





SRF No. 0148483 County Project No. 091101

CSAH 112 – Phase 1 Project Advisory Committee (PAC) Meeting December 17, 2014; 8:00 am – 10:00 am Orono City Hall MEETING RECORD

A project PAC meeting for the referenced project was held at the Orono City Hall on December 17, 2014 from 8:00 p.m. – 9:45 a.m. The following is a summary of the meeting based on the Agenda, which is attached to this record:

Meeting Summary:

1. Introductions:

Nate Will opened the meeting. Introductions were made as several new people were present. A copy of the meeting sign in sheet is attached to this meeting record.

2. Review of November 19, 2014 Project Advisory Committee Meeting Record

Nate asked that any comments on the Meeting Record from the November 19, 2014 meeting be sent electronically to him at SRF. Nate will post the meeting record on the project website at www.CSAH112.com on the status page.

3. Review of Previous Action Items:

The following action items were reviewed. Any items shown in grey require additional action which are added to the action items from this meeting below.

Task	Responsible Party	Due Date	Resolution
SRF to explore options for implementing screening such as trees along the bike path from Mill Street to Martha Lane.	Nate Will	12/31/14	Further review required
SRF to include copy of full calendar (color version) with PAC meeting record.	Nate Will	12/17/14	Complete
SRF to research technical guidance for implementing a pedestrian flasher (push-button operated) on the west leg of CSAH 112/Mill St intersection. Research rules for advance flasher warning signs along CSAH 112.	Nate Will	12/17/14	Complete See discussion below 4.b
Revise geometric design to incorporate a 6-foot wide sidewalk along the northeast side of Symes Street between Lake Street and existing trail that terminates into Symes Street, west of Mill Street. Bring revised layout to 12/17/14 PAC meeting.	Nate Will	12/17/14	Complete
SRF to update project website (www.csah112.com) to include note about upcoming field work for soil borings, utilities and environmental studies.	Mike Turner	11/30/14	Complete
SRF to request copy of lighting unit standard from Orono for their recent work completed at the CSAH 15/19 intersection.	Nate Will	12/1/14	Complete
SRF to request copy of standard lighting units for Long Lake for use in developing a lighting approach for the CSAH 112 project.	Nate Will	12/1/14	Complete
SRF to bring lids for coffee cups.	Nate Will	12/17/14	Complete

Nate presented a layout showing the proposed sidewalk along Symes Street, adjacent to Nelson Lake Park, from Lake Street easterly to the existing crossing west of Mill Street. See copy of layout attached to this meeting record. Nate reviewed the previous discussion presented at the November 19, 2014 PAC meeting which indicated shared-bike lanes would be implemented along Symes Street and Martha Lane. A resolution banning parking from the Nelson Lake Park side of Symes Street and from both sides of Martha Lane will be needed from the City of Long Lake. The representatives from Long Lake indicated they would begin working on the resolution to ban parking as described above and they do not anticipate any issue with passing a resolution.

4. Discussion Items:

a. PAC concerns regarding quorum of Council Members and Open Meeting Rules for January 2015 PAC Mtg. Nate mentioned that the January PAC meeting, may have a quorum of the Long Lake City Council and questioned if this required noticing the meeting to follow "open meeting rules" for the City of Long Lake. Scott discussed the issue and mentioned they are planning to have two council representatives continue serving on CSAH 112 PAC (Donny Chillstrom and Liz Olson). They will plan to have Tom Skjaret attend the January PAC meeting as a Long Lake resident. Marty Schneider would like to remain involved with the PAC but understood the concern with having a quorum of the Council. Long Lake will continue to discuss this issue and may consider noticing the meeting to allow additional council members to attend and provide input.

b. Mill Street pedestrian crossing – flasher system

Nate presented a layout showing the Phase 1 project area from Lake Street to Martha Lane including Symes Street. See copy of layout attached to this meeting record. He mentioned SRF took a second look at the horizontal curvature of 112 through the Mill Street intersection and revisions were incorporated to tighten the curvature and improve the site lines at Mill Street.

Nate provided highlights of his review into the design guidance and operation for a proposed Rectangular Rapid-Flashing Beacon (RRFB) system located on the west leg of the 112/Mill Street intersection. The highlights included the following:

- RRFB can enhance safety by reducing crashes between vehicles and pedestrians at unsignalized intersections and mid-block pedestrian crossings by increasing driver awareness of potential pedestrian conflicts.
- Normal activation of the RRFB is provided by a push-button that is pressed by a pedestrian wishing to cross 112.
- Guidance supports installing an Advance RRFB or BlinkerSign LED sign approximately 140 feet, along 112, in advance of Mill Street for increased warning to traffic. These advance RRFB or BlinkerSign LED signs are typically linked wirelessly to flash for the same duration of the RRFB at the pedestrian crossing.
- RRFB is not a traffic signal.
- See attached figure of an RRFB attached to this meeting record.

The PAC members present were supportive of moving the proposed RRFB from the Martha Lane crossing to Mill Street. Appropriate pedestrian/trail crossing signage will be installed at the Martha Lane. Mike Turner indicated that SRF would prepare a memo documenting the guidance to propose the RRFB at the Mill Street intersection with 112.

c. Street lighting concepts and goals

Mike McGarvey introduced himself to the PAC and presented the Phase 1 street lighting discussion. See attached CSAH 112 Preliminary Lighting Overview attached to this meeting record. Mike described the street lighting that exists within the Phase 1 corridor which is

mostly the "Acorn" units consisting of high pressure sodium light sources per the Long Lake standard details. No lighting currently exists in the Phase 1 project area for the City of Orono. Mike explained that the Phase 1 project area is classified into three (3) sub-categories (commercial, intermediate and residential) for lighting. Refer to attached CSAH 112 Preliminary Lighting Overview for description of the 3 sub-categories. He further explained the lighting design is focused on lighting the roadway lighting first and secondly for pedestrian areas. Mike continued to explain the average illumination, which fluctuates between 0.7 footcandles (Fc) (residential); 1.4 Fc (commercial); and 1.0 Fc (intermediate).

