

Exhibit 2

Design Narrative

On Site Improvements

Site improvements should include all necessary access, parking including all horizontal paving for pedestrian access.

Project Summary

The intent of the project is to design and construct a state-of-the-art facility that will support a theme-park-style aquarium spanning over three levels comprising of approximately 75,700 SF First Floor, 27,000 SF Second Floor (AKA Mezzanine), and 85,500 SF Third Floor. The facility needs to support numerous exhibits (see program space requirements at the end of this section) containing 30,000 animals of varying species.

To meet the business model of the investors the DBE needs to demonstrate how they are going to attract visitors and create a flow through the aquarium to move 2 million people through the facility annually.

Due to the strict temperature controls of the animals the exterior skin of the building and exhibit tanks need to be of concrete construction to create enough thermal mass to resist the large temperature differentials present in Scottsdale, Arizona.

The following items will be Owner Furnished Owner Installed (OFOI)

- Acrylic glass and install for the tanks
- Salt and Freshwater pumping systems
- Acoustics/AV
- Tank Waterproofing
- Carousel (During construction another contractor will come on-site hired by the Owner to install.) The design needs to accommodate for a 90' diameter structure.
- Food Service
- Artwork
- Fixtures, Furniture, and Equipment (FF&E)

Architectural Summary

The new building is fully-sprinkled, as determined by the International Building Code. The project includes interior architectural work, plumbing, mechanical related to exhibit climate control, and electrical work from the panels or motor control centers, as well as structural work related to concrete aquarium tanks and kitchen equipment. All acrylic panels, fiberglass tanks, theming, audio/visual devices and aquatic life support systems will be completed by owner. Installation and all other ancillary work required to fully and correctly execute the work indicated on the drawings shall be coordinated by the Design Builder. (Refer to budget breakdown) All materials unless otherwise specified shall be new, commercial grade having a quality capable of performing within the aquarium to a level commonly achieved in commercial aquariums.

The following outlines general requirements for rooms and spaces required to support the aquarium. The requirements listed for each are basic descriptions.

All Levels Typical: Back of House (B.O.H.) Life Support areas contain skimmer tanks process piping, pumps and filtering systems.

Require the following:

- good ventilation for heat removal
- floor drains to sewer

- sound absorption on some walls and ceiling
- hoist rail over pumps for removal

Ground Floor; Offices:

- operations offices (12'x12' approximately)
- open office (6'x6' approximately)
- administration work room (12'x18' approximately) near clerical
- Break Room
- First Aid
- Security
- Employee Restroom and Break Room
- Receiving Office

Mezzanine; Salt Storage - contains salt and chemicals for artificial salt manufacture

Requires the following:

- storage shelving
- good ventilation

Mezzanine; Food Preparation Areas – used for storage and preparation of fish food, thawing of frozen food; storage, and preparation of fresh fish nutrition supplements (dry prep); 2 – 3 people (people from lab)

Requires the following:

- washing hose over sink
- commercial food mincer (3 phase) on wet beach
- sloping floors, floor drains, clear food for washing with wastes to sewer
- hand washable (hose) walls and roof
- 12 foot stainless steel prep bench with large sink and separate sink with waste (wet area)
- 2 thaw troughs 4' x 3' (wet area)
- hand-wash basin with soap dispenser, paper towel dispensers, hand drier, etc.
- 12 foot stainless steel bench (dry) with storage shelving and cabinet over (dry area)
- freezer 12' x 8' (wet area)
- cooler 12' x 8' (wet area)
- dry storage
- good access to outside loading dock (for bringing in fish food) and to tanks (for feeding out)
- commercial refrigerator/cooler (dry area)

Mezzanine; Laboratory – used for chemicals preparation for quarantine tanks and bulk treatment of fish and shark and display tanks for chemical supplements to fish food; for pathology; for water testing.

Requires the following:

- 12' stainless steel laboratory sink bench for pathology with waste disposal and double sink
- 12' stainless steel bench with cupboard storage over and under
- small refrigerator/freezer for specimen storage
- office area for desk, files and records, reference library and reading corner
- good access to tanks – near quarantine area
- notice board, 9 feet x 5 feet

Mezzanine Quarantine (Nursery) and Rearing Areas – contains quarantine tanks varying from about 14 feet in diameter to specimen tanks for quarantining and introduction. Shark revival tank (20' x 20', approximately 18" to 2' water depth).

Requires the following:

- shark revival tank requires hoist access over to outside (minimum head height 10 feet hoist to floor) and water into shark tank - 18 feet to 2 feet deep
- ability to use main seawater system or close off and use air lift (blower)

Mezzanine; Sea Lion Holding – Quarantine (Nursery) and Rearing Areas - contains rooms varying size for quarantining and introduction.

Requires the following:

- epoxy over all CMU walls in each holding area

- stainless steel fencing around area and tank
- 6 raised concrete pools in each holding area
- ability to use main seawater system or close off and use air lift (blower)

Mezzanine; Locker Rooms Wet Staff Area (separate male and female)

Requires the following:

- laundry indicating 2 washers and 2 dryers
- need for clothes storage (open shelves (8), plus coat hangers), changing
- walk-in showers with full tiled floors and walls drywall ceilings
- showering, wet clothes drying for divers, also may be used by workshop and lab staff
- lockers
- stainless steel sink counter w/ integral sinks

Mezzanine; Dive Equipment / Workshop – used for maintenance work on dive equipment smaller pumps, general repairs and maintenance mechanical & electrical and minor display work, storage of fish gear, repair of same. Diver gear and bottle storage (air-fill compressor in plant room) also used for storage of fish-catching gear and handling gear.

Requires the following:

- storage racks for pipes
- workshop bench with tools, vice, etc.
- single and 3-phase power (welding, etc.)
- small office/ records area
- wash hand basin
- sloping floor
- floor drains and waste pipes to sewer
- wash down hose on reel
- direct access to tank
- good ventilation
- wet suit drying racks
- fish gear storage in racks
- FRP and stainless steel wall panels throughout.

Second Level; Penguin Lab – used for chemicals preparation for quarantine and bulk treatment of penguin and display tanks for chemical supplements to penguin food; for pathology; water testing.

Requires the following:

- 12' stainless steel laboratory sink bench for pathology with waste disposal and double sink
- 12' stainless steel bench with cupboard storage over and under
- small refrigerator/freezer for specimen storage
- office area for desk, files and records, reference library and reading corner
- good access to tanks - near quarantine area
- notice board 9 feet x 5 feet
- FRP and stainless steel wall panels throughout.

Second Level; Penguin Holding –Quarantine (Nursery) and Rearing Areas - contains rooms of varying size for quarantining and introduction.

Requires the following:

- ability to use main seawater system or close off and use air lift (blower)

Second Level; Sea Trek Office –

- operations offices (12'x12' approximately)

Requires the following:

- copier/fax/computer

- photo printer area
- flat drawers for large stock
- wet suit drying racks
- spin / water extractor
- space and equipment for minor graphics upgrading
- files and records storage

Second Level; Sea Trek Equipment – used for mechanical systems used in the sea trek experience and general repairs.

