

Razorback Road Parking Garage



Gensler

**Issue for Programming Pricing
Design Narrative**

April 23, 2026

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Section A. Project Description

The Razorback Road Parking Garage at the University of Arkansas will park up to 1,700 cars and include program at the ground level to support students and the community. The garage will be clad on all sides, including screening at the ground level to direct users to specific entry points of the garage. Site development includes straightening of Center Street, development of a plaza between the amenity areas and the existing Razorback Road sidewalk, transit-focused programs along Graham Avenue to the west, and a loading area to the south of the garage.

The parking bays are oriented east-west. An open airway is incorporated to ensure open-air requirements are met and to introduce natural light into the center of the garage. At the ground level, the opening provides a way to traverse the garage from east to west or west to east.

Section B. Location

The project is located on Razorback Road in the southwest part of the University of Arkansas campus. The site is bounded by Center Street to the north, Graham Avenue to the west, and the Administrative Services Building to the south. Utilities are located around the site and are within easy access.

Section C. Scope of Work

1. Program development is ongoing. Initial program elements to be considered include:
 - a. Up to 1,700 spaces
 - b. Up to 20,000sf of tenant or program space along Razorback Road
 - i. Up to 12,000sf of interior fit out for university services program, excluding retail or Food and Beverage (F&B)
 - ii. Up to 8,000sf of F&B space, delivered up to warm-lit shell level
 - c. Mobility program such as bicycle storage, scooter parking, repair station, etc.
 - d. University services programs such as UAPD Substation (office space), URec equipment rental program, storage, and multi-purpose space
 - e. Restrooms with showers will be provided to support mobility and university programs
 - f. IT, storage, and other service programs as required
2. Gensler will provide the following services:
 - a. Architecture
 - b. Interior Design
 - c. Signage & Wayfinding

3. The consultants who will be providing supporting documentation and services are identified as follows:
 - a. Civil Engineering: Walter P Moore
 - b. Landscape Architecture: Ground Control
 - c. MEP/F: Henderson Engineers
 - d. Parking: Walter P Moore (Programming Pricing deliverable not required)
 - e. Traffic: Walter P Moore (Programming Pricing deliverable not required)

Section D. Pricing Options and Alternates

Two options are included in the architectural drawings:

- i. Two-Step
- ii. Breezeway

Each option should be priced according to the massing and dimensions included in the drawings. Provide line-item estimates as follows:

Scope	Options
Massing	Two Options: Breezeway and Two-Step
Façade	Two Options: Breezeway and Two-Step
Loading Area	Two Options: Breezeway and Two-Step
Amenity Areas	Two Options: Breezeway and Two-Step
Civil	See Civil exhibit for alternates
Landscape	Single option, see narrative
Structural	Single option, see narrative
MEP	See MEP Narrative for alternates

Section E. Architectural Narrative

1. The drawings, Design Narrative, and presentation materials, used together, describe the project's design intent and provide a frame of reference for initial pricing. As the Project evolves, building and material systems will develop and be reviewed for appropriateness for use in the Project from various standpoints, including but not limited to sustainable design, cost, maintenance, and availability. The information provided here is intended to aid in establishing a “basis of design” that later material specifications will document with a minimum of three equivalent products, vendors, or fabricators.

2. Typical features for Breezeway and Two-Step include:
 - a. Cast in place concrete frame with post-tensioned slabs; see structural narrative
 - i. Level 1 columns to be Class A concrete
 - b. Vehicle cable barrier
 - i. 42" typical to provide for guardrail as well
 - c. Vertical circulation
 - i. Aluminum-framed exterior storefront at vertical circulation lobbies at all floors
 - ii. Three (3) elevators total, see plans for locations
 - 1) The elevators will be 3500 lb passenger elevators (over 100fpm), see plans for number of stops
 - 2) Controls will be within the entrance jamb of the elevator doors
 - 3) Finishes shall be chosen from the manufacturer's standard finishes
 - 4) Vandal-resistant fixtures shall be provided
 - 5) Two way communication device to be provided
 - iii. Three (3) stairwells, concrete pan stair assembly with vertical picket guardrail and 1" pipe railing (1-1/4" OD)
3. Typical Construction
 - a. Floor Construction Types
 - i. Exterior Slabs
Location: Parking areas
Cast in place concrete, light broom finish, see structural narrative, traffic coating over enclosed program areas and cold joints (extend 5' beyond cold joint)
 - ii. Interior Slabs
Location: Amenity buildings, Loading Dock / Maintenance
Cast in place concrete, steel trowel finish, sealed, see interior finish notes for flooring
 - b. Wall Construction Types:
 - i. CFMF Wall Construction
Location: Program Areas
6" cold-formed metal framing with sheathing, a continuous air and water barrier, 2" rigid insulation between Z-furring, and ventilated cladding to provide drainage and drying. Openings and transitions will be carefully detailed to ensure moisture control, with performance verified through testing.
 - ii. CMU Wall Construction with Insulation

Location: Loading Dock / Maintenance building

8" concrete masonry units (CMU) with a continuous air and water barrier, 2" rigid insulation between Z-furring, and ventilated cladding to provide drainage and drying. Openings and transitions will be carefully detailed to ensure moisture control, with performance verified through testing.

iii. CMU Wall Construction without Insulation

Location: Storage areas under ramps, infill at elevators, mechanical

8" Concrete Masonry Unit wall

c. Roof Construction

i. Membrane Roof

Locations: Program Areas and Loading Dock / Maintenance where not under slab

Membrane roof over coverboard on 4" polyiso rigid insulation on roof deck

ii. Metal Roof

Locations: Stair and Elevator Cores

12" standing seam metal panel on vented hat channels over high temperature ice and water shield coverboard 4" polyiso rigid insulation on roof deck

d. Below Grade Waterproofing

Location: Elevator pits

The below-grade walls and slabs will be protected with continuous waterproofing systems designed to resist hydrostatic pressure, supported by perimeter drainage and sump pumps. Joints, penetrations, and transitions will be sealed for redundancy, with protection and drainage layers ensuring long-term performance

4. Massing

a. See drawings for dimensions of each option

5. Facades

- a. See drawings for areas of each Façade System Type
- b. Additional sketches to be provided as a supplement as needed
- c. Façade Systems include:

- i. Type A: Storefront

Aluminum storefront framing system with medium stile entry doors, custom color, clear insulated glazing, front set

Basis of design: Kawneer 601T with Solarban 70XL IGU

- ii. Type B: Curtain Wall

Aluminum curtain wall framing system, custom color, clear insulated glazing, front set

Basis of design: Kawneer 1600, 7-3/4" depth with Solarban 70XL IGU

- iii. Type C: Articulated Facade

Finish material (see options) on 8' wide articulated galvanized steel subframe, 2' projection from building, subframe anchored to galvanized steel girts at 8' on center

Finish material options:

- 1) Prefinished metal fins, 1-1/2" x 4" nominal dimension at approximately 7" on center, custom color, attached to subframe using standing details, basis of design: Longboard Link & Lock system
- 2) Perforated, prefinished metal panel, custom color, attached to subframe with concealed fasteners, basis of design: [Morin Matrix MX-1](#), perforated, 33% open area

Reference: Preliminary Gensler Rendering



iv. Type D: Flat Panels

Finish material (see options) on horizontal galvanized girts approximately 8' on center

Finish material options:

- 1) Prefinished metal fins, 1-1/2" x 4" nominal dimension at approximately 7" on center, custom color, attached to subframe using standing details, basis of design: [Longboard Link & Lock system](#)
- 2) Perforated, prefinished metal panel, custom color, attached to subframe with concealed fasteners, basis of design: [Morin Matrix MX-1](#), perforated, 33% open area

Reference: Preliminary Gensler Rendering



v. Type E: Perforated Screen

Perforated panels on horizontal galvanized steel girts approximately 8' on center, approximately 50% of area to include 8" standoff from girt to allow for alternating depths for panel surface

Basis of design: [Morin Matrix MX-1](#), perforated, 33% open area; mix of four (4) custom colors distributed randomly across facade

Reference: Preliminary Gensler Rendering



vi. Type F: Stretched Chain Link

Stainless steel stretched wire mesh facade system, galvanized header and sill mounted to the underside of the Level 2 slab and ground floor slab, respectively

Basis of design: [Banker Wire Flat Thread System utilizing Delta 12R wire mesh](#)

Reference: stretched wire mesh façade system at the east side of the [Garland Avenue Parking Garage](#)

vii. Type G, Loading Dock / Maintenance Rooms, West side of Program Areas at Razorback Road

8" metal panel, standard premium color, Morin or equal, on horizontal hat channel over CMU wall construction with insulation

viii. Type H, Elevator Shafts

8" metal panel, standard premium color, Morin or equal, on horizontal hat channel over CMU wall construction without insulation

6. Loading Area

- a. Includes site development between the south face of the garage and the Administrative Services Building
- b. See drawings for options, summary of options:
 - i. Breezeway includes depressed loading dock with hydraulic dock levelers
 - ii. Two-Step features an alley with striped loading areas alongside the building

7. Program Areas

- a. Razorback Road Program
 - i. Program types:
 - 1) Breezeway includes two (2) blocks of program; the block north of the airway will be dedicated to future retail and/or F&B; the block south of the airway will be dedicated to university-focused amenities
 - 2) Two-Step includes three (3) blocks of program; the block north of the airway will be dedicated to future retail and/or F&B; the two (2) blocks south of the airway will be dedicated to university-focused amenities
 - ii. Future Retail and/or F&B
 - 1) Cold dark shell
 - 2) Stub utilities into the space
 - 3) Perimeter slab (2' wide)

iii. University-Focused Amenities

- 1) Full build out of Class B Office tenant fit-out
- 2) Catering kitchen
- 3) Break room
- 4) Carpet, acoustic ceiling tile, light gauge wall framing with sound batts and gypsum wallboard, rubber base

iv. Restrooms

- 1) Two (2) group restrooms, four (4) fixtures and three (3) lavatories per restroom
- 2) Two (2) single-user restrooms with showers
- 3) Polished concrete floor, full-height ceramic wall tile, gypsum hard-lid ceiling
- 4) Accessories: mirrors, soap dispensers, paper towel dispensers with integral waste receptacle, diaper changing tables and toilet partitions with coat hooks

b. Loading Dock / Maintenance Rooms

- i. Sealed concrete floors, open ceiling, light gauge wall framing, gypsum wallboard, rubber base
- ii. Restrooms
 - 1) Two (2) single-user restrooms
 - 2) Sealed concrete floor, full-height ceramic wall tile, gypsum hard-lid ceiling
 - 3) Accessories: mirrors, soap dispensers, paper towel dispensers with integral waste receptacles

PARKING

Section A – Introduction

The project consists of a new 5-story stand-alone parking garage. The University of Arkansas (UA) Razorback Road Parking Garage will supply approximately 1,700 spaces to accommodate the parking needs of the students, faculty/staff, visitors, and events on campus. In addition, secure parking will be provided for UAPD. The garage will accommodate truck loading and have a bus staging area.