Mike briefly discussed the differences and limitations between several styles of lighting fixtures including the "acorn", tear drop and a typical "cobra" roadway fixture. Mike explained that a tear drop fixture disperses light downward rather than illuminating the sky and surrounding properties. The tear drop fixture typically conceals the bulb up within the fixture. An example of this fixture was recently installed along CSAH 15 at CSAH 19 in Navarre, by the City of Orono. This fixture is mounted 25 feet above the ground and uses a LED bulb. See attached lighting packet (page 2, fixture CN55P1 – Arm M202) for example of lighting unit.

Mike explained that the acorn lighting unit (Long Lake standard) is currently serviced through a contract with Xcel Energy. He further described the difference in color temperature between high pressure sodium (HPS) which is orange to LED which is cool white. LED lighting reduces routine maintenance costs, reduces power consumption and distributes the lighting better which allows motorists to focus on objects better. This particular lighting unit is not available in LED and in order for the project to cover the cost of replacing the lighting in Phase 1, the lighting quantities must be included in the Phase 1 project.

Donny Chillstrom mentioned that the City of Long Lake would like to use the tear drop style lighting that matches the style installed at the CSAH 15/19 intersection, along the CSAH 112 project corridor. He likes the idea of switching to LED lighting for the main corridor through the City and the benefits of reduced long-term maintenance costs to the City. The City requested that the lighting units include the following items: flag pole mounts; electrical outlets; banner mounts and banner rods; and several poles include planter attachments. Adam mentioned he recalled the color of the CSAH 15/19 lighting units are bronze or possibly black. Donny mentioned that black would be easier for touch up painting and suggested to the PAC that the color black be selected for use on CSAH 112.

Liz Olson inquired about the existing "acorn" lighting that is planned for removal with the Phase 1 project and whether or not it could be salvaged. Mike Turner responded that the existing lighting could be salvaged and delivered to the City yard for future reuse at the City's discretion. If the City does not want the light poles, the Phase 1 Contractor would remove the lighting and recycle at their discretion. The City of Long Lake requested that County salvage the existing lighting (luminaries and poles) that are impacted with Phase 1 construction and direct the Contractor to haul the material to the City yard. The City will provide a contact name, phone number and address for the final delivery location.

The PAC discussed the lighting concepts through downtown, which is focused on the stretch from Brown Road to Martha Lane. The City of Long Lake desires to maintain the

character of downtown by implementing vertical elements (lighting, trees, etc) to enhance the downtown area. The PAC discussed options such as using lower mounted lighting units for the roadway and possibly adding intermediate pedestrian lighting. It was noted that pedestrian lighting would be 100% paid for by the City of Long Lake since it is considered an aesthetic upgrade.

The PAC requested the County to develop a couple of options for implementing lighting in the downtown area as follows:

- 1) Exclusive 25-foot height fixtures for roadway lighting
- 2) Lower mounted fixtures for downtown
- 3) Alternating 25-foot fixtures and lower aesthetic fixtures

Mike McGarvey described the lighting ideas for the project area east of Martha Lane to Cemetery Road; which falls into the "residential" sub-category. The lighting design for this area is intended to be less intense but necessary to alert motorists to changing urban conditions as they approach Martha Lane. Mike explained the light spacing along this area would generally be farther apart to reduce the average illumination to approximately 0.7 Fc while still providing approximately 4:1 uniformity. A 4:1 uniformity ratio minimizes "hot spots" on the roadway which provides better focus on objects by motorists on the roadway. Mike mentioned the lighting levels along the trail from Martha Lane to Cemetery Road may be adequate, even with cut-off fixtures, based upon the roadway lighting. The PAC requested the County to review the lighting levels along this area including review of the lighting that may be expected along the trail.

d. Discussion of goals for future open house meeting date TBD

This item was not specifically discussed and will be tabled until the next PAC meeting.

- e. Update of ongoing design efforts
 - i. Geotechnical Investigation / Coordination
 - ii. Utility Coordination & Mapping
 - iii. Environmental Investigation

Nate reported the three items listed above is underway and the field work is expected to be completed in January 2015.

5. Open Discussion (5 Minutes)

The City of Long Lake questioned if flashing yellow turn sign arrows (FYA) would be implemented into the new CSAH 112 traffic signals at Brown Road and Lake Street. Mike Turner explained this technology would be reviewed during the traffic signal design. It is possible that FYA might be implemented for non-peak (low volume) traffic volume time of day and a permitted (red arrow) usage during peak hours. Tim Bruers mentioned they have implemented a few signals in this manner and would discuss with the County's traffic engineers.

The PAC discussed the propose color for the traffic signal mast arms and poles. The PAC prefers to have the mast arms and poles match the color of the proposed street lighting. Mike Turner mentioned that additional cost may be incurred for specialty painting the mast arms and poles; and this additional cost may be split among the project partners.

Donny Chillstrom mentioned the City of Long Lake and their businesses feel strongly that the 112 project corridor must remain open to traffic during construction rather than closing and detouring the traffic around Long Lake. Donny mentioned that Long Lake contracts with Wayzata for police and emergency response. Mike Turner responded by acknowledging the difficulties of closing the roadway and the impact to residents and businesses in Long Lake and Orono. He further explained that given the proposed impacts to repair the Long Lake slope restoration, it would be extremely difficult, if not impossible, to safely permit traffic through the corridor. Nate added that emergency traffic would be maintained during the project as the contractor will need to have access to facilitate the construction. Nate questioned possibly using the TH 12 emergency access gate at the 112/Mill Street intersection as a primary access point. Mike Turner mentioned that the County is aware of City's position and would review the proposed staging and shoreline improvements for options to maintain traffic rather than closing the roadway.

