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S. 4th Street Revisioning Plan
Traffic Review

June 28th, 2023

Prepared for: City of Clinton, 611 S. 3rd Street, Clinton, IA 52732
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ABES Project Number: 223035

I hereby certify that this Engineering document was prepared by me or under my direct personal supervision and that I am a duly Licensed Engineer under the laws of the State of Iowa.

Jeffrey C. Morrow, P.E.
Iowa Registration No. 14259

Exp. Date: 12/31/2023

BACKGROUND AND SUMMARY

This Traffic Review was prepared to identify, discuss, and provide recommendations related to the proposed S. 4th Street Revisioning Plan. The scope of this study is limited to the proposed properties located at 1000 – 1020 South 4th Street in Clinton, Iowa, and the intersection of US 30 and S. 4th Street. This area had been identified by the City and community as an underutilized resource and the site is also a Brownfield Cleanup candidate, as defined by the Environmental Protection Agency (EPA). The intention is to encourage redevelopment to spur revitalization of this area.

PROJECT DETAILS

Area Description and Location

The South 4th Street Area is located on the northwest corner of the intersection of South 4th Street and US Highway 30/67. This intersection represents the eastern limits of the Liberty Square Area. **Figure 1** provides a location map for the proposed improvement area.

Figure 1 – Area Location

Figure 2 - S. 4th Street Area Detail

Figure 2 is an aerial photograph of the South 4th Street Area showing the buildings and existing development. It should be noted the building on the corner has been demolished since this photo was taken.

EXISTING CONDITIONS

Land Usage

The S. 4th Street area is mostly developed with buildings dating from the late 1800's to early 1900's. The area includes six properties located at 1000 – 1020 South 4th Street. The South 4th Street Area has historically been home to a variety of commercial and residential uses including apartments, retail shops, bars, and laundromats. The buildings located at 1014-1020 South 4th Street were demolished by their owner in 2022 and those lots are currently vacant. Due to their age, many of the buildings have asbestos construction materials and qualify as a Brownfield Site. The existing zoning is currently Commercial, C-2.

Access Locations and Size

The existing area has on-street parking along S. 4th Street that could accommodate about 10 passenger cars total. The building fronts abut the sidewalk adjacent to the parking. There is an existing 20-foot wide, east-west alley at the midpoint of the block from S. 4th Street, extending west to S. 5th Street. The alley is currently closed and blocked at S. 4th Street. There also appears to be shared access driveways to the backs of the buildings on 10th Avenue S (24-feet wide) and 11th Avenue S. (40-feet wide).

Aerial Image

See **Figures 1 and 2.**

Adjacent Streets

S. 4th Street is the west/south bound half of a one-way pair for US Highway 30/67. The east/north bound couplet is 11th Avenue S., east of S. 4th Street. S. 4th Street is a two-lane roadway with on-street parking allowed on its west side. At the approach to 11th Avenue S., 4th Street widens to three southbound lanes that provide a right-turn lane, through lane, and left turn lane. South of 11th Avenue S., S. 4th Street operates as a two-way street with a northbound right turn lane, northbound left turn lane, and one southbound lane.

11th Avenue S. is the west/south bound half of a one-way pair for US Highway 30/67. It is paired with the east/north bound couplet of Liberty Avenue. Along the study site, 11th Avenue S. is a two lane highway that does allow direct driveway access. The eastbound approach to the intersection (Liberty Avenue) consists of three lanes: Two eastbound through lanes and a right turn lane.

The intersection of S. 4th Street with 11th Avenue S. operates under signalized control.

Crash Review

The Iowa Department of Transportation (IDOT) maintains an online database known as the Iowa Crash Analysis Tool (ICAT). The database contains data from all reported crashes within a selected area and/or timeframe. The crashes are summarized below in **Table 2.** Based on the last five years of data, all crashes are on the highway approaches to the intersection of S. 4th Street and 11th Avenue S. Using published Average Daily Traffic Data from the Iowa DOT which shows about 12,865 vehicles entered the intersection daily in 2018, the calculated crash rate for this intersection is 0.3 crashes per million vehicles entering the intersection (0.3/MEV).

The Iowa DOT publishes comparable intersection crash rates for typical intersections, statewide. For the intersection of two primary (State) routes in a municipality, the average crash rate is 1.0 crashes/MEV. As can be seen, this intersection is well be low the average crash rate and well below the threshold crash rates at which safety improvements would be considered.