Section B – Functional Design

1. All parking will be designed to meet UA's requirements.
2. The parking garage will be designed towards meeting an overall level of service (LOS) B+.
3. The design will utilize parkable double-helix ramps with 3 flat bays for improved visibility, security, and easy elevator and ADA access. These 5 bays of parking will be aligned in the East to West direction to take advantage of the slightly rectangular shape of the site.
4. Two points of ingress and egress are to be provided from Graham Avenue and Center Street with an additional egress point on the Southeast corner of the garage to Razorback Road.
5. Standard parking spaces will be designed to be:
6. 90 degrees at 9'-0" wide by 18'-0" long.
7. Minimum clearance heights are anticipated for 8'-2" van accessible parking and 7'-0" for standard accessible parking above level 2 of the garage to meet code. Higher floor to floor heights closer to 8'-6" to 9'-0" clear will be designed for each level.
8. The garage design will include a static wayfinding system to properly direct vehicles through the garage that do not conflict but enhance the Parking Count and Guidance System (PCGS).

Section C –Technology

1. Parking access for students, faculty and staff will be provided through Virtual Permits. Visitor parking is provided through the multi-space parking meters or smartphone application. Both are enforced using License Plate Recognition (LPR). Event parking is managed by Transit and Parking. There will be no parking equipment in the entry/exit lanes.
2. Parking Count and Guidance System (PCGS) will be provided in the parking garage with camera-based system located down the center of the drive lanes. Sleeves in structural beams will be provided to keep the installation clean. External monument signs will be installed at the entry points and internal count and directional signage at strategic intersections will be provided. The top-level spaces will have cameras mounted on the light poles to provide the counting and information. The PCGS will be integrated into the University's parking system. The basis of design is Indect through Parking Guidance System.

Section D –Sustainable Design

In addition to the parking structural system impacts on the project sustainability strategy, the design of the parking structure presents additional opportunities for incorporating sustainable practices into the project.

1. Electric Vehicle Charging (EVC) spaces will be in the parking garage. The exact quantity has not been determined at this time. Providing conduit for additional future EVC's is also recommended. The electrical service should be designed to accommodate planned and future EVC spaces.
2. Lighting is a key design element in a parking structure for passive security and user comfort. LED lighting strategies will be explored to minimize energy use.

Walter P Moore Parking Parking Lighting Baseline Recommendations 2026

Parking Garage	Foot Candles - At Floor	Comments
Vehicular Entrances and Exits	46 (Day) ² ; 1 (Night) ² WPM Recommendation 30'	Transition from building face 66 feet inside the facility. ² Transition length can be reduced with use of gates. ²
Covered Parking Areas	6 ¹	
Elevators / Stair and pedestrian areas	10 ¹	30' radius from center of gathering point ¹
Roof (or surface lot)	3 ¹	
Emergency Egress Lighting Inside & Outside Garage	1 average (.1 minimum)	As required by code

General Recommendations

- Provide a photometric study to confirm lighting levels.
- Uniformity ratio: 10:1 when security is not an issue for interior vehicle transaction areas, 4:1 when security is an issue, 5:1 for pedestrian areas.
- Interior Light Fixtures along the garage perimeter shall be circuited separately for daylight harvesting.
- Circuiting shall allow for a reduction in light levels for nighttime use. - motion sensors
- Recommended lighting types: LED Light Fixtures in Parking Areas
- Fixtures should be surface mounted for a Cast in Place Garage, and pendent mounted for a Precast Garage.
- Hinged poles or drop-down fixtures on roof for better accessibility
- Roof level lighting: No perimeter light poles recommended.
- Confirm program is in line with the security/operations plan (i.e., Security cameras, Parking Office Areas etc.)
- Measuring of horizontal illuminance for existing facilities shall be performed on the pavement or finish floor.

Notes:

1. Reference IES G-1-22 - Guide for Security Lighting for People, Property, and Critical Infrastructure.
2. Reference ANSI/IES RP-8-25 + E1 – Recommended Practice: Lighting Roadway and Parking Facilities.

Basis of Design

Our recommendations meet or exceed the minimum Illuminating Engineering Society (IES) RP-8-25 + E1 standards and should be considered as the baseline standard. MEP shall provide final design and confirm governing agency code requirements are met.

LANDSCAPE DESIGN NARRATIVE

Section A - Existing Conditions

1. The +/-4.6-acre project site, centrally located in the Athletic Valley district at the University of Arkansas, is bordered north by W. Center Street, S. Razorback Rd to the East, Lot 216 and the Administrative Services Building to the South, and S. Graham Ave and the Markham Hill neighborhood to the West. Razorback Transit routes 48 and 11 run along S. Graham Ave with current stops on Graham south of Nettleship St. and one on Meadow St. one block north of Center St. Predominantly characterized by asphalt parking lots 214 and 215 the site is relatively flat gently sloping ~4' from an elevation of +/-1283 at the northwest to the southeast at an elevation of +/-1279. Along the northern edge of the site a box culvert daylights into a vegetated storm drainage channel bordered by oak, elm, walnut, and hackberry trees flowing between the parking lots south to the approximate midpoint of the southern edge of the site where the channel ties to another box culvert conveying stormwater eastward. There is existing sidewalk along Razorback Road and Graham Street, with sidewalk extending approximately mid-block along Center Street from Graham. A small parking area at the south of the site serves UAPD and is accessed from Razorback Rd. The site is proximate to significant University athletic facilities including Bud Walton Arena, John McDonnell Field, and Razorback Stadium.

Section B - Proposed Landscape Overview

1. The +/-4.6-acre designed landscape, site amenities, and associated site improvements for the proposed Razorback Road Parking Garage will create an appropriately welcoming and inclusive landscape setting that integrates this new facility into the existing Athletic Valley district and campus environment. Following University standards for campus planning and construction (<https://fama.uark.edu/campus-construction/architects-engineers.php>), and utilizing best practices developed through previous successfully completed projects on campus the site design provides a pedestrian focused environment that creates a sense of community, strengthens connections to the larger district and surrounding neighborhood, and takes advantage of the sites position as a key component of Athletic Valley. The intent is to create welcoming pedestrian corridors which directs users making critical connections between the parking structure, campus, and adjacent neighborhood. Engaging flexible outdoor spaces support the facility's function and planned retail components providing opportunities for daily student and visitor engagement with the capacity to accommodate larger University events – especially game days. Canopy trees and landscaped areas will help dissipate rainfall, encourage infiltration, and slow stormwater runoff from the site. In coordination with Walter P. Moore,

site stormwater will be managed and directed to an underground detention system to address detention and water quality per the University's Stormwater Management Manual.

Section C – S. Razorback Road Gameday Promenade

1. The design establishes a linear pedestrian plaza that facilitates movement to and from campus while creating a sequence of distinct outdoor rooms that encourage gathering, socialization, and lingering. These spaces are intentionally shaped to support the adjacent retail uses, offering comfortable areas to pause and engage. The promenade is set back from Razorback Road to provide a welcoming buffer from the busy corridor while preserving and reinforcing the existing tulip poplar allée that defines the street edge. Scaled to feel comfortable and inviting during everyday use with only a few occupants, the plaza is also designed to accommodate the large crowds that gather on game days in anticipation of Razorback events. Planting is strategically introduced to soften and interrupt the linear streetscape experience, creating varied perspectives and smaller niches for gathering, relaxation, and informal activity.

Section D – Lightwell Court – ‘the Terrarium’

1. The central courtyard is conceived as an oasis that links the parking structure to campus while establishing an important east–west corridor connecting the facility to both the university and the Markham Hill neighborhood. Its hardscape and planting geometry intentionally contrast with the linear form of the parking deck and the typical Razorback Road streetscape, extending outward to create a distinct spatial identity. This geometry introduces a language that is both playful and responsive, shaping unique moments and inviting opportunities to pause, gather, and linger.

The courtyard's spatial framework is defined by a cathedral-like arrangement of fastigate trees, whose upright habit creates a sense of enclosure without heaviness. Their verticality echoes the surrounding architecture, forming green columns that soften the hard edges of the block while maintaining clarity, rhythm, and order. These trees frame views, filter light, and lend the space a composed, almost civic calm—a modern cloister set within the city. Overhead, catenary lighting creates a gentle canopy across the courtyard. During the day, the space reads as restrained and architectural; at night, the lighting introduces warmth and informality, transforming the courtyard into an animated outdoor room that feels welcoming and comfortable, encouraging students and visitors to remain after sunset.

