



# ENGINEERING STUDY

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## MORNINGSIDE A & WHITE OAKS C NEIGHBORHOOD ROADWAY RECONSTRUCTION

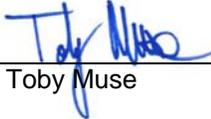
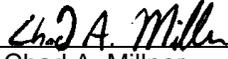
Townes Avenue, Grimes Avenue, Curve Avenue,  
Townes Circle, Sunnyside Road, 45<sup>th</sup> Street

**MORNINGSIDE A IMPROVEMENT NO. BA-422**  
**WHITE OAKS C IMPROVEMENT NO. BA-438**

**November 6, 2015**

**ENGINEERING DEPARTMENT**  
**CITY OF EDINA**

I hereby certify that this feasibility study was prepared by me or  
under my direct supervision and that I am a duly Registered  
Professional Engineer under the laws of the State of Minnesota.

	43364	11/6/15
Toby Muse	Reg. No.	Date
Approved by: 		11/6/15
Chad A. Millner		Date



## ENGINEERING STUDY – BA-422 & BA-438

### ENGINEERING DEPARTMENT

### CITY OF EDINA

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#### MORNINGSIDE A & WHITE OAKS C NEIGHBORHOOD ROADWAY RECONSTRUCTION

#### NOVEMBER 6, 2015

#### SUMMARY:

This project implements principles of the Living Streets Policy and Living Street Plan. It continues our change of thinking about the use of our streets from primarily auto-centric to the incorporation of pedestrian-centric elements and what is required for a balanced, multi-modal transportation system.

This project involves reconstruction of the roadways including bituminous pavement and curb and gutter. The project also includes upgrading existing utility infrastructure systems including storm sewer, sanitary sewer and water main. Existing sidewalk panels that are cracked or heaved will be replaced.

The estimated total project cost is \$3,817,000. Funding for the entire project will be from a combination of special assessment, respective utility funds, and Pedestrian and Cyclist Safety (PACS) funds. The estimated roadway cost for the Morningside A neighborhood is \$1,284,200 and the estimated roadway cost for the White Oaks C neighborhood is \$480,600. All of these costs will be 100 percent funded by special assessments at a rate of \$10,200 per REU for Morningside A and \$26,700 per REU for White Oaks C. Utility improvements and repairs amount to \$2,012,800 and will be funded through respective utility funds. Any pedestrian safety enhancement such as crosswalks and sidewalks will be funded through the PACS Fund in an amount of \$39,400.

The project can be completed during the 2016 construction season. Due to the proximity of the 2 neighborhoods, we anticipate bidding them together as one project to realize economic savings based on project size and the decreased amount of construction coordination required.

Staff and consultant believe the project is necessary, cost effective and feasible to improve the infrastructure as initiated by Vision Edina's mission statement to "provide effective and valued public services and maintain a sound public infrastructure" and also in the City's Living Streets Policy and Living Streets Plan.

#### LOCATION:

The project area includes Townes Road (Bridge Ln to Sunnyside Rd), Grimes Avenue (Sunnyside Rd to W 44<sup>th</sup> St), Curve Avenue (Sunnyside Rd to W 44<sup>th</sup> St), Townes Circle (Townes Rd to end of Cul-De-Sac), Sunnyside Road (Grimes Ave to France Ave), W 45<sup>th</sup> Street (Grimes Ave to end of W 45<sup>th</sup> St). Figure 1 is a detailed project location map of the Morningside A & White Oaks C Neighborhood Roadway Reconstruction Project.

