BOARD OF VISITORS

OCTOBER 1, 2020

SUPPLEMENTAL DOCUMENTS

CONTENTS

MARINE ENGINEERING TECHNOLOGY
DEPARTMENT HEAD ANNOUNCEMENT

Dr. Alok K. Verma, P.E., CMfgE
Dept. Head & Professor,
Marine Engineering Technology
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averma@tamug.edu

Dr. Alok K. Verma is Professor, Powell Chair and Head of the Department of Marine Engineering Technology at Texas A&M University-Galveston. Dr. Verma received his B.S. in Aeronautical Engineering from the famed institution, Indian Institute of Technology- Kanpur, MS in Engineering Mechanics and PhD in Mechanical Engineering from Old Dominion University. Prof. Verma is a licensed professional engineer in the state of Virginia, a certified manufacturing engineer and has certifications in Lean Manufacturing and Six Sigma. He has organized several international conferences as General Chair, including ICAM-2006 and ICAM-1999, and also serves as associate editor for three International Journals. Dr. Verma's scholarly publications include more than 100 journal articles and papers in conference proceedings and over 50 technical reports. He has served as a PI or Co-PI on several funded competitive grants exceeding $4.0 million from agencies like NSF, DOE, NSRP etc. He is well-known internationally and has been invited to deliver keynote addresses and invited papers at more than 12 national and international conferences. Dr. Verma has received the Isadore T. Davis award from the American Society for Engineering Education (ASEE) for bringing industry and academia together, Regional Alumni Award for Excellence for contribution to Lean Manufacturing research, International Education Award at ODU and Ben Sparks Medal by the American Society of Mechanical Engineers (ASME). He is active in ASME and American Society for Engineering Education (ASEE). Dr. Verma has served the Hampton Roads community as board member of several non-profit organizations like Norfolk Sister City Association, World Affairs Council and Asian Indians of Hampton Roads. For his work with under-represented groups, he was awarded the Diversity Champion Award by ODU and the Humanitarian Award by the Virginia Center for Inclusive Communities (VCIC). Dr. Verma is married to Rashmi and they have two children - Shalini, who is a dentist and Shivesh, who is a physician.

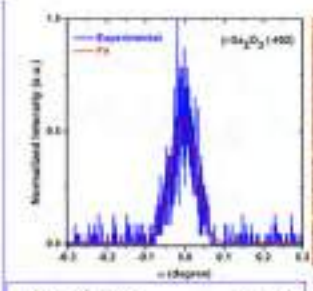
Clean and Resilient Energy Systems (CARES) Lab

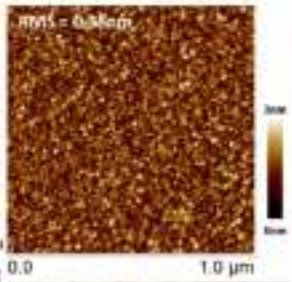
Clean and **R**esilient **E**nergy **S**ystems (**CARES**) lab at TAMUG consists of a research team of 10 undergraduate students and one Ph.D. student, led by Dr. Irfan Khan, an Instructional Assistant Professor at the Marine Engineering Technology department in a joint appointment with Electrical and Computer Engineering department. The lab's research focuses on the optimization and control of power electronics circuits in applications of various clean energy resources including, solar and wind energy systems. The lab's recent work has been centered on four research areas: 1) developing a gearless electric drive system for a marine propulsion system 2) developing a modular multi-port converter for smooth integration of renewables to marine energy systems, 3) evaluation and comparison of different High Voltage Direct Current (HVDC) transmission technologies for Offshore Wind Power Plants (OWPP), and 4) proposing a medium voltage transmission line integrated Solid – State Transformer (SST) based superfast EV charging station.

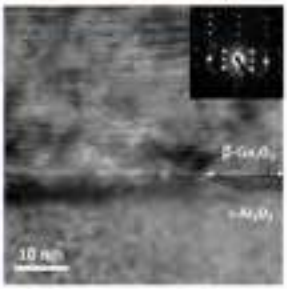
Dr. Luke Nyakiti's Recent Research Thrust:
Performing Synthesis, Structural characterization and functional property relationship of novel Phase Controlled homo- and Heteroepitaxy of Gallium Oxide Semiconductor Films. These Oxides has potential usage in high performing electrical power devices due to their ultrawide bandgap, low-power loss transistors, as well as high breakdown electric field as well as large figure of merit compared to the traditionally used Silicon and Gallium Nitride material systems.

Payoff: The study present a promising new insight for next-generation of high power devices like Schottky barrier diode. Maritime applications of these devices include radiation detection (cargo security and Weapons of Mass Destruction detection), gas sensing (offshore drilling), and magnetic functionality (harbor security).

The specific goal is to improve the performance of the said devices by minimizing structural defects that manifests themselves on the semiconducting film. The film structural images are obtained using High Resolution TEM, AFM & X- Ray Spectroscopy.







Milestone: Phase selectivity of different phases of Ga_2O_3 was demonstrated as a function of plasma gas composition, plasma flow, pressure during the plasma. This was based on High resolution TEM, AFM and X-ray Data shown below shown in the figures

Figures: X-Ray, Atomic Force and Transmission Electron Microscopy Images

Highlights of LIST faculty research

Dr. Jim Ryan has a multi-edited book that is forthcoming with Bloomsbury Press on *Post-Cold War Revolutionaries in the American Communist Party: Citizens, Revolutionaries and Spies.* Dr. Daniel Traber has several invited book chapters that are in various stages of publication. Among these include the chapter "You Ain't No Punk, You Punk: On Semiotic Doxa, Postmodern Authenticity, Ontological Agency and the Goddam Alt-Right" that is in press for the *Oxford Handbook of Punk Rock.* Dr. JoAnn DiGeorgio-Lutz was awarded a US Scholar Fulbright to Myanmar/Burma for 2021 and she is currently completing a manuscript on Gender and Genocide Memorialization for I. B. Taurus Press. Dr. Blake Earle's book, The Liberty to Take Fish: Fisheries and Federal Power in Nineteenth-Century America, is under consideration by Harvard University Press and his article "The Navy, the Transatlantic Slave Trade, and Antebellum American Foreign Relations," is under review by Diplomatic History.

Dr. Jenna Lamphere is PI on an National Science Foundation REU Site: Ocean and Coastal Research for Undergraduates grant for $399,058 and a CO-PI on the Sao Paulo Research Foundation International Collaboration Initiative for "An Institutional Interplay Perspective into Multi-Level Environmental Governance: The Case of Offshore Oil Governance in Gulf of Mexico and Santos Basin (OFFOCEANS) for 20,000. Lamphere, Jenna A. "Preparing U.S. Cities for a Green New Deal." (Book proposal under review with Policy Press). Her manuscript, Sustainability Transitions Meets Critical Urbanism: Environmental Justice in the Greenest City in America, is under review with Environmental Innovations and Societal Transitions and she has a manuscript proposal under review with Policy Press on *Preparing U.S. Cities for a Green New Deal.* Additionally, she and Dr. Elizabeth Nyman are collaborating with a TAMUG graduate student, Richard Dally, on two projects--Peru, Ports, and Piracy: Armed Robbery at Sea in Callao Anchorage and Peruvian Piracy and Eco-Crime: A Case of the Natural Resource Curse.

Highlights of CTBS faculty research (see also attached flyer)

Dear Galveston Colleagues,

I writing to give you a brief update on our recent activities to establish the Institute for a Disaster Resilient Texas. I know everyone is super busy with COVID issues and don't want to take too much of your time, but also want to keep you apprised. Some summer highlights include:

- I have been busy setting up new contracts and grants. We have pending or secure 7 new projects over the next 3 years totaling around $7 million. We will be expanding our existing internal and external team to conduct the work.
- The cornerstone project for the institute is the TX Disaster Information System. We are just about to start our planning phase. There is a lot of support and enthusiasm (almost unnaturally so) among state and federal agencies for this project, which is to develop an enterprise level, web-based disaster data decision support tool and visual interface. We also have projects with GLO, TDEM, DOI at the state level.
- We signed a book contract with Elsevier Press on our US/Dutch flood risk reduction initiative, now in its 10th year.
- I have been busy establishing program-level research partnerships, which we now have with Architecture, Geography, Engineering, U. Texas, Rice U., U. Houston, UT-Arlington. Our most prominent brand new collab. is with the TX Advanced Computing Center (TACC), which will help us with data architecture, web system design, and high performance computer applications.
- We will soon be working with an outside organization for a communications plan, website design, logo/branding, outreach, etc.
- I am working towards a space in the new TAMU HMC campus for the Institute and tamug in general (have commitment but no build out money). I really think this would be good for tamug over the long term and serve as a collaborative meeting point with lots of other campuses, experts, and organizations. Kind of like a backwards beachfront.

Sincerely,

Sam

Regents Professor and George P. Mitchell '40 Chair in Sustainable Coasts

Director, Institute for a Disaster Resilient Texas

Director, CTBS (Center for Texas Beaches and Shores)

Texas A&M University, Galveston Campus

Adjunct Professor, Department of Civil and Environmental Engineering, Rice University

Highlights of MCES faculty research

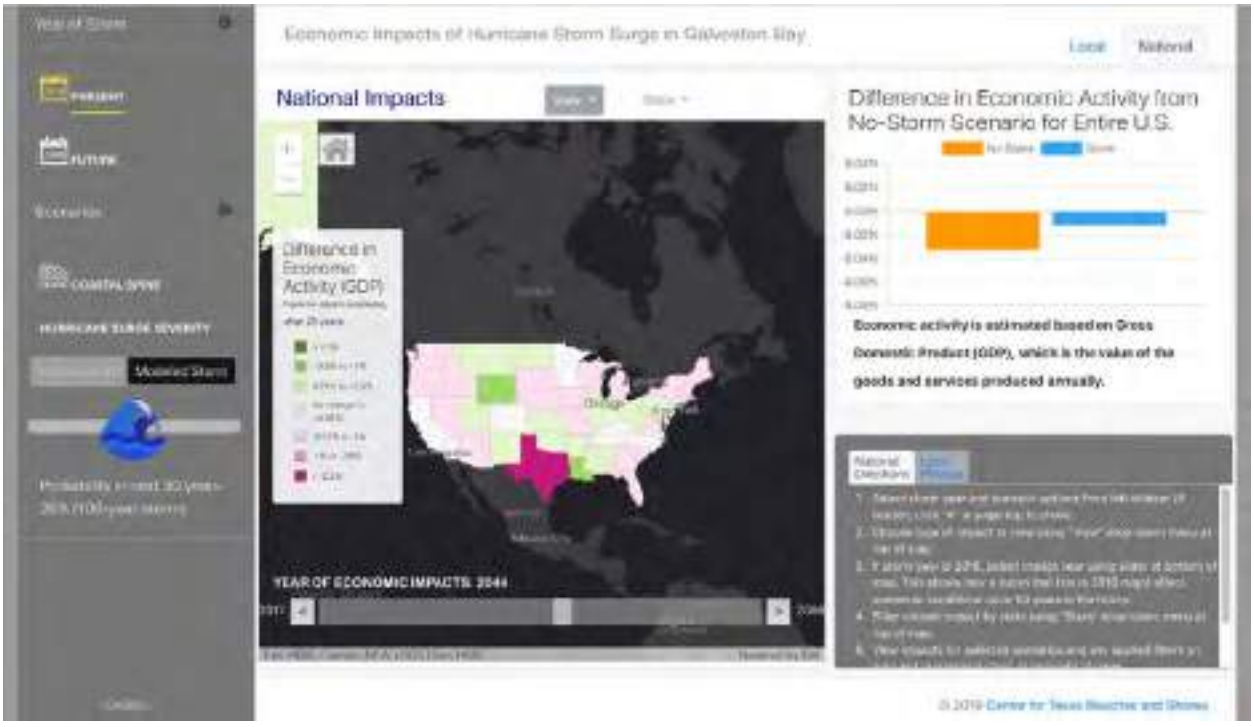
Ashley Ross

Ashley Ross is an Assistant Professor in the Marine and Coastal Environmental Science department. Her work focuses social perceptions, community resources, and governance issues surrounding environmental hazards. Over the past six months, she has continued an interdisciplinary collaboration with TAMUG colleagues to examine water pollution of the Galveston Bay due to recent, man-made environmental disturbances. She led a survey of 500 bay residents to assess health concerns, information sources, and policy priorities for the region. This data will be used to complement analyses of water and biota samples collected in the bay. She is currently leading a paper using this data that investigates how pollution monitoring awareness and use by bay residents is associated with risk-reducing behaviors. This paper, along with others developed as part of the project, will be used to improve risk communication in our community.

In addition to this project, Ross recently participated in a workshop that brought together TAMU researchers from a diverse set of fields to explore health resilience priority issues for the state of Texas. The group identified research to address the changing nature of healthcare cost, quality, and access as critical, with a particular emphasis on telehealth and vulnerable populations in the state. Ross adapted the drivers-pressures-states-impacts-responses framework traditionally used to study problems in environmental systems as a framework of analysis for health systems; she led the drafting of a white paper on this topic. In the past six months Ross has also submitted three papers and two grant proposals to the National Science Foundation, one of which she serves as the lead principal investigator. If funded, this project will examine hazard adaptation in the Gulf Coast with a particular emphasis on leveraging community resources for bottom-up resilience-building efforts. This project will involve Ross' graduate student, Abbey Hotard, who is part of the inaugural cohort of TAMUG Marine and Coastal Management and Science doctoral program.

David Retchless

Over the last six months, Dr. David Retchless has prepared and submitted several publications. He submitted for publication with the Journal of Maps a manuscript describing development of an interactive map of the economic impacts of storm surge flooding in Houston-Galveston (see screenshot). In collaboration with colleagues Ashley Ross and Pete van Hengstum, he has continued work on a manuscript analyzing a survey of Gulf Coast residents' receptivity to information about trends in hurricane risk. He also has several manuscripts in preparation with his graduate students that are nearing publication, including: an effort to use UAV and GIS methods to assess physical distancing on a Galveston beach on Memorial Day weekend (Benjamin Ritt; see screenshot); an automated method for identifying South Korean estuarine areas (Nicholas Wellbrock); and a GIS-based delineation of suitable Gulf of Mexico habitats for a newly-identified species of jellyfish (Alexandra Frovola). Dr. Retchless has also continued to build his network, including through a collaboration with Rice University researchers on an NSF Civic Innovation Challenge Stage 1 grant application related to flood risk communication.



Peter Santschi




1) Dr. Santschi's new proposal "Department of Energy, Office of Science, Subsurface Biogeochemical Research Program, "WATERSHED CONTROLS ON URANIUM CONCENTRATIONS TIED INTO NATURAL ORGANIC MATTER AND IRON INTERACTIONS IN STREAMBEDS AND WETLANDS", Peter H. Santschi, PI, $270,000 to TAMUG, September 2020 - August 2022).
2) As a subcontractor with PNNL, Santschi's team have conducted five deployments of LCW braided U adsorbents to ambient seawater at TAMUG dock (see pictures above with team, set-up and sorbents before and after 4 wks deployment).
3) Dr. Peng Lin joined the field sampling of sediment cores for Addicks Reservoir at Houston, TX (DEPARTMENT OF THE ARMY, FORT WORTH DISTRICT, CORPS OF ENGINEERS. "Measurements sedimentation within Addicks and Barker Reservoirs using 239+240 Pu Isotope Geochronology", Timothy Dellapenna, PI, Santschi, P.H., co-PI, May 1, 2020-April 30, 2021, $50,000).
4) Dr. Peng Lin published "Partitioning of iron and plutonium to exopolymeric substances and intracellular biopolymers: A comparison study between the coccolithophore Emiliania huxleyi and the diatom *Skeletonema costatum*" in Marine Chemistry (doi.org/10.1016/j.marchem.2019.103735).
5) Dr. Chen Xu published on "Molecular Nature of Marine Particulate Organic Iron-Carrying Moieties Revealed by Electrospray Ionization Fourier-Transform Ion Cyclotron Resonance Mass Spectrometry (ESI-FTICRMS)" in Frontiers in Earth Science-Biogeoscience (https://doi.org/10.3389/feart.2020.00266).
6) Santschi's team has authored or co-authored 8 additional publications on nanoplastics, exopolymeric substances, or PAHs.

The Department of Marine Biology at Texas A&M University discovers biological and ecological knowledge of world's oceans and the coastal zones of all seven continents. The 20 research and teaching faculty (tenure-track and tenured) of the department all lead world-class research laboratories. Our three instructional faculty are also involved in research. The focus areas of these research laboratories are listed below. Also provided are photos of recent research activities with captions. The department's annual research expenditures are ~$4 million dollars. Most recently, one of our faculty (Dr. David Wells), received the prestigious President's EDGES Award for outstanding scholarly works.

The Department of Marine Biology at Texas A&M University also disseminates knowledge. While our research products reach global audiences through scientific publications, we also offer Bachelors of Sciences degrees in Marine Biology, Marine Fisheries and Marine Biology with Mariners License Option, and we offer Master's of Science (thesis and professional) and Doctor of Philosophy in marine Biology. Currently the department has enrolled 532 undergraduate students and 62 graduate students, by far the largest on campus. Most recently, one of our faculty (Dr. Anna Armitage), received the prestigious Association of Former Students Award for outstanding teaching.

Research labs focus areas

Professors (nine tenured)

- *Dr. Jaime Alvarado-Bremer* (Professor), whose laboratory focuses on conservation and population genetics of pelagic fishes.
- *Dr. Anna Armitage* (Professor), whose laboratory focuses on coastal wetland ecology and restoration.
- *Dr. Randall Davis* (Regents Professor), whose laboratory focuses on comparative physiology and ecology of marine mammals and birds.
- *Dr. Thomas Iliffe* (Professor), whose laboratory focuses on marine cave ecology, technical diving.
- *Dr. Christopher Marshall* (Professor), whose laboratory focuses on functional and ecological morphology, biomechanics, conservation.
- *Dr. Antonietta Quigg* (Regents Professor, Senior Associate VP for Research and Graduate Studies), whose laboratory focuses on phytoplankton ecophysiology, bioindicators and ecotoxicology, environmental stress and climate change.
- *Dr. Daniel Roelke* (Professor, Department Head), whose laboratory focuses on plankton ecology and theoretical ecology, with emphasis on inflows, nutrient pollution and harmful algal blooms.
- *Dr. Jay R. Rooker* (Regents Professor), whose laboratory focuses on ecology of estuarine, coastal, and pelagic fishes.

- *Dr. Anja Schulze* (Professor), whose laboratory focuses on evolution, biogeography and development of marine annelids.

Associate Professors (three tenured, one tenure-track))

- *Dr. Hui Liu* (Associate Professor), whose laboratory focuses on zooplankton population dynamics, quantitative fisheries research.
- *Dr. Maria Pia Miglietta* (Assistant Professor), whose laboratory focuses on evolution, genomics, and ecology of Hydrozoa (Cnidaria).
- *Dr. Ana Širović* (Associate Professor), whose laboratory focuses on marine bioacoustics of highly exploited and endangered marine mammal and fish species, noise and impacts of anthropogenic noise in the ocean.
- *Dr. David Wells* (Associate Professor), whose laboratory focuses on biology and ecology of bony fishes, sharks, and rays.

Assistant Professors (four tenure-track, three instructional)

- *Dr. Ron Eytan* (Assistant Professor), whose laboratory focuses on population genetics, phylogenetics, and phylogeography of coral reef fishes.
- *Dr. David Hala* (Assistant Professor), whose laboratory focuses on environmental toxicology, metabolic and endocrine biomarkers, computational biology.
- *Dr. Laura Jurgens* (Assistant Professor), whose laboratory focuses on global change and ecological resilience, nearshore and estuarine invertebrate ecology.
- *Dr. Jessica Labonté* (Assistant Professor), whose laboratory focuses on marine microbial ecology and evolution, virus-host interactions.
- *Dr. Philip Matich* (Instructional Assistant Professor), whose research involves behavioral ecology of top predators.
- *Dr. Lene Petersen* (Instructional Assistant Professor), whose research involves fish cardiovascular physiology, fish reproduction, conservation physiology.
- *Dr. Jamie Steichen* (Instructional Assistant Professor), whose research involves phytoplankton ecology, harmful algal bloom monitoring and freshwater bioindicators.

Galveston Beach Rainwater Runoff Investigation:

Funding Agency: Galveston Park and Board of Trustees (2017-2018); Texas General Land Office – Coastal Management Program (2020 – 2022).

Combined theoretical and field quantification of rainwater catchment processes for beach drainages of Galveston Island. It develops the local rainfall-runoff relationship based on geospatial integration of local precipitation records with surface gradient and land surface information obtained from national terrain and land cover database. It further implements the UAS (Unmanned Aerial Survey; e.g., drone) for geomorphic measurements of the eroded local beach surface, and hence for assessing the runoff-erosion relationship in low-lying coastal watersheds. Technical review and feasibility assessment of effective runoff mitigation strategies (e.g., efficacy of potential Best Management Practice designs) are followed for urban coastal application.

South Padre Island Sand Tracer Study

Funding Agency: United States Army Corp of Engineers (2019-2020)

Assessment of efficacy of the cost-effective, nearshore "feeder berm" practice on beach nourishment and shoreline stabilization. The transport pathways of the submerged berm materials placed on the offshore of South Padre Island were identified by tracing the magnetic, fluorescent tracer particles deployed on the newly built berm surface. As a multi-state agency collaborative research, detailed process-based morphodynamics modeling is to be performed in order to validate the offshore berm nourishment as a beneficial scheme to utilize the dredge materials.

Impacts of Ship Channel Geomodification on Hydrodynamics and Ferry Operation of Port Aransas

Funding Agency: Texas Department of Transportation (2020)

Evaluation of impacts that the planned Corpus Christi Ship Channel (CCSC) deepening and proximate installation of a Very Large Crude Carrier terminal would collectively have on overall hydrodynamics near the public ferry transportation system in Port Aransas, TX. It assimilates the information on the site geography and planned CCSC usage and expansion project, and analyzes the primary riverine and coastal processes relevant to CCSC navigation and hydrodynamic forces affecting the ferry operation or facilities.

Figure 1. Images demonstrating offshore deployment (left), and preparation (middle) and quantification (right) of the sand tracer under a blue, UV torch light with bulk sediment sample collected from the SPI nearshore berm placement area. *The photo of the offshore tracer deployment was taken by City of South Padre Island on August 15, 2018. The photos of a former Research Experiences for Undergraduates (REU) student (Texas A&M Ocean Engineering – Galveston) performing the sediment laboratory analysis were taken on November 12, 2018.*

CAMPUS MASTER PLAN

TEXAS A&M UNIVERSITY AT GALVESTON

2020 UPDATE

APRIL 2020

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TAMUG Leadership

Col. Michael E. Fossum, USAFR (Ret.)
Chief Operating Officer, TAMUG
Vice President, Texas A&M University
Superintendent, Texas A&M Maritime Academy

Dr. Patrick Louchouarn
Executive Associate Vice President for Academic Affairs and Chief Academic Officer, TAMUG

Dr. Antonietta Quigg
Senior Associate Vice President for Research & Graduate Studies, TAMUG

Captain Allan Post
Acting Deputy Superintendent, Texas A&M Maritime Academy, Executive Director of Marine Education Support and Safety Operations, TAMUG

Dr. Donna Lang
Associate Vice President for Academic Operations, TAMUG

Ms. Susan Hernandez Lee
Associate Vice President for Finance and Compliance Officer, TAMUG

Mr. Grant W. Shallenberger
Associate Vice President for Administration and Auxiiliary Services, TAMUG

Dr. Todd Sutherland
Associate Vice President for Student Affairs, TAMUG

Major General Charles "Bill" McClain
External Relations Officer, TAMUG

Mr. Richard J. Kline
Assistant Vice President for Development, Texas A&M Foundation

Ms. Rebecca Watts
Director of Marketing & Communications, TAMUG

Mr. John Kovacevich
Director of Information Technology

Project Team

Lead Planner
Work5hop

Associate Planner, Civil Engineering, Building Condition Assessments
PGAL

Wayfinding and Signage
D|G Studios

MEP Engineering
Shah Smith and Associates

Telecommunications
4b Technology Group, LLC

Transportation Consulting
Alliance Transportation Group

Landscape Architecture
Clark Condon and Associates

Cost Consulting
AG|CM

Parking Consulting
Walter P. Moore and Associates

SECTION A

INTRODUCTION AND PRINCIPLES

A.2

Texas A&M University at Galveston (TAMUG) is a unique campus: not only does it have a clear and focused mission, but its physical setting is tailored precisely to its needs. In the lifecycle of universities, TAMUG is still young. The first 50 years of the history of the university have been focused on building up a physical infrastructure which can support a critical population mass. Established initially as little more than an outpost of the main Texas A&M campus, TAMUG now offers a range of programs and amenities worthy of a complete campus. This first phase of growth at the campus has seen the campus expand to around 2,500 full-time equivalent students, with a variety of programs to match. The campus has transitioned from one building on a hard-baked flat with a pier for the training ship, to a complete campus featuring academic, research, housing, and recreational facilities.

As the campus continues to grow and mature, the next 50 years of TAMUG must focus on how the campus can become a place which encourages collaboration and closer connections between its mission and physical setting. No longer should solutions which are merely good enough be accepted. To become fully actualized as a national leader in maritime and marine programs, TAMUG must implement facilities and campus spaces which knit together those programs with the waterfront and natural spaces offered by the campus's unique setting.

Master plans are often described as roadmaps. That is most frequently intended to imply that they lay out a sequence of steps, to be followed in order, to arrive at a destination. But inherernt in that analogy is the implication that a master plan actually offers multiple routes to a destination, and it is in that sense that this master plan is offered. That destination is laid out most succinctly in the principles described on the next pages, as well as in greater detail in the full campus program, renderings, and supporting materials.

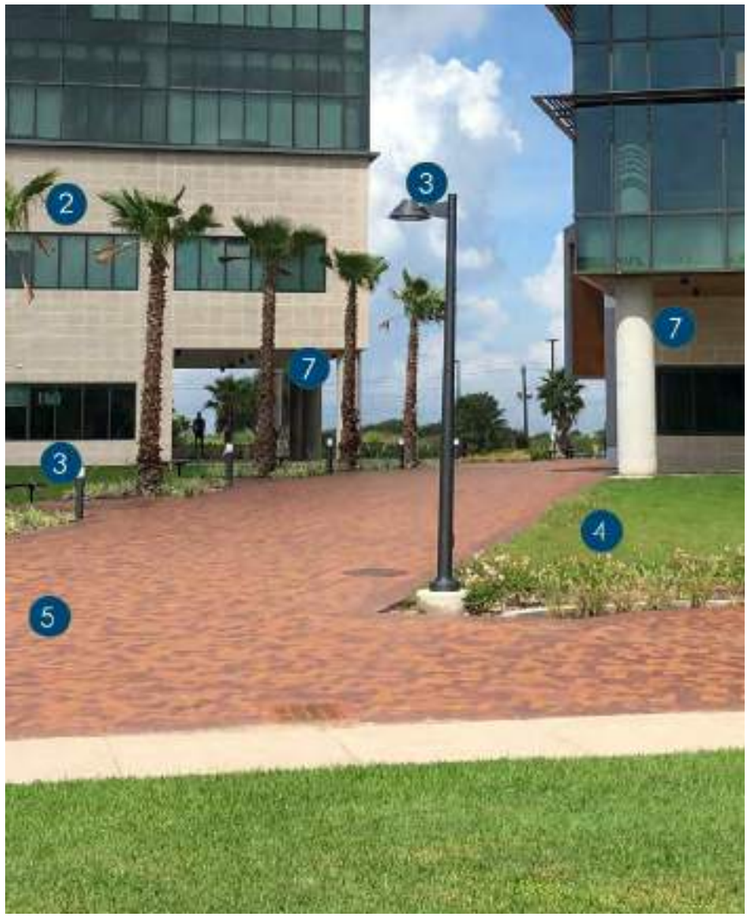
Principles
INTRODUCTION AND PRINCIPLES

Vision is at the core of this plan. That vision is the destination, although in truth, the ever-changing nature of modern universities means that the destination is rarely reached. Rather, the vision represents what the administration is striving towards.

Strong principles are the best way to ensure that that vision is carried out. They are a means of charting decisions – and results – against specific criteria. Campuses are not just collections of buildings: they have character, and they affect students, faculty, and staff in myriad ways that are not always obvious. These principles, developed through several rounds of input and feedback with the master planning committee, reflect the intended impacts of the master plan on the university.

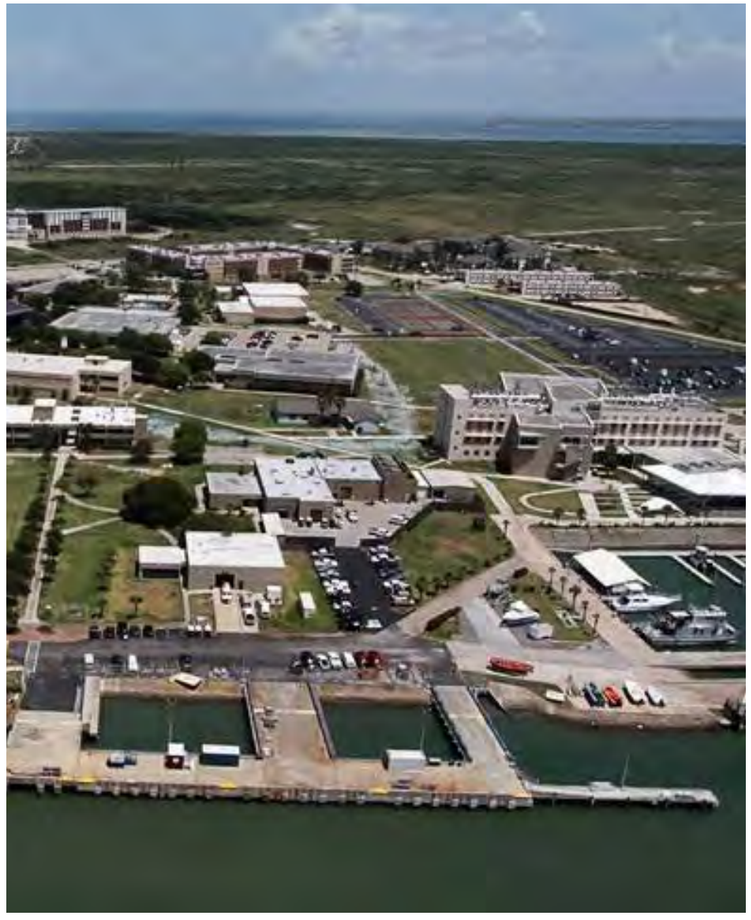
1 Facilitate a Collaborative Environment

Collaboration is the heart of the collective enterprise of a university. Bringing students, faculty, and staff together is the key to successful learning and research. The physical campus environment should support that collaboration in thoughtful ways. This first and foremost goal is really an umbrella over the following goals: it is an overarching pursuit which is wider and deeper than just architecture. The rest of the goals support it.



2 Heal Campus Spaces

TAMUG has seen tremendous building growth over the past ten years. Development and refinement of campus spaces has not kept pace with that growth, and as seen in analysis sections later, many parts of campus are actively detrimental to the feeling and character of the university. Those issues should be addressed and healed.



3 Strengthen Connections to Waterfront and Natural Areas

Celebrating and building on strengths and unique characteristics is a critical part of placemaking, which is itself at the heart of places people love. TAMUG's proximity to the working waterfront and barrier island natural areas is a tremendous strength, but the campus does not currently reflect and build upon those opportunities. The master plan must correct that.

4 Create Opportunities for Traditions

While not a directly physical trait, as other campus characteristics are, tradition runs deep in the heart of the Aggie. Establishing ways for existing Aggie traditions and new traditions to be kept and built will create connec tions between Galveston and College Station. Further, it will build life-long connections between the campus and its students.

5 Improve Impressions for Visitors

Successful universities display the best version of themselves to prospective students, visitors, and others on the campus. TAMUG has made great strides in doing so, but much work remains. Improving the way in which people experience the campus should remain a strong goal.

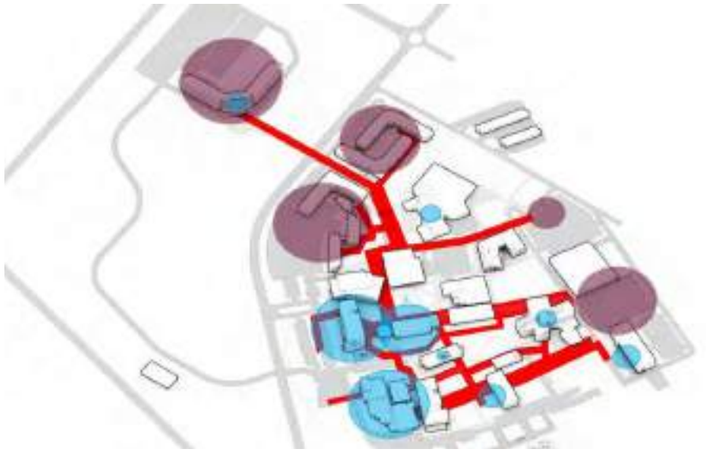
Executive Summary
INTRODUCTION AND PRINCIPLES

The next 50 years of TAMUG will focus on how the campus can become a place which encourages collaboration and closer connections between its mission and physical setting. TAMUG will implement facilities and campus spaces which knit together maritime and marine programs with the waterfront and natural spaces offered by the campus's unique setting.