Requires the following:

- storage racks for equipment.
- workshop bench with tools
- wash hand basin
- sloping floor
- floor drains and waste pipes to sewer
- wash down hose on reel
- direct access to tank
- good ventilation

Second Level Kitchen – Tenant Improvement by Kitchen Operator; infrastructure by Design-Builder

Second Level Dining – Tenant Improvement by Kitchen Operator; infrastructure by Design-Builder

Second Level Gift Shop – Tenant Improvement by Gift Shop Operator; infrastructure by Design-Builder

Second Level; Retail Storage -for storage of sales goods

Requires the following:

- storage shelving and racking

PERFORMANCE

Comply with all fire, structural, and seismic performance meeting requirements of building code and local authorities.

All materials used throughout, if requiring periodic recoating or maintenance by reapplying finish in place, shall be free of toxic emissions during reapplication.

DEMOLITION

Not Applicable to this scope.

TEMPORARY FACILITIES AND EQUIPMENT

Provide and maintain as required throughout the duration of the project, as specified in other documents prepared for this project by other design professionals and required by local authorities.

COORDINATION

. This includes the all work provided by owner and owner vendors required for a complete and operational aquarium.

1000 GENERAL REQUIREMENTS (Design-Builder to include all required items)

- Services of a Project Manager and Field Superintendent;
- Scheduler, clerical support, and temporary field office;
- Storage trailers and temporary utilities for construction;
- Temporary lighting, sanitation and power distribution;
- Trash disposal, clean up, safety and fire protection equipment;
- Printing plans and specs, surveying and layout, and small tools;
- Vehicles for supervisory personnel and site communications;
- Progress photos, barricades and site security fence, and cleanup;
- Geotechnical testing, material testing and record keeping;
- Permits, development fees, and utility connections;
- Insurance and Bonds;
- Environmental and archaeological assessments and surveys.

2000 SITE WORK

HORIZONTAL PAVING

- Scope as indicated on site plan as governed by soils report.
- Utility connection, backflow preventers, meters, and sewer upgrades shall be brought to the lease line of the Aquarium.
- 2" Asphalt paving over 6" ABC at vehicle maneuvering. Asphalt paving 3" over 8" ABC at truck maneuvering. 6" unreinforced Concrete over 4" ABC at loading dock.
- Driveway entrances per plan (concrete).
- ADA access walkway to right of way.
- Delivery truck docks, ramps, and driveway.
- Infrastructure access shall be provided to the main entrance and to all other building exits at the perimeter of the building.

GRADING

- Dust control and storm water control per county requirements.
- Sheet drain storm water typical to basins.
- Assume balanced site.

UTILITIES

- Brought to the building by others and to the first piece of equipment or service entrance point by the utilities. See other specifications prepared by other design professionals and made part of these specifications.
- 2- (2") Water Services
- (1 1/2") Irrigation manifold off domestic
- 6" Sewer to aquarium
- 6" Sewer to retail
- Retail restaurants to centralized grease interceptors.
- 8" Fireline Loop with hydrants at site perimeter (Connect to Fire Pump)
- Fire Protection – EFSR
- Gas service – TBD
- SES to be 3000 amp; 277/480 for aquarium building.
- SES to be 1800 amp; 277/480 (Multi Service) – anticipate four (8) tenants. 200 amp for (6) retail suites, 300 amps for (2) restaurant suites.
- Telephone 200 pair

LANDSCAPE

There is approximately 6.4 acres of landscape at the proposed Odysea Aquarium in Scottsdale, Arizona. The landscape for the project consists of three distinct areas:

PARKING LOT AND SITE PERIMETER

- The parking lot, street frontage and perimeter landscape make up the first area. The landscape in these areas will be desert native plants, trees, and cacti as is stipulated by the Salt River Pima Maricopa Indian Community design guidelines. The character for the landscape in this area has already been established during the construction of the butterfly exhibit. The landscape surrounding the Aquarium will match and/or improve upon the already established landscape theme. The landscape shall be colorful and inviting but will be somewhat sparse in comparison to other areas on site.

PROJECT ENTRY CORRIDORS

- The landscape in the corridors between the buildings will take on a different character from other areas on site. These corridors serve as transitional spaces; they are to be inviting spaces that bring people from the parking lot welcoming them into the main areas within the interior of the project. The landscape palette will become more lush and inviting within the corridors. Shade trees, colorful shrubs and groundcovers, along with cacti for accents will be more densely planted in these areas as a way to add interest and act as identifiers to the entries into the project core. Decorative hardscape and low voltage lighting will be key components of the corridors as well.

CENTER COURTYARD

- The last area and perhaps the most critical area is the Central Courtyard. This area takes on a completely different and unique character. This is to be an open, inviting, and dynamic area that serves as focal point of the project open space. The courtyard will be the backdrop to the outdoor seating spaces at the second story restaurants and a gathering area for people as they come and go to the many venues on site. The courtyard may be used as an outdoor activity or entertainment area.
- There are a few key features that make up the Central Courtyard: the most noticeable of which is the large water feature. The water feature itself is round in shape and is elevated with a seat wall on the outside edge. The water feature steps up to higher feature that spills over into lower pools of water. On the interior side of the circle, the water feature drops into lower pools that surround seating nooks. The interior of the water feature shall be comprised of tile; bubblers will be located in the higher middle section of the water feature and lighting shall be integrated into all areas of the feature.
- In the very center of the courtyard, which is down 18" from the main level, an active water feature is proposed. In floor bubblers shall shoot up from the surface and are to be on a controller. The goal of this space is to create the sound of water and allow kids to run through the water. The surface of this feature is to be flagstone, stone tile, or a heavy exposed aggregate. The entire space may be used as an activity area or for entertainment purposes.
- A fifteen foot wide landscape planter runs around the perimeter of the courtyard separating the main and secondary concourse. The planter is to be bounded by a 4" high and 12" wide concrete curb. The planter will be fully landscaped with large evergreen trees and a lush understory, giving the area a resort character. Benches will line the interior side of the planter and low voltage lighting shall be installed to up-light the trees.
- A shade structure is proposed to cover the lower seating nooks: stone wrapped columns with steel supports for the tensile shade sails shall be included within the scope of the courtyard.
- The hardscape within the courtyard may be comprised of several paving options. Decorative concrete may be used on the outer concourse, while colored pavers in Pima basket pattern may be located on the middle concourse and lower area surrounding the splash pad water feature.

- All landscape areas shall be irrigated by in-ground drip irrigation system that is to be integrated with the existing irrigation installed with the butterfly exhibit.

3000 CONCRETE

GENERAL CONCRETE TOPPING

- Waterproofing membranes, hardeners and sealers

CONCRETE TILT PANELS

- Tilt Up construction (assume 10" panels) with form liner as indicated on elevations.