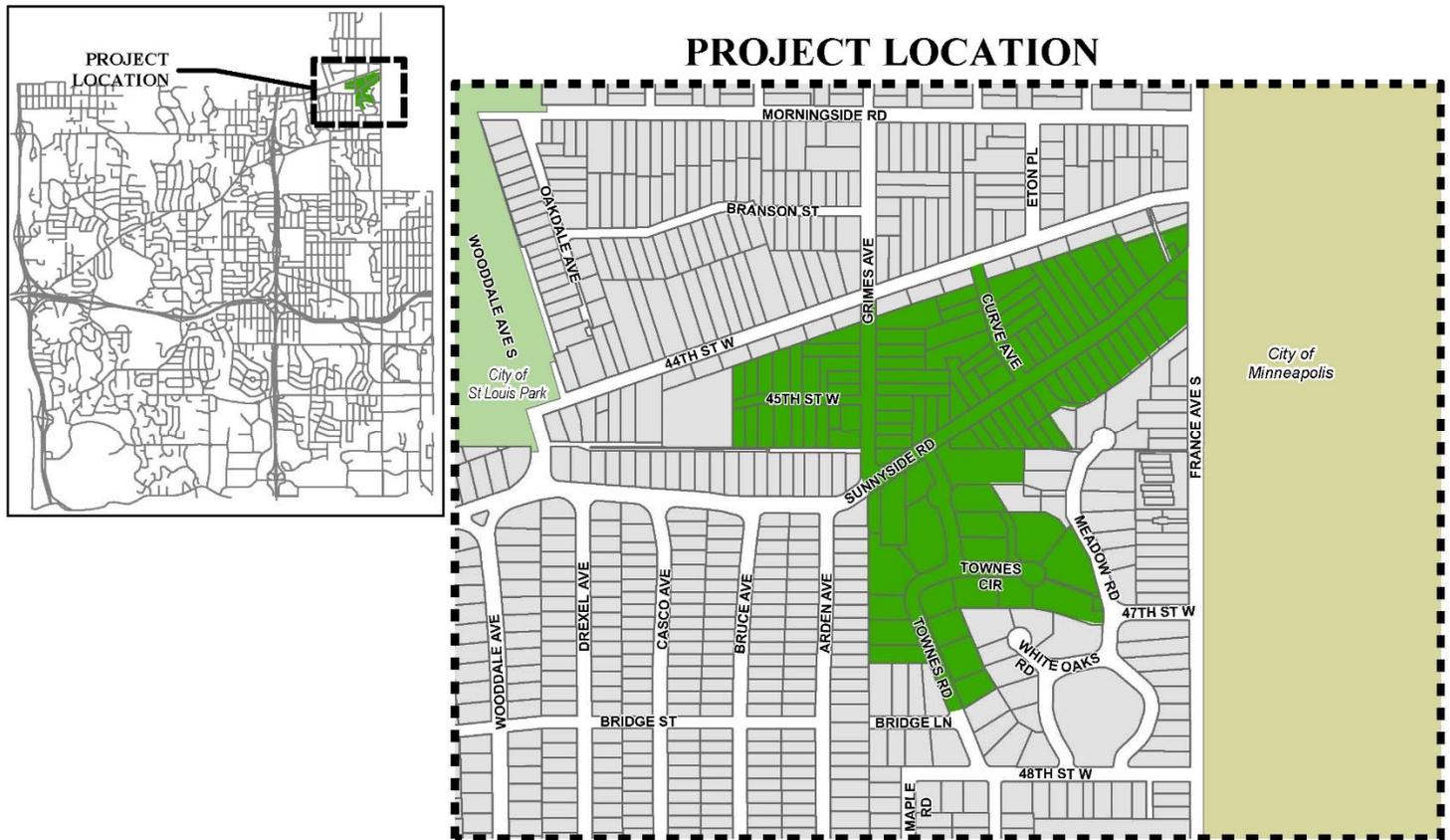


Figure 1 - Project Location Map

**INITIATION & ISSUES:**

The project was initiated by the Engineering Department as part of the City's street reconstruction program and identified in the Capital Improvement Program. Improvements to City lift station No. 1 were delayed in 2013 due to high bid prices and will be included with this project. This project addresses updating aging infrastructure issues associated with the pavement condition, storm water, sanitary sewer and water main systems.

All Engineering projects are reviewed for compatibility with the City of Edina 2008 Comprehensive Plan Update, Comprehensive Bicycle Transportation Plan, the Comprehensive Water Resource Management Plan, the Living Streets Policy and Plan, and the Active Routes to Schools Plan.

Recall the City recently completed a study of flood protection and clean water improvements to a land-locked wetland located in the project area. Council met with the neighborhood at a work session on July 7, 2015 to discuss the results of the study and opportunities this project presents to mitigate water levels and improve water quality.

In 2006, the City completed the Northeast Edina Transportation Study Final Report to address long-term concerns from area residents regarding traffic volumes and speeds on residential streets that included this project area. The report evaluated existing traffic patterns and safety concerns and identified

potential solutions for the surrounding arterial streets and neighborhoods. No improvements to Sunnyside Road were recommended. A dedicated left-turn lane was proposed on northbound France Avenue at the Sunnyside Road intersection. The project would require an agreement with Hennepin County and the City of Minneapolis. Currently, Hennepin County has no plans to add the left-turn lane.

Also included in the study were suggested residential area safety improvements that included the addition of traffic circles at the intersections of Sunnyside Road with Grimes and Curve Avenues and speed humps or tables east of the intersection of Sunnyside Road and Curve Avenue.

### **City of Edina 2008 Comprehensive Plan Update**

#### **Sidewalk Facilities**

Chapter 7 of the plan addresses locations of proposed sidewalks facilities and funding options within the City. As shown in Figure 7.10 of Appendix G, there are no future sidewalk facilities planned within the project limits.

#### **Bicycle Facilities**

Chapter 7 of the plan addresses locations of proposed bicycle facilities within the City as part of the Comprehensive Bicycle Transportation Plan. Figure 7.11 of Appendix G does not identify proposed bicycle routes within this neighborhood.

### **City of Edina Comprehensive Water Resource Management Plan**

The project is located within the Minnehaha Creek Watershed District. The 2011 Comprehensive Water Resource Management Plan indicates no potential flood areas in the neighborhood. The City recently completed project STS-406 to study flood protection and clean water improvements to a land-locked wetland located in the project area. Further evaluation will be performed regarding drainage issues resulting from the questionnaires.

### **Living Streets Policy Evaluation**

The vision statement of the Living Streets Policy expresses the need to look at projects differently in the future:

*Living Streets balance the needs of motorists, pedestrians, bicyclists, and transit riders in ways that promote safety and convenience, enhance community identity, create economic vitality, improve environmental sustainability, and provide meaningful opportunities for active living and better health.*

Sustainability in engineering projects means delivering our services in a manner that ensures an appropriate balance between the environment, the community, and funding. This is essentially the “Triple Bottom Line” of sustainability; Equity, Environment, and Economy. We look at sustainability as maximizing our resources, creating lasting environments, improving and shaping both the present and future of our community so that future generations are not burdened by the decisions of today.

The project was evaluated based on the following key indicators to look for strengths, weaknesses, opportunities and risks.

- **Equity:** How well does the project provide or maintain core city services such as transportation, sanitation, clean water, emergency access, and emergency service? How does the project influence the well-being of the community?
- **Environment:** How does the project influence the natural environment, including surface or ground water health, forest canopy, natural resource diversity, wildlife habitat, air quality, noise and others?
- **Economy:** How does the project influence the local economy? What are the short term and long term costs? Is the continued service worth the price?

The following is a summary of this evaluation:

**Equity:** The project maintains access to the transportation network. Updates to the fire hydrants provide public safety staff the ease of connection needed during an emergency.

**Environment:** The project provides for an increase in the sediment control capacity of the storm sewer network and helps to control localized flooding. The project provides homeowners a piping system to discharge ground water into; this will mitigate standing water and/or ice buildup along the street curb lines. Construction operations are required to use the smallest footprint necessary to complete the work thus protecting the existing natural environment. The project also analyzes the sanitary sewer to ensure that inflow and infiltration of clear water is kept out of the sewer system, which minimizes regional wastewater treatment.

**Economy:** The project is designed to reduce construction costs now and into the future. The proposed roadway section can easily be maintained in the long term with the use of mill and overlays and/or seal coating operations. These maintenance operations will extend the life of the pavement. The project will also use less intense construction methods, such as trenchless technology; i.e., lining the pipes versus removing and replacing them.

This is a simplified analysis of the projects sustainability. In the future we anticipate correlating this analysis to an in-depth scoring system displaying the City's sustainability to the community.

### **Staff Issues**

The following existing issues and/or features are addressed in this study:

- Traffic volume and speed
- Pedestrian, bicycle and vehicle safety
- Poor condition of existing pavement surface
- Storm water quality and drainage
- Existing landscaping, retaining walls and driveways

**Engineering Study  
Morningside A Neighborhood Improvement No. BA-422  
White Oaks C Neighborhood Improvement No. BA-438  
November 6, 2015**

- Existing mature trees
- Existing landscaping and driveways
- Sanitary sewer and water main condition; areas missing adequate water mains
- Existing residential roadway lighting

**Resident Input**

The Engineering Department follows a practice of notifying residents two years prior to a potential reconstruction project. The residents of this neighborhood were invited to an Open House on November 25, 2013 to discuss the City’s process for street reconstruction and provide input for the flood protection study. A copy of the presentation from this meeting is included in Appendix A.

