

December 2025

Ames Avenue Safe Mobility Recovery Plan

MEMO D: ROAD SAFETY ASSESSMENT

NEEDS ASSESSMENT REPORT

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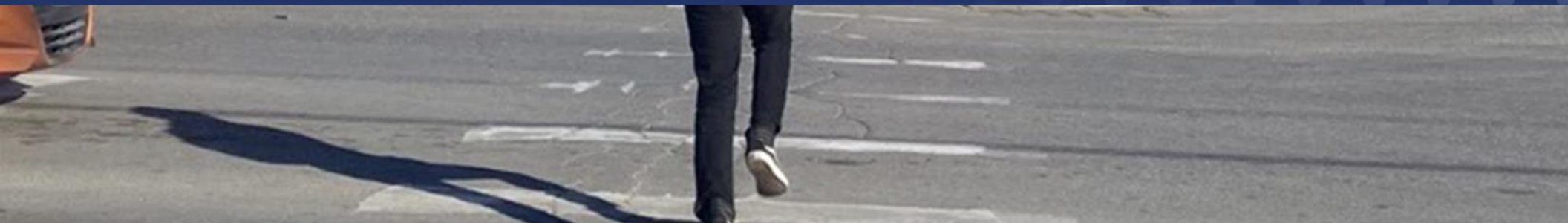


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LIST OF ABBREVIATIONS

CRF	Crash Reduction Factor
CSAP	Comprehensive Safety Action Plan
FHWA	Federal Highway Administration
MAPA	Metropolitan Area Planning Organization
MV	Motor Vehicle
PEL	Planning and Environmental Linkages
RSA	Road Safety Assessment
SSA	Safe System Approach
VRU	Vulnerable Road User (pedestrians and bicyclists)

1.0 INTRODUCTION

This document summarizes the methodology, findings, and resulting recommendations of the Road Safety Assessment (RSA) completed as part of the Ames Avenue Safe Mobility Recovery Plan led by the City of Omaha. This RSA provides a comparative safety analysis of a broad set of potential safety improvement options that will inform the Planning and Environmental Linkages (PEL) study.

The RSA consists of three components:

1. A **risk-based assessment** that evaluates the relative likelihood and potential severity of crashes before they occur, based on site characteristics and design elements in both the existing conditions and in the proposed conditions within each initial alternative.
2. Development of **RSA recommendations**, which are broad planning-level recommendations for potential safety countermeasures that may be appropriate for addressing the safety risks at each study intersection and along each segment. These recommendations will help to inform the development of initial alternatives to be considered in the PEL study.
3. A planning-level **safety benefit-cost analysis** of the RSA recommendations based on the value of their 20-year projected crash reduction potential and the planning-level costs of safety countermeasures for each recommendation.

This RSA is intended to complement the crash data analysis conducted as part of the Crash History Review (Appendix C of the Needs and Road Safety Assessment Report). The RSA of existing conditions and initial stakeholder feedback informed the identification of recommended intersection and segment countermeasures that make up the initial alternatives. The RSA's evaluation framework was then applied to the initial alternatives to provide a relative comparison of the degree to which each concept alternative aligns with the Safe System Approach (SSA) as well as approximate safety benefit-cost comparisons of the concept alternatives.

2.0 RISK-BASED ASSESSMENT

In addition to a comprehensive review of the actual 2017-2024 crash data along Ames Avenue as part of the Crash History Review, the study team conducted a **risk-based assessment** that evaluates the relative likelihood and potential severity of crashes before they occur, based on site characteristics and design elements in both the existing conditions and in the potential future conditions within each initial alternative.

The Ames Avenue RSA's risk-based assessment is adapted from the Federal Highway Administration (FHWA)-developed [Safe System Project-Based Alignment Framework](#) (herein referred to as the "FHWA Framework"). The FHWA Framework provides a comprehensive and user-friendly approach that can be replicated across multiple locations and alternatives. The FHWA Framework is aligned with the SSA's emphasis on integrating *multiple layers* of protection to prevent crashes and to minimize the severity of crashes when they do occur. Designed for infrastructure projects, the FHWA Framework assesses both existing conditions and proposed improvements using a scoring matrix focused on *Exposure*, *Likelihood*, and *Severity* for both vulnerable road users and motor vehicle occupants.

