

MEMORANDUM

June 13, 2022

To: Mayor William Polk and Patrick Mauney

Organization: The Rappahannock / Rapidan Commission and the Town of Remington

From: Barbara Mosier, PE

Project: Town of Remington Pedestrian Infrastructure and Traffic Calming Evaluation

Re: Existing Conditions and One-Way Circulation Technical Memorandum

This project has two primary objectives that support the Town of Remington's goal focused on revitalizing the Town into a destination leveraging the historic and natural assets of the Town.

The first objective is to identify location-specific traffic calming measures and on/off-road multimodal improvements between M.M. Pierce Elementary School, located north of the Town's corporate boundary, and the Rappahannock River Bridge, located south of the Town's corporate boundary (**Figure 1**). This will enable connectivity to the recently opened river access at the Rector Tract, as well as to the planned Rappahannock Station Battlefield Park. This objective builds on the Remington Walks Plan (adopted in 2017 along James Madison Street (Business Route U.S. 15/29).)

The second objective is to analyze the feasibility of converting East Main Street in the Town to one-way, eastbound traffic movements and utilizing East Madison Street for one-way, westbound traffic movements, and to provide additional traffic calming and multimodal improvement alternatives along the two corridors to enhance the Town's walkability and increase the safety, connectivity, and vibrancy of downtown Remington.

This memo presents key findings focusing on the feasibility of the one-way conversion plan for the second objective, as well as a general existing conditions analysis for both objectives. This includes a review of past plans and studies, a review of available traffic and geographic information systems (GIS) data, an AutoTurn Analysis, and one day of field work (April 5, 2022). The report presents:

- A description of the study area
- An overview of state and national design guidance relevant to this project
- A summary of relevant of ongoing projects
- Existing facilities and conditions for biking and walking in the study area
- An AutoTurn analysis
- A discussion of feasibility of the one-way circulation concept

Study Area

The purpose of this memorandum is to develop a foundation of understanding of existing conditions and how they may impact the objectives noted above. **Figure 1** below highlights the Town of Remington boundary as well as important destinations.

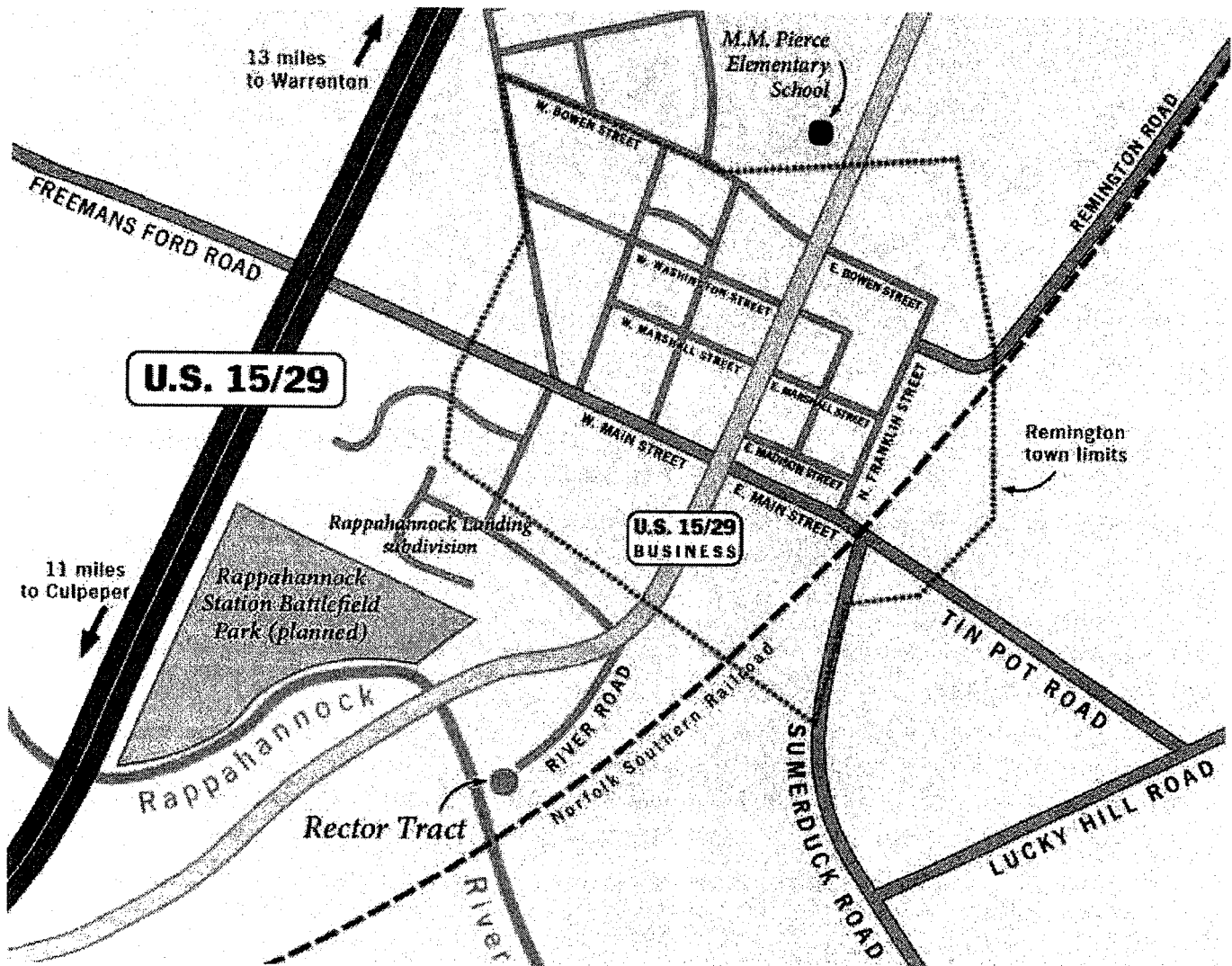


Figure 1. Town of Remington, Source: Project TAP application materials

Relevant destinations include:

- M.M. Pierce Elementary School
- Rappahannock Station Battlefield Park (Planned)
- Rector Tract River Access
- Main Street Commercial Area

The roadways included in the study area include Business 15/29 from Pierce Elementary School to the Rector Tract River Access (a 2 mile section), Main Street from N Franklin Street to Business 15/29 and Madison Street from N Franklin Street to Business 15/29.

Business 15/29 is classified as a Major Collector by Virginia Department of Transportation (VDOT) and has a posted speed limit of 35 MPH. It consists of a single lane in each direction heading North and South. There is a sidewalk on the eastern side of the road that varies in width ranging from three feet to 5.5 feet. The sidewalk extends from M.M. Pierce Elementary School to E Madison Street. There are no sidewalks on Business 15/29 South of W Main Street within the study area (**Figure 2**). Using data collected in 2020, the segment has an Average Daily Traffic (ADT) of 2,300 and an Annual Average Daily Traffic (AADT) of 2,600.



Figure 2. Business 15/29 Facing South In front of the Remington Car Wash

Similarly, Main Street, **Figure 3**, is also classified as a Major Collector by VDOT but has a posted speed limit of 25 MPH. Main Street has an ADT of 1,500. There are sidewalks on both sides of Main Street with varying widths. Main Street does not have any lane markings but operates with parking on both sides of the street one lane of traffic in each direction, in a de facto yield street condition when parked cars are present. The National Association of City Transportation Officials (NACTO) explains that a 2-way yield streets are appropriate in residential environments where drivers are expected to travel at low speeds. Many yield streets have significant off-street parking provisions and on-street parking utilization of 40-60% or less.

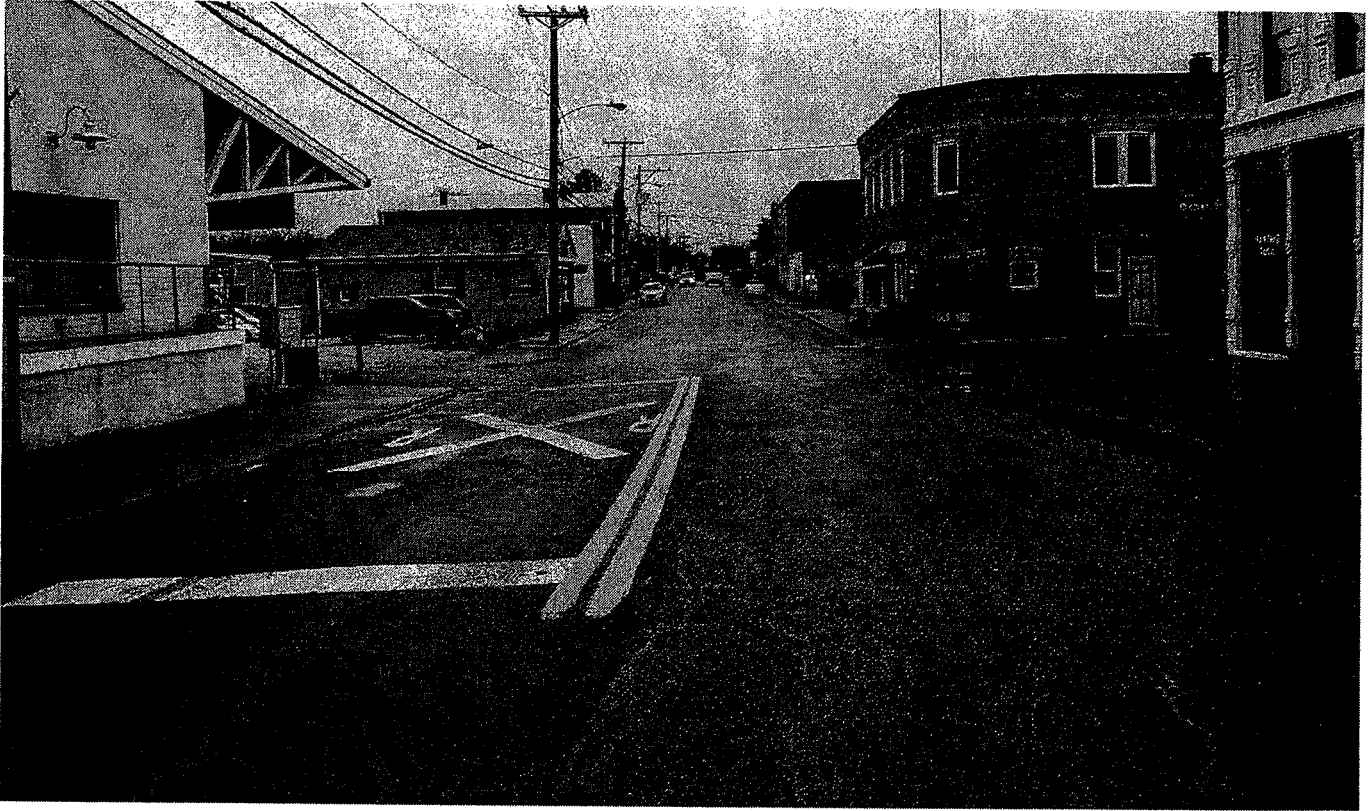


Figure 3. W Main Street and N Franklin Street Facing West

Madison Street, **Figure 4**, is a local street with a posted speed limit of 25 MPH and an ADT of 430. There are no sidewalks nor any pavement markings on Madison Street.