Residents were then invited to another Open House on February 25, 2015 to discuss the City’s process for street reconstruction and learn about the results of the flood protection and water quality study. A copy of the presentation from this meeting is included in Appendix A.

A resident multi-modal survey was sent to the property owners on May 4, 2015. The surveys were completed and returned by 40 of the 111 property owners, a return rate of 36%. The full survey and responses by each neighborhood are included in Appendix D.

The survey asked property owners for input on existing multi-modal usage and traffic conditions of the neighborhood including vehicle speeds, traffic volume, motorist behavior, and a wide variety of pedestrian issues. Some of the results from the survey are shown in Table 1.

MAY 4, 2015 MULTI-MODAL SURVEY RESULTS								
Neighborhood	Surveys Sent	Surveys Returned	% of Returned Surveys <sup>1</sup>	Speed Satisfaction			Intersection Unsafe? <sup>2</sup>	
				Satisfied	Neutral	Dissatisfied	Yes	No
Morningside A	88	34	39%	4	0	29	27	9
White Oaks C	23	6	26%	3	2	1	1	5
<b>Total</b>	111	40	36%	7	2	30	28	14

<sup>1</sup> Percentages are based on responses of returned questionnaires and may not equal 100% if questions were not answered on questionnaire.

<sup>2</sup> The majority of residents that answered this question commented that the unsafe intersections were W 45<sup>th</sup> St and Grimes Ave, Grimes Ave and Sunnyside Rd, Curve Ave and Sunnyside Rd.

**Table 1**

Other results of note for the Morningside A respondents include:

- 53% were dissatisfied or very dissatisfied with traffic volume
- 70% were most impacted when biking, walking or running
- 97% walk or run frequently or very frequently

A utility survey was sent to the property owners on June 4, 2015. The surveys were completed and returned by 39 of the 111 property owners, a return rate of 35%.

The survey asked property owners the history of their properties and public spaces including existing drainage service connections and private underground utilities. Survey results for the neighborhoods are included in Appendix E. A summary of results is shown in Table 2.

<b>JUNE 4, 2015 UTILITY SURVEY RESULTS</b>			
<b>Neighborhood</b>	<b>Surveys Sent</b>	<b>Surveys Returned</b>	<b>% of Returned Surveys</b>
Morningside A	88	33	38%
White Oaks C	23	6	26%
Total	111	39	35%

**Table 2**

Recall a group of the residents provided input to the Council at the July 7, 2015 work session. The topic of that conversation was the flood protection and the water quality study.

A neighborhood informational meeting was held on July 29, 2015 to discuss improvements planned for this neighborhood. Several residents expressed concerns with traffic speeds and volumes in the neighborhood, specifically related to traffic from 44<sup>th</sup> Street along Grimes and Curve Avenues to and including Sunnyside Road and France Avenue. They also voiced concerns about pedestrian crossing safety on Sunnyside Road at Grimes and Curve Avenues and across Grimes Avenue at 45<sup>th</sup> Street. Residents asked staff to review traffic calming and pedestrian safety measures on these streets as part of the preliminary design process. The meeting was attended by 20 residents representing 16 properties. A copy of the presentation and public input from this meeting are included in Appendix B.

Another neighborhood informational meeting was held on September 21, 2015 to discuss preliminary assessments and proposed utility and street improvements. Staff presented traffic calming measures that were considered and recommended on Grimes and Curve Avenues and along Sunnyside Road. The meeting was attended by 37 residents representing 28 properties. A copy of the presentation, public input from this meeting, and subsequent correspondence from residents to staff requesting stop signs and cross walks are included in Appendix C.

**Staff Input**

A draft engineering report was provided to the public works, fire department, the Edina Transportation Commission and Edina School District.

Public Works Department: Staff indicated challenges with snow plowing curb extension areas but considered these proposed improvements balanced when compared to traffic circles or speed bumps / tables.

Fire Department: The fire department supports the 27-foot proposed street widths in context with their largest fire truck. Existing hydrants lack the STORZ connections. Consideration of fire hydrant placement needs to be made to minimize obstacles within 3-feet of fire hydrants that may hamper emergency operations.

The existing water service pipe diameters from the city water main to residential connection is between one-half inch (1/2") and three-quarter inch (3/4"). The City's water service pipe standard is one-inch (1") for any new construction.

Edina School District: Concerns with narrowed or "necked-down" widths on Grimes and Curve Avenue intersections with Sunnyside Road, specifically in the winter months.

Edina Transportation Commission (ETC): See Appendix M for input received from the October 22, 2015 ETC meeting.

**EXISTING CONDITIONS: Public Utilities**

Water Main and Sanitary Sewer Pipes

Water main pipe material is cast iron and the sanitary sewer pipe material is vitrified clay. The sanitary sewer lines and water mains were constructed in the 1940's and 1950's.

Water in the Morningside Neighborhood is supplied by the City of Minneapolis. There have been issues with colored or red water caused by mineral deposits. The White Oaks Neighborhood is supplied with water produced by the City of Edina.

The neighborhood is served by six-inch (6") diameter water main pipes except for four properties located in the Townes Circle private drive that are serviced by a two-inch (2") water service pipe.

The valves and fire hydrants along the water main pipe are operable, vary in age and lack the STORZ nozzle fittings desired by the Edina Fire Department for quick connection of fire hoses.

Two (2) water main pipe breaks have been recorded in the neighborhood. In order to better understand the integrity of the water main system, it was acoustically tested during July 2014. The testing provided remaining pipe wall

thickness data to help staff assess the condition of the pipes. Results of the tests are described in the proposed improvements section and shown in Appendix K.

The neighborhood is served by nine-inch (9") diameter clay sanitary sewer pipes, except for an eight-inch (8") diameter clay sanitary pipe that serves the private drive north of Townes Circle. Based on the City's closed-circuit television inspections of the sanitary sewer pipes, five (5) areas have been identified with problems including cracked pipe or offset joints. In addition, multiple joint locations along the pipe showed extensive root infiltration.

