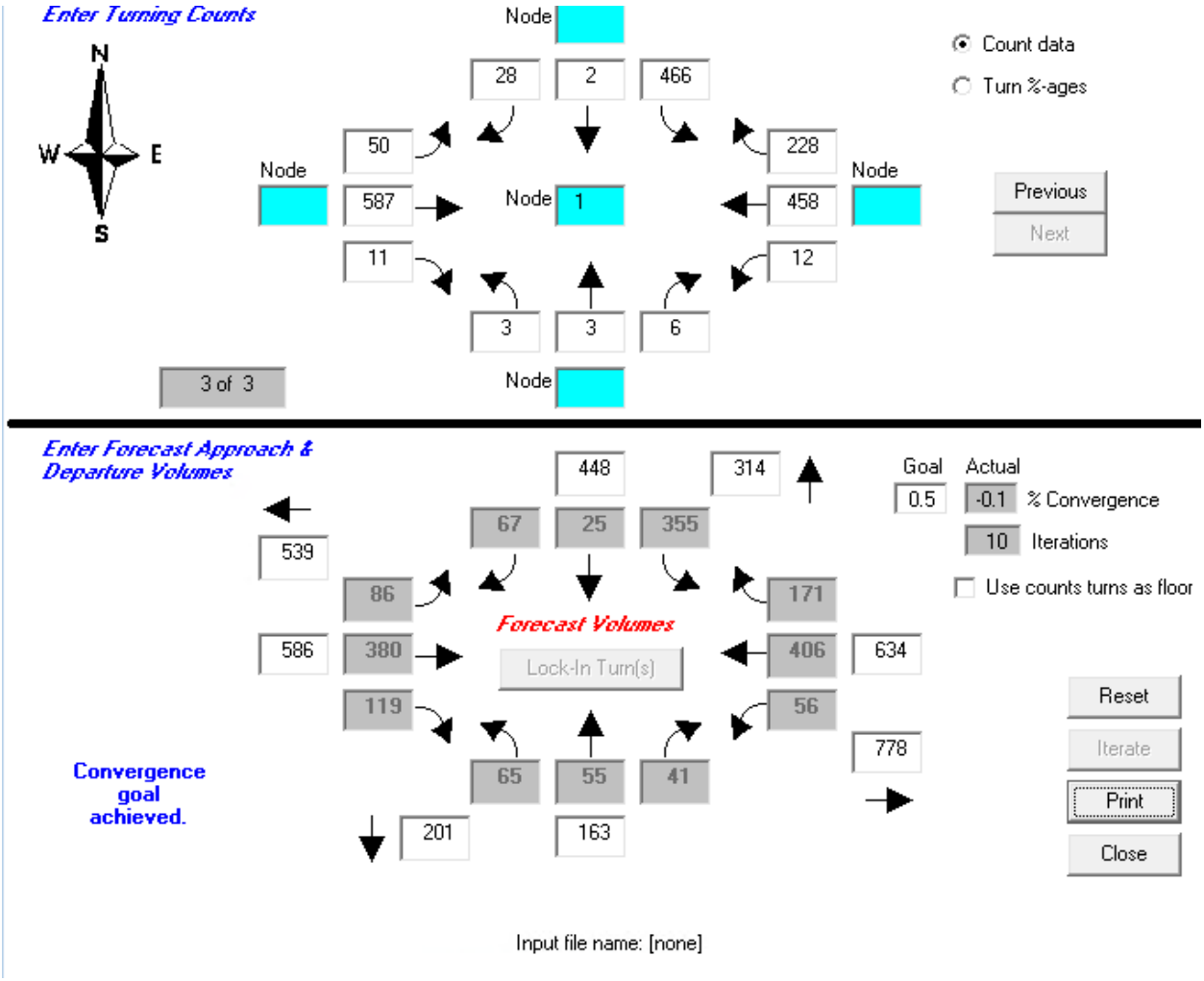


Figure A10: Afternoon NCHRP 255 Iterative Procedure at Dransfeldt Rd and Twenty Mile Rd

