UCHealth – University of Colorado Hospital Parking Garage 2 Project

University of Colorado Design Review Board Schematic Design June 11, 2020



Agenda

I. Introductions

II. Building

III. Site & Landscape

IV. Sustainable Strategies



I. Introductions





A/E Team







Kimley »Horn





Pact Studios, LLC – Architectural Design

Martin & Martin - Civil and Structural Engineering

Specialized Engineering Solutions – MEP Design; Low Voltage; Lighting Design

Kimley>Horn – Landscape Architecture

Felsburg Holt & Ullevig – Traffic, Transportation, and Parking Study

Lerch Bates – Vertical Transportation

Fd2s – Graphic and Signage Design



Campus Plan



Context of Project – Campus





II. Building





Previous Schematic Design



View of North Elevation



View of West Elevation



View Looking Northeast



View Looking Northwest



North Core Relocation



North Core Relocation



Architectural Context - ACP



Solid Massing Elements

- Anchors Building
- Articulates Solid and Void

Formatting of Glazing System Horizontal Elements - Expressed Vertical Elements - Subdued



Solid Massing Elements

- Anchors Building
- Articulates Solid and Void

Exposed Structural Network

Layering of Façade Elements



Architectural Context – Garage 3 & 8



Garage 3 – Pedestrian Scale



Garage 3



Garage 8 – Solid Massing Elements



Garage 8



Perforated Metal Panel Systems - Corrugated

PAC-CLAD - Backup Structural System



ATAS – Backup Structural System

CENTRIA – Backup Structural System



*Require an independent network of both vertical and horizontal structural members to support the system.



Perforated Metal Panel Systems - Mesh

CAMBRIDGE – Tension Structural Assembly – Complex Mechanical Attachments



GKD – Tension Structural Assembly – Complex Mechanical Attachments



VALMONT – Aurora Cassette System



HENDRICK – Cassette System



*Require horizontal structural members – no vertical structural members are required.

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VALMONT – Aurora Cassette System

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VALMONT – Aurora Cassette System





(Video)

VALMONT – Perforation Patterns



*Eliminated Mesh Patterns and Those with Less Than 50% Open Area



VALMONT – Perforation Patterns







Aero – Field Perforated Pattern – 56% Open



Champagne - Accent Perforated Pattern



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North Elevation





View Looking Southeast





View Looking Northeast





View Looking Northwest







North Elevation

West Elevation



South Elevation



East Elevation





North Elevation





North Elevation





View Looking Southeast

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View Looking Southeast





View Looking Northeast





View Looking Northwest





View from North Crosswalk





View from North Crosswalk





View at NW Corner of Plaza





View at NW Corner of Plaza





View from West Crosswalk





View 16th Avenue and Aurora Court




View of Entry Drive from Aurora Court







North Elevation

West Elevation



South Elevation



East Elevation





North Elevation





West Elevation





South Elevation





East Elevation





North Elevation





View Looking Southeast





View Looking Northeast





View Looking Northwest







North Elevation

West Elevation



South Elevation



East Elevation



III. Landscape





Overall Project Site Plan



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Planting Plan



PLANTING PLAN

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Enlargement Plan



NORTH PLAZA ENLARGEMENT PLAN

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North Plaza Perspective Views









NORTH PLAZA PERSPECTIVE VIEWS





Enlargement Plan

WEST PLAZA AND ELEVATOR CORE ENLARGEMENT PLAN

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Landscape Section

DROP OFF AREA FACING SOUTHWEST



KEY MAP SCALE: NTS



Landscape Section



WEST PLAZA FACING NORTH



West Plaza Perspective Views



WEST PLAZA AND ELEVATOR CORE PERSPECTIVE VIEWS



IV. Sustainable Strategies





Energy Design Consideration Summary

	Typical Parking Structure	Best Practices	Project Implementation
Performance			Design team has set annual energy goal of 51kWH/parking
Specification	None.	Energy goal-driven specification	stall/year.
	Mechanical ventilation if underground or		
Ventilation	enclosed	Natural ventilation only	Garage will be entirely naturally ventilated.
			Daylighting sensors provided to reduce power to luminaires
Daylighting	None	Daylight provides 75%-100% energy use reduction for electric lighting during daytime hours	by 30%.
Electric Lighting	0.18-0.30 W/ft2 installed load	0.05-0.18 W/ft2 installed load depending on illuminance requirements	0.17 W/ft2 installed load.
		Concern for safety and way finding, driving time, and lighting use. Flow considerations reduce energy	
Pedestrian Flow	Concern for safety and way finding	use by 75% during nighttime hours (can vary based on garage use patterns).	High priority on pedestrian experience and way finding.
	Active heating methods to prevent freezing		
Equipment	in drainpipes and elevator gear.	Passive heating and heat recovery methods to prevent freezing in drain-pipes and elevator gear.	TBD
Incentives	Preferred parking.	Preferred parking and onsite charging stations powered by renewable energy	Infrastructure for (2) EV charging stations per floor.
Renewable Energy	None	Solar electricity and wind used in appropriate climate zones	Alternate for solar electricity on top level is included.
	Commissioning but no measurement and		
Commissioning	verification (M&V)	Commissioning and ongoing M&V	TBD

Notes:

- 1. US Energy Star does not provide Energy Use Intensity (EUI) data for parking garage projects.
- 2. This list is adapted from NREL guidelines for Low-Energy Parking Structure Design.