2.1 RISK-BASED ASSESSMENT METHODOLOGY

A custom Excel workbook was created, based on the FHWA Framework, to record quantitative and qualitative observations regarding the roadway characteristics and context of Ames Avenue in its current condition in the Fall of 2025, as well as for the proposed initial alternatives. The workbook is set up to automatically calculate scores, based on the user inputs, for three scoring categories:

- **Exposure** (20 points possible) - factors that increase exposure to relevant conflicts, based on the roadway geometry and user volumes, such as:
 - » Vulnerable road user volumes
 - » Crossing distance
 - » Motor vehicle volumes
 - » Roadway width
- **Likelihood** (30 points possible) - factors that increase the likelihood of a fatal or serious injury crash taking place, such as:

» Lack of physical separation for sidewalks or bike facilities » Lack of separation in time for pedestrian/bike crossings (i.e., signal phasing treatments or other enhanced traffic control such as pedestrian hybrid beacons) » Lack of sufficient lighting » Presence of fixed objects » Permissive left turns » Obstructed sight distance	» Topography that impacts speeds or sight distance » Channelized right turn lanes » Driveways » Lack of physical separation between opposing directions of travel » Right-angle crossing conflicts at intersections » Skewed intersections » Large turn radii » Roadway curvature
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Severity (20 points possible) - factors that increase the potential severity of conflicts, namely the existing operating speeds, and the potential for improvements in the proposed conditions to reduce those speeds.

It is important to note that the *Likelihood* scoring is weighted higher to reflect consistency with the FHWA Framework methodology and to produce overall scores that better reflect differences between existing and proposed conditions.

Based on the scores in these three categories, the workbook calculates an overall score for motor vehicle (MVs) occupants and for vulnerable road users (VRUs), which includes pedestrians and bicyclists. Lower scores represent closer alignment with the SSA than higher scores. The score is multiplicative based on the three scoring categories, meaning the maximum possible score for each mode is 12,000 (20 multiplied by 30 multiplied by 20), and the scores for VRUs and motor vehicle occupants are added together, making a total maximum possible score of 24,000 for each evaluated location and alternative. See **Appendix A** for the scoring key for roadway segments and **Appendix B** for the scoring key for intersections.

The overall scores are intended to provide a relative comparison of different locations along the corridor, as well as to compare the initial alternatives to the existing conditions.

2.1.1 Study Segments and Intersections of Interest

For the Ames Avenue RSA, the segment-based assessment was applied to the six “zones” (**Figure 1**):

- **Zone 1:** N. 72nd Street to N 60th Street
- **Zone 2:** East of N. 60th Street to N 46th Street
- **Zone 3:** East of N. 46th Street to N 40th Street
- **Zone 4:** East of N. 40th Street to N 33rd Street
- **Zone 5:** East of N. 33rd Street to N 26th Street
- **Zone 6:** East of N. 26th Street to Florence Boulevard

Where the roadway cross-sections or characteristics along a single zone change in a way that would result in notable changes in scoring, the zone was split into multiple sub-segments. Overall scores for each zone were then calculated by averaging the scores for each sub-segment within the zone.