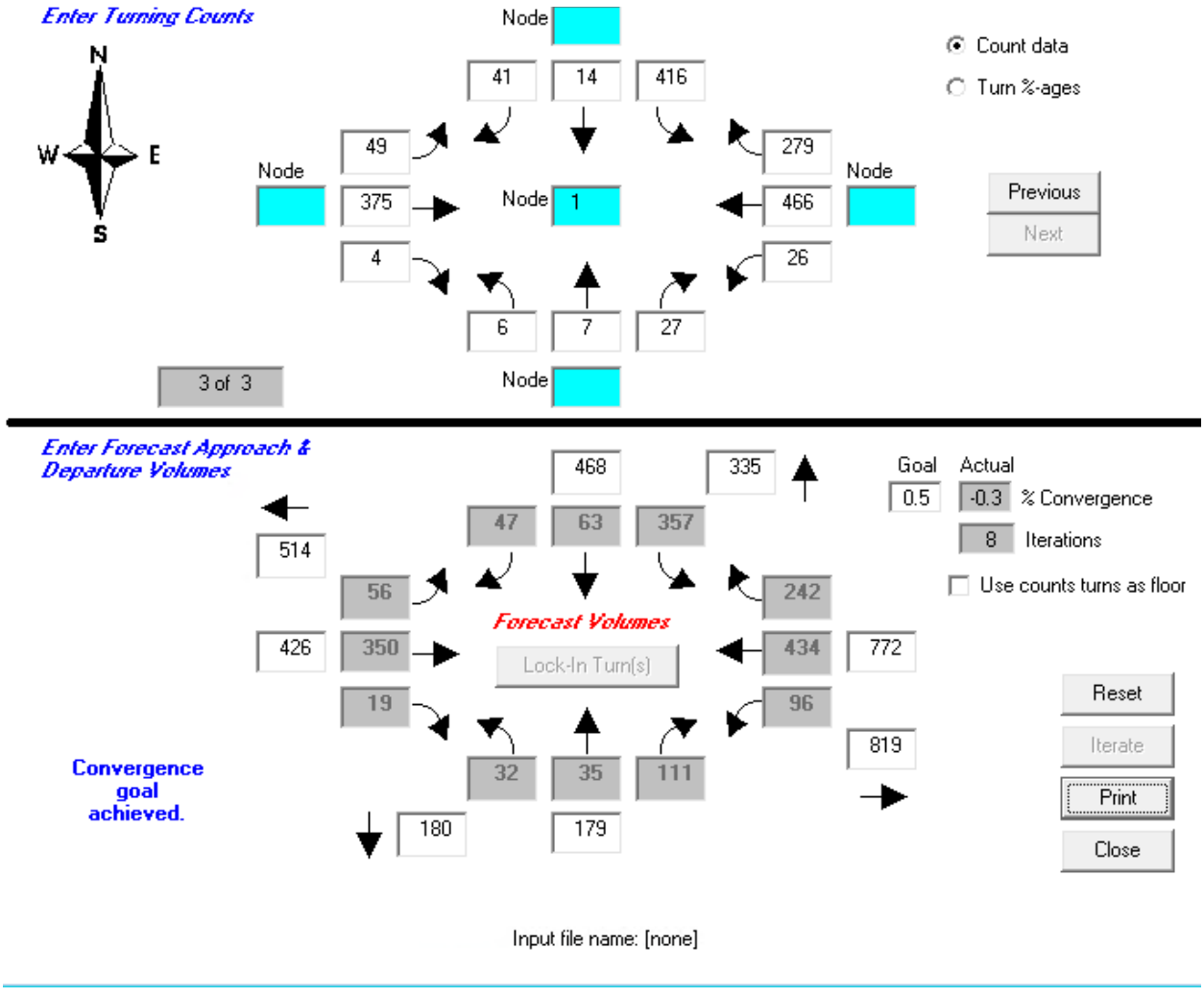


Figure A11: Morning NCHRP 255 Iterative Procedure at Dransfeldt Rd and Twenty Mile Rd

HCS Two-Way Stop-Control Report

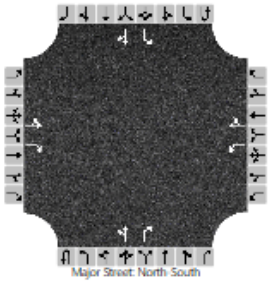
General Information

Analyst	
Agency/Co.	
Date Performed	9/18/2023
Analysis Year	2023
Time Analyzed	
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Primary Entrance
Jurisdiction	
East/West Street	
North/South Street	
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		1	1	0	0	0	1	1	0	1	1	0
Configuration		LT		R		L		TR		LT		R		L		TR
Volume (veh/h)		76	47	168		75	44	75		78	199	77		78	105	74
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No								No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.13	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		134		183		82		129		85				85		
Capacity, c (veh/h)		219		889		157		468		1373				1255		
v/c Ratio		0.61		0.21		0.52		0.28		0.06				0.07		
95% Queue Length, Q_{95} (veh)		3.5		0.8		2.6		1.1		0.2				0.2		
Control Delay (s/veh)		44.1		10.1		50.5		15.6		7.8	0.3			8.1		
Level of Service (LOS)		E		B		F		C		A	A			A		
Approach Delay (s/veh)		24.5				29.1				1.9				2.5		
Approach LOS		C				D				A				A		

