

APPLICATION FORM FOR

CYCLE 8 HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

DLA-002 (NEW 04/2016)

Page 1 of 10

APPLICATION SUMMARY

This summary page is filled out automatically once the application is completed.

After the application is finalized, please save this PDF form using the exact "Application ID" (shown below) as the file name.

Application ID 04-Oakland-3

Important: Review and follow the [Application Instructions](#) step-by-step as you complete the application. Completing an application without referencing the instructions will likely result in an incomplete application or an application with fatal flaws that will be disqualified from the ranking and selection process.

Submitted By (Agency)

Oakland

Caltrans District

04

Application Number

3

Out of

6

Project Location

35th Avenue from E 12th Street to I-580

Project Description

This project aims to make this corridor safer for pedestrians and all users through corridor-wide crossing enhancements, a protected left turn phase at Foothill Boulevard, and Class II bicycle lanes between International Blvd and E 12th Street.

Countermeasure 1 NS19: Install pedestrian signal or HAWK

Countermeasure 2 NS18: Install pedestrian crossing at uncontrolled locations (with enhanced safety features / curb-extensions)

Countermeasure 3 S6: Provide protected left turn phase (left turn lane already exists)

Total Expected Benefit 33,084,493

Total Project Cost \$2,903,800.00

B/C Ratio (BCR) 11.39

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I. Basic Project Information

Date Aug 12, 2016

Caltrans District 04

MPO MTC

Agency Oakland

County Alameda County

Total number of applications being submitted by your agency

6

Application Number (each application must have a unique number)

3

Contact Person Information

Name (Last, First) Ho, Philip

Position/Title of Contact Person Transportation Engineer

Email pho@oaklandnet.com

Telephone (510) 238-6256

Extension

Address 250 Frank H. Ogawa Plaza, Suite 4344

City Oakland

Zip Code CA 94612

(Enter only a 5-digit number)

Project Information

Project Location

-Be Brief (Limited to 250 Characters)

[-See Instructions](#)

35th Avenue from E 12th Street to I-580

Project Description

-Be Brief (Limited to 250 Characters)

[-See Instructions](#)

This project aims to make this corridor safer for pedestrians and all users through corridor-wide crossing enhancements, a protected left turn phase at Foothill Boulevard, and Class II bicycle lanes between International Blvd and E 12th Street.

Functional Classification Minor Arterial

(For Functional Classification and CRS Maps,
Visit http://www.dot.ca.gov/hq/tsip/hseb/crs_maps/)

CRS Map ID (e.g. 08E14) 05I23

Urban/Rural Area Urban

(Visit <http://earth.dot.ca.gov/>)

High-Risk-Rural-Roads (HR3) Eligibility

No

If this project is not entirely HR3 eligible, what is the approximate total cost percentage that is HR3 eligible? 0%

Work on the State Highway System

Does the project include improvements on the State Highway System?

No

If no, move on to the next page.
If yes, go to the below question.

Is this a jointly-funded project with Caltrans?

No

(Must be jointly-funded if the project is for intersection safety improvement involving SHS.)

☐ If yes, check this box to confirm a formal Letter of Support from Caltrans - District Traffic is attached to the application. The letter should include estimates of cost sharing.☐ If no, check this box to confirm a written correspondence from Caltrans District Traffic is attached to the application. The correspondence should indicate that Caltrans does not see issues that would prevent the proposed project from receiving an encroachment permit.

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Set-asides for Guardrail Upgrades and Crosswalk Enhancements/Pedestrian Countdown Heads

Are you applying for funding set-asides?

1. Set-aside for guardrail upgrades?

No

OR

2. Set-aside for crosswalk enhancements at unsignalized locations and/or pedestrian countdown heads at signalized intersections?

No

If you answer yes to one of the above two questions, no crash data and Benefit/Cost Ratio are needed in Section V. See Instructions for more details about the funding set-asides.

Additional Information

1. Is the project focused primarily on "spot location(s)" or "systemic" improvements?

Systemic

The primary type of the "systemic" improvements:

Pedestrian Countdown Heads/Crossing Upgrades

2. Which of the California's Strategic Highway Safety Plan (SHSP) Challenge Areas does the project address primarily?
(For more information on the SHSP and its Challenge Areas, see: <http://www.dot.ca.gov/SHSP/>)

9: Pedestrians

3. How were the safety needs and potential countermeasures for this project first identified?

Corridor Safety Analysis/Road Safety Assessment

4. What is the primarily mode of travel intended to be benefited by this project?

Pedestrians

5. Approximate percentage of project cost going to improvements related to motorized travel

20 %

6. Approximate percentage of project cost going to improvements related to non-motorized travel

80 %

7. Is the project focused primarily on "Intersection" or "Roadway" improvement?

Roadway

Miles of Roadway

1.6

8. Posted Speed Limit (mph)

30

9. Average Daily Traffic (See Instructions)

ADT (Major Road)

16,242

ADT (Minor Road)

12,639

Year Collected

2000

APPLICATION FORM FOR**CYCLE 8 HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)****II. Narrative Questions (See Instructions)**

These narrative questions are intended to provide additional project details for the application reviewers and project files. The reviewers will use the information in their "fatal flaw" assessment of the applications. Please make sure that:

- 1) The project scope is eligible for HSIP funding;
- 2) The countermeasures used in the B/C ratio calculation are appropriately applied based on the scope of the project;
- 3) The crash data used in the B/C ratio calculation is appropriately applied based on the scope of the project and countermeasures used;
- 4) The application data and attachments are reasonable and meet generally accepted traffic engineering and transportation safety principles

If significant inconsistencies or errors are found in the application information, the reviewers may conclude that the application includes "fatal flaws" and the application will be dropped from further funding considerations. The applicant will not be notified of findings until after the selection process is complete.

1. Overall Identification of Need

Describe how the agency identified the project as one of its top safety priorities. Was a data-driven safety evaluation of their entire roadway network completed? Do the proposed project locations represent some of the agency's highest crash concentrations?

(Limited to 5,000 characters)

This location was identified by City of Oakland staff through a process that identified the intersections with the highest number of collisions in the City that were then packaged into corridors for further analysis. This corridor is not currently the focus of any other project, and yet it carries significant travel volumes due to the fact that it connects several major roadways in East Oakland.

The 35th Avenue Corridor in Oakland has one lane of traffic in each direction with parking along the curbs. It is primarily a residential corridor, although it connects to several schools, including Life Academy and St. Elizabeth High School. AC Transit bus service operates through this corridor. It is characterized by a large number of three-way intersections.

The additional analysis consisted of analyzing the history of collisions in the corridor on an intersection-by-intersection basis, with particular attention paid to collisions that resulted in a fatality and/or a severe injury. Collisions that involved a pedestrian or cyclists were also given additional attention. In fact, collisions that resulted in a fatality and/or a severe injury and collisions that involved a pedestrian or a cyclist were highly correlated (all collisions that resulted in a severe injury involved either a cyclists or a pedestrian).

The proposed project contains some of the City of Oakland's highest crash concentrations. There are eight intersections in the corridor with nine or more collisions recorded over five years (located at International Boulevard, Suter Street, Allendale Avenue, Brookdale Avenue, Davis Street, Salisbury Street, Foothill Boulevard, and E 18th Street). These account for most of the pedestrian and bicycle collisions that occurred in the corridor between 2011 and 2015.

The proposed left turn phase at Foothill Boulevard is in response to the 31 crashes that were recorded at this intersection between 2011 and 2015, including eight broadside collisions and four vehicle-pedestrian collisions.

2. Potential for Proposed Improvements to Address the Safety Issues

Describe the primary causes of the collisions that have occurred within the project limits. Are there patterns in the crash types? Clearly demonstrate the connection between the problem and the proposed countermeasures utilized in the Benefit/Cost Ratio calculations. Depending on the nature of the project, explain why the agency choose to pursue "Spot location(s)" or "Systemic" improvements.

(Limited to 5,000 characters)

Note: Safety improvements that do not have countermeasures and crash reduction factors identified in the Excel Benefit Calculator can be included in the project scope and cost estimate as "Other Safety-Related" improvement; they just won't be added to the project's B/C ratio shown in the application.

There are many causes of collisions in the 35th Avenue Corridor. Nearly every intersection has been the location of collisions caused by unsafe speeds, driving under the influence, right of way violations (by both motorists and pedestrians), traveling on the wrong side of the road, and improper turning.

Installing High-Intensity Activated Crosswalk (HAWK) beacons and Rectangular Rapid Flash Beacons (RRFB) throughout the corridor are among the proposed countermeasures that would reduce these collisions. They would control speeding, make the right of way clearer, and reduce ambiguity regarding what road user has the priority at intersection crossings. The selection of a HAWK or an RRFB was selected carefully, with the benefit/cost ratio in mind. While HAWK beacons are considered to be more effective at reducing collisions, RRFBs are less expensive, in both their initial costs and in their on-going maintenance costs.

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The City of Oakland is proposing systematic improvements in the 35th Avenue corridor given that this is how safety measures can be most effective. In addition, it is the preference of the City of Oakland to carry out roadway improvements through sizable projects rather than small, spot improvements in the interest of project cost-effectiveness.

In addition to the systemic improvements aimed at improving the safety of roadway crossings, two safety-related spot improvements are proposed. The first is the installation of a protected left turn signal phase at the intersection with Foothill Boulevard. This will directly address the collisions that have historically been observed at this intersection, including six collisions caused by turning violations between 2011 and 2015, four collisions caused by traffic signals and signs between 2011 and 2015, and seven collisions caused by automobile right of way violations between 2011 and 2015. It may also be able to reduce collisions caused by unsafe speeds by the likely increase in delay at this intersection that would be created by the new signal phase.

A second spot improvement is proposed between International Boulevard and E 12th Street in the form of bicycle lanes. There were four collisions recorded between 2011 and 2015 that were in the intersection or north of the intersection that involved a bicyclist. The costs are expected to be relatively small given that no additional right of way is needed to install these bicycle lanes.

3. Crash Data Evaluation

What is the source of the crash data? For each countermeasure, describe how the influence areas and the limits of the crash data were established to ensure only appropriate crashes were included in the Collision Summary Report(s), Collision Diagram(s) and B/C calculations.

(Limited to 5,000 characters)

Note: If the project includes multiple locations and multiple countermeasures, group the locations so that within each group, the same countermeasures apply to all locations and their crash data. Describe the location groups. (These location groups must be consistent with the grouping in using the Excel Benefit Calculator.)

The crash data are from the Statewide Integrated Traffic Records System (SWITRS). This is a database of recorded roadway collisions that contains information about collision location, time of day, age of parties, vehicle type, collision type, collision location, location date, and other items that could be useful in the analysis of collisions.

The proposed HAWKs and RRFBs have been incorporated systematically throughout the corridor in line with the City of Oakland's Crosswalk Policy, in accordance with HAWK warrants, and in an attempt to balance the greater collision-reduction benefits of HAWKs compared to RRFBs with their greater maintenance costs. The result is 10 HAWKs and RRFBs, or a countermeasure every 850 feet. Because they have been proposed in a way that serves the corridor as a whole, all pedestrian and bicycle crashes recorded in this corridor are considered to be in the influence area of these countermeasures.

A proposed protected left turn signal phase is proposed at 35th Avenue and Foothill Boulevard. The left turn phase's influence area is assumed to be the entire intersection, including movements from all directions and all users.

A proposed bicycle lane between International Boulevard and E 12th Street would aim to address collisions involving bicycles traveling in a north-south direction through the International Boulevard and E 35th Avenue intersection.

4. Prior Attempts to Address the Safety Issue

List all other projects/countermeasures that have been (or are being) deployed at this location. Applicants must identify all federal funds that have been used or approved within or directly adjacent to the proposed project limits within the last 5 years. (HSIP funding cannot be used to construct the same general type of countermeasures within the same limits within 5 years to ensure agencies do not apply the same Crash Reduction Factors to the same crashes.)

For projects proposing high cost improvements/countermeasures such as shoulder widening and horizontal/vertical realignments, applicants must document that they have installed and monitored low-cost improvements which have not adequately addressed the safety issue ("incremental approach").

(Limited to 5,000 characters)

No existing or planned federally funded countermeasures have been identified in the corridor. Some countermeasures already exist in the corridor in the form of pedestrian signal countdown heads and mast arms. The East Bay BRT project which is being built on International Boulevard is impacting the intersection of International Boulevard and E 35th Avenue and is federally funded.

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Application ID 04-Oakland-3

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APPLICATION FORM FOR**CYCLE 8 HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)****III. Project Cost Estimate****Important:** Please review Appendix A of the [Application Form Instructions](#) before you start this section.**1. Construction Cost**

The first step is to estimate the project construction cost by using the provided Excel template "Detailed Engineer's Estimate and Cost Breakdown by Countermeasure". Enter the results from the construction cost estimate below.

Total Construction Cost	\$1,939,800	Maximum "HSIP/Total" Percentage (e.g. Enter 90 for 90%)	90
Cost Breakdown (%) (e.g. enter 20 for 20%. Total is 100.)			
CM #1	42	CM #2	27
CM #3	23	Other Safety-Related Costs	0
		Non Safety-Related Costs	8

2. Project Costs - All Phases

Then project costs of all phases must be accounted for, even if substantial elements of the overall project are to be funded by other sources.

Shaded fields are calculated (read only). Round all costs up to the nearest hundred dollars. Once all costs and the desired HSIP/Total ratios are entered, click "Check Cost Estimate" to perform validation. If errors are detected, they will appear below the button. Click it to check again each time when the costs have been revised.

Phase		Total Cost	HSIP/Total (%)	HSIP Funds	Local/Other Funds
Preliminary Engineering	Environmental	\$97,000	90 (%)	\$87,300	\$9,700
	PS&E	\$387,000	90 (%)	\$348,300	\$38,700
	PE Subtotal	\$484,000		\$435,600	\$48,400
<input type="checkbox"/> Agency does NOT request HSIP funds for PE Phase (automatically checked if PE - HSIP funds is \$0).					
Right of Way	Right of Way Engineering	\$90,000	90 (%)	\$81,000	\$9,000
	Appraisals, Acquisitions & Utilities	\$100,000	90 (%)	\$90,000	\$10,000
	ROW Subtotal	\$190,000		\$171,000	\$19,000
Construction Engineering & Construction	Construction Engineering	\$290,000	90 (%)	\$261,000	\$29,000
	Construction	\$1,939,800	90 (%)	\$1,745,820	\$193,980
	(Read Only - From "1" above - "Total Construction Cost")				
	CON Subtotal	\$2,229,800		\$2,006,820	\$222,980
Total Cost		\$2,903,800	90 (%)	\$2,613,420	\$290,380

Click to Check Cost Estimate (See Notes in Instructions)

No errors have been found in the cost estimate.

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IV. Benefit/Cost Ratio Calculation**Important: Please review Appendix A of the Application Form Instructions before you start this section.**

This section is utilized to calculate the Benefit/Cost (B/C) Ratio (BCR) of the project. Prior to this calculation, applicants are required to complete the following:

1. Use the Excel "Detailed Engineer's Estimate and Cost Breakdown by Countermeasure" template and Section III (Project Cost Estimate) of this application form to complete the construction cost estimate and the overall project cost estimate; and
2. Use the Excel "Benefit Calculator" to calculate the benefits of the safety countermeasures (the final printouts of the benefit calculation results must be provided as one of the application attachments).

1. Project Cost

Read Only - From Section III (Project Cost Estimate)

Total Project Cost \$2,903,800

Cost Breakdown (%. Total is 100.)

 CM #1 42 CM #2 27 CM #3 23 Other Safety-Related Costs 0 Non Safety-Related Costs 8 **Total: 100%**
2. Countermeasures and BenefitsEnter the Exact Data from the Excel "Benefit Calculator" Results

Crash Data Period: from 1/1/2011 to 12/31/2015

Number of Countermeasures Utilized (Max 3) 3

Countermeasures**Life Benefit (\$)**

#1	NS19: Install pedestrian signal or HAWK	\$27,631,780
#2	NS18: Install pedestrian crossing at uncontrolled locations (with enhanced safety features / curb-extensi	\$3,026,673
#3	S6: Provide protected left turn phase (left turn lane already exists)	\$2,426,040

3. BCR Calculation

	Life Benefit	Expected Cost	Resulting BCR
Countermeasure #1	\$27,631,780	\$1,325,648	20.84
Countermeasure #2	\$3,026,673	\$852,202	3.55
Countermeasure #3	\$2,426,040	\$725,950	3.34
Project's Total (Overall)	\$33,084,493	\$2,903,800	11.39

(Project BCR Used in Ranking)

APPLICATION FORM FOR**CYCLE 8 HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)****V. Implementation Schedule (See Instructions)**

The local agency is expected to deliver the project per Caltrans Local Assistance [Safety Program Delivery requirements](#). In order for the milestones to be calculated correctly, all fields needs to be filled in. For steps that are not applicable, enter "0".

Target Date for the Project's Amendment into the FTIP:

01/01/2017

Time for agency to internally staff project and request PE authorization

4

Month(s)

Typical Time for Caltrans and FHWA to process and approve PE authorization

2

Month(s)

Proposed PE Authorization Date:

07/02/2017

(PE Authorization
Delivery Milestone)

Will external consultants be required to complete the PE phase of this project?

Yes

Additional time needed to the Delivery Process for hiring PE consultant(s)

6

Month(s) (0 - 6)

Time to prepare environmental studies request

1

Month(s)

Time to complete CEQA/NEPA studies/approvals

2

Month(s)

See PES Form in the LAPM for Typical studies and permits

Time to complete the Right of Way Acquisition (federal process)

1

Month(s)

Plan on 18 months minimum for federal process including a condemnation

Time to complete final PS&E documentation

6

Month(s)

Other

0

Month(s)

Expected Completion Date for the PE Phase:

10/31/2018

Time for agency to request CON authorization

2

Month(s)

Typical Time for Caltrans and FHWA to process and approve CON authorization

3

Month(s)

Proposed CON Authorization Date:

04/01/2019

(CON Authorization
Delivery Milestone)

Time included for the agency's workload-leveling or construction-window needs

1

Month(s)

Time to award contract with CON contractor (following the federal process, including Board/Council approval, advertise, award, execute and mobilize)

6

Month(s)

Time to complete construction

6

Month(s)

Time included for closing the CON contract

6

Month(s)

Other

0

Month(s)

Expected Completion Date for the CON Phase:

10/29/2020

Time to complete the project close-out process

3

Month(s)

Typical Time for Caltrans and FHWA to process and approve project close-out

3

Month(s)

Expected Completion Date for the project Close-Out:

04/29/2021

(Close-Out Delivery Milestone)

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VI. Application Attachments (See Instructions)

Check All Attachments Included in this Application

- ☒ Engineer's Checklist (Required)
- ☒ Vicinity map/Location map (Required)
- ☒ Project maps/plans showing existing and proposed conditions (Required)
- ☒ Pictures of Existing Condition (Required)
- ☒ Collision diagram(s) (Required)
- ☒ Collision List(s) (Required)
- ☒ Collision Summary/Summaries (Required)
- ☒ Detailed Engineer's Estimate (Required)
- ☒ Excel Benefit Calculator Printout(s) (Required)
- ☒ Warrant studies (Required when applicable)
- ☐ Letter/email of Support from Caltrans (Required when applicable)
- ☒ Additional narration, documentation, letters of support, etc. (Optional)

ADA Notice

For individuals with sensory disabilities, this document is available in alternate formats. For alternate format information, contact the Forms Management Unit at (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

Cycle 8 HSIP Application – Engineer's Checklist

This application checklist is to be used by the engineer in "responsible charge" of the preparation of this HSIP application to ensure all of the primary elements of the application are included and the application is free of errors in the calculation of the Benefit/Cost Ratio (BCR); allowing the application to be accurately ranked in the statewide selection process. Applications with errors in the supporting data for the BCR calculation will not be considered in the application process.

Special Considerations for Engineers before they Sign and Stamp this document attesting to the accuracy of the application:

Chapter 7; Article 3; Section 6735 of the Professional Engineer's Act of the State of California requires engineering calculation(s) or report(s) be either prepared by or under the responsible charge of a licensed civil engineer. Since the corresponding HSIP application defines the scope of work of a future civil construction project and requires complex engineering principles and calculations which are based on the best data available at the time of the application, the application must be signed and stamped by a licensed civil engineer. By signing and stamping this document, the engineer is attesting to this application's technical information and engineering data upon which local agency's recommendations, conclusions, and decisions are made. This action is governed by the Professional Engineer's Act and the corresponding Code of Professional Conduct, under Sections 6775 and 6735.

The following checklist is to be completed by the engineer in "responsible charge" based on the final application and application attachments – as submitted to Caltrans. The engineer's initials and stamp should not be placed until the application is complete and in final form.

1. **Vicinity map /Location map** Engineer's Initials: PH
 - a. The project limits must be clearly depicted in relationship to the overall agency boundary
2. **Project layout-plan** showing existing and proposed conditions must: Engineer's Initials: PH
 - a. Be to a scale which allows the visual verification of the overall project limits and the "construction" limits of each safety countermeasure included in the application's BCR
 - b. Show the full scope of the proposed project, including any non-safety construction items
 - c. Show the "Influence Area" for each safety countermeasure (CM) included in the application's BCR
 - d. Show all changes to existing lane and shoulder widths. Label the proposed widths
 - e. Show limits of all roadway excavation/demolition
 - f. Show agency's right of way (ROW) lines. (Also show Caltrans', Railroad, and all other government agencies)
3. **Project cross-section** showing existing and proposed conditions. Engineer's Initials: PH

(Only required for projects with roadway excavation, cut/fill slopes, and changes to lane widths)

 - a. Show and dimension: changes, ROW lines, safety countermeasures, etc.
4. **Countermeasure Selection** (used throughout the application): Engineer's Initials: PH
 - a. The CMs used are appropriate and reasonable based specifically on the guidance in the HSIP call-for-projects guidelines and application instructions, including Appendix B of the Local Roadway Safety Manual.
5. **Crash Data** used in the BCR calculations must be: * Engineer's Initials: PH
 - a. From a reliable and well documented source
 - b. Within influence area of CM and applied to CMs using generally accepted traffic engineering principles
(Example: If the CM only addresses the northbound lanes of a divided roadway, then southbound crashes should be excluded.)
 - c. Accurately shown in collision diagram(s) and collision lists(s) attached to this application.
 - d. Crashes are presented in terms of the number of crashes (**not** the number of injuries and fatalities)
 - e. The most recent crash data available and a minimum 3 years and maximum 5 years of data

6. **Collision Diagram(s)** (Shown separately or combined) * **Engineer's Initials:** PH.
- a. Should be to scale with crash locations accurately plotted
 - b. Reveals collision pattern(s) necessary to justify CM(s)
 - c. The influence area for each CM is shown separately on the diagrams (unless the areas are identical)
 - d. All crashes, included in the BCR Calculation, must be clearly shown within the influence area of that CM
 - e. Totals for each Location and/or CM are shown with crashes segregated based on Crash Severity
 - f. The totals shown match the totals shown in the Collision List and Collision Summary
7. **Collision List(s)** (Shown separately or combined) * **Engineer's Initials:** PH.
- a. Totals for each Location and/or CM are shown with crashes segregated based on Crash Severity
 - b. If the List(s) includes crashes that were not appropriate to include in the project BCR calculations, these crashes must be crossed through or removed and not included in the totals
 - c. The totals shown match the totals shown in the Collision Diagram and Collision Summary
 - d. Each crash is only counted as one, even if there were multiple victims and/or vehicles involved
8. **Collision Data Summary/Summaries (HSIP Form in Excel)** * **Engineer's Initials:** PH.
- a. Totals for each Location are shown with crashes segregated based on Crash Severity
 - b. The totals for each Location/ match the totals shown in the Collision Diagram and Collision List
 - c. One Collision Data Summary is needed for each benefit calculation run. The totals at the bottom of the form match the totals in the Crash Data Table in the benefit calculation run.
9. **Detailed Engineer's Estimate (HSIP Form in Excel)** **Engineer's Initials:** PH.
- a. All likely construction costs associated with the project are identified and included in the estimate
 - b. Each of the main project elements are broken out into separate construction items. The costs for each item are based on calculated quantities and appropriate corresponding unit costs
 - c. Costs for each item are distributed between CMs using a logical method to fairly calculate each CM's cost
 - d. Each CM included in the BCR calculation must represent a minimum of 15% of the construction costs *
 - e. "Other Safety" and "Non-Safety" construction items/costs are identified and properly accounted for
 - f. The total construction cost in the estimate must match the "Construction" cost in Section III of the application
10. **Benefit Results and Benefit Summary (Excel Benefit Calculator)** * **Engineer's Initials:** PH.
- a. Project locations are grouped appropriately per Appendix A of the application form instructions
 - b. For each of the benefit calculation run, the CMs and crash data shown match the totals shown in the corresponding Collision Data Summary
 - c. The calculation sheets from all benefit calculation runs must be signed by the Engineer in Responsible Charge and attached to the application
 - d. When multiple benefit calculation runs are utilized in a project, the results of all runs are summarized in the Benefit Summary sheet which is also attached to the application
11. **Benefit/Cost Ratio (BCR) Calculation (Section IV of the application form)** * **Engineer's Initials:** PH.
- a. The CMs, the crash data period and the benefits by CM shown match the output of the Excel Benefit Calculator / Benefit Summary sheet
 - b. The total project cost in the BCR calculation must match the total project cost in Section III of the application
12. **Warrant studies/guidance (Check if not applicable)** **Engineer's Initials:** PH.
- ☐ N/A a. Traffic Signal Warrants – Warrant 4, 5 or 7 met (CA MUTCD): Signal warrants must be documented as having been met based on the CA MUTCD.

13. Additional narration, documentation, letters of support:**Engineer's Initials:** PH

- a. The text in the "Narrative Questions" in the application is consistent with and supports the engineering logic and calculations used in the development of the application's BCR
- b. When needed, clarify non-standard application of countermeasures, crashes and/or costs; appropriate documentation is attached to the application to document the engineering decisions and calculations


** Not required if the project is applying for set-aside funds.*

Licensed Engineer:

Name: Philip Ho

Title: Transportation Engineer

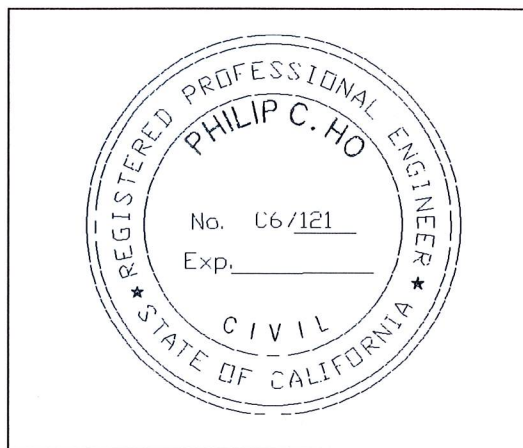
Engineer License Number C67121

Signature: 

Date: August 1, 2016

Email: pho@oaklandnet.com

Phone: (510) 238-6256

Engineer's Stamp:

To ensure the application's quality and the agency's commitment to deliver the safety project in an expedited manner, the application must be signed by the Agency's Transportation/Traffic Engineering Manager.


By signing this application, the manager is attesting to:

1. All data in the application is accurate and represents the total scope of the planned project;
2. The agency understands the Project Delivery Requirements for the HSIP Program and is prepared to deliver the project per these requirements; and
3. The agency understands if Caltrans staff determine that any of the above requirements are not met, or data is inaccurate, or the application fails to meet the program guidelines and application instructions, the application will be rejected and will not be eligible to receive federal safety funding. Due to time constraints in the evaluation process, applicants will not be notified until after the selection process is complete. Refer to Application Form Instructions for more information.