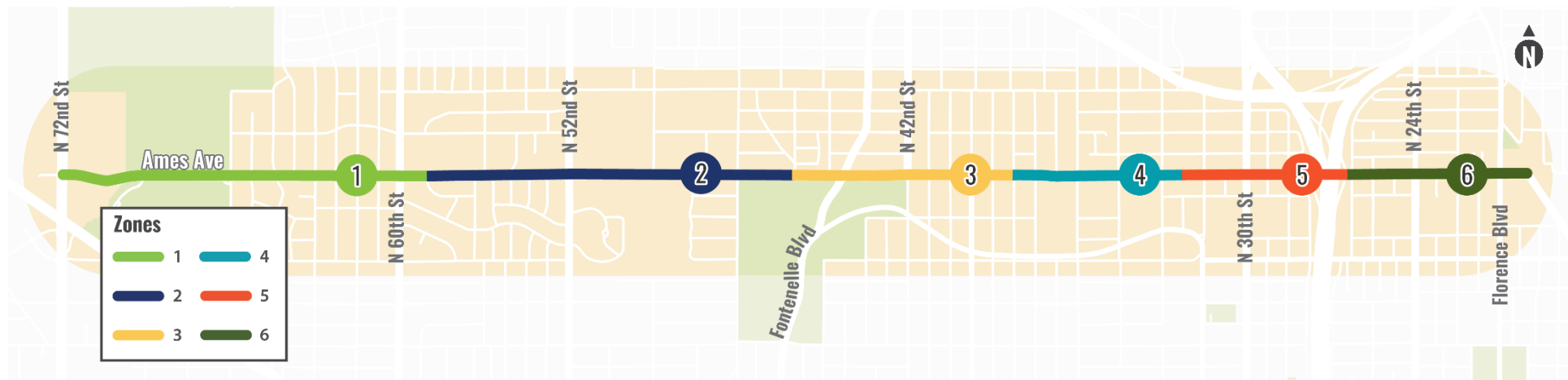


Figure 1: Ames Avenue Corridor Study Segments

The Intersection-based assessment was completed for each of the thirty study Intersections of Interest along the corridor (**Figure 2**).