6. Follow Up Items/Action Items: (5 Minutes)

For tracking purposes, we have assigned a responsible party and a due date for completing the following action items, which were identified at the meeting:

Task	Responsible Party	Due Date
SRF to explore options for implementing screening such as trees along the bike path from Mill Street to Martha Lane.	Nate Will	1/21/15
SRF to prepare memorandum to document decision for constructing the Rapid Rectangular-Flashing Beacon (RRFB) at intersection of CSAH 112 and Mill Street.	Nate Will	2/1/15
SRF to update project website (<u>www.csah112.com</u>) to include meeting record for PAC meeting held on 11/19/14.	Mike Turner	12/23/14
SRF to review the traffic signal design and guidance for implementing Flashing Yellow Arrow (FYA) traffic signals at Lake Street and Brown Road intersections with 112.	Nate Will	2/1/15
City of Long Lake to develop and pass resolution to ban parking along both sides of Martha Lane and along Symes Street adjacent to the Nelson Lakeside Park.	Scott Weske	2/28/15
SRF to review proposed cross sections along the Long Lake bank stabilization area and determine if possible to maintain traffic along CSAH 112 throughout construction.	Nate Will	
The City will provide a contact name, phone number and address for the final delivery location of the light poles to be salvaged.	Scott Weske	2/1/15

Task	Responsible Party	Due Date
SRF to develop lighting design and layout of lighting units to provide recommended lighting along 112.	Nate Will/ Michael Jischke	1/21/15

7. Upcoming Meetings:

- a. PMT Meeting: January 8, 2015; 1:00 pm 2:30 pm
- b. PAC Meeting: January 21, 2015; 8:00 am 10:00 am

Meeting Record Revisions:

The preceding represents SRF Consulting Group's understanding of the referenced meeting. If you identify discrepancies or items that require clarification, please contact Nate Will at SRF via email at nwill@srfconsulting.com or via telephone at (763) 249-6761.

NW/gjd

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CSAH 112 Project

Final Design - Phase 1

Project Advisory Committee (PAC) Meeting Sign-In Sheet Wednesday, December 17, 2014 (8:00 – 10:00 a.m.)

Present	Name/Organization	Mailing Address	Phone	Email
	Kristy Morter	1600 Prairie Drive	612-596-0384	Kristy.Morter@hennepin.us
	Hennepin County	Medina, MN 55340		
\boxtimes	Mike Turner	1 Carlson Parkway, Suite 150	763-249-6717	MTurner@SRFConsulting.com
	SRF Consulting Group	Minneapolis, MN 55447		
	Jessica Loftus	P.O. Box 66	952-249-4601	JLoftus@ci.orono.mn.us
	City of Orono	Crystal Bay, MN 55323		
	Scott Weske	P.O. Box 606	952-473-6961x2	SWeske@longlakemn.gov
	City of Long Lake	Long Lake, MN 55356		
\boxtimes	Nate Will	1 Carlson Parkway, Suite 150	763-249-6761	NWill@SRFConsulting.com
_	SRF Consulting Group	Minneapolis, MN 55447		
\boxtimes	Adam Edwards	P.O. Box 66	952-249-4661	AEdwards@ci.orono.mn.us
_	City of Orono	Crystal Bay, MN 55323		
\boxtimes	Liz Olson	P.O. Box 606		lolson@longlakemn.gov
	Long Lake City Council	Long Lake, MN 55356		
\boxtimes	Donny Chillstrom	P.O. Box 606	612-710-0569	dchillstrom@longlakemn.gov
	Long Lake City Council	Long Lake, MN 55356		
	Tom Skjaret			
	Long Lake Resident			
	Lili McMillan	P.O. Box 66	612-840-8484	lmcmillan@ci.orono.mn.us
	Orono Mayor	Crystal Bay, MN 55323		
	Jeanne Mabusth	740 Brown Road N	952-476-0578	jamabusth@mchsi.com
	Orono Resident	Orono, MN		

CSAH 112 Project

Final Design – Phase 1

Project Advisory Committee (PAC) Meeting Sign-In Sheet

Wednesday, December 17, 2014 (8:00 – 10:00 a.m.)

	Name/Organization	Mailing Address	Phone	Email
\boxtimes	Marty Schneider Long Lake Council Elect	1176 W. Wayzata Blvd. Long Lake, MN 55356	612-237-3843	martyexplore@msn.com
×	Tim Bruers Hennepin County	1600 Prairie Drive Medina, MN 55340	612-596-0393	Timothy.Bruers@hennepin.us
	Lizz Levang City of Orono	4010 Bayside Road Orono, MN 55359	612-309-7928	clevang@aol.com
	Mike McGarvey SRF Consulting Group	1 Carlson Parkway, Suite 150 Minneapolis, MN 55447	763-249-6753	mmcgarvey@srfconsulting.com







SRF No. 0148483 County Project No. 091101

CSAH 112 – Phase 1 Project Advisory Committee (PAC) Meeting December 17, 2014; 8:00 am – 10:00 am Orono City Hall AGENDA