Transportation Manager:

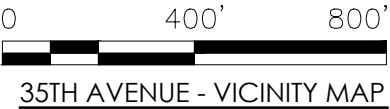
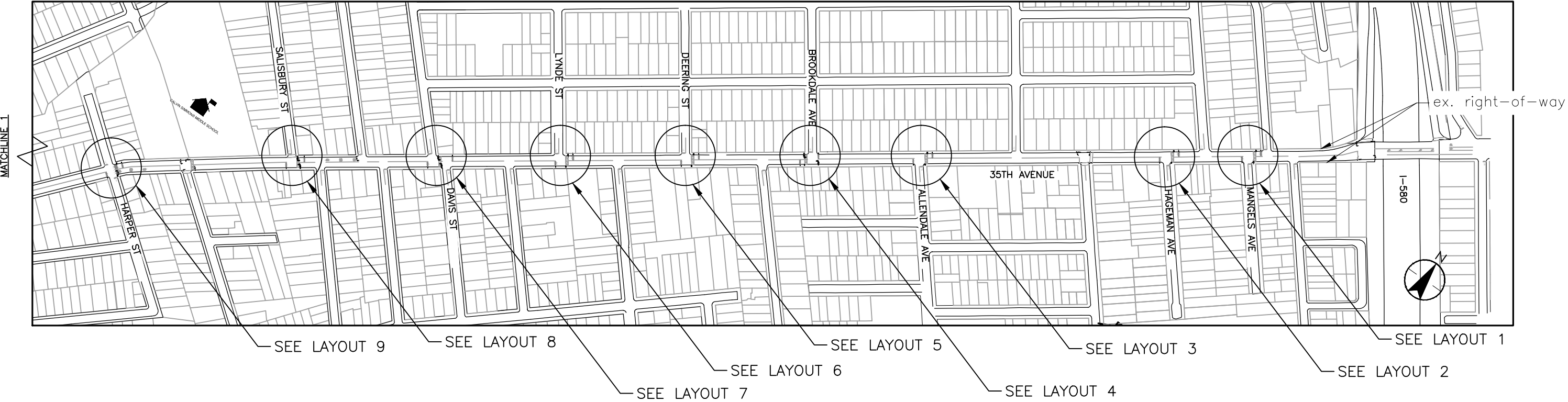
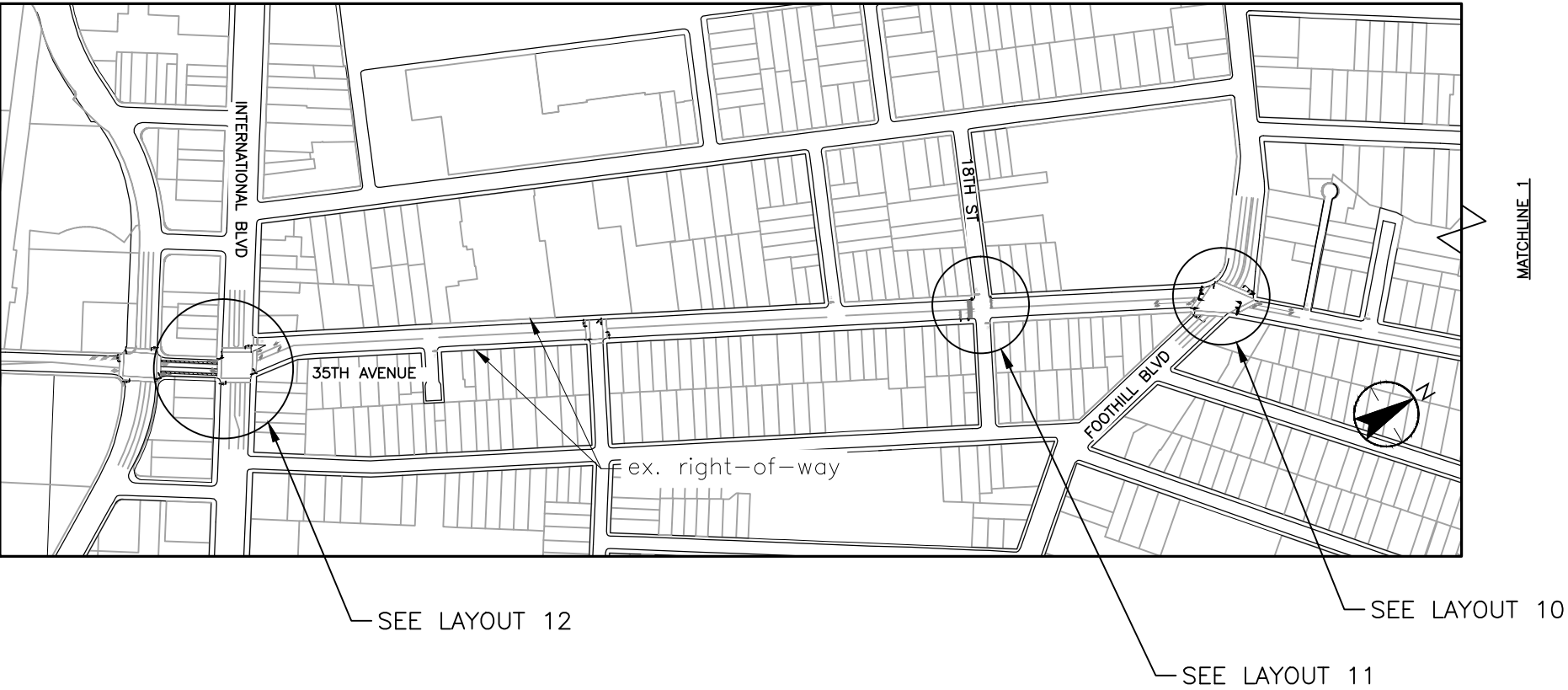
Name: Wladimir Wlassowsky

Title: Transportation Services Division Manager

Signature: 

Date: August 12, 2016

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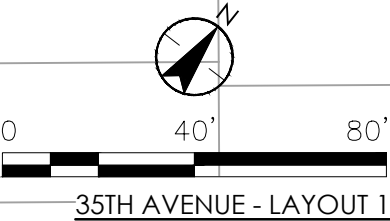
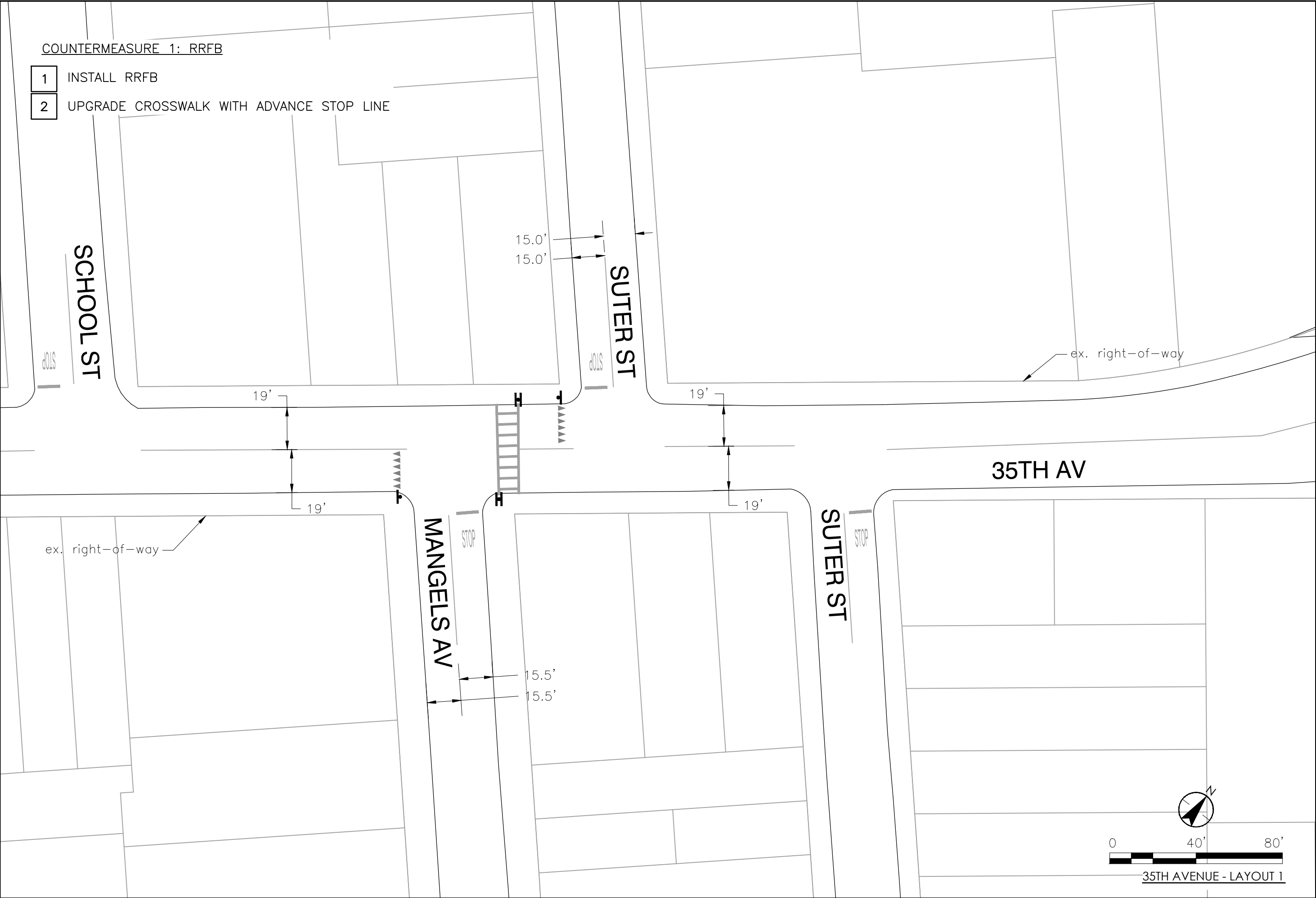