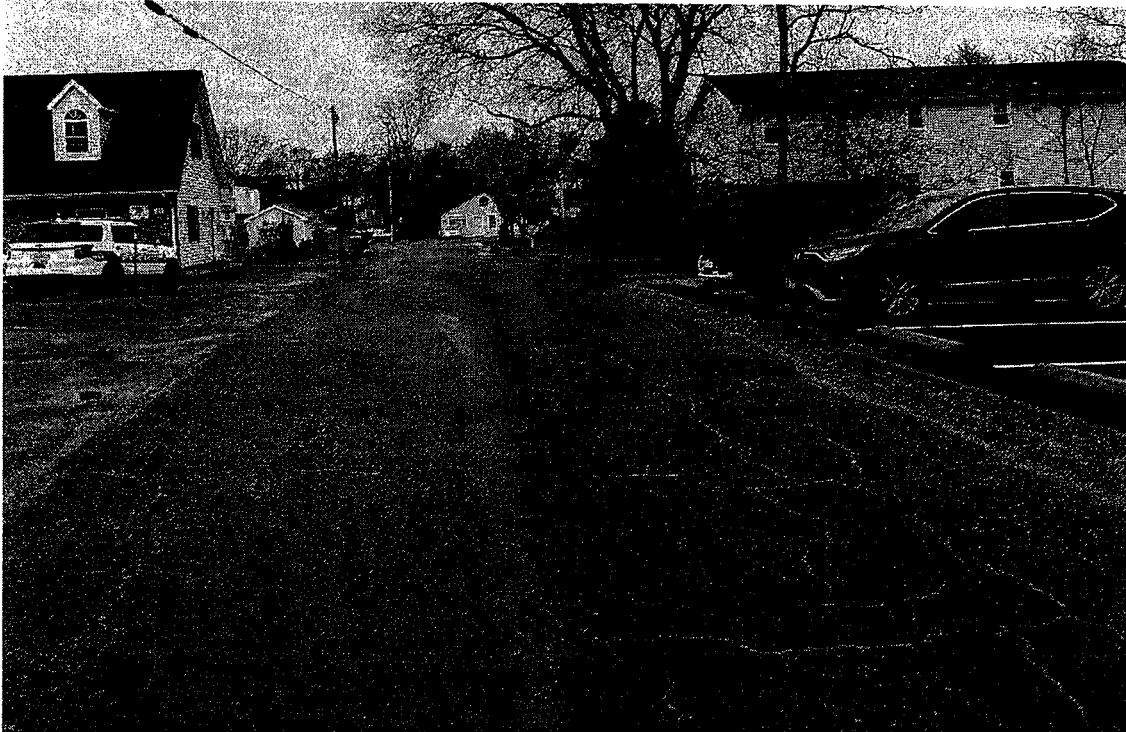


Figure 4. E Madison St Facing West at N John Stone St Intersection

Fieldwork Observations and Measurements

Fieldwork was conducted through the entire study area on Tuesday April 5, 2022 from 8:00 AM to approximately 3:00 PM. The weather was generally rainy and overcast during observations, which may have limited the number of pedestrians and cyclists compared to a better weather day. Observations were conducted at M. M. Pierce Elementary School during morning arrival, on Main and Madison Street in the mid-morning, and then south on Business 15/29 to the Rector Tract and Battlefield Parkway at approximately 2:00 PM. We were joined in the field by Mayor William Polk, Mr. Patrick Mauney of the Rappahannock / Rapidan Commission and Julie Bolthouse of Piedmont Environmental Council to observe operations and existing conditions on Main and Madison Street south to the Battlefield Parkway entrance. Notes taken during the field visit on April 5, 2022, and dimensions taken from the field can be found in **Appendix A** accompanying this memorandum.

During field observations, a steady stream of vehicles was observed on Business 15/29 in both directions making it difficult for vehicles turning from Main Street to find gaps. This caused a noticeable queue on Main Street at the stop signs shown in **Figure 5**.

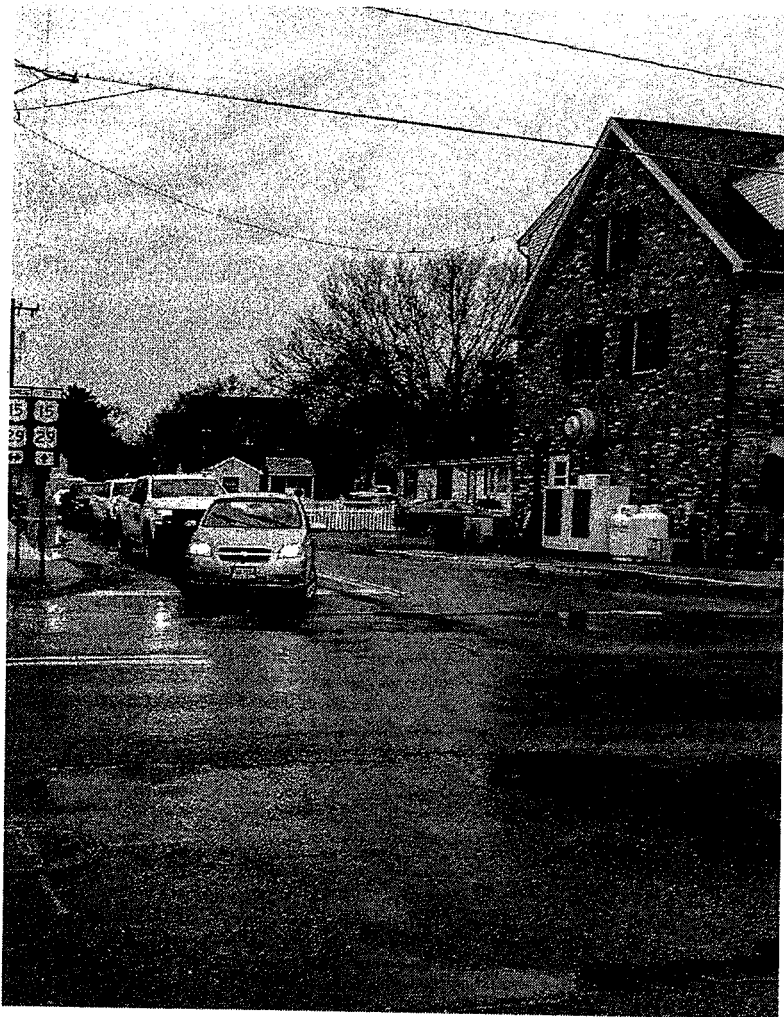


Figure 5. Motorists Queuing on Eastbound Main Street and Business 15/29

At that time, based on Waze mapping, a crash was noted on the main Route 15/29, just north of the Business 15/29 bypass. It is likely that northbound traffic from Route 15/29 was re-routing to Business 19/15 and potentially southbound traffic was re-routing to Main Street. This condition was confirmed by local stakeholders to be unusual, and observations of high delays at Business 15/29 at Main Street are not considered to be typical or significant for this study.

Generally Main Street is a lower volume roadway, and motorists appeared to be following the speed limit. There is parking permitted on both sides of Main Street between Franklin and Business 15/29, and while there were more available spaces than occupied spaces, vehicles were parked on both sides of the street through the length of the study area. The remaining travel way between parked vehicles is generally less than two full travel lanes, and vehicles were observed to pull partially behind parked cars to yield to oncoming traffic. Sidewalks are provided on both sides of Main Street, but width and condition vary, with some sections only providing a 3.5' sidewalk. Other sections have a wider existing sidewalk that goes directly to the building face of commercial buildings (**Figure 3**).

It was observed that during morning drop-off at M.M. Pierce Elementary that drivers were strictly utilizing the Northern entrance of the school and buses were not utilizing the right turn lane (**Figure 6**).



Figure 6. Right Turn Lane on Business 15/29 by M. M. Pierce Elementary School

Land use along Main Street is generally commercial, and includes Town Hall, a Lumber Yard and a number of smaller businesses in older buildings, some with residential on upper floors. Many of the buildings are located with zero setback from the street right-of-way, and sidewalks extend directly to the building faces.

Building patterns on Madison Street are more open, with parking lots and rear-building access areas for the businesses on Main Street. Madison Street is also a mix of residential and commercial but appears to be primarily commercial in nature.

Observations of operations along Business 15/29 will be discussed in more detail in subsequent documents focusing on that facility.

Observations Shared by Stakeholders

During field visits and subsequent project meetings, Mayor Polk and other stakeholders have shared their experiences with these facilities. Their observations and impressions are below. Generally, the current yield street condition on Main Street is perceived as chaotic and undesirable. NACTO notes that for a yield street to function effectively, motorists should be able to use the street intuitively without the risk of head-on collision, which is not always the case on Main Street. During peak hours the truck traffic and narrow effective roadway results in drivers and pedestrians perceiving Main Street as unsafe. Business 15/29 has also been reported to Mayor Polk and others as being a barrier to pedestrian access from the east to west side of towns. This issue was discussed in the context of residents from west side homes not walking to Main Street businesses, as well as students not being permitted to walk to school and cross Business 15/29. Residents have also criticized the speeding that often occurs on Business 15/29, contributing to the sense of lack of pedestrian of safety.

Design Guidance

This section summarizes the leading state and national design guidance for three facility types that are applicable to this study:

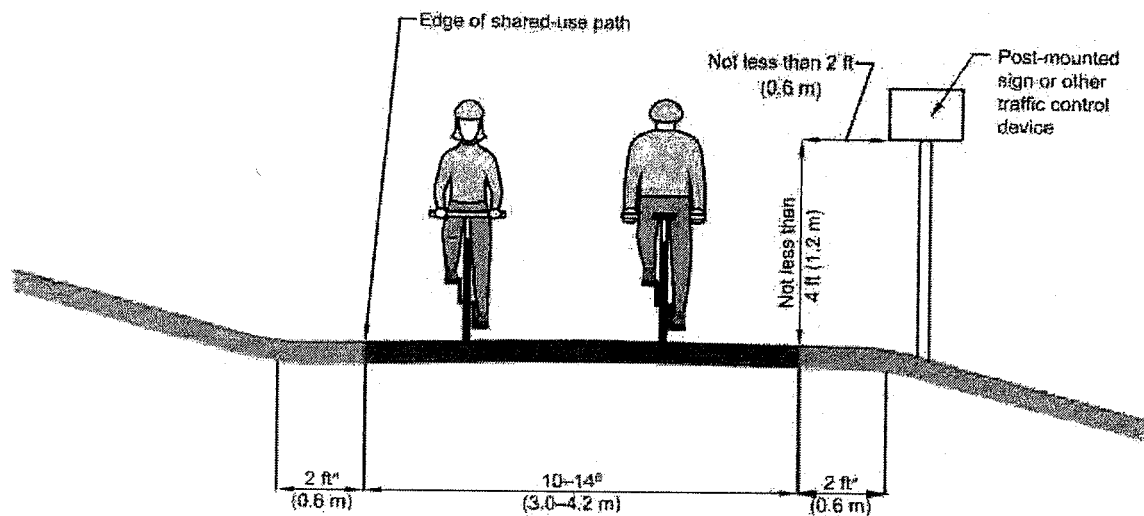
- Shared use paths
- On-road bicycle facilities
- Sidewalks

Shared Use Paths

Figure 7 depicts the national design guidance for a typical cross section of a shared use path.¹ The minimum paved width for a two-directional shared use path is 10 feet. Typically, widths range from 10 to 14 feet (3.0 to 4.3 m), with the wider values applicable to areas with high use and/or a wider variety of user groups. VDOT allows a shared use path width of 8 feet for short distances if needed due to a physical constraint such as an environmental feature, bridge abutment, utility structure, etc.²

¹ American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, 2012.

² Virginia Department of Transportation, Roadway Standards Appendix A(1): Bicycle and Pedestrian Facility Guidelines, Bus Stop Design, and Parking Guidelines, <https://www.virginiadot.org/business/resources/locdes/rdm/AppendA1.pdf>



Notes:

^a (1V:6H) Maximum slope (typ.)

Figure 7. Typical Cross Section of Two-Way, Shared Use Path on Independent Right-of-Way

Source: 2012 AASHTO Bike Guide

Other state design guidance, such as the Ohio Department of Transportation Multimodal Design Guide, which was adopted in April 2022, distinguishes between shared use path level of service (SUPLOS) and operating conditions. This is shown in **Table 1**

Table 1. Shared Use Path Operating Conditions Based on Level of Service Criteria

SUPLOS	Description	Peak Operating Conditions
A	Excellent	A significant ability to absorb more users across all modes is available
B	Good	A moderate ability to absorb more users across all modes is available
C	Fair	Path is close to functional capacity with minimal ability to absorb more users
D	Poor	Path is at its functional capacity. Additional users will create operational and safety problems
E	Very Poor	Path operation beyond its functional capacity resulting in conflicts and people avoiding path
F	Failing	Path operating beyond functional capacity resulting in significant conflicts and people avoiding the path

Table 2 shows preferable shared use path widths to achieve a SUPLOS of “C” for typical mode split conditions.

Table 2. Shared Use Path Width and Operational Lanes

Operational Lanes	Preferable Width (ft)	SUPLOS “C” Peak Hour Volumes at Preferable Width	Minimum Width (ft)	SUPLOS “D” Peak Hour Volumes at Minimum Width
2	10 - 12	150 – 300	8	50
3	12 - 15	300 - 500	11	400
4	16 - ≥20	500 - ≥600	15	600

FHWA SUPLOS Methodology

The US Federal Highway Administration (FHWA) found in their Shared Use Path Level of Service Calculator User’s Guide that widths of 11 - 15 feet (3.4–4.6 m) provide improved levels of service (LOS) for higher volumes and more balanced user mixes than narrower widths. This is consistent with AASHTO recommendations that under certain conditions it may be necessary or desirable to increase the width of a shared-use path to 12 feet (3.8 m) or even to 14 feet (4.3 m), due to substantial use by people walking, biking, and those using wheelchairs, scooters, skateboards, and other modes. Trails of 11 – 15 feet (3.4–4.6 m) are wide enough to operate as three-lane paths. The increased passing capacity provided by a trail that operates as three lanes improves LOS and increases the trail’s ability to absorb higher volumes and a wider variety of use-types without degrading service.

