SHERWOOD FOREST ELEMENTARY SCHOOL

DAC SUBMITTAL

SEPTEMBER 19, 2014

RECOVERY School District
Excellence.Equity.Community.

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PROGRAM MANAGEMENT

CORE CONSTRUCTION
Relationships. Solutions. Value. ...Since 1937.

GraceHebert architects

DLR Group

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DAC Application |
September 19, 2014

Prepared by
GraceHebert Architects, APAC

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PROJECT OVERVIEW & GOALS

Prologue

The following information was compiled for the Design Advisory Committee Application for their review. This document demonstrates the design response to the contextual influences of the site while providing a facility that is both low maintenance and energy efficient to serve the programmatic needs of the Recovery School District for years to come.

Introduction

The project consists of the design and construction of a new approximately 107,950 sf elementary school to accommodate roughly 788 students. The facility will house grades Pre-K through 8th grade with three classrooms per grade, special education classrooms, two flexible teaching rooms, an art classroom, a music classroom, two science classrooms and a science lab. The gymnasium, cafeteria, and media center will also be accessible to the public.

Site Design

The site has been arranged to be complimentary to traffic flow surrounding the site. The bus drop-off entry has been located on Maid Marion Dr. and runs through the site exiting onto Robin Hood Dr. where bus traffic can continue to collector streets and arterial roadways. The carpool line will enter and exit on Maid Marion Dr. Staff parking makes up the majority of the parking on the site, and therefore has been located on the north end of the site between Maid Marion Dr. and Robin Hood Dr. where it is least visible. Visitor parking is located off of the carpool drive along Maid Marion Dr. The play fields are located on the south end of the site. Existing mature trees are being preserved where possible.

Building Design

The building layout has been designed to accommodate separation of learning areas, including public vs. classroom, noisy vs. quiet learning, and separation of younger students from older students. The exterior building materials are proposed to be primarily masonry, metal panel and aluminum storefront systems to increase durability of the exterior façade. The interior building materials are proposed to include terrazzo flooring, vinyl composition tile flooring, painted gypsum board walls, painted CMU walls, painted gypsum board ceilings, acoustical tile ceilings, and acoustical or specialty finish treatments where applicable.

The proposed elementary school facility will feature three classrooms per grade for grades Pre-Kindergarten through 8th grade. Spaces will be provided for a music/theater room, an art classroom, two science classrooms, a science lab, two special education classrooms, and two flex classrooms. Other spaces will include the media center, gymnasium/stage, cafeteria, various administrative areas, teacher workrooms, and two additional rooms for continuing education for teachers or flex space for student classes. The gymnasium, cafeteria, media center and potentially the music/theatre will also be accessible to the public while secured from the remainder of the school. Below outlines an approximate square footage allotment of the spaces:

Areas	Count	Quantity	Unit	NSF
Core Academic Areas				
Pre-K & Kindergarten Classroom	6	900	NSF	5,400
Pre-K & Kindergarten Restroom	4	60	NSF	240
Grades 1 - 8 Classroom	24	850	NSF	20,400
Grades 6-8 Science Classroom	2	950	NSF	1,900
Grades 6-8 Science Lab & Storage	1	1,400	NSF	1,400
Teacher Workroom & Storage	3	320	NSF	960
TOTAL				**30,300**
Special Education				
Special Education Classroom & RR	2	1,050	NSF	2,100
Flex Classroom	2	850	NSF	1,700
Speech Services	2	150	NSF	300
OT/PT/APE Room	1	200	NSF	200
Storage Room	1	75	NSF	75
TOTAL				**4,375**
Library/Media Center				
Library/Media Center Main Room	1	3,400	NSF	3,400
Professional Development Room	1	850	NSF	850
Teacher Reference Room	1	150	NSF	150
Office/Workroom/Storage/Restroom	1	360	NSF	360
TOTAL				**4,760**
Visual Arts				
Art Classroom	1	1,200	NSF	1,200
Kiln Room	1	125	NSF	125
Storage Room	1	125	NSF	125
TOTAL				**1,450**
Exploratories				
Flexible Exporatories Classroom	1	850	NSF	850
TOTAL				**850**
Music/Performing Arts				
Music/Choir Room/Performance	1	2,400	NSF	2,400
Performing Arts Office	2	100	NSF	200
Practice Room	2	65	NSF	130
Music Storage	1	100	NSF	100
Instrument Storage	1	200	NSF	200
Chair Storage	1	200	NSF	200
Riser Storage	1	200	NSF	200
TOTAL				**3,430**

Stage	1	600	NSF	600
Chair Storage	1	400	NSF	400
PE/Storage	2	300	NSF	600
Office	2	120	NSF	240
Locker Room/Restroom/Showers	2	600	NSF	1,200
Laundry	1	125	NSF	125
Concessions	1	200	NSF	200
TOTAL				**12,765**
Welcome Center/Administration				
Entrance Lobby	1	200	NSF	200
Waiting/Reception	1	200	NSF	200
Offices	4	148	NSF	590
Conference Room	1	300	NSF	300
Success Center	1	425	NSF	425
Lounge/Workroom/Storage	1	650	NSF	650
Restroom	2	60	NSF	120
TOTAL				**2,485**
Student Services				
Guidance Reception	1	200	NSF	200
Offices	6	125	NSF	750
Records Storage/Restroom	1	210	NSF	210
Health Clinic	1	405	NSF	405
TOTAL				**1,565**
Food Service				
Kitchen	1	2,950	NSF	2,950
Student Dining	1	4,500	NSF	4,500
TOTAL				**7,450**
Custodial/Maintenance				
Receiving/Storage/Maintenance	1	1,000	NSF	1,000
Office/Lockers/Storage/Restroom	1	270	NSF	270
TOTAL				**1,270**
BUILDING NSF TOTAL				**70,700**
BUILDING GSF TOTAL				**107,950**

LEED Design

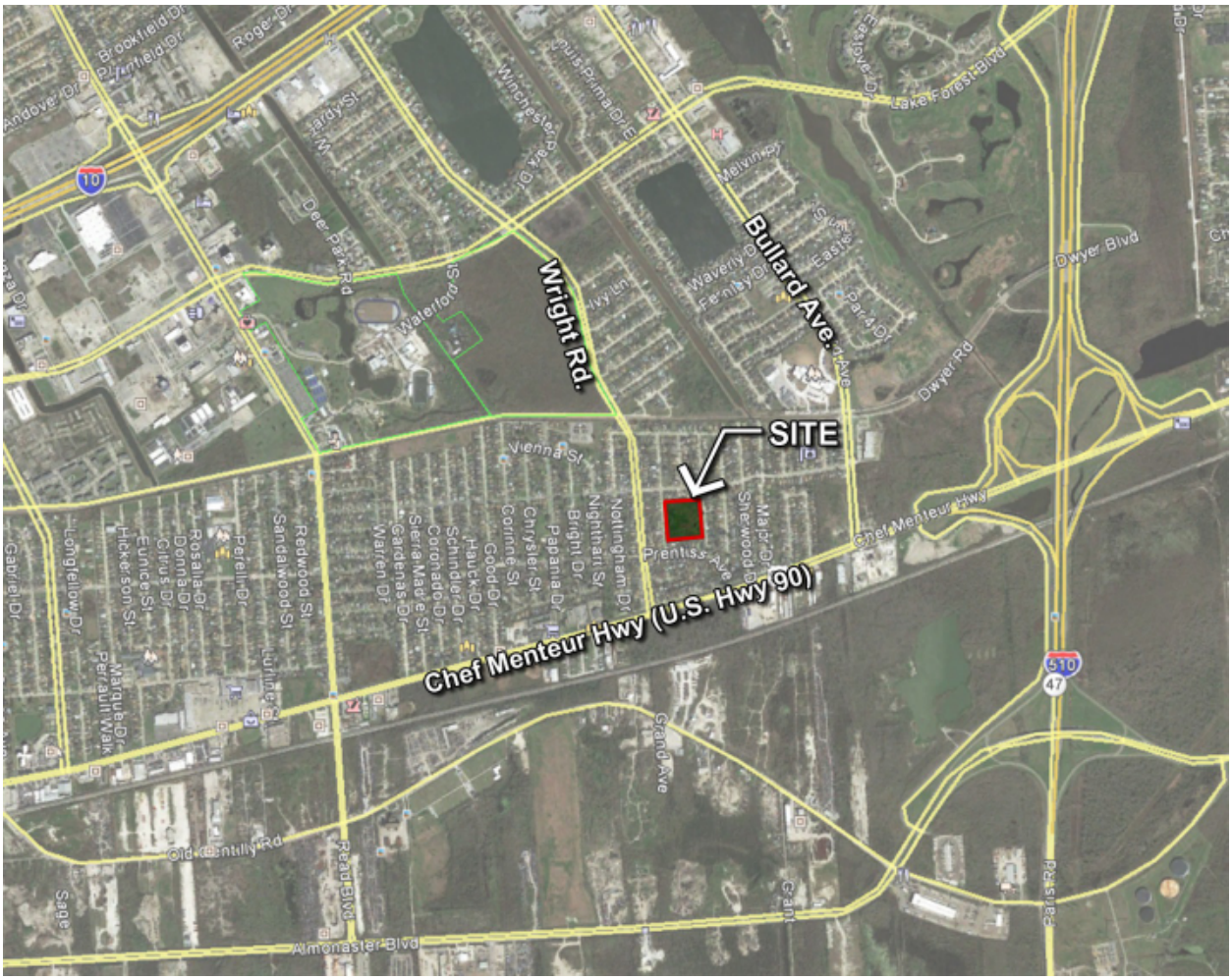
The project will be designed to achieve LEED Silver under LEED 2009 for Schools New Construction and Major Renovations. To achieve this, the site will be designed to accommodate alternate transportation including access to public transportation systems, providing bicycle racks and changing rooms, and encouraging the use of fuel-efficient vehicles through priority parking. The site will utilize native growing planting materials and trees to reduce water use for landscaping purposes. Mechanical systems will be designed to achieve 28% greater efficiency than the current standard, reducing energy consumption, and the system will be commissioned to assure the Owner that it is operating at the highest efficiency. Materials for the building's interior and exterior finishes will be selected based on their regional availability, recycled content and low VOC emission qualities in addition to their aesthetic. Construction waste materials will be collected and sorted to be recycled rather than brought to a landfill. The interior will be designed to achieve maximum environmental quality including the use of daylighting in regularly occupied spaces, controllability of lighting, and maximizing thermal comfort and controllability within practicality for the building use.

CONTEXTUAL INFORMATION

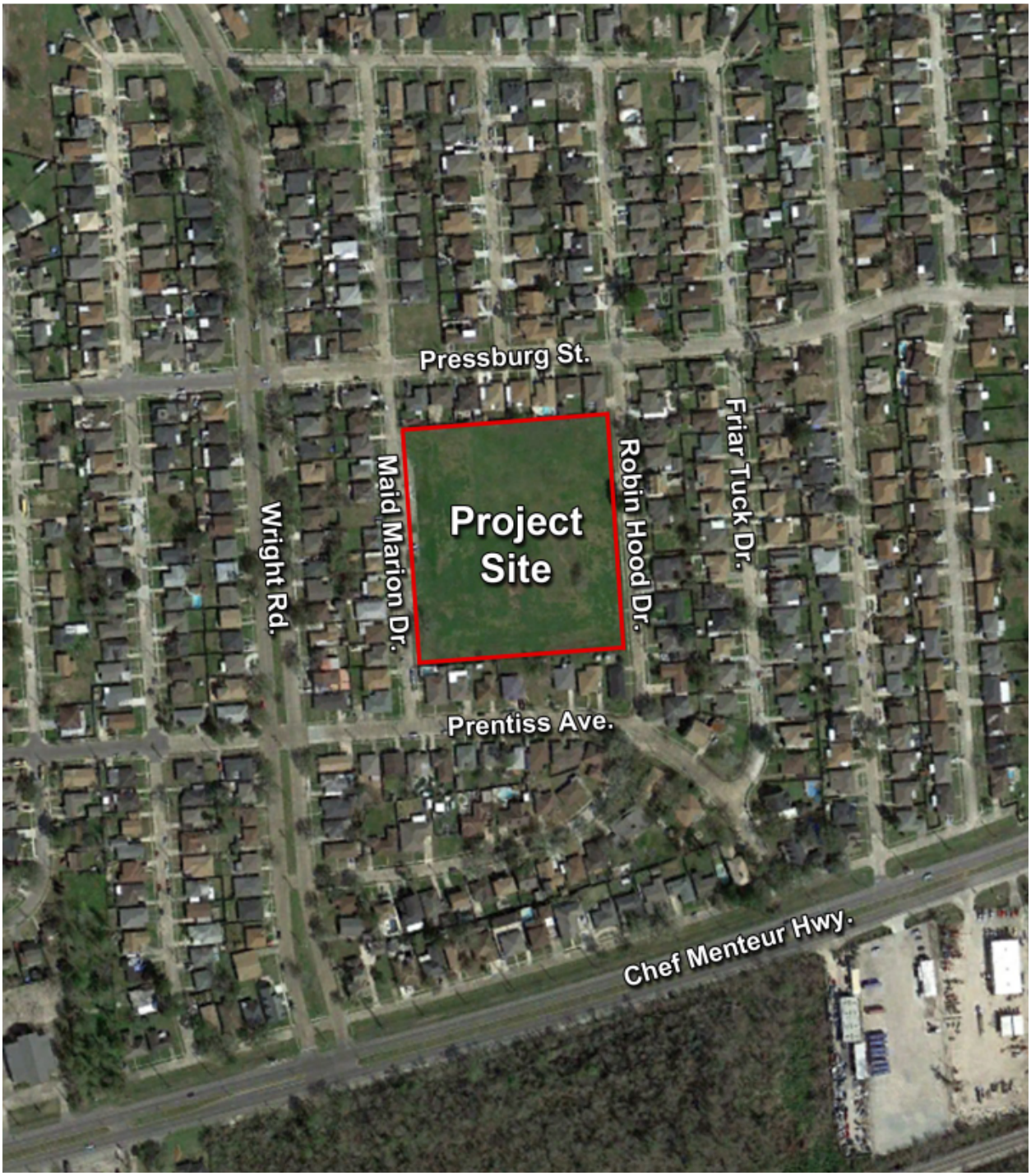
Site Aerials

The proposed Sherwood Forest Elementary School is located at 4801 Maid Marion Drive in New Orleans, La. The site is bounded by Maid Marion Dr. to the east, Robin Hood Dr. to the west, and single family residential to the north and south.