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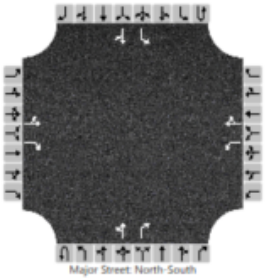
Figure A12: Two-Way Stop Controlled Main Entrance (2025 AM)

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Primary Entrance
Agency/Co.		Jurisdiction	
Date Performed	9/18/2023	East/West Street	
Analysis Year	2040	North/South Street	
Time Analyzed		Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		1	1	0	0	0	1	1	0	1	1	0
Configuration		LT		R		L		TR		LT		R		L		TR
Volume (veh/h)		147	47	187		75	44	75		70	284	77		78	159	99
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No								No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.13	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		211		203		82		129		76				85		
Capacity, c (veh/h)		158		810		110		389		1276				1161		
v/c Ratio		1.33		0.25		0.74		0.33		0.06				0.07		
95% Queue Length, Q_{95} (veh)		12.8		1.0		4.0		1.4		0.2				0.2		
Control Delay (s/veh)		241.1		10.9		99.5		18.8		8.0	0.4			8.3		
Level of Service (LOS)		F		B		F		C		A	A			A		
Approach Delay (s/veh)		128.1				50.0				1.5				1.9		
Approach LOS		F				F				A				A		

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Figure A13: Two-Way Stop Controlled Main Entrance (2040 AM)

HCS Two-Way Stop-Control Report

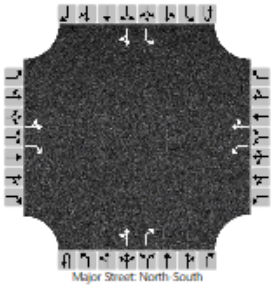
General Information

Analyst	
Agency/Co.	
Date Performed	9/18/2023
Analysis Year	2023
Time Analyzed	
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Primary Entrance
Jurisdiction	
East/West Street	
North/South Street	
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		1	1	0	0	0	1	1	0	1	1	0
Configuration		LT		R		L		TR		LT		R		L		TR
Volume (veh/h)		52	24	111		36	22	36		36	87	39		39	59	43
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No								No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.13	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		83		121		39		63		39				42		
Capacity, c (veh/h)		494		968		414		712		1473				1441		
v/c Ratio		0.17		0.12		0.09		0.09		0.03				0.03		
95% Queue Length, Q_{95} (veh)		0.6		0.4		0.3		0.3		0.1				0.1		
Control Delay (s/veh)		13.8		9.2		14.6		10.5		7.5	0.1			7.6		
Level of Service (LOS)		B		A		B		B		A	A			A		
Approach Delay (s/veh)		11.1				12.1				1.7				2.1		
Approach LOS		B				B				A				A		

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Figure A14: Two-Way Stop Controlled Main Entrance (2025 PM)

HCS Two-Way Stop-Control Report

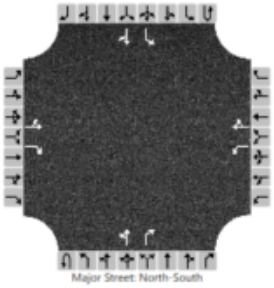
General Information

Analyst	
Agency/Co.	
Date Performed	9/18/2023
Analysis Year	2040
Time Analyzed	
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Primary Entrance
Jurisdiction	
East/West Street	
North/South Street	
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		1	1	0	0	0	1	1	0	1	1	0
Configuration		LT		R		L		TR		LT		R		L		TR
Volume (veh/h)		98	24	111		36	22	36		36	121	39		39	72	75
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No								No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.13	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		133		121		39		63		39				42		
Capacity, c (veh/h)		439		930		368		656		1413				1397		
v/c Ratio		0.30		0.13		0.11		0.10		0.03				0.03		
95% Queue Length, Q_{95} (veh)		1.3		0.4		0.4		0.3		0.1				0.1		
Control Delay (s/veh)		16.7		9.4		16.0		11.1		7.6	0.1			7.7		
Level of Service (LOS)		C		A		C		B		A	A			A		
Approach Delay (s/veh)		13.3				12.9				1.5				1.6		
Approach LOS		B				B				A				A		

