

Sam Houston State University Coliseum Parking Garage

Design Development Submission
for the Texas State University
System Board of Regents

May 23-24, 2019

Client
Sam Houston State University

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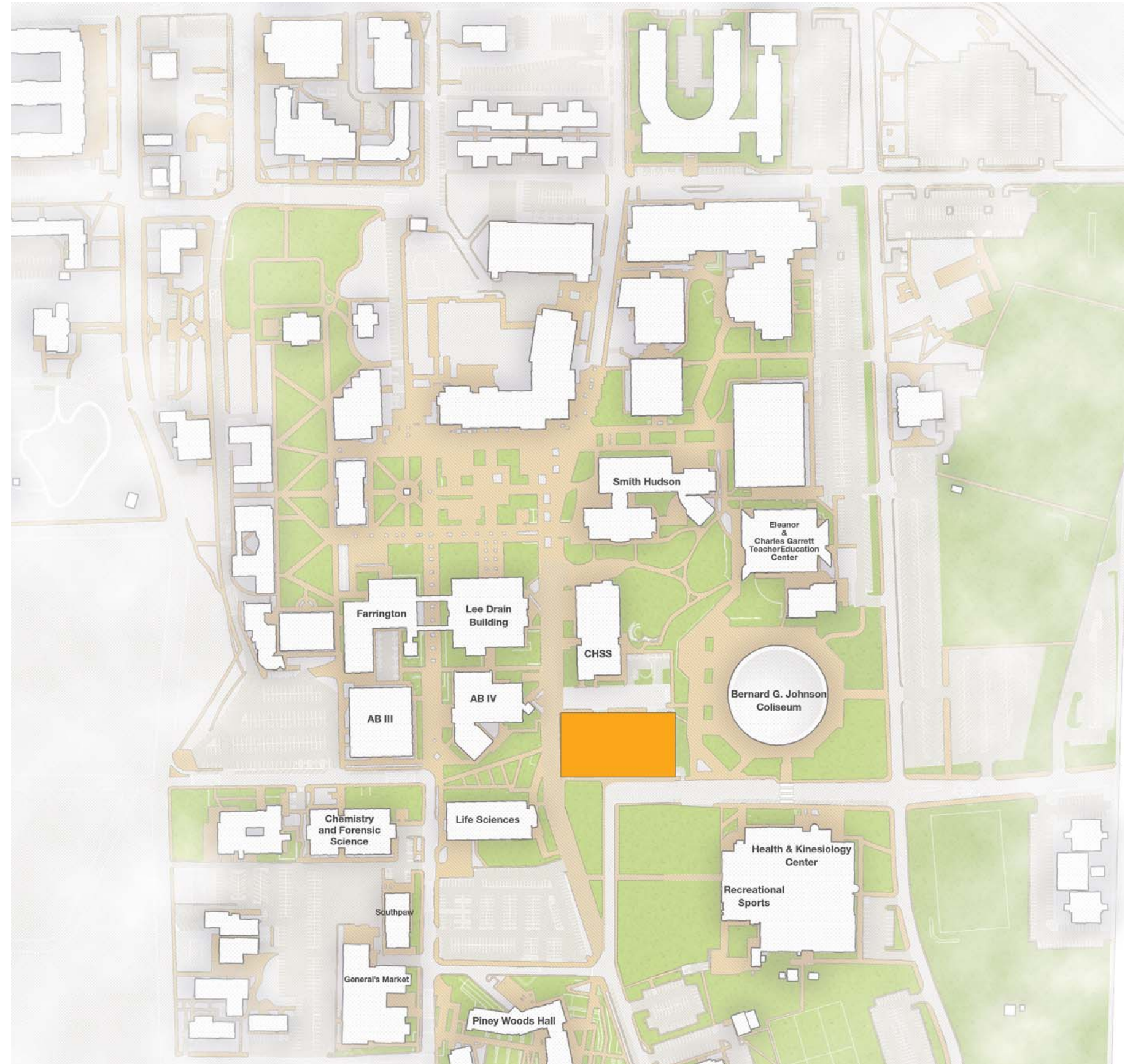


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Introductory Pages

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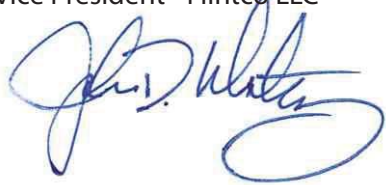
Acknowledgment & Contact Information

Acknowledgment

The Design Building Team would like to express our appreciation to The Texas State University System and Sam Houston State University for the opportunity to assist the University in the design of the Coliseum Parking Garage.

We would also like to thank the administrators, faculty, and staff who continue to provide critical support during the planning and design phases of the project.

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Introductory Pages

Project Overview

Project Summary

The project is an approximately 199,000 gross square feet, four-story, 551 space parking structure centrally located on the Sam Houston State University campus site in Huntsville, Texas. A standalone single story building approximately 4,600 gross square feet will include office spaces, conference room, and future dispatch for the University Police Department (UPD). The stated Construction Cost Limitation (CCL) for the project is \$10,000,000 and the project has been awarded to Flintco, LLC and Page Southerland Page, Inc. as a Design Build project.

The new parking garage site is located to the west of the Bernard G. Johnson Coliseum and south of the College of Humanities & Social Sciences Building. Bowers Boulevard is directly to the south, and will serve as the primary entry/exit artery to/from the new parking structure. Avenue I is located directly west of the site. The Campus Master Plan envisions Avenue I closing and being re-routed to create a new primary pedestrian corridor from the center of campus to the south campus replacing Avenue I. The proposed site has three existing dormitories Vick House, Spivey House, and Randel House which will be demolished as part of this project.

All site utilities are available at the adjacent Bowers Boulevard thoroughfare. No stormwater detention is required.

The information contained within the following document represents the design response to the project requirements as currently understood. Additional information is currently being provided by multiple sources and authorities having jurisdiction over the project.

