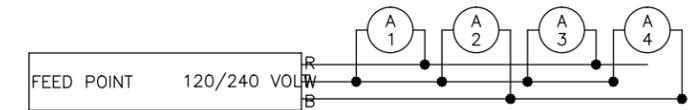


CITY OF DULUTH, MINNESOTA

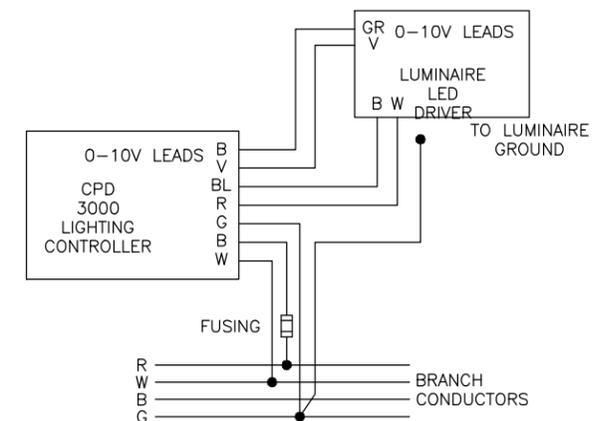
CITY WIDE STREET LIGHTING UPGRADES

LEGEND AND EQUIPMENT SCHEDULE	
SYMBOL	DESCRIPTION
3	INSTALL LED LUMINAIRE - HOLOPHANE PTU POST TOP - 70W
3A	INSTALL LED LUMINAIRE - HOLOPHANE PTU POST TOP - 105W
4	INSTALL LED LUMINAIRE - LEOTEK ARIETA - 155W
4A	INSTALL LED LUMINAIRE - LEOTEK ARIETA - 65W
5	INSTALL LED LUMINAIRE - HOLOPHANE WASHINGTON POST TOP - 105W
6	INSTALL LED LUMINAIRE - HALLBROOK PENDANT LED LUMINAIRE & ARM ASSEMBLY - 105W
7	INSTALL LED RETROFIT KIT - HOLOPHANE BERN PENDANT - 105W
7A	INSTALL LED LUMINAIRE - HOLOPHANE BERN PENDANT - 105W
8	INSTALL LED RETROFIT KIT - HOLOPHANE GRANVILLE - 100W
9	INSTALL LED RETROFIT KIT - STERNBERG 1910 LED PENDANT - 66W
10	INSTALL LED RETROFIT KIT - STERNBERG G793 LED ACORN - 91W
11	INSTALL LED LUMINAIRE - HOLOPHANE GRANVILLE ACORN - 100W
12	INSTALL POWERLINE CONTROLLER

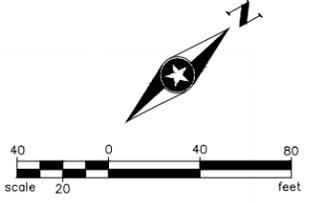
NOTE: ALL LED LUMINAIRES, RETROFIT KITS, AND LIGHTING CONTROLLERS
WILL BE FURNISHED BY THE CITY OF DULUTH TO THE CONTRACTOR.



TYPICAL LIGHTING CIRCUIT WIRING DIAGRAM



TYPICAL POLE WIRING DETAIL
WHEN POWERLINE CONTROLLER IS SPECIFIED



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DRAWN BY:	ACO/TPY	1	TPY	10/28/2015	POWERLINE CONTROLLER NOTE
DESIGNER:	KT				
CHECKED BY:	MJB				
DESIGN TEAM		NO.	BY	DATE	REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Matthew J. Bolf
 Matthew J. Bolf, PE
 Lic. No. 43913
 Date: 10/19/2015



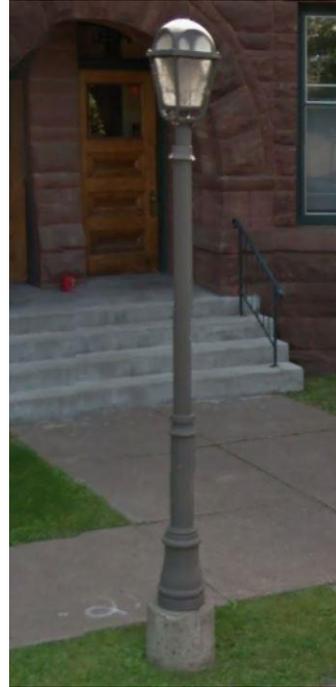
PHONE: 218.279.3000
 418 W SUPERIOR ST STE 200
 DULUTH, MN 55802-1512
 www.sehinc.com

**CITY WIDE STREET
 LIGHTING UPGRADES
 DULUTH, MINNESOTA**

**1ST STREET
 12TH AVE. EAST - 13TH AVE. EAST**

FILE NO.
 DULUT 134195

1st Street – 12th to 13th Avenue East



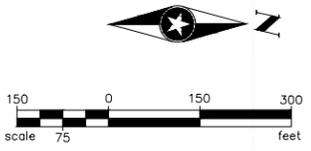
Remove Existing Sternberg Riverwalk Coach Luminaire. Remove pole riser conductors. 4 total luminaires.