The Importance of Spaces

Spaces root the campus to its place. The place, in the case of TAMUG, is a special one, and campus spaces must reflect this identity. Spaces are the true experience of the campus. Nice though buildings may be, they do not connect to us as people in the same way that walking through a campus does. For TAMUG to become more meaningfully rooted to its place, campus spaces are critical.

Many of the concepts of TAMUG's current strategic plan relate to building the sorts of connections and opportunities that benefit directly from creating collaborative environments. Implementing this strategy must be accomplished in multiple dimensions on campus, from how programs and classes are structured, to student and faculty support and organization, to how buildings and spaces are designed. This master plan is built around changes which will accomplish the physical parts of those strategies: new campus elements have been designed to drive pedestrian traffic along common corridors – and not necessarily the shortest corridors – which interface with gracious outdoor spaces.



Pelican Island Bridge

The projected realignment of the Pelican Island Bridge is at once a tremendous benefit to the campus – no longer will industrial traffic route directly through the middle of campus – as well as a challenge: the campus has been planned and built around the current alignment and reorienting the campus to the new alignment will mean disruption. Fully addressing the impacts of this change will not occur within the 30-year long-term planning horizon of this master plan, but the plan will begin to adapt to the long-term future within the next five-year period, anticipating that the bridge will be completed in the next ten years.

Waterfront and Building Types

Development of and investment in the waterfront have always been important facets of campus planning for TAMUG. The changes called for in this master plan are for increased focus and different relationships between buildings, usage, and the waterfront itself. One major component of this will be facilities purpose-built to combine the waterfront operations components of academic programs with the labs, classrooms, and offices that those programs need.

But new buildings on the waterfront should offer more than functional space. Just like OCSB and the Waterfront Pavilion, gathering and casual spaces should be included in each building. Views to the waterfront from these spaces should be emphasized.

Parking and Traffic

TAMUG has benefitted from ample and well-deployed surface parking over the years. As the campus becomes more populous and increases in density, parking must densify along with the rest of the campus environment in order to maintain current standards of proximity and walking times from parking to campus destinations.

The solution is a parking structure. Structured parking can not only provide for the growth in supply in parking but can also create additional building sites by making parking more compact. Properly sited, a garage will have a positive effect on campus spaces and on campus pedestrian traffic.

SECTION B

FOCUS AREAS

Overall Master Plan
FOCUS AREAS

The plan on this page shows the overall master plan at build-out in 2050, including all new facilities, site improvements, and associated work. Following pages will explore the main concepts of the new master plan in detail.

01 Engineering Building
02 Academic/Vessel Operations Building
03 Academic Building
04 Academic Building
05 Student Life Center
06 Structured Parking
07 Police Headquarters & Physical Plant
08.1 Central Plant (New)
08.2 Central Plant (Addition)
09 Residence Hall
10 The ISLE
11 Sea Turtle Center
20 Surface Parking
21 Surface Parking
22 Surface Parking
23 Boat Basin
24 Ship's Green
25 ISLE Quad
26 Kirkham Quad
27 Recreational Fields and Pavilions
28 Reserved Space
29 Recreational Trails and Site Preservation

Spaces, not buildings, should be the measure of future development

Spaces must be designed to encourage interaction and enjoyment

A campus perceived as a series of buildings will never have the cohesive character of a campus perceived as a series of spaces. Spaces root the campus to its place. The place, in the case of TAMUG, is a special one. Pelican Island is a place only lightly separated from the water. Campus spaces must reflect this identity. They must relate to the waterfront and to the natural areas on the island; their authenticity (and therefore success) is tied to that connection.

The plan on this page visualizes the campus in a very different way. Every plan drawing has a natural bias, just like every photograph has a natural focus. Most site plans place their focus on buildings. Because buildings have a fixed, determinate nature – and are large investments – this bias is natural. In many campus plans, buildings are what matter, and spaces are what is left over.

The bias of this plan is the spaces. Spaces are the true experience of the campus. Nice though buildings may be, they do not connect to us as people in the same way that walking through a campus does. No, experiences and places are our connections to our present and past. For TAMUG to become more meaningfully rooted to its place, campus spaces must be perceived as primary.

A great space has an identity. That can take many forms – the materials used, character of the vegetation, a grand building façade – but it is necessary. Further, that identity is a focus around which tradition and custom can cohere. Traditions root us to places: there is no better exemplar of this than College Station. Spaces at TAMUG must be shaped and seeded to create these opportunities.

Campus Space and Collaboration
FOCUS AREAS

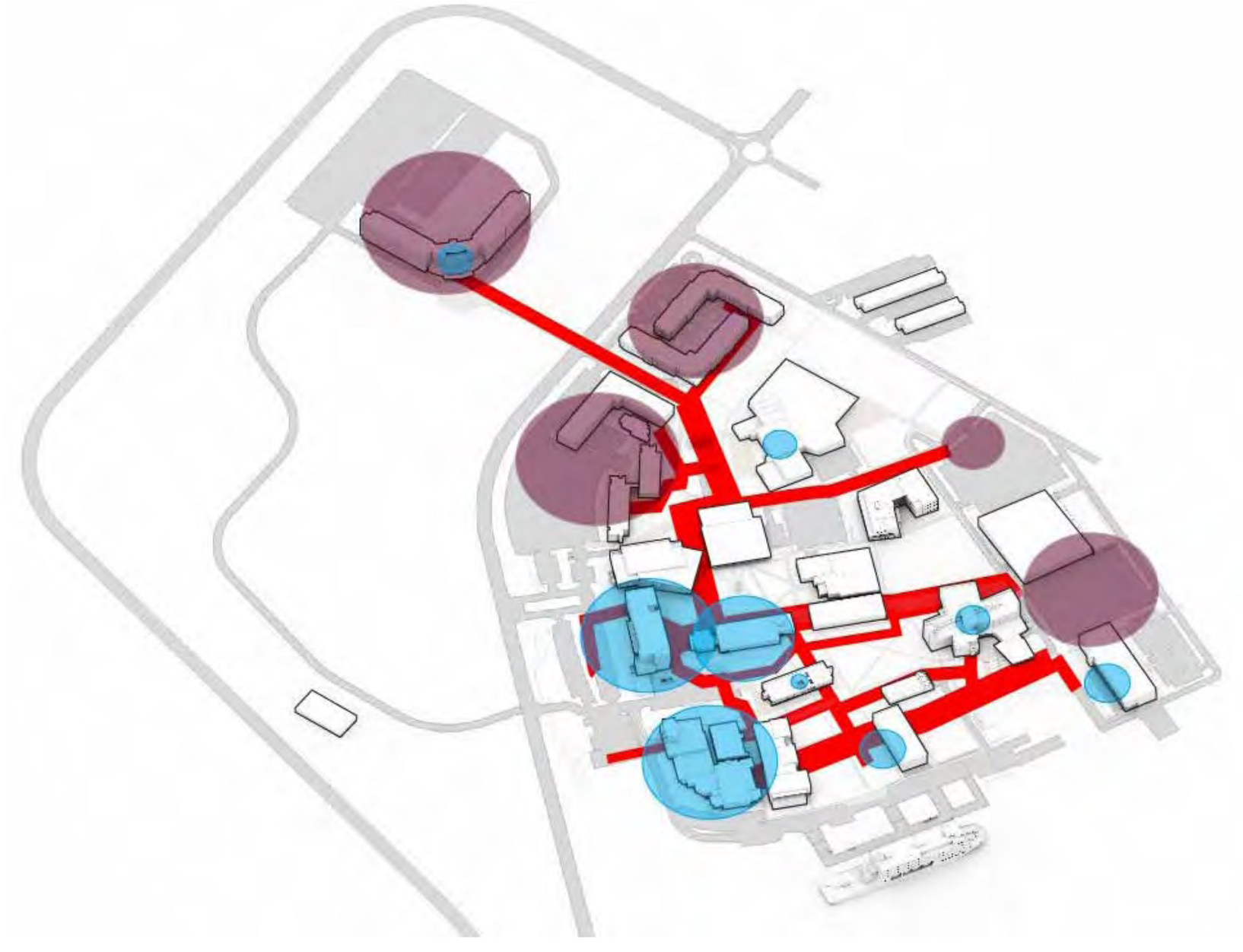
The waterfront should become a focus for working, gathering, and study

Buildings should combine assignable, service, and recreation space

The center of the changes in this master plan is to alter how outdoor spaces on the campus are used. Critically, this approach is not superficial: it is woven deeply into the most significant decisions made in planning. New building locations, parking densities, and techniques of space development are all driven by how they impact how space is used. The force behind this is a desire to greatly enhance collaboration between all groups on campus. Recent building design has incorporated these philosophies, and now campus design on a macro scale incorporates them as well.

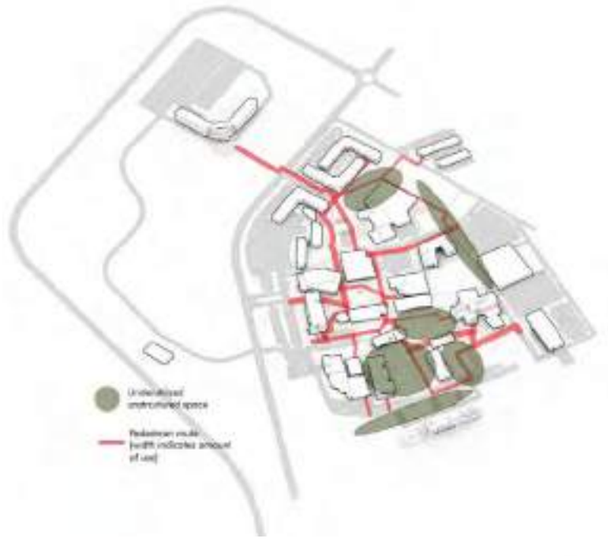
Many of the concepts of TAMUG's strategic plan relate to building the sorts of connections and opportunities that benefit directly from creating collaborative environments. Implementing this strategy must be accomplished in multiple dimensions on campus, from how programs and classes are structured, to student and faculty support and organization, to how buildings and spaces are designed. This master plan is built around changes which will accomplish the physical parts of those strategies.

Implementing this new direction is dependent on continuing the same level of thoughtful design that the new buildings represent out into campus walkways, plazas, green spaces, and connections. This is challenging – funding for these kinds of improvements can be more difficult to achieve than funding for building projects. Donor gifts, building space improvements into building projects, and similar strategies must be pursued.



The diagram on this page shows a detailed example of how this has been accomplished. One part of collaboration involves creating opportunities for people to interact, meaning that patterns of pedestrian traffic and locations of outdoor spaces are critical components. Those patterns are set by the placement of buildings, parking, and housing.

With this master plan update, new campus elements have been designed to drive pedestrian traffic along common corridors – and not necessarily the shortest corridors – which interface with gracious outdoor spaces. The diagram clearly shows where people are coming from and going to, along with the routes and density of pedestrian traffic along them. Comparison with a similar diagram derived from existing conditions reveals that opportunities for interaction will be greatly increased.



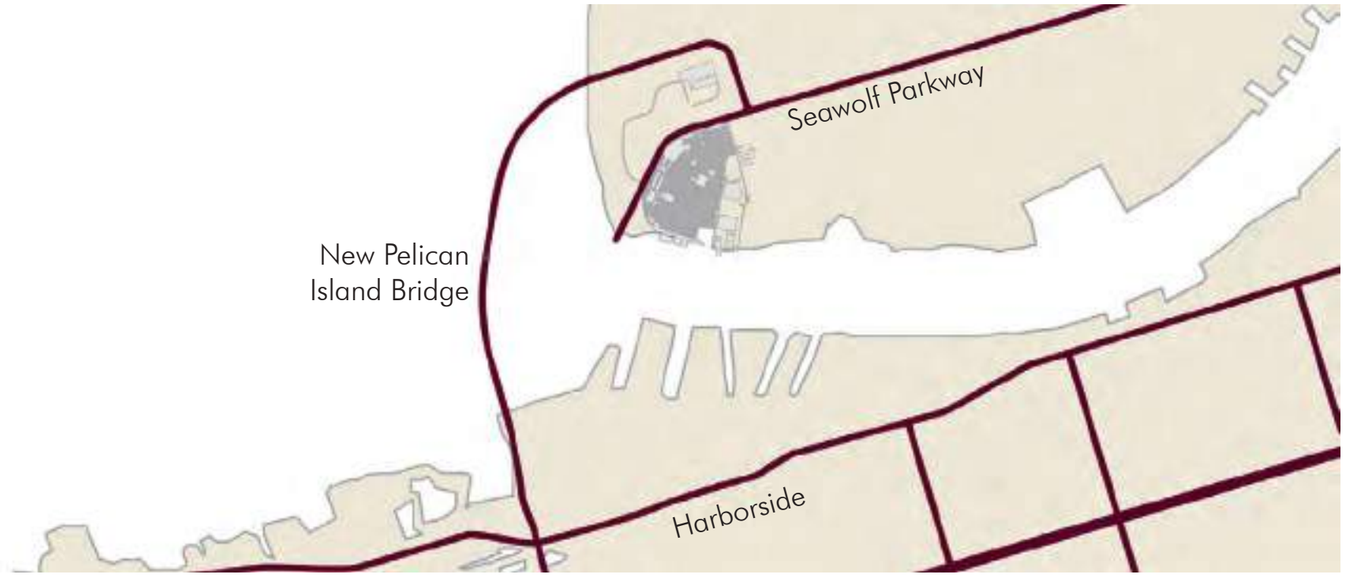
Pelican Island Bridge
FOCUS AREAS

The campus has faced no bigger external change than the projected realignment of the Pelican Island Bridge. It is at once a tremendous benefit to the campus – no longer will industrial traffic route directly through the middle of campus – as well as a challenge: the campus has been planned and built around the current alignment and re-orienting the campus to the new alignment will mean disruption.

Fully addressing the impacts of this change will not occur within the 30-year long-term planning horizon of this master plan, but the plan will begin to adapt to the long-term future within the next five-year period, anticipating that the bridge will be completed in the next ten years.

The campus has been built around a specific sequence of arrival, predicated upon the current placement of the bridge. The future alignment will flip-flop the arrival direction and de-emphasize the role of Seawolf Parkway within the campus: it will become an internal circulator, not a conduit for traffic on and off the island.

To this point, Seawolf Parkway is a slash cut through campus. Its traffic and noise have forced buildings, and therefore the campus itself, to set back significantly, limiting space and curtailing building sites. When the bridge moves, this will change. Buildings can edge closer and the scar tissue – the bar ditches and buffer space – along the road can be healed.



A new building type, purpose-built to combine waterfront operations with labs, classrooms, and offices, should be implemented

Buildings should combine assignable, service, and gathering space

Development of and investment in the waterfront have always been important facets of campus planning for TAMUG. The changes called for in this master plan are for increased focus and different relationships between buildings, usage, and the waterfront itself.

One major component of this will be facilities purpose-built to combine the waterfront operations components of academic programs with the labs, classrooms, and offices that those programs need. Rather than an isolated waterfront operations building and separated storage facilities, all of those facilities should be combined in the ground level of new waterfront buildings, with academic space above.

But new buildings on the waterfront should offer more than functional space. Just like OCSB and the Waterfront Pavilion, gathering and casual spaces should be included in each building. Views to the waterfront from these spaces should be emphasized.

Parking and Traffic
FOCUS AREAS

TAMUG has benefitted from ample and well-deployed surface parking over the years. As the campus becomes denser, however, parking must densify along with the rest of the campus environment in order to maintain current standards of proximity and walking times from parking to campus destinations.

Just as important as convenience and efficiency, however, is the impact of parking on the campus environment. Growth in the campus population, given TAMUG's island location, will translate into the need for an equivalent growth in parking. If that supply is provided exclusively in the form of surface lots, a very significant portion of campus area will be occupied by parking lots: a sea of asphalt which is not conducive to the atmosphere called for in the principles established for this master plan.

The solution is a parking structure. Structured parking can not only provide for the growth in supply in parking but can also create additional building sites by making parking more compact. Properly sited, a garage can have a positive effect on campus spaces and on campus pedestrian traffic.

The waterfront should become a focus for working, gathering, and study

Facilities along the waterfront should maximize the limited waterfront space

TAMUG has no more important physical asset than its waterfront. Facilities along the waterfront must be efficiently and thoughtfully designed and deployed to maximize this limited space. This is a key differentiator from previous planning: the boat basin and the working waterfront must be understood as limited resources, and investments must be made which maximize those resources.

Great waterfront areas are working waterfront areas. Harbor areas across the nation have seen surges in redevelopment and subsequent popularity over the past several decades; the most successful of these are where amenities (food, seating, shade, and promenades) and working facilities are well balanced.

TAMUG should undergo this same type of revitalization. The waterfront areas on campus must continue to support TAMUG's mission, as they have since the campus's inception, but they must also offer opportunities for collaboration between disciplines and across groups. The waterfront should be redeveloped to allow for more gathering opportunities while also densifying usage for academic and research uses.

Waterfront: Pier and Boat Basin Areas
FOCUS AREAS

The heart of the waterfront is the pier, adjoined by the boat basin. These two components are the working features of the waterfront operations, and as such are key to integrating campus functions with campus appearance. As home of the training ship, the pier is arguably the reason why TAMUG's campus is located where it is, and this primacy of mission should be reflected in how the campus is designed.

The master plan proposes a future expansion of the boat basin to accommodate the university's fleet. This improvement will be needed in one of the longer-term planning phases, not immediately. However, the master plan has been designed to allow for that expansion; new building sites have been placed to allow for both construction and future operation of the enlarged boat basin. Activity around the boat basin will be reinforced by the construction of new buildings on the waterfront designed to support waterfront operations.

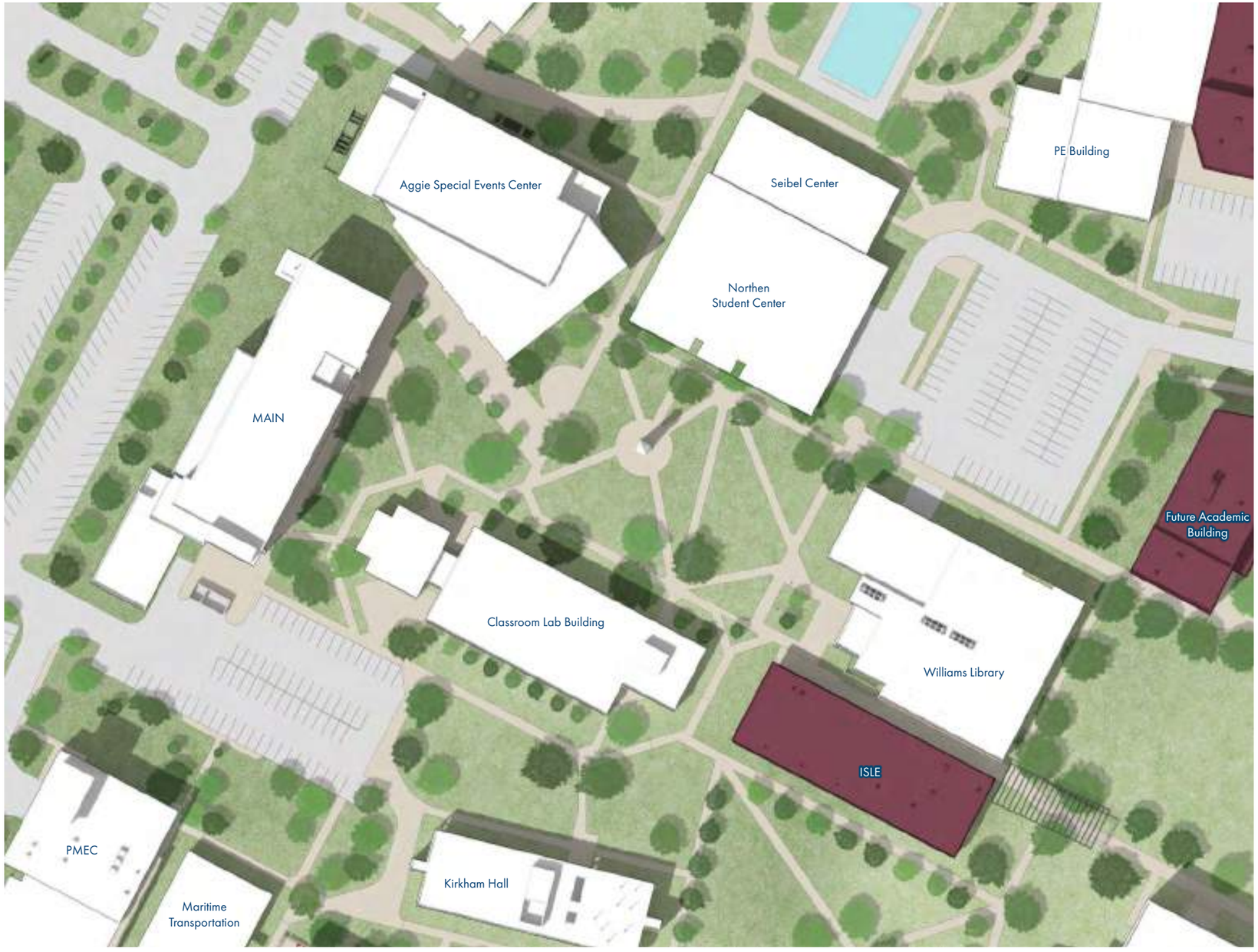
As the only major green space opening on to the working waterfront, the Ship's Green will gain new importance. The green is somewhat overscaled now, and given the future scarcity of space in this area, it will be framed by new buildings on both the west (in front of the Powell Marine Engineering Complex) and the east (replacing the current Oceanography Building and a portion of the existing Central Services Building, jutting towards the pier).

The two new buildings will sharpen the focus of the Ship's Green towards the waterfront. Views from Kirkham – particularly through the portal in that building – are remnants of the origins of the campus. They will be protected while incorporating tens of thousands of new square feet of academic and service space in the area.

Campus Core: Core Identity
FOCUS AREAS

Previous iterations of the campus master plan, especially the 2013/2014 updates, called for strengthening the campus entrance sequence through the construction of what has become MAIN and ASEC. That goal has been accomplished, and the campus has benefitted greatly from that reorganization, the new facilities themselves, and the refinements to the Central Quad completed at the same time.

In fact, the Central Quad is now by far the strongest, best-organized campus space and easily one of the most pleasant to occupy. This master plan calls for improvements to other campus spaces to bring them up to – and beyond – the standard set by the Central Quad. The quality of campus space at TAMUG should be consistent with spaces at other Texas A&M component campuses, and the improvements incorporated into this master plan will accomplish that.



The Central Quad is the perceived heart of campus, and that will not change as the campus develops. It is bordered by some of the university's most heavily used buildings and is on the path between housing and the waterfront, so its central nature will remain unchanged.

The clock tower, as at many campuses, marks the acknowledged center. The tower is under-scaled, however, for what the campus has become. It is dwarfed by the buildings around it, and it does not anchor the quad the well. Opportunities should be explored to find ways to correct this scaling issue, perhaps by using parts of the tower in a new structure which is properly scaled but which still holds the memorial significance intended by the original donors.

Campus Core: ISLE Quad
FOCUS AREAS

This area has long been neglected. It is now no more than a shapeless space, bordered haphazardly by buildings which do not face it or form its edges. It is defined in negative, rather than actively shaped and developed.

Many of the future campus spaces will be formed or refined by new buildings. The Immersive Scholarship Learning Environment Building (ISLE) will create one edge of this quad, but other interventions are necessary to define character and create an identity for the space. This plan proposes a light shade structure along one side of the space to do several things. First, it defines an edge of the quad, and in doing so, it also creates a gathering space, where tables and chairs can be placed.

If possible, ISLE should have minor food service – a coffee shop or snack bar – available, and seating should spill onto the plaza outside. The plaza should bridge between the Library Quad and the Campus Quad, making a connection between the two spaces.

This comparatively minor space is an opportunity to strengthen connections between the Campus Quad and the waterfront. It is edged on one side by Kirkham Hall, the oldest campus academic building, and this relationship should be emphasized and formalized. The eastern and western edges of the spaces should be more clearly defined so that the space is focused and sharpened.

The unusual design of Kirkham Hall, which incorporates an open portal, creates a natural means of connection between the Kirkham Quad and the Ship's Green to the south. Walkways connecting the two campus spaces as well as the Central Quad are some of the most important and most heavily traveled on campus. Landscaping should be emphasized here, particularly shade trees. Amenities such as lighting, benches, and improved paving are all critical parts of improving the pedestrian experience in this area.

Housing capacity at TAMUG has reached a stable point. Until existing residence halls reach replacement age/condition or student population grows to the point that additional capacity is required – which is not anticipated within the period of this master plan – no new housing will be needed. However, plans and needs can change in unanticipated ways, so as a future-proofing measure, a site has been identified for a future residence hall.

This site is near existing residence halls in order to maintain adjacencies to amenities and services. There are other potential sites in the immediate area, as well as across Seawolf Parkway, which could work equally well.

Campus recreational facilities have fallen behind current standards. The PE Building no longer offers sufficient facilities for campus needs. To address this, a new Student Life Center is proposed which will offer facilities for fitness and recreation in support of an improved quality of life – all part of larger strategies for student/faculty/staff retention.

The center has been sited in a location adjacent to the PE Building. This will allow for shared uses but is also well located to allow for use by the wider Galveston community: the secondary campus entrance is nearby, as is ample parking (and the future parking garage). Adjacencies to the pool, sand volleyball pit, and other areas proposed to be landscaped and developed as campus spaces will help create a student-centric face on the campus side of the complex.

Seawolf Parkway was a barrier to campus growth for many decades. It was finally bridged by the construction of the Texas A&M Maritime Academy Hall, but it remains largely undeveloped. However, it has other challenges as well: not only is it perceptually remote from the rest of campus, but it also is pocked with wetlands and other undevelopable area. This means that the land is both difficult to develop as well as a natural amenity.

This master plan, like those before it, calls for a measured approach to development in the natural area. Uses like recreational fields and walking trails have an innate suitability to the area, and future development of that type is shown there.

However, in the ten-year timeframe, the new bridge and subsequent recharacterization of Seawolf Parkway as an internal roadway will open up new opportunities for building sites. Campus currently sets back significantly from Seawolf because of the busy, loud character of it now; that will change and buildings can move closer to the road alignment. In fact, the portion of Seawolf nearest the existing bridge can likely be demolished entirely, allowing for a future building site there.

North Campus: Western Shore
FOCUS AREAS

The area west of the road to the Texas A&M Maritime Academy Hall is home to the new sewage treatment plant, dredge spoils areas, TAMUG's Wetlands Center, and several National Wetlands Inventory-identified wetlands areas. It is projected to be the landing spot for the future Pelican Island Bridge as well, which will dramatically alter the appearance of the area.

The Sea Turtle Center will be located here to take advantage of adjacency to the shoreline, wetlands, and other natural areas. This area will also be the site of walking trails and recreational fields – both uses which can be woven into the natural landscape with relatively limited disruption. In fact, the precise location and size of recreational fields should be fine-tuned in the field to limit disruption. Regulation field sizes are not necessary for all recreational fields, and that flexibility should be used to advantage here. Further, new roadways in this area should be limited – in fact, access to all new facilities, including the Sea Turtle Center and recreational fields – should be via existing roads.

Trails should connect from the TAMUG working waterfront, to the existing fishing pier, to a re-imagined Pelican Island Bridge pier, and then into the trails that will weave through the natural area.

The Texas A&M Maritime Academy Hall was by far the most important step in establishing the presence of the university on the north side of Seawolf Parkway, which in turn has been critical in the larger conversation regarding the location of the future bridge. With the projected course of the bridge and its associated roadways intersecting Seawolf Parkway just east of the campus, TMMA now has an important new role: anchoring what will become the new entrance into campus.

The most important change from a visual perspective will be that the campus will have a true gateway entrance for the first time. Instead of being split by a public road, TAMUG will have a true perimeter, creating the opportunity for a more traditional and significant entrance. The rendering on this page shows that new entrance, with design features inspired by those along Texas Avenue at the main campus as well as the new signage concepts recently adopted by TAMUG.

SECTION C

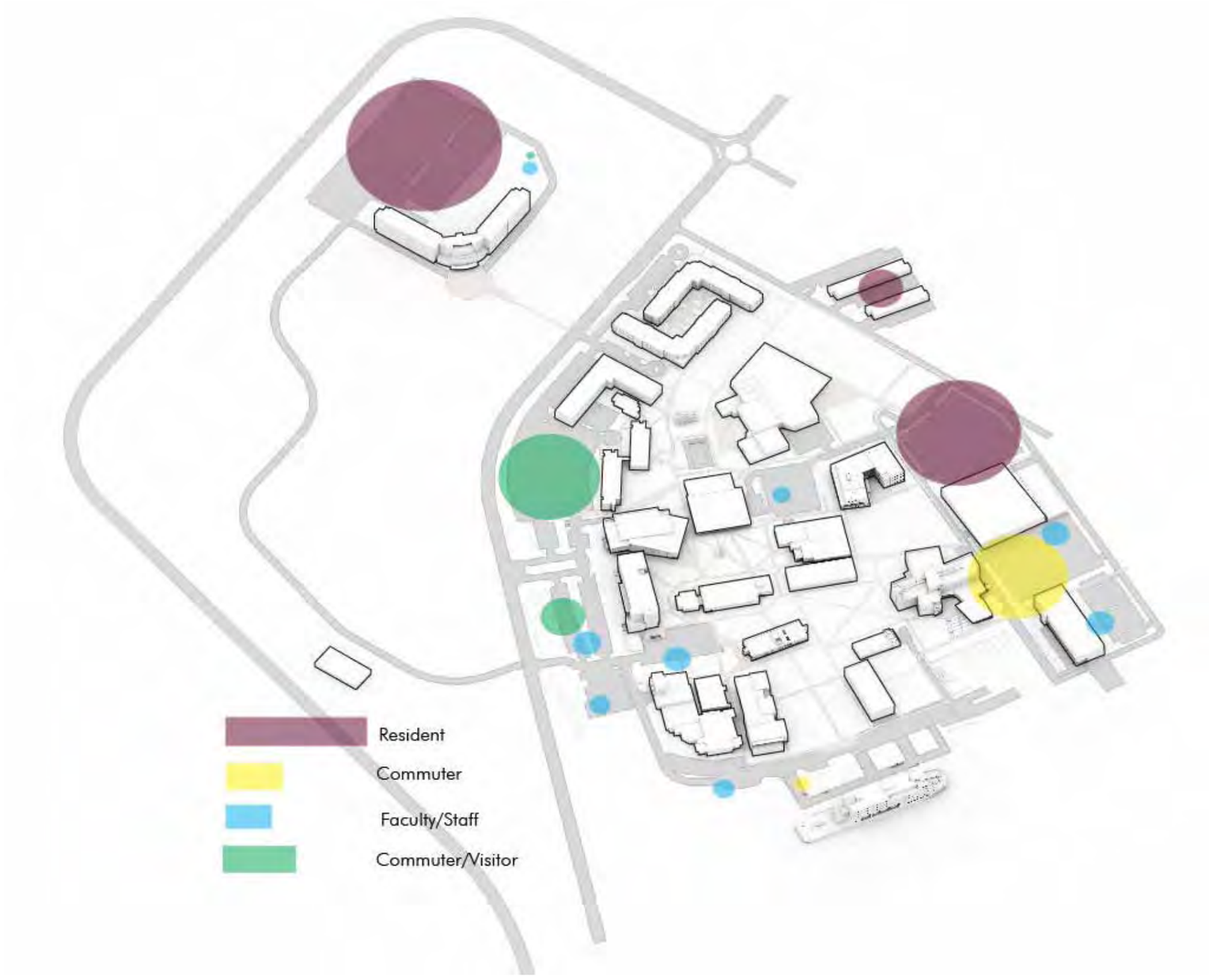
SYSTEMS AND INFRASTRUCTURE

Vehicular Circulation
SYSTEMS AND INFRASTRUCTURE

The major change to vehicular circulation will be, of course, the new bridge alignment. No longer will the campus be effectively cut in two by a highway; instead, the portion of Seawolf Parkway will become an interior circulator.

Drivers arriving at campus will be directed along one of two routes where the new bridge access intersects Seawolf: either straight ahead, to access the bulk of campus parking and many of the future waterfront facilities; or right, to go directly to the administrative and special events complex. This dichotomy mirrors the Harborside/Broadway split as people navigate towards campus: the former for those who have been to campus before and know their destination and route; the latter for visitors and others who need special direction.

Fully adapting to the new bridge route is a very long-term issue. Even within the 30-year term of this master plan, it is not likely that the campus will be fully adapted. Seawolf Parkway within campus limits must be reconstructed to make it an internal campus circulator, which will allow for additional parking. Drainage must be reconstructed, and agreements worked out with agencies regarding property disposition. This master plan will begin that process, but it may take 50 years or more to complete.



Parking is an opportunity – where it is placed can shape how people walk across campus, either creating more lively spaces or removing the potential for interaction. This has been a primary consideration as new spaces and a new parking structure have been located. As now, parking will primarily be located around the perimeter of campus, but a new division will be developed: one traffic route and set of parking options for visitors, and another route and set of options for those familiar with campus.

The parking structure will be the primary initiator of pedestrian trips across campus. It is likely that it will serve all campus groups: staff, students, and faculty. Flexible payment strategies, such as the extension of the current payment mechanisms, will allow visitors to park in the garage as well.