At its west end, the courtyard transitions into a bike hub and covered gathering space adjacent to a new Razorback transit stop, reinforcing its role as both a social and connective landscape.

Together, these elements create a courtyard that is purposeful rather than decorative—an active, memorable space that supports circulation, gathering, and everyday campus life.

Section E – W. Center St. Streetscape

1. A generous, tree-lined planting strip along the roadway provides a comfortable buffer between pedestrians and traffic, enhancing both safety and the overall streetscape experience. Layered planting along the building façade adds depth and volume, creating a functional green edge that softens the architecture and contributes to a more pleasant and inviting pedestrian environment. At the driveway crossings, granite cobble aprons extend the language of the existing streetscape across Center Street, reinforcing material continuity and strengthening the identity of the corridor.

Section F – S. Graham Ave. Streetscape

1. This streetscape responds to the residential character of Markham Hill to the west while accommodating an important transit and pedestrian interface. Its primary feature is the bike hub and covered gathering space, which serves as the new Razorback transit stop and supports the movement of students to and from the parking garage. To strengthen both comfort and functionality, the existing sidewalk is reconfigured to allow for street tree planting and to provide greater separation between pedestrians, the roadway, and transit activity. Together, these elements create a streetscape that is both contextual and purposeful, balancing neighborhood sensitivity with the demands of campus circulation and transit use.

Section G – Hardscape & Paving

1. The hardscape scope includes cast-in-place concrete, stone fines paving, granite cobblestone pavers, and asphalt pavers per university standard:
 - a. Cast-in-Place Concrete – 6" cast-in-place over a 6" compacted aggregate base. Campus standard broom finish.
 - b. Stone Fines Paving – Kafka Granite LLC, (www.kafkagranite.com); Stabilized Pathway Aggregate. Color: Midnight Blue.
 - c. Granite Cobblestone Pavers – The blocks shall be 4" x 4" x 4" cobblestone, Carbon grey/black, split face sides with thermal finish top ½" - ¼" inch polymeric sand joint max. All blocks shall have one reasonably smooth split face with no projections or depression over 1/4".

- d. Asphalt Unit Pavers - Asphalt-Block Pavers: Solid units made from asphalt cement complying with ASTM D312, Type III; inorganic stone dust or cement filler; and coarse aggregate, consisting of clean, hard, unweathered stone crushed into angular particles of varying sizes. Manufacturer: Hanover Architectural Products (www.hanoverpavers.com). Size: 5" x 12" commercial asphalt block. Paver Thickness: 3". Finish: Ground Finish. Color: Matrix #10 – A80010 matrix.

Section H – Site Walls

- 1. Site walls, as required, will be constructed of brick veneer or masonry to match the façade material of the architecture. All fixed seat walls shall be constructed of Washburn granite or match the façade material of the architecture. (Source: Quarra Stone <https://www.quarrastone.com/>). These seatwalls shall have a natural finish with no exposed saw cut faces and shall be a minimum of 6'-0" in length unless detailed otherwise. These monolithic stone segments shall extend a minimum of 3" below grade and rest upon a compacted aggregate base.

Section I – Site Furnishings

- 1. See the Site Walls section for fixed seating. Additional site furnishings include:
 - a. Movable Tables – Fermob, Luxembourg 4-Leg Table (32"x32") SKU 41358, Color: Rosemary. (Quantity: Assume 20)
 - b. Movable Chairs – Fermob, Luxembourg Armchair SKU 4102484, Color: Rosemary. (Quantity: Assume 80)
 - c. Bench – Country Casual, Monarch Teak Bench, 8ft Length, anchored below grade. (Quantity: Assume 10)
 - d. Bike Racks - Manufacturer: Streetlife, Model No: BP-70-CT (Quantity: Assume 20)
 - e. Electrical Bollard - BK Lighting, Model No: RB - 18 - RE1 - BLP – PP. Satin Black (Quantity: Assume 10)
 - f. Trash Receptacles – Landscape Forms, Petosky, 30-gallon, Powder-coated, Color: Stone. (Quantity: Assume 4)
 - g. Recycling Receptacles – Landscape Forms, Petosky, 30-gallon, Powder coated, Color: Ivy, Standard recycling logo for aluminum cans and plastic bottles. (Quantity: Assume 4)

Section J – Site Lighting

1. The site lighting should create a safe, welcoming, and inviting campus experience throughout the evening. The intent is to create appropriately illuminated streetscape and plaza areas that facilitate safe and efficient movement to, from, and within the parking structure, and that encourage use of the outdoor spaces by the campus community after sunset and on game days. Layered lighting will be incorporated to create comfortable, inviting spaces for socialization and community-building, supporting campus development standards and the planned retail uses. Campus-standard light levels will be provided at a minimum of 0.1 fc. Proposed light fixtures include path lights and University-standard pedestrian pole lights. Existing light fixtures that are intended to remain, which are removed, damaged, or destroyed during construction, are to be replaced in kind. All existing fixtures shall be protected during construction. All fixtures removed during demolition shall be stored in accordance with the University's direction.

Proposed light fixtures include campus standard 'Contemporary' pedestrian pole and path lights. Festoon lighting will be strategically located in gathering areas, specifically along the Terrarium lightwell plaza area:

- a. 'Contemporary' Pedestrian Pole Light – BEGA 3"-5" OD tapered aluminum pole with round hinged base model 1908HR. Height: 19'-8". Color: Old BEGA Black. Luminaire: BEGA 77022LED. Color: Old BEGA Black. (Quantity: Assume 25)
- b. Catenary Lighting – Landscape Forms Tumbler, Black die-cast aluminum housing, Diffused lens, wideflood distribution, 3000k (Quantity: Assume 400 LF, 15 luminaires)

Section K – Soils & Vegetation

1. Since the site has been disturbed by previous development, the current soil condition is unknown. It is assumed that in-situ soils will require some level of amendment to re-establish suitable chemical, biological, and physical conditions required for the establishment of healthy plantings. The use of native and adaptive vegetation on the project will contribute to water management objectives and increase biodiversity. All planting areas require a minimum depth of 12" of amended planting soil at lawn areas, 18" of amended planting soil at shrub, groundcover, perennial, and ornamental grass areas, and 48" of amended planting soil for tree planting areas.

Section L – Irrigation & Water

1. All plantings will require irrigation. Permanent irrigation will be provided for plant beds, including trees, woody and herbaceous shrubs, groundcovers, perennials, ornamental grasses,

and lawn areas. Standard pop-up rotor spray head irrigation will be provided for trees and shrub beds, per UA Facilities Management standards. Lawn areas will be irrigated by spray irrigation. Rainbird systems are the basis of design and the University of Arkansas's preferred vendor. Hose bibs shall be provided at select locations throughout the site for maintenance, watering, and pavement cleaning, as needed (assumed 50'-0" hose length, typical). Irrigation service will be provided from an irrigation tap and meter, with a backflow preventer and an irrigation controller conforming to university standards.

By specifying several native and adaptive plant species suited to the Northwest Arkansas region, the design will reduce the need for supplemental irrigation while increasing the potential for a varied natural habitat for songbirds and pollinator species.

Section M – Stormwater & Utilities

1. Please see the Civil site layout and storm plan exhibit for stormwater management infrastructure, existing utilities and new utility infrastructure scopes.



