LEGISLATIVE ID #110815

MAIN STREET STREETSCAPE

For:

CITY OF GAINESVILLE

PUBLIC WORKS DEPARTMENT

Brown & Cullen Inc
CIVIL ENGINEERS • LAND PLANNERS

PROJECT DESIGN & APPROACH
PHASE 1: LIGHTING

I. Project Summary

II. Design Criteria

III. Design Standards

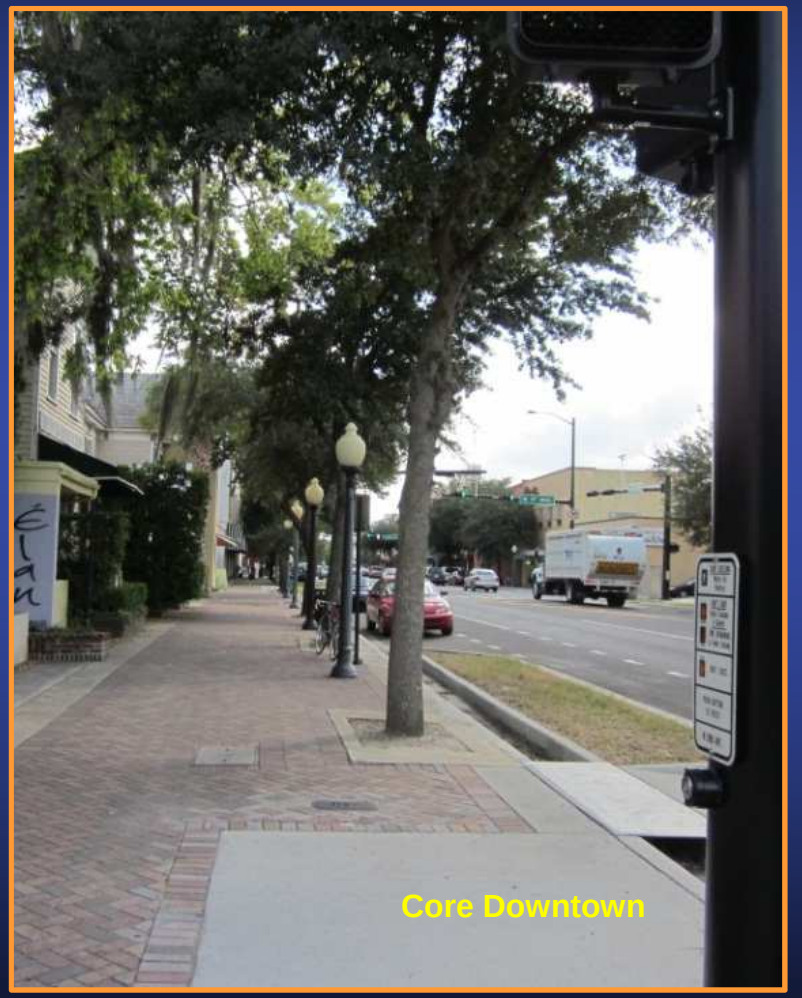
IV. Design Challenges

V. Lighting Layout and Design

VI. LED Lighting

VII. Budget

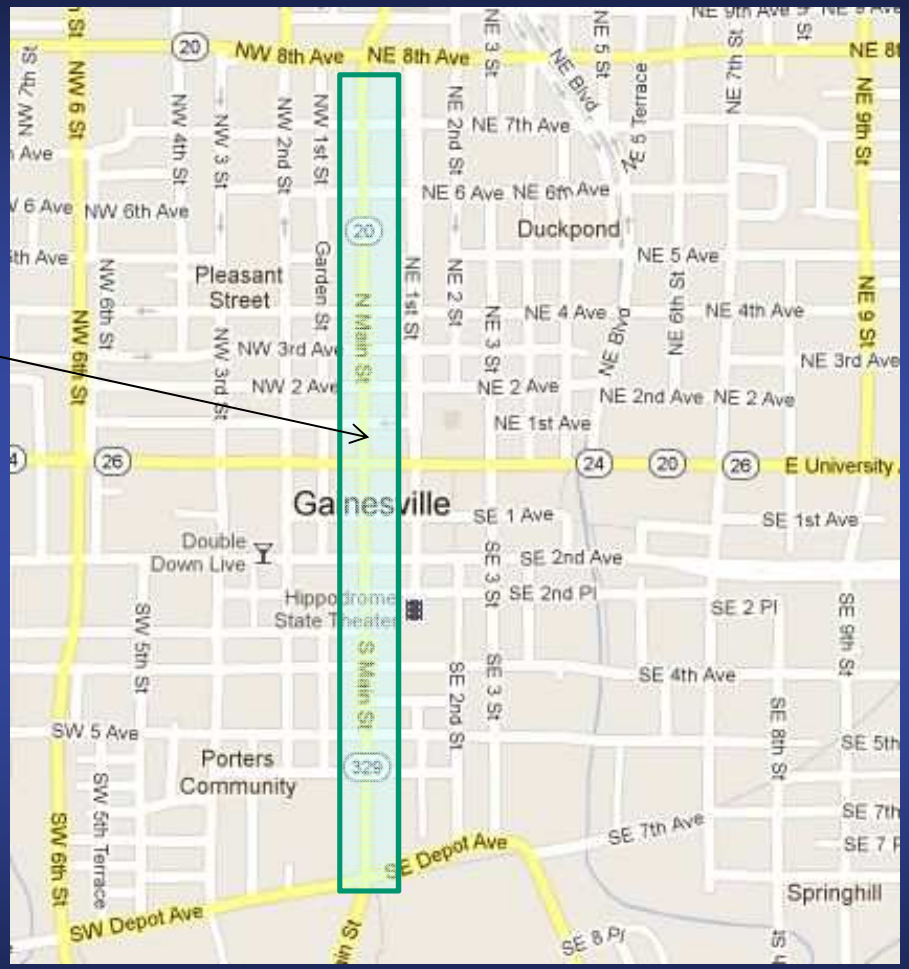
VIII. Local Considerations



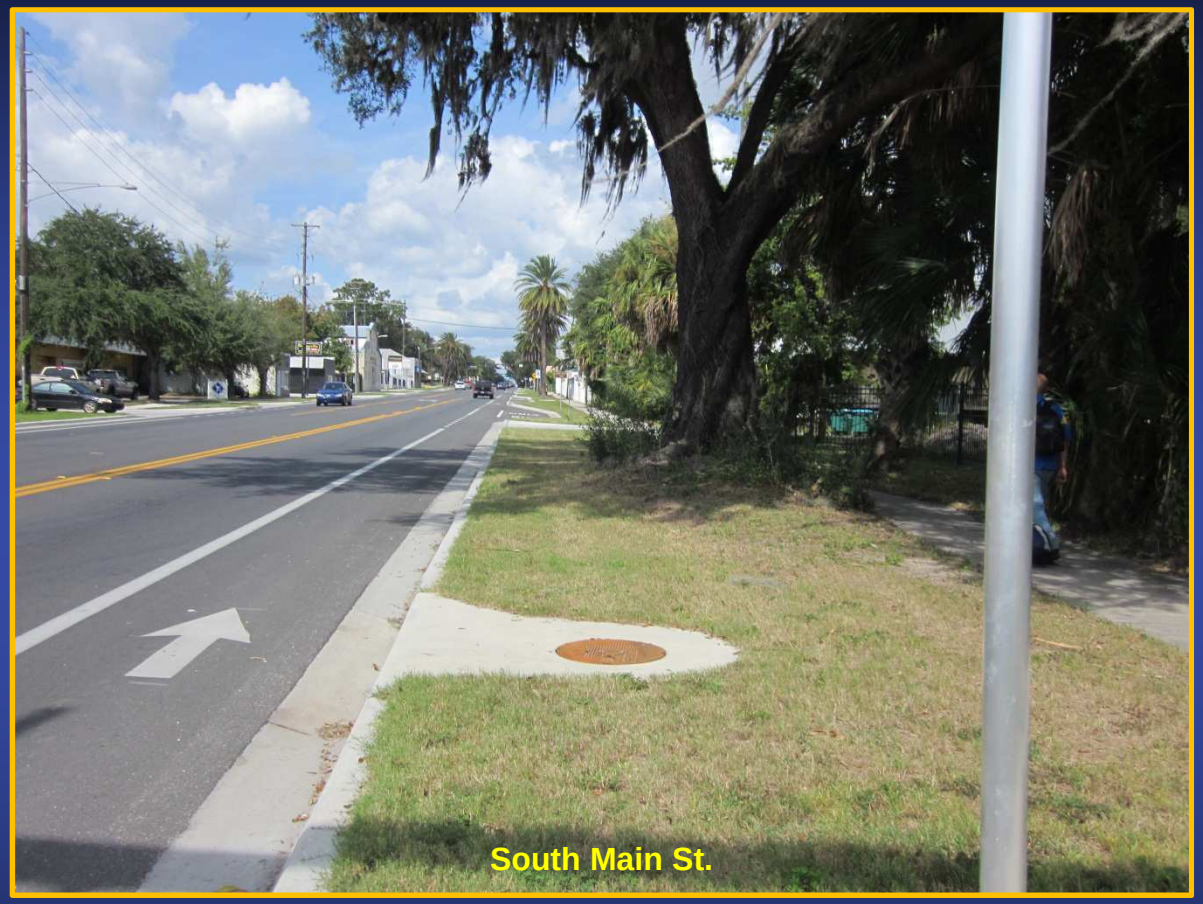
PROJECT SUMMARY

Project Corridor:

Main Street from N 8th Ave. to Depot Ave.



PROJECT SUMMARY



Recent Main Street upgrades did not include lighting.

PROJECT SUMMARY

Existing Conditions Considerations:

- Inadequate Photometrics Throughout Corridor