Table 1 – Crash Data Summary: 2018-2022

Location	Date	Direction	Type	Severity	Contributing Factors
S. 4th St & 11th Ave S.	6/22/2018	Unknown	Left Turn	Possible Inj.	Unknown
S. 4th St & 11th Ave S.	5/1719	SB/SB	Rear-End	PDO	Unknown
S. 4th St & 11th Ave S.	6/13/2019	SB/SB	Sideswipe	PDO	Improper lane change
S. 4th St & 11th Ave S.	1/21/2022	SB/SB	Sideswipe	PDO	Unknown
S. 4th St & 11th Ave S.	5/24/2022	SB/SB	Rear-End	PDO	Distracted Driver
S. 4th St & 11th Ave S.	8/18/2022	EB/EB	Rear-End	PDO	Follow too close
S. 4th St & 11th Ave S.	12/27/2022	EB/EB	Rear-End	PDO	Follow too close

Existing Traffic

Available traffic count data from the Iowa DOT includes traffic turning movement counts at the intersection of S. 4th Street and 11th Avenue S. Although the count data is not broken down in 15-minute periods, a rough estimate of the peak traffic hours and the traffic turning movement volumes are summarized in Table 2, below. The traffic counts also classified about 10% of the southbound right turn as tractor semi-trailers. Nearly 600 right turns is a very heavy traffic movement with a high percentage of heavy vehicles.

Table 2 – Peak Hour Turning Movement Traffic (2018 Count)

	Southbound			Northbound		Eastbound	
Peak Hour	Left	Through	Right	Left	Right	Through	Right
6:00-7:00 AM	12	69	399	11	9	207	35
12:00-1:00 PM	23	14	539	40	10	395	27
5:00-6:00 PM	17	9	591	36	39	606	11

Public Involvement

As part of the S. 4th Street Reuse Plan, a citizen opinion survey was conducted. Of note were the citizen responses to questions about what they would like to see addressed on the site or surrounding area and what things did they like or dislike about the intersection of S. 4th Street and 11th Avenue S.

According to the survey, the number one issue citizens wanted to see addressed was safety. This is an interesting response considering how low the crash experience has been over the last five years. Some of that response could be related to the perception of personal safety related to criminal activity (or perceived possibility of criminal activity) in the area. However, several comments were made concerning pedestrian safety crossing 11th Avenue S. Some of those included right-turn on red making the intersection "tricky". Also, the width of the pedestrian crossing and speed of approaching vehicles also gave the perception of an unsafe condition, even though crash history does not indicate any safety concerns.

Another issue identified by the public is the perception of conflict between northbound left turns and southbound right turns on S. 4th Street. The southbound right turn has a green arrow and the northbound left turn has 'Yield on Green' signing. Clearly, the left turns should yield to the right turns heading west onto US 30/67. However, several commenters indicated there are 'near misses' which suggests the two directions are competing for the same westbound lane leaving the intersection. As there are two existing westbound lanes, it seems there shouldn't be much conflict.

PROPOSED CONDITIONS

Land Usage

The re-use area is partially City owned and privately owned. The redevelopment is planned in two general phases. The first phase will include razing the existing buildings on City owned property and creating green space as shown in Figure 3, below.

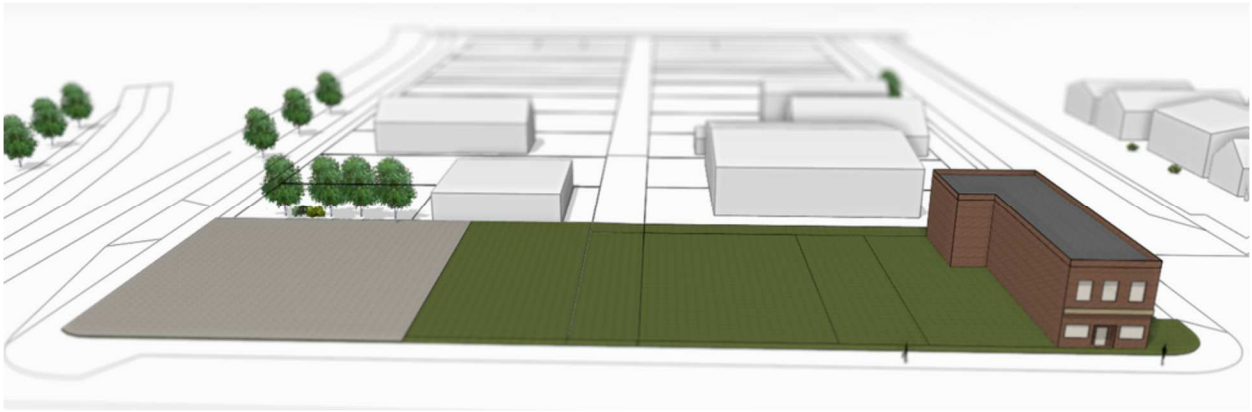


Figure 3 – Phase 1 Redevelopment of Re-Use Area: Looking West

The existing, privately owned building at the southwest corner of S. 4th Street and 10th Avenue S. would remain. The existing alley, which is currently closed at S. 4th Street would be closed and vacated for additional development space. The grey shaded area in Figure 3 is a privately owned vacant lot.