On-Road Bicycle Facilities

For on-road facilities, the FHWA published the Bikeway Selection Guide in February 2019 which highlights the preferred bikeway type for based on volume and speed. This is depicted in **Figure 8**.

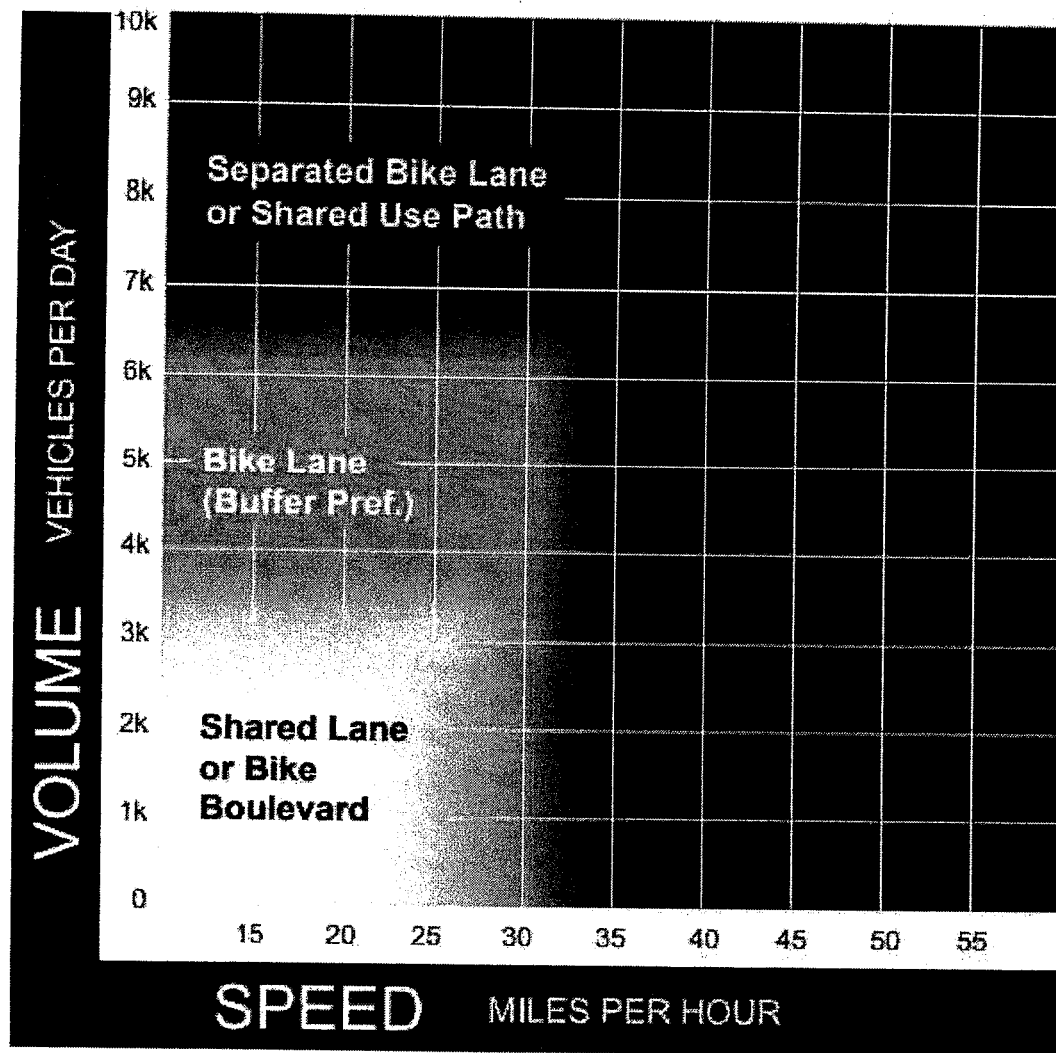


Figure 8. Preferred Bikeway Type for Urban, Urban Core, Suburban and Rural Town Contexts

Source: FHWA Bikeway Selection Guide, 2019

Notes: 1. Chart assumes operating speeds are similar to posted speed. 2. Advisory bike lanes may be an option where traffic volume is <3K ADT.

Any future analysis for on-road bicycle access options will use this guidance as a starting point to determine alternatives for on-road bike access.

Sidewalks

VDOT Road Design Manual⁴ includes Appendix A which outlines geometric design standards. The Manual notes that a sidewalk must be a minimum of 36 inches to be compliant with the Americans with Disabilities Act (ADA) though, if possible, it is recommended to widen it further to allow users side-by-side passing. As per both the roadway design guidelines, and the pedestrian guidelines in Appendix A(1) referenced previously, a 5 foot

sidewalk, excluding the width of the curb, with a minimum buffer of 4 feet for roadways posted at greater than 25 mph and 3 feet for the roadways posted at 25 mph and less is required. Narrower widths are allowable for unique situations and short sections.

ADA Compliant curb ramps should also be provided at all corners where pedestrian access is provided and at all pedestrian pathway crossings.

These minimums provide a basic pedestrian access route for users of all types, and while a 5' minimum width provides adequate access for people walking alone, in areas of heavy use, wider sidewalks should be considered. The NACTO *Urban Street Design Guide* suggests a width of 5-7 feet for residential areas.³

Trail and pedestrian path crossings at uncontrolled locations may need additional design features to provide for a safe and comfortable crossing experience. The FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, often referred to as the STEPS Guide, provides guidance on appropriate crossing treatments based on vehicular speed and volume and will be referenced when reviewing potential treatments recommended for this project. The countermeasure summary chart from the STEPS guide is shown in **Figure 9**.

Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	1 2 4 5 6 7 9	1 5 6 7 9	1 5 6 7 9	1 4 5 6 7 9	1 5 6 7 9	1 5 6 7 9	1 4 5 6 7 9	1 5 6 7 9	1 5 6 7 9
3 lanes with raised median (1 lane in each direction)	1 2 3 4 5 7 9	1 3 5 7 9	1 3 5 7 9	1 3 4 5 7 9	1 3 5 7 9	1 3 5 7 9	1 3 4 5 7 9	1 3 5 7 9	1 3 5 7 9
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	1 2 3 4 5 6 7 9	1 3 5 6 7 9	1 3 5 6 7 9	1 3 4 5 6 7 9	1 3 5 6 7 9	1 3 5 6 7 9	1 3 4 5 6 7 9	1 3 5 6 7 9	1 3 5 6 7 9
4+ lanes with raised median (2 or more lanes in each direction)	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9
4+ lanes w/o raised median (2 or more lanes in each direction)	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9

Given the set of conditions in a cell,

- # Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.
- Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.
- Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.*

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

- 1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs
- 2 Raised crosswalk
- 3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line
- 4 In-Street Pedestrian Crossing sign
- 5 Curb extension
- 6 Pedestrian refuge island
- 7 Rectangular Rapid-Flashing Beacon (RRFB)**
- 8 Road Diet
- 9 Pedestrian Hybrid Beacon (PHB)**

Figure 9. STEPS Guide Pedestrian Crossing Countermeasures

Source: FHWA "Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations" 4

³ <https://nacto.org/publication/urban-street-design-guide/street-design-elements/sidewalks/>

⁴ https://safety.fhwa.dot.gov/ped_bike/step/docs/STEP_Guide_for_Improving_Ped_Safety_at_Unsig_Loc_3-2018_07_17-508compliant.pdf

Additionally, VDOT adopted an Instructional and Informational memorandum in 2016 that focuses on pedestrian crossing accommodations at unsignalized intersections crossings and mid-block crossings. It provides additional guidance beyond what is in the 2009 Manual on Uniform Traffic Control Devices (MUTCD) and the 2011 Virginia Supplement to the MUTCD.

Previous Projects

Collaborative Community Design for a Healthier Remington Report

In August of 2017 the Piedmont Environmental Council (PEC) published the “Collaborative Community Design for a Healthier Remington” report. The following is a recommendation that was made as near-term priority actions and next steps relevant to the goals of this study:

1. Initiative conversations with VDOT and Fauquier County about the feasibility of a four-way stop and intersection improvements at Main Street and Business 29/15, as well as the proposed cross-section redesign of Main Street.

Beyond the near-term priorities, the report recommended the creation of a Remington Walks! Task Force comprised of elected officials, citizens, PEC and others, to meet regularly and strategize. The following were the long-term priorities that were listed for consideration by the Task Force relevant to this study:

- Pursue additional funding as needed (e.g., to cover the local match for a state or federal grant) to advance the design and implementation of the new cross-section of Main Street. This investment has the potential to beautify the Town in a way that supports community cohesion, active lifestyles and business development long term.
- Designate a small, dedicated line item in the Town annual budget for new sidewalks, and aim to implement the proposed new sidewalks outlined in this plan in phases, one year at a time.
- Pursue County, State or foundation funds to advance design plans for the shared use path that is proposed along Business 15/29, connecting from MM Pierce Elementary School to the Town Center and then on to the future Rappahanock Battlefield Station Park. Once the Town has developed design plans for this important connection, the project can either be implemented in phases as opportunities arise (e.g., if a parcel is redeveloped) or as a stand-alone project if funding can be identified.
- As the Rappahanock Station Battlefield Park is implemented, consider allowing multiple access points for people arriving by foot or bike. More entry points will diffuse the traffic and make it extremely convenient for people to get to the park and river from any starting point in and around Town. The park should be designed to encourage people who live within a mile to use it often and to travel there by foot or bike at least some of the time.

During the development of this report a three-day workshop was held where gathered input from residents and Town leaders about their goals and priorities for the Town. During the workshop, the design team was encouraged to rethink the cross section of Main Street, and developed a design solution that will enhance the user experience and better celebrate the small-town character of Remington. The right-of-way width is only 50 feet from building face to building face and is the main constraint on the street. The key design for Main Street, from Business 29/15 to Franklin Street, was to widen the sidewalks, add street trees, remove the on-street parking on the west side of the street and formalize it on the east side with bulbout planters and landscaping, and make the travel lanes wide enough that vehicles can pass one another without having to yield to oncoming traffic (Figure 10).

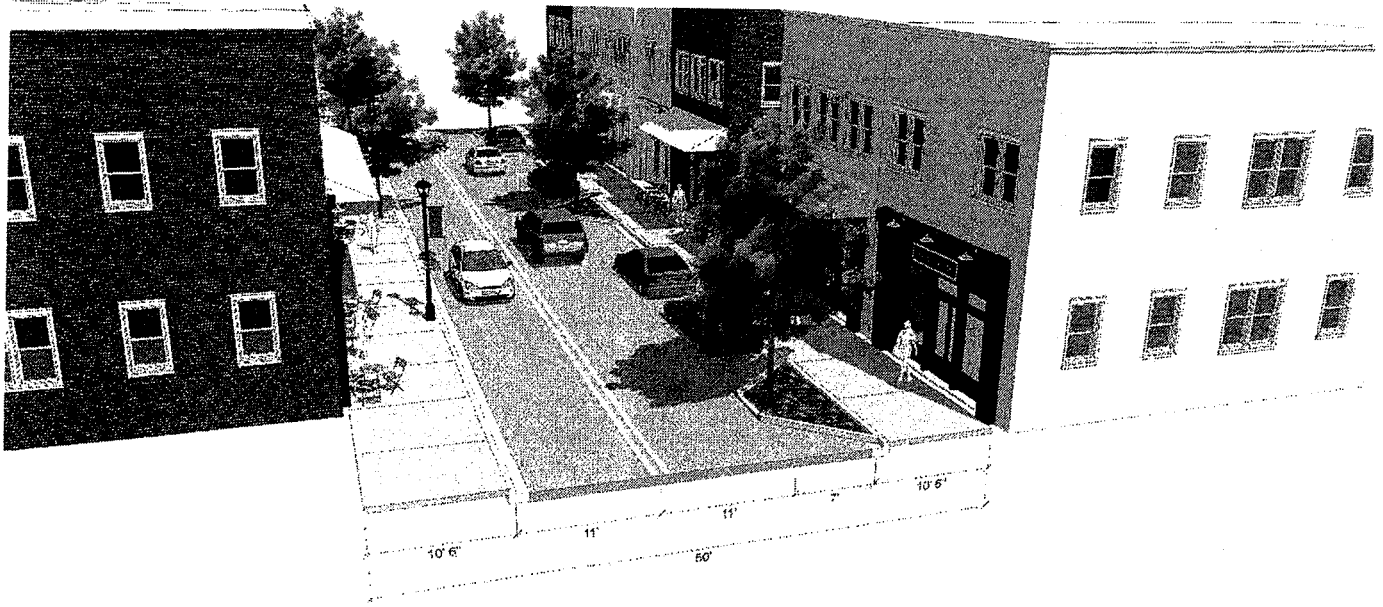


Figure 10. Main Street Near Town Hall Facing East Design⁵

The intersection of Main Street and Business 15/29 was the focus of much of the public input received during the workshop. Responding to this community input, the report recommended a raised intersection at Main Street and Business 29/15 to signify the key intersection into downtown and to make the pedestrian crossings there more conspicuous. Similar to the raised crosswalks, the intersection approaches will gradually ramp up to a flush intersection that is textured with brick and have high visibility markings at the crosswalks. The current 2-way stop sign configuration on Main Street was recommended for conversion to 4-way stop sign control at the intersection. Lastly, bulb outs were recommended at the corners to narrow the pedestrian crossing distance and add places for landscape planters as shown in **Figure 11**.