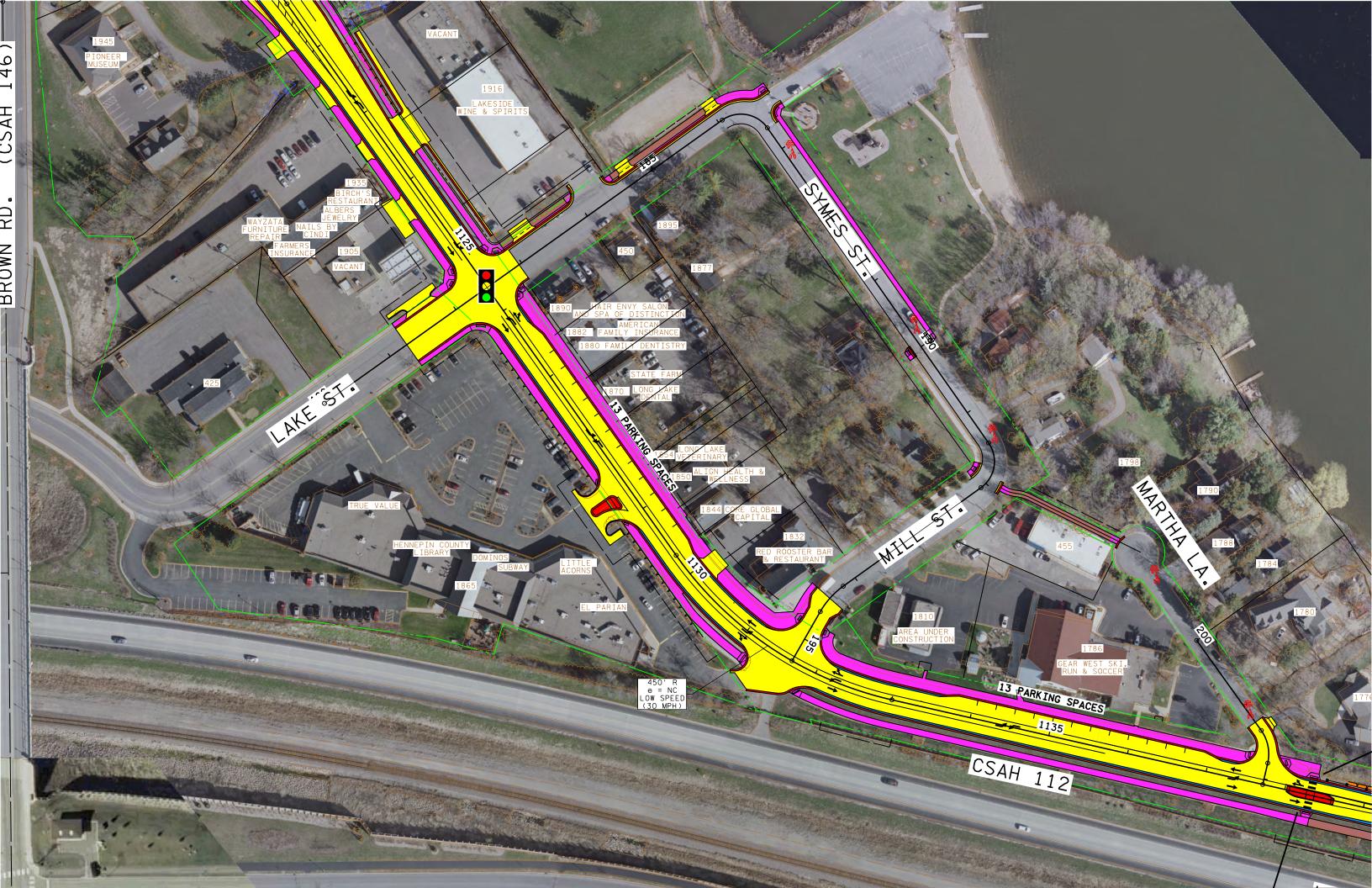
- 1. Introductions: (5 Minutes)
- 2. Review of November 19, 2014 Project Advisory Committee Meeting Record: (5 Minutes)
- 3. Review of Previous Action Items: (5 Minutes)

Task	Responsible Party	Due Date	Resolution
SRF to explore options for implementing screening such as trees along the bike path from Mill Street to Martha Lane.	Nate Will	12/31/14	
SRF to include copy of full calendar (color version) with PAC meeting record.	Nate Will	12/17/14	Complete
SRF to research technical guidance for implementing a pedestrian flasher (push-button operated) on the west leg of CSAH 112/Mill St intersection. Research rules for advance flasher warning signs along CSAH 112.	Nate Will	12/17/14	
Revise geometric design to incorporate a 6-foot wide sidewalk along the northeast side of Symes Street between Lake Street and existing trail that terminates into Symes Street, west of Mill Street. Bring revised layout to 12/17/14 PAC meeting.	Nate Will	12/17/14	
SRF to update project website (www.csah112.com) to include note about upcoming field work for soil borings, utilities and environmental studies.	Mike Turner	11/30/14	Complete
SRF to request copy of lighting unit standard from Orono for their recent work completed at the CSAH 15/19 intersection.	Nate Will	12/1/14	Complete
SRF to request copy of standard lighting units for Long Lake for use in developing a lighting approach for the CSAH 112 project.	Nate Will	12/1/14	Complete
SRF to bring lids for coffee cups.	Nate Will	12/17/14	Complete

- 4. Discussion Items: (50 Minutes)
 - a. PAC concerns regarding quorum of Council Members and Open Meeting Rules for January 2015 PAC Mtg.
 - b. Mill Street pedestrian crossing flasher system
 - c. Street lighting concepts and goals
 - d. Discussion of goals for future open house meeting date TBD (5 Minutes)
 - i. Identify potential meeting location
 - e. Update of ongoing design efforts (5 Minutes)
 - i. Geotechnical Investigation / Coordination
 - ii. Utility Coordination & Mapping
 - iii. Environmental Investigation
- 5. Open Discussion (5 Minutes)
- 6. Follow Up Items/Action Items: (5 Minutes)

Task	Responsible Party	Due Date	Resolution

- 7. Upcoming Meetings:
 - a. PMT Meeting: January 8, 2015; 1:00 pm 2:30 pm
 - b. PAC Meeting: January 21, 2015; 8:00 am 10:00 am