- Yellowed/Cracked Polycarbonate Lenses
- Street Light Pole Conditions
- Hardscape Areas vs. Grassed

PROJECT SUMMARY

Proposed Improvements:

- Compliance with Approved Lighting Criteria
- Compliance with Approved Standards
- LED Lighting (USDOE Grant Funding)

DESIGN CRITERIA

FDOT Criteria of Conventional Roadway Lighting

Design Criteria

- Average = 1.5 Footcandles
- Avg/Min Ratio = 4:1 or less
- Max/Min Ratio = 10:1 or less

Topic #625-000-007
Plans Preparation Manual, Volume 1 – English

January 1, 2009
Revised – January 1, 2012

Table 7.3.1 Conventional Lighting - Roadways

ROADWAY CLASSIFICATIONS	ILLUMINATION LEVEL AVERAGE INITIAL HORIZONTAL FOOT CANDLE (H.F.C.)	UNIFORMITY RATIOS		VEILING LUMINANCE RATIO
		Lavg/Lmin	Lmax/Lmin	Lv(max)/Lavg
INTERSTATE, EXPRESSWAY, FREEWAY & MAJOR ARTERIALS	1.5	4:1 or Less	10:1 or Less	0.3:1 or Less
ALL OTHER ROADWAYS	1.0	4:1 or Less	10:1 or Less	0.3:1 or Less
* PEDESTRIAN WAYS AND BICYCLE LANES	2.5	4:1 or Less	10:1 or Less	------

Note: These values should be considered standard, but should be increased if necessary to maintain an acceptable uniformity ratio. The maximum value should be one and one-half values.

* This assumes a separate facility. Facilities adjacent to a vehicular roadway should use the levels for that roadway.

DESIGN CRITERIA

Existing Conditions

- 14 Corridor Blocks Evaluated
- 4 blocks have min light levels of zero
- 9 blocks have very low min and/or very high max light levels
- 13 of 14 blocks do not meet criteria