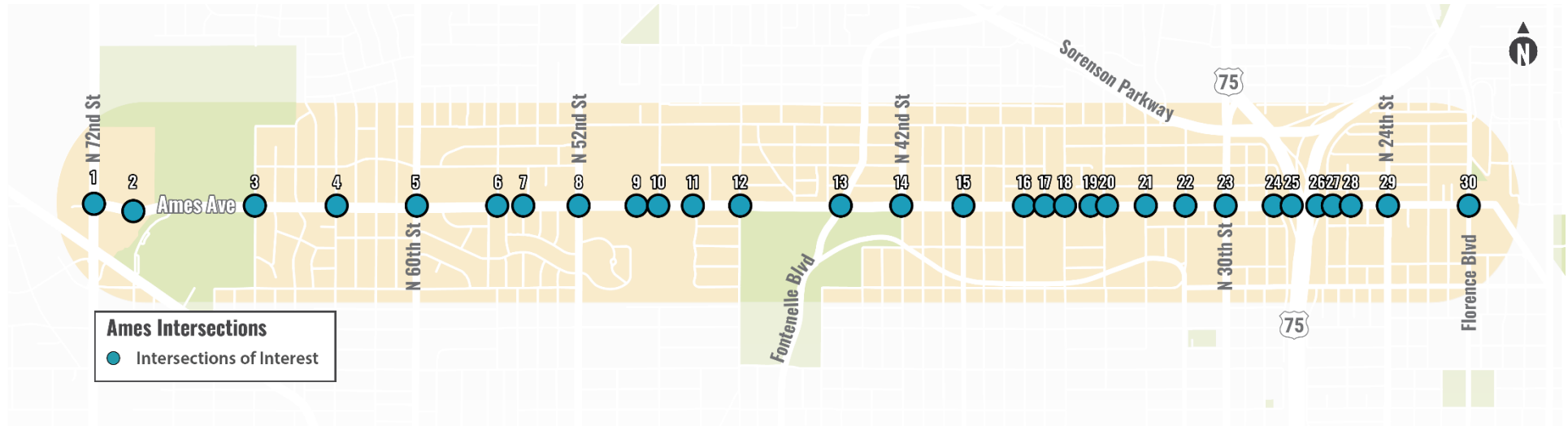


Figure 2: Ames Avenue Corridor Study Intersections of Interest

List of Study Intersections of Interest

- | | |
|---|--|
| 1. N. 72 nd Street & Ames Avenue | 16. N. 37 th Street & Ames Avenue |
| 2. Benson Park Plaza / N. 71 st Street & Ames Avenue | 17. N. 36 th Avenue & Ames Avenue |
| 3. N. 66 th Street & Ames Avenue | 18. N. 36 th Street & Ames Avenue |
| 4. N. 63 rd Street & Ames Avenue | 19. N. 35 th Street & Ames Avenue |
| 5. N. 60 th Street & Ames Avenue | 20. N. 34 th Avenue & Ames Avenue |
| 6. N. 56 th Street & Ames Avenue | 21. N. 33 rd Street & Ames Avenue |
| 7. N. 55 th Street & Ames Avenue | 22. N. 31 st Avenue & Ames Avenue |
| 8. N. 52 nd Street & Ames Avenue | 23. N. 30 th Street & Ames Avenue |
| 9. Walmart Drive & Ames Avenue | 24. N. 28 th Street Ames Avenue |
| 10. N. 50 th Street & Ames Avenue | 25. Southbound North 75 Freeway Ramp & Ames Avenue |
| 11. N. 49 th Avenue & Ames Avenue | 26. Northbound North 75 Freeway Ramp & Ames Avenue |
| 12. N. 48 th Street & Ames Avenue | 27. N. 26 th Street & Ames Avenue |
| 13. Fontenelle Boulevard & Ames Avenue | 28. N. 25 th Avenue & Ames Avenue |
| 14. N. 42 nd Street & Ames Avenue | 29. N. 24 th Street & Ames Avenue |
| 15. N. 40 th Street & Ames Avenue | 30. Florence Boulevard & Ames Avenue |

2.1.2 Changes from the FHWA Framework

To improve the ease of use of the Roadway Safety Risk-Based Assessment Excel tool and establish it as a template for the City's future corridor study efforts, the study team made significant changes to the overall structure and organization, compared to the original FHWA Framework tool. These changes allow the

user to assess and review results for all locations and alternatives for a single corridor within a single Excel workbook without losing the level of detail present in the original framework.

In addition to formatting and organization changes, several changes to the content and scoring weights in the FHWA Framework were made to better align the tool with the context of Ames Avenue and the City of Omaha. Most of the changes alter the risk factor weightings or descriptions, which are a component of the *Likelihood* score, to place greater emphasis on specific risk factors that contribute most significantly to the likelihood of a crash occurring. Taken together, all of the proposed changes are expected to result in a broader range of scores and a better representation of the relative impact of proposed safety countermeasures across alternatives compared to using the original FHWA Framework's calculation methods.

2.2 RISK-BASED ASSESSMENT – ROADWAY SEGMENTS EVALUATION RESULTS

The roadway segment evaluation reveals a wide gap between existing conditions and initial alternatives, in terms of how closely they align with the SSA. On average, the six “zones” along Ames Avenue score 12,228 points out of 24,000 possible points in the Existing/No-Build 2025 conditions. In both the quick-build and long-term initial alternative conditions, the average scores are significantly lower, which indicates closer alignment with the SSA. **Table 1** shows the overall scores across the existing, quick-build, and initial alternatives. The full scoring sheets for roadway segments can be found in **Appendix C**.

Table 1: Risk-Based Assessment Results Summary for Segments

2.2.1 Segment Evaluation Results - Existing / No-Build 2025 Conditions

Table 2 shows the overall segment risk scores for the study zones along Ames Avenue for the Existing / No Build conditions present in 2025 for VRUs and MVs. The evaluation results indicate that, relative to the entire corridor, Zone 4 (east of N. 40th Street to east of N. 33rd Street) and Zone 2 (east of N. 60th Street to east of N. 46th Street) stood out as having conditions least in alignment with the SSA.

Key factors that contribute to the higher (worse) score in these zones include:

- Relatively high traffic and pedestrian volumes contribute to high exposure scores
- Relatively high operating speeds (especially in Zone 2) contribute to high severity scores
- A high density of driveways
- Presence of driveways with obstructed sight distance
- Topography that may affect sight distance and speeds (primarily in Zone 2)
- Narrow, back-of-curb sidewalks (in Zone 4)
- A lack of a median or center turn lane (in Zone 4)

Table 2: Risk-Based Assessment Results Summary for Segments in the Existing/No-Build 2025 Condition

Zone #:	1	2	3	4	5	6
Extents:	N. 72 nd Street to east of N. 60 th Street	East of N. 60 th Street to east of N. 46 th Street	East of N. 46 th Street to east of N. 40 th Street	East of N. 40 th Street to east of N. 33 rd Street	East of N. 33 rd Street to N. 26 th Street	N. 26 th Street to Florence Blvd