CAST IN PLACE CONCRETE

- Slab on grade to, base bid, 6" unreinforced slab on grade over 4" ABC, 3,500 lb. Concrete. Alternate; 7" Slab on grade over 4" ABC with #4 bars 18" o.c. Dock door bays to be 7" unreinforced slab on grade over 4" ABC.

CONCRETE TANKS

- All concrete tanks will be constructed to hold water when the acrylic glazing is in place.
- Concrete will contain an admixture of fiber mesh or equivalent to control hairline cracks. All concrete tanks will be free of voids.
- Concrete will contain an admixture of silica fume, fly ash, and a corrosion inhibitor.
- All inner wall surfaces to be faced with a smooth coating in areas where theming will not cover.
- All concrete surfaces to be double epoxy or cementitious coated wherever connection are made to structural steel.
- All cracks resulting from the curing process will be epoxy injected.
- All reinforcing steel to be no less than 4" beneath the inner wall surface.
- All concrete tanks to be poured without cold joints except between walls and floors.
- All walls and floor joints to include a water stop; Greenstreak ® Hydrotite CJ (CJ-1030-4M) at concrete pour joints of concrete aquarium tanks, and. HYDROTITE DDS Pipe penetrations/Pipe thimbles for penetrations through the tanks.
- All concrete tanks should be isolated as much as possible to eliminate vibration.

TANK WATERPROOFING COATINGS

- Refer to Division 9 Sections for Wall Coatings

4000 MASONRY

CONCRETE MASONRY

- Units, light-weight autoclave cured conforming to ASTM C 90, Grade except that when CMU will be exposed in final construction, ASTM C 90 "Visual Inspection" shall be modified to read... "that not more than 3 percent of a shipment contains slight cracks or small chips not larger than 1/2 inch (12 mm), this shall not be deemed grounds for rejection. Units shall be in the same condition in wall as they were upon delivery. Units shall have a maximum linear shrinkage not to exceed 0.065 of 1% from a saturated oven dry condition by N.B.S. 3079 method of testing. Unit sizes shall be nominally 16 by 8, 6 or 4 as shown on Drawings. Surface of units shall be clean and free from dirt when laid in walls.

INSERTS AND REINFORCING

- Shall be extra heavily hot dipped galvanized.

UNIT WATER-REPELLENT ADMIXTURE

- Provide liquid polymeric admixture formulated for mixing with concrete during production of concrete masonry units to cross link and provide resistance to water penetration to achieve a Class E Rating when tested in accordance with ASTM E514 as manufactured by W. R. Grace or approved equal; *only in units in contact with water.*

MORTAR WATER-REPELLENT ADMIXTURE

- Provide Dry Block Mortar Admixture as manufactured by W.R. Grace & Co; *only in units in contact with water.*

5000 METALS**MISCELLANEOUS STEEL ANGLES AND CHANNELS**

- All shall be coated with the same water/rust resistant material as specified by the building shell engineer for the building structural steel.

STAINLESS STEEL

- Where indicated, shall be type 304.

6000 WOODS & PLASTICS**FORMALDEHYDE EMISSION LEVELS**

- Particleboard: NPA 8 compliance.
- Medium Density Fiberboard: NPA 9 compliance.
- Hardwood Plywood: HPMA FE compliance.

PLYWOOD

- Plywood Wall Panels: Marine-Grade for use as mounting panels adjacent to aquarium tanks or other wet areas to attach equipment or devices to walls in the Service areas "behind the scenes". Provide by allowance.
- Plywood Backing Panels: Fire Treated for Electrical and Communications Devices.
- Rough Blocking: Behind wall mounted cabinets and for securing wall mounted educational presentation surfaces shall be pressure treated for water resistance.

MILLWORK / WOODWORK: AWI CUSTOM GRADE

- Shelves: Exterior grade Plywood, (no particle board) with solid wood edging
- Base, Wall Cabinets, and Counter Tops: (Reference documents)
- Type G: Stainless Steel Components
- Type H: Laminate over exterior grade plywood
- Type I: Stone countertop with wood veneer exterior grade plywood.

INTERIOR LAMINATE-CLAD CASEWORK:

- Laminate: High pressure decorative laminate, NEMALD-3.
- Grade: Custom.
- Face Style: Flush overlay.

FRAME FABRICATION:

- Manufacturer's option.

COUNTERTOPS:

- Laminate: High pressure decorative laminate, NEMALD-3.
- Grade: Custom.
- Core: Plywood.
- Edge: Laminate.

FRP COMPONENTS

- Grating, ladders, handrails, plates, anchor bolts, and other incidental components that are associated with the materials indicated around the Shark Tank, Coral Reef, and Amazon large tanks, and as otherwise indicated on the drawings, shall be manufactured from fiberglass reinforced plastic, molded, extruded or as otherwise appropriate for the component.
- All components U.N.O. shall be molded or extruded, with salt air resistant resin as warranted by FRP manufacturer.
- All FRP components immersed in salt water shall be molded or extruded, with salt-water resistant resin as warranted by manufacturer.
- Auxiliary Materials:
 - Air Infiltration Barrier: Woven polyolefin sheet.
 - Framing Anchors and Fasteners: Non-corrosive, suitable for load and exposure.

7000 THERMAL AND MOISTURE PROTECTION**WATERPROOF MEMBRANE**

- Between topping and base concrete Bituthane 5000® membrane or other architect-approved 1.7mm thick membrane consisting of high strength layer of self-adhesive rubberized asphalt. All accessory items shall be compatible. All primers and/or adhesive shall be low VOC type.

ACOUSTIC SPRAY / FIRE RATINING 2HR

- Spray applied cellulose K-13® by International Cellulose Corp., 2-inch thickness, black color, throughout the building, except over areas that have lay-in or gypsum board ceilings. Spray all structural steel excluding deck 2HR fire rating. Spray all deck exposed to public to achieve sound absorption.

SEALANTS

- Acrylic latex at non-moving interior joints in areas that are on the "dry" side of the moisture barrier walls indicated on the drawings.
- Silicone at non-moving interior joints in areas that are on the "wet" side of the moisture barrier walls indicated on the drawings.
- Weatherproof caulking and sealing of all exterior enclosure walls
- Firesafing sealants at pipe penetrations through fire-rated partitions.
- Sealant in conjunction with concrete aquarium tanks, unless specified or indicated otherwise, shall be Leakmaster LV-1 by GREENSTREAK®.

SEALANT TAPES

- Provide Polytite® or Ceva® by e-poxy® in areas indicated on the drawings as receiving Sealant Tape; between the Tank walls and the CMU partition bases.

ROOFING

- Roofing base bid, 45 mil TPO roof; fully adhered, 10 year bond/warranty by manufacturer. Alternate 60 mil TPO; fully adhered, 20 year bond/warranty by manufacturer.

INSULATION

- R 30 ridged roof insulation over metal roof deck at aquarium.
- R19 ridged roof insulation over metal roof deck at aquarium.