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Figure A15: Two-Way Stop Controlled Main Entrance (2040 PM)

HCS Two-Way Stop-Control Report

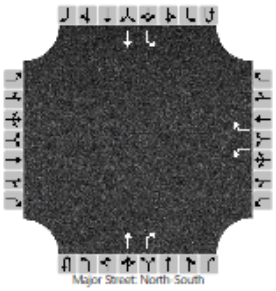
General Information

Analyst	
Agency/Co.	
Date Performed	9/18/2023
Analysis Year	2023
Time Analyzed	
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Secondary Entrance
Jurisdiction	
East/West Street	
North/South Street	
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	1	0	1	1	0
Configuration						L		R			T	R		L	T	
Volume (veh/h)						60		30			325	62		24	312	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No				No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						65		33						26		
Capacity, c (veh/h)						372		688						1133		
v/c Ratio						0.18		0.05						0.02		
95% Queue Length, Q_{95} (veh)						0.6		0.1						0.1		
Control Delay (s/veh)						16.7		10.5						8.3		
Level of Service (LOS)						C		B						A		
Approach Delay (s/veh)						14.7								0.6		
Approach LOS						B								A		

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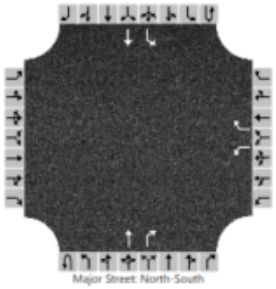
Figure A16: Two-Way Stop Controlled Secondary Entrance (2025 AM)

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Secondary Entrance
Agency/Co.		Jurisdiction	
Date Performed	9/18/2023	East/West Street	
Analysis Year	2040	North/South Street	
Time Analyzed		Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	1	0	1	1	0
Configuration						L		R			T	R		L	T	
Volume (veh/h)						60		30			365	62		24	350	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No				No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						65		33						26		
Capacity, c (veh/h)						331		651						1092		
v/c Ratio						0.20		0.05						0.02		
95% Queue Length, Q_{95} (veh)						0.7		0.2						0.1		
Control Delay (s/veh)						18.5		10.8						8.4		
Level of Service (LOS)						C		B						A		
Approach Delay (s/veh)						16.0								0.5		
Approach LOS						C								A		

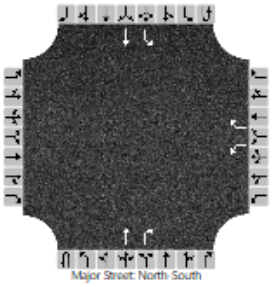
Figure A17: Two-Way Stop Controlled Secondary Entrance (2040 AM)

HCS Two-Way Stop-Control Report

General Information

Analyst		Intersection	Secondary Entrance
Agency/Co.		Jurisdiction	
Date Performed	9/18/2023	East/West Street	
Analysis Year	2023	North/South Street	
Time Analyzed		Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	1	0	1	1	0
Configuration						L		R			T	R		L	T	
Volume (veh/h)						30		15			145	31		12	198	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No				No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						33		16						13		
Capacity, c (veh/h)						599		885						1376		
v/c Ratio						0.05		0.02						0.01		
95% Queue Length, Q_{95} (veh)						0.2		0.1						0.0		
Control Delay (s/veh)						11.4		9.1						7.6		
Level of Service (LOS)						B		A						A		
Approach Delay (s/veh)						10.6								0.4		
Approach LOS						B								A		

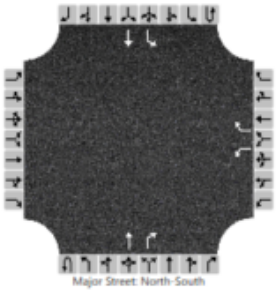
HCS™ TWSC Version 2023
PM 2025.xtw
Generated: 9/21/2023 9:23:18 AM

Figure A18: Two-Way Stop Controlled Secondary Entrance (2025 PM)