On the northwest side of campus, the existing lots will continue to be used as they are now, but should be augmented to allow for more capacity for events at ASEC. Signage will direct visitors to this area as the main campus entrance.

Wayfinding & Identity
SYSTEMS AND INFRASTRUCTURE

At the core of this wayfinding and signage master plan is the desire to create and reinforce a sense of place: to make the campus, public areas or buildings more memorable to inhabitants and visitors. To identify, as well as inform, within the context of a flexible and expansive graphics system, is only part of the intent. The other part is to celebrate those characteristics which make the campus unique — history, architecture, natural resources, events, community relationships, and curriculum.

The objectives are as follows:

- Reinforce site boundaries and identity
- Identify key entry points into the site
- Define pathways for vehicular traffic
- Define pathways for vehicular traffic to parking areas
- Define pathways for pedestrians from parking areas to the individual buildings
- Create an awareness of destinations and promote those destinations
- Emphasize special aspects of the site which make it unique and interesting
- Reduce the visual clutter or overuse of signs to reduce confusion
- Enhance the perception of the site as a safe, clean, and welcoming environment
- Create a system consisting of simple components that are easily fabricated and easily maintained

The purpose of a wayfinding system is to promote the use of public facilities, building uses, campus amenities and parking for the campus. It consists of the four components outlined below.

1. Identification System

Gateway signage is placed at the most important edges of the campus to welcome the visitor and to set the tone for the rest of the sign standards. Consistent use of graphic elements, logos, colors and structural components is key to reinforcing TAMUG's identity.

2. Vehicular Directional System

This system helps lead vehicles from major traffic spines leading into the campus to major destinations and to parking areas along preferred routings. The vehicular directional system focuses on occasional users and first-time visitors. The vehicular directionals are located at key decision-making intersections.

3. Pedestrian Directional System

For the pedestrian leaving the vehicle at a parking destination, the pedestrian directional system reinforces direction and orientation. This level of signing includes specific destinations that are within walking distance, as well as map elements to help orient the user. The pedestrian system includes directional signs, information kiosks or directories with orientation maps, and identity signs for the buildings and entrances.

4. Interpretive and Decorative/Seasonal Graphics

As a supplement to the other elements, these can take any number of forms and help to create a visually exciting environment. Banners can be used to promote special events, or to simply reinforce campus entrances. These may be changed frequently to continually refresh the image of the university. Other temporary enhancements, such as construction barricade fences, provide an excellent backdrop for graphics and a palette for community involvement.

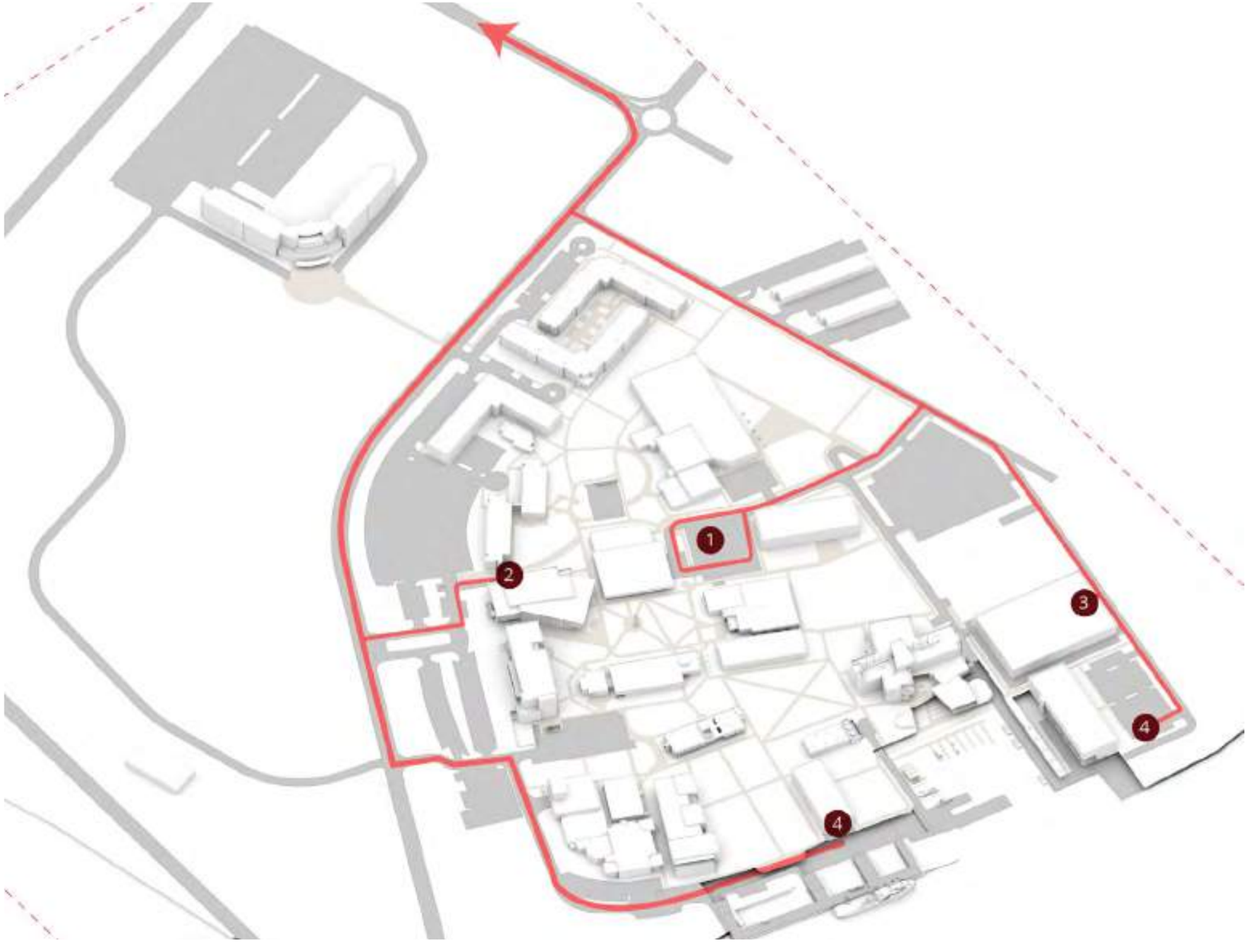
Deliveries and Service
SYSTEMS AND INFRASTRUCTURE

Service access is a critical consideration for any campus, especially growing campuses. The back side of the Student Center (labeled 1 on the adjacent diagram) is the single most significant service spot thanks to the daily food deliveries to the cafeteria and dumpster pickup, but there is also a service dock at the library. Currently, general campus parking blends with the service drive, but this creates hazards where the busy service traffic and the general public intersect.

As changes are made to the back side of campus, roadways will be simplified to clarify routes in and out of the area behind the Student Center. Parking will be relocated to other areas in order to separate delivery and trash pickups from general traffic, and dedicated dock space and turnaround areas will be incorporated.

Formalizing the delivery court behind the Mary Moody Northen Student Center will benefit the campus in a number of ways: deliveries will be more easily managed and more efficient, general pedestrian traffic which currently transits the area (and will do so in the future, though to a more limited extent) can be directed to more appropriate and welcoming pathways which will be built as part of the changes, and the unattractive back-of-house nature of this area can be screened. By reducing pedestrian/traffic conflicts, safety will be improved as well.

Deliveries will continue to ASEC for special events, to the new location of the Physical Plant, as well as to the waterfront, including new waterfront operations facilities. Access to all of these locations is either unchanged (ASEC) or improved (Physical Plant) by the changes in the master plan.



The campus currently has only 300 tons of firm capacity available. A new central plant or major expansion of the existing plant will be necessary to add any significant additional load to the campus loop. The build-out of the master plan requires a minimum of 3,200 tons for cooling and 14,000 MBH for heating, meaning that significant additional capacity will be needed.

Future buildings will have the following projected loads. Cooling is indicated in tons, and heating units are MBH.

Description	Size (SF)	Cooling	Heating
New Academic Building	80,000	250	1,600
New Vessel Operations	80,000	250	1,600
Academic Building	45,000	150	900
New Academic Building	80,000	250	1,600
Student Life Center Addition	100,000	350	2,000
New Residence Hall	80,000	250	1,600
ISLE	20,000	50	400
New Physical Plant Facility	19,000	50	285
Academic Building Complex*		1,200	4,000
Training Ship Shore Cooling		400	N/A
New Demand		2,000	9,985
Total Plant Requirements		3,200	13,985

* The Academic Building Complex is an existing facility, but it is served by air-cooled chillers with a relatively short anticipated service life. Figures indicated are what are required to serve those buildings from the main campus distribution loop.

The master plan indicates two potential locations for future central plant capacity: an expansion of the existing plant and/or a new facility constructed as part of the new parking garage. Depending on funding availability, timing, and overall cost, either or both of those options may be utilized. Additionally, the existing plant facility is reaching the end of its service life. Major renovations should be planned to allow the facility to continue to serve the campus.

Electrical System
SYSTEMS AND INFRASTRUCTURE

The campus's existing electrical service is rated for approximately 6400 kVA, with a current demand load of approximately 3600 kVA. There is some spare capacity in the circuit to add future buildings but capacity is not sufficient to serve the entire campus development.

As part of expansions of the campus thermal utilities, a new campus electrical service should be included to serve the new and/or expanded central plant, new campus buildings, and ultimately the existing campus electrical distribution system. New electrical ductbanks should be included when planning new thermal piping distribution. The new electrical distribution will be routed adjacent to Sea Wolf Parkway as the campus is expanded.

The new service will have new 12.47 kV switchgear in a main-tie-main configuration and will serve a new distribution loop for campus and central plant loads. The new loop will tie into the existing loop at the existing service entrance location. The new service in the central plant will serve as the main service for the campus distribution. Future building requirements are as follows:

Description	Size (SF)	Electrical Demand (kVA)
New Academic Building	80,000	400
New Vessel Operations	80,000	400
Academic Building	45,000	225
New Academic Building	80,000	400
Student Life Center Addition	100,000	500
Parking Garage with Central Plant		6500
New Residence Hall	80,000	400
ISLE	20,000	100
Central Plant Expansion	3,500	6100
Sea Turtle Center	15,000	75
New Physical Plant Facility	19,000	100
Total New Demand		15200
Existing Demand		6400
Total Electrical Requirements		21600

Outside Plant

Recent construction efforts have provided an underground campus communications duct bank which provides a direct fiber feed to most of existing campus facilities. The installation of additional fiber optic cabling (seen to the left) is recommended to allow for technology connectivity to all existing buildings and to provide redundancy to each building on campus. Campus currently has a secondary fiber pathway off island/ campus which provides true campus redundancy.

A campus study found that existing duct bank system (conduits and maintenance holes) are filled with legacy copper cables which are no longer in use. These cables should be removed, if possible, to free existing pathway for new fiber optic infrastructure.

In-Building Recommendations

The latest codes and university standards require installation of Distributed Antenna Systems (DAS). A campus standard must be implemented to include cellular DAS planning and public safety DAS Systems supporting first responder radio frequencies for future construction and renovation projects.

Campus should standardize on higher bandwidth Category 6E cable to provide a robust wireless and wired network both indoor and throughout exterior campus spaces. Campus telecom room sizes should be updated to minimum 11′ x 14′.

The current data center contains outdated equipment and requires modernization. The space has additional capacity for new electronics but requires a redundant cooling system. Campus should follow Tier III Data Center Guidelines TIA-942 for renovations and expansions.

Recent renovation and construction projects have standardized on the Lenel Access Control Mercury platform. HID multi-class RP40 and RP15 card readers are to be used for electrified hardware entry locations.

The use of emergency phone stanchions or callboxes has been ruled out at this time.

The current video management software is ONSSI. The video system is currently integrated with the access control system, and this integration should be included in future projects. Storage for the video surveillance system is ONSSI NVR software that is placed on an owner-provided Windows-based server.

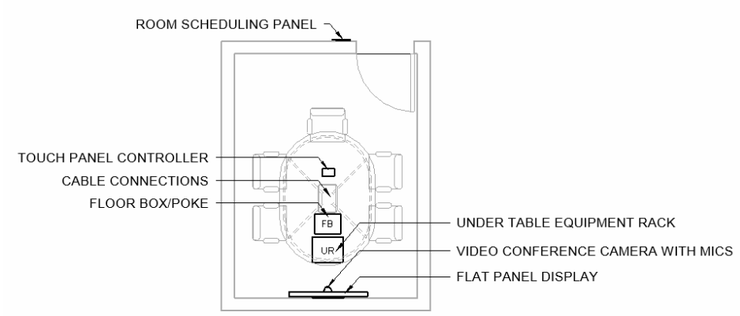
Future video surveillance should implement AXIS IP Dome megapixel cameras, viewing all exterior entrances with added coverage at parking lots and building utility equipment locations. Additional surveillance coverage over boat docks is also recommended.

The campus should also investigate future active shooter monitoring systems that can tie into the existing security system.

TAMUG has nine primary AV room types that are utilized in normal classroom buildings. The appendix contains full information for each room type; the following is an excerpt covering several of the most commonly used types.

Small conference room – approximately: 12' x 14'

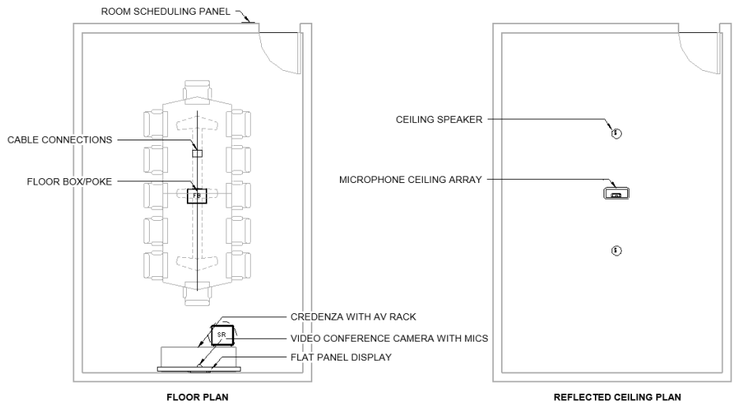
a. Flat screen display
b. Table mounted device connection
c. Wall mounted or table control screen
d. Floor box with interface plate for AV, data, and power
e. Wireless device connection
f. PTZ conference camera with integrated microphones
g. Add soft codec if designated a video conference room (Zoom, Teams, G2M, etc.)
h. Optional room scheduling panel



Small conference room

Large conference room – approximately: 25' x 17'

a. Flat screen display
b. Multiple table mounted device connection
c. Wall mounted and table control screens
d. Multiple floor boxes with interface plates for AV, data, and power
e. Ceiling mounted speakers
f. Wireless device connection
g. PTZ conference camera
h. Ceiling conference microphone(s)
i. Add soft codec if designated a video conference room (Zoom, Teams, G2M, etc.)
j. Optional room scheduling panel



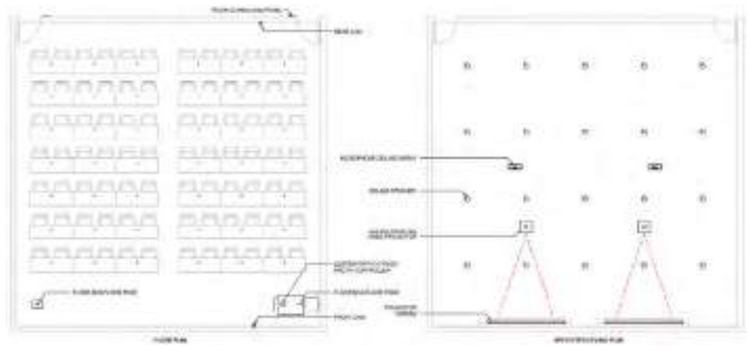
Large conference room

Medium classroom – approximately: 32' x 24'

a. 16:9 electronic projector (ALR) tensioned screen with RS232 control (more if needed)
b. 3500+ (depending on lighting) lumen laser video projector (more if needed)
c. Ceiling mounted speakers
d. Wall mounted or podium control screen
e. Floor box with interface plates for AV, data, and power
f. Lectern with room for AV equipment
g. AV equipment includes desktop computer, DVD/Blu-Ray player, connection for a laptop, wireless device connection, document camera, amplifier, and AV switcher
h. 2 PTZ conference cameras (instructor and audience) to desktop computer
i. Ceiling microphone(s) to desktop computer
j. Add soft codec if designated a video conference room (Zoom, Teams, G2M, etc.)

Large classroom – approximately: 42′ x 42′

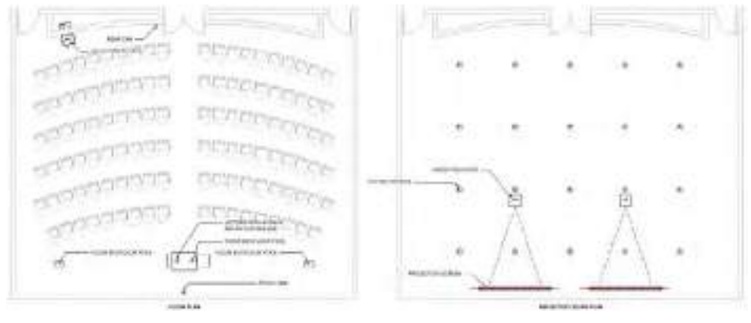
a.16:9 Electronic projector (ALR) tensioned screen with RS232 control (more if needed)
b. 4500+ (depending on lighting) lumen laser video projector (more if needed)
c. Ceiling mounted speakers
d. Wall mounted and podium control screens
e. 2 Floor boxes with interface plates for AV, data, and power
f. 2 wireless microphone combos (lapel and handheld) to project to room and desktop computer
g. Lectern with room for AV equipment and able to switch floor boxes easily
h. AV in lectern includes podium microphone, desktop computer, DVD/Blu-Ray player, connection for a laptop, wireless device connection, and document camera
i. AV Cabinet for additional switchers, amplifiers, etc…
j. 2 PTZ conference cameras (instructor and audience) to desktop computer
k. Add soft codec if designated a video conference room (Zoom, Teams, G2M, etc.)



Auditorium

Auditorium/amphitheater – approximately: 42′x 50′

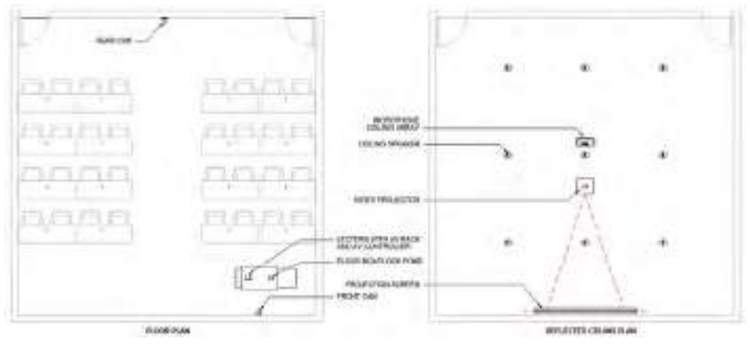
a. Appropriate number of 16:9 Electronic projector (ALR) tensioned screens with RS232 controls
b. Appropriate number of 6500+ (depending on lighting) lumen laser video projector
c. Ceiling mounted speakers
d. Wall mounted and podium control screens
e.Two floor boxes with interface plates for AV, data, and power
f. Three wireless microphone combos (lapel and handheld) to project to room and desktop computer
g. Lectern with room for AV equipment and able to switch floor boxes easily
h. AV in lectern includes podium microphone, desktop computer, DVD/Blu-Ray player, connection for a laptop, wireless device connection, and document camera
i. AV Cabinet for additional switchers, amplifiers, and associated equipment
j. Two PTZ conference cameras (instructor and audience) to desktop computer



Auditorium

Teaching Computer Lab approximately: 32′ x 32′

a. 16:9 Electronic projector (ALR) tensioned screen with RS232 control (more if needed)
b. 3500+ (depending on lighting) lumen laser video projector (more if needed)
c. Ceiling mounted speakers
d. Wall mounted or podium control screen
e. Podium Floor box with interface plates for AV, data, and power
f. Lectern with room for AV equipment
g. AV equipment includes desktop computer, DVD/Blu-Ray player, connection for a laptop, wireless device connection, document camera, amplifier, and AV switcher
h. Floor boxes to accommodate 2 power and 1 data for each computer
i. 2 PTZ conference cameras to (instructor and audience) to desktop computer
j. Ceiling microphone(s) to desktop computer
k. Add soft codec if designated a video conference room (Zoom, Teams, G2M, etc.)



Auditorium

SECTION D

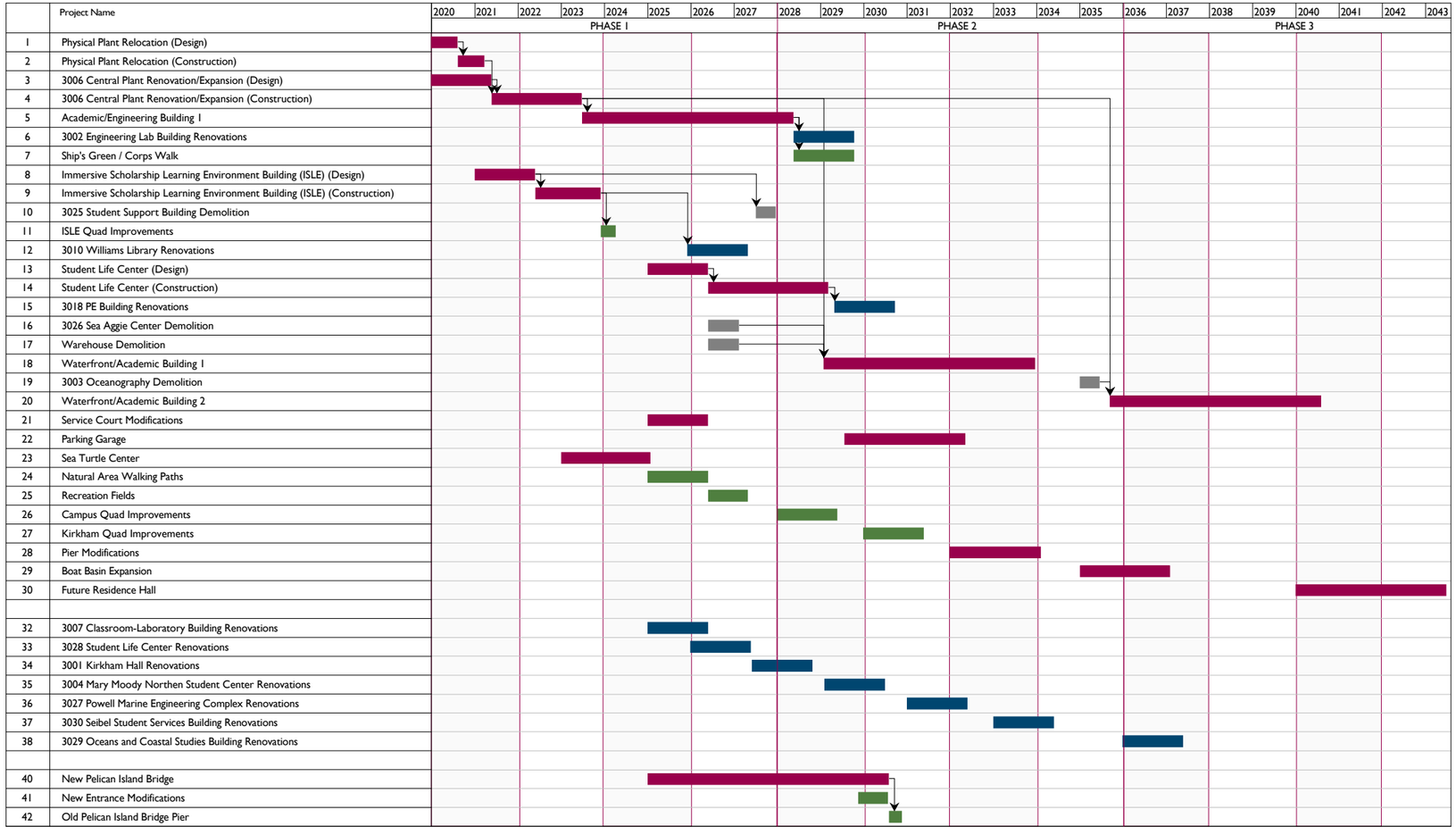
IMPLEMENTATION

Phasing
IMPLEMENTATION

The master plan proposes a sequence of completion for new projects, including renovation, demolition, and new construction. Some of the projects are dependent upon the completion of others, while other projects can be completed without substantial preceding work. The master schedule depicts all projects and interrelationships between them.

Developing project phasing is an art, not a science. While there are some dependencies within projects (such as the necessity to clear the site for the Waterfront/Academic Building 1 through demolition of the existing warehouse), many projects are independent of such considerations. The phasing shown has been developed based on expectations of student population growth over time, information regarding external projects (such as construction of the new Pelican Island bridge), estimations of building service life, and similar concerns.

Master plans are developed with end goals in mind, and usually – as in this case – the strategies for phasing are generated after that. While this may seem like an overly flexible approach, it works to the advantage of institutions. Funding and other considerations inevitably require modifications to the timeline, sequence, and sometimes content of the master plan. The flexibility this offers with regards to achieving the end goal is critical.



	Project Name
1	Physical Plant Relocation (Design)
2	Physical Plant Relocation (Construction)
3	3006 Central Plant Renovation/Expansion (Design)
4	3006 Central Plant Renovation/Expansion (Construction)
5	Academic/Engineering Building 1
6	3002 Engineering Lab Building Renovations
7	Ship's Green / Corps Walk
8	Immersive Scholarship Learning Environment Building (ISLE) (Design)
9	Immersive Scholarship Learning Environment Building (ISLE) (Construction)
10	3025 Student Support Building Demolition
11	ISLE Quad Improvements
12	3010 Williams Library Renovations
13	Student Life Center (Design)
14	Student Life Center (Construction)
15	3018 PE Building Renovations
16	3026 Sea Aggie Center Demolition
17	Warehouse Demolition
18	Waterfront/Academic Building 1
19	3003 Oceanography Demolition
20	Waterfront/Academic Building 2
21	Service Court Modifications
22	Parking Garage
23	Sea Turtle Center
24	Natural Area Walking Paths
25	Recreation Fields
26	Campus Quad Improvements
27	Kirkham Quad Improvements
28	Pier Modifications
29	Boat Basin Expansion
30	Future Residence Hall
32	3007 Classroom-Laboratory Building Renovations
33	3028 Student Life Center Renovations
34	3001 Kirkham Hall Renovations
35	3004 Mary Moody Northen Student Center Renovations
36	3027 Powell Marine Engineering Complex Renovations
37	3030 Seibel Student Services Building Renovations
38	3029 Oceans and Coastal Studies Building Renovations
40	New Pelican Island Bridge
41	New Entrance Modifications
42	Old Pelican Island Bridge Pier

This phase has several major projects, both building projects and sitework, intended to begin the process of transforming the waterfront. As such, this is an interim phase: some of the changes will open up free space to enable critical building projects in later phases.

This phase also has elements which will dramatically improve the appearance and collaborative nature of campus. These are site-focused projects, including a complete update to the student life area, changes to the Ship's Green (in conjunction with the new Engineering Building), and improvements to the ISLE quad.

New Buildings
Engineering Building
ISLE
Student Life Center
Sea Turtle Center
Central Service Building Demo/Expansion/Renovation

New/Renovated Campus Spaces
Ship's Green
Campus Life Quad / Recreational Fields
Tennis Courts
ISLE Quad

Renovations
3001 Kirkham Hall
3002 Engineering Lab Building
3007 Classroom-Laboratory Building
3010 Williams Library
3028 Student Life Center

Demolitions
3006 Central Service Building (partial)
3026 Sea Aggie Center
Warehouse

Phase 2: 2029 to 2036
IMPLEMENTATION

Phase 2 is when major changes to the waterfront begin to take shape, starting with the completion of the Academic/ Vessel Operations Building. The second phase of Ship's Green renovations will be completed, both improving the campus's connection to the waterfront as well as preparing the way for work in Phase 3. The Parking Garage will be constructed as well, which will improve pedestrian patterns on campus and will create opportunities for more interaction between students and faculty.

Renovations of existing buildings continue as well, with the Powell Marine Engineering Complex and various student services buildings receiving renovations. No demolitions are slated to occur in this phase.

New Buildings
Academic/Vessel Operations Building
Parking Garage

New/Renovated Campus Spaces
Ship's Green (Phase 2)
Waterfront Area
Recreational Field
Old Pelican Island Bridge Pier

Renovations
3027 Powell Marine Engineering Complex
3004 Northen Student Center
3030 Seibel Student Services Building
3018 Physical Education Facility

Demolitions
None

The final phase of the master plan completes several of the major initiatives of the master plan, including last changes to the waterfront (another academic/operations facility, expansion of the boat basin and related aesthetic/campus space improvements), renovations to OCSB, and far-future facility additions: another academic building and a future residence hall.

New Buildings
Academic Building
Future Academic Building (likely beyond 2050)
Future Residence Hall (likely beyond 2050)

New/Renovated Campus Spaces
Boat Basin Expansion
Waterfront Area

Renovations
3029 Ocean & Coastal Studies Building

Demolitions
None

Cost Estimates
IMPLEMENTATION

Cost estimates have been created for each major project called for in the master plan. Where there are options – sizing options for the structured parking and location options for Central Plant and Physical Plant – both options are captured in the listing.

All line items include the following assumptions:

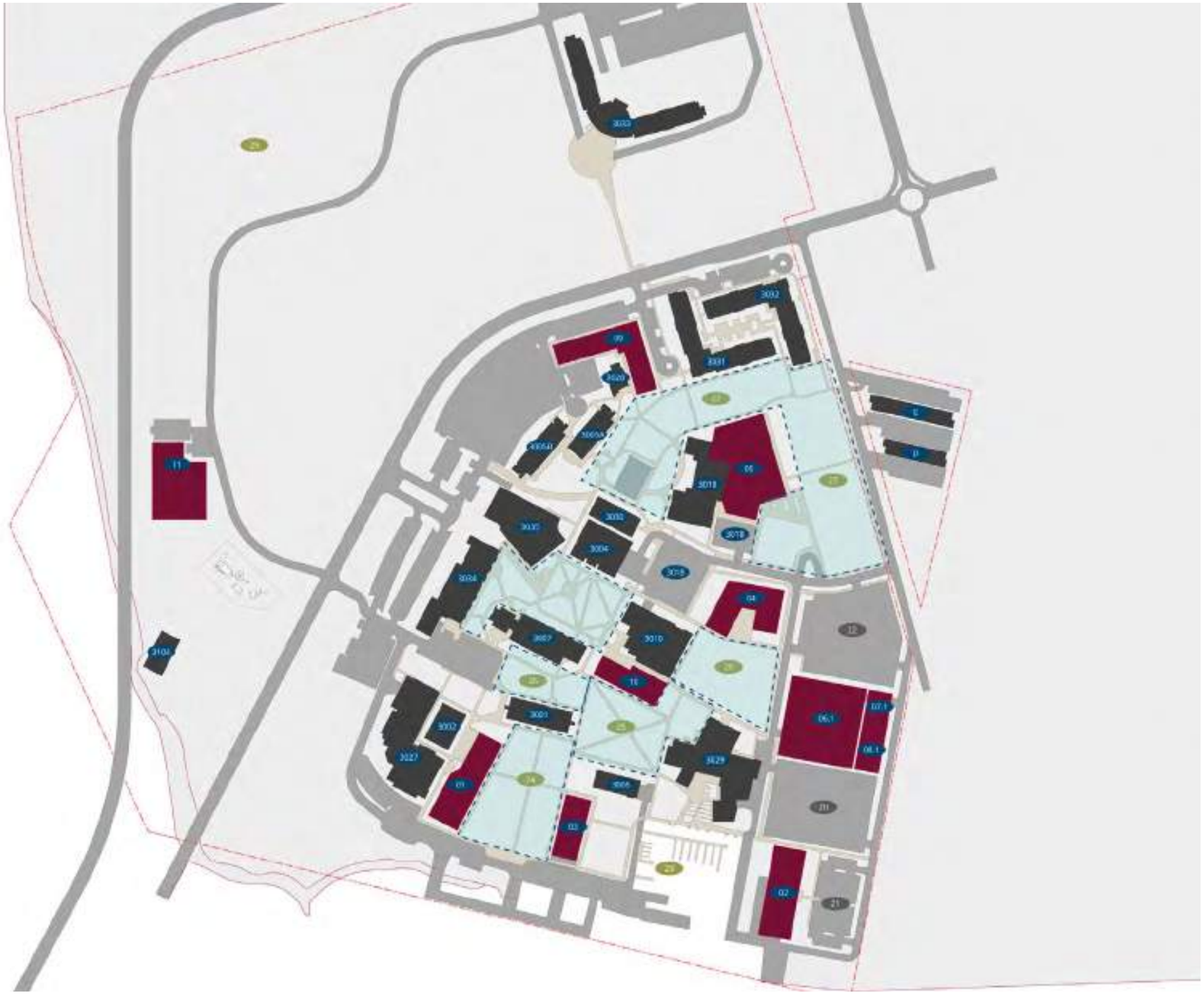
15% for contractor's general conditions
25% for estimating/design contingency
5% for contractor's bonds and insurance
10% for contractor's overhead and profit

All figures were generated as current cost estimates, but projected construction dates vary. To aid in future budgeting efforts, escalation (i.e., cumulative estimated inflation) has been applied to projects which will take place in the future, as seen in the "Projected Year Project Cost" column. This chart is synchronized with the phasing information shown on the previous pages.