Vicinity Aerial



Site Aerial

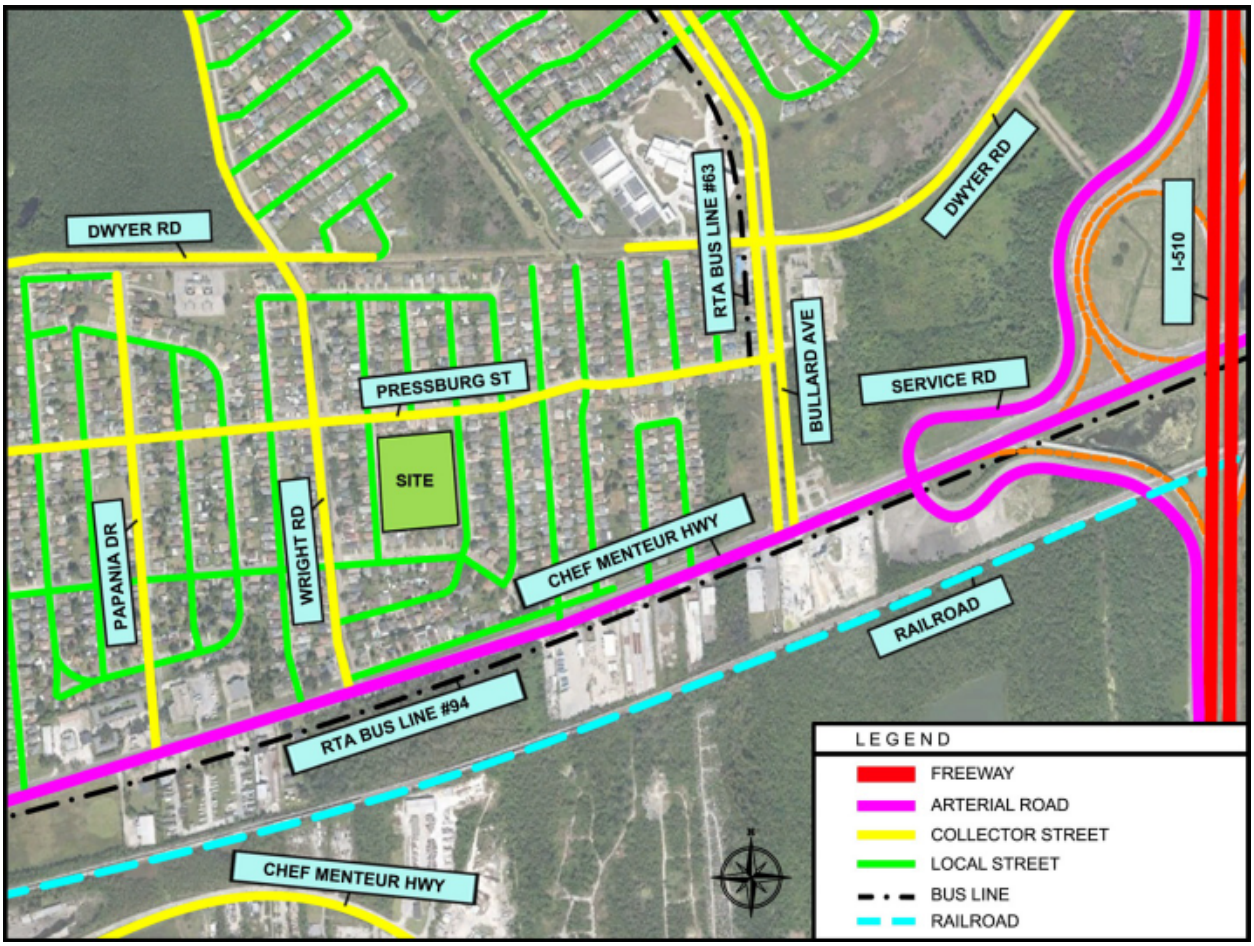

Pressburg St.
Project Site
Maid Marion Dr.
Robin Hood Dr.
Friar Tuck Dr.
Wright Rd.
Prentiss Ave.
Chef Menteur Hwy.

CONTEXTUAL INFORMATION

Context Maps

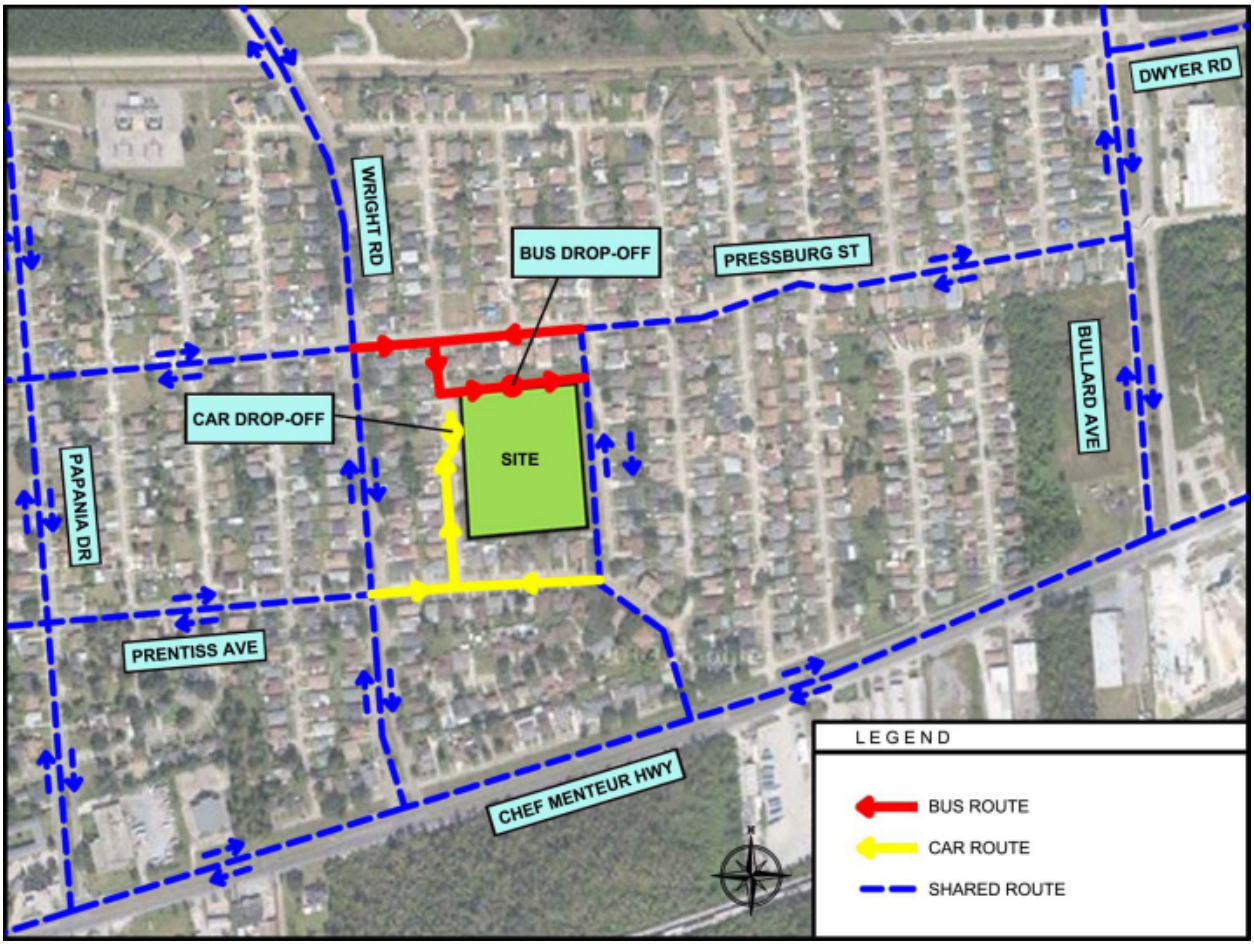
The following illustrations diagram vehicular patterns, zoning uses, etc. in close proximity to the Paul B. Habans site. These factors have been analyzed to influence the overall site layout, including but not limited to locating the bus drop-off, carpool line, parking and play fields.

Vicinity Traffic



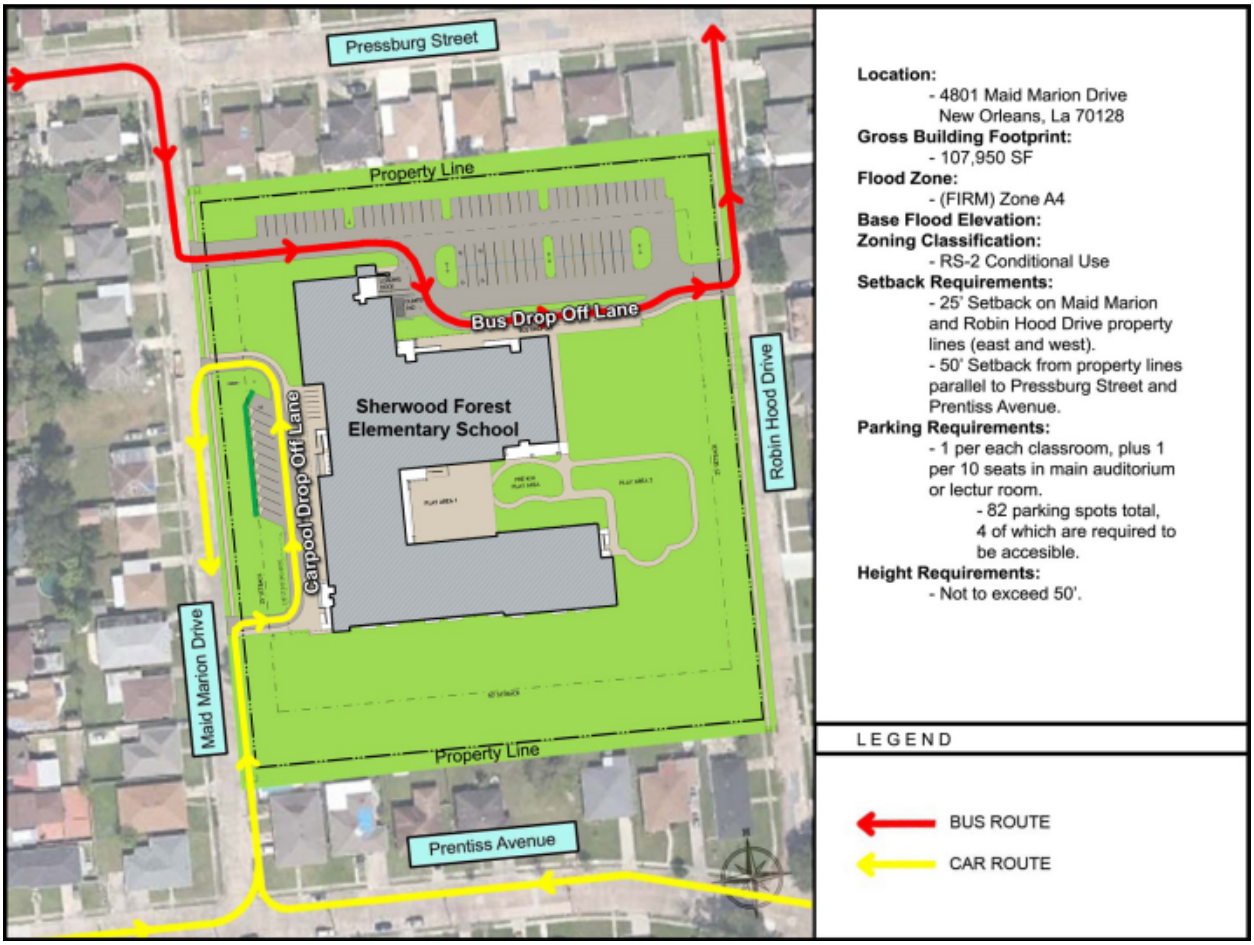
Showing traffic types around project site