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Secondary Entrance
Agency/Co.		Jurisdiction	
Date Performed	9/18/2023	East/West Street	
Analysis Year	2040	North/South Street	
Time Analyzed		Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	1	0	1	1	0
Configuration						L		R			T	R		L	T	
Volume (veh/h)						30		15			162	31		12	224	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No				No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						33		16						13		
Capacity, c (veh/h)						563		865						1355		
v/c Ratio						0.06		0.02						0.01		
95% Queue Length, Q_{95} (veh)						0.2		0.1						0.0		
Control Delay (s/veh)						11.8		9.2						7.7		
Level of Service (LOS)						B		A						A		
Approach Delay (s/veh)						10.9								0.4		
Approach LOS						B								A		

HCS™ TWSC Version 2023
PM 2040.xtw
Generated: 9/22/2023 11:43:29 AM

Figure A19: Two-Way Stop Controlled Secondary Entrance (2040 PM)

Salisbury Park North Program Parking Matrix

	Quantity	Units	Parking Spaces per Unit	
Ballfields & Pedestrian Promenade				
Baseball/Softball Field	4	Fields	40	160
Multi-Use Fields and Flexible Lawn Area				
Multi-Use Field (258' x 366')	2	Fields	60	120
Inclusive Playground	58,000	SF	1 per 1000 SF	58
Large Picnic Shelter* (Community Hub)	1	Shelter	18	18
Medium Picnic Shelter** (at playground)	1	Shelters	8	8
Small Picnic Shelter*** (at playground)	2	Shelters	2	4
Courts Sports Area				
Pickleball Courts	16	Courts	5	80
Tennis Courts	2	Courts	3	6
Playground	4,696	SF	1 per 1000 SF	5
Medium Picnic Shelter**	2	Shelters	8	16
Adventure Area & Valley Overlook				
Large Group Shelter*- Valley Overlook	1	Shelters	18	18
Nature Exploration Area- soft surface trails	1	miles of trail	5	5
Bike Park	4	acres	5	20
Misc.				
Outdoor Fitness Equipment	1	5 pieces	3	3
				521 TOTAL

Assumptions
*Large Picnic Shelter has 9 picnic tables = 72 seats - Robyn modified with estimate on amount of seating wanted for that area
**Medium Picnic Shelter has 4 picnic tables = 32 seats - Robyn modified with estimate on amount of seating wanted for that area
***Small Picnic Shelter has 1 picnic tables = 8 seats
Assumed Salisbury Bike Park is 4 acres
***will need to update based on final number of picnic tables per shelter & per final square footage of play areas, trails, etc

Figure A20: Salisbury Park North Minimum Parking Spaces Required

Parker COLORADO

TIS Standard Checklist

Development: Salisbury Park North
Filing:
Consultant: Stolfus & Associates Inc.

Date: 11/03/23
Submittal Number: 02
Reviewed By:

Required Discussions - To be completed by the Transportation Consultant Engineer:

REPORT SECTION	COMPLETED	N/A	COMMENTS
GENERAL	☒	☐	
Original & Revision Dates	☒	☐	
Dated, Checked, Sealed & Signed by P.E.	☒	☐	
INTRODUCTION	☒	☐	
Vicinity Map	☒	☐	
Proposed Project Site Plan	☒	☐	
Proposed Development Phasing	☐	☒	Construction is planned to be in one phase.
Existing & Proposed Land Uses Surrounding Site	☒	☐	
EXISTING CONDITIONS	☒	☐	
Roadway Counts < One Year Old	☒	☐	
Intersection Counts < Six Months Old	☒	☐	
Existing LOS Summary (Table)	☒	☐	
PROPOSED CONDITIONS	☒	☐	
Trip Generation Summary (Table)	☒	☐	
Internal Trip Reduction Justification (< 10%)	☐	☒	
Pass-by Trip Reduction Justification (< 15%)	☐	☒	
Trip Distribution Assumptions	☒	☐	
Site Trip Distribution (Figure)	☒	☐	
Projected Site Traffic Volumes (Figure) - Each Phase	☒	☐	

Figure A21: Parker, Colorado Standard TIS Checklist (Page 1 of 2)