Tab 1

Architectural Renderings

Exterior Elevations



View Looking West Up Bowers Boulevard



View Looking Northeast on Avenue I



View Looking Southeast

Architectural Renderings - Exterior Elevations

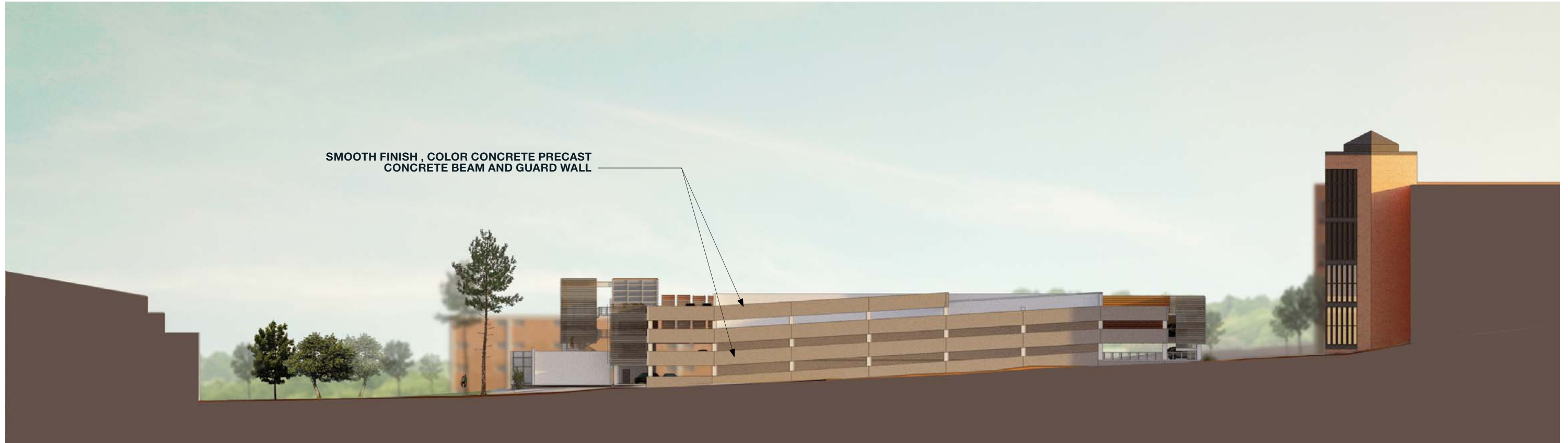


South Elevation

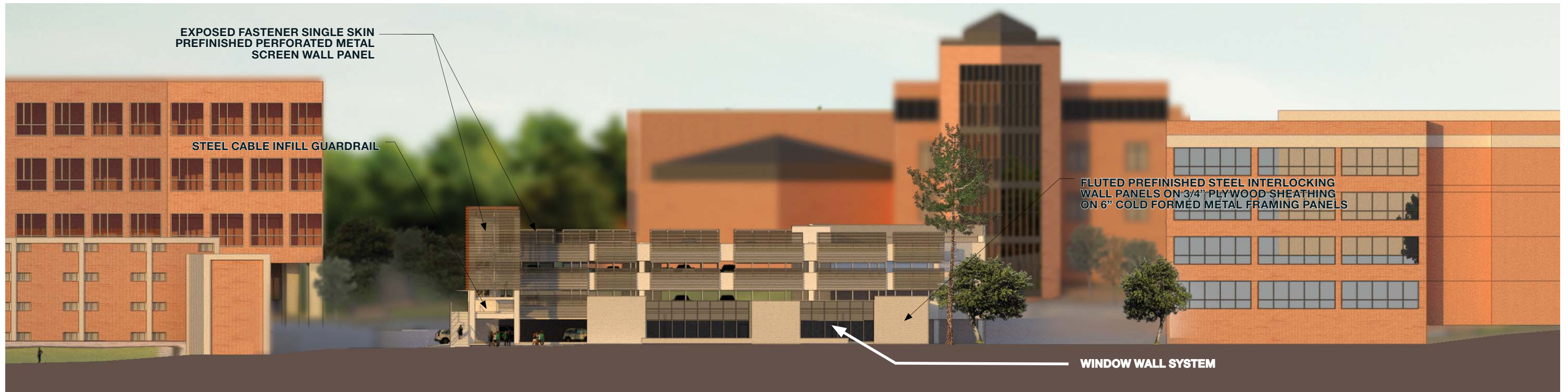


West Elevation

Architectural Renderings - Exterior Elevations



North Elevation



East Elevation

Tab 2

Overall Site Campus Plan

Site Plan - Existing

Building Program

Architectural Floor Plans

Overall Site Campus Plan
Not To Scale



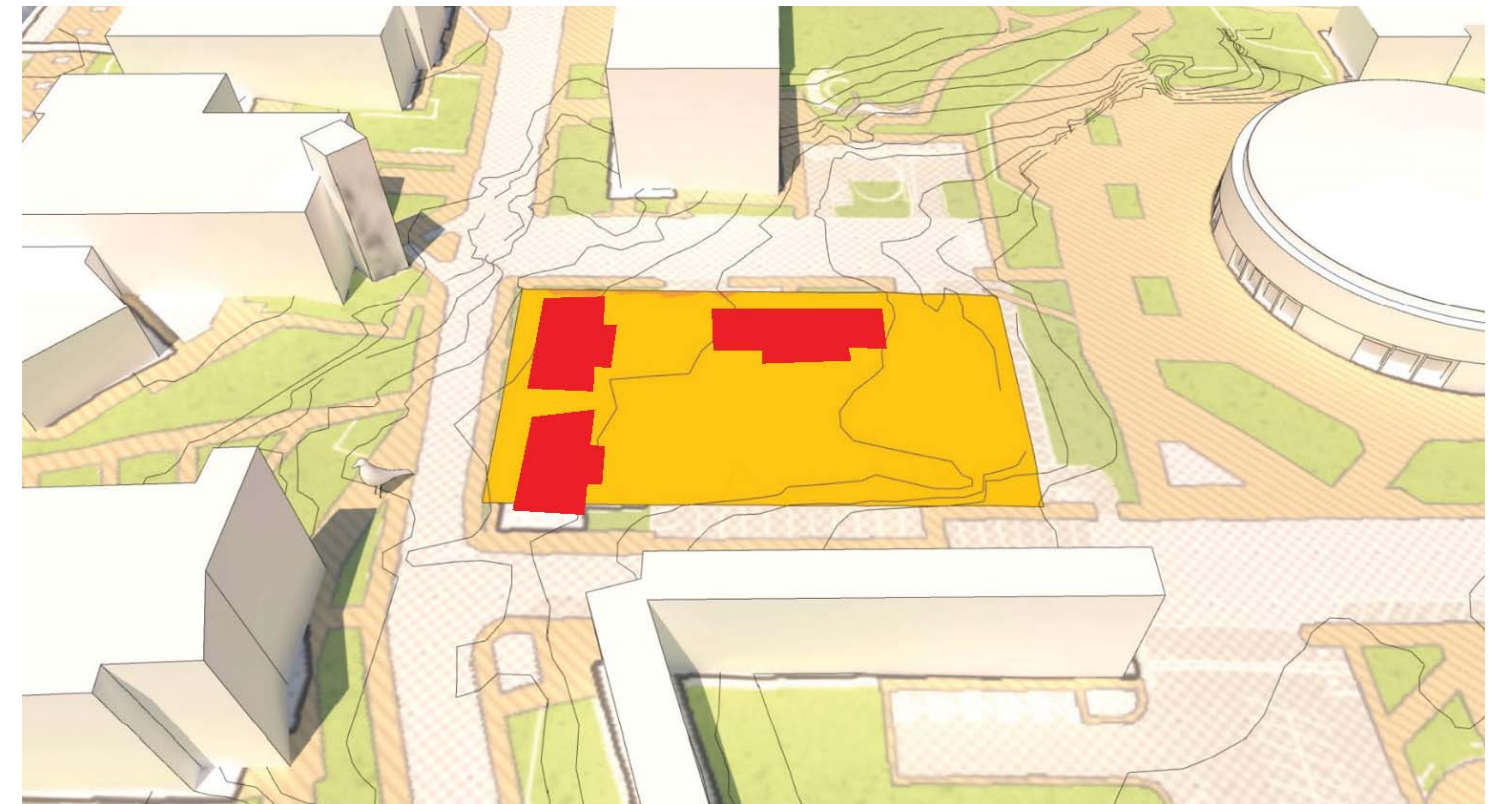
Site Plan - Existing
Not To Scale

Demolition and Site Considerations

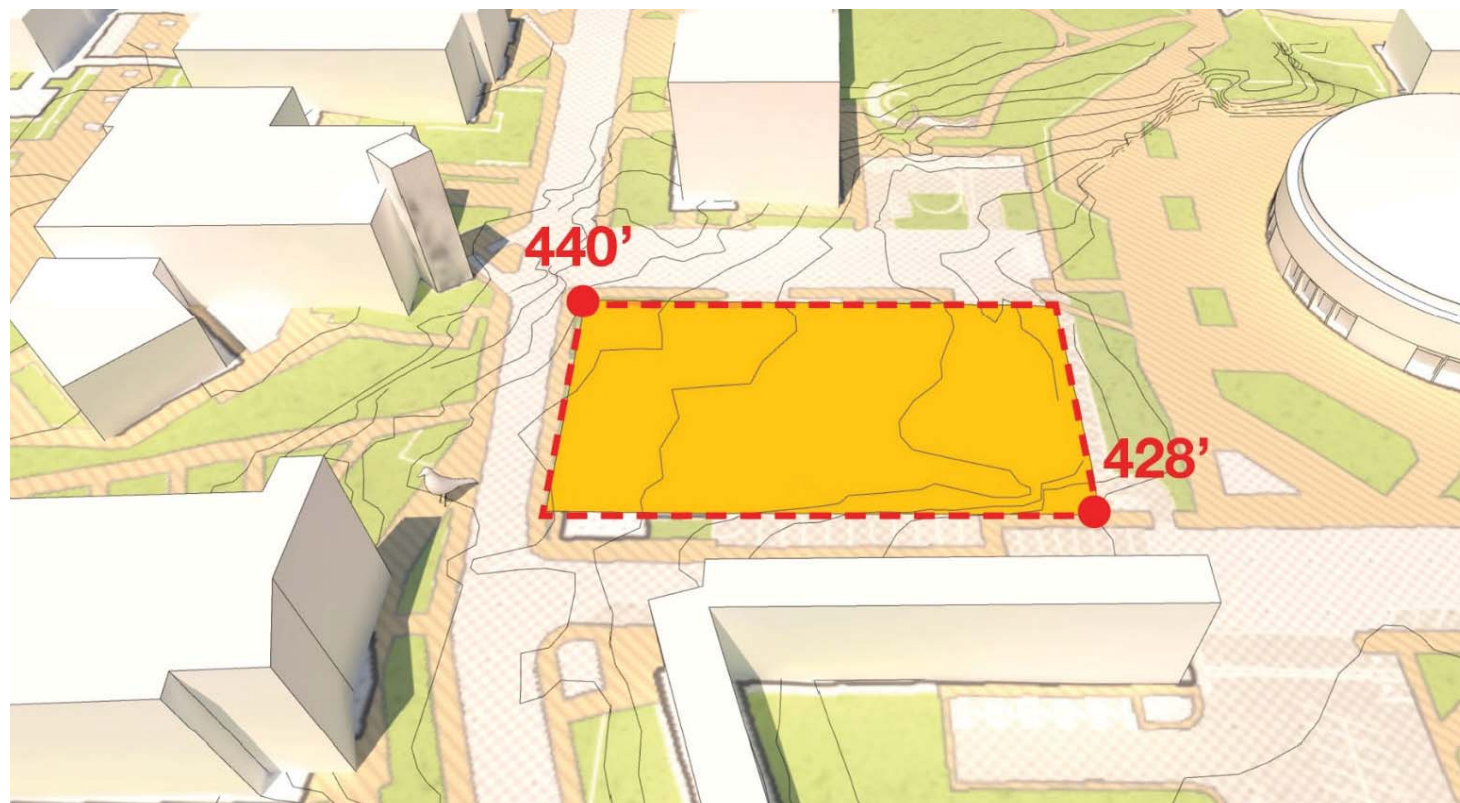
The site for the Coliseum Garage is occupied and requires the demolition of existing dormitories Vick House, Spivey House, and Randel House (A). Independent of utilities- the clear site yields a slope across the site (B) of approximately twelve feet. The Design Build team identified that the slope of the site, as it relates to the ramp location, would be valuable in both the structuring of the ramp and would further abbreviate the necessary excavation and retaining structure.(C)

Location of Program Space

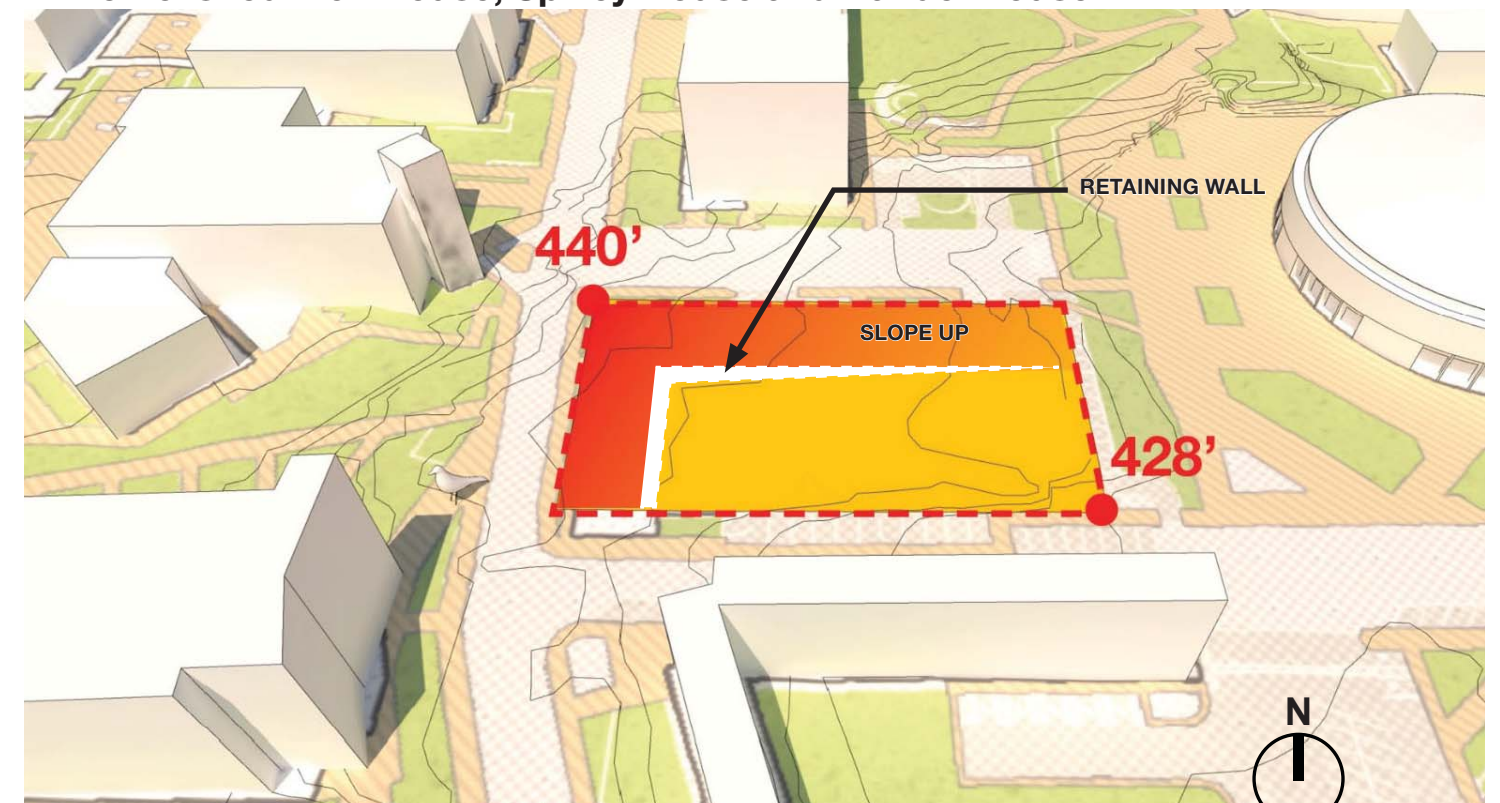
The west bound, one-way Bowers Boulevard is the single access point to the Coliseum Garage and the primary approach to Coliseum events. This passageway is poised for heavy use for vehicular and pedestrian traffic for students and guests of the campus. Therefore, the team has positioned the program space to the East face of the garage, as a visual link to the Coliseum, a structure that would mediate the scale of the garage, as well as provide a visible presence for student safety.



A. Demolished Vick House, Spivey House and Randel House



B. Site Elevation Change



C. Earth Retaining Structure

Building Program

Overview

The Program of Requirements for the Proposed Coliseum Parking Garage, published in November 2015, produced by Facilities Programming and Consulting and approved by Sam Houston State University (SHSU) in December 2015. A supplemental performance criteria was published with additional information and revised goals. The Design team worked hand in hand with the SHSU University Police Department (UPD) and Facilities Management (FM) to develop and clarify further the intent of the offices space.

Program Goals

The Design Build team developed the garage, site and program space with a sensitivity to budget, campus character, material durability and student safety.

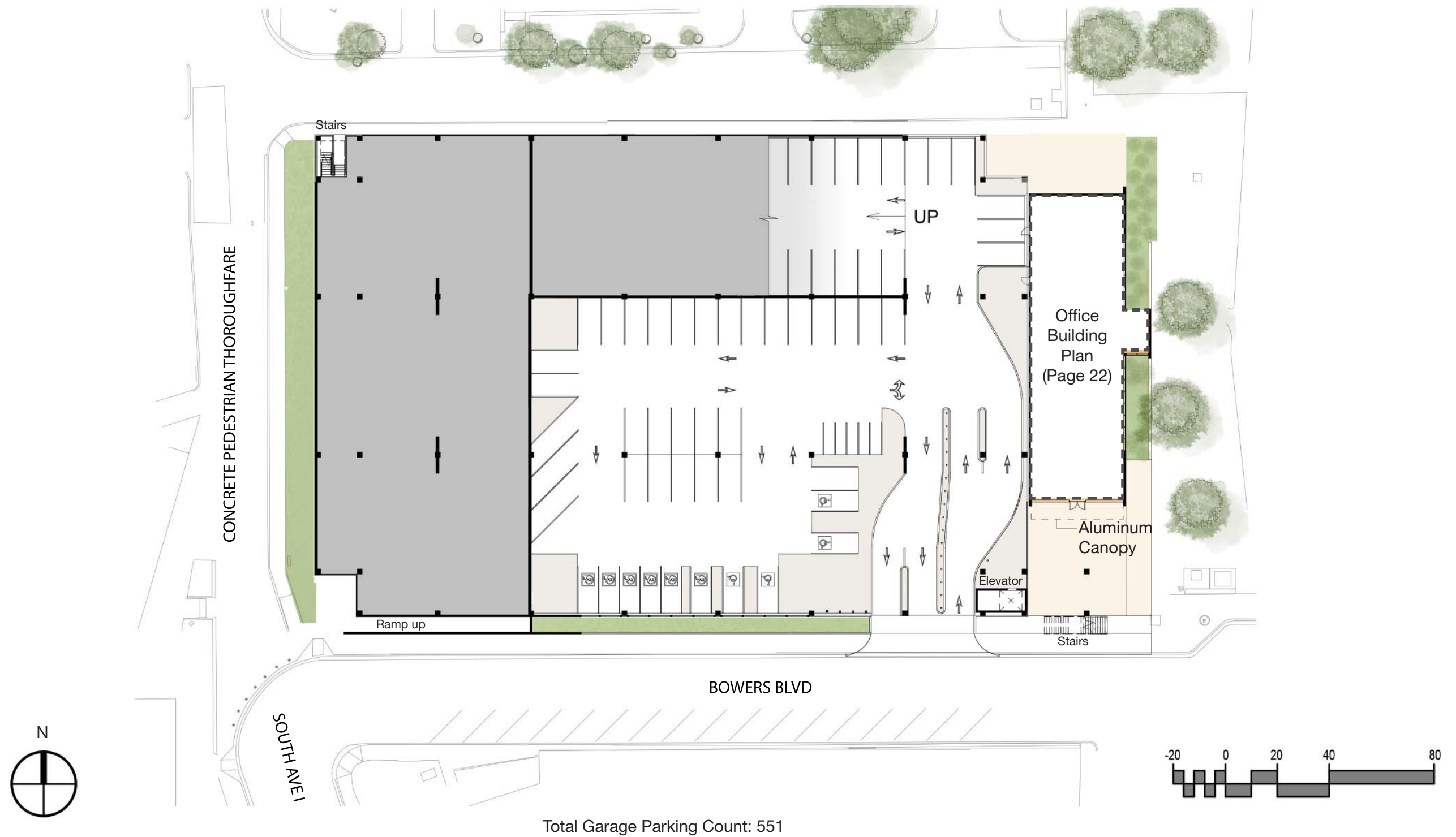
The parking garage component meets the requirement of parking spaces. The built structure to support these spaces are developed with attention to structural modularity and appropriate massing for the central position of the garage on the campus.

The square footage was increased per the performance criteria subsequent to the program document. These spaces to support UPD and Facilities are a refinement of verbal and visual dialogue with the user group, engineering and design team. Together, this process yielded a practical and necessary set of spaces that would meet their departmental needs.