3

70-watt



Install City furnished Holophane PTU Post-Top LED 70-watt Luminaire and powerline lighting controller. Furnish and install (5) # 12 XHHW conductors from branch circuiting and controller to luminaire including all necessary fusing and splicing equipment.



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DRAWN BY:	ACO/TPY	1	TPY	10/28/2015	SYMBOL CHANGE FROM 3 TO 3A
DESIGNER:	KT				
CHECKED BY:	MJB				
DESIGN TEAM		NO.	BY	DATE	REVISIONS

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Matthew J. Boff, PE
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CITY WIDE STREET
LIGHTING UPGRADES
DULUTH, MINNESOTA

WALLACE AVE.
EAST 4TH ST. - ARROWHEAD RD.

FILE NO.
DULUT 134195

2
17

Wallace Avenue – East 4th Street to Arrowhead Road



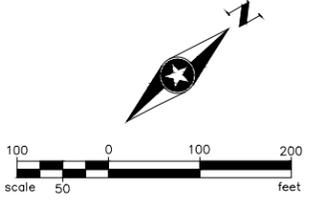
Remove existing Holophane Post-top Luminaire. Remove pole riser conductors. 31 total luminaires.

3A

105-watt



Install City furnished Holophane PTU Post-Top 105-watt LED Luminaire. Furnish and install (3) # 12 XHHW conductors from branch circuiting to luminaire including all necessary fusing and splicing equipment.



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DRAWN BY:	ACO/TPY	1	TPY	10/28/2015	4A LUMINAIRE UPGRADES ADDED
DESIGNER:	KT				
CHECKED BY:	MJB				
DESIGN TEAM		NO.	BY	DATE	REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Matthew J. Bolf
 Matthew J. Bolf, PE
 Date: 10/19/2015 Lic. No. 43913

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**CITY WIDE STREET
 LIGHTING UPGRADES
 DULUTH, MINNESOTA**

**WEST 2ND STREET
 21ST AVE. WEST - 25TH AVE. WEST**

FILE NO.
 DULUT 134195

2nd Street – 21st to 25th Avenue West



Remove existing Sterner Executive Shoebox Luminaire. Remove pole riser conductors. 15 total luminaires.

- 4

155-watt

- 4A

65-watt



Install City furnished Leotek Arieta 155-watt or 65-watt LED Luminaire with shorting cap. Furnish and install (3) # 12 XHHW conductors from branch circuiting to luminaire including all necessary fusing and splicing equipment.



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DRAWN BY:	ACO/TPY	1	TPY	10/28/2015	PROJECT LOCATION SHIFTED TO THE SOUTH
DESIGNER:	KT				
CHECKED BY:	MJB				
DESIGN TEAM		NO.	BY	DATE	REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Matthew J. Bolf
Matthew J. Bolf, PE
Date: 10/19/2015 Lic. No. 43913



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**CITY WIDE STREET
LIGHTING UPGRADES
DULUTH, MINNESOTA**

61ST AVENUE EAST

FILE NO.
DULUT 134195

4
17

61st Avenue East – London Road to Superior Street



Remove existing Sterner Post Top Marina Style Luminaire. Remove pole riser conductors. 5 total luminaires.

5



Install City furnished Holophane Washington Post Top LED Luminaire. Furnish and install (3) # 12 XHHW conductors from branch circuiting to luminaire including all necessary fusing and splicing equipment.

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DRAWN BY: ACO/TPY	1	TPY	10/28/2015	POWERLINE CONTROLLER NOTE
DESIGNER: KT				
CHECKED BY: MJB				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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 Matthew J. Bolf, PE
 Lic. No. 43913
 Date: 10/19/2015