8000 DOORS & WINDOWS**QUALITY ASSURANCE**

- Standards:
ANSI/SDI-100, Recommended Specifications for Standard Steel Doors and Frames.
- Performance Standards:
Fire-Rated Assemblies: NFPA 80, and acceptable testing agency listing.
Thermal-Rated Assemblies at Exterior: ASTM C 236 or ASTM C 976.
Sound-Rated Assemblies at Mechanical Rooms: ASTM E 90, and ASTM E 413.

DOORS

- All Wood Doors in the "Wet" areas are to be solid stave core 1 3/4-inch thick plane-sawn Natural Birch veneer wood doors; marine glues if available.
- All Wood Doors in "Dry" area are to be particle-core wood, 1 3/4-inch thick, plain-sawn Natural Birch veneer.
- All Hollow Metal Doors are Seamless steel doors with hollow or composite construction.
- Interior Doors: ANSI/SDI-100, Grade II, heavy-duty, minimum 18-gauge cold-rolled steel, 1-3/4 inches thick.
- Exterior Doors: included in shell package.
Accessories: Sight proof stationary louvers and glazing stops.
Finish: Factory primed and field painted; Factory finished.
Integrated 3'-0" sidelight at all doors.

OPERABLE DOORS

- Vertical operable partition by Hufcore, Modernfold, and Skyfold.
Finish:
 - Theater side: Wood or laminate wainscot with fabric above.
 - Exhibit Side: Custom Graphics
Electrically Operated
Heights: 12'-0"
Opening Width: 40'-0"
STC Rating: Min. 51
Hardware: Concealed
- Radius operable partitions custom
Finish: wood with custom art glass features
Manually Operated
Heights: 12'-0"
Opening Width: (2) 25'-0"
STC Rating: Min. 51
Hardware: stainless steel Exposed

SECURITY GRILL (Kitchen)

- Upward Coiling Security by Overhead.

Finish: Aluminum
 Electrically Operated
 Heights: 8'-0"
 Opening Width: (2)20'-0"
 Hardware: Concealed

FRAMES

- Door frames, hollow metal 14-gage, hot dipped galvanize where scheduled; fully welded; standard 2-inch double rabbet profile.
- Windows: hollow metal 14-gage, hot dipped galvanized where scheduled; fully welded; standard 2-inch double rabbet profile/
- Accessories: Door silencers and plaster guards, stainless steel kick plates on both sides in BOH.
- Finish: Factory primed and field painted.

ACCESS DOORS

General: Provide where ever mechanical or electrical equipment is indicated or anticipated to require access.

- Frame: 16 gage sheet galvanized steel with flange suitable for adjacent material; use 16 gage stainless steel with AISI No. 4 satin finish with flange suitable for adjacent material for access through "B" partitions separating wet areas.
- Doors: 14 gage galvanized sheet steel except 14 gage stainless steel, AISI No. 4 satin finish for access through "B" partitions separating wet areas.
- Door Type: Flush panel or Recessed panel as appropriate for the type of wall material.
- Locking Devices: Cylinder locks.
- Provide acoustical or fire-rated panels in walls that are indicated on the drawings either having an STC rating greater than or a fire rating.

HARDWARE

- Lock Cylinder: Six-pin tumbler.
- Butts and Hinges: Lawrence Brothers; stainless steel where indicated.
- Latch and Lock Sets: Schlage Heavy Duty; stainless exposed materials where located in or behind the "B"-type walls separating corrosive salty atmosphere from remainder of the Aquarium.
- Closers: LCN series 4000.
- Door Stops: Stanley Hardware, Div. Stanley Works.
- Door Stripping and Seals: Pemko Manufacturing Co., Inc.
- Thresholds: Pemko Manufacturing Co., Inc.
- Location/schedule shall be as shown on the drawing's door type sheet.

GLAZING

- Exterior Glazing: Anodized aluminum storefront 1" insulated glassing with 1/4 reflective low-E insulated glass.
- Interior Glazing: in corridor view windows, provide 1/4-inch clear tempered glass; in doors, provide clear 1/4" tempered glass; all other interior glass to be tempered.

9000 FINISHES

Note: All manufacture specifications listed are for pricing purposes only. Final Finish selections shall be confirmed during design.

ACOUSTIC LAY-IN PANELS

- Lay-in 2' x2' throughout where indicated fissured pattern, 5/8 inch thick mineral panels equal to ARMSTRONG's fissured *Minaboard*™.

- Mylar surfaced BOH, Lab and Kitchen Panels, 2 'x 4' X1" in food preparation areas; ASTM E 1264, Type XII, Form 1; lightly textured.

DIRECT-HUNG SUSPENSION SYSTEMS, NON-FIRE-RESISTANCE RATED

- Type: Wide-face, single-web steel, intermediate duty classification, ASTM C635.
- Accessories:
 - Edge molding and trim.
 - Concealed acoustical sealant.

METAL FRAMING FOR DRYWALL

- Studs and Runners: ASTM C 645, 25 gage to 10-feet and 20 gage over 10-feet tall; 3-5/8 and 6 inch typical depth as indicated for conditions, height or other details.
- Furring Channels: ASTM C 645, gage as required for condition.
- Auxiliary Framing Components: Furring brackets, resilient furring channels, Z-furring members, and non-corrosive fasteners.
- Installation Standard: ASTM C 754.
- Suspended and Furred Ceilings: Furring Channels: ASTM C 645 gauge, as required for conditions.
- Accessories: Hangers and inserts.
- Installation Standard: ASTM C 754.
- Auxiliary Materials:
 - Gypsum board screws, ASTM C 1002.
 - Gypsum board nails, ASTM C 514.
 - Fastening adhesive.
 - Concealed acoustical sealant.
 - Mineral fiber thermal insulation.

GYPSUM DRYWALL BOARD

- Gypsum drywall board: ASTM C 36, 5/8-inch single and double layer, as indicated on the partition types. Use light orange peal texture unless covered with themework.
- Exterior Grade Gypsum Backing Board: ASTM C 931 regular and fire-rated types, 5/8 inch typical thickness.
- Type Exterior Grade board: Use behind all ceramic wall tiles except in showers.
- Joint Treatment: ASTM C 475 and ASTM C 840, 3-coats system.
- Installation Standard: ASTM C 840.

GYPSUM DRYWALL BOARD TRIM ACCESSORIES

- Material: Galvanized Metal or plastic trim.
- Types: Corner bead, edge trim, and control joints.

FRP WALLBOARD

- Panels and Accessories: Fiberglass reinforced plastic, 0.09 inches (2.25 mm) thick with embossed finish laminated to one side of a 1/2 inch (12mm) thick APA, CD Exposure 1 grade plywood. Colors, textures, and patterns, as selected.
- Moldings at panel edges to be 2-piece batten type with Snap-On trim.
- Fasteners to be Manufacturer's standard nylon drive pins.
- Manufacturer: Dyrotech Industries, Joliet, IL, or approved equal.
- Adhesive: Manufacturer's recommended type for use with selected materials, waterproof, mildew resistant non-staining type.
- Caulking: Latex type as approved by Adhesive and Wall Paneling Manufacturer.
- Moldings: Extruded anodized aluminum trim pieces. Use at internal and external corners.
- Miscellaneous Items: Furnish and install supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation whether or not specified or indicated.