Vicinity Traffic Flow



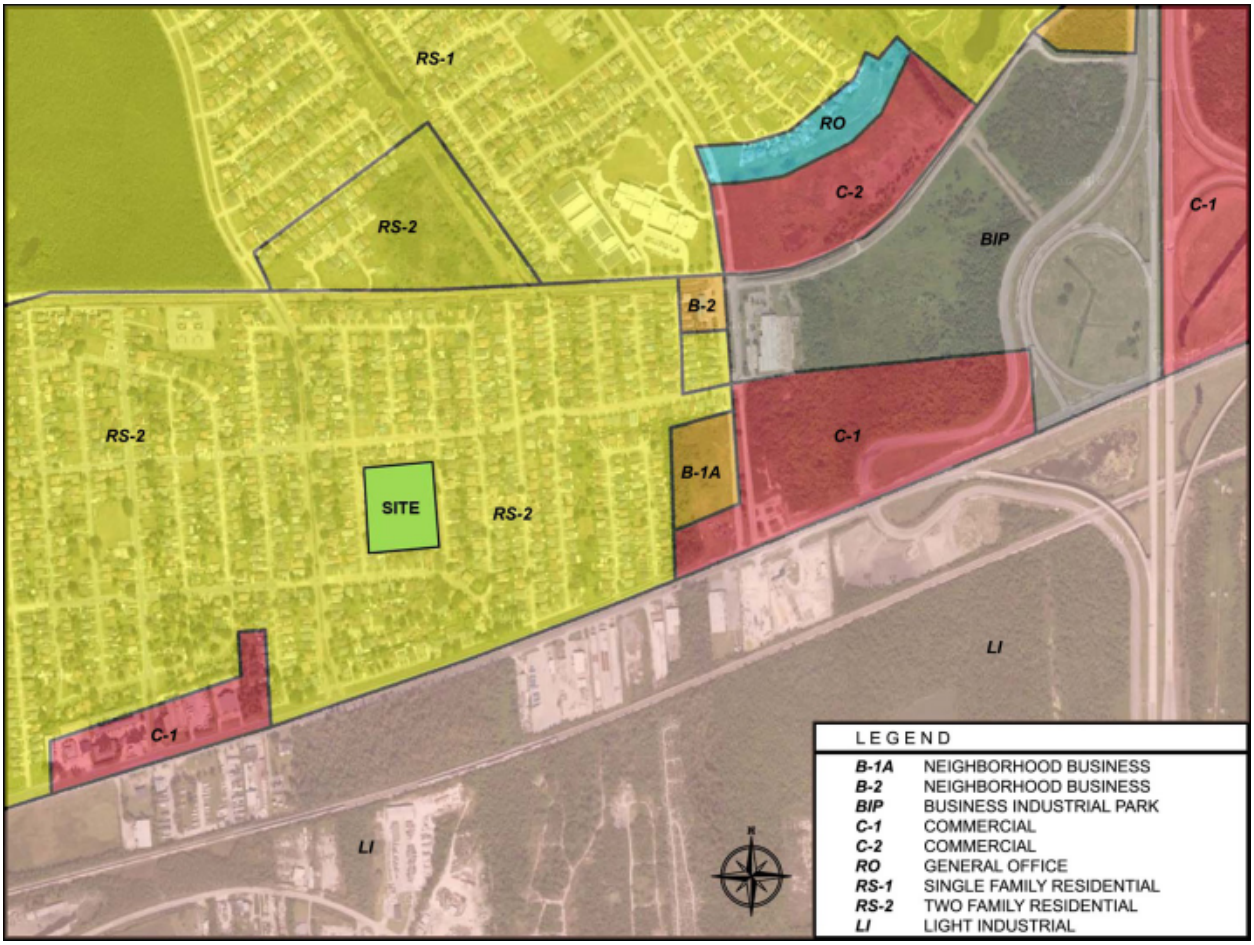
Showing proposed car and bus traffic

Site Traffic Flow



Showing Car and Bus Traffic through Site

Vicinity Zoning



Showing zoning around project site

Site Photographs

The site is currently undeveloped but previously was the location of the now demolished Sherwood Forest Elementary School which was badly damaged during Hurricane Katrina. The site is located in a predominantly single family residential area.

1. Northeast corner of site looking south down Robin Hood Dr.

2. Northeast corner of site looking at residences along north property line.

3. Northwest corner of site looking at residences along north property line.

4. Northwest corner of site looking south down Maid Marion Dr.

5. Southeast corner of site looking at residences down south property line

6. Southeast corner of site looking north down Robin Hood Dr.

7. Southwest corner of site looking at residences down south property line.

8. Southwest corner of site looking north down Maid Marion Dr.

DRAWINGS

Site Plan

The site plan identifies areas of the site to be used for visitor parking, staff parking, carpool drop-off, bus drop-off, and vehicular and pedestrian circulation. Areas to be used for age grouped play areas are identified. The plan identifies signage, bike rack, flag pole, and exterior lighting locations.

Landscape Plan

The landscape plan portrays an illustrative layout of required plantings based on zoning and code requirements. Also shown are existing trees to be protected and preserved throughout construction.

Tree Protection Plan

The tree protection plan indicates existing trees to be preserved and preservation techniques.

Site Lighting Plan

The site lighting plan indicated types and locations of exterior lighting on the site.

1st Floor Plan

The proposed first floor plan identifies the locations of the administrative offices, cafeteria, gymnasium, Pre-K through 2nd grade classrooms, and miscellaneous related spaces serving the proposed elementary school. The cafeteria and gymnasium will be accessible to the general public while secured from the remainder of the school.

2nd Floor Plan

The proposed second floor plan identifies the locations of the media center, music/theater room, art room, 3rd through 4th grade classrooms, administrative offices, and miscellaneous related spaces serving the proposed elementary school. The media center and potentially the music/theatre room will be accessible to the general public while secured from the remainder of the school.

3rd Floor Plan

The proposed third floor plan identifies the locations of the 5th through 8th grade classrooms, science classrooms, science lab and miscellaneous related spaces serving the proposed elementary school.

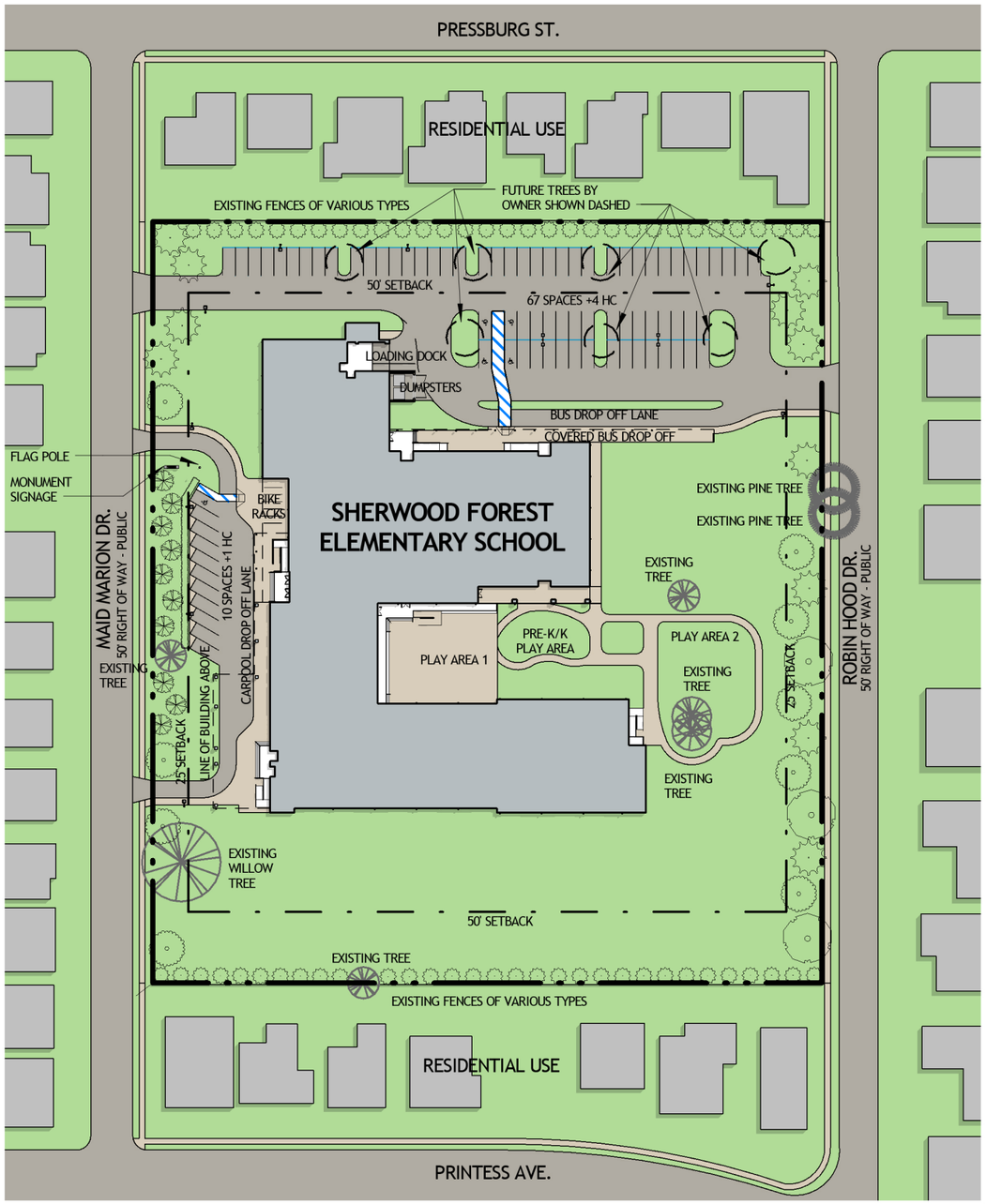
Exterior Building Elevations

The included exterior elevations are included to convey the design intent for the massing, materials, and color scheme of the proposed design.

Renderings

The included rendering are included to convey the design intent for the massing, materials, and color scheme of the proposed design.

SHERWOOD FOREST ELEMENTARY SCHOOL



SHERWOOD FOREST ELEMENTARY SCHOOL

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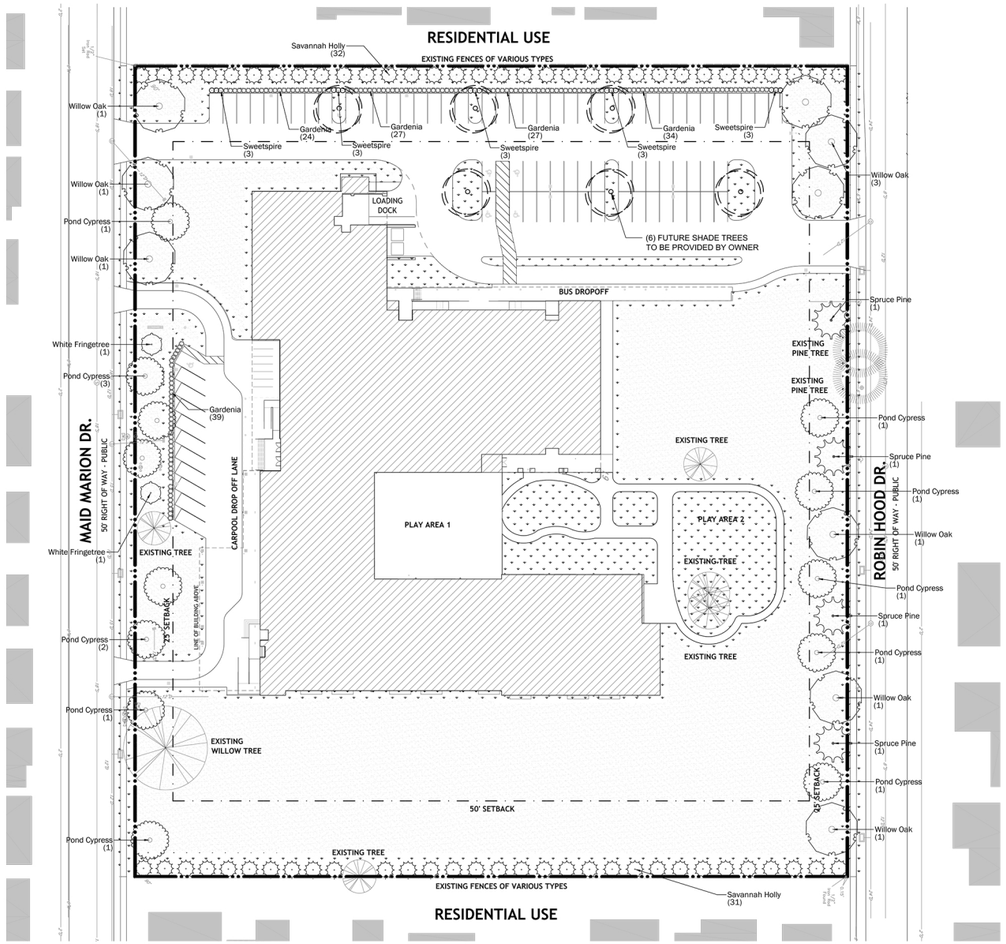


PLANT SCHEDULE

TREES	QTY	COMMON NAME	BOTANICAL NAME	CONT	CAL	SIZE
	2	White Fringetree	Chionanthus virginicus	.	2"-2 1/2" Cal.	10`-12` Ht.
	63	Savannah Holly	Ilex x attenuata `Savannah`	F.G.	2"-2 1/2" Cal.	6`-8` HT
	4	Spruce Pine	Pinus glabra	F.G.	2"-2 1/2" Cal.	10-12` HT
	9	Willow Oak	Quercus phellos	F.G.	2"-3" Cal.	10`-12` Ht.,
	13	Pond Cypress	Taxodium ascendens	F.G.	2"-2 1/2" Cal.	10`-12` Ht.,

SHRUBS	QTY	COMMON NAME	BOTANICAL NAME	CONT	SPACING
	151	Gardenia	Gardenia jasminoides	3 gal	36" o.c.
	15	Sweetspire	Itea virginica `Henry`s Garnet`	3 gal	36" o.c.