COUNTERMEASURE 1: RRFB

- 1

INSTALL RRFB
- 2

UPGRADE CROSSWALK WITH ADVANCE STOP LINE

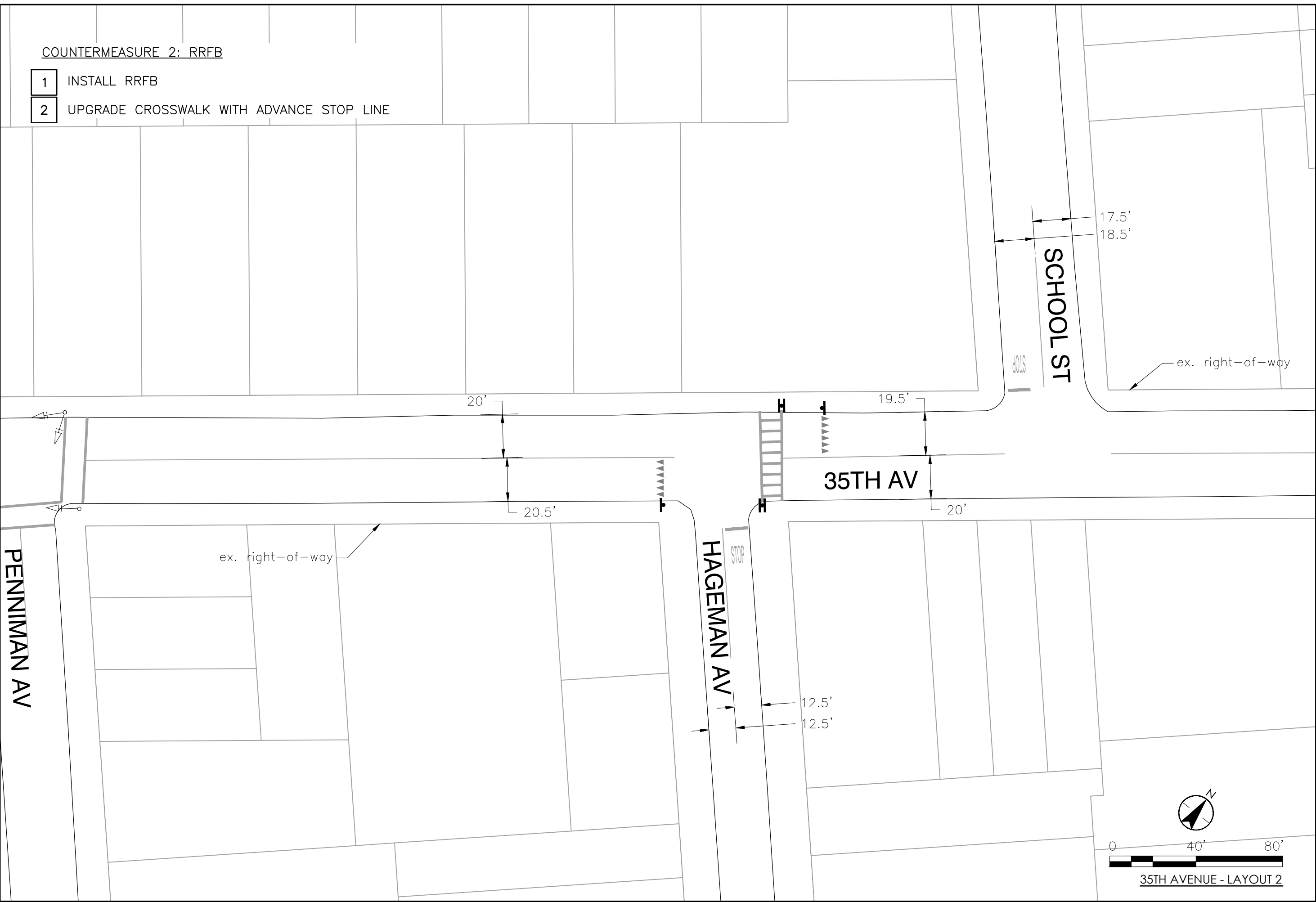


COUNTERMEASURE 2: RRFB

- 1

INSTALL RRFB
- 2

UPGRADE CROSSWALK WITH ADVANCE STOP LINE



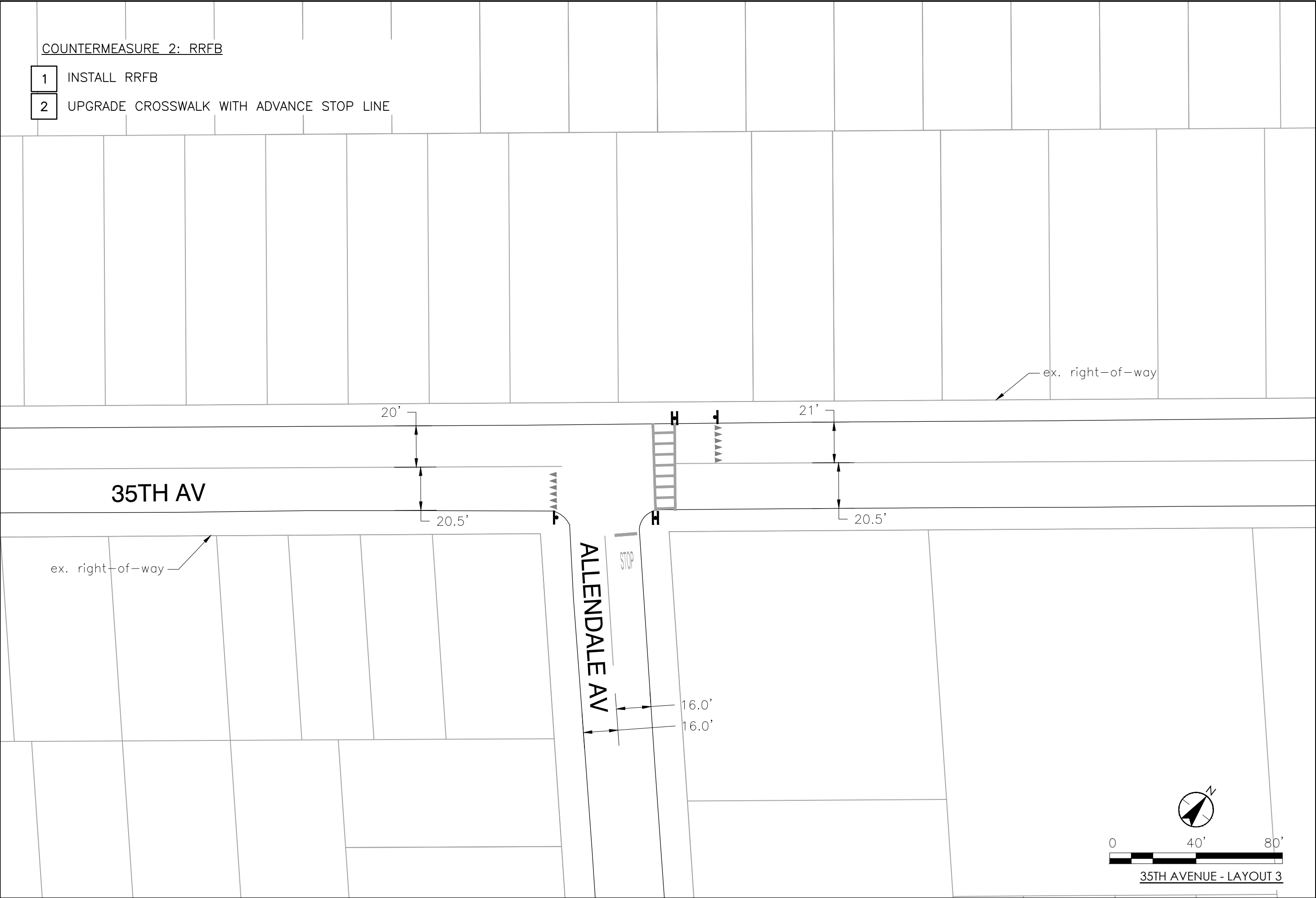
35TH AVENUE - LAYOUT 2

COUNTERMEASURE 2: RRFB

- 1

INSTALL RRFB
- 2

UPGRADE CROSSWALK WITH ADVANCE STOP LINE

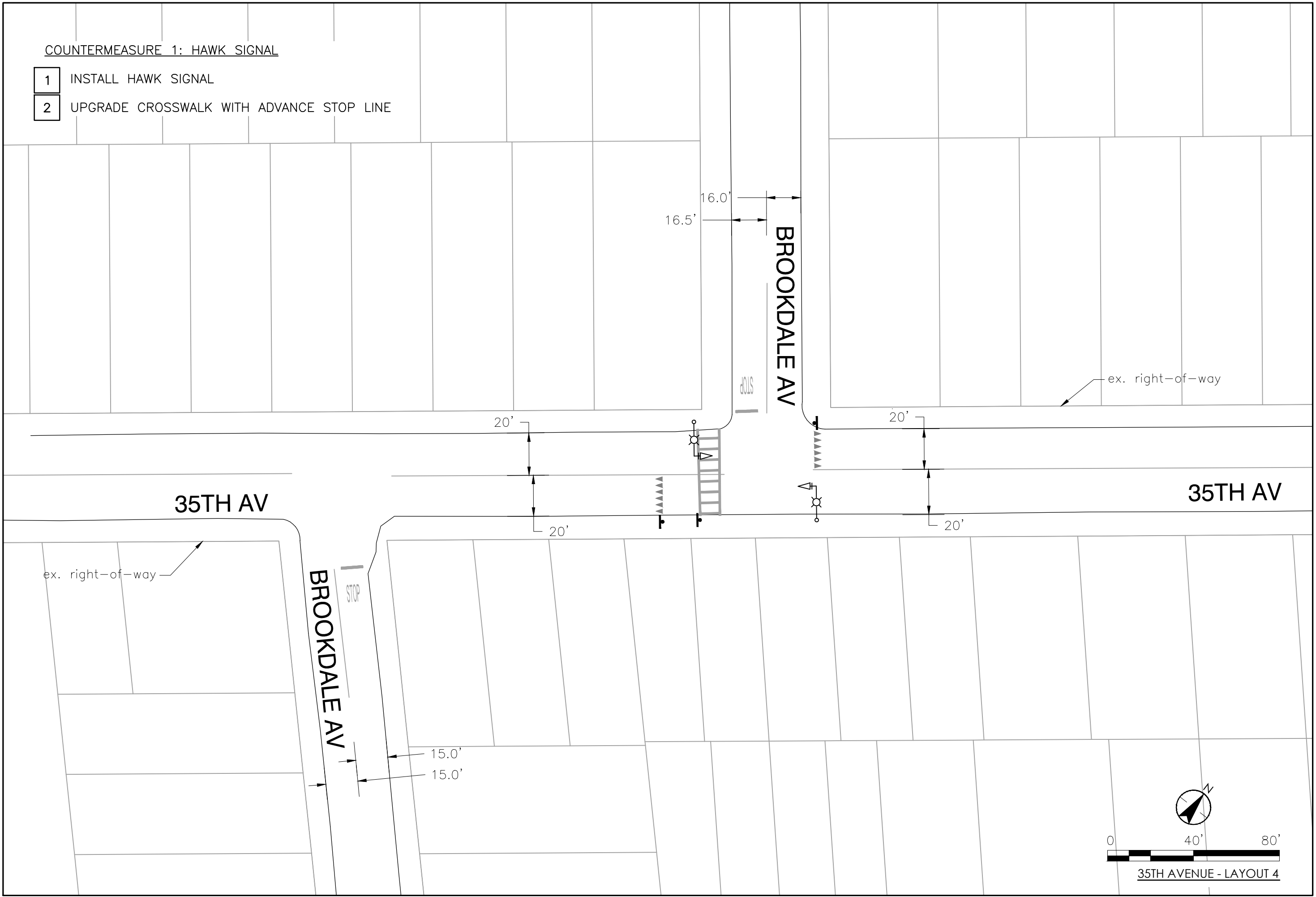


COUNTERMEASURE 1: HAWK SIGNAL

- 1

INSTALL HAWK SIGNAL
- 2

UPGRADE CROSSWALK WITH ADVANCE STOP LINE

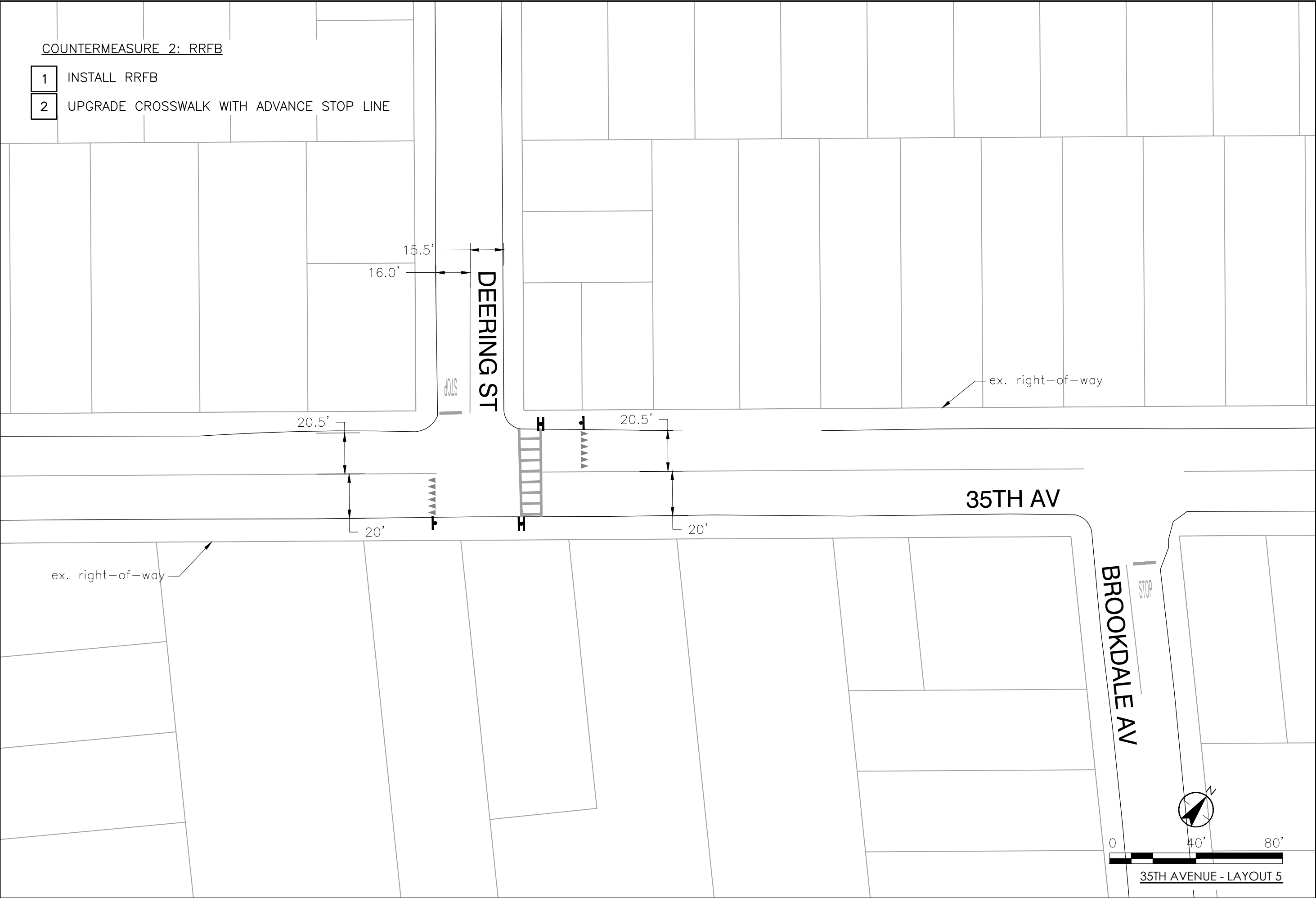


COUNTERMEASURE 2: RRFB

- 1

INSTALL RRFB
- 2

UPGRADE CROSSWALK WITH ADVANCE STOP LINE



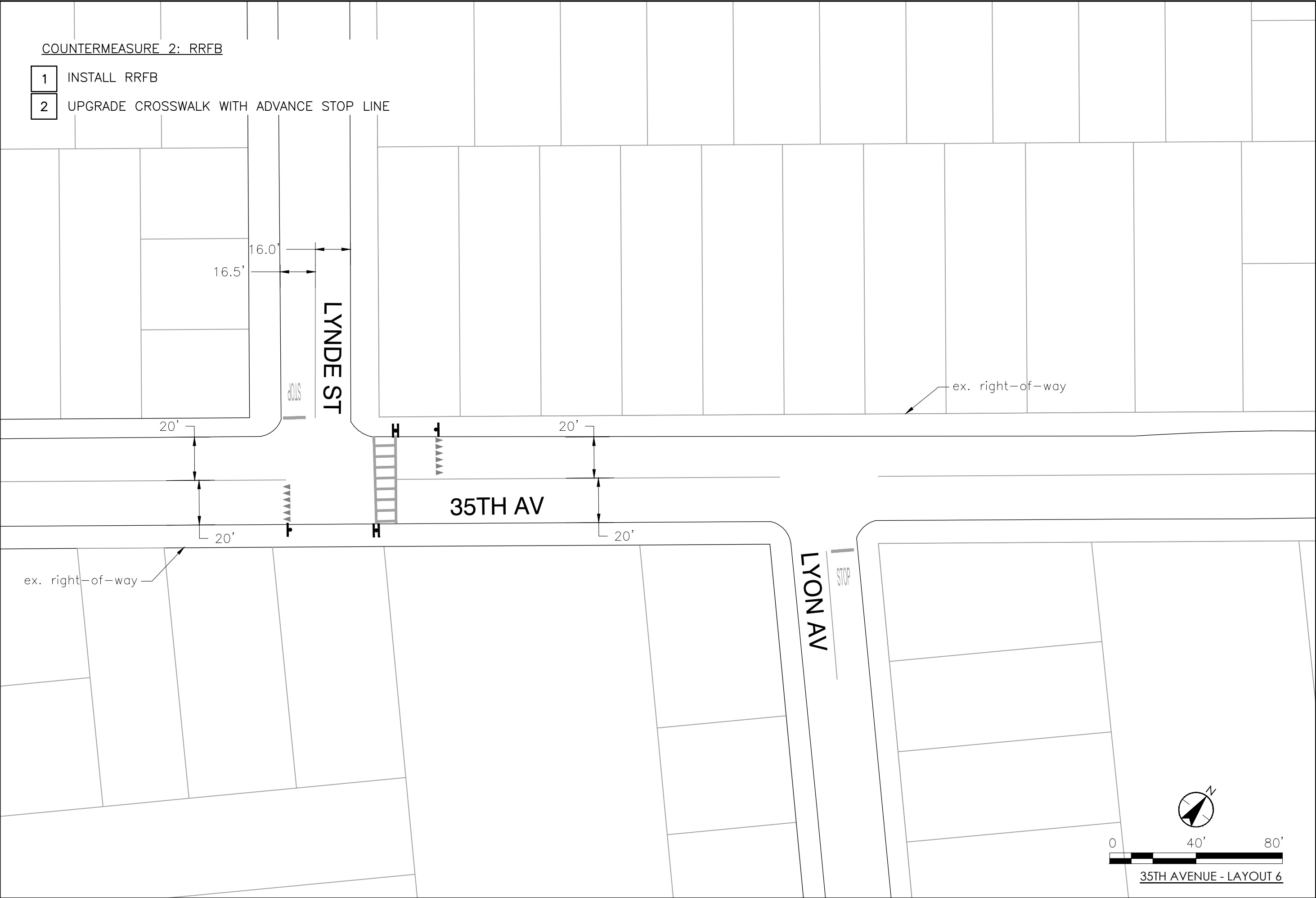
35TH AVENUE - LAYOUT 5

COUNTERMEASURE 2: RRFB

- 1

INSTALL RRFB
- 2

UPGRADE CROSSWALK WITH ADVANCE STOP LINE



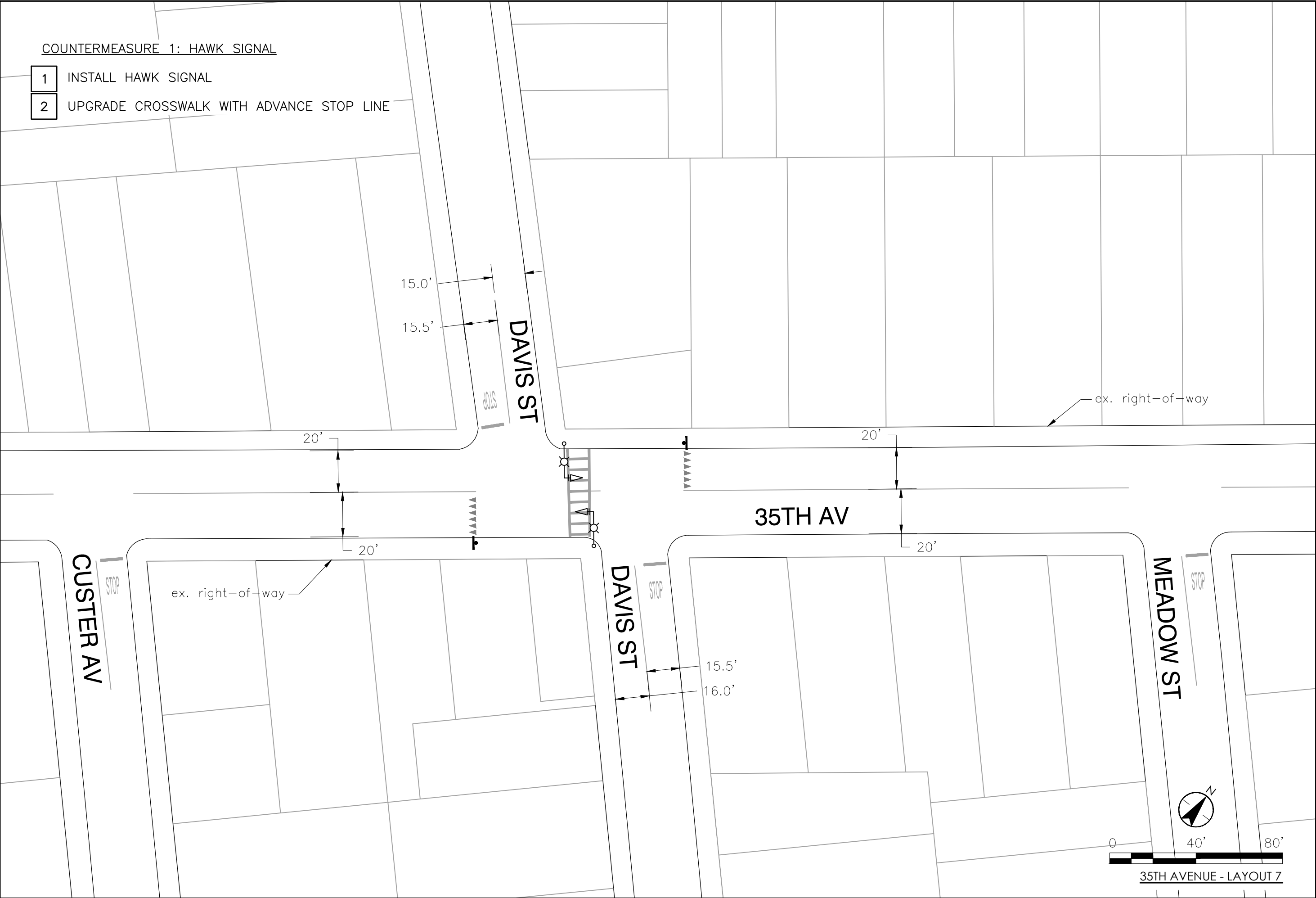
35TH AVENUE - LAYOUT 6

COUNTERMEASURE 1: HAWK SIGNAL

- 1

INSTALL HAWK SIGNAL
- 2

UPGRADE CROSSWALK WITH ADVANCE STOP LINE



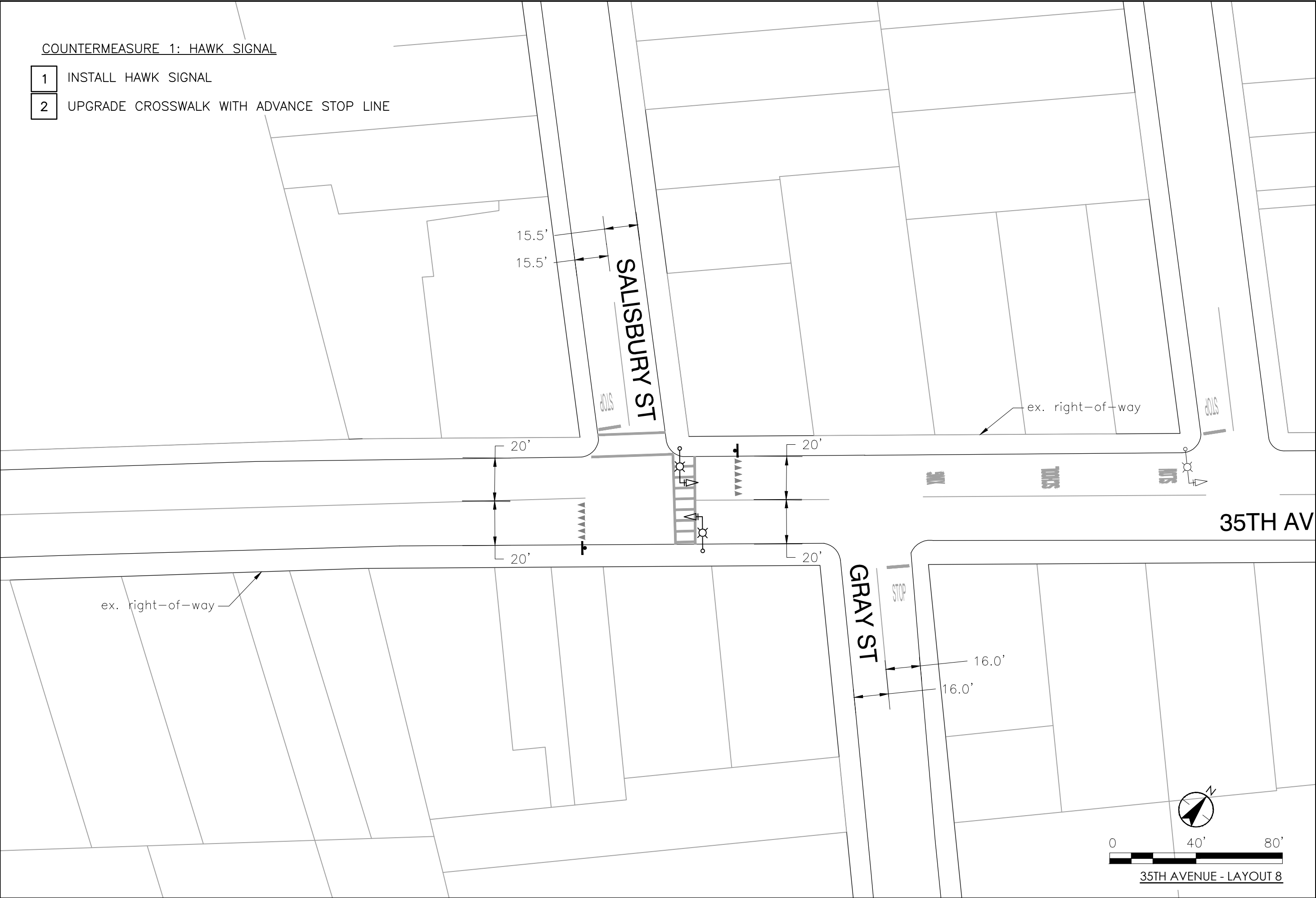
35TH AVENUE - LAYOUT 7

COUNTERMEASURE 1: HAWK SIGNAL

- 1

INSTALL HAWK SIGNAL
- 2

UPGRADE CROSSWALK WITH ADVANCE STOP LINE

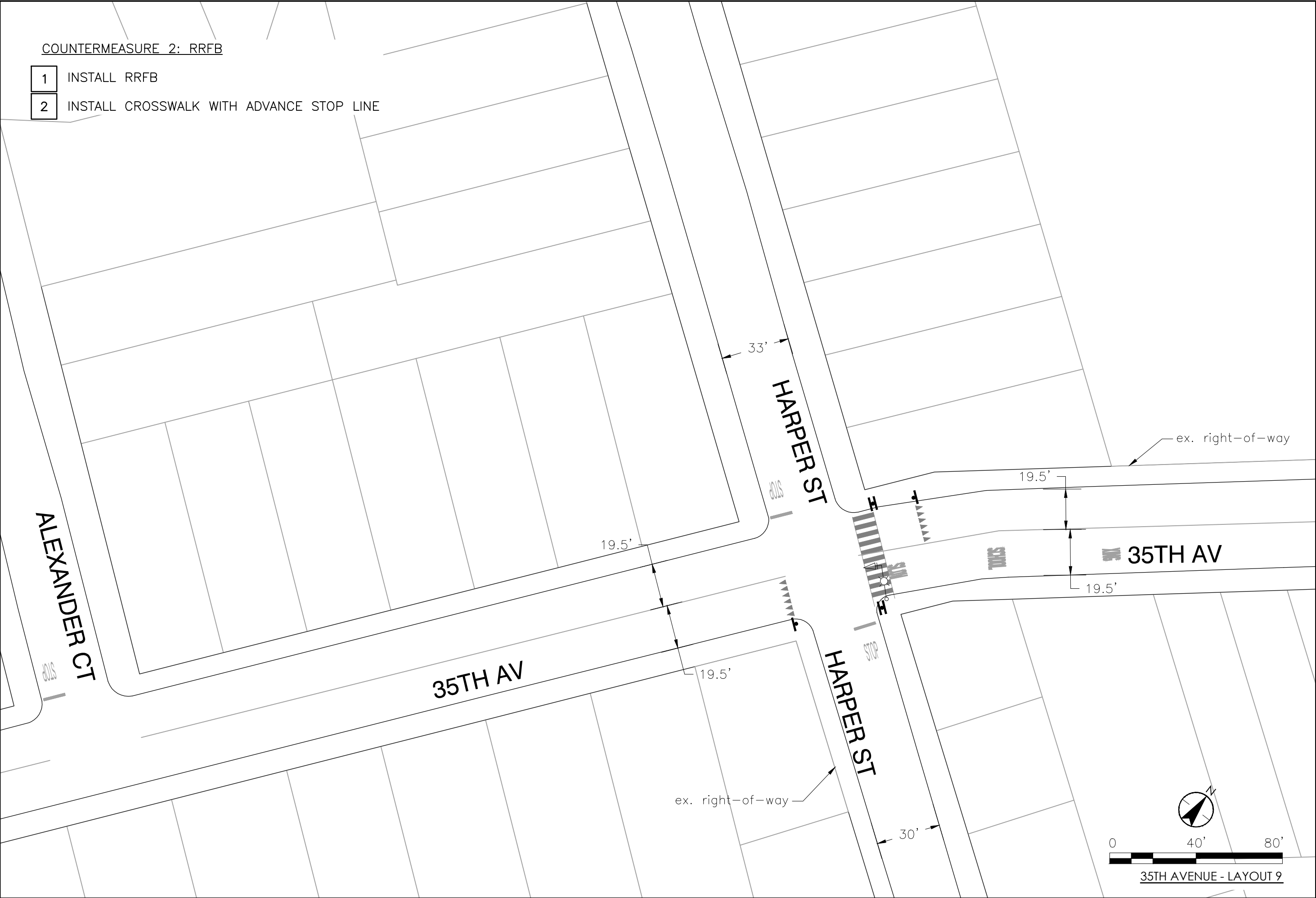


COUNTERMEASURE 2: RRFB

- 1

INSTALL RRFB
- 2

INSTALL CROSSWALK WITH ADVANCE STOP LINE



COUNTERMEASURE 3: PROTECTED LEFT TURN PHASE

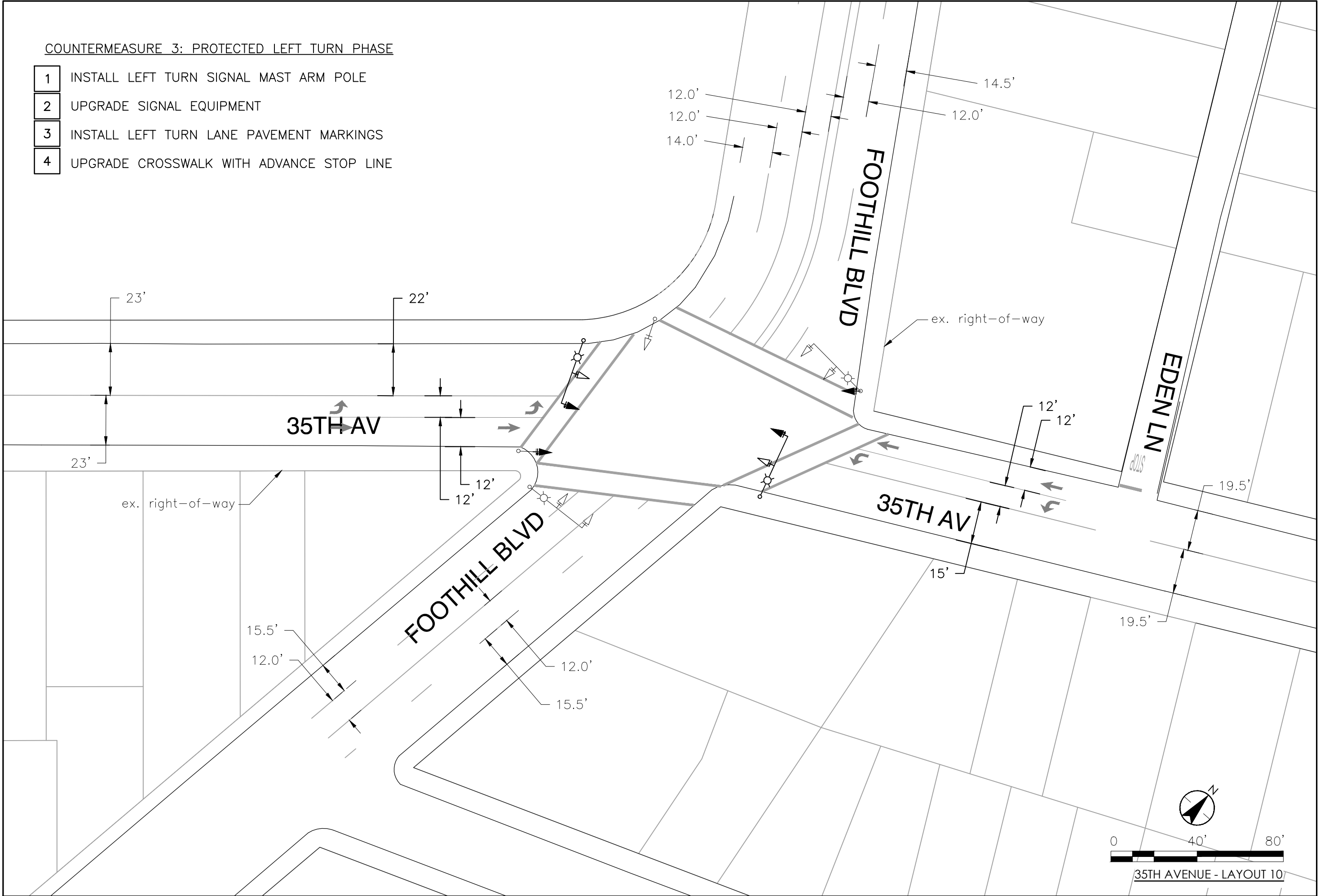
- 1

INSTALL LEFT TURN SIGNAL MAST ARM POLE
- 2

UPGRADE SIGNAL EQUIPMENT
- 3

INSTALL LEFT TURN LANE PAVEMENT MARKINGS
- 4

UPGRADE CROSSWALK WITH ADVANCE STOP LINE

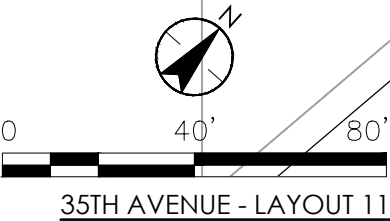
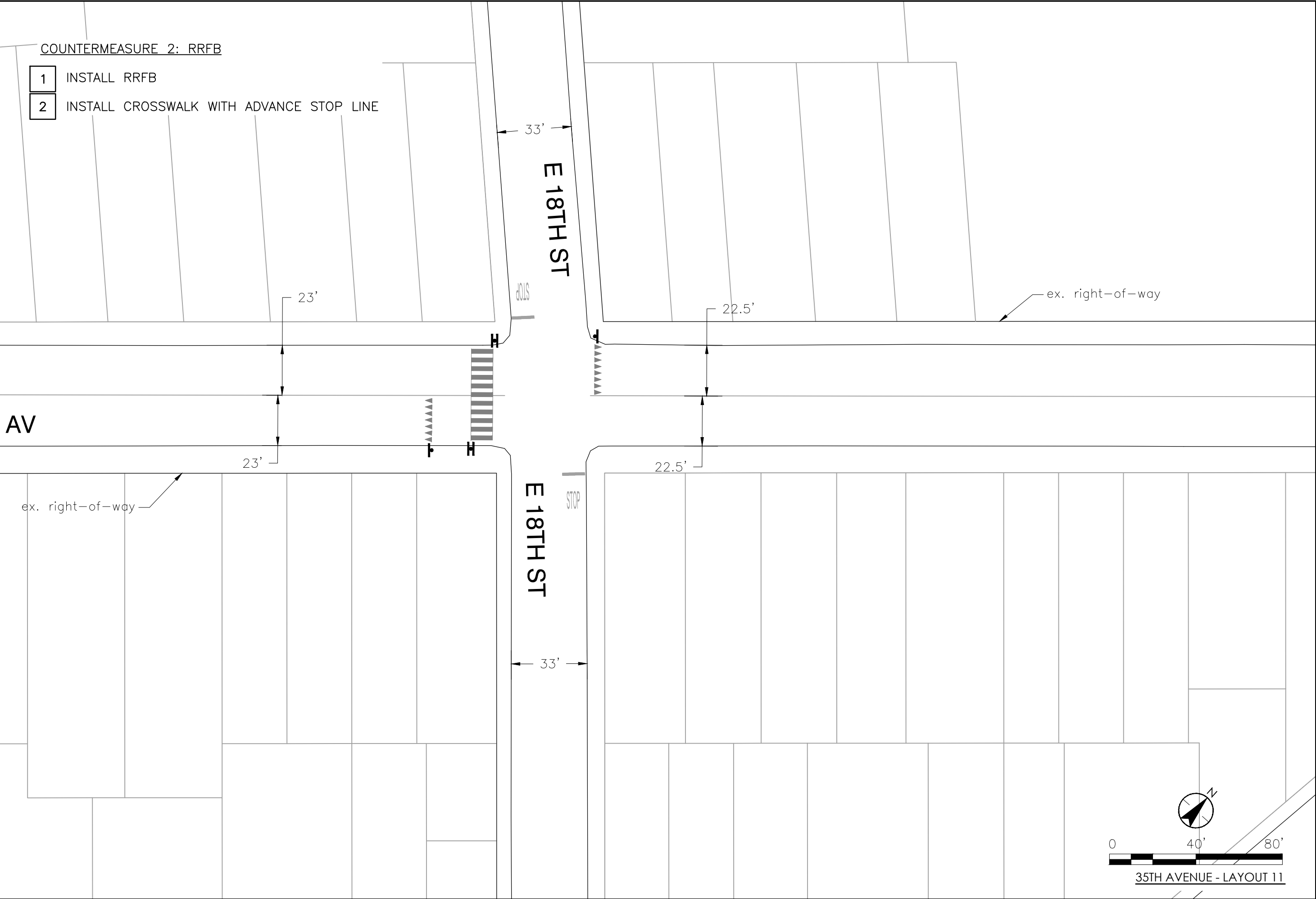


COUNTERMEASURE 2: RRFB

- 1

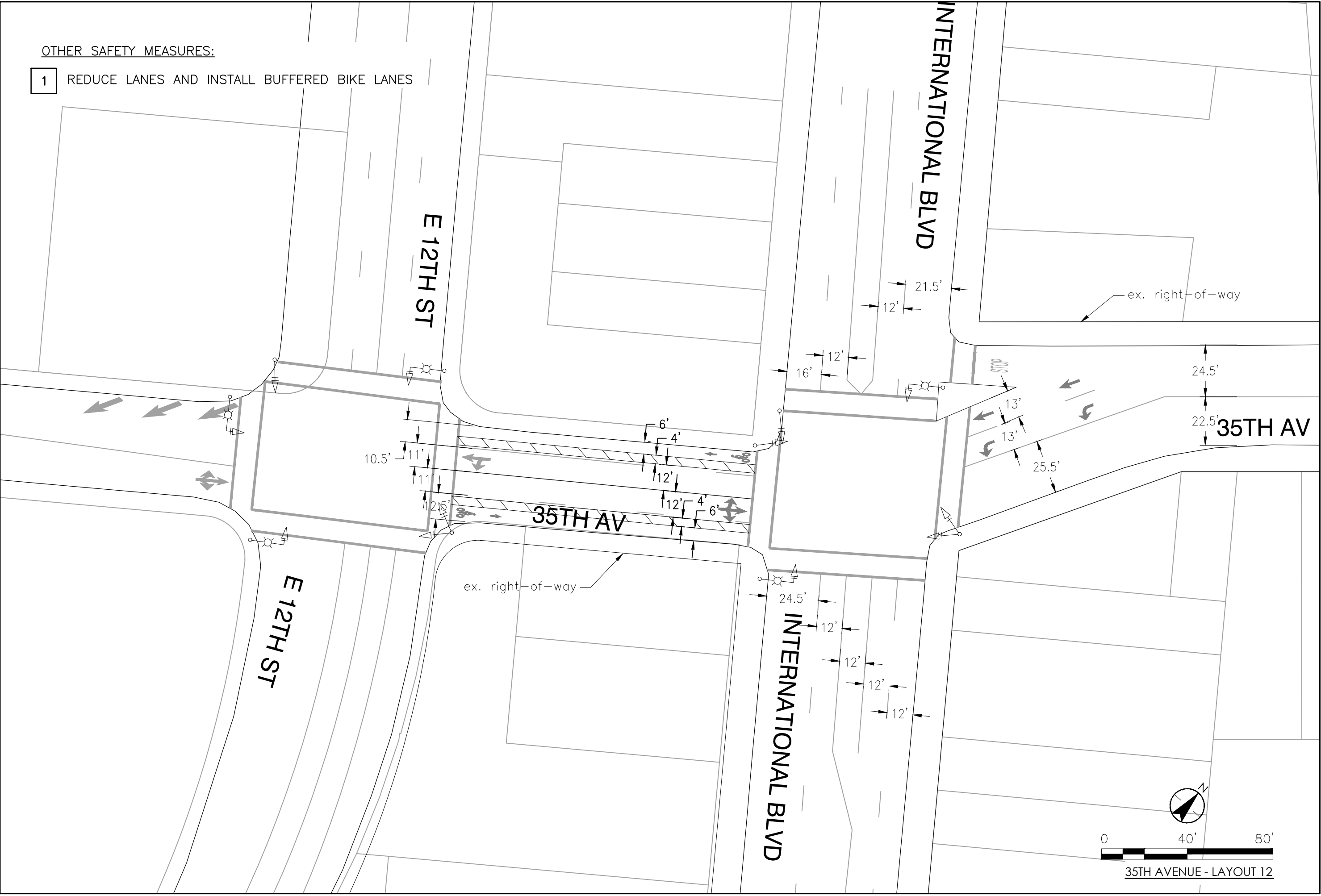
INSTALL RRFB
- 2

INSTALL CROSSWALK WITH ADVANCE STOP LINE



OTHER SAFETY MEASURES:

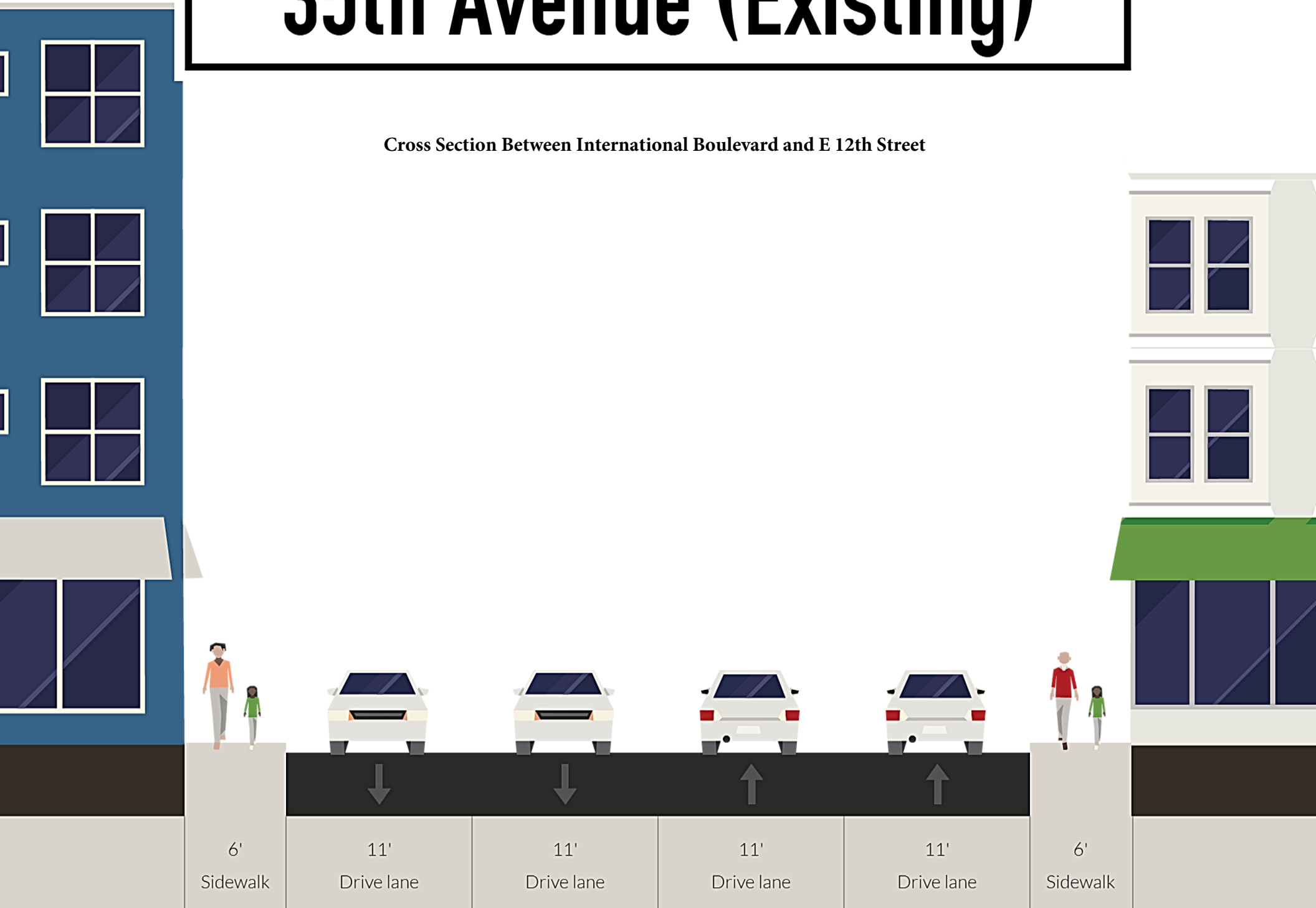
- 1
- REDUCE LANES AND INSTALL BUFFERED BIKE LANES



35TH AVENUE - LAYOUT 12

35th Avenue (Existing)

Cross Section Between International Boulevard and E 12th Street



35th Avenue (Recommended)

Cross Section between International Boulevard and E 12th Street



35th Avenue and E 12th Street Existing Conditions

GoogleMaps Streetview



35th Avenue and E 18th Street Existing Conditions

July 26, 2016



35th Avenue and Foothill Boulevard Existing Conditions

July 26, 2016



35th Avenue and Harper Street Existing Conditions

July 26, 2016



35th Avenue and Salisbury Street Existing Conditions

July 26, 2016



35th Avenue and Davis Street Existing Conditions

July 26, 2016



35th Avenue and Lynde Street Existing Conditions

July 26, 2016



35th Avenue and Deering Street Existing Conditions

July 26, 2016



35th Avenue and Brookdale Avenue Existing Conditions

July 26, 2016



35th Avenue and Allendale Avenue Existing Conditions

July 26, 2016



35th Avenue and Hageman Avenue Existing Conditions

July 26, 2016



35th Avenue and Mangels Avenue Existing Conditions

July 26, 2016



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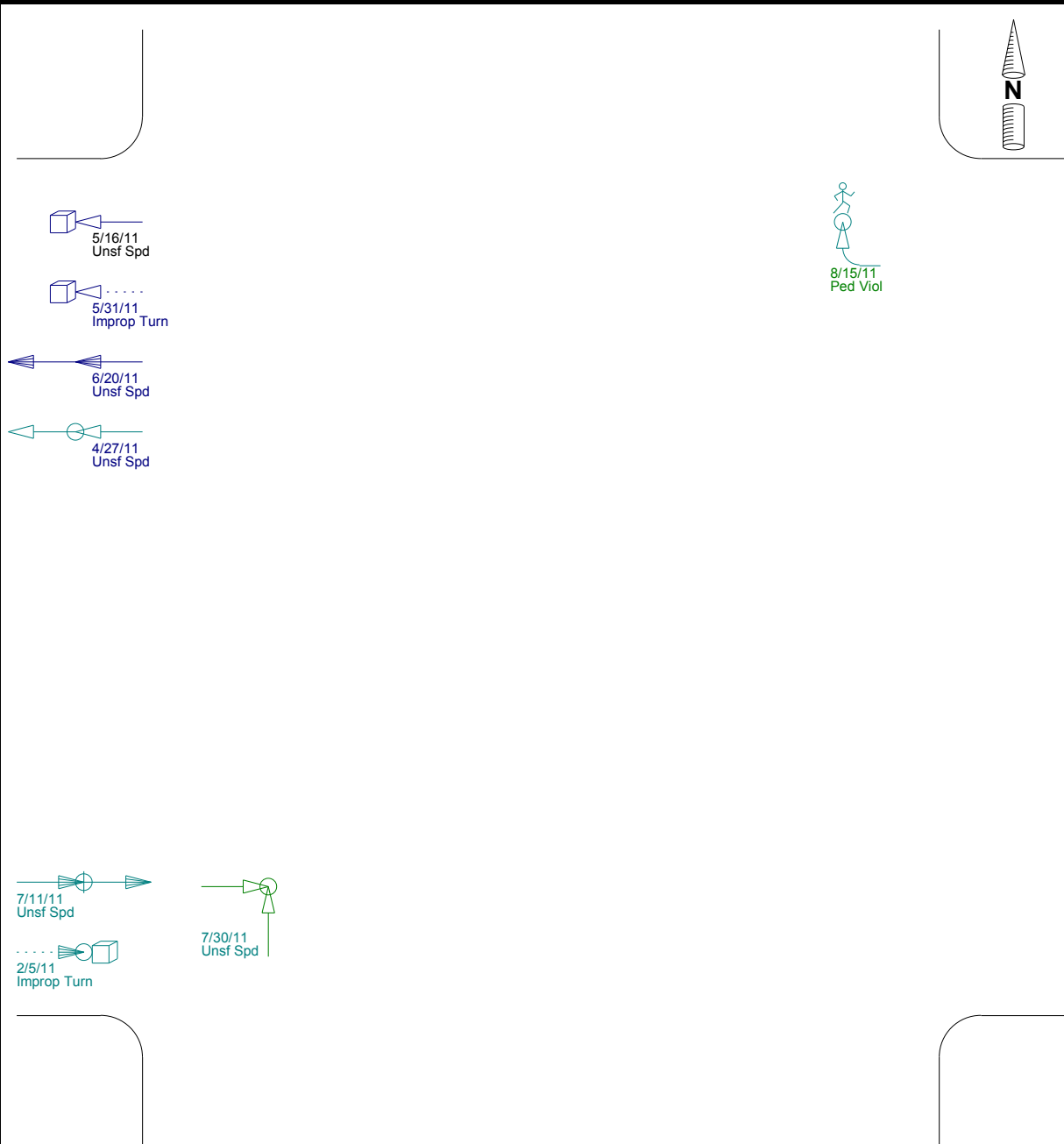
Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: EB I580