ACOUSTIC SPRAY – WALL CAVITY

- Spray applied cellulose CELOBAR® by International Cellulose Corp., applied to the inside face in the stud cavity one layer of gypsum board; use in all partitions indicated on the drawings or otherwise required to isolate noise from the public exhibit areas.

HARDWOOD FLOORING

- Type: Plain sawn, first grade hard maple 25/32 inch thick, 3-1/4 inch face width.
- Accessories: Simulated wood pegs.
- Finish: Site finish.
- Auxiliary Materials: Trim, moldings, thresholds, and reducer strips; Metal feature strips; Underlayment, mounts, adhesives, mastics, and fasteners.

CARPET

Note: Products A, B to account for 90 percent of carpet area and product C represents 20 percent.

- CPT1
Type: Broadloom
Manufacturer: Masland 786D for offices, Allow \$18.00/square yard, including installation and accessories.
- CPT2a:
Type: Tile
Manufacturer: Tandus 04332 Stack 9, Allow \$32.00/square yard, including installation and accessories.
- CPT2b
Type: Tile
Manufacturer: Masland T503, Allow \$32.00/square yard, including installation and accessories.
- CPT2c
Type: Tile
Manufacturer: Interface TB602 12667, Allow \$39.00/square yard, including installation and accessories.
- Base: Rubber, top-set 4-inch x 1/8-inch cove; color as selected by the architect from the manufacturer's standard.

TILE

Includes: Floor tile on concrete and Wall tile over tile backer board at wet areas. Tile Materials meet ANSI 118 series standard specifications.

- Installation: ANSI 108 series standard specifications and Tile Council of America, Handbook for Ceramic Tile Installation.
- Floor Tile:
FTa
Type: Interior type body, flat tile.
Manufacturer: DalTile, Kimona Silk, Allow \$5.50/square sf, including installation.
FTb
Type: Interior type body, flat tile.
Manufacturer: DalTile, City View, Allow \$5.50/square sf, including installation.
- Wall Tile: Module size to be determined during design, Include 12x24 and 24x24.
WTa
Type: Interior type body, flat tile.
Manufacturer: DalTile, Exhibition, Allow \$5.50/square sf, including installation.
- Unglazed Quarry Tile:
Type: Abrasive square-edged flat tile; color selected by the Architect from manufacturer's premium colors.
Size: 8 by 8 inches
Thickness: 1/2-inch nominal.
- Tile Accessories:
Matching trim units.

Marble thresholds.

- Setting Materials:
Latex-Portland cement mortar, ANSI A118.4, walls and Dry-set Portland cement mortar, ANSI A118.1.
- Grout:
Latex-Portland cement grout, ANSI A118.6.
- Setting Accessories:
Membrane waterproofing under tile.
Cementitious tile backer board.
Elastomeric Sealants:
One-part mildew-resistant silicone sealant for non-traffic areas.
- Tile Schedule:
Toilet and Shower Room Walls: Glazed ceramic mosaic tile over gypsum drywall with organic adhesive and latex-portland cement grout.]
Toilet and Shower Room Floors: Unglazed ceramic mosaic tile over concrete slab with latex Portland cement mortar and latex-Portland cement grout.]
Kitchen Floor: Quarry tile with dry-set mortar and epoxy grout.
- Epoxy Seamless Resinous Flooring
- Seamless Chemical resistant, troweled-on, Type:
Epoxy quartz chip resinous flooring.
Surface: Standard Slip-resistant surface as indicated on the drawings.
- Auxiliary Materials: Waterproof membrane.
- Manufacturer: General Polymer or approved equal.
- Base: Integral in all locations except in areas indicated to have other.

PAINTING

Includes: Painting of all exterior unfinished surfaces. Painting and surface preparation for all interior unfinished surfaces unless specifically indicated or specified to be finished by other means; also field-painting and surface preparation of exposed mechanical and electrical piping, conduit, ductwork, and equipment.

- Comply with VOC and environmental regulations.
- Provide first-line commercial-quality products for all coating systems.
- Concrete and Masonry (except concrete masonry units) to receive Semi-gloss Enamel finish: 1 coat latex-based interior flat paint, 1 coat interior enamel undercoat, 1 coat interior semi-gloss odorless alkyd enamel.
- Concrete Masonry Units to receive Semi-gloss Emulsion finish: 1 coat high-performance latex block filler, 2 coats latex-based interior semi-gloss paint.
- Gypsum Drywall (Ceilings): To receive Lusterless Emulsion finish 1 coat latex-based interior primer, 1 coat latex-based interior flat paint.
- Gypsum Drywall to receive Semi-gloss Latex Enamel finish (Walls): 1 coat interior latex-based primer, 2 coats interior semi-gloss odorless latex enamel.
- Stained Woodwork to receive Stained-Wax Polished finish: 1 coat oil-type interior wood stain, 1 coat cut shellac, 3 applications paste wax.
- Natural Finish Woodwork to receive Rubbed Varnish finish: 1 coat cut shellac, 1 application paste wood filler, 2 coats oil rubbing varnish.
- Ferrous Metal to receive Full-Gloss Enamel finish: 1 coat synthetic rust-inhibiting primer, 1 coat interior enamel undercoat, 1 coat exterior alkyd gloss enamel.
- Zinc Coated Metal to receive Full-Gloss Enamel finish: 1 coat galvanized metal primer, 1 coat interior enamel undercoat, 1 coat exterior alkyd gloss enamel.

10000 SPECIALTIES

TOILET PARTITIONS

- Baked enamel, ceiling mounted, standard colors, complete with coat hook, tissue dispenser, latch & keeper, self-closing hinges, urinal screens, pre-fabricated shower stalls and stall fronts; and incidentals normal to institutional installations.

- Manufactured by Mills Company, or as approved by the architect.

TOILET ACCESSORIES

- Towel Dispenser & Disposal Combination Units Bobrick and Brocar B-3944
- In-Sink Soap Dispensers Bobrick and Brocar B-822
- Sanitary Napkin Dispenser (Women's Room) Bobrick and Brocar B-282
- Stainless Steel Shelf Bobrick and Brocar B-287
- Grab Bars per ADA Bobrick and Brocar B-5806X36, B-5806X42
- Chrome framed mirrors Bobrick and Brocar B-145 for BOH. All public areas mastic applied wall width to 8'-0" AFF.
- Diaper Changing fold-down devices secured to walls. Bobrick and Brocar 100 E
- Each Stall contains:
 - Seat Liner Dispenser - Bobrick and Brocar B-221.
 - Toilet Paper Dispenser - Bobrick and Brocar B-2740.
 - Sanitary Napkin Disposal (Women's Room) - Bobrick and Brocar B-270.