GROUND COVERS	QTY	COMMON NAME	BOTANICAL NAME	CONT	SPACING
	91,441 sf	Bermuda Grass Seed	Cynodon dactylon	seed	
	41,756 sf	Bermuda Grass Sod	Cynodon dactylon	sod	
	6,819 sf	Pine Needle Mulch	Pine Mulch	Mulch	
	1,614 sf	Bed Builder	Soil Planting	Soil	

NOTES TO CONTRACTOR:
TREES PLANTED IN ROW SHALL BE MINIMUM 5' FROM CATCH BASINS, 10' FROM UTILITY POLES AND FIRE HYDRANTS, AND 15' FROM DRIVEWAYS.

LEGEND

EXISTING TREES TO BE PRESERVED

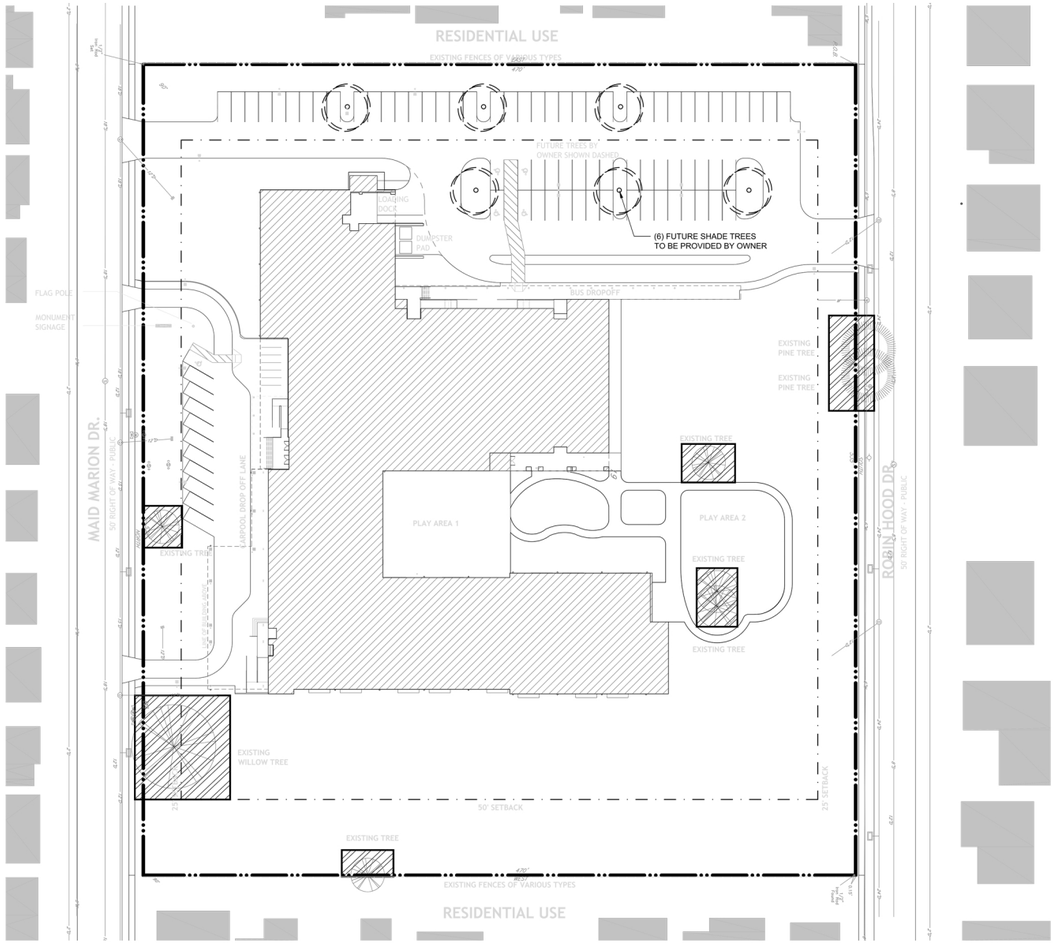
FUTURE SHADE TREE TO BE PROVIDED BY OWNER

DANA BROWN& Associates

DANA BROWN & ASSOCIATES, INC.
BATON ROUGE 225.381.3139 NEW ORLEANS 504-345-2639
www.danabrownassociates.com

1 Landscape Plan
200 L101

SHERWOOD FOREST ELEMENTARY SCHOOL



NOTES TO CONTRACTOR:

1. THE CONTRACTOR AND SUB-CONTRACTORS SHALL TAKE EVERY MEASURE TO PROTECT AND PRESERVE EXISTING TREES MARKED AS 'TREE TO REMAIN' DURING DEMOLITION AND CONSTRUCTION ACTIVITIES.
2. THE CONTRACTOR WILL BE HELD ACCOUNTABLE FOR ANY DETRIMENTAL ACTIVITIES OCCURRING WITHIN TREE PROTECTION ZONES AND WILL BE REQUIRED TO RETAIN A CERTIFIED ARBORIST TO MAKE NECESSARY REPARATIVE/RESTORATIVE MEASURES AS SEEN FIT BY LANDSCAPE ARCHITECT AND CERTIFIED ARBORIST.
3. PRIOR TO COMMENCEMENT OF ANY WORK, THE TREE PROTECTION AREA SHALL BE ESTABLISHED AND PROTECTED FROM DAMAGE BY ERECTION OF A PRIMARY TREE PROTECTION FENCE, AND SHALL BE APPROVED, IN WRITING, BY LANDSCAPE ARCHITECT.
   THIS FENCE SHALL REMAIN IN POSITION AND IN GOOD CONDITION DURING THE ENTIRE COURSE OF THE CONSTRUCTION PROJECT.
4. THE EXTENT OF THE TREE PROTECTION AREA SHALL BE AS SHOWN ON FUTURE PLANS.

LEGEND

EX. PINE TO REMAIN AND PRESERVED WITH TREE PROTECTION FENCING

EX. TREE TO REMAIN AND PRESERVED WITH TREE PROTECTION FENCING

TREE PROTECTION ZONE

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1 Tree Protection Plan
200 L100

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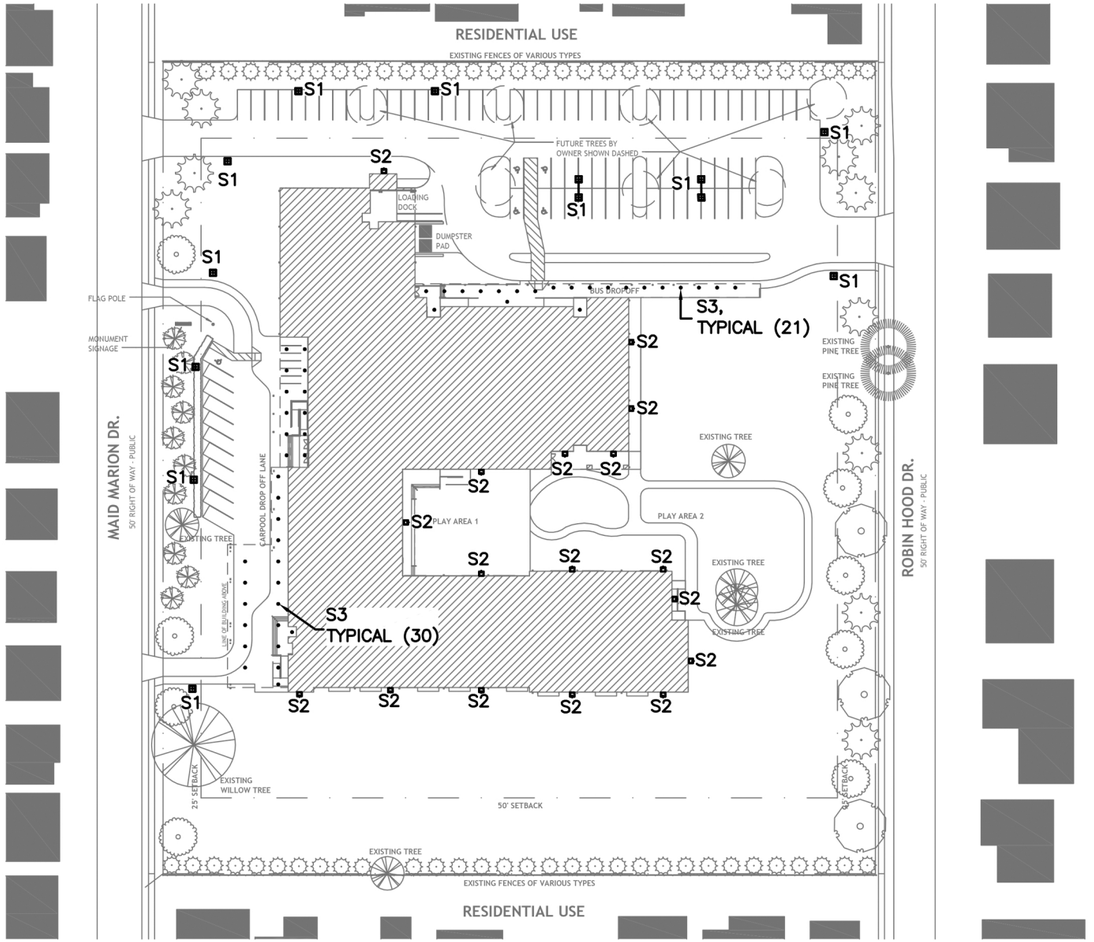

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Department Legend

- ADMINISTRATION
- BUILDING SUPPORT
- CAFETERIA
- CORE ACADEMIC
- CORRIDOR
- CUSTODIAL/MAINTENANCE
- FOOD SERVICES
- GYM
- RESTROOM
- SPECIAL EDUCATION
- STUDENT SERVICES
- VERTICAL CIRCULATION

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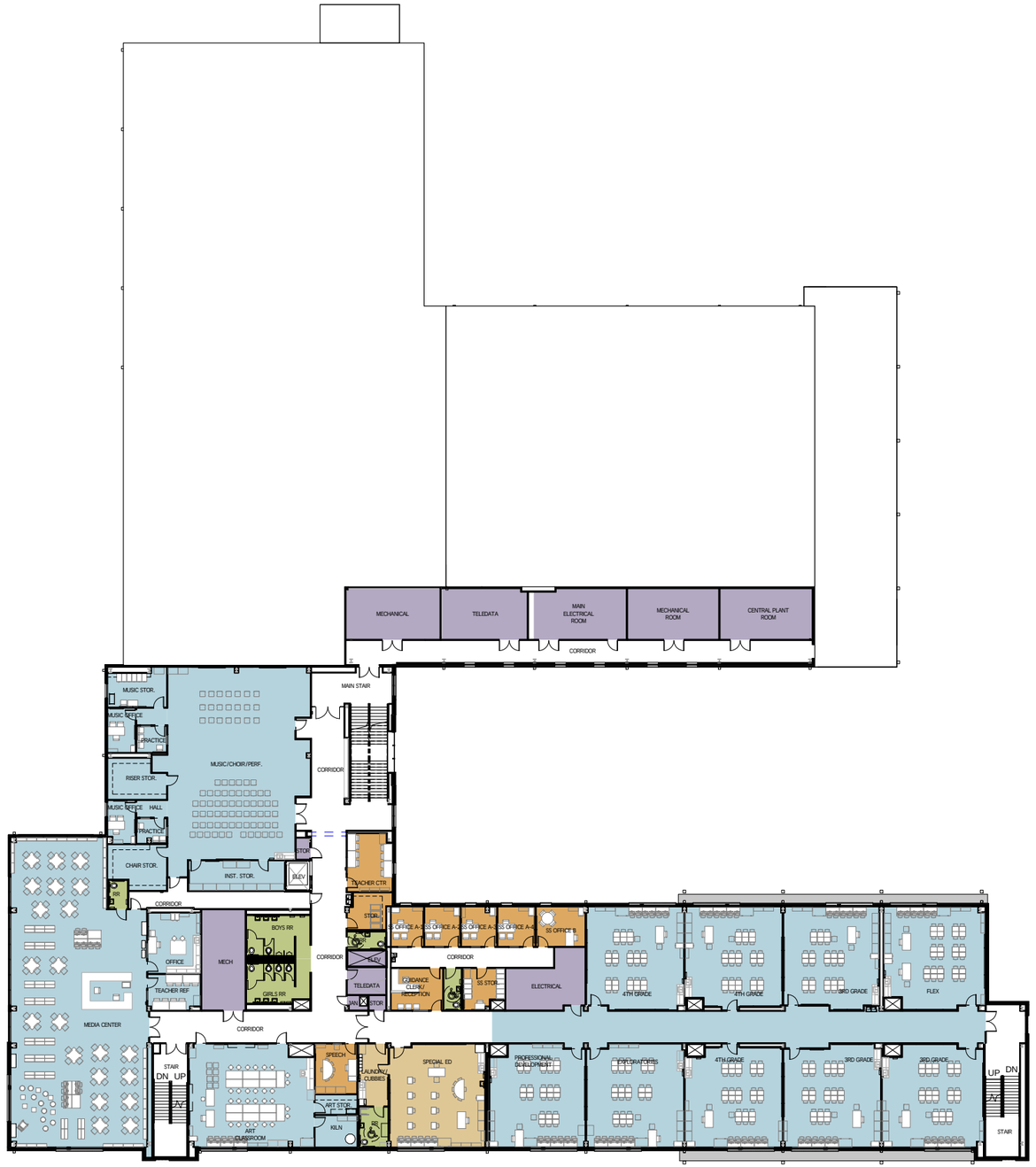