Equipment in sanitary sewer lift station No. 1 at the intersection of Curve Avenue and Sunnyside Road has reached the end of its useful life.

#### Water and Private Sanitary Sewer Service Pipes

Water service pipes within the neighborhood are copper pipes and vary in diameter.

Six (6) City owned water service pipe break and leak repairs have occurred in the neighborhood. Locations of the City-owned water service pipe breaks are shown in Appendix K.

Private sanitary sewer service pipes are likely 4-inch or 6-inch diameter clay pipes.

#### Storm Sewer

The storm sewer system is located within the legal boundary of Minnehaha Creek Watershed District (MCWD). The majority of the surface water for the neighborhood typically drains via longitudinal street slopes and concrete curb and gutters where it enters a neighborhood storm sewer system that drains to a land-locked wetland.

Based on a hydraulic model of the existing storm sewer pipes in the neighborhood, most are currently large enough to convey storm water following typical size storm events. However, the existing storm sewer system does not have capacity for large storm events as confirmed from input received by residents and City staff. Localized flooding based on input and the model is illustrated in the blue shaded areas and highlighted curb and gutters in Figure 2. Observations include localized flooding or surface discharges from storm sewer structures. However, no known structural flooding has occurred.



Figure 2 – Surface Water Ponding/Flooding Areas

Six (6) property owners told us they operate sump pumps via returned questionnaires. The City’s GIS records indicate that 49 residents utilize sump pumps. They use these pumps to discharge ground water away from their homes. In most cases, their pumps discharge onto their yards or an adjacent street.

**Private Utilities**

Providers of privately owned gas, electric, communications and cable television utilities are present in the neighborhood. These utilities are either overhead or buried underground both within and outside the street right-of-way (ROW).

Results from the questionnaire indicate sixteen (16) residents own and operate a lawn irrigation system and two (2) own and operate an underground pet containment system within the project boulevards.

**Streets and Sidewalks**

The neighborhood’s existing streets are surfaced with bituminous pavement. Patches, overlays, and sections of alligator cracking are present at random locations throughout the project area as shown in Figure 3.



Figure 3 – Typical Pavement Condition

The streets vary in width between 23 feet and 37 feet. Average existing street widths are shown in Table 3. If a street has curb and gutter, the width shown is from face to face of curb. Where no curb and gutter exists, street width is from edge to edge of pavement.

EXISTING STREET WIDTHS		
Street	Existing Width (ft.)	Curb and Gutter (Y/N)
45 <sup>th</sup> Street	25	Y
Grimes Avenue	32	Y
Curve Avenue	27	Y
Sunnyside Road (1)	28	Y
Sunnyside Road (2)	37	Y
Townes Circle	25	N
Townes Road (3)	23	N
Townes Road (4)	25	Y

- (1) Grimes Avenue to 4001 Sunnyside Road
- (2) 4001 Sunnyside Road to France Avenue
- (3) Sunnyside Road to Townes Circle
- (4) Townes Circle to Bridge Street

**Table 3**

The concrete curb and gutter is in poor condition. While the pavement condition varies throughout the neighborhood, it is generally in poor condition likely due to its age.

In 2012, City street crews completed a thin overlay patch along Townes Road and Townes Circle due to failed pavement conditions and to prevent city plows from inadvertently gouging chunks of bituminous and throwing them towards vehicles, homes and boulevards. The pavement surface throughout these streets appears to be near the end of its useful life while the costs to maintain and repair the roadways are steadily increasing. Overlaying or seal coating the pavement is no longer feasible.

As part of this study, 13 soil borings were taken in the project area. The borings identified a 3-inch to 11-inch thick bituminous pavement. West 45<sup>th</sup> Street and Sunnyside Road have up to 8-feet of poorly graded sand beneath 5-inches to 6-inches of aggregate base. Grimes Avenue has 3-feet of clay beneath 5-inches of aggregate base. Curve Avenue, Sunnyside Road, Townes Road, and Townes Circle have 3-feet or more of silty sand beneath varying amounts of aggregate base. Street grades vary throughout the area from approximately 0.3 percent to 12 percent.

The average pavement condition index (PCI) for the City of Edina is 57 and the average PCI for the Morningside A neighborhood is 11. The average PCI for the White Oaks C neighborhood was at or below 11 prior to the thin overlay patch.

The City of Edina has a consultant systematically evaluate all bituminous roadways within the City. The streets are graded based on a number of conditions such as sagging, alligator cracking, raveling and potholes. Streets are rated on a scale from 0 to 100 with 0 being extremely poor and 100 representing a brand new road surface. The City evaluates the PCI values of streets to determine a proper maintenance program. Streets with a PCI less than 45 are evaluated for total reconstruction, PCI's between 45 and 65 are evaluated for mill and overlays, and PCI's greater than 65 are considered for seal coats.

An existing private drive exists north of Townes Circle as indicated by the hatched area in Figure 4. The drive is approximately 200 feet long and is owned by the property owners at 4605, 4607, 4609, and 4611 Townes Circle. The City currently maintains this private road pavement and provides snow plowing services to allow the City the use of this property for specific utilities. Three out of the four properties allow sanitary sewer, storm sewer, and watermain pipes within the easement. The remaining easement document only allows sanitary sewer.



Figure 4 – Private Drive North of Townes Circle

Sidewalks with boulevards exist today on both sides of Townes Road (south of Townes Cir), Grimes Avenue, Curve Avenue, West 45<sup>th</sup> Street, and Sunnyside Road. Parking is allowed on both sides of all streets except on the south side of Sunnyside Road from Grimes Avenue to 3905 Sunnyside Road.

As discussed in the Resident Input section of the study, neighborhood residents have expressed speed, volume and safety concerns on many of the Morningside A neighborhood streets including Curve Avenue, Grimes Avenue, and Sunnyside Road. Vehicle traffic speeds and volumes on these streets can likely be attributed to one or a combination of the following; traffic attempting to circumvent traffic signals at France Avenue, avoiding 44<sup>th</sup> Street, and longer stretches of straightaways, particularly on Sunnyside Road. These issues can lead to diminished pedestrian and bicyclist safety. The existing geometric configurations at the intersections are shown in Figures 5, 6 and 7.



Figure 5 – Curve Avenue and Sunnyside Road



Figure 6 - Grimes Avenue and Sunnyside Road



Figure 7 – Grimes Avenue and West 45<sup>th</sup> Street

The existing pavement footprint of the cul-de-sac for Townes Circle is larger than necessary and is shown in Figure 8.