EXISTING STATISTICS

Description	Avg	Max	Min	Max/Min	Avg/Min
END-N8AV	1.3 fc	7.9 fc	0.0 fc	N / A	N / A
N8AV-N7AV	2.0 fc	8.6 fc	0.0 fc	N / A	N / A
N7AV-N6AV	1.7 fc	8.6 fc	0.0 fc	N / A	N / A
N6AV-N4AV	2.0 fc	9.3 fc	0.1 fc	93.0:1	20.0:1
N4AV-N3AV	2.0 fc	8.9 fc	0.1 fc	89.0:1	20.0:1
N3AV-N2AV	1.4 fc	8.3 fc	0.1 fc	83.0:1	14.0:1
N2AV-N1AV	3.1 fc	7.2 fc	0.2 fc	36.0:1	15.5:1
N1AV-UNIV	4.8 fc	9.3 fc	0.7 fc	13.3:1	6.9:1
UNIV-S1AV	4.5 fc	8.8 fc	0.9 fc	9.8:1	5.0:1
S1AV-S2AV	5.4 fc	10.8 fc	1.5 fc	7.2:1	3.6:1
S2AV-S4AV	4.0 fc	10.7 fc	0.4 fc	26.8:1	10.0:1
S4AV-S5AV	2.0 fc	8.6 fc	0.1 fc	86.0:1	20.0:1
S5AV-S6AV	1.3 fc	8.2 fc	0.1 fc	82.0:1	13.0:1
S6AV-DEPOT	1.4 fc	8.4 fc	0.0 fc	N / A	N / A
CRITERIA	**1.5 (min)**			**10:1 (max)**	**4:1 (max)**

DESIGN CRITERIA

Proposed Conditions

- 14 Corridor Blocks Evaluated
- All blocks meet criteria
- More uniform light distribution
- Pedestrian **and** street lighting considerations
  - (Back of Walk to Back of Walk)

PROPOSED STATISTICS

Description	Avg	Max	Min	Max/Min	Avg/Min
END-N8AV	2.4 fc	5.2 fc	0.7 fc	7.4:1	3.4:1
N8AV-N7AV	2.5 fc	5.6 fc	0.7 fc	8.0:1	3.6:1
N7AV-N6AV	2.7 fc	5.7 fc	0.7 fc	8.1:1	3.9:1
N6AV-N4AV	2.7 fc	6.0 fc	0.8 fc	7.5:1	3.4:1
N4AV-N3AV	3.2 fc	8.7 fc	1.1 fc	7.9:1	2.9:1
N3AV-N2AV	2.9 fc	5.9 fc	0.8 fc	7.4:1	3.6:1
N2AV-N1AV	3.2 fc	7.1 fc	1.1 fc	6.5:1	2.9:1
N1AV-UNIV	3.4 fc	7.5 fc	1.1 fc	6.8:1	3.1:1
UNIV-S1AV	3.4 fc	9.0 fc	0.9 fc	10.0:1	3.8:1
S1AV-S2AV	3.4 fc	7.9 fc	1.2 fc	6.6:1	2.8:1
S2AV-S4AV	2.9 fc	7.1 fc	0.8 fc	8.9:1	3.6:1
S4AV-S5AV	3.1 fc	7.8 fc	0.9 fc	8.7:1	3.4:1
S5AV-S6AV	2.8 fc	7.2 fc	0.8 fc	9.0:1	3.5:1
S6AV-DEPOT	2.7 fc	8.9 fc	0.9 fc	9.9:1	3.0:1
CRITERIA	**1.5 (min)**			**10:1 (max)**	**4:1 (max)**

DESIGN STANDARDS

Streetscape Design and Technical Standards for City of Gainesville CRA Districts

Downtown District

- Corridor lies within Downtown District
- Roadway Light = Round "Cutoff"
- Pedestrian Light = Traditional "Cutoff"