While these figures are sufficient for general decision-making and conceptual budgeting efforts, specific projects should be more closely scoped and specifically budgeted prior to placement on CIP timelines or procurement of design services.

Full information, including more com plete breakdowns of each component shown here, is available in the appendix.

Number	Item	Quantity	Unit	Unit Cost	2019 Construction Cost	2019 Project Cost	Projected Year	Projected Year Project Cost
	Demolition: 3003 Oceanography Building	5,750	SF	$ 6.00	$50,407	$59,302	2024	$70,719
	Demolition: 3006 Physical Plant/Storage	6,750	SF	$ 6.00	$59,174	$69,616	2022	$76,022
	Demolition: 3025 Student Support	6,000	SF	$ 5.50	$48,215	$56,724	2026	$73,870
	Demolition: Dockside Warehouse	35,000	SF	$ 5.50	$281,257	$330,891	2022	$361,341
	Demolition: 3026 Sea Aggie Center	67,000	SF	$ 5.50	$538,406	$633,419	2020	$633,419
01	Engineering Building	80,000	SF	$ 320.26	$25,620,941	$34,161,255	2022	$37,304,944
02	Academic/Vessel Operations Building	80,000	SF	$ 314.41	$25,153,148	$33,537,531	2024	$39,994,129
03	Academic Building	45,000	SF	$ 354.14	$15,936,128	$21,248,171	2029	$31,576,803
04	Academic Building	90,000	SF	$ 347.55	$31,279,306	$41,705,741	2035	$80,712,389
05	Student Life Center	100,000	SF	$ 307.28	$30,727,702	$40,970,269	2026	$53,353,948
06.1	Structured Parking (Option 1)	180,000	SF	$ 94.10	$16,938,508	$22,584,677	2030	$35,073,313
06.2	Structured Parking (Option 2)	200,000	SF	$ 93.15	$18,630,699	$24,840,932	2030	$38,577,208
07.1	Police Headquarters & Physical Plant	10,000	SF	$ 412.99	$4,129,903	$5,506,537	2021	$5,754,332
07.2	Police Headquarters & Physical Plant	10,000	SF	$ 412.99	$4,129,903	$5,506,537	2021	$5,754,332
08.1	Central Plant (New)	10,000	SF	$ 392.15	$3,921,534	$5,228,712	2021	$5,464,004
08.2	Central Plant (Addition)	3,500	SF	$ 398.40	$1,394,391	$1,859,188	2021	$1,942,851
08.3	Central Plant Equipment (Full Buildout)	1	LS	$ 9,000,000	$9,000,000	$12,000,000	2023	$13,693,994
09	Residence Hall	80,000	SF	$ 339.63	$27,170,012	$36,226,683	2050	$135,680,452
10	The ISLE	16,000	SF	$ 404.91	$6,478,564	$8,638,085	2023	$9,857,490
11	Center for Texas Beaches and Shores	15,000	SF	$ 429.26	$6,438,833	$8,585,111	2023	$9,797,037
20	Surface Parking	70,000	SF	$ 13.40	$937,947	$1,250,596	2020	$1,250,596
21	Surface Parking	35,000	SF	$ 13.40	$468,973	$625,297	2024	$745,679
22	Surface Parking	12,000	SF	$ 13.40	$160,816	$214,421	2026	$279,232
23	Boat Basin	1	LS	$ 3,378,736	$3,378,736	$3,974,983	2040	$9,586,523
24	Ship's Green	1	LS	$ 1,091,455	$1,091,455	$1,284,065	2022	$1,402,231
25	ISLE Quad	1	LS	$ 1,028,068	$1,028,068	$1,209,492	2023	$1,380,232
26	Kirkham Quad	1	LS	$ 436,582	$436,582	$513,626	2022	$560,892
27	Recreational Fields and Pavilions	1	LS	$ 2,724,447	$2,724,447	$3,205,232	2026	$4,174,045
28	Reserved Space	1	LS	$ 100,000	$100,000	$117,647	2035	$227,680
29	Recreational Trails and Site Preservation	1	LS	$ 800,000	$800,000	$941,176	2023	$1,074,039
	Miscellaneous Site Improvements	1	LS	$ 1,858,895	$1,858,895	$2,186,935	2028	$3,110,041
	Miscellaneous Roadway Improvements	1	LS	$ 413,641	$413,641	$486,636	2028	$692,046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SECTION E

DESIGN GUIDELINES

Introduction

Design guidelines are meant to be a rulebook for how campuses are designed in order to establish consistency and to ensure that the goals of the master plan are met. They set expectations of designers for how campus spaces and buildings will appear as well as set performance criteria – usually loosely – for how buildings should perform.

Designers should study the guidelines which follow. New projects will generally require the interpretation of these guidelines, as not every situation can be anticipated, but in general, projects should relate to the existing campus while accomplishing the specific goals laid out here as well as in the discussions in the master plan itself.

Colors and Materials

Blues, blue-greens, greens, grays, and whites are all colors which are found in marine environments and maritime construction. Colors from that palette should be emphasized over the more land-oriented browns and earth tones which were used on early campus buildings. However, new buildings should include some colors which correspond to existing campus colors; new construction should not be entirely divorced from the existing campus. Additionally, colors which relate to the Texas A&M branding palette should be used sparingly, as they have been on MAIN and ASEC. New materials should be representative of TAMUG's involvement in technologically oriented fields. Glass, metals, and composite materials are visually consistent with TAMUG's programs and mission.

As new buildings are designed, designers should look primarily to MAIN, ASEC, and the new pavilion attached to OCSB for precedent for colors and materials.

Colors at MAIN and ASEC

Incorporation of tan at Atlantic Hall

MAIN showing grays, tans, and maroon accent

Curved fabric form near OCSB

Rendering of ISLE showing glazing and shading on the Central Quad

Building Shapes and Forms

Building forms should, where possible, refer to shapes which relate to maritime and marine settings as well as those which reflect TAMUG's advanced technological programs. References need not be literal; in fact, abstractions may be more useful in conveying the feel of the various referents without historical confusion. Copying the architectural language of a Galveston wharf-side building verbatim, for example, would not be faithful to the history or setting of that building, but an abstracted version of the language implies that building type as a precedent without creating a hollow imitation.

Original campus buildings were mostly one or two stories, but the campus has grown in density to three- and four-story buildings. New buildings should also be in the three- to four-story range.

Glazing and Shading

Glazing should be used to activate the ground floor of buildings in order to emphasize connections between indoor and outdoor space. Much of the focus on this master plan is on how outdoor campus spaces can and should enhance opportunities to communicate and collaborate, and the way that building edges form space and make linkages between inside and outside are critical part of that.

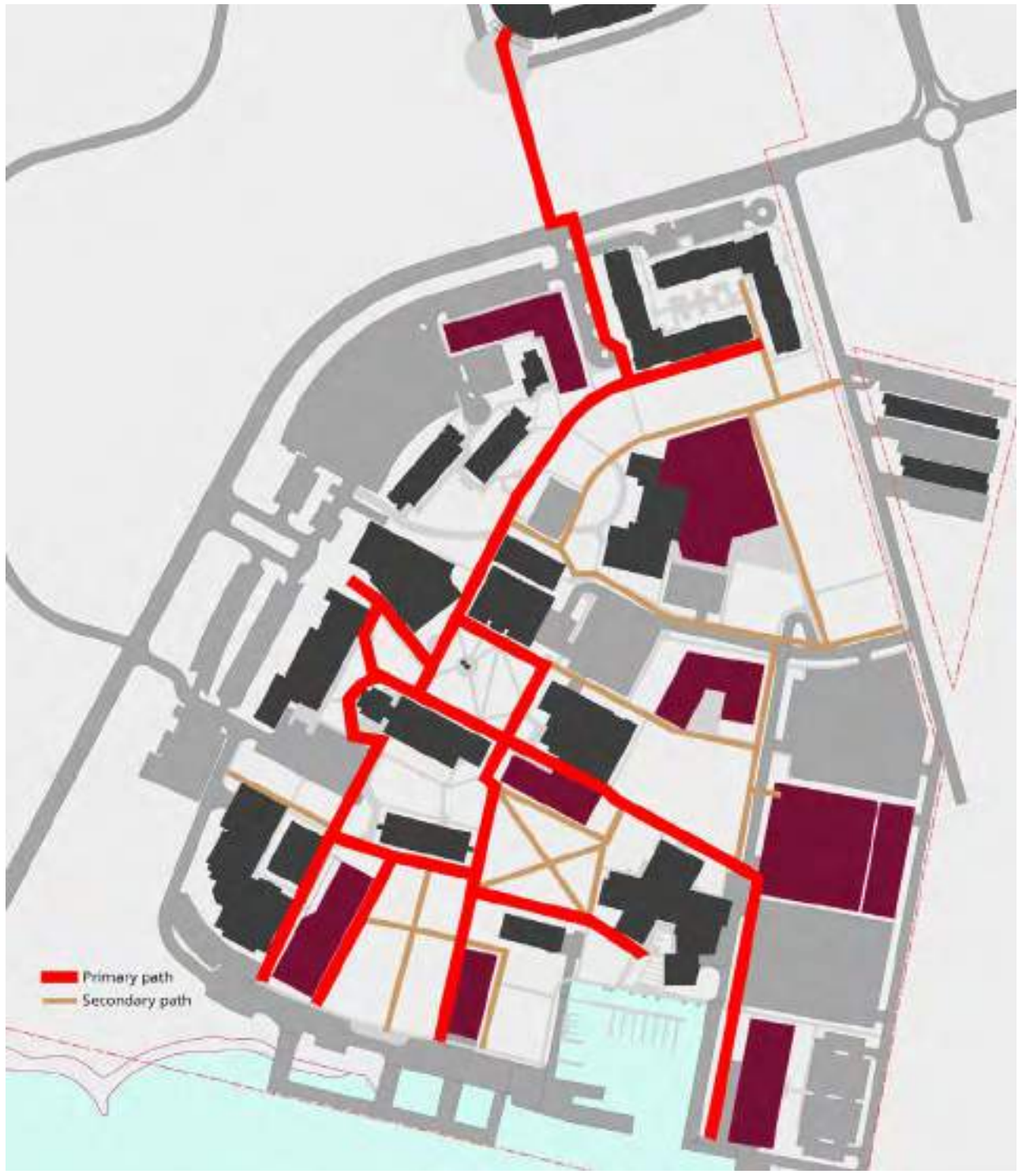
Several buildings on campus have metal or concrete horizontal sunshades. Shades like these should be used on new buildings. Steel shades, in particular, are visually appropriate for the high-tech, maritime-inspired character which all new buildings should have. Window glass should be clear, un-tinted, low-e, double-pane glass.

Walkways and Plazas

- Primary walkways should be given more visual importance and developme nt than secondary walkways
- Primary walkways should be emphasized with double rows of trees, benches and litter receptacles, and special paving at plazas. Primary walkways may also be paved entirely with pavers matching those near MAIN and ASEC.
- Secondary walkways should have a single row of trees spaced appropriately to give shade and should have benches and litter receptacles at intersections with other paths
- Plazas and other gathering places should be paved with medium- to dark-colored pavers matching those near MAIN and ASEC
- Match new sidewalks to existing sidewalk materials

General Hardscape

New exterior furniture and furnishings, light fixtures, and paving installed as part of the MAIN and ASEC projects should be used as campus standards from this point forward. Exterior furniture and other furnishings are important components of a university's appearance and using a standard set of fixtures will help to knit the campus together visually. As campus spaces are developed according to the projects called for in this master plan, these standards should be used. Furthermore, deteriorated and aging furniture should be progressively replaced with the same selections.



Designation of primary and secondary campus walkways

Example of paving for primary walkways and plazas

Secondary walkway example, showing concrete, benches, and trees

Landscape

The landscape character of the campus should support the overall maritime character of the campus through the use of plants that are native/adaptive and compatible with a coastal marine environment. Functionally it should provide a unifying landscape framework for the many individualized spaces and design elements that exist and are planned for the campus while strengthening the relationship between the built and native environments. The landscape should also reflect a campus goal of creating a pedestrian friendly atmosphere.

The campus is located in a sub-tropical climate zone that is characterized by hot summers, short mild winters, occasional heavy rains and dry spells, high humidity, and proximity to salt air and water from the gulf. Within certain limitations, conditions on campus should be favorable to a lush planting environment. One of the biggest limiting factors is that Pelican Island for the most part was built with dredged fill material which is very sandy and has a high salt content. Existing ornamental plantings on campus exhibit a wide range of adaption to the local conditions. Some appear to thrive while others appear to struggle for survival. Learn from which plants are successful and apply that knowledge to future plantings.

Landscaping should be utilized on the TAMUG campus in a manner that achieves several important objectives including:

- Defining campus open spaces
- Defining circulation systems
- Creating design interest
- Create continuity throughout campus with the use of a consistent, identifiable plant palette
- Providing protection from the elements
- Screening of undesirable views

There are specific zones identified in this campus master plan that provide opportunities to use specific landscape treatments that reinforce the distinct use and character of those zones.

Pier and Ship's Green

The pier and Ship's Green have the opportunity to become one of the campus' premier outdoor spaces, second only to the Central Quad. Ship's Green offers expansive lawns for passive use, pedestrian access and long views to the pier; home to one of the most distinctive landmarks on campus, the General Rudder. Currently, disjointed pedestrian connections coupled with the access road and on street parking make the pier an uninhabitable zone for pedestrians. Traffic should be limited on the access road and a generous promenade extending from the fishing pier to the boat basin should be provided to encourage pedestrian activity. The road paving in front of Ship's Green should be indistinguishable from the pedestrian paving causing the two areas to bleed into one contiguous space. The utilization of upright, high canopy trees along central circulation within Ship's Green will create a strong spine and powerful view from Kirkham Hall to the pier and General Rudder.

ISLE Quad

The development of the ISLE building creates another opportunity for an iconic outdoor space on campus. The kite pattern proposed in this quad will create critical pedestrian links to the Central Quad and Ship's Green as well as parking on the east side of campus. The quad is punctuated in the center by a water feature. Formal planting and hardscape patterns radiate away from the middle of the quad in a circular pattern to mimic the ripples of water. Tree species reduce in mature height as you move to the center of the quad to reinforce a welcoming pedestrian scale. Seating integrated into planters and landscape walls provide a shaded respite for users. Planter and landscape wall materials should be of or compliment adjacent building materials. Flatwork materials shall be consistent with other areas of campus to reinforce continuity of the campus. Bookending the quad at Kirkham Hall and the Ocean & Coastal Studies Building are larger gathering areas that can serve as outdoor classrooms.

Central Quad

The Central Quad is the symbolic center of campus. This quad also sees the heaviest pedestrian traffic due to its location in relation the surrounding building usages. The quad should be treated in a manner to mirror its significance to the campus. The clock tower, the most iconic landmark on campus, remains as the center piece of the space. As stated previously in this report, measures should be taken to increase the scale of the tower to better relate to surrounding architecture. Upgraded paving materials within the core of the quad should be utilized to reinforce the reverence of the space. The upgraded paving within this quad could also serve as an opportunity to recognize alums or faculty in the form of dedication plaques or pavers. A proposed compass rose in the center of the quad gives a nod to the maritime history of the campus and

providse some relatability to the existing ship's mast flag pole. Planting within the Central Quad should reflect the formality of the space. Double rows of oak trees to the north and south anchor the quad while sight lines are kept open to the Jack K. Williams Library, Academic Complex and Aggie Special Events Center.

Courtyards

Courtyard and ceremonial spaces function as formal and informal outdoor rooms for events, campus rituals, social encounters and unstructured recreation and relaxation. The central courtyard is symbolic heart if the campus and landscaping for this area should reflect the significance of the campus. The geometric space should be lined with double rows of canopy trees to define the space and provide shade for the walkways around the space. Landscaping at the Ships Green should reinforce a visual and physical connection to the waterfront and the General Rudder. The existing rows of trees in the middle of the space are poor condition and should be replaced with Live Oak trees that will provide a formal evergreen connection that enhances the Corps drill plaza.

Parking Lots

Planting islands for trees should be provided in all parking lots to breakup the expanse of paving, create shaded areas and reduce heat island effect. Planting islands with trees should be provided at the ends of all parking rows and along the interior of the parking lots. At a minimum the area of the parking islands should be equal to the size of two parking stalls for the healthy growth of a canopy tree.

Parking lots that are adjacent to streets or in view by the public should have a landscape buffer. The buffer should be bermed and/or landscaped in order to partially screen cars from view.

Walkways

Pedestrian comfort and protection from weather is an important element of a successful campus design. Large shade trees should be planted along major pedestrian paths to protect pedestrians from the summer sun as well as provide a visual reference for pedestrian circulation through campus.

Open Space/Nature Preserve

The land west of Seawolf Parkway is mostly undeveloped but has evolved over time to be a haven for native wildlife and plants and should continue to be preserved as such. The ecological and educational work of the TAMUG Wetland Center should be enhanced and expanded. The lagoon on the east side of the Pelican Island Bridge should be incorporated into the overall Wetland Center with trails and interpretive graphics. The trail under the bridge should be enhanced to provide better access to the trails on the east side of campus. Efforts should be taken to eliminate any invasive and/or non-indigenous plants from overtaking this natural environment.

Security

The composition of landscaping should adhere to the principles of design for defensible space: clear visibility should be maintained at the ground plane, sight lines into the space from adjacent buildings and areas should be maintained and traffic patterns should avoid dead or isolated zones.

Irrigation

An important goal for the campus should be the reduction of water usage for landscaping which can be accomplished using a combination of drought tolerant plants

and using a high efficiency irrigation system. All new planting beds should be a drip irrigated to target water to the plants and reduce waste due to overwatering, evaporation and runoff. Irrigation for lawn areas should be restricted to high profile areas and high activity areas. These lawn areas should utilize Matched Precipitation (MP) type spray heads and rotors. MP heads mimic rain more than conventions spray heads and allow for shorter watering times. It is recommended that a computer programmed central controller station to monitor and adjust all irrigation on campus. The irrigation system shall irrigate each area per the plant material selection according to a water-zoning concept, i.e. lowest water requiring plant zones should be irrigated less frequently than others.

Soil Amendments and Preparation

Poor sandy and salty soils due to the island being created from dredge fill have had a negative effect on many plantings on campus. While some have thrived others appear stressed and are underperforming. Any future plantings will need to address the soil conditions in which they are planted. Salt over time will be slowly leached from the soil. Until that time it is recommended to use imported topsoil, prepared planting mix and/or adding compost to build up a viable growing medium for general planting. Prior to adding any amendments or fertilizer determine whether there is a problem with the soil that is related to poor nutrition or poor physical property of the soil. Laboratory soil tests should be performed on existing campus soils to determine the proper amendments needed for the soil in appropriate ratios to best benefit the plantings.

Planting

To assist in creating design interest on the campus, plant material shall be carefully selected in order provide interesting color, form, texture and fragrance to all campus spaces.

Trees are critical to the quality of life on a campus for students and faculty. Large trees offer shade to pedestrians during warm weather. Use trees of a single variety to reinforce specific zones or features such as a oaks along main pedestrian corridors. Otherwise it is recommended to use a variety of tree species to provide visual interest and prevent a monoculture of trees that are more susceptible to pests and disease.

Shrubs and smaller trees are more appropriate choices for prominent locations, courtyards, small spaces or corridors and around buildings to create a graceful transition from the vertical planes of the building to the horizontal plane of the site. Overly intricate plantings out of character and scale with the setting should be avoided. The preferred approach to shrub planting is to employ masses of low maintenance plants to direct pedestrian traffic, provide visual interest and screen unsightly views. Simplicity of plant character in keeping with the architectural palette will create a unified composition properly scaled to the size and style of the buildings and spaces.

Lawns are an important component to the campus landscape. They literally provide the ground plane between buildings. Provide good drainage to prevent standing water and breeding of mosquitoes.

Annual flower and perennial plantings are an important part of the landscape materials palette and can contribute greatly to the campus appearance. Because of high maintenance requirements, seasonal planting should be limited to few but larger areas to maximize visual impact. The most appropriate areas for seasonal plantings would include campus entries and visitor destinations.

All plant materials specified for future construction projects on the TAMUG campus shall be of the highest quality available. All trees, shrubs, and groundcover plants shall be container grown. Large trees shall be a minimum of four inches in caliper and shall be grown in a minimum of one-hundred gallon containers. Understory trees shall be a minimum of three inches in caliper and shall be grown in a minimum of sixty-five gallon containers. Shrubs shall be grown in a minimum of five-gallon containers and groundcover and vines shall be grown in a minimum of one-gallon containers. Lawn areas shall be solid sod in high activity areas and hydromulch in areas of lower activity. Lawn type shall be either St. Augustine or Common Bermuda. Select shade trees for the following characteristics: high clear trunk, broad spreading canopy, tolerance to salt and poor sandy soil conditions.

Recommended Plant Species

Large Canopy Trees

Acer rubrum 'drummondii'	Drummond Red Maple
Magnolia grandiflora	Southern Magnolia
Pinus elliottii	Slash Pine
Pinus taeda	Loblolly Pine
Quercus shumardii	Red Oak
Quercus virginiana	Live Oak
Taxodium distichum	Bald Cypress
Ulmus crassifolia	Cedar Elm
Ulmus parvifolia	Lacebark Elm

Small/Medium Trees

Bauhinia purpurea	Orchid Tree
Callistemon citrinus	Bottlebrush
Callistemon viminalis	Weeping Bottlebrush
Cercis canadensis	Redbud
Cordia boissieri	Mexican Olive
Eriobotrya japonica	Loquat
Feijoa sellowiana	Pineapple Guava
Ilex vomitoria	Yaupon Holly
Ilex attenuata "Savannah"	Savannah Holly
Lagerstroemia indica	Crapemyrtle
Myrica pumila	Wax Myrtle
Prunus mexicana	Mexican Plum
Vitex agnus-castus	Chaste Tree

Large Shrubs

Alpinia zerumbet	Varigated Shell Ginger
Aralia papyrifera	Rice Paper Plant
Bambusa, spp.	Bamboo (Clumping Only)
Caesalpinia gilliesii	Bird of Paradise
Caesalpinia pulcherrima	Pride of Barbados
Cascabela thevetia	Yellow Oleander
Hibiscus coccineus	Texas Star Hibiscus
Leucophyllum, spp.	Texas Sage
Malpighia glabra	Barados Cherry
Michelia figo	Banana Shrub
Musa ornata	Dwarf Banana
Myrica cerifera	Wax Myrtle
Nerium oleander	Oleander
Tecoma Stans	Yellow Bells

Palms

Butia capitata	Pindo Palm, Jelly Palm
Chamaerops humilis	Mediterranean Fan Palm
Cycas revoluta	King Sago Palm
Dioon edule	Virgin Palm
Livisona chinensis	Chinese Fan
Phoenix canariensis	Date Palm
Phoenix dactylifera	Medjool Palm
Phoenix roebelenii	Pygmy Date Palm
Phoenix sylvestris	Sylvester Date Palm
Raphis excelsa	Lady Palm
Sabal mexicana	Mexican Fan Palm
Sabal minor	Dwarf Palmetto
Sabal palmetto	Palmetto
Serenoa repens	Saw Palmetto
Syagrus romanzoffiana	Queen Palm
Trachycarpus fortunei	Windmill Palm
Washingtonia filifera	Mexican Fan Palm
Washingtonia robusta	Washington Fan Palm

Vines

Antigonon leptopus	Coral Vine
Bignonia capreolata	Cross Vine
Bougainvillea spp.	Bougainvilla
Ficus pumila	Creeping Fig
Gelsemium sempervirens	Carolina Jasmine
Passiflora, spp.	Passion Flower
Pseudogynoxys chenopodioides	Mex. Flame Vine
Tecoma capensis	Cape Honeysuckle
Trachelospermum jasminoides	Confederate Star Jasmine
Thunbergia grandiflora	Thunbergia

Ground Cover

Cupea hysopifolia	Mexican Heather
Liriope gigantea	Giant Liriope
Liriope spicata	Lily Turf
Ophiopogon japonicus	Mondo Grass
Trachelospermum asiaticum	Asian Jasmine

Small/Medium Shrubs

Abelia grandfloria	Abelia
Asparagus densiflorus "Myserii"	Foxtail Asparagus Fern
Canna indica spp.	Cannas
Carissa macrocarpa "Fancy"	Fancy Natal Plum
Cyperus alternifolius	Umbrella Plant
Dietes iridioides	Butterfly Iris
Hibiscus rosa sinensis "Cherie"	Cherie Chinese Hibiscus
Fatsia japonica	Fatsia
Ilex vomitoira "Nana"	Dwarf Yaupon Holly
Ixora sp.	Ixora
Lantana camara	Lantana
Lantana montevedinsis	Trailing Lantana
Loropetalum chinense "Nana"	Dwarf Loropetalum
Malpighia punicifolia	Dwarf Barbadoes Cherry
Malvaviscus arboreus	Turk's Cap
Nandina domestica	Nandina
Nerium oleander "Petite Salmon"	Petite Salmon Oleander
Opuntia ficus-indica	Spineless Prickly Pear
Philodendron selloum	Cut-Leaf Philodendron
Philodendron 'xanadu'	Xanadu Philodendron
Plumbagp auriculata	Plumbago
Raphiolepis indica	Indian Hawthorn
Rusellia equisetiformis	Rusellia

Grasses

Miscanthus sinensis "Adagio"	Adagio Miscanthus
Muhlenbergia capillaris	Gulf Muhly
Spartina spartinae	Gulf Cord Grass
Uniola paniculata	Sea Oats

Signage and Identification

Following are general guidelines for placement of vehicular and pedestrian signs as viewed when approaching the sign.

Vehicular Directionals

- Signs must be placed within the driver's immediate cone-of-vision so that they do not have to turn their heads to see the sign.
- The sign face should be perpendicular to the approaching driver. It will be overlooked if it is parallel to the road.
- Signs should be placed on the right side of the road whenever possible. Drivers are conditioned to look to the right side of the road for signs with information.

  An exception to this is when a sign is to be read from both directions of approaching traffic, as in the case of double-faced signs. If a double-faced sign is used instead of two single-faced signs on both sides of the road, the double-faced sign should be located for clear readability from both directions of approaching traffic. Also, if the messages require queuing to the left, the sign may be located to the left to provide advance warning.
- Signs which require drivers to turn must be placed well enough in advance of the intersection in order to allow for reaction time to slow down and turn.
- Signs should not overhang into the roadway if located on a sidewalk or street post.

Pedestrian Directionals

- Signs should be placed within a visible area along the path of travel. Signs should be located so as not to interfere with pedestrian traffic, nor should they

PROJECT STANDARDS • TYPEFACE

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abcdefghijklmnopqrstuvwxyz1234567890&
Open Sans Regular

Open Sans Regular Adobe Postscript Font

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abcdefghijklmnopqrstuvwxyz1234567890&
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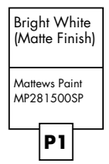
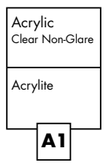
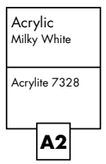
PAINT

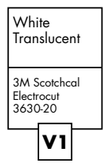


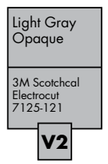
ACRYLIC



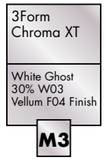


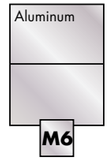
VINYL





MATERIALS





PROJECT LOGOS

PROJECT STANDARDS • COLORS • MATERIALS

REF. NO.	DESCRIPTION/ FINISH	MANUFACTUER
PAINT		
P1	Bright White (Matte Finish)	Matthews Paint MP 281500 SP
P2	Aggie Maroon (Satin Finish)	Matthews Paint To Match PMS 7421C
ACRYLIC		
A1	Acrylic, Clear Non-Glare	Acrylite
A2	Acrylic, Milky White	Acrylite 7328
VINYL		
V1	White Translucent - 3M Scotchcal Electrocut	3630-20
V2	Light Gray Opaque - 3M Scotchcal Electrocut	7125-121
MATERIAL		
M1	Stainless Steel, #4 Brushed Finish - Alloy 316	
M2	3Form KODA XT	
M3	3Form Chroma XT — White Ghost 30% W03 w/Vellum F04 Finish	
M4	3Form Chroma XT — White Down 15% W02 w/Sandston F01 Finish	
M5	Salt & Pepper Stone Block — Polished Finish	
M6	Aluminum	

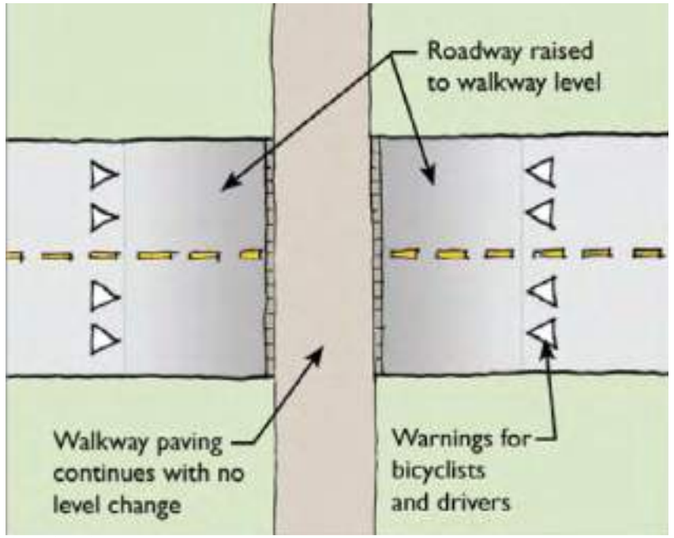
block important roadway signage or obstruct views of roadway traffic.

- Pedestrian signs have been designed to mount to existing structures, or to custom posts. Specific mounting heights are shown in the drawings for the individual sign types.
- Wall or fence-mounted signs should be placed high enough so as not to be blocked by cars and plants or other obstructions. This will generally range between 5′ to 7′ above the ground. Mounting height is measured from the ground level to the bottom of the sign panel.
- Consideration should be given to locating pedestrian signs in areas which receive ambient light from other light sources to create better visibility at night. For all signs, mounting locations should be carefully considered so that viewing is not obstructed by other signs, trees or structures. In some cases, it may be necessary to remove and/or consolidate information presented by other signs.
- Where a new sign is replacing an older sign which does not comply with the standards in this manual, the entire sign assembly should be replaced. Old sign posts should be removed and replaced with the new custom posts.

Harbor and Roads

The utilitarian nature of working waterfronts means that they tend to accumulate various trailers, containers, and other equipment clutter more readily than other campus locations. This presents a dilemma: such equipment is required for the operations of the harbor and docks, but if care is not taken to organize and maintain the waterfront, then the activity around and connections to the waterfront which are such a critical part of this master plan will suffer.

The campus should be a primarily pedestrian place. Pedestrian crossings should be prominently marked and designed to make drivers aware that they are crossing a pedestrian thoroughfare. Raised intersections and distinctive surfacing, as illustrated, may be used at heavily-used crossings. Care should be taken to avoid obstructing bicycle traffic, however, and all crossings must comply with the Texas Accessibility Standards.



Raised pedestrian crossings

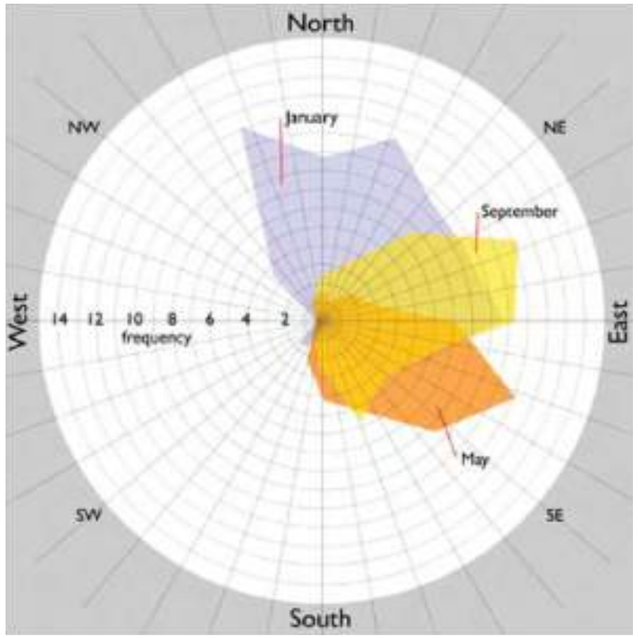

Example of a raised crosswalk

Exterior Lighting

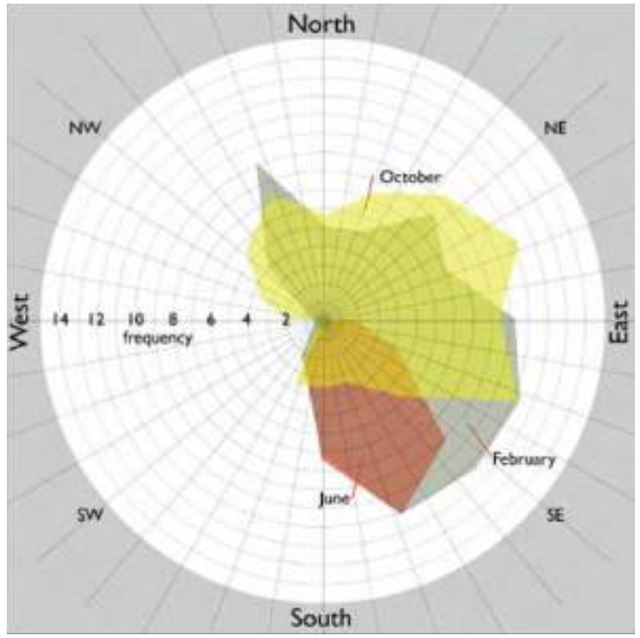
Lighting is an important part of the campus environment both for reasons of safety and of appearance. Good lighting heightens the interest of spaces at night, but it also makes people feel safe. Encouraging this feeling of safety is not simply a matter of increasing the amount of light in a space, which is the most common solution to a perceived lighting problem. In fact, high nighttime light levels often create glare and shadows which contribute to a feeling of insecurity. Safe lighting consists of applying low, but very even levels of light to areas like parking lots and walkways, and slightly higher levels of light to plazas and areas immediately outside buildings. Glare should be avoided in all locations. Higher light levels should be cast on building exteriors, as this provides the impression of brightness and enhances perceptions of safety without negatively affecting night-adapted vision.