Concrete Mix

Compressive Strength ● Curing Time yds ≦ 5000 psi 28d	4
≅ 5000 psi 28d ■ Compressive Strength Other @ Curing Time ▼ BOXPLOT Slump (min) Options ▼ ≤ W/C Ratio ≥ 5CM ≤ EC3 / 1 yd3	\$
Slump (min) Options ✓ ≤ W/C Ratio ≥ SCM ≤ EC3 / 1 yd3 800	
800	M
Standardweight 700 GEOGRAPHIC 600	516
Filter by State/Province 500	
USA × × = Colorado × × = 400 conservative	BF Baseline 343
	265

Notes:

Design team is using the EC3 website as a tool for selecting a concrete mix. Other variables will need to be considered and evaluated to ensure the proper concrete mix is selected.

EC3 Online Tool for Material Comparisons

Organization Name: Martin Marietta	
Plant Name: Quivas	
Product Name: A5512	700
Description: Exterior 5000 PSI	600 - 616
GWP: 400 kgCO2e	500
Declared Unit: 1 yd3	400 - 431 CLF Base
Concrete Compressive Strength 28D: 5000 psi	300265
Driginal EPD File: DOWNLOAD EPD	200
ew .	0
	THIS SEARCH SELECTED MATERIAL

Example of Concrete Mix that would fall below the Carbon Leadership Forum (CLF) baseline for Ready Mix concrete, which is 458.73



Appendix







North Elevation





View Looking Southeast





View Looking Northeast





View Looking Northwest



Grading Plan





Utility Plan







Existing Traffic Volumes

Anticipated 2025 Traffic Volumes



Pedestrian and Vehicular Circulation



PEDESTRIAN AND VEHICULAR CIRCULATION

Site Furnishings



Hardscape and Material Finishes



Plant Palette



AUTUMN BLAZE MAPLE





SPRING SNOW CRAB APPLE

*

SHADE PARTIAL

PONDEROSA PINE





COLORADO SPRUCE





SKYLINE HONEY LOCUST 🔆



SUN

*
Plant Palette









KNOCKOUT ROSE 🔆

SEA GREEN JUNIPER 🔆





GRO-LOW FRAGRANT SUMAC 🌟 🌟





VINCA 🔆





SUN

*

Plant Palette





BLACK-EYED SUSAN 🔆



PAMPAS GRASS 🔆 🌟



PLANTAIN LILY 🔆



MINIATURE BEARDED IRIS 🔆 🔆



LITTLE BLUESTEM GRASS 🔆

FEATHER REED GRASS 🔆 🔆









Precedent Images



Site Lighting



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Lighting Fixtures

Fixture Vocabulary A

Vehicular Luminaire

Gardco "Round Form 10" CA Style Material: Aluminum, RAL7038 Height: 30' (RA5) *See University of Colorado Denver Design & Construction Standards, Section 26 56 00 for additional Information



Pedestrian Luminaire

Gardco "Round Form 10" MP Style Material: Aluminum, RAL7038 Height: 10' (RA4) *See University of Colorado Denver Design & Construction Standards, Section 26 56 00 for additional Information

Campus Standard Fixtures



Bollard Lighting

Gardco "Round Form 10" MP Style Material: Aluminum, RAL7038 Size: 16" Diameter *See University of Colorado Denver Design & Construction Standards, Section 26 56 00 for additional Information



Discontinued

Exterior Building Wall Lighting

Gardco "Bollard 10" BR160 Material: Aluminum Color: RAL 7038 *See University of Colorado Denver Design & Construction Standards, Section 26 56 00 for additional Information





Total Parking Counts and GSF

Statistic Per Level

Level 6	164 spaces	45,808 GSF
Level 5	252 spaces	64,592 GSF
Level 4	241 spaces (35 ADA)	77,565 GSF
Level 3	242 spaces (36 ADA)	77,565 GSF
Level 2	242 spaces (36 ADA)	78,354 GSF
Level 1	169 spaces (2 ADA/22 van)	78,250 GSF

Totals

- 1,179 typical spaces
- 22 Van spaces
- 109 ADA spaces

Grand Total

1,310 spaces 422,134 GFA (322 SF/stall)





North/South Section

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	2			
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	. D. Z	I FH *	_ CALLER ALLER ALL ALLER ALL ALL ALL ALL ALL ALL ALL ALL ALL AL	
the state				

East/West Section



Proposed Signage





West Elevation

Proposed Signage



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Proposed Signage



Southeast Perspective



Southwest Perspective



Northeast Perspective







Exterior Lighting





Length:

L1

L2



Introduction

The RADEAN arm mount luminaire is the perfect choice for pedestrian applications where daytime aesthetics and visual comfort are needed. Adding architectural flair to any space, the RADEAN's low-profile shape and smooth curves blend in while adding a touch of elegance.