From: 1/1/2011 To: 12/31/2015

Date Prepared: 7/21/2016



Number of Collisions

3 Property Damage Only
5 Injury Collisions
0 Fatal Collisions
8 Total Collisions

Legend

Moving Vehicle
 Stopped Vehicle
 Backing Vehicle
 Ran Off Road
 Movement Unknown

Right Turn
 Left Turn
 Sideswipe
 Day
 Night

Pedestrian
 Fixed Object
 Bicycle
 DUI
 Injury
 Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

<u>Parameter</u>	<u>Setting</u>
Street Name	35TH AV
Cross Street	EB I580
Starting Date	1/1/2011
Ending Date	12/31/2015
Intersection	Intersection Related

Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: SUTER ST (E)

From: 1/1/2011 To: 12/31/2015

Date Prepared: 7/21/2016



8/31/11
Auto R/W

Number of Collisions

0 Property Damage Only
1 Injury Collisions
0 Fatal Collisions
1 Total Collisions

Legend

◄ Moving Vehicle
◄| Stopped Vehicle
◄→ Backing Vehicle
◄~ Ran Off Road
◄..... Movement Unknown

↗ Right Turn
↖ Left Turn
◄◄ Sideswipe
◄ Day
◄ Night

🚶 Pedestrian
📦 Fixed Object
🚲 Bicycle
🍷 DUI
👤 Injury
☠ Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

<u>Parameter</u>	<u>Setting</u>
Street Name	35TH AV
Cross Street	SUTER ST (E)
Starting Date	1/1/2011
Ending Date	12/31/2015
Intersection	Intersection Related

Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: MANGELS AV

From: 1/1/2011 To: 12/31/2015






Date Prepared: 8/8/2016














Number of Collisions

- 0 Property Damage Only
- 0 Injury Collisions
- 0 Fatal Collisions
- 0 Total Collisions

Legend

-  Moving Vehicle
-  Stopped Vehicle
-  Backing Vehicle
-  Ran Off Road
-  Movement Unknown

-  Right Turn
-  Left Turn
-  Sideswipe
-  Day
-  Night

-  Pedestrian
-  Fixed Object
-  Bicycle
-  DUI
-  Injury
-  Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

MANGELS AV

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

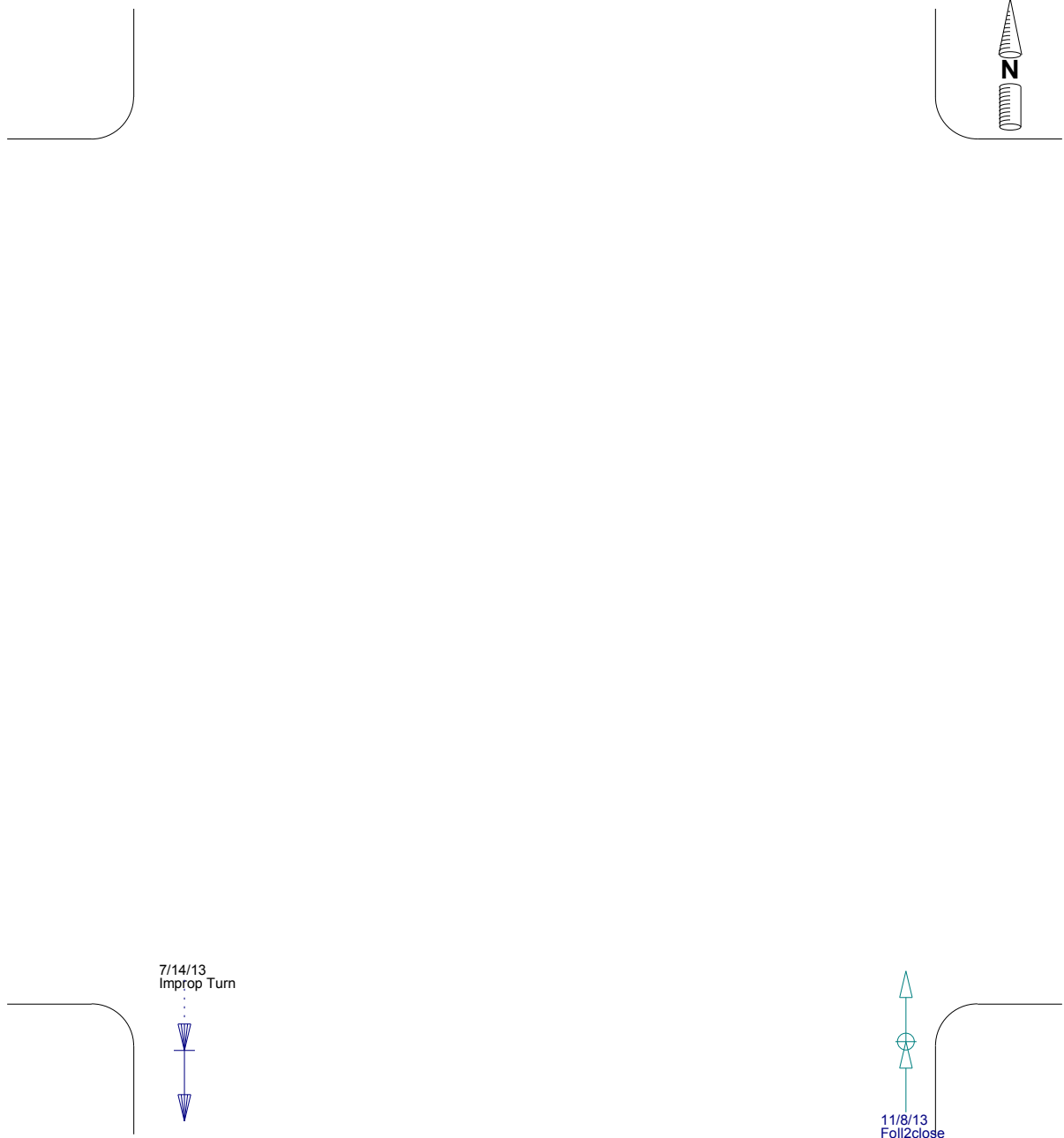
Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: HAGEMAN AV

From: 1/1/2011 To: 12/31/2015

Date Prepared: 8/8/2016



Number of Collisions

- 1 Property Damage Only
- 1 Injury Collisions
- 0 Fatal Collisions
- 2 Total Collisions

Legend

- ◄ Moving Vehicle
- ◄| Stopped Vehicle
- ◄> Backing Vehicle
- ◄~ Ran Off Road
- ◄..... Movement Unknown

- ◄ Right Turn
- ◄ Left Turn
- ◄ Sideswipe
- ◄ Day
- ◄ Night

- ◻ Pedestrian
- ◻ Fixed Object
- ◻ Bicycle
- ◻ DUI
- Injury
- ◎ Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

HAGEMAN AV

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: PENNIMAN AV (E)

From: 1/1/2011 To: 12/31/2015






Date Prepared: 8/8/2016














Number of Collisions

- 0 Property Damage Only
- 0 Injury Collisions
- 0 Fatal Collisions
- 0 Total Collisions

Legend

-  Moving Vehicle
-  Stopped Vehicle
-  Backing Vehicle
-  Ran Off Road
-  Movement Unknown

-  Right Turn
-  Left Turn
-  Sideswipe
-  Day
-  Night

-  Pedestrian
-  Fixed Object
-  Bicycle
-  DUI
-  Injury
-  Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

PENNIMAN AV (E)

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

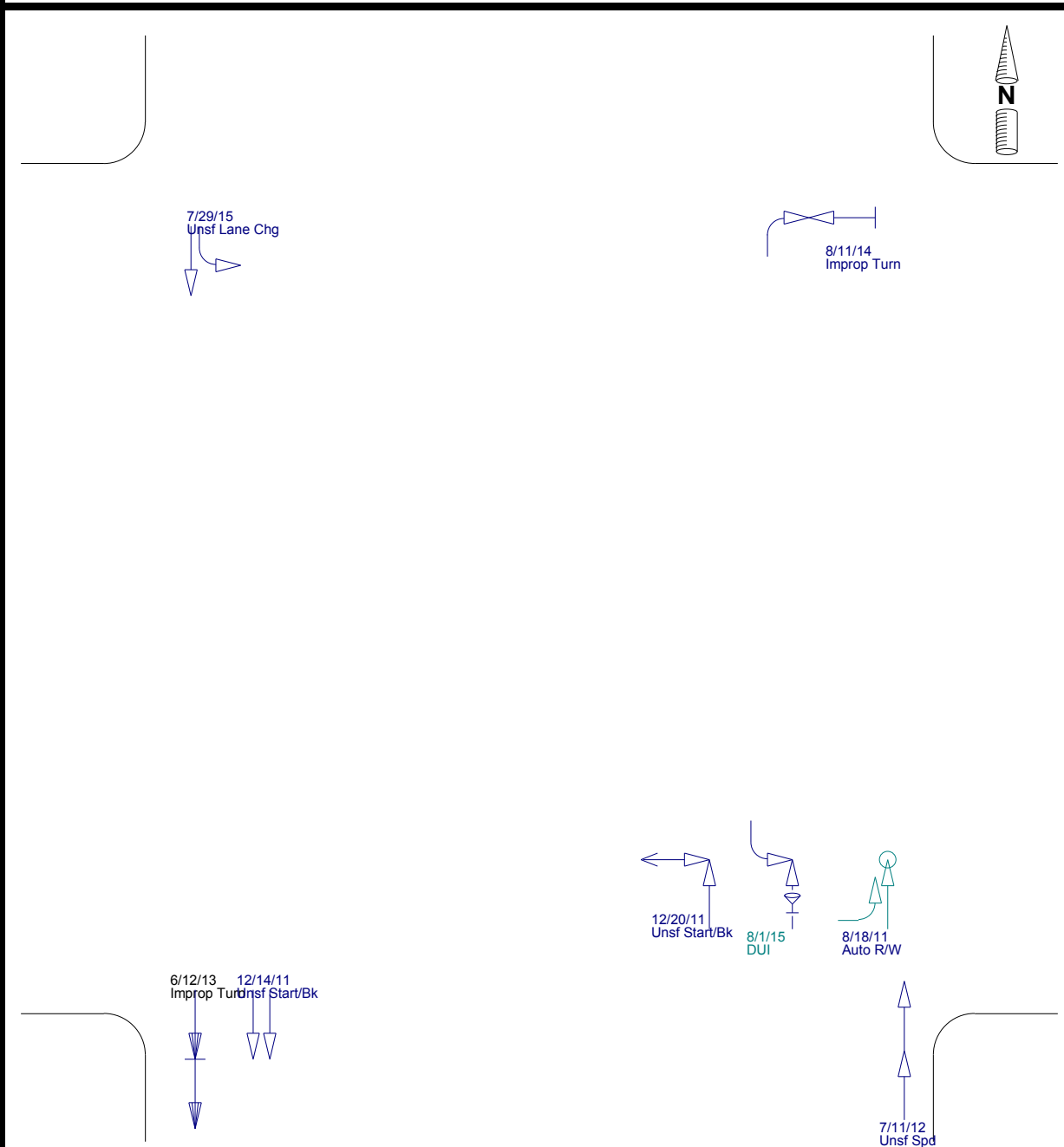
Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: ALLENDALE AV

From: 1/1/2011 To: 12/31/2015

Date Prepared: 8/8/2016



Number of Collisions

8 Property Damage Only
1 Injury Collisions
0 Fatal Collisions
9 Total Collisions

Collisions Not Plotted: 1

Legend

Moving Vehicle
 Stopped Vehicle
 Backing Vehicle
 Ran Off Road
 Movement Unknown

Right Turn
 Left Turn
 Sideswipe
 Day
 Night

Pedestrian
 Fixed Object
 Bicycle
 DUI
 Injury
 Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

ALLENDALE AV

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

Collision Diagram

Horizontal Street: 35TH AV

From: 1/1/2011 To: 12/31/2015

Vertical Street: BROOKDALE AV (E)






Date Prepared: 7/21/2016














Number of Collisions

- 0 Property Damage Only
- 0 Injury Collisions
- 0 Fatal Collisions
- 0 Total Collisions

Legend

-  Moving Vehicle
-  Stopped Vehicle
-  Backing Vehicle
-  Ran Off Road
-  Movement Unknown

-  Right Turn
-  Left Turn
-  Sideswipe
-  Day
-  Night

-  Pedestrian
-  Fixed Object
-  Bicycle
-  DUI
-  Injury
-  Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

BROOKDALE AV (E)

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

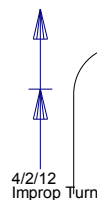
Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: DEERING ST

From: 1/1/2011 To: 12/31/2015

Date Prepared: 8/8/2016



Number of Collisions

1 Property Damage Only
0 Injury Collisions
0 Fatal Collisions
1 Total Collisions

Legend

Moving Vehicle
 Stopped Vehicle
 Backing Vehicle
 Ran Off Road
 Movement Unknown

Right Turn
 Left Turn
 Sideswipe
 Day
 Night

Pedestrian
 Fixed Object
 Bicycle
 DUI
 Injury
 Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

DEERING ST

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

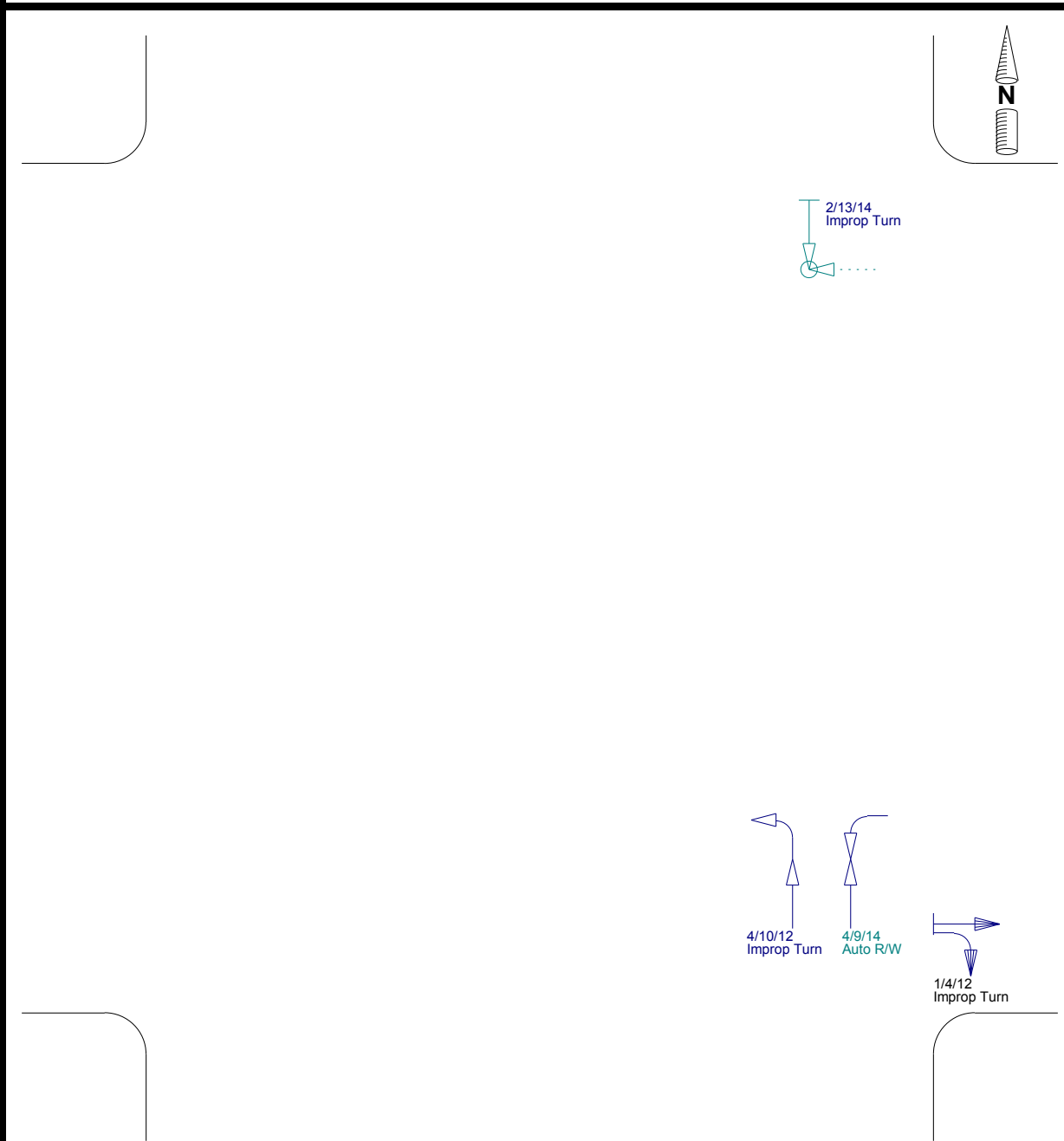
Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: LYON AV

From: 1/1/2011 To: 12/31/2015

Date Prepared: 8/8/2016



Number of Collisions

3 Property Damage Only
1 Injury Collisions
0 Fatal Collisions
4 Total Collisions

Legend

Moving Vehicle
 Stopped Vehicle
 Backing Vehicle
 Ran Off Road
 Movement Unknown

Right Turn
 Left Turn
 Sideswipe
 Day
 Night

Pedestrian
 Fixed Object
 Bicycle
 DUI
 Injury
 Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

<u>Parameter</u>	<u>Setting</u>
Street Name	35TH AV
Cross Street	LYON AV
Starting Date	1/1/2011
Ending Date	12/31/2015
Intersection	Intersection Related

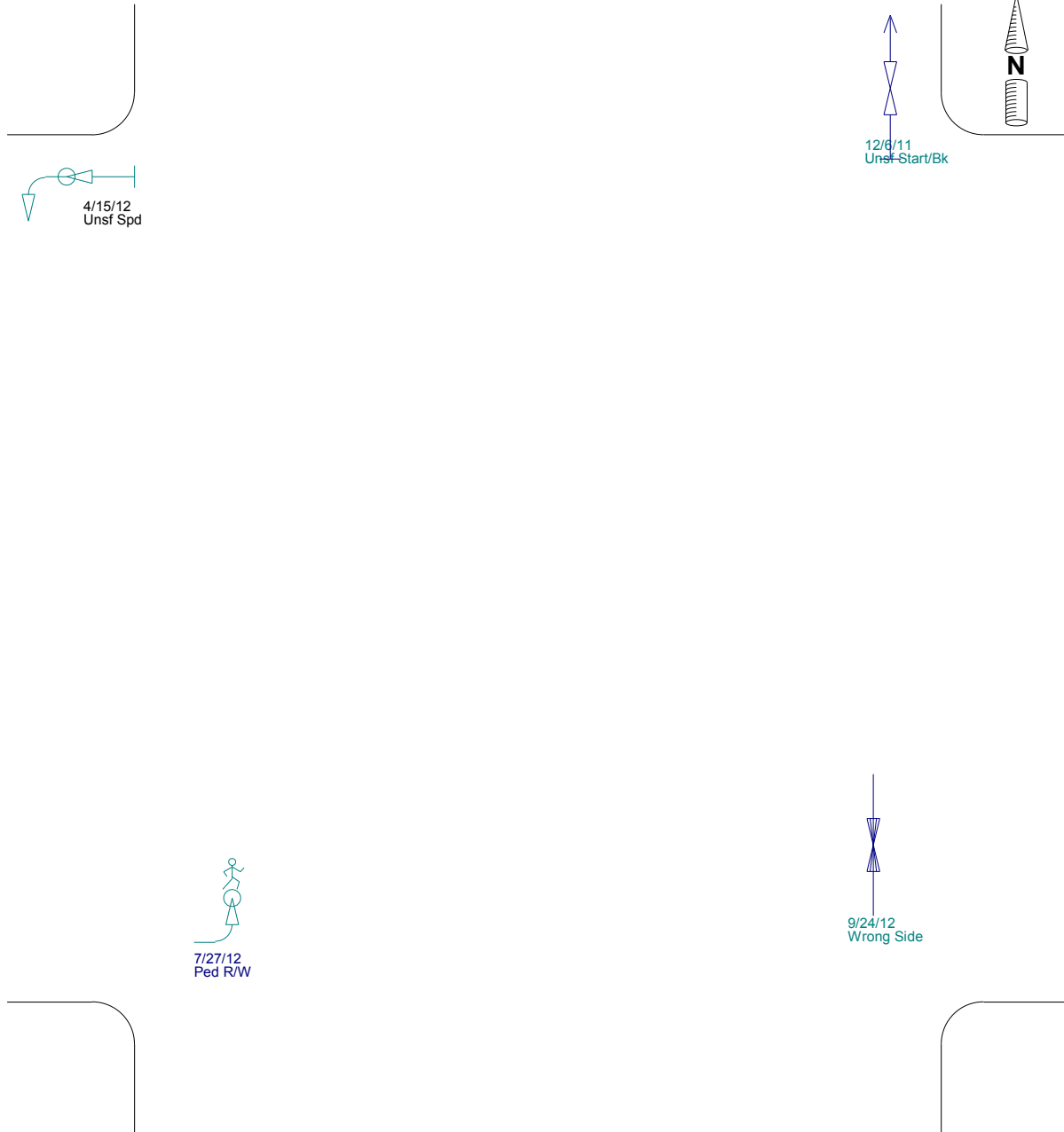
Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: LYNDE ST

From: 1/1/2011 To: 12/31/2015

Date Prepared: 7/21/2016



Number of Collisions

2 Property Damage Only
2 Injury Collisions
0 Fatal Collisions
4 Total Collisions

Legend

Moving Vehicle
 Stopped Vehicle
 Backing Vehicle
 Ran Off Road
 Movement Unknown

Right Turn
 Left Turn
 Sideswipe
 Day
 Night

Pedestrian
 Fixed Object
 Bicycle
 DUI
 Injury
 Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

<u>Parameter</u>	<u>Setting</u>
Street Name	35TH AV
Cross Street	LYNDE ST
Starting Date	1/1/2011
Ending Date	12/31/2015
Intersection	Intersection Related

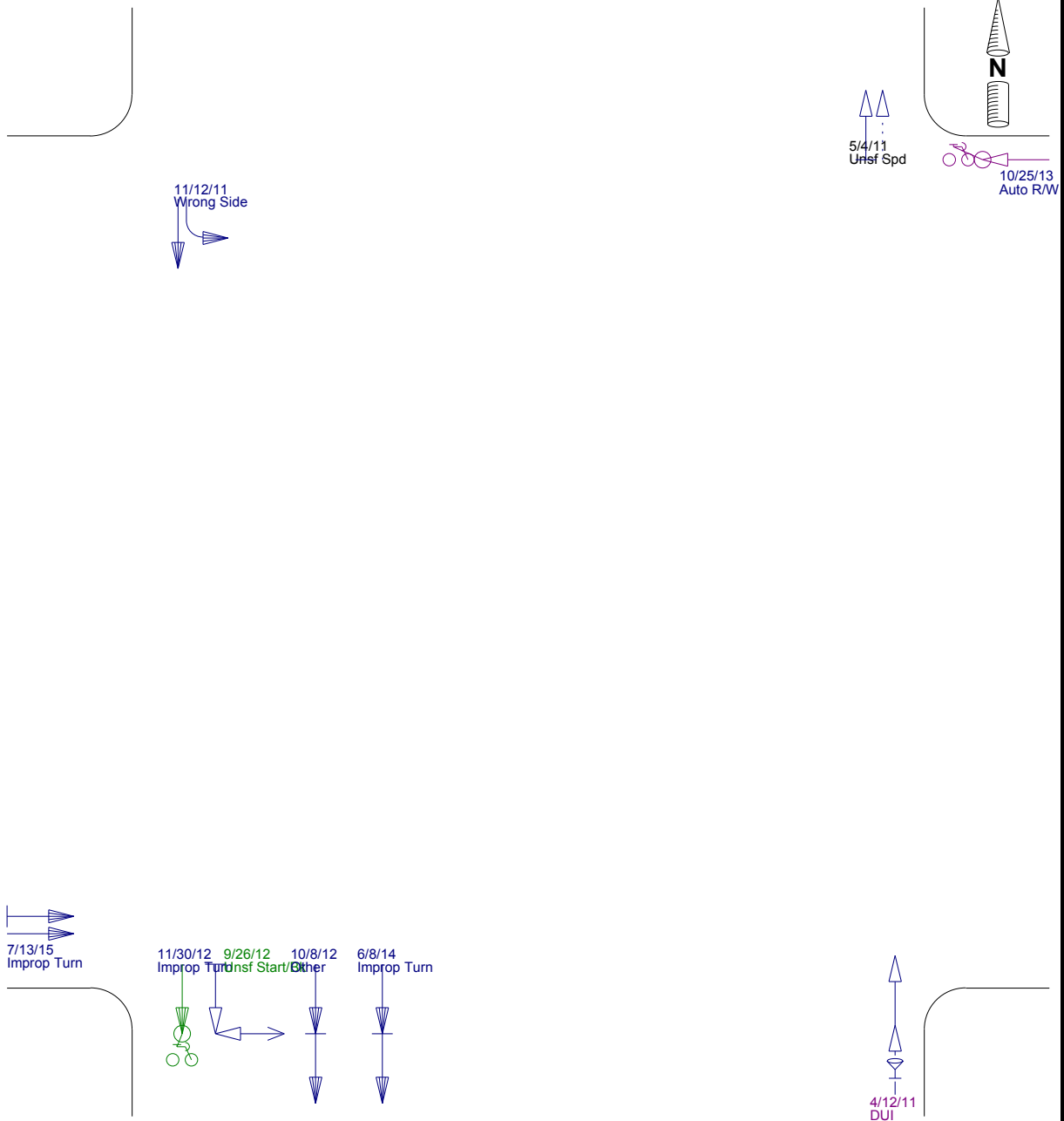
Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: DAVIS ST (W)

From: 1/1/2011 To: 12/31/2015

Date Prepared: 7/21/2016



Number of Collisions

7 Property Damage Only
2 Injury Collisions
0 Fatal Collisions
9 Total Collisions

Legend

← Moving Vehicle
 ←| Stopped Vehicle
 ←→ Backing Vehicle
 ←~ Ran Off Road
 ←..... Movement Unknown

↗ Right Turn
 ↖ Left Turn
 ↔ Sideswipe
 → Day
 → Night

🚶 Pedestrian
 🚗 Fixed Object
 🚲 Bicycle
 🍷 DUI
 ○ Injury
 ⊙ Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

DAVIS ST (W)

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

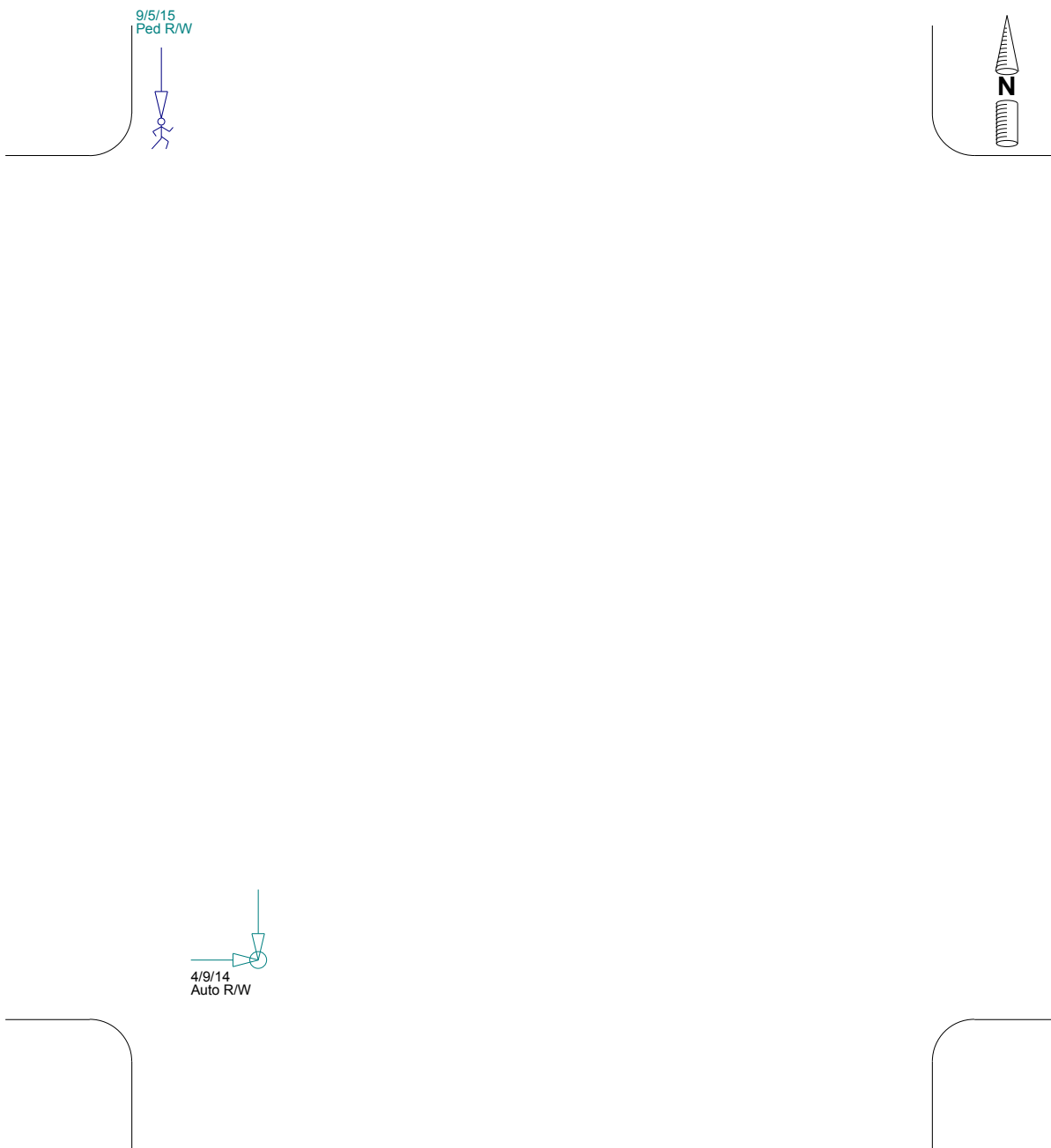
Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: CUSTER AV