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**CITY WIDE STREET
 LIGHTING UPGRADES
 DULUTH, MINNESOTA**

**MORGAN PARK
 88TH AVE WEST
 CONCORD ST. TO HILTON ST.**

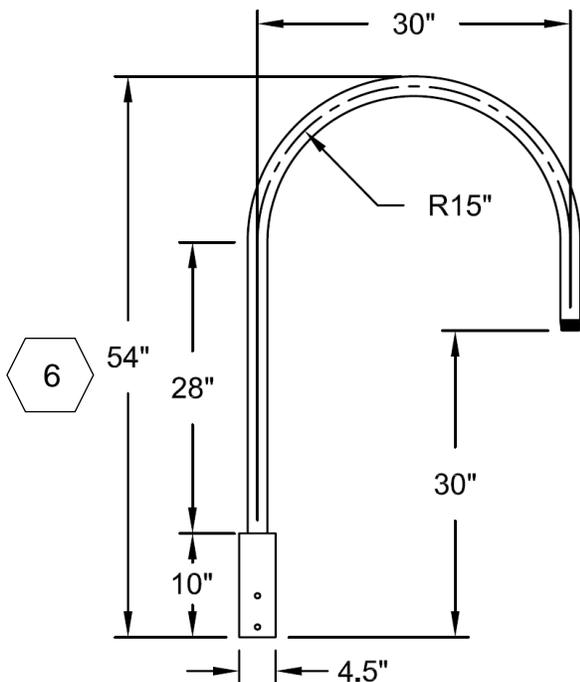
FILE NO.
 DULUT 134195

5
 17

Morgan Park – 88th Avenue West from Concord Street to Hilton Street



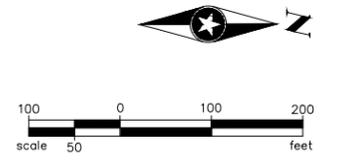
Remove existing Architectural Area Lighting Pendant Luminaire and Shepherd Hook arm assembly. Remove pole riser conductors. 30 total luminaires.



Install City furnished Hallbrook Pendant LED Luminaire and Arm Assembly and powerline lighting controller. Furnish and install (5) # 12 XHHW conductors from branch circuiting and controller to luminaire including all necessary fusing and splicing equipment.

7 10 LUMINAIRE UPGRADES AT THIS LOCATION.

12 13 POWERLINE CONTROLLER UPGRADES AT THIS LOCATION



INSTALL POWERLINE CONTROLLERS, POLE RISER CONDUCTORS, FUSING & SPLICING EQUIPMENT ONLY

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DRAWN BY: ACO/TPY	1	TPY	10/28/2015	ADDED 3 POWERLINE CONTROLLERS & POWERLINE CONTROLLER NOTE
DESIGNER: KT				
CHECKED BY: MJB				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

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 Matthew J. Bolf, PE
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CITY WIDE STREET LIGHTING UPGRADES DULUTH, MINNESOTA

HAWK RIDGE ESTATES

FILE NO. DULUT 134195

Hawk Ridge – Snowy Owl Circle, Bald Eagle Trail, Broadwing Drive, Redtail Drive



Remove existing Holophane Vienna and Bern Lower Luminaire Housing. Remove pole riser conductors. 10 total Luminaires.

7



Install City furnished Holophane Bern Pendant LED Lower Housing Retrofit Kit. Install 13 City furnished powerline lighting controllers (includes controllers for (3) existing luminaires). Furnish and install (5) # 12 XHHW conductors from branch circuiting and controller to luminaire including all necessary fusing and splicing equipment.

N



100 0 100 200
scale 50 feet



7A 9 LUMINAIRE UPGRADES AT THIS LOCATION.

12 9 POWERLINE CONTROLLER UPGRADES AT THIS LOCATION.

PROJECT LIMITS

Middle Rd.

Howard Gresham Rd.

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DRAWN BY:	ACO/TPY	1	TPY	10/28/2015	SYMBOL CHANGE FROM 7 TO 7A, ADDED POWERLINE CONTROLLER NOTE
DESIGNER:	KT				
CHECKED BY:	MJB				
DESIGN TEAM		NO.	BY	DATE	REVISIONS

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Matthew J. Bolf, PE
Date: 10/19/2015 Lic. No. 43913



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**CITY WIDE STREET
LIGHTING UPGRADES
DULUTH, MINNESOTA**

MIDDLE ROAD

FILE NO.
DULUT 134195

7
17

Middle Road

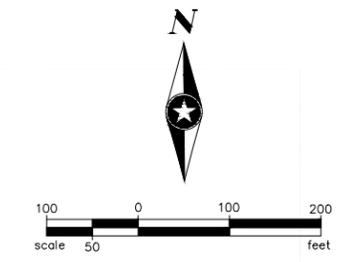


Remove existing Holophane Bern Luminaire. Remove pole riser conductors. 9 total luminaires.

7A



Install City furnished Holophane Bern Pendant LED Luminaire and powerline lighting controller. Furnish and install (5) # 12 XHHW conductors from branch circuiting and controller to luminaire including all necessary fusing and splicing equipment. Install City furnished Swivel Nipple as required.



7A 7 LUMINAIRE UPGRADES AT THIS LOCATION.