The Bike Hub

West Center Street

Razorback Road Parking Garage - North

The Razorback Gameday Promenade

The Terrarium

Retail

Retail

Retail

Razorback Road Parking Garage - South

LOADING

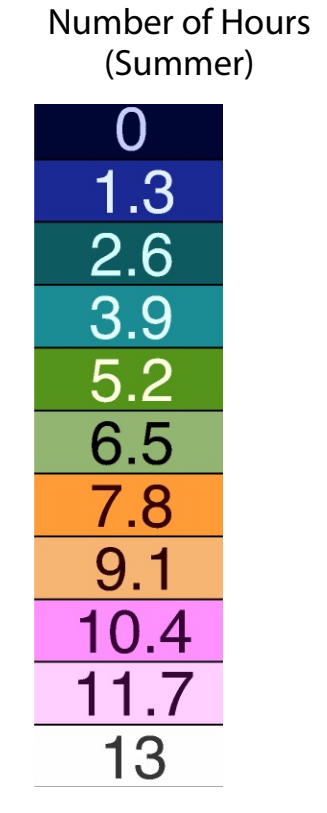
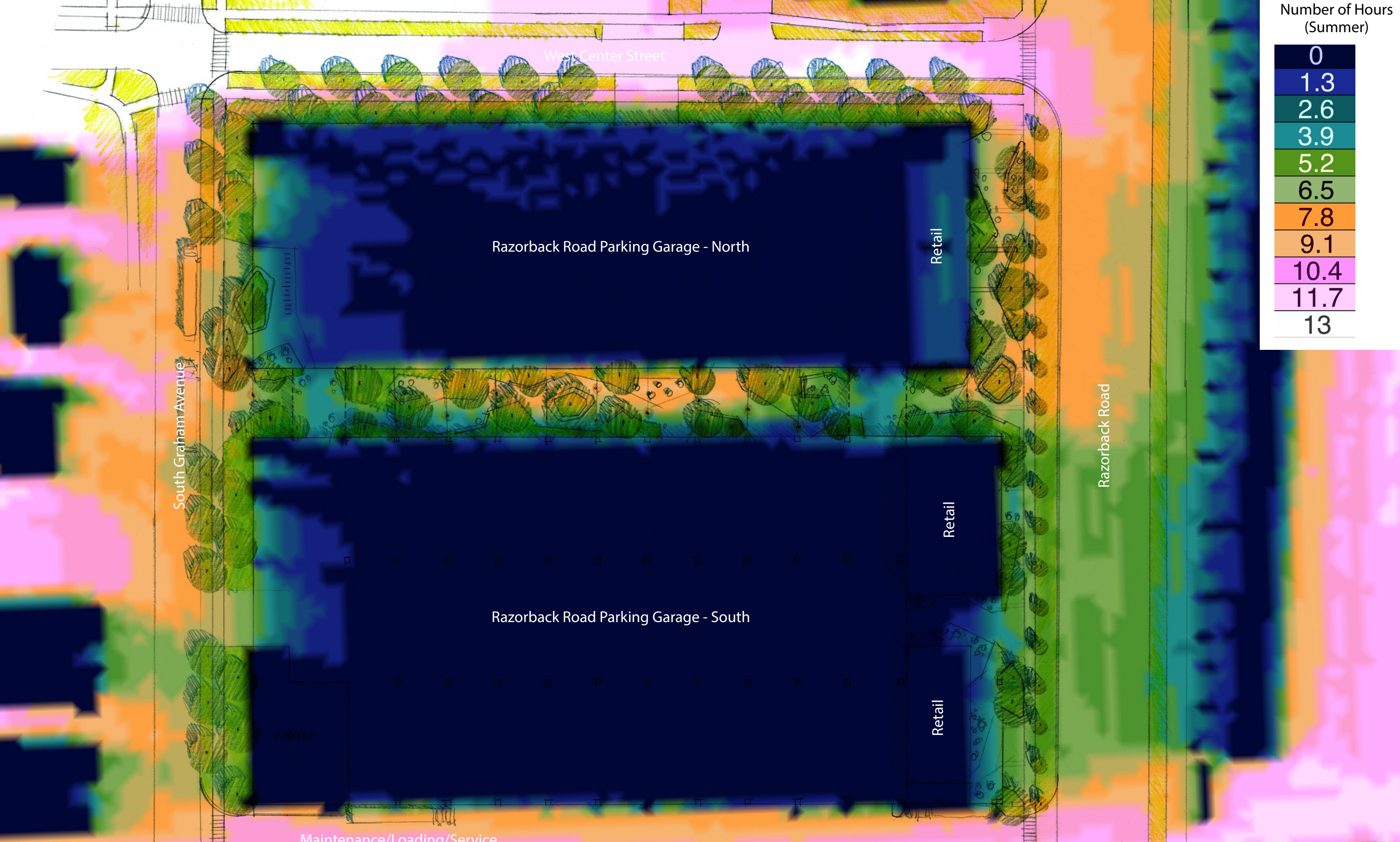
Maintenance/Loading/Service

Razorback Road Parking Garage

UNIVERSITY OF ARKANSAS

N.T.S N 23 APRIL 2026

ground control



Razorback Road Parking Garage

STRUCTURAL

1. Design Criteria:
 - a. Building code: 2021 International Building Code
 - b. Building risk category: II
 - c. Loads
 - i. Superimposed dead loads
 1. Garage: 5 psf
 - ii. Live loads
 1. Stairs, ramps and exits: 100 psf
 2. Garage: 40 psf
 - iii. Wind loads
 1. Ultimate wind speed: 107 mph - 3 sec gust
 2. Exposure category: B
 3. Internal pressure: +/- 0.18
 - iv. Seismic criteria
 1. Seismic design category: B
 - v. Deflection/drift
 - vi. Live load deflection: L/360 (floors), L/240 (roof)
 - vii. Total load deflection: L/240 (long-term)
 - viii. Spandrel deflection supporting cladding: 3/8" MAX
 - ix. Story drift (wind): H/400 (10-yr wind)
 - d. Concrete:
 - i. Foundations and basement walls: 4,000 psi NW at 56 days
 - ii. Grade beams: 4,000 psi NW at 56 days
 - iii. Slab-on-grade: 3,000 psi NW at 56 days
 - iv. Horizontal framing: 5,000 psi NW at 28 days
 - v. Columns: 5,000 psi NW at 28 days
 - vi. Slab on metal deck: 3,500 psi NW at 28 days
 - e. Concrete reinforcement and post-tensioning:
 - i. All reinforcing steel shall be ASTM A615 grade 60
 - ii. All pt strands shall be ASTM A416 low relaxation type with 270 ksi minimum ultimate strength.
 - f. Structural steel:
 - i. Wide flanges: ASTM A992
 - ii. Rectangular HSS: ASTM A500, grade C

2. Foundations:
 - a. A geotechnical report was not available as of the writing of this narrative
 - b. Description: for pricing purposes, assume that the foundation will consist of 36" diameter drilled piers extending 35'-0" bearing into rock (assume a 3'-0" socket).
 - c. Floor slab is a 5" thick slab on compacted select fill. For pricing purposes, assume 4'-0" replacement of existing soil with select fill. Reinforcement will be #3@12" each way with 0.5 psf of additional reinforcement.
 - d. Columns: Refer to plan for column sizes
 - e. Quantities:
 - i. Drilled piers: 120 PCY
 - ii. Columns: 325 PCY
3. Elevated structure:
 - a. Description: Refer to plan for description of the structural system at the floors.
 - b. Quantities: Refer to plan.
4. Miscellaneous:
 - a. Retail cladding steel: The east side of the garage is planned to have cladding. Allow for 0.25 PSF of floor area of structural steel for cladding back up support
 - b. Elevator structural support: For pricing purposes, assume that the elevators will need a divider beam between elevator cabs, a hoist beam above each elevator and guiderail supports at the bottom and top floors of the garage. Allow for 20 tons of structural steel.
 - c. Vehicle barrier: barriers for vehicle fall protection will consist of (11) ½" ø seven wire strand barrier cables at perimeter and at both sides of bays with ramps. If span of cables is greater than 30 ft, provide a 1'-0" x 1'-0" x 4'-0" tall concrete stub column reinforced with 4-#6 vertical and #3 ties @4".



Date	Description
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Seal / Signature