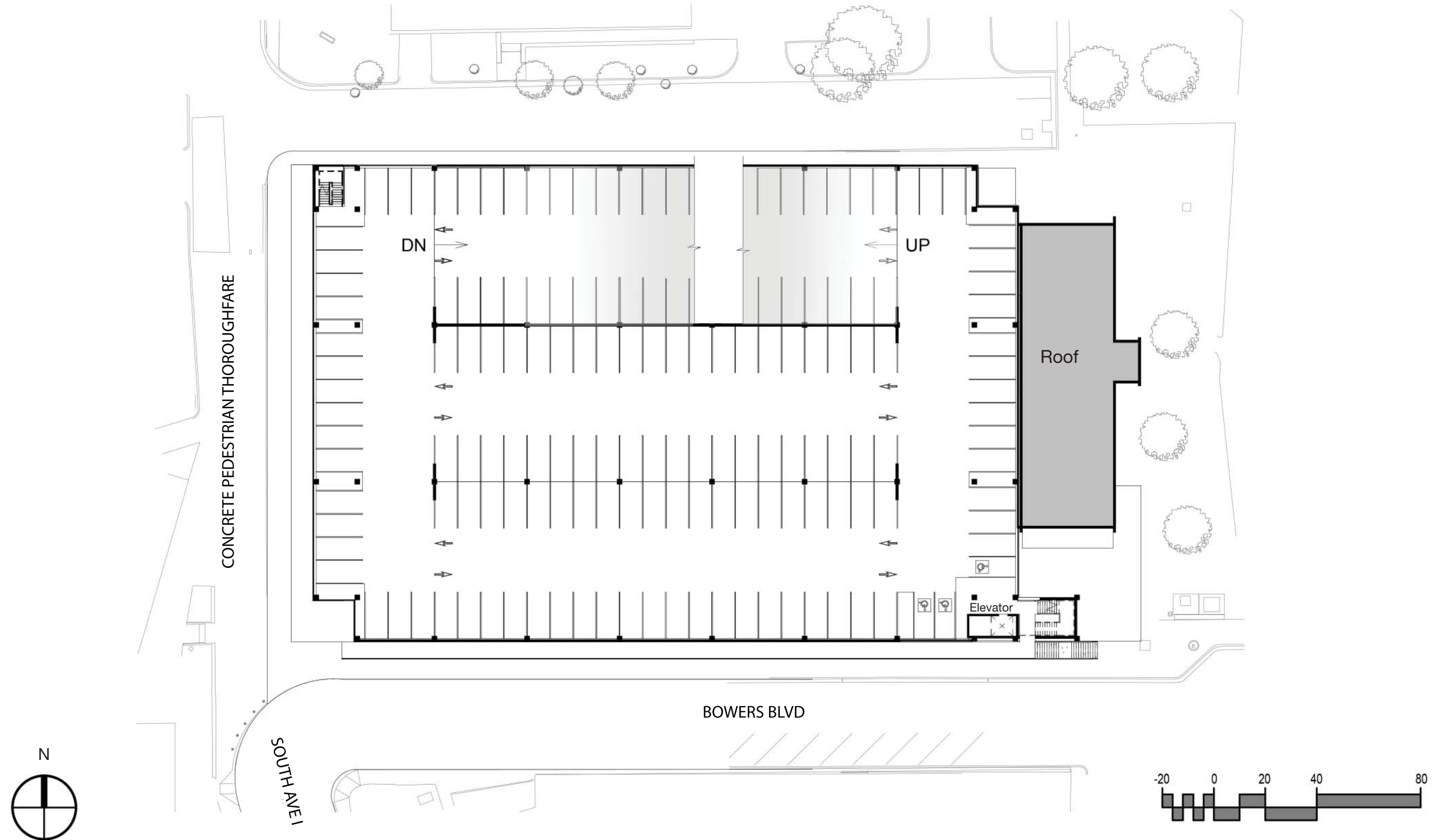
Program					
	Original Program Nov/2015		SD Drawings Program*		Diff
COLISEUM PARKING STRUCTURE					
Number of Levels		5		4	(1)
Number of Parking spaces		550		551	1
Garage square footage (SF)		184,000		198,829	14,829
SF per Parking Space		333		343	10
Space Size		9-Foot (90)		9-Foot (90)	
PARKING OFFICE SUITE					
	SIZE / #OF SPACE(S)	ASF	SIZE / #OF SPACE(S)	ASF	Diff
Waiting Area / Lobby	1 @ 240	240	1 @ 564	564	324
Customer Service Counter	3 @ 75	225	3 @ 79	237	12
Administrative Bullpen	2 @ 80	160			(160)
Open Office Area & Breakroom			1 @ 739	739	739
Dispatch			1 @ 577	557	557
Supervisor Office	2 @ 130	260	1 @ 223	223	(37)
Dispatch Supervisor Office			1 @ 157	157	157
Server Room			1 @ 86	86	86
Storage/File Room	1 @ 80	80	1 @ 71	71	(9)
Conference Room			1 @ 341	341	341
Unisex ADA Restroom	1 @ 80	80	2 @ 72	144	64
Break/Work Room Enforcement	1 @ 200	200			(200)
Storage Workroom			1 @ 356	356	356
Hardware/Storage	1 @ 80	80			(80)
Janitor Closet			1 @ 56	56	56
Data Closet			1 @ 86	86	86
Electrical Room			1 @ 74	74	74
Total ASF		Sub Total 1,325		Sub Total 3,691	2,366
Total GSF		1,723		Final Total 4,598	

* Based on Schematic Design drawings Dated February 21, 2019 and Value Engineering savings dated 4/18/19
 ASF: Assignable Square Feet
 GSF: Gross Square Feet

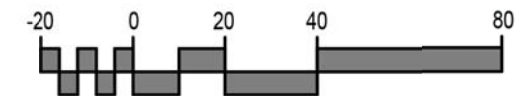
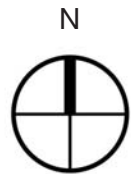
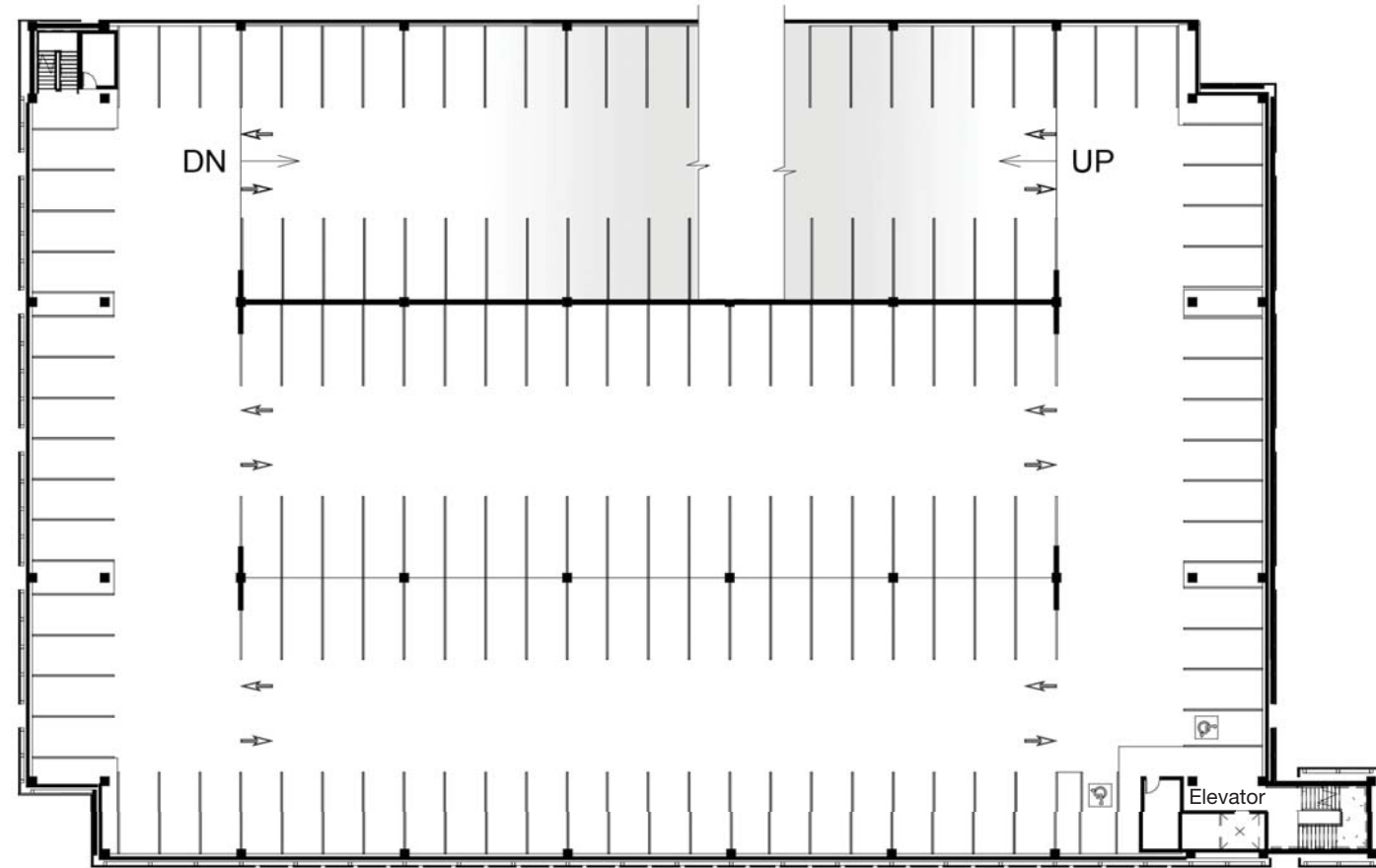
Ground - Floor Plan



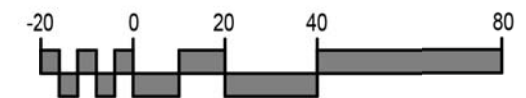
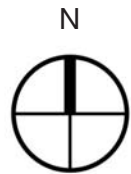
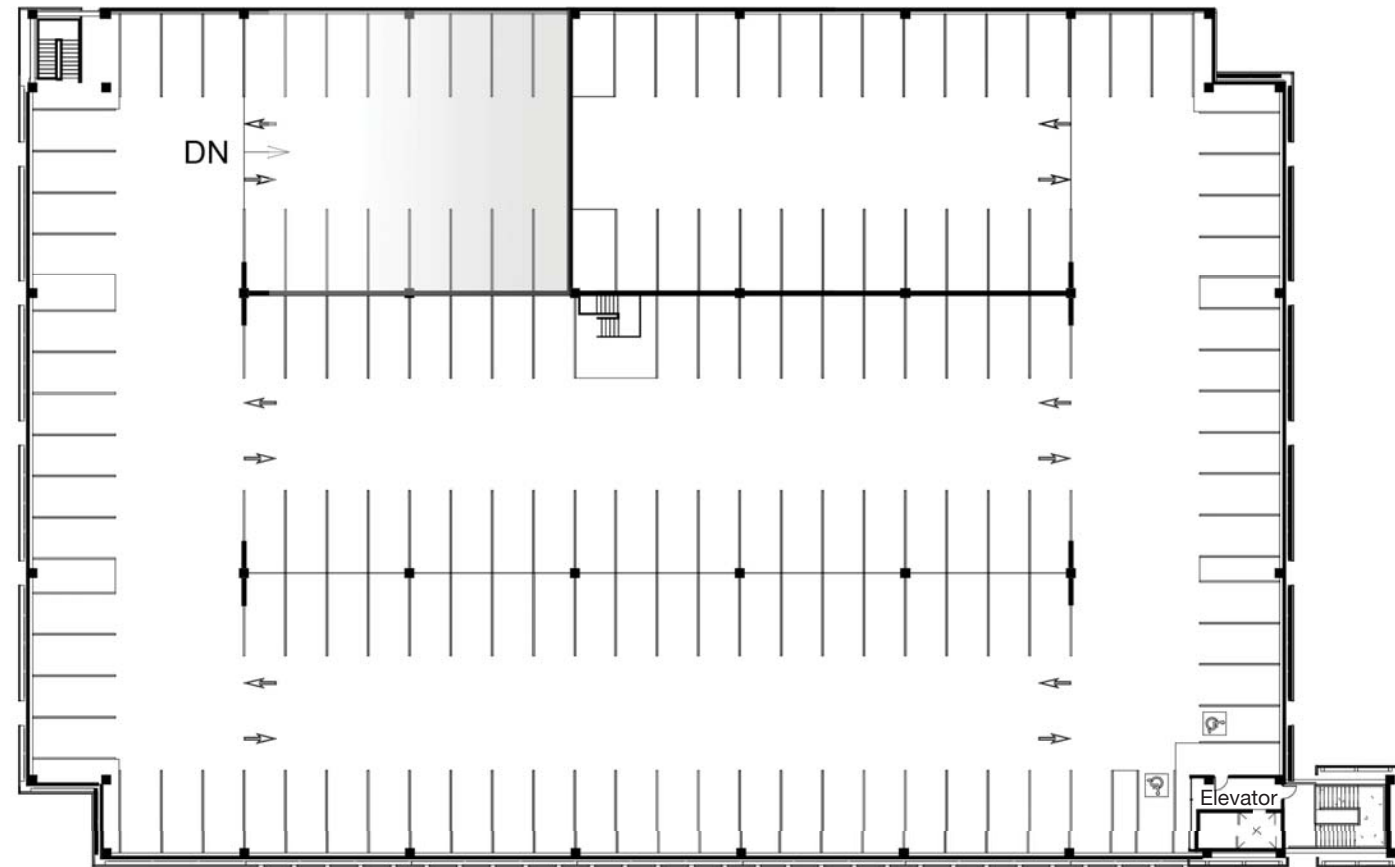
Second - Floor Plan



Third - Floor Plan



Fourth - Floor Plan



Enlarged Architectural Floor Plans

Ground Office Building - Floor Plan



Project Narratives

Design Narrative

Site

The new Coliseum Parking Garage has a central location on the campus, located to the west, and is intended to support the Bernard G. Johnson Coliseum, the College of Humanities & Social Sciences Building and surrounding buildings. Bowers Boulevard is directly to the south and will serve as the primary entry/exit artery to/from the new parking structure. The Campus Master Plan envisions Avenue I closing and being re-routed to create a new primary pedestrian corridor from the center of campus to the south campus and the design accommodates this requirement.

The Coliseum Parking Garage site has three existing dormitories Vick House, Spivey House, and Randel House which will be demolished as part of this project. The site has a cross slope that is uniquely characteristic to much of the Sam Houston State Campus. It is with a high appreciation of this campus texture that the slope of the site is used to perpetuate the continuity of landscape, material tone and overall walk-ability of the campus.

Parking

Parking Layout

This is a 4 Level parking garage with a total of 551 spaces. Three 60 foot minimum two-way bays running East/West with 90° parking on both sides, and a single parkable ramp on the northern bay.

Entry/Exit

The garage has two entry lanes and two exit lanes. Parking control equipment will consist of LPR (License Plate Recognition) readers provided by others. A parking guidance system shall display available spaces in entire garage and contain ultrasonic sensor detection, overhead mount detection, or side mount detection rather than a loop count.

Exterior Architecture

As a campus garage, each elevation interacts with a uniquely distinct edge of campus. To the east, the Coliseum event plaza and the facade that communicates arrival while to the south along Bowers Boulevard there is an opportunity to establish a continuity with the new terraced landscape connection, from west to east and towards the athletics edge. The landscape zone material tones are mirrored along the Avenue I with similar material tones integrated into the base condition of the parking garage. This connective strategy reinforces the pedestrian passageway that leads north to the legacy green spaces.

With this blend of campus and qualities, student life, and material technique, it is important that the garage is responsive to the diverse edges and still maintain a cohesive architectural deployment of material, assembly and detail. Therefore, the development of the facade considered how the site was designed into each elevation as a collection of campus spaces- not a series of elevations. As stated in the campus masterplan, special attention to covered walkways are to be considered into the character of the architecture. The garage's covered walkway reinforces a pedestrian scale to the site.

The sloped site allowed for two major advantages. First, the higher position of the 'pedestrian pathway' connect with an elevated walk way that further integrates into the garage level 2. The elevated path positions students and visitors over the vehicular entry for traffic separation. Second, the natural slope is used as the first level ramp. This is a design advantage which minimizes excavation and retaining wall perimeter.

The precast garage facade is screened with a mix of perforated and corrugated metal panels that echo the warm tone of the campus masonry as well as evoking the school colors, as the garage

needed to share its identity with both the athletic and academic life of SHSU. The panels to the west are more neutral to serve as a backdrop to the Raven sculpture, landscape, and future pedestrian passageway.