Figure 8 – Townes Circle Cul-De-Sac

There are seven (7) driveways featuring brick paver block in the project area. Figure 9 depicts a driveway with brick paver block found in the project area.



Figure 9 - Paver Driveway

Residential Lighting

Street lighting in the project area consists of combination of City owned and Xcel Energy owned street lights as shown in Appendix I. The 2 City owned street lights are Arlington and Acorn style lights.

Xcel Energy street lights are a combination of Coach (11), Acorn (1), Shoebox Square (2), and Cobra (2) cut-off style lights and are located throughout the two neighborhoods. A cut-off style street light is a street light that does not project or reflect light upward and meets standards set by the Dark Sky Association.

Traffic/Crash Data and Existing Signs

The most recent average daily traffic volumes and speeds are shown in Table 4.

<b>EXISTING TRAFFIC VOLUMES AND SPEEDS</b>			
<b>Street</b>	<b>Date Recorded</b>	<b>Average Daily Traffic</b>	<b>85<sup>th</sup> % Speed (mph)</b>
Curve Avenue	October 2014	199	23.9
Grimes Avenue	April/May 2014	976	26.7
Sunnyside Road	July 2012	2,914	30.3
Townes Road	July/August 2008	153	26.3

**Table 4**

Historic traffic and speed counts and crash data are shown in Appendix H. Existing signs are shown in Appendix I.

Landscaping

Several property owners have landscaping in the ROW. Many of these landscape items are located directly behind the curb or adjacent to existing fire hydrants. Some of these landscape items will need to be removed in

order to complete the necessary reconstruction work. Figure 10 shows a typical landscaping feature found in the project's ROW.



Figure 10 – Landscaping Within ROW

**PROPOSED  
IMPROVEMENTS:**

This project involves reconstruction of existing roadways including bituminous pavement, existing curb and gutters and portions of any poor subgrade soils. The project also includes upgrading existing City utility systems. Green infrastructure improvements to reduce storm water to the wetland include options to install tree trenches, a permeable pavement system, perforated storm sewer pipe, and private rain gardens.

**Public Utilities**

The scope of the water main, sanitary and storm sewer reconstruction should meet the following parameters:

- Protect boulevard trees.
- Provide continuous sewer and water service to residents.
- Maintain pedestrian and vehicle access in the neighborhood during construction.
- Encourage property owners to reconstruct their private sanitary sewer service pipe between the sanitary trunk pipe and their homes prior to construction.
- Reconstruct the City-owned water service pipe up to and including replacement of the curb stop box within the City's ROW.
- Encourage property owners to reconstruct their private water service pipes between the curb stop and their homes.

**Water Main and Sanitary Sewer Pipes**

Based on the results of the pipe integrity testing, segments of the existing water main pipe on Townes Road are in satisfactory condition and will not be upgraded. The existing water main pipes along West 45<sup>th</sup> Street, Grimes

Avenue, Curve Avenue, Townes Circle, and Sunnyside Road will be replaced via open cut as shown in Drawing 1 in Appendix L.

The project will replace all of the existing fire hydrants with new City standard hydrants and will replace all existing gate valves. All of the proposed improvements to the water main system will optimize water flow for firefighting and improve water quality.

Staff will continue discussions with property owners at the Townes Circle private drive concerning the extension of a 6-inch water main and hydrant to address water pressure and fire flow concerns.

During improvements to the water main pipe network, residents will have continuous water service. If necessary, temporary water main and service pipes will be placed on the ground along the boulevards and front yards of the neighborhood. These temporary pipes are connected to sections of the existing water main. Continuous water service is provided to each home via its outside garden hose spigot. The contractor will need access into each affected home to make a proper temporary water main connection.

The project will reconstruct the sanitary sewer pipes using a trenchless reconstruction method called cured in place pipe lining. Spot repairs will be made to the sanitary sewer pipes that have sagged, cracked or where offset joints occur. Wherever necessary, the repairs will be completed using open cut repair methods. In sensitive locations, repairs will be completed using trenchless repair methods.

Approximately 60% of the sanitary sewer manholes are constructed with brick or concrete block. All of the brick / block manholes will be lined with cement mortar. All sanitary manholes will have castings and adjustment rings replaced.

The project will remove sanitary sewer lift station No. 1 at the intersection of Curve Avenue and Sunnyside Road. To serve the neighborhood, a new sanitary sewer pipe will be installed by directional drill that will flow by gravity and connect to an existing sanitary sewer manhole on Meadow Road. The location of the proposed sanitary sewer pipe is shown in Figure 11.



Figure 11 – Sanitary Sewer Improvements

Sanitary Sewer Service and Water Service Pipes

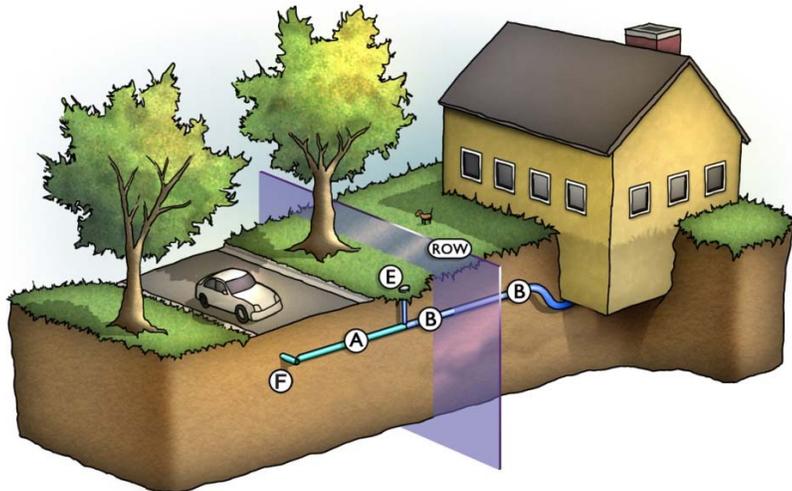
Along with upgrading the street, the City also plans to upgrade the publicly owned water service pipes. Upgrading these pipes will ensure that the water services will be safe and reliable for the foreseeable future.

Upgrading portions of the private and public underground utility lines also helps ensure that the new street will stay in good condition by decreasing the chances that the street will need to be disturbed in order to repair old or leaking underground utilities.