FIRE EXTINGUISHERS & CABINETS

- Fully recessed or semi recessed depending on the depth of wall. Locate for low hazard occupancy. Number of extinguishers as required by NFPA Code to achieve coverage. Location as determined by DBE.

KITCHEN EQUIPMENT

- Kitchen Equipment to be provided by owner.

LABORATORY CASEWORK

- Cabinets in the Laboratory and Food preparation areas shall be Kewaunee® or approved equal wood units of the type indicated on the drawings.
- All counters, sinks, etc. to be stainless steel.

12000 FURNISHINGS

FIXED THEATER SEATS

- Back heights: Min. 35"
- Chair widths: 22" - 19" (Chair widths are measured from the centerlines of the armrests).
- Automatic self-rising gravity-lift mechanism for quiet, maintenance-free operation.
- Fixed armrests

PORTABLE THEATER BENCH

- Back heights: Min. 35"
- Bench widths: 8'-0" (Bench widths are measured from the centerlines of the armrests).
- Stackable with carts.
- Fixed armrests

14000 CONVEYING SYSTEMS

CONVEYING SYSTEMS

- Work includes 2,500 lb. passenger elevators, 8,000 lb. freight elevator, dumbwaiters; and 42-inch wide escalators. *The finishes shall be mid-prices, conventional designs; escalator shall have stainless steel balustrades.*

15000 MECHANICAL

HVAC EQUIPMENT

- Packaged Rooftop Units: All units are to be packaged, high efficiency, gas heat/electric cooling DX units. Unit size ranges from 3 to 25 tons. Unit is to be included with a hot gas bypass re-heat for humidity control. Units 7.5 ton and larger will have multiple compressors for stage cooling. Outside air economizer is required on all units. Provide a 14" manufacturer's curb. Each unit is to be controlled by a 7-day programmable thermostat. Unit is to have a single

point power connection. Electrical is to provide disconnects for all the units. Refer to M-SK-4 for unit quantity and size. Approved manufacturers are Carrier and Trane.

- Corrosion Resistant Protective Coatings: Units shall have the components in the air stream coated to protect from corrosion. Only units serving offices and retail areas will not require coating. All evaporator coil and exposed copper in the air stream shall be coated with Bygold PoluA1XT. All exposed cabinet structure and metal shall be coated with PSX700. Coil coatings shall have a thickness of 0.8 to 1.2 mil. Cabinet structure coatings shall be a minimum of 7 mil. Approved manufacturers are Rahn Industries and Luvata.
- Smoke Detectors: A duct mounted smoke detector shall be installed in the supply air main duct upstream of filters and outdoor air connections. Smoke detectors are to shut down all the units upon detection of smoke.
- Rooftop Exhaust Fans (restrooms): Exhaust fans are to be sized at 75 cfm per urinal/water closet and 100 cfm per janitor's closet. Exhaust fans are to be roof mounted, up-blast, belt driven motor and controlled with a timer. Approved manufacturers are Greenheck and Cook.
- Rooftop Exhaust Fans (commercial kitchen): Exhaust fans are to be sized based on kitchen hood size and ventilation requirements. Exhaust fans are to be roof mounted, up-blast, rated for grease exhaust, belt driven motor and controlled by a switch.
- Make-up Air Unit (commercial kitchen): Make-up air unit is to be sized and selected based on the required exhaust air for the kitchen. Make-up air unit shall be a roof mounted, evaporative cooler, belt driven motor and interlocked with the exhaust fans serving the kitchen hoods. Approved manufacturers are Captive Aire and United Metal Products.
- Ductless Mini-split: A 1.5 ton ductless mini-split system is to be provided at each elevator equipment room. Unit is to have a roof mounted condensing unit and a wall mounted air handler unit. Condensing unit is to be provided with a manufacturer's rack stand. Mini-split system is to have a single point power connection to the condensing unit. Condensing unit is to power the air handler unit. Air handler unit is to have a manufacturer's provided condensate pump. Approved manufacturers are Mitsubishi and Carrier.
- Condensate Piping: Condensate piping from each unit is to be Type L hard copper tube. Condensate piping is to be routed under the roof structure and sloped at 1/8" per foot of piperun.

METAL DUCTS

- Ductwork: All ductwork is to be single seam galvanized steel. Alternate material for ductwork in a "wet environment" application is to be 304 stainless steel. All exposed ductwork is to be spiral and painted black.
- Duct Layout: Refer to M-SK sheets for the zone that each rooftop unit is serving.

INSULATION

- Duct Insulation: All ductwork located in unconditioned spaces shall be insulated with minimum R-8 insulation.

DIFFUSERS, REGISTERS AND GRILLES

- Diffusers, Registers and Grilles: All diffusers, grilles and registers shall be constructed of aluminum. Only the diffusers, grilles and registers located in the office and retail areas can be constructed of steel. Approved manufacturers are Price Industries, Krueger and Titus.

DOMESTIC WATER

- Water Meter: A 3" water meter at 290 gal/min will be required.
- Domestic Potable Water: The main size will be 4" based on peak flow. Domestic water piping material shall be Type L hard copper tube for all piping above slab on grade. Domestic water piping material shall be Type K soft temper copper tube for all piping below grade.
- Domestic Hot Water: All hot water is to be insulated with 1" thick insulation with all-purpose fire retardant jacket.

- Fittings: Fittings for copper piping below grade with bronzed joints shall be wrought copper for solder joint-pressure type. Fittings for copper piping above grade shall be wrought copper or cast red brass for solder joint-pressure type.

SANITARY SEWER

- Sanitary Sewer and Vent: A 6" diameter main sanitary sewer pipe is required. The slope shall be 1/4" per ft. of pipe run. All sanitary waste and vent piping shall be threaded or solvent welded schedule 40 PVC.

Fittings: Fittings for PVC sanitary sewer and vent shall be schedule 40 DWV.