⁵ Collaborative Community Design for a Healthier Remington, Remington Walks, Piedmont Environmental Council, 2017.

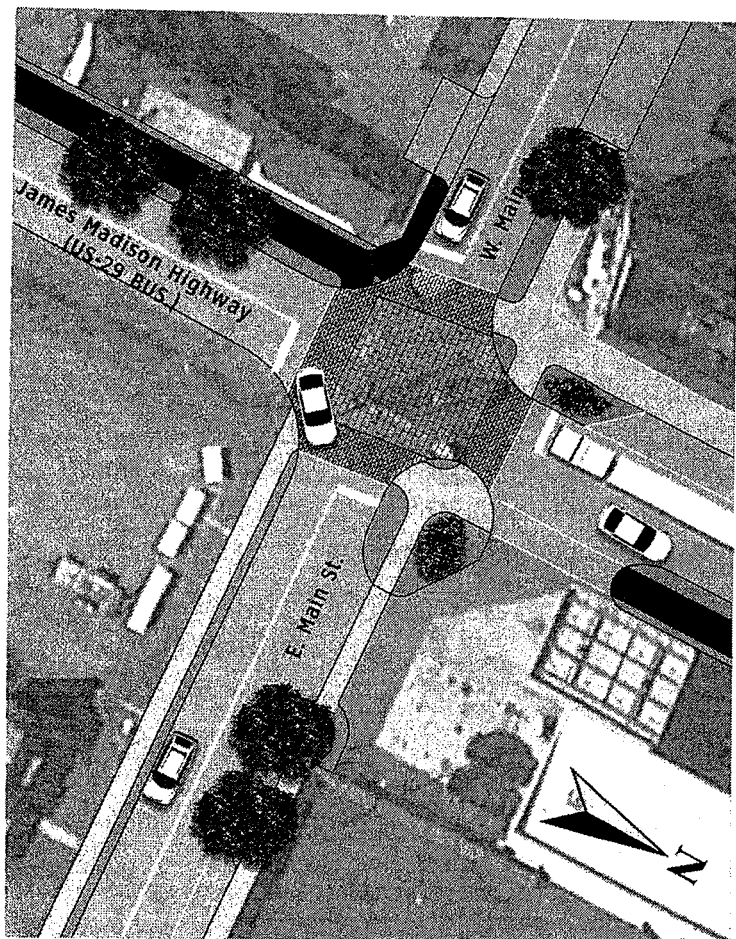


Figure 11. Rendering of Proposed Raised Crosswalk, Shared Use Path, and Curb Extensions at Main Street and Business 15/29⁶

VDOT Traffic Control and Speed Studies

During the stakeholder and team update meeting held June 3, 2022, VDOT local residency staff indicated that VDOT staff had previously conducted studies on the appropriateness of the existing speed limits on Business 15/29 as well as possible conversion of Main Street at Business 15/29 to an All-Way Stop control. The materials from these studies will be considered and incorporated into this study in later documents once they are provide by VDOT.

Ongoing Projects

Dollar General

⁶ Collaborative Community Design for a Healthier Remington, Remington Walks, Piedmont Environmental Council, 2017.

There is a proposed development of a Dollar General on the east side of Business 15/29 across from Pierce Elementary. This development is currently in the approval process. Their current site plan as provided on April 5, 2022, is shown in **Figure 12**.

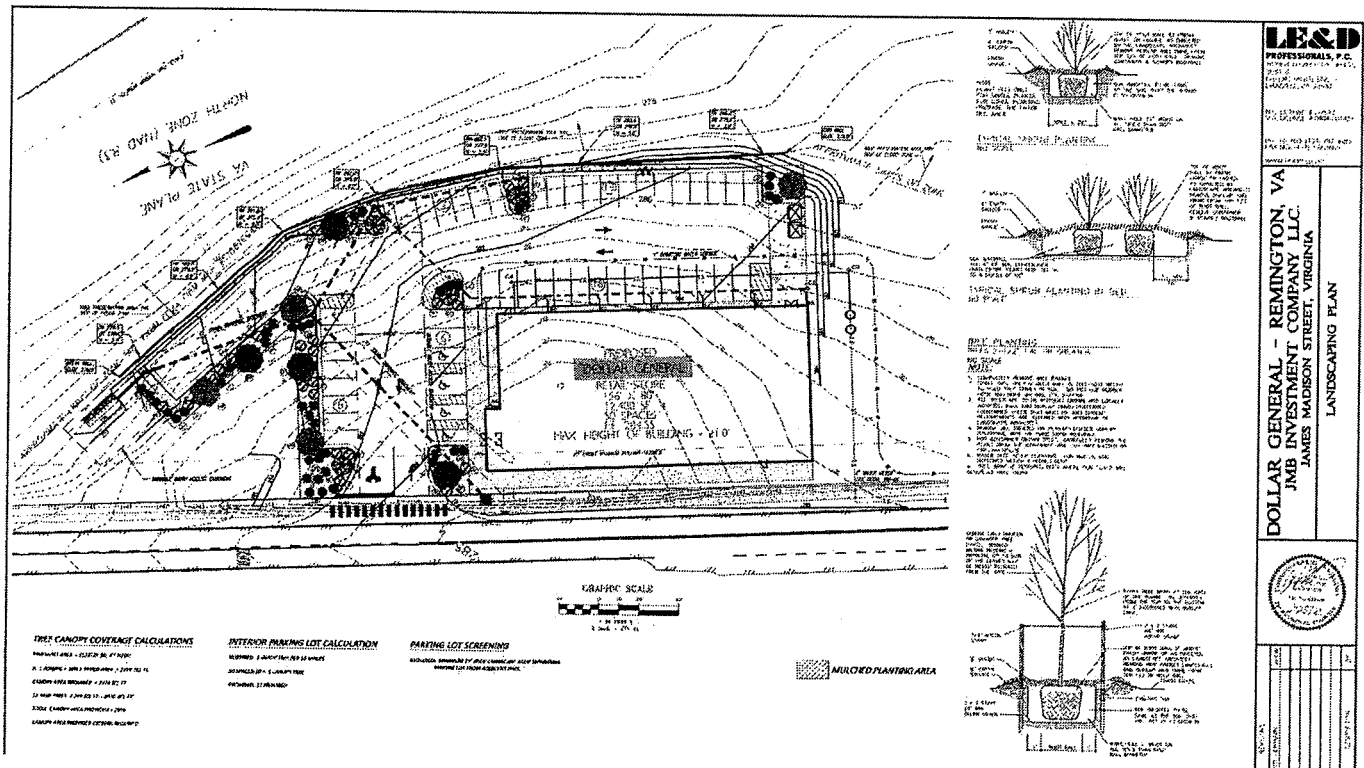


Figure 12. Dollar General Site Plan

Existing Transportation Features and Data

Walk Score

VTrans is Virginia's statewide transportation plan. A component of VTrans is an online, interactive data portal with dozens of data sets relevant to transportation in Virginia (Interact VTrans, <https://vtrans.org/interactvtrans/map-explorer>). One of the data sources available through Interact VTrans is Walk Score, which the website describes as:

"Walk Score measures the walkability of any address using a patented system. For each address, it analyzes hundreds of walking routes to nearby amenities. Points are awarded based on the distance to amenities in each category. Amenities within a 5-minute walk (.25 miles) are given maximum points. A decay function is used to give points to more distant amenities, with no points given after a 30-minute walk. Walk Score also measures pedestrian friendliness by analyzing population density and road metrics such as block length and

intersection density. Data sources include Google, Factual, Great Schools, Open Street Map, the U.S. Census, Localeze, and places added by the Walk Score user community.”⁷

Definitions for various Walk Score results are shown in **Table 3**. The VTrans website provides a map explorer that allows users to quickly identify the Walk Score of specific addresses (see example in **Figure 13**). Addresses adjacent to the study area for this project were collected and averaged. The study area was found to have an average Walk Score of 38 (Car-Dependent).

Table 3. Walk Score Definitions

Walk Score	Category	Description
90 – 100	Walker's Paradise	Daily errands do not require a car
70 – 89	Very Walkable	Most errands can be accomplished on foot
50 – 69	Somewhat Walkable	Some errands can be accomplished on foot
25 – 49	Car-Dependent	Most errands require a car
0 – 24	Car-Dependent	Almost all errands require a car



⁷ Interact VTrans, <https://vtrans.org/interactvtrans/map-explorer>

Figure 13. VTrans Website – Walk and Bike Score Retrieval

Bike Score

In addition to a Walk Score, Interact VTrans provides Bike Score data, which estimates the relative comfort of an area for biking. For a given location, a Bike Score is calculated by measuring bike infrastructure (lanes, trails, etc.), hills, destinations and road connectivity, and the number of bike commuters. These component scores are based on data from the USGS, Open Street Map, and the U.S. Census. Definitions for various Bike Scores are shown in **Table 4**. Similar to the Walk Score assessment, the study team gathered Bike Score data for addresses adjacent to the proposed alignment. The average Bike Score was 31 (Somewhat Bikeable).

Table 4. Bike Score Breakdown

Walk Score	Category	Description
90 – 100	Biker's Paradise	Daily errands can be accomplished on a bike
70 – 89	Very Bikeable	Biking is convenient for most trips
50 – 69	Bikeable	Some bike infrastructure
0 – 49	Somewhat Bikeable	Minimal bike infrastructure

Mid-term Needs

VTrans identifies and prioritizes locations with transportation needs using data-informed transparent processes. The identified transportation needs may be addressed by projects, policies, or programs. Projects that address needs may become eligible for state funding under the SMART SCALE program and receive priority consideration in VDOT's Revenue Sharing program. **Table 5** lists the identified mid-term needs by VTrans for the segment of Business 15/29 that is within the bounds of the study area. The following acronyms are defined for reference:

- CoSS – Corridor of Statewide Significance. Indicates whether the segment is assigned to a Corridor of Statewide Significance
- RN – Regional Network
- UDA – Urban Development Area

Table 5. Business 15/29 2021 VTrans Mid-Term Needs

Need	Description
Rail On-time Performance (CoSS)	A segment associated with a rail station with a "Need for Intercity and Passenger Rail on-time performance improvement."
Transportation Demand Management (Non-limited Access CoSS)	A CoSS segment with a "Need for new or expanded park and ride facilities, rail and public transportation services and passenger facilities, bicycle and pedestrian facilities where permitted, and expansion and coordination of commuter assistance programs services"

Transit Access (RN)	A Regional Network Activity Center with a "Need for Transit Access Improvements"
Roadway Capacity (UDA)	A non-limited access roadway segment located within the boundaries of a UDA, or within a quarter mile of the UDA, with a "Need for roadway capacity and infrastructure improvements (additional lanes)"
Roadway Operations (UDA)	A non-limited access roadway segment located within the boundaries of a UDA, or within a quarter mile of the UDA, with a "Need for roadway operations (intelligent transportation systems, including traffic signals)".
Intersection Design (UDA)	A non-limited access roadway segment located within the boundaries a UDA, or within a quarter mile of the UDA, with a "Need for intersection design or other improvements (roundabouts, improved geometry, add turning lanes)."
Street Grid (UDA)	A non-limited access roadway segment located within a UDA or within a quarter mile of the UDA with a "Need for intersection design or other improvements (roundabouts, improved geometry, add turning lanes)."
Safety Features (UDA)	Indicates a non-limited access roadway segment located within the boundaries of a UDA or within a quarter mile of the UDA with a "Need for safety features".
Traffic Calming (UDA)	Indicates a non-limited access roadway segment located within a UDA or within a quarter mile of the UDA with a "Need for traffic calming features".
Signage / Wayfinding (UDA)	Indicates a non-limited access roadway segment located within a UDA or within a quarter mile of the UDA with a "Need for signage/wayfinding".
Bicycle Infrastructure (UDA)	Indicates a non-limited access roadway segment located within a UDA or within a quarter mile of the UDA with a "Need for bicycle infrastructure (bicycle lanes, crossing, paths, parking, bike-specific traffic signals)"
Pedestrian Infrastructure (UDA)	Indicates a non-limited access roadway segment located within a UDA or within a quarter mile of the UDA with a "Need for pedestrian infrastructure (cross walks, pedestrian signals, pedestrian islands or bumpouts)"
Complete Streets (UDA)	Indicates a non-limited access roadway segment located within a UDA or within a quarter mile of the UDA with a "Complete streets improvements beyond bike/pedestrian facilities"
Sidewalks (UDA)	Indicates a non-limited access roadway segment located within the boundaries of a UDA or within a quarter mile of the UDA with a "Need for sidewalks."
Off-Street Parking (UDA)	Indicates a non-limited access roadway segment located within the boundaries of a UDA or within a quarter mile of the UDA with a "Need for off-street parking capacity"
Environment (UDA)	Indicates a non-limited access roadway segment located within the boundaries of a UDA or within a quarter mile of the UDA with a "Need for improvements to the natural environment, stormwater management, site design, or landscaping"

Vehicular Characteristics

This section will provide vehicular characteristics that are present within the study area such posted speed limits and turning movement counts (TMC).