Interior Architecture

The UPD and Facilities building is outside the body of the garage to the East and makes up the interior component of the Coliseum Parking Garage project. Similar to how the facade developed with the site, the interior spaces like the waiting lobby visually connect with the outdoor space, vehicle entry and elevator access.

Finishes

Interior finishes are durable and low maintenance. The character of interior spaces is bright, open, and welcoming.

The design and construction documentation of the Coliseum Parking Garage adheres to Sam Houston State University Design and Construction Standards as laid out in the most recent documents provided.

Landscape

Landscaping at the new Coliseum Parking Garage strives to provide a positive pedestrian experience as people move between the garage and the Bernard G. Johnson Coliseum. Planting around the garage will be shrubs and ground cover beds that soften the aesthetics of the architecture at pedestrian level. Existing large trees between the coliseum plaza and garage have been maintained to provide shade and enhance the users experience for special events and everyday use.

Landscape Materials

The selection of landscape plant materials is

coordinated with SHSU staff. Plant material will be selected based on low water use, low maintenance requirements and the ability to withstand a campus environment yet be aesthetically pleasing. Lawn area and existing shade trees on east side of garage will be reestablished to provide pedestrians a park like setting adjacent to existing pedestrian corridor system. Where space allows, plant beds located around remaining sides of the building has included rows of shrubs with ground covers and/or large aggregate gravel that complements the architecture.

Hardscape Materials

Materials are selected based on durability and aesthetics. Materials complement the architecture as well as the Campus as a whole. When possible, materials will be locally or regionally sourced. The design of the hardscape areas as well as the selection of materials for those spaces has considered safety and maintenance.

Design Narrative

Structural

The foundations for structural loads consists of shallow spread footings, bearing at a depth of 6 feet below existing or final grade, whichever is lower. Footings are cast on a series of rammed-aggregate piers designed by a specialty engineer. The level 1 slab consists the following: a soil supported slab is used for all of the first floor, and assumes that it consists of a 6 inch thick slab over a vapor barrier, on sub-grade prepared in accordance with the geotechnical report. An underslab drainage system will be required below the level 1 slab. Around soil-supported slabs, grade beams approximately 16 inches wide will be required around the perimeter. The grade beams will extend from the ground floor to approximately 42 inches below the ground floor slab.

The garage superstructure is a pre-engineered precast building system. The primary floor structure will consist of 12 foot wide by 28 inches deep double tees with a 3 inch normal weight topping slab. Double tees are sloped to internal drains. Garage ramps are supported by light-walls with double tees bearing on corbels or ledges. Non-ramped areas are supported by inverted T beams spanning to precast columns. North and South walls have L spandrel panels to support the double tees and extend up to provide vehicle barriers and pedestrian guardrails. East and West walls have L beams parallel with double tees. Lateral system consist of light walls in the east-west direction and two sets of shear walls in the north-south direction. Typical garage stairs are precast. There will be an elevated walkway along the south side of the garage aligning with level 2. The walkway consists of a slab-on-grade ramp on the west end transitioning to a precast plank floor bearing on a precast structure. The east end has a precast monumental stair down to grade.

The office building structural framing system consists of structural steel with roof joists and

metal deck. The structural steel wide flange shapes shall conform to American Society of Testing and Materials (ASTM) standards A992, Grade 50. Hollow steel section structural steel tube shapes shall conform to ASTM A500, Grade B. Other steel shapes, plates, angle and channels shall conform to ASTM A36.

Mechanical, Plumbing and Electrical (MEP) Systems Narrative

General Project Site Information

The parking garage is designed to accommodate the large number of cars the campus experiences during large events that the University does not currently have the capacity to accommodate. The office building adjacent to the garage is designed to house the campus parking authority and law enforcement. The building will be provided building utilities such as domestic cold water, fire water, sanitary waste/vent, and electricity.

The following summarizes the mechanical, electrical and plumbing systems to be used to support the Sam Houston State University Coliseum Parking Garage:

MECHANICAL

- Variable Refrigerant Flow (VRF) systems with remote ground mounted air-cooled condensing units (4 VRF units; two energy recovery units at 185 Million British Thermal unit (MBH) total, one heat pump at 36 MBH, and one 17 MBH cooling only unit)
- Roof mounted exhaust fan
- Refrigerant liquid and suction piping
- Direct Digital Controls

Air Distribution Systems

- Variable Refrigerant Flow Systems
 - o Two multi-zone heat recovery VRF systems to serve office with combination of wall mounted, above ceiling ducted and ceiling cassette type indoor units
 - o Dedicate cooling only system to serve Server, IDF, Electrical room
 - o Dedicated heat pump system to serve elevator machine room
- Outside air will be provided in accordance with International Energy Conservation Code (IECC) 2015 and processed directly at the VRF indoor unit.

Space Type	Lighting Power Density Allowances (IECC 2015) (Space-by-Space Method) W/ft ²	People Rate (Exhaust) (cfm/person)	Area Rate (Exhaust) (cfm/sq.ft.)
Office Building			
Offices (enclosed)	1.11	5	0.06
Offices (open)	0.98	5	0.06
Conference/Meeting/Multi purpose Rooms	1.23	5	0.06
Interior Corridors	0.66	-	0.06
Storage	0.63	-	0.06
Seating Area, General	0.54	7.5	0.06
Lobby	0.90	7.5	0.06
Restroom	0.98	(50 cfm/fixture)	-
Lounge/Break Areas	0.73	5	0.06
Support Spaces			
Electrical/Mechanical Rooms	0.42	-	0.12
Data/Communication Rooms	0.42	-	0.12
Janitorial /Maintenance	0.63	-	(1 cfm/sq.ft.)

- Roof mounted exhaust will handle Class II air from Janitor's closets and restrooms. The garage is classified as open as defined by International Building Code (IBC) 2015. Ventilation shall be provided via free area at building exterior
- Andover/Schneider Electric controls system will be provided for Building Automation System (BAS)
- Ductwork Requirements
 - o Galvanized sheet metal for general use
 - o All detail per Sheet Metal and Air Conditioning National Association (SMACNA), American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) handbooks and in compliance with Sam Houston State University Guidelines
 - o Externally Insulated
- Piping Requirements
 - o Soft annealed copper suction and liquid lines, factory cleaned, dried, pressurized and sealed
 - o Factory insulated suction lines with flared fitting at both ends
 - o Length of run and pipe size per manufacturer's recommendations
- Test & Balance Requirements
 - o Start-up, testing, balancing and initial adjustments for the above listed heating,

- ventilating and air conditioning and exhaust systems will be required by a certified, third party consultant as specified in construction documents.
- Commissioning shall be by Owner's third party commissioning agent

ELECTRICAL

Electrical Service

- The facility will be served from a pad-mounted transformer. The garage area will be fed from the Main Electrical Room in the office space
 - o Surge protective devices and Power Logic panels will support electrical equipment
 - o 25% spare capacity will be included
- 480/277V, 3 phase, 4 wire pad-mounted natural gas backup generator with weatherproof enclosure (Basis of design is Caterpillar)
 - o Emergency backup for Critical operations in the Office area
 - o Emergency backup for life safety and egress lighting loads in the garage
- The Main Service Equipment shall be Square-D Panelboard Underwriters Lab (UL) labeled for service entrance and rated for 480Y/277 Volts, 3

Phase, 4 Wire.

- o Plated copper bus on main distribution and shall be UL labeled for service entrance.
- Two Automatic Transfer Switches, ATS's, to be open transition types.

Distribution Equipment

- Dry-type transformers will be utilized to provide 208Y/120 Volt power, which will be distributed along with 480Y/277 Volt power throughout the building. Transformers will have copper windings, and taps to adjust voltage levels
- Power and distribution panel boards shall be 480Y/277 or 208Y/120 Volt, 3 phase, 4 wire, and shall have bolt-on breakers, plated copper bus, main compression type lugs only (MLO) or main circuit breakers (MCB) as required, feed through lugs where required, and National Electrical Manufacturers Association (NEMA), 1 type construction. Distribution and branch circuit panel boards will be located in Electrical Rooms.
- All safety switches shall be of the heavy-duty type, with a NEMA 1 or 4X enclosure, and fused or non-fused as required. NEMA 4X enclosures shall be used at "wet" locations and corrosive locations
- All distribution equipment will be sized for 25% spare capacity.

Wiring Methods

- All wiring shall be copper and will be run in conduit or approved raceway. Conduit will be electrical metallic tubing (EMT), galvanized rigid steel (GRS), or intermediate metallic tubing (IMC). EMT will be allowed in dry locations only and will not be installed in concrete.
- Flexible metal conduit may be used for connections to motors and equipment subject to vibration, as well as for connections to lighting fixtures. Lengths shall not exceed 6 feet. For office area, metal clad (MC) cable, is allowed from the last junction box down a wall cavity, as well as, horizontal runs in wall cavities.
- Liquid tight flexible conduit may be used for connections to motors or equipment subject to vibration in damp or wet locations.

Mechanical, Plumbing and Electrical Systems Narrative

- Minimum size conduit for power and lighting circuits will be ¾ inch, and minimum size conduit for telecommunications will be 1-1/2 inch. Larger conduit sizes will be used to accommodate the number and sizes of conductors contained within so as not to exceed National Electric Code (NEC) fill requirements. Fittings for GRS and IMC conduits will be threaded; fittings for EMT will be compression type.

Conductors

- Conductors will be single copper conductor, 600-volt, type thermoplastic, high heat, nylon (THHN), THHN/THWN insulated, 75 degrees C, and thermoplastic jacketed. The minimum size conductor for power will be #12 American wire gauge (AWG), and the minimum size conductor for control will be #14 AWG. Conductors #6 AWG and smaller shall be factory color-coded, larger conductors will have colored tape on each conductor. Aluminum conductors are not allowed on the project
- Service entrance conductors will be single conductor, 600-volt, Type Cross-Linked high heat water resistant insulated wire (XHHW), XHHW/XHHW-2, 90 degrees C, and Poly Vinyl Chloride jacketed (PVC) jacketed. NEC table for 75 degrees C will be used when determining the ampacity of the service conductors.

Electrical System Grounding

- The electrical distribution system grounding includes the grounding of the neutral of each separately derived electrical system, and the grounding of electrical equipment enclosures and raceways to serve as a fault return path.
- Electrical equipment enclosures and raceways and other exposed non-current carrying metal parts of the distribution system will be grounded by means of a green grounding conductor routed with each feeder and branch circuit. Grounding will extend from the switchboard or panelboard grounding bus throughout the system to each device and item of equipment.

Lighting Systems

- The Illuminating Engineering Society's Illuminance Selection Procedure will be used for establishing target maintained illumination levels throughout all areas. Specific influences of glare, task complexity, surface reflectance characteristics, veiling brightness and user age are addressed with this procedure.
- International Energy Conservation Code, 2015 Edition will be utilized to establish the baseline of energy usage for lighting.
- Dimmable Fixtures shall be provided for Offices and Conference Areas
- Interior and exterior building lighting will be provided at 277V.
- Building's interior lighting will utilize 2X2, and 2X4 Light Emitting Diode (LED), fixtures, LED downlights, suspended direct/indirect and general purpose strip lights. Light fixtures will be independently supported from the structure and not the ceiling.
- Emergency egress lighting for Garage.
 - o Backed up by the Generator thru a dedicated Life Safety ATS and Distribution Panel.

Lighting Controls

- A lighting control panel shall control garage lighting.
- Advanced lighting controls will be used to minimize electric lighting energy consumption through the use of daylight sensors, occupancy and vacancy sensors, programmable dimming, and schedule based controls.
- Office Building lighting will utilize low voltage controls, low voltage vacancy and occupancy sensors, wall mounted sensor switches, control relays and daylight sensors where required. Lighting controls shall operate stand alone, and will not require networked controls. Low voltage switches shall have stainless steel faceplates.
- Exterior lighting will be connected through contactors and controlled by a manual time clock.

- Dimming controls will be provided in Offices and Meeting Rooms.

Wiring Devices

- Circuits will be provided throughout various locations of the building to serve convenience receptacles, computers and owner furnished equipment.
- Standard and computer receptacles are 20 Amp, weather proof and standard specification grade (dependent on location), grounding type receptacles. All receptacles shall have stainless steel faceplates.

Standards of Design

- Voltage drop will be a maximum of 2% for feeder conductors, and a maximum of 3% on branch circuit conductors at the circuit's rated capacity. If the phase conductor size is increased for voltage drop, the equipment-grounding conductor shall increase in size proportional to the circular mil increase of the phase conductor.
- Motor control features and Variable Frequency Drives (VFD)'s, will be coordinated with the mechanical system design.
- All conduits and raceways shall be run straight and parallel to construction lines. Conduit shall be supported independently to building structure. Circuits from different panels and of different voltages shall not be mixed in the same conduit. Telephone, fire alarm, controls, fiber optic, Building Energy Management System (BEMS), data and clean power systems shall be run in separate conduits where inaccessible (hard ceilings, chases, wall cavities) or exposed in mechanical rooms or public spaces. In concealed but accessible areas these low voltage cable systems can be in the cable trays or in independent supports (bridal rings, etc.).
- Power and data will be provided as per the AV/IT standard and coordinated with SHSU IT Team.

Fire Alarm System

- The office Building will be provided with a new

fire alarm system as specified by Edwards, EST-3. The garage Building fire alarm system will be provided and tied into the Main Fire Alarm Control Panel (FACP) for the Office Building. All equipment and devices will be shown on the engineering drawings.