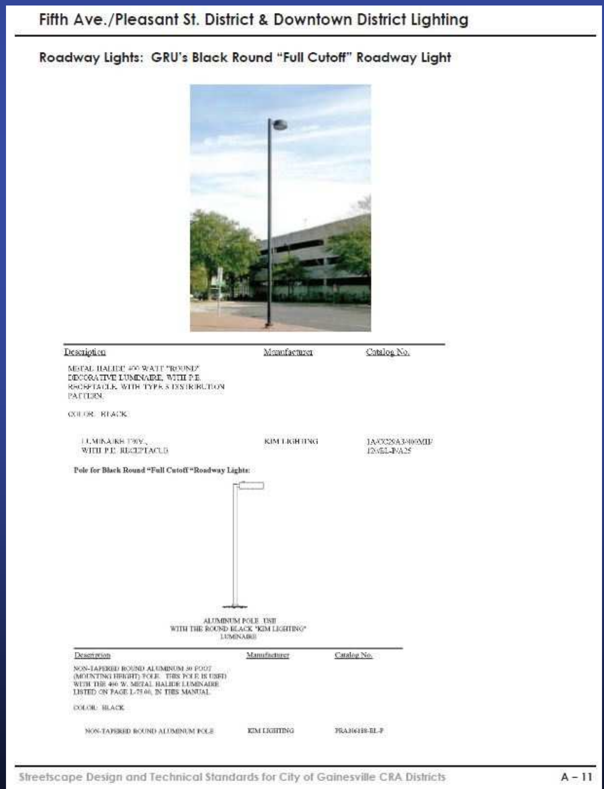
Primary Corridor

- Main St. considered a Primary Corridor
- Roadway Light = Renaissance
- Pedestrian Light = Traditional "Cutoff"

DESIGN STANDARDS

Downtown District Chosen for Compliance with Standards

- Light selection will complement Depot Avenue projects
- CRA requested evaluation of Downtown Standards applied to this corridor



Fifth Ave./Pleasant St. District & Downtown District Lighting

Roadway Lights: GRU's Black Round "Full Cutoff" Roadway Light

Description	Manufacturer	Catalog No.
METAL HALIDE 400 WATT "ROUND" DECORATIVE LUMINAIRE, WITH P.E. RECEPTACLE, WITH TYPE 3 DISTRIBUTION PATTERN. COLOR: BLACK		
LUMINAIRE 120V., WITH P.E. RECEPTACLE	KIM LIGHTING	1A/CC29A3/400MH/120/EL-P/A25

Pole for Black Round "Full Cutoff" Roadway Lights:

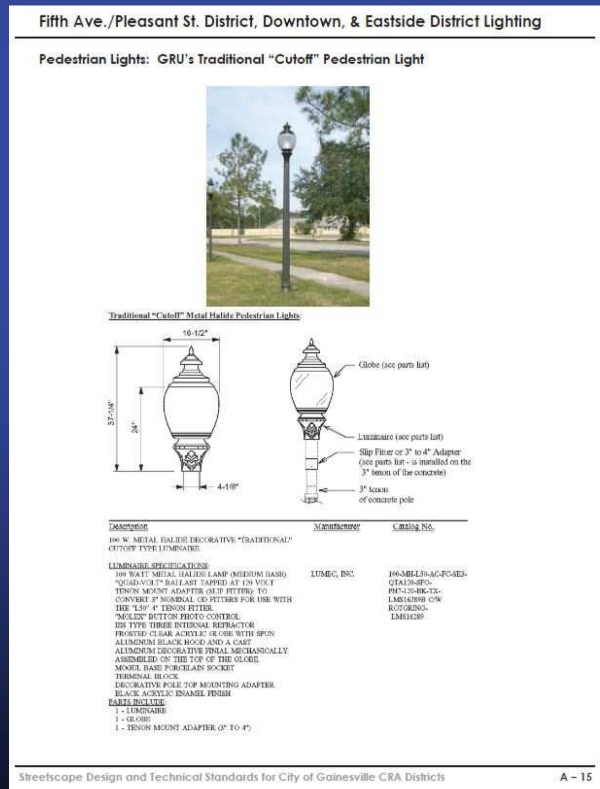
Description	Manufacturer	Catalog No.
NON-TAPERED ROUND ALUMINUM 30 FOOT (MOUNTING HEIGHT) POLE. THIS POLE IS USED WITH THE 400 W. METAL HALIDE LUMINAIRE LISTED ON PAGE L-75.00, IN THIS MANUAL. COLOR: BLACK		
NON-TAPERED ROUND ALUMINUM POLE	KIM LIGHTING	PRA30618B-EL-P

Streetscape Design and Technical Standards for City of Gainesville CRA Districts A – 11

"Downtown" District

Roadway Lighting = Black Round "Full Cutoff"

Pedestrian Lighting = Traditional "Cutoff"



Fifth Ave./Pleasant St. District, Downtown, & Eastside District Lighting

Pedestrian Lights: GRU's Traditional "Cutoff" Pedestrian Light

Traditional "Cutoff" Metal Halide Pedestrian Lights:

Description	Manufacturer	Catalog No.
100 W. METAL HALIDE DECORATIVE "TRADITIONAL" CUTOFF TYPE LUMINAIRE		
LUMINAIRE SPECIFICATIONS: 100 WATT METAL HALIDE LAMP (MEDIUM BASE) "QUAD-VOLT" BALLAST TAPPED AT 120 VOLT TENON MOUNT ADAPTER (SLIP FITTER): TO CONVERT 3" NOMINAL OD FITTERS FOR USE WITH THE "L50" 4" TENON FITTER. "MOLEX" BUTTON PHOTO CONTROL IES TYPE THREE INTERNAL REFRACTOR FROSTED CLEAR ACRYLIC GLOBE WITH SPUN ALUMINUM BLACK HOOD AND A CAST ALUMINUM DECORATIVE FINIAL MECHANICALLY ASSEMBLED ON THE TOP OF THE GLOBE MOGUL BASE PORCELAIN SOCKET TERMINAL BLOCK DECORATIVE POLE TOP MOUNTING ADAPTER BLACK ACRYLIC ENAMEL FINISH	LUMEC, INC.	100-MH-L50-AC-FC-SE3-QTA120-SFO-PH7-120-BK-TX-LMS16289B C/W ROTORING-LMS16289
PARTS INCLUDE: 1 - LUMINAIRE 1 - GLOBE 1 - TENON MOUNT ADAPTER (3" TO 4")		

Streetscape Design and Technical Standards for City of Gainesville CRA Districts A – 15

DESIGN CHALLENGES

Existing Conditions

- GRU Overhead Primary Distribution
- Mature Tree Canopy
- Downtown Hardscape


Overhead High-Voltage Lines
South Main St. @ Depot Ave


Dense Tree Canopy
Core Downtown


Brick Paver Sidewalks
Core Downtown

DESIGN CHALLENGES

Budget

- Balancing Criteria, Standards, Aesthetics and Costs
- Reutilizing Existing Lighting per Standards

Electrical Requirements for LED

- Disconnect from GRU Distribution
- Electric Meters required

LIGHTING LAYOUT AND DESIGN

3 Main Focus Areas

- "Core Downtown" (S 2nd Ave to N 2nd Ave)
- North Section (N 2nd Ave to N 8th Ave)
- South Section (S 2nd Ave to Depot Ave)

Block-By-Block Design

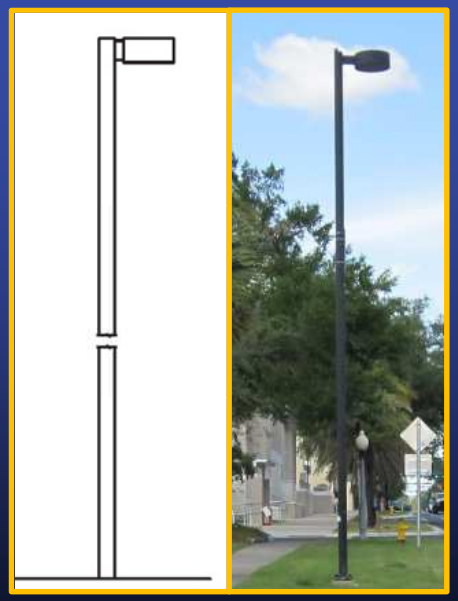
- Uniformity achieved within each block

LIGHTING LAYOUT AND DESIGN

Light Fixture Quantities: Roadway Lights

	Existing	Post-Install
Mast-Arm	16	16
Round "Cutoff"	26	62
Cobra Head	36	7
TOTAL	**78**	**85**

Mast-Arm Mounted



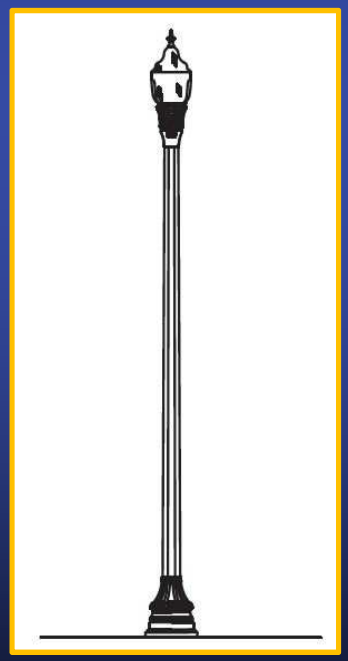
GRU Round "Full Cutoff"