Posted Speed Limits

Within the town boundary, Business 15/29 a posted speed limit of 35 Miles per Hour (MPH). However, just South of the study area the posted speed limit is 45 MPH and 50 MPH North of the study area. It was noted during the field visit that based on personal experience of stakeholders this inconsistency has caused drivers to speed through the town.

Turning Movement Count

Turning Movement Counts (TMCs) of automobiles and heavy trucks, bicycles and pedestrians were collected in 15-minute increments from 7:00 AM to 6:00 PM on May 5, 2022 at the following intersections (**Figure 14**):

1. E Main St and Business 15/29
2. E Main St and N Franklin St
3. E Madison St and Business 15/29
4. E Madison and N Franklin St
5. Business 15/29 and Bowen St
6. Business 15/29 and Godwins Landing Dr
7. Business 15/29 and River Road

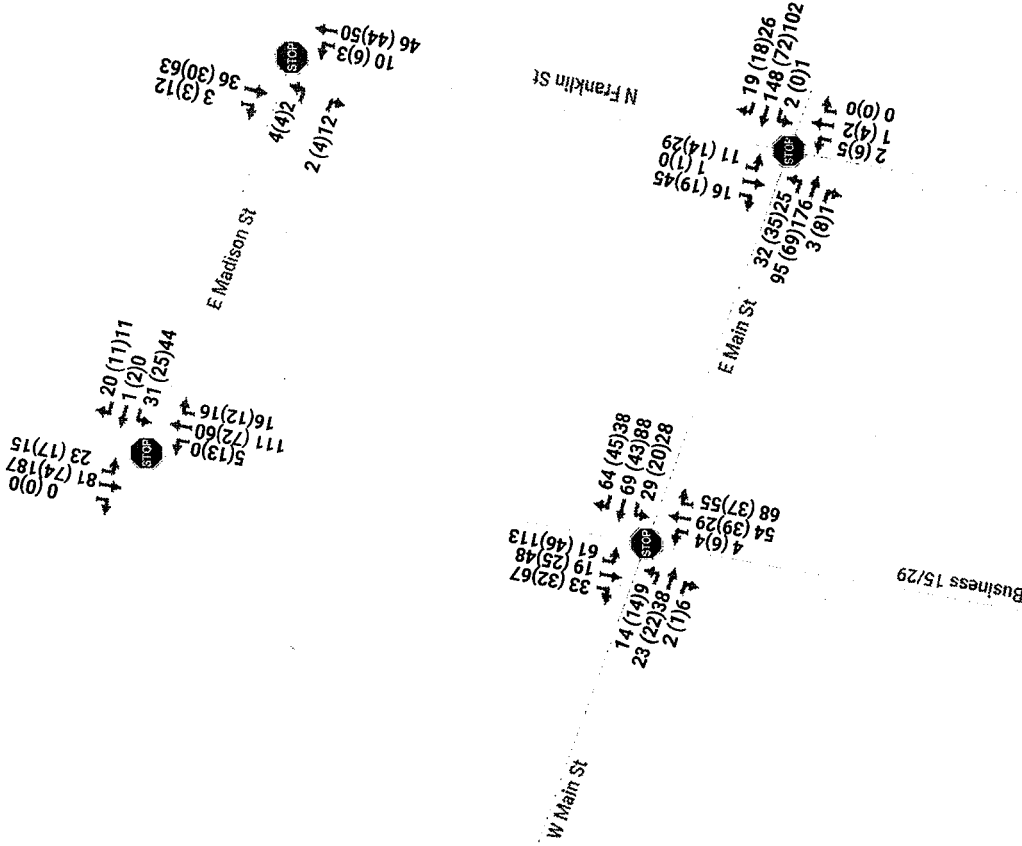


Figure 14. TMC Locations

The vehicular turning movement volumes from these counts are shown in **Figure 15**



NOT TO SCALE



Legend
Stop Controlled Intersection
xx (xx)xx Volumes - AM (Midday) PM

TOOLE
DESIGN

FIGURE 15
AM(MID)PM PEAK TURNING MOVEMENT VOLUMES
Town of Remington Pedestrian Infrastructure and Traffic Calming Evaluation
DATA COLLECTION DATE: 05/04/2022

THIS GRAPHIC IS FOR INFORMATIONAL PURPOSES ONLY. THE GRAPHIC IS NOT INTENDED TO PRESENT RECOMMENDATIONS TO TRAFFIC OPERATIONS OR ROADWAY DESIGN. THE TRAFFIC DATA SHOWN IS REPRESENTATIVE OF TRAFFIC CONDITIONS ON THE DAY AND TIME THE DATA WAS COLLECTED. ACTUAL CONDITIONS WILL VARY FROM THOSE SHOWN. REUSE OR ALTERATION IS AT THE USER'S SOLE RISK. TOOLE DESIGN GROUP, LLC DOES NOT GUARANTEE THE ACCURACY, COMPLETENESS, OR ADEQUACY OF THE DATA FOR ANY PURPOSE OTHER THAN THE PROJECT FOR WHICH IT WAS DEVELOPED.

Truck Volumes

Vehicle classification data was also gathered with the turning movement counts. At the intersection of Business 15/29 and Main Street, Business 15/29 has less than 1% heavy vehicles during the peak periods counted, and Main Street had 2.5% heavy vehicles. The majority of truck traffic on Main Street is traveling eastbound in the AM peak hour and westbound in the PM peak hour and does not turn north or south at Business 15/29 but continues their path on Main Street.

Average truck percentages on non-highway routes as based on VDOT AADT traffic data for this county are as shown in **Table 6**. A 2.5% heavy truck percentage is higher than average. Based on those non-highway routes with reported truck percentages in the VDOT AADT Volume Estimates for 2019, Main Street in Remington has the 30th highest truck percentage out of the other reported 168 roadways, indicating that it has a higher-than-average volume of large trucks for the facility type.

Table 6. Typical Truck Percentage in Fauquier County (excluding US Routes and Interstates)

Cars	Busses	Single Unit Trucks 2 Axle	Single Unit Truck 3+ Axle	Combination Trucks
96%	0%	1%	1%	1%

During the April 5th field visit, large trucks were observed frequently traveling on Main Street through town (**Figure 16** and **Figure 17**), which is in line with the data gathered and discussed above. The truck types observed included lumber trucks traveling to and from the lumber yard on the southwest quadrant of the intersection of Main Street and Franklin Street, trucks transporting sod, heavy construction equipment and other unknown materials traveling through town, and food service company trucks serving local restaurants. As shown in the photographs in **Figure 17**, these trucks are visually out of scale to Main Street. When cars are parked on both sides of Main Street, these trucks use the entirety of the available roadway, and oncoming traffic must yield.



Figure 16. Truck Driving Eastbound on Main Street

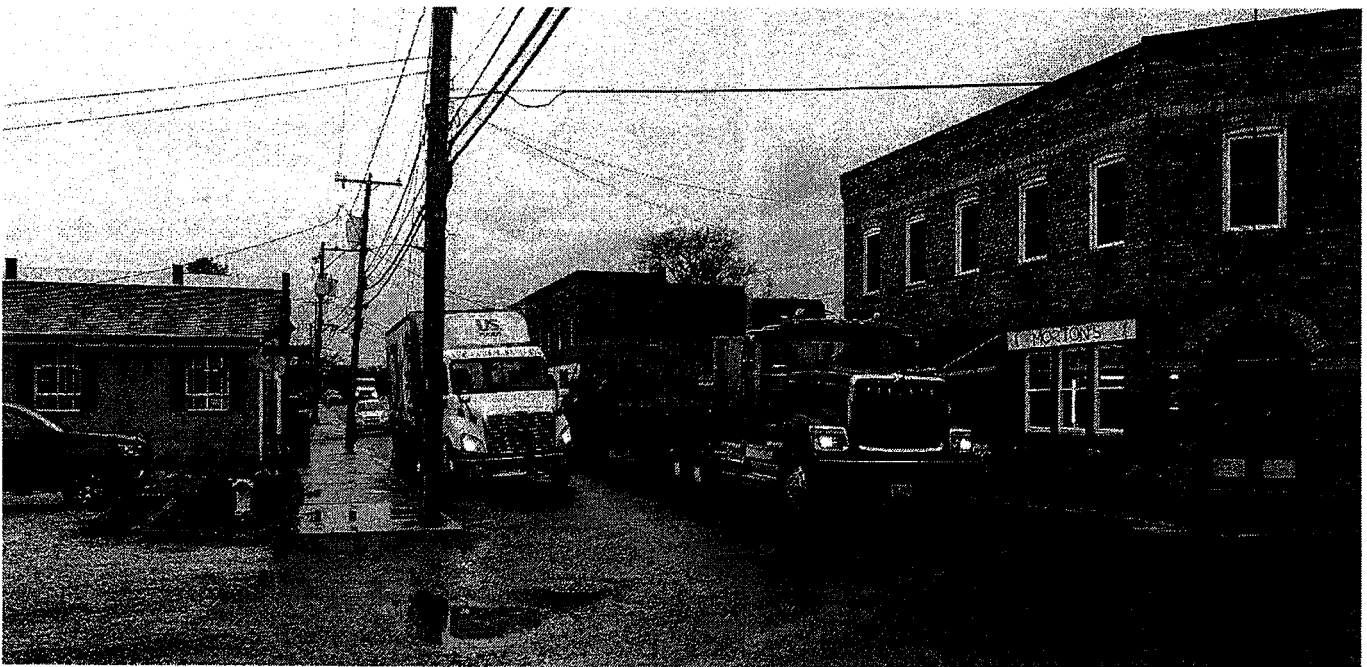


Figure 17. Trucks on Main Street by Lumberyard Entrance

Feasibility of One-Way Approach To Main Street

One of the objectives of this project is to examine the feasibility of converting Main Street and Madison Street into a one-way pair. The objective of the one-way circulation is to enable the transformation of Madison Street into a second Main Street to ideally double the downtown storefront capacity, as well as create space to introduce traffic calming treatments, and to promote multimodal transportation. In order to determine the feasibility of the one-way circulation plan, vehicular reassignment impacts and truck movements were analyzed. **Figure 18** depicts the existing circulation and **Figure 19** depicts the circulation that would occur should E Main Street and E Madison Street be a one-way pair.