Department Legend

- ADMINISTRATION
- BUILDING SUPPORT
- CORE ACADEMIC
- CORRIDOR
- RESTROOM
- SPECIAL EDUCATION
- VERTICAL CIRCULATION

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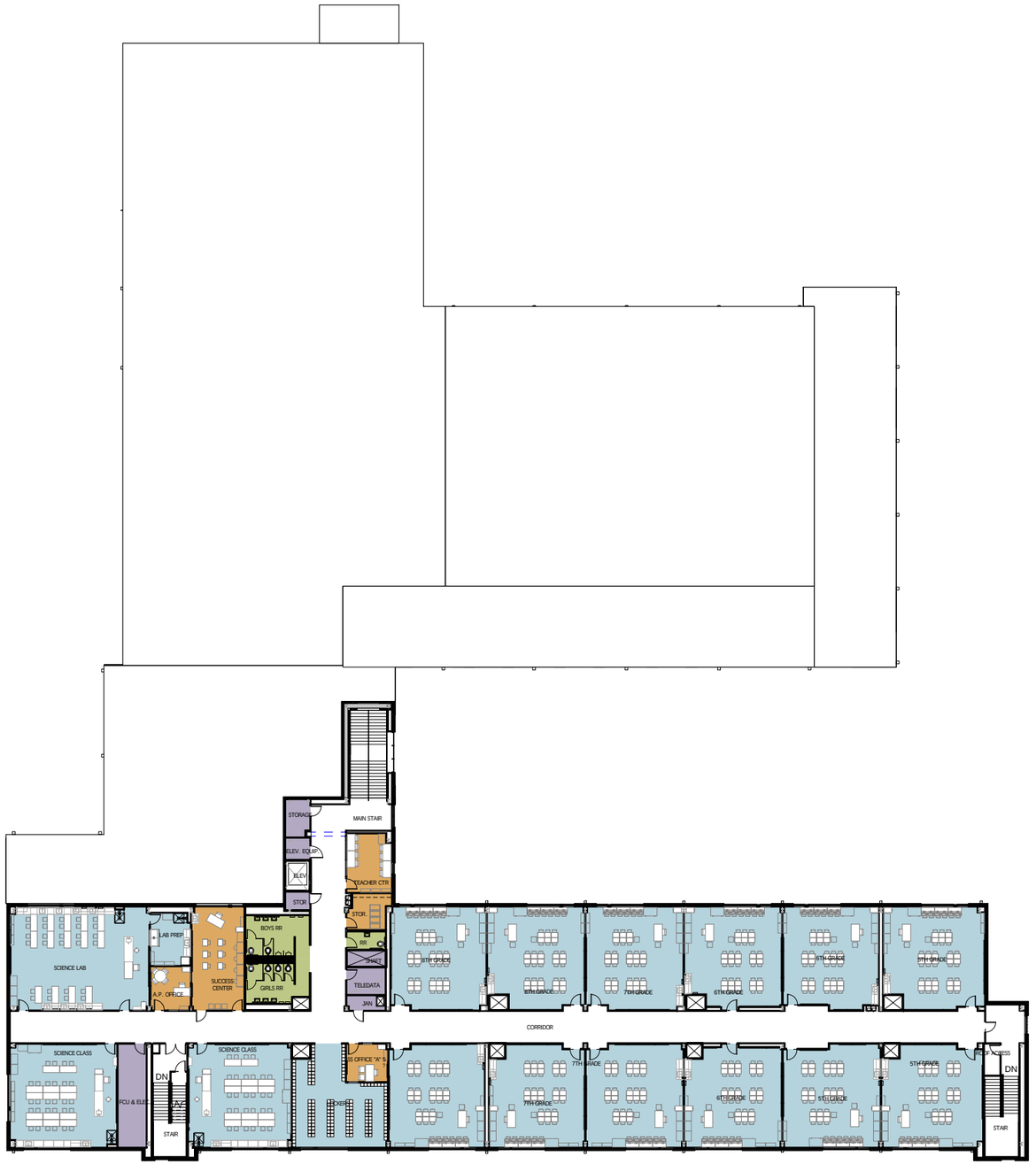

Department Legend

- ADMINISTRATION
- BUILDING SUPPORT
- CORE ACADEMIC
- CORRIDOR
- RESTROOM
- VERTICAL CIRCULATION

SHERWOOD FOREST | 09.19.2014 | OVERALL PLAN - 3RD FLOOR | SCALE: 1" = 40'-0"

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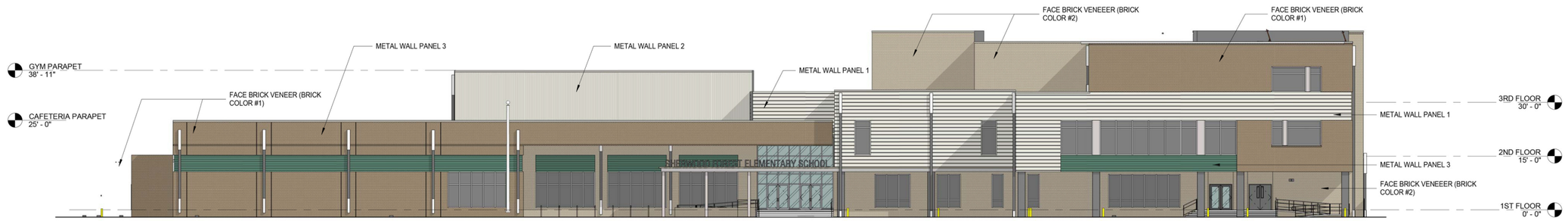
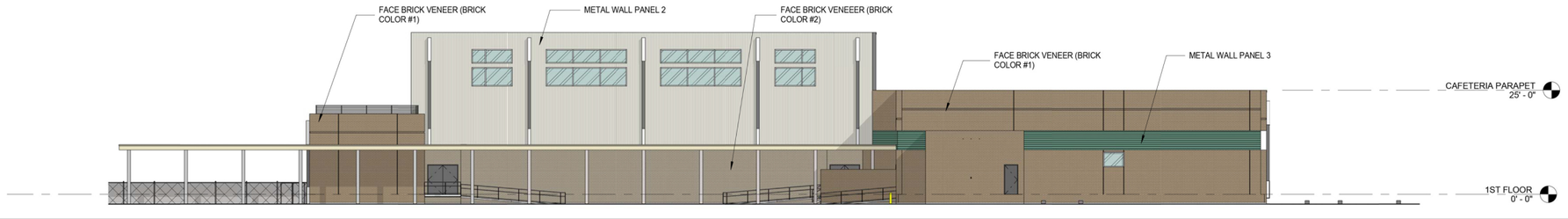


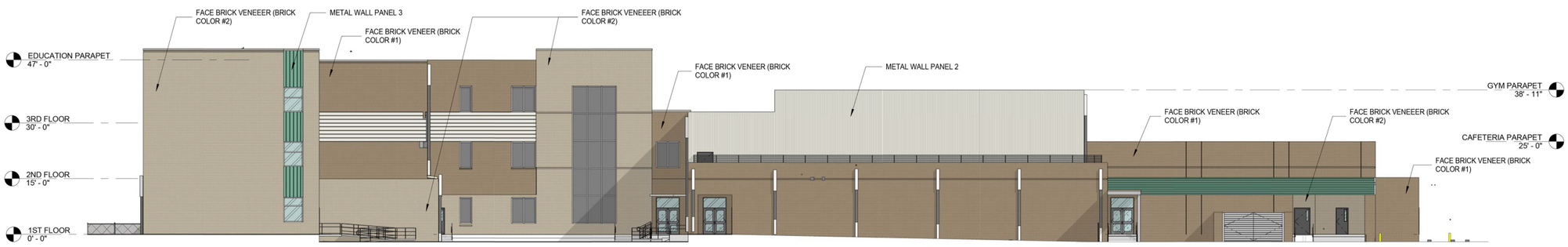
1 A301 WEST ELEVATION

1/16" = 1'-0"



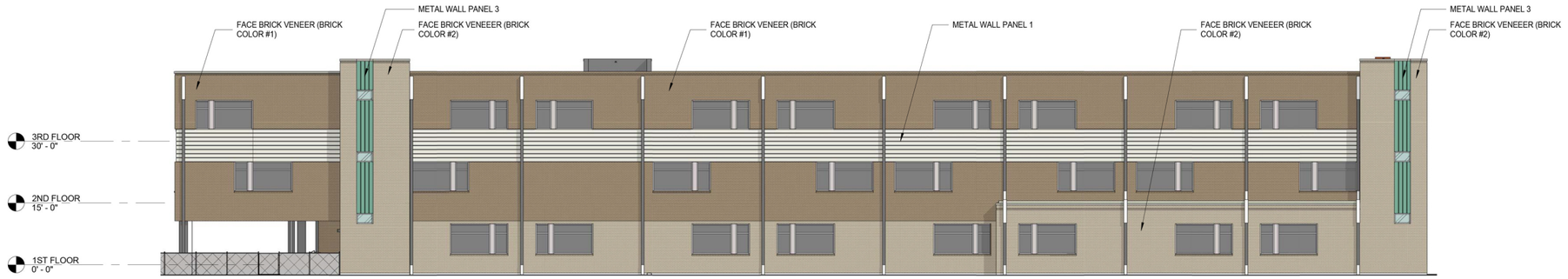
2 A301 NORTH ELEVATION

1/16" = 1'-0"



3 A301 EAST ELEVATION

1/16" = 1'-0"



4 A301 CLASSROOM WING SOUTH ELEVATION

1/16" = 1'-0"

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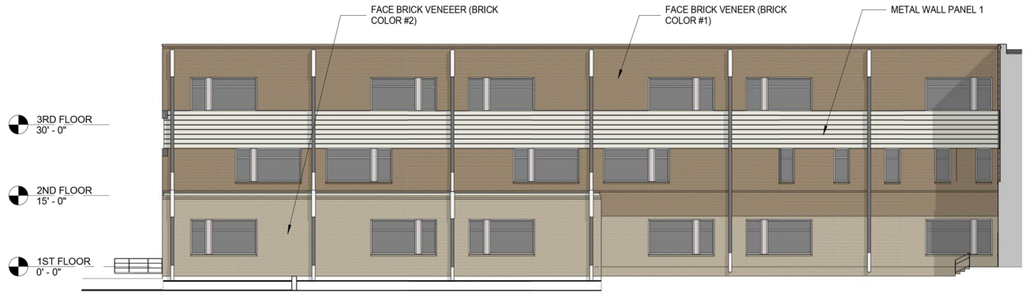
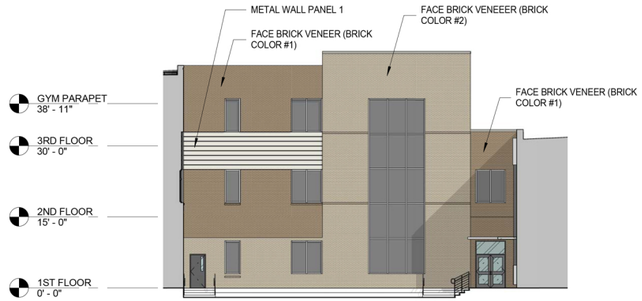
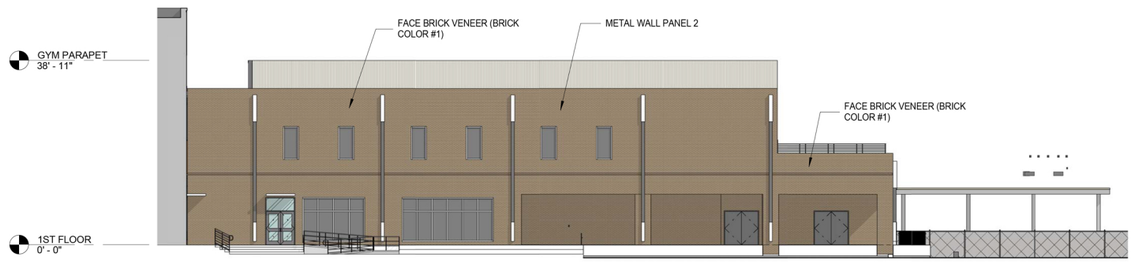


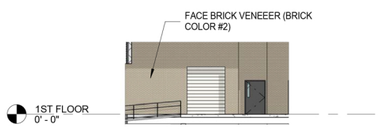
1 A302 CLASSROOM WING NORTH ELEVATION
1/16" = 1'-0"



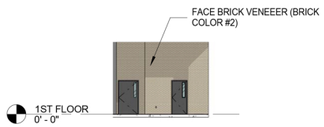
2 A302 MAIN STAIR EAST ELEVATION
1/16" = 1'-0"



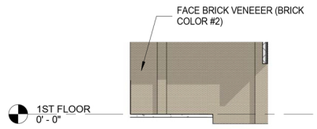
3 A302 CAFETERIA NORTH ELEVATION
1/16" = 1'-0"



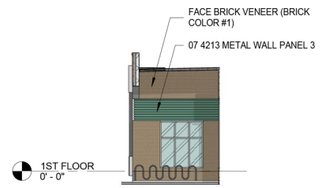
4 A302 ELEVATION - NORTH LOADING DOCK
1/16" = 1'-0"



5 A302 ELEVATION - WEST LOADING DOCK
1/16" = 1'-0"



6 A302 ELEVATION - SOUTH LOADING DOCK
1/16" = 1'-0"



7 A302 ELEVATION - UNDER SOFFIT CAFETERIA
1/16" = 1'-0"

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BUILDING MATERIALITY

Exterior Building Materials:

The following building materials represent the current basis of design selections and are intended to convey the overall aesthetic of the proposed Sherwood Forest Elementary School. Please note that exact selections of building materials are subject to change based on budget and availability as the project progresses. Physical samples are provided as part of this submission.