Space Type	Lighting Power Density Allowances (IECC 2015) (Space-by-Space Method) W/ft2	Recommended Light Illuminance Level Foot-candles
Parking Garage	0.21	
Driveways (Pavement)		6 (4:1 Uniformity Ratio)
Entrance Ramps		25 (4:1 Uniformity Ratio)
Elevator Lobby and Stairs		10 (4:1 Uniformity Ratio)
Top Level Garage		3
Support Spaces		
Electrical/Mechanical Rooms	0.42	30
Janitorial/Storage/Maintenance	0.63	30
Office Building		
Offices (enclosed)	1.11	40
Conference/Meeting/Multipurpose Rooms	1.23	30
Interior Corridors	0.66	30
Support Spaces		
Lounge/Break Areas	0.73	30
Toilets	0.98	30
Electrical/Mechanical Rooms	0.42	30
Data/Communication Rooms	0.42	30
Janitorial/Storage/Maintenance	0.63	30

Mechanical, Plumbing and Electrical Systems Narrative

PLUMBING

Utility Service

The project will be served by the following plumbing utilities:

- Water
- Sanitary
- Storm
- Fire Sprinkler

Systems

The project will be served by the following plumbing systems:

- Domestic Cold Water: Domestic Cold Water (DCW) will be provided to all plumbing fixtures in the facility.
 - o All DCW piping will be ASTM B88, Type L seamless copper water tube with wrought copper fittings.
 - o DCW piping will be sized for a maximum velocity of 8 feet per second (fps). Cold water piping will be insulated with mineral fiber, ASTM C547, preformed pipe insulation type I. Cold water piping insulation to be 1 inch thick.
- Domestic Hot Water: Domestic Hot Water (DHW) will be provided to all plumbing fixtures in the facility.
 - o All DHW piping will be ASTM B88, Type L seamless copper water tube with wrought copper fittings.
 - o Hot water piping will be sized for a maximum velocity of 6 fps. Hot water piping will be insulated with mineral fiber, ASTM C547, preformed pipe insulation type I. Hot water piping insulation NPS 1-1/2 inch and smaller to be 1 inch thick.
- Sanitary Waste and Vent: All fixtures will discharge to a sanitary waste and vent system.
 - o Sanitary waste and vent above ground will be service weight, no-hub cast iron pipe and

fittings with heavy duty couplings. Sanitary waste and vent below ground will be schedule 40 solid wall PVC with Domestic Waste Vent (DWV) fittings.

- Storm piping: Above grade and below ground.
 - o Garage will be schedule 40 solid wall PVC with DWV fittings.
 - o Office area above ground will be service weight, no-hub cast iron pipe with heavy duty couplings.
 - o Sanitary waste and vent below grade will be schedule 40 solid wall PVC with DWV.
- Sprinkler System: The garage will be protected with a manual dry pipe system.
 - o Sprinkler piping will be schedule 40 galvanized with galvanized fittings.
 - o Fire hose cabinets will be provided on each floor with a coverage distance of 130 feet. No sprinkler system is required for the office.

Equipment

The project will be served by the following plumbing equipment:

- Water heater – The office building will be served by a tank type electric water heater.

Plumbing Fixtures

The plumbing fixtures will be high efficiency water saving type. At a minimum, plumbing fixtures will include:

- Water closets: Porcelain wall mounted fixtures with 1.28 gallon per flush, sensor battery flush valves.
- Urinals: Porcelain wall mounted fixtures with 0.125 gallon per flush (gpm) sensor battery flush valves
- Lavatory: Porcelain fixtures with sensor battery faucets 0.5 gpm.
- Sink: Stainless Steel with 1.5 gpm swing spout gooseneck faucet.
- Mop sinks: Floor mounted terrazzo type.

Telecommunications Narrative

Data Communications

Existing campus infrastructure and duct system currently servicing campus buildings adjacent to the site will need to be re-routed outside the new Coliseum Parking Garage foot print.

Two redundant campus ductbank feeds to the garage Main Telecom Room (MDF) are required. Each feed will consist of two newly installed 4 inch schedule 40 conduits. Two 4 inch conduits in each feed will have three 3 inch 3-cell fabric mesh innerducts installed.

Redundant multi-strand single-mode fiber optic backbone outside plant cables will be fed from the existing campus network to the projects telecommunication Main Equipment Room (MDF). Due to the size of the building footprint two Telecom Rooms (IDF) are required.

The project shall meet Category 6 cabling performance standards. Each Telecommunications Outlet (TCO) will contain plenum, Category 6, 4 pair UTP copper cables unless otherwise indicated on the Telecommunications Drawings. All inserts will be flush-type mounted into conduit and boxes installed in the hollow wall space or in floor poke-thru devices. Typical outlets will consist of two data Category 6 cables with 568B terminations.

Typical Wireless Access Points (WAPS) will consist of two data Category 6 cable with 568B terminations. All inserts will be flush-type mounted into 2-port surface mount plenum box housed in a double gang electrical box with cover. A 20 feet service loop at the access point end is required for final placement of access point after post coverage survey. WAPS are provided by owner and installed by awarded contractor.

24-strand single-mode fiber backbone cables shall connect each new Intermediate Room (IDF)

to the Main Telecom Room (MDF).

Fiber cable termination hardware shall be mounted in one of the Contractor provided and installed 19 inches equipment racks in the TR Rooms. Fiber backbone shall terminate in, fully populated, rack mounted 2RU Fiber Shelf using ST connectors and cartridges.

Typical security IP camera will consist of one data Category 6 with 568B termination. All inserts will be flush-type mounted into 1-port surface mount box housed in a double gang electrical box with cover.

Horizontal data cabling shall terminate on rack mounted Category 6, patch panels in the MDF & IDF's, and on 568B Category 6 inserts at the outlet with a faceplate.

Contractor shall provide two Category 6 patch cords per horizontal data cable installed: 50% 5 feet Length and 50% 15 feet Length.

Contractor shall provide one duplex fiber optic patch cords per fiber termination; patch cords shall be consistent with fiber type.

Data communications equipment (data switches) are provided and installed by the Owner and will be sized to meet the existing needs of the facility with careful consideration of future growth.

Voice Communications

25 pair plenum rated copper backbone cable shall connect the MDF to the new IDF's for analog phone lines.

Copper backbone cabling shall terminate on rack mounted patch panel hardware.

Voice communications equipment is provided and installed by the Owner. The project will provide space and connectivity for owner

furnished equipment with careful consideration of future growth.

Communications Supplementary Components

The telecommunications cable distribution system will be run from each outlet above the finished ceiling in conduit, routed to the nearest Intermediate Room (IDF). The maximum allowed distance from the IDF patch panel to the workstation outlet is 295 feet. Horizontal conduit will connect the station outlet boxes with nearest appropriate cable pathway. Each outlet will consist of a double gang box fed by one 1 inch conduit with pull string.

Conduit shall be minimum 1 inch EMT and shall not exceed 100 feet or have more than two 90 degree bends between pull boxes.

Main Telecom Room (MDF) and other telecom rooms (IDF) to have a minimum clearance of 8 x 10 feet min. All rooms to have required heating and cooling.

Telecom Rooms (TR) shall have one 20-amp 120 volt single phase outlet per equipment rack and additional 30 amp 208 volt single phase per designated rack to power network switch equipment, with duplex convenience outlets every 6 feet on all four walls.

Contractor shall provide and install equipment racks in each IDF, and MDF. Racks should be properly bonded to the Telecommunications Main Grounding Bus Bar (TMGB), and the Telecommunications Grounding Bus Bar (TGB).

Telecom Room (TR) walls shall be covered with ¾ inch marine rated plywood, painted on both sides with fire retardant paint.

Chatsworth, 18 inch ladder rack shall be installed around the perimeter of the rooms and above the equipment racks as well as vertically adjacent to the riser pathway.

Additional outside plant conduit/duct bank along with maintenance holes will be required for connectivity to exterior systems.

“STI EZ Path” shall be utilized in high density wiring locations for all fire-stop penetrations.

Electronic Safety and Security

Access Control

The new office and garage will be equipped with a Software House: C-Cure 9000 Access Control Management System (ACMS) controlling access into “high risk” areas within as defined by the SHSU Campus Safety. The system intent is to control and monitor access to areas that may contain items and/or information identified as valuable, and to allow access to appropriately authorized personnel only.

Access to secured areas will be controlled by the presentation of a credential (access card or finger print). The access control system has the ability to report back to centralized security monitoring location via the data network.

Electronic access controlled is recommended for all office entrances, telecom rooms, and other areas defined as secure space.

All cabling for the access control system shall be home run to the nearest Security Room (C-Cure 9000) Security Control Panel (SCP).

Access control doors are fed by security signal cable and require remote power distribution from the Security Room.

Telecommunications Narrative

Doors secured with access control will be activated by a card reader or biometric reader from the entry side and crash bar or motion from the exit side. Access control cables will terminate in a separate security room, with request and report functions processed at the security monitoring location.

Electronic Surveillance

Cameras for the video surveillance system shall be used for facial ID, activity detection, and panoramic IP (Axis Cameras and Milestone Xprotect Corporate Video Surveillance Software and NVR) unless otherwise directed by SHSU Campus Safety. The cameras will be cross connected to a dedicated network PoE device located in the IDF that transmits image data to a dedicated Network Video Recorder (NVR) for remote viewing and storage.

The video surveillance system will be capable of 24/7 recording and monitoring from a station in a security area of the facility as well as remote locations as dictated by SHSU Campus Safety.

Surveillance cameras are to view activity and people in entryways, elevator lobbies, gate entry/exit, vehicular directional pathways, and stairwell vestibules with sufficient resolution to make personal identification. Locations as directed by SHSU Campus Safety.

All category 6 cabling for the video Surveillance System shall be home run to IDF's.

NVR's (Milestone Xprotect Corporate) and monitoring station(s) for the video surveillance system are to be located as directed by SHSU Campus Safety.

Contractor shall provide one Category 6 patch cord per camera cable installed. 100% 3 feet length at outlet.

Electronic Personnel Protection Systems

Emergency phone wall mounted call boxes shall be located and installed at egress to stairwells and elevator lobbies.

Emergency phone wall mounted call boxes require a 20A, 120V circuit and draw a minimum of 3 amperes under normal operation.

A single voice line shall be required to feed the emergency phone via a 1 inch conduit homerun to the nearest garage IDF.

Detailed Cost Estimate

Detailed Cost Estimate

Project: Sam Houston State University Coliseum Parking Garage
Design Development Cost Estimate Summary



4/18/2019

Cost of Work Breakdown			
Garage Cost of Work		\$	8,148,916.00
Building Cost of Work		\$	1,001,959.00
SDI Sub Bonds	1.00%	\$	87,095.00
Total Cost of Work		\$	9,237,970.00
DB Associated Costs			
DB General Conditions		\$	532,439.00
GL and Insurance	0.40%	\$	38,976.00
P&P Bond	0.89%	\$	96,628.00
Builders Risk	0.15%	\$	16,267.00
Total General Conditions		6.31% \$	684,310.00
DB Fee	3.75%	\$	406,682.00
DB Contingency	4.76%	\$	515,880.00
Total Fee/Contingency		\$	922,562.00
Total Construction Costs		\$	10,844,842.00
Area of Savings Summary			
Total Construction Costs Prior to Savings		\$	10,844,842.00
Total Area of Savings Adjustments		\$	(903,975.00)
Adjusted Total		\$	9,940,867.00
Total After Savings		\$	9,940,867.00

Continue next page.

Detailed Cost Estimate

Location	CSI-1	Description	Takeoff Quantity	Total Cost/Unit	Total Amount
.02 Garage					
	01-00-00	GENERAL REQUIREMENTS			
		LAYOUT & ENGINEERING			
		Layout Buildings & Partitions	50,496.00 sf	0.08 /sf	3,912
		Site Engineer	8.00 wk	1,854.13 /wk	14,833
		Engineer Helper	8.00 wk	921.65 /wk	7,373
		Car Allowance	2.00 mo	400.00 /mo	800
		Mobile Phone	2.00 mo	150.00 /mo	300
		Gas Card	2.00 mo	450.00 /mo	900
		LAYOUT & ENGINEERING	198,012.00 sf	0.14 /sf	28,118
		TEMPORARY UTILITIES			
		Temporary Water	Mo	/Mo	
		Month Electric Cost - Prior to Permanent Power	Mo	/Mo	
		Monthly Electric Cost - After Utility Connection	Mo	/Mo	
		TEMPORARY UTILITIES	198,012.00 sf	/sf	
		EXPENDABLE TOOLS/GASOLINE/MISC. EQUIPMENT			
		Expendable Tools	12.00 mo	541.25 /mo	6,495
		Gasoline for Misc. Equipment	3,114.00 gal	2.25 /gal	7,007
		Lull	4.00 mo	2,706.25 /mo	10,825
		Bobcat	6.00 mo	1,623.75 /mo	9,743
		EXPENDABLE TOOLS/GASOLINE/MISC. EQUIPMENT	198,012.00 sf	0.17 /sf	34,069
		SAFETY			
		Safety Lunches	6.00 ea	270.63 /ea	1,624
		Misc. Safety Item	1.00 ls	1,082.50 /ls	1,083
		OSHA Safety Meeting	52.00 wk	37.50 /wk	1,950
		Check Equipment Tool for Safety	1.00 ls	375.00 /ls	375
		Hard Hats and Goggle	1.00 ls	541.25 /ls	541
		Fire Extinguisher	21.00 ea	45.39 /ea	953
		SAFETY	198,012.00 sf	0.03 /sf	6,526
		TESTING			
		Testing Allowance Site	ls	/ls	
		Testing Allowance Concrete	ls	/ls	
		Testing Allowance Steel	ls	/ls	
		TESTING	198,012.00 sf	/sf	
		DISTRIBUTIVE WORK			
		Flagmen in Streets	519.00 mh	22.50 /mh	11,678
		Pump Water	346.00 mh	45.00 /mh	15,570
		Construction Fence Rental	1,355.00 lf	3.50 /lf	4,743
		Construction Fence Gate	3.00 ea	1,500.00 /ea	4,500
		Traffic Control	12.00 Mo	841.25 /Mo	10,095
		DISTRIBUTIVE WORK	198,012.00 sf	0.24 /sf	46,585
		PROJECT CLEANING			
		Construction Clean-up	198,012.00 sf	0.23 /sf	44,553
		Clean Streets	519.00 mh	31.07 /mh	16,124
		Final Clean & Washdown	198,012.00 sf	0.11 /sf	20,791
		Temporary Toilets	12.00 mo	541.25 /mo	6,495
		PROJECT CLEANING	198,012.00 sf	0.44 /sf	87,963
		PERIMETER PROTECTION & FLOOR OPENINGS			
		Safety Rails - Floor Edge	3,280.00 lf	7.50 /lf	24,600
		PERIMETER PROTECTION & FLOOR OPENINGS	198,012.00 sf	0.12 /sf	24,600
		01-00-00 GENERAL REQUIREMENTS	198,012.00 sf	1.15 /sf	227,861
	02-00-00	EXISTING CONDITIONS			
		GENERAL CONDITIONS			