REPORT SECTION	COMPLETED	N/A	COMMENTS
FUTURE CONDITIONS	☒	☐	
Background Transportation Improvements	☒	☐	
Background Growth Method & Assumptions	☒	☐	
Background Traffic Volumes (Figure) - Each Phase	☒	☐	
Total Traffic Volumes (Figure) - Each Phase	☒	☐	
SITE CIRCULATION & DESIGN EVALUATION	☒	☐	
Level of Service Analysis - Each Phase (Figures/Table)	☒	☐	
Queuing Analysis - Vehicle Storage Lengths	☒	☐	
Traffic Signal Warrant Analysis	☐	☒	
Traffic Signal Progression	☐	☒	
Safety Analysis	☐	☒	
PROPOSED MITIGATION MEASURES	☒	☐	
Level of Service for Each Intersection Movement (Table)	☒	☐	
CONCLUSIONS/RECOMMENDATIONS	☒	☐	
Improvements/Lane Configurations (Figure)	☒	☐	
Recommended Construction Phasing	☐	☒	Construction is planned to be in one phase.
APPENDIX	☒	☐	
Traffic Count Data	☒	☐	
Traffic Analysis Software Output Reports (All Periods)	☒	☐	
Time-space Diagrams	☐	☒	

"I have reviewed the attached report with this checklist and all required items have been included except as noted above."

Signature of Professional Engineer

Town of Parker

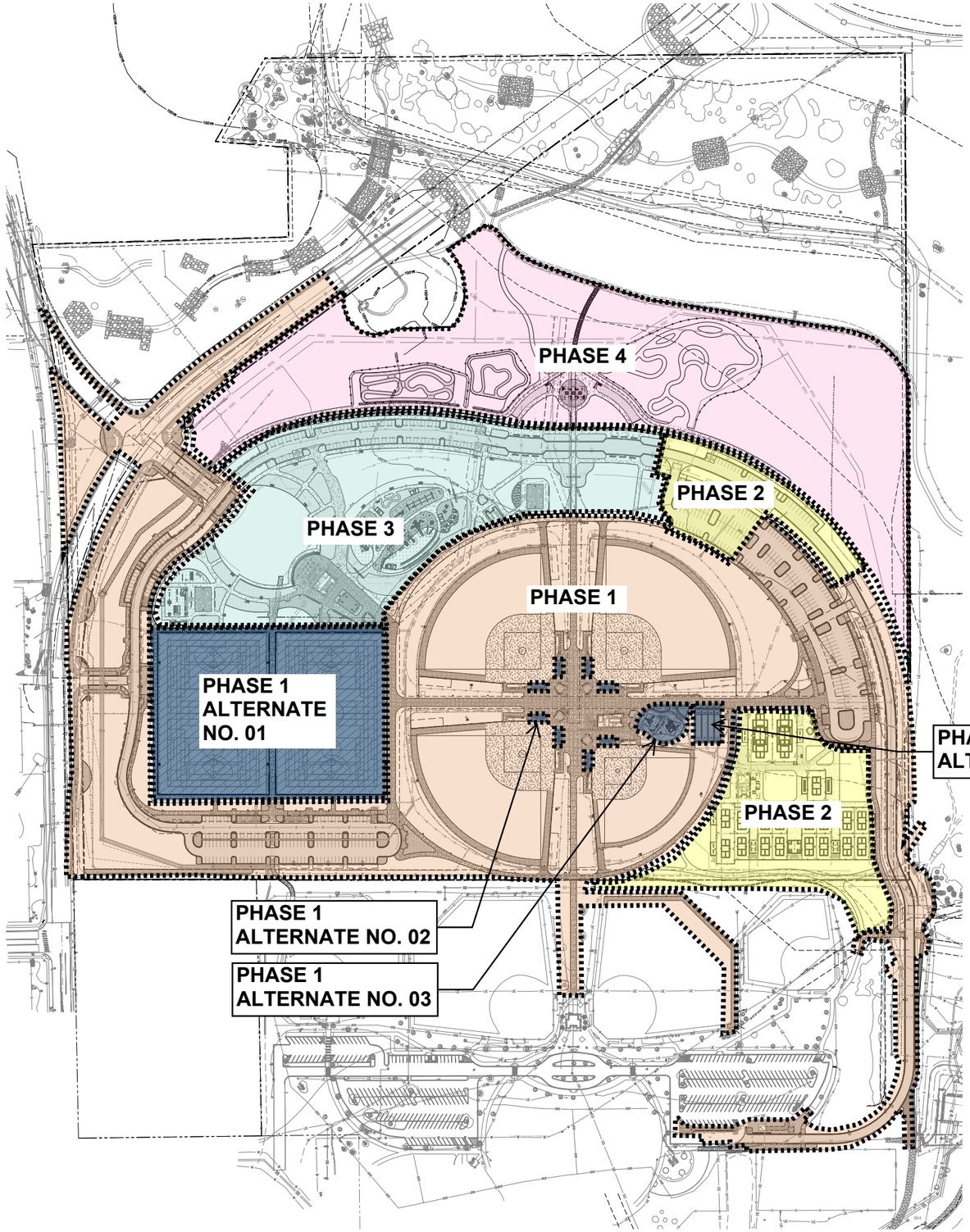
TIS Standard Checklist
Revised November 2012