Project Name

UofA Razorback Rd Parking
Garage

Project Number

M28-26001-00

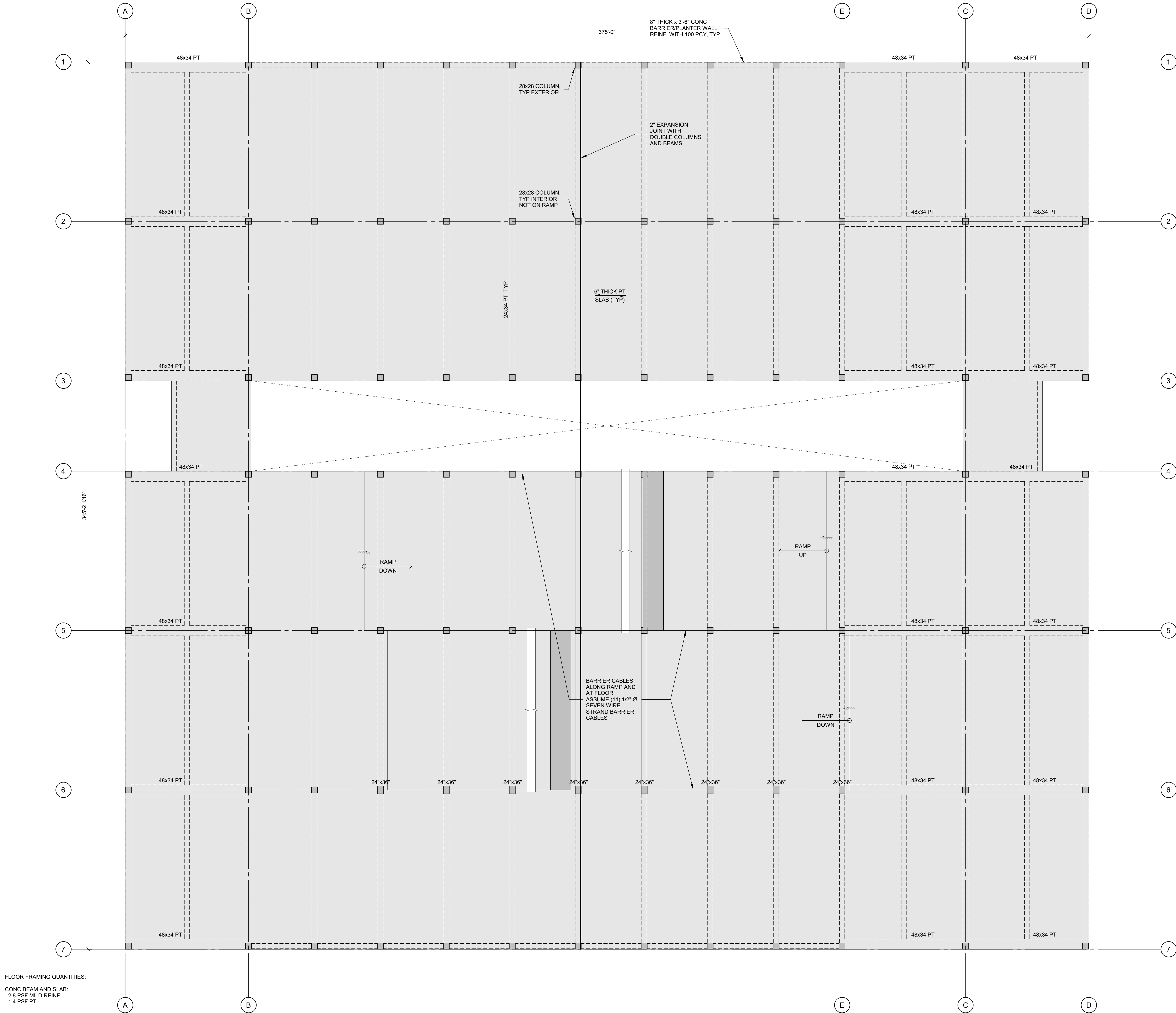
Description

TYPICAL STRUCTURAL PLAN -
BREEZEWAY

Scale

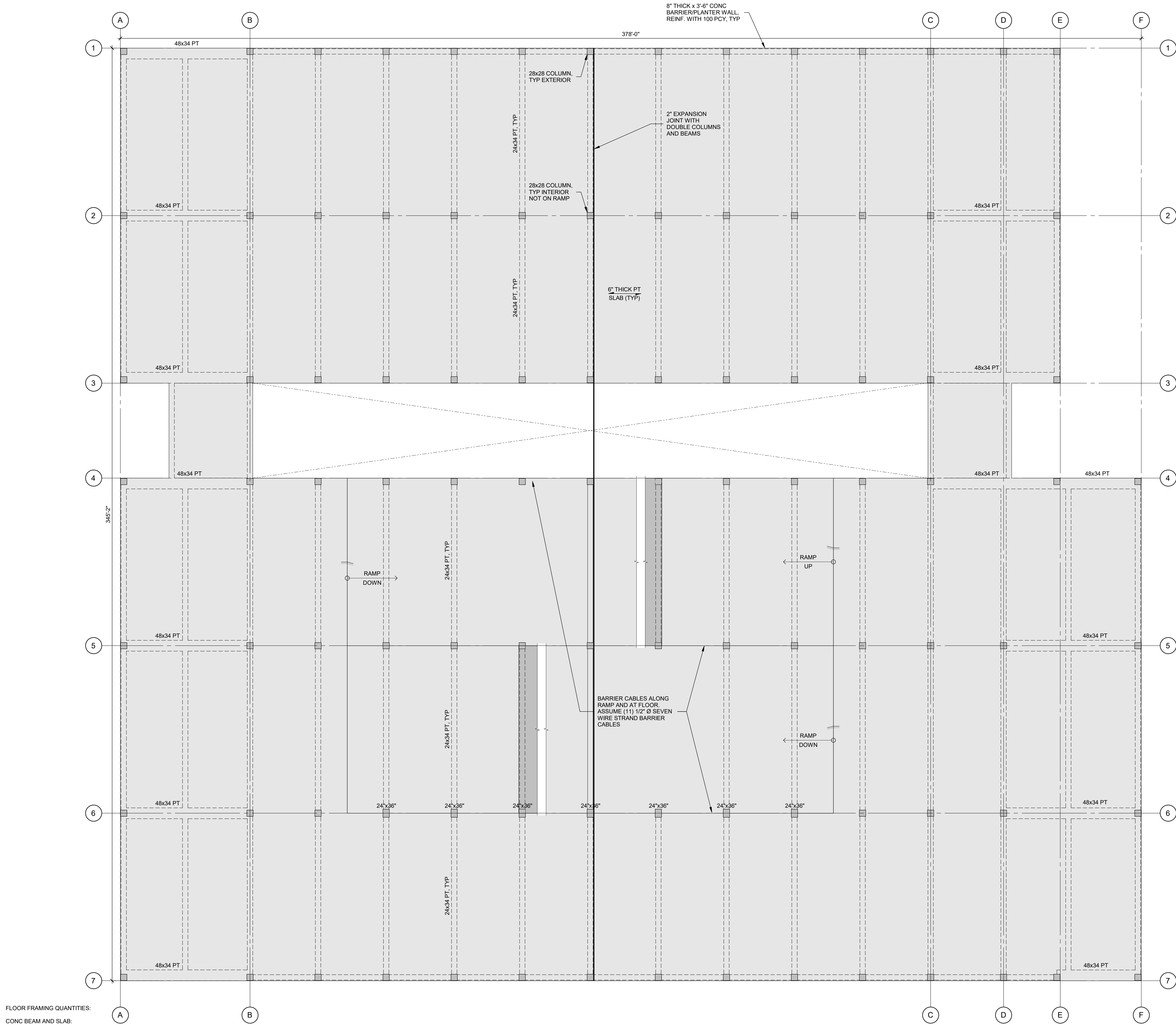
1/16" = 1'-0"

S101A



FLOOR FRAMING QUANTITIES:
CONC BEAM AND SLAB:
- 2.8 PSF MILD REINF
- 1.4 PSF PT

1 TYPICAL STRUCTURAL PLAN - BREEZEWAY
1/16" = 1'-0"



FLOOR FRAMING QUANTITIES:
CONC BEAM AND SLAB:
- 2.8 PSF MILD REINF
- 1.4 PSF PT

1 TYPICAL STRUCTURAL PLAN - TWO STEP
1/16" = 1'-0"

Date	Description
------	-------------

Seal / Signature

Project Name

UofA Razorback Rd Parking
Garage

Project Number

M28-26001-00

Description

TYPICAL STRUCTURAL PLAN - TWO
STEP

Scale

1/16" = 1'-0"

SECTION H – MEP NARRATIVE

1. General

a. Schematic Design Descriptive Specification

- i) Razorback road parking garage is an approximately 1,700 space parking garage located south of center street between Razorback Road and Graham. The project will include a dock and campus receiving office, and approximately 20,000 sf of retail space along Razorback road. Of the 20,000 sf retail space, 5,000 sf are planned for a future restaurant tenant.
- ii) This document describes the general expectations of the heating, ventilating, air conditioning (HVAC), electrical, plumbing, and fire suppression telecommunications security fire alarm systems for this project.
- iii) This document is structured to provide both general and discipline-based project specific requirements. There are two main portions. First, there is general information in parts 1 through 4 which may apply to all relevant disciplines. Secondly there are division (discipline) specific portions that describe the expected requirements of the project.

2. Codes, Regulations, and Standards

a. the following codes, regulations, and STANDARDS WILL be used in the design of this project:

- i) University of Arkansas Standards and Guidelines
- ii) International Building Code, 2021
- iii) International Energy Conservation Code, 2009
- iv) International Mechanical Code, 2021
- v) International Plumbing Code, 2018
- vi) International Fuel Gas Code, 2018
- vii) International Fire Code, 2018
- viii) ASHRAE 90.1, 2007
- ix) ASHRAE 62.1, 2019
- x) ASHRAE 55, 2019
- xi) Laws, Rules and Regulations for Installing Wires and Equipment (WAC 296-46)
- xii) National Fire Protection Association (NFPA)
 - 1) NFPA 13, "Installation of Sprinkler Systems", 2019
 - 2) NFPA 14, "Installation of Standpipes, Private Hydrants and Hose Systems", 2019
 - 3) NFPA 20, "Standard for the Installation of Stationary Pump for Fire Protection", 2019
 - 4) NFPA 24, "Private Fire Service Mains and their Appurtenances", 2019
 - 5) NFPA 54, "National Fuel Gas Code",
 - 6) NFPA 70, "National Electrical Code" (NEC), 2017
 - 7) NFPA 72, "National Fire Alarm Code", 2019
 - 8) NFPA 101, "Safety to Life from Fire in Buildings and Structures", 2019

- xiii) ADA - Americans with Disabilities Act Accessibility Guidelines (ADAAG), U. S. Architectural and Transportation Barriers Compliance Board
 - xiv) ANSI/CABO A117.1 - Access and Usable Buildings and Facilities
 - xv) Sheet Metal and Air Conditioning Contractors' National Association (SMACNA), HVAC Duct Construction Standards, latest edition.
 - xvi) American National Standards Institute (ANSI).
 - xvii) Underwriters Laboratories (UL)
 - xviii) American Society for Testing and Materials (ASTM)
 - xix) American Gas Association (AGA)
 - xx) American Society of Mechanical Engineers (ASME)
 - xxi) American Society of Sanitary Engineers (ASSE)
 - xxii) American Water Works Association (AWWA)
 - xxiii) National Electrical Manufacturers Association (NEMA)
 - xxiv) National Standards Foundation (NSF)
 - xxv) Plumbing and Drainage Institute (PDI)
 - xxvi) ANSI/ASA 12.60 Parts One and Two
 - xxvii) TIA-526 – Standard Test Procedures for Fiber Optic Systems
 - xxviii) TIA-568-E – Commercial Building Telecommunications Cabling Standard
 - xxix) TIA-569-E-1 – Commercial Building Standards for Telecommunication Pathways and Spaces
 - xxx) TIA 606-D – Administration Standard for the Telecommunications Infrastructure
 - xxxi) J-STD-607-E – Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
 - xxxii) BICSI TDMM 15th Edition – Telecommunications Design Methods Manual
 - xxxiii) BICSI OSPDRM 6th Edition – Outside Plant Design Reference Manual
 - xxxiv) IEEE 802.3x CSMA/CD Standard
 - xxxv) All Applicable State and Local Codes.
- b. Energy and Sustainability
- i) The building envelope and MEP systems will be provided in compliance with [insert applicable energy code project will seek compliance with] for Climate Zone [X], demonstrating compliance with the energy code and as a base line for energy performance measure analysis.
 - ii) The building HVAC system will be designed to be as energy efficient as possible while keeping factors such as maintenance, initial cost, and feasibility in mind.
- c. Noise Control
- i) [Refer to Acoustics section for acoustical requirements related to the MEPFT systems.]
 - ii) The MEPFT systems will be designed for the following space sound levels:

Area	NC
Loading Docks	50
Offices	35
Retail	35
 - iii) All ducts, pipe, and conduit penetrations will be sealed air-tight to limit sound propagation.

- iv) All fluid-carrying pipe (liquid or gas) routed above or through noise sensitive spaces will be provided with commercially-available resilient connectors.