Phase 2 of the re-use plan included two potential options: Phase 2A and 2B. Both options develop a 4,800 sf commercial building with off-street parking.

Phase 2A: In this scenario, a low rise, commercial building would be constructed with parking at the back of the building and pedestrian access along S. 4th Street. On-street parking would also remain at the front of the building. The concept shows an outdoor seating area for a small restaurant and/or bar. The building would house at least one, if not multiple small businesses, similar to the original development.

Figure 4 – Phase 2A Redevelopment Concept – Plan View

Access to this development would be limited to the existing, shared driveway off of 10th Avenue S. However, it appears access to the existing alley to the west would be re-established. It is good practice to have more than one entrance to the site, and the entrances located such that heavy trucks for deliveries and trash pickup can negotiate the site without having to turn around.

Consideration in the plan should include at least the option of extending an access through the vacant site (shaded grey) to the existing driveway to the south onto 11th Avenue S. Again, redundancy in access is an

Figure 5 – Phase 2A Redevelopment Concept – Perspective View

advantage, and the existing site is small, presenting development challenges. It might be further advantageous if all the properties might someday be combined and developed as a larger parcel. That possibility may or may not occur, but as the concept shown in Phase 2A is developed, care should be taken in the design pavement grades, trash enclosure locations, etc., to not preclude that possibility.

One disadvantage of this plan is the existing street access is on a residential street (10th Avenue S.). However, that may be mitigated by the fact the previous commercial businesses also had access to this driveway.

Phase 2B:

Phase 2B shows a similar, low rise commercial building, fronting onto S. 4th Street with parking in the rear. The intent of this concept is to improve vehicle circulation by providing a new driveway onto S. 4th Street. Because S. 4th Street is one-way southbound, the new driveway would be right-in/right-out access only. Again, it appears access to the existing alley would be reestablished.

Figure 6 – Phase 2B Redevelopment Concept – Plan View

This proposed driveway would be onto US 30/67. Though no review of traffic operations was performed in the field for this study, there were citizen comments that the southbound right turn from S. 4th Street onto westbound US 30/67 frequently backs up from the intersection, primarily due to tractor semi-trailers trying to make the right turn. A quick turning movement model for a typical tractor semi-trailer was placed on the existing intersection and it appears trucks will consume both westbound lanes on 11th Avenue S, to make the turn.

Figure 7 – Phase 2B Redevelopment Concept – Perspective View

As with Phase 2A, we recommend the site be designed such that a drive connection could be made to the existing vacant lot to the south.

Intersection Improvement

Based on the citizen comments and a review of truck turning templates at S. 4th Street and 11th Avenue S., an intersection improvement concept was developed to examine ways to:

1. Improve pedestrian crossings
2. Improve the flow of the southbound to westbound right turn from S. 4th Street onto 11th Avenue S.
3. Reduce the conflict between northbound left turns and southbound right turns on S. 4th Street.

Attached to this report is an Intersection Turning Analysis sketch showing the turning movement swept path for a southbound tractor semi-trailer as it would navigate the intersection while turning right today. Also shown is the path a northbound left turning vehicle would take to complete a left turn. As can be seen from the sketch, the southbound truck occupies both westbound lanes to make its turn and remain in the paved area. The northbound left turning vehicle is blocked. The existing pedestrian crossing length to cross 11th Avenue S is about 82 feet from ramp to ramp. Under existing conditions, there is no right-turn on red prohibition. Although intersection capacity analyses were not included in the scope of this study, the right-turn on red prohibition would likely have a substantial impact on the intersection traffic operations. Citizen observation already noted the southbound right turning traffic experiences substantial queuing and backup.

A second sketch is attached to this report showing a possible intersection modification that could be considered to address the northbound/southbound turning conflict, improve southbound vehicle capacity, and improve the pedestrian safety.