Lamps should be selected for color-rendering performance and for efficiency. Lamps should have a color rendering

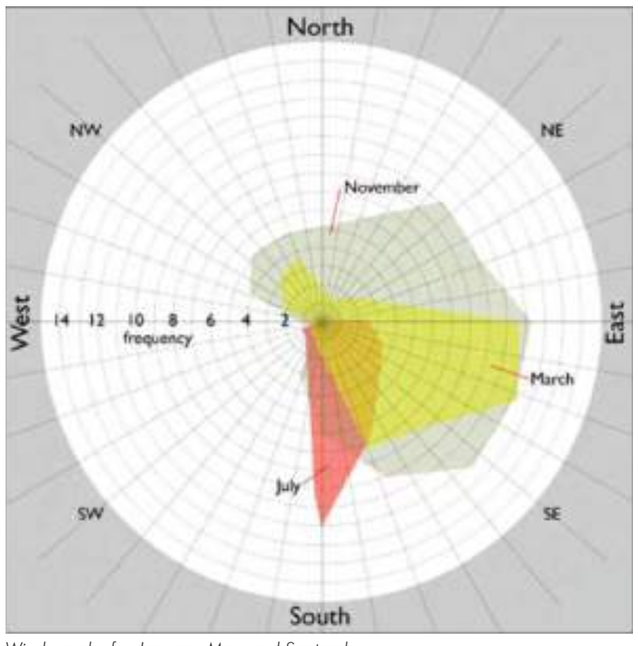

Light fixture example



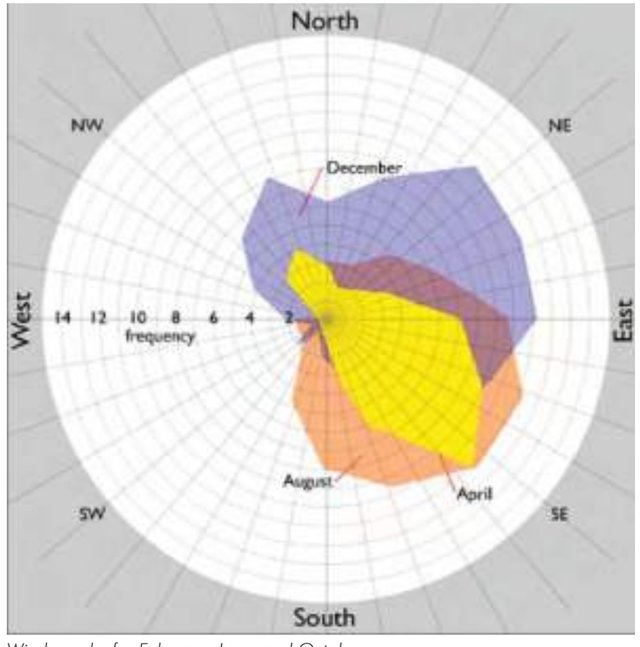
Wind graphs for January, May, and September



Wind graphs for February, June, and October



Wind graphs for January, May, and September



Wind graphs for February, June, and October

index value of 78 or above, and all new and retrofit fixtures should be LED. Lamp replacement should be done on a schedule, rather than on an as-needed basis, to ensure that replacements are all the same type.

Taller light standards with unobtrusive fixtures can be used to provide overall low fill light levels in large spaces, but pedestrian walks and plazas should be lit by fixtures on standards of twelve feet or less. Poles along walkways and in plazas should be spaced to achieve light levels which range from one to five footcandles. Light levels should at no point vary more than 4:1 within a 100 square foot area.

Most light fixtures on campus are some variant of a shoebox type, as seen in the image. Future light fixtures should be similar. Where possible, aligning light poles with trees can help to disguise them, though spacing and tree type should be carefully done to avoid trees blocking light.

Environmental Considerations

Awareness of environmental topics and interest in energy and resource conservation have become significant issues in building construction. The role of TAMUG as a leader in studying and working in the environment should be translated into the way that the university designs and constructs buildings. A thoughtful designer can and should adapt design responses to particular sites and programs.

Energy Use

The state of Texas mandates that all new buildings meet the requirements of ASHRAE 90.1. This mandate requires that all new building use at least 14% less energy than a base building as described in ASHRAE 90.1 High efficiency glass and more energy efficient wall systems.

Alternative Transportation

As TAMUG's population grows, alternative means of transportation will become more important. Public transportation connections should be sought in order to provide connections to Galveston and the mainland. While bicycle traffic across the current Pelican Island bridge is unsafe and should be discouraged, residents of Pelican Island dormitories and apartments should be encouraged to bike to and around the campus. Additionally, the feasibility of using alternative fuel for campus vehicles should be investigated.

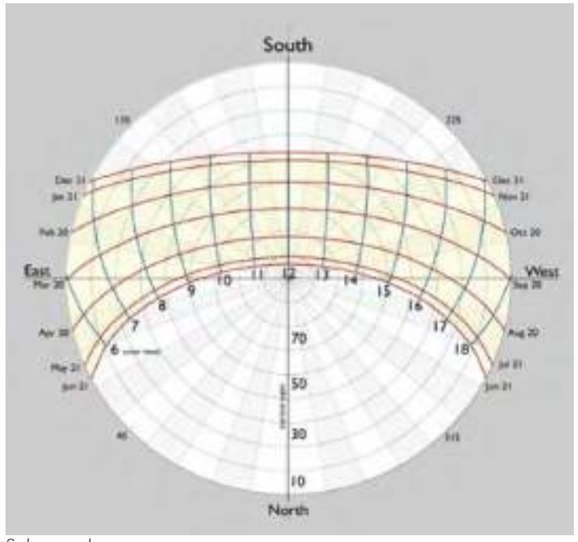
Parking capacity for the future campus has been sized based on current usage. As more students live on or close to campus, their need for personal vehicles may be diminished. TAMUG should encourage on-campus students to do without personal vehicles and off-campus students to carpool whenever possible. Preferred parking spaces for carpooling students should be established. If such programs are successful in reducing parking demand, fewer parking spaces than called for in the master plan should be built.

Site Development

Site disturbances should be limited as much as is feasible. While most of Pelican Island is the product of dumping dredge spoils and is therefore not natural in the purest sense, it is still worthwhile to protect undeveloped areas.

Stormwater Design

Limiting runoff is not as significant a concern on TAMUG's campus as at other institutions because of the campus's proximity to the sea. However, the quality of the runoff is every bit as important as at inland sites, if not more so. Impervious cover should be minimized, and techniques such as eliminating contaminants and performing water polishing via on-site vegetative filtration should be pursued.



Solar graph


Undeveloped campus area

Waterfront Pavilion, an example of a shading structure

Shade structure

Shade structure, photo by Daniel Prostak

Light Pollution Reduction

Minimizing light pollution will primarily benefit the school by reducing energy costs. Exterior lighting systems should be carefully designed to place light only where it is needed and only in the amounts which are required.

Condensate Collection

Galveston is a very humid climate, and all outside air used for HVAC is pretreated. This pretreatment removes the moisture, which should then be collected and utilized for irrigation or other non-potable water uses.

Shading Structures

Windows should be shaded wherever possible. Shading is the most effective way to reduce solar gain through windows, and it is also in keeping with the design guidelines which encourage steel and aluminum window shading. Shades can either be applied individually to windows or they can be large structures or extensions of roofs which shade a larger area of glass. Designers should investigate both horizontal and vertical shades, as they can both be effective depending on exposure. Wind uplift is a consideration – shades should be designed to resist hurricane-force winds.

Building Orientation

The footprints of buildings are somewhat determined by the master plan, but the massing and fenestration of those buildings are resolved by individual designers. The way that building masses are disposed and how windows are placed on those masses can have a considerable effect on building performance. Designers should investigate ways to locate the largest amounts of glass on north and shaded south faces.

Prevailing wind directions should also influence how build-

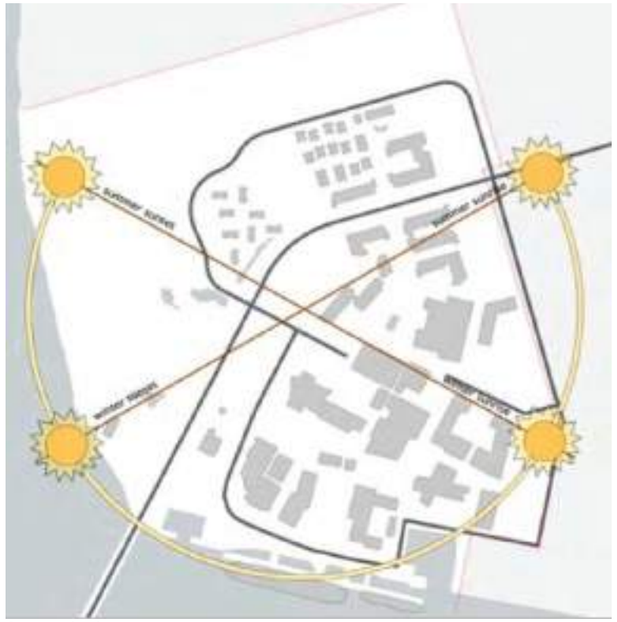
ings and outdoor spaces are oriented. Summer winds tend to come from the south and southeast, so those exposures should be open. Northwest exposures should also be open to allow for the free flow of those breezes from the south through spaces. Winter winds come from the north and northeast, so those exposures should be relatively closed to minimize cold winds.

Rainwater Collection

Given Galveston's annual rainfall, there is a significant opportunity to collect rainwater for use in landscape irrigation. This issue can be pursued in individual buildings projects as well as in a campus-wide system. The designers of each project should research the viability, cost, and benefits of implementing rainwater collection, storage, and distribution for irrigation. One way to begin this process without overburdening any particular project with system-wide costs would be to require individual projects to collect enough water to supply most of the needs of the landscaping installed in that project. The lessons learned in those projects should dictate whether it is to TAMUG's benefit to implement campus-wide systems.

Low-VOC, Recycled, and Locally-sourced Materials

Building projects should use materials which have a low environmental impact whenever possible. Materials which do not emit chemicals as they age contribute to healthier conditions inside buildings. Products which are made from recycled material encourage future recycling and, in many cases, require less energy to produce. Materials which are manufactured locally do not require expensive and pollution-causing transportation and are more cost-effective in many cases.



Sun angle diagram


Rainwater collection at the TAMU Agriculture and Life Sciences Complex, photo by Patrick Creighton

Flood gates at the Port of Rotterdam, similar to those proposed for the Ike Dike

Disaster Readiness

The two primary hazards to facilities in a hurricane are wind and water. Proper planning and construction can avert problematic situations.

Wind Issues

Current building codes have requirements regarding construction practices in areas of high winds. These codes should be regarded as minimum acceptable practices, and facilities should be examined on a case-by-case basis to decide whether more stringent standards should be applied.

Flooding

There are two basic methods to protect equipment or areas from flooding. The first is a passive system – for example, placing critical equipment above flood level or using unbroken hydrostatically-designed walls. These solutions require no human intervention, nor do they rely on the proper operation of equipment. The second set of solutions, including various types of flood doors and flood barriers, are active systems. They must be operated in order to protect against flooding. These systems may be entirely automated, but they still depend on moving doors, seals, or some other type of mechanism.

It may also be useful to distinguish solutions by potential failure types (in all these cases, "failure" is taken to mean the loss of capability of the system to protect the equipment in question from floodwater). An active system may fail by improper or untimely operation, mechanical failure, poor design, or several other potentials. The set of passive solutions which use "bathtub" type passive protection basins may fail by breach of containment, whether that be by structural collapse, by penetration of the water-tight vessel, or by operational failure strictly related to the protection method itself. A passive system which relies on placing

equipment above flood level may fail only by structural collapse. Some of these failure modes, like structural failure, are simple and can be guarded against relatively easily. Others, like operational failure, can involve complexities which are not evident at first glance.

Flood protection in new construction should be passive in all cases, and where possible, it should be a passive type which does not rely on containment. Active solutions may be required in retrofitting existing buildings, but the use of those solutions should be minimized and passive solutions used wherever feasible.

Most facilities at the Mitchell Campus are near 15 feet above sea level, and this affords a significant level of protection from storm surges from the federal government-defined base flood of 11 feet MSL (equivalent to a 100-year flood, or a 1% probability of occurring in a given year). However, the possibility of storm surges in the range of 15 to 20 feet above sea level exists. Because of this, standard practice for infrastructure installations in this area is that utility and research equipment should be located above (or protected to) 20 feet MSL.

SECTION F

APPENDIX

Texas A&M University - Galveston, TX
Master Planning
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RECAP SHEET

BUILDING / PROJECT / COST ITEM:	QUANTITY:	UNIT:	UNIT COST:	PERCENT OF TOTAL:	TOTAL CONSTRUCTION COST:
Demolition	120,500	SF	$24.03	1.4%	$2,896,125
01 Engineering Building	80,000	SF	$320.26	12.2%	$25,620,941
02 Academic/Vessel Operations Building	80,000	SF	$314.41	12.0%	$25,153,148
03 Academic Building	45,000	SF	$354.14	7.6%	$15,936,128
04 Academic Building	90,000	SF	$347.55	15.0%	$31,279,306
05 Student Life Center	100,000	SF	$307.28	14.7%	$30,727,702
06.1 Structured Parking	180,000	SF	$94.10	8.1%	$16,938,508
07.1 Police Headquarters & Physical Plant	10,000	SF	$412.99	2.0%	$4,129,903
08.1 Central Plant New	10,000	SF	$392.15	1.9%	$3,921,534
09 Residence Hall	80,000	SF	$339.63	13.0%	$27,170,012
10. The ISLE	16,000	SF	$404.91	3.1%	$6,478,564
11. Center for Texas Beaches and Shores	15,000	SF	$429.26	3.1%	$6,438,833
20. Surface Parking	70,000	SF	$13.40	0.4%	$937,947
21. Surface Parking	35,000	SF	$13.40	0.2%	$468,973
22. Surface Parking	12,000	SF	$13.40	0.1%	$160,816
Walkways	120,000	SF	$34.03	2.0%	$4,083,568
Roadways	28,700	SF	$19.22	0.3%	$551,521
Site Structures	28,500	SF	$211.03	2.9%	$6,014,482
Landscaping	180,000	SF	$1.57	0.1%	$282,253
Total Construction Cost:	**855,000**	**SF**	**$244.67**	**100.0%**	**$209,190,262**

OPTIONS					
06.2 Structured Parking	200,000	SF	$93.15		$18,630,699
07.2 Police Headquarters & Physical Plant	10,000	SF	$412.99		$4,129,903
08.2 Central Plant Addition	3,500	SF	$398.40		$1,394,391

TAMUGalveston - Masterplan Estimate 07.12.19.xlsx

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SUMMARY SHEET

BUILDING / PROJECT / COST ITEM:	QUANTITY:	UNIT:	UNIT COST:	PERCENT OF TOTAL:	TOTAL CONSTRUCTION COST:
Demolition	**120,500**	**SF**	**$24.03**	**1.4%**	**$2,896,125**
1. Existing Buildings	120,500	SF	$5.55		$669,000
2. Existing Campus Site Elements	261,000	SF	$4.12		$1,075,325
3. General Conditions, Insurance & Fee	120,500	SF	$5.40		$650,306
4. Contingencies & Allowances	120,500	SF	$4.16		$501,493
01 Engineering Building	**80,000**	**SF**	**$320.26**	**12.2%**	**$25,620,941**
1. Substructure	80,000	SF	$11.00		$880,000
2. Shell	80,000	SF	$65.44		$5,235,467
3. Interiors	80,000	SF	$35.31		$2,824,750
4. Services	80,000	SF	$68.35		$5,468,000
5. Equipment & Furnishings	80,000	SF	$7.00		$560,000
6. Special Construction & Demolition	80,000	SF	$2.94		$235,000
7. Sitework	80,000	SF	$2.85		$228,180
8. General Conditions, Insurance & Fee	80,000	SF	$71.91		$5,753,018
9. Contingencies & Allowances	80,000	SF	$55.46		$4,436,527
02 Academic/Vessel Operations Building	**80,000**	**SF**	**$314.41**	**12.0%**	**$25,153,148**
1. Substructure	80,000	SF	$11.00		$880,000
2. Shell	80,000	SF	$66.12		$5,289,467
3. Interiors	80,000	SF	$32.80		$2,624,000
4. Services	80,000	SF	$68.35		$5,468,000
5. Equipment & Furnishings	80,000	SF	$7.00		$560,000
6. Special Construction & Demolition	80,000	SF	$1.25		$100,000
7. Sitework	80,000	SF	$2.85		$228,180
8. General Conditions, Insurance & Fee	80,000	SF	$70.60		$5,647,978
9. Contingencies & Allowances	80,000	SF	$54.44		$4,355,523
03 Academic Building	**45,000**	**SF**	**$354.14**	**7.6%**	**$15,936,128**
1. Substructure	45,000	SF	$11.00		$495,000
2. Shell	45,000	SF	$73.29		$3,297,950

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BUILDING / PROJECT / COST ITEM:	QUANTITY:	UNIT:	UNIT COST:	PERCENT OF TOTAL:	TOTAL CONSTRUCTION COST:
3. Interiors	45,000	SF	$44.51		$2,002,875
4. Services	45,000	SF	$68.35		$3,075,750
5. Equipment & Furnishings	45,000	SF	$10.78		$485,000
6. Special Construction & Demolition	45,000	SF	$1.25		$56,250
7. Sitework	45,000	SF	$4.12		$185,445
8. General Conditions, Insurance & Fee	45,000	SF	$79.52		$3,578,355
9. Contingencies & Allowances	45,000	SF	$61.32		$2,759,503
04 Academic Building	**90,000**	**SF**	**$347.55**	**15.0%**	**$31,279,306**
1. Substructure	90,000	SF	$11.00		$990,000
2. Shell	90,000	SF	$75.14		$6,762,400
3. Interiors	90,000	SF	$44.31		$3,987,619
4. Services	90,000	SF	$68.35		$6,151,500
5. Equipment & Furnishings	90,000	SF	$5.11		$460,000
6. Special Construction & Demolition	90,000	SF	$2.75		$247,500
7. Sitework	90,000	SF	$2.67		$240,390
8. General Conditions, Insurance & Fee	90,000	SF	$78.04		$7,023,567
9. Contingencies & Allowances	90,000	SF	$60.18		$5,416,330
05 Student Life Center	**100,000**	**SF**	**$307.28**	**14.7%**	**$30,727,702**
1. Substructure	100,000	SF	$16.80		$1,680,000
2. Shell	100,000	SF	$60.05		$6,005,300
3. Interiors	100,000	SF	$29.40		$2,939,900
4. Services	100,000	SF	$65.55		$6,555,000
5. Equipment & Furnishings	100,000	SF	$7.05		$705,000
6. Special Construction & Demolition	100,000	SF	$3.05		$305,000
7. Sitework	100,000	SF	$3.17		$316,980
8. General Conditions, Insurance & Fee	100,000	SF	$69.00		$6,899,708
9. Contingencies & Allowances	100,000	SF	$53.21		$5,320,814
06.1 Structured Parking	**180,000**	**SF**	**$94.10**	**8.1%**	**$16,938,508**

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BUILDING / PROJECT / COST ITEM:	QUANTITY:	UNIT:	UNIT COST:	PERCENT OF TOTAL:	TOTAL CONSTRUCTION COST:
1. Substructure	180,000	SF	$2.87		$516,600
2. Shell	180,000	SF	$22.13		$3,983,400
3. Interiors	180,000	SF	$5.86		$1,055,400
4. Services	180,000	SF	$15.65		$2,817,000
5. Equipment & Furnishings	180,000	SF	$5.35		$962,200
6. Special Construction & Demolition	180,000	SF	$1.25		$225,000
7. Sitework	180,000	SF	$3.57		$642,400
8. General Conditions, Insurance & Fee	180,000	SF	$21.13		$3,803,433
9. Contingencies & Allowances	180,000	SF	$16.29		$2,933,075
07.1 Police Headquarters & Physical Plant	**10,000**	**SF**	**$412.99**	**2.0%**	**$4,129,903**
1. Substructure	10,000	SF	$30.00		$300,000
2. Shell	10,000	SF	$93.30		$933,000
3. Interiors	10,000	SF	$44.71		$447,125
4. Services	10,000	SF	$65.35		$653,500
5. Equipment & Furnishings	10,000	SF	$7.50		$75,000
6. Special Construction & Demolition	10,000	SF	$1.25		$12,500
7. Sitework	10,000	SF	$6.63		$66,300
8. General Conditions, Insurance & Fee	10,000	SF	$92.73		$927,343
9. Contingencies & Allowances	10,000	SF	$71.51		$715,135

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BUILDING / PROJECT / COST ITEM:	QUANTITY:	UNIT:	UNIT COST:	PERCENT OF TOTAL:	TOTAL CONSTRUCTION COST:
08.1 Central Plant New	**10,000**	**SF**	**$392.15**	**1.9%**	**$3,921,534**
1. Substructure	10,000	SF	$30.00		$300,000
2. Shell	10,000	SF	$87.30		$873,000
3. Interiors	10,000	SF	$44.71		$447,125
4. Services	10,000	SF	$65.35		$653,500
5. Equipment & Furnishings	10,000	SF	$1.20		$12,000
6. Special Construction & Demolition	10,000	SF	$1.25		$12,500
7. Sitework	10,000	SF	$6.38		$63,800
8. General Conditions, Insurance & Fee	10,000	SF	$88.06		$880,555
9. Contingencies & Allowances	10,000	SF	$67.91		$679,053
09 Residence Hall	**80,000**	**SF**	**$339.63**	**13.0%**	**$27,170,012**
1. Substructure	80,000	SF	$11.00		$880,000
2. Shell	80,000	SF	$67.07		$5,365,467
3. Interiors	80,000	SF	$35.31		$2,824,750
4. Services	80,000	SF	$72.20		$5,776,000
5. Equipment & Furnishings	80,000	SF	$11.50		$920,000
6. Special Construction & Demolition	80,000	SF	$5.85		$467,680
7. Sitework	80,000	SF	$1.63		$130,500
8. General Conditions, Insurance & Fee	80,000	SF	$76.26		$6,100,852
9. Contingencies & Allowances	80,000	SF	$58.81		$4,704,764
10. The ISLE	**16,000**	**SF**	**$404.91**	**3.1%**	**$6,478,564**
1. Substructure	16,000	SF	$30.00		$480,000
2. Shell	16,000	SF	$91.44		$1,463,020
3. Interiors	16,000	SF	$40.16		$642,615
4. Services	16,000	SF	$64.85		$1,037,600
5. Equipment & Furnishings	16,000	SF	$9.69		$155,000
6. Special Construction & Demolition	16,000	SF	$1.25		$20,000
7. Sitework	16,000	SF	$6.49		$103,780

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BUILDING / PROJECT / COST ITEM:	QUANTITY:	UNIT:	UNIT COST:	PERCENT OF TOTAL:	TOTAL CONSTRUCTION COST:
8. General Conditions, Insurance & Fee	16,000	SF	$90.92		$1,454,720
9. Contingencies & Allowances	16,000	SF	$70.11		$1,121,829
11. Center for Texas Beaches and Shores	**15,000**	**SF**	**$429.26**	**3.1%**	**$6,438,833**
1. Substructure	15,000	SF	$30.00		$450,000
2. Shell	15,000	SF	$94.47		$1,417,020
3. Interiors	15,000	SF	$42.11		$631,615
4. Services	15,000	SF	$68.35		$1,025,250
5. Equipment & Furnishings	15,000	SF	$15.67		$235,000
6. Special Construction & Demolition	15,000	SF	$4.58		$68,700
7. Sitework	15,000	SF	$3.37		$50,500
8. General Conditions, Insurance & Fee	15,000	SF	$96.39		$1,445,798
9. Contingencies & Allowances	15,000	SF	$74.33		$1,114,949
20. Surface Parking	**70,000**	**SF**	**$13.40**	**0.4%**	**$937,947**
1. Special Construction & Demolition	70,000	SF	$0.00		$0
2. Sitework	70,000	SF	$8.07		$564,922
3. General Conditions, Insurance & Fee	70,000	SF	$3.01		$210,610
4. Contingencies & Allowances	70,000	SF	$2.32		$162,415
21. Surface Parking	**35,000**	**SF**	**$13.40**	**0.2%**	**$468,973**
1. Special Construction & Demolition	35,000	SF	$0.00		$0
2. Sitework	35,000	SF	$8.07		$282,461
3. General Conditions, Insurance & Fee	35,000	SF	$3.01		$105,305
4. Contingencies & Allowances	35,000	SF	$2.32		$81,207
22. Surface Parking	**12,000**	**SF**	**$13.40**	**0.1%**	**$160,816**
1. Special Construction & Demolition	12,000	SF	$0.00		$0
2. Sitework	12,000	SF	$8.07		$96,859
3. General Conditions, Insurance & Fee	12,000	SF	$3.01		$36,110
4. Contingencies & Allowances	12,000	SF	$2.32		$27,847
Walkways	**120,000**	**SF**	**$34.03**	**2.0%**	**$4,083,568**

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BUILDING / PROJECT / COST ITEM:	QUANTITY:	UNIT:	UNIT COST:	PERCENT OF TOTAL:	TOTAL CONSTRUCTION COST:
1. Special Construction & Demolition	120,000	SF	$0.00		$0
2. Sitework	120,000	SF	$20.50		$2,459,518
3. General Conditions, Insurance & Fee	120,000	SF	$7.64		$916,939
4. Contingencies & Allowances	120,000	SF	$5.89		$707,111
Roadways	**28,700**	**SF**	**$19.22**	**0.3%**	**$551,521**
1. Special Construction & Demolition	28,700	SF	$0.00		$0
2. Sitework	28,700	SF	$11.57		$332,179
3. General Conditions, Insurance & Fee	28,700	SF	$4.31		$123,840
4. Contingencies & Allowances	28,700	SF	$3.33		$95,501
Site Structures	**28,500**	**SF**	**$211.03**	**2.9%**	**$6,014,482**
1. Boat Basin	28,500	SF	$71.40		$2,035,000
2. Pavilion	28,500	SF	$5.70		$162,500
3. Shade Structure	28,500	SF	$50.00		$1,425,000
4. General Conditions, Insurance & Fee	28,500	SF	$47.39		$1,350,513
5. Contingencies & Allowances	28,500	SF	$36.54		$1,041,469
Landscaping	**180,000**	**SF**	**$1.57**	**0.1%**	**$282,253**
1. Sod	180,000	SF	$0.67		$120,000
2. Trees	180,000	SF	$0.28		$50,000
3. General Conditions, Insurance & Fee	180,000	SF	$0.35		$63,378
4. Contingencies & Allowances	180,000	SF	$0.27		$48,875
Total Construction Cost:	**855,000**	**SF**	**$244.67**	**100.0%**	**$209,190,262**

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SUMMARY SHEET

BUILDING / PROJECT / COST ITEM:	QUANTITY:	UNIT:	UNIT COST:	PERCENT OF TOTAL:	TOTAL CONSTRUCTION COST:
OPTIONS					
06.2 Structured Parking	**200,000**	**SF**	**$93.15**		**$18,630,699**
1. Substructure	200,000	SF	$2.87		$574,000
2. Shell	200,000	SF	$22.13		$4,426,000
3. Interiors	200,000	SF	$5.85		$1,170,000
4. Services	200,000	SF	$15.65		$3,130,000
5. Equipment & Furnishings	200,000	SF	$4.81		$962,200
6. Special Construction & Demolition	200,000	SF	$1.25		$250,000
7. Sitework	200,000	SF	$3.55		$709,000
8. General Conditions, Insurance & Fee	200,000	SF	$20.92		$4,183,404
9. Contingencies & Allowances	200,000	SF	$16.13		$3,226,095
07.2 Police Headquarters & Physical Plant	**10,000**	**SF**	**$412.99**		**$4,129,903**
1. Substructure	10,000	SF	$30.00		$300,000
2. Shell	10,000	SF	$93.30		$933,000
3. Interiors	10,000	SF	$44.71		$447,125
4. Services	10,000	SF	$65.35		$653,500
5. Equipment & Furnishings	10,000	SF	$7.50		$75,000
6. Special Construction & Demolition	10,000	SF	$4.58		$45,800
7. Sitework	10,000	SF	$3.30		$33,000
8. General Conditions, Insurance & Fee	10,000	SF	$92.73		$927,343
9. Contingencies & Allowances	10,000	SF	$71.51		$715,135
08.2 Central Plant Addition	**3,500**	**SF**	**$398.40**		**$1,394,391**
1. Substructure	3,500	SF	$30.00		$105,000
2. Shell	3,500	SF	$94.14		$329,500
3. Interiors	3,500	SF	$66.13		$231,456
4. Services	3,500	SF	$44.10		$154,350
5. Equipment & Furnishings	3,500	SF	$1.00		$3,500
6. Special Construction & Demolition	3,500	SF	$1.25		$4,375

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BUILDING / PROJECT / COST ITEM:	QUANTITY:	UNIT:	UNIT COST:	PERCENT OF TOTAL:	TOTAL CONSTRUCTION COST:
7. Sitework	3,500	SF	$3.33		$11,655
8. General Conditions, Insurance & Fee	3,500	SF	$89.46		$313,101
9. Contingencies & Allowances	3,500	SF	$68.99		$241,453

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DETAIL SHEET - DEMOLITION OF EXISTING BUILDINGS AND SITE ELEMENTS

ITEM	QUANTITY	UNIT	UNIT COST	PERCENT OF PROJECT	TOTAL
A. DEMOLITION					
1. Existing Buildings					
a. 3003 - Oceanography Building, full building demo	5,750	SF	$6.00		$34,500
b. 3006 - Facilities Services Physical Plant and Storage space	6,750	SF	$6.00		$40,500
c. 3025 - Student Support, full building demo	6,000	SF	$5.50		$33,000
d. 3026 - Dockside Warehouse, full building demo	67,000	SF	$5.50		$368,500
e. Dockside Waterhouse adjacent to 3026, full building demo	35,000	SF	$5.50		$192,500
2. Existing Campus Site Elements					
a. Roadways	15,500	SF	$8.75		$135,625
b. Pedistrian Walkways	23,500	SF	$2.20		$51,700
c. Surface Parking	222,000	SF	$4.00		$888,000
Subtotal	120,500	SF	$14.48	60.23%	$1,744,325
General Conditions	120,500	SF	$2.17	9.03%	$261,649
Estimating / Design Contingency	120,500	SF	$4.16	17.32%	$501,493
Bonds and Insurance	120,500	SF	$1.04	4.33%	$125,373
Overhead & Profit	120,500	SF	$2.18	9.09%	$263,284
Total Construction Cost	120,500	SF	$24.03	100.00%	**$2,896,125**

Texas A&M University - Galveston, TX

Master Planning

Budget Estimate - July 12, 2019

COMPOSITE WORKSHEET

I. Construction Costs	New Construction	Renovation Construction
A. Contractor's General Conditions	15.0%	15.0%
B. Estimating / Design Contingency	25.0%	25.0%
C. Contractor's Bonds & Insurance	5.0%	5.0%
D. Contractors Overhead & Profit	10.0%	15.0%

A. Contractor's General Conditions

This represents Direct Costs to the Contractor for construction of the project not associated with specialty trades. Supervisory personnel, temporary field office facilities, miscellaneous equipment and construction aids are items typically identified as General Conditions expenses.

B. Estimating / Design Contingency

An amount allowed for items that may be necessary for construction of the project but are not yet identified in the plans and specifications or are unforeseen, associated with the original project quality and scope. It is not intended to cover increases in quality, scope or escalation. The amount varies from at 20% at Conceptual Design, 15% at Schematic Design, 10% at Design Development, 5% at Construction Documents and 0 at Bid Documents, based on historical and statistical data and industry standards. The estimator is responsible, based on their experience and review of the planning documents, to assign an appropriate value for this item using the percentages above as a guideline.

C. Contractor's Bonds & Insurance

This item represents the amount the Contractor will pay to secure Performance and Payment Bonds, General Liability Insurance, Builder's Risk Insurance and other protective means during construction of the project. These items are necessary for protection of both the Owner and the Contractor and are typically required by the Financing Entity, State and Local Governing Authorities.

D. Contractors Overhead & Profit

Overhead represents Indirect Costs born by the Contractor for Home Office expenses associated with the project. Items such as Accounting, Submittal Processing, Contracting and Legal Fees fall under this category. Profit represents the amount the Contractor proposes for it's margin after all costs associated with constructing the project are satisfied. This is first and foremost based on risk analysis and secondly on market conditions. The percentage shown represents a CMAR procurement contract.