Property owners will be allowed to have the cost of any private sanitary sewer service or water service upgrades financed through the City's special assessment financing system. Staff will provide the interested property owners with information on how to proceed with this option.

Water Service Pipes:

The City will upgrade the publicly owned portion of the water service shown as segments "A & E" in Figure 12. There will be no special assessment for this work.



<u>SEGMENT</u>	<u>OWNERSHIP</u>
B	Property Owner
A	City
E	City
F	City

Figure 12 – Typical Section Showing Water Service

Storm Sewer: All of the concrete curb and gutter in the neighborhood will be replaced. Installation of sump drains will be installed where feasible to allow the property owners to connect their sump pump discharges directly into the storm sewer system.

To begin to address the water level and water quality issues in the wetland and taking advantage of the sandy soils in the area, three (3) levels of green infrastructure that utilize infiltration are under consideration with specific locations identified in Figure 13.

1. Tree trenches
2. Permeable pavements
3. Perforated storm sewer pipe

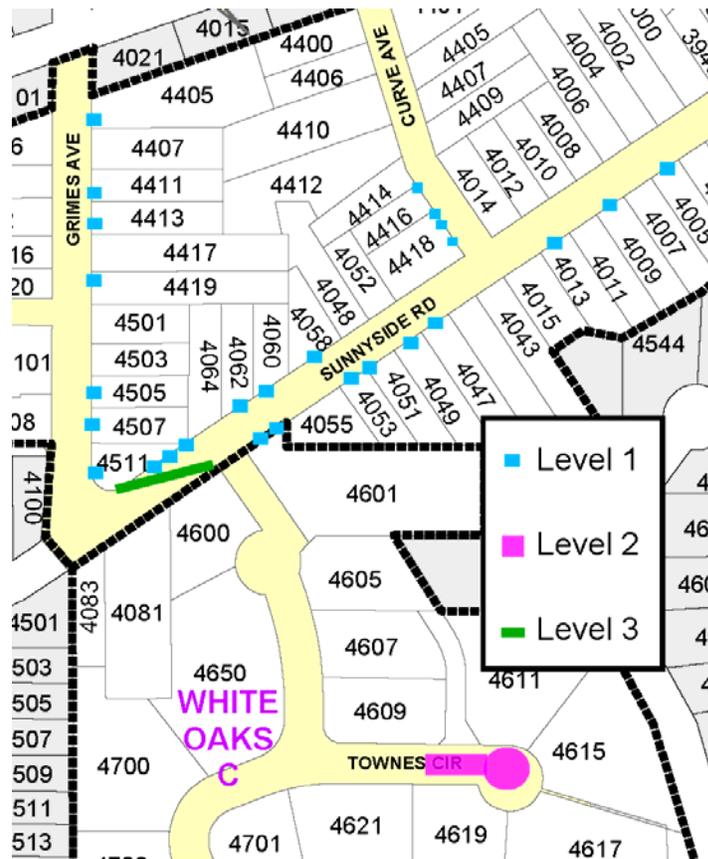


Figure 13 - Storm Sewer Infiltration Areas

As a reference, a 0.5-inch precipitation event generates 5,846 cubic feet of storm water runoff. A 1.0-inch precipitation event generates 11,692 cubic feet of storm water runoff.

Based on the locations shown in Figure 13, we could expect the following cubic feet of treatment associated with each treatment level.

• Stormwater Treatment Options

Treatment Level	Green Infrastructure Item	Treatment Provided (cu. ft.)	Cost	Cost / cu. ft.
1	Tree boxes / trenches	3,848	\$83,000	\$21.57
2	Permeable pavements	2,392	\$35,000	\$14.63
3	Perforated storm sewer	658	\$30,000	\$45.59

Typically we do not include this level of storm water treatment within our street reconstruction projects. Due to the fact the City increased the amount of storm water runoff from an adjacent street into the land-locked wetland, staff is recommending implementation of Level 1 green infrastructure improvements. The addition of tree trenches in boulevard areas will improve storm water and air quality. Even though it's above our typical practice, this correlates well with the City's Living Streets Plan where streets are

considered part of the natural ecosystem. Implementation of Levels 2 and 3 is not recommended by staff but could be considered by the Council.

Staff has submitted a grant application to the MCWD for the green infrastructure options under consideration since it meets the watershed district's goal of recharging groundwater adjacent to the creek. The status of whether a grant is secured will not be known until January/February 2016. If the grant is not secured, costs to implement Level 1 improvements will be funded by the City's storm sewer fund and staff will seek Council input on whether to fund levels 2 and 3.

Representatives of MCWD and the Master Water Stewards Program have attended the neighborhood informational meetings. To continue exploring stormwater infiltration options, residents have been encouraged to consider constructing private rain gardens on their property or installing rain barrels to capture stormwater at their own cost.

**Private Utilities**

The City will coordinate other private utility relocations or upgrades prior to the start of construction.

Any damage to privately-owned pet containment and irrigation systems caused by City reconstruction activities will be repaired by the City.

**Streets and Sidewalks**

Based on the City's Living Streets Plan, Grimes Avenue and Sunnyside Road are classified as local connectors. All other streets in the neighborhood are classified as local streets. The proposed width of all neighborhood streets compared to existing widths is shown in Table 5.

<b>EXISTING vs. PROPOSED STREET WIDTHS (ft.)</b>		
<b>Street</b>	<b>Existing</b>	<b>Proposed</b>
45 <sup>th</sup> Street	25	27
Grimes Avenue	32	27
Curve Avenue	27	27
Sunnyside Road (1)	28	27
Sunnyside Road (2)	37	37
Townes Circle	25*	27
Townes Road (3)	23*	21
Townes Road (4)	25	27

- (1) Grimes Avenue to 4001 Sunnyside Road
- (2) 4001 Sunnyside Road to France Avenue
- (3) Sunnyside Road to Townes Circle
- (4) Townes Circle to Bridge Street

\* Edge of bit. to edge of bit. All other widths shown are face to face of curb.

**Table 5**

All existing sidewalks will remain in place. Cracked or heaved concrete sidewalk panels will be removed and replaced.

The project will recycle all the existing bituminous street pavement on-site. The existing bituminous will be mixed together with the existing aggregate base course below it and then reincorporated into the project to replace poor subgrade soils, utility trench backfill or street aggregate.