The sketch shows acquiring right-of-way from the parcel on the northwest corner of the intersection and adding a triangular island to channelize the southbound right turn and provide enough width for trucks to make a right turn and stay within their own westbound lane. This eliminates the conflict between northbound left turns and southbound right turns.

Additionally, since the southbound right turn will operate as 'nearly' a free-flow right, there will be less stopping and waiting by the right turning traffic. The improved geometry means the trucks do not need to slow to a crawl to make a severe right turn, which will also improve capacity.

Finally, we recommend the southbound right turn be signalized to stop traffic for the pedestrians that cross that lane. As there is currently little to no pedestrian traffic, it is anticipated at least in the short term, the right turn movement will have nearly continuous

green time. Even when redevelopment spurs additional pedestrian traffic, the improved geometry alone will add capacity to the turn lane that reportedly experiences backups and queuing today.

For pedestrians, the crossing distance is reduced from 82' feet to 67', ramp to ramp. Also, the pedestrians can stage in the generous right turn island. A current complaint is the existing median nose island in the middle of the west leg pedestrian crossing is insufficient in width to accommodate pedestrians. It is also too narrow (about 5'-6' wide) to accommodate bicycles comfortably.

MULTIMODAL REVIEW

Pedestrians, Bikes, Transit

Pedestrian Access: The existing site is served by sidewalks along the public street system. There are ADA compliance concerns at the street crossings, particularly at 10th Avenue S. It is understood the sidewalks will be reconstructed along this block as part of the development to remove, among other things, the double-step up curb along S. 4th Street.

The traffic signal at S. 4th Street and 11th Avenue S. includes pedestrian heads and pushbuttons. A Field review of the pushbutton locations would be required to determine if they comply with ADA requirements. That was not done as part of this study.

For the proposed site development phases, 2A and 2B, Phase 2A appears to include sidewalk access from 4th Street to the back of the building, but it is not included in Phase 2B. We recommend examining the possibility of providing pedestrian access to the back of the building similar to Phase 2A.

Bicycle Accommodations: The Mississippi River Trail is located along Liberty Avenue and is the backbone of the City's trail system. In addition, there is a significant amount of green space and parklets/pocket parks in the vicinity. As such, accommodation for bicycles should be included in the design of Phase 2A and Phase 2B. Amenities at a minimum should include space reserved for a bike rack.

Bicycling is an alternative transportation choice often used by lower income individuals. While there is a trail system along 11th Avenue S., there are no bicycle accommodations along S. 4th Street. In general, much of the development on the west side of S. 4th Street is residential in nature, while the east side is primarily commercial, including grocery, City services like the Library, parks, and other services. It appears much of the on-street parking on the west side of S. 4th Street is either unused or lightly used, often replaced by developments with their own off-street parking. Consideration could be given to providing a marked bicycle lane on the west side of S. 4th Street at least from 8th Avenue S. to 11th Avenue S.

Transit: The City of Clinton operates a transit route along 11th Avenue S. and on S. 4th Street (Main Avenue West and Camanche Ave./South Clinton). The route operates from 6:00 AM to 6:00 PM Monday through Friday and 8:00 AM to 4:00 PM on Saturday. There is no Sunday service. It does not appear there is an active bus stop in the vicinity of the Re-use area. However, as development occurs and if demand picks up, a stop can easily be added.

CONCLUSIONS

The re-use of this area should restore traffic volumes to what they once were in the past as similar, small commercial businesses are proposed.

The crash experience at the intersection of S. 4th Street and 11th Avenue S. is very light, probably due to the one-way nature of the roadway system reducing the number of conflict points within the intersection. The calculated crash rate was well below the state average for a similar type intersection.