Pole-Mounted Cobra Head

LIGHTING LAYOUT AND DESIGN

Light Fixture Quantities: Pedestrian Lights

	Existing	Post-Install
GRU "Traditional"	54	78



10' Mounting Height

LED Conversion

LIGHTING LAYOUT AND DESIGN

Pedestrian Lights – Component Variations

Polycarbonate Lens
"Flowery" Tenon
Concrete Pole

Diffused Clear Acrylic Lens
Bulbous Tenon
Glossy Black Fiberglass Pole

Frosted Acrylic Lens
Flared Tenon
Matte Black Fiberglass Pole

Uniformity Throughout Corridor and District Affected By:

- Project Budget
- GRU Standards
- Variations in Applicability
- Manufacturing Design Revisions

LIGHTING LAYOUT AND DESIGN

Pedestrian Lights

- Use Existing Poles (Repaint as needed)
- Replace Luminaires
- LED from S 4th Ave to N 2nd Ave

Benefits of Design:

- Retain Existing Bases & Poles (Save $$)
- Acrylic Lenses Will Not Yellow
- Recently Upgraded LED Fixture Release is an Improvement Over Existing Installations


"Traditional" Pedestrian Light

Roadway Lights

- Use Existing Poles & Luminaires (Repaint as needed)
- LED Conversion in "Core Downtown" Area

Benefits of Design:

- Minimize Hardscape Disruptions
- 30' Mounting = Better Light Distribution
- Retain Existing Bases & Luminaires (Save $$)


Round "Cutoff" Roadway Light

Brown & Cullen Inc

LED LIGHTING

Cost-Savings Benefits

- Long-Term Operational Cost Savings
- Utilize Existing GRU Infrastructure in Downtown Core Area
- USDOE Grant Funding Available
- High Efficiency, Long Life
- Reduced Maintenance Costs

Additional Benefits

- Ability for East/West Expansion for Future LED Lighting Projects

BUDGET

Cost Comparisons for LED vs. HID

- LED = Light-Emitting Diode
  HID = High-Intensity Discharge (Metal Halide)

- Partial-LED Design = $785,000
  All-HID Design = $882,000

  HID Design is more expensive due to GRU Standards upgrade requirements in the Core Downtown area for pedestrian fixtures.

- Cost Savings for LED Design = $97,000
  Additional Cost-Savings from Grant Money = $98,000

- Total Cost Savings Utilizing LED Design = $195,000

BUDGET

Cost Considerations - Installation

- Acquisition of GRU Infrastructure
- Painting Touch-Up for Existing Bases & Poles ($200 Paint vs. $700 for New Pole)
- Pole Uniformity – Aesthetics vs. Budget
- Electric Meters for LED Lighting

Cost Considerations – Operation & Maintenance

- Warehousing Space for LED Parts
- Maintenance Crew Costs & Availability
- Outsourcing Costs
- Monthly Metering Charges

LOCAL CONSIDERATIONS

Awareness

- Neighborhood Meetings
- Coordination with each Business Owner

Impact

- Minimize disruptions to corridor businesses
- Maintenance of Traffic
- Phased Construction
- Attention to needs of business

Enhancement

- Safety for Businesses & Patrons
- More Pedestrian-friendly

PHASE 1 SUMMARY

- *Existing Lighting Conditions Are Inadequate*
- *Proposed Design Will Provide Uniform Lighting and Bring In Compliance with Standards*
- *LED Design = Significant Cost Savings*
- *Benefits = Beautification and Improved Safety*

PHASE 2: STREETSCAPE IMPROVEMENTS

Considerations

- Historical Component
- Public Art Component
- Low Impact Development (LID) Stormwater Treatment
- Electric Vehicle Charging Station
- Grassed area to Hardscape
- Brick Pavers
- Landscaping
- Street Furniture

Limitation Factors

- Budget
- Site Conditions
- Impacts to Businesses

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North Main St.

S 4th Ave @ Main St.


South Main St. at Night

QUESTIONS?


North Main St.

Core Downtown


South Main St.