- FIXTURES
- Circulating pumps: All bronze construction, no mechanical seals and flanged connections. Controlled by an automatic timer.
- Electric drinking fountains: 3 sets of hi-lo dual height, barrier free, wall mounted, refrigerated drinking fountains
- Expansion tanks: Shall be 6.4 gallon and provided at each water heater.
- Floor cleanouts: 4" diameter pipe size, no-hub adaptor and polished bronzetop.
- Floor drains: Floor drains in restrooms and janitor's closet shall be 5" diameter adjustable nickel bronze strainer and shall have a 3" no-hub outlet connection. Provide floor drains in the kitchen per kitchen design.
- Floor sinks: Full size (6") floor sinks shall be provided in all back of house areas. Provide 1 floor sink per 300 sq.ft. Floor sinks will be required in the kitchen area per kitchen design.
- Lavatories: Lavatories shall be under counter mounted with automatic, sensor operated faucet. A thermostatic mixing valve shall be provided with each lavatory.
- Mop sink: Shall be a 24"x24" floor mounted mop sink. Provide a wall mounted chrome plated service faucet.
- Pumps (elevator pit): Provide a sump pump at each elevator pit. Pump is to be capable of pumping fluids to a floor sink located at a remote location.
- Trap primers: Provide trap primers at all floordrains.
- Wall cleanout: Cast iron branch cleanout tee with bronze countersunk plug and round stainless steel access cover.
- Water closets and urinals: All water closets and urinals are to be flush-valve type. An automatic, battery operated flush valve is to be provided with each fixture. The water closets and urinals that are to be ADA compliant are shown on the design layout.
- Water heaters: Provide (4) 80 gallon storage capacity, 12 kW at 480V/3 phase and 49 gallon per hour recovery rate at 100 deg. F temperature rise water heaters for all the restrooms and locker rooms. Each water heater is to have a recirculation pump installed in the return hot water piping to the water heater. Water heater for the kitchen is to be 100 gallon, 199,000 BTUH and 230 gallons per hour recovery rate at 100 deg F temperature rise. A concentric vent kit is to be provided with the gas water heater. Approved manufacturers are A.O. Smith and State.
- Water hammer arrestor: Water hammer arrestors installed as required by the fixture load. Barrel to be fabricated of type 'k' hard drawn copper. The piston and threaded adapter are machined of free turning brass with o-ring seals. Water hammer arrestors are to be installed in accessible areas near access door.

NATURAL GAS

- Pressure: Natural gas piping to be sized for an inlet pressure of 2 psi and a pressure drop of 1 psi.
- Piping: A 3" main natural gas line will be required. Natural gas piping material shall be seamless sched. 40 black iron.

- Regulators: A pressure regulator shall be provided at each rooftop unit or appliance. Pressure regulator shall reduce pressure from 2 psi to 7" w.c. All regulators shall be vented to the outdoors.

CHILLED WATER

- 1st floor tank heat exchangers except tank 49 shall be served by a single air-cooled chiller mounted on roof. Air-cooled chiller shall be Carrier, Trane or McQuay 100-ton (nominal) with minimum of 4-stages, redundant pump package to deliver 240 gpm @ 100 ft TDH and on-board control panel. Loop shall be standard chilled water with chiller set point of 42 °F LWT and 52 °F EWT. Ambient temp shall be 120 °F for chiller selection. Tanks to be served are #45 through 75 except #49. Total of 29 heat exchangers to be connected to loop.
- Tank #49 on 1st floor shall be served by an air-cooled point-of-use chiller in adjacent back of house area. Chiller shall be Carrier or equivalent 18,000 BTU/Hr with pump package to deliver 10 gpm @ 50 ft TDH and on-board control panel. Loop shall be glycol with set point of 35 °F LWT and 40 FEWT.
- 2nd floor tank heat exchangers shall be served by a single air-cooled chiller mounted on roof. Air-cooled chiller shall be Carrier, Trane or McQuay 125-ton (nominal) with minimum of 4-stages, redundant pump package to deliver 300 gpm @ 100 ft TDH and on-board control panel. Loop shall be standard chilled water with chiller set point of 42 °F LWT and 52 °F EWT. Ambient temp shall be 120 °F for chiller selection. Tanks to be served are #9A through 40. Total of 25 heat exchangers to be connected to loop.
- Chilled water loop for 1st floor shall be 4" Sch. 40 carbon steel welded with vapor barrier, insulation and jacket (PVC indoors; Aluminum outdoors). Connection size to heat exchangers shall be sized at approximately 5 ft/second in piping.
- Chilled water loop for 2nd floor shall be 6" Sch. 40 carbon steel welded with vapor barrier, insulation and jacket (PVC indoors; Aluminum outdoors). Connection size to heat exchangers shall be sized at approximately 5 ft/second in piping.

260000 – ELECTRICAL SYSTEMS

ELECTRICAL BASIC MATERIALS

- All electrical work to conform to the National Electric Code, UL standards and National Fire Protection Association regulations. Minimum branch circuit size to be 20 amps. All wiring to be copper.

PRIMARY ELECTRICAL SERVICE

- A new 3600A, 480Y/277V, 3Ø, 4W, NEMA 3R, service will be provided for the Aquarium. Another 1600A, 480Y/277V, 3Ø, 4W, NEMA 3R, service will be provided for the Retail Shops, Gift Shop and the Restaurant.

POWER DISTRIBUTION

- System voltage 480Y/277V will be extended to all distribution equipment in the new building. Step down dry type transformers will provide 208Y/120V power as required. Lighting will be 277V for fluorescent and LED fixtures. Motors and equipment will be 120, 208 or 480 volt power. Standard receptacles, equipment, computers and small motors will have 120 volt power.

SWITCHGEAR AND PANELBOARDS

- Bolt-on type circuit breaker panel boards, no plug-in types, with either 480Y/277 volt, 3 phase, 4 wire or 208Y/120 volt, 3 phase, 4 wire.

EMERGENCY POWER

- Integral battery unit with the Fire Alarm system and emergency lighting units for emergency exit and egress lighting. Also, an Optional Standby Generator will be provided for process critical loads.

CONDUIT

- All conduit in the aquarium/wet areas shall be PVC Schedule 40. Minimum conduit size is 3/4".
- Below grade conduit shall be PVC Schedule 40. Transition to PVC coated RGS or tapped RGS for extension to above finished grade and for underground bends. Minimum conduit size is 1".
- In areas, other than the aquarium/wet area, rigid galvanized steel (RGS) conduit will be used in exposed locations subject to mechanical injury; electrical metallic tubing (EMT) will be used in stud partitions and hollow masonry walls, above suspended or accessible ceilings, and in exposed locations not subject to mechanical injury; and flexible conduit will be used to connect to unit heaters, motors, lay-in lighting fixtures and transformers. Minimum conduit size is 3/4".

CONDUCTORS

- All conductors will be copper insulated for 600 volts with a temperature rating of not less than 75 degrees C, wet location.

GROUNDING

- The main grounding system shall consist of a concrete encased bare copper (UFER) bonded to equipment ground, building steel, water main and other metallic piping.

BOXES AND DEVICES

- Minimum 4" square by 1-1/2" deep with 5/8" plaster rings to be used. Duplex receptacles will be specification grade, 20 ampere, 125 VAC, 2 pole, 3 wire grounding type, with stainless steel cover plates at all locations. All electrical devices in wet/aquarium areas to be grounded and GFCI protected.

GENERAL LIGHTING

- Fluorescent and LED fixtures will be used for ambient and focused lighting throughout the facility. All luminaires in aquarium/wet areas to be anodized or epoxy coated aluminum. No exposed galvanized fixtures.

PARKING LOT AND SECURITY LIGHTING

- Exterior luminaires shall be HID. Exterior security lighting shall have vandal resistant fixtures. Exterior luminaires shall conform to local "dark sky" ordinances.