12 7 POWERLINE CONTROLLER UPGRADES AT THIS LOCATION.



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DRAWN BY:	ACO/TPY	1	TPY	10/28/2015	SYMBOL CHANGE FROM 7 TO 7A, ADDED POWERLINE CONTROLLER NOTE
DESIGNER:	KT				
CHECKED BY:	MJB				
DESIGN TEAM		NO.	BY	DATE	REVISIONS

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 Date: 10/19/2015

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CITY WIDE STREET LIGHTING UPGRADES DULUTH, MINNESOTA

NORTH RIDGE ESTATES NORTH RIDGE DRIVE

FILE NO. DULUT 134195

Northridge Estates – Northridge Drive



Remove existing Holophane Bern Luminaire. Remove pole riser conductors. 7 total luminaires.

7A



Install City furnished Holophane Bern Pendant LED Luminaire and powerline lighting controller. Furnish and install (5) # 12 XHHW conductors from branch circuiting and controller to luminaire including all necessary fusing and splicing equipment. Install City furnished Swivel Nipple as required.



8

21 LUMINAIRE UPGRADES AT THIS LOCATION.

12

21 POWERLINE CONTROLLER UPGRADES AT THIS LOCATION.



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DRAWN BY:	ACO/TPY	1	TPY	10/28/2015	ELIMINATED 4 LUMINAIRE UPGRADES, ADDED POWERLINE CONTROLLER NOTE
DESIGNER:	KT				
CHECKED BY:	MJB				
DESIGN TEAM		NO.	BY	DATE	REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Matthew J. Bolf
 Matthew J. Bolf, PE
 Date: 10/19/2015 Lic. No. 43913

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CITY WIDE STREET LIGHTING UPGRADES DULUTH, MINNESOTA

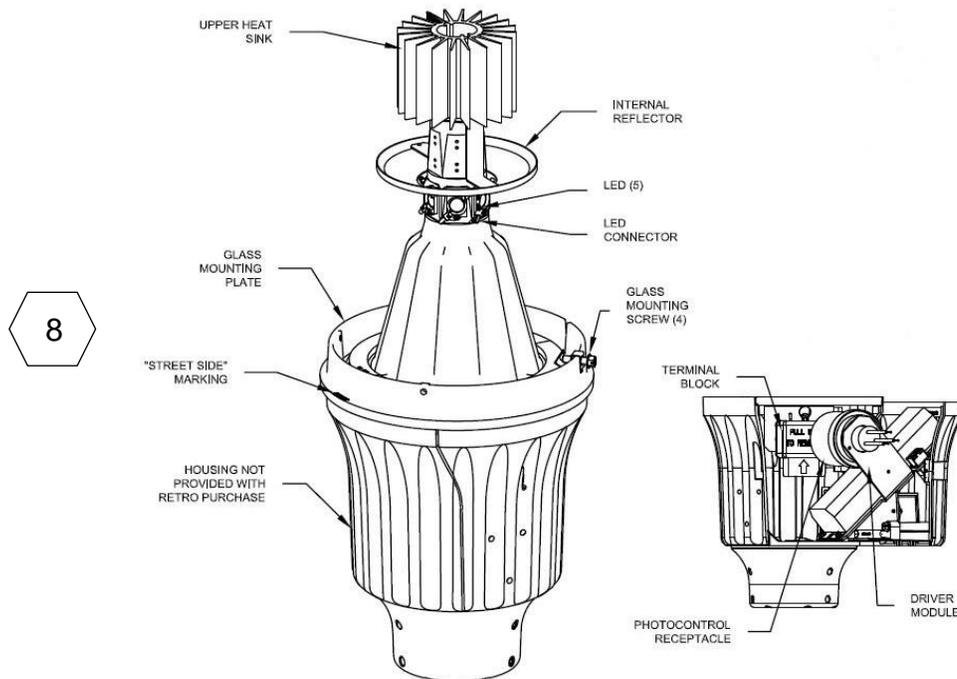
**WEST 3RD STREET
 21ST AVE. WEST - VERNON STREET**

FILE NO.
 DULUT 134195

3rd Street – 21st Avenue West to Vernon Street



Remove existing Holophane internal (HPS) lamp and ballast assembly. Remove pole riser conductors. 21 total luminaires.



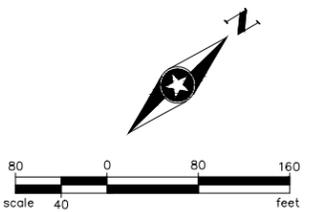
Install City furnished Holophane Granville LED Retrofit Kit and power line controller. Furnish and install (5) # 12 XHHW conductors from branch circuiting and controller to luminaire including all necessary fusing and splicing equipment.