Campus Thermal Utilities

The campus is equipped with a water-cooled chilled water and heating hot water plant. The chilled water central plant is at maximum capacity. Local air-cooled plants have been provided as part of new campus distribution projects. The new dormitory on the north side of the campus and the new main academic building complex are equipped with dedicated thermal plants.

The air-cooled chilled water plant at the main academic complex works in parallel with the campus central plant to meet the campus cooling demands. The current campus central plant has a cooling demand of 1,850 tons and a heating demand of just over 6,000 MBH. The current central plant and the main academic complex combined firm capacity is 2,200 tons. The central plant firm heating hot water capacity is 8,000 MBH.

The central plant has reached its peak chilled water capacity. The limiting factor at the central plant is the cooling tower system and the distribution piping leaving the plant. A new central plant is needed for the campus.

Campus Thermal Utility Distribution System

The campus distribution system was upgraded in 2018 as part of the second phase of the academic building complex. A new chilled water and heating hot water distribution network was designed and installed. The new loop design runs the perimeter of the current campus layout south of Seawolf Parkway. Only the south side of the campus distribution loop was installed. Provisions were provided for future build out of the north side distribution as well as tees to connect to a new central plant.

All the transite thermal distribution pipe was taken out of service. The remaining distribution piping is ductile iron and high-density polyethylene pipe. The distribution network was designed to allow for future expansion, but without plans to serve on the north side of Seawolf Parkway.

New Central Plant

The campus currently only has 300 tons of firm capacity available. Any future campus building construction past 300 tons will need local cooling, or a new centralized cooling and heating capacity will be required. As mentioned above, the existing central plant has reached its production capacity. A new central plant would need to be constructed, or major expansion of the existing plant would need to be done. The thermal expansion for the building included on this master plan would be a minimum of 3,200 tons for cooling and 14,000 MBH for heating. Below is a breakdown of the new buildings and their projected loads.

Central Plant Requirements

	Description	Size (SF)	Cooling Demand (Tons)	Heating Demand (MBH)
1	New Academic Building	80,000	250	1,600
2	New Vessel Operations	80,000	250	1,600
3	Academic Building	45,000	150	900
4	New Academic Building	80,000	250	1,600
5	Student Life Center Addition	100,000	350	2,000
6	New Parking Garage with Central Plant		-	-
7	New Residence Hall	80,000	250	1,600
8	Immersive Scholarship Learning Environment	20,000	50	400
9	Central Plant Expansion	3,500	-	-
10	New Center for Texas Beaches and Shores	15,000	-	-
11	New Physical Plant Facility	19,000	50	285
12	Training Ship Shore Cooling		400	-
	New Demand		2,000	9,985
	Academic Building Complex		1,200	4,000
	Total Plant Requirements		3,200	13,985

Existing Electrical Distribution System

The existing campus electrical distribution system consists of one 12.47kV circuit from Centerpoint Energy (CPE). It terminates in a two circuit breaker line up of metal clad switchgear on the TAMUG campus. The system is then routed to each of the buildings via an underground duct bank with a single circuit of #4/0 conductors.

Each transformer is served from a loop switch that connects to the existing campus loop distribution system. The loop can be utilized to isolate an area of the campus should the feeder fail between buildings.

The circuit is rated for approximately 6400 kVA. The demand load on the system is approximately 3600 kVA. There is some spare capacity in the circuit to add future buildings but not sufficient to serve the entire campus development.

Campus Electrical Utility Distribution System

The infrastructure for the campus distribution system was installed partially in 2018 as part of the second phase of the academic building complex. It has been determined that the campus cannot be further developed without the construction of a new central plant. As part of that new plant a new campus electrical service should be included. The new service point will be at the new central plant location. It will serve the new central plant and new campus buildings and ultimately the existing campus electrical distribution system. The routing for the ductbank system should be included with the planning of the new thermal piping distribution scheme. Where new thermal lines are installed to serve new buildings the new ductbank should be routed adjacent to the thermal lines. Where new thermal lines are connected into the existing thermal distribution system, the new electrical distribution system can be routed adjacent to the new thermal lines and connect into the existing electrical distribution system to allow the existing system to be upgraded. The new electrical distribution will be routed under Sea Wolf Parkway as the campus is expanded.

New Central Plant

The new central plant will have new 12.47 kV switchgear in a main-tie-main configuration and will serve a new distribution loop on campus and central plant loads. The new loop distribution will need to be completed and tie into the existing loop at the campus existing service entrance location. The new service in the central plant will serve as the main service for the campus distribution.

A 12.47-480Y/277V transformer and 480Y/277V switchgear will be installed at the plant to serve the plant loads. A 480-208Y/120V transformer will also be installed at the plant to serve necessary receptacle and miscellaneous loads in the plant.

Central Plant Electrical Requirements

	Description	Size (SF)	Electrical Demand (kVA)
1	New Academic Building	80,000	400
2	New Vessel Operations	80,000	400
3	Academic Building	45,000	225
4	New Academic Building	80,000	400
5	Student Life Center Addition	100,000	500
6	New Parking Garage with Central Plant		6500
7	New Residence Hall	80,000	400
8	Immersive Scholarship Learning Environment	20,000	100
9	Central Plant Expansion	3,500	6100
10	New Center for Texas Beaches and Shores	15,000	75
11	New Physical Plant Facility	19,000	100
	New Demand		15200
	Existing Demand		6400
	Total Electrical Requirements		21600


TEXAS A&M UNIVERSITY
GALVESTON CAMPUS
WAYFINDING & IDENTITY MASTER PLAN
•• Wayfinding Signage Overview & Standards ••

TABLE OF CONTENTS

The graphic design requirements shown by the details on these sign type drawing documents are for design intent only and intended to establish basic dimensions of units or modules, profiles and sight lines of members, and appearance. Within these limitations, the Signage Contractor is responsible for fabrication of the entire system, and to make whatever modifications of, and additions to the details as may be required. Maintain the visual design concept as shown, including members sizes, profiles and alignment of components as accurately as possible.

The Signage Contractor shall supplement the general design shown with detailed shop drawings for the Graphic Designer's approval. The shop drawings shall include major aspects of the system proposed, such as sections, shapes and connections of components and joints, how temperature movement is handled, venting, and anchorage to structure.

All ideas, design arrangements, or plans indicated or represented by these drawings are owned by, and remain the sole property of the Graphic Designer. No ideas, designs, arrangements, or plans shall be disclosed to any other person, firm, or corporation for any purpose whatsoever without the express written consent of the Graphic Designer.

All Artwork and Drawings required under the scope of these documents are to become the sole property of the Owner at the completion of the contract, with all original, or created artwork or drawings to be surrendered to the Owner at the end of fulfillment of the contract or sooner if requested in writing from the Owner.

All Artwork and Drawings are not to be reproduced or circulated for use outside the scope of this contract without written consent of the Owner. Failure to do so will result in legal action to the fullest extent of the law.

SECTION 1

SYSTEM OVERVIEW

SYSTEM CONCEPT • IDENTIFY • INVITE • ENHANCE

At the core of the Texas A&M Galveston Campus Wayfinding Standards is the desire to create and reinforce a sense of place: to make the campus, public areas or buildings more memorable to inhabitants and visitors. To identify, as well as inform, within the context of a flexible and expansive graphics system, is only part of the intent. The other part is to celebrate those characteristics which make the campus unique—history, architecture, natural resources, events, community relationship and curriculum.

The following are objectives of the Texas A&M Galveston Campus Wayfinding Standards.

- **Reinforce site boundaries and identity**
- **Identify key entry points into the site**
- **Define pathways for vehicular traffic**
- **Define pathways for vehicular traffic to parking areas**
- **Define pathways for pedestrians from parking areas to the individual buildings**
- **Create an awareness of destinations and promote those destinations**
- **Emphasize special aspects of the site which make it unique and interesting**
- **Reduce the visual clutter or overuse of signs to reduce confusion**
- **Enhance the perception of the site as a safe, clean, and welcoming environment**
- **Create a system consisting of simple components that are easily fabricated and easily maintained**

The installation of environmental graphics alone will not accomplish all of these objectives. Because they are environmental, these signs will be affected by what is happening around them. For example, a vehicular directional sign may be totally lost if located among a lot of other signs or concealed by trees. A pedestrian directional would not be functional if located where there are no pedestrians.

Programming for the site signage system is critical to its success. This is the process of determining what sign type is needed to help implement the wayfinding system, would be most appropriate at a particular location, what it should say, and how it should relate to all other signs within the system. Sidewalks, landscaping, parks and public amenities such as street lamps, public phones, benches and trash receptacles all contribute to the perception of a welcoming environment. Similarly, the development and enforcement of strict private signage codes improves the general appearance of any community and could help blend Texas A&M Galveston Campus with its neighbors. These aspects of the environment should be considered in conjunction with plans for the graphics system.

WAYFINDING CONCEPT • STANDARDS

A wayfinding system begins with support or creation of an area identity, definition of the boundaries for the area, then directing vehicles and pedestrians to specific visitor destinations within that area. The purpose of the system is to promote the use of public facilities, building uses, campus amenities and parking for Texas A&M Galveston Campus. Motorists entering the campus are greeted at those gateways that are not otherwise obvious, then organized and distributed to key destinations and parking via vehicular directional signs. It consists of the four components outlined below...

1. Identification System

Gateway signage is placed at the most important and least legible edges of the campus to welcome the visitor and to set the tone for the rest of the sign standards. Consistent use of graphic elements, logos, colors and structural components is key to reinforcing Texas A&M Galveston Campus's identity. Color and design of the signage system will help to reinforce the identity even as it reinforces the image of the area.

2. Vehicular Directional System

This system helps lead vehicles from major traffic spines leading into the campus to major destinations or destination zones, and to parking areas along preferred routings. The vehicular directional system focuses on first-time or occasional users and visitors. This part of the signage system contains limited amounts of information so as not to confuse drivers. The vehicular directionals are located at key decision-making intersections, and appear frequently enough so as not to "lose" the driver. They may be augmented by identity signs for public, handicapped or visitor parking opportunities. Once the driver has reached a parking area, the pedestrian system takes over.

3. Pedestrian Directional System

For the pedestrian leaving the vehicle at a parking destination, the pedestrian directional system reinforces direction and orientation. This level of signing includes specific destinations that are within walking distance, as well as map elements to help orient the user. These signs should be located to reinforce predetermined routings so that the visitor never feels lost or unsafe. The pedestrian system includes directional signs, information kiosks or directories with orientation maps, and identity signs for the buildings and entrances. In a phased installation program, the pedestrian directional system should initially concentrate on those streets that provide the type of activities that most attract visitors. Other amenities besides signage that contribute to the success of the pedestrian directional system include clean sidewalks, pedestrian-scale lighting, benches, trash receptacles, bike racks, public phones, and greenscaping. As such improvements are made, the pedestrian directional system may be expanded.

4. Interpretive and Decorative/Seasonal Graphics

As a supplement to the other elements, these can take any number of forms and help to create a visually exciting environment. Banners are currently used to promote special events, or to simply reinforce the entrances of Texas A&M Galveston Campus and its various areas. These may be changed frequently to continually refresh the image of the college for faculty, students and visitors alike. Other temporary enhancements, such as construction barricade fences, provide an excel-lent backdrop for graphics and a palette for community involvement. Other decorative elements may include flags, seasonal or specialty lighting, special events posters in directory kiosks, parking lots or garages anything that helps visually celebrate and reinforce Texas A&M Galveston Campus's changing menu of events and seasons.

SECTION 1

PLACEMENT GUIDELINES

SIGNAGE PLACEMENT • GENERAL GUIDELINES

Following are general guidelines for placement of vehicular and pedestrian signs as viewed when approaching the sign...

Vehicular Directionals

- Signs must be placed within the driver's immediate cone-of-vision so that they do not have to turn their heads to see the sign.
- The sign face should be perpendicular to the approaching driver. It will be overlooked if it is parallel to the road.
- Signs should be placed on the right side of the road whenever possible. Drivers are conditioned to look to the right side of the road for signs with information.

An exception to this is when a sign is to be read from both directions of approaching traffic, as in the case of double-faced signs. If a double-faced sign is used instead of two single-faced signs on both sides of the road, the double-faced sign should be located for clear readability from both directions of approaching traffic. Also, if the messages require queuing to the left, the sign may be located to the left to provide advance warning.

- Signs which require drivers to turn must be placed well enough in advance of the intersection in order to allow for reaction time to slow down and turn.
- Signs should not overhang into the roadway if located on a sidewalk or street post.

Pedestrian Directionals

- Signs should be placed within a visible area along the path of travel. Signs should be located so as not to interfere with pedestrian traffic, nor should they block important roadway signage or obstruct views of roadway traffic.
- Pedestrian signs have been designed to mount to existing structures, or to custom posts. Specific mounting heights are shown in the drawings for the individual sign types.
- Wall or fence-mounted signs should be placed high enough so as not to be blocked by cars and plants or other obstructions. This will generally range between 5′ to 7′ above the ground. Mounting height is measured from the ground level to the bottom of the sign panel.
- Consideration should be given to locating pedestrian signs in areas which receive ambient light from other light sources to create better visibility at night.

For all signs, mounting locations should be carefully considered so that viewing is not obstructed by other signs, trees or structures. In some cases, it may be necessary to remove and/or consolidate information presented by other signs, and will be subject to the approval of the Traffic Engineering Director.

Where a new sign is replacing an older sign which does not comply with the standards in this manual, the entire sign assembly should be replaced. Old sign posts should be removed and replaced with the new custom posts, again, subject to the approval by the Traffic Engineer.

SECTION 1

TYPEFACE & COLOR STANDARDS

PROJECT STANDARDS • TYPEFACE

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890&
Open Sans Regular

Open Sans Regular Adobe Postscript Font

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890&
Open Sans Bold

Open Sans Bold Adobe Postscript Font

PROJECT LOGOS

TEXAS A&M UNIVERSITY

PAINT

Bright White (Matte Finish)	Aggie Maroon (Satin Finish)	Pure Black
Mattews Paint MP281500SP	Mattews Paint To Match PMS 7421C	Mattews Paint
P1	P2	P3

ACRYLIC

Acrylic Clear Non-Glare	Acrylic Milky White
Acrylite	Acrylite 7328
A1	A2

VINYL

White Translucent	Light Gray Opaque
3M Scotchcal Electrocut 3630-20	3M Scotchcal Electrocut 7125-121
V1	V2

MATERIALS

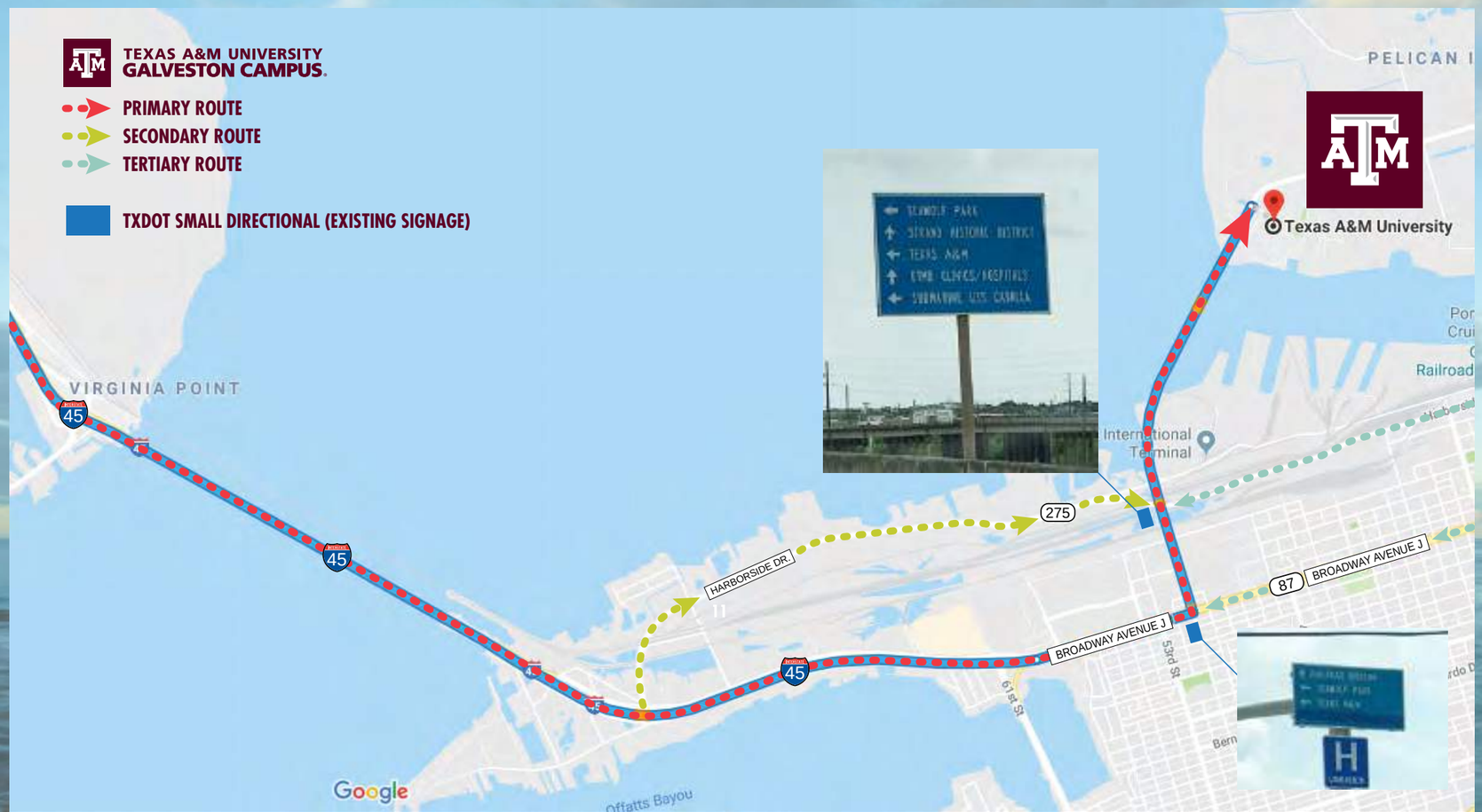
Stainless Steel	3Form Koda-XT	3Form Chroma XT	3Form Chroma XT		Aluminum
#4 Brushed Finish Alloy 316		White Ghost 30% W03 Vellum F04 Finish	White Down 15% W02 Sandstone F01 Finish	Salt & Pepper Stone Polished Finish	
M1	M2	M3	M4	M5	M6

PROJECT STANDARDS • COLORS • MATERIALS

REF. NO.	DESCRIPTION/ FINISH	MANUFACTUER
PAINT		
P1	Bright White (Matte Finish)	Matthews Paint MP 281500 SP
P2	Aggie Maroon (Satin Finish)	Matthews Paint To Match PMS 7421C
ACRYLIC		
A1	Acrylic, Clear Non-Glare	Acrylite
A2	Acrylic, Milky White	Acrylite 7328
VINYL		
V1	White Translucent - 3M Scotchcal Electrocut	3630-20
V2	Light Gray Opaque - 3M Scotchcal Electrocut	7125-121
MATERIAL		
M1	Stainless Steel, #4 Brushed Finish - Alloy 316	
M2	3Form KODA XT	
M3	3Form Chroma XT — White Ghost 30% W03 w/Vellum F04 Finish	
M4	3Form Chroma XT — White Down 15% W02 w/Sandston F01 Finish	
M5	Salt & Pepper Stone Block — Polished Finish	
M6	Aluminum	

SECTION 2

EXISTING WAYFINDING CIRCULATION



SECTION 2

EXISTING SIGNAGE & SITE CONDITION

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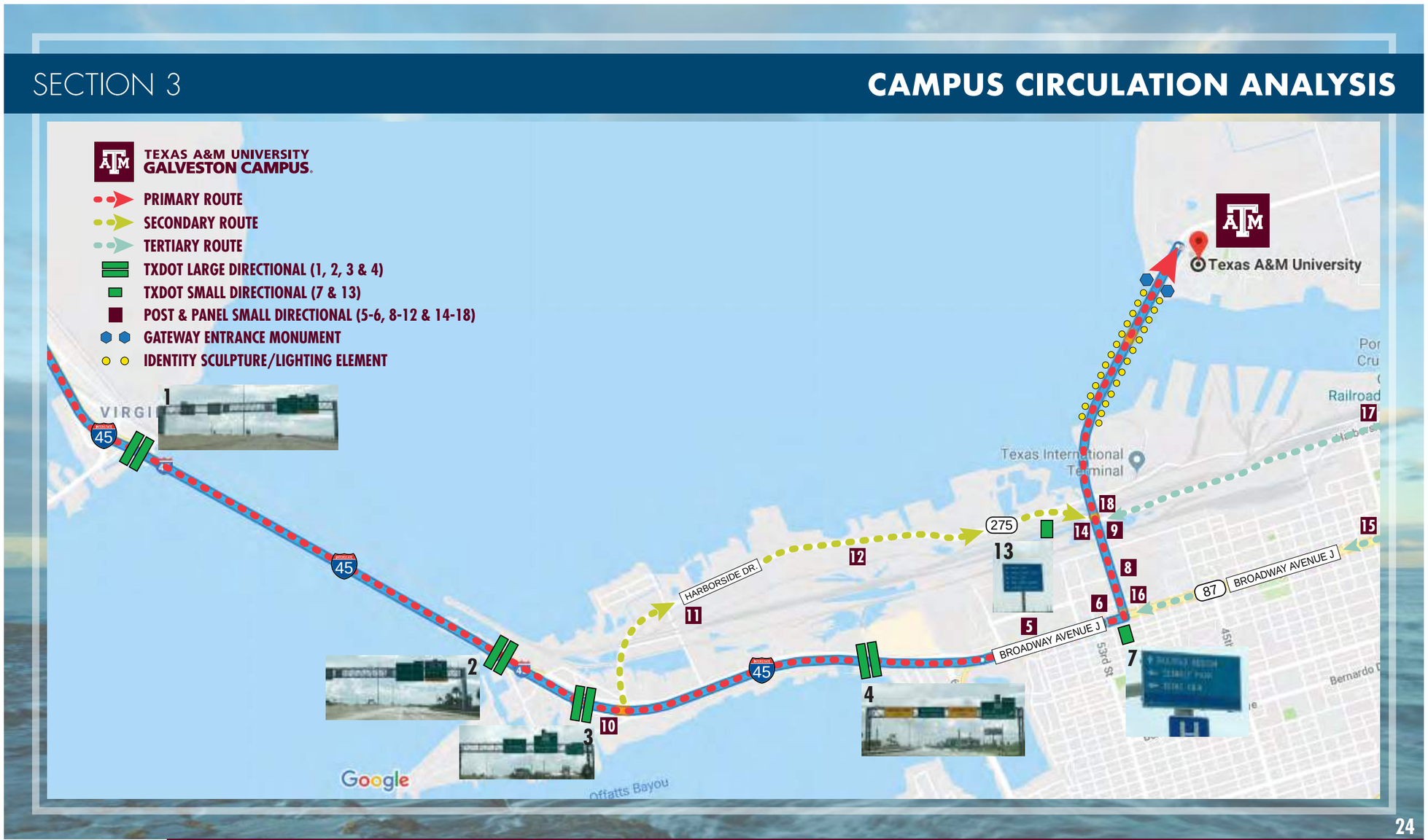
SECTION 3

CAMPUS CIRCULATION ANALYSIS



SECTION 3

CAMPUS CIRCULATION ANALYSIS

CIRCULATION AROUND CAMPUS

TEXAS A&M UNIVERSITY
GALVESTON CAMPUS.

N W E S

MASTER PLAN ICONS

- Circulation Around Campus
- Delivery Traffic
- Residents Traffic
- Pedestrian Traffic
- Campus Gateway Entrance Monuments
- Secondary Entrance Monument
- Identity Sculpture/Lighting Element
- Large Vehicular Directional
- Small Vehicular Directional
- Pedestrian Directional
- Campus Map Directional
- Ground-Mounted Building Identity
- Building Address Letterforms
- Building-Mounted Letterforms
- Campus Banners
- Street ID with Stop Sign
- Yield Sign
- No Parking
- Visitor Parking Pay Station
- Disabled Parking
- Pedestrian Crossing Warning

PARKING

- Resident Parking
- Commuter & Paid Visitor Parking
- Faculty & Staff Parking
- Authorized Vehicle Parking
- No Parking

BUILDINGS

3001	Emmett O. Kirkham Hall
3002	Maritime Transportation
3003	Waterfront Operations
3004	Mary Moody Northen Student Center
3005A	Hullabaloo Hall
3005B	Oceans Hall
3006	Facilities Services
3007	Classroom Lab Building
3010	Jack K. Williams Library
3014	Wetlands Center
3016	Training Ship
3018	Campus Recreation Center
3018A	Swimming Pool
3018B	Volleyball Courts
3018C	Tennis Courts
3018D	Recreation Field
3019	Waste Water Treatment
3025	Institutional Support & Information Technology
3026	Sea Aggie Center/Police
3027	Powell Marine Engineering Complex
3028	Clubhouse
3029	Ocean & Coastal Studies Building
3029A	Sea Life Center
3030	Seibel Student Services Center
3031	Pacific Hall
3032	Atlantic Hall
3033	Texas A&M Maritime Academy Hall
3034	Main
3035	Aggie Special Events Center
3036	East Dock Warehouse

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TEXAS A&M UNIVERSITY
GALVESTON CAMPUS.

PREPARED BY: D|G STUDIOS

SECTION 3

CAMPUS CIRCULATION ANALYSIS

DELIVERY TRAFFIC

TEXAS A&M UNIVERSITY
GALVESTON CAMPUS.

N W E S

MASTER PLAN ICONS

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3014	Wetlands Center
3016	Training Ship
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3018C	Tennis Courts
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SECTION 3

CAMPUS CIRCULATION ANALYSIS

RESIDENTS TRAFFIC

TEXAS A&M UNIVERSITY
GALVESTON CAMPUS

N W E S

MASTER PLAN ICONS

- Circulation Around Campus
- Delivery Traffic
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3016	Training Ship
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3018B	Volleyball Courts
3018C	Tennis Courts
3018D	Recreation Field
3019	Waste Water Treatment
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3028	Clubhouse
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3033	Texas A&M Maritime Academy Hall
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SECTION 3

CAMPUS CIRCULATION ANALYSIS

PEDESTRIAN TRAFFIC

PEDESTRIAN CROSSING WARNING

TEXAS A&M UNIVERSITY GALVESTON CAMPUS.

N W E S

MASTER PLAN ICONS

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TEXAS A&M UNIVERSITY GALVESTON CAMPUS.

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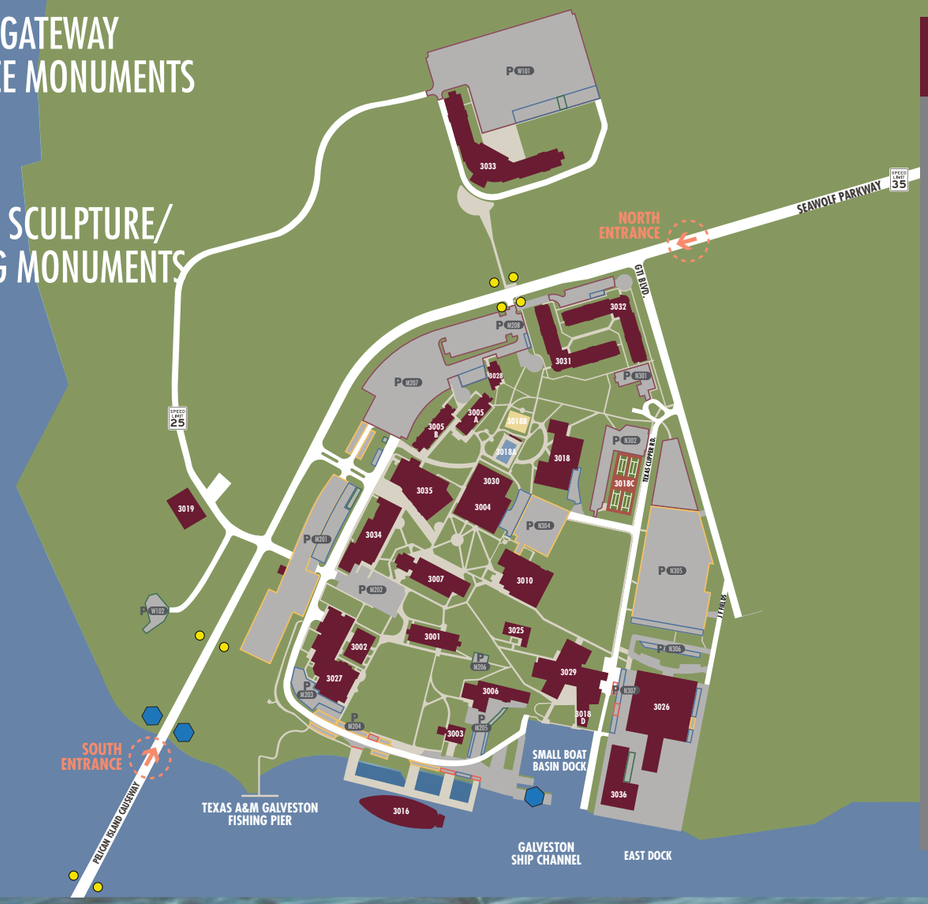
SECTION 3

CAMPUS CIRCULATION ANALYSIS

CAMPUS GATEWAY ENTRANCE MONUMENTS

IDENTITY SCULPTURE/ LIGHTING MONUMENTS



TEXAS A&M UNIVERSITY GALVESTON CAMPUS

N W E S

MASTER PLAN ICONS

- Circulation Around Campus
- Delivery Traffic
- Residents Traffic
- Pedestrian Traffic
- Campus Gateway Entrance Monuments
- Secondary Entrance Monument
- Identity Sculpture/Lighting Element
- Large Vehicular Directional
- Small Vehicular Directional
- Pedestrian Directional
- Campus Map Directional
- Ground-Mounted Building Identity
- Building Address Letterforms
- Building-Mounted Letterforms
- Campus Banners
- Street ID with Stop Sign
- Yield Sign
- No Parking
- Visitor Parking Pay Station
- Disabled Parking
- Pedestrian Crossing Warning

PARKING

- Resident Parking
- Commuter & Paid Visitor Parking
- Faculty & Staff Parking
- Authorized Vehicle Parking
- No Parking

BUILDINGS

3001	Emmett O. Kirkham Hall
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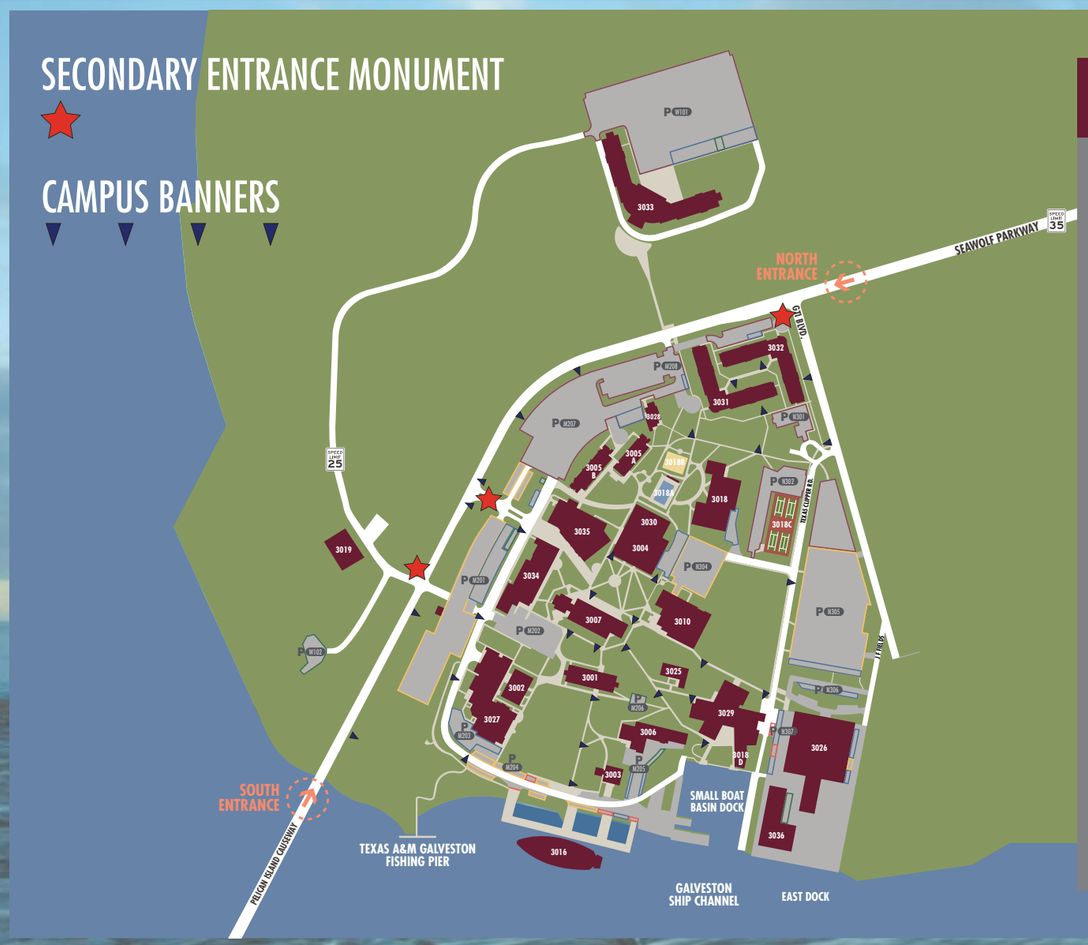
3034	Main
3035	Aggie Special Events Center
3036	East Dock Warehouse

SECTION 3

CAMPUS CIRCULATION ANALYSIS



TEXAS A&M UNIVERSITY
GALVESTON CAMPUS.