Perfect for campuses, parks, pedestrian malls, courtyards and pathways, the RADEAN arm mount is the Architect's choice to provide beautiful aesthetics both day and night.

Ordering	Information	/			XAMPL	E: RAD1	LED P3 30K	SYM M	VOLT RPA PE DNA
RAD1 LED									
RADI LED P1 3,000 Lumens P2 5,000 Lumens 93 7000 Lumens 94 11,000 Lumens P5 16,000 Lumens 95		27K 2700 30K 3000 35K 3500 40K 4000 50K 5000	SYM ASY PATH	SYM Symmetric type V MVOLT 277 * SPA Square pole mounting (includes adapted adaptedataptedatadapted adapted adaptedatapted adapted adapted adapted		ndudes adapter)			
Control options		Othe	roptions			Finish org	uoved)		
Shipped installe NLTAIR2 nLight PIR Bi-lev PE Buttor FAO Field a	d AIR 2.0 enabled ¹ El motion sensor (100% to 30%) - i photocell ^{1,2,1} diustable output ^{2,3,0}	SF DF L90 R90	Single Fuse ¹ Double Fuse ¹ Left rotated optics Right rotated optics	Shipped separa HS Housesic	i tely le shield ^a	DDBXD DBLXD DNAXD DWHXD	Dark bronze Black Natural aluminum White	DDBTXD DBLBXD DNATXD DWHGXD	Textured dark bronze Textured black Textured natural aluminum Textured white



Interior Lighting









A+ Capable options indicated by this color background.



and the



Introduction

The all new VCPG LED (Visually Comfortable Parking Garage) luminaire is designed to bring glare control, optical performance and energy savings into one package. The recessed lens design of VCPG LED minimizes high angle glare, while its precision molded acrylic lens eliminates LED pixilation and delivers the required minimums, verticals and uniformity. The dedicated up-light module option reduces the contrast between the luminaire and the ceiling creating a more visually comfortable environment.

The VCPG LED delivers up to 87% in energy savings when replacing 175W metal halide luminaires. With over 100,000 hour life expectancy (12+ years of 24/7 continuous operation), the VCPG LED luminaire provides significant maintenance savings over traditional luminaires.

WOCIED										
eries	LED Light	Package	Color	Color Rendering	Distribution	Voltage		Mounting		
ICPG LED	V41 4 Light Engines V81 8 Light Engines	P1' P2' P3 P4' P5' P6' P7'	30K 3000 K 35K 3500 K 40K 4000 K 50K 5000 K	70CRI 80CRI	TSM Type V, mechum TSR ² Type V, nectangular TSW Type V, wide TSE Type V entry LANE ² Drive Tane	<mark>мүоцт</mark> 347 480	For ordering with fuse 120 208 240 277 347 480	Shipped included PM Pendart mount standard (24-inch length supply leads) SRM Surface mount (24-inch length supply leads) ARM Arm mount (cae RSXWRA accessory to mount to a Shipped separately YK Yoke/trumisin mount ⁴		
									Finish	
Shipped ins JPL1 JPL2 EIOWH 4A FF SPD10KV LDS36 LDS72 LDS108 DM6 Shipped Seg WG BDS HS	rd installed Standalone Senser/Controls ¹ up-Light: 500 lumens PIR Motion/ambient sensor for 8-15' mounting heights up-Light: 500 lumens PIR Motion/ambient sensor for 8-15' mounting heights up-Light: 500 lumens PIR Motion/ambient sensor for 8-15' mounting heights ch Tee2 DMADBS (MV, -20" remover PIRF CM Motion/ambient sensor for 6-15' mounting heights, pre programmed to 3k and 35% light output d Emergency battery backup, Certifieri in GA Tite? DMADDS (10W, ST' min) ^{MAP} PIRFSCM Motion/ambient sensor for 6-15' mounting heights, pre programmed to 3k and 35% light output High ambients (STC, on PT-144) PIRFSC W Motion/ambient sensor for emergency crowalt for 15-30' mounting heights, pre programmed to 3k and 35% light output Double face (CX0X, 240X) Networked Sensorx/Controls ¹ VI NV Samp Fack NLIARZ PIRM nLIGHT R Windess enabled motion/ambient sensor for 8-15' mounting heights 72m (6ft) lead length NLIARZ PIRM nLIGHT R Windess enabled. UL 324 Liaded motion/ambient sensor for 8-15' mounting heights 8 1081 (r9R) lead length NLIARZ PIRM nLIGHT R Windess enabled motion/ambient sensor for menegency circuits for 8-15' mounting heights 72m (6ft) lead length NLIARZ PIRMP2 NLIARZ PIRM					DWHXD DNAXD DDBXD DBLXD	White Natural alurninum Dark bronz Black			