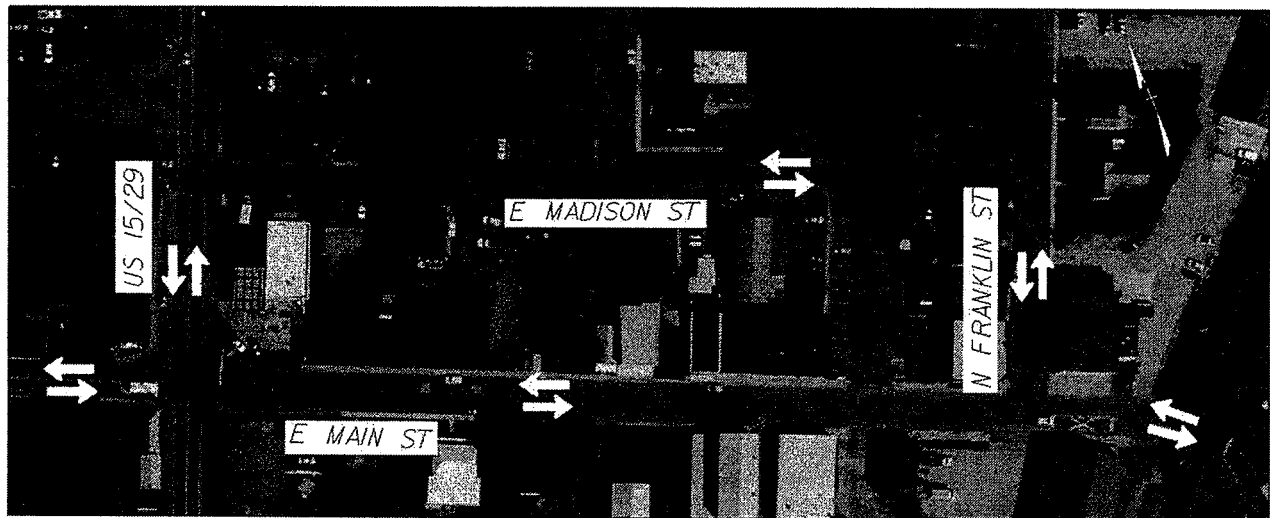


Figure 18. Existing Circulation

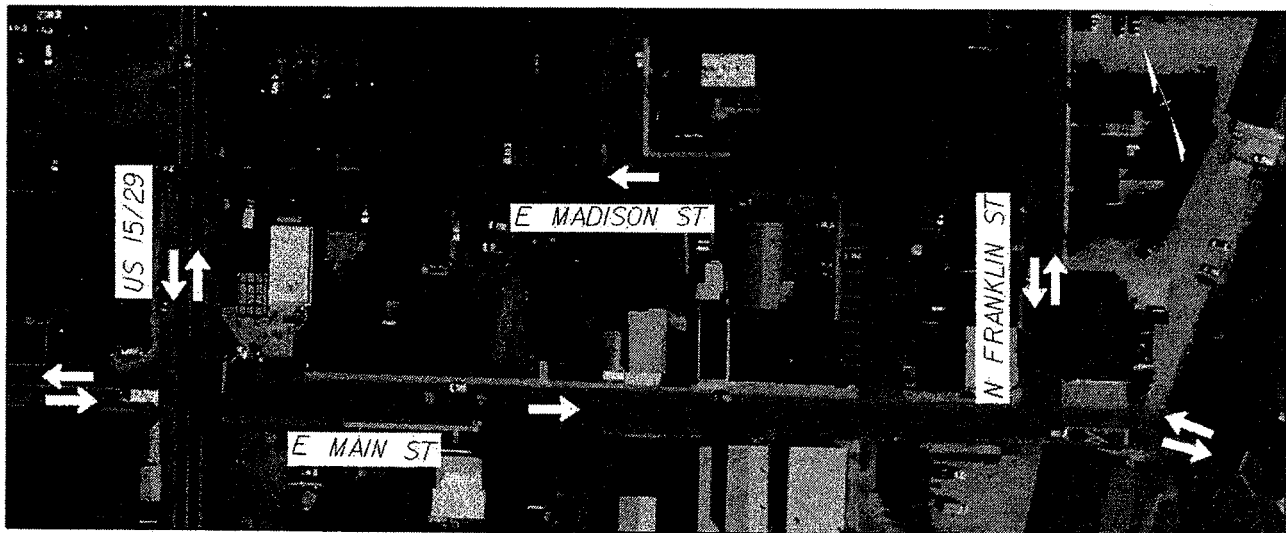


Figure 19. Circulation with One-Way Pair

All drivers currently traveling westbound on Main Street will re-route to a right turn onto Franklin St, a left onto E. Madison Street, a left onto Business 15/29 and a right to continue westbound on Main Street (or the appropriate turning movement on Business 15/29 if they wish to travel north or south on that roadway). The traffic volumes as shown above for the relevant intersections are low enough that there are no expected concerns related to vehicular capacity with the one-way circulation; however, each of these turns on Main Street and Madison Street will introduce a new pedestrian-vehicle conflict for pedestrians traveling along Main Street.

Due to the existing truck movements on Main Street, unless existing local land uses and access and current truck traffic patterns are significantly changed in the future, this new circulation pattern would require intersection design that can accommodate new turning movements for those trucks. The required turn geometry as based on an AutoTurn analysis is discussed in more detail below.

Truck movements through Main Street, as discussed above are a mix of trips that were observed to be local in nature, as well as other trucks which may have more viable alternative routes. Currently Main Street through Remington is not restricted to trucks in any way. VDOT has formal processes for various truck restrictions, which may have varying results for successful removal of trucks through this section and could be pursued by the Town. A more detailed truck movement study considering the wider region beyond the scope of this study may reveal other information on existing truck travel patterns and the potential for reduction of truck traffic on Main Street through Remington.

AutoTurn Analysis

AutoTurn is a Computer-Aided Design (CAD) software used by government agencies and transportation engineering firms to analyze vehicle swept path. An AutoTurn analysis was conducted focusing on the effects on truck movements as a result of a one-way pair on Main Street and Madison Street as discussed above. Based on the truck observations discussed above, a WB-50 truck is used as the basis of the analysis. A WB-50 truck is defined as having two units with a width of 8.5 feet and wheelbases of the two units are 20 and 30 feet with a front overhang of 3 feet. A WB-50 is similar in dimension to the lumber and sod trucks observed in town. In order to accurately capture the very slow movements observed for trucks turning into the lumber yard during the field visit, and to provide a conservative analysis, a 3 MPH design speed was used.

For many of the turns in the new circulation pattern, particularly Business 15/29 onto W Main Street and E Main Street onto N Franklin Street, trucks would be required to encroach into the opposing lane, and use full available roadway widths, approaching very close to existing building corners and sidewalks. Though it is technically possible to make the turns with existing roadway geometry accommodating these truck movements would preclude using corner space or narrowed lanes to provide improved pedestrian facilities and traffic calming, particularly at the intersection of Main Street and Business 15/29 and even with existing geometry may lead to damaged infrastructure at intersections. The encroachment into opposing lanes also introduces a risk of head on and sideswipe collisions, particularly with higher speed traffic on Business 15/29 and vehicles stopped eastbound on Main Street at Business 15/29. The AutoTurn exhibits can be found in **Appendix B**.

Conclusion for One Way Feasibility

The goal of the one-way circulation pattern was to create a more predictable travel pattern on Main Street, help enliven Madison Street, and create space for traffic calming and pedestrian infrastructure on Main Street. The one-way pair would remove the yield street condition on Main Street and help create more traffic on Madison Street. The creation of a one-way pair for E Main Street and E Madison Street would also increase the travel time for most truck drivers, which may in turn deter future truck drivers from using this route as a cut-through and decrease the overall truck traffic within the town limits. However, with existing truck traffic patterns, the one-way circulation plan would preclude the ability to create the desired pedestrian connections and traffic calming. Trucks making multiple turning movements to continue their path east-west through town would require wider

intersections, and with existing roadway widths would also include frequent encroachment into oncoming traffic lanes, creating additional vehicular conflicts. Additionally, an increase in travel time within the town limits would ensure that trucks would remain in the town for a longer duration of time, with subsequent increases in noise and disruption.

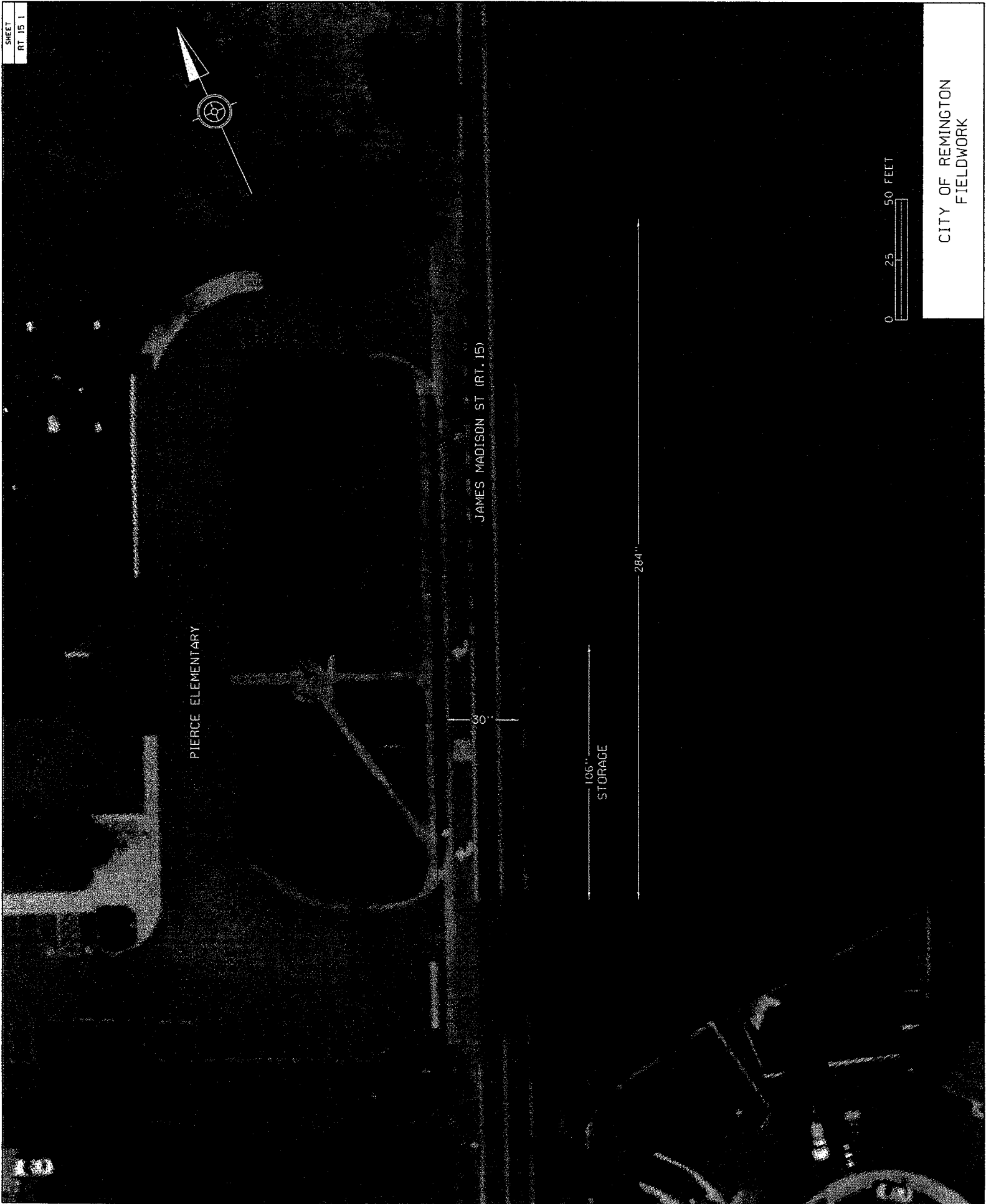
The new turning movements along Main Street also introduces new vehicle-pedestrian conflicts for pedestrians traveling along Main Street, as pedestrians traveling on the northern side of Main Street will now be in conflict with all westbound traffic at Franklin Street and again at Business 15/29.

Based on this analysis, the one-way circulation approach is not feasible without significant changes to existing truck travel patterns and would make it more difficult to achieve the other project goals of improved pedestrian access.

Next Steps

Using this report as a starting point, the study team will identify recommendations for the remaining project objectives of pedestrian accommodations and traffic calming along Main Street and Madison Street, as well as a pedestrian connection along Business 15/29 from Piece Elementary to the Rector Tract and Battlefield Park. These recommendations will be outlined in a subsequent memo, delivered to the City in July 2022.