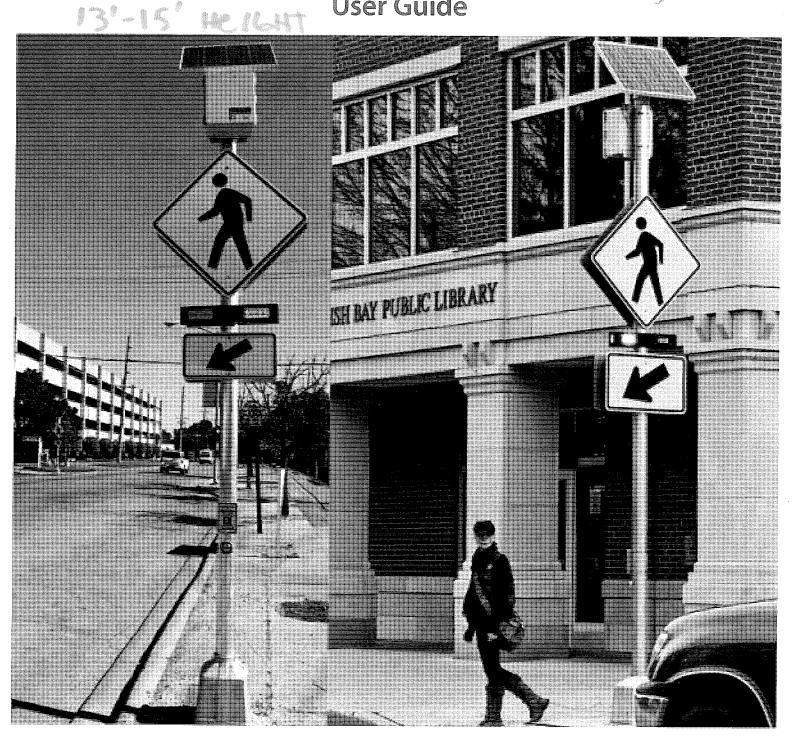




Rectangular Rapid-Flashing Beacon: RRFB-XL™

Solar Powered, Extra Large LED Arrays with AutoBright™ Control

User Guide



Existing Conditions

- "Acorn" light style, high pressure sodium light source
- Xcel Outdoor Lighting Program
 - o Hardware and maintenance included
- Located at intersections on south side of road west of Brown Rd
- Located at regular intervals in downtown area
- No lighting on Orono side of corridor
- No lighting along edge of lake

Potential Opportunities for Improvement

- Establish appropriate lighting levels and uniformity based on roadway classification and surrounding land uses
- Create a consistent corridor aesthetic by selecting a style supported by both communities
- Upgrade lighting technology
- Lower energy usage

Roadway Classification

- Minor Arterial roadway classification has three sub-categories: commercial, intermediate and residential.
- Willow Rd to Brown Rd
 - Intermediate category
 - o Average illumination = 1.0 Fc
 - Uniformity = 4:1
- Brown Rd to Martha Ln
 - Commercial category
 - Has significant pedestrian and vehicle traffic and hence the highest lighting level for the classification
 - Average illumination = 1.4 Fc
 - Uniformity = 4:1
- Martha Ln to Wolf Point Tr (along Long Lake)
 - Residential category
 - o Average illumination = 0.7 Fc
 - Uniformity = 4:1

Xcel Energy Outdoor Lighting Program

- Contract between the cities and Xcel
- Xcel provides the light poles and luminaires and does installation
- Xcel provides ongoing maintenance
- Limited range of style options
- LED not available until mid 2015

Outdoor Lighting Technology

- Most common types
 - High Pressure Sodium (HPS)
 - Metal Halide (MH)
 - Light Emitting Diode (LED)
- From Xcel's LED Pilot Program website:

Q: What are the benefits of LED street lighting?

A: Although LED fixtures are more expensive than traditional lighting options, LED lighting offers advantages: improved night visibility due to higher color rendering, higher color temperature and increased luminance uniformity; significantly longer lifespan; lower energy consumption; reduced maintenance costs; instant-on with no run-up or re-strike delays; no mercury, lead or other known disposable hazards; and lower environmental footprint.

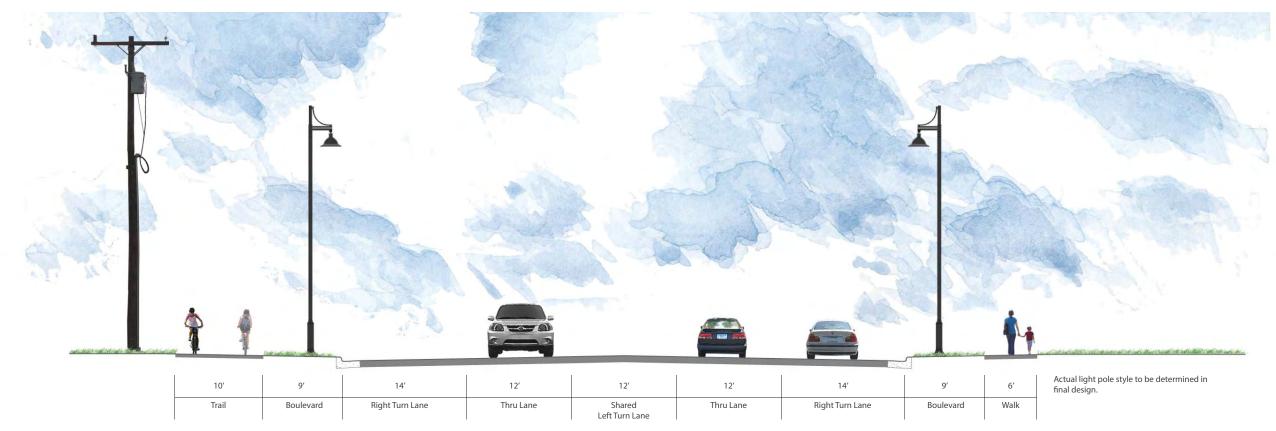
- Why LED is recommended?
 - o Roadway lighting may be the fastest growing market for LED
 - Long Life
 - LED = Typically 70,000 to 100,000 hour ratings
 - HPS = Typically 24,000 hour rating
 - Metal Halide = Typically 20,000 hour rating
 - o Color rendering
 - The color output of the light source plays an important role in how a person sees colors
 - Color rendering index (CRI) assigns are scale of 0 to 100 for light sources
 - LED is typically around 80 CRI
 - Metal Halide is typically around 60 CRI
 - HPS is typically around 25 CRI
 - Uniformity
 - Uniformity defines how a light fixture distributes the light and gives the roadway user better ability to focus on objects
 - Better uniformity can result in fewer lighting units to meet the roadway classification criteria above
 - HPS & Metal Halide require external lens providing adequate light distribution
 - Inherent to LED is a lens directly at the light source, LED provides excellent light distribution
 - o Cost
 - Initial cost of LED lighting was expensive
 - Costs have come down dramatically, but is still the most expensive
 - Pole, wiring, conduit, foundation is same for either technology, about \$7,000-\$10,000 per lighting unit depending on size and other options
 - Approximate Luminaire cost: LED = \$450, HPS = \$300