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SECTION 3

CAMPUS CIRCULATION ANALYSIS

LARGE VEHICULAR DIRECTIONAL

SMALL VEHICULAR DIRECTIONAL

PEDESTRIAN DIRECTIONAL

CAMPUS WAYFINDING MAP

TEXAS A&M UNIVERSITY
GALVESTON CAMPUS

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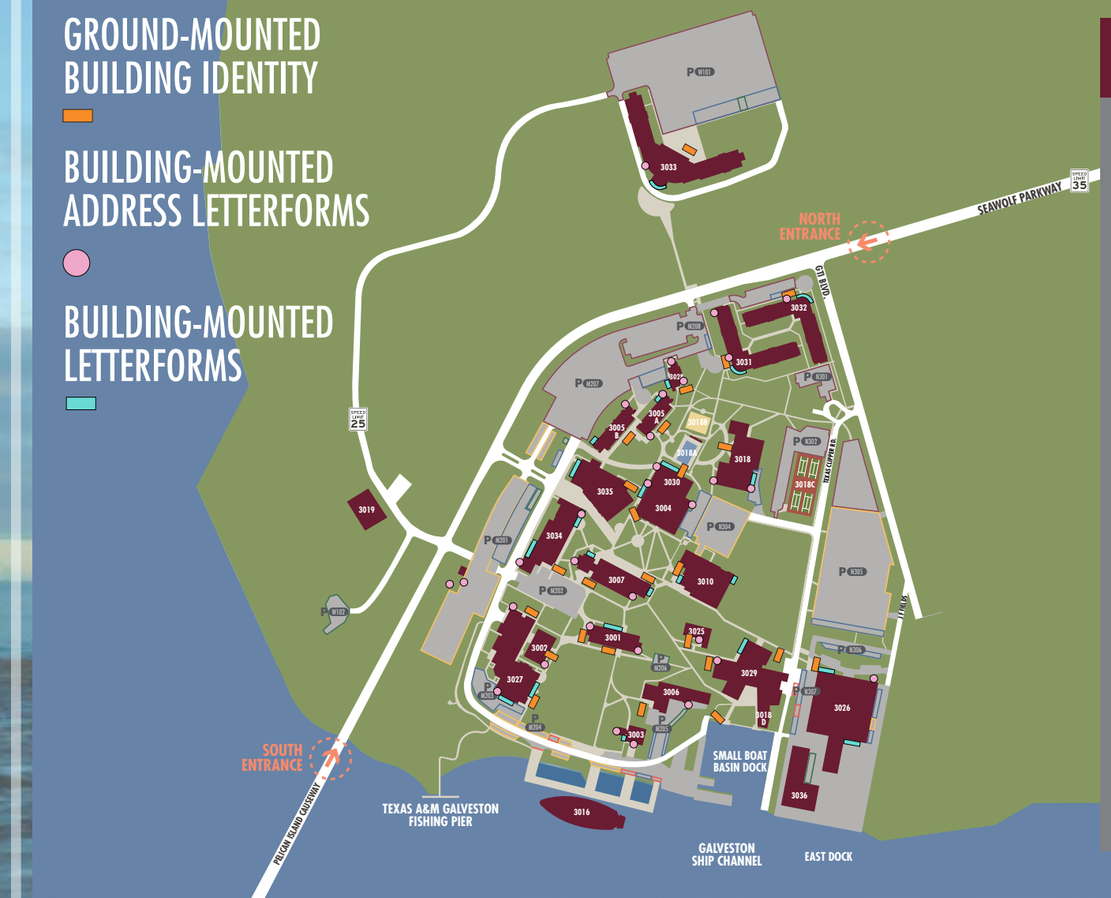
SECTION 3

CAMPUS CIRCULATION ANALYSIS

GROUND-MOUNTED BUILDING IDENTITY

BUILDING-MOUNTED ADDRESS LETTERFORMS

BUILDING-MOUNTED LETTERFORMS



TEXAS A&M UNIVERSITY GALVESTON CAMPUS.

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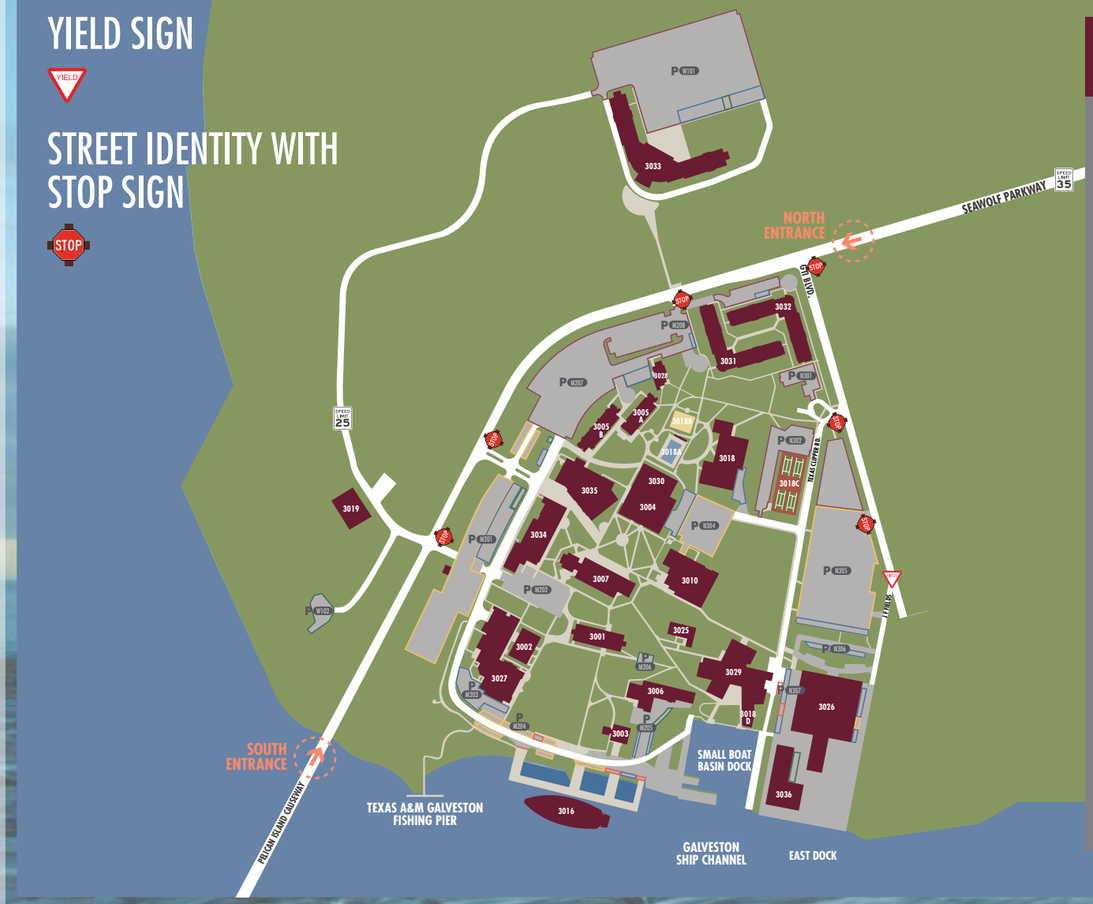
SECTION 3

CAMPUS CIRCULATION ANALYSIS

YIELD SIGN

STREET IDENTITY WITH STOP SIGN



TEXAS A&M UNIVERSITY
GALVESTON CAMPUS

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SECTION 3

CAMPUS CIRCULATION ANALYSIS

NO PARKING IDENTITY

VISITOR PARKING PAY STATIONS

DISABLED PARKING

TEXAS A&M UNIVERSITY GALVESTON CAMPUS.

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TEXAS A&M UNIVERSITY GALVESTON CAMPUS.

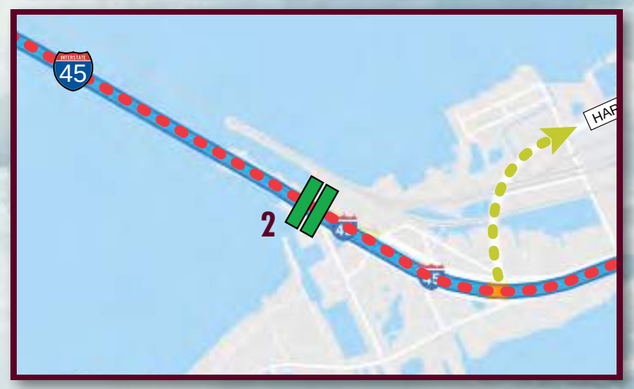
PREPARED BY: DG STUDIOS

SECTION 4

PROPOSED TEXAS D.O.T. SIGNAGE

SECTION 4

PROPOSED TEXAS D.O.T. SIGNAGE



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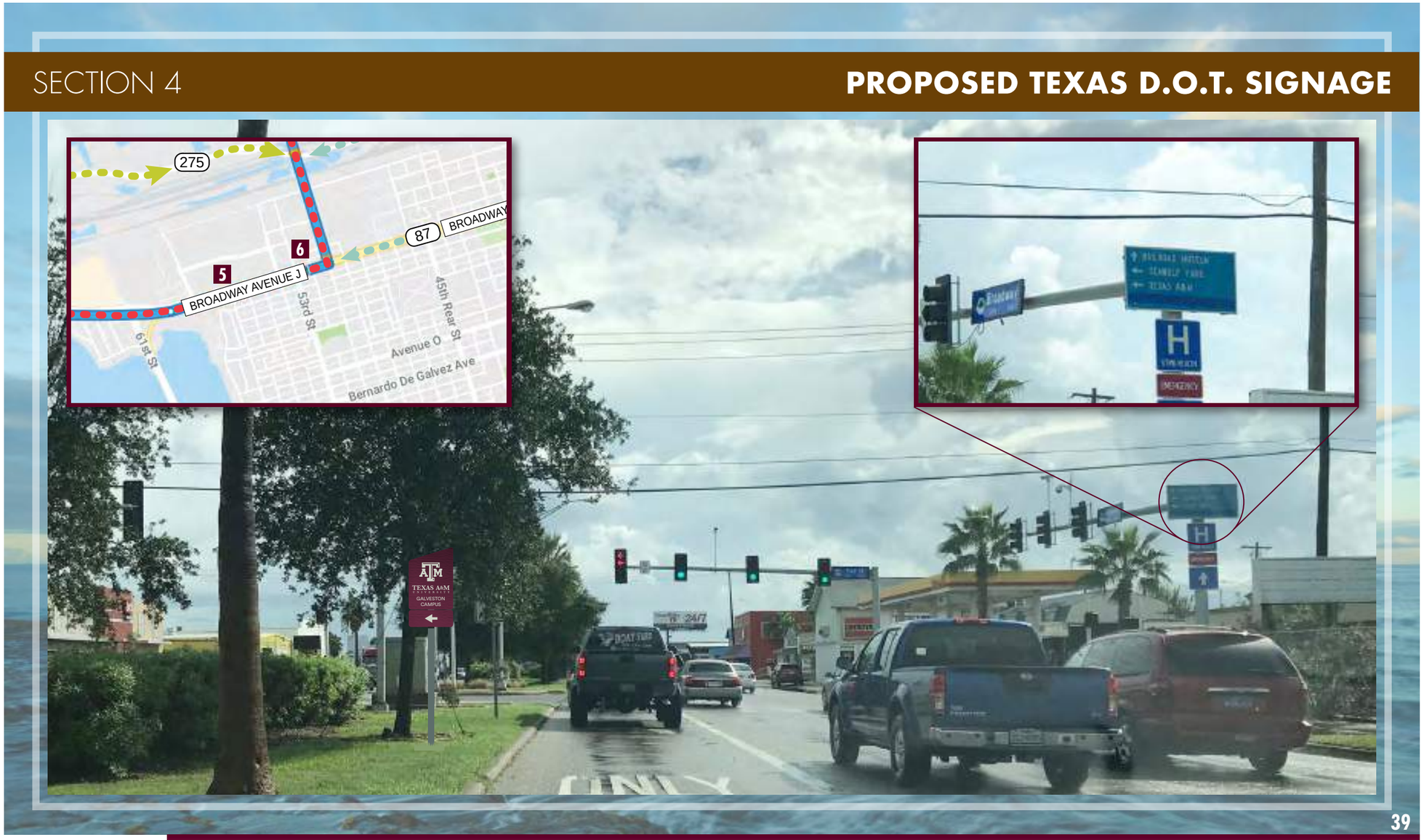

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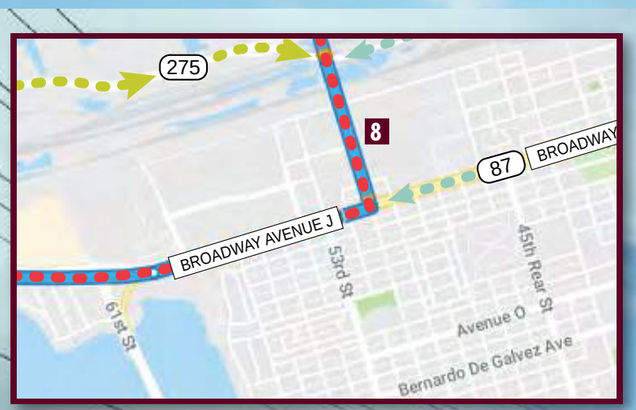

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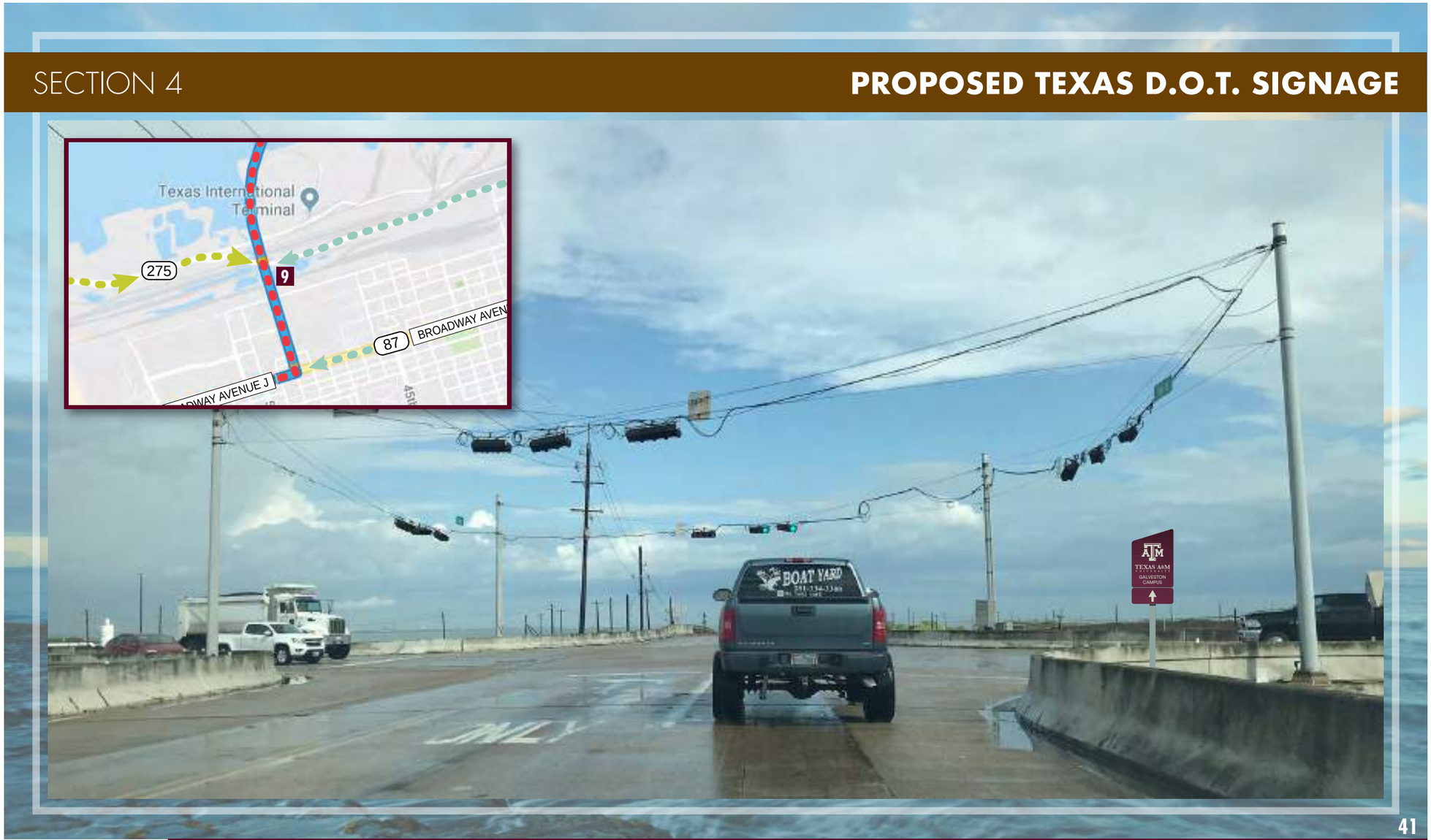

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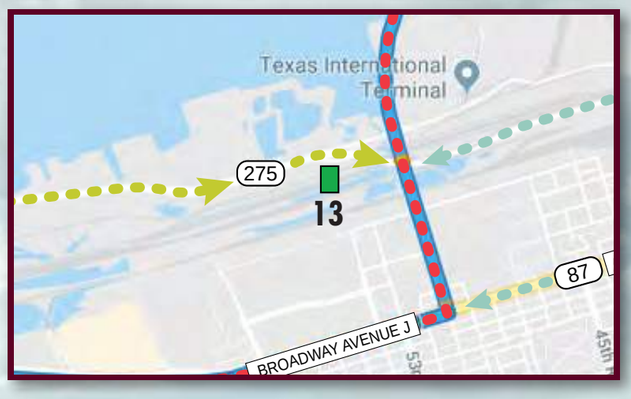

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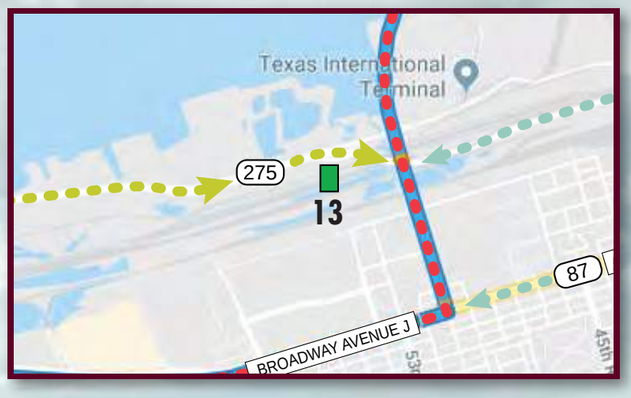


SECTION 4

PROPOSED CAMPUS SIGNAGE

SECTION 4

PROPOSED CAMPUS SIGNAGE

GATEWAY ENTRANCE MONUMENT

SECTION 4

PROPOSED CAMPUS SIGNAGE

LARGE VEHICULAR DIRECTIONAL

SECTION 4

PROPOSED CAMPUS SIGNAGE

SECONDARY MONUMENT IDENTITY

SECTION 4

PROPOSED CAMPUS SIGNAGE

REGULATORY IDENTITY

SECTION 4

PROPOSED CAMPUS SIGNAGE

CAMPUS MAP IDENTITY

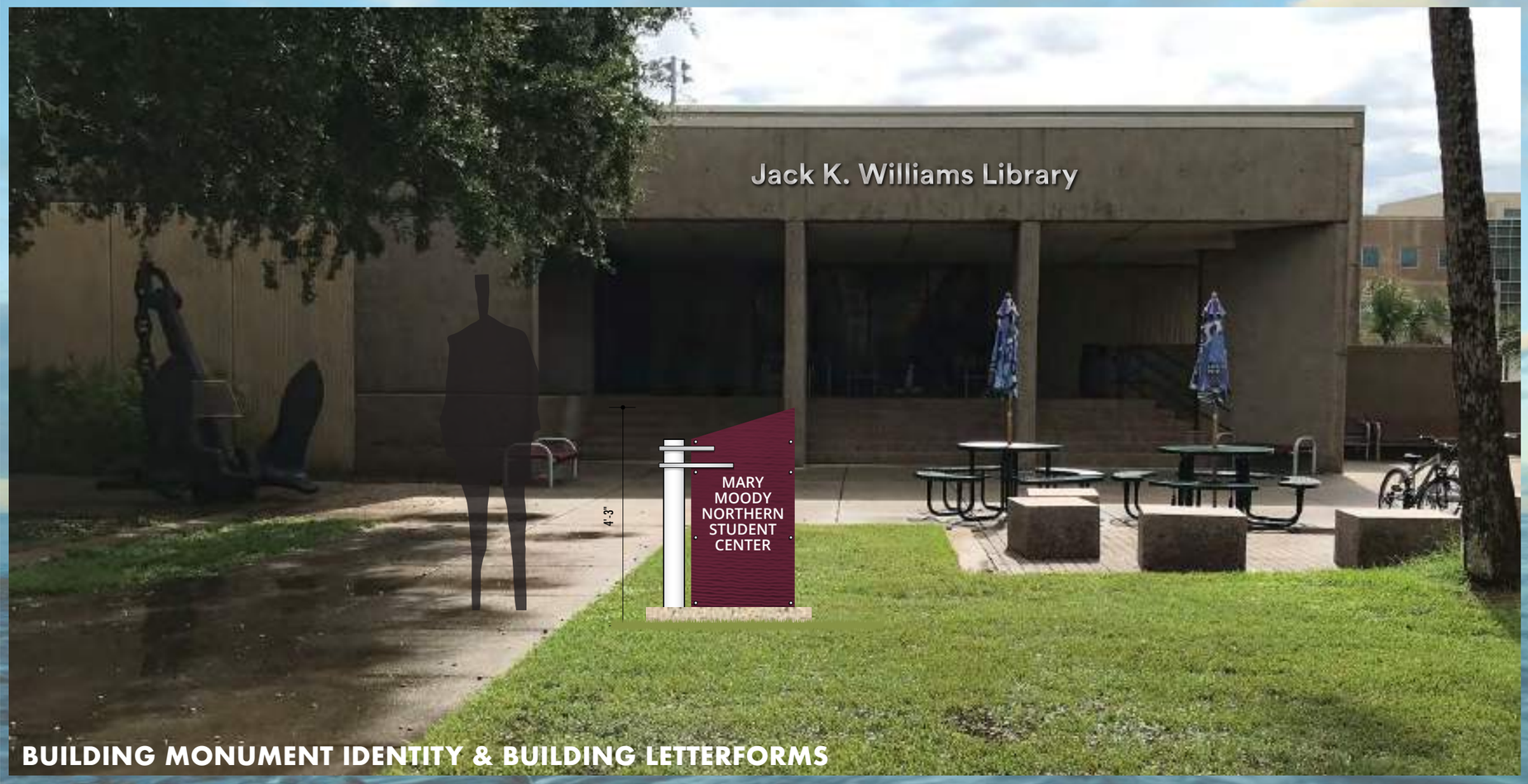
SECTION 4

PROPOSED CAMPUS SIGNAGE

PEDESTRIAN DIRECTIONAL

SECTION 4

PROPOSED CAMPUS SIGNAGE



BUILDING MONUMENT IDENTITY & BUILDING LETTERFORMS

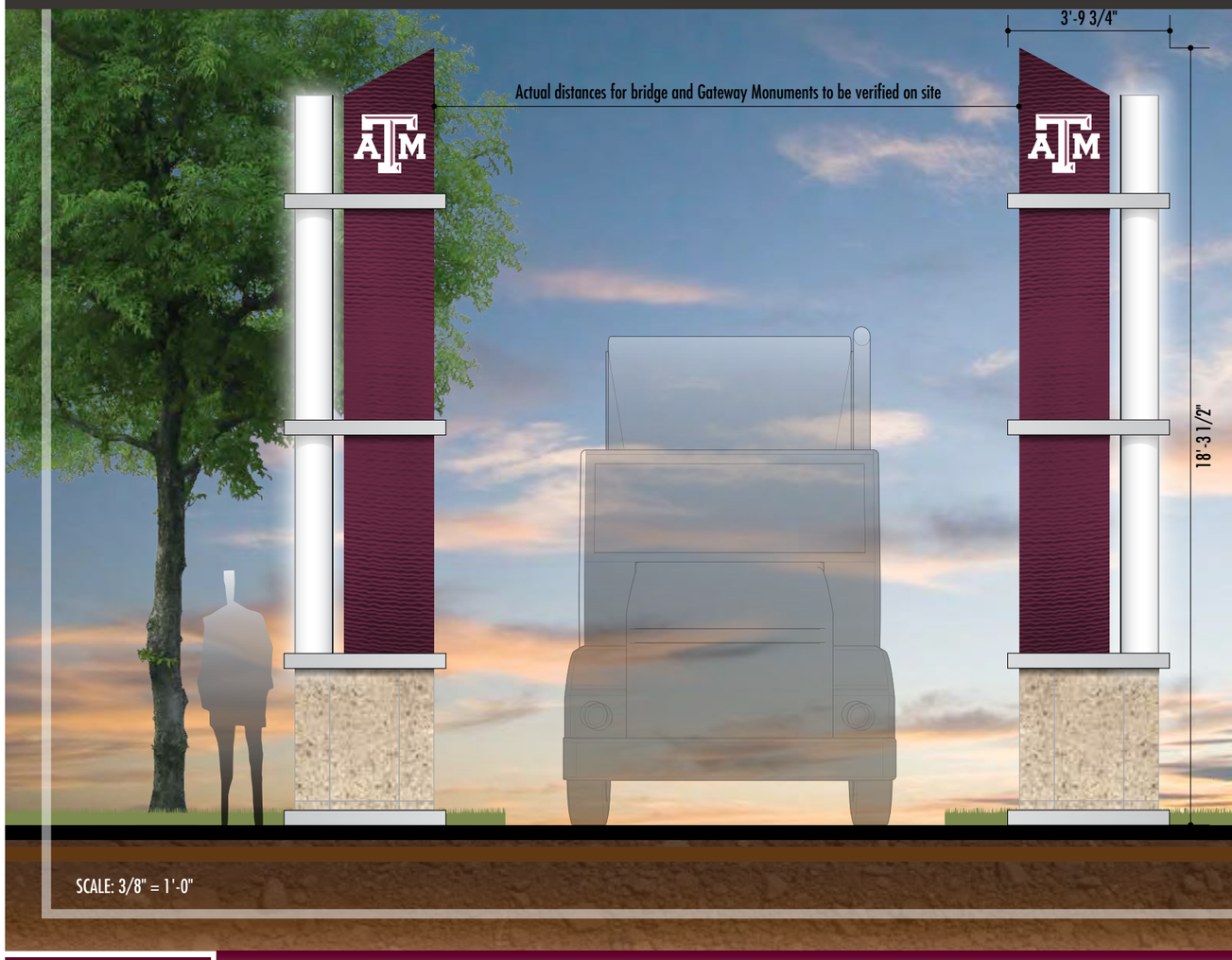
SECTION 4

PROPOSED CAMPUS SIGNAGE

CAMPUS BANNER IDENTITY

SECTION 5

GATEWAY ENTRANCE MONUMENT



The purpose of this sign is to announce the main entrance of the Pelican island and leading into the TAMU campus. It is also to establish the boundaries of the campus and to convey the TAMU identity in an attractive form that will be functional and legible both during the day and at night.

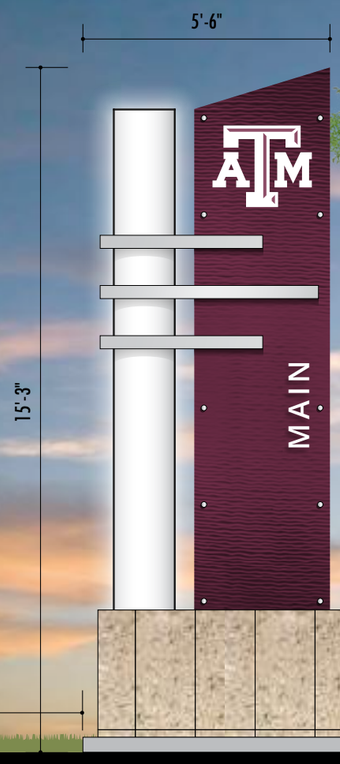
The number of these signs should be limited to the major entrances only. Gateway signs are illuminated with Bright White internal illumination for the ease of vehicular entry at night and as icons to be seen from far away.

The quantity and placement of these signs are to be approved and permitted by TAMU and City of Galveston prior to undertaking fabrication and installation.

Note: For design intent only. Not for construction/fabrication.

SECTION 5

SECONDARY ENTRANCE MONUMENT



The purpose of this sign is to announce the arrival of Main Entrance of the TAMU campus to all visitors.

The number of these signs should be limited to the main entrances only. These signs are illuminated with Bright White internal illumination for the ease of vehicular entry at night and as icons to be seen from far away.

This double-sided monument Identity is to be placed perpendicular to the street at the main entrance.

The quantity and placement of these signs are to be approved and permitted by TAMU and City of Galveston prior to undertaking fabrication and installation.

Note: For design intent only. Not for construction/fabrication.

SCALE: 3/8" = 1'-0"

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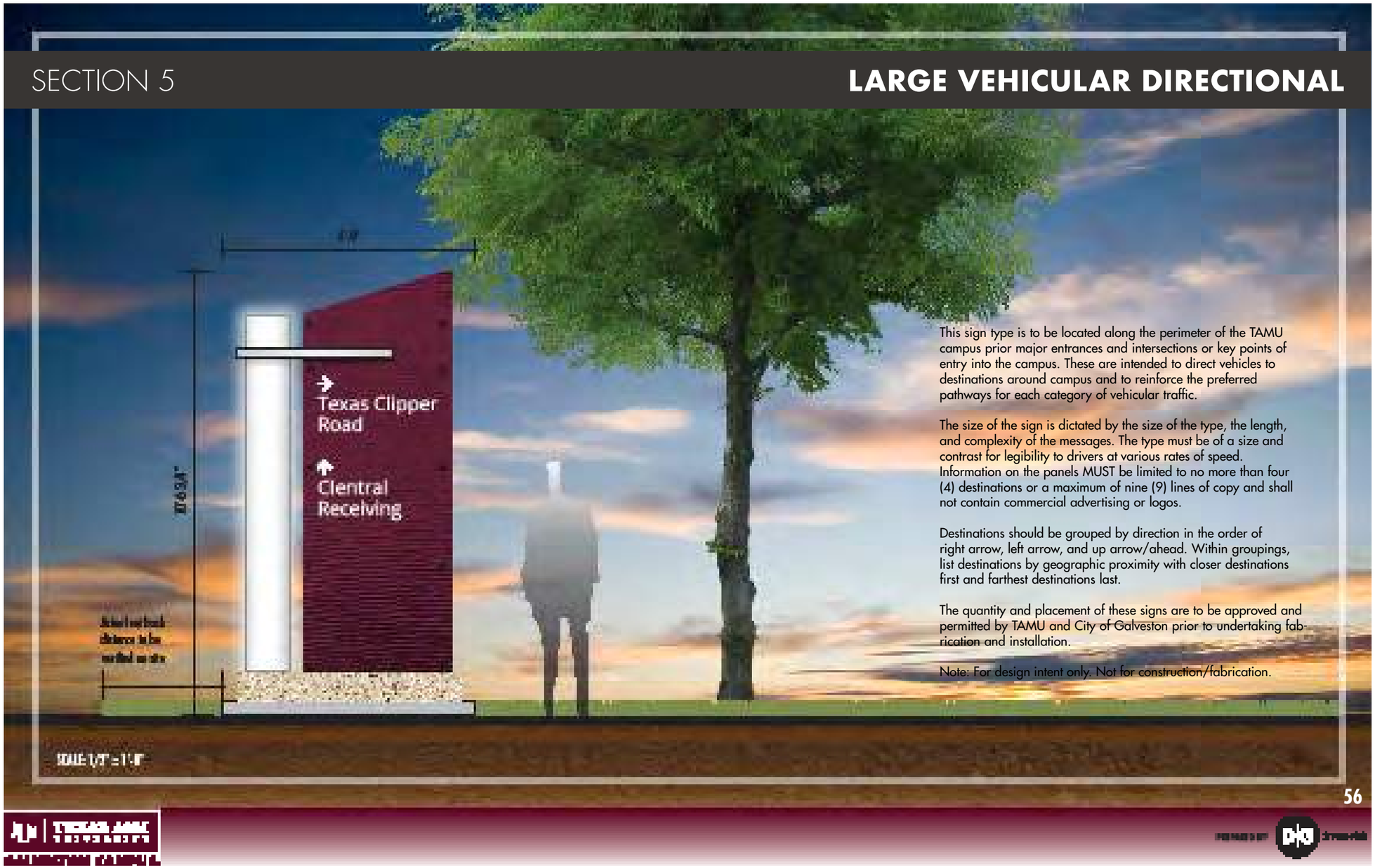
TEXAS A&M UNIVERSITY
GALVESTON CAMPUS

PREPARED BY: DG STUDIOS

SECTION 5

LARGE VEHICULAR DIRECTIONAL



This sign type is to be located along the perimeter of the TAMU campus prior major entrances and intersections or key points of entry into the campus. These are intended to direct vehicles to destinations around campus and to reinforce the preferred pathways for each category of vehicular traffic.