Page2 of 2

Figure A22: Parker, Colorado Standard TIS Checklist (Page 2 of 2)

THE SQUARES ABOVE ARE COLOR, WITH BLACK AND WHITE LETTERS, IF PRINTED CORRECTLY

THE LINES SHOWN ABOVE IS EXACTLY ONE INCH LONG, AT THIS SHEET'S ORIGINAL PAPER SIZE



PHASING LEGEND

PHASE 1 NO. 1, 2, 3, & 4 ALTERNATES (MULTI-USE FIELDS, BLEACHER SHADE STRUCTURES, BALLFIELD PLAYGROUND, BATTING CAGES)

A1 OVERALL SITE AND PHASING PLAN

1" = 140'-0"

SCALE: 1" = 140'-0"

0' 70' 140' 280' 320'

CALL 811 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE OR EXCAVATE FOR MARKING OF UNDERGROUND MEMBER UTILITIES

hord | coplan | macht

LANDSCAPE ARCHITECT / ARCHITECT
1800 Wazee Street, Suite 450
Denver, CO 80202
p. 303.607.0977

CIVIL ENGINEER / STRUCTURAL ENGINEER
JVA Incorporated
1675 Larimer Street, #550
Denver, CO 80202
p. 303.444.1951

ELECTRICAL ENGINEER
Ackerman Engineering, Inc.
3000 Youngfield Street, #264
Wheat Ridge, CO 80215
p. 303.278.7297

IRRIGATION
Avocet Irrigation
11757 W. Ken Caryl Ave., Suite F-509
Littleton, CO 80127
p. 303.986.2175

MECHANICAL ENGINEER
ENVISION Mechanical Engineers, Inc.
9777 Pyramid Court, #260
Englewood, CO 80112
p. 303.688.0223

Town of Parker
SALISBURY PARK NORTH - PHASE 1
11700 MOTSENBOCKER RD
PARKER, CO 80134

hord | coplan | macht

ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

	DATE	DESCRIPTION

Project Number:	223072.00
Sheet Issue Date:	2024-11-22
Drawn By:	EH, LW, ED, MS, AG
Checked By:	RB, CB, DD