Location	CSI-1	Description	Takeoff Quantity	Total Cost/Unit	Total Amount
		GENERAL CONDITIONS			
		Insurance and Liability for Abatement	1.00 ls	15,000.00 /ls	15,000
		GENERAL CONDITIONS	198,012.00 sf	0.08 /sf	15,000
		SITE DEMOLITION			
		Demo Structures	25,260.00 sf	4.50 /sf	113,670
		SITE DEMOLITION	198,012.00 sf	0.57 /sf	113,670
		HAZARDOUS MATERIAL ABATEMENT			
		Asbestos Abatement - Blding	25,260.00 sf	3.50 /sf	88,410
		HAZARDOUS MATERIAL ABATEMENT	198,012.00 sf	0.45 /sf	88,410
		SITE DEMOLITION			
		Remove Tree and Stump	5.00 ea	250.00 /ea	1,250
		Asphalt Demo	37,077.00 sf	0.45 /sf	16,685
		Remove Sidewalks	8,058.00 sf	1.25 /sf	10,073
		Remove Curb & Gutter	1,238.00 lf	4.00 /lf	4,952
		Saw Cut Road	182.00 lf	1.25 /lf	228
		Remove Light Pole Bases	3.00 ea	300.00 /ea	900
		Sawcut Asphalt	950.00 lf	1.25 /lf	1,188
		SITE DEMOLITION	198,012.00 sf	0.18 /sf	35,274
		SANITARY SEWER			
		Fill or Remove 8" SS Line	350.00 lf	10.00 /lf	3,500
		SANITARY SEWER	198,012.00 sf	0.02 /sf	3,500
		02-00-00 EXISTING CONDITIONS	198,012.00 sf	1.29 /sf	255,854
	03-00-00	CONCRETE			
		AUGER CAST PILES			
		Drilling/placement of piles 18" Diameter/80' deep	16,640.00 lf	25.10 /lf	417,664
		Dispose of Spoils	1,251.25 yd	12.00 /yd	15,015
		Bobcat	1.00 mn	1,623.75 /mn	1,624
		Bobcat - Operator	120.00 hr	37.50 /hr	4,500
		Bobcat - Fuel	420.00 gl	3.25 /gl	1,364
		Mobilization	1.00 ea	40,000.00 /ea	40,000
		Test Pile	1.00 ea	30,000.00 /ea	30,000
		AUGER CAST PILES	198,012.00 sf	2.58 /sf	510,167
		CAST IN PLACE CONCRETE			
		Foundations	50,496.00 sf	5.50 /sf	277,728
		SOG	50,496.00 sf	4.50 /sf	227,232
		Topping Slab	147,516.00 sf	4.25 /sf	626,943
		Backfill at Ramp	1,800.00 yd	22.66 /yd	40,779
		Cast in Place Wall	4,806.00 sf	27.00 /sf	129,762
		Elevator Pits	2.00 ea	6,500.00 /ea	13,000
		Perimeter Grade Beam	862.00 lf	25.00 /lf	21,550
		CAST IN PLACE CONCRETE	198,012.00 sf	6.75 /sf	1,336,994
		STRUCTURAL PRE-CAST			
		Precast Garage Structure	147,516.00 sf	16.00 /sf	2,360,256
		Additional Elevator Shaft	250.00 sf	16.00 /sf	4,000
		Walkway Balcony 6' wide	1,776.00 sf	35.00 /sf	62,160
		Design of Precast	1.00 ea	/ea	(134,259)
		STRUCTURAL PRE-CAST	198,012.00 sf	11.58 /sf	2,292,157
		03-00-00 CONCRETE	198,012.00 sf	20.90 /sf	4,139,318
	05-00-00	METALS			
		MISC STEEL			
		Bicycle Racks	1.00 ls	15,000.00 /ls	15,000
		MISC STEEL	198,012.00 sf	0.08 /sf	15,000
		STRUCTURAL STEEL			
		Framing at Metal Panel Exterior Horizontal at 10' oc- 6x4x1/4 Tube	45.00 tons	4,500.00 /ton	202,500
		Guard Rail at Stairs - Steel	539.00 lf	130.00 /lf	70,070
		Guard Rail at Walkway	296.00 lf	210.00 /lf	62,160

Detailed Cost Estimate

Location	CSI-1	Description	Takeoff Quantity	Total Cost/Unit	Total Amount
		STRUCTURAL STEEL			
		Decorative Pergola	788.00 sf	45.00 /sf	35,460
		STRUCTURAL STEEL	198,012.00 sf	1.87 /sf	370,190
		BARRIER CABLES - VEHICLE STOP			
		Barrier Cables / Handrail	lf	/lf	
		BARRIER CABLES - VEHICLE STOP	198,012.00 sf	/sf	
		EXP. JOINT COVERS			
		Floor Expan. Jt. Covers	lf	/lf	
		EXP. JOINT COVERS	198,012.00 sf	/sf	
		EXTERIOR SUN CONTROL			
		Walkway Canopy	3,033.00 sf	45.00 /sf	136,485
		EXTERIOR SUN CONTROL	198,012.00 sf	0.69 /sf	136,485
		05-00-00 METALS	198,012.00 sf	2.64 /sf	521,675
07-00-00		THERM./ MOIST. PROTECTION			
		ROUGH CARPENTRY			
		Rough Hardware	1.00 ls	1,291.25 /ls	1,291
		ROUGH CARPENTRY		/sf	1,291
		WATERPROOFING			
		Elevator Walls Waterproofing	1.00 ea	2,500.00 /ea	2,500
		Traffic Coating	sf	/sf	
		Caulking Joints	152,814.00 sf	0.35 /sf	53,485
		Caulking Joints Site	1.00 ls	7,500.00 /ls	7,500
		WATERPROOFING	198,012.00 sf	0.32 /sf	63,485
		METAL WALL PANELS			
		Metal Wall Panel Ends	7,280.90 sf	24.00 /sf	174,742
		Metal Wall Panel Sides	13,602.60 sf	24.00 /sf	326,462
		Metal Screen Infill	3,910.00 sf	30.00 /sf	117,300
		METAL WALL PANELS	198,012.00 sf	3.12 /sf	618,504
		ELASTOMERIC MEMB. ROOFING			
		Membrane Roofing	600.00 sf	18.00 /sf	10,800
		ELASTOMERIC MEMB. ROOFING	198,012.00 sf	0.06 /sf	10,800
		APPLIED FIREPROOFING			
		Spray Fireproofing	ls	/ls	
		Intumescent Paint	ls	/ls	
		APPLIED FIREPROOFING	198,012.00 sf	/sf	
		07-00-00 THERM./ MOIST. PROTECTION	198,012.00 sf	3.51 /sf	694,080
08-00-00		OPENINGS			
		METAL FRAMED CURTAINWALL			
		Store Front at Roof for Elevator	260.00 sf	75.00 /sf	19,500
		METAL FRAMED CURTAINWALL	198,012.00 sf	0.10 /sf	19,500
		08-00-00 OPENINGS	198,012.00 sf	0.10 /sf	19,500
09-00-00		FINISHES			
		PAINTING			
		Paint Railings	16.00 Ind	1,350.00 /Ind	21,600
		Paint Doors	8.00 ea	125.00 /ea	1,000
		PAINTING	198,012.00 sf	0.11 /sf	22,600
		09-00-00 FINISHES	198,012.00 sf	0.11 /sf	22,600
10-00-00		SPECIALTIES			
		MISC STEEL			
		Signage Allowance at Garage	1.00 ls	100,000.00 /ls	100,000
		MISC STEEL	198,012.00 sf	0.51 /sf	100,000
		FIRE PROTECTION			
		Extinguisher & Cabinets	40.00 ea	170.27 /ea	6,811
		FIRE PROTECTION	198,012.00 sf	0.03 /sf	6,811
		10-00-00 SPECIALTIES	198,012.00 sf	0.54 /sf	106,811
11-00-00		EQUIPMENT			

Location	CSI-1	Description	Takeoff Quantity	Total Cost/Unit	Total Amount
		PARKING CONTROL			
		Parking Detection Equipment/Counter System	1.00 ls	75,000.00 /ls	75,000
		PARKING CONTROL	198,012.00 sf	0.38 /sf	75,000
		11-00-00 EQUIPMENT	198,012.00 sf	0.38 /sf	75,000
14-00-00		CONVEYING EQUIPMENT			
		ELECTRIC ELEVATORS			
		Elevators	4.00 stps	33,250.00 /stps	133,000
		ELECTRIC ELEVATORS	198,012.00 sf	0.67 /sf	133,000
		14-00-00 CONVEYING EQUIPMENT	198,012.00 sf	0.67 /sf	133,000
21-00-00		FIRE SUPPRESSION			
		FIRE PROTECTION			
		Dry Standpipe Sys./ sf	198,012.00 sf	0.75 /sf	148,509
		FIRE PROTECTION	198,012.00 sf	0.75 /sf	148,509
		21-00-00 FIRE SUPPRESSION	198,012.00 sf	0.75 /sf	148,509
22-00-00		PLUMBING			
		PLUMBING			
		Plumbing Sub /sf	198,012.00 sf	1.50 /sf	297,018
		PLUMBING	198,012.00 sf	1.50 /sf	297,018
		22-00-00 PLUMBING	198,012.00 sf	1.50 /sf	297,018
23-00-00		HVAC			
		HVAC			
		Hvac Budget Commercial / sf Elevator Rooms	1.00 ea	10,000.00 /ea	10,000
		HVAC	198,012.00 sf	0.05 /sf	10,000
		23-00-00 HVAC	198,012.00 sf	0.05 /sf	10,000
26-00-00		ELECTRICAL			
		ELECTRICAL			
		Electrical	198,012.00 sf	2.34 /sf	463,030
		Generator	1.00 ea	80,000.00 /ea	80,000
		Electrical - Garage LED Lighting	198,012.00 sf	0.50 /sf	99,006
		Additional Elevator	250.00 sf	25.00 /sf	6,250
		ELECTRICAL	198,012.00 sf	3.27 /sf	648,286
		26-00-00 ELECTRICAL	198,012.00 sf	3.27 /sf	648,286
27-00-00		COMMUNICATIONS			
		LOW VOLTAGE SYSTEMS			
		Data Comm	198,012.00 sf	/sf	
		LOW VOLTAGE SYSTEMS	198,012.00 sf	/sf	
		27-00-00 COMMUNICATIONS	198,012.00 sf	/sf	
28-00-00		ELEC. SAFETY-SECURITY			
		ELECTRICAL			
		Fire Alarm	198,012.00 sf	0.16 /sf	32,000
		ELECTRICAL	198,012.00 sf	0.16 /sf	32,000
		LOW VOLTAGE SYSTEMS			
		Security and LPR Rough In	198,012.00 sf	0.25 /sf	49,503
		LOW VOLTAGE SYSTEMS	198,012.00 sf	0.25 /sf	49,503
		28-00-00 ELEC. SAFETY-SECURITY	198,012.00 sf	0.41 /sf	81,503
31-00-00		EARTHWORK			
		MISC STEEL			
		Dewatering/Underground Unforeseens	1.00 ls	50,000.00 /ls	50,000
		MISC STEEL	198,012.00 sf	0.25 /sf	50,000
		EARTHWORK			
		Cut	4,289.50 yd	13.50 /yd	57,908
		Fill	6,060.00 yd	8.00 /yd	48,480
		Import	6,060.00 yd	12.00 /yd	72,720
		EARTHWORK	198,012.00 sf	0.91 /sf	179,108
		SOIL STABILIZATION			

Detailed Cost Estimate

Location	CSI-1	Description	Takeoff Quantity	Total Cost/Unit	Total Amount
		SOIL STABILIZATION			
		Lime Injection	4,200.00 sy	5.00 /sy	21,000
		SOIL STABILIZATION	198,012.00 sf	0.11 /sf	21,000
		SOIL TREATMENT			
		Termite Control	50,496.00 sf	0.12 /sf	6,060
		SOIL TREATMENT	198,012.00 sf	0.03 /sf	6,060
		EROSION CONTROL			
		Inlet Protection	5.00 ea	350.00 /ea	1,750
		Silt Fence	1,355.00 lf	3.50 /lf	4,743
		Stabilized Construction Entrance	1,500.00 sf	1.89 /sf	2,833
		Erosion Control Maintenance	80.00 hr	45.00 /hr	3,600
		EROSION CONTROL	198,012.00 sf	0.07 /sf	12,926
		SUBSURFACE DRAINAGE			
		French Drain and Pipe	400.00 lf	30.00 /lf	12,000
		SUBSURFACE DRAINAGE	198,012.00 sf	0.06 /sf	12,000
		31-00-00 EARTHWORK	198,012.00 sf	1.42 /sf	281,093
	32-00-00	EXTERIOR IMPROVEMENTS			
		ASPHALT PAVING			
		<i>Asphalt Paving - New - HEAVY DUTY</i>	<i>sy</i>	<i>/sy</i>	
		ASPHALT PAVING	198,012.00 sf	/sf	
		CONCRETE PAVING			
		Stone Base	120.00 tn	28.32 /tn	3,398
		Sidewalks - Broom LD	3,295.00 sf	7.50 /sf	24,713
		Sidewalks - Handicap	154.00 sf	12.00 /sf	1,848
		Concrete Paving - Entrance Apron	1,500.00 sf	9.00 /sf	13,500
		Sidewalks - Scored	3,124.00 sf	10.00 /sf	31,240
		Transformer Pad	80.00 sf	12.00 /sf	960
		Paving Utility Pour Back	3,124.00 sf	10.00 /sf	31,240
		CONCRETE PAVING	198,012.00 sf	0.54 /sf	106,898
		CURBS & GUTTERS			
		Curb and Gutter	200.00 lf	18.00 /lf	3,600
		Extruded Curb	204.00 lf	18.00 /lf	3,672
		CURBS & GUTTERS	198,012.00 sf	0.04 /sf	7,272
		MISC SITE CONCRETE			
		Bollards	21.00 ea	350.00 /ea	7,350
		MISC SITE CONCRETE	198,012.00 sf	0.04 /sf	7,350
		LANDSCAPE & IRRIGATION ALLOWANCE			
		Sod (Palisade)	2,300.00 sy	7.75 /sy	17,825
		Irrigation	8.00 zn	2,250.00 /zn	18,000
		Canopy Tree	20.00 ea	950.00 /ea	19,000
		Shrubs	275.00 ea	75.00 /ea	20,625
		LANDSCAPE & IRRIGATION ALLOWANCE	198,012.00 sf	0.38 /sf	75,450
		FENCES & GATES			
		Generator Screen Allow	1.00 ea	4,538.75 /ea	4,539
		FENCES & GATES	198,012.00 sf	0.02 /sf	4,539
		PARKING BUMPERS			
		Parking Bumpers at Handicap	15.00 ea	125.00 /ea	1,875
		PARKING BUMPERS	198,012.00 sf	0.01 /sf	1,875
		PAINTING			
		Striping	578.00 spa	25.00 /spa	14,450
		PAINTING	198,012.00 sf	0.07 /sf	14,450
		32-00-00 EXTERIOR IMPROVEMENTS	198,012.00 sf	1.10 /sf	217,834
	33-00-00	UTILITIES			
		WATER DISTRIBUTION			
		Waterline and Infill	250.00 lf	18.00 /lf	4,500
		Fire Line	250.00 lf	45.00 /lf	11,250