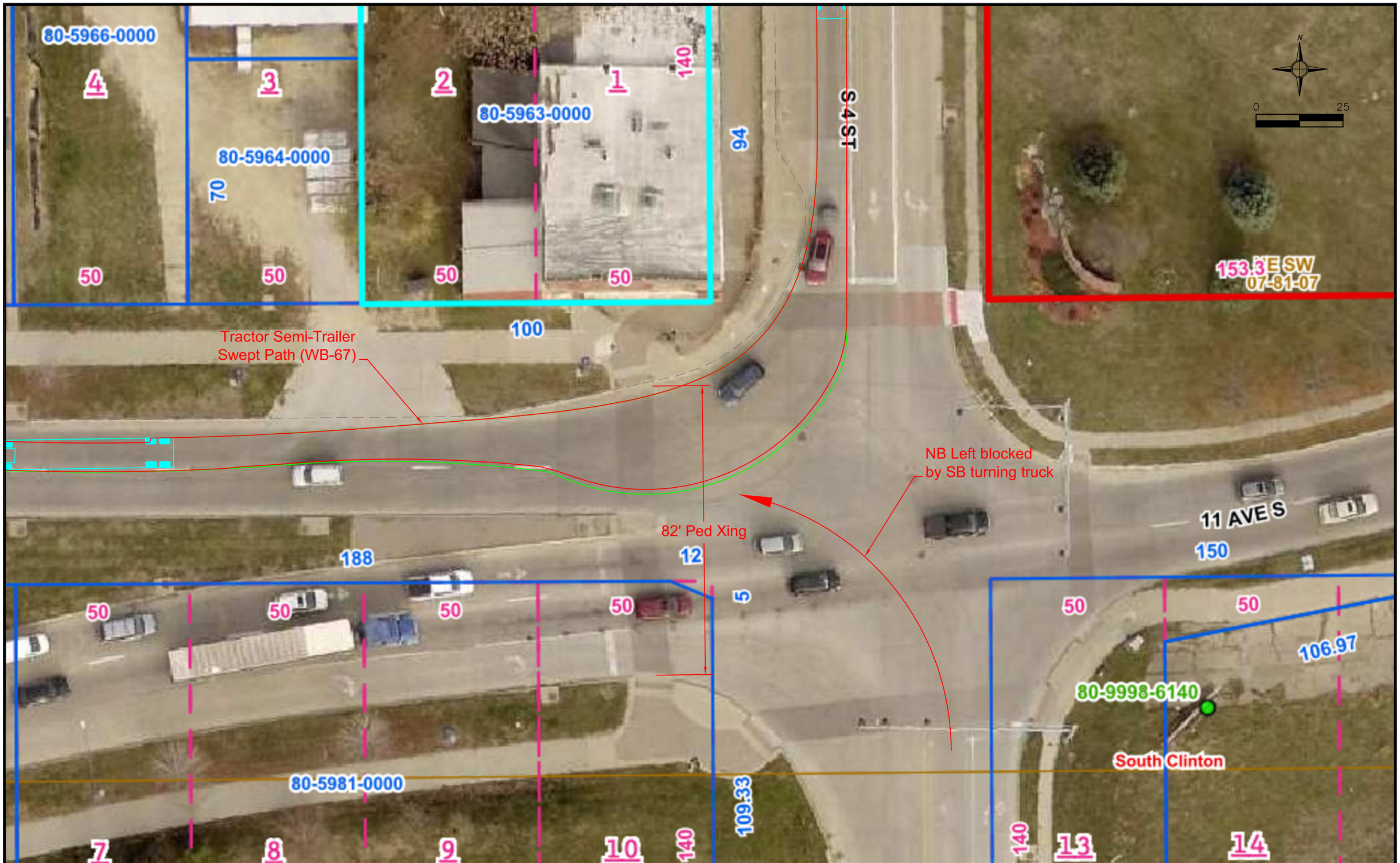
Phase 2A and 2B development proposals could both work, in terms of traffic operation. Phase 2A provides easier ingress/egress since the main driveway is located on a two-way street. Access under Phase 2B will not be as direct since patrons will need to circle the block to drive to the right-in/right-out driveway proposed on S. 4th Street.

For both re-use scenarios, we recommend trying to obtain cross access easements with the property to the south. We assume the alleys would be used for delivery and trash truck access.

We recommend some improvement be made to the intersection to accommodate the very high amount of tractor semi-trailer turning at the southbound right turn movement from S. 4th Street to westbound US 30/67. The painted out, excess pavement for truck off-tracking could also be a low profile, mountable island for trucks to drive over, which would reduce the re-painting maintenance of the right turn lane. Improving the flow of the right turn should help reduce queuing and noise from truck declaration to near stop condition, and noise from trucks starting up from a stop condition.

If a channelized, free-flow right turn option is developed, we recommend it be signalized for pedestrian crossing. We anticipate the signal would rest in green for the right turn movement and only change to red if there is a pedestrian that actuates the pushbutton. The channelization will reduce the length of pedestrian crossing distance across 11th Avenue S./Liberty Avenue.

Finally, since much of the on-street parking along S. 4th Street is little used, or not at all, consideration should be given to repurposing that pavement for bicycle accommodation.