SITE LIGHTING

- Site lighting shall match the existing parking in the adjacent Butterfly exhibit facility. Area lighting fixtures shall be as manufactured by USArchitectural series RSB. Pole height, fixture wattages and spacing shall be similar to the existing parking lot.
- Building accents shall include highlighting all exterior walls and signage with Lithonia ASF series metal halide floodlights.
- Facility entry and approach path shall be illuminated with pedestrian scale poles, as manufactured by BEGA series 8670 and downlights as manufactured by Gotham Lighting, EVO series with wall accent fixtures for the ticket booth as manufactured by BEGA series 4424.
- All exterior lighting circuits shall be controlled by a low voltage control system as manufactured by LC&D GR2400 series.

INTERIOR LIGHTING

LOBBY

- Entry lobby lighting shall consist of three elements:
 1. LED cove lighting highlighting circular perimeter wall as manufactured by Tokistar gradient series
 2. Accent lighting for each fishbowl as manufactured by Gotham Lighting Incito adjustable series
 3. Ambient lighting as manufactured by Gotham Lighting EVO series.
- Dimming controls for the Lobby light fixtures shall be by ETC Unison series.

AQUARIUMS

- Sea Trek Experience, Deep Ocean Exhibit and Hammerheads and Sharks aquariums shall be illuminated with 5700K dimmable LED fixtures as manufactured by LumenPulse series Lumenbeam to a level as recommended by aquarium consultant or as recommended by the Illuminating Engineering Society of America (IESNA).
- Provide an add alternate for the addition of RGB dmx controlled LED fixtures as manufactured by LumenPulse.
- Lighting Control for all 5700K aquariums shall be 0-10 dimming as manufactured by ETC. Lighting Control for all dmx controlled dimming shall also be as manufactured by ETC.
- All smaller aquariums shall be illuminated with 5700K dimmable LED fixtures as manufactured by LumenPulse Lumenbeam or Lumenfacade series.

THEATERS

- Theater lighting shall consist of two elements:
 1. Dimmable LED downlights as manufactured by Gotham Lighting EVO series
 2. Linear steplights as manufactured by Tempo Industries Guardian series.
- Lighting control for each theater shall be 0-10 dimming as manufactured by ETC Unison series.

GUEST WALKWAYS

- All guest walkways within the public aquarium experience shall be illuminated with small aperture LED downlights as manufactured by Gotham Lighting EVO series.

CAFÉ

- Café lighting shall consist of two elements:
 1. Small aperture downlights as manufactured by Gotham Lighting EVO series
 2. LED decorative pendants as manufactured by Bruck Lighting Laguna series.
- Lighting control for cafe shall be 0-10 dimming as manufactured by ETC Unison series.

OFFICES

- Office lighting shall be as manufactured by Lithonia Lighting GT series.
- Lighting control for office areas shall be individual wall occupancy sensors or with LC&D GR2400 series switching.

PUBLIC RESTROOMS

- Restroom lighting shall consist of two elements:
 1. LED downlights as manufactured by Gotham Lighting EVO series
 2. Bathbars as manufactured by Eureka Lighting Moonrise Plus series.

BACK OF HOUSE

- Back of house shall use non-corrosive wet location fixtures as manufactured by Lithonia DMW series.

270000 – VOICE (TELEPHONE) AND DATA SYSTEMS

VOICE AND DATA SYSTEMS

- Provide a complete Voice and Data system as follows:
 - Coordination with serving Utility Company for underground facilities.
 - Equipment room with terminal boards, entrance conduits, power, HVAC, and grounding.
 - Back-bone pathways.
 - Horizontal pathways, outlets.
 - Telecom rooms with terminal boards, power, HVAC and grounding.

- Data system, i.e. cable, terminations, electronic equipment – MDF/IDF etc. will be installed by Owner's Vendor.

283100 – FIRE ALARM SYSTEMS

- Provide a complete Class A, addressable detection and alarm system. Comply with codes, latest edition adopted by Authority Having Jurisdiction (AHJ) including: NFPA 70, NFPA 72, ADA, IFC.
- System shall be UL listed, meet requirements of the authorities having jurisdiction and the State of Arizona Fire Code.

Program Space Requirements

Exhibit Space	First Floor (SF)	Second Floor (SF)	Third Floor (SF)
Tank (10' deep)	200		
Tank (7' deep)	360		
Tank	60		
Tank	60		
Tank	60		
Tank	100		
Tank	60		
Tank	60		
Tank	150		
Reef Experience	1000		
Tank	60		
Tank	60		
Tank	60		
Tank		350	
Tank		150	
Carousel Tank (11' deep)	1100	1100	
Carousel Tank (11' deep)	1100	1100	
Carousel Tank (11' deep)	1100	1100	
Tank (8' deep)	310		
Carousel Tank (12' deep)	3500	3500	
Tank	2500	2500	
Tank (9' deep)	1200	1200	
Tank		2300	2300
Tank			60
Tank			250
Tank			100
Tank			60
Tank			200
Tank			60
Tank			100
Tank			60

Tank			100
Tank			100
Tank			100
Tank			200
Tank			400
Tank (10' deep)			400
Tank (5' deep)			740
Tank (10' deep)			480
Tank (5' deep)			1000
Filter Tanks Gross SF	5000	500	4000
Support Tanks Gross SF	2000		2500
Subtotal	20100	13800	13210

Entertainment	First Floor	Second Floor	Third Floor
Lobby	7260		
Tank VIP Area and Private Viewing	3000		
Theater	7000		
Video Presentation Area			600
Café			6000
Wetsuit Changing Area Exhibits			2100
Orientation Area for Exhibits			2500
Patio			2000
Subtotal	17260		13200

Support Spaces	First Floor	Second Floor	Third Floor
Excutive Offices (8) and Conference Room	3400		
Gross Back of House (BOH) Area for Tanks	9000	3000	9800
Janitorial	200		
Catering	700		
Receiving Area & 2 truck loading dock deck	1000		
Lab (Qty 2)		400	
Dive Equipment		500	
Animal Holding		1000	
Lockers		1000	
Classroom Space		400	
Vet and Curator Offices		400	
General Back of House (BOH) Area	3445	600	10000
Storage	1500	800	
Restrooms	2300	700	1400
Circulation	8000	1925	22215
Animal Food Services	1200		500
HR/IT/Eng/Operations Office			2000
First Aid			800
Holding/Food Prep/Quarantine Exhibits			2000

Kitchen			3500
Employee Break Room			2000
Subtotal	30745	10725	54215

MEP Spaces	First Floor	Second Floor	Third Floor
Elevator and Machine Rooms (Qty 4 150 SF Each)	600	150	600
Stairs (Qty 5 375SF Each)	1875	1125	1875
Escalators (Qty 2 200SF Each)	400		400
Mechanical/Electrical /Telecom	1120	700	2000
Filter and Pump Rooms	900	500	
Central Plant	2700		
Subtotal	7595	2475	4875

Per Floor Total SF	75700	27000	85500
Building Total SF	188200		

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