Resident input from the multi-modal survey in Appendix D, Table 1 of this study and from informational meetings indicates issues with traffic speed and volumes and safety of pedestrian and bicyclists. Figure 14 lists the traffic calming measures listed in the City’s Living Streets Plan that are options to consider.

Traffic Calming Measure	LIVING STREETS CLASSIFICATION			
	Local Street	Local Connector	Collector Street	Minor Arterial
Reduction in number of lanes	○	●	●	●
Lane width reduction	●	●	●	●
Median refuge		○	●	●
Curb extension	●	●	●	●
On-street parking	●	●	●	○
Bike lanes/protected bike lanes		○	●	●
Street trees	●	●	●	●
Textured and/or colored paving materials	○	●	●	●
Roundabouts		○	●	●
Traffic Circles	●	●		
Raised intersections	●	●	○	
Raised crosswalks	●	●	○	

Table 6.2. Applicability of Traffic Calming Measure

● = Appropriate    ○ = Appropriate in specific circumstances    □ = Not Appropriate

Figure 14 – Traffic Calming Measures

Table 6 lists a qualitative comparison of traffic calming options considered that fit the context of the neighborhood. Traffic calming options under consideration were limited to Grimes Avenue, Curve Avenue, and Sunnyside Road.

Identified Pedestrian and Vehicle Issues			
Issue	Traffic Calming Option Considered	Pros	Cons
<b>Traffic Speed*</b>	Traffic Circles		Private driveway access issues
			Landscaping maintenance and access
			Increased vehicle travel times
	Raised Brick Crosswalk	Likely reduction in vehicle speed	Not recommended where cyclists are present
			Difficult to properly remove snow
Enforcement		Regulatory speed issue does not exist	
On Street Parking	Likely reduction in vehicle speed due to less vehicle space	Reduction in parking availability in an area with low availability	
<b>Traffic Volume*</b>	Lane Width Reduction	Possible reduction in volumes	
		Less future road maintenance costs	
		Less impervious surface leads to less storm water runoff	
	Traffic Circles	Possible reduction in volume	Difficult to properly remove snow
			Driveway access issues
			Landscaping maintenance and access
	Raised Brick Crosswalk	Possible reduction in volume	Not recommended where cyclists are present
			Difficult to properly remove snow
On Street Parking	Possible reduction in volumes	Reduction in parking availability in an area with low availability	

Table 6 continued on next page

Identified Pedestrian and Vehicle Issues				
Issue	Traffic Calming Option Considered	Pros	Cons	
Pedestrian Safety*	Lane Width Reduction / Curb Extension	Reduction in travel distance reduces risk for conflicts		
		Reduction in vehicle speed reduces risk for conflicts		
		Increased visibility of pedestrians		
	Delineated Crosswalks	Increased visibility of pedestrian facility		Warrants are not met at some intersections
		Installation can occur after construction if warrants are not met		
	Raised Brick Crosswalk	Change in texture and grade may reduce traffic speed and volume		Less visible than City standard crosswalk markings
More difficult to install after construction				
Difficult to properly remove snow				
Cyclist Safety	Dedicated bicycle lanes	Dedicated space for cyclists	ROW impacts, tree removals, not enough space for this facility	
	Shared bicycle lanes/sharrows	Dedicated space for cyclists	All parking would have to be removed to accommodate this facility	

\* Stop signs were suggested by the residents as an option to address this issue. Stop signs determine right-of-way. Industry practice is not to introduce stop signs to address vehicle speeds and volumes.  
(1) Traffic circles considered on Sunnyside Road at Grimes and Curve Avenue intersections

**Table 6**

It is difficult to predict if any of the options listed would decrease traffic volumes. However, the recommended option will likely discourage some drivers from using the neighborhood if the geometric configuration of the neighborhood streets causes vehicle users to either slow down or become uncomfortable navigating narrower streets.

Based upon the evaluation in Table 6, curb extensions are proposed at the intersection of 45<sup>th</sup> Street and Grimes Avenue as shown in Figure 15, and on straightaway sections of Curve Avenue and Sunnyside Road as shown in Figures 16, and 17. These options will eliminate 2 parking spaces on Sunnyside Road and 4 spaces on Curve Avenue assuming 21-foot parking space lengths.

Curb extensions are proposed on Sunnyside Road at the intersections with Grimes Avenue and Curve Avenue as shown in Figures 18 and 19 respectively. This option will not eliminate any parking spaces at the Curve Avenue intersection based on City ordinance that stipulates parking is not

allowed within 30-feet of intersections. No loss of parking will occur at the Grimes intersection since it already has no parking signs posted beyond the ordinance requirements.

Revisions are proposed to the cul-de-sac geometrics at Townes Circle as shown in Figure 20. This improvement will help reduce the overall impervious surface of the project.

Crosswalk striping will be updated at the Sunnyside Road and France Avenue intersection. The week of October 5, the Edina Traffic Safety Committee recommended approval of three (3) striped crosswalks at the intersection of Sunnyside Road and Grimes Avenue. Crosswalks at the intersections of Curve Avenue and Sunnyside Road and Grimes Avenue and W 45<sup>th</sup> Street did not meet City crosswalk warrants and were not recommended.

Staff recommends that the City discontinue snow plowing operations in the private drive north of Townes Circle due to liability and precedent concerns.



Figure 15 – 45<sup>th</sup> Street and Grimes Avenue Intersection



Figure 16 – Curve Avenue Curb Extensions



Figure 17 – Sunnyside Road Curb Extensions



Figure 18 – Grimes Avenue and Sunnyside Road Intersection



Figure 19 – Curve Avenue and Sunnyside Road Intersection



Figure 20 – Townes Circle Cul-De-Sac

#### Residential Lighting

The existing lighting will remain the same with no additional lights proposed.

The proposed improvements acknowledge many of the comments and concerns raised by residents and staff throughout the information gathering process while still maintaining the desired minimum standards of the engineering and public works staff.

#### **RIGHT-OF-WAY & EASEMENTS:**

Existing ROW in the neighborhood varies from 40 feet to 60 feet wide. A 40-foot ROW exists for 45<sup>th</sup> Street. A 50-foot ROW exists for Curve Avenue. 60-foot ROWs exist for Townes Road, Townes Circle, Sunnyside Road, and Grimes Avenue. The City has a water, sanitary sewer and storm sewer utility easement in the private drive for 4607, 4609 and 4611 Townes Circle. The City only has a sanitary sewer utility easement for 4605 Townes Circle.