Appendix A



PIERCE ELEMENTARY

JAMES MADISON ST (RT. 15)

30'

106'
STORAGE

284'



CITY OF REMINGTON
FIELDWORK

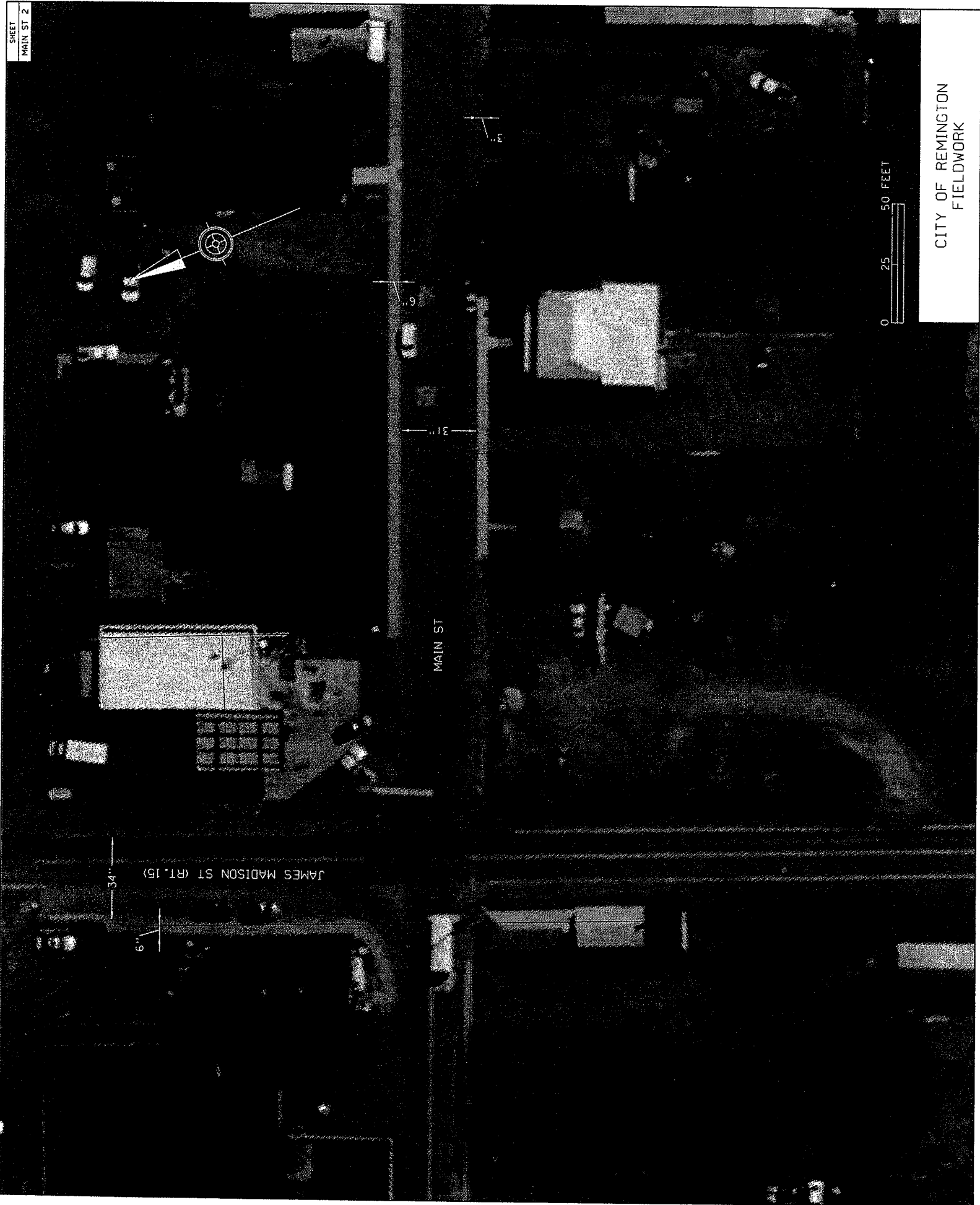


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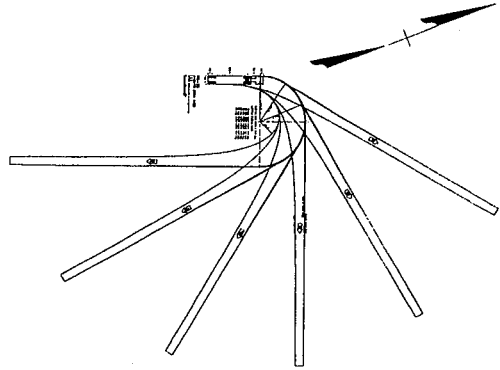
CITY OF REMINGTON
FIELDWORK

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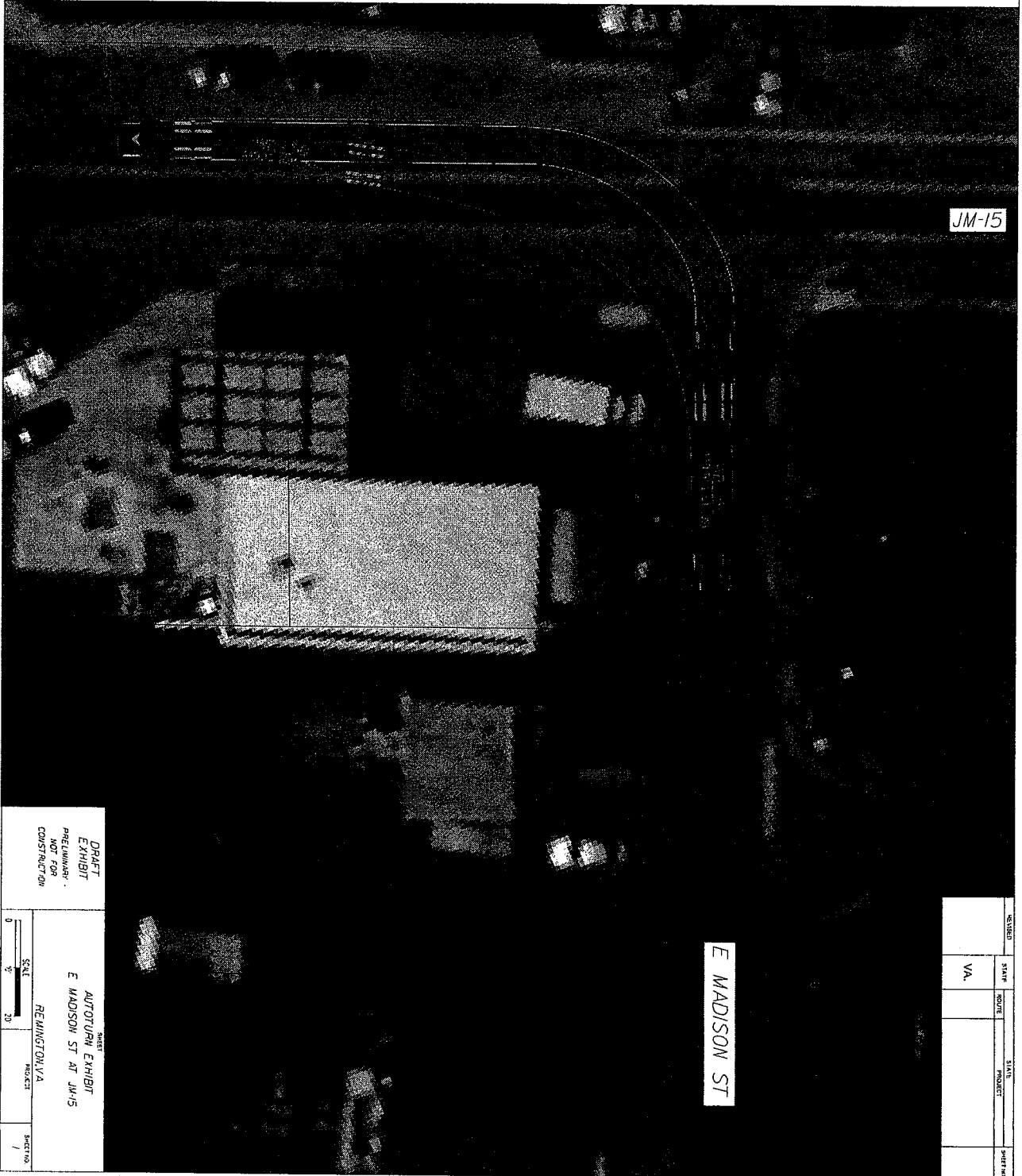
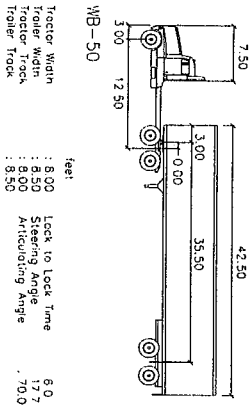
Appendix B

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DATE:
SUBMITTER:
SUBJECT:
SHEET NO.:
SHEET TOTAL:



NOTES:

1. AUTOTURN MOVEMENT SPEED: 3 MPH
2. DESIGN VEHICLE: WB-50



JM-15

E MADISON ST

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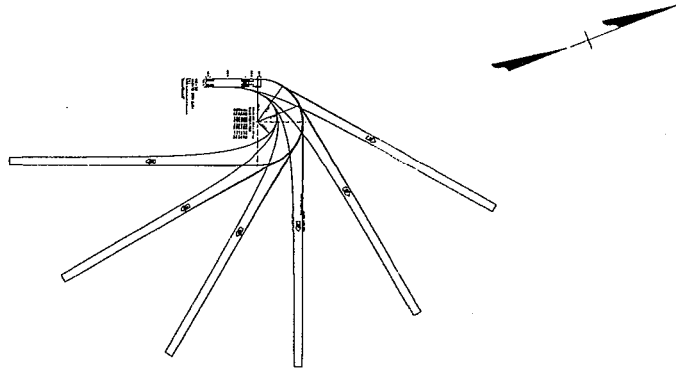
DRAFT
EXHIBIT
PRELIMINARY
NOT FOR
CONSTRUCTION

AUTOTURN EXHIBIT
E MADISON ST AT JM-15
REMANINGTON, VA

SCALE
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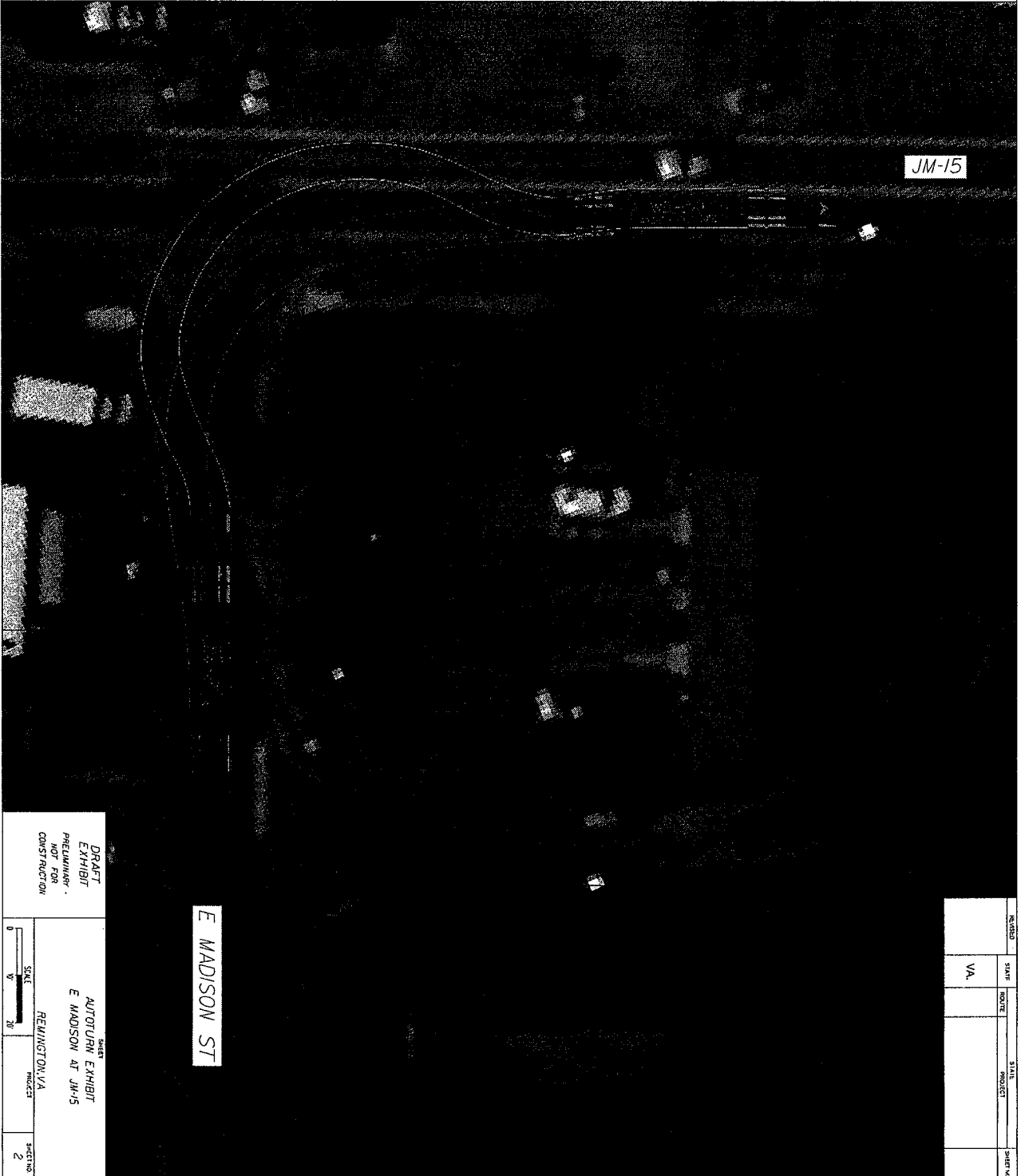
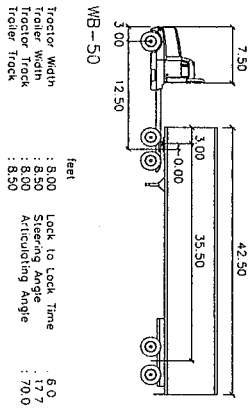
PROJECT NO.
SHEET NO. 1