8

82 LUMINAIRE UPGRADES AT THIS LOCATION.

12

82 POWERLINE CONTROLLER UPGRADES AT THIS LOCATION.



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DRAWN BY:	ACO/TPY	1	TPY	10/28/2015	ADDED POWERLINE CONTROLLER NOTE
DESIGNER:	KT				
CHECKED BY:	MJB				
DESIGN TEAM		NO.	BY	DATE	REVISIONS

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Matthew J. Bolf
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Date: 10/19/2015 Lic. No. 43913



CITY WIDE STREET LIGHTING UPGRADES DULUTH, MINNESOTA

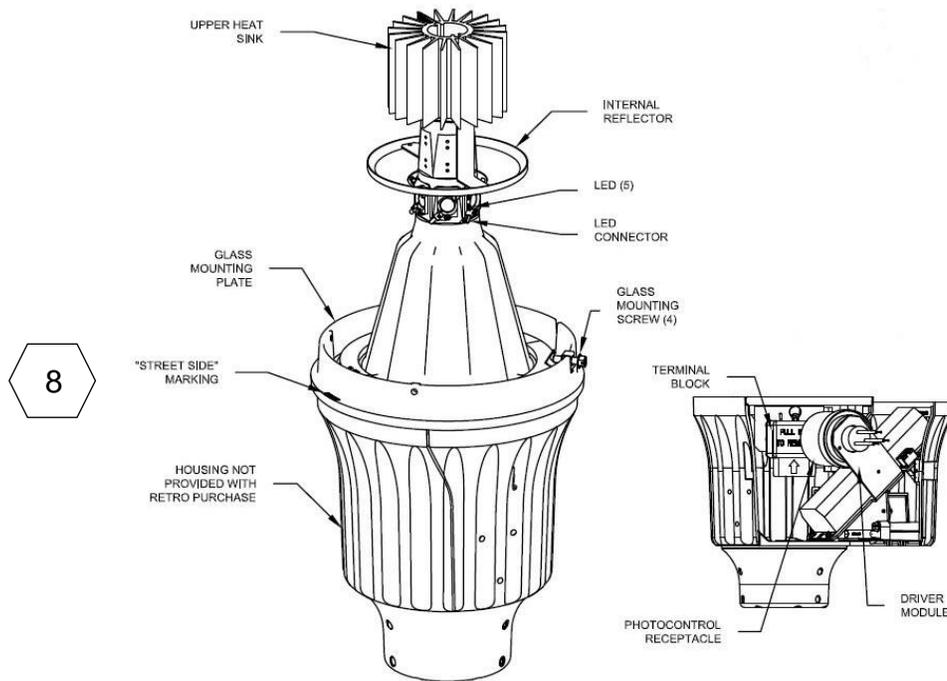
GRAND AVENUE

FILE NO. DULUT 134195 10/17

Central Avenue-Grand Avenue to I-35. Grand Avenue – Central Avenue to 59th Avenue West



Remove existing Holophane Granville lamp and ballast assembly. Remove pole riser conductors. 181 total luminaires.

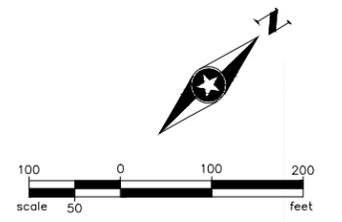


Install City furnished Holophane Granville LED Retrofit Kit and powerline lighting controller. Furnish and install (5) # 12 XHHW conductors from branch circuiting and controller to luminaire including all necessary fusing and splicing equipment.

8 6 LUMINAIRE UPGRADES AT THIS LOCATION.

10 12 LUMINAIRE UPGRADES AT THIS LOCATION.

12 18 POWERLINE CONTROLLER UPGRADES AT THIS LOCATION.



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DRAWN BY:	ACO/TPY	1	TPY	10/28/2015	ADDED POWERLINE CONTROLLER NOTE
DESIGNER:	KT				
CHECKED BY:	MJB				
DESIGN TEAM		NO.	BY	DATE	REVISIONS

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 Matthew J. Bolf, PE
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CITY WIDE STREET LIGHTING UPGRADES DULUTH, MINNESOTA