#### **PROJECT COSTS:**

**The total estimated project cost is \$3,817,000 (Table 7).** The total cost includes direct costs for engineering, clerical and construction finance costs from the start of the project to the final assessment hearing. Funding for the entire project will be from a combination of special assessment, utility, and PACS funds.

The estimated roadway improvement cost is \$1,764,800 for both neighborhoods. All of these costs will be 100 percent funded by special assessments.

**Engineering Study**  
**Morningside A Neighborhood Improvement No. BA-422**  
**White Oaks C Neighborhood Improvement No. BA-438**  
**November 6, 2015**

Utility improvements and repairs amount to \$2,012,800 and will be funded through respective utility funds. Any pedestrian safety enhancement such as crosswalks and sidewalks will be funded through the PACS Fund in an amount of \$39,400.

ITEM	ESTIMATED COST <sup>2</sup>	
	CITY	RESIDENTS
Sanitary Sewer	\$487,900	
Sanitary Sewer Lift Station #1	\$190,300	
Water Main Pipe and Service Pipe Up To and Including Curb Stop Box	\$766,100	
Storm Sewer	\$568,500	
PACS	\$39,400	
Street Reconstruction <sup>1</sup> (Morningside A)		\$1,284,200
Street Reconstruction <sup>1</sup> (White Oaks C)		\$480,600
<b>Sub-total</b>	<b>\$2,052,200</b>	<b>\$1,764,800</b>
<b>Total</b>	<b>\$3,817,000</b>	

<sup>1</sup> Cost to be assessed to residents

<sup>2</sup> Costs are given in 2016 dollars

**Table 7**

Council may consider adding additional green infrastructure items shown in Table 8. The cost of these items would be funded through the storm sewer utility fund and are not reflected in the overall project costs shown in Table 7 or in the City's current Capital Improvement Plan.

GREEN INFRASTRUCTURE ITEM	ESTIMATED COST <sup>1</sup>
Permeable pavements	\$35,000
Perforated storm sewer	\$30,000
<b>Total</b>	<b>\$65,000</b>

<sup>1</sup> Cost are given in 2016 dollars

**Table 8**

**ASSESSMENTS:**

The assessments are based on the City's special assessment policy, dated August 21, 2012. Drawing 2 in Appendix L summarizes the distribution of REUs within the neighborhood.

Based on this policy, the residential equivalent units (REU) for Morningside A and White Oaks C are shown in Table 9 with estimated street reconstruction assessments per REU in 2016 dollars.

SUMMARY OF TOTAL REUs and ASSESSMENTS		
Neighborhood	REUs	Assessment per REU
Morningside A	125.9	\$10,200
White Oaks C	18	\$26,700

**Table 9**

City-owned property is located within the neighborhood on Townes Road. The property contains a land-locked wetland area that cannot be developed in the future so no levied assessment is planned for that parcel.

The methodologies for calculating other assessments that are not equal to 1 REU are as follows:

Commercial Property:

Commercial properties in the Morningside A neighborhood are assessed 1.5 REU's per 1000 square feet.

4412 France Avenue S:

$$4.3 \text{ REU's} = [(7,670 \text{ SF} / 1,000) \times (1.5 \text{ REU}) + (3 \text{ units}) \times (0.5 \text{ REU})] \times (1/3 \text{ REU})$$

4500 France Avenue S:

$$6.7 \text{ REU's} = (13,414 \text{ SF} / 1,000) \times (1.5 \text{ REU}) \times (1/3 \text{ REU})$$

3903 Sunnyside Road:

$$12.2 \text{ REU's} = (8,111 \text{ SF} / 1,000) \times (1.5 \text{ REU})$$

3904 Sunnyside Road:

$$5.0 \text{ REU's} = (3,342 \text{ SF} / 1,000) \times (1.5 \text{ REU})$$

3910 Sunnyside Road:

$$6.9 \text{ REU's} = (4,578 \text{ SF} / 1,000) \times (1.5 \text{ REU})$$

3918 Sunnyside Road:

$$2.9 \text{ REU's} = (1,945 \text{ SF} / 1,000) \times (1.5 \text{ REU})$$

3920 Sunnyside Road:

$$3.6 \text{ REU's} = (2,412 \text{ SF} / 1,000) \times (1.5 \text{ REU})$$

3930 Sunnyside Road:

$$3.7 \text{ REU's} = (2,484 \text{ SF} / 1,000) \times (1.5 \text{ REU})$$

3940 Sunnyside Road:

$$3.6 \text{ REU's} = (2,368 \text{ SF} / 1,000) \times (1.5 \text{ REU})$$

A copy of the preliminary assessment roll for each neighborhood is included in Appendix F.

**Engineering Study  
Morningside A Neighborhood Improvement No. BA-422  
White Oaks C Neighborhood Improvement No. BA-438  
November 6, 2015**

**PROJECT SCHEDULE:** The following schedule is feasible from an Engineering standpoint:

Project Open House 2013	November 25, 2013
Project Open House 2015	February 25, 2015
Neighborhood Informational Meeting	July 29, 2015
Neighborhood Informational Meeting	September 21, 2015
Edina Transportation Commission Meeting	October 15, 2015
Receive Engineering Study and Public Hearing	December 8, 2015
Bid Opening	February 2016
Award Contract	Spring 2016
Begin Construction	Spring 2016
Complete Construction	Fall 2016
Final Assessment Hearing	Fall 2017

**FEASIBILITY:** Staff and consultant believes the construction of this project is necessary, cost effective and feasible to improve the public infrastructure in the Morningside A and White Oaks C Neighborhood.

- APPENDIX:**
- A. 2013 and 2015 Open House
  - B. July 29, 2015 Informational Meeting
  - C. September 21, 2015 Informational Meeting
  - D. Property Owner Multi-modal Survey
  - E. Property Owner Utility Survey
  - F. Preliminary Assessment Roll
  - G. City Comprehensive Plan Update – Sidewalk and Bicycle Facilities
  - H. Traffic and Crash Data
  - I. Existing Street Lights and Signs
  - J. Not Used
  - K. Water Main and Service Breaks
  - L. Appendix Drawings
    - Drawing 1 – Proposed Water Main Map
    - Drawing 2 – Preliminary Assessment Map
  - M. October 22, 2015 Edina Transportation Committee Meeting Minutes