From: 1/1/2011 To: 12/31/2015

Date Prepared: 8/8/2016



Number of Collisions

- 1 Property Damage Only
- 1 Injury Collisions
- 0 Fatal Collisions
- 2 Total Collisions

Legend

- ◄ Moving Vehicle
- ◄| Stopped Vehicle
- ◄> Backing Vehicle
- ◄~ Ran Off Road
- ◄..... Movement Unknown

- ◄ Right Turn
- ◄ Left Turn
- ◄ Sideswipe
- ◄ Day
- ◄ Night

- ◄ Pedestrian
- ◄ Fixed Object
- ◄ Bicycle
- ◄ DUI
- ◄ Injury
- ◄ Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

CUSTER AV

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

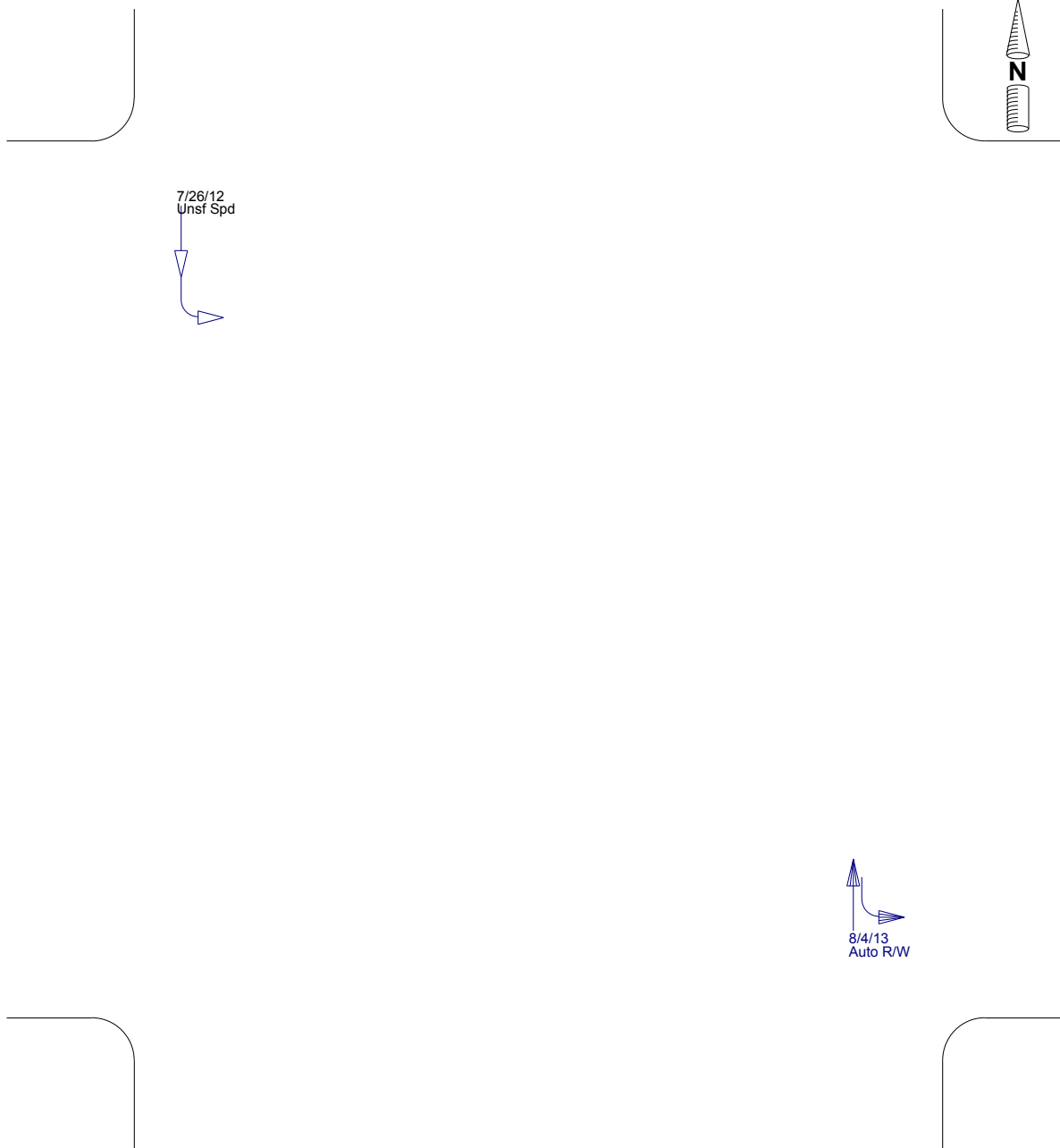
Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: GRAY ST

From: 1/1/2011 To: 12/31/2015

Date Prepared: 8/8/2016



Number of Collisions

2 Property Damage Only
0 Injury Collisions
0 Fatal Collisions
2 Total Collisions

Legend

Moving Vehicle
 Stopped Vehicle
 Backing Vehicle
 Ran Off Road
 Movement Unknown

Right Turn
 Left Turn
 Sideswipe
 Day
 Night

Pedestrian
 Fixed Object
 Bicycle
 DUI
 Injury
 Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

<u>Parameter</u>	<u>Setting</u>
Street Name	35TH AV
Cross Street	GRAY ST
Starting Date	1/1/2011
Ending Date	12/31/2015
Intersection	Intersection Related

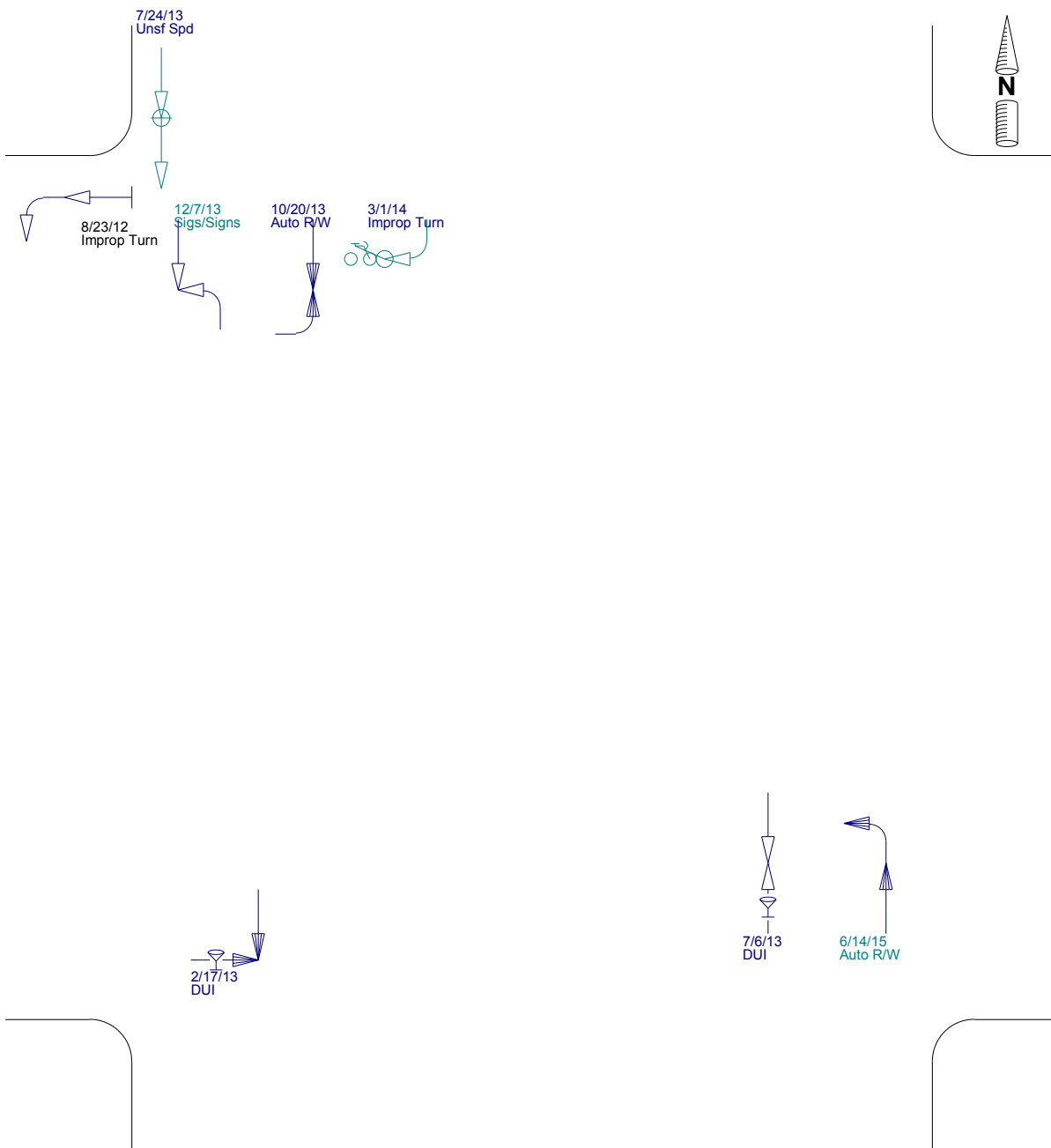
Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: SALISBURY ST

From: 1/1/2011 To: 12/31/2015

Date Prepared: 8/8/2016



Number of Collisions

6 Property Damage Only
2 Injury Collisions
0 Fatal Collisions
8 Total Collisions

Legend

Moving Vehicle
 Stopped Vehicle
 Backing Vehicle
 Ran Off Road
 Movement Unknown

Right Turn
 Left Turn
 Sideswipe
 Day
 Night

Pedestrian
 Fixed Object
 Bicycle
 DUI
 Injury
 Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

SALISBURY ST

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

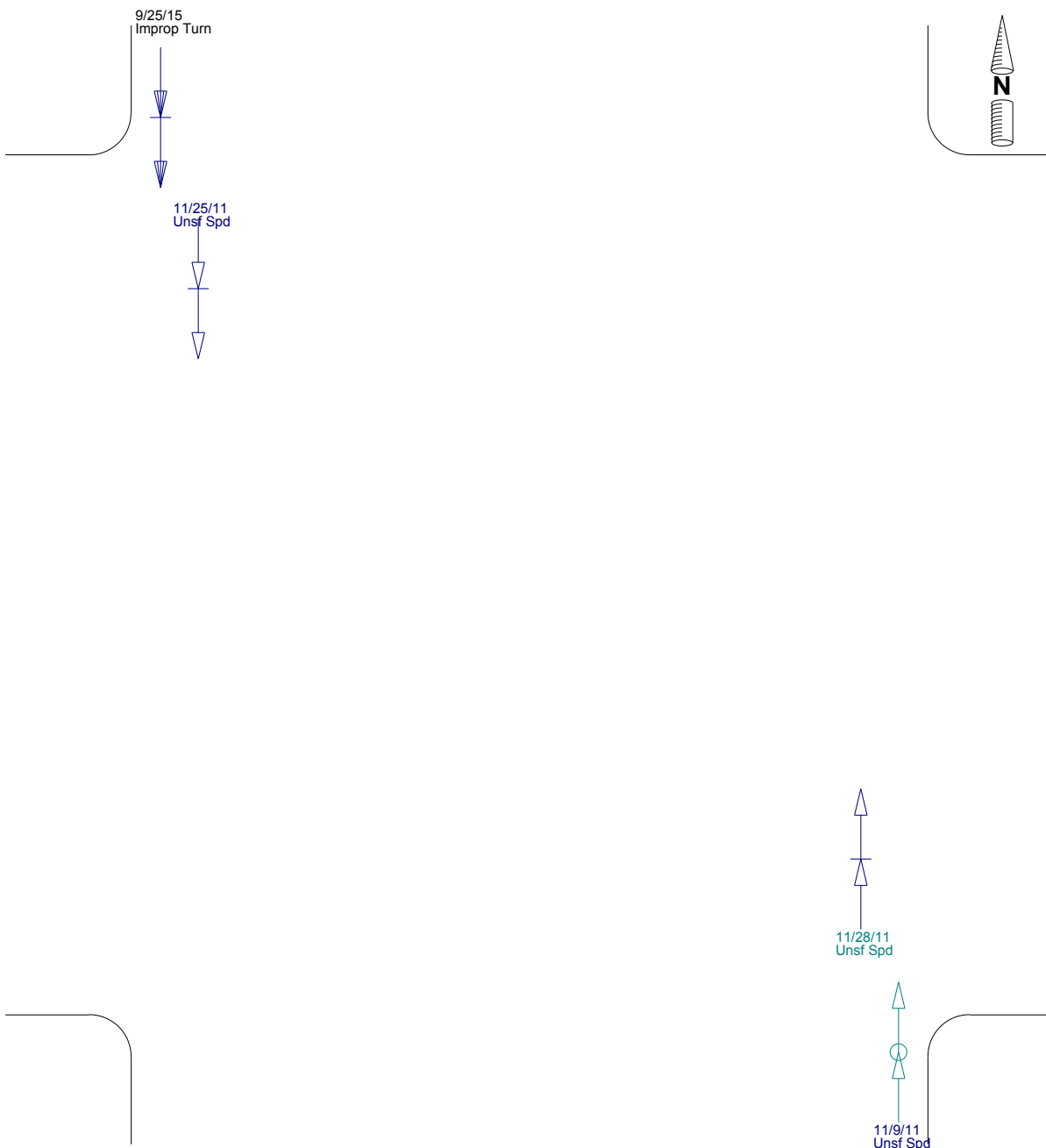
Collision Diagram

Horizontal Street: 35TH AV

Vertical Street: GALINDO ST

From: 1/1/2011 To: 12/31/2015

Date Prepared: 8/8/2016



Number of Collisions

- 3** Property Damage Only
- 1** Injury Collisions
- 0** Fatal Collisions
- 4** Total Collisions

Legend

- ➡ Moving Vehicle
- ➡ Stopped Vehicle
- ➡ Backing Vehicle
- ➡ Ran Off Road
- ➡ Movement Unknown

- ↗ Right Turn
- ↖ Left Turn
- ↔ Sideswipe
- ☀ Day
- ☀ Night

- 🚶 Pedestrian
- 📦 Fixed Object
- 🚲 Bicycle
- 🍷 DUI
- Injury
- ⊙ Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

GALINDO ST

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

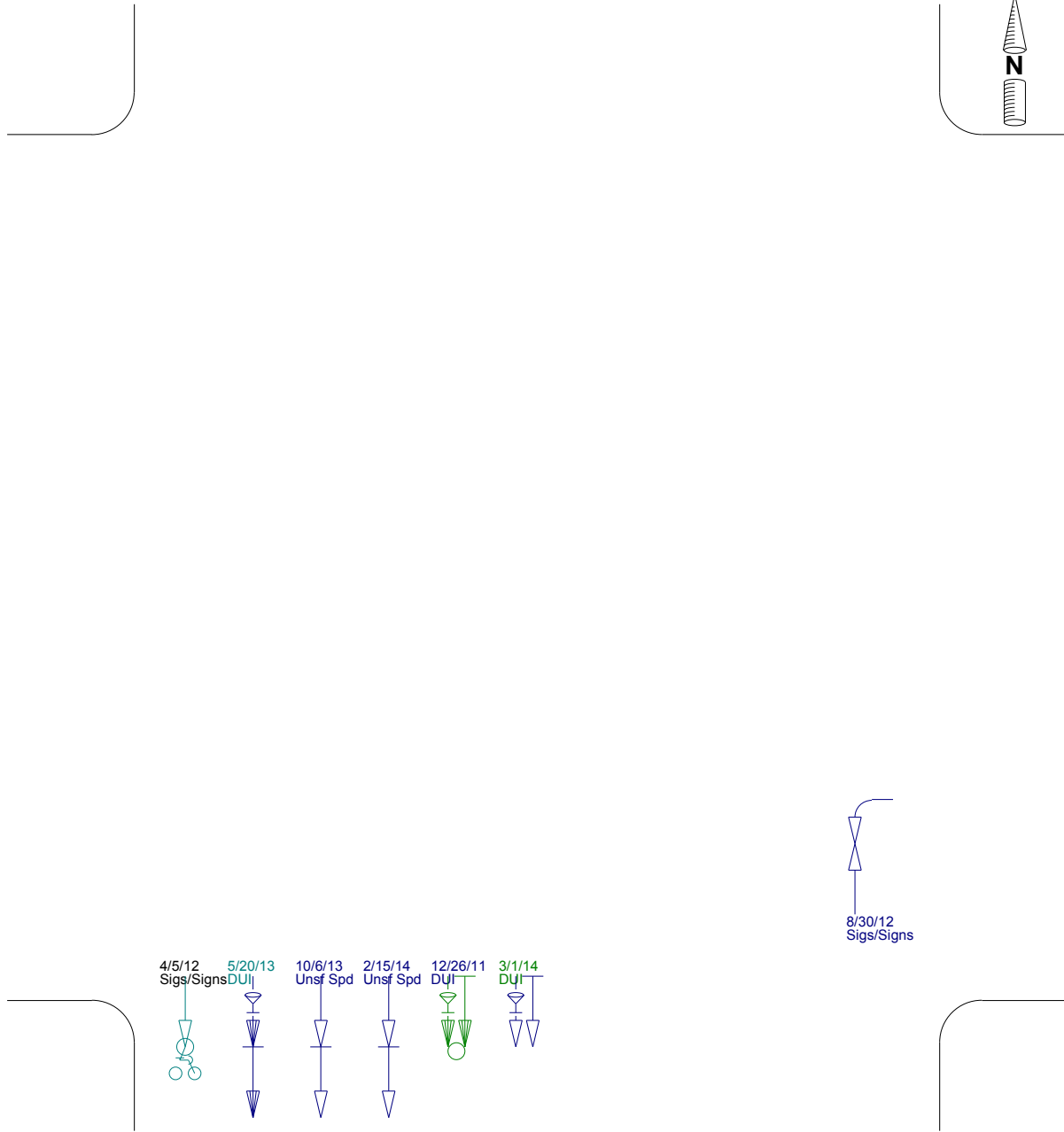
Collision Diagram

Horizontal Street: HARPER ST

Vertical Street: 35TH AV

From: 1/1/2011 To: 12/31/2015

Date Prepared: 7/21/2016



Number of Collisions

5 Property Damage Only
2 Injury Collisions
0 Fatal Collisions
7 Total Collisions

Legend

← Moving Vehicle
 ← Stopped Vehicle
 ←→ Backing Vehicle
 ←~ Ran Off Road
 ←..... Movement Unknown

↗ Right Turn
 ↖ Left Turn
 ↔ Sideswipe
 △ Day
 ▴ Night

🚶 Pedestrian
 📦 Fixed Object
 🚲 Bicycle
 🍷 DUI
 ○ Injury
 ⊙ Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

<u>Parameter</u>	<u>Setting</u>
Street Name	35TH AV
Cross Street	HARPER ST
Starting Date	1/1/2011
Ending Date	12/31/2015
Intersection	Intersection Related

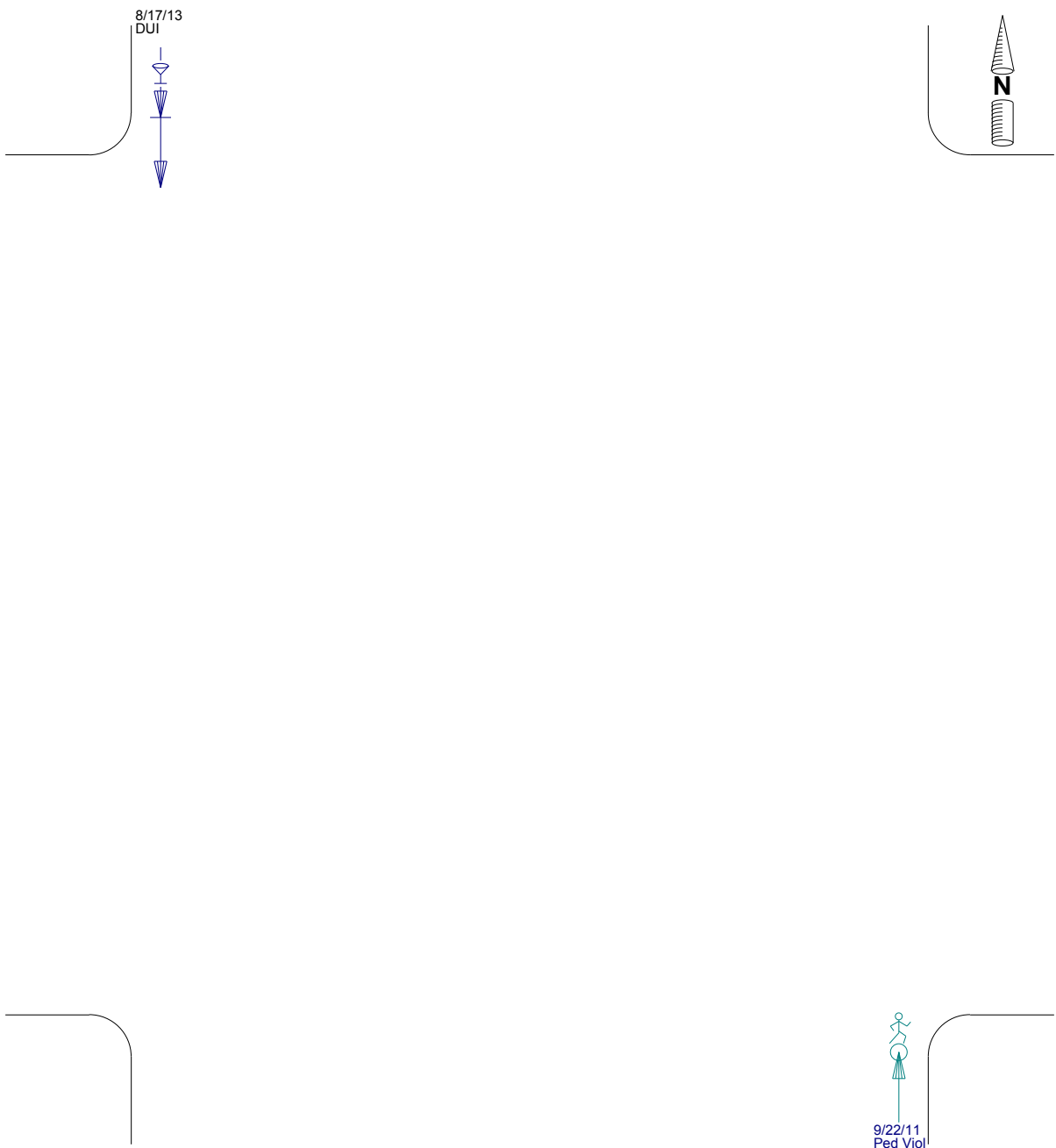
Collision Diagram

Horizontal Street: ALEXANDER CT

From: 1/1/2011 To: 12/31/2015

Vertical Street: 35TH AV

Date Prepared: 8/8/2016



Number of Collisions

- 1 Property Damage Only
- 1 Injury Collisions
- 0 Fatal Collisions
- 2 Total Collisions

Legend

- ◄ Moving Vehicle
- ◄ Stopped Vehicle
- ◄ Backing Vehicle
- ◄ Ran Off Road
- ◄ Movement Unknown

- ◄ Right Turn
- ◄ Left Turn
- ◄ Sideswipe
- ◄ Day
- ◄ Night

- ◄ Pedestrian
- ◄ Fixed Object
- ◄ Bicycle
- ◄ DUI
- ◄ Injury
- ◄ Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

ALEXANDER CT

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

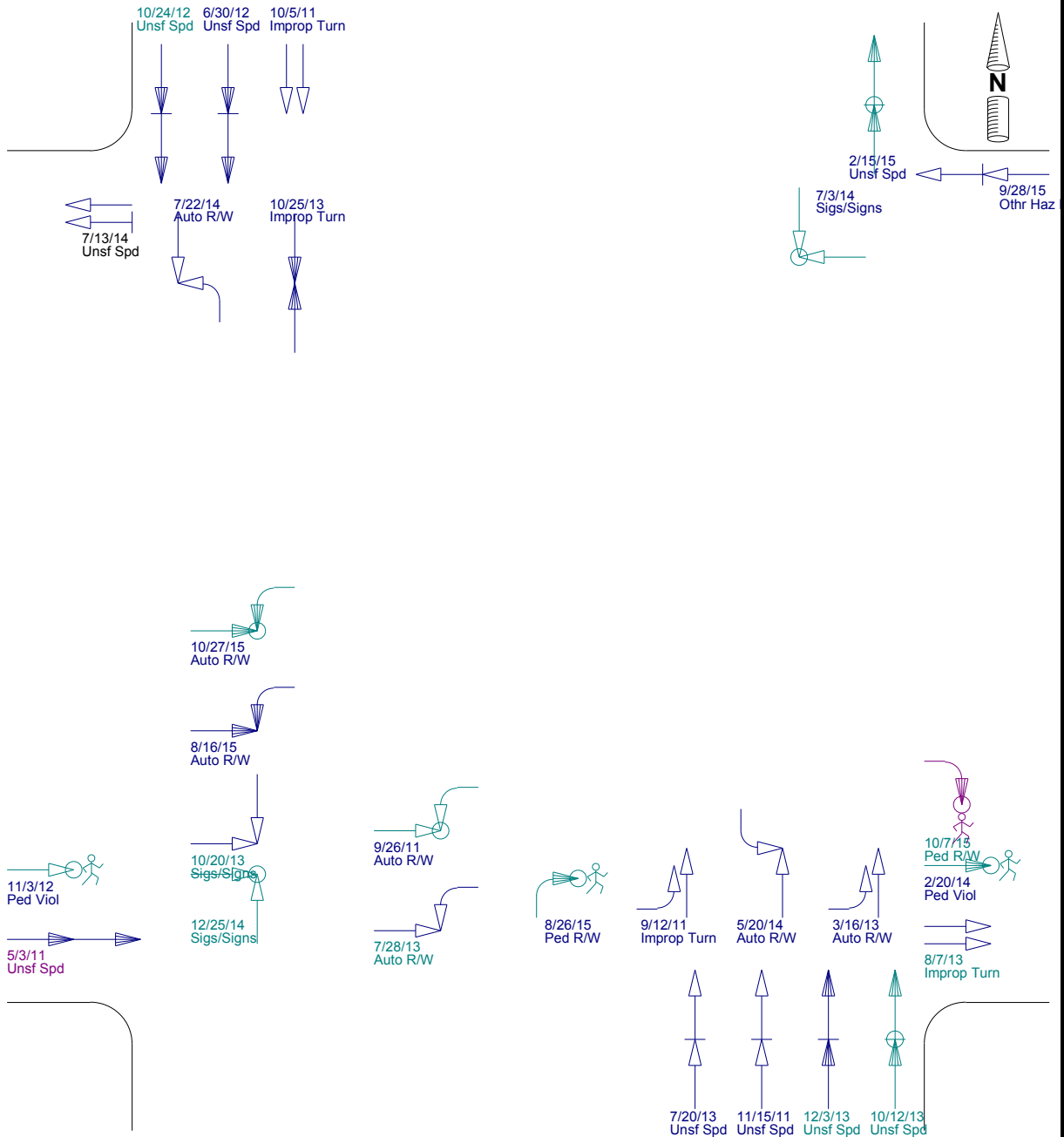
Collision Diagram

Horizontal Street: FOOTHILL BLVD

From: 1/1/2011 To: 12/31/2015

Vertical Street: 35TH AV

Date Prepared: 7/21/2016



Number of Collisions

19 Property Damage Only
10 Injury Collisions
0 Fatal Collisions
29 Total Collisions

Collisions Not Plotted: 1

Legend

Moving Vehicle
 Stopped Vehicle
 Backing Vehicle
 Ran Off Road
 Movement Unknown

Right Turn
 Left Turn
 Sideswipe
 Day
 Night

Pedestrian
 Fixed Object
 Bicycle
 DUI
 Injury
 Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