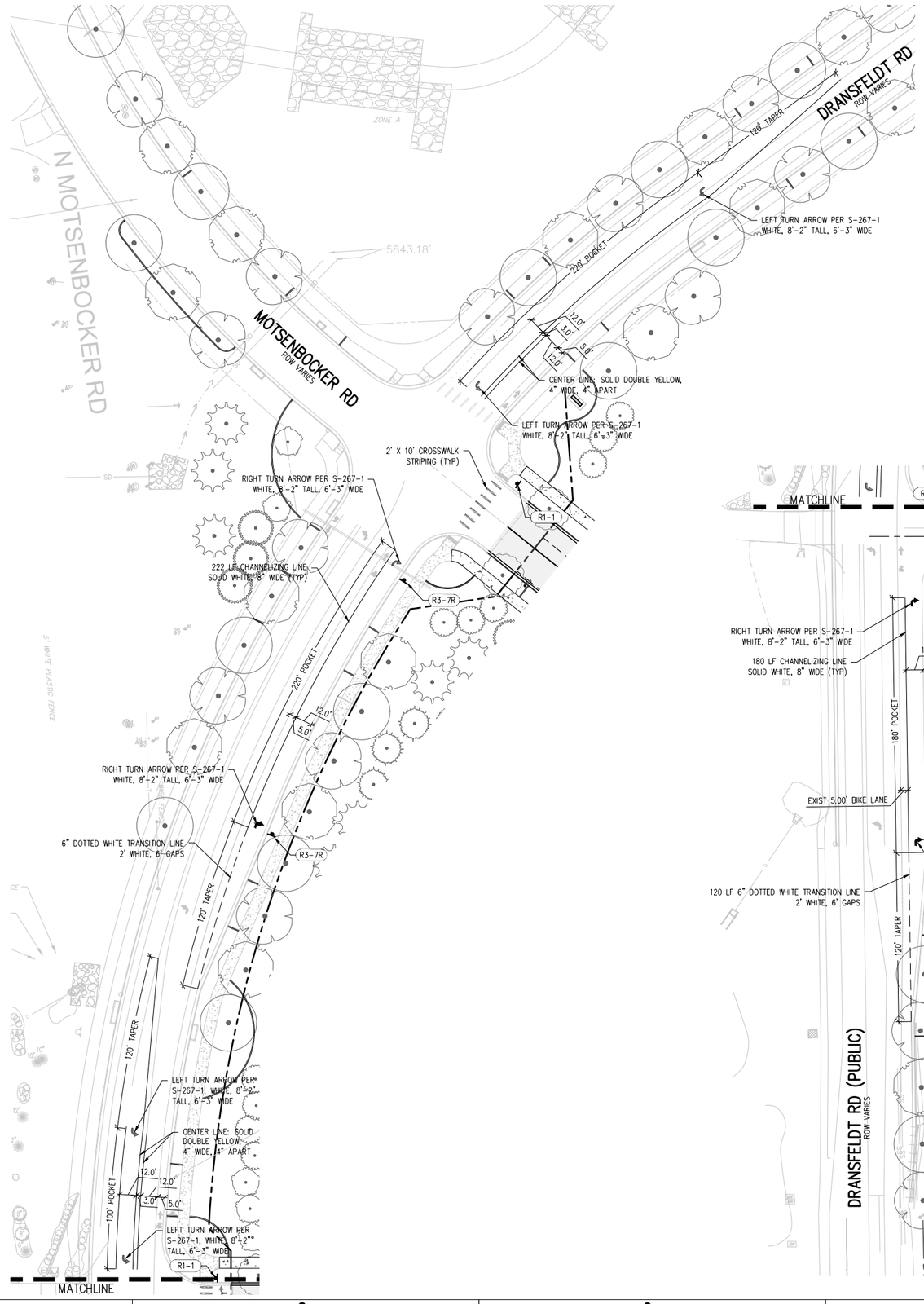
Key Map

Drawing

OVERALL SITE AND PHASING PLAN

G-010

SITE PLAN SUBMITTAL



HORIZONTAL CONTROL NOTES:

1. ALL DIMENSIONS AND RADII ARE TO FACE OF CURB, FACE OF BUILDING AND EDGE OF WALK UNLESS OTHERWISE NOTED.
2. CONTRACTOR TO REPAIR/REPLACE ALL DAMAGE TO EXISTING FLATWORK OR SITE FEATURES NOT INTENDED FOR DEMOLITION.
3. REFER TO GRADING AND DRAINAGE PLAN FOR FURTHER INFORMATION PERTAINING TO CURB & GUTTER, CHASES, AND DRAINAGE PANS.

HORIZONTAL CONTROL LEGEND

- ASPHALT PAVING
- HEAVY-DUTY ASPHALT PAVING
- CONCRETE PAVING
- HEAVY-DUTY CONCRETE PAVING
- MILL AND OVERLAY
- LIMITS OF SAWCUT

SIGNAGE LEGEND

R1-1	R3-7R
STOP	RIGHT LANE MUST TURN RIGHT

hord | coplan | macht

LANDSCAPE ARCHITECT / ARCHITECT
1800 Wazee Street, Suite 450
Denver, CO 80202
p. 303.607.0977

CIVIL ENGINEER / STRUCTURAL ENGINEER
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p. 303.990.2175

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ENVISION Mechanical Engineers, Inc.
9777 Pyramid Court, #260
Englewood, CO 80112
p. 303.688.0223

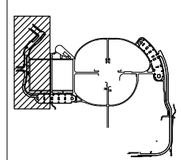
Town of Parker
SALISBURY PARK NORTH - PHASE 1
11700 MOTSENBOCKER RD
PARKER, CO 80134

ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

	DATE	DESCRIPTION

Project Number:	223072.00
Sheet Issue Date:	2025-04-01
Drawn By:	AMF/MGG/MJS
Checked By:	WTP/CWK/CFG

Key Map



Drawing

PHASE 1 DETAILED SIGNAGE, STRIPING, & PAVING PLAN

FIG-C1

SITE PLAN SUBMITTAL

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG. IF THIS SET IS SCANNED, THE SCANNED IMAGE

THE SQUARES ABOVE ARE COLOR, WITH BLACK AND WHITE LETTERS. IF PRINTED CORRECTLY