Exposure Score (20 pts possible)	VRUs	17	20	19	19	18	12
	MVs	20	20	20	17	18	13
Likelihood Score (30 pts possible)	VRUs	25	25	23	25	25	26
	MVs	8	12	11	25	15	25
Severity Score (20 pts possible)	VRUs	20	20	20	20	20	20
	MVs	15	18	14	12	12	10
VRUs Subtotal		8,500	10,000	8,740	9,500	9,000	6,240
Motor Vehicles Subtotal		2,400	4,320	3,080	5,100	3,240	3,250

2.2.2 Segment Evaluation Results - Quick-Build Concept Conditions

[to be drafted after the quick-build concept for the resurfacing project layout is finalized]

2.2.3 Segment Evaluation Results - Initial Alternative 1 Conditions

[to be drafted after the initial alternatives are developed]

2.2.4 Segment Evaluation Results - Initial Alternative 2 Conditions

[to be drafted after the initial alternatives are developed]

2.3 RISK-BASED ASSESSMENT – INTERSECTIONS EVALUATION RESULTS

The intersection evaluation also reveals a large gap between existing conditions and initial alternatives, in terms of how closely they align with the SSA. On average, the thirty study Intersections of Interest along Ames Avenue score 13,819 points out of 24,000 possible points in the Existing/No-Build 2025 conditions. In both the Quick-Build and long-term Initial Alternatives conditions, the average scores are significantly lower, which indicates closer alignment with the SSA. **Table 3** shows the overall scores across the existing, quick-build, and initial alternatives. The full scoring sheets for the Intersections of Interest can be found in **Appendix D**.

Table 3: Risk-Based Assessment Results Summary for Intersections of Interest

[Table to be included after development of initial alternatives]

2.3.1 Intersection Evaluation Results - Existing / No Build 2025 Conditions

Table 4 and **Table 5** show the risk-based assessment scores for the Intersections of Interest along Ames Avenue for the Existing / No Build conditions present in 2025. **Table 4** includes intersections along the western portion of the corridor (Zones 1, 2, and 3) and **Table 5** shows the intersections along the eastern portion of the corridor (Zones 4, 5, and 6).

Along the western portion of the corridor (from N. 40th Street west), the intersections that stand out as having the five highest (worst) overall scores include the intersections of Ames Avenue with N. 52nd Street, N. 50th Street, N. 55th Street, Fontenelle Boulevard, and N. 63rd Street, respectively. Key factors that contribute to the higher (worse) score at these intersections, when compared to the rest of the study Intersections of Interest, include:

- Relatively high traffic and pedestrian volumes (especially at Fontenelle Boulevard, N. 50th Street, and N. 52nd Street) coupled with a wide roadway, contributing to high Exposure scores
- Higher operating speeds along the western portion of Ames Avenue, contributing to high Severity scores
- Presence of driveways close to the intersection (at N. 52nd Street, N. 55th Street, and N. 63rd Street)
- Topography on minor street approaches that may obstruct sight distance or approach speeds (at N. 63rd Street)
- Other sight obstructions on a minor street approach (south leg of N. 55th Street)
- Large corner radii that allow for higher speed turning movements (especially on the north leg of N. 50th Street and at Fontenelle Boulevard)
- The skewed intersection geometry at Fontenelle Boulevard
- A lack of intersection lighting (at N. 50th Street)
- A general lack of pedestrian crossing treatments or enhancements (all)

Table 4: Risk-Based Assessment Results Summary for Intersections of Interest (West Half of Corridor) in the Existing/No-Build Condition