FOOTHILL BLVD

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

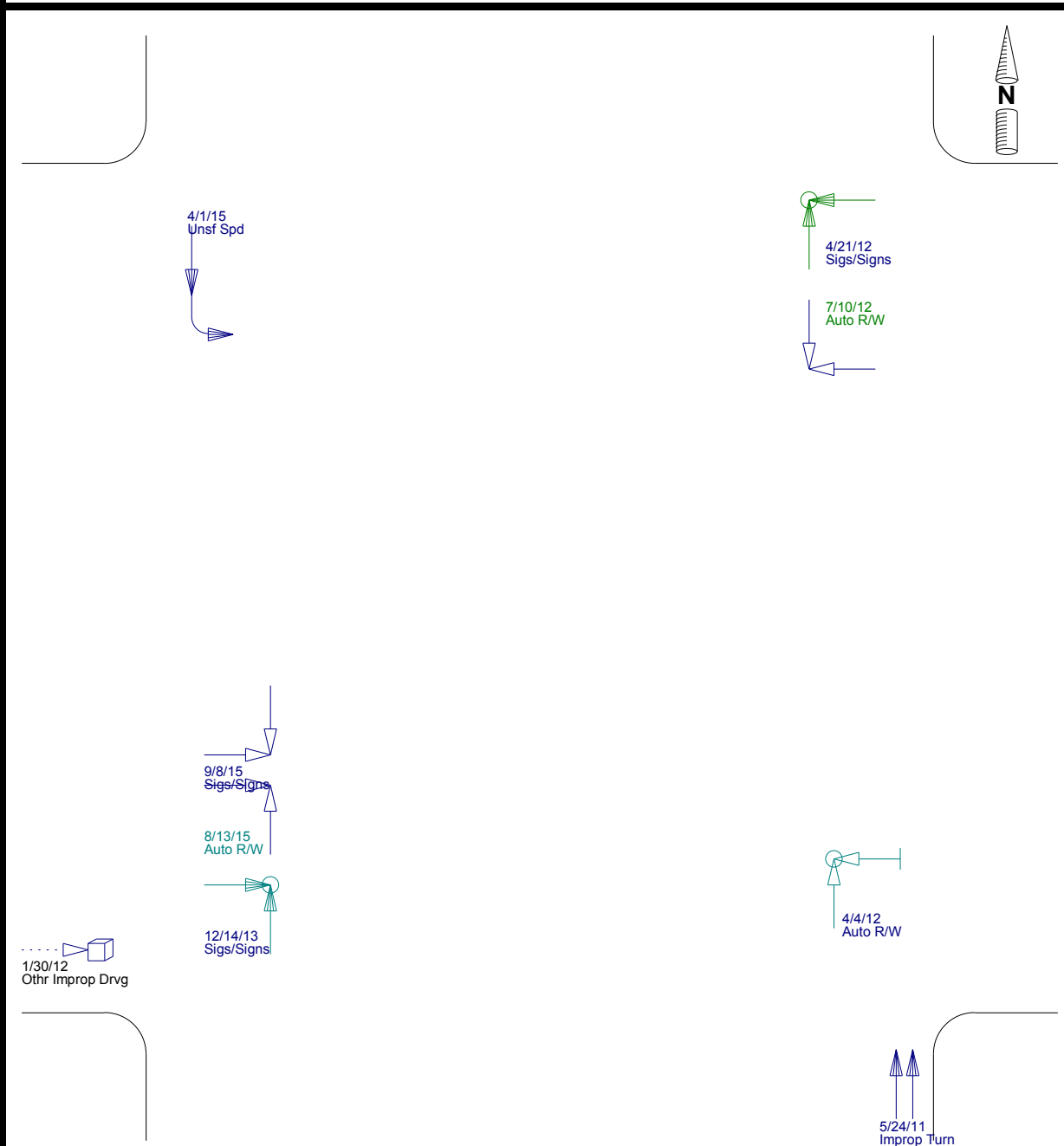
Collision Diagram

Horizontal Street: E 18TH ST

Vertical Street: 35TH AV

From: 1/1/2011 To: 12/31/2015

Date Prepared: 8/8/2016



Number of Collisions

6 Property Damage Only
3 Injury Collisions
0 Fatal Collisions
9 Total Collisions

Legend

➡ Moving Vehicle
 ➡ Stopped Vehicle
 ➡➡ Backing Vehicle
 ➡~ Ran Off Road
 ➡..... Movement Unknown

↗ Right Turn
 ↖ Left Turn
 ➡➡ Sideswipe
 ➡ Day
 ➡ Night

🚶 Pedestrian
 🚗 Fixed Object
 🚲 Bicycle
 🍷 DUI
 ○ Injury
 ⊙ Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

E 18TH ST

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

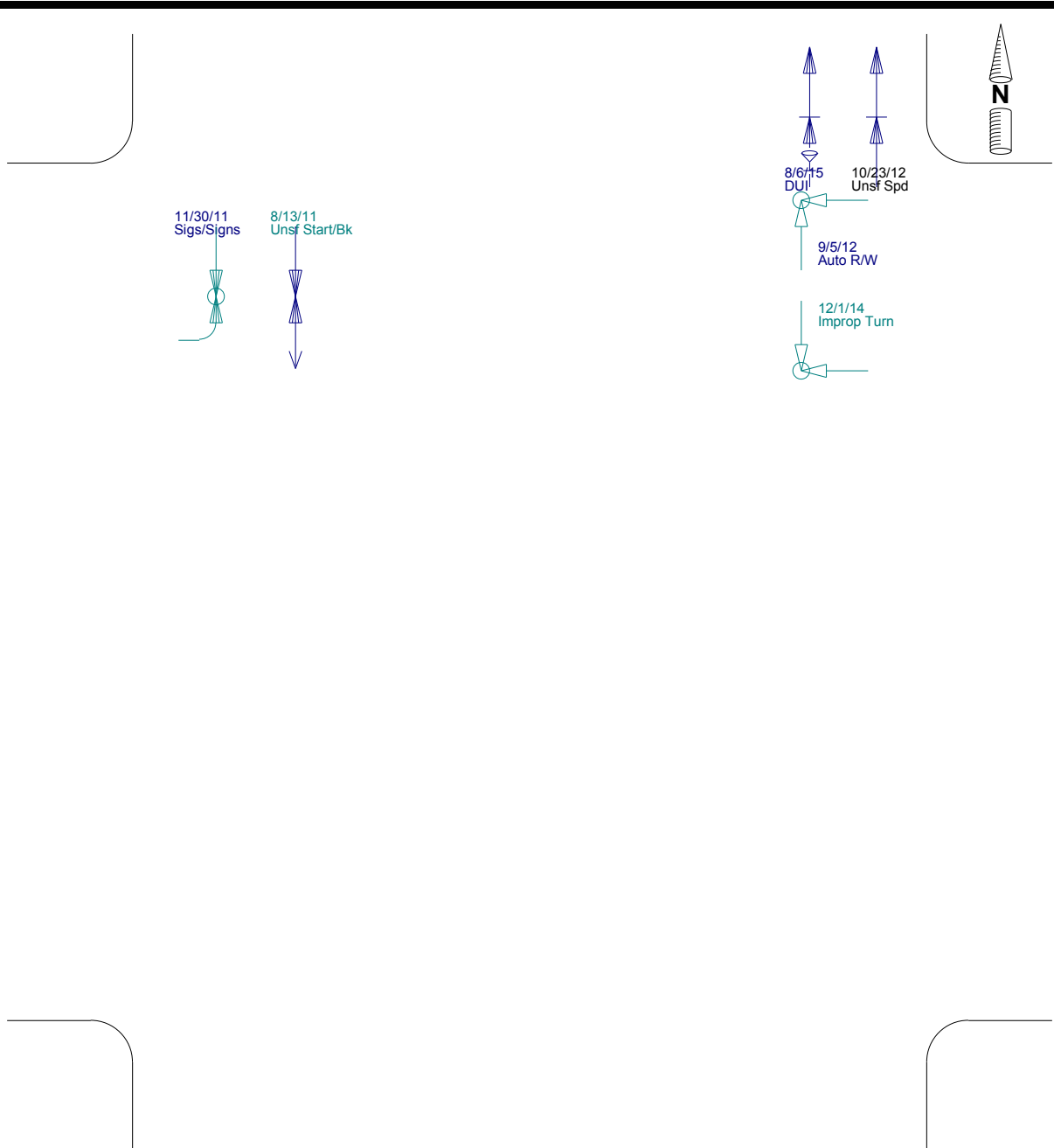
Collision Diagram

Horizontal Street: E 17TH ST

Vertical Street: 35TH AV

From: 1/1/2011 To: 12/31/2015

Date Prepared: 8/8/2016



Number of Collisions

3 Property Damage Only
3 Injury Collisions
0 Fatal Collisions
6 Total Collisions

Legend

Moving Vehicle
 Stopped Vehicle
 Backing Vehicle
 Ran Off Road
 Movement Unknown

Right Turn
 Left Turn
 Sideswipe
 Day
 Night

Pedestrian
 Fixed Object
 Bicycle
 DUI
 Injury
 Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

<u>Parameter</u>	<u>Setting</u>
Street Name	35TH AV
Cross Street	E 17TH ST
Starting Date	1/1/2011
Ending Date	12/31/2015
Intersection	Intersection Related

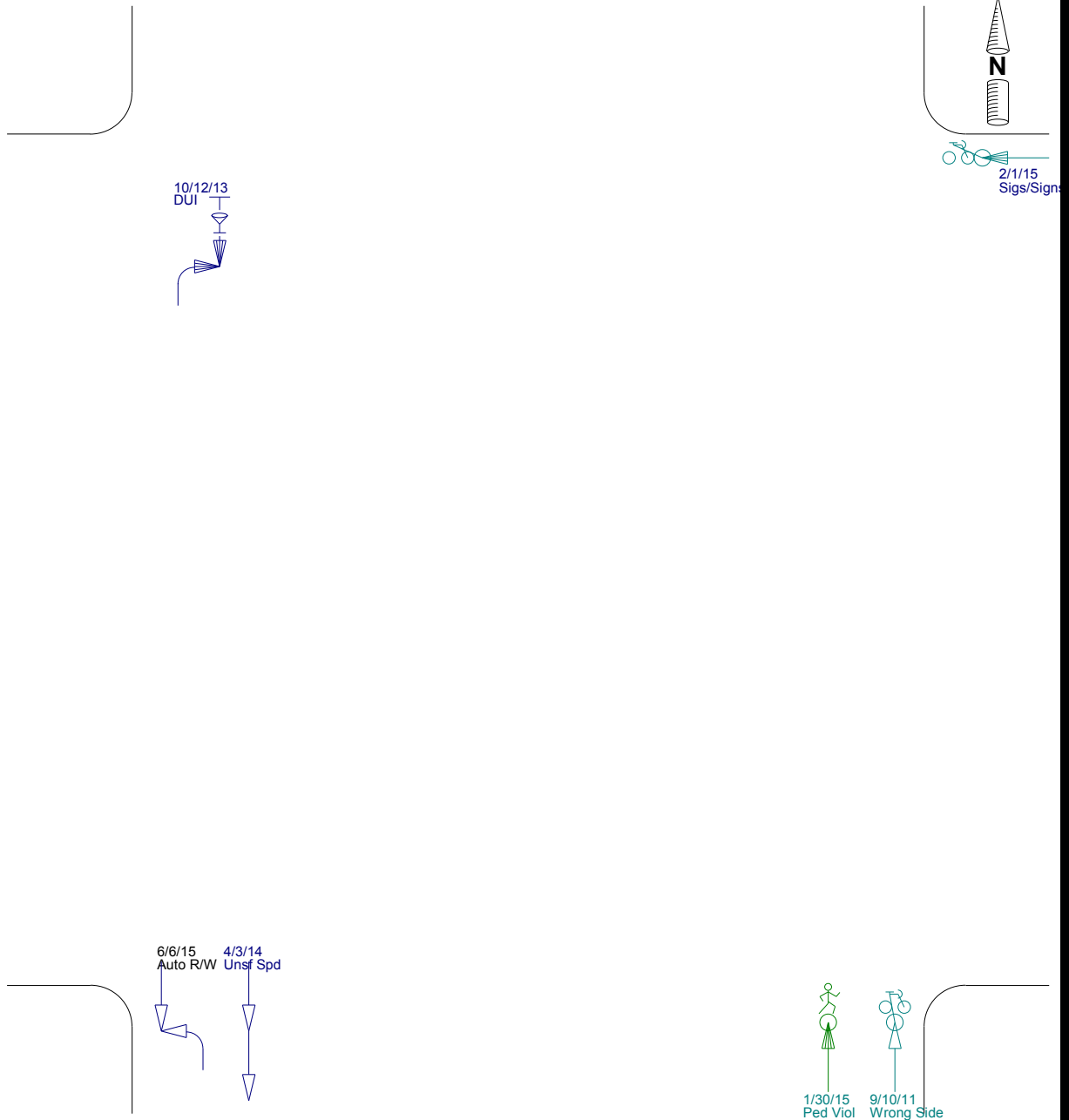
Collision Diagram

Horizontal Street: E 16TH ST

Vertical Street: 35TH AV

From: 1/1/2011 To: 12/31/2015

Date Prepared: 7/21/2016



Number of Collisions

3 Property Damage Only
3 Injury Collisions
0 Fatal Collisions
6 Total Collisions

Legend

Moving Vehicle
 Stopped Vehicle
 Backing Vehicle
 Ran Off Road
 Movement Unknown

Right Turn
 Left Turn
 Sideswipe
 Day
 Night

Pedestrian
 Fixed Object
 Bicycle
 DUI
 Injury
 Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

<u>Parameter</u>	<u>Setting</u>
Street Name	35TH AV
Cross Street	E 16TH ST
Starting Date	1/1/2011
Ending Date	12/31/2015
Intersection	Intersection Related

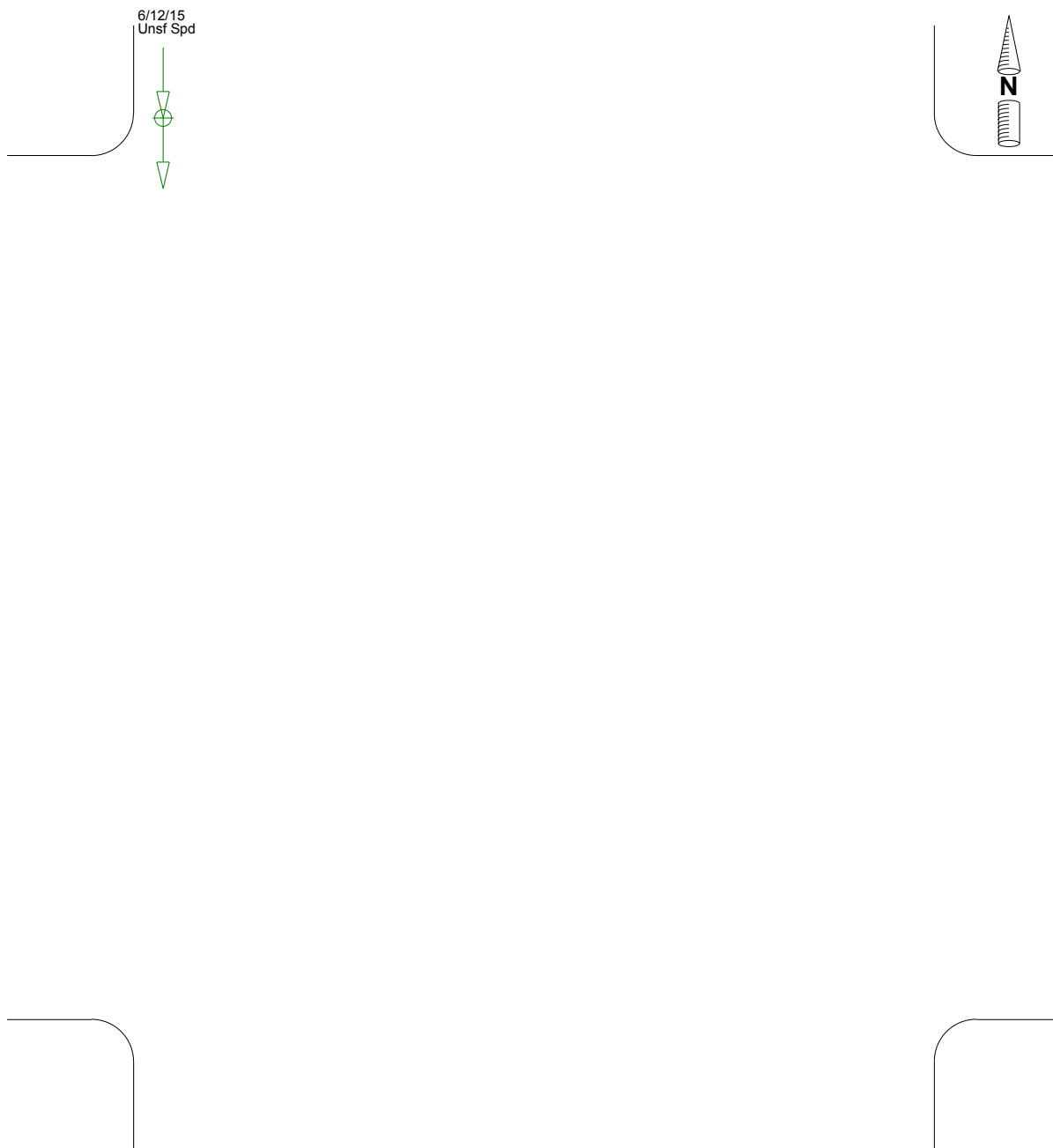
Collision Diagram

Horizontal Street: E 15TH ST

From: 1/1/2011 To: 12/31/2015

Vertical Street: 35TH AV

Date Prepared: 8/8/2016



Number of Collisions

0 Property Damage Only
1 Injury Collisions
0 Fatal Collisions
1 Total Collisions

Legend

Moving Vehicle
 Stopped Vehicle
 Backing Vehicle
 Ran Off Road
 Movement Unknown

Right Turn
 Left Turn
 Sideswipe
 Day
 Night

Pedestrian
 Fixed Object
 Bicycle
 DUI
 Injury
 Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

E 15TH ST

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

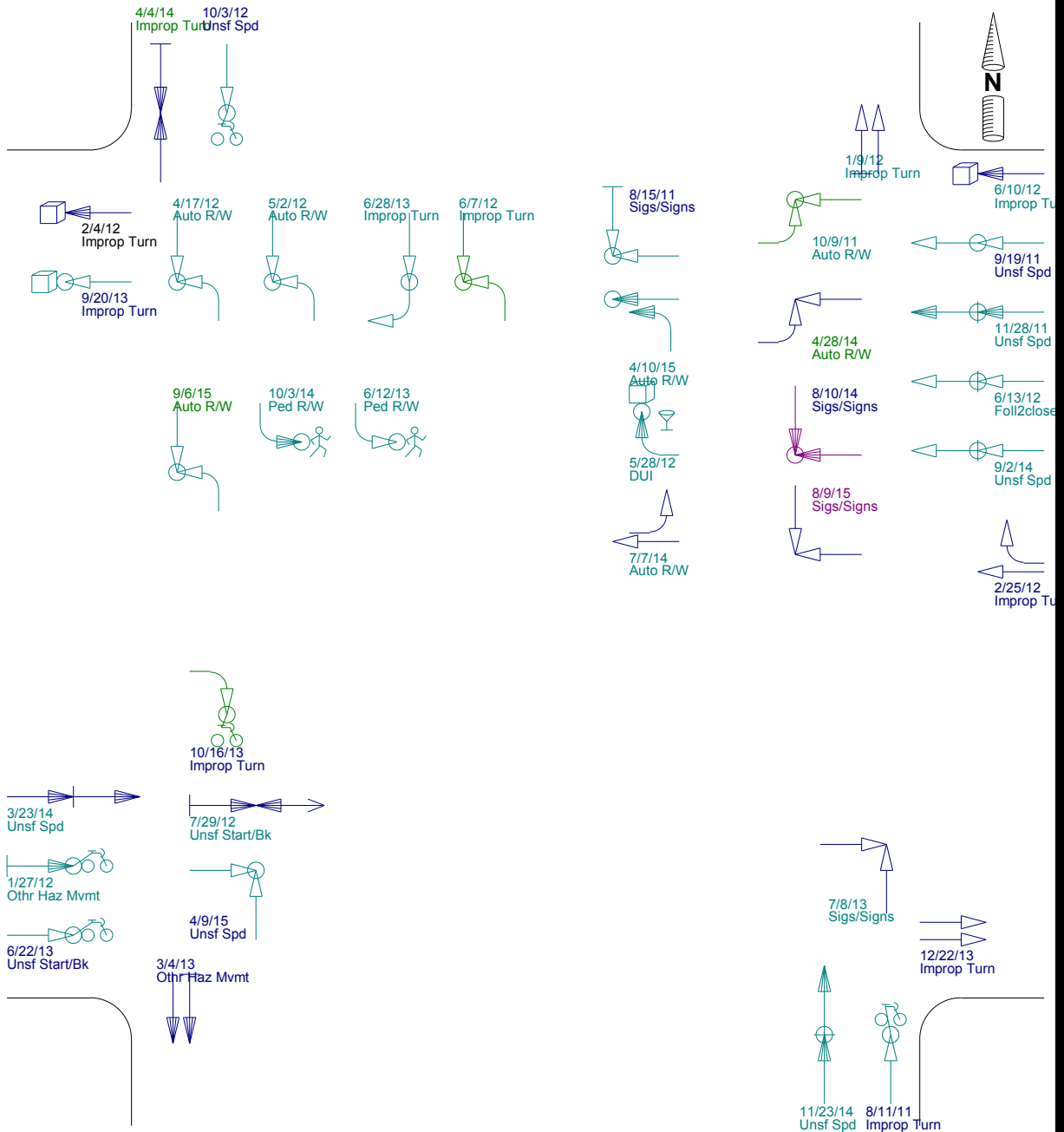
Collision Diagram

Horizontal Street: INTERNATIONAL BLVD

From: 1/1/2011 To: 12/31/2015

Vertical Street: 35TH AV

Date Prepared: 7/21/2016



Number of Collisions

14 Property Damage Only
24 Injury Collisions
0 Fatal Collisions
38 Total Collisions

Collisions Not Plotted: 1

Legend

Moving Vehicle
 Stopped Vehicle
 Backing Vehicle
 Ran Off Road
 Movement Unknown

Right Turn
 Left Turn
 Sideswipe
 Day
 Night

Pedestrian
 Fixed Object
 Bicycle
 DUI
 Injury
 Fatal

Color Legend - Highest Degree of Injury

Maroon = Fatal

Purple = Severe Injury

Green = Other Visible Injury

Teal = Complaint of Pain

Dark Blue = Property Damage Only

Settings Used For Query

Parameter

Setting

Street Name

35TH AV

Cross Street

INTERNATIONAL BLVD

Starting Date

1/1/2011

Ending Date

12/31/2015

Intersection

Intersection Related

Collision List - 2011-2015 (35th Avenue)

Case ID	Collision Year	Primary Road	Secondary Road	Collision Date	Collision Time	Distance	Direction	Collision Severity	Type of Collision
4753564	2011	INTERNATIONAL BL	35TH AV	20110407	2230	120	W	0	E
4754441	2011	PAXTON AV	35TH AV	20110418	1115	65	W	0	C
5023492	2011	INTERNATIONAL BL	35TH AV	20110112	1513	65	W	0	C
5055221	2011	35TH AV	MANGELS AV	20110117	2110	20	S	4	E
5057757	2011	35TH AV	17TH ST	20110210	2059	200	S	0	B
5084152	2011	35TH AV	SUTER ST	20110120	820	50	N	0	C
5084803	2011	DAVID ST	35TH AV	20110129	155	30	E	0	D
5086348	2011	FOOTHILL BL	35TH AV	20110224	1940	0		4	A
5088746	2011	35TH AV	16TH ST	20110216	1215	45	S	0	B
5088921	2011	35TH AV	DAVIS ST	20110216	750	45	S	0	D
5102845	2011	35TH AV	E 12TH ST	20110209	1713	0		0	D
5109792	2011	35TH AV	QUIGLEY ST	20110225	47	60	N	0	C
5110632	2011	35TH AV	BROOKDALE AV	20110309	39	10	N	4	C
5117754	2011	35TH AV	GALINDO ST	20110301	615	78	S	3	C
5117758	2011	35TH AV	PENNIMAN AV	20110301	1012	0		0	C
5144883	2011	E 16TH ST	35TH AV	20110325	1430	1	E	0	H
5152247	2011	35TH AV	17TH ST	20110429	815	0		0	C
5152314	2011	35TH AV	LYNDE ST	20110429	1259	40	S	0	C
5153459	2011	35TH AV	HAROLD ST	20110401	1547	0		0	B
5156796	2011	35TH AV	ALEXANDER CT	20110414	730	55	N	0	G
5159846	2011	35TH AV	ALEXANDER CT	20110322	1700	0		0	C
5168248	2011	35TH AV	SALISBURY ST	20110330	925	0		3	G
5179495	2011	35TH AV	RT 580	20110517	2040	10	N	4	B
5189132	2011	FOOTHILL BL	35TH AV	20110503	2232	60	W	0	C

5194378	2011 35TH AV	E 18TH ST	20110524	2155 10	S	0	B
5205341	2011 35TH AV	DAVIS ST	20110504	1740 15	N	0	B
5218090	2011 35TH AV	E 12TH ST	20110613	1023 0		4	D
5220137	2011 35TH AV	SUTER AV	20110712	800 0		4	C
5232514	2011 35TH AV	DAVIS ST	20110412	1615 40	S	0	C
5251208	2011 35TH AV	SUTER ST	20110706	1838 0		4	C
5254896	2011 35TH AV	RT 580	20110730	1349 0		3	D
5258034	2011 35TH AV	SUTER ST	20110723	1908 5	S	4	C
5272746	2011 35TH AV	QUIGLEY ST	20110809	2248 0		4	C
5272754	2011 35TH AV	INTERNATIONAL BL	20110811	1813 0		4	H
5274156	2011 INTERNATIONAL BL	35TH AV	20110815	1826 0		4	D
5275362	2011 35TH AV	PENNIMAN AV	20110813	1335 100	N	0	C
5285630	2011 35TH AV	E 17TH ST	20110813	2110 30	N	0	C
5298828	2011 35TH AV	RT 580	20110815	931 0		4	G
5298864	2011 35TH AV	ALLENDAL AV	20110818	1201 0		4	D
5307718	2011 35TH AV	SUTER ST	20110821	1603 10	S	0	C
5316559	2011 INTERNATIONAL BL	35TH AV	20110905	1135 0		0	C
5321648	2011 35TH AV	E 16TH ST	20110910	1241 100	S	4	H
5346097	2011 35TH AV	FOOTHILL BL	20111005	818 0		0	B
5351305	2011 INTERNATIONAL BL	35TH AV	20111009	1754 0		3	D
5356505	2011 35TH AV	FOOTHILL BL	20110912	1617 0		0	B
5361348	2011 35TH AV	SUTTER ST	20110831	715 0		4	H
5365253	2011 35TH AV	ALEXANDER CT	20110922	1920 66	S	4	G
5385588	2011 FOOTHILL BL	35TH AV	20110926	1000 0		4	A
5389697	2011 35TH AV	GALINDO ST	20111109	1654 45	S	4	C

5393893	2011 35TH AV	DAVIS ST	20111112	2320 40	N	0	B
5412492	2011 35TH AV	GALINDO ST	20111125	805 0		0	C
5414485	2011 35TH AV	BROOKDALE AV	20111112	329 0		4	A
5433482	2011 INTERNATIONAL BL	35TH AV	20111128	2000 20	E	4	C
5447505	2011 35TH AV	BROOKDALE AV	20111206	1750 0		3	A
5447720	2011 INTERNATIONAL BL	35TH AV	20110919	1802 0		4	H
5451813	2011 35TH AV	ALLENDALE AV	20111220	1240 20	S	0	C
5465964	2011 35TH AV	ALLENDALE AV	20111214	710 75	S	0	B
5465984	2011 35TH AV	LYNDE ST	20111206	955 25	N	0	H
5466534	2011 35TH AV	PENNIMAN AV	20111216	1322 20	N	3	B
5466550	2011 35TH AV	HARPER ST	20111226	1821 42	S	3	B
5470501	2011 35TH AV	E 17TH ST	20111130	1735 0		4	D
5476554	2012 35TH AV	INTERNATIONAL BL	20120109	1500 60	N	0	B
5476659	2011 35TH AV	GALINDO ST	20111128	1612 15	S	0	C
5476967	2011 35TH AV	FOOTHILL BL	20111115	1753 0		0	C
5489599	2012 35TH AV	SCHOOL ST	20120120	1600 0		0	B
5491686	2012 35TH AV	E 16TH ST	20120224	948 200	N	4	A
5499567	2012 35TH AV	PENNIMAN AV	20120127	55 0		0	D
5499575	2012 INTERNATIONAL BL	35TH AV	20120127	1730 100	W	4	H
5500906	2012 35TH AV	E 18TH ST	20120130	1647 81	S	0	E
5506665	2011 35TH AV	EDEN AV	20111224	1740 24	N	0	B

5508548	2012 LYON AV	35TH AV	20120104	2021 50	E	0	B
5510233	2012 INTERNATIONAL BL	35TH AV	20120225	1150 40	E	0	B
5516411	2012 INTERNATIONAL BL	35TH AV	20120204	255 25	W	0	E
5521488	2012 GRAY ST	35TH AV	20120304	1312 150	E	3	A
5541441	2012 QUIGLEY ST	35TH AV	20120131	2212 200	E	0	B
5545531	2012 E 12TH ST	35TH AV	20120225	1735 0		4	D
5553122	2012 PENNIMAN AV	35TH AV	20120124	1702 10	W	0	A
5555129	2012 35TH AV	PENNIMAN AV	20120401	202 10	N	0	D
5555478	2012 35TH AV	GALINDO ST	20120313	1916 10	N	4	B
5577077	2012 35TH AV	PENNIMAN AV	20120408	1050 5	S	0	B
5578779	2012 35TH AV	FOOTHILL BL	20120202	2134 309	S	0	B
5580468	2012 35TH AV	DEERING ST	20120402	2230 25	S	0	C
5597182	2012 35TH AV	E 18TH ST	20120421	2224 0		3	D
5604478	2012 35TH AV	18TH ST	20120404	1532 0		4	D
5609150	2012 35TH AV	INTERNATIONAL BL	20120417	1639 0		4	D
5609940	2012 35TH AV	HARPER ST	20120405	1739 4	S	4	H
5622965	2012 35TH AV	E 15TH ST	20120326	2050 150	N	0	B
5631982	2012 35TH AV	PENNIMAN AV	20120514	621 40	N	0	D
5662892	2012 35TH AV	PENNIMAN AV	20120603	1015 50	N	0	B
5670799	2012 INTERNATIONAL BL	35TH AV	20120610	217 0		0	A
5676879	2012 35TH AV	QUIGLEY ST	20120701	1002 60	N	4	C
5677609	2012 INTERNATIONAL BL	35TH AV	20120502	1022 0		4	D
5678327	2012 PENNIMAN AV	35TH AV	20120606	1845 6	E	0	E
5682613	2012 35TH AV	LYON AV	20120410	1245 60	S	0	C