Exterior Masonry:

- Brick 1: Palmetto Brick, Color: 2.0 Greystone
- Brick 2: Palmetto Brick, Color: .75 Greystone

Metal Wall Panel:

- Metal Panel 1: Pac-Clad Reveal Wall Panel, Color: Pac-Clad, Almond
- Metal Panel 2: Berridge Standard L-Panel, Color: Pac-Clad, Almond
- Metal Panel 3: Pac-Clad PAC Precision Series, Color: Sheffield Metals, Patina Green

Aluminum Storefront/Curtainwall Systems:

- Aluminum Storefront/Curtainwall: Kawneer/Traco, Color: Clear Anodized Aluminum, Glazing: Insulated glazing unit with Low-E coating.

Railing Systems:

- Stainless steel handrails and guardrails at all primary public entrances.
- Hot-dipped galvanized handrails and guardrails at all other public entrances.

Roofing Systems:

- Soprema Soprastar SBS elastomeric bitumen roofing with min. 2% slope.

Exterior Door Systems:

- Hollow Metal Doors and Frames, Color: TBD

Site Lighting:

The following site lighting fixtures represent the current basis of design selections. Please note that exact selections of lighting fixtures are subject to change based on budget and availability as the project progresses.

Exterior Lighting:

- S1 (light poles): McGraw-Edison, The Galleon LED luminaire
- S2 (wall mounted lighting): Invue, Entri LED Round Reveals luminaire
- S3 (can lights): Portfolio, LD6A10/LD6A15/6LM, 6” LED medium beam down-light

McGRAW-EDISON®

energy solutions

DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated.

Catalog #		Type
Project	Paul Habans	S1
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics
Choice of 16 patented, high-efficiency AccuLED Optics. The optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT and minimum 70 CRI. Optional 6000K CCT and 3000K CCT. For the ultimate level of spill light control, an optional house side shield accessory can be field or factory installed. The house side shield is designed to seamlessly integrate with the SL2, SL3, SL4 or AFL optics.

Electrical
LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. Standard with 0-10V dimming. Shipped standard with Cooper Lighting proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 530mA and 700mA drive currents.

Mounting
Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during assembly. Designed for pole or wall mounting. When mounting two or more luminaires at 90° or 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table on page 3. Round pole top adapter included. For wall mounting, specify wall mount bracket option. 3G vibration rated.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult the McGraw-Edison Architectural Colors brochure for the complete selection.

Warranty
Five-year warranty.

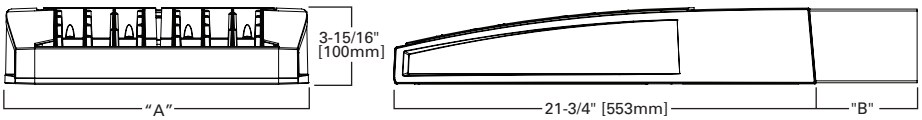
GLEON
GALLEON LED

1-10 Light Squares
Solid State LED

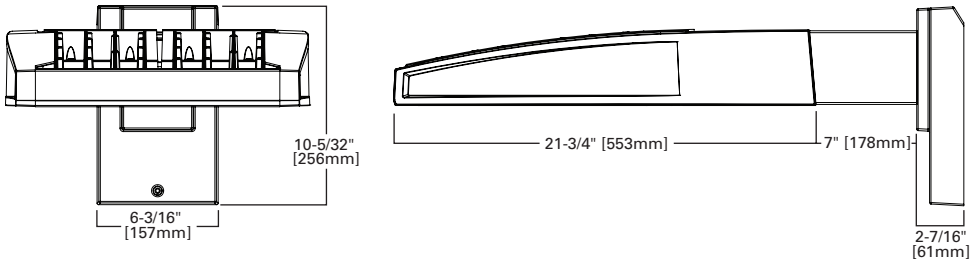
AREA/SITE LUMINAIRE

DIMENSIONS

POLE MOUNT



WALL MOUNT



DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length [1]	Weight with Arm (lbs.)	EPA with Arm [2] (Sq. Ft.)
1-4	15-1/2" (394mm)	7" (178mm)	10" (254mm)	33 (15.0 kgs.)	0.96
5-6	21-5/8" (549mm)	7" (178mm)	10" (254mm)	44 (20.0 kgs.)	1.00
7-8	27-5/8" (702mm)	7" (178mm)	13" (330mm)	54 (24.5 kgs.)	1.07
9-10	33-3/4" (857mm)	7" (178mm)	16" (406mm)	63 (28.6 kgs.)	1.12

NOTES: 1 Extended arm option may be required when mounting two or more fixtures per pole at 90° or 120°. Refer to arm mounting requirement table. **2** EPA calculated with optional arm length.

CERTIFICATION DATA

UL/cUL Wet Location Listed
ISO 9001
LM79 / LM80 Compliant
3G Vibration Rated
IP66 Rated
DesignLights Consortium® Qualified*

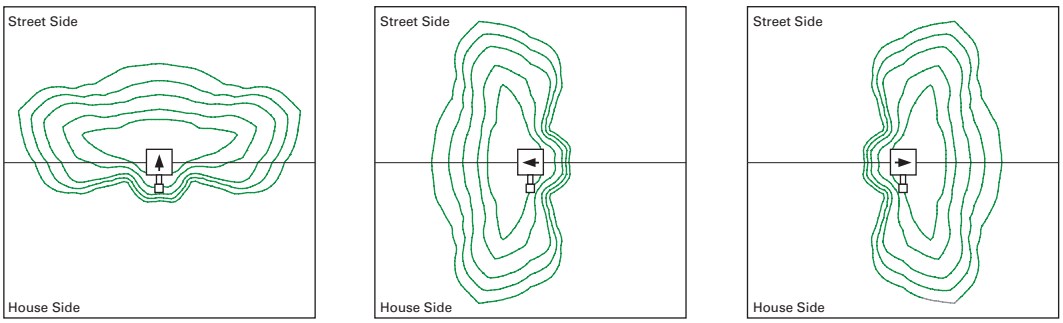
ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120V-277V 50/60Hz
347V & 480V 60Hz
-40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)

Cooper Lighting
by EATON

*www.designlights.org

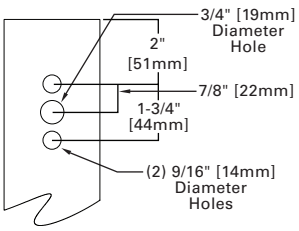
OPTIC ORIENTATION



Standard | **Optics Rotated Left @ 90°** [L90] | **Optics Rotated Right @ 90°** [R90]

DRILLING PATTERN

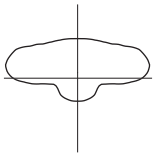
TYPE "N"



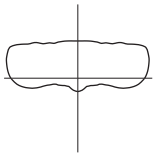
OPTICAL DISTRIBUTIONS

Asymmetric Area Distributions

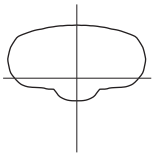
T2 (Type II)



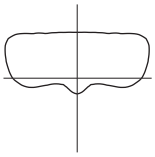
SL2 (Type II with Spill Control)



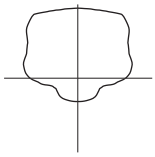
T3 (Type III)



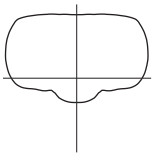
SL3 (Type III with Spill Control)



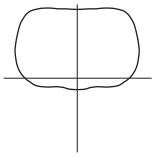
T4FT (Type IV Forward Throw)



T4W (Type IV Wide)

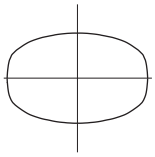


SL4 (Type IV with Spill Control)

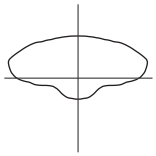


Asymmetric Roadway Distributions

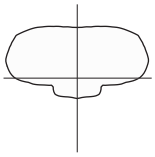
RW (Rectangular Wide Type I)



T2R (Type II Roadway)

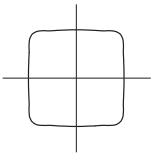


T3R (Type III Roadway)

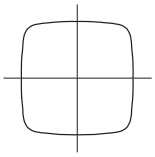


Symmertric Distributions

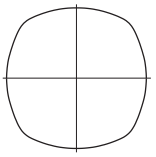
5NQ (Type V Square Narrow)



5MQ (Type V Square Medium)

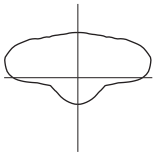


5WQ (Type V Square Wide)

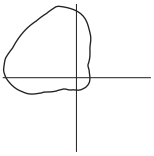


Specialized Distributions

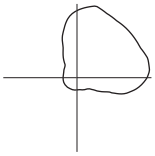
AFL (Automotive Frontline)



SLL (90° Spill Light Eliminator Left)



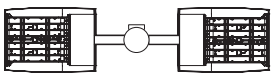
SLR (90° Spill Light Eliminator Right)



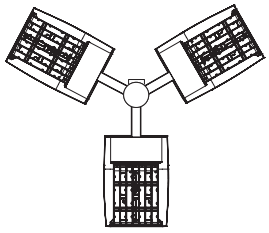
ARM MOUNTING REQUIREMENTS

Configuration	90° Apart	120° Apart
GLEON-AE-01	7" Arm (Standard)	7" Arm (Standard)
GLEON-AE-02	7" Arm (Standard)	7" Arm (Standard)
GLEON-AE-03	7" Arm (Standard)	7" Arm (Standard)
GLEON-AE-04	7" Arm (Standard)	7" Arm (Standard)
GLEON-AE-05	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AE-06	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AE-07	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AE-08	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AE-09	16" Extended Arm (Required)	16" Extended Arm (Required)
GLEON-AE-10	16" Extended Arm (Required)	16" Extended Arm (Required)

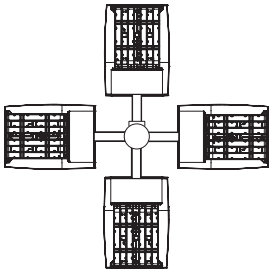
2 @ 180°



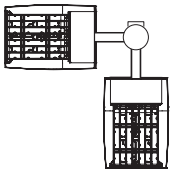
Triple[1]



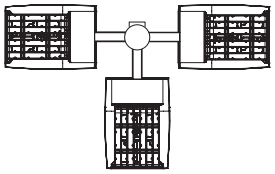
4 @ 90°



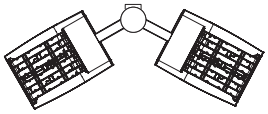
2 @ 90°



Triple[2]



2 @ 120°



LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
0°C	1.02
10°C	1.01
25°C	1.00
40°C	0.99
50°C	0.97

LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Theoretical L70 (Hours)
25°C	> 94%	> 350,000
40°C	> 93%	> 250,000
50°C	> 90%	> 170,000

ORDERING INFORMATION

Sample Number: GLEON-AE-04-LED-E1-T3-GM-700

Product Family [1]	Light Engine	Number of Light Squares [2]	Lamp Type	Voltage	Distribution	Color	Mounting
GLEON=Galleon	**AE**=1A Drive Current	**01**=1 **02**=2 **03**=3 **04**=4 **05**=5 **06**=6 **07**=7 **08**=8 **09**=9 **10**=10	**LED**=Solid State Light Emitting Diodes	**E1**=120-277V **347**=347V [3] **480**=480V [3]	**T2**=Type II **T2R**=Type II Roadway **T3**=Type III **T3R**=Type III Roadway **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **5NQ**=Type V Narrow **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=Rectangular Wide Type I **AFL**=Automotive Frontline	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White	**[Blank]**=Arm for Round or Square Pole **EA**=Extended Arm [4] **MA**=Mast Arm Adapter [5] **WM**=Wall Mount