		Zone 1					Zone 2							Zone 3		
		N. 72 nd Street	N. 71 st Street / Benson Park Plaza	N. 66 th Street	N. 63 rd Street	N. 60 th Street	N. 56 th Street (East)	N. 55 th Street	N. 52 nd Street	N. 51 st Street (Wal-mart)	N. 50 th Street	N. 49 th Avenue	N. 48 th Street	Fonte-nelle Blvd	N. 42 nd Street	N. 40 th
Exposure Score	VRUs	16	20	18	18	18	18	20	20	20	20	18	18	20	18	18
	MVs	20	18	18	18	20	18	18	20	18	18	18	18	20	18	16
Likelihood Score	VRUs	26	25	26	27	25	26	26	26	21	26	24	26	26	26	27
	MVs	18	18	21	21	18	21	21	21	18	21	18	21	21	26	27
Severity Score	VRUs	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	MVs	15	15	15	15	15	15	15	15	15	15	15	15	12	12	12
VRUs Subtotal		8,320	10,000	9,360	9,720	9,000	9,360	10,400	10,400	8,400	10,400	8,640	9,360	10,400	9,360	9,720
MV's Subtotal		5,400	4,860	5,670	5,670	5,400	5,670	5,670	6,300	4,860	5,670	4,860	5,670	5,040	5,616	5,184
Total Score		13,720	14,860	15,030	15,390	14,400	15,030	16,070	16,700	13,260	16,070	13,500	15,030	15,440	14,976	14,904

Along the eastern portion of the corridor (east of N. 40th Street), the intersection of N. 30th Street is an outlier with the worst overall score for this portion of the corridor. Key factors that contribute to the high (poor) score at N. 30th Street, when compared to the rest of the study Intersections of Interest, include:

- High traffic and pedestrian volumes coupled with a relatively wide roadway cross-section, which results in the maximum Exposure score of 20 for both VRUs and Motor Vehicles
- Operating speeds (85th percentile), while lower than the rest of the corridor to the west, still exceed 40 mph along Ames Avenue, contributing to a high Severity score for VRUs.
- Presence of driveways near the intersection on the north, west, and south legs.
- A lack of dedicated left turn signal phasing or flashing yellow arrows for westbound and southbound approaches.

Table 5: Risk-Based Assessment Results Summary for Intersections of Interest (East Half of Corridor) in the Existing/No-Build Condition

		Zone 4						Zone 5					Zone 6			
		N. 37 th Street	N. 36 th Avenue	N. 36 th Street	N. 35 th Street	N. 34 th Avenue	N. 33 rd Street	N. 31 st Avenue	N. 30 th Street	N. 28 th Street	North Freeway SB Ramp	North Freeway NB Ramp	N. 26 th Street	N. 25 th Avenue	N. 24 th Street	Florence Blvd
Exposure Score	VRUs	18	20	20	20	18	18	18	20	16	14	18	18	18	16	12
	MVs	12	16	18	16	14	12	14	20	12	18	16	12	16	16	12
Likelihood Score	VRUs	24	24	24	24	25	25	26	25	24	25	25	27	24	25	27
	MVs	24	21	18	15	26	26	26	21	25	21	21	25	25	25	27
Severity Score	VRUs	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	MVs	12	12	12	12	12	12	12	12	12	12	12	12	12	9	9
VRUs Subtotal		8,640	9,600	9,600	9,600	9,000	9,000	9,360	10,000	7,680	7,000	9,000	9,720	8,640	8,000	6,480
MVs Subtotal		3,456	4,032	3,888	2,880	4,368	3,744	4,368	5,040	3,600	4,536	4,032	3,600	4,800	3,600	2,916
Total Score		12,096	13,632	13,488	12,480	13,368	12,744	13,728	15,040	11,280	11,536	13,032	13,320	13,440	11,600	9,396

In general, the intersections in Zones 1, 2, and 3 (from N. 72nd Street to N. 40th Street) scored worse than intersections in Zones 4, 5, and 6 (east of N. 40th Street). This is largely due to higher *Exposure* and *Severity* scores resulting from higher traffic volumes and speeds and generally wider roadway cross-sections along the western portion of the corridor. When comparing only the *Likelihood* scores, which account for specific design treatments or conditions that may affect the risk of a crash occurring, the reverse is true. Average scores for the Intersections of Interest in Zones 1, 2, and 3 (western zones) are slightly better than for intersections in Zones 4, 5, and 6 (eastern zones). This is especially the case for Motor Vehicles, as the average *Likelihood* score for Intersections of Interest in the western zones is 20.7 out of 30 points, and the average *Likelihood* score for Intersections of Interest in the eastern zones is 23.1 out of 30 points.