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NO.	REVISION DESCRIPTION	APPROVED	DATE

ANDERSON BOGERT

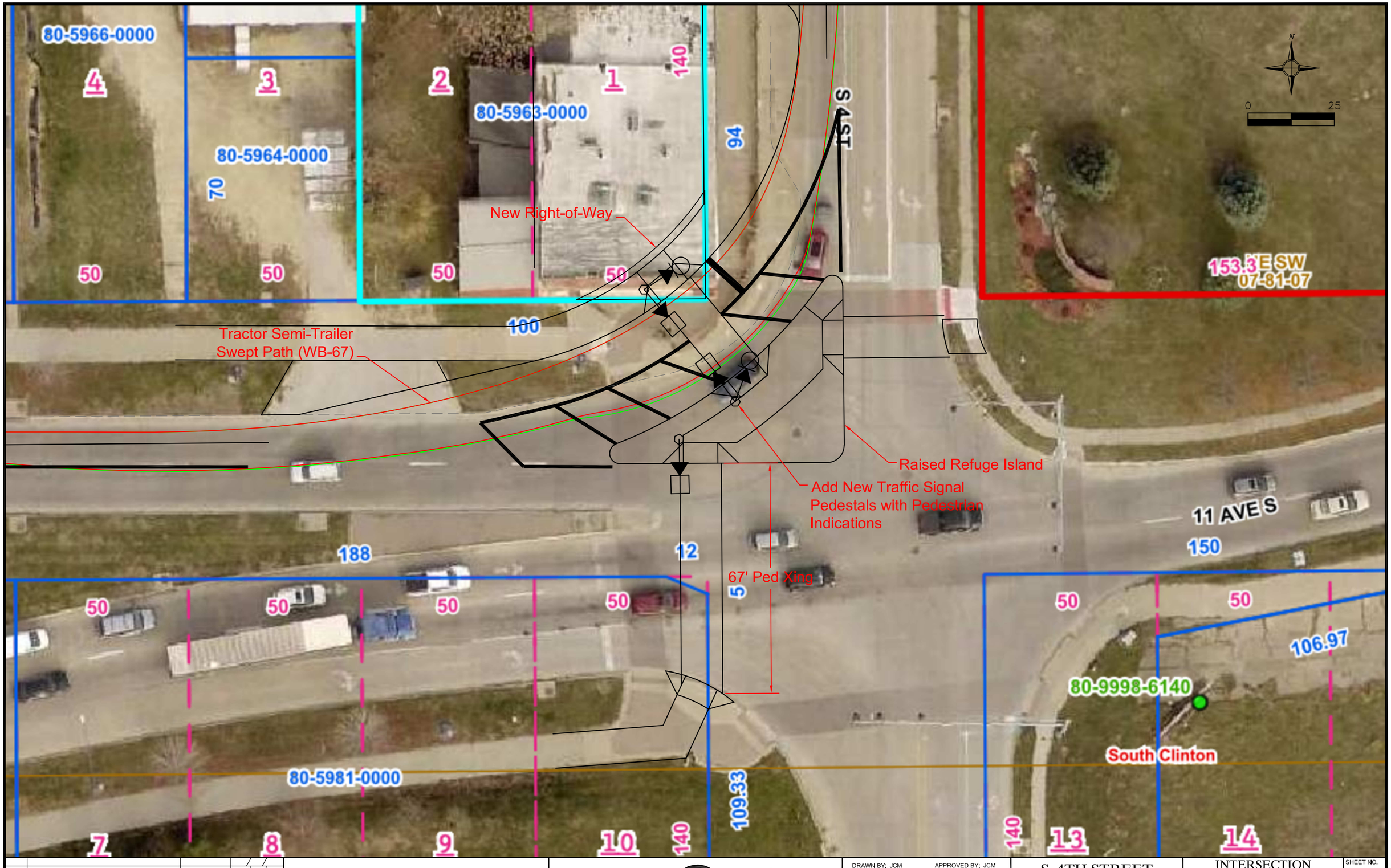
DRAWN BY: JCM
DATE: 6/28/23
PROJECT NO. 223035

APPROVED BY: JCM
SCALE: 50

S. 4TH STREET
RE-USE AREA

INTERSECTION
TURNING ANALYSIS

SHEET NO.



NO.	REVISION DESCRIPTION	APPROVED	DATE

ANDERSON BOGERT

DRAWN BY: JCM
APPROVED BY: JCM
DATE: 6/28/23
SCALE: NTS
PROJECT NO. 223035

S. 4TH STREET
RE-USE AREA

INTERSECTION
IMPROVEMENT
CONCEPT

SHEET NO.

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