HARBOR HIGHLANDS

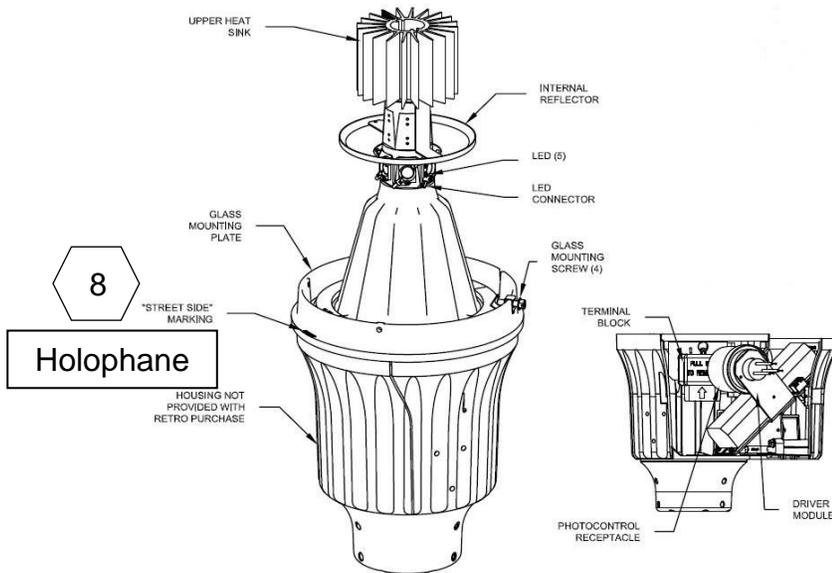
FILE NO.
DULUT 134195

12
17

Harbor Highlands – Village View Drive, Harbor Highland Drive, West 11th St., Red Rock Trail, Lake Avenue, 1st Ave. East.



Remove existing Holophane Granville & Sternberg G793 Acorn lamp and ballast assembly. Remove pole riser conductors. 18 total luminaires – 6 Holophane and 12 Sternberg.



8

Holophane



10

Sternberg

Install City furnished Holophane Granville LED Retrofit Kit or Sternberg G793 LED Acorn Retrofit Kit and power line controller. Furnish and install (5) # 12 XHHW conductors from branch circuiting and controller to luminaire including all necessary fusing and splicing equipment.



8 4 LUMINAIRE UPGRADES AT THIS LOCATION.

12 4 POWERLINE CONTROLLER UPGRADES AT THIS LOCATION.

PROJECT LIMITS

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DRAWN BY:	ACO/TPY	1	TPY	10/28/2015	ADDED POWERLINE CONTROLLER NOTE
DESIGNER:	KT				
CHECKED BY:	MJB				
DESIGN TEAM		NO.	BY	DATE	REVISIONS

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 Matthew J. Bolf, PE
 Date: 10/19/2015 Lic. No. 43913



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**CITY WIDE STREET
 LIGHTING UPGRADES
 DULUTH, MINNESOTA**

**LINCOLN PARK
 10TH STREET BRIDGE**

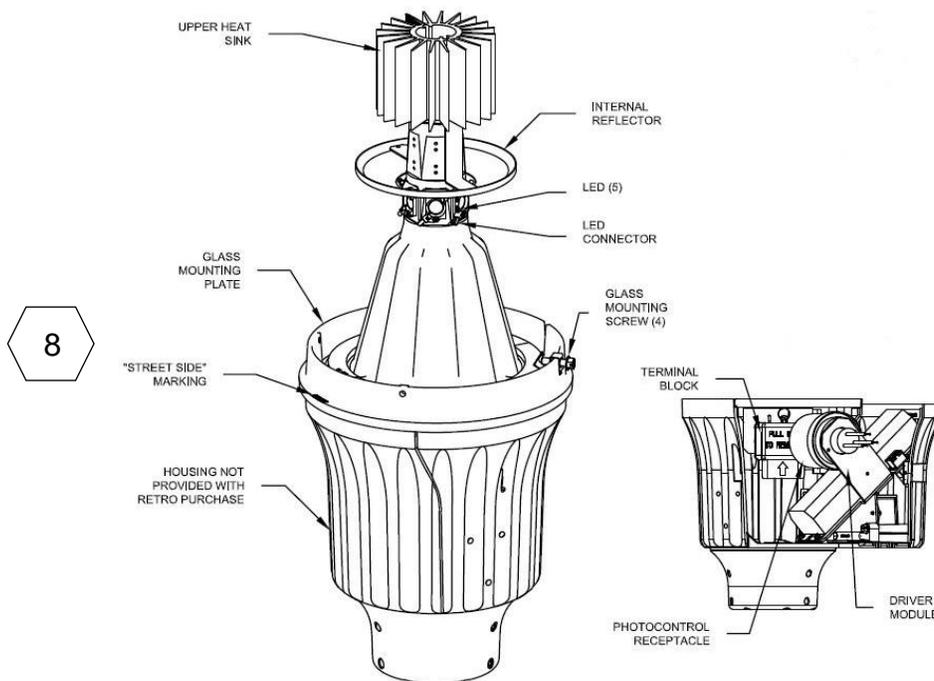
FILE NO.
 DULUT 134195

13
17

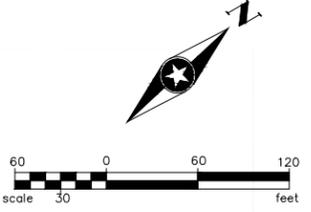
Lincoln Park – West 10th Street Bridge



Remove existing Holophane Utility Granville lamp and ballast assembly. Remove pole riser conductors. 4 total luminaires.