Location	CSI-1	Description	Takeoff Quantity	Total Cost/Unit	Total Amount
		WATER DISTRIBUTION			
		PIV at Fire Line	1.00 ea	3,500.00 /ea	3,500
		WATER DISTRIBUTION	198,012.00 sf	0.10 /sf	19,250
		SANITARY SEWER			
		Sanitary Sewer Line	1,035.00 lf	110.00 /lf	113,850
		Manhole	5.00 ea	4,000.00 /ea	20,000
		Manhole Remove and Replace	2.00 ea	6,500.00 /ea	13,000
		SANITARY SEWER	198,012.00 sf	0.74 /sf	146,850
		GAS			
		Gasline to Genset	125.00 lf	30.00 /lf	3,750
		GAS	198,012.00 sf	0.02 /sf	3,750
		STORM DRAINAGE			
		Plug Storm Line	1.00 ea	750.00 /ea	750
		Remove Drainage Structure	2.00 ea	750.00 /ea	1,500
		Storm Drain - Remove and Infill	73.00 lf	45.00 /lf	3,285
		5' Manhole	1.00 ea	3,150.00 /ea	3,150
		RCP 24"	181.00 lf	75.00 /lf	13,575
		RCP 36"	137.00 lf	90.00 /lf	12,330
		RCP 18"	58.00 lf	48.00 /lf	2,784
		Curb Drain Inlet	2.00 ea	2,500.00 /ea	5,000
		Area Inlet	4.00 ea	1,500.00 /ea	6,000
		Storm Junction Box	2.00 ea	3,500.00 /ea	7,000
		STORM DRAINAGE	198,012.00 sf	0.28 /sf	55,374
		ELECTRICAL			
		Site Electrical Duct Bank	350.00 lf	125.00 /lf	43,750
		ELECTRICAL	198,012.00 sf	0.22 /sf	43,750
		33-00-00 UTILITIES	198,012.00 sf	1.36 /sf	268,974
		.02 Garage	198,012.00 sf	41.15 /sf	8,148,916
.03 Building					
	01-00-00	GENERAL REQUIREMENTS			
		LAYOUT & ENGINEERING			
		Layout Buildings & Partitions	4,436.00 sf	0.08 /sf	344
		LAYOUT & ENGINEERING	4,436.00 sf	0.08 /sf	344
		TEMPORARY UTILITIES			
		<i>Temporary Water</i>	<i>Mo</i>	<i>/Mo</i>	
		<i>Month Electric Cost - Prior to Permanent Power</i>	<i>Mo</i>	<i>/Mo</i>	
		<i>Monthly Electric Cost - After Utility Connection</i>	<i>Mo</i>	<i>/Mo</i>	
		TEMPORARY UTILITIES	4,436.00 sf	/sf	
		EXPENDABLE TOOLS/GASOLINE/MISC. EQUIPMENT			
		Expendable Tools	6.00 mo	541.25 /mo	3,248
		Gasoline for Misc. Equipment	778.50 gal	2.25 /gal	1,752
		EXPENDABLE TOOLS/GASOLINE/MISC. EQUIPMENT	4,436.00 sf	1.13 /sf	4,999
		SAFETY			
		Fire Extinguisher	2.00 ea	45.39 /ea	91
		SAFETY	4,436.00 sf	0.02 /sf	91
		TESTING			
		<i>Testing Allowance Site</i>	<i>Is</i>	<i>/Is</i>	
		<i>Testing Allowance Concrete</i>	<i>Is</i>	<i>/Is</i>	
		<i>Testing Allowance Steel</i>	<i>Is</i>	<i>/Is</i>	
		TESTING	4,436.00 sf	/sf	
		PROJECT CLEANING			
		Construction Clean-up	4,436.00 sf	0.23 /sf	998
		Final Clean	4,436.00 sf	2.04 /sf	9,038

Detailed Cost Estimate

Location	CSI-1	Description	Takeoff Quantity	Total Cost/Unit	Total Amount
		PROJECT CLEANING	4,436.00 sf	2.26 /sf	10,036
		01-00-00 GENERAL REQUIREMENTS	4,436.00 sf	3.49 /sf	15,469
	03-00-00	CONCRETE			
		CAST IN PLACE CONCRETE			
		SOG	4,436.00 sf	6.00 /sf	26,616
		Foundations	4,436.00 sf	9.00 /sf	39,924
		CAST IN PLACE CONCRETE	4,436.00 sf	15.00 /sf	66,540
		03-00-00 CONCRETE	4,436.00 sf	15.00 /sf	66,540
	04-00-00	MASONRY			
		CONCRETE MASONRY UNITS			
		Block Masonry	3,065.00 sf	14.00 /sf	42,910
		CONCRETE MASONRY UNITS	4,436.00 sf	9.67 /sf	42,910
		04-00-00 MASONRY	4,436.00 sf	9.67 /sf	42,910
	05-00-00	METALS			
		STRUCTURAL STEEL			
		Structural Steel / Tons	29.28 tn	4,093.88 /tn	119,869
		STRUCTURAL STEEL	4,436.00 sf	27.02 /sf	119,869
		05-00-00 METALS	4,436.00 sf	27.02 /sf	119,869
	06-00-00	WOOD & PLASTIC			
		ROUGH CARPENTRY			
		Rough Carpentry	4,436.00 sf	1.29 /sf	5,728
		ROUGH CARPENTRY	4,436.00 sf	1.29 /sf	5,728
		CABINETS			
		Base Cabinet	101.00 lf	368.13 /lf	37,181
		Wall Cabinet	49.00 lf	202.81 /lf	9,938
		CABINETS	4,436.00 sf	10.62 /sf	47,118
		COUNTER TOPS			
		Solid Surface Counter Top	101.00 lf	134.93 /lf	13,627
		COUNTER TOPS	4,436.00 sf	3.07 /sf	13,627
		06-00-00 WOOD & PLASTIC	4,436.00 sf	14.99 /sf	66,474
	07-00-00	THERM./ MOIST. PROTECTION			
		DAMP-PROOFING			
		Damp-proofing/ sf	5,304.00 sf	3.50 /sf	18,564
		DAMP-PROOFING	4,436.00 sf	4.19 /sf	18,564
		WATER-PROOFING			
		Caulking Joints	4,436.00 sf	0.35 /sf	1,553
		WATER-PROOFING	4,436.00 sf	0.35 /sf	1,553
		METAL WALL PANELS			
		Metal Wall Panel	2,140.00 sf	24.00 /sf	51,360
		METAL WALL PANELS	4,436.00 sf	11.58 /sf	51,360
		ELASTOMERIC MEMB.ROOFING			
		Membrane Roofing	4,436.00 sf	12.00 /sf	53,232
		ELASTOMERIC MEMB.ROOFING	4,436.00 sf	12.00 /sf	53,232
		07-00-00 THERM./ MOIST. PROTECTION	4,436.00 sf	28.11 /sf	124,709
	08-00-00	OPENINGS			
		STEEL DOORS/FRAMES			
		Metal Door Material-Std. 3068	4.00 ea	284.68 /ea	1,139
		Sgl.Door Frame Material 3068	15.00 ea	342.36 /ea	5,135
		STEEL DOORS/FRAMES	4,436.00 sf	1.41 /sf	6,274
		WOOD DOORS			
		S.C. Wood Doors	11.00 ea	339.02 /ea	3,729
		WOOD DOORS	4,436.00 sf	0.84 /sf	3,729
		COILING DOORS/GRILLS			
		Coiling Counter Doors	1.00 ea	5,000.00 /ea	5,000

Location	CSI-1	Description	Takeoff Quantity	Total Cost/Unit	Total Amount
		COILING DOORS/GRILLS	4,436.00 sf	1.13 /sf	5,000
		DOOR HARDWARE			
		Hardware Sets	15.00 ea	338.13 /ea	5,072
		DOOR HARDWARE	4,436.00 sf	1.14 /sf	5,072
		METAL FRAMED CURTAINWALL			
		Entrnace of Building 12' Tall	1,678.00 sf	75.00 /sf	125,850
		Double Door at Entrance	1.00 ea	2,000.00 /ea	2,000
		METAL FRAMED CURTAINWALL	4,436.00 sf	28.82 /sf	127,850
		08-00-00 OPENINGS	4,436.00 sf	33.35 /sf	147,925
	09-00-00	FINISHES			
		GYP LT.GA. WALLS			
		Lt. Ga. Interior Wall	6,033.00 sf	7.00 /sf	42,231
		Lt. Ga. Exterior Wall	4,304.00 sf	8.00 /sf	34,432
		GYP LT.GA. WALLS	4,436.00 sf	17.28 /sf	76,663
		Porcelain Tile			
		Ceramic Wall Tile	401.00 sf	10.00 /sf	4,010
		Ceramic Floor Tile	198.00 sf	10.00 /sf	1,980
		Porcelain Tile	4,436.00 sf	1.35 /sf	5,990
		ACOUSTIC CEILINGS			
		Acoustic Ceiling Complete	1,559.00 sf	4.50 /sf	7,016
		ACOUSTIC CEILINGS	4,436.00 sf	1.58 /sf	7,016
		RESILIENT FLOORING			
		12x12 VCT Flooring	2,500.00 sf	5.71 /sf	14,266
		Luxury Vinyl Tile	600.00 sf	10.51 /sf	6,306
		RESILIENT FLOORING	4,436.00 sf	4.64 /sf	20,572
		CARPET			
		Carpet Tiles	80.00 sy	52.00 /sy	4,160
		CARPET	4,436.00 sf	0.94 /sf	4,160
		PAINTING			
		Paint Sheetrock	4,436.00 sf	2.75 /sf	12,199
		Sealed Concrete	320.00 sf	0.75 /sf	240
		PAINTING	4,436.00 sf	2.80 /sf	12,439
		09-00-00 FINISHES	4,436.00 sf	28.59 /sf	126,840
	10-00-00	SPECIALTIES			
		MARKERBOARDS			
		Markerboard	6.00 ea	465.07 /ea	2,790
		MARKERBOARDS	4,436.00 sf	0.63 /sf	2,790
		FIRE PROTECTION			
		Extinguisher & Cabinets	2.00 ea	170.27 /ea	341
		FIRE PROTECTION	4,436.00 sf	0.08 /sf	341
		EXTERIOR SUN CONTROL			
		Sun Control Device Bid	210.00 sf	45.00 /sf	9,450
		EXTERIOR SUN CONTROL	4,436.00 sf	2.13 /sf	9,450
		TOILET ACCESSORIES			
		Towel Dispenser - Surface	2.00 ea	222.77 /ea	446
		Soap Dispenser	2.00 ea	87.03 /ea	174
		Grab Bar	6.00 ea	114.51 /ea	687
		Framed Mirrors	2.00 ea	174.05 /ea	348
		Mop and Broom Holders	1.00 ea	118.40 /ea	118
		Fem.Nap.Dispenser	1.00 ea	152.40 /ea	152
		Fem.Nap.Disposal	1.00 ea	109.10 /ea	109
		TOILET ACCESSORIES	4,436.00 sf	0.46 /sf	2,035
		10-00-00 SPECIALTIES	4,436.00 sf	3.30 /sf	14,616
	12-00-00	FURNISHINGS			
		WINDOW TREATMENTS			

Detailed Cost Estimate

Design Development Estimate
Sam Houston State University Coliseum Parking Garage

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Location	CSI-1	Description	Takeoff Quantity	Total Cost/Unit	Total Amount
		WINDOW TREATMENTS			
		Window Covering	1,050.00 sf	4.50 /sf	4,725
		WINDOW TREATMENTS	4,436.00 sf	1.07 /sf	4,725
		12-00-00 FURNISHINGS	4,436.00 SF	1.07 /SF	4,725
	21-00-00	FIRE SUPPRESSION			
		FIRE PROTECTION			
		Wet System at Office	4,436.00 sf	5.00 /sf	22,180
		FIRE PROTECTION	4,436.00 sf	5.00 /sf	22,180
		21-00-00 FIRE SUPPRESSION	4,436.00 sf	5.00 /sf	22,180
	22-00-00	PLUMBING			
		PLUMBING			
		Plumbing Sub /sf Office	4,436.00 sf	8.00 /sf	35,488
		PLUMBING	4,436.00 sf	8.00 /sf	35,488
		22-00-00 PLUMBING	4,436.00 sf	8.00 /sf	35,488
	23-00-00	HVAC			
		HVAC			
		Hvac Budget Commercial / sf Office	4,436.00 sf	20.00 /sf	88,720
		HVAC	4,436.00 sf	20.00 /sf	88,720
		23-00-00 HVAC	4,436.00 sf	20.00 /sf	88,720
	26-00-00	ELECTRICAL			
		ELECTRICAL			
		Electrical - Office	4,436.00 sf	17.50 /sf	77,630
		ELECTRICAL	4,436.00 sf	17.50 /sf	77,630
		26-00-00 ELECTRICAL	4,436.00 sf	17.50 /sf	77,630
	27-00-00	COMMUNICATIONS			
		LOW VOLTAGE SYSTEMS			
		Data/Phone	4,436.00 sf	5.00 /sf	22,180
		LOW VOLTAGE SYSTEMS	4,436.00 sf	5.00 /sf	22,180
		27-00-00 COMMUNICATIONS	4,436.00 sf	5.00 /sf	22,180
	28-00-00	ELEC. SAFETY-SECURITY			
		ELECTRICAL			
		Fire Alarm	4,436.00 sf	1.00 /sf	4,436
		ELECTRICAL	4,436.00 sf	1.00 /sf	4,436
		LOW VOLTAGE SYSTEMS			
		Access Control	4,436.00 sf	1.50 /sf	6,654
		LOW VOLTAGE SYSTEMS	4,436.00 sf	1.50 /sf	6,654
		28-00-00 ELEC. SAFETY-SECURITY	4,436.00 sf	2.50 /sf	11,090
	31-00-00	EARTHWORK			
		EARTHWORK			
		Cut 2'	375.00 yd	13.50 /yd	5,063
		Fill 2'	375.00 yd	8.00 /yd	3,000
		Import 2'	375.00 yd	10.00 /yd	3,750
		EARTHWORK	4,436.00 sf	2.66 /sf	11,813
		SOIL STABILIZATION			
		Lime Injection	450.00 sy	5.00 /sy	2,250
		SOIL STABILIZATION	4,436.00 sf	0.51 /sf	2,250
		SOIL TREATMENT			
		Termite Control	4,436.00 sf	0.12 /sf	532
		SOIL TREATMENT	4,436.00 sf	0.12 /sf	532
		31-00-00 EARTHWORK	4,436.00 sf	3.29 /sf	14,595
		.03 Building	4,436.00 sf	225.87 /sf	1,001,959

Detailed Cost Estimate

Project: Sam Houston State University Coliseum Parking Garage
 Design Development Cost Estimate Compared with 3rd Party Estimate
 Prepared by Flintco and Halford Busby