PROJECT NUMBER:
SHEET NO. B. DATE:
DESIGNED BY:
CHECKED BY:
APPROVED BY:
DATE:



NOTES:

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2. DESIGN VEHICLE: WB-50

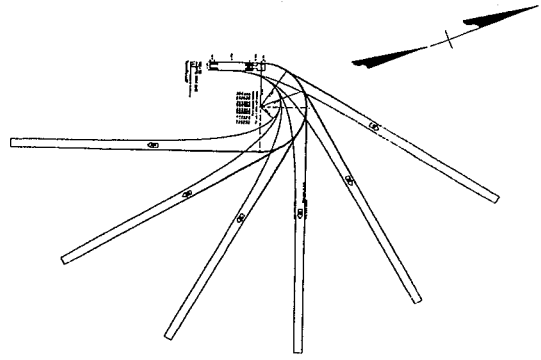


PROJECT	STATE	ROUTE	PROJECT	SHEET NO.
	VA.			

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<p>E MADISON ST REMANOVATION</p>		<p>SECTION 2</p>	

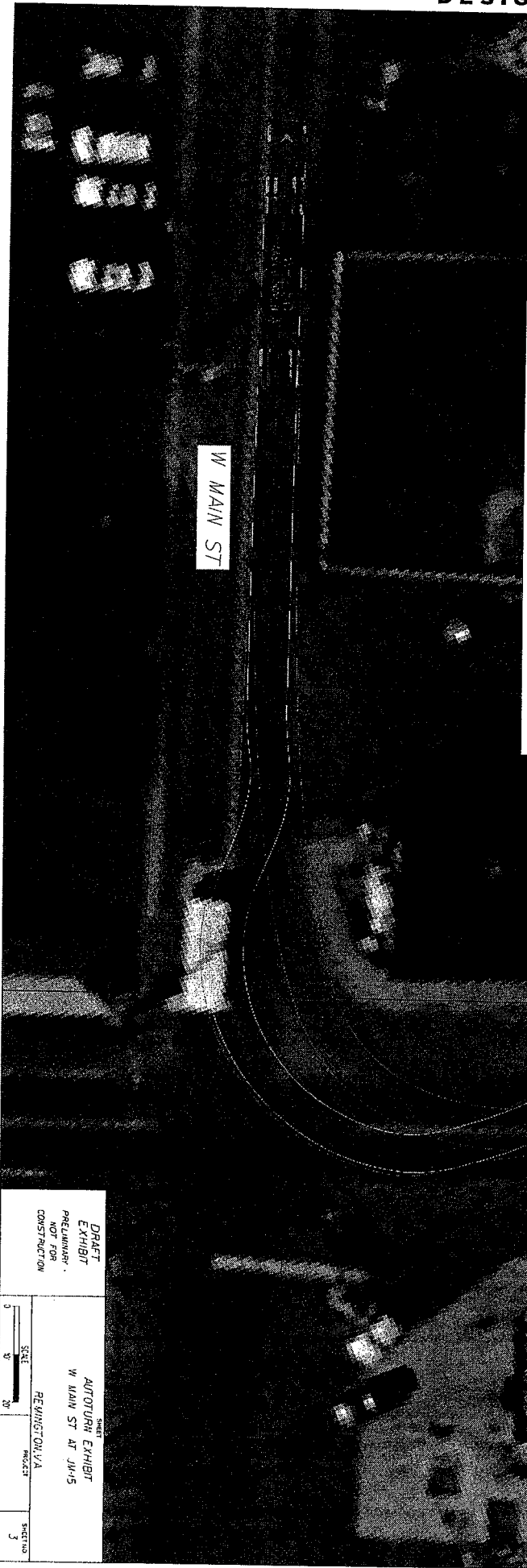
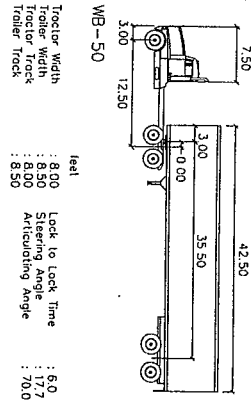
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PROJECT MANAGER
DESIGN BY DATE
SUBMITTAL OFFICE BY DATE



NOTES:

1. AUTOTURN MOVEMENT SPEED: 3 MPH
2. DESIGN VEHICLE: WB-50



DRAFT
EXHIBIT
PRELIMINARY
NOT FOR
CONSTRUCTION

AUTOTURN EXHIBIT
W MAIN ST AT JM-15
REUNION, VA

SCALE
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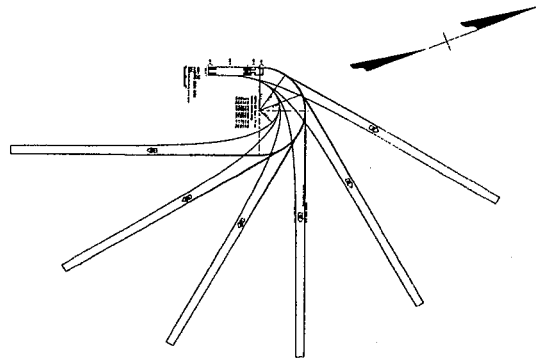
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NO. 1000	DATE	STATE	PROJECT	SHEET NO.
VA				

Author: E. M. M. 2022
Revised: By: M. M. 2022

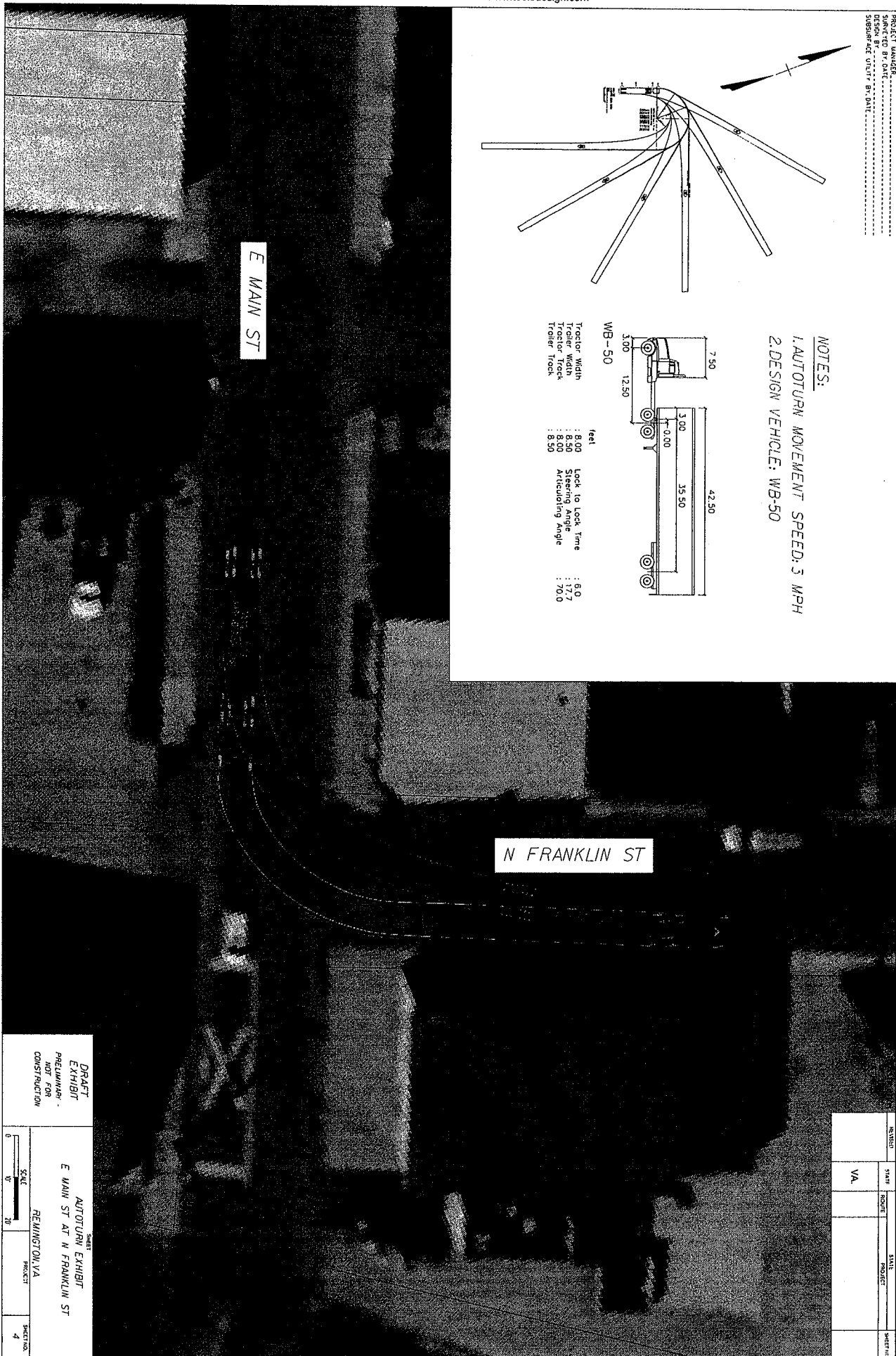
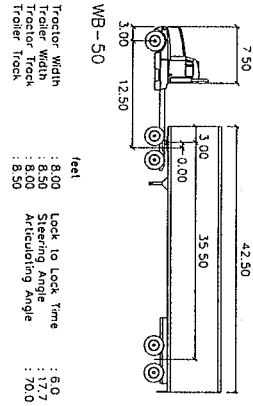
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DESIGNED BY DATE:
SUPERVISOR DATE:
SUPERVISOR NAME:



NOTES:

1. AUTOTURN MOVEMENT SPEED: 3 MPH
2. DESIGN VEHICLE: WB-50



DATE	BY	DATE	BY	DATE	BY
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DRAFT
EXHIBIT
PRELIMINARY
NOT FOR
CONSTRUCTION

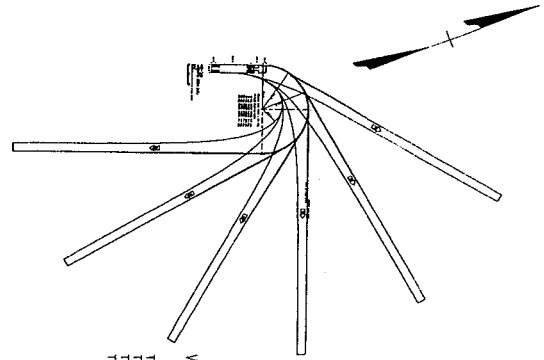
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E MAIN ST AT N FRANKLIN ST
REMINISTON, VA

SCALE
1" = 20'

SECTION
4

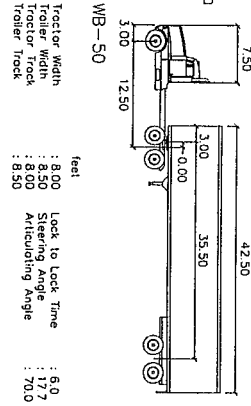
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CHECKED BY: DMT
SURFACE VEHICLE BY: DMT



NOTES:

1. AUTOTURN MOVEMENT SPEED: 3 MPH
2. DESIGN VEHICLE: WB-50



E MAIN ST

N FRANKLIN ST

DRAFT
EXHIBIT
PRELIMINARY -
NOT FOR
CONSTRUCTION

AUTOTURN EXHIBIT
E MAIN ST AT N FRANKLIN ST

REVISION: 1

SCALE: 1" = 20'

PROJECT

SHEET NO. 3

DATE	SCALE	DATE	SCALE	DATE	SCALE
VA					

Autoturn Land Design
Paving the Way