Install City furnished Holophane Granville LED Retrofit Kit and powerline lighting controller. Furnish and install (5) # 12 XHHW conductors from branch circuiting and controller to luminaire including all necessary fusing and splicing equipment.



9 8 LUMINAIRE UPGRADES AT THIS LOCATION.

12 8 POWERLINE CONTROLLER UPGRADES AT THIS LOCATION.

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DRAWN BY:	ACO/TPY	1	TPY	10/28/2015	ADDED POWERLINE CONTROLLER NOTE
DESIGNER:	KT				
CHECKED BY:	MJB				
DESIGN TEAM		NO.	BY	DATE	REVISIONS

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 Lic. No. 43913
 Date: 10/19/2015



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**CITY WIDE STREET
 LIGHTING UPGRADES
 DULUTH, MINNESOTA**

**EAST 8TH STREET BRIDGE
 14TH AVE. EAST - 15TH AVE. EAST**

FILE NO.
 DULUT 134195

8th Street Bridge – 14th to 15th Avenue East



Remove existing Sternberg 1910 Pendant lamp and ballast assembly. Remove pole riser conductors. 8 total luminaires.

9

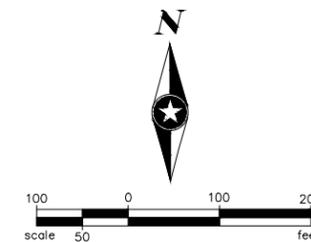


Install City furnished Sternberg 1930 LED Pendant Retrofit Kit and powerline lighting controller. Furnish and install (5) #12 XHHW conductors from branch circuiting and controller to luminaire including all necessary fusing and splicing equipment.

10
12

51 LUMINAIRE UPGRADES AT THIS LOCATION.

51 POWERLINE CONTROLLER UPGRADES AT THIS LOCATION.

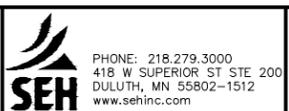


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DRAWN BY: ACO/TPY	1	TPY	10/28/2015	ADDED POWERLINE CONTROLLER NOTE
DESIGNER: KT				
CHECKED BY: MJB				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Matthew J. Bolf
Matthew J. Bolf, PE
Date: 10/19/2015 Lic. No. 43913



CITY WIDE STREET LIGHTING UPGRADES DULUTH, MINNESOTA

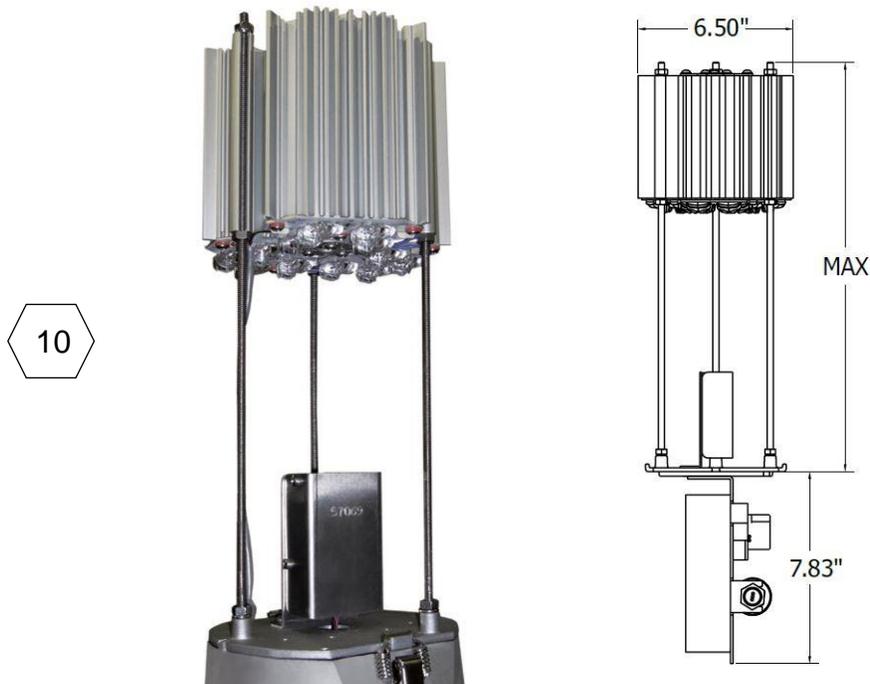
LOWER PIEDMONT WEST 4TH STREET - WEST 10TH STREET

FILE NO. DULUT 134195

Lower Piedmont Avenue – W. 4th Street to Trinity Road



Remove existing Sternberg G793 Acorn lamp and ballast assembly. Remove pole riser conductors. 86 total luminaires.