The size of the sign is dictated by the size of the type, the length, and complexity of the messages. The type must be of a size and contrast for legibility to drivers at various rates of speed. Information on the panels MUST be limited to no more than four (4) destinations or a maximum of nine (9) lines of copy and shall not contain commercial advertising or logos.

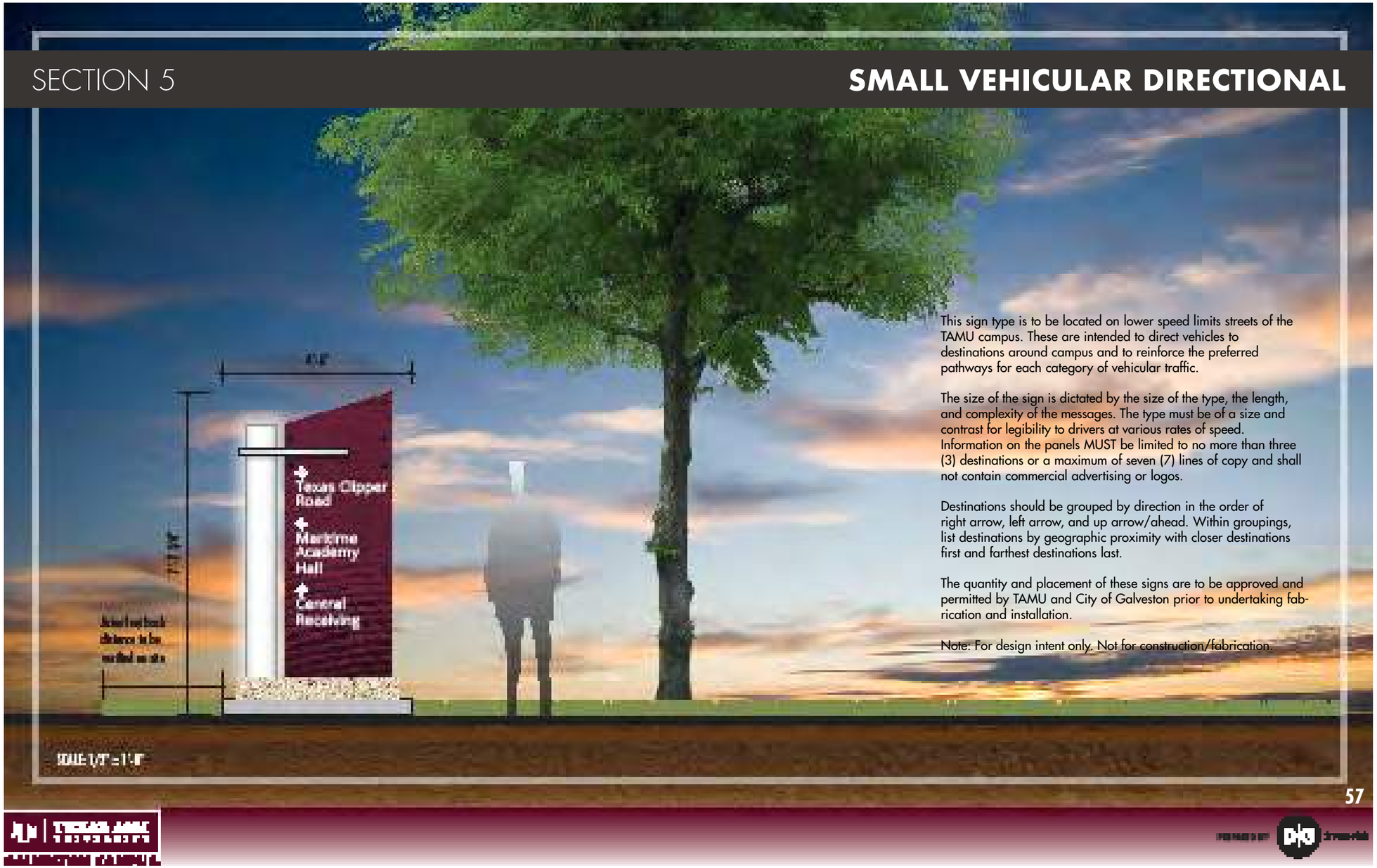
Destinations should be grouped by direction in the order of right arrow, left arrow, and up arrow/ahead. Within groupings, list destinations by geographic proximity with closer destinations first and farthest destinations last.

The quantity and placement of these signs are to be approved and permitted by TAMU and City of Galveston prior to undertaking fabrication and installation.

Note: For design intent only. Not for construction/fabrication.

SECTION 5

SMALL VEHICULAR DIRECTIONAL



This sign type is to be located on lower speed limits streets of the TAMU campus. These are intended to direct vehicles to destinations around campus and to reinforce the preferred pathways for each category of vehicular traffic.

The size of the sign is dictated by the size of the type, the length, and complexity of the messages. The type must be of a size and contrast for legibility to drivers at various rates of speed. Information on the panels MUST be limited to no more than three (3) destinations or a maximum of seven (7) lines of copy and shall not contain commercial advertising or logos.

Destinations should be grouped by direction in the order of right arrow, left arrow, and up arrow/ahead. Within groupings, list destinations by geographic proximity with closer destinations first and farthest destinations last.

The quantity and placement of these signs are to be approved and permitted by TAMU and City of Galveston prior to undertaking fabrication and installation.

Note: For design intent only. Not for construction/fabrication.

SECTION 5

REGULATORY IDENTITY

SCALE: 1/2" = 1'-0"

These signs serve the practical and necessary purpose of regulating vehicular traffic. Content may include traffic control messages such as Stop, Yield, Speed Limit, One Way...etc. Additionally, these signs may identify restricted parking, or restricted entry access. As traffic control devices, street identification signs are also included in this category. Signs may be single or double-sided as needed.

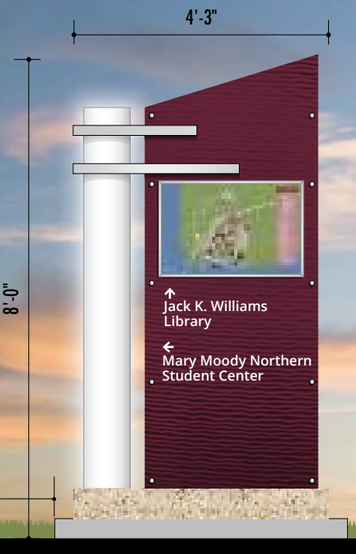
All posts are round and plainted Black. Where new panels are replacing old panels on an existing pole, the Signage Contractor is responsible for field verifying existing conditions and selecting appropriate mounting brackets and hardware to work with the existing post.

Signs should be placed where appropriate and according to local/ state code.

Note: For design intent only. Not for construction/fabrication.

SECTION 5

CAMPUS MAP IDENTITY



This sign type is to be located within the TAMU campus. These are intended to direct pedestrians to destinations within the campus.

Information on the panels MUST be limited to no more than three (3) destinations or a maximum of six (6) lines of copy and shall not contain commercial advertising or logos.

Destinations should be grouped by direction in the order of right arrow, left arrow, and up arrow/ahead. Within groupings, list destinations by geographic proximity with closer destinations first and farthest destinations last.

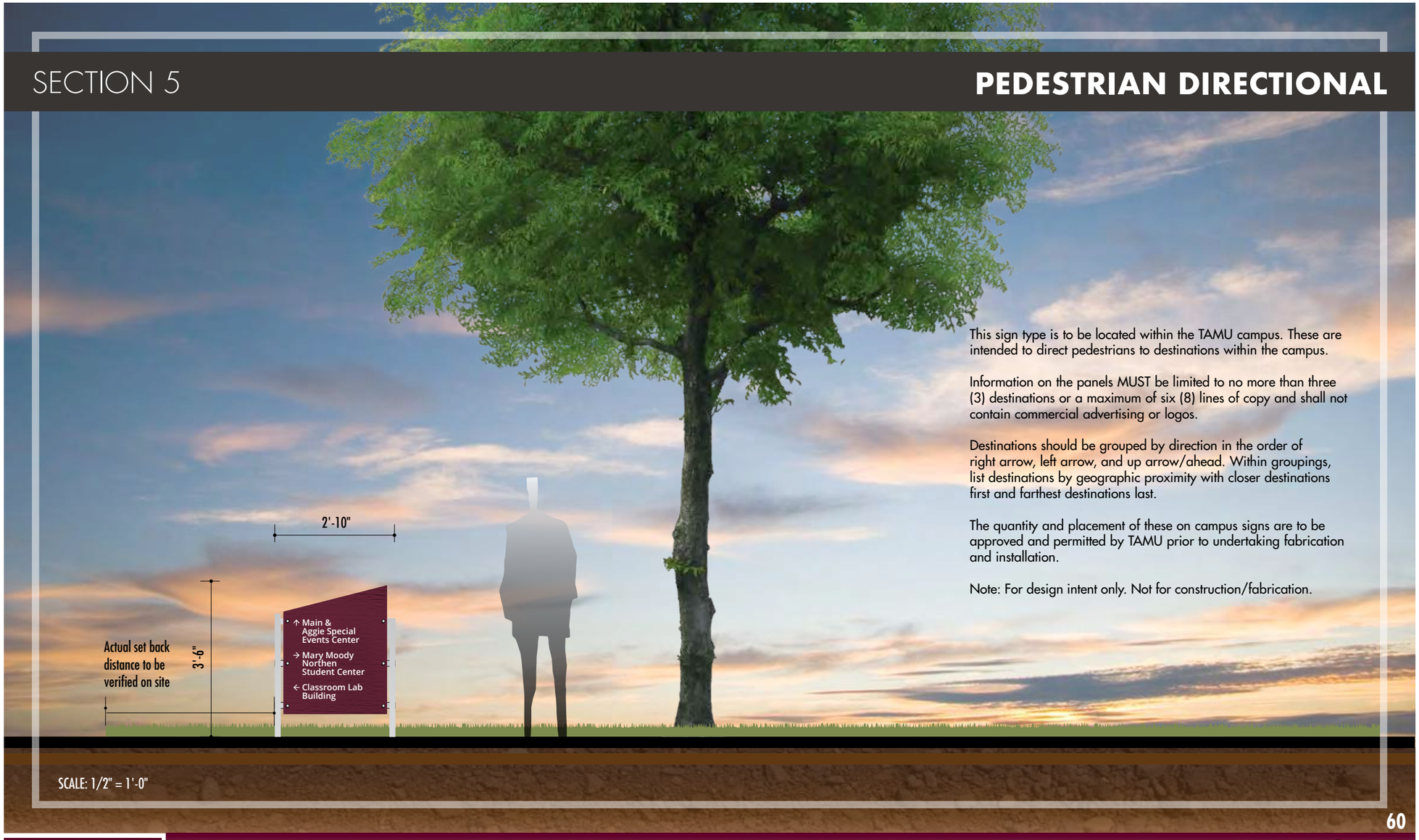
The quantity and placement of these on campus signs are to be approved and permitted by TAMU prior to undertaking fabrication and installation.

Note: For design intent only. Not for construction/fabrication.

SCALE: 1/2" = 1'-0"

SECTION 5

PEDESTRIAN DIRECTIONAL



This sign type is to be located within the TAMU campus. These are intended to direct pedestrians to destinations within the campus.

Information on the panels MUST be limited to no more than three (3) destinations or a maximum of six (8) lines of copy and shall not contain commercial advertising or logos.

Destinations should be grouped by direction in the order of right arrow, left arrow, and up arrow/ahead. Within groupings, list destinations by geographic proximity with closer destinations first and farthest destinations last.

The quantity and placement of these on campus signs are to be approved and permitted by TAMU prior to undertaking fabrication and installation.

Note: For design intent only. Not for construction/fabrication.

SECTION 5

BUILDING MONUMENT

This category of sign is intended to convey information. Content may also include, but is not limited to, parking lot information, policy information, hours of operation, security information and identification of limited or restricted access.

This double-sided Building Monument Identity is to be near the main entrance of the building and/or other high traffic entrances near the building.

Building Monuments should be programmed for larger buildings while Building-Mounted Letterforms work better for smaller buildings.

Note: For design intent only. Not for construction/fabrication.

SCALE: 3/4" = 1'-0"

SECTION 5

BUILDING LETTERFORMS

Jack K. Williams Library — For dark color surface

Jack K. Williams Library — For light color surface

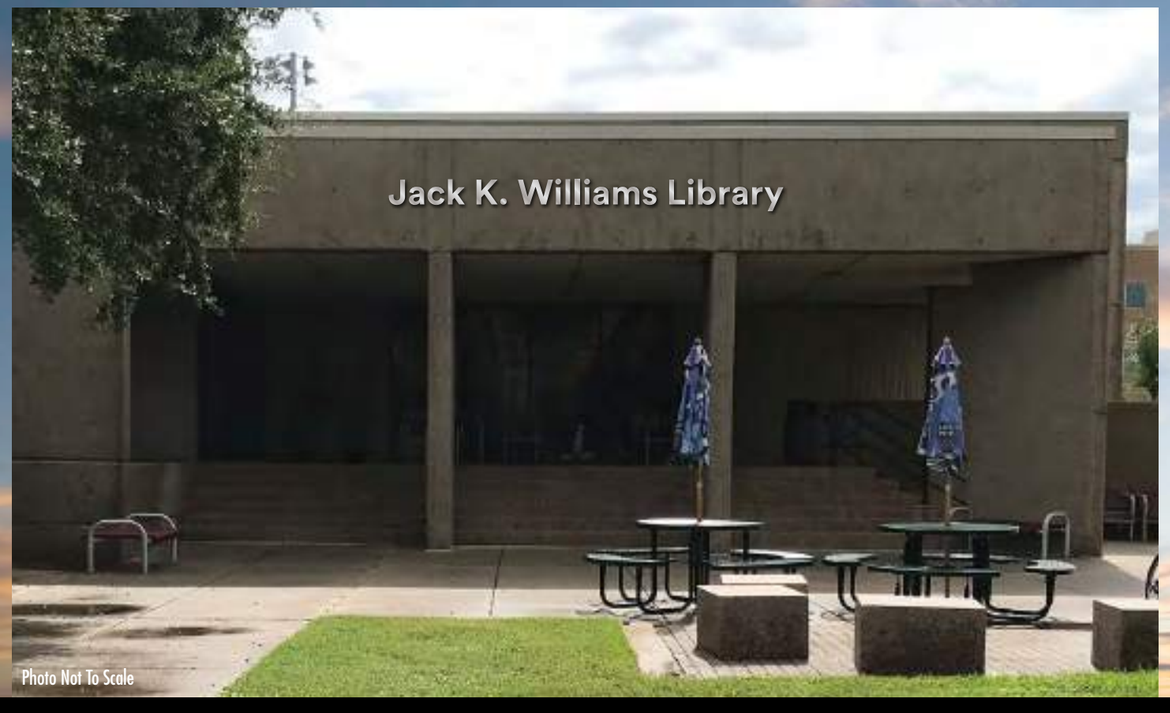


Photo Not To Scale

SCALE: 3/4" = 1'-0"

The function of this identification sign is to confirm destination, to establish recognition of a particular site, entrance, building, or area. It is to be fascia mounted at locations selected to provide maximum visibility from pedestrian and vehicular approaches.

The sizes of the Building Letterforms should be standarized in 3 different sizes. Depands on the size of the buildings, an appropriate letterform size will be assigned. For larger buildings with higher mounting locations, the recommanded size should be at 18 inches tall. For other smaller/shorter buildings, the recommanded sizes are 12 inches and 9 inches.

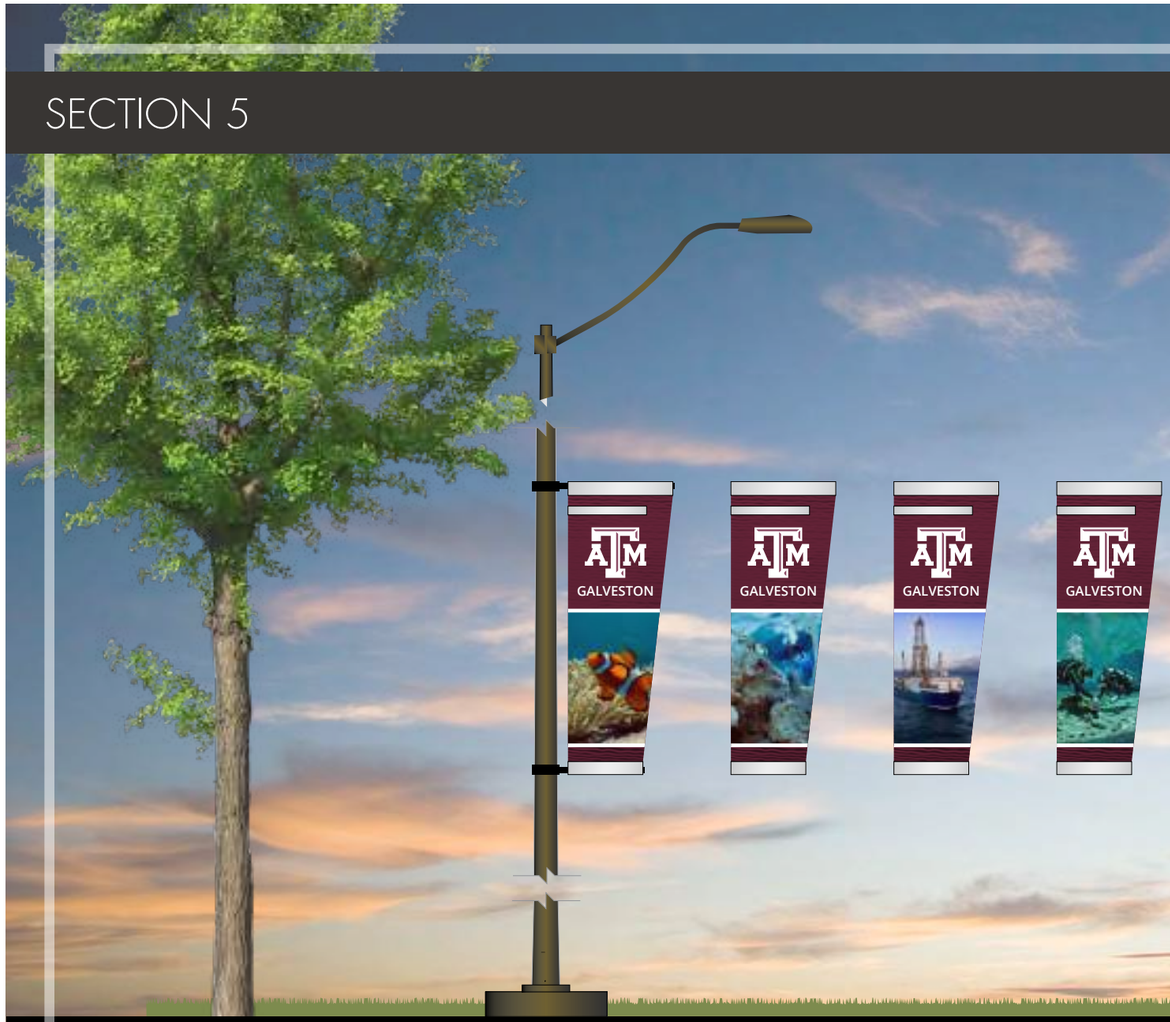
All letterforms are non-illuminated and shall all be pin-mounted to surface with a minimum of 1/2 inch gap. Sign construction and mounting hardware to be engineered by structural engineer licensed with the State of Texas to meet maximum local wind load requirements and detailed on Sign Contractor's stamped shop drawings.

There are two color options for all letterforms—Black and Silver. Utilize black or silver based on the color of the building, choosing the appropriate color to achieve maximum contrast.

Note: For design intent only. Not for construction/fabrication.

SECTION 5

CAMPUS BANNER



Signs in this category may be thematic and may support wayfinding by identifying destinations in a memorable, fun and attractive way. Some signs in this category may function as storytelling devices, presenting text and photos that convey the unique history and character of the campus.

Interpretive graphics may consist of stand-alone signs such as a Seasonal Banner possibly a group of elements such as an exhibit.

All Banners shall be fabricated with perforated aluminum panels for duability. Sign construction and mounting hardware to be engineered by structural engineer licensed with the State of Texas to meet maximum local wind load requirements and detailed on Sign Contractor's stamped shop drawings.

Note: For design intent only. Not for construction/fabrication.

THE TEXAS A&M FOUNDATION

Established in 1953

LEAD *by* EXAMPLE

A campaign to raise $4 billion by 2020 for Texas A&M University

The Texas A&M Foundation builds a brighter future for Texas A&M University, one relationship at a time. We aspire to be among the most trusted philanthropies in higher education.

LEAD by EXAMPLE

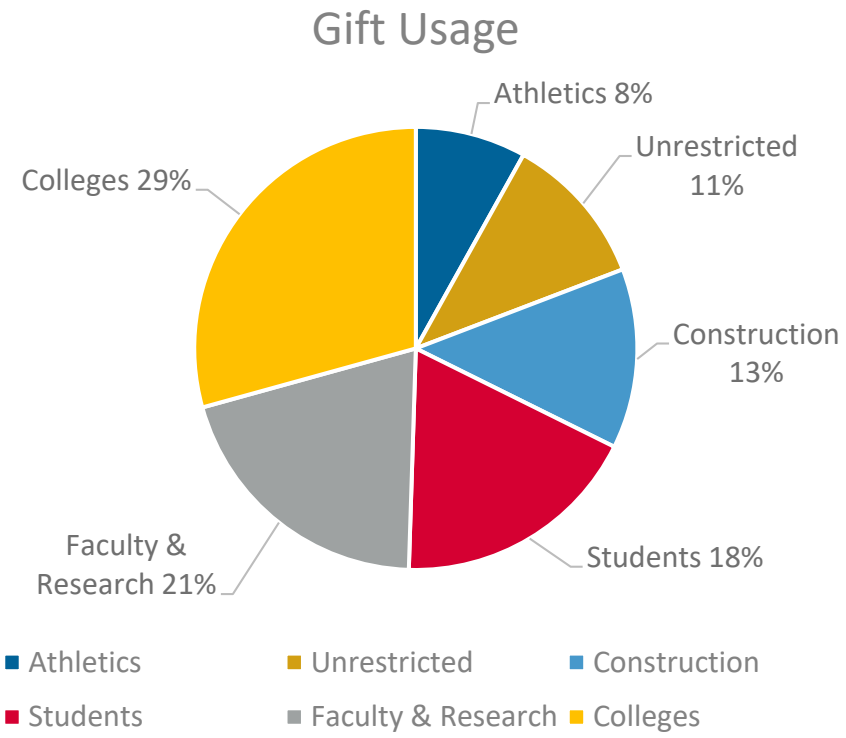
The Lead by Example campaign has reached its truly extraordinary goal of $4 billion. Some may incorrectly perceive that the $4B is made up of "discretionary money" of which the various entities doing fundraising for Texas A&M University (Texas A&M Foundation, 12th Man Foundation, Association of Former Students, and Bush Foundation) may appropriate the funds as desired. ***Contrary to that perception, every dollar is accounted for and designated towards a specific project or goal as directed by our generous donors.***

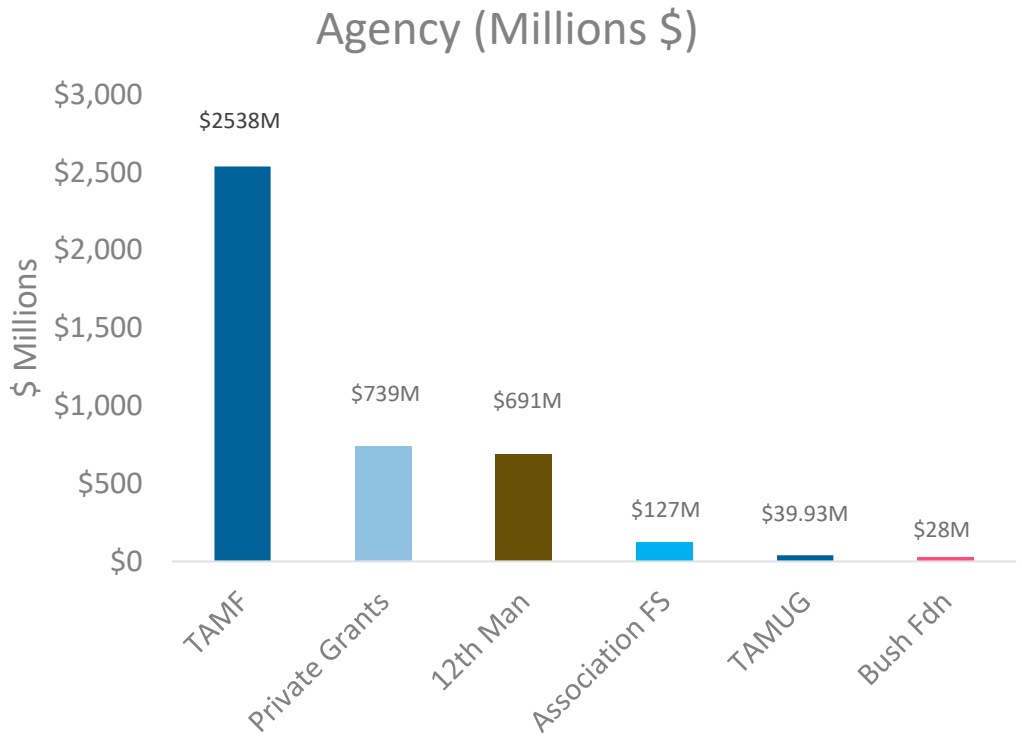
We refer to our relationship with our donors as "stewardship", because we really are simply stewards of their greater vision.

The objective of the TAMUG Development Office is to enable partnerships with donors who want to build a brighter future for our campus by supporting students, faculty, programs, and facilities.

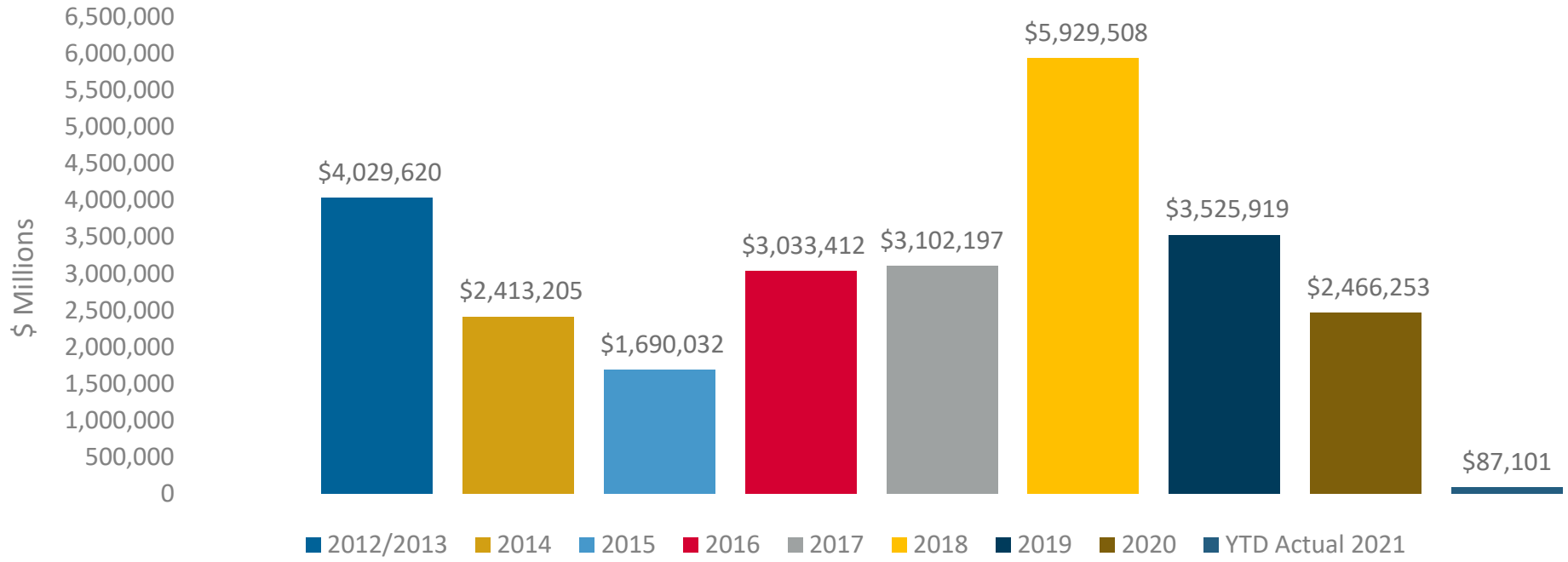
Lead by Example Campaign Totals

$4,122,936,604.97



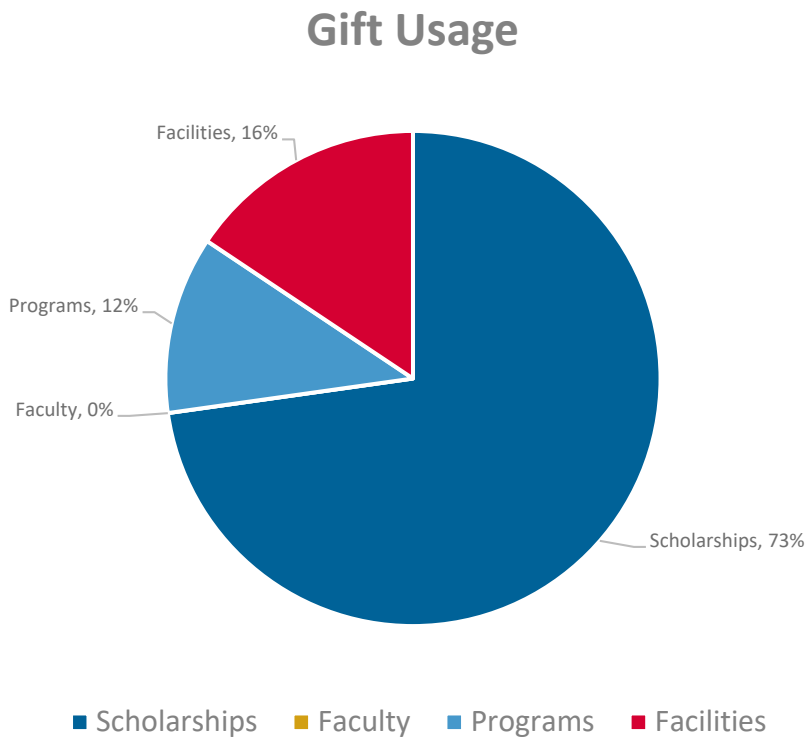


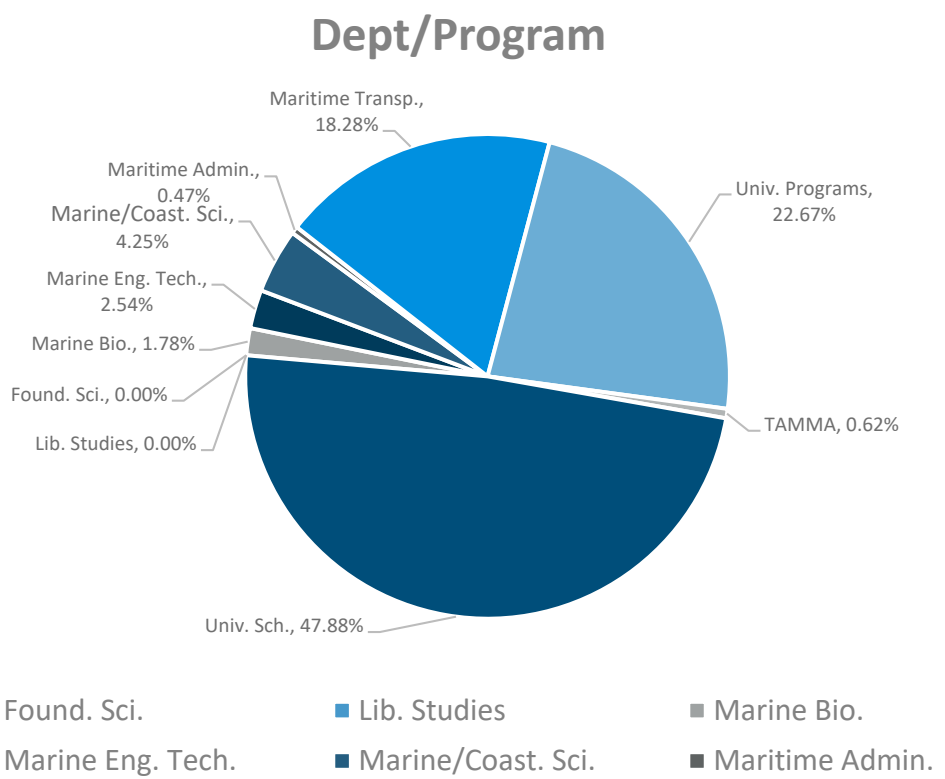
TAMUG Lead by Example Campaign Totals*



*Does not include Private Research Grant Funding

Lead by Example TAMUG Breakdown





TEXAS A&M FOUNDATION

LEAD *by* EXAMPLE

TEXAS A&M UNIVERSITY
GALVESTON CAMPUS®