4/18/2019

Garage Breakdown			Flintco		Busby		Delta
Area	Cost	\$/SF	Cost	\$/SF	Cost	\$/SF	
01-00-00 GENERAL REQUIREMENTS	198,012.00 SF	\$227,861	\$1.15	\$227,861	\$1.15	\$1.15	\$0
02-00-00 EXISTING CONDITIONS	198,012.00 SF	\$255,854	\$1.29	\$249,412	\$1.26	\$1.26	\$6,442
03-00-00 CONCRETE	198,012.00 SF	\$4,139,318	\$20.90	\$4,285,112	\$21.64	\$21.64	-\$145,794
05-00-00 METALS	198,012.00 SF	\$521,675	\$2.63	\$503,410	\$2.54	\$2.54	\$18,265
06-00-00 WOOD & PLASTIC	198,012.00 SF	\$0.00	\$0.00	\$0	\$0.00	\$0.00	\$0
07-00-00 THERM./ MOIST. PROTECTION	198,012.00 SF	\$694,080	\$3.51	\$671,626	\$3.39	\$3.39	\$22,454
08-00-00 OPENINGS	198,012.00 SF	\$19,500	\$0.10	\$18,200	\$0.09	\$0.09	\$1,300
09-00-00 FINISHES	198,012.00 SF	\$22,600	\$0.11	\$23,774	\$0.12	\$0.12	-\$1,174
10-00-00 SPECIALTIES	198,012.00 SF	\$106,811	\$0.54	\$106,800	\$0.54	\$0.54	\$11
11-00-00 EQUIPMENT	198,012.00 SF	\$75,000	\$0.38	\$79,246	\$0.40	\$0.40	-\$4,246
14-00-00 CONVEYING EQUIPMENT	198,012.00 SF	\$133,000	\$0.67	\$140,000	\$0.71	\$0.71	-\$7,000
21-00-00 FIRE SUPPRESSION	198,012.00 SF	\$148,509	\$0.75	\$148,586	\$0.75	\$0.75	-\$77
22-00-00 PLUMBING	198,012.00 SF	\$297,018	\$1.50	\$272,644	\$1.38	\$1.38	\$24,374
23-00-00 HVAC	198,012.00 SF	\$10,000	\$0.05	\$10,000	\$0.05	\$0.05	\$0
26-00-00 ELECTRICAL	198,012.00 SF	\$648,286	\$3.27	\$686,845	\$3.47	\$3.47	-\$38,559
27-00-00 COMMUNICATIONS	198,012.00 SF	\$0.00	\$0.00	\$0	\$0.00	\$0.00	\$0
28-00-00 ELEC. SAFETY-SECURITY	198,012.00 SF	\$81,503	\$0.41	\$83,208	\$0.42	\$0.42	-\$1,705
31-00-00 EARTHWORK	198,012.00 SF	\$281,093	\$1.42	\$279,294	\$1.41	\$1.41	\$1,799
32-00-00 EXTERIOR IMPROVEMENTS	198,012.00 SF	\$217,834	\$1.10	\$198,785	\$1.00	\$1.00	\$19,049
33-00-00 UTILITIES	198,012.00 SF	\$268,974	\$1.36	\$267,400	\$1.35	\$1.35	\$1,574
Garage Total		\$8,148,916	\$41.15	\$8,252,203	\$41.68	\$41.68	-\$103,287

Building Breakdown			Flintco		Busby		Delta
Area	Cost	\$/SF	Cost	\$/SF	Cost	\$/SF	
01-00-00 GENERAL REQUIREMENTS	4,436.00 SF	\$15,469	\$3.49	\$15,469	\$3.49	\$3.49	\$0
03-00-00 CONCRETE	4,436.00 SF	\$66,540	\$15.00	\$66,889	\$15.08	\$15.08	-\$349
04-00-00 MASONRY	4,436.00 SF	\$42,910	\$9.67	\$42,910	\$9.67	\$9.67	\$0
05-00-00 METALS	4,436.00 SF	\$119,869	\$27.02	\$128,250	\$28.91	\$28.91	-\$8,381
06-00-00 WOOD & PLASTIC	4,436.00 SF	\$66,474	\$14.99	\$64,458	\$14.53	\$14.53	\$2,016
07-00-00 THERM./ MOIST. PROTECTION	4,436.00 SF	\$124,709	\$28.11	\$126,428	\$28.50	\$28.50	-\$1,719
08-00-00 OPENINGS	4,436.00 SF	\$147,925	\$33.35	\$133,275	\$30.04	\$30.04	\$14,650
09-00-00 FINISHES	4,436.00 SF	\$126,840	\$28.59	\$117,343	\$26.45	\$26.45	\$9,497
10-00-00 SPECIALTIES	4,436.00 SF	\$14,616	\$3.29	\$14,440	\$3.26	\$3.26	\$176
12-00-00 FURNISHINGS	4,436.00 SF	\$4,725	\$1.07	\$5,270	\$1.19	\$1.19	-\$545
21-00-00 FIRE SUPPRESSION	4,436.00 SF	\$22,180	\$5.00	\$23,065	\$5.20	\$5.20	-\$885
22-00-00 PLUMBING	4,436.00 SF	\$35,488	\$8.00	\$36,985	\$8.34	\$8.34	-\$1,497
23-00-00 HVAC	4,436.00 SF	\$88,720	\$20.00	\$87,728	\$19.78	\$19.78	\$992
26-00-00 ELECTRICAL	4,436.00 SF	\$77,630	\$17.50	\$83,034	\$18.72	\$18.72	-\$5,404
27-00-00 COMMUNICATIONS	4,436.00 SF	\$22,180	\$5.00	\$20,759	\$4.68	\$4.68	\$1,421
28-00-00 ELEC. SAFETY-SECURITY	4,436.00 SF	\$11,090	\$2.50	\$11,533	\$2.60	\$2.60	-\$443
31-00-00 EARTHWORK	4,436.00 SF	\$14,594	\$3.29	\$16,146	\$3.64	\$3.64	-\$1,552
Building Total		\$1,001,959	\$225.87	\$993,982	\$224.07	\$224.07	\$7,977

Total Cost of Work Comparison

	Flintco		Busby		Delta
	Rate	Cost	Rate	Cost	
TOTAL COST OF WORK		\$9,150,875		\$9,246,185.00	\$ (95,310) -1.04%
DB GENERAL CONDITIONS		\$ 532,439.00		\$ 506,077.00	
SUB BONDS	1%	\$ 87,095.00	1%	\$ 88,050.00	
GL AND INSURANCE	0.40%	\$ 38,976.00	0.40%	\$ 39,353.00	
P&P BOND	0.891%	\$ 96,628.00	0.891%	\$ 97,561.00	
BUILDERS RISK	0.15%	\$ 16,267.00	0.15%	\$ 16,425.00	
DB FEE	3.75%	\$ 406,682.00	3.75%	\$ 410,610.00	
DB CONTINGENCY	4.76%	\$ 515,880.00	5%	\$ 547,480.00	
Grand Total		\$10,844,842		\$10,951,741	-\$106,899

Sam Houston State University Coliseum Parking Garage
 Flintco/Page Design Development Estimate Review



4/18/2019

Item	Description	Potential Savings	Approved	Total Savings
1 Reduce height of Glass	Replace Curtain Wall with Alt System	\$ 41,950.00	x	\$ 41,950.00
2 Eliminate Canopy of West Elevation*	Delete Canopy on West Elevation	\$ 54,990.00	x	\$ 54,990.00
3 Office Building	Shell of office only. No interior work.	\$ 201,140.00	-	\$ -
4 Reduce Metal Panel Scenarios	S2 South Elevation Deduct 1914 sq.ft.	\$ 45,936.00	x	\$ 45,936.00
	S3 North Elevation Deduct 5495 sq.ft. Add Precast	\$ 134,355.00	x	\$ 134,355.00
	S1 West Elevation Deduct 1090 sq.ft.	\$ 26,160.00	x	\$ 26,160.00
5 Reduce Garage Size	Total Reduction of Precast of 12,741 sq.ft.	\$ 195,482.00	x	\$ 195,482.00
6 Geopier ILO AugerCast Piles	Saves Time and Money	\$ 70,000.00	x	\$ 70,000.00
7 Adjust Architectural Precast Finish	Precast covered by panel to be standard grey finish	\$ 45,000.00	x	\$ 45,000.00
8 Work in Bowers*	Work in Bowers - Storm and Sewer	\$ 174,120.00	x	\$ 174,120.00
9 Reduce Graphic Budget	Based on information provided by Design Team	\$ 25,000.00	x	\$ 25,000.00

Total		\$ 812,993.00
Insurance, Bond, Profit, and Contingency	11.191%	\$ 90,982.00
Total Area of Savings		\$ 903,975.00
DD Estimate		\$ 10,844,842.00
Updated DD Estimate After Savings		\$ 9,940,867.00

* Items will be bid as an alternate

Total Project Costs

Total Project Costs

Total Estimated Construction Cost:	\$ 9,940,867
D/B Pre-Construction Services	\$225,921
Architect /Engineer Fees:	\$761,388
Furnishings and Equipment:	\$100,000
Owner Contracted Services / Other Work:	included below
Owner Provided Services / Miscellaneous:	\$200,000
Project Contingency:	\$291,824
Project Management Administrative Fees:	\$360,000
Public Art	\$120,000
Landscape Enhancement	included in CCL
Estimated Total Project Cost (TPC):	\$12,000,000

This budget represents the University's best estimate of project costs at this stage of design, based upon reconciled estimates between the third-party estimator, Halford Busby, and the Design-Build Contractor, Flintco LLC.

Project Cost Comparisons

Project Cost Comparisons

Project Name	University of Houston Parking Garage 5	VA Parking Garage A	St Jude Precast Garage #3	University of Memphis Garage and Landbridge	Sam Houston State University Coliseum Parking Garage
Owner	University of Houston	Department of Veteran Affairs	St Jude Research Hospital	University of Memphis	Sam Houston State University
Location	Houston, TX	Houston, TX	Memphis, TN	Memphis, TN	Huntsville, TX
Start Date	Sep-18	Dec-16	May-14	Dec-17	Aug-19
Date of Completion	On Going	Dec-17	Apr-15	On Going	Jul-20
Garage Size SF	784,369	143,300	460,709	354,233	198,012
Estimated Cost	\$47,244,797	\$8,448,646	\$21,572,726	\$33,289,935	\$9,940,867
Cost/SF	\$60.23	\$58.96	\$46.83	\$93.98	\$50.20
Escalated to 2019 at 4% per year	-	\$9,138,056	\$26,246,520	\$34,621,532	
Escalated Cost/SF	-	\$63.77	\$56.97	\$97.74	
Unique Aspects	Project Includes 67,000 sf of School Building \$15,000,000 - Adjust Cost per Square Foot reflects this			Project includes \$12,500,000 Landbridge and \$2,500,000 Sitework - Adjusted Cost per Square Foot reflects this	Project Includes 4,300 sf of Office Building
Adjusted Cost per Square Foot	\$41.11	\$63.77	\$54.78	\$55.39	\$50.20

Tab 8

Operating, Maintenance, and Repair Cost

SECO Compliance



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1100 Louisiana Street, Suite One
Houston, Texas 77002
pagethink.com

Garrett Neubauer, PE
Principal

April 24, 2019

Mr. Peter Maass, RA, NCARB, CTCM, CNU-A
Director of Capital Projects Administration
The Texas State University System
O. Henry Hall Building
601 Colorado Street, Site 203
Austin, TX 78701

Re: TSUS Sam Houston State University Huntsville Coliseum Parking Garage
Project No: 418181

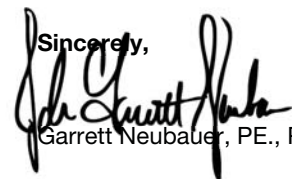
Dear Mr. Maass,

Page has done a preliminary cost analysis for annual utility usage for the new Coliseum Parking Garage. The energy analysis is based on the following assumptions:

1. The building shall be occupied year-round with typical building occupancy between of 8:00AM to 5:00PM (M-F) and closed on weekends. The Dispatch headquarters shall be occupied 24/7. It is assumed that the building will operate one hour prior to occupancy for preheat/precool measures.
2. All spaces will be served by Variable Refrigerant Flow (VRF) systems with remote condensing units.
3. Outdoor air shall be provided directly the indoor units of the VRF systems.
4. A roof mounted exhaust fan shall be provided to serve the janitor's closet and restrooms of the office building.
5. Separate VRF systems shall be used to serve the IDF and Elevator Control Room in the garage with remote condensing units located at the North end of the Office building.
6. Utility rates of \$0.0895/kWh for Electricity and \$2.77/MMBtuh for Natural Gas have been applied.

With the information available to Page, our estimate of annual energy usage for the building will be \$45,000 per year. This includes the cost for electricity and natural gas only.

The MEP system shall be designed in compliance with the International Energy Conservation Code – 2015 Edition standard and the equipment selections shall be made at or above efficiencies required by the minimum standards.

Sincerely,

Garrett Neubauer, PE., Principal

ARCHITECTURE / ENGINEERING / INTERIORS / CONSULTING
Austin / Dallas / Denver / Houston / Washington DC /
International Affiliate Offices

Repair and Maintenance Cost

Per the Whitestone Facility Maintenance and Repair Cost Reference (2012-2013), average annual maintenance and repair cost (as a percentage of replacement over a 50 year period) is estimated at .94% for the parking garage and 1.39% for office space.

As the estimated replacement cost is, \$10,000,000, we estimate annual maintenance and repair cost to average about \$103,000.00 using a weighted average of 1.03% of replacement value.

March 14, 2019

Re: Seco - Rain Water Harvesting System
Project No: 418181

Dear Recipient,

The Sam Houston State University Parking Garage in Huntsville Texas will not be utilizing a rain water harvesting system.

The building design incorporates DX split system for cooling so the rain water would be used for irrigation only.

The site has an estimated landscape area of 2,000 square feet.
The irrigation demand is .62 gallons x sq.' = gallons of water (.62 x 2,000 = 1240 gallons)
The water rate is \$1.61/1,000 gallons.
The monthly meter charge is \$122.66 a month.
The estimated monthly irrigation bill would be \$122.66 + \$60.38 = \$183.10/month.
With an estimated 8 month irrigation time the yearly total is estimated at \$1,464.28.

The estimated cost of the tank and pump system for a below ground rain water collection system is \$50,000.

The estimated pay back for the system would be $\$50,000 / \$1,464.28 = 34$ years.

Sam Houston Director of Building and Landscape Services has reviewed the pay back duration indicated in this letter and agrees that there is not a benefit for a rainwater collection system on this project.

Sincerely,

Steven W Smith, CPD, GPD
Lead Plumbing Engineer