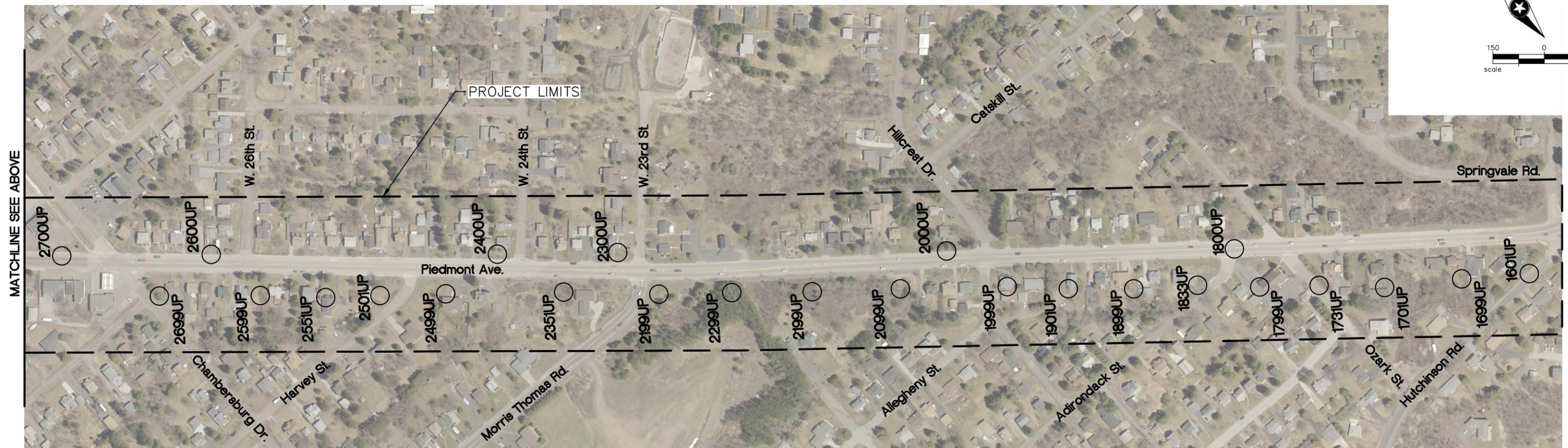
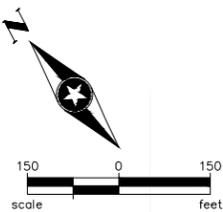
Install City furnished Sternberg G793 LED Acorn Retrofit Kit and powerline lighting controller. Furnish and install (5) # 12 XHHW conductors from branch circuiting and controller to luminaire including all necessary fusing and splicing equipment. Maintain function of internal house-side shield.



11
12

49 LUMINAIRE UPGRADES AT THIS LOCATION.

49 POWERLINE CONTROLLER UPGRADES AT THIS LOCATION.

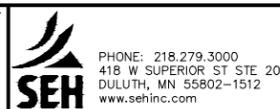


S:\AE\DL\134195\5-final-dsgn\51-drawings\10-civil\cad\dwg\plans\upper piedmont.dwg 10/19/2015 11:38 AM tyngsdal

DRAWN BY:	ACO/TPY	1	TPY	10/28/2015	ADDED POWERLINE CONTROLLER NOTE
DESIGNER:	KT				
CHECKED BY:	MJB				
DESIGN TEAM		NO.	BY	DATE	REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Matthew J. Bof, PE
Matthew J. Bof, PE
Date: 10/19/2015 Lic. No. 43913



CITY WIDE STREET LIGHTING UPGRADES DULUTH, MINNESOTA

PIEDMONT AVENUE HUTCHINSON ROAD - HAINES ROAD

FILE NO. 17
DULUT 134195 17

Upper Piedmont – Hutchinson Road to Haines Road



Remove existing Sun Valley LCGR Acorn Luminaire. Remove pole riser conductors. 49 total luminaires.

11



Install City furnished Holophane Granville LED Acorn Luminaire and powerline lighting controller. Furnish and install (5) # 12 XHHW conductors from branch circuiting and controller to luminaire including all necessary fusing and splicing equipment.