3. Utility Services

a. General

- i) The design of the utility services beyond five feet from the building will be by the civil engineer. Henderson Engineers will work in conjunction with the civil engineer to develop the utility entrance(s) into the building.
- ii) No residual pressure or flow test data has been received at this time. A flow test will be coordinated with the water authority and updated data provided when it is available.

b. Domestic Water Service:

- i) One 3-inch Type K copper domestic water main will be installed from a point 5 feet outside of the building. Water service to the building will be designed by the civil engineer.
 - 1) A reduced pressure zone backflow preventer in accordance with local authority requirements will be installed in the service line inside the building.
 - 2) A backflow preventer in accordance with local authority requirements will be installed above ground, outside the building in the service line. The backflow preventer design will be by the civil engineer.
 - 3) A water meter will be installed within a vault located outside of the building in accordance with local authority requirements. The water meter and vault design will be by the civil engineer.
 - 4) Domestic water booster pumps may be anticipated to be required to supply the Parking Structure to ensure a working pressure of 35 psi at the most remote flush valve.

c. Fire Water Service:

- i) A single 8-inch cement lined ductile iron fire protection service will be extended into the building from a point 5 feet outside the building line. A double detector check type backflow preventer with monitored OS&Y valves will be installed in the fire service line inside the building. A wall mounted fire department connection with 5" Storz will be provided.

d. Sanitary Sewer Service:

- i) One 4-inch hub and spigot cast iron sanitary sewer main will be extended to a point 5 feet outside the building. This line is sized based on a horizontal pipe slope of 1/8-inch per foot. Sanitary sewer service to the building will be designed by the civil engineer.
- ii) Portions of the building which cannot be gravity drained will be connected to the sanitary sewer system via duplex sewage ejector pumps.

e. Storm Sewer Service:

- i) One 8-inch hub and spigot cast iron storm sewer main will be extended to a point 5 feet outside the building. This line is sized based on a horizontal pipe slope of 1/8-inch per foot and local design rainfall rate of 9" per hour. Storm sewer service to the building will be designed by the civil engineer.
- ii) Portions of the building which cannot be gravity drained will be connected to the storm sewer system via duplex sump pumps.

f. Natural Gas Service:

- i) Natural gas piping will be extended to a new gas meter/regulator assembly which will be provided by the local gas company at Parking Structure of the new building in a location coordinated with the Architect. The downstream pressure of the utility company supplied and installed gas meter/regulator assembly will be 2 PSI. Point of use gas pressure regulators with vent limiting devices will be installed where required.
 - g. Electrical Service
 - i) The new electrical service for the building will be fed by BEUD medium voltage distribution. The service will be sized to accommodate the anticipated demand load of 715 kVA, 1,000A at 480Y/277V, phase.
 - 1) The electrical service will enter the building service equipment, located in the main electrical room, via a new utility provided utility transformer located exterior to the building.
 - ii) Emergency and Standby power will be provided by a new diesel generator with a preliminary size of 250 kW. The generator will be located exterior to the building.
 - h. Telecommunications Service
 - i) Provide a minimum of (8) 4" conduits for Campus owned fiber and telecommunications utilities. Three of these conduits shall contain (4) 1-1/4" fiber innerducts. Pathway infrastructure 5'-0" outside of the building line will be shown on civil plans. Maintenance vaults shall be provided to meet cable pulling requirements between the Entrance Facility and the property line at the utility easement/right-of-way.
 - ii) All underground entrance conduits shall be accompanied by a common ground system. This ground shall be a bare #2/0 copper conductor in a dedicated 1-1/4" conduit. The ground shall attach to the PBB in the MDF and connect to the reinforcing bar of the duct bank and to the existing grounding infrastructure in the vault system.
4. Division 20 Seismic Controls
- a. Seismic Protection:
 - i) In general, the location of this project does not typically dictate that any seismic restraints will be required for the MEPF systems.
5. Division 21 Fire Suppression
- a. General
 - i) The sprinkler system will be designed and installed in accordance with the requirements of National Fire Protection Association (NFPA) Standards 13, 14, 20 and 24th International Building and Fire Codes and the Arkansas Fire Prevention Code.
 - ii) All heated areas of the building will be provided with a wet-pipe sprinkler system, hydraulically designed in accordance with NFPA 13. The fire sprinkler system will be supplied by the fire protection service and fire booster pump (if required)
 - 1) Wet system risers will be limited to 52,000ft² maximum.
 - iii) All un-heated covered areas will be provided with a dry-pipe sprinkler system, hydraulically designed in accordance with NFPA 13. The dry system will be supplied by an automatic dry valve installed in a heated space.
 - iv) Design Criteria

- 1) A minimum light hazard design criteria (0.10 GPM/SF over 1500 SF hydraulic remote area) throughout building unless required otherwise. Hose Allowance is to be included on base of riser
 - 2) A minimum ordinary hazard group 1 design criteria (0.15 GPM/SF over 1500 SF hydraulic remote area) throughout mechanical and kitchen areas. Hose allowance is to be included at base of riser.
 - 3) A minimum ordinary hazard group design criteria (0.20 GPM/SF over 1500 SF hydraulic remote area) throughout storage areas. Hose allowance is to be included at base of riser.
 - 4) A minimum extra hazard group design criteria (0.40 GPM/SF over 2500 SF hydraulic remote area) at EV charging areas. Hose allowance is to be included at base of riser.
- v) Automatic Sprinklers
- 1) Sprinklers: type and style as indicated or required by application. Sprinkler operating temperatures to comply with NFPA 13. Sprinklers in light hazard areas shall be quick response type.
 - 2) Sprinkler Finishes: Provide sprinklers with the following finishes:
 - a) Premium areas: Concealed sprinklers with coverplates painted to match the ceiling.
 - b) Unfinished areas and areas not exposed to view: Upright, pendent and sidewall type, rough bronze finish. Sprinklers shall be wax-coated where installed exposed to acids, chemicals, or other corrosive fumes.
- vi) Pipe
- 1) All piping 2-inch and smaller:
 - a) With the use of welded or roll grooved fittings: ASTM A135 or 795, Grade A, Schedule 10 or 40, seamless or ERW, black steel pipe.
 - b) With the use of threaded fittings: ASTM A135 or 795, Grade A, Schedule 40, seamless or ERW, black steel pipe. All 1-inch piping shall have threaded ends.
 - 2) All piping 2-1/2" and larger: ASTM A135 or 795, Grade A, Schedule 10, ERW, black steel pipe, threaded or roll grooved ends.
 - 3) Piping used in dry pipe and preaction sprinkler systems shall be ASTM A135 or 795, Type E, Grade A, Schedule 40, black steel pipe, threaded or roll grooved ends.
 - 4) All piping on the exterior of the building shall be externally galvanized.
- b. Fire Department Standpipe System
- i) A Class I, [automatic-dry standpipe system will be provided for the building in accordance with NFPA 14. Fire Department hose connections will be provided in the building stairways with 2-1/2-inch valve and capped connections at each main level landing.
 - ii) Standpipes will be sized to provide [100 psi when 500 GPM] at the most remote standpipe.
 - iii) The standpipe system will be supplied by the fire protection service and fire booster pump (if required).

c. Fire Pump

- i) A fire pump will be required to meet the pressure demands of the sprinkler and standpipe systems. The pump will be sized to the flow and pressure demand of the sprinkler and standpipe systems as determined by system hydraulic calculations. Final size and necessity of the fire pump will be determined during design development or preliminary hydraulic design.
- ii) The fire pump will be a electric driver and electric motor start up controller. The main source of power will be from the power utility, and the secondary means of power will be addressed by utilizing a transfer switch located in the pump room to switch to the site generator power supply.
- iii) The fire sprinkler service entrance will be provided with an approved backflow preventer assembly (in accordance with local code requirements), supervised control valves, and water flow switches.
- iv) All required sprinkler and fire pump functions will be connected into the building fire alarm panel for monitoring. An exterior waterflow alarm device will be provided on the exterior of the building in a location approved by the Fire Department.
- v) A fire pump test header will be provided for fire pump testing.

d. Fire Department Connection

- i) Fire department connection will be flush wall-mounted or freestanding type. The connection will consist of 4-inch Storz with clappers. Fire department connection shall have UL listed Knox Caps keyed for the city of Fayetteville Fire Department.

6. Division 22 Plumbing

a. General

- i) Heat tracing will be provided on portions of the potable water system, storm piping, sanitary piping, and sanitary waste p-traps which will be in use year round and subject to freezing.
- ii) Heat tracing will be provided on aboveground grease waste systems with line lengths over 100 feet to prevent grease coagulation and clogging in the piping system.
- iii) Drip pans will be provided below all plumbing piping routed above electrical, telecom, A/V, etc. spaces.
- iv) Drip pans will be provided below sanitary, grease waste, and storm piping routed above food service spaces.
- v) Domestic water systems which will not be in use year round will be installed to be drained down. Drain down valves and hose bibbs will be provided as required to facilitate drain down.
- vi) All exposed ferrous metal pipes will be prepped, primed, and finish coat painted.
- vii) Concrete housekeeping pads will be provided for all floor mounted plumbing equipment. Minimum depth will be 4".

b. Energy and sustainability design concepts

- i) The following concepts are planned to be implemented into the project:
 - 1) High-efficiency Water Heaters
 - 2) Variable Speed Pumps
 - 3) Low Flow Plumbing Fixtures

c. Domestic Water (potable):