Lighting Decision Matrix

Location	Issues	Lighting	Light Pole	Additional
		Warranted?	Height	Amenities
Willow Rd to Brown Rd	 Wider roadway corridor Speed limit transition area lower to east higher to west Commercial/Retail Driveways Downtown approach from west Speed limit change Add'I ped/bike 			
Brown Rd to Martha Ln	 Narrower roadway corridor Lower speed Traditional downtown character Commercial/Retail Potential non-signalized ped crossing at Mill St 			
Martha Ln to Wolfe Point Tr	 Along lake edge Downtown approach from east Speed limit transition area Lower to west Higher to east Non-signalized ped crossing at Martha Ln Approaching residential area Visible from across lake • • • 			







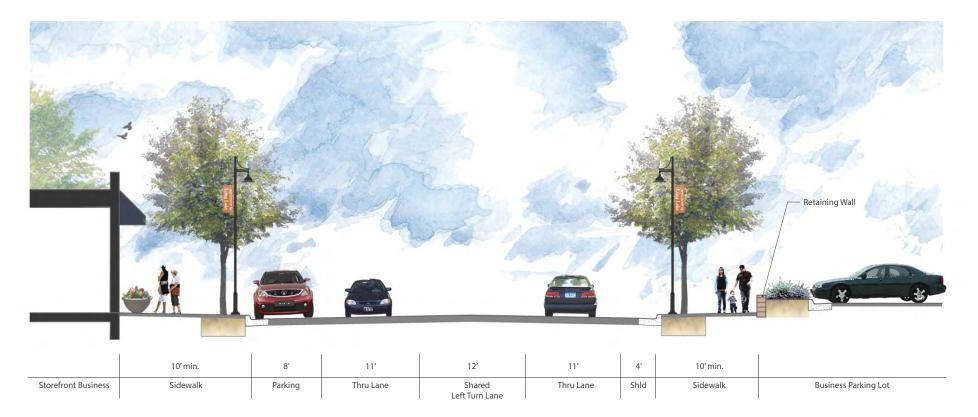
Section Area C (Looking East) ——



Figure B7

SRE Consulting Group, Inc.

PRELIMINARY DESIGN OF CSAH 112 FROM CSAH 6 TO TH 12



Section Area D2 Actual light pole style to be determined in final design.

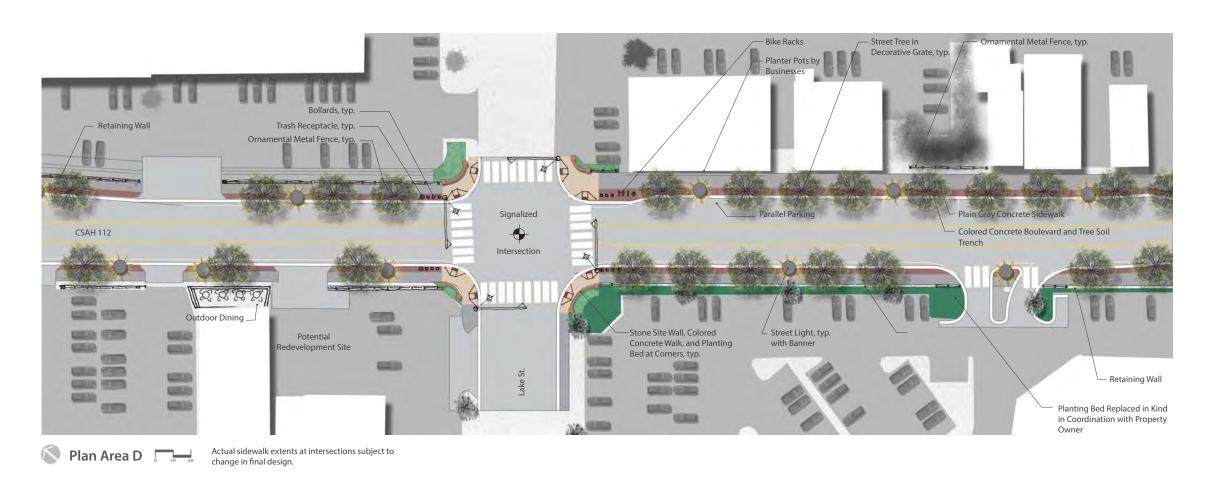


Figure B9

Consulting Group, Inc.





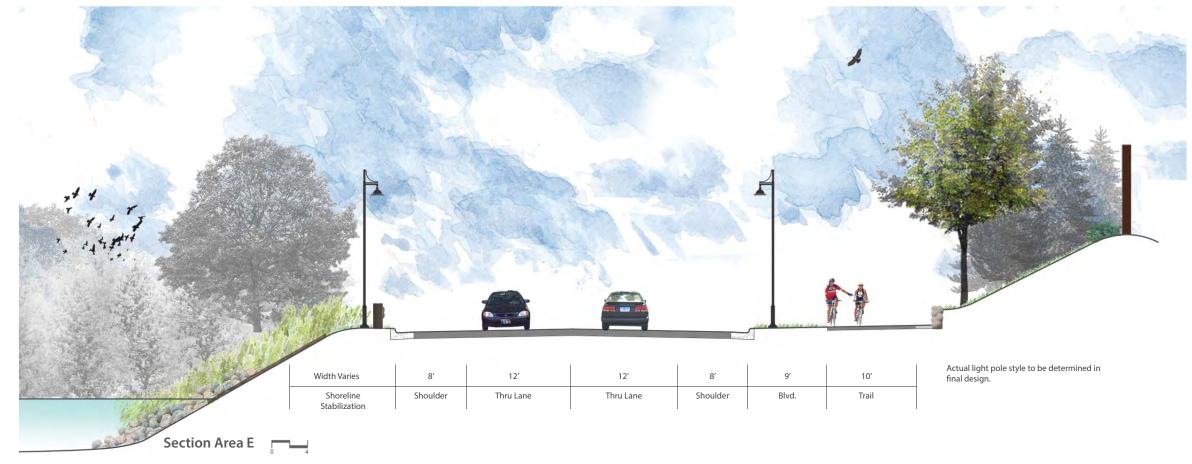




Figure B11

SRE

Preliminary Design of CSAH 112 from CSAH 6 to TH 12



Plan Area E

Location: Minnesota





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Product Offerings

Products and packages available in your state.