2.3.2 Intersection Evaluation Results - Quick-Build Concept Conditions

[to be drafted after the quick-build concept for the resurfacing project layout is finalized]

2.3.3 Intersection Evaluation Results - Initial Alternative 1 Conditions

[to be drafted after the initial alternatives are developed]

2.3.4 Intersection Evaluation Results - Initial Alternative 2 Conditions

[to be drafted after the initial alternatives are developed]

3.0 RSA RECOMMENDATIONS

Based on the corridor Needs Assessment (which included a review of the existing and planned multimodal transportation network, recent crash history, and existing and projected traffic operations along the corridor) and the risk-based assessment component of the RSA, the study team identified safety countermeasures that may be appropriate for addressing the safety risks at each study intersection and along each segment of Ames Avenue.

Potential safety countermeasures were identified based on resources, including:

- Omaha Vision Zero Action Plan
- Metropolitan Area Planning Agency (MAPA) Comprehensive Safety Action Plan (CSAP)
- FHWA Proven Safety Countermeasures
- FHWA PedBikeSafe.org
- FHWA Everyday Counts Initiatives
- FHWA Safe Transportation for Every Pedestrian (STEP)
- FHWA Crash Modification Factor Clearinghouse

Key recommendations of potential safety countermeasures identified through this process are summarized in one-page “Profile Sheets” for each “zone” and each study Intersection of Interest along the corridor. These zone and Intersection profiles also include a high-level summary of the crash history for each location to provide context. These are included in **Appendix E** and **Appendix F**.

A more detailed listing of recommendations identified through the RSA and Needs Assessment process was compiled into an Excel and GIS database that identifies the recommendation’s location, countermeasure type, and a field for optional additional comments or notes about the recommendation. The RSA recommendations list is provided in **Appendix G**. This RSA recommendations database also includes a “toolbox” of each countermeasure type within the recommendations, along with their estimated crash reduction factor (CRF), documentation of which crash types/severities the CRF applies to, and the Crash Modification Factor ID(s) or source for the CRF. This toolbox of countermeasure types is provided in **Appendix H**.

Many locations along the corridor have more than one recommended potential countermeasure, some of which are complementary to one another and some of which are mutually exclusive alternatives. The potential countermeasures and improvement locations that are complementary to one another have been strategically grouped into potential projects or *initial alternatives*.¹

4.0 SAFETY BENEFIT- COST ANALYSIS

To supplement the risk-based assessment, the study team completed a planning-level safety benefit-cost analysis of the initial alternatives.

¹ NOTE: The development of quick-build recommendations for the portion of the corridor east of Fontenelle Boulevard is being expedited to take advantage of the opportunity presented by the planned resurfacing of the east portion of Ames Avenue in 2026. The design of quick-build improvements for this portion of the corridor is occurring as a separate process from the development of initial alternatives described here.

4.1 BENEFIT-COST ANALYSIS METHODOLOGY

The safety-specific guidance in [USDOT's Benefit-Cost Analysis Guidance for Discretionary Grant Programs \(2025 Update II\)](#) was used as a basis for the analysis of the initial alternatives for Ames Avenue.

The calculation of benefits was based on the projected 20-year crash reduction potential of proposed countermeasures identified in the initial alternatives for each intersection and segment location. The benefits calculation is a function of the monetized value of projected reductions in fatalities, injuries, and vehicle property damage based on Table A-1 in the USDOT benefit-cost analysis guidance, using an annual benefits discount rate of 7 percent, as recommended by USDOT.

The study team used the same planning-level costs that were associated with the countermeasures identified in the MAPA CSAP as a starting point. For countermeasure types that are not captured within the MAPA plan, costs are based on comparable projects in the region.

The benefit-cost analysis tool was created in Excel and builds upon the database of recommended improvements developed as part of the RSA Recommendations section of this document.

4.2 BENEFIT-COST ANALYSIS RESULTS

[to be drafted after the initial alternatives are developed]

5.0 CONCLUSION

[Conclusion and key takeaways to be drafted after the risk-based assessment and benefit-cost analysis of initial alternatives is completed]