Options (Add as Suffix)

2L=Two Circuits [6, 7]
7030=70 CRI 3000K [8]
7060=70 CRI 6000K [8]
530=Drive Current Factory Set to 530mA [9]
700=Drive Current Factory Set to 700mA [9]
P=Button Type Photocontrol (120, 208, 240 or 277V)
PER7=NEMA 7-Pin Twistlock Photocontrol Receptacle
R=NEMA Twistlock Photocontrol Receptacle
HA=50°C High Ambient [7]
MS/DIM-L08=Motion Sensor for Dimming Operation, Maximum 8' Mounting Height [10, 11, 12, 13]
MS/DIM-L20=Motion Sensor for Dimming Operation, 9' - 20' Mounting Height [10, 11, 12, 13]
MS/DIM-L40=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height [10, 11, 12, 13]
MS/X-L08=Bi-Level Motion Sensor, Maximum 8' Mounting Height [10, 11, 12, 13]
MS/X-L20=Bi-Level Motion Sensor, 9' - 20' Mounting Height [10, 11, 12, 13]
MS/X-L40=Bi-Level Motion Sensor, 21' - 40' Mounting Height [10, 11, 12, 13]
MS-L08=Motion Sensor for ON/OFF Operation, Maximum 8' Mounting Height [10, 11, 12, 13]
MS-L20=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height [10, 11, 12, 13]
MS-L40=Motion Sensor for ON/OFF Operation, 21' - 40' Mounting Height [10, 11, 12, 13]
DIMRF-LW=LumaWatt Wireless Sensor, Wide Lens for 8' - 16' Mounting Height [14]
DIMRF-LN=LumaWatt Wireless Sensor, Narrow Lens for 16' - 40' Mounting Height [14]
L90=Optics Rotated 90° Left
R90=Optics Rotated 90° Right
MT=Factory Installed Mesh Top
TH=Tool-less Door Hardware
LCF=Light Square Trim Plate Painted to Match Housing [15]
HSS=Factory Installed House Side Shield [16]

Accessories (Order Separately)

OA/RA1016=NEMA Photocontrol Multi-Tap - 105-285V
OA/RA1027=NEMA Photocontrol - 480V
OA/RA1201=NEMA Photocontrol - 347V
OA/RA1013=Photocontrol Shorting Cap
OA/RA1014=120V Photocontrol
MA1252=10kV Surge Module Replacement
MA1036-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon
MA1037-XX=2 @ 180° Tenon Adapter for 2-3/8" O.D. Tenon
MA1197-XX=3 @ 120° Tenon Adapter for 2-3/8" O.D. Tenon
MA1188-XX=4 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1189-XX=2 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1190-XX=3 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1191-XX=2 @ 120° Tenon Adapter for 2-3/8" O.D. Tenon
MA1038-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon
MA1039-XX=2 @ 180° Tenon Adapter for 3-1/2" O.D. Tenon
MA1192-XX=3 @ 120° Tenon Adapter for 3-1/2" O.D. Tenon
MA1193-XX=4 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon
MA1194-XX=2 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon
MA1195-XX=3 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon
FSIR-100=Wireless Configuration Tool for Occupancy Sensor [17]
GLEON-MT1=Field Installed Mesh Top for 1-4 Light Squares
GLEON-MT2=Field Installed Mesh Top for 5-6 Light Squares
GLEON-MT3=Field Installed Mesh Top for 7-8 Light Squares
GLEON-MT4=Field Installed Mesh Top for 9-10 Light Squares
LS/HSS=Field Installed House Side Shield [16, 18]

Notes:
1. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
2. Standard 4000K CCT and minimum 70 CRI.
3. Requires the use of a step down transformer when combined with MS/DIM, MS/X or DIMRF.
4. May be required when two or more luminaires are oriented on a 90° or 120° drilling pattern. Refer to arm mounting requirement table.
5. Factory installed.
6. 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in AE-02 through AE-04 requires a larger housing, normally used for AE-05 or AE-06. Extended arm option may be required when mounting two or more fixtures per pole at 90° or 120°. Refer to arm mounting requirement table.
7. Not available with LumaWatt wireless sensors.
8. Extended lead times apply. Use dedicated IES files for 3000K and 6000K when performing layouts. These files are published on the Galleon luminaire product page on the website.
9. 1 Amp standard. Use dedicated IES files for 530mA and 700mA when performing layouts. These files are published on the Galleon luminaire product page on the website.
10. Consult factory for more information.
11. Replace E1 with specific voltage.
12. The FSIR-100 accessory is required to adjust parameters.
13. Not available with HA option.
14. LumaWatt wireless sensors are factory installed only requiring network components RF-EM1, RF-GW1 and RF-ROUT1 in appropriate quantities. See www.cooperlighting.com for LumaWatt application information.
15. Not available with house side shield (HSS).
16. Only for use with SL2, SL3, SL4 and AFL distributions. The Light Square trim plate is painted black when the HSS option is selected.
17. This tool enables adjustment of parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your Eaton's Cooper Lighting business representative for additional details.
18. One required for each Light Square.

INVUE® energy solutions

DESCRIPTION

Entri LED features a classic and stylish design with the added benefits of solid state lighting technology, offering outstanding uniformity and energy savings. Using Cooper Lighting's proprietary LED LightBAR™ technology and AccuLED optical systems, Entri LED offers designers vast versatility in system design, function and performance. Use Entri LED for wall mount architectural lighting applications and egress lighting requirements. UL/cUL listed for use in wet locations.

Catalog #		Type
Project	Paul Habans	S2
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction

HOUSING: Heavy wall, one-piece, die-cast aluminum construction for precise tolerance control and repeatability in manufacturing. Integral extruded aluminum heat sink provides superior thermal heat transfer in +40°C ambient environments. Housing and heat sink are designed to offer various options for down lighting, up lighting or a combination of both up and down. FACEPLATE / DOOR: One-piece die-cast aluminum construction. Captive, side hinged faceplate swings open via release of one (1) flush mount die-cast aluminum latch on housing side panel. Door closure and seal is ensured through a robust and positive retention bale latch which upon closing can be heard through distinct sound. GASKET: One-piece molded silicone gasket mates perfectly between the door and housing for repeatable seal. Silicone wire way plug on housing back wall seals incoming electrical leads to prevent moisture and dust entry. LENS: Uplight lens is impact resistant, 5/32" thick tempered frosted glass sealed to housing with continuous bead silicone gasket. Downlight lens is LED board integrated acrylic over-optics, each individually sealed for IP66 rating. HARDWARE: Stainless steel mounting screws and latch hardware allow access to electrical components for installation and servicing.

Optics

DISTRIBUTION: Primary downlight distribution offers a choice of six (6) patented, high-efficiency AccuLED Optics™, that maximize light collection and direction distribution onto the application region. Each optical lens is precision manufactured via injection-molding, then precisely arranged and sealed on the board media. Optional uplight LED distribution features a diffuse soft glow for enhancing architectural scenes or accentuating structural features. LEDs: High output LEDs, 50,000+ hours life at >70% lumen maintenance, offered standard in 4000K (+/- 275K) CCT and nominal 70 CRI.

Electrical

DRIVER: LED drivers are potted and heat sunk for optimal performance and prolonged life. Standard drivers feature electronic universal voltage (120-277V/50-60hz), greater than 0.9 power factor, less than 20% harmonic distortion and feature ambient temperature range of +40°C (104°F) down to minimum starting temperature of -30°C (-22°F). Shipped standard with Cooper Lighting proprietary circuit module designed to withstand 10kV of transient line surge. Options to control light levels, energy savings and egress capabilities (battery pack and separate circuit) are available. All LED LightBARs™ and drivers are mounted to a primary mounting plate and are easily replaced by use of quick disconnects for ease of wiring.

Mounting

JUNCTION BOX: Standard with zinc plated quick-mount junction box plate that mounts directly to 4" J-Box. LightBARS mount facing downward. Fixture slides over mounting plate and is secured with two (2) stainless steel fasteners. Mounting plate features a one-piece EPDM gasket on back side of plate to firmly seal fixture to wall surface, forbidding entry of moisture and particulates. Optional mounting arrangements utilize a die-cast mounting adaptor box to allow for LED battery pack, surface conduit and through branch wiring. Entri LED is approved for mounting on combustible surfaces.

Finish

Housing is finished in 5-stage Super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. LightBAR™ cover plates are standard white and may be specified to match finish of luminaire housing. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult Outdoor Architectural Colors brochure for a complete selection.

Warranty

Entri LED features a five-year limited warranty.

ENV ENTRI LED ROUND REVEALS

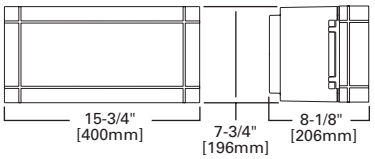
1 - 2 LightBARs

Solid State LED

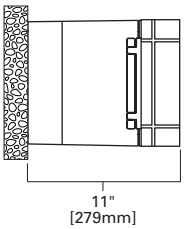
ARCHITECTURAL WALL LUMINAIRE

DESIGNLIGHTS CONSORTIUM

DIMENSIONS



CONDUIT MOUNT / BATTERY BACK BOX



CERTIFICATION DATA

UL/cUL Listed
ISO 9001
IP66 LightBARs
ARRA Compliant
LM79 / LM80 Compliant

ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 & 60hz, 347V/60hz, 480V/60hz
-30°C Minimum Temperature
40°C Ambient Temperature Rating

SHIPPING DATA

Approximate Net Weight:
16 lbs. (7.3 kgs.)

ISO SYSTEMS CERTIFIED

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COOPER Lighting
www.cooperlighting.com

POWER AND LUMENS BY BAR COUNT

Number of LightBARs	DISTRIBUTION							
	Power [Watts]	Current @ 120V [A]	Current @ 277V [A]	BL2	BL3	BL4	GZW	SLR/ SLL
	7 LED LIGHTBAR							
C01	27	0.23	0.13	1,770	1,625	1,720	1,725	1,571
C02	54	0.46	0.21	3,540	3,249	3,440	3,450	3,142
	21 LED LIGHTBAR							
B01	27	0.23	0.13	2,177	1,998	2,115	2,122	1,932
B02	51	0.43	0.20	4,354	3,996	4,231	4,244	3,865

LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
10°C	1.04
15°C	1.03
25°C	1.00
40°C	0.96

ORDERING INFORMATION

Sample Number: ENV-B02-LED-E1-BL3-GM

Product Family [1]
ENV= Entri Round Reveals

Number of Lightbars [2, 3]
B01=[1] 21 LED LightBAR
B02=[2] 21 LED LightBARs
C01=[1] 7 LED LightBARs
C02=[2] 7 LED LightBARs

Lamp Type
LED= Solid State Light Emitting Diodes

Voltage
E1=Electronic (120-277V)
347=347V
480=480V

Distribution
BL2= Type II w/Back Light Control
BL3= Type III w/Back Light Control
BL4=Type IV w/Back Light Control
GZW=Wall Grazer Wide
SLL=90 Degree Spill Light Eliminator Left
SLR=90 Degree Spill Light Eliminator Right

Finish [4]
BK= Black
AP= Grey
BZ= Bronze
WH=White
DP=Dark Platinum
GM=Graphite Metallic

Options [5]
ULG= Uplight Glow
PC= Button Type Photocell (Available in 120V, 208V, 240V, and 277V)
WG=Wire Guard
2L=Two Circuits[6]
TP=Tamper Resistant Hardware
LCF=LightBAR Cover Plate Matches Housing Finish
7060=70 CRI/6000K CCT[7]
8030=80 CRI/3000K CC[7]
OSB=Occupancy Sensor with[8] Back Box
BBB=Battery Pack with Back[9] Box (Specify 120 or 277)
CWB=Cold Weather Battery[10] Pack with Back Box (Specify 120 or 277)

Accessories [11]
VA2001-XX= Thru-Way Conduit Adaptor Box
VA6172= Wire Guard
VA6173=Tamper Resistant Driver Bits
MA1253=10kV Circuit Module Replacement

Notes:
1. DesignLights™ Consortium Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
2. Standard 4000 K CCT and greater than 70 CRI. LightBARS for downlight use only.
3. 21 LED LightBAR powered at 350mA, 7 LED LightBAR powered at 1A.
4. Custom and RAL color matching available upon request. Consult your customer service representative for further information.
5. Add as suffix in the order shown.
6. Low-level output varies by bar count, consult factory. Not available with 347V or 480V. Available with 2 Bars (B02 or C02) only.
7. Consult customer service for lead times and lumen multiplier.
8. Available with B02 or C02, only (1) LightBAR on street side will be wired to sensor. Time Delay factory setting 15 minutes. When ordered with Option PC, both light bars will connected to photocell as primary switching means. Standard sensor lens covers 8-foot mount height, 360-degree coverage, maximum 48-foot diameter. Not available in all configurations or with BBB or CWB options.
9. Specify 120 or 277V. LED standard integral battery pack is rated for minimum operating temperature 32°F (0°C). Operates (1) lightbar for 90 minutes. Not available in all configurations or with OSB option. Consult factory.
10. Specify 120 or 277V. LED cold weather integral battery pack is rated for minimum operating temperature -4°F (-20°C). Operates (1) lightbar for 90 minutes. Not available in all configurations or with OSB option.
11. Order separately, replace XX with color suffix.