Xcel Energy offers design, installation, maintenance and energy for your outdoor lighting needs.

Acorn Lamp - Classic and Antique



Acorn (Classic)

High Performance Beauty

The Classic Acorn combines superior photometrics with exceptional design and sets a new standard for decorative post top luminaries. COLORS: BRONZE, BLACK, AND GREEN Available on pole style A (aluminum), B, & C only

Acorn (Antique)

Historic Sophistication

The Antique Acorn captures the superior photometrics of the Classic Acorn while adding definitive flair to its design. COLORS: BRONZE, BLACK, AND GREEN Available on pole style A (aluminum), B, & C only



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 Vernon Lamp

Nostalgic Style

The Vernon pleasantly blends an old-fashioned look and classic styling to enhance any outdoor setting. COLORS: BRONZE, BLACK, AND GREEN Available on pole styles B & C only



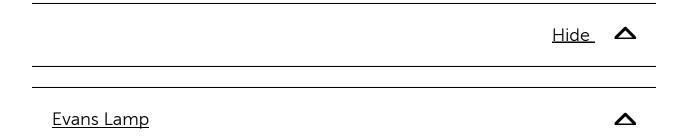
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Lantern Lamp (with or without spikes)

Timeless Classic

The Lantern captures the beauty of yesteryear with features that provide both function and form to deliver a warm illumination. COLORS: BRONZE, BLACK, AND GREEN Available on pole styles A (aluminum), B & C only





Renaissance Grandeur

The Evans intelligent design will revitalize any community roadway with sophisticated style. COLORS: BRONZE, BLACK, AND GREEN Available on pole style "D" only

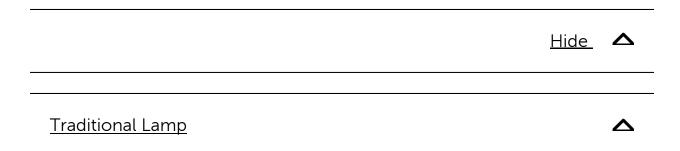


Hide △ Colonial Lamp

Fashionable Standard

The Colonial luminaire presents an old-fashioned charm in any community setting. COLORS: BRONZE ONLY Available on pole styles A, B, & C





Old Favorite

This luminaire stands the test of time with its traditional appeal making it a great match for any neighborhood setting. COLORS: BRONZE ONLY Available on pole style "A" only



	<u>Hide</u>	Δ
Shoebox Lamp		^

Functional Elegance A balanced blend of form and functionality to minimize light trespass and illuminate your roadways with style. COLORS: BRONZE ONLY Available on pole style "A" only

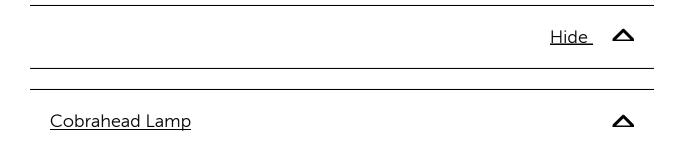


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Rectilinear Lamp	^

Conventional Style

The Rectilinear has a straightforward approach to providing optimum light levels and a clear crisp look to your community. COLORS: BRONZE ONLY Available on pole style "A" only





Reliable Standard

The Cobrahead is appreciated for function and form that contributes to the safety and security of well-lit streets for your residents and business patrons. COLORS: GREY ONLY Available on pole style "A" only



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Poles - Styles A, B, C & D		<u>^</u>

Style A (not shown)

A round, smooth tapered shaft available in varying heights, anchor based or direct buried. Fiberglass – 18' or 30' direct buried. COLORS: BRONZE ONLY Aluminum – 18' direct buried. COLORS: BRONZE, BLACK & GREEN Aluminum – 30' base mounted. COLORS: BRONZE & GREEN

Style B - Columbus

An aluminum decorative pole with a 15 ft. fixture mounting height. This pole comes in both a 19 ft. direct buried version and a 15 ft. base mounted with decorative base. COLORS: BRONZE, BLACK & GREEN.

Style C - Washington

A fluted base mounted pole with a 15 ft. fixture mounting height. Available in both fiberglass and aluminum. COLORS: BRONZE, BLACK & GREEN.

Style D - Evans

A decorative base mounted fluted aluminum pole with a 25 ft. fixture mounting height. COLORS: BRONZE, BLACK, & GREEN. Available only with the Evans fixture.



<u>Hide</u> △



Energy Saving Tip

Want to make a strong statement about energy efficiency? Consider whether your home might be a good candidate for a green roof, solar panels, or a geothermal system.