- i) Domestic hot and cold water will be provided for all domestic plumbing fixtures and devices that require potable water.
- ii) The copper cold water distribution piping will be sized for a maximum velocity of 8 FPS.
- d. Domestic Hot Water:
 - i) Hot water for Parking Structure will be provided by area specific electric tank type and gas fired high efficiency water heaters. These water heaters will be zoned by incoming water pressure (city and boosted).
 - ii) Reference Area Specific MEP Requirements' for additional water heater requirements.
 - iii) The hot water distribution piping will be sized for a maximum velocity of 5 FPS.
 - iv) Domestic hot water will to be heated to 140 degrees. Point of use thermostatic mixing valves will be installed for break room sinks, lavatories and hand sinks. Where higher temperatures are required a booster heater will be installed.
 - v) The hot water systems will be recirculated as required by the plumbing, health and energy codes.
- e. Sanitary, Waste and Vent System:
 - i) Multiple sanitary, waste and vent stacks will serve the tenant spaces, food service areas, mechanical rooms, etc.
 - ii) The sanitary system will be sized based on a uniform 1/4 inch per foot (2 percent) slope for piping 3 inch and smaller, and uniform 1/8 inch per foot (1 percent) slope for piping 4 inch and larger.
 - iii) Where possible the grease waste system piping will be sized based on a uniform 1/4 inch per foot (2 percent) slope for all piping sizes. Where required due to invert elevations and allowed by the authority having jurisdiction the grease waste system piping will be sized based on a uniform 1/8 inch per foot (1 percent) slope.
 - iv) Large, buried, plastic grease interceptors will be provided to serve the food service spaces. Grease interceptors will be sized and installed per local requirements.
 - v) Where required by the authority having jurisdiction, floor drains will be provided with trap primers.
 - vi) Trap primers will be provided at all drains (floor drains, floor sinks, trench drains, etc.) receiving high flow discharge, in Food Service Areas, where large amounts of debris are present, and all other locations where required by the authority having jurisdiction. All other drains will be provided with a trap seal device.
 - vii) If portions of the sanitary waste system cannot flow by gravity into the site system, then a duplex sewage ejector will be provided.
 - viii) Backwater valves will be provided to serve gravity systems where the flood rim is below the upstream manhole.
 - ix) Contractor will be required to perform a Final Flow Verification Test within 10 days of Owner final acceptance of the facility. Test shall consist of providing 1,500 gallon water tank and discharging through a 2 1/2' diameter hose by gravity into the main vent cleanout to verify no blockage of sewer system. Water flow shall not be throttled other than 2 1/2" diameter hose.
 - x) Contractor will be required to perform a Smoke Test - smoke testing of all chemical drainage and vent systems within building when complete to confirm that all traps work properly and that all vents on roof do not recirculate into HVAC equipment outside air intake openings.
- f. Storm Water Drainage System

- i) A gravity storm drainage system will be provided for the facility. The system will connect to each roof drain, area drain, and trench drain. The storm drainage system will be sized based upon the local rainfall rates of 9" per hour and an 1/8-inch per foot horizontal slope. Secondary roof drains will discharge separate from the primary system onto grade or onto roofs below. To allow for flexibility to install horizontal offsets in vertical stacks, all lines will be sized using the horizontal sizing criteria.
 - ii) Large, buried, plastic sand/oil interceptors will be provided to serve the Parking Structure spaces. Sand/oil interceptors will be sized and installed per local requirements.
 - iii) If portions of the storm water drainage system cannot flow by gravity into the site system, then a duplex sump pump will be provided.
 - iv) Backwater valves will be provided to serve gravity systems where the flood rim is below the upstream manhole.
 - v) A geo tech report has not been received at this time. The under slab foundation drainage system (if required) will be designed by others. The connection between the foundation drainage system and the storm system will be provided within the plumbing drawings. A duplex sump pump connected to emergency power will be provided to receive drainage from the new building underground dewatering system in accordance with the dewatering drainage system designer's requirements. The pumps will discharge directly to the site storm drainage system.
- g. Natural Gas System:
- i) Natural gas will be provided for all pieces of cooking, and mechanical equipment and for natural gas fired water heaters. The distribution system will include all regulators, valves, vents, piping and fittings that are required for the facility.
 - ii) Reference Area Specific MEP Requirements' for additional compressed air requirements.

7. Division 23 HVAC

a. Design Conditions

- i) ASHRAE Fundamentals 2021 Design Conditions (Drake Field, Fayetteville, AR):
 - 1) Summer: 95.2°F dry-bulb / 74.4°F wet-bulb (ASHRAE 0.4% Cooling DB/MCWB)
 - 2) Winter: 10.4°F dry-bulb (ASHRAE 99.6% Heating Dry Bulb)
- ii) Ventilation Air Requirements:
 - 1) Ventilation air will be provided per the 2021 International Mechanical Code.

b. HVAC Systems

- i) Two options are to be priced for comparison:
 - 1) Option 1 – Hydronic Systems
 - a) Primary system components with preliminary assumptions for quantities and capacities for pricing purposes:
 - (i) 100-ton air-cooled scroll chiller
 - (ii) 1500 MBH condensing boiler
 - (iii) Two fully redundant vertical inline centrifugal chilled water pumps: 175 gpm at 110 feet of head each.

- (iv) Two fully redundant vertical inline centrifugal heating hot water pumps: 100 gpm at 125 feet of head each.
 - (v) Two indoor 20,000-cfm multi-zone variable-air-volume modular air handling units.
 - (1) 18-gauge, double-wall, injected foam insulation with low-leak dampers, mixing box, heating hot water coil with circulating pump for freeze protection, chilled water coil, fan array, and discharge plenum.
 - (vi) Twenty-five 12"Ø inlet single-duct variable-air-volume air terminals with two-row heating hot water reheat coils.
 - (vii) Two coalescing-type air-dirt separators, one 4" and one 3".
 - (viii) Two 30-gallon full-acceptance ASME bladder expansion tanks.
 - (ix) Two 3-ton ductless minisplit systems with wall-mounted indoor units and integral condensate pumps.
 - (x) Two extruded aluminum 72"x72" drainable fixed blade louvers.
- 2) Option 2 – Packaged Rooftop Units
- a) Primary system components with preliminary assumptions for quantities and capacities for pricing purposes:
 - (i) Two 50-ton multi-zone variable-air-volume packaged rooftop units with natural gas furnaces and powered exhaust.
 - (ii) Twenty-five 12"Ø inlet single-duct variable-air-volume air terminals with two-row heating hot water reheat coils.
 - (iii) Two 3-ton ductless minisplit systems with wall-mounted indoor units and integral condensate pumps.
 - ii) In addition to each option above, include pricing for the following:
 - 1) Assume that the return air system will utilize plenum return.
 - 2) Assume that most of the air distribution will be concealed above ceilings with wrap insulation and use 2x2 air devices suitable for ACT drop ceilings.

8. Division 26 Electrical

a. General

- i) Power requirements are estimated as follows:
 - 1) The total demand power is estimated at approximately 1.2 W/SqFt. This includes power for convenience and equipment receptacles, HVAC and plumbing equipment, interior and exterior lighting, food service equipment, elevators, and the following miscellaneous loads:
- ii) Distribution of power will be from 480Y/277V circuit breaker switchboard MSB located in the Main Electrical Room. From there, 480Y/277V branch circuit panelboards, step-down transformers, and 208Y/120V branch circuit panelboards will be provided at strategic locations throughout the facility for efficient power distribution.
- iii) Surge Protection Devices (SPD) will be provided on service entrance equipment, panelboards serving sensitive equipment, and panelboards serving exterior lighting, and emergency system distribution as required per the NEC to protect against voltage transients generated by lightning, utility, electro-mechanical, and electronic equipment.

- iv) Emergency power for the facility will be supplied by a new diesel fueled standby generator with an anticipated load capacity of 250 kW.
 - 1) The life safety emergency loads will include interior and exterior emergency egress lighting and fire alarm systems.
 - 2) Legally required standby loads will include fire pumps as necessary and any other loads requiring back-up power.
 - 3) [Optional standby power will include owner designated load including select elevators and telecommunications equipment.
- v) Emergency power for emergency lighting will be provided by an emergency generator.
- vi) Separate transfer switches will be provided for life safety and optional standby loads such as selected elevators and telecommunications equipment.
- vii) Common Requirements
 - 1) Motor loads 3/4 HP and greater will be powered at 480 volts. All motors will meet energy conservation code requirements for efficiency, and will have a minimum service factor of 1.15.
 - 2) Lighting systems for the interior spaces will generally be LED. Exterior lighting will generally be LED.
 - 3) Receptacles will be provided in each space per program requirements. At a minimum, each regularly occupied space will have at least one receptacle per wall. In large spaces, corridors, and concourses convenience receptacles will be spaced at 40'-0" maximum intervals.
 - 4) All 20 amp, 120 volt receptacles in restrooms, janitor closets, loading docks, mechanical rooms, and exterior locations will be GFCI type.
 - 5) All receptacles rated for 50 amps or less on 120 volt or 208 volt single phase circuits and all receptacles rated for 100 amps or less on 208 volt three phase circuits will have GFCI protection for personnel when located in food preparation areas.
 - 6) Safety tamper resistant receptacles will be provided in all code required locations where easily accessible by children.
- b. Lightning Protection:
 - i) A lightning protection system will be provided for the facility.
 - 1) The lightning protection will be a Franklin type system designed and installed per UL 96 and NFPA 780.
 - 2) Lightning protection system downlead conductors will be concealed within the exterior walls.
 - 3) Provide surge protection devices on electrical service entrance equipment and panelboards directly serving roof mounted HVAC equipment or exterior lighting.
 - 4) The lightning protection system will be UL 96A Master Labeled.