PORTFOLIO™

DESCRIPTION

6 inch LED recessed medium beam downlight with 50° cut off specially designed for LED technology. Two-stage reflector system produces smooth distribution with excellent light control and low aperture brightness. Lumen packages include 1000 and 1500 delivered lumens with color temperatures of 2700K, 3000K, 3500K, 4000K. Suitable for commercial construction and exceeds high efficacy requirements (with designated trims) for T24. Energy Star qualified.

Catalog #		Type
Project	Paul Habans	S3
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Lower Shielding Reflector
Self-flanged, spun .050" thick aluminum lower reflector in combination with a lensed upper optical chamber provides superior lumen output with minimal source brightness. Available in all Portfolio Alzak® finishes.

Trim Retention
Lower reflector is retained with two torsion springs holding the flange tightly to the finished ceiling surface.

Plaster Frame / Collar
New Construction Housing: Die cast aluminum 1-1/2" deep collar accommodates ceiling materials up to 2".

Universal Mounting Bracket
Accepts 1/2" EMT, C channel and bar hangers and adjusts 5" vertically from above and below the ceiling.

Junction Box
(4) 1/2" and (2) 3/4" trade size pry outs positioned to allow straight conduit runs. Listed for (8) #12 AWG (four in, four out) 90°C conductors and feed thru branch wiring.

Thermal
Extruded aluminum heat sink conducts heat away from the LED module for improved performance and longer life.

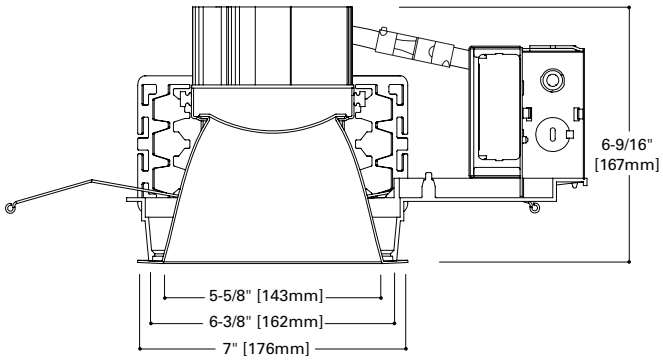
LED
LED system contains a plurality of high brightness white LED's combined with a high reflectance upper reflector and convex transitional lens producing even distribution with no pixilation. Rated for 50,000 hours at 70% lumen maintenance. Auto resetting, thermally protected, LED's are turned off when safe operating temperatures are exceeded. Color variation within 3-step MacAdam ellipses. Flexible disconnect allows for tool-less replacement of LED engine from below ceiling. Available in 80 or 90 CRI.

Driver
Combination 120-277V 0-10V or 120V trailing edge phase cut driver provides flicker free dimming from 100% to 10%. Optional 1% 0-10V, Fifth Light, DMX or Lutron® Ecosystem. Driver can be serviced from above or through the aperture.

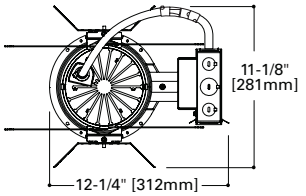
Environmental
Fixture should not be operated in ambient temperatures above 40° C.

Code Compliance
Thermally protected and cULus listed for protected wet locations. IP66 rated when used with IP66 gasket kit accessory. Optional City of Chicago environmental air (CCEA) marking for plenum applications. EMI/RFI emissions per FCC 47CFR Part 18 Class B consumer limits. Non-IC rated - Insulation must be kept 3" from top and sides of housing. RoHS Compliant. Photometric testing completed in accordance with IES LM 79 standards. LED life testing completed in accordance with LM 80 standards.

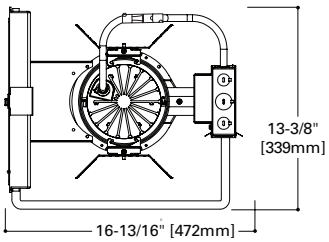
Warranty
5 year warranty on LED housings, LED Modules and LED Trims.



TOP VIEW - NEW CONSTRUCTION



TOP VIEW - NEW CONSTRUCTION WITH BATTERY



LD6A10 LD6A15 6LM

1000 Lumen LED

1500 Lumen LED

6-Inch

Medium Beam Downlight

New Construction

ENERGY STAR | Can be used for T24 California Title 24 High Efficacy Compliance

Qualified and Compliant. Refer to the ENERGY STAR® Qualified Product List and CEC (T24) Appliance Database for listings.

ENERGY DATA	
Sound Rating: Class A standards	
Operating Temperature: 40°C (104°F)	
1500 Lumen D010TE	
(Values at non-dimming line voltage)	
Minimum Starting Temperature: -30°C (-22°F)	
EMI/RFI: FCC Title 47 CFR, Part 15, Class B (Consumer)	
Input Voltage: UNV (120V - 277V)	
Power Factor: >0.90 (at nominal input 120/277 VAC & 100% of Rated Output Power)	
Input Power: 22.4W	THD: <20%
120V Input Current: .12A	277V Input Current: .09A
Maximum Non-IC Ambient Continuous	
Input Frequency: 50-60Hz	

1000 Lumen D010TE	
(Values at non-dimming line voltage)	
Minimum Starting Temperature: -30°C (-22°F)	
EMI/RFI: FCC Title 47 CFR, Part 15, Class B (Consumer)	
Input Voltage: UNV (120V - 277V)	
Power Factor: >0.90 (at nominal input 120/277 VAC & 100% of Rated Output Power)	
Input Power: 14.1W	THD: <20%
120V Input Current: .12A	277V Input Current: .06A
Maximum Non-IC Ambient Continuous	
Input Frequency: 50-60Hz	

powered by fifthlight technology

ORDERING INFORMATION

EXAMPLE: LD6A15D010TE ERM6A15835 6LM0LI=6" LED Medium Beam Reflector, 1500 Lumen 3,500 K Color with Universal 120 - 277V, 0 - 10 Driver

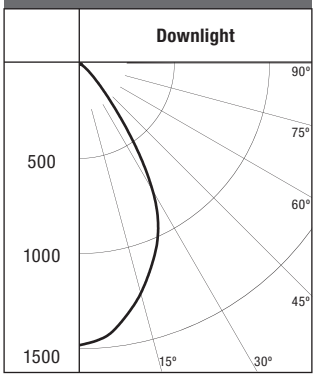
Housing	Lumens[1]	Driver	Options	Power Module	CRI	Color
LD6A=6"Aperture, **LD6ACP**=6"Aperture	**10**=1000 Lumens **15**=1500 Lumens	**D010TE**=120-277V 0-10V 10% Dimming or Trailing Edge 120V Dimming **D010TR**=120-277V 0-10V 10% Dimming or Leading Edge 120V Dimming **D5LT**=Fifth Light® (DALI) Dimming 1-100% **DE010**=1 to 100% Dimming, 120-277V 50/60Hz, 0-10V **DL3**=1 to 100% Dimming, 120-277V Lutron® Hi-Lume, Ecosystem or 3 Wire **DLT**=1 to 100% Dimming, 120V Lutron® Hi-Lume Forward Phase Dimming **DMX**=DMX Dimming 1-100%	**EMBOD**=Bodine® Emergency Module with Remote Test Switch **IEMBOD**=Bodine® Emergency Module with Integral test Switch[3]	**ERM6A10**=6", 1000 Lumen Module for Medium Beam Reflector **ERM6A15**=6", 1500 Lumen Module for Medium Beam Reflector	**8**=80 CRI **9**=90 CRI	**27**=2700° K **30**=3000° K **35**=3500° K **40**=4000° K **27CP**=2700° K, Chicago Plenum **30CP**=3000° K, Chicago plenum **35CP**=3500° K, Chicago Plenum **40CP**=4000° K, Chiago Plenum

Reflector	Finish		Options	Accessories	
6LM0=6" Medium Reflector, Polymer Trim Ring **6LM1**=6" Medium Reflector, Self-flanged **6LM0E**=6" Medium Reflector, Polymer Trim Ring for use with IEM Integral Emergency Option **6LM1E**=6" Medium Reflector, Self-flanged for use with IEM Integral Emergency Option	**LI**=Specular Clear **H**=Semi-Specular Clear **WMH**=Warm Haze **G**=Specular Gold **WH**=Wheat **WHH**=Wheat Haze **GP**=Graphite **GPH**=Graphite Haze	**B**=Specular Black **W**=Gloss White **6LM0, 6LM0E Only** **BB**=Black Baffle **WB**=White Baffle	**Self-flanged Only** **WF**=White Painted Flange	**HB26**=C-channel Bar Hanger, 26" Long, Pair **HB50**=C-channel Bar Hanger, 50" Long, Pair **RMB22**=Wood Joist Bar Hanger, 22" Long, Pair **H277**=277 To 120V Step Down Transformer, 300VA **H347**=347 To 120V Step Down Transformer, 75VA	**H347200**=347 to 120V Step Down Transformer, 200VA Housings, Specify Slope **HSA6**=Slope Adapter for 6" Aperture Housings, Specify Slope **TRM6**=Metal Trim Ring, Specify Color[2] **TRR6**=Rimless Trim Ring[2] **DT6**=Deco Trim[2] **LGSKT6IP66**= P66 Gasket Kit

Notes: **1** Nominal Lumens will vary depending on selected color, driver and reflector finish.
2 Order trim with polymer trim ring (Consult specification sheet for color ordering information and options).
3 Not available with Chicago Plenum.

PHOTOMETRICS

CANDLEPOWER DISTRIBUTION



Test Number	P98227
LD6A15D010TE ERM6A835 6LM1H	
Lumens	1347
Efficacy	61.8 Lm/W
Watts	21.8
CCT	3500K
SC	0.92

CONE OF LIGHT

Distance Fixture to Lighted Plane	Initial Footcandles at Nadir	Beam Diameter
5'5"	48	5.0
7'	30	6.5
8'	22	7.0
9'	18	8.0
10'	14	9.0
12'	10	11.0

CANDELA TABLE

Degrees Vertical	Candela
0	1468
5	1436
15	1238
25	969
35	468
45	116
55	25
65	8
75	2
85	0
90	0

ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixture
0-30	919	68.2
0-40	1213	90.1
0-60	1336	99.2
0-90	1347	100
90-180	0	0
0-180	1347	100

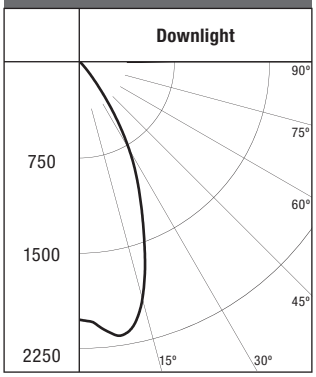
LUMINANCE

Average Candella Degrees	Average 0° Luminance
45	10749
55	2889
65	1158
75	378
85	0

EMBOD MULTIPLIER

1000 Lumen=	.64
1500 Lumen=	.45

CANDLEPOWER DISTRIBUTION



Test Number	P97379
LD6A15D010TE ERM6A835 6LM1LI	
Lumens	1509
Efficacy	69.2 Lm/W
Watts	21.8
CCT	3500K
SC	0.83

CONE OF LIGHT

Distance Fixture to Lighted Plane	Initial Footcandles at Nadir	Beam Diameter
5'5"	69	4.0
7'	42	5.6
8'	32	6.0
9'	25	7.0
10'	21	8.0
12'	14	9.5

CANDELA TABLE

Degrees Vertical	Candela
0	2018
5	2098
15	1908
25	1097
35	381
45	29
55	4
65	1
75	0
85	0
90	0

ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixture
0-30	1225	81.2
0-40	1471	97.5
0-60	1507	99.9
0-90	1509	100
90-180	0	0
0-180	1509	100

LUMINANCE

Average Candella Degrees	Average 0° Luminance
45	2676
55	455
65	154
75	0
85	0

EMBOD MULTIPLIER

1000 Lumen=	.64
1500 Lumen=	.45

Lumen Output Bodine:...Emergency .45

PHOTOMETRICS

CCT Multiplication Factors		CCT [K]	Multiplier from 3500K	80 -> 90 CRI
80 CRI	1000 Lumen	2700	0.93	
		3000	0.99	
		3500	1.00	
		4000	1.01	
	1500 Lumen	2700	0.93	
		3000	0.99	
		3500	1.00	
		4000	1.01	
90 CRI	1000 Lumen	2700	0.88	0.79
		3000	0.95	0.80
		3500	1.00	0.84
		4000	1.03	0.86
	1500 Lumen	2700	0.88	0.79
		3000	0.94	0.79
		3500	1.00	0.84
		4000	1.03	0.86