Company

Our Company

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Doing Your Part

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Sourcing and Purchasing Process

Community

Corporate Giving

Community Involvement

Economic Development

Educational Resources

Safety

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Natural Gas Safety

Electric Safety

Hydro Safety

Nuclear Safety

Vegetation Management

Additional Safety Resources

Year-Round Safety Tips

Connect with us If 🗾 🔠 👩 in 🕤





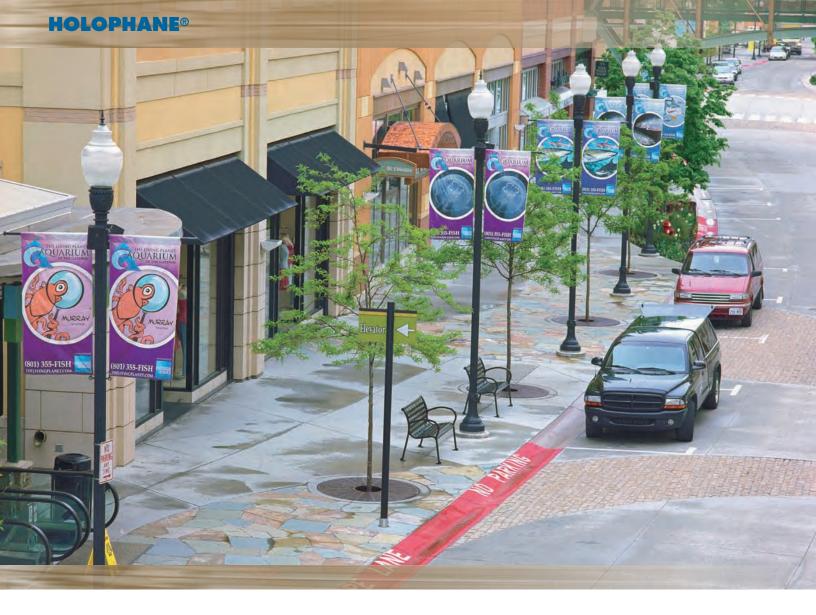






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WASHINGTON SERIES LED

THE USE OF LED (LIGHT EMITTING DIODE) LIGHT SOURCES IN STREET AND AREA LIGHTING APPLICATIONS IS GAINING MOMENTUM IN TODAY'S LIGHTING WORLD. IDEALLY, LED LUMINAIRES REDUCE ENERGY CONSUMPTION, FACILITATE LONG COMPONENT LIFE, AND PROMOTE SUSTAINABILITY.

To meet these 21st century needs, it is imperative that the LED system is properly engineered for thermal and performance considerations. Holophane has exhausted many hours of research and development to ensure reliability through innovative integration of this exciting technology.





Internal LED stalk design offers state-of-the-art light control and thermal management

Trim and Cover Options for the Classic and Premier Optics offers a variety in luminaire shapes, decorative trim and uplight options











Access Door for easy access to the electronic driver (Enhanced and Utility model)



Photocell Window is hidden to maintain architectural form



Slipfitter mounts to 3"D x 3"H pole tenon, and is secured in place through the use of six hex socket screws



Pole Options include a variety of pole materials and styles available to complement luminaire and site architecture





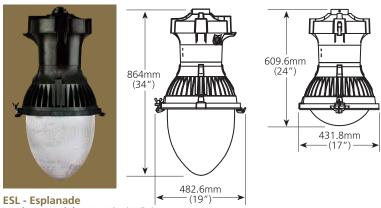
TEAR DROP LED SERIES

AS LED TECHNOLOGY CONTINUES
ITS RAPID PROGRESSION WITH
CHARACTERISTICS SUCH AS
IMPROVED EFFICACY AND EXTENDED
LIFE; CITIES, TOWNS, VILLAGES, AND
INSTITUTIONS CONTINUE TO SHOW
SIGNIFICANT INTEREST IN ADOPTION
TO PROMOTE SUSTAINABILITY AND
REDUCE LIFE-CYCLE COSTS.

The use of LED's within traditional street and area lighting applications is becoming a wide spread consideration when lighting design and selection is being performed. In order to take advantage of technology performance advancements, it is essential that the lighting system choice come from a reputable supplier where comprehensive engineering and testing has been conducted. Holophane has undergone extensive research and development to ensure reliability of our luminaires utilizing LED technology so as to provide exceptional value to our customers.

ORDERING INFORMATION

DIMENSIONAL DETAILS



686mm (27") 483mm (19")**BWL** - Boardwalk

Maximum Weight: 32.2 kg (71 lbs) Maximum E.P.A.: 2.3 sq. ft.

Maximum Weight: 34.47 kg (76 lbs) Maximum E.P.A.: 2.4 sq. ft.





PHL - Port Huron Maximum Weight: 32.2 kg (71 lbs) Maximum E.P.A.: 2.3 sq. ft.

PERFORMANCE SPECIFICATIONS

The Tear Drop LED luminaire is styled to replicate the "teardrop" luminaires that lighted boulevards in the first half of this century. Designed for light control and ease of installation and maintenance, the Tear Drop LED luminaire has a precision optical system for true street lighting performance.

Wiring Chamber

The wiring chamber has a 1-1/2 Inch, gasketed, NPT threaded entry for pendant mounting. A stainless steel set screw locks the unit In position. A three station terminal block will accept #14 through #2 wires and Is prewired to one half of the plug assembly that connects to the removable electric module.

Electrical and Reflector Assembly

The electrical and reflector assembly hinges down from the wiring chamber for ease in wiring and to facilitate the removal of the electrical module. The assembly is secured in place by a stainless steel latch. The unitized electrical module consists of the electronic driver and components mounted to an aluminum plate that is easily removed by loosening two screws In keyhole slots. The disconnect plug connects the ballast to the terminal block In the wiring chamber

Refractor and Door Assembly

The cast aluminum door supports a teardrop, bowl, or sag shaped, thermal resistant borosilicate glass refractor that controls the light to provide an asymmetric cut off distribution. The combination of reflector, refractor maximize efficiency and uniformity of illumination while controlling luminaire brightness. The refractor assembly and decorative skirt (when applicable) assembly hinges from the electrical and reflector assembly and is latched by a stainless steel, captive, wing nut assembly.

LED driver (see separate specification sheet)

Finish and Material

The luminaire is finished with polyester powder paint to insure maximum durability. All castings utilize alloy #356 aluminum for maximum corrosion resistance and all exposed hardware is stainless steel.

The luminaire is CSA and UL/CUL listed as suitable for wet locations up to 40°C ambient temperature. IP66 rated.



ASSEMBLY EXAMPLES