5690395	2012 35TH AV	INTERNATIONAL BL	20120607	1916 0		3	A
5742974	2012 35TH AV	FOOTHILL BL	20120630	2345 30	N	0	C
5746774	2012 35TH AV	E 18TH ST	20120710	1620 0		0	D
5747008	2012 PAXTON AV	35TH AV	20120607	2040 50	W	0	B
5749656	2012 LYNDE ST	35TH AV	20120415	1536 52	W	4	C
5756272	2012 35TH AV	BROOKDALE AV	20120221	1125 74	S	0	D
5769697	2012 35TH AV	LYNDE ST	20120727	1746 0		4	G
5772125	2012 INTERNATIONAL BL	35TH AV	20120729	1020 50	W	0	C
5782187	2012 35TH AV	GRAY ST	20120726	1630 0		0	C
5794669	2012 QUIGLEY ST	35TH AV	20120731	1208 75	E	0	B
5797891	2012 35TH AV	DAVIS ST	20120926	1903 10	S	0	H
5798796	2012 35TH AV	HARPER ST	20120830	1620 0		0	D
5830717	2012 35TH AV	INTERNATIONAL BL	20121003	1528 20	N	4	B
5836860	2012 35TH AV	17TH ST	20120905	1310 40	S	4	D
5844219	2012 35TH AV	PENNIMAN AV	20121027	933 0		0	A
5860767	2012 35TH AV	DAVIS ST	20121008	2245 50	S	0	C
5866732	2012 INTERNATIONAL BL	35TH AV	20120528	25 10	E	4	E
5872020	2012 35TH AV	FOOTHILL BL	20121024	1327 60	N	0	C
5878279	2012 35TH AV	FOOTHILL BL	20121012	754 0		0	D
5880777	2012 35TH AV	LYNDE ST	20120924	602 76	S	0	B
5888743	2012 35TH AV	DEERING ST	20121231	1303 48	N	0	B
5888794	2012 SUTER ST	35TH AV	20121106	1520 0		0	C
5895645	2012 DAVIS ST	35TH AV	20121208	1417 5	W	0	H
5896520	2012 35TH AV	35TH AV 2522	20121017	1700 0		4	G

5901588	2012 35TH AV	RT 580	20120914	1600 0		0	D
5904703	2012 MANGELS AV	35TH AV	20121104	1518 150	E	4	G
5904708	2012 SALISBURY ST	35TH AV	20120823	2027 15	W	0	C
5904756	2012 PAXTON AV	35TH AV	20120804	2342 100	W	0	C
5915826	2012 INTERNATIONAL BL	35TH AV	20121226	1144 153	W	0	H
5927744	2012 35TH AV	DAVIS ST	20121130	1831 30	S	3	H
5927867	2012 35TH AV	E 16TH ST	20121212	1612 80	S	0	B
5928506	2012 FOOTHILL BL	35TH AV	20121103	936 0		4	G
5941646	2013 PENNIMAN AV	35TH AV	20130203	2144 100	E	0	A
5947876	2012 35TH AV	E 12TH ST	20121215	2115 0		3	G
5948401	2012 35TH AV	ALLENDALE AV	20120711	1843 0		0	C
5953472	2012 35TH AV	17TH ST	20121023	505 100	N	0	C
5953757	2012 35TH AV	FOOTHILL BL	20121201	742 0		0	B
5953769	2012 INTERNATIONAL BL	35TH AV	20120312	621 24	S	0	E
5959584	2012 INTERNATIONAL BL	35TH AV	20120613	1735 20	E	4	C
5960920	2012 INTERNATIONAL BL	35TH AV	20121210	2000 28	W	0	B
5961783	2012 35TH AV	FOOTHILL BL	20121122	1359 12	S	0	B
5967475	2012 35TH AV	SUTER ST	20121112	752 35	N	0	A
5980012	2012 35TH AV	LYON ST	20121117	810 0		0	D
5987341	2013 35TH AV	PENNIMAN AV	20130108	1921 90	N	4	D
5996395	2013 35TH AV	LYNDE ST	20130124	55 25	S	0	C
5998709	2013 FOOTHILL BL	35TH AV	20130319	1845 50	E	0	C
6009558	2013 35TH AV	ALLENDALE AV	20130207	1049 0		4	G

6042579	2013 35TH AV	HARPER ST	20130423	30 0		4	C
6082518	2013 35TH AV	GALINDO ST	20130424	1000 0		0	D
6087279	2013 35TH AV	INTERNATIONAL BL	20130507	956 10	N	0	B
6087883	2013 35TH AV	RT 580	20130226	2135 0		4	D
6087917	2013 INTERNATIONAL BL	35TH AV	20130324	929 40	E	4	C
6092808	2013 INTERNATIONAL BL	35TH AV	20130504	1030 20	W	0	C
6104665	2013 35TH AV	INTERNATIONAL BL	20130304	1958 40	S	0	B
6112975	2013 35TH AV	BROOKDALE AV	20130318	1830 100	N	0	C
6113003	2013 35TH AV	FOOTHILL BL	20130316	950 0		0	D
6130410	2013 35TH AV	SALISBURY AV	20130706	1945 0		0	A
6133699	2013 INTERNATIONAL BL	35TH AV	20130622	1032 100	W	4	H
6138400	2013 35TH AV	HARPER AV	20130520	2134 15	S	0	C
6141219	2013 35TH AV	ALLENDALE AV	20130612	2356 45	S	0	C
6147679	2013 35TH AV	INTERNATIONAL BL	20130612	900 0		4	G
6148627	2013 35TH AV	SUTTER ST	20130513	130 200	N	4	C
6157025	2013 ALEXANDER CT	35TH AV	20130520	2035 180	W	0	D
6159624	2013 35TH AV	HAGEMAN AV	20130714	300 20	S	0	C
6179721	2013 35TH AV	18TH ST	20130707	25 10	N	0	A
6184372	2013 35TH AV	SALISBURY ST	20130724	956 0		4	C
6188104	2013 INTERNATIONAL BL	35TH AV	20130708	720 0		0	D
6205174	2013 FOOTHILL BL	35TH AV	20130728	1443 0		0	A
6216798	2013 35TH AV	FOOTHILL BL	20130720	1022 0		0	C

6226206	2013 FOOTHILL BL	35TH AV	20130807	1310 10	E	0	B
6226977	2013 35TH AV	12TH ST	20130514	1530 0		3	H
6228583	2013 35TH AV	ALEXANDER CT	20130817	2213 100	N	0	C
6228587	2013 35TH AV	GRAY ST	20130804	2210 0		0	B
6262361	2013 35TH AV	E 18TH AV	20130908	228 0		0	B
6278701	2013 35TH AV	FOOTHILL BL	20130922	830 0		0	B
6295418	2013 35TH AV	HARPER ST	20131006	715 15	S	0	C
6300574	2013 35TH AV	FOOTHILL BL	20131012	118 40	S	4	C
6332240	2013 INTERNATIONAL BL	35TH AV	20131016	1655 0		3	B
6332281	2013 35TH AV	FOOTHILL BL	20131020	1430 0		0	D
6338008	2013 INTERNATIONAL BL	35TH AV	20130920	811 50	W	4	E
6351364	2015 35TH AV	FOOTHILL BL	20151215	1012 25	S	0	B
6351407	2015 E 17TH ST	35TH AV	20151215	930 4	W	0	G
6354418	2013 35TH AV	BROOKDALE AV	20131109	2200 60	S	4	E
6361261	2013 35TH AV	HAGEMAN ST	20131108	1240 15	S	4	C
6361832	2013 35TH AV	E 17TH ST	20131217	1227 250	S	0	B
6361840	2013 RT 580	35TH AV	20131018	840 25	W	4	C
6369624	2014 35TH AV	HARPER ST	20140110	49 0		0	D
6370497	2013 INTERNATIONAL BL	35TH AV	20130906	755 120	E	0	E
6381293	2013 35TH AV	DAVIS ST	20131025	1500 0		2	H
6381397	2013 35TH AV	GALINDO ST	20131210	539 130	N	0	C
6384294	2014 FOOTHILL BL	35TH AV	20140116	1316 20	W	0	B
6384326	2013 35TH AV	FOOTHILL BL	20131025	2120 0		0	A
6385216	2013 35TH AV	E 16TH ST	20131012	1855 42	N	0	A
6392084	2013 35TH AV	FOOTHILL BL	20131203	1845 0		0	C

6394751	2013 35TH AV	RT 580	20131105	1820 0		3	G
6395495	2013 35TH AV	SALISBURY ST	20131020	11 5	N	0	A
6406740	2014 35TH AV	FOOTHILL BL	20140223	220 150	S	3	B
6415158	2013 PENNIMAN AV	35TH AV	20131201	900 60	E	0	B
6415160	2013 35TH AV	SALISBURY ST	20131207	850 0		0	D
6418543	2014 35TH AV	FOOTHILL BL	20140124	1355 0		4	D
6418904	2013 INTERNATIONAL BL	35TH AV	20131222	810 50	E	0	B
6423776	2014 35TH AV	E 17TH ST	20140131	1520 150	S	0	B
6430753	2013 35TH AV	E15TH ST	20131215	1640 0		0	B
6440658	2013 35TH AV	E 18TH ST	20131214	1945 0		4	D
6440725	2014 35TH AV	SUTER ST	20140221	1915 0		0	B
6442005	2014 35TH AV	SALISBURY ST	20140301	1059 0		4	G
6444136	2014 35TH AV	BROOKDALE AV	20140203	1630 0		2	G
6446215	2014 INTERNATIONAL	35TH AV	20140317	1728 122	W	0	C
6458144	2014 LYON AV	35TH AV	20140213	1759 15	E	4	B
6460610	2014 35TH AV	PENNIMAN AV	20140113	1948 0		4	C
6466992	2014 35TH AV	GALINDO	20140217	430 150	N	0	C
6472622	2014 FOOHILL BL	35TH AV	20140220	1830 34	E	4	G
6477839	2013 35TH AV	EDEN LN	20131002	2045 0		4	A
6486468	2014 35TH AV	E 12TH ST	20140508	1118 10	N	0	D
6491649	2014 35TH AV	BROOKDALE AV	20140311	110 0		3	H

6496871	2014 E 12TH ST	35TH AV	20140107	1540 20	W	0	B
6513855	2014 35TH AV	HARPER ST	20140215	1800 10	S	0	C
6519549	2014 35TH AV	HARPER ST	20140301	2008 40	S	0	B
6532981	2014 35TH AV	E 16TH ST	20140403	1110 20	S	0	C
6534051	2014 INTERNATIONAL BL	35TH AV	20140323	2058 0		0	C
6548935	2014 35TH AV	CUSTER ST	20140409	1830 0		4	D
6564751	2014 INTERNATIONAL BL	35TH AV	20140428	930 0		0	D
6572635	2014 35TH AV	PAXTON AV	20140529	2301 0		0	D
6578756	2014 35TH AV	RT 580	20140625	2033 0		4	D
6579717	2014 35TH AV	INTERNATIONAL BL	20140404	407 40	N	0	D
6581175	2014 35TH AV	FOOTHILL BL	20140520	825 0		0	D
6590776	2014 SUTER ST	35TH AV	20140728	1430 30	W	0	B
6592368	2014 FOOTHILL BL	35TH AV	20140703	950 0		4	D
6599724	2014 35TH AV	PENNIMAN AV	20140718	900 100	S	0	B
6600544	2014 INTERNATIONAL BL	35TH AV	20140703	1200 150	W	0	E
6607906	2014 FOOTHILL BL	35TH AV	20140616	1330 115	E	0	D
6611497	2014 FOOTHILL BL	35TH AV	20140713	1729 100	W	0	B
6613251	2014 35TH AV	DAVIS ST	20140608	442 5	S	0	C
6625042	2014 SUTER ST	35TH AV	20140726	843 200	W	0	D
6625043	2014 35TH AV	FOOTHILL RD	20140722	1755 0		0	D
6648085	2014 ALLENDALE AV	35TH AV	20140811	1919 5	E	0	B
6651259	2014 E 12TH ST	35TH AV	20140803	402 200	W	4	C

6686667	2014 SUTER ST	35TH AV	20140905	130 7	E	0	B
6688705	2013 35TH AV	SALISBURY ST	20130217	2320 0		0	D
6707482	2014 INTERNATIONAL BL	35TH AV	20140902	1300 10	E	4	C
6707672	2014 35TH AV	PENNIMAN AV	20141104	330 0		0	A
6708578	2014 35TH AV	SALISBURY ST	20140903	823 138	S	4	H
6709411	2013 INTERNATIONAL BL	35TH AV	20130628	535 0		4	D
6714237	2014 QUIGLEY ST	35TH AV	20141016	2040 200	E	0	B
6720705	2014 35TH AV	PENNIMAN AV	20141105	547 5	S	4	C
6737028	2014 35TH AV	INTERNATIONAL BL	20140707	1724 0		0	B
6737287	2014 INTERNATIONAL BL	35TH AV	20140912	235 0		0	D
6745304	2014 35TH AV	E 16TH ST	20141026	216 30	S	0	B
6765760	2014 INTERNATIONAL BL	35TH AV	20141003	615 0		4	G
6766450	2014 35TH AV	HAGEMAN AV	20141128	2010 25	S	0	C
6766466	2014 SUTER ST	35TH AV	20141128	2020 200	W	0	C
6777467	2014 INTERNATIONAL BL	35TH AV	20141206	1308 10	E	0	B
6784438	2014 INTERNATIONAL BL	35TH AV	20140919	956 2	W	0	B
6785193	2014 INTERNATIONAL BL	35TH AV	20141113	1545 0		0	B
6788535	2014 35TH AV	BROOKDALE	20141129	2335 35	S	3	G
6793806	2014 35TH AV	LYON AV	20140409	800 0		0	D
6801270	2014 35TH AV	FOOTHILL BL	20141225	1311 0		4	D
6801334	2014 BROOKDALE AV	35TH AV	20140518	2006 100	E	0	C
6806505	2014 35TH AV	INTERNATIONAL BL	20141123	30 10	S	4	C

6810933	2014 35TH AV	BROOKDALE AV	20141022	1729 0		3	D
6813236	2014 INTERNATIONAL BL	35TH AV	20141024	2045 2	W	0	E
6813502	2015 35TH AV	FOOTHILL BL	20150120	1257 0		0	B
6813610	2014 35TH AV	BROOKDALE AV	20141130	2350 8	S	0	G
6813940	2014 E 17TH ST	35TH AV	20141201	822 0		4	D
6814440	2015 35TH AV	ALLENDALE AV	20150126	1228 44	S	0	B
6817546	2014 35TH AV	E 17TH ST	20141227	1834 166	N	4	B
6827759	2014 35TH AV	FOOTHILL BL	20141210	1922 500	S	0	A
6828228	2014 35TH AV	CUSTER ST	20141114	1651 35	W	0	H
6828641	2015 35TH AV	ALLENDALE AV	20150104	2225 0		0	D
6828808	2014 INTERNATIONAL BL	35TH AV	20140810	2237 0		2	D
6829657	2015 35TH AV	E 15TH ST	20150310	1 35	N	0	C
6835067	2015 35TH AV	E 16TH ST	20150201	2113 0		4	H
6839746	2014 35TH AV	QUIGLEY ST	20141223	1911 100	S	0	C
6847213	2015 35TH AV	HARPER ST	20150303	359 130	S	0	B
6851060	2015 35TH AV	E 16TH ST	20150130	1928 0		3	G
6852604	2015 35TH AV	E 12TH ST	20150205	1838 0		4	A
6855133	2014 35TH AV	QUIGLEY ST	20141128	607 0		4	D
6858424	2015 35TH AV	E 18TH ST	20150225	855 0		0	C
6859500	2014 35TH AV	QUIGLEY ST	20141209	1600 30	S	4	C
6890133	2015 35TH AV	FOOTHILL BL	20150309	2331 40	S	0	C

6896369	2015 35TH AV	FOOTHILL BL	20150413	1959 50	S	0	C
6908046	2015 35TH AV	E 18TH ST	20150401	610 0		0	D
6928232	2015 LYON AV	35TH AV	20150430	1105 12	E	0	C
6947914	2015 35TH AV	HARPER ST	20150402	2338 10	W	4	D
6983255	2015 E 18TH ST	35TH AV	20150705	1700 0		4	D
6998733	2015 INTERNATIONAL BL	35TH AV	20150313	2209 0		0	D
7001498	2015 E 16TH ST	35TH AV	20150317	1105 20	E	0	B
7018169	2015 INTERNATIONAL BL	35TH AV	20150329	20 15	E	0	C
7052810	2015 35TH AV	E 17TH ST	20150806	35 50	N	0	C
7053923	2015 35TH AV	E 15TH ST	20150612	1632 100	N	3	C
7060062	2015 35TH AV	E 16TH ST	20150606	1408 50	S	0	A
7060064	2015 35TH AV	PENNIMAN	20150622	1221 0		0	-
7060214	2015 DELAWARE ST	35TH AV	20150610	2011 106	W	0	E
7061015	2015 35TH AV	SUTER ST	20150715	2235 50	N	4	H
7066380	2015 INTERNATIONAL BL	35TH AV	20150410	113 0		4	A
7066596	2015 35TH AV	FOOTHILL BL	20150215	2115 5	N	4	C
7071210	2015 35TH AV	RT 580	20150702	1347 0		0	B
7072629	2015 BROOKDALE AV	35TH AV	20150807	1733 0		0	A
7072635	2015 INTERNATIONAL BL	35TH AV	20150809	900 0		0	D
7074644	2015 35TH AV	SALISBURY ST	20150614	2254 0		0	D
7082698	2015 DAVIS ST	35TH AV	20150713	130 100	W	0	B
7093853	2015 35TH AV	E 18TH ST	20150813	846 0		0	D
7095190	2015 FOOTHILL BL	35TH AV	20150928	1603 50	E	0	A

7095194	2015 CUSTER ST	35TH AV	20150905	1607 0		0	G
7097234	2015 35TH AV	SUTTER ST	20150715	2129 0		0	D
7111453	2015 35TH AV	QUIGLEY ST	20150730	2105 20	S	0	E
7112725	2015 35TH AV	ALLENDALE ST	20150801	821 0		0	A
7114853	2015 35TH AV	ALLENDALE AV	20150729	1053 0		0	B
7126059	2015 INTERNATIONAL BL	35TH AV	20150906	1357 0		4	A
7129803	2015 35TH AV	GALINDO ST	20150925	114 0		0	C
7129876	2015 35TH AV	FOOTHILL BL	20150816	11 0		0	D
7130420	2015 35TH AV	FOOTHILL BL	20151027	1850 0		4	A
7136271	2015 INTERNATIONAL BL	35TH AV	20150409	1528 0		4	D
7148355	2015 E 18TH ST	35TH AV	20150908	1728 0		0	D
7151879	2015 FOOTHILL BL	35TH AV	20151007	1 5	E	2	G
7153383	2015 35TH AV	FOOTHILL BL	20150826	540 0		4	G
7176344	2015 35TH AV	E 15TH ST	20151101	1619 100	N	0	C
7188247	2015 35TH AV	INTERNATIONAL BL	20151224	1536 45	N	2	G
7189903	2015 MEADOW ST	35TH AV	20151127	149 100	E	0	B
7190754	2015 FOOTHILL BL	35TH AV	20151116	1739 0		4	A
7204597	2015 35TH AV	E 16TH ST	20151123	1921 0		4	D
8001446	2015 35TH AV	SUTER ST	20151216	1220 0		4	C
8001482	2015 HARPER ST	35TH AV	20151223	2205 10	W	0	C
8014453	2015 E 12TH ST	35TH AV	20151209	1625 116	E	0	B
5297939	2011 RT 580	35TH AV	20110711	2225 50	W	4	C
5304690	2011 RT 580	35TH AV	20110516	1320 9	W	0	E
5304705	2011 RT 580	35TH AV	20110531	1130 40	W	0	E

5304960	2011 RT 580	35TH AV	20110620	100 50	W	0	C
5308264	2011 RT 580	35TH AV	20110427	900 30	W	4	C
5311342	2011 RT 580	35TH AV	20110728	1850 150	E	0	C
5318046	2011 RT 580	35TH AV	20110205	2018 7	W	4	E
5369881	2011 RT 580	35TH AV	20111003	2025 15	W	0	E
5451667	2011 RT 580	35TH AV	20111207	1720 200	W	0	C
5608792	2012 RT 580	35TH AV	20120305	700 100	W	0	C
5613664	2012 RT 580	35TH AV	20120320	1615 30	E	0	B
5736157	2012 RT 580	35TH AV	20120418	850 50	E	0	C
5821615	2012 RT 580	35TH AV	20120827	1530 200	W	0	E
5853111	2012 RT 580	35TH AV	20121101	2345 37	W	0	E
5931913	2012 RT 580	35TH AV	20121225	530 54	W	3	E
5937096	2012 RT 580	35TH AV	20121225	545 5	W	0	D
5975334	2013 RT 580	35TH AV	20130122	2235 45	W	3	C
5996394	2013 RT 580	35TH AV	20130124	900 200	E	0	C
6107962	2013 RT 580	35TH AV	20130516	1655 40	W	4	C
6117070	2013 RT 580	35TH AV	20130606	1821 200	W	4	C
6140976	2013 RT 580	35TH AV	20130703	805 145	W	0	C
6185441	2013 RT 580	35TH AV	20130731	1755 100	W	0	C
6260348	2013 RT 580	35TH AV	20131010	1710 100	E	4	C
6278708	2013 RT 580	35TH AV	20131010	1750 120	E	0	B
6411063	2014 RT 580	35TH AV	20140207	945 100	W	4	D
6472884	2014 RT 580	35TH AV	20140422	838 40	W	0	C
6486272	2014 RT 580	35TH AV	20140419	1140 5	W	0	C

6517998	2014 RT 580	35TH AV	20140422	837 100	E	0	C
6534428	2014 RT 580	35TH AV	20140506	1615 50	W	0	H
6597161	2014 RT 580	35TH AV	20140730	1310 50	E	3	B
6674148	2014 35TH AV	PAXTON AV	20140912	755 95	S	0	C
6897672	2015 RT 580	35TH AV	20150420	1600 120	E	0	C
6959903	2015 RT 580	35TH AV	20150610	805 42	W	0	C
6973048	2015 RT 580	35TH AV	20150615	1801 188	W	0	C
6985154	2015 RT 580	35TH AV	20150629	1800 150	E	4	C
7056322	2015 35TH AV	FOOTHILL BL	20150716	1500 35	N	0	B
90014659	2015 I-580 E/B	35TH AVE	20150827	1805 30	E	0	C
90039082	2015 I-580 E/B	35TH AVE	20151013	1610 100	E	3	C
90071232	2015 I-580 E/B TO 35TH AVEN 35TH AVE		20151125	2240 20	W	0	C
90074746	2015 I-580 E/B (MACARTHUR 35TH AVE		20151202	1713 50	E	4	B

Count: 358

0 Fatal (1)
5 Severe (2)
25 Visible (3)
99 Complaint (4)
229 PDO (0)

04-Oakland-3

Collision Summary - 2011-2015

Dataset / Sub-dataset	Fatality	Severe Injury	Injury - Other Visible	Injury - Complaint of Pain	Property Damage Only	Total
All	0	5	25	99	229	358
Night	0	2	12	37	84	135
Ped & Bike	0	5	9	25	5	44
Emergency Vehicle	0	0	0	1	7	8
Animal	0	0	0	1	0	1

Collision Totals - Foothill Boulevard - 2011-2015

Dataset / Sub-dataset	Fatality	Severe Injury	Injury - Other Visible	Injury - Complaint of Pain	Property Damage Only	Total
All	0	1	0	9	21	31
Night	0	1	0	4	10	15
Ped & Bike	0	1	0	3	0	4
Emergency Vehicle	0	0	0	0	0	0
Animal	0	0	0	0	0	0

04-Oakland-3

[illegible]

04-Oakland-3

HSIP Cycle 8 Call for Projects - Benefit Calculator

(Read instructions to the left. For more instructions please refer to Appendix A of the application form instructions)

All yellow-highlighted fields are required.

Application ID: 04-Oakland-3

Calculation Run No. 1 of 2 (e.g. 1 of 2)

1. Countermeasures Utilized

(Select up to 3 countermeasures from the dropdown lists. At least one must be selected. Use CM#1 first then CM#2/CM#3.)

Countermeasure #1	NS19-Install pedestrian signal or HAWK	▼
Countermeasure #2	R38-Install pedestrian crossing (with enhanced safety features)	▼
Countermeasure #3	(No selection)	▼

NOT required for this project:

The below information is NOT required since roundabout has NOT been selected as a countermeasure (S18/NS4A/NS4B).

Project location:	(Select from Dropdown List)		
Intersection type:	(Select from Dropdown List)		
Roundabout:	(Select from Dropdown List)		
Average Daily Traffic (ADT)	Major Road	Minor Road	Total ADT

2. Crash Data

From	1/1/2011	(required)
To	12/31/2015	(required)
Number of Years	5.00	(must be between 3 and 5).

Crash Data Table (data sets or rows highlighted in yellow are required as they are related to the selected countermeasures)

Dataset / Sub-dataset	Fatality	Severe Injury	Injury - Other Visible	Injury - Complaint of Pain	Property Damage Only	Total
All	0	5	25	99	229	358
Night	0	2	12	37	84	135
Ped & Bike	0	5	9	25	5	44
Emergency Vehicle	0	0	0	1	7	8
Animal	0	0	0	1	0	1

3. Results - Benefits by Countermeasures

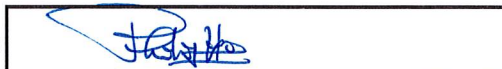
(Enter these results in Sheet "Benefit Summary" if this project has multiple benefit calculation runs)

	CM ID	Crash Dataset /Sub-dataset Applied	Crash Reduction Factor (CRF)	Life (Years)	Life benefits
Countermeasure #1	NS19	Ped & Bike	55%	20	\$27,631,780
Countermeasure #2	R38	Ped & Bike	30%	10	\$3,026,673
Countermeasure #3	(Not Selected)	(N/A)	0%	-	\$0

Total Benefits \$30,658,453

Safety Practitioner/Engineer (Print):

Signature:



Date:

8/12/2016

By signing this benefit calculation sheet, you are attesting to your authority / responsibility as the Engineer in Responsible Charge of the preparation of the HSIP application and you are attesting to the accuracy of the values on this page and that they have been entered into the HSIP Application Form correctly, DO NOT SIGN if any of this is not the case.

HSIP Cycle 8 Call for Projects - Benefit Calculator

(Read instructions to the left. For more instructions please refer to Appendix A of the application form instructions)

All yellow-highlighted fields are required.

Application ID: 04-Oakland-3

Calculation Run No. 2 of 2 (e.g. 1 of 2)

1. Countermeasures Utilized

(Select up to 3 countermeasures from the dropdown lists. At least one must be selected. Use CM#1 first then CM#2/CM#3.)

Countermeasure #1	S6-Provide protected left turn phase (left turn lane already exists)	▼
Countermeasure #2	(No selection)	▼
Countermeasure #3	(No selection)	▼

NOT required for this project:

The below information is NOT required since roundabout has NOT been selected as a countermeasure (S18/NS4A/NS4B).

Project location:		(Select from Dropdown List)
Intersection type:		(Select from Dropdown List)
Roundabout:		(Select from Dropdown List)

Average Daily Traffic (ADT)	Major Road	Minor Road	Total ADT
			-

2. Crash Data

From	1/1/2011	(required)
To	12/31/2015	(required)
Number of Years	5.00	(must be between 3 and 5).