9. Division 27 Telecommunications

a. General Requirements

i) Telecommunications scope:

- 1) Structured Cabling System including passive cabling and hardware for: Telephone, Data Network and Wireless LAN.
- 2) Wi-Fi Equipment including: Wireless Access Points
- 3) Radio Systems (EMS, Two-way communication/rescue assistance, Area of Refuge)

ii) Site work for telecommunications shall include all areas contained immediately adjacent to the facility and areas supported by the facility (such as sports fields, connector walkways, etc.).

iii) Exterior coverage shall include the devices attached to the building and ground or pole/structure mounted to specifically supply telecommunications (intranet/internet/Wi-Fi/EMS DAS) to the building, pedestrian plaza/walkways and driveways immediately adjacent to the facility.

iv) Building utilities design included within this narrative shall extend from the Campus owned fiber optic loop to the building for incoming telecommunications service.

v) Infrastructure shall be a combination of indoor/outdoor plenum single mode fiber optic cable, category 6A copper cable, and/or a hybrid system to meet speed and distance requirements.

vi) All references to equipment sizing are based upon preliminary design estimates and are subject to adjustment as the design progresses.

vii) Local codes shall take precedence when they dictate the use of alternative procedures or require minimum telecommunications levels for specific areas.

b. Common Work

i) Telecommunications Pathways

- 1) Provisions for telephone and data network cabling shall be made. Such provisions may include empty conduits, conduit sleeves, pull boxes, outlet boxes, floor boxes, floor poke-through devices, telephone terminal boards, etc. A typical wall mounted telecommunication outlet shall consist of a 2-gang outlet box with a minimum 1-inch conduit (with a pull string) stubbed into accessible ceiling space.

ii) Telecommunications Horizontal/Backbone Pathways

- 1) In the parking areas that are semi-exposed all cabling shall be installed in conduit and outlets boxes in a star topology to provide cable support from far end termination to telecommunication rooms, to connect the MDF to the IDFs, and throughout the area served to protect and secure cable from vandalism and damage from exposure.
- 2) In tenant spaces that where overhead pathways are concealed cabling shall be installed in cable tray, J-hook, or conduit in a star topology to provide cable support from far end termination to telecommunication rooms, to connect the MDF to the IDFs, and throughout the area served.

c. Structured Cabling System

- i) System provided shall be an end-to-end telecommunications structured cabling system (SCS) that offers a cost-effective system providing flexibility, potential for growth (both physical and bandwidth considerations) and the capability of supporting the various communication systems required by the End-user systems or solutions in the parking garage.

- ii) Main Telecommunications Equipment Rooms (MDF)
 - 1) A Main Telecommunications Room shall be provided for the building to house computer systems and associated components, such as telecommunications and storage systems. The room shall serve as the head end for systems such as the emergency two-way communication system, access control system, visual surveillance system, storage/servers, and core switch(es). The room will service a specific area of the facility with respect to horizontal cable distribution and facilitate the interconnection between the copper horizontal cabling and the facility's backbone cabling. It may also be used for intermediate and main cross-connects. The room shall be located where the average cable run is not more than approximately 200 feet and the farthest horizontal cable run supported is less than 295 feet (including vertical and lateral bends).
 - a) The primary purpose of these spaces is the consolidation of horizontal cabling systems into copper and fiber optic backbone infrastructure.
 - 2) Optimally, these rooms should be stacked for ease of vertical distribution.
 - 3) The minimum Telecommunications Room dimensions shall support 4 full-size equipment racks and be 10' x 16'.
 - 4) The room shall be rectangular in shape and free of obstructions, such as columns, and surfaces shall be treated to eliminate dust.
- iii) Telecommunications Room(s) (IDF)
 - 1) All telecommunications rooms are designed to service a specific area of the facility with respect to horizontal cable distribution. It is the space that facilitates the interconnection between the copper horizontal cabling and the facility's backbone cabling. They may also be used for intermediate and main cross-connects. Each room is to be centrally located but spaced far enough apart so that devices within the area being served are ensured that the permanent link shall stay within the required 295' limitation.
 - 2) Optimally, these rooms should be stacked for ease of vertical distribution.
 - 3) The minimum Telecommunications Room dimensions shall support a minimum of 2 full-sized equipment racks and be 10' x 11'. Room size and rack quantities may be increased based on square footage of covered area or cable quantities served by the IDF.
 - 4) All rooms shall be rectangular in shape and free of obstructions, such as columns, and surfaces shall be treated to eliminate dust.
- iv) Backbone/Riser Distribution:
 - 1) The general design of the intra-building backbone will be a star topology. There shall be no more than two hierarchical levels of wiring cross-connects in the backbone wiring. Cross-connects may be located in the telecommunications rooms. All wiring cross-connects will be located in secured rooms.
 - 2) All backbone cabling shall be coordinated with the Owner prior to the completion of the design and the beginning of the implementation phase of the project.
 - 3) The Demarcation/Service Entrance room shall have 144 strands of single mode OS2 fiber optic cabling.
 - 4) The requirement for copper backbone cabling will be provided pursuant to applicable local, state, and federal building codes.
 - a) If required by code a 25-pair OSP ALPETH cable will be distributed to the Main Telecommunications Room / Data Center for connection to internet service provider networks and local telephone company connections.

- b) Ultimately, if required by code, the size and location of the copper cabling to be installed in the new parking garage will be coordinated with the Technology Coordinator.
- 5) Main Telecommunications Room / Data Center shall have 144 strands of single mode OS2 indoor/outdoor rated fiber optic cabling for interfacing LAN switch uplink connections between Core Backbone Switches and Edge Access Switches or Optical Line Terminals (OLT) and inter-room connections to servers and other data network equipment.
- v) Horizontal/Hybrid Distribution:
 - 1) Each Intermediate Telecommunications Room shall have plenum rated Category 6A cables for interfacing with traditional copper connections and hybrid (fiber optic/copper) cables with fiber media converters for devices beyond 295' and/or requiring PoE.
- d. Specialty Systems
 - i) Code-Required Area of Rescue/Area of Refuge two-way communication system: A new Area of Rescue/Area of Refuge two-way communication system shall be provided throughout the facility. At a minimum, call stations shall be provided at each elevator lobby/landing area. The master control station placement shall be coordinated to be installed at a location within the facility that shall be manned 24 hours a day or the system shall be programmed to call out directly to emergency services. Space shall be allocated for the location of head-end equipment which could be either rack-mounted or wall-mounted and located in MDF. Minimum conduit size for the pathway shall be 1".
 - ii) Parking Guidance System: A new parking guidance system shall be provided throughout the facility. Design team shall coordinate with the Owner and parking vendor to determine what infrastructure needs will be required. Space shall be allocated for the location of head-end equipment which could be rack-mounted or wall-mounted and located in MDF.

10. Division 28 Security

- a. General Requirements
 - i) This narrative describes the Electronic Security Systems planned for the secure operation and monitoring of the facility. The planning for systems described within this narrative presume the presence of an on-site security command station that is staffed 24/7 to monitor systems for the receipt of alarms.
 - ii) This Security Systems narrative is intended to provide general direction for the design and initial cost budgeting for the systems associated with the Owner's organization in the planned secure operation and monitoring of the facility.
 - iii) This narrative establishes Security System design strategies and concepts for the project. Information is based on meetings with the design team, owners, and experience with projects of similar size and scope.
 - iv) The site is new construction [a renovation of an existing building].
 - v) The building design shall be provided by the Owner's Security Consultants for adoption, coordination and conformation to the final building design.
 - 1) Adoption implies that the system design shall be provided by the Owner's Security Consultants.
 - 2) Coordination implies the final device location placement shall be dictated through the coordination of all design factors to the building including all MEPFT, Structural, and Interior Design.

- 3) Conformation implies that the adoption of the Owner's Security Consultant design and final coordination shall conform to all required codes and local amendments.
- vi) The building shall be provided with the following systems:
 - 1) The Electronic Access Control System shall serve as an expansion of their existing system.
 - 2) The IP-based Video Surveillance System shall serve as an expansion of their existing system.
 - 3) The Video Intercom System shall serve to validate visitors and grant entry access at unsupervised entry zones.
- vii) Design components outlined in this narrative may be amended based on review of this document, modifications to the scope, and/or budgetary constraints.
- viii) This document constitutes the entire Electronic Security Systems' information package at this time.

11. Division 28 Fire Detection and Alarm

- a. General
 - i) The building will be provided with a fire alarm system complying with NFPA 72, The International Building and Fire Codes.
 - ii) The new building will be equipped with a fully addressable fire alarm system. The system will provide fire detection and alarm, complete with manual pull stations, ceiling mounted detectors, air handling unit shutdown, notification appliances, elevator recall and sprinkler monitoring, as required.
 - iii) Fire alarm system will be fully integrated and monitored by the University system.
- b. Fire Alarm Control panel
 - i) The main fire alarm control panel will be located in the electrical room, as coordinated with the authority having jurisdiction. The fire alarm control panel will be microprocessor-based with fully addressable initiating devices.
 - ii) The Fire alarm control panel manufacturer will be as per the University standard.
- c. Remote Annunciator Panel
 - i) A remote annunciator panel with microphone will be provided at the point of fire department access, front door.
- d. Initiating Devices
 - i) Smoke detection will be provided above all fire alarm control equipment, elevator lobbies, elevator machine rooms, elevator shaft and pit,
 - ii) Duct smoke detection will be provided in all air handling equipment over 2,000 CFM and within 5 feet of all smoke or fire/smoke dampers.
 - iii) Heat detection will be provided in elevator machine rooms, elevator shafts and any areas that require detection that are not suitable for smoke detectors.
 - iv) Manual pull stations will be provide at all exits from the building and at all rated stairs for levels above and below the main level of exist discharge. A manual pull station will be provided at the fire alarm annunciator panel.
 - v) Extinguishing System Monitoring

- 1) The fire sprinkler system will be monitored by the fire alarm system for sprinkler system waterflow and supervision of all sprinkler system control valves.
 - 2) Fire Pump will be monitored for running status, phase reversal, and loss of power in accordance with NFPA 20 and NFPA 72.
- e. Audible Notification
- i) The building will be provide with a horn notification system throughout in accordance with NFPA 72.
- f. Visible Notification
- i) The building will be provided with visible notification throughout in accordance with NFAP 72.
- g. Wiring
- i) All Signaling Line Circuits will be Class B.
 - ii) All Notification and Initiating Circuits will be Class B.
 - iii) All wiring will be installed in conduit.