Crash Data Table (data sets or rows highlighted in yellow are required as they are related to the selected countermeasures)

Dataset / Sub-dataset	Fatality	Severe Injury	Injury - Other Visible	Injury - Complaint of Pain	Property Damage Only	Total
All	0	1	0	9	21	31
Night	0	1	0	4	10	15
Ped & Bike	0	1	0	3	0	4
Emergency Vehicle	0	0	0	0	0	0
Animal	0	0	0	0	0	0

3. Results - Benefits by Countermeasures

(Enter these results in Sheet "Benefit Summary" if this project has multiple benefit calculation runs)

	CM ID	Crash Dataset /Sub-dataset Applied	Crash Reduction Factor (CRF)	Life (Years)	Life benefits
Countermeasure #1	S6	All	30%	20	\$2,426,040
Countermeasure #2	(Not Selected)	(N/A)	0%	-	\$0
Countermeasure #3	(Not Selected)	(N/A)	0%	-	\$0

Total Benefits \$2,426,040

Safety Practitioner/Engineer (Print):

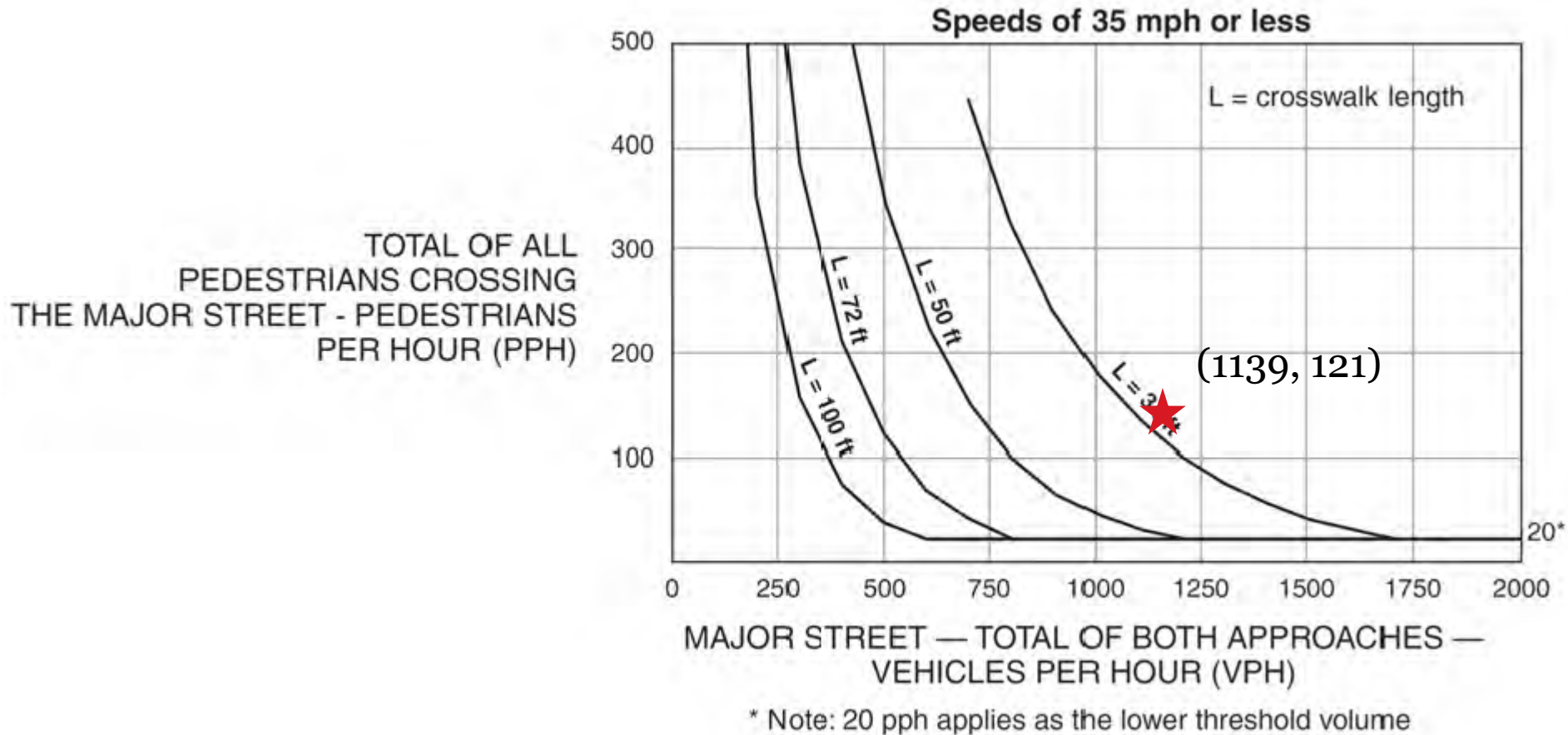
Signature:

Date:

8/12/2016

By signing this benefit calculation sheet, you are attesting to your authority / responsibility as the Engineer in Responsible Charge of the preparation of the HSIP application and you are attesting to the accuracy of the values on this page and that they have been entered into the HSIP Application Form correctly, **DO NOT SIGN** if any of this is not the case.

Pedestrian Hybrid Beacon – Warrant Analysis (35th Avenue and Davis Street)

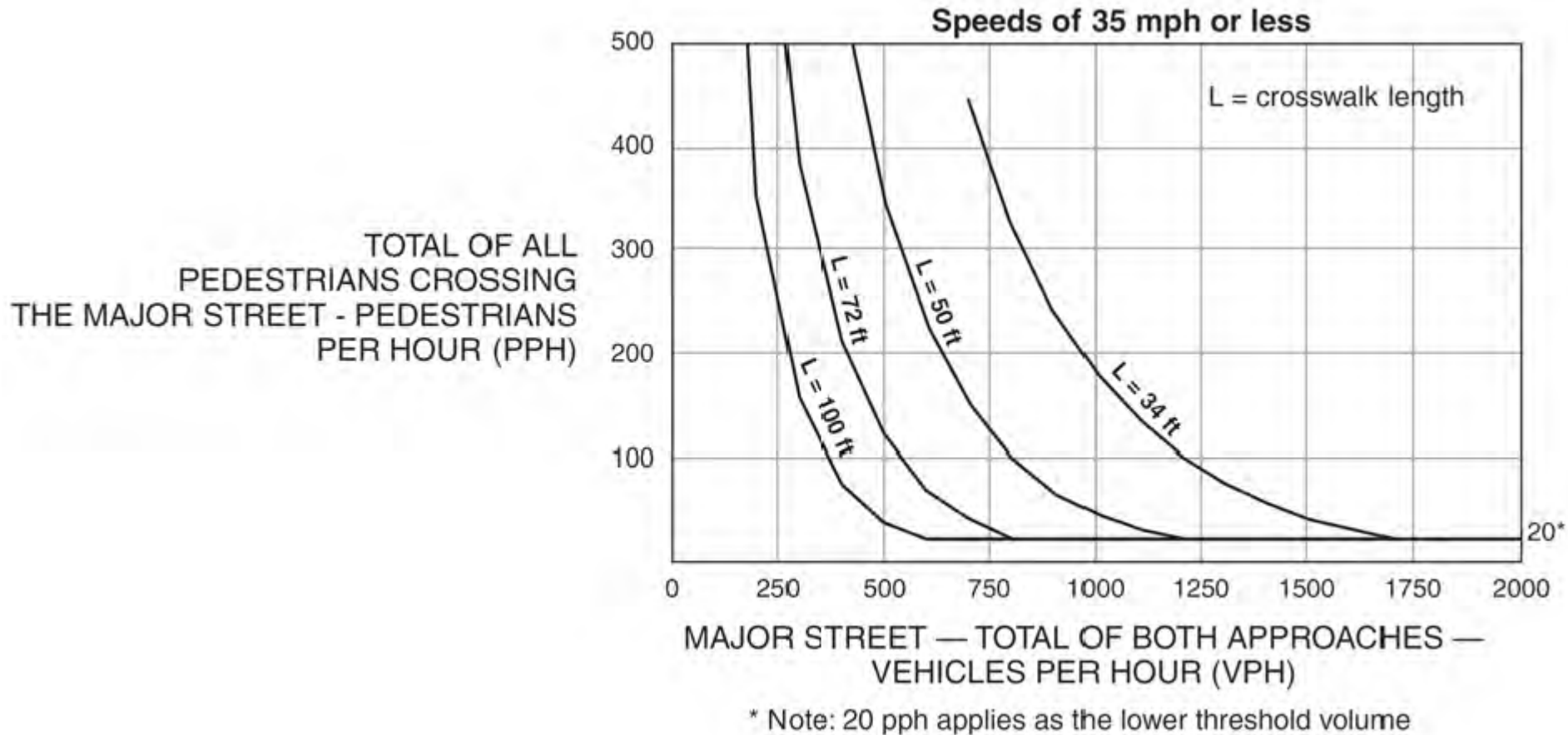


Speed Limit – 30 mph

Crosswalk width – 30 feet

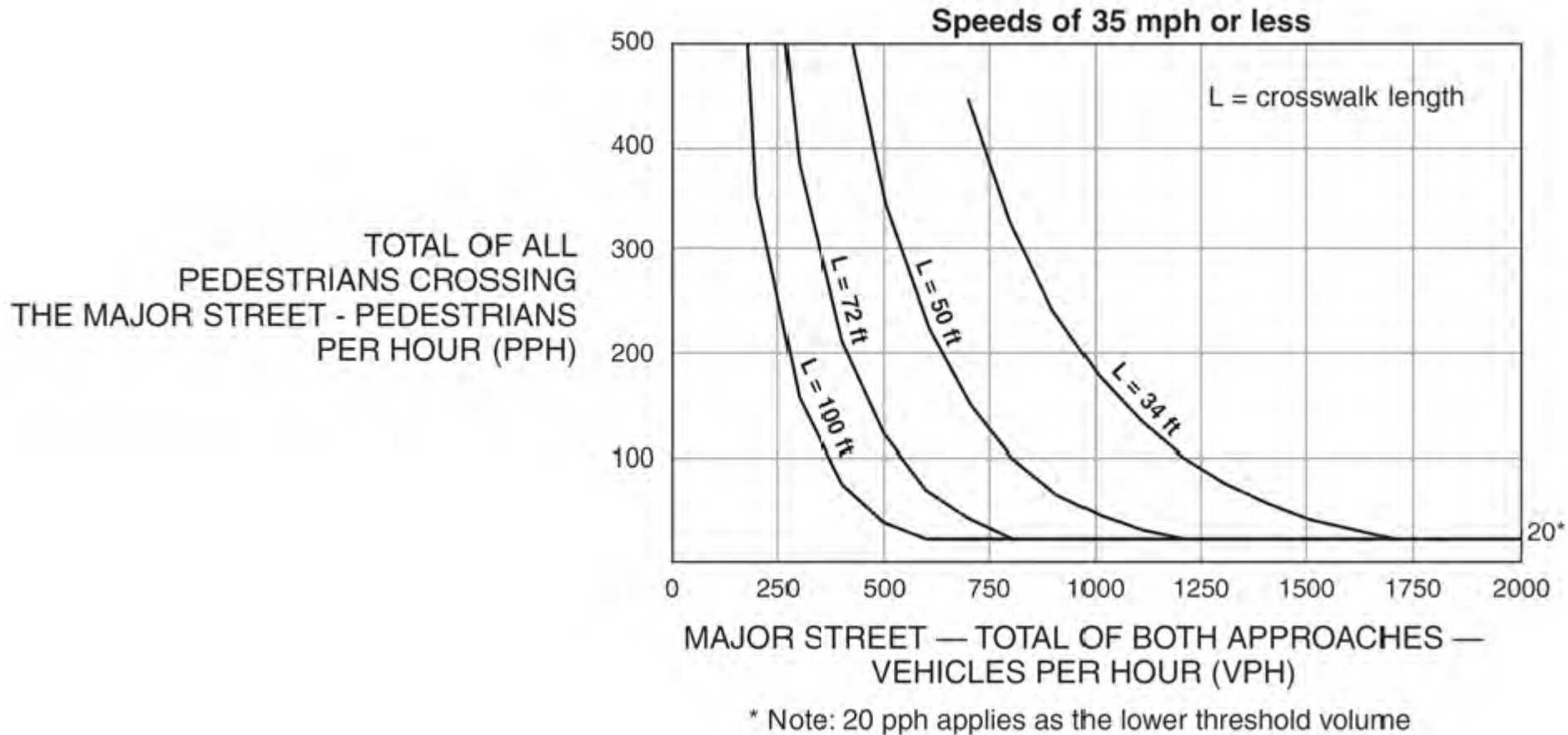
As shown in the figure the PHB warrant is met at this location. Therefore, a HPB is recommended.

Pedestrian Hybrid Beacon – Warrant Analysis (35th Avenue and Brookdale Avenue)



It doesn't meet PHB Warrant. However, it meets the crash warrant for signals with 5 correctible crashes in 2014, including 2 pedestrian and 2 bicycle collisions. Therefore, a HPB is recommended.

Pedestrian Hybrid Beacon – Warrant Analysis (35th Avenue and Salisbury Street)



It doesn't meet PHB Warrant. However, it meets the crash warrant for signals with 5 correctible crashes in 2013. This intersection provides access to school. Therefore, a HPB is recommended.

To:	Philip Ho	From:	Joy Bhattacharya, Alex Ha, and Maria Tribelhorn
	City of Oakland 250 Frank Ogawa Plaza Oakland, CA		Stantec, Inc. 1340 Treat Boulevard Suite 300 Walnut Creek, CA 94597
File:	Lane Configuration Modifications at the International Boulevard/35th Avenue and Bancroft Avenue/Havenscourt Boulevard intersections in Oakland	Date:	August 10, 2016
Subject	Traffic Analysis Memorandum		

The proposed project involves lane configuration modifications at the following locations: the International Boulevard / 35th Avenue intersection and the Bancroft Avenue / Havenscourt Boulevard intersection. To better facilitate safe and efficient multimodal transportation, it is proposed to add a bicycle lane northbound and southbound on 35th Avenue and eastbound on Bancroft Avenue at Havenscourt Boulevard.

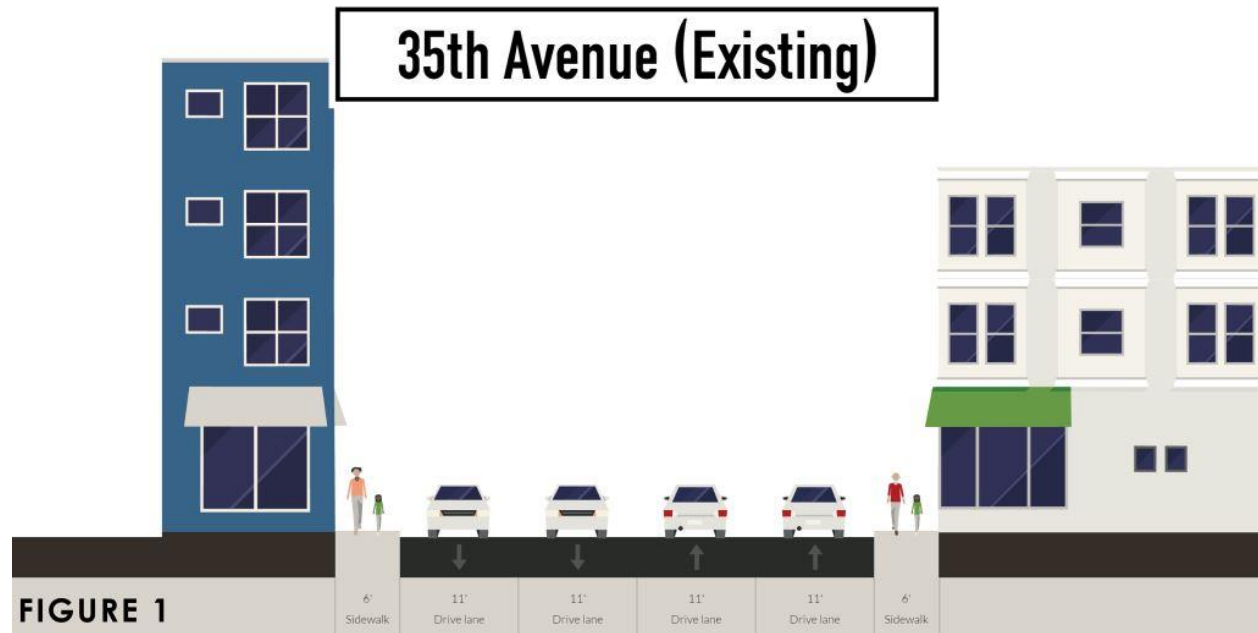
The 35th Avenue bike lanes would provide connectivity for cyclists traveling to and from the BART station on 35th Avenue. The addition of these bike lanes requires a vehicle lane reduction northbound and southbound on 35th Avenue between International Boulevard (from two lanes to one lane in each direction) and E-12 Street. Figure 1 shows the existing lane configuration for 35th Avenue and Figure 2 shows the proposed lane configuration for 35th Avenue.

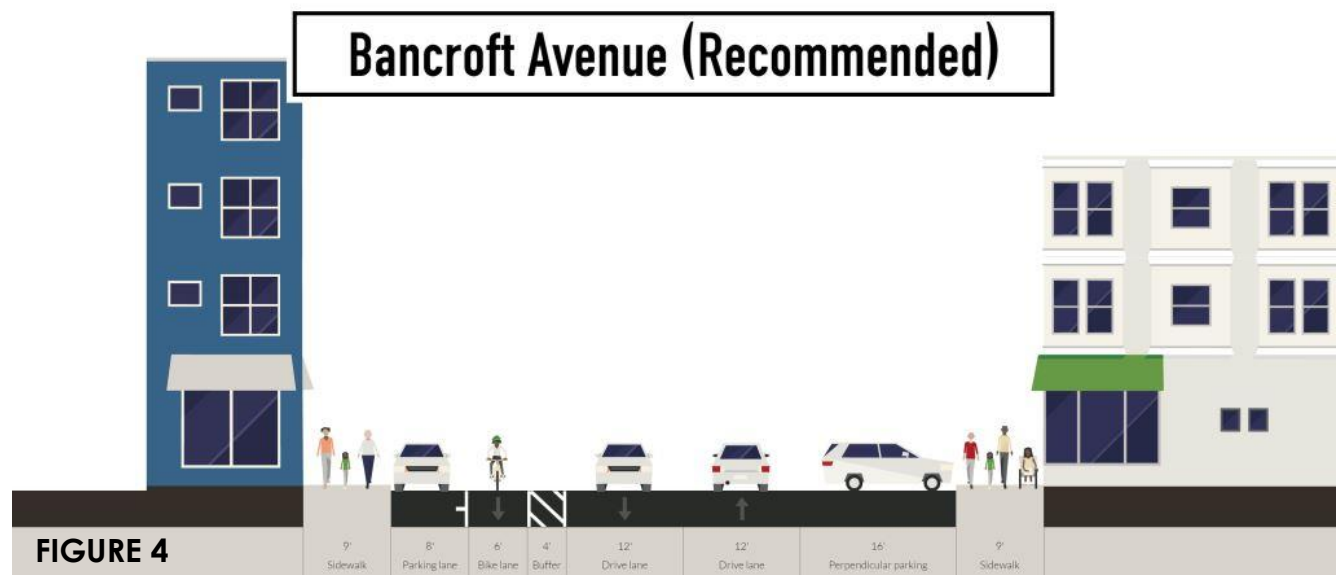
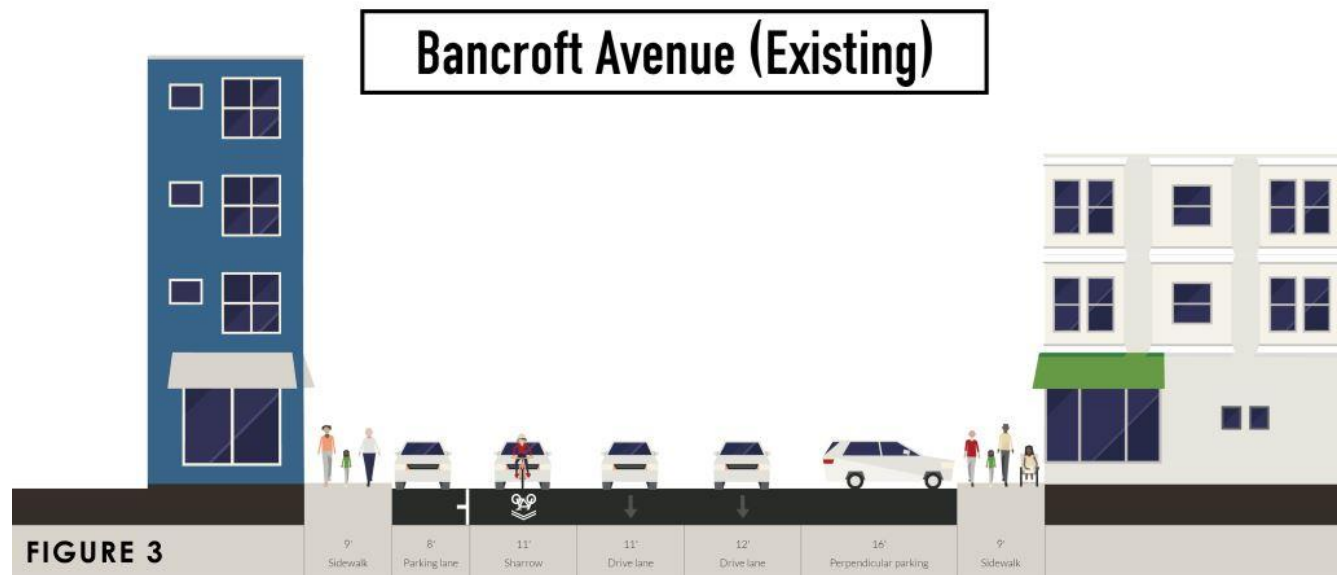
Currently there is an eastbound bike lane on Bancroft Avenue; however a gap exists between 66th Avenue and 67th Avenue. Adding this lane at the Bancroft Avenue / Havenscourt Boulevard intersection would fill this gap, providing better connectivity and safety for cyclists. The proposed eastbound bike lane on Bancroft Avenue requires vehicle lane reduction eastbound on Bancroft Avenue approaching Havenscourt Boulevard (from two lanes to one lane) and restriping of the southbound lanes on Havenscourt Boulevard. The existing lane configuration for Bancroft Avenue is shown in Figure 3 and the proposed lane configuration for this location is shown in Figure 4.

TRAFFIC ANALYSIS

Stantec utilized Synchro 8 software for the intersection level of service analysis to estimate the impacts of the proposed lane configuration modifications. Two scenarios were evaluated and compared for both locations:

- Existing lane configuration and
- Proposed lane configuration.





Stantec completed the analysis for the traffic conditions during the p.m. peak hour for a typical weekday, as the p.m. peak hour represents the highest traffic volumes during the day for both locations. Weekday p.m. peak hour vehicle counts were provided by the City. Because some of the data was not current, a 1% growth rate per year was assumed in order to model current year traffic conditions as accurately as possible. Traffic volumes used in the analysis are shown in the Synchro reports provided in the appendix.

LEVEL OF SERVICE ANALYSIS METHODOLOGY

Potential project improvements at the study intersection were quantified through the determination of level of service (LOS), a qualitative measure describing operational conditions within a traffic stream. LOS has letter designations ranging from A to F, with LOS A representing free flow traffic with little or no delay and LOS F representing jammed conditions with excessive delay and long back-ups. Procedures for analyzing each type of facility are based on the Highway Capacity Manual 2000 (HCM 2000).

INTERSECTION LEVEL OF SERVICE ANALYSIS

Table 1 below summarizes peak hour level of service at the study intersection. LOS worksheets are provided in the Appendix.

Table 1 - Peak Hour Intersection LOS

Intersection	Intersection Control	Scenario			
		Existing Lanes		Proposed Lanes	
		Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)	LOS
International Blvd/ 35th Avenue	Signalized	12.3	B	15.2	B
Bancroft Ave/ Havenscourt Blvd	Signalized	12.5	B	17.7	B

Under the p.m. peak traffic conditions, the study intersections operate at an acceptable level of service (LOS) B for both the existing lane configuration and the proposed lane configuration. The proposed changes should not have a significant impact on the intersection operations.

CONCLUSION

Under both the existing and proposed lane configurations, both of the study intersections operate at an acceptable level of service (LOS) B. The proposed changes should not have a significant impact on intersection operations. However, the modifications would improve pedestrian safety and provide better bicycle lane connectivity along the two study corridors.

STANTEC CONSULTING SERVICES INC.

Joy Bhattacharya
Senior Project Manager
Phone: (925)296-2107
Fax: (925)941-1401
Joy.Bhattacharya@Stantec.com

Alex Ha
Senior Designer
Phone: (925)296-2178
Fax: (925)941-1401
Alex.Ha@Stantec.com

Maria Tribelhorn
Engineering Designer
Phone: (925)296-2167
Fax: (925)941-1401
Maria.Tribelhorn@Stantec.com



















Attachment: Appendix A – LOS Reports

Appendix A – LOS Reports

HCM Signalized Intersection Capacity Analysis

3: International/35th Existing



















8/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	785	93	36	649	103	17	358	36	67	307	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor		0.95		1.00	0.95			0.95			0.95	1.00
Frt		0.99		1.00	0.98			0.99			1.00	0.85
Flt Protected		1.00		0.95	1.00			1.00			0.99	1.00
Satd. Flow (prot)		3473		1770	3467			3486			3508	1583
Flt Permitted		0.82		0.19	1.00			0.93			0.82	1.00
Satd. Flow (perm)		2857		355	3467			3255			2893	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	90	879	104	40	727	115	19	401	40	75	344	106
RTOR Reduction (vph)	0	18	0	0	28	0	0	16	0	0	0	68
Lane Group Flow (vph)	0	1055	0	40	814	0	0	444	0	0	419	38
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		21.0		21.0	21.0			16.0			16.0	16.0
Effective Green, g (s)		21.0		21.0	21.0			16.0			16.0	16.0
Actuated g/C Ratio		0.47		0.47	0.47			0.36			0.36	0.36
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	4.0
Lane Grp Cap (vph)		1333		165	1617			1157			1028	562
v/s Ratio Prot					0.23							
v/s Ratio Perm		c0.37		0.11				0.14			c0.14	0.02
v/c Ratio		0.79		0.24	0.50			0.38			0.41	0.07
Uniform Delay, d1		10.1		7.2	8.4			10.8			10.9	9.6
Progression Factor		1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2		4.9		3.5	1.1			1.0			1.2	0.2
Delay (s)		15.0		10.7	9.5			11.8			12.1	9.8
Level of Service		B		B	A			B			B	A
Approach Delay (s)		15.0			9.5			11.8			11.7	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			12.3			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			45.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			85.6%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: International/35th Proposed



















8/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	785	93	36	649	103	17	358	36	67	307	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor		0.95		1.00	0.95			1.00			1.00	1.00
Frt		0.99		1.00	0.98			0.99			1.00	0.85
Flt Protected		1.00		0.95	1.00			1.00			0.99	1.00
Satd. Flow (prot)		3473		1770	3467			1837			1846	1583
Flt Permitted		0.81		0.20	1.00			0.98			0.87	1.00
Satd. Flow (perm)		2821		373	3467			1798			1615	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	90	879	104	40	727	115	19	401	40	75	344	106
RTOR Reduction (vph)	0	18	0	0	28	0	0	7	0	0	0	66
Lane Group Flow (vph)	0	1055	0	40	814	0	0	453	0	0	419	40
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		20.0		20.0	20.0			17.0			17.0	17.0
Effective Green, g (s)		20.0		20.0	20.0			17.0			17.0	17.0
Actuated g/C Ratio		0.44		0.44	0.44			0.38			0.38	0.38
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	4.0
Lane Grp Cap (vph)		1253		165	1540			679			610	598
v/s Ratio Prot					0.23							
v/s Ratio Perm		c0.37		0.11				0.25			c0.26	0.03
v/c Ratio		0.84		0.24	0.53			0.67			0.69	0.07
Uniform Delay, d1		11.1		7.8	9.1			11.6			11.8	8.9
Progression Factor		1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2		7.0		3.5	1.3			5.1			6.2	0.2
Delay (s)		18.1		11.2	10.4			16.8			18.0	9.2
Level of Service		B		B	B			B			B	A
Approach Delay (s)		18.1			10.4			16.8			16.2	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			15.2			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			45.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			105.2%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Bancroft/Havenscourt Existing


8/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	510	28	0	53	496	109	162	82	162	144	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor		0.95			1.00			1.00	1.00	0.95	0.95	
Frt		0.99			0.88			1.00	0.85	1.00	0.98	
Flt Protected		1.00			1.00			0.98	1.00	0.95	0.99	
Satd. Flow (prot)		3508			1636			1826	1583	1681	1729	
Flt Permitted		0.83			1.00			0.77	1.00	0.49	0.95	
Satd. Flow (perm)		2903			1636			1441	1583	860	1646	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%
Adj. Flow (vph)	18	665	37	0	69	647	142	211	107	211	188	29
RTOR Reduction (vph)	0	10	0	0	332	0	0	0	64	0	12	0
Lane Group Flow (vph)	0	710	0	0	384	0	0	353	43	186	230	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		16.0			16.0			16.0	16.0	16.0	16.0	
Effective Green, g (s)		16.0			16.0			16.0	16.0	16.0	16.0	
Actuated g/C Ratio		0.40			0.40			0.40	0.40	0.40	0.40	
Clearance Time (s)		4.0			4.0			4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		1161			654			576	633	344	658	
v/s Ratio Prot					0.23							
v/s Ratio Perm		c0.24						c0.24	0.03	0.22	0.14	
v/c Ratio		0.61			0.59			0.61	0.07	0.54	0.35	
Uniform Delay, d1		9.5			9.4			9.5	7.4	9.2	8.4	
Progression Factor		1.00			1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		2.4			3.8			4.8	0.2	6.0	1.5	
Delay (s)		11.9			13.2			14.4	7.6	15.2	9.8	
Level of Service		B			B			B	A	B	A	
Approach Delay (s)		11.9			13.2			12.8			12.2	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			12.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			40.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			78.3%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Bancroft/Havenscourt Proposed

8/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔	↔	↔	
Volume (vph)	14	510	28	0	53	496	109	162	82	162	144	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00	1.00	1.00	
Frt		0.99			0.88			1.00	0.85	1.00	0.98	
Flt Protected		1.00			1.00			0.98	1.00	0.95	1.00	
Satd. Flow (prot)		1848			1636			1826	1583	1770	1825	
Flt Permitted		0.96			1.00			0.78	1.00	0.43	1.00	
Satd. Flow (perm)		1781			1636			1460	1583	807	1825	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%
Adj. Flow (vph)	18	665	37	0	69	647	142	211	107	211	188	29
RTOR Reduction (vph)	0	4	0	0	267	0	0	0	68	0	11	0
Lane Group Flow (vph)	0	716	0	0	449	0	0	353	39	211	206	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		24.0			24.0			18.0	18.0	18.0	18.0	
Effective Green, g (s)		24.0			24.0			18.0	18.0	18.0	18.0	
Actuated g/C Ratio		0.48			0.48			0.36	0.36	0.36	0.36	
Clearance Time (s)		4.0			4.0			4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		854			785			525	569	290	657	
v/s Ratio Prot					0.27							0.11
v/s Ratio Perm		c0.40						0.24	0.02	c0.26		
v/c Ratio		0.84			0.57			0.67	0.07	0.73	0.31	
Uniform Delay, d1		11.3			9.3			13.5	10.5	13.9	11.5	
Progression Factor		1.00			1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		9.6			3.0			6.7	0.2	14.8	1.2	
Delay (s)		21.0			12.3			20.2	10.7	28.7	12.8	
Level of Service		C			B			C	B	C	B	
Approach Delay (s)		21.0			12.3			18.0			20.6	
Approach LOS		C			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			17